

ARMOR



The Tank in 2020 — A Proposal



The Armor Conference, 1997 appellation, has come and gone here at Fort Knox. Some people not assigned to the Home of Armor have mistakenly thought that the end of the conference each year is the trigger for hibernation. They have believed that the sleepy TRADOC outpost of Fort Knox goes back into near dormancy until it is time to begin the spin-up cycle for the 1998 Armor Conference. They couldn't be more wrong. Who has time to slack off? The historic moment we serve in doesn't care one mil whether you are in FORSCOM, TRADOC, or a forward deployed part of the force. If you were here and heard the briefers at the conference, or if you are just a guy who keeps his ear to the ground listening to tremors, you already know this. You know just how busy is the task of armor and cavalry guys worldwide, no matter the locale of their current laager.

One of the facts about Fort Knox that most don't know is that the OPTEMO and ammunition usage here is higher than you would think. Some charts I saw in the Post Chief of Staff's office say it is equal to or greater than that of two heavy, active-duty brigades. That is a lot of miles and lots of bullets going downrange when you consider the mission here is training, mostly at the individual level. True, the place isn't bustling like in the late 1970's Armor Officer Basic days of my memory, but a backwater, sleepy Kentucky outpost? My aftcap!

While Fort Knox trains the men who today crew the squadron and battalion vehicles, it is also looking forward to determine what form the next iron steed will take. There is as much discussion of how it will look as on how we will employ it too. How long will we continue our incremental improvements of existing platforms? Are we really going to invest in and ride into battle a "leap-ahead" vehicle full of multiple pieces of emergent technology? To get us all thinking of these issues and some solutions to them, we have two articles in this magazine that attempt

to see into the hazy future, and I know you will find them stimulating. The magazine's lead article, on one vision of the future combat system, is the first installment of a three-part article that will conclude in the November-December issue. It demonstrates what kind of picture one can draw with a clever use of many open sources. The other article, by the Director of Force Development here at Fort Knox, postulates a new organization optimized to use the capabilities of the 21st century modernized force. Neither writer professes to know what the geometry on battlefields decades away will truly look like, but the assumptions they make seem plausible and will advance our thought.

Some of you may know naysayers out there who see future low- and mid-intensity battlefields as places where United States armored forces are anachronistic "Lost World" dinosaurs. They may be sincere in their beliefs, or they may have their own modernization agendas, such as trying to get bigger slices of the acquisition pie, but whatever the motivation, they are wrong. All of us Armor and Cavalry soldiers need to say so. Loudly. Repeatedly. In any forum that is appropriate. The lives of future soldiers, your kids, your grandkids, demand it. The article by LTC (Ret.) Eshel, "Armored Anti-Guerrilla Combat in South Lebanon," should provide you with enough high pK ammunition to silence those misguided people. The Israeli Defense Forces have found renewed faith in their armor during their border war with the Hezbollah. They have learned that armored vehicles and formations, rather than being leftovers, useless relics from the days of sweeping across the Sinai, are among the most essential equipment they have.

We, too, already know this, but we have to do better letting others who decide things like force structure and budget know, too. Enjoy the magazine.

— TAB

By Order of the Secretary of the Army:

DENNIS J. REIMER
General, United States Army
Chief of Staff

Official:

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

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Editor-in-Chief

LTC TERRY A. BLAKELY

Managing Editor

JON T. CLEMENS

Commandant

MG GEORGE H. HARMEYER

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July-August 1997, Vol. CVI No. 4

Features

- 7 **The Future Combat System (FCS)**
by Dr. Asher H. Sharoni and Lawrence D. Bacon
- 14 **The M1A2 Abrams: The Last Main Battle Tank?**
by Stanley C. Crist
- 17 **The Mounted Close Combat Battalion**
by Colonel John F. Kalb and Christopher T. Mayer
- 21 **In Close Country: World War II American Armor Tactics In the Jungles of the Southwest Pacific**
by Kevin C. Holzimmer
- 26 **Armored Anti-Guerrilla Combat in South Lebanon**
by Lieutenant Colonel David Eshel
- 32 **The Reason "Why" We Will Win**
by Captain (P) Dave Thompson and Captain P. Kevin Dixon
- 36 **Doctrine Division Recommended Internet Links**
Captain Elizabeth L. Tolle
- 37 **Task Force Operations**
by Major Wayne T. Seidler and Captain Cameron A. Leiker
- 41 **Techniques to Shorten the Decision-Making Process at the Task Force Level**
by Lieutenant Colonel Rich Rees and Major Steve Sorrell
- 46 **The Italian Army Moves Toward the XXI Century**
by Lieutenant Colonel Osvaldo Bizzari
- 51 **1997 Franks Award Winner Recognized at Armor Conference**
by Captain Chip Banks
- Back Cover A Great Soldier Remembered**
by Colonel Bruce B.G. Clarke (Retired)

Departments

- 2 **Contacts**
- 3 **Letters**
- 5 **Commander's Hatch**
- 6 **Driver's Seat**
- 52 **Books**

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Directory — Points of Contact

DSN - 464-XXXX

Commercial - (502) 624-XXXX

ARMOR Editorial Offices

Editor-in-Chief
LTC Terry A. Blakely 2249
E-Mail: BLAKELYT@KNOX-EMH1.ARMY.MIL

Managing Editor
Jon T. Clemens 2249

Editorial Assistant
Vivian Oertle 2610

Production Assistant
Mary Hager 2610
E-Mail: HAGERM@KNOX-EMH1.ARMY.MIL

Staff Illustrator
Mr. Jody Harmon 2610

U.S. Army Armor School

Director, Armor School (ATSB-DAS)
COL Richard P. Geier 1050
E-Mail: GEIER@FTKNOX-DTDD-EMH5.ARMY.MIL

Armor School Sergeant Major (ATSB-CSM)
CSM Jack Tilley 5405
E-Mail: TILLEYJ@KNOX-EMH1.ARMY.MIL

NCO Academy (ATZK-NC)
CSM Kevin P. Garvey 5150
E-Mail: GARVEYK@KNOX-EMH1.ARMY.MIL

16th Cavalry Regiment (ATSB-SBZ)
COL Gregory M. Eckert 7848
E-Mail: ECKERTG@FTKNOX16CAV-EMH12.ARMY.MIL

1st Armor Training Brigade (ATSB-BAZ)
COL Scott R. Feil 6843
E-Mail: FEIL@FTKNOX-EMH3.ARMY.MIL

U.S. Army Armor Center

Commanding General (ATZK-CG)
MG George Harmeyer 2121
E-Mail: HARMEYER@FTKNOX-EMH7.ARMY.MIL

Deputy Commanding General (ATZK-DCG)
BG Clayton E. Melton 7555
E-Mail: MELTON@FTKNOX-DTDD-EMH5.ARMY.MIL

Chief of Staff (ATZK-CS)
COL William E. Marshall 1101
E-Mail: MARSHALL@FTKNOX-EMH7.ARMY.MIL

Command Sergeant Major (ATZK-CSM)
CSM David L. Lady 4952
E-Mail: POSTCSM@FTKNOX-EMH7.ARMY.MIL

Directorate of Force Development (ATZK-FD)
COL John F. Kalb 5050
E-Mail: KALB@FTKNOXDFD-EMH13.ARMY.MIL

Directorate of Training and Doctrine Development (ATZK-TD)
COL William R. Betson 8247
E-Mail: BETSON@FTKNOX-DTDD-EMH5.ARMY.MIL

TRADOC System Manager for Force XXI (ATZK-XXI)
COL Robert L. Westholm 4009
E-Mail: TSMFXXI@FTKNOX-XXI-EMH1.ARMY.MIL

TRADOC System Manager for Abrams (ATZK-TS)
COL David M. Cowan 7955
E-Mail: COWAND@FTKNOXDFD-EMH13.ARMY.MIL

Mounted Maneuver Battlespace Battle Lab (ATZK-MW)
LTC(P) Karl J. Gunzelman 7809
E-Mail: GUNZELMAN@FTKNOX-MBBL-LAN.ARMY.MIL

Office, Chief of Armor (ATZK-AR)
COL Patrick F. Webb 1272
E-Mail: WEBBP@FTKNOXDFD-EMH13.ARMY.MIL
FAX 7585

Special Assistant to the CG (ARNG) (ATZK-SA)
LTC Randall Williams 1315
E-Mail: WILLIAMR@FTKNOX-EMH7.ARMY.MIL

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Training For Maneuver

Dear Sir:

Captain Robert Bateman's training critique of our CTCs is a "round out of impact!" I think he's both missed the basic point of why we take our units to the CTCs, and has been trapped in the current rage to change everything we do, whether it works or not. I don't think he's alone in his opinions. I respectfully suggest that he reflect just a little more on the goals of a CTC rotation, and, perhaps more importantly, the reasons why we do *not* go to the CTCs. Hopefully, he and his peers can learn these valuable lessons earlier in their careers than some of us did, and benefit. More importantly, their soldiers can benefit. Captain Bateman, and others as appropriate, I suggest to you that:

CTC Rotations **are** about:

- **Training for the Tactical Fight.** Training companies/troops and battalion task forces/squadrons to fight and win (at the tactical level) the most demanding of battles against a dedicated, professional, and determined enemy under the worst case scenarios imaginable. To fight and win the most perilous battles, when we're outnumbered, outgunned, and alone.

- **Training for the Present.** Training units to fight and win America's battles that we might face next month or next year, with the equipment and capabilities we have today, not in some visionary future fight.

- **Learning to Synchronize.** Training tactical leaders to efficiently synchronize their available combat power to avoid waste of any precious asset. Learning that efficient and disciplined wargaming for synchronization is hard and unglamorous work, but has a high payoff in the end. Learning that it's worth every minute we allocate to it!

- **Learning Hard Lessons.** Walking away just a little bit humbled and more dedicated to the process of training to fight and win the toughest of fights. Knowing that you went up against the best, on his turf, and got better in the process.

- **Feeling Accomplished.** Knowing that we took our soldiers and units to the CTC, trained hard and safe, and came home better prepared to fight and win.

CTC Rotations **are not** about:

- **Beating the OPFOR.** Go to a CTC with that goal uppermost in mind and you guarantee yourself disappointment. If, in the process of learning how to fight you win a few, consider it icing on the cake.

- **Equaling or Bettering the Record of a Previous Unit's Rotation.** Training to fight isn't that kind of competitive sport. The conditions change. Forget what they did and get focused on training *your* unit!

- **Teaching and Training Operational Art.** We have other tools to do that — simulations, CGSC, etc. Rest assured that our

battalion and brigade commanders will gladly opt to hit the enemy's rear and flank. If it's open to attack. If the higher mission permits. If, if, if.

- **Free Wheeling Cavalry Charges (Free Play).** We don't charge across the desert in a best-case scenario based on perfect intelligence and a semi-cooperative and outgunned enemy. We used to do that during the "olden days" of REFORGER. Looked good but was lousy training at the tactical level.

- **Training Units to Fight on a Digitized Tactical Battlefield that is still at best years away from reality.**

- **Feeling good.** Puffing our chests out, based on the accomplishment of easy missions.

That, Captain Bateman, is what I believe CTC rotations are all about, and what they are not about. By all means, keep thinking deep. Keep thinking about the future fight and how to train for it. Just don't lose focus on the close battle/today's battle in the process! You and other leaders of your generation might have to conduct that lousy deliberate attack against a prepared defense tomorrow, without the aid of intelligence, air, naval, or ground combat power supremacy. What then? Learn to synchronize on the fly? I don't think so.

Oh, and by the way, CTCs, keep up the great work!

O.T. EDWARDS
LTC, Armor
HQ, ACE MOBILE FORCE (LAND)

Battlespace and the XO's Role

Dear Sir:

I read with great interest 1LT(P) Peck's passionate arguments concerning the tank company XO's role and his direct refutation of my points in his article, "The Tank XO...2IC or TOC-IC," in the May-June 1997 issue. He directly states that I "...could not have been more wrong." My spouse of one year has also stated that point on several occasions, giving the phrase an air of familiarity. Therefore, 1LT Peck's directly stated point, through no fault of his own, had a dull edge to it. Nevertheless, had I been assigned to argue his point, I would have said the same thing, if not more loudly. In fact, I agree.

I can safely make that statement because I was not making the point against which 1LT Peck is arguing. If we agree that the tank company's entire battlespace CAN be seen (I assume he means with direct eyesight) as he so states on page 23, then I certainly agree that the XO should be in a tank. However, that was not the point I was making in reference to digitization's effect on the tank company and its potential on the future battlefield. A digitally-equipped

tank company, especially one with far-target designation capability like the M1A2, will operate over more physical space, and thus, will have a greatly expanded battlespace. If you include this unit's enhanced capability to integrate other combat multipliers into the equation, the battlespace will correspondingly increase also. Does 1LT Peck really think that all of this will be within direct eyesight of either the tank company CO or XO?

This is where his argument misses the point. He assumes that I contend the tank's direct capabilities are dictating roles. My point is that digitization and its corresponding capability to improve the unit's situational awareness will improve and expand the battle of the tank company; the M1A2 only serves as a tool to make that call. In order to fully take advantage of this improved capability, the XO best assists the commander from a C2V rather than a tank as I stated in my article. Hence, my analogy using the current role of the cavalry troop XO as an example for the future tank company XO. In effect, digitization will change the XO's role, not the tank, insofar as it affects his ability to deal with the demands of digitization.

I believe my argument is also consistent with situational awareness theory, which comprises three hierarchical levels: Level 1 is "perception of the environment;" Level 2 is "comprehension of the environment;" Level 3 is "projection of future status." I contend that an XO operating from a tank will only achieve Level 1 at best, while the capabilities inherent in a C2V will allow him (and hence the company) to reach the other levels. This is why it is imperative to have a C2V vehicle at the company level, manned by the XO, to assist the commander in integrating other combat multipliers across an expanded tank company battlespace. The company itself will have more potential in this way.

If nothing else, this professional exchange between myself and 1LT Peck should serve as one point that must be addressed in defining the role of the tank company XO and how he is equipped as the Army enters the twenty-first century.

MAJ KEVIN D. POLING
CTAC-CGSC
Ft. Leavenworth, Kan.

Crusader Queries

Dear Sir:

I was very pleased to receive several magazines from my U.S. contact and *ARMOR* contributor 1LT Adam Geibel, including your March-April 1997 edition.

While I have not had time to read and enjoy the magazine in full, one item caught my eye straight away. The article "British Tradition vs. German Innovation" by MAJ David

P. Cavaleri includes an illustration of a British Crusader tank being tested at Fort Knox. The caption contains two points I would like to comment on before adding an anecdote which you may find interesting.

First of all, the tank is stated to be armed with a 37mm cannon, when in common with most British tanks of that era it mounted a 2pdr or 40mm gun. One Crusader which did carry a 37mm is the surviving vehicle at Puckapunyal in Australia, which tank was refitted with a U.S. built gun for display purposes as its own weapon was removed to be used in an Australian armored car project during the war years. By 1942, the date of the photo, new British tanks were being fitted with the 6pdr gun, also used as the M1 series in U.S. service as a towed anti-tank piece.

Crusader is also said to have riveted armor, which is not totally correct as the turret was made up of an inner, welded shell to which the main armor plates were riveted. This reduced the effect of rivets being forced into the tank if directly struck by a projectile. The same construction was used on the Conventer, which carried a very similar turret to the Crusader — and which would have been the first all-welded British tank, had there not been a shortage of trained welders more urgently needed to build ships in 1940 — and also on the later Cavalier, Centaur, and Crusader, the last of which served in the North West European campaign in 1944-45. Its replacement, the Comet, was an all-welded design but did not see action until early 1945, the date of introduction being delayed by the German counter-offensive in the Ardennes.

Visible in the photo is the small sub-turret next to the driver and mounting a single machine gun. This was of doubtful value. When the Crusader was being tested in later 1940/early 1941, it was found that firing four 225-round belts of ammunition consecutively through this machine gun resulted in the unfortunate gunner becoming unconscious and needing oxygen to revive him, the driver being unfit to drive, while even the main turret crew complained of headaches. Many of the Crusaders used in North Africa operated with this turret unmanned, as much due to crew shortages as safety. The sub-turret was deleted on later Crusaders.

One small point I would like clarification on should someone be able to help: The vehicle in the photo has a number painted on its turret, but the print is not clear enough to make it out. I would be interested to know what it actually is as I am engaged in a long-term — too long! — study of British armor including these census numbers, and would like to place this tank in its rightful order. Identification of whether the tank was a Mk I or a Mk II would also help, although its number would point in the right direction. [Ed. Note - The number on the turret is T16636.]

Also, what became of the reports produced on these trials? The trials included several British vehicles including, I under-

stand, another Crusader, a later Mk III vehicle with a 6pdr gun which is currently being refurbished at Aberdeen Proving Ground, Md. The test results and comments on these vehicles would be very interesting, if anyone can point me to their location.

PETER BROWN
8 Saddle Close
Colehill, Wimborne
Dorset, BH21 2UN
England
e-mail: 106247.3271@compuserve.com

Personnel System Drives Good People Out of the Active Army, and the Guard

Dear Sir:

Major Donald Vandergriff's article in the March-April 1997 issue of *ARMOR*, "Creating the Officer Corps of the Future to Execute Force XXI Blitzkrieg," could not have more clearly outlined the shortfalls of today's U.S. Army Armor Officer Corps personnel system for both the active duty and National Guard ranks. His proposal to reform the whole system is the only viable solution that would ensure we have a combat-ready armor force to execute Force XXI Blitzkrieg doctrine. For this reason, the Department of the Army should implement these changes as soon as possible.

Over half of the armor lieutenants with whom I served in 4-66 Armor Battalion during Operation Desert Storm left active duty or the military altogether within three years of returning to Europe from the war. Why did so many battle-tested, young armor officers leave the Army, taking with them to the civilian sector the combat experience they had learned in the Middle East? Because they were fed up with poor leadership and lack of support that is characteristic of our up-or-out and no-fault armor officer personnel system.

When, in 1992, I left active duty for the civilian sector, I sought to put behind me the up-or-out and no-fault armor officer system while pursuing a part-time military career in the Texas Army National Guard's 49th Armored Division. Unfortunately, I very quickly found that the structure of the National Guard's Armor Officer Corps is in even worse shape than its active duty counterpart. Most National Guard armor officers, many of whom are not qualified to lead troops out the front door of their armory, constantly vie for leadership and command positions not based upon their competence but by using the good ol' boy system and Machiavellian politics. It is no coincidence, therefore, that so many good National Guard armor officers, as well as their enlisted subordinates, are leaving the military service for the same reason their active duty brethren are — the armor personnel system is broken.

The only way the Army can ensure it has the qualified and competent tank officers

needed to effectively implement Force XXI Blitzkrieg doctrine is to limit armor command slots to real leaders, put only qualified and caring managers into armor staff and support positions, and rid the armor officer ranks of those who do not care or just do not belong. Likewise, the Army should quit trying to fund National Guard armor units and start putting all of its tank training funds into the active duty ranks where it belongs — with real tankers. The armor community, U.S. Army, and our nation as a whole desperately need and demand these changes. Our freedom ultimately depends upon it.

MICHAEL A. KELLY
CPT, AR, TXARNG

Leadership Development Demands The Chance to Try and Fail

Dear Sir:

I found MAJ Vandergriff's article ("Creating the Officer Corps of the Future...," Mar-Apr 97) to be provocative and controversial and on the right track. It should stimulate some interesting responses. For sure the Army needs to do something besides play around with technology and constant reorganizations that create endless and needless turmoil. We don't concentrate enough on leadership development, both for junior officers and NCOs. Seniors remain petrified that if one of their junior officers makes a mistake that it will terminate the senior's career. This has been true as long as I can remember, and obviously persists to this day. Consequently, juniors have few chances to show their stuff, but if they play ball, they do get promoted and then are qualified to do what? Play some more ball with higher-up seniors? I shudder to think what sort of an Army this will produce, especially when those at the top keep pretending that pushing females into every niche will be wonderful for combat readiness. So, pushing females and muzzling junior officers will... well, you should quickly get the picture!

I agree that the Army fails to recognize that there must be different career tracks and that not everyone is ready or willing to command others and all the responsibility this entails. Also agree that officers must remain in positions, especially command, for several years to become really proficient, and if this means that we cut back on senior positions, so be it. I believe that the OER system must emphasize what raters have done to provide juniors with opportunities to learn how to take the initiative when appropriate for particular positions and situations. If raters cannot truly develop leaders, what the hell good are they? We simply must expand the risk tolerance factors of seniors to encourage their juniors to tackle difficult tasks and accept the mistakes that go with them... So far we've done a lousy job for a

Continued on Page 50

*MG George H. Harmeyer
Commanding General
U.S. Army Armor Center*



Post AWE Observations

Now that the Task Force XXI Advanced Warfighting Experiment (TFXXI AWE) is behind us, and Fort Hood and TRADOC personnel are simultaneously breathing sighs of relief and hustling to get everything in place for the Division XXI AWE in November, I believe it is appropriate to present my assessment of the TFXXI AWE. Echoing what you have probably already heard about the NTC portion of the AWE, I believe it was an amazingly successful rotation that provided a valuable training opportunity for the 1st BCT, 4th ID, and clearly demonstrated the great potential of many experimental and future digital systems and concepts. Our collective challenge today is to take the emerging lessons of the TFXXI AWE, analyze these lessons, determine their impact, and ensure that the correct lessons are properly incorporated into current and future requirements documents, doctrine, and training systems.

I am convinced that digitized equipment enhances the combat capability of modernized warfighting organizations. However, digitization is not, of itself, the key to future battlefield success. Soldiers, leaders, and units must continue to be well-trained in the basics and experienced in order to fully leverage the capabilities of current and future digitized systems. The 1st BCT was challenged before the NTC rotation by ever-evolving hardware and software delivery schedules and widely varying levels of system functionality. Despite these challenges, they successfully conducted a wide range of train-

ing events in preparation for the NTC. They also benefited from a week-long shakeout phase at the NTC that enabled them to both stress their digitized systems prior to the rotation and conduct additional collective training. With the home station training challenges that all of our rotating units encounter today, incorporation of a similar shakeout training period in future NTC rotations might be of benefit to any rotating unit. Hats off to the professionalism and flexibility of the NTC.

The 1st BCT's NTC rotation also highlighted the continued value of the NTC. The Army has made a tremendous investment in this facility, to include recent upgrades to the NTC instrumentation systems. The OPFOR (11th ACR) remains the most formidable and well-trained force in the world, but they also require equipment modernization. We must all strive to make the most of this unique training capability. There is no other opportunity, aside from a real-world combat operation, that stresses and stretches a unit like the NTC. The assistance provided by experienced observer/controller (OC) teams further magnifies the already high value of training at the NTC. For all of these reasons, it was appropriate that the NTC was the "test" venue for this experiment, and we must continue to consider its similar use in future experiments.

If we have any chance of successfully fighting with a digitized force, we must start today to grow and train the digital

force of tomorrow. I am convinced that individual and collective training was under-resourced throughout this experiment, and the trend will probably continue in the Division AWE. There were some great successes in training during the AWE, however, which illustrate that we have a strong existing nucleus here at Ft. Knox for future digital training development: the Force XXI Training Program (FXXITP). We provided a series of training support packages (TSP) for the EXFOR, based on FXXITP products. While these constructive and virtual training products were significantly modified to meet the EXFOR's unique organizational and equipment characteristics, the baseline products are usable by any armored or mechanized unit. The challenge is to keep these products current, and to expand them to address the collective training requirements of all Battlefield Operating Systems (BOS) within the digital division. We must also address the special training requirements for future digital leaders. The TRADOC Commander has discussed the need to develop a Digital Leader's Reaction Course (DLRC) to help train digital leaders; I believe we have the baseline for the DLRC today within the various components of the Force XXI Training Program — the challenge is securing and sustaining adequate resources to further refine these 21st century training tools.

Although most individual digital systems performed well during the TFXXI AWE, we must remember that most of

these systems were experimental prototypes, or early versions of fielded systems. The M1A1 with appliqué is not an objective system; our ability to operate in a digital environment cannot be evaluated solely on the AWE performance of less than fully integrated prototype systems. The objective requirement is for fully integrated combat systems, with integrated situational awareness, target acquisition and location, direct fire, and target handoff systems, supported by high bandwidth, long-range secure communications systems. The Force XXI Battle Command Brigade and Below (FBCB2) system is the key platform component within fully integrated digital combat systems, and we have already modified FBCB2 requirements based on emerging insights from the TFXXI AWE. Our future direct-fire fights must be built around a strong backbone of internally and externally integrated digital combat systems — the M1A2SEP tank, the M2A3 Bradley, and the Apache Longbow — all utilizing FBCB2 as their embedded digital command and control system. Fielding these modernized digital combat systems is essential to achieving the full capabilities of the objective Force XXI Division. Along with showing the potential value of these fully digitized

integrated systems, the AWE also demonstrated that the future digital force must be resourced with adequate quantities of dismounted infantry (the 2 X 9 + 5 initiative), dismounted soldiers with usable digitized systems (Land Warrior), modernized mortars in all maneuver task forces, improved night vision devices (Own the Night), improved reconnaissance platforms with modernized acquisition capabilities (FSCS and LRAS3/HS3), refined Combat Service Support (CSS) capabilities through proliferation of the Palletized Loading System (PLS) with Movement Tracking System (MTS), and robust data radios.

Two TFXXI AWE organizational initiatives deserve specific comment: the Brigade Reconnaissance Troop (BRT) and CSS Reorganization. The BRT was a success during the AWE because it enabled the 1st BCT to emplace ground reconnaissance assets throughout the depth of the battlefield, and, in coordination with other advanced aerial and ground surveillance systems, establish and maintain an unprecedented level of observation on the OPFOR. Of equal importance were reduced taskings on TF scouts due to the presence of the BRT. Unencumbered, the TF

scouts were extremely effective in fulfilling their traditional role — providing the security for the task force. While we need to continue to refine the organization, equipment, and doctrine of the BRT, it is clearly a winner. Discussion on CSS reorganization is an emotional issue. The Forward Support Company (FSC) may pay off with its hypothesized benefits once all the necessary enabling initiatives are available. Any assessment of this initiative is premature, as it was not fully exercised or stressed during the TFXXI AWE. We must wait for further modeling, testing, and analysis before a final decision is made regarding this organizational change.

Finally, I cannot overpraise the efforts of the 1st BCT throughout the entire AWE process. This organization worked tirelessly to ensure the successful execution of the AWE and has established a high standard for performance by any unit, digital or otherwise. The leaders and soldiers of this talented organization deserve all the accolades they have received for their key role in the AWE.

FORGE THE THUNDERBOLT!

DRIVER'S SEAT

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



To the Force

This is my final opportunity to say "Thanks" to everyone for the support my wife and I received during this assignment. Rose and I will retire from active duty in Radcliff, Kentucky, on 31 August 1997. This assignment has been blessed with its share of challenges, as well as the unique privilege of serving the great soldiers of the Armor and Cavalry force. Without your support and dedication to duty, the success achieved through hard work and diligent effort would not have occurred. We have taken the Armor Force to the next level, and prepared it to play a

dominant role in the defense of this great nation in the twenty-first century.

Command Sergeant Major David Lady will assume my duties in July. I ask you to provide your continued support to the Armor Center.

Soldiers will always be a part of my life. I will never forget those soldiers I served with, and in this last assignment, those that I have served. I will not bore you with any profound philosophy or challenge you to exceed published standards when I am gone. I will just remind you of something you have

heard many times in the past, "Non-commissioned Officers Lead the Way" and "Once a Tanker, always a Tanker." Thanks again for your support, stay low in the foxhole, and watch out for incoming rounds.

Lest We Forget!
On The Way

Ronnie W. Davis
21 Aug 1969 – 31 Aug 1997

The Future Combat System (FCS)

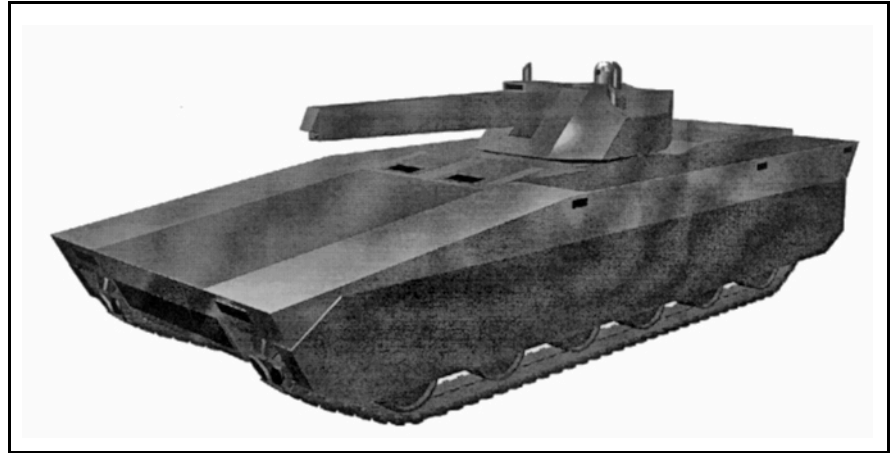
A Technology Evolution Review and Feasibility Assessment

by Asher H. Sharoni and Lawrence D. Bacon

This is the first installment of a three-part article on an independent analysis and proposal for a future tank-like system. The second part will appear in the September-October issue. - Ed.

The Future Combat System (FCS) is the Army's most recent attempt to begin developing a new tank that is to be fielded in the 2010-2015 time frame. To understand its origins, one must examine the prevailing global political situation, and its effect on future deployment of the U.S. Army. The post-Cold War era has been distinguished by the downsizing of military power and ever-diminishing defense budgets for research, development, and acquisition of new weapon systems. Moreover, the counterterrorism program added unplanned budgetary and operational pressures, and its immediate funding led to an additional intensive cut of \$680 million from research and development programs as a 'down-to-earth' practical approach to reducing total allocation of FY 97 defense spending.

Meanwhile, the U.S. Army has been currently undergoing a transition from a force permanently deployed all over the world into a global, consolidated, 'power-projection' force, primarily stationed in the U.S. In view of these changes and uncertainties, the conception of a novel tank has not been heretofore widely advocated. Instead, the Army has been focusing its efforts on upgrading programs to improve the M1 Abrams tank fleet¹ (e.g. M1A2/SEP, M1A2/P3I, M1A3(?)...). Possible upgrades may include the high-pressure XM291 120mm tank gun, with more effective, advanced kinetic energy (KE) and chemical energy (CE) ammunition; an integrated dynamic defensive 'suit' (Active Protection System - APS); armor augmentation (Explosive Reactive Armor - ERA); digital appliques; improved target acquisition; digital fire control system; and a driver night vision enhancement. A new turret incorporating a 140mm gun is not consid-



A computer-modeled sketch of the system being discussed.

ered a viable option at this time. Continued modernization and upgrades are designed to preserve the M1 Abrams fleet's advantageous technological edge, operational superiority, and sustainability until a new generation tank is ready to be deployed.

Nevertheless, we've recently discerned a resurgence of interest in a novel tank, postulated by the authors to be fielded within at least 20 to 30 years into the next century, rather than within 15 to 20 years as commonly perceived feasible. General Dennis J. Reimer, U.S. Army Chief of Staff, has recently stated in an interview to *Armed Forces Journal* that by 2010, "The Army After Next," namely Army XXI, will be configured and equipped with M1A2 Abrams tanks.² General Reimer also commented that the Army has begun work with OSD's Net Assessment Group to portray what the future battlefield will look like in the 2020-2030 time frame. In a recent Ad-Hoc Study of Tank Modernization,³ the Army Science Board (ASB) panel, headed by General Glenn K. Otis (USA, Ret.), concluded that no significant technological breakthroughs are expected prior to the year 2020. This distinguished panel of military and civilian

experts has identified the following future major threats to U.S. Armored Forces: Line of Sight (LOS) Antitank Guided Missiles (ATGM) fired from tanks and helicopters; top-attack ATGMs; advanced KE rounds fired from large-caliber tank guns (120mm and up); extensively proliferated infantry antitank weapons; top-attack, artillery-fired, precision-guided antitank munitions with shaped charges or Explosively Formed Penetrator (EFP) warheads; significant advances in foreign tank armor (e.g. explosive reactive and active protection/defense systems) and, sophisticated (intelligent) mines. These findings lead to the conclusion that the 2020-2030 future battlefield environment's operational requirements could only be met — on equal terms — by the FCS. Consequently, it implies what the FCS's time frame of deployment may realistically be — beyond Army XXI!

The Future Combat System (FCS) is fundamentally a futuristic conceptual tank or weapon system, characterized by *unprecedented* operational capabilities.³ It will incorporate state-of-the-art, leap-ahead technologies, matured and available for implementation 20-30+ years from today. The Senate Armed

Future Combat System (FCS) External Dimensions and Features

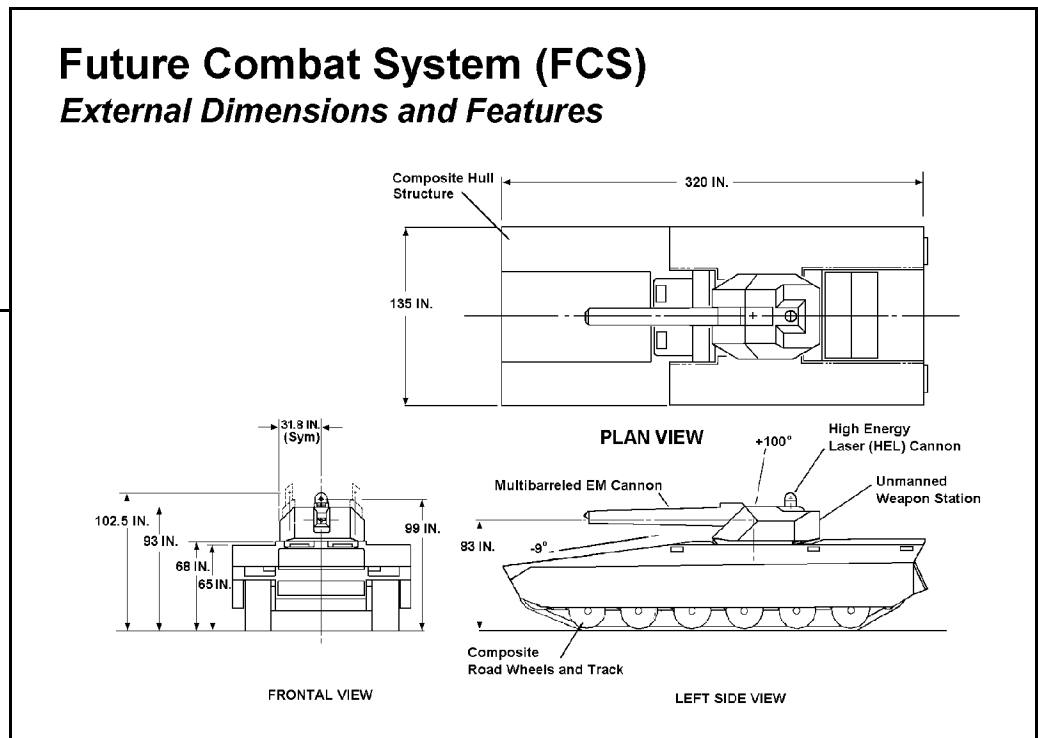
Services Committee and the Senate Defense Appropriations Subcommittee started the ball rolling when they recently authorized funds (\$12 M) for a new program primarily designed to:⁴ Identify requirements and assess future concepts as to what system or mix of systems will support the best operational weapon system for defeating the ever-evolving threats; develop conceptual approaches for imminent technologies that could be integrated into a future tank

(or upgrades to the existing M1 Abrams fleet); and employ 'virtual prototyping' techniques [e.g. studies of computerized 3-D graphics and processes for emulation of engineering and manufacturing development (EMD)] for conceptualizing and subsequently fielding a *revolutionary* Future Main Battle Tank (FMBT) within 20 years or so.

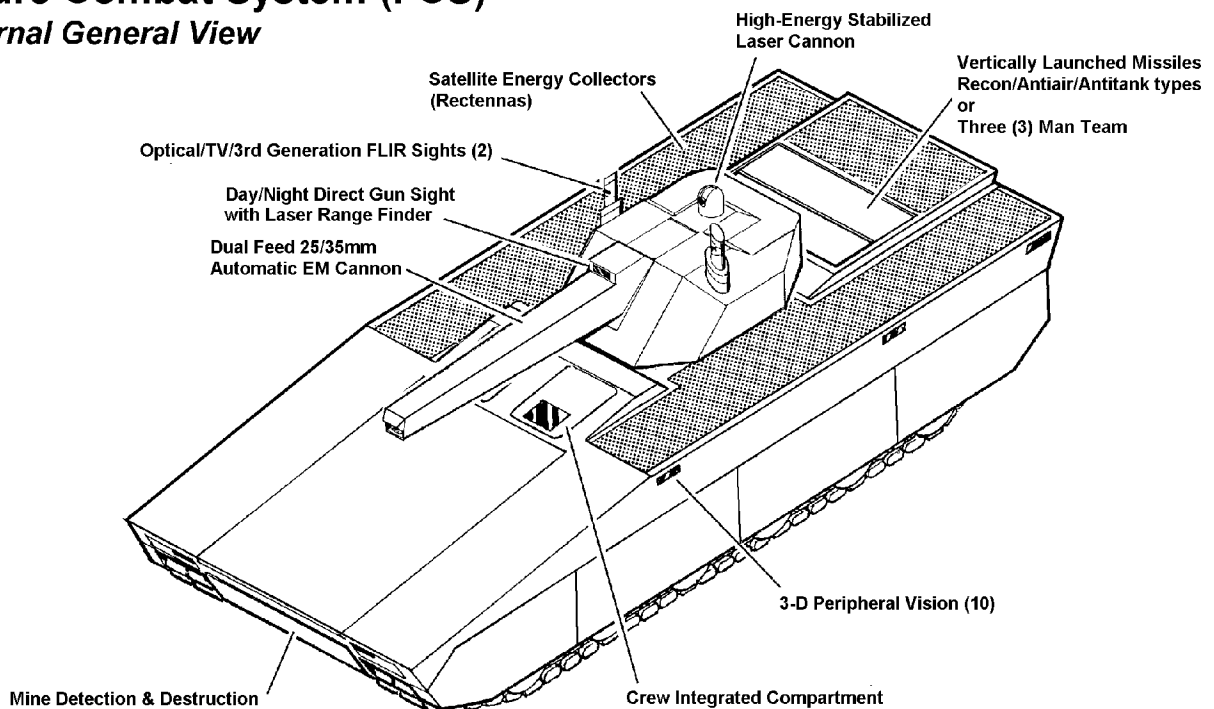
The Future Main Battle Tank (FMBT)

The evolution of the FCS should not be disassociated from that of its predecessor, the FMBT. On January 1993, the U.S. Armor Association and *ARMOR* magazine, in conjunction with the Directorate of Combat Developments at Fort Knox, Kentucky, con-

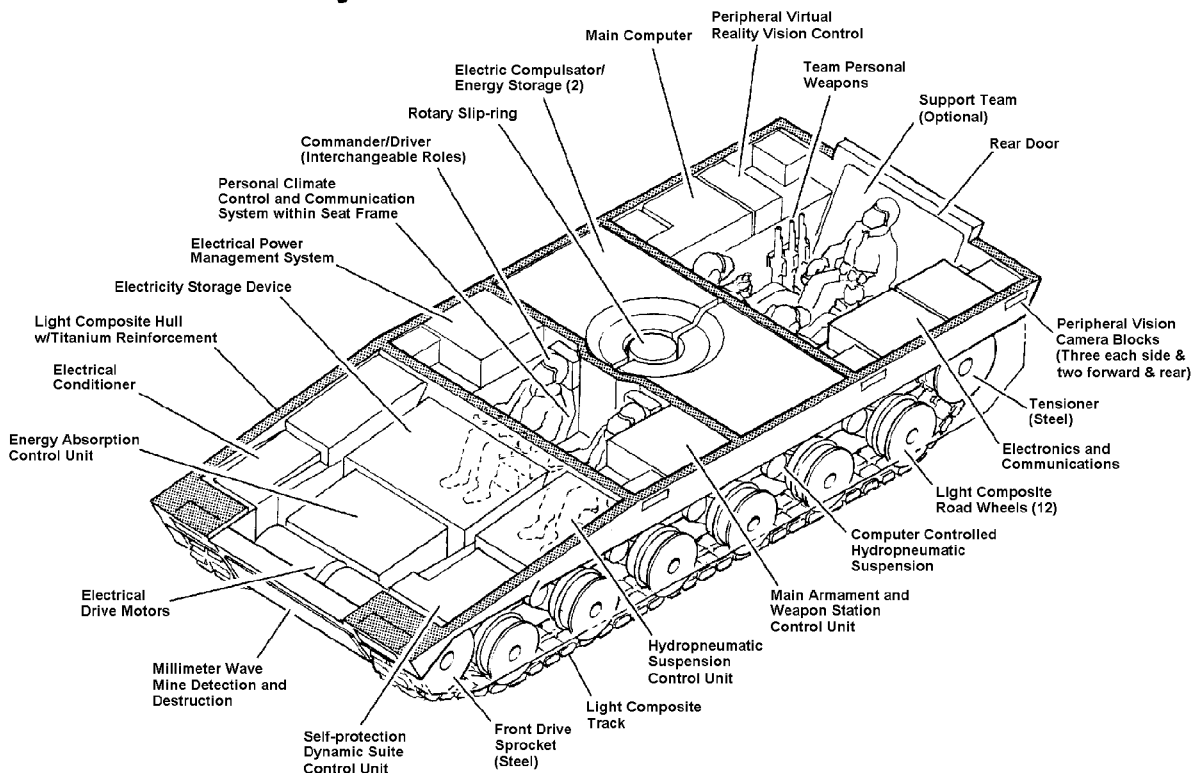
ducted a conceptual tank design contest for the next-generation tank — known as the FMBT. The contest drew close attention and extensive response from all quarters of the defense community. The winning entry, submitted by Western Design Howden⁵ (WDH), presupposed 2010-2015 as the time span for fielding.



Future Combat System (FCS) External General View



FCS Detailed Layout



The FMBT was perceived as the successor to the M1 Abrams tank. It capitalized on a new and revolutionary tank design philosophy as a fully integrated, multipurpose weapon system. Considering lethality as the principal design driver, the design approach commenced with the selection of the main armament, continued with an unmanned, remotely operated weapon station, and concluded with the hull constructed around it. Consequently, the weapons station was located towards the rear of the hull, the three crew members were positioned abreast in a well-protected, consolidated compartment low in the center portion of the hull, and the power pack was placed at the front.

Compartmentalization and placement of the entire crew in the hull constituted a major enhancement to crew survivability and predominantly contributed to overall weight reduction.⁶ The high-pressure 120mm XM291 gun, developed by TACOM-ARDEC/Benet Labs, was the main armament gun system of choice. The XM291 possesses the inherent lethality growth potential, affordability, and ability to defeat contemporary and future armor. It is about the same size and weight as the standard M256 120mm tank gun, yet possesses a 'built-in' growth capability to utilize higher pressure, future 120mm

ammunition, can be adopted to electro-thermal chemical (ETC) propulsion, and is internationally harmonized with the 140mm gun implementation, requiring solely a tube and ammunition exchange. It is considered by many as the most viable upgrade to the standard M256 gun. The XM291 gun is short-term, readily available, and represents a sound economical alternative to serve in the next 30 years and beyond, prior to maturation of a new and *revolutionary* main tank armament system. The FMBT was favorably received by the armor community because it epitomized the prudent utilization and integration of mature, state-of-the-art, and battle-proven technologies *currently* available.

The Future Combat System (FCS)

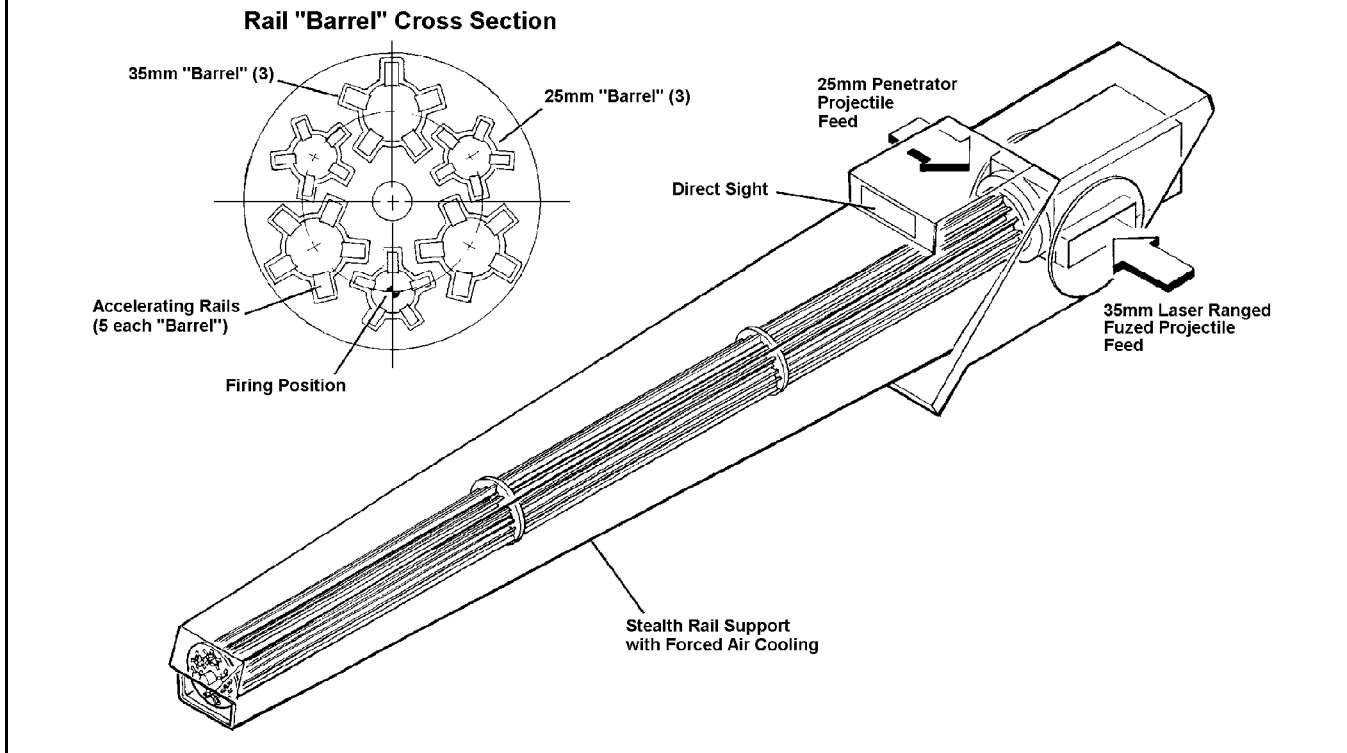
On July 8th, 1996, Major General Lon Maggart, then commanding general of the U.S. Army's Armor Center at Fort Knox, Kentucky, introduced a novel concept of a "tank" identified as the *Future Combat System* (FCS). MG Maggart expressed his explicit viewpoint regarding the FCS while interviewing with the *Defense Daily* newsletter.⁷ Our present analysis is based in part on that interview, considering that the Mission Need Statement (MNS)

was not available. Additional insight into the FCS concept was subsequently provided at the American Defense Preparedness Association's Combat Vehicles Conference,³ conducted at the U.S. Army Armor Center, Fort Knox, Kentucky, September 24-26, 1996.

The imaginary FCS is, in our *personal* conviction, a visionary successor to the conceptual FMBT, whereas the latter is the successor to the M1 Abrams series tank. Our governing assumption is that, in actuality, the FCS will be deployed in the 2020-2030 and not in the 2010-2015 time frame as currently presumed feasible.³ Formidable technological breakthroughs are mandatory and prerequisite prior to committing immense funds and scarce technological resources to the development, acquisition, and fielding associated with the FCS. These may not be realized, nor sufficiently mature, to warrant their implementation within the 2010-2015 time frame, especially under continuous adverse budgetary restraints and ever-competing, oftentimes contradictory, operational requirements.

Nonetheless, the FCS concept has secured support of military leaders and captured \$100 M in the Army's recent six-year budgetary plan. For the FCS, or any other future generation tank, to

Conceptual 25/35mm Electro-Magnetic Automatic Cannon



come to fruition, it *must* incorporate *revolutionary* technologies that demonstrate novel, highly-potent weapon systems and substantial reductions or savings in manpower, propulsion energy, consumption of consumables, sustained maintenance, reliance on logistic support, and overall combat weight.^{8,9,10,11,12,13}

Presumably, it will be one of the last manned tanks produced in large numbers. Most likely thereafter, remotely-operated tanks will be introduced — much smaller, unmanned ‘robotic’ tanks introduced into the battlefield in decisive aggregates.^{14,15,18}

Scope of This Article

The emergence of the revolutionary FCS concept triggered our imagination and persuaded us to conduct a rather limited technical literature research of information available in the public domain. The latter resulted in this article, after we anguished over the imponderable complexities associated with such a revolutionary design, portraying how we envision the FCS 20-30 years into the future. In consequence, we’ve determined to advance our conceptual FMBT one generation further to meet future battlefield operational require-

ments and leverage technologies available for implementation in the 2020-2030+ time frame. FMBT’s underlying philosophy served as the bedrock for our proposed FCS. It bridges the gap in the evolutionary process between the advanced, yet conventional, M1 Abrams tank series and the imaginary, futuristic, nearly ‘science-fiction’ FCS. Whenever applicable, conceptual features have been adapted from the FMBT and further advanced to correspond to their likely evolutionary status at the time of implementation. Admittedly, it is a formidable task to accurately forecast technology evolution 20 or 30-plus years into the future. This has become particularly evident in the course of the last four decades, when *unprecedented* technological breakthroughs have become customary and more frequent. In view of this, we ask readers for patience as we look into our ‘crystal ball’ and occasionally let our imaginations go wild.

The FCS - Characteristics and Major Capabilities

The FCS will capitalize on the following major capabilities and attributes:

Concept for a dual-caliber electromagnetic railgun to be cooled by forced air circulation.

Lethality - FCS Armament Choices

● **Primary Armament System - Main Gun Armament Candidates:** The following are the potential prime candidates for the FCS’s Main Armament System (MAS):

- Conventional solid propellant (SP) 120/140mm smoothbore guns
- Liquid propellant (LP)
- Electro-thermal chemical (ETC)
- Electromagnetic (EM)
- Antiarmor, anti-air guided or ‘fire-and-forget’ type tactical missiles.

We will discuss the predicted evolution, technical feasibility, and applicability of these guns and missiles later on.

● **Secondary (I) Armament System - High-Energy, Direct-Projection Laser Gun:** The FCS will be equipped with a high-power, extremely accurate, fully-stabilized laser gun. The FCS is envisioned as an ‘all-electric’ vehicle, which facilitates a laser gun that could be used against a variety of close-in threats. Among them are helicopters, drones, ground ‘soft’ targets, infantry,

and — in self-defense mode — against incoming enemy missiles. High-power laser technology for armament applications has successfully advanced beyond its infancy and nowadays is well established in outer space and airborne applications. The FCS laser gun application will probably be a 'spin-off' of these developmental efforts. Incontestably, laser gun technology represents a tremendous step towards independence from logistic support. There is no need for frequent ammunition resupply since it will be 'firing' variable, high-energy short pulses (bursts) of converted electrical energy. During target acquisition, a low-energy laser beam will be pointed at the target to verify 'on-target' position and the corresponding effective range. Subsequently, the low-energy beam will be substituted with a short, high-energy pulse, ultimately yielding target destruction.

A case in point is the USAF's *High-Energy Chemical-Oxygen Airborne Laser* (ABL), currently being developed to destroy ballistic missiles early in their boost phase of flight, immediately following their launch phase. A full-power prototype baseline configuration laser module in the hundreds of kilowatts class has already been demonstrated to meet stringent performance requirements. Another notable program is the U.S.-Israeli *Tactical High-Energy Laser* (THEL), developed to engage and destroy incoming missiles. Though chemical laser technology is considered mature, a compact and transportable tactical laser weapon system, well integrated into a smaller mobile armored vehicle, remains to be demonstrated. Typical outstanding issues are integration of optics, energy pressurization system, radar, and command & control. To facilitate its development, the U.S. Army is already leveraging technology from the USAF's space-based laser program. Finally, the U.S. Army's fixed laser, based at the *High Energy Laser Systems Test Facility* (HELSTF) White Sands, N.M., and the *Los Alamos National Laboratory* (LANL) facility are both engaged in laser research for military applications. These developments and similar projects imply that future 'spin-off' versions, on a much smaller scale, could be implemented in various, armored ground-to-ground and ground-to-air offensive weapons and active self-defense applications. The high-power, direct line-of-sight (LOS) laser beam must have the ability to travel

through the atmosphere at tactical operational ranges (10-15 km) without detrimental losses from beam spreading, divergence, dispersion, diffraction and scattering. Additionally, it must maintain its 'self-focus' characteristics and high-energy density, which are mandatory for achieving an effective target kill. Much has yet to be said about laser research and applicability, but, in the interest of time and space, this short overview will suffice.

● **Secondary (II) Armament System - Dual-Role Anti-air/Antiarmor Missiles:** The FCS will be equipped with dual-role, 'fire-and-forget' anti-air (40-50+ km extended range) beyond-line-of-sight (BLOS), and laser/TV (infrared, passive or active, 3rd generation) guided 'line-of-sight' and beyond (B/LOS) antiarmor (10-30+ km range) missiles. Compact *third* generation missiles, with multiple target capability, air-defense and antitank system (ADATS), robust lethality type missiles. Though still presumed to incur high cost per unit and inefficient at very close engagements, there will be no substitute for their accuracy and extremely high probability of hit and kill at short and extended tactical ranges. Their BLOS formidable tactical capability will remain second to none.

In addition to primarily assuming an offensive role, the FCS will also act as an armored *mobile* air defense (AD) system¹⁶ for the combined arms team (CAT). By acquiring this capability, air defense will become fully integrated into the CAT to allow for its maximum effect and deployability. A network of four to six FCSs could prioritize and engage a number of aerial and point targets. This network, being an integral part of the digitized force, could either acquire and engage targets on its own, or convey critical information to other forces in the greater area. The FCS dispersed 'battle groups' (not large armored formations anymore) could be connected to higher-echelon defense and command centers for automatic response to saturation and time-compressed attacks. This need is reinforced by the reality that the Army is modifying its 50-year-old air defense doctrine, taking over responsibility for close air support (CAS). The Army will rely on its own means, such as deep attack helicopters (AH-64 Longbow Apache), advanced artillery systems (Crusader), and ultimately the FCS, rather than the customary U.S. Air Force dedicated close support aircraft.

● Battle Management System

The third-generation Battle Management System (BMS) includes a peripheral, multi-sensor-aided target acquisition and fire control system. It would be a day/night integrated system capable of automatically engaging and managing up to 15-20 active or passive targets simultaneously and autonomously. Automatic air/ground acquisition would be made through thermal imagery, millimeter-wave radar processing, and direct optical sights. It would include target recognition, identification, prioritization, and automatic tracking. Fire controls would incorporate main and secondary armament stabilization and support automatic loading. The system would offer full fire-on-the-move capability while engaging multiple targets. It would assume an active role within the tactical and regional digitized communication networks by providing critical battle awareness information and target data submission and acceptance. The FCS/BMS could be temporarily 'slaved' to other FCSs or to higher-echelon commands.

● All-Around Vision, Transparent "Virtual Reality" Under Armor

An all-around, 'virtual reality,' day/night, 360° array of TV/thermal cameras and computer-processed vision would enable the crew to "see" through the armored walls of the crew compartment with helmet integrated displays. This would allow excellent "buttoned-up" visibility and alleviate motion sickness. The weapons could be fully slaved to each of the two crew members' helmets as tactical considerations and battle conditions dictate. The displays would make accessible all critical battle awareness, vehicle status, and intelligence information. Crew members would be able to see the faces of people they are communicating with and other pertinent pictured information on their personal displays.

Integrated Survivability

This lightweight (40-45 ton), all-terrain, all-weather, extended-operational capability (EOC), highly mobile armored vehicle would be significantly more versatile than the present M1 Abrams tank series and capable of missions *beyond* those traditionally performed by contemporary main battle tanks (MBT).

The vehicle would present a substantially reduced overall target signature

(heat, acoustic, magnetic and visual) by way of utilization of 'stealthy' materials and design contours. Equipped with an extensive signature management system (SMS - thermal, electromagnetic, acoustic), countermeasures, and a *False Target Generation (FTG)* active/passive decoy system, which could project and emulate an imaginary FCS signature to divert incoming homing missiles away from the real FCS.

A self-defense, dynamic 'hit-avoidance suit' (HAS) would automatically detect, prioritize, counter, and intercept enemy cruise missiles, helicopters, unmanned vehicles, high performance fixed-wing ground support aircraft, top-attack antitank munitions, homing artillery munitions like SADARM (Search and Destroy Armor), and other antitank threats.

There would be an automatic detection, alert, avoidance, and protection system for areas contaminated by weapons of mass destruction (WMD).

The vehicle would be equipped with advanced, 'add-on' modular passive

and energetic/reactive armor modules that could be installed in accordance with the primary assigned mission.

Another system would integrate passive/active mine detection, avoidance, and possibly destruction (neutralization) while stationary, or preferably on-the-move.

Force-Projection Deployability

Reduced weight and a smaller silhouette would improve air, land, and sea transportability and deployability.

The FCS would play a key role as an active information node, fully integrated into digitized battlefield, tactical, and regional communication networks, providing combat, surveillance, and logistic information.

The vehicle would offer improved cross-country mobility, speed, and agility, and a greater range than the M1 series tank.

An autonomous system would provide day/night obstacle avoidance, 'Auto-Pilot' (AP) navigation/cruise and automatic formation maneuver.

Mobility and Agility

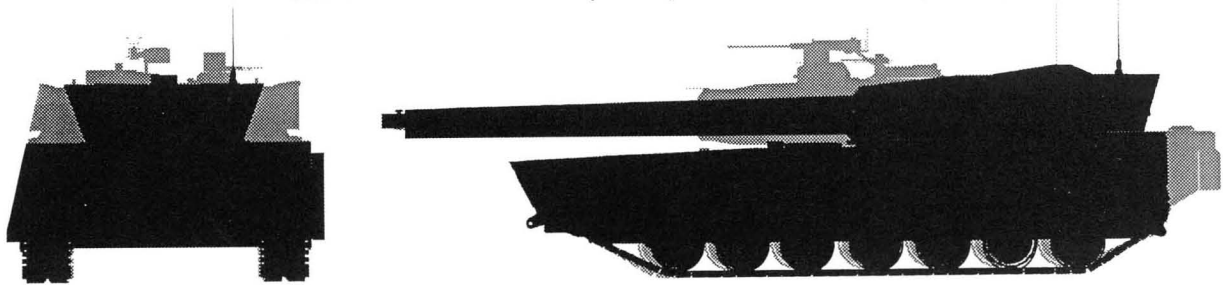
Unprecedented cross-country mobility and enhanced agility will be provided by an all-electric power train producing a variable 800-1200 Hp (@45 ton max. overall weight!). Computerized hydropneumatic 'dynamic' suspension will provide smooth and comfortable adjustable ride over all kinds of rough terrain. Maximum cross-country speed will be 100 KPH (63 MPH). This is extremely high and practically unattainable with limited performance, conventional torsion-bar or coil-spring suspensions. Nonetheless, it is attainable with a hydropneumatic suspension. Maximum flat-road cruising speed will exceed 120 KPH (75 MPH) at maximum power output.

Sustainability - Reduced Maintenance and Logistics

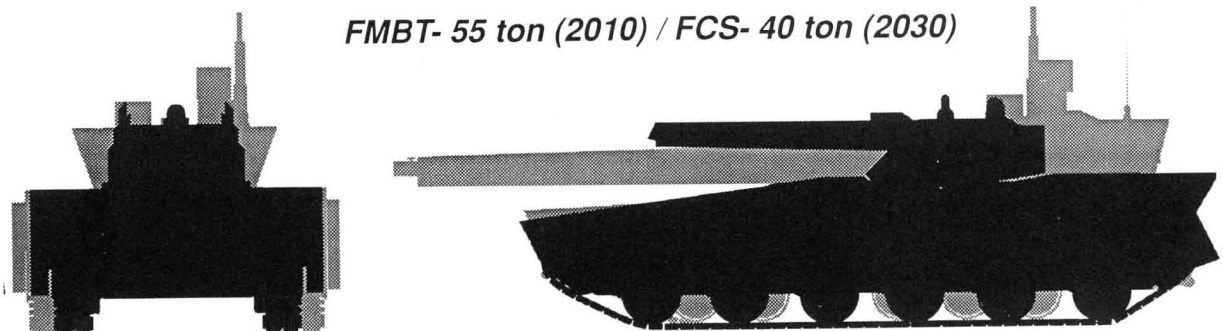
Powered by a new, high-efficiency power-pack and energy source, possibly an *alternative* energy source to conventional fossil fuels. The engine/power source facilitates the implementation of electromagnetic or elec-

Evolutionary Silhouette Comparison

M1 Abrams- 70 ton (1980) / FMBT- 55 ton (2010)



FMBT- 55 ton (2010) / FCS- 40 ton (2030)



trothermal-chemical guns that use electrical energy (EE) as their means, all or in part, for projectile propulsion.

We envision a significantly reduced reliance on conventional maintenance, resupply of rations, ammunition, fuel, and spare parts to achieve long-term, extended operational capability.

Compliance of major sub-systems with the above required capabilities and attributes will be discussed in the following sections.

Logistics Are the Key to the FCS

The M1 Abrams, though inarguably one of the most capable and potent tanks ever produced, must cease operations for refueling at least once every 8 hours under normal operational conditions. Its ammunition and other critical consumables could be readily depleted in a very short time during heavy combat. Like all contemporary modern tanks, the M1 requires a long and vulnerable logistic support "tail" that severely delimits its deployability and operability. In an era when power projection is critical, strong logistical dependency is not acceptable over the long run. The current goal is to reduce the logistic burden by at least 50%. Unfortunately, armored force maneuver and the intensity level of its attack are frequently limited by the capabilities of logistic support infrastructures, rather than the inherent ability of the tank itself. (*What's new?... Wasn't General Patton short of fuel while rapidly advancing in France? Or for that matter, Field Marshal Rommel in North Africa?*).

A modern fast-maneuvering army must reduce its reliance on restrictive logistic support systems while consuming fewer limited resources. On July 17, 1996, Major General Robert Scales, Deputy Chief of Staff for Doctrine at the Army's Training and Doctrine Command (TRADOC), expressed his conception in the *Defense Daily* newsletter,¹⁷ that the Army's operational revolution relies upon effective utilization of better technologies and techniques to support ground forces. The key issue at hand is to be able to "temporarily break from the logistics umbilical cord..." restoring the rapid maneuvering of dispersed formations so essential to full exploitation of armor firepower, shock, and mobility. According to General Scales, the Army will be able to create a dominant Force XXI by employing alternative sources of en-

ergy for mobility and propulsion, while reducing the traditional restricting dependency on rations, ammunition, and spare parts. This same underlying philosophy has played a paramount role in the derivation of our FCS concept.

We'll deal with solutions to these problems in the second part of this three-part article.

Note: All information contained in this article was derived from open sources and the analysis of the authors.

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Western Design HOWDEN (WDH) is a small defense company in Irvine, California, which specializes in the design, development and production of ammunition and material handling systems for the U.S. and international military markets. WDH's track record includes a variety of air, land and seaborne weapon systems which require automated feed, resupply and optimized ammunition packaging. WDH has been involved among others in the Tank Test Bed, AC-130U Gunship, AH-64 Apache and Tank Compact Autoloader Programs.

Mr. Lawrence D. Bacon is the Director of Graphic Arts at WDH where, for the past 18 years, he has been responsible for creating numerous concepts for automatic ammunition handling, loading and storage systems.

Dr. Asher H. Sharoni is the Director of Engineering at WDH. He holds a Sc.D. in Mechanical Engineering from MIT and a M.Sc. and B.Sc. in Mechanical and Industrial Engineering from the Technion, Israel Institute of Technology. Dr. Sharoni is a former colonel in the Israeli Defense Forces in which he was involved in various major armored weapons developments. Dr. Sharoni has accumulated more than 30 years of experience in armor design and production.

The M1A2 Abrams: The Last Main Battle Tank?

by Stanley C. Crist

With its superb integration of fire-power, mobility, and armor protection, the M1A2 Abrams is very nearly the ultimate incarnation of the main battle tank (MBT). Although more advanced design concepts have been published in recent years, it will likely prove quite difficult to produce an MBT sufficiently superior (to the M1A2) to justify the cost, so why not look for a better idea?

The Missile Option

When Egyptian Sagger surprised Israeli tankers in the 1973 Yom Kippur War, there were many who proclaimed, "The tank is dead!" A quarter-century later, tank advocates point to the continued use of the MBT as proof that the best antitank weapon is still another gun-armed tank. Yet it may be that the missile proponents were not wrong in their pronouncement — just premature.

Missiles that are guided to the target by a human operator (e.g., TOW, Dragon, Sagger) can be neutralized by distracting or killing the gunner. This would be analogous to World War II dive bombers being fired on by a battleship's antiaircraft guns; disrupt the pilot's concentration and the bomb impacts harmlessly into the sea.

But an electronic brain does not — as far as we know — feel fear or get distracted by nearby shellbursts. It also has immensely faster reaction times than a human. These factors make electronic guidance far superior to human control for guided missiles.

The self-guided missile has eclipsed the large-caliber gun in naval surface warfare. It is about to do so in the realm of land combat. The tank cannon has a maximum effective range of about 3000 meters, and precise aim is required to make a hit. The self-guided missile, however, can — like Longbow Hellfire — be effective to more than 8000 meters, and the electronic brain continually corrects the flight path as necessary.

Although Longbow Hellfire was designed for the AH-64D Apache helicopter, there is no obvious reason it couldn't be fired from an armored vehicle. Indeed, at least one nation is apparently developing a similar system. According to the August/December 1993 issue of *ASIAN MILITARY REVIEW*, India has developed the NAG, a fire-and-forget antitank missile with a range of six kilometers. It was planned that the NAG would be the armament for a tracked combat vehicle. With ground surveillance radar (GSR) incorporated into its fire control system, such a combat vehicle could engage targets through fog and smoke screens that block thermal sights. U.S. tank crewmen have never had to face a weapon system with such capabilities.

In the United States, the self-guided Javelin missile system began being issued to the troops in mid-1996. Although it was designed as a manportable, antiarmor missile for infantry use, there is a growing awareness that Javelin has enormous potential as a vehicle-mounted weapon. For example, the U.S. Marine Corps is investigating how Javelin can be incorporated into the new advanced amphibious assault vehicle (AAAV). Another idea would have single or multiple Javelin launchers installed on the M113A3 armored personnel carrier, thereby vastly increasing the combat capability of the venerable APC.

Because Javelin's 2000-meter maximum range is less than optimal for vehicle employment, the follow-on to TOW (FOTT) program is underway. FOTT will also use fire-and-forget technologies, but it will probably have a maximum range of 4000-5000 meters.

MBT or FCS?

The Army's modernization plan, as made public in September 1996, calls for continued upgrades to the Abrams fleet, while conducting research on a future combat system (FCS). The FCS

is expected to enter production around 2015, replacing the M1-series tanks. Since the next generation armored fighting vehicle is no longer referred to as an MBT, can it be inferred that the future combat system need not be a tank as we know it today?

If self-guided missiles are chosen for the primary armament of the FCS, a number of advantages present themselves. For one, it ought to be possible to eliminate the turret assembly; this would greatly simplify construction, with a corresponding decrease in production cost and vehicle weight. As currently configured, an MBT needs a turret to enable 360-degree target en-

"Since the next generation armored fighting vehicle is no longer referred to as an MBT, can it be inferred that the future combat system need not be a tank as we know it today?"

gagement without changing hull direction. At a traverse rate of, say, 40 degrees per second, it would take over four seconds to reverse the direction of the gun tube. For the FCS, if vertical launch is feasible, "traverse" could be done electronically and instantaneously, without any actual movement of the launch tubes; for horizontal launch, some form of physical traverse mechanism might be necessary, though.

The Abrams' maximum rate of fire is about six rounds per minute; if a single M1A2 were to engage a half dozen enemy tanks, the Abrams would be subject to return fire for nearly a full minute, since each opponent would have to be dealt with sequentially. On the other hand, a properly-designed, missile-armed FCS could lock onto all six en-

Disturbing parallels to land warfare?

emy vehicles simultaneously and salvo fire one missile at each target in perhaps less time than the M1A2 crew would take to achieve its first kill. This would give an FCS-equipped force a great advantage when fighting outnumbered.

Ideally, the FCS would use a multi-purpose missile that can be employed not only against armored vehicles, but the entire array of ground and aerial targets encountered on the battlefield. As on modern naval vessels, it would probably be wise to include a small- or medium-caliber gun for close range and low priority targets, but this would depend on the capabilities of the missile system.

Back to the Future

No doubt most MBT proponents will object to the idea that a missile-armed future combat system can make obsolete the gun-armed main battle tank. Perhaps they would find it worthwhile to ponder the words of Rear Admiral Austin M. Knight in his introduction to the 1917 book, *The United States Navy — From the Revolution to Date*:

“And through all its changes the backbone of the fleet has continued to be the fighting ship of large and steadily increasing size, with powers of offense and defense evenly balanced upon the whole — recognizing the menace of secondary enemies and guarding against them as best it may, but seeing its real opponent in the battleships and dreadnoughts of the enemy. The dreadnought of today has succeeded, through gradual, not revolutionary, development, to the line-of-battle ship of two centuries ago. It may be that this type is soon to become obsolete, but the evidence that this is so appeals far more strongly to the popular imagination than to the seasoned judgment of students of naval warfare.”

Substitute “battle tank” and “land warfare” for the terms “battleship” and “naval warfare,” and the paragraph would read almost as if it were printed in a current issue of *ARMOR*. Admiral Knight’s words should stand as a note of caution to those who think the MBT



Lethality, range, and accuracy of the Harpoon antiship missile has enabled modern cruisers and destroyers to become the Navy’s primary surface combatants, a role that used to belong to the heavily-armored, direct-fire, big-gun battleships. (Photo: U.S. Navy)



As in naval warfare, aerial combat is now dominated by guided missiles; guns have been relegated to the status of backup weapons. (Photo: U.S. Air Force)



Hellfire, seen here being fired from an M113, can hit targets as far away as 8000 meters—almost three times as far as the Abrams! If adapted to the Longbow Hellfire system, ground forces would have a heretofore unknown combat capability. (Photo: Rockwell International)



The shape of things to come? A missile-armed Future Combat System might resemble the Bradley-LOSAT prototype shown here. A very low silhouette is made possible by a turretless configuration. (Photo: Loral Vought Systems)

is here to stay. Just as the self-guided missile has displaced the gun in naval warfare, so is it sure to do in ground combat. The question is, will the Armor community follow Javelin and Longbow Hellfire on the path to the future, or will it stay on the same dead end street that doomed the battleship to oblivion?

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

The Mounted Close Combat Battalion

Operations and organizations to exploit future capabilities

by Colonel John F. Kalb and Christopher T. Mayer

In October 1973, the effectiveness of antitank guided missiles took the world by surprise. Although the precision and long range of weapons like TOW, the SS-11, and SAGGER were well known before the October War, the way they would change armored combat was not. Today, there is a new generation of long-range weapons. These include the Russian AT-10 and 11, the U.S. Hellfire and the Hellfire-like VIKHR, and international near-brilliant systems like Bussard and Strix. Other systems under development include Enhanced Fiber Optic Guided Munitions (EFOG-M), Line-of-Sight Anti-Tank (LOSAT), Tank Extended Range Munitions (TERM), and similar systems in development by other countries. Combined with battlefield digital interconnectivity, these systems may fundamentally change mounted maneuver combat — engines of a Revolution in Military Affairs (RMA). To anticipate the future, rather than react to events, we must develop operational and organizational concepts to exploit and guide the development of these new systems — and to counter potential enemy capabilities. This article examines one piece of this change: the synergistic effect that TERM-equipped M1A2 SEP tanks, the Future Scout and Cavalry System (FSCS), and the Army Battle Command System (ABCS) may have on armor operations and organizations in the 21st century.

Previously in *ARMOR* (M-A 97), LTC John Woznick described the technical aspects of TERM. I will not repeat that detail. However, some review will help to understand the effect this round will have on battalion and brigade operations. TERM, as its name suggests, fires at much longer ranges than conventional tank rounds — even longer than AT-10/11 tank-fired missiles. Eight or even ten kilometer ranges are possible. The munition will have beyond-

line-of-sight (BLOS) capabilities. TERM-equipped tanks will be able to fire at enemy vehicles that are unseen by the firing tank. Instead, a distant spotter will digitally transmit target data to the firing tank and could laser-designate for terminal guidance. This capability not only outranges current antiarmor threats, it offers the possibility of changing the way we fight. It offers Force XXI brigade and task force commanders entirely new ways to shape battlespace and execute decisive action.

Together with FSCS and battalion-level C2 improvements, TERM will provide the means for brigade and battalion commanders to mass fire effects without massing forces. The practical dispersion of contemporary armor is limited by terrain and the ability of the force to mass overwhelming firepower at any given point or target. Presently, all elements of an armor unit must maneuver to within two or three thousand meters of a point to apply overwhelming firepower to that target. TERM can double or triple the effective dispersion of an armor task force, increasing its effective battlespace. This dispersion increases the task force's flexibility. Instead of focusing on one or two known locations or possible enemy main avenues, the maneuver commander will be able to respond to a wide range of enemy courses of action. Whether moving or stationary, the task force can spread out over 10 or even 20 kilometers. As the task force encounters the enemy, it will be able to focus the TERM fires of many tanks against that foe, across the battalion's battlespace. As the battalion closes with the enemy, more distant task force elements can maneuver against enemy weaknesses, while continuing to launch TERM. These enemy weaknesses will either be opportunities detected by brigade and task force scouts, or those created by

focusing TERM and supporting fires against specific enemy targets. Finally, the task force will complete the enemy's destruction with close combat throughout its depth.

These systems will not change the primary mission of armor: to close with and destroy enemy forces through firepower, mobility, and shock action. The difference between this and the current battalion/task force will be the capability to shape battlespace and engage the enemy beyond the line-of-sight (LOS) of its tanks. As a result, the TERM-equipped battalion task force may have noticeable differences in operations and tactics than the current battalion task force. To reflect this potential for change, I will use the phrase Mounted Close Combat Battalion — or MCCB — to describe this battalion-size organization.

Within the MCCB, TERM-equipped tanks may designate targets for themselves, for other tanks, or may rely on scouts to acquire and designate targets. Of these three methods, the greatest chance to exploit the capabilities of TERM and battlefield dispersion is the last — battalion scouts and tanks working together as hunter/killer teams. Figure 1 depicts how TERM tank-to-scout links may work at the company level. TERM fires will shape the battlespace and set the conditions for decisive action, the maneuver and close combat that will complete the destruction of the enemy, and set conditions for future operations.

MCCB operations capture the Revolution in Military Affairs at the small-unit level. The MCCB will initially deploy its reconnaissance well forward of the main body. This reconnaissance includes MCCB scouts, attached collectors, and reconnaissance planning that exploits the suite of reconnaissance,

surveillance, and target acquisition (RSTA) systems, giving the MCCB commander the situational awareness he needs to dominate the battlefield. When not in contact with the enemy, the scout component of this RSTA suite could operate as much as ten to fifteen kilometers forward of the battalion's tanks. The FSCS will enable the battalion scouts to conduct a swift but stealthy reconnaissance of the terrain and enemy forward of the battalion. Battalion and company commanders will use this reconnaissance to adjust their maneuver to exploit terrain, and to avoid restrictions and obstacles. As scouts approach known or suspected enemy locations, the rate of reconnaissance slows. This will close the distance between scouts and the main body to about seven kilometers — establishing conditions for TERM engagement. The first TERM targeting priority is to eliminate enemy reconnaissance. Next, scouts will look for other high-value targets and weaknesses in enemy disposition. Future Battle Command Brigade and Below (FBCB2) will digitally link the scouts, the high value targets they observe, and the TERM-equipped tanks that will fire on those targets. Other combat vehicles OPCON or attached to the MCCB, such as infantry fighting vehicles, will also transmit TERM targeting data. Scouts, however, will perform this acquisition and targeting as an integral component of force-oriented reconnaissance. The battalion commander will quickly decide where to strike, transmitting maneuver and target data to his companies as they continue to move. Finally, the battalion will begin direct fire and close combat against the enemy in a synchronized strike at the point and time selected by the battalion commander.

The difference between MCCB offensive and defensive operations will be time. In the offense, the commander uses his scouts to find the enemy and then applies fires against a defending enemy — who may be stationary or moving. The tempo of the attack and enemy maneuver (or lack of it) can result in a very fast closure rate, limiting the time between initial TERM engagement and coming into enemy direct-fire range. In the defense, the MCCB commander will still use his scouts (and external RSTA assets) to find the enemy,

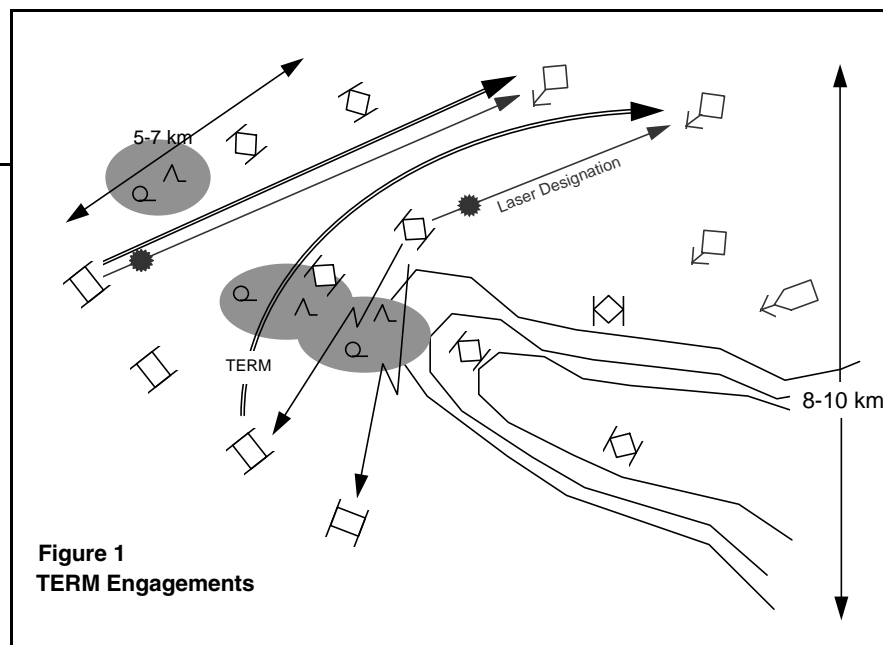


Figure 1
TERM Engagements

but he will also enjoy the time it takes for the enemy to close into the battalion engagement areas. This time gives the battalion commander the opportunity to move his tanks to the exact positions that will achieve maximum results for his TERM. He can also maneuver to the rear or laterally to maintain the optimum range differential between his tanks and the advancing enemy, choosing to delay close combat until the time of the U.S. commander's choosing.

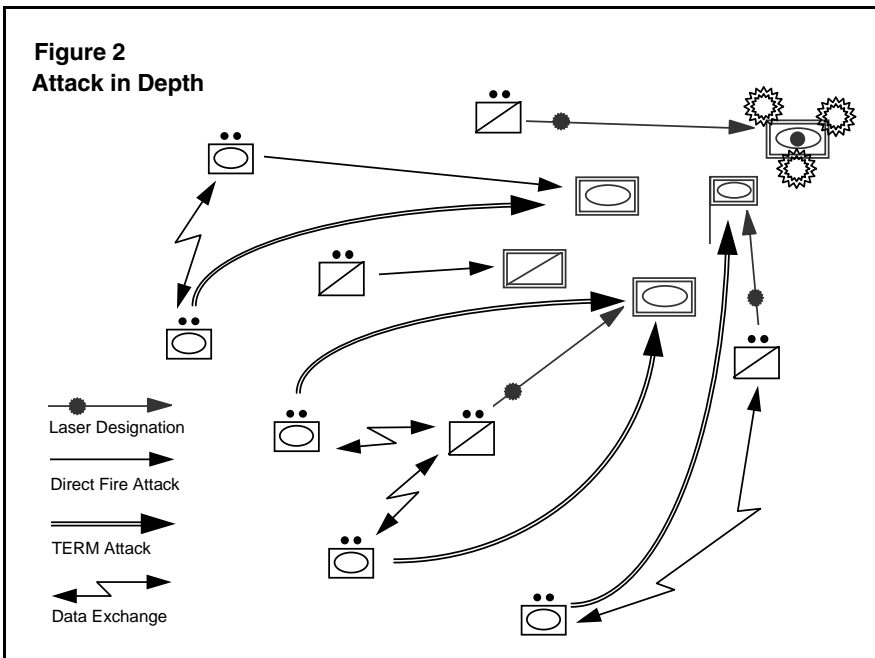
In both offense and defense, the battalion commander may choose to engage the enemy as he comes within TERM range or to delay the engagement until the MCCB can simultaneously strike the enemy throughout his depth.

By opening fire as the enemy comes within TERM range, the battalion commander seeks to disrupt the enemy while he is still well beyond LOS and direct-fire range. Tanks can deploy rearward as the enemy advances, or around him as the U.S. force advances. The goal is to keep the enemy from closing to direct fire range until the battalion establishes favorable conditions for close combat or counterattack. On the defense, the MCCB may be able to delay in front of the enemy — continuing his destruction until the enemy reaches his culminating point. Selective engagement with TERM can also shape enemy maneuver. By focusing fire onto certain areas, the battalion will deny the enemy freedom of action, and force him to move into direct-fire kill zones.

By holding fire until the battalion can engage all lead enemy forces, the battalion commander seeks to destroy the enemy through a single, synchronized, spasm of violence. (See Figure 2.) This technique is suitable against a massed enemy armor formation, as well as against an enemy operating with digitally-enabled dispersion. In this technique, the battalion commander selects an armor company and attached infantry to engage the enemy with direct fires while other armor companies and supporting artillery attack deeper enemy targets. Battalion direct fires will destroy lead enemy armored vehicles at the precise time that TERM and precision artillery will attack enemy C2 vehicles and other high-value targets. Other fire support can land in synchronization with these fires to separate the enemy force in contact with the MCCB from supporting forces.

Battalion scouts operating in the enemy's depth will relay damage assessments and alert the battalion to new threats or opportunities. Concurrently, scouts will conduct terrain reconnaissance, looking for the best routes that friendly tanks and infantry can use to isolate remaining enemy forces and effect destructive fires. The battalion commander will focus his maneuver in response to this information, to include opportunities created through other long-range precision fires. When fighting massed armor, the battalion may have to displace companies rearward or laterally to maintain standoff with following enemy forces. Against a more dispersed or heavily attrited force, the

Figure 2
Attack in Depth



battalion could execute company-level attacks to destroy the remaining enemy through close combat and shock action.

The expanded battlespace and capabilities of the MCCB will affect the way it interacts with other units on the battlefield. The expanded range and BLOS capability of TERM will affect the missions and battlefield application of artillery, aviation, and cavalry. TERM may increase the contribution of artillery to decisive operations, enabling it to focus on deeper, high-value targets and counter-battery operations. Aviation may also have new freedom to conduct deep operations. Alternatively, the targeting capabilities of MCCB scouts offer new capabilities for attack helicopters to contribute to the battalion fight. Helicopters may also be able to designate for TERM fires, providing more opportunities for TERM employment.

The MCCB may have reconnaissance and security capabilities well above the current battalion task force, approaching or exceeding those of today's cavalry squadrons. This may change the structure, roles, and missions of division and regimental cavalry. Janus simulation shows that UAVs also improve the ability to focus MCCB maneuver and scout employment. This, in turn, may affect military intelligence organization and operations. Together, these last two considerations may lead us to reexamine the way we perform reconnaissance. The FSCS is, in reality, a system of systems that make up a greater RSTA capability.

This concept also has applications in military operations other than war, particularly in peace enforcement. The MCCB will be able to provide beyond-line-of-sight support to scouts on OPs, checkpoints, and patrols, and between tank-occupied positions. In many MOOTW situations, the mere presence of tanks has defused a rapidly deteriorating situation. Even two tanks can make a difference. Some situations, however, require more than simply some armor. TERM fires will enable a single tank section or platoon to receive immediate support from many tanks. In turn, the MCCB will be able to provide effective stability for a broad area, with a relatively small number of tanks. (This will also result in reduced collateral damage from tank movement in a fragile infrastructure.) The sensitive political nature of peacekeeping — combined with the desire to avoid civilian casualties and limit collateral damage — often restricts or prohibits the use of indirect-fire weapons. TERM will give the MCCB commander the capability to respond to enemy aggression originating beyond the normal direct-fire range of his other direct-fire systems. Operating within established rules of engagement (ROE), the MCCB can swiftly attack armored vehicles, artillery, and weapons emplacements without having to maneuver units into direct-fire range.

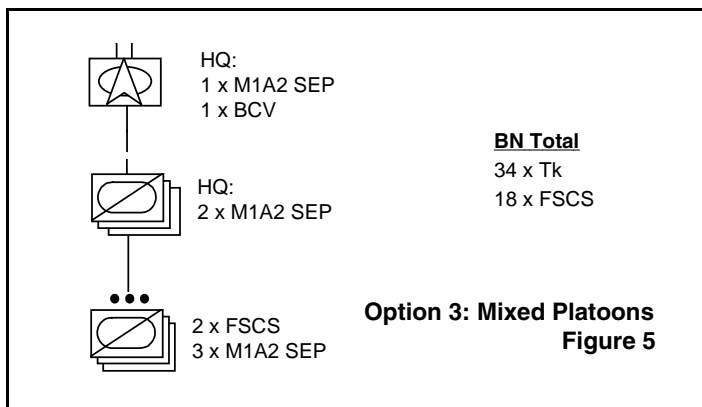
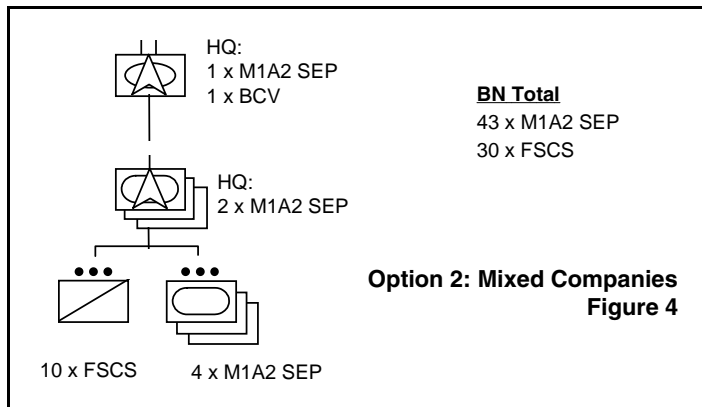
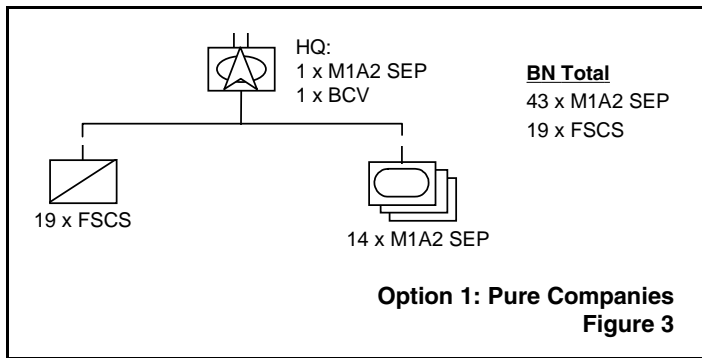
The previous operational sketch shows the changes in interaction between tanks, scouts, and battalion-level C2. The MCCB will be capable of dominating a larger battlespace than

present battalions, with improved capabilities to operate on a non-linear battlefield. These new operations and capabilities generate a need to reevaluate the organization of the current armored battalion and explore alternative designs. The remainder of this article describes three possible designs under study this year in a TRADOC concept experimentation program (CEP).

The first design focuses on the increased roles and responsibilities of the battalion scouts. In this organization, battalion reconnaissance capabilities increase from a single scout platoon to a reconnaissance troop of 20 FSCS (see Figure 3). The reconnaissance troop will conduct reconnaissance and security tasks across the entire MCCB battlespace, guiding battalion maneuver through terrain reconnaissance and obstacle avoidance. Upon enemy contact, some platoons and sections will perform target designation against that enemy. Meanwhile, the balance of the troop continues reconnaissance — attempting to gain contact with the balance of the enemy force.

A second approach incorporates scouts directly into the tank companies (see Figure 4). In this design, each tank company has three tank platoons and a scout platoon. This establishes a close team relationship between tanks and scouts within a single company. Although the information collected by the scouts will be available throughout the battalion, scouts will focus their effort on supporting the maneuver and fires of their company. This is particularly important if battalions operate much more dispersed than they do now, with companies operating over the geographical area of current battalions, and the MCCB dominating the battlespace of an AirLand Battle brigade.

The third option goes one step further in the scout/tank integration process — mixing scouts and tanks in the same platoons (see Figure 5). This organizes the battalion into precise hunter-killer teams. Each scout focuses on providing targets for a single tank — although all target data will be available to each of the platoon's tanks. This arrangement offers the greatest potential for dispersion. Individual hunter-killer teams could operate at extended distance from one another. These small teams can disrupt enemy forces as the balance



of the company and battalion maneuvers.

These organizations — and the operational concept itself — are the subject of ongoing analysis at the Armor Center. Up to now, Janus has been the primary analysis tool. Although Janus analysis is not complete, there have been some important observations about TERM capabilities and limitations. The most obvious result to date is the apparent improvement in combat power of the MCCB over current armor-heavy task forces. This is the case for any of the alternatives described above. There have also been some tactical insights that were not immediately apparent before simulation. These include the importance of maintaining standoff, establishing targeting geome-

try between sensor and shooter, and the effects of intervening terrain. Some of these insights may be unique to the particular TERM system modeled.

The MCCB CEP is the next step and will be conducted in the Mounted Warfare Test Bed (MWTB) at Fort Knox. Organizational issues will focus on command over a non-linear — and sometimes non-contiguous — battlefield, sensor-to-shooter links, organizational mixes of scouts and tanks, and the optimal tank strength of the battalion. This experiment may also answer questions about fire distribution, raise other questions or difficulties inherent in BLOS fires, and provide a clearer insight about applying decisive operations concepts at the battalion level. Finally, the CEP will provide data neces-

sary to develop tactics and techniques to exploit the TERM/FSCS/ABCS synergy. Subsequent analysis will move beyond MCCB systems and organization to include leader development issues and the impact on organizations and operations of other units.

In October 1973, the combination of ATGM's, modern armor, and combat helicopters ushered in a revolution in military affairs that surprised the world. Concept development and current experimentation indicate that TERM/M1A2 SEP, FSCS, and digital battle command will bring about a similar revolution. The synergy of these systems — or similar systems in development by other countries — can lead to a leap-ahead capability for the battalion-level commander to dominate the close battle. Unlike the years leading up to the October War, current techniques in concept development, simulation, experimentation, and analysis enable us to evaluate systems and develop organizations before the first TERM round is a reality. We can and should be ready for the next military revolution before the first round is fired.

Colonel John F. Kalb currently serves as the Director of the Directorate of Force Development at the Armor Center at Ft. Knox. He has served in a wide range of troop and staff assignments, including battalion commander, 4-32 Armor, 3AD, Germany; Inspector General, DA Inspector General Agency and Chief, Spec Tech Opns Branch, J-3, JCS, in Washington, D.C.; and TRADOC System Manager-Abrams/Tank at the Armor Center. He holds an MA degree in political science from Webster University and an MMAS from CGSC.

Christopher Mayer was commissioned in Armor in 1980. Since leaving active duty in 1992, he has worked for the Armor Center's Directorate of Force Development as a concepts writer and force design analyst.



Tanks proved useful in the early Pacific battles at Guadalcanal, despite little treatment of armor use in doctrinal manuals of the time.

In Close Country:

World War II American Armor Tactics In the Jungles of the Southwest Pacific

by Kevin C. Holzimmer

According to Russell F. Weigley, two distinct traditions shaped the pre-World War II American army. On one hand, officers of the interwar period in many ways resembled their nineteenth-century predecessors who protected the Western frontier against Indian warriors. The army “was a border constabulary for policing unruly Indians and Mexicans,” he argues. “The U.S. Army of 1940 had not yet completed the transition that would have made it an appropriate instrument of its country’s claims to world power.” The mission of patrolling the Western frontier transformed the military into a fighting force designed primarily for mobility. “The history of the frontier,” he continues, “was that of the horse soldier in blue or khaki forever challenged by the quicksilver elusiveness of Mexican ir-

regulars or the Indian light cavalry of the Plains.”¹

On the other hand, Weigley continues, the Army also had fought the American Civil War, a European-style war that possessed its own unique characteristics. Through four years of bloody conflict, the Army learned the lesson of applying overwhelming power against its enemies. The “memory of the Civil War suggested that the primary military value is sheer power: General U.S. Grant’s great blue army corps smothering the gray legions of Robert E. Lee under the weight of their weapons and numbers.”²

These two traditions pulled the Army in opposite directions. An army prepared to apply overwhelming power against its foes is not necessarily one

designed for mobility. Similarly, a mobile army is generally not able to generate vast quantities of power: “[T]he American army’s principal inheritances from its past were also conflicting legacies, which might put the Army at cross-purposes with itself as it began in 1940 to prepare for European war.”³

While these two heritages propelled the Army down different paths, they nevertheless shared one fundamental assumption: both were shaped by the ability to operate in open country. In other words, geographical considerations deeply influenced the frontier army. Operations on the wide-open spaces of the Plains placed a premium on mobility. Similarly, the application of sheer power required open country as well. Overwhelming power fre-

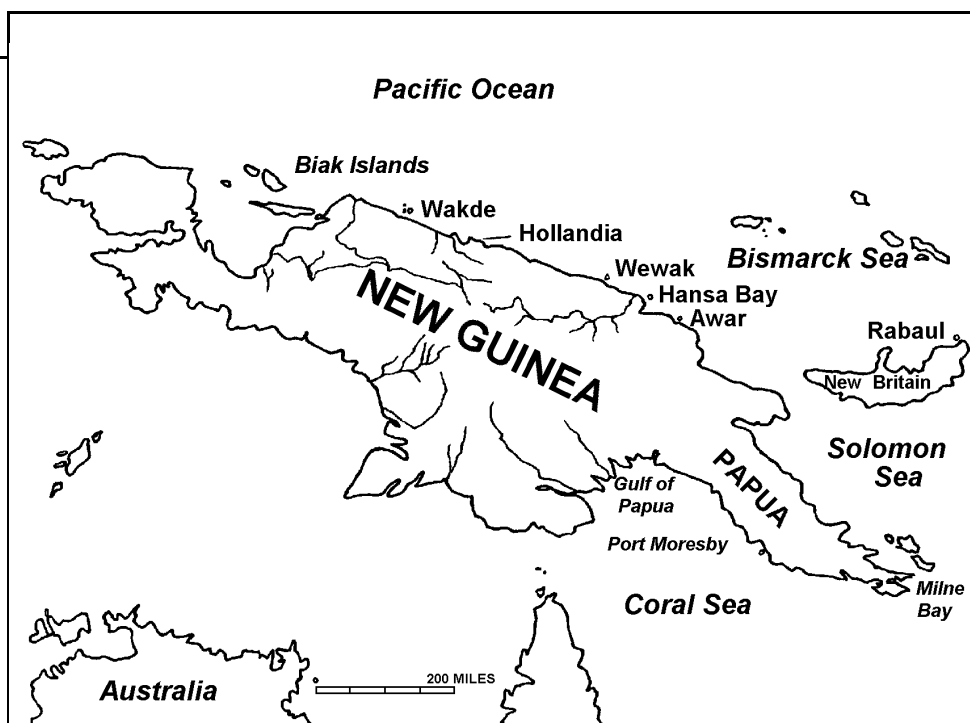
quently required heavy equipment; heavy equipment needed relatively open country. Throughout history, irregular forces often have avoided American power by staying away from open spaces. In the Second Seminole War, for instance, the Seminoles generally refused to face the Americans in open conventional battles. Instead, the Florida swamps became the Seminoles' ally. As Weigley writes, General Winfield Scott's "heavy columns of slow-moving troops and much impedimenta marching noisily through the Florida hammocks merely served to scatter the Seminoles, so that Scott's blows landed in air."⁴

Thus while preparing for either a war of mobility, one of overwhelming power, or a combination of these, American military leaders on the verge of World War II all assumed a future war would take place in open country. Virtually no advanced planning had anticipated any other alternative, such as the jungle terrain of the Southwest Pacific Area (SWPA), where the majority of American land forces would meet the forces of Imperial Japan. How then did the U.S. Army, particularly armored forces, operate under such circumstances? In what ways, if any, did prewar doctrine influence jungle operations? This essay will examine how the Army used its armored forces in the SWPA, commanded by General Douglas MacArthur.

Early Doctrine

The last edition of the official document of Army doctrine — FM 100-5 *Field Service Regulations: Operations* — before American participation in the Second World War appeared in 1941. *Operations* covered all the different types of warfare that American planners envisioned, from urban to mountain warfare. It even included a section that explored the various dimensions of jungle combat.

Not surprisingly, the chapter devoted to jungle operations began with a consideration of geography and the restrictions it placed on operations. Parallels were drawn between jungle terrain and the more familiar wooded terrain: "Movements are restricted. There are few roads or trails available; often trails must be slashed as movement progresses. Direction is hard to maintain.



Control and maneuver are difficult. Ground observation is limited to short distances, sometimes to only a few feet." In addition to these already formidable obstacles, jungle terrain added other handicaps such as heat, heavy rains, insects, and unhealthy conditions. In short, geographical factors dominated Army thinking about jungle operations. With this in mind, the Army, of course, still had to devise sound doctrine to minimize the effects of such conditions.⁵

Prewar planners acknowledged that normal operations needed dramatic alteration in jungle or "close" country. They deemed the old concepts concerning maneuver and firepower inappropriate in the jungle: "Jungle warfare is characterized by close fighting. Artillery and other supporting weapons have only limited application. The grenade, submachine gun, semiautomatic rifle, bayonet, and machete are the weapons best suited to operations in the jungle." Prewar planners believed that the terrain mitigated against the use of combined arms. Instead, they anticipated that the infantry would bear the brunt of the fighting. The U.S. War Department's 1941 pamphlet *Jungle Warfare* simply stated that: "Support of infantry by other arms will frequently be impracticable or impossible."⁶

Armored formations were categorically denied a significant role in jungle terrain. "Mechanized units will have little or no combat value in the jungle itself," *Jungle Warfare* stated. "They

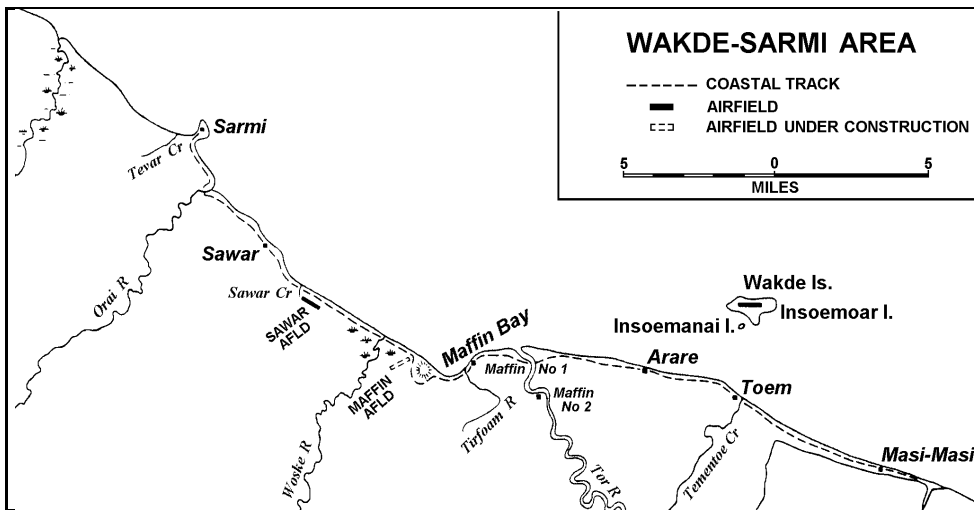
Map 1.

The island of New Guinea, a steppingstone toward MacArthur's reconquest of the Philippines. Wakde is on the island's north coast.

can be effectively employed on sabanas or other open areas and against native villages."⁷ Many Army planners maintained that tanks had almost no place on jungle-covered battlefields, even though the War Department had conducted promising exercises in the 1920s during which tanks proved their value in the jungles of Panama.⁸ They continued to believe that the geography of such places as the Pacific islands would not allow tanks to either maneuver or utilize their firepower. However, the realities of combat revealed serious flaws in prewar armor doctrine. As the war progressed, tanks would not only win a place beside infantry, they would prove to be an essential component of the American SWPA victory in World War II. Indeed, tanks became a vital part of a combined-arms synthesis that defeated the forces of Imperial Japan.

Tactical Realities

Despite doctrinal preconceptions, American infantrymen quickly discovered the value of the tank in jungle operations. The utility of mechanized units became quite apparent when G.I.s faced the formidable defensive prowess



Map 2.

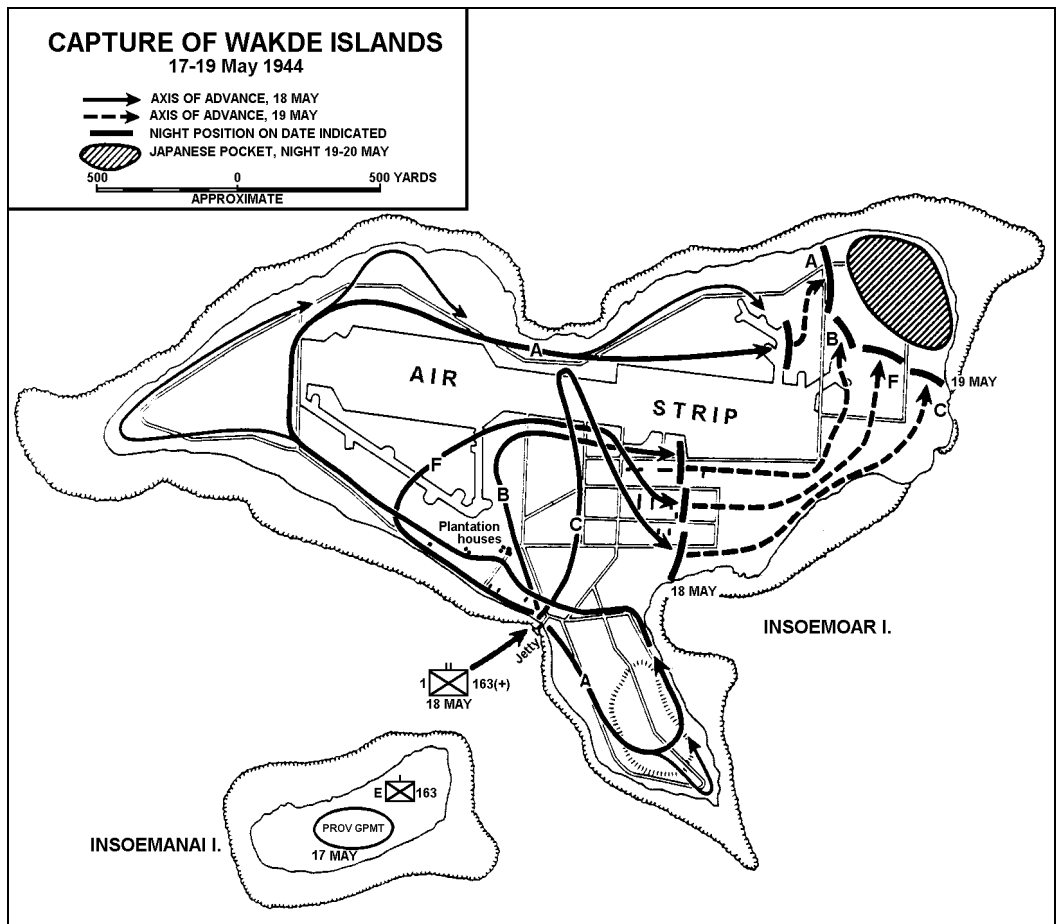
Three airfields, two operating and another under construction, were objectives in the Wakde-Sarmi area.

In order to fulfill his famous pledge, he planned to proceed along the northern coast of north-east and Dutch New Guinea, a route that would eventually lead to Leyte. MacArthur used American forces primarily to secure airfields, which in turn would provide air support for future American military operations.

The Wakde-Sarmi area was one of many such ventures on the northern edge of New Guinea. This area refers to a region that is covered with dense jungle and low-lying swamps but yet contained three airfields, all within 15 miles of one another. (Map 2) Located near the New Guinea mainland, across from the village of Arare, is Wakde Island, which had one of the three airdromes in the area. Actually, Wakde refers to two islands: Insoemoar and In-

of the Japanese. In many cases, the Japanese had up to two years to prepare for the expected American counteroffensives. Central to Japanese defensive tactics was the field fortification. According to the U.S. War Department's 1944 edition of its *Handbook on Japanese Military Forces*: "The Japanese defense of small islands is characterized by the extensive use of field fortifications. The bunkers and pillbox-emplaced machine guns are the backbone of defensive fire. These fortifications have been developed from small installations, composed of a single layer of palm logs and sand bags and large enough for only a few men, into massive structures 6 to 8 feet thick, housing more than a squad. Palm logs are giving way to reinforced concrete and completely enclosed steel structures." Not only did these strongpoints protect the small islands of the central Pacific Ocean, they also became obstacles to American units operating throughout New Guinea and the Philippines.

Of the many individual battles between the armies of America and Japan, the Wakde-Sarmi campaign highlights the way in which tanks were utilized in the SWPA. This battle was one of several that propelled American forces along the northern coast of New Guinea on their way to recapture the Philippine Islands. (Map 1) MacArthur's desire to return to the Philippine Islands dominated SWPA strategy.



Map 3.

A closer look at the campaign to seize the Wakde Islands.

soemanai. Insoemanai is the smaller of the two, measuring just 750 yards across, while the larger is approximately 1,500 yards across. The airstrip covered much of Insoemoar, which made it a natural target for MacArthur's push to the Philippines. The rest of the island was covered with coral sand, except in the western part where there are some small, rough, limestone hills. The island also contained an abandoned coconut plantation. In all, Insoemoar Island represented one type of "close country" for the American soldiers who fought there.¹⁰

Leading MacArthur's drive was Lieutenant General Walter Krueger, commanding the Sixth United States Army.¹¹ Krueger planned to land the Wakde-Sarmi task force, codenamed Tornado Task Force (TTF), in the vicinity of Arare on 17 May 1944, with the 163d Regimental Combat Team (RCT) of the 41st Division. The 3d Battalion had the task of hitting the beaches first and quickly securing the western flank of the planned perimeter at the Tor River, while the 1st Battalion was to unload last and prepare for its assault on Wakde Island the next day.¹²

After a preinvasion bombardment, TTF landed unopposed and quickly organized defensive positions near Arare and on the Tor River. In addition to establishing the beachhead, Company E moved to Insoemanai. The small island was quickly secured with no Japanese resistance. H hour for the assault on Insoemoar was set for 0900 of 18 May. The invasion force consisted of Companies A, B, and C of the 1st Battalion and Company F of the 2d Battalion. These four rifle companies would benefit from the support of four M4 Sherman tanks¹³ of the 603d Tank Company. The landing site was near a small jetty on the southern edge of the island, one of only a few suitable beaches on the whole island.¹⁴

Whereas the Japanese offered no resistance on the New Guinea mainland or on Insoemanai, they were not so passive on Insoemoar. On the larger island, they had prepared approximately a hundred bunkers, many of which were well camouflaged, while others were dug deep into the ground and presented low silhouettes. As the official historian of the New Guinea campaign states: "The majority of the many bunkers were mutually supporting, but, on the other hand, some had been built

with no apparent relationship to others." In all, the defenses on Insoemoar presented a deadly challenge for the invading American force.¹⁵

Shortly after the landings began at 0845 on 18 May, the soldiers of the 1st Battalion discovered for themselves the tenacity of the Japanese defense. Enemy soldiers near the beach opened up with machine guns as the first waves approached the landing site, but all four companies reached the island by 0925. Two of the four Shermans were not so successful. One tank had electrical trouble and another fell into seven feet of water as it attempted to land. Nevertheless, Companies B and F quickly established positions by 0930.¹⁶

With the beachhead secured, Company A started in the direction of the airstrip. It soon faced a bunker 200 yards east of the landing site, which the Americans quickly destroyed with hand grenades at 0946. (Map 3) The company then pushed down the southeastern portion of Insoemoar, clearing it of enemy resistance an hour later.¹⁷

Company C, meanwhile, advanced straight ahead approximately 250 yards, at which point it ran into a carefully prepared Japanese defensive position. In addition to the various bunkers, the natural terrain contributed to the Japanese defense. Surrounding the pillboxes was the dense underbrush of a neglected coconut plantation. Facing such a dangerous situation, Company C's commanding officer, First Lieutenant Floyd R. Stanfield, called for tank support. The two M4s left the beachhead area and headed toward Company C's position, arriving by 1010. For the attack, Stanfield assigned one platoon to each tank, which moved abreast fifty yards apart. With their 75-mm main guns, the Shermans fired at each bunker from between twenty-five to two-hundred yards away. One round was usually sufficient to deal with any Japanese strongpoint. Consequently, the tanks methodically and carefully destroyed all the enemy bunkers. For its part, the infantry protected the tanks from enemy raiders by following the tanks in a skirmish line and firing into likely enemy hideouts. This type of attack took place even though the unit received its only tank-infantry training the day before. Despite inexperience in these types of combined-arms tactics, the soldiers of Company C were able to progress to the southern edge of the airstrip by 1045.¹⁸

As the reinforced Company C pushed its offensive, Company F cleared a number of snipers from the coconut-plantation buildings, which were located approximately 500 yards south of the airfield. At the same time, Company B moved out of the beachhead and reached the southern edge of the airstrip on Company F's immediate right. The two companies, however, did not advance for very long. Enemy resistance halted the troops of both B and F on the edge of the airstrip. With the southeastern tip of the island cleared, Company A and the two Shermans (operating with Company C) were sent forward to support Company F. By 1110, the tanks were assisting Company F after first returning to the beachhead to replenish ammunition.¹⁹

After engaging enemy targets with Company F, the two tanks again ran dangerously low on ammunition and again had to return to the beachhead shortly after 1200. Meanwhile, Company C's forward progress ground to a snail's pace due to machine gun fire. Without tank support, it had not been able to push across the south side of the airstrip. Consequently, the M4s were ordered back to Company C as soon as they finished assisting Company F. Until the arrival of the tanks, Company C remained on the edge of the airfield. Approximately one-half hour after establishing their positions, Stanfield realized that the Japanese fire had died down. Shortly thereafter, he sent a patrol across the airstrip, and when it reported no opposition, he prepared the rest of the company to follow across the strip under cover of mortar fire.²⁰

Company A, meanwhile, advanced along the northwest portion of the island. Its progress slowed, however, due to three Japanese bunkers on its right flank. The two tanks, once they received fresh stocks of ammunition, were ordered to assist Company A. As they proceeded to Company A's position, one of the tanks was disabled. The remaining tank, however, knocked out the enemy strongpoints by 1300. In the process, twenty Japanese defenders were killed. Even though the bunkers no longer presented an obstacle, enemy resistance had not been completely extinguished. In fact, small groups of Japanese soldiers hidden in foxholes attacked the company and its tank with hand grenades and bayonets. To combat such Japanese tactics, Captain

Richard J. Satran, commander of Company A, deployed a squad of infantry on each side of the tank. In this effective formation, the automatic riflemen could kill or disperse the enemy soldiers before they could damage the tank.²¹

By 1330, all of the companies of the 1st Battalion were on the move again. Company A had pushed its attack around the west end of the island. Meanwhile, Company C crossed the airstrip against little opposition, and Company F had advanced as far as the southern edge of the airstrip but was receiving sniper and machine gun fire. As a result of the Japanese resistance earlier in the day, and Company F's difficulties, the 1st Battalion commander, Major Leonard F. Wing, decided to reorganize his forces as well as devise a new plan of attack to finally secure the northeastern section of the island, where the bulk of enemy troops were now located. Actually, his plan was just a variation of the one his battalion had been employing. He wanted Company A to proceed on the northern edge of the island, while Companies B and C pushed to the northeast from their positions just to the south of the airstrip. Company F was to act as battalion reserve. In order to ensure the success of his new offensive, Wing requested two additional tanks from the mainland. The attack began at 1530 but ran into heavy Japanese opposition. By 1630, the tank commander notified Wing that his tanks had exhausted their ammunition supply and would need to return to the beachhead for fresh supplies. With night approaching, his tanks out of ammunition, and no sign that the Japanese were weakening, Wing decided to dig in for the night at approximately 1720. Companies A, B, F, and C, therefore, formed a line and consolidated their positions to seal off the northeast area of the island.²²

During the night, regimental headquarters conceived a plan to finally defeat the Japanese and allow American engineers to complete their work on the airstrip. At 0640 of 19 May 1944, Lieutenant Colonel Walter R. Rankin, the executive officer of the 163d Infantry, radioed Wing and ordered that Company C, with the three tanks, would spearhead the new offensive by pushing east, north, and then along the southeastern shore into Japanese lines. Company A was ordered to hold its position, while Companies F and B were

to support Company C in rolling up the Japanese's left flank.²³

Once the three tanks reached Company C at 0915, the attack was ready to proceed, but not before a pocket of Japanese soldiers behind American lines destroyed four 6x6s, two trailers, and two ¼-ton trucks, all belonging to American engineers. The offensive finally got under way by 0945 with the tanks in the lead. However, like the previous day's offensives, it came under heavy defensive fire from enemy soldiers who used fallen coconut trees, bunkers, bomb craters, coral caves, heavy brush, and demolished buildings as cover. The tanks quickly fired at each enemy position, while American infantrymen, in turn, fired on fleeing enemy soldiers. Despite such formidable resistance, Company C reported at 1045 that its soldiers were neutralizing the enemy positions and slowly advancing due to the coordinated tank-infantry attack.²⁴

At the same time, Company B moved forward and also confronted strong Japanese resistance. Consequently, two tanks were transferred from Company C to Company B. Using similar tactics to those of Company C, the commander of Company B assigned one rifle platoon to each tank while the third platoon was held in reserve. The M4s drove through the brush, firing their machine guns at any possible location that could provide cover for Japanese soldiers, while the riflemen provided close-in support for the tanks. Even with these successful tactics, the Americans faced slow going before finally reaching their objective at 1400. Company F also pushed forward with one tank under heavy opposition but maintained its pace with Companies B and C.

Wing ordered Company A to move forward until it was on Company B's left flank. With all four companies advancing, the last of the organized Japanese defenses in the northeastern quadrant of Insoemoar was broken in the early evening hours. Throughout the morning of the 20th, Wing's men cleared the northeast section of the island of the remaining scattered pockets of Japanese resistance and then moved to the mainland in the afternoon. Engineering units, who started working on the western section of the airfield on the 19th, were able to begin repairs on the whole airstrip on the 20th. Eventually, the airdrome on Insoemoar pro-

vided a base for which Allied Air Forces could support MacArthur's drive toward the Philippines.²⁵

Lessons Learned

While prewar planning foresaw no important role for armor in the jungles of SWPA or any other Pacific Theater, American soldiers discovered the necessity of tank support for their numerous offensives against the skillful defensive tactics of the Japanese Army even before the Wakde-Sarmi campaign. Captain Richard J. Satran, commander of Company A wrote: "The success of the recent operations on Wakde... has opened up a new and unexplored field for tank warfare in the Southwest Pacific Area." What the men of the 163d realized was that armor relieved riflemen of the dangerous task of closing with Japanese defenses and destroying them with such weapons as hand grenades. Consequently, tanks provided attacks with both speed and momentum. Without armored support, infantry attacks often became bogged down or stopped altogether. In the case of the battle for Insoemoar, the two tanks were simply not sufficient during the first day of fighting. "The tanks broke the stalemate on the beach," the historian of the 41st Infantry Division, William F. McCartney, writes, "but it was impossible to keep the entire line moving with only two of them."²⁶ Through such campaigns, American units developed their own tank tactics. Over time, the Americans formulated certain key principles of armored warfare in a jungle environment.

First, tanks were used, one veteran observed, primarily against "definitely located centers of resistance holding up the infantry advance." As in the Wakde-Sarmi operation, tanks were utilized to reduce not only carefully planned Japanese strongpoints such as bunkers and pillboxes, but makeshift centers of resistance such as foxholes as well.²⁷

Second, American officers found it absolutely necessary to thoroughly familiarize not only themselves but also their units with the terrain and the mission objectives. Due to the nature of the jungle environment, armored and infantry units could easily become disoriented and lost. Consequently, as one wartime report stated: "Early reconnaissance by infantry, tank, artillery,

Continued on Page 30

Armored Anti-Guerrilla Combat In South Lebanon

by Lieutenant Colonel David Eshel

Normally, anti-guerrilla combat is the mission of specially-trained infantry units, not armored forces, but in South Lebanon, the Israeli Defense Force has been fighting a continuous battle against fanatic Islamic guerrillas in which all combat elements are forced to play a role, and armor is very much a part of the fight.

The Terrain in South Lebanon

From a military standpoint, the terrain in South Lebanon seems totally unsuited for armored warfare. It favors the defender, with its rugged, hilly countryside. Rock-covered basalt hills with steep ravines make cross-country movement, even with tanks, extremely difficult, and in most cases armored vehicles are road- or track-bound. As the ridges normally run from east to west, movement is geared through the wadis, between the ridges. These are passable only in part and, with their steep canyon-like walls, make formidable obstacles. Most of the region is pocked with thick shrubs, providing excellent hiding places for tank-hunter teams and ambushes that are very difficult to detect before they are executed.

Furthermore, the area is filled with hundreds of small villages, mostly situated on the high ground, from which guerrilla fighters can mount their surprise attacks and swiftly return to good hiding places amongst the mostly friendly local Shiite population.

The Israeli deployment in the so-called Security Zone in South Lebanon is implemented through a series of strongpoints located widely apart and not always capable of rendering mutual fire support. One of the most difficult tasks is to maintain lines of communications to and from those strongpoints and the supply depots on the Israeli

border. As most of the roads are winding narrow tracks, they provide the attackers with easy access to ambush sites, where they emplace explosive charges and mount rocket attacks on IDF traffic. Most of the costly IDF losses have been caused by such ambushes, and considerable effort is necessary in order to maintain open supply routes to the strongpoints. This is one of armor's major tasks in this continuous war.

Hezbollah Guerrilla Tactics

The Hezbollah, or Party of God, is the major element in the guerrilla warfare in the Security Zone, although there are some other extremist factions also taking part. Over the years, the Iranian-backed Hezbollah has become a substantial military force, capable of taking on the highly trained, battle-experienced, and superbly equipped Israeli Army. It has proved extremely difficult for a regular army to fight against small guerrilla elements that are highly motivated, intimately familiar with the terrain, and capable of hit-and-run attacks.

Hezbollah activity in south Lebanon started about 14 years ago, as the IDF was withdrawing after the 1982 invasion of Lebanon. Originally, the Hezbollah militia operated in small teams, normally attacking Israeli troops from ambush with primitive explosive devices and small arms, and with rocket attacks on Israeli border villages. But since 1989, the Hezbollah has grown considerably and is now operating a far greater number of combat elements. Hezbollah is estimated to include over a thousand men, several hundred of them highly trained fighters.

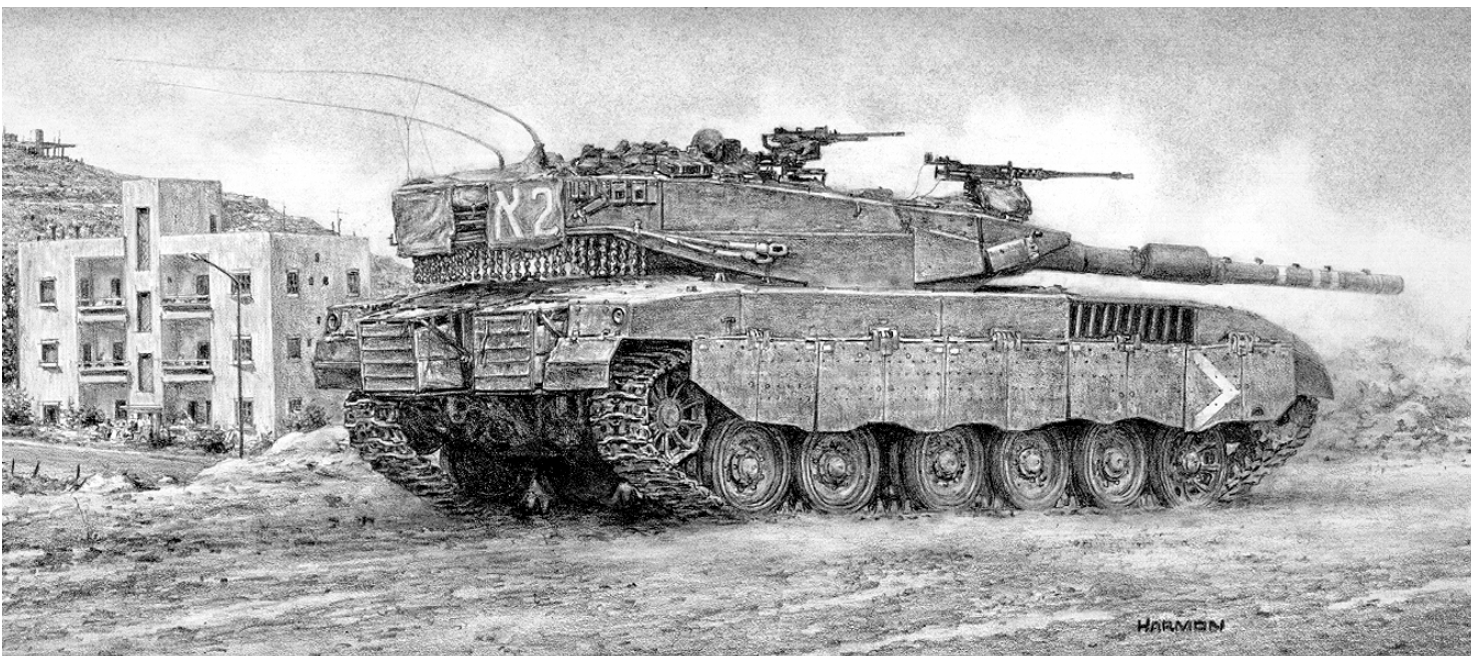
Currently, several training camps are operating in the Syrian-controlled Beka'a valley in east Lebanon. Here,



the majority of Hezbollah fighters are trained in guerrilla tactics by Iranian Republican Guard instructors. Those Shiites, earmarked as combat leaders, are sent to specialist training camps in Iran, where they undergo professional specialist courses in explosive demolitions, subversive operations, field intelligence and observation, and other military trades.

Hezbollah tactics have become substantially refined over the years. From individual attacks on lone vehicles, night ambushes, and sporadic rocket attacks, the fighting has escalated into highly skilled guerrilla operations, some of which have proved extremely successful against the Israeli Army and its proxy, the South Lebanese Army (SLA). Hezbollah combat engineers fight a running battle with Israeli forces, planting explosive charges against IDF road-bound traffic, as well as attacking day and night patrols.

Iranian demolition experts are studying each and every case, whether successful or not, to find out the best way to mount future attacks. Israeli experts are trying not only to find new means for enhanced protection of vehicles, but also actively preventing attacks through early detection, which is proving more difficult as the Hezbollah hides its explosive charges with great ingenuity, using styrofoam to create rock-like shapes for their sophisticated explosive charges. Frequently, using fougasse and Claymore mines remote controlled from standoff hiding places, the Hezbollah hit foot patrols with deadly effect, and also cause substantial damage to vehi-



cles carrying supplies or troops, which, on dismounting, are hit by volleys of mortar and rocket fire. Since the early nineties, the Hezbollah has also been using, with great skill, Sagger antitank missiles, as well as the second generation AT-4 Spigot ATGMs against tanks and armored personnel carriers. These weapons caused considerable concern initially, until crews were trained to counter the threat, both passively and actively. In many cases, the Hezbollah has also used these weapons against point targets such as outposts and bunkers.

Israeli Counter-Guerrilla Actions

To counter the Hezbollah threat to road traffic and improve the survivability of the various vehicles involved in moving along lines of communication, the Israeli armor experts have devised a variety of enhanced protective measures, some quite ingenious. Some of these techniques have substantially demonstrated their effect in countering attacks by antiarmor weapons of all kinds, and have saved many lives. Tanks and armored personnel carriers are widely used in the fighting in South Lebanon in a variety of combat and support missions. Tanks operate with foot patrols, scanning the operational sector for hostile elements. If detected, tanks can render direct fire support at suspected targets with long range point fire from main guns or machine guns. Some measures counter Sagger ATGM attacks with special drills which have been employed since our first encounter with such weapons during the Yom

Kippur War in 1973. The so-called "Sagger watch" technique envisages tanks operating in teams. Each team member searches key points in the terrain to locate enemy ATGM teams hiding out. If an area is suspected, it is covered by main gun, machine gun, or onboard mortar fire, or blinded by smoke. The watching vehicle will give warning to the rest of the team, which opens fire in that direction. When a Sagger is spotted in flight, the tank fires in the direction of the launcher, hoping to disturb the enemy gunner's concentration during the critical navigation phase, or obscure his vision by smoke. This, of course, applies only to wire-guided missiles, not newer fire-and-forget weapon systems, but there are still many of the older weapons posing a threat to the tanks.

IDF forces are also trained in evasive action drills which are still valid and applied when sufficient warning is given. Israeli tank crews, using their advanced optical instruments and fire control equipment, have become highly proficient in locating and destroying Hezbollah Sagger teams, even during the flight of the missile. The latest addition that Israeli experts have devised is an innovative system which only the Japanese Type 90 tank is known to incorporate. This is an automatic tracker, based on the video output from either a TV camera or thermal imager. The auto-tracker, which has been used successfully in action in Lebanon, locks on target, irrespective of the motion of both tank and target, and brings the sight back on track even when the target has

been temporarily obscured. The auto-tracking device is incorporated into the fire control system and thus enables the tank gunner to engage moving ground targets, as well as helicopters. One of the prime targets are fleeing Hezbollah fighters, who are moving fast between hiding places. These have to be detected by alert tank crews in overwatch positions who constantly scan the countryside for suspected enemy. The procedure is normally carried out by tank teams in hull-down positions, which observe at long range to protect them from Hezbollah Sagger teams lurking in the underbrush.

Another procedure uses tanks in mobile patrols supporting infantry on search-and-destroy missions. Here the tanks are on high alert to open fire not only on suspected enemy targets, but also to give strong fire support from onboard weapons once a firefight starts between the infantry patrol and enemy ambushers. It is in such surprise encounters that the tank commander has to operate under the most stringent conditions, acting fast but taking great care to prevent hitting friendly troops who are sometimes close to the enemy. The Hezbollah fighters usually cover the site with mortar barrages on the ambush area, which is usually highly accurate. If the tank crew, especially the tank commander, is operating from open hatches, casualties can occur from shrapnel or direct hits. Whatever the case, tank commanders prefer to work from open hatches, ignoring the threat, rather than lose their observation capability which is crucial in this kind of

ISRAELI ARMOR INNOVATIONS



Above, an IDF "Puma," a Centurion tank modified as an armored personnel carrier. At right, the Magach-8, an M60 variant with a modular armor suite offering protection similar to the Merkava.



Three Magach-6 tanks rendezvous with a scout helicopter in South Lebanon. The Magach-6 is an M60 modified with reactive armor.

Below right, the Magach-7, another M60 variant with a reshaped turret.

Below left, the Achsarit, a turretless T-55 chassis with redesigned engine compartment, allowing a rear access hatch.



PHOTOS: IDF



combat. The improved versions of IDF tanks fighting in Lebanon, such as the Merkava Mk3 and Magach-8, have improved all-round vision turrets which give the commander enhanced protection from overhead threats, but many tank commanders still prefer to work with their heads outside, scanning the terrain with day or night binoculars rather than optics, however sophisticated. One important advantage of the Merkava, not available in other tanks, is the capability to evacuate wounded infantry through the Merkava's rear doors. The Merkava's engine is in front of the tank, so there is sufficient room in the rear for several casualties which can be transported to safety under fire. This type of MEDEVAC is often performed in Lebanon, and has already saved many lives.

Enhancing Armor Protection

Some highly effective protective measures have been specially developed to counter the growing Hezbollah threat to IDF vehicles, especially those prone to ambushes from hidden guerrillas operating remote control charges. Israeli experts have designed a wide variety of protective measures to armored personnel carriers, uparmoring the older versions of the M113, which were totally unsuited to withstand these explosive attacks. Added protective layers of appliqué armor and dense steel mesh known as TOGA offer improved protection against small arms. Further protection comes from reactive armor, to protect against HEAT rounds, and a variety of shaped add-on armor plates to further protect sensitive areas. To increase the fightability of uparmored M113s, which still make up a large portion of the APCs supporting infantry in Lebanon, steel-plated turrets have been added to protect machine gunners.

"...The rest of the crew was safe, in fact, some infantrymen hiding in the rear compartment did not even notice that the tank had been hit!"

But while these protective measures have increased survivability, other life-saving elements were also introduced. These include a turretless Centurion APC, which is far better armored than an armored personnel carrier. A steel roof is added, rendering very good protection in a firefight. But because of the vehicle's lack of a rear exit, infantry

have difficulty dismounting under fire. The Puma, which is the name for this turretless Centurion, was initially designed for service with armored engineers, but given to infantry as a stopgap solution until a further improvement was introduced, the Acharsit vehicle. This is based on the T-55 hull, with a reworked engine compartment that allows a rear exit hatch that enables the infantry to dismount under cover. The Acharsit, with its crew of two, also carries 10 infantrymen, has enhanced armor protection through add-on reactive armor, and mounts considerable on-board firepower.

So far, although some designs for an IFV have been considered to be built on the hull of the Merkava, none have materialized, as the concept still envisages the tank, with its infantry-carrying capacity in its rear compartment to be the more cost-effective solution in a budget-constrained era. In a recent interview, Major General Israel Tal, the father of the Merkava and Israel's most prominent armor specialist, declared that the uparmored Acharsit APC and the Merkava MBT could defeat the heaviest antiarmor threats, even in a fire-saturated breakthrough battle.

The IDF has also improved the survivability of older Israeli tanks still in service. The M60 Patton, now in its third decade with the IDF, has received Blazer add-on armor as a protective measure against HEAT rounds, but as the struggle in Lebanon progressed — and with the introduction of more lethal weapons by the Hezbollah, especially second generation antitank missiles — further upgrading became necessary. New designs, based on the experience of the modular armor on Merkava Mk3, were introduced to uparmor the Patton with the same technique. The result was the Magach-8, which is the latest version of the M60. It has already seen much action in Lebanon with great success. To prove this case, two separate actions should serve to demonstrate the survivability of the Magach-8 under fire. On two consecutive days of combat in South Lebanon last November, two Israeli Pattons, still with Blazer plates, were hit by a salvo of Hezbollah Sagger missiles and the crew suffered casualties, including one member dead. In another engagement, this time with second-generation Spigot ATGMs, a Magach-8 was hit repeatedly, but none of the missiles penetrated and the crew escaped unhurt. In yet another incident, a Merkava Mk3 took no less than 20 hits from ATGMs, but only a single

warhead penetrated from the top, killing one man, who had his head outside the turret hatch; all the others were unhurt! Finally, in another firefight with Hezbollah ATGM teams, a Merkava took two hits from what is believed to be a Spigot, but this time, the tank commander, standing on his seat but protected by the commander's turret, received only slight burns from the splinters. The rest of the crew was safe, in fact, some infantrymen hiding in the rear compartment did not even notice that the tank had been hit!

These incidents vividly demonstrate the high rate of survivability that the IDF is giving its troops in the anti-guerrilla fighting in Lebanon. A lot of professional thinking and the closest cooperation between the technical experts and the fighting crews has been encouraged and the results speak for themselves. It is indeed very rare, due to these stringent protective measures, that tank crews are being hit and becoming casualties these days, and if such incidents do occur, they usually result not from faulty equipment, but from inexperience or disciplinary lapses. If the crew operates according to the drill and procedure, it can count on its survival, and that is quite a lot in any battle that tanks have to fight in.

Lieutenant Colonel David Eshel was born in Dresden, Germany in 1928, and emigrated to Palestine in 1938. After serving briefly with British forces after WWII, he became one of the founding members of the Israeli Armoured Corps in 1948 and served as a career officer with the IDF for 26 years. Educated at the French Cavalry School at Saumur, he later held various command and staff assignments and fought in all of the Arab-Israeli wars up to and including the 1973 conflict, when he served as the Armoured Corps' chief of signals. He later lectured on tactics at the IDF Command and Staff College. Formerly publisher of a military magazine, he is now a freelance journalist and serves as defense analyst for several military journals.

engineer, and communication officers is essential.”²⁸

Lastly, and perhaps most importantly, commanders quickly discovered that tanks could not close with their targets unassisted. The Japanese would easily knock out tanks that were not escorted by infantry. Each Japanese rifle company trained certain individuals as tank-killers, all of whom were armed with tank mines and smoke hand grenades. These tank-fighters were instructed to attack an American tank via the tank weapon’s dead spaces. Once they had closed with the tank, these specially trained Japanese soldiers would then employ a variety of techniques to knock out the vehicle. They would often use antitank mines, damage the tank’s main gun, or damage the rotating mechanism.²⁹

Commanders had to rely on a combined-arms team — including artillery, engineers, air support, and, most importantly, tanks and infantry — to overcome such determined antitank resistance. According to the U.S. War Department: “Close cooperation and coordination with the infantry was essential for success. It was found best to assign a certain number of infantrymen to furnish close support for each tank closely to exploit their success.” Throughout the Wakde-Sarmi campaign, infantry were vital in preventing Japanese soldiers from getting close to the M4s. When fighting the Japanese in the mountainous terrain of northern Luzon, Captain Peter Marusek of the 775th Tank Battalion, observed that: “A thorough understanding between tank and infantry units is a prime necessity. Every possible effort should be made for coordinated teamwork between the two arms.”³⁰

Teamwork involved numerous elements. In addition to providing local security, infantry also designated targets for the tanks. Due to the thick vegetation and undergrowth of a jungle environment, as well as enemy camouflage, tanks could rarely identify and locate enemy positions. Infantry squad leaders, therefore, experimented with a number of different methods to signify targets. Often times, they would use tracer fire or smoke grenades for close targets and rifle grenades for ones farther away.³¹

Despite the need for close cooperation between tanks and infantry, a constant problem had always been com-

munication. EE8A telephone units were utilized to maintain a constant flow of information between infantry to tank. “For communication between tanks and infantry a reel of field wire was enclosed in a box and mounted on the rear of the tank,” an officer reported. “A field phone was attached to one end of the wire and installed in the tank while the other end of the wire dragged free behind the tank. Each infantry squad carried an EE-8 field phone to hook on the wire. A switch and a light operated by the ringer circuit were installed in the tank. This system worked, though a number of reel boxes were damaged and infantrymen sometimes had to expose themselves to connect their phones.”³²

Quickly, the Army leadership changed its doctrine to fit the realities of armored combat in a jungle environment. Although some officers clung to their prewar beliefs,³³ most confessed that tanks did indeed have a role to play in the war against Japan. Tanks provided much-needed firepower against Japanese fixed positions throughout the SWPA, from Buna to Luzon, and most official wartime statements reflected this attitude. Nevertheless, there was no standard tactical principle that governed every situation. Rather, commanders formulated tactics to suit particular situations or ones that they found particularly successful over time. This was certainly the case during the Wakde-Sarmi battle. Lieutenant Stanfield of Company C, for instance, deployed one platoon behind each tank in a skirmish line, while Captain Satran placed one squad on each side of his tanks. According to a report of the 13th Armored Group, which operated on Luzon, “Tactics and size of force used varies with almost every situation.” The transcendent principle was flexibility, not a rigid prefabricated doctrine.³⁴

Conclusion

Many prewar Army leaders stressed the primacy of the infantryman in jungle combat, but tanks played a critical role in the American defeat of Japan as the soldiers of the 1st Battalion of the 163d RCT knew so well. Yet it was not a victory for prewar American doctrine. Rather, the credit goes to those who actually conducted the many campaigns across the thousands of miles of ocean. Over time, American soldiers forged infantry, armor, artillery, air power, and engineering units into an effective

combined-arms team. This team effort worked methodically against prepared Japanese defensive positions such as bunkers and caves.³⁵

In many respects, the experience of Americans in SWPA reflected those in other theaters. In an important new book, Michael Dale Doubler has emphasized the degree to which G.I.s in the European Theater of Operations learned from the “schoolhouse of war” and created their own combined-arms effort to defeat the Germans.³⁶

Although devising a combined-arms synthesis in the heat of combat was not the only factor that forged an American victory, it proved to be an important contributor. With a successful naval campaign, superior industrial capabilities, a military strategy that often emphasized concentrating forces on a single point, America won the war against Japan for many different reasons. Infantry-tank combined arms warfare was a single factor in a larger combined effort on a national and even international scale.

Notes

¹Russell F. Weigley, “Shaping the American Army of World War II: Mobility Versus Power,” *Parameters, Journal of the U.S. Army War College* 11:3 (September 1981): 14.

²*Ibid.*

³Russell F. Weigley, *Eisenhower’s Lieutenants: The Campaigns of France and Germany, 1944-1945* (Bloomington: Indiana University Press, 1981), 2.

⁴Russell F. Weigley, *The American Way of War: A History of United States Military Strategy and Policy*, The Macmillan Wars of the United States, Louis Morton, general editor (New York: Macmillan Publishing Co., Inc.; London: Collier Macmillan Publishers, 1973), 67. For an expanded discussion of this topic, see John D. Waghelstein, “Preparing for the Wrong War: The United States Army and Low Intensity Conflict, 1755-1890” (Ph.D. dissertation, Temple University, 1990, Order No. DA 9107934), *passim*.

⁵U.S. War Department, FM 100-5, *Field Service Regulations: Operations* (Washington, D.C.: U.S. Government Printing Office, 1941), 235.

⁶*Ibid.*; U.S. War Department, FM 31-20, *Jungle Warfare* (Washington, D.C.: U.S. Government Printing Office, 1941), 21.

⁷FM 31-20, *Jungle Warfare*, 21-23.

⁸In regards to the Panama exercises, one participant, Captain John N. Johnson, Jr., wrote: “There are many ways in which tanks can be used in the defense of the Canal, and in nearly all cases their employment would require somewhat of a deviation from the conventional tacti-

cal use of tanks as laid down in the various manuals and teachings on the subject." John N. Johnson, Jr., "Tanks in the Jungles," *Infantry Journal* 27:3 (September 1925): 268; U.S. Army Infantry School, Army Extension Courses, Special Text No. 13, *Infantry in Special Operations*, 1937 Edition (Fort Benning Georgia: The Army Printing Plant, The Infantry School, 1937), 84.

I would like to thank Dr. Andrew J. Birtle of the U.S. Army Center of Military History for bringing the U.S. Army's use of armored units in the Panama exercises to my attention.

⁹U.S. War Department, *Handbook on Japanese Military Forces* (Washington, D.C.: U.S. Government Printing Office, 1944; reprint, Baton Rouge and London: Louisiana State University Press, 1991), 136.

¹⁰"Report on the Wakde-Biak Operation, 17 May 1944 to 2 September 1944," 6, 6th Army 106-0.3, Record Group (RG) 407, Box 2399, National Archives and Records Administration (NARA), College Park, Maryland. For an excellent account of the different varieties of jungle terrain, see Eric Bergerud, *Touched with Fire: The Land War in the South Pacific* (New York: Viking, 1996), 55-89.

¹¹Actually, MacArthur designated the Sixth Army, Alamo Force to keep it independent of Australian control.

¹²For the larger dimensions of the this campaign, see Kevin C. Holzhammer, "Walter Krueger, Douglas MacArthur, and the Pacific War: The Wakde-Sarmi Campaign as a Case Study," *The Journal of Military History* 59:4 (October 1995): 661-685, and Robert Ross Smith, *The Approach to the Philippines (United States Army in World War II: The War in the Pacific*, Washington, D.C.: Office of the Chief of Military History, Department of the Army, 1953).

¹³American forces started the war against Japan with the M3 Stuart light tank. However, as early as the Guadalcanal campaign, Army leaders realized that the M3 was inadequate. M4 Sherman tanks were first used with the United States Marine Corps at Tarawa in November 1943. After the battle, Major General Holland M. Smith recommended that M4s replace all light tanks in future operations due to the superiority of its 75-mm main gun over the M3's 37-mm gun. See John Miller, Jr., *Guadalcanal: The First Offensive (United States Army in World War II: The War in the Pacific*, Washington, D.C.: Office of the Chief of Military History, Department of the Army, 1949), 308-309; and R.P. Hunnicutt, *Sherman: A History of the American Medium Tank* (Novato, Calif.: Presidio Press, 1978), 187-188.

¹⁴Smith, *Approach to the Philippines*, 222.

¹⁵*Ibid.*, 223.

¹⁶163d Infantry Regiment, "Journal: Toem-Wakde Operation," 341-INF(163)-0.3, RG 407, Box 10634, NARA (hereafter cited as "163d Journal;" Smith, *Approach to the Philippines*, 225-226.

¹⁷"163d Journal;" 1st Battalion, 163d Infantry Regiment, "S-1 Journal: Summary of Wakde

and Toem," 2, 341-INF7(163)-0.3, RG 407, Box 10634, NARA (hereafter cited as "1st Battalion Journal").

¹⁸"1st Battalion Journal," 2-3; Company C, 1st Battalion, 163d Infantry Regiment, "Infantry-Tank Assault Teams," 31 July 1944, 341-INF(163)-0.3, RG 407, Box 10634, NARA; Smith, *Approach to the Philippines*, 224-226.

¹⁹"1st Battalion Journal," 3; "163d Journal;" Smith, *Approach to the Philippines*, 226.

²⁰"163d Journal."

²¹"163d Journal;" "1st Battalion Journal," 3; Company A, 1st Battalion, 163d Infantry Regiment, "Infantry & Tank Coordination in the Attack," 12 August 1944, 341-INF 7(163)-0.3, RG 407, Box 10634, NARA (hereafter cited as "Company A Report); Smith, *Approach to the Philippines*, 227.

²²Smith, *Approach to the Philippines*, 227; "163d Journal;" William F. McCartney, *The Jungleers: A History of the 41st Infantry Division* (Washington, D.C.: Infantry Journal Press, 1948; reprint, Nashville, Tennessee: The Battery Press, Inc., 1988), 98.

²³"163d Journal;" "1st Battalion Journal," 4; Smith, *Approach to the Philippines*, 228.

²⁴"163d Journal;" "1st Battalion Journal," 4; Smith, *Approach to the Philippines*, 230.

²⁵"163d Journal;" "1st Battalion Journal," 4-6; Smith, *Approach to the Philippines*, 230.

²⁶McCartney, *The Jungleers*, 97-98; "Company A Report."

²⁷Byron L. Paige, "Campaigning in the Jungle," *Military Review* 24:1 (April 1944): 33; see also Wilbur C. Strand, "The Infantry-Tank Team in Jungle Operations," *The Cavalry Journal* 55:2 (March-April 1946): 2.

²⁸U.S. Army Headquarters, European Theater of Operations (ETO), *Battle Experiences against the Japanese*, 1945, United States Army Military History Institute Library (USAMHIL), 62.

²⁹U.S. War Department, *Handbook on Japanese Military Forces*, 117. A good example of a tank attack that had no infantry support was the 172d Infantry Regiment's attack on the Munda airfield on New Georgia from 16-24 July 1943. Initially, U.S. Army infantrymen were assigned to protect U.S. Marine M3 light tanks. Neither the tankers nor the infantrymen, however, had any experience working with one another, and ultimately, the tanks, attacking on 17 July, faced Japanese defenses alone. Two of three tanks were permanently disabled by Japanese soldiers, who possessed no antitank weapons but instead used mines, flame throwers, Molotov cocktails, and TNT. See John Miller, Jr., *CARTWHEEL: The Reduction of Rabaul (United States Army in World War II: The War in the Pacific*, Washington, D.C.: Office of the Chief of Military History, Department of the Army, 1959), 132-134.

³⁰U.S. War Department, *Combat Lessons: Rank and File in Combat, What They're Doing, How They Do It*, 9 Vols. (Washington, D.C.: Operations Division, Combat Analysis Section, 1944-1945), vol. 2, 61; Peter Marusek, "Tanks

and Infantry in Northern Luzon," *Armored Cavalry Journal* 55:4 (July-August 1946): 18.

Lieutenant Colonel Wilbur Strand, in a post-war article, testified to the importance of a well-balanced offensive formation. He dealt with, for instance, the importance of supporting artillery and engineer units to the infantry-tank team. Strand, "Infantry-Tank Team," 2-4; see also U.S. Army Ground Forces Observer Board, Pacific Ocean Area, *Reports of Observer Boards, Pacific Ocean Areas*, 11 vols., USAMHIL, vol. 10, Report D-74, "Questionnaire for Armored (Tank) Units," 43.

³¹Strand, "Infantry-Tank Team," 3.

³²U.S. Army Headquarters, ETO, *Battle Experiences against the Japanese*, 62; for the various techniques employed by other units under different circumstances in the SWPA, see Strand, "Infantry-Tank Team," 3; Marusek, "Tanks and Infantry," 19; U.S. Army Ground Forces Observer Board, *Reports*, vol. 7, Report B-203, "Standard Operating Procedures on Tank-Infantry Cooperation," 4 February 1945, 4-5.

³³For an example of those officers who did not yet learn the value of tank operations in a jungle environment, see Jack W. Rudolph, "It's All In the Books," *Military Review* 23:2 (May 1943): 8-12.

³⁴See for example U.S. War Department, FM 17-32, *Tank Company* (Washington, D.C.: U.S. Government Printing Office, 1944), 152-157; and U.S. War Department, FM 17-36, Supplement No. 1, *Employment of Tanks with Infantry: Illustrated Problems* (Washington, D.C.: U.S. Government Printing Office, 1944), 37-41; U.S. Army Ground Forces Observer Board, *Reports*, vol. 10, Report D-74, "Questionnaire for Armored (Tank) Units," 40.

³⁵Although most infantry-tank operations were against fixed defensive targets, there were tank-versus-tank battles on Biak and Luzon, for instance.

³⁶Michael D. Doubler, *Closing with the Enemy: How GIs Fought the War in Europe, 1944-1945*, Modern War Studies, Theodore A. Wilson, general editor (Lawrence, Kan.: University Press of Kansas, 1994).

Kevin C. Holzhammer is currently a Ph.D. candidate in military history at Temple University. His main research interest is modern American military history, specifically the United States Army in the Pacific War during World War II. Working under the direction of Dr. Russell F. Weigley, his dissertation is entitled, "General Walter Krueger and the Pacific War: The Dynamics of Command in the Southwest Pacific Area, 1943-1945."

The Reason “Why” We Will Win

by Captain (P) Dave Thompson and Captain P. Kevin Dixon

The purpose of this article is to stimulate discussion and thought concerning how we, as tactical leaders, can position ourselves to win in combat by applying a way of thinking that exploits opportunities on a changing battlefield. We have sought to use a practical approach, in the hope that any benefit gained from reading this article may be put to use quickly.

It is no secret that some units achieve relatively little success in terms of engagements and battles against the OPFOR at the Combat Training Centers. Units that do succeed have, as a characteristic, a sense of purpose. We contend that there is a direct relationship between battlefield success and a unit's understanding of purpose orientation and its benefits in planning and executing combat operations. Units have shown a propensity to fight according to plan. This tendency might suffice if combat was an orderly, logical pursuit. Unfortunately, “command-by-plan inherently fights the disorderly nature of war as much as the adversary. It is a futile quest to will order upon chaos.”¹ Strict adherence to the best plan becomes a recipe for failure when pursued vigorously without accounting for a changing environment. Our question is, “How can we become more flexible, better positioned to exploit opportunities as they arise on the battlefield, while retaining the initiative and imposing our will on the enemy?”

Take the example of the company commander in the hatch of his tank during a battle (Figure 1). He is commanding the advance guard company during a movement to contact. The S3 has provided him with a support-by-fire position on the operations overlay and has tasked him to fix the forward security element of the advancing divisional forward detachment (a motorized rifle battalion). During the task force rehearsal, the task force commander reiterated numerous times the importance of this company commander's mission. “Occupy the support-by-fire position as rapidly as pos-

sible to fix the forward security element. I will maneuver the battalion to assail the southern flank of the enemy advance guard main body.” In the morning, the company commander crossed the LD ahead of the task force by about 2 kilometers. As the company moved along its assigned axis, things were going smoothly, just as planned. The S3 called for a SITREP, wanting to know how long it would be until the company was in its assigned support-by-fire position. Simultaneously, the task force main body began receiving artillery fires as it crossed the LD. The TF commander ordered the TF to move rapidly across the LD and deploy into its planned formation. The S3 called again to the advance guard company commander, emphasizing that he had to get to the SBF position quickly. The company commander then admonished his leaders to “move out — let's get to the SBF!” So the company did. Once there, the company commander verified his location using his position locator. Indeed he was at the SBF depicted on the operations overlay. His fields of fire were unlimited. He re-

ported this to the TF commander. Then it happened. Direct fire began pouring in on the company from its northern flank. The company commander had been concerned about that intervisibility line on the right at about 2000 meters. The contact report went up to the TF commander, who immediately set in motion the gears to get the TF moving to the south of the advance guard company and into the flank of the enemy advance guard main body, just as planned. At this point, the lead company commander is in the fight of his life, attempting to reorient his company to face the threat coming from the north. Unfortunately, there is no terrain to tie in to, and he begins to lose combat power. Command and control is a mess. The net becomes clogged with platoon leaders trying to inform him of what is happening. Within four minutes, the FSE destroys the company. The rest of the battalion is still moving forward, through predetermined checkpoints, to assail the enemy flank. As they begin to wheel to the north as planned, knowing that is where the enemy is — as reported by the advance guard com-

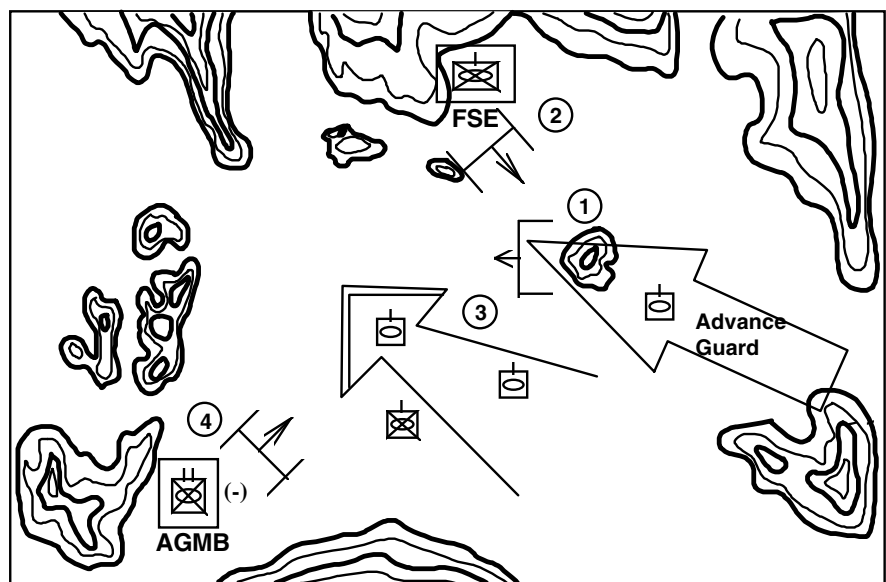


Figure 1

pany commander — the TF receives fire from the left flank (west). It is the southern MRC of the AGMB. The TF commander orders his left flank company/team to provide a base of fire while the TF attempts to maneuver back to the west and around the enemy. As the TF turns back to the west, it receives fire from the northern MRC of the AGMB, which is occupying defensible terrain directly to the front of the TF. The company/team in the lead at this point returns fire but is having a hard time picking out targets through the dust. The trail company/team begins taking AT fire from the rear. It's the FSE, still located in the position from which it destroyed the advance guard company. The battalion is dead.

The plan had detail, with graphic control measures painstakingly applied to aid in control. Rehearsals confirmed that everyone knew what they had to do and where they had to go. The advance guard company moved rapidly to gain contact. The TF moved aggressively once in contact, ensuring maintenance of initiative. What went wrong? Everything.

This unit knew the plan and believed in it. That became its undoing. The graphic control measures meant as an enhancement to command and control became an end in themselves, with the advance guard company focused on what turned out to be an untenable position. Rather than focusing on why they had to fix the FSE, which would have been their purpose, they focused on the support by fire position itself and what they were planning to do when they got there. Pursuit of purpose did not occur; only the task of support by fire received attention. Not once during the fight was the company commander asked about his progress in achieving his purpose. What was his purpose? It received little attention during the rehearsal, and was not written into the task force operations order. The inputs of terrain and enemy had little impact on the company commander until it was too late. Too late to modify his given task. Too late to maneuver his company. Too late to achieve his purpose. Too late for the TF commander to make a good decision.

The rest of the TF then threw good money after bad. With their maneuver firmly fixed in their minds, they acted according to plan. At that point the enemy clearly had the initiative, and the TF was merely reacting. Poor actions

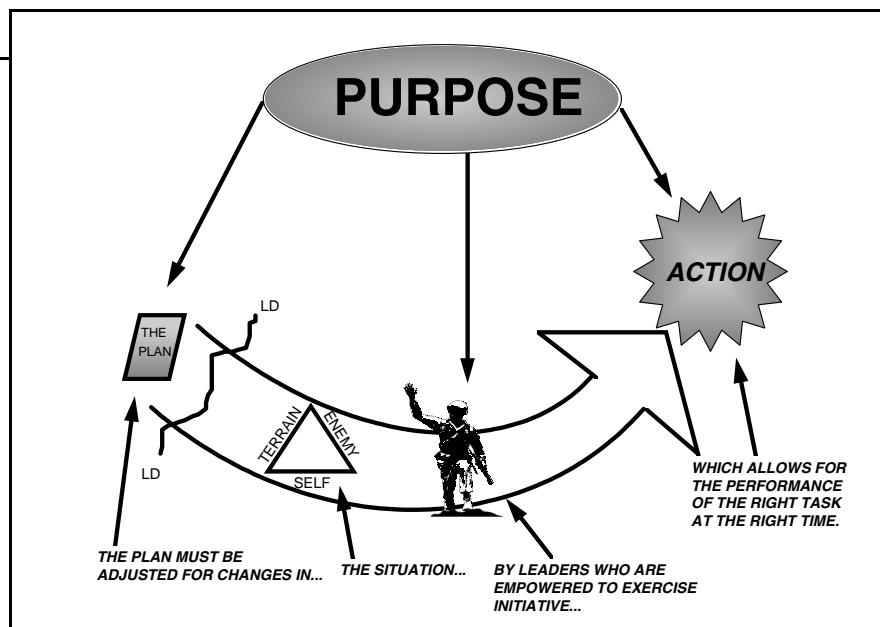


Figure 2

on contact led to a loss of initiative, and ultimately, to the loss of the fight.

It is understood that there are many tactics, techniques, and procedures that can improve to prevent scenarios such as this from occurring. Obviously, the training of our units in basic battle drills and gunnery helps us to survive unexpected contact. This fact almost goes without saying, since it has been the hallmark of all good units. But that is only half the picture. The answer does not lie exclusively in conducting battlefield activities well. Instead, the rest of the answer lies in why we are on the battlefield in the first place!

Purpose and Its Role

Webster's 9th New Collegiate Dictionary defines purpose as an "end to be obtained." This is nothing more than the "why" of the mission statement. The purpose of the operation should always drive the way we think. This holds true from both a planning and an execution perspective. This is the notion of "purpose orientation," or thinking, planning, and acting with a definite purpose in mind (Figure 2). While we may have subordinates who can execute assigned tactical tasks well, unless guided by a purpose they are hostages of those tasks. In a changing battlefield environment, they will execute the wrong task in the wrong place at the wrong time extremely well.

It seems simple that the "why" justifies the tactical tasks we plan and perform. Apparently, in many cases, exactly the opposite is true. Observations

indicate that process and tactical tasks become the driving factors in planning and execution, respectively. We should replace this paradigm with one in which the focus is on an overriding purpose. Purpose orientation empowers subordinates to re-task themselves, which enhances maneuver, adds simplicity, and ultimately leads to success. Unfortunately, purpose usually languishes in the mission statement or on the pages of numerous manuals. The problem is that purpose — usually treated as purely an intellectual notion — sometimes has little linkage to how we plan and execute combat operations. It is not surprising that articulation of purpose does not receive emphasis, since purpose is rarely leveraged to the degree required by rapidly changing combat situations.

Purpose in History

History reinforces the fact that we need purpose, and indeed require it to ensure success. The first example would be the one provided by the German army. Their concept of "auftragstaktik" or mission orders, parallels what we term "purpose orientation." The Prussians in the 1700s recognized that successful combat requires freedom of action and initiative. Hesitating to gain time to make a decision was unacceptable. The Prussians leveraged this way of thinking into battlefield success numerous times during the 18th and 19th centuries.

The second edition of *Infantry in Battle*,² quotes Napoleon as saying, "Bat-

tles of which one cannot say why they are fought and with what purpose, are the usual resource of ignorance.” Also from the same book: “In every operation there must run from the highest to the lowest unit the sturdy lifeline of a guiding idea; from this will be spun the intricate web that binds an army into an invincible unit embodying a single thought and a single goal.” This “guiding idea” is nothing other than purpose.

History gives us numerous examples of commanders using this “guiding idea” or purpose orientation to “re-task” themselves. BG John Buford is one such commander who had the willingness and ability to act. His classic delay in sector on the field at Gettysburg occurred because of purpose orientation. His division of cavalry posted astride the Chambersburg Pike on July 1, 1863, was a result of re-tasking due to changes in the terrain, enemy, and friendly forces. Buford’s appreciation of the terrain around Gettysburg and his understanding of the movements of the Southern army are well-documented. He used this knowledge, coupled with that about changes in Union infantry locations, to re-task himself to block Confederate movement and allow the Union army to concentrate around the defensible terrain at Gettysburg. Notice that the technical ability of Buford provided the ability to act, but the willingness came from his understanding of the unique contribution that only his 1st Cavalry Division made to the overall commander’s concept. His mission was to allow the Army of the Potomac to group together. BG Buford changed the task that would achieve this purpose, as well as the location of its performance.

Purpose and Force XXI

If a sense of purpose proved to be a characteristic of good leaders and units in the past, then the present and the future makes this trait an absolute requirement. A Third Wave³ (Force XXI) army undergoes a bombardment of information which, if properly managed, will empower leaders with an unprecedented, real-time view of the battlefield. This information audience includes leaders at all levels, not only those at the upper echelons. Purpose, and its articulation, takes on even more meaning. As we become smaller, while being required to operate across the entire spectrum of conflict, the opportunities for us to exploit battlefield situ-

ations become more numerous. Our leaders must exercise initiative to exploit opportunities, guided by the commander’s intent, only secondarily dependent on technology.⁴ A sense of purpose, given the battlefield environment, defines for us what we should do in terms of tactical tasks. Force XXI requires that we institutionalize a way of thinking whereby the benefits of information dominance are apparent at all echelons of command. Simply put, our level of technology demands that even more flexibility (through articulation of purpose) be embodied in planning and execution. The result is a dynamic and dominating maneuver which is presently, and will continue to be, required of Third Wave thinkers.

Purpose in Planning

In the planning of combat operations, purpose orientation allows the planner to start with and maintain an orderly, logical approach to formulating a possible plan to accomplish the assigned mission. The mission, by definition, includes task and purpose. It would seem that the next step is easy — take the purpose found in the mission statement, choose a decisive point, and start developing a course of action. Unfortunately, many times the “purpose” in the mission statement is not really a purpose at all. Instead, it is usually just another tactical task, couched in terms that make it seem palatable. An example at the battalion level would be, “TF 1-91 attacks NLT 090600SEP96 to destroy an enemy MRC(ES675453) and seize Objective Ford (ES660470).” At the company/team level, a mission statement might sound like this: “Team Animal occupies support by fire position A1 NLT 090600SEP96 to fix enemy MRP on Objective Gold (ES670450).” The battalion level example is a statement of the type of operation and a tactical task, followed by another tactical task, with no purpose. The company/team example is a statement of a tactical task with no purpose. They seem acceptable though, since the first action leads to the achievement of the second. Thus begins the vicious circle of “task orientation.” Focus shifts purely to the assigned tactical task, achievement of the task defines success, the plan loses flexibility, and initiative loses its true value. What would happen in the battalion example if destruction of the MRC or seizure of the objective, due to changes in the situ-

ation, no longer remains as a viable or logical task? Without a purpose being articulated, the unit cannot react to that eventuality. If, however, the mission statement read something like, “TF 1-91 attacks NLT 090600SEP96 to seize Objective Ford (ES660470) to create maneuver space for TF 2-74 (BDE main effort),” then, regardless of changes in the situation, the leaders of TF 1-91 know that any task they perform must in a clear way support, either directly or indirectly, the creation of maneuver space for TF 2-74. Tactical tasks determined from our planning may be fleeting when examined in the light of battlefield realities. Purpose, however, is far less transitory.

FM 101-5-1 and other doctrinal literature are sources for possible tactical tasks. Examples of how to write the purpose portion of the mission statement are hard to find in any manual. This creates problems. Our inability to articulate the purpose of an operation, since purpose does not follow any formula, becomes the stumbling block. Relief is in sight, however. The planner has only to ask the question, “Why is a force needed?” The reason “why” should begin with an operative word such as create, allow, enable, protect, or prevent. These examples are not all-inclusive. The only limitation in developing ways to articulate purpose is the planner’s imagination. These operative words provide a natural transition between the task and the purpose and, in their use, give primacy to purpose. In this manner, flexibility exists in the plan. Consequently, subordinates are in a position to exercise meaningful initiative, not just tenaciously pursue an assigned task.

Purpose in Execution

Planning with a purpose provides great benefits in execution. Often overlooked is the flexibility that is consequently “built-in” to the plan. The true beauty of purpose is what it enables us to do on the battlefield. Commanders cannot afford a force shackled to a plan that does not provide the best solution to the tactical problem. The reason for this is that the plan uses estimates. What occurs after the LD is reality. Our actions should reflect these realities of the battlefield environment, not the estimate. Although reconnaissance lessens the gap between estimates and reality, rarely can we account for all the possible mutations of the battlefield en-

vironment. These mutations, or changes in the battlefield environment (situation) occur in three distinct areas; terrain, enemy, and self.

First, terrain changes in terms of our appreciation of its effects. Once we are physically on the ground, our vision of the terrain may change markedly from the usually map-based vision that we utilized in planning. Remember the company commander in the story. The SBF position, although planned with the best intentions, did not reflect the realities of the terrain. The contour intervals on our maps limit us in this respect. Given a 20-meter contour interval, a 60-65 foot rise may not show up significantly on the map. The effect is profound if we cannot adjust once on the ground. Second, the enemy may change in terms of its composition and disposition, as well as course of action adopted. Third, our own status or vision of self can undergo significant changes in terms of combat power, relative positioning of units, and overall effectiveness. With all these possible changes occurring on the battlefield, there is one constant upon which to base our actions: the purpose of the operation. Purpose orientation creates a force that can rapidly exploit a changing situation, executing the appropriate tactical task, subordinated to the operation's overall purpose.

One example of this is the commander who senses the changes in the situation and utilizes his initiative to perform the task that the situation requires. Instead of destroying an MRP, given the existing situation, maybe suppressing it will suffice, justification being provided by achievement of the purpose, not execution of a planned tactical task. The opposite would be the well-meaning commander who, given his assigned tactical task, doggedly pursues it to the end, at the expense of men and equipment with no regard for a higher purpose. **Destroying an enemy force may be important, but relative to the reason why, it may not be most important.**

Purpose and Initiative

In order for purpose orientation to be leveraged to its fullest possible extent, there must be a linkage to leader initiative. Initiative has two distinct components, according to FM 100-5. Ability and willingness to act are the ingredients that determine the level of success

that a unit will enjoy while using purpose orientation. Specifically, subordinate leader initiative (ability component) will not exist if he is not well-trained, or his commander has not underwritten his mistakes in training. Empowerment of the subordinate (willingness component) comes by way of the purpose that his superior articulates. This enables him, in the absence of guidance, to deviate from the initially assigned tactical task in order to take full advantage of the situation at hand. This means that mutual trust must exist between higher and lower. Failure to develop this environment will result in subordinates with the ability to exercise battlefield initiative, but unwilling to do so out of fear that his actions might disrupt the plan. This fear need not be real to inhibit subordinate initiative; all it takes is the *perception* of an inflexible command environment to abruptly end all opportunities for battlefield initiative. Clearly, subordinates must *possess* initiative while superiors must *allow* it.

We must recognize that initiative is a double-edged sword. Certainly, the subordinate must maintain excellent situational awareness (terrain, enemy, self) in order to execute the appropriate task. If not, he becomes a loose cannon, detrimental to the accomplishment of the higher mission, and a possible cause of fratricide. He must always understand the nuances of terrain and its effects on both the enemy and himself. He must understand how the Threat fights and be able to read the battlefield indicators pointing to certain Threat courses of action. He must have a good understanding of the locations and actions of units around him so as to not interfere with their efforts. He must understand his relationship to the main effort and how his actions should enhance the success of it. Finally, he must always operate within the framework of the commander's intent. This allows the higher commander to achieve and maintain a unity of effort across his command.

The flexibility provided to the subordinate in terms of his power to conduct the task he deems appropriate, given the current situation, comes at a price. It is his duty to maintain increased situational awareness, fully understand the purposes of his higher and adjacent units, and keep his higher commander informed. The Army of today and tomorrow requires that this mutual trust

exists. This trust, embodied and strengthened in training, will lead to battlefield success.

Purpose at All Levels of Command

Purpose provides the common thread between all units and all echelons. Purpose orientation must be systemic. If it does not exist at every level, the chain breaks, unity of effort diminishes, and task orientation results. Each subordinate unit must know the unique end to obtain while each commander must clearly articulate purpose to those below him.

It is difficult for well-intentioned leaders to work in a vacuum created by the inability of their next higher level of command to tell them why they must perform a combat action. Likewise, articulating purpose becomes an exercise in futility if subordinates do not embody it in their plan or use it to guide their actions. Purpose must be a central theme at all levels of command in order to reap its benefits at any level.

The current intellectual levels of our subordinates, as well as the integration of information technology, makes articulation of a reason for our actions critical. If we do not, we will end up attempting to give prescriptive directions to account for every twist and turn on the battlefield. The increased speed at which information becomes available will overmatch our ability to make decisions and give instructions. The best information is that collected by the man in contact. The best action is the action that the man in contact decides upon, while guided by the reason for the operation. The influence of purpose at this point — actions on contact — is absolutely critical.

Arguably, the need for a common understanding of purpose and what it does for us at all levels of command is the most important aspect of purpose orientation. Purpose orientation is difficult to achieve across an entire unit because leaders have different repetitive experience levels, different interpretations of doctrine, and different opinions. The fact that this way of thinking, although embodied in our doctrine, is not readily apparent or accepted by many, further complicates matters. For this reason, purpose orientation remains the responsibility of the commander. He is the one who articulates purpose to his subordinates through his intent.

He is the one who must be purpose orientation's biggest fan. Only through his acceptance and insistence on the "life-line of a guiding idea" can his subordinates and indeed his entire unit achieve success on the battlefield.

Conclusion

As stated earlier, the purpose of this article is to stimulate discussion and thought. An engine for change can then develop. That engine would include modifications to institutional instruction, training, and leader development. To fully capitalize on the capabilities of the current and future force, we must leverage the flexibility that purpose orientation provides. Old paradigms of process-oriented staffs, task-oriented units, and Second Wave (mass production) thinking will give way to situationally oriented staffs, purpose-oriented units, and Third Wave thinking. The current world order requires this customization of thinking to be our hallmark. Consequently, one of our most valued assets is "the reason why."

Notes

¹"Command and Control at the Crossroads" by Thomas J. Czerwinski in *Parameters*, Autumn 1996, p. 124.

²*Infantry in Battle*, 2d edition, by the Military History and Publications Section of the Infantry School, 1939.

³The Third Wave is a concept developed by futurists Alvin and Heide Toffler. It describes the current information revolution. The Tofflers have also related Third Wave economic development to Third Wave war, in which information and customization are fundamental.

⁴"Command and Control at the Crossroads," p. 126.

Captain (P) Dave Thompson is currently assigned as a Small Group Instructor at the Armor Officer Advanced Course, Fort Knox, Kentucky.

Captain P. Kevin Dixon is the Chief, Armor Pre-Command Course, Fort Knox, Kentucky.

Doctrine Division Recommended Internet Links

by CPT Elizabeth L. Tolle, EN, Doctrine Division, DTDD, USAARM C

Department of Defense <http://www.dtic.mil/defenseink/>
 Force XXI <http://204.7.227.75:443/f21home.html>
 Army <http://www.army.mil/>
 Army Reserves (USAR) <http://www.army.mil/usar/>
 Army Index http://WWW.ARMY.MIL/cfdocs/view_all_by_alpha.cfm
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DOCTRINE

Joint Doctrine <http://www.dtic.mil/doctrine/>
 TRADOC Doctrine <http://www-tradoc.army.mil/dcsdoc/index.html>
 CGSC Doctrine Library <http://www-cgsc.army.mil/cgsc/cdd/doc-lib.htm>
 Center for Army Lessons Learned (CALL) <http://call.army.mil:1100/call.html>
 Army Training Digital Library <http://www.atsc-army.org/atdls.html>
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 AMEDD <http://www.acs.amedd.army.mil/>
 Military Intelligence Doctrine http://huachuca-usaic.army.mil/SCHOOL/doc_pubs.html
 Aberdeen Proving Grounds <http://www.apg.army.mil/>
 Signal Center <http://www.gordon.army.mil/home/>

TRAINING

Army Training Support Center (ATSC) http://www.atsc-army.org/atdl/browse/doc_type.htm
 Battle Command Training Program <http://leav-www.army.mil:80/bctp/>
 National Training Center (NTC) <http://www.irwin.army.mil/>
 Combined Maneuver Tng Center (CMTC) <http://www.grafenwoehr.army.mil/>
 Joint Readiness Training Center (JRTC) <http://146.53.33.3/jrtcx.htm>

PUBLICATIONS

Military Review <http://www-cgsc.army.mil/cgsc/milrev/milrev.htm>
ARMOR Magazine <http://www.entelechy-inc.com/docs/knoxdoc/armormag/cover.htm>
PS Magazine <http://www.logsa.army.mil/psmag/pshome.html>
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"...Team play wins."

Task Force Operations

by Major Wayne T. Seidler and Captain Cameron A. Leiker

"There is still a tendency in each separate unit... to be a one-handed puncher. By that I mean the rifleman wants to shoot, the tank to charge, the artilleryman to fire... that is not the way to win battles. ...To get harmony in battle, each weapon must support the others. Team play wins."

*MG George S. Patton Jr.
Ft. Benning, Ga. 1941*

This article describes some of the tactics, techniques, and procedures used by one armor-heavy task force in Korea. These recommendations for combat are based on one commander's METT-T assessment. The purpose of this article is to spur discussion about fighting in restricted terrain to help other commanders and units think about the difficulties of operations in mountainous regions.

Techniques

The techniques that form the basis for pre-combat training should include an understanding of how the threat will use the terrain, a realization of the required frequency of training, and an emphasis on winning the direct-fire fight. In restricted terrain, the enemy will defend from keyhole shot positions that conceal his fire until the last moment. Platoon leaders, company/team commanders, and task force commanders have less time to react to enemy actions in restricted terrain. To react successfully under these conditions, all sub-elements of the unit must know much more about fighting the force as a whole than is normally required. It

requires a team that can anticipate the enemy's moves.

To win in restricted terrain requires a high frequency of training. Most of the skills required to train tank and mechanized infantry crews are highly perishable. In a place like Korea, where most people serve a short one year tour, personnel turbulence exacerbates the challenge of maintaining a high level of training on the functional capabilities of the individual tank or Bradley, much less the collective force. The tank and Bradley commander's mastery of technical and tactical subjects is the link to reaching the objective at the other side of the defile.

A basic rule of combat is that the first to fire is the first to kill. This is especially important in the defile fight, where the three-to-six-second-advantage is, literally, a matter of life or death. The words of Field Marshal Erwin Rommel concerning this issue are still as true today as when he uttered them nearly half a century ago: "the day goes to the side that is the first to plaster its opponents with fire. The man who lies low and awaits developments usually comes off second-best."

When fighting the defile fight, firing first is a decisive advantage to the attacking tank, section, platoon, and company/team. If the lead attacking tank is destroyed or disabled, and the defile is blocked, an entire task force attack can be stopped or slowed. In restricted terrain, an enemy with inferior weapons and training can nullify our capabilities by using well-placed keyhole positions.

Procedures

A variety of functions help the commander build and sustain combat power in restricted terrain. To synchronize forces and effects on the battlefield, Army leaders examine large, complex operations in terms of functional operating systems that exist at each level of war. Commanders integrate and coordinate these functions to synchronize battle effects in time, space, and purpose. At the tactical level, the *battlefield operating systems* enable a comprehensive examination in a straightforward manner that facilitates the integration, coordination, preparation, and execution of successful combined-arms operations. Some of the most important sub-elements for our battlefield management while operating in restrictive terrain are described below:

Intelligence

Intelligence operations are the commander's best organized efforts to gather and analyze information on the environment of operations and the enemy. Obtaining and synthesizing battlefield information prior to beginning operations is vital, and assembling an accurate picture of the battlefield is particularly important in restricted terrain.

In restricted terrain particularly, the commander drives the intelligence system to help him set the conditions for tactical success. He must ask the right questions because that will focus the intelligence work. He must know the enemy. The commander's personal involvement and knowledge have no substitutes. He helps his intelligence system work effectively by clearly stating his intent and decisively designating his priority intelligence requirements.

The Intelligence Preparation of the Battlefield (IPB) is critical to maneuver in restricted terrain. Movement information [bridge locations and weight capacities; traffic-capable trails; choke points; likely key enemy positions and keyhole shots; ford crossing sites] is a vital component of developing the basic operations plan. Every action in war is based on the enemy. The base plan must be the basis for changes. These changes are driven by an understanding of where the enemy is, and what he



can do. A combat force in restricted terrain must be able to change plans rapidly to fit the reality of the situation.

All of this depends on reconnaissance. Reconnaissance forces serve two primary functions for an armored force in restricted terrain. Some scouts (flank scouts) must move along parallel routes, or dismount to the flanks to confirm or deny the IPB. Other scouts (route scouts) — or armored units trained for the reconnaissance role — should be used to lead the column. This provides maximum information on the route and allows the commander to develop the situation by changing direction or developing a more deliberate attack of the enemy waiting in ambush. Route and flank scouts should be reinforced by ground surveillance radar [GSR], artillery lasing teams [COLTs], engineers and, if chemical use is likely, chemical reconnaissance personnel. In addition, the commander should consider adding to the scouts an enlisted tactical air controller (ETAC) to gain the option of using available close air support assets early in the fight against large enemy concentrations or strong-points. Reconnaissance assets must have priority of fires and are the main effort during the reconnaissance battle. To create the conditions for the success of reconnaissance, commanders may have to maneuver mortar and artillery units.

Maneuver

Maneuver is movement relative to the enemy and intended to put him at a disadvantage. Commanders maneuver their forces to create the conditions for tactical and operational success. Generating combat power on the battlefield requires combining the movement of combat forces and employment of their direct fires in combination with fire support. The more immediate the combat in time and space, the more intertwined are maneuver and firepower.

In restricted terrain, intervisibility lines (IV) create small engagement areas where direct fire weapon systems can dominate the engagement area (Figure 1). Between intervisibility lines, there may be an enemy ambush. A smart enemy defends the defile against an armored penetration by reinforcing his defense with the terrain. Keyhole positions anchor his defense. The successful application of maneuver requires agility of thought, plans, operations, and organizations. Original plans may require modifications as the enemy situation changes or becomes more clear. Attacking forces, therefore, must be able to modify or change their direction of attack. Defending forces must be capable of rapidly changing the orientation of the defense. The mental agility of the commander, organizational agility of his staff, and physical agility of his units are vital to success. In restricted terrain, plans are a basis for changes, but there must be a base plan and branch plan for every mission.

In restricted terrain, the commander must try to “feel” the battlefield, rather than see it. It is usually impossible to see the battlefield in restricted terrain, because commanders practice fighting in open terrain. In restricted terrain, the commander must anticipate battlefield decisions in order to know the best place to be.

Restricted terrain requires units to fight as combined arms teams. The requirement for combined arms in companies, and even combined arms platoons, is paramount. Units must not be afraid to mix sections if required. The defile fight may force the unit into combined arms organizations below platoon level — but it takes practice first. The goal of this combined arms organization must be to place a decisive concentration of direct and indirect fires against the enemy’s fragmentation. The conditions for success must be set with reconnaissance, smoke, mortars and artillery, using the advantages of the hasty/deliberate defense whenever possible. Cavalry charges work best in pursuits, not when rushing into the fire sack. But, when in doubt, **ATTACK!**

Fire Support

Commanders are responsible for fighting their fire and maneuver assets. They fight much of their fires through the function of fire support, the collective and coordinated employment of indirect fires to support combat operations. This is especially true in restricted terrain, where effective fire support provides a density of force that is not achievable with direct fire systems because of terrain limitations. Massing fire effects, rather than concentrating forces, can help numerically inferior forces achieve decisive results,

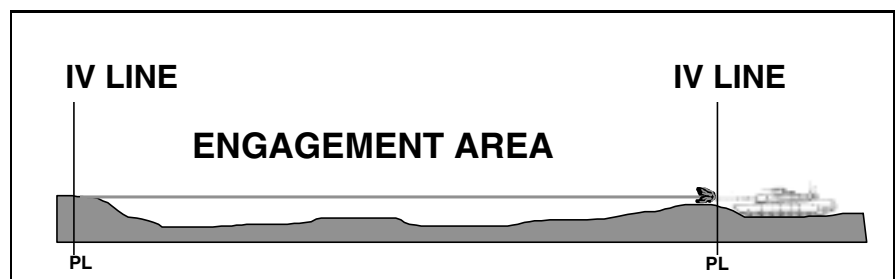


Figure 1. Intervisibility Diagram

while limiting exposure to enemy fire. In the Korean War, "artillery alone could not demolish the deep nKPA fortifications, though the 2d Infantry Division Artillery fired 229,724 rounds" in its attack at Heartbreak Ridge over a two-day period.

Suppression saves lives and buys time for the tank or Bradley crew in the defile. Accurate artillery or mortar fire, suppressing enemy keyhole positions with smoke and HE munitions, can make the difference between success and failure or unacceptable casualties for the attacking force in the defile fight. The lead tank attacking down a defile is key to the indirect fire suppression task. Every vehicle commander and squad leader must know how to call for fire. Mortars are the most versatile and useful means of fire support suppression in the defile fight. The mission of mortars will normally be suppression of key enemy positions along the direction of attack. Artillery has a difficult time destroying or neutralizing targets in restrictive terrain due to its lower trajectory. In fast-moving situations of restricted terrain combat, the commander should not count on the destruction of enemy positions by indirect fires. Attacking units must train to button up and fight through our own artillery, if necessary.

Tactical air can be a tremendous force multiplier in restricted terrain, if it can be effectively employed. The use of smart munitions will be limited by the steep terrain that will prohibit their use from low-threat altitudes (20,000 feet). The use of unguided, dumb munitions will require their use against targets that are not in close proximity to friendly forces, and not on their route, to ensure their effects will not impede our movement. Tactical air must be pushed down to the lead task force which will retain control through its tactical air control party (TACP). The lead task force must control the air as far forward as possible by either employing its ETACs forward with its reconnaissance forces or lead company/team; or through the lead FIST vehicle, which can lase targets and relay target information.

Air Defense

In restricted terrain, the air defense assets task-organized to an armor or mechanized combined arms task force must be able to keep up with the force while also having the firepower to pro-

tect the force from enemy air and itself from enemy direct fire systems. One or more Bradley-Stinger Fighting Vehicle (BSFV) platoons are best suited for this role. These assets should support the task force's scheme of maneuver and be employed as a unit most of the time. When attacking in restricted terrain, these assets should be toward the rear of the task force formation, because the enemy's air request system is not as flexible or responsive as ours.

The task force will require the massed fires of these systems because nKPA air tactics call for massing aircraft against a target; a way to compensate for their limited acquisition assets. When the task force is conducting a road march, having the air defense unit task-organized with one of the trail maneuver units provides the commander the flexibility to employ them to clear the route of march while overwatching air avenues of approach. This permits the commander the option of covering his movement with an air defense umbrella when it is most restricted. In restricted terrain with a high density of forces, such as Korea, this may be a big challenge. In addition, this employment method permits the commander to attack from the march without delay.

Mobility/Counter-mobility/ Survivability

Engineers are worth more than their weight in gold in restricted terrain, but unfortunately there are never enough engineers for the missions identified. All units must be able to breach in stride and establish hasty defenses without engineer support.

The key to a successful breach-in-stride is clearing the obstacle before the enemy can concentrate his artillery against you — 10-15 minutes. In our battalion task force, the advance guard team, supported by engineer assets, will breach in stride using M1A1 plows, M1A1 rollers, MICLICs, or if necessary, manual breaching methods and bangalore torpedoes.

When a more deliberate breach is required, the task force must have a battle drill established using a combined arms team. In the Dragon Force, Team C, 2-72 AR — the breach company — has the bulk of the engineer breaching assets and conducts the deliberate breach. This organization must train together at least once a quarter and consists of one support (direct fire) platoon, two breach tank platoons (with 2

plows or a plow and a roller) and an engineer company(-).

In restricted terrain, the ability to block or defend a defile with a company or smaller force may be required on short notice. Each company/team should carry on its vehicles enough class IV so it can establish 100 meters of a point minefield and 200 meters of triple strand wire on its own. The task force should plan to carry critical class IV and mines on one cargo HEMMT in the combat trains where it can be pushed forward quickly.

Command and Control — [Battle Command]

Battle command is the art of battle decision-making, leading, and motivating soldiers and their organizations into action to accomplish missions with the fewest casualties. It begins in the training a commander provides for his command, and it ends with the successful redeployment and recovery of the command in preparation for its next mission. It includes visualizing the current state of the unit and desired future states, and then deciding how to get from one to the other at least cost to the force. The two elements of battle command are the ability to decide and the ability to lead. Here are a few areas to focus on that will help your C2 in restricted terrain:

- Plans are a basis for changes! Focus plans on the enemy as they are, not as you want them. Always have a base plan and at least one branch plan.
- Troop-leading procedures — know them; use them; have them in your notebook.
- Rehearse! Conduct parallel rehearsals — when the plan is being developed, have the NCOs rehearse breaching drills, fording operations, actions on contact and movement from the AA to the LD, etc. Rehearse the key actions in your plan. You must have a rehearsed plan to get from the AA to the LD. And the best plan will never be successful if you don't cross the LD.
- C2 Facilities include the command group, TAC, TOC, CTCP and field trains command post. Within restricted terrain, the command group may be split up to control the battle on multiple axes. This causes problems not normally found in open terrain.
- The commander must be able to "see" the battlefield while deployed

forward. The TAC and ETAC move forward behind the battalion commander's combat vehicle to assist in controlling the battle. The TAC and ETAC are M113A3 C2 vehicles. The TAC has four radios and the ETAC has the battalion air liaison team's high frequency radio set. The TAC/ETAC has an operations battle captain, the BICC, the FSO, an enlisted ALO, drivers and track commanders to support the battalion commander in coordinating battle operating systems. The TAC/ETAC, because of its small footprint and mobility, can easily maneuver over all types of terrain and can more easily "jump" to better support the battalion.

- Within restricted terrain, communication is the most important factor in selecting the TOC site. The SIGO and the TOC quartering party must ensure the TOC site can support communication with maneuver units and higher headquarters as well as security from detection. The TOC controls the battle and reports to higher headquarters by coordinating with adjacent and higher units.

- Work of communications. The restricted terrain of Korea represents the greatest challenge and obstacle to communications. SINCGARS training and operations must be constantly worked within the task force. The task force net control station (NCS) must be proactive and ensure strict enforcement of "Plugger" time within the unit.

- Deception operations can be a great force multiplier in restricted terrain, however, it is usually the last task a unit trains or incorporates into a plan. Carry a few tank targets to place inside your defensive positions to act as dummy positions; emplace dummy mines in every live minefield so that dummy minefields can be employed later, and use smoke on alternate routes to confuse the enemy on your route of movement.

Training for Restricted terrain

The following tasks should be accomplished before a battalion-level ARTEP. Many of these things can be accomplished by embedding them into your execution of gunnery. Some can be taught to the leadership during the OC mission, or when your unit is in a red training cycle.

- Move your company at night, using the standard night recognition signals.

- Practice fording procedures and ford marking.

- Create and inspect crew obstacle breaching kits. Practice point obstacle breaching.

- Work on MILES boresighting and gunnery.

- Use company lanes to practice platoon critical tasks. Platoon drills should include reaction drills (React to Artillery, React to Direct Fire, React to NBC), tactical movement (Traveling in Column, Traveling Overwatch, Bounding Overwatch), Occupy a Firing Line, Assault, Breach a Mine and Wire Point Obstacle.

- Practice and rehearse SOPs, casualty evacuation, and LOGPAC procedures.

Conclusion

The role and mission of the heavy force in restricted terrain operations has important implications for future U.S. Army operations. During the Korean War, the U.S. Army found that "armor remained an indispensable part of ground combat, regardless of any limiting conditions under which it had to operate." If Armor leaders see combat in Bosnia, or fight again in the hills of Korea, the ability of tank and Bradley crews to fight through and penetrate defended defiles in restricted terrain will be decisive.

If the U.S. Army fights in restricted terrain, force protection will be a major issue. There is never enough infantry or artillery. In restricted terrain, an armored combined arms force is the weapon of choice for a quick, decisive victory that produces a minimum of friendly casualties. Combined arms warfare produces effects that are greater than the sum of the individual parts. The combined arms team strives to conduct fully integrated operations in the dimensions of time, space, purpose, and resources. The goal is to confuse, demoralize, and destroy the enemy with the coordinated impact of combat power. Our Abrams tank, with its excellent armor protection, provides a mobile, tough, battle-winning platform that is an important part of the

combined arms battle in restricted terrain.

Tank and Bradley crew skills are at a premium in restricted terrain. Battlefield situation awareness is the critical component of success in gaining the three-to-six second advantage. If tanks are used to penetrate a defile, tank crews will be challenged to destroy an enemy defender who controls all the natural advantages. Tank crews can steal that advantage and gain the initiative by building high-performing tank crews that can master the techniques of acquiring targets and apply techniques to rapidly win the close-range, direct-fire fight.

Major Wayne T. Seidler is a 1982 graduate of the United States Military Academy. He has served as a rifle platoon leader, antitank platoon leader, and combat support company XO in the 5-502 IN, Berlin Brigade. He has served in all levels of command within Europe from company to theater, to include company command in 1-7 IN and as assistant brigade S4 in 3 Bde, 1AD during Desert Storm/Shield. He is currently the battalion S3 of 2-72 AR, 2ID.

Captain Cameron A. Leiker is a 1990 distinguished military graduate of the Emporia State University ROTC program. He has served as a tank platoon leader, support platoon leader, and battalion liaison officer in 4-69 AR, 3ID; 3-2 ACR; and 4-67 AR, 1AD in Germany. He was also the S3 air for 2-72 AR, 2ID, Camp Casey, Korea. He has graduated from the Armor Officer Basic Course and the United States Marine Corps' Amphibious Warfare School. He is currently the company commander for C/2-72 AR, 2ID.

Techniques to Shorten The Decision-Making Process At the Task Force Level

by Lieutenant Colonel Rich Rees and Major Steve Sorrell

"If planning time is short, the commander may abbreviate the decision-making process only in the amount of time required for each step [of the deliberate decision-making process]. All steps should be completed, in the proper order, as outlined."

FM 71-123

Introduction. Observations at the National Training Center consistently show that task forces have difficulty planning operations. One of the contributing factors is that task forces often attempt to conduct a Deliberate Decision-Making Process (DDMP) when there is insufficient time to conduct the process. When time is short, our doctrine tells us that we may abbreviate the DDMP. Unfortunately, our doctrine provides little guidance on how to achieve an Abbreviated Decision-Making Process (ADMP) or when it should be used. The purpose of this article is to provide *a technique* on how the DDMP may be abbreviated and applied at the task force level. The final product of either the deliberate or an abbreviated process remains the same: a simple, flexible plan.

There are no set rules or timelines on when to use an abbreviated planning process. The task force should not take longer than one third of the planning time. If one third of the time available will let your staff conduct a DDMP, conduct the deliberate process. It is still the best process to use when the time is available. If not, then you must abbreviate the process. The techniques presented in this article are based on task force observations and lessons learned at the NTC and generally follow the Troop-Leading Procedure planning process used in FM 7-20 and FM 71-123.

General. Before we discuss the techniques for abbreviating the decision-making process, there are several important issues. They are the role of the commander, the role of brigade, parallel planning, and the role of the task force LNO.

Probably the most significant change between the DDMP and the ADMP is the role of the commander. The commander is the key component in abbreviating the decision-making process. The DDMP tends to be a staff-based process. The staff conducts its estimate and concludes with a recommended COA presented to the commander. The commander conducts a parallel but separate process when he does his commander's estimate. When time is short, the commander must take a much more active role with the staff in the planning process. He must know his capabilities and limitations, and the capabilities of his unit, his staff, and company commanders. He must develop and clearly articulate his vision of the battle to his staff and subordinates. The commander is the best trained, most experienced leader in the task force; success in the ADMP is proportionate to his personal involvement.

Before members of the task force can begin planning, they have to receive information from brigade. The more information the brigade provides prior to the brigade order, the more planning the task force is capable of conducting. There are a couple of techniques available to get information faster from brigade to the task force. They all require the brigade staff to help. The first is the parallel planning process. Brigades (and task forces) should provide a series of warning orders to their subordinate units. This enables the task force

to begin planning prior to the brigade order.

Parallel planning is a process of providing information to subordinate units in order to push information as it becomes available. By making a unit wait until the order is issued wastes a lot of planning time that should have been available to a subordinate unit. Brigades should provide a series of three warning orders (WO) to their subordinate units. The first should be immediately after the brigade becomes aware of a change in mission or the receipt of a new mission. This WO should provide the area of operations, the division mission and type of operation, and the time of the operation. The information provided should allow the task forces to begin their IPB process and to begin gathering facts. The second WO should follow the brigade's mission analysis brief. This WO should now be able to contain the area of operations, enemy situation (with SITEMP or enemy COA sketch), restated mission, and a brigade timeline. The task force can now begin developing its SITEMP, analyzing the terrain in the area of operations, developing its list of facts and assumptions, and developing a timeline. The third WO will follow the brigade commander's decision on a COA. This WO can now provide task organization, a concept sketch, the brigade commander's decisive point, and subordinate unit missions (task and purpose). The task force can now begin developing COA(s). The bottom line is that the more information the task force can get from brigade, the more the task force can do prior to the task force commander going to the brigade OPORD.

The second technique is for the brigade to issue two copies of the brigade



PHOTO: GREG STEWART

OPORD to each task force. This enables the commander to refer to one during the brigade OPORD and the LNO to take the other copy back to the task force so that the “second team,” led by the task force XO, can begin the planning process while the commander is still receiving the brigade OPORD briefing and conducting his briefback.

The final technique involves the use of the task force LNO, who is an important but underutilized asset in the task force planning process. The LNO is usually a young lieutenant who does not know what to do and thinks he’s successful if he can just stay out of the way. Most task forces do not adequately use the task force LNO. He normally spends most of his time at the task force, versus brigade, TOC. An experienced, trained LNO, who knows the task force and brigade, can pay dividends to the task force. Brigade needs to allow the LNO to watch the planning process and be able to pass updates back to the task force on what the brigade is planning for the task force. The LNO can provide hard copies of the brigade WOs to the task force or, if the brigade is not producing WOs, he can provide the same information by watching what the brigade staff is planning. As a minimum, the LNO should be able to provide the brigade SITEMP, brigade COA (concept sketch), the brigade commander’s decisive point, task organization, brigade timeline, and the subordinate units’ tasks and purposes. Just knowing what the brigade is thinking about can save time later. Having covered these important topics, we are now ready to discuss a technique for abbreviating the DDMP using the Troop Leading Procedure format in FM 7-20.

1. Receive the Mission. The task force can receive the mission in the form of a warning order, OPORD, or FRAGO. The XO should develop a hasty timeline for the task force that includes the time available to conduct the planning process. The XO should not plan for the task force to take more than one third of the time available to conduct its planning process, briefbacks, and rehearsals. Time available will lead the commander or XO to determine whether to use the DDMP or the ADMP. The commander, S3, S2, FSO, and LNO receive the brigade order. The LNO brings the written order to the planners, either in a jump CP or the main CP. While the commander and portions of the staff are receiving the brigade OPORD, the task force XO assembles the mission analysis team (consisting of the BICC, S3 Air, FSE NCO, engineer company XO, ADAO, and NBCO) and a representative of the CSS staff (most likely the S4 or the S1) and prepares to conduct the mission analysis. The S3 Air will issue a warning order alerting subordinate units to an imminent change in mission.

2. Issue a Warning Order. The S3 air issues the first WO to the company/teams. The task force follows the same parallel planning process that the brigade follows and issues three warning orders. The first WO should alert the company/teams that there is a new mission, the area of operations, the time of the operation, and general situation, if known.

3. Make a Tentative Plan.

a. Mission Analysis. The purpose of the mission analysis is to allow the commander to get an understanding of the mission. It is the means by which

he begins to visualize the battlefield by seeing the terrain, the enemy, and ourselves. While the commander is still at the OPORD, the XO organizes the second team to conduct mission analysis. The goal is for the second team to have completed the mission analysis and be prepared to brief the commander when he returns from the OPORD. There are a couple of techniques to shorten the mission analysis and the brief to the commander.

The S2 can shorten the amount of time to conduct IPB by conducting pre-deployment preparation. The S2 section can do some of the first two steps of the IPB and all of step three, evaluate the threat, prior to deployment. The S2 should develop a data base for the possible deployment area of operations. He should already know enemy order of battle, weapons capabilities, general terrain characteristics, and weather patterns. By completing evaluation of the threat prior to deployment, the S2 can focus his limited time on determining threat COAs. The product that takes the longest to produce during mission analysis is the SITEMP. Starting this product based on a brigade WO, or receiving a copy of the brigade SITEMP from the LNO prior to the commander receiving the brigade OPORD, will save time during this step. The S2 section should also be developing the EVENTEMP and matrix and should have a draft of these products available before the wargame begins.

The task force staff should develop an SOP for developing the mission analysis. The same products are required for either a deliberate or abbreviated process. A technique to conduct the mission analysis is for each staff member to have a butcher board-size “hard chart”

to record the results of the mission analysis and then to use this chart to conduct the briefing. The key is to visualize the information for the commander and the staff. The charts should contain the information the commander needs to see the terrain, the enemy, and the task force and should focus on the information the commander needs to make decisions. For example, the S2 should have a couple of blank charts to draw enemy COAs, and a separate chart that has the enemy task and purpose, weather and terrain effects, and proposed PIR; the S3 should have a couple of charts to record the specified and implied tasks for himself and the rest of the BOS (there is a new term here now), a chart for the restated mission, and one for the timeline; the engineer, FSO, NBCO, ADAO all need an additional chart apiece to record assets and capabilities; and the S4 should have a chart for the status of classes of supply (focus on class III, IV, and V), and one for combat power down to platoon level; and the S1 needs a chart for personnel status.

There are a couple of techniques to shorten the mission analysis brief. The first is to focus the brief only on the essential information the commander needs but does not yet have. The same mission analysis briefing SOP and products should be followed, but the discussion should focus on the changes to the existing situation. For example, if the commander already knows the task force's combat power there is no reason to waste time briefing it again. Finally, the number of briefers should be reduced. The entire brief can be conducted by the S2 (or BICC) and the XO.

If the S2 is capable of returning to the CP, receiving a quick update from the BICC, and briefing his portion of the mission analysis, he should conduct the briefing. He was at the brigade OPORD, knows what the commander heard in the brigade briefing, and is then able to abbreviate his briefing so that he is not repeating information. If he is not able to quickly assimilate the information the BICC has, then let the BICC conduct the briefing. The XO and S2 are capable of providing all the information required, and by limiting the number of briefers you will reduce the time it takes to conduct the briefing. The rest of the staff is present at the briefing and is prepared to answer

questions should the commander have any.

b. Commander's Guidance. After the mission analysis brief, the commander provides his guidance. The commander can shorten the planning time by providing specific guidance. He should focus the staff on a single COA and include his guidance on how he wants to use his combat multipliers. He needs to clearly define his decisive point. He should specify the enemy COA(s) that he wants to focus his planning on, and specify a reconnaissance and surveillance concept. Finally he should clearly articulate his Commander's Critical Information Requirements (CCIR). Once the commander has finished his guidance, the S3 should issue the second WO to the company/teams. This WO should only be a page or two and should include the restated mission, enemy COA sketch, and the task force initial timeline. If the commander directed a COA during his guidance, a COA sketch with task and purpose should be provided as well. This provides company commanders enough information to begin planning.

c. Course of Action Development. Although the commander provided his COA concept during commander's guidance, this concept must still be transformed into a set of maneuver graphics and a task and purpose for each company. This can be done by the commander, the S3, or the S3 Air. We recommend that the S3 refine the concept, leaving the commander free to work other issues. This step will still take some time to complete. The S3 needs to apply the COA concept to the terrain and the enemy by drawing the COA on a 1:50,000 map with a SITEMP overlay. The final product remains a COA maneuver graphic and a COA statement that includes subordinate unit task and purpose. If the task force does not have these two products they will lose time trying to develop graphics or task and purpose during the wargame. The more specific (or focused) the commander can be, the more time he can save in this step.

If the commander has sufficient time available, he has the option to develop more than one COA. Rarely will the commander have time to develop more than two COAs in the abbreviated process. If he knows what he wants to do, he should not waste time having the staff develop a separate COA. If he

does decide to develop two COAs, one technique is to have the commander develop a COA and have his S3 develop a second COA. Should the commander decide to develop more than one COA, he will need to use a method to decide on a COA. In the ADMP, he will not have time to wargame two COAs. A technique is to have the staff conduct a "box" analysis of the COA. The intent is to focus on the advantages and disadvantages of the COA, not to synchronize the COA. The S2 and S3 conduct the box analysis of the COA using the action/reaction/counteraction methodology, focusing on actions at the decisive point. The staff then quickly discusses the advantages and disadvantages of the COA as the S2 and S3 move through the COA. One of the staff officers records the list of advantages and disadvantages. This box analysis should take no longer than 15-20 minutes per COA. Again, the commander should be part of this process and, based on the discussion, choose a COA. If the commander does not participate, the staff will have to present a decision briefing and more time is needed.

d. Synchronizing the COA. Once the commander has chosen a COA, the staff needs to conduct a wargame in order to synchronize the COA. Again the commander should be involved in this process. His participation will shorten this time-consuming but important step. His role should be one of an active observer. He needs to let his staff conduct the wargame, but he serves to keep them focused by clarifying his guidance and helping the staff move through tough spots when they bog down. Additionally, his presence at the wargame eliminates the requirement to brief him on its results. He needs to walk a fine line as a participant in the wargame. If he becomes too involved in the process, the staff tends to stand back, and he does not get their valuable expertise. The commander's participation does not alleviate the XO from his responsibility of running the wargame.

Before the staff starts the wargame, it's important to ensure that the staff understands the COA and has had some time to develop how they can support the COA based on the commander's guidance. This will save time later. The XO or S3 should identify the critical events that the staff needs to wargame and prioritize the critical

events. He should then pick the technique to use during the wargame. The box method is the best technique when time is short.

Most staffs have difficulty wargaming the most critical event, actions on the objective, first. The easiest way to wargame the critical events is to proceed in chronological order. The XO needs to allocate the amount of time for the wargame and then, based on the importance of the critical event, allocate time for each event. For instance, the XO has allocated 2 hours on the timeline for wargaming. He then allocates 30 minutes for the reconnaissance effort, 15 minutes for crossing the LD, 15 minutes for destroying the CSOP, and 60 minutes for the breach and actions on the objective. Once the XO sets the timeline, he must be ruthless in enforcing it. It's easy to become distracted by minor events during the wargame. The staff then conducts the wargame using the action/reaction/counteraction methodology, using a synchronization matrix to record its results. The task force needs to develop a synchronization matrix applicable to the task force level. The division level matrix, with the BOS along the left side, does not work at the task force level. The task force needs a matrix that has its assets separated along the side (Figure 1). The staff needs to wargame its selected COA against the enemy's most likely COA (MLCOA). If time permits, they can then wargame the COA against the enemy most dangerous COA (MDCOA) in order to develop branch plans. As the staff moves through the wargame, the staff must stay focused and only talk if they have something important to add to the process.

4. Initiate movement. This step can occur any time during the troop-leading procedures. The goal is to ensure the most efficient use of time. As far as the planning process is concerned, the task force is unable to effectively conduct any planning process if the CP is moving. If the task force must move to a new location, the commander must decide if he will move his CP to the new location and begin planning, or begin planning and move the CP when the process is complete. There are no correct answers. This is a METT-T decision based on the situation and time available.

5. Conduct Reconnaissance. Commander's and staff's reconnaissance is

difficult to do within the constraints of an abbreviated process. Normally the best they will be able to do in an offensive operation is a map recon. In a defensive operation, the commander can usually get out in the EA to conduct reconnaissance. A technique is to place the CP near the EA or battle positions during the planning process. This allows the commander and staff to do some reconnaissance, places the CP near the company/team battle positions, and decreases travel time for the task force and company commanders.

6. Complete the Plan. There are several different options for developing a plan. They range from an oral order to a written order with written annexes. Even though it takes more time to write a five-paragraph field order, it is still the best method for communicating your plan to your subordinates. Matrix orders take less time, but are normally harder to understand and hinder synchronization between company/teams. Whenever possible, use the written format. During the writing

"As the staff moves through the wargame, the staff must stay focused and only talk if they have something important to add to the process."

of the plan, the task force should develop an SOP on who does what. Try to limit the number of annexes, which tend to repeat information and usually are confusing because different annexes often contradict each other. Additionally, by shortening the length of the product, you will save time in reproducing copies. Use of sketches and cartoons in the OPORD will help in the understanding of the plan. Focus the products on what the company commanders need. The staff should produce an acetate copy of the operations graphics for the company commanders. A technique to shorten the time needed in graphics reproduction is to have the S3 section place the brigade graphics shell on an acetate overlay after the brigade OPORD and make acetate overlay copies for each of the commanders. Only the brigade boundaries and phase lines are done initially. As the task force develops its graphics, the graphics are added to the commanders' cop-

ies. Diazos work fine for the rest of the orders group.

7. Issue the OPORD. The OPORD should be given overlooking the terrain if at all possible. Additionally, the more sketches used in the presentation of the OPORD, the clearer the understanding. The sketches should include the terrain, the enemy, and the friendly forces. The key is to visualize the plan for the company commanders. Company commanders should arrive early and be given a copy of the written order and graphics before the OPORD briefing. This allows them to read through the order and post their graphics before the briefing begins. In order to shorten the presentation time, limit the number of briefers. The S2, S3, and S4 should be the only briefers required. In the defense you may want to add the engineer. The order should allow the commanders to fully understand the nature of the operation, how the battle will progress, and what is expected during execution. The presentation should sequence the operation from the tactical assembly area to actions on the objective in the offense and from receipt of the enemy at the battle handover line to the destruction of the enemy in sector in the defense. As a technique, the presentation should not talk the scheme of maneuver, fires, engineers, ADA, etc. separately; the S3 should cover all areas that are essential to the concept of the operation by phase. If required, key staff members can add additional information after the S3 has finished. Remember, the briefing is for the company commanders; the task force commander knows the plan.

8. Supervise. Having completed the OPORD in one third of the time available, the commander and staff now have two thirds of the time to prepare and supervise. The troop-leading procedures do not stop once the task force issues its OPORD. Information is continuously gathered, analyzed in the CP, disseminated, and plans adjusted as necessary. The process does not finish until the mission is complete. If the staff has not had time to develop branch plans based on other enemy COAs prior to issuing the OPORD, the staff should spend some time during the preparation developing and synchronizing branch plans.

Reconnaissance and Surveillance Planning. R&S planning is difficult during an abbreviated process, and

| | | | | |
|-----------------|--|--|--|--|
| EVENT/ PHASE | | | | |
| ENEMY ACTION | | | | |
| MAN | | | | |
| CO/TM | | | | |
| CO/TM | | | | |
| CO/TM | | | | |
| CO/TM | | | | |
| SCOUTS | | | | |
| FA | | | | |
| MTR | | | | |
| MOB | | | | |
| CMOB | | | | |
| SURV | | | | |
| ADA | | | | |
| TOC | | | | |
| RTRAN | | | | |
| CTCP | | | | |
| M/FAS | | | | |
| UMCP | | | | |

Fig. 1. Synchronization Matrix

| | | | |
|--|--|-------|--------|
| FIRE SUPPORT | | | |
| BRIGADE CONCEPT OF FIRES: | | | |
| BRIGADE SCHEME OF FIRES (HOW WE FIT): | | | |
| BRIGADE SPECIFIED TARGETS: | | | |
| BRIGADE FSCMS: | | | |
| NUMBER OF KILLING MSN: ARTY _____ MORTAR _____ | | | |
| NUMBER OF SMOKE SCREENS: _____(DURATION/DIST) | | | |
| NUMBER OF FASCAMS: _____(METERS/DURATION) | | | |
| MINUTES OF ILLUM: _____ | | | |
| CAS SORTIES ALLOCATED: _____ | | | |
| OBSERVER STATUS: | | | |
| | | AUTO | TURRET |
| | | COMMO | CREW |
| A | | | |
| B | | | |
| C | | | |
| D | | | |
| MORTAR STATUS: _____ | | | |

The FSO's Mission Analysis Chart

there are differing views on how it should be conducted. We felt we would be remiss if we did not offer a technique on how to conduct R&S planning. The R&S plan is normally a product of the war-game. The problem of waiting to do the plan during the war-game is the time it takes to get a product to the scout platoon. Developing the plan this late in the process does not give the scout platoon sufficient time to conduct its own troop-leading procedures and to gather the information the commander needs in a timely manner. A technique is to have the scout platoon leader attend the mission analysis brief to the commander. This will enable the scout platoon leader to hear the S2 discuss the terrain and the enemy COA(s). When the commander gives his guidance after the brief, he should also give his guidance for the R&S plan. Once the commander finishes his guidance, the S3 should refine the commander's maneuver concept into a COA. While the S3 is developing the maneuver plan, the commander has time to quickly gather the rest of the staff with the scout platoon leader to develop the reconnaissance plan. The commander and staff jointly develop the NAIs, OPs, routes, check points, fire support plan, communications plan, and CSS plan needed to gather the information the commander needs. The scout platoon leader now has all the information needed to begin his troop-leading procedures. The scout platoon should be positioned near the main CP. This allows the scout platoon leader to quickly move back and forth from the TOC to the platoon. Once the scout platoon leader has the information he needs, he returns to the platoon and begins his troop-

leading procedures. If he needs more information or products were not finished, he can quickly return to the TOC. Once he has finished his plan, he should return to the TOC to backbrief the commander.

Conclusion. The intent of this article was to present a *technique* that task forces can use in conducting an abbreviated planning process. The most significant difference between the deliberate and abbreviated decision-making process at the task force level is the role of the commander. In the abbreviated process, the commander must take a much more active role with his staff. As the most experienced leader in the task force, success is proportionate to his involvement. Whichever process you choose to use, the most successful way to save time is by developing SOPs and by conducting repetitive staff planning processes under realistic conditions. The endstate of either planning process remains the same... simple, flexible plans.

Lieutenant Colonel Richard Rees is a 1979 graduate of the U.S. Military Academy. His previous duty assignments include platoon leader and company executive officer in 2-41 Infantry; company commander B/1-48 Infantry; S3 plans for 2d Bde, 3AD; assistant G4 in the 24th ID (M); S3 for 2-7 Infantry; and the S3 OC for the Mechanized Infantry Training Team at the NTC. He is currently assigned as the brigade executive officer for 2d Bde, 4th ID (M).

Major Steven G. Sorrell is currently serving at the NTC as a Senior Infantry Task Force Analyst with prior experience as a Battle Staff and Co/Tm OC. He previously served in the 1st Bn, 5th Cav, Ft. Hood, Texas, as a Bradley company commander and S3 Air. Prior to that, he was a platoon leader, XO, and S3 Air with 7th Bn, 6th Infantry in Bamberg, Germany. He is a 1984 ROTC graduate of Florida State University.

The Italian Army Moves Toward the XXI Century

by Lieutenant Colonel Osvaldo Bizzari

A NATO ally transitions to a professional army, a redefined mission, and the introduction of several new combat systems

Introduction

All armies of the main industrialized countries are now passing through a crucial time, characterized by a new geostrategic and geopolitical environment, an era of declining defense resources, and the rapid technical evolution brought about by the Information Age. The events of the last few years have also brought to light a sense of interdependence in international security. Security requirements are common to all, but there is no international event which can be considered only the concern of "others."

Given these changes, Italy is redefining its views on security and reshaping its military to play an effective role in maintaining the military balance in the complex Mediterranean region. In the following article, the author, currently the Italian liaison officer at the U.S. Army Armor Center, would like to provide a broad overview of the Italian Army's current evolution. By sharing this kind of knowledge among NATO countries, we can better understand each other and cooperate more effectively in a multinational environment.

Foreword

The geostrategic changes that occurred in the 1990s profoundly modified the international arena. On the one hand, the possibility of a global conflict has become remote, allowing great reductions in the defense establishments of most major nations. On the other hand, there is an increased risk of being involved in so-called "minor" conflicts. A new global balance is now developing, closely dependent on local and regional micro-balances whose at-

tainment is often the cause of new conflicts.

Yesterday's threats are today called risks, but the difference is not substantial. What has changed for the Italian Army, which once operated only within its own borders, is that Italian Armed Forces have been employed in overseas operations to an extent unprecedented in the period following World War II, and in a context marked by uncertainty.

Driving this change in orientation is the international community's new concern with controlling regional tensions with multinational missions — Operations Other Than War. These actions have heavily involved the Italian Army, which has deployed to many of these trouble spots, including Kurdistan, Albania, Mozambique, Somalia, and the Balkans.

These changes, given the new geostrategic situation and the trend toward declining defense resources, inspired the reorganization of the Italian Army which is still ongoing. The main factors on which the "New Defense Model" is based are the geostrategic position of Italy, strategic functions, structure (forces) and equipment.

Geostrategic Position of Italy

In geostrategical terms, Italy is located in a very sensitive area, the Mediterranean basin, a region where highly different living standards and population growth rates are in themselves a cause of instability. In addition, the changes in continental Europe, the explosion of ethnic, religious, and nationalistic rivalries in the Balkan area, radicalism, regional crises and conflicts, underdevelopment, terrorism,

and the proliferation of weapons of mass destruction (WMD) significantly increase the likelihood of instability in the region. When we speak of the Mediterranean basin, we actually refer to a wider theater that stretches from the western approaches of Gibraltar through the Black Sea to the Caucasus, and through the Suez Canal and the Red Sea to the Middle East, the Horn of Africa, right up to the Persian Gulf. Within that region, there are two crisis belts, one running across the southern border, the other spanning the east. These two belts seem to overlap at the geographic crossroads comprising the Balkans, the Caucasus, and the near Middle East. Italy stands on the edge of this crossroads and is, therefore, particularly sensitive to this area's stability and security. Historically, Italy has always had two geostrategic orientations, one Mediterranean, the other continental. For this reason, Italy has been trying in every way to promote Mediterranean links, both within the European integration process and within NATO. The changes in Europe's geostrategic situation have not affected our basic foreign and security policy: support for a stronger European and Western European Union in a solid transatlantic alliance, certainly reaching out to the east, but also to the south, although in a different manner.

The Three Major Strategic Functions

The "New Defense Model" is aimed at accomplishing three major strategic functions:

The first function is **to maintain a presence in and surveillance of the entire area of strategic interest**, to in-

Italy's cavalry regiments are equipped with 400 of these 8-wheeled Centauro armored cars, armed with 105mm cannon that fire standard NATO 105mm ammunition types.



clude military cooperation and training exchanges, disarmament control, and enforcement of trust and security measures, “forward presence” as a natural outgrowth of “forward defense,” information activities, and control of non-allied or potentially hostile forces, surveillance of the land, borders, airspace, naval docks, and exclusively economic zones, and civilian-protection support activities.

This function is eminently national in nature, even though it includes supporting the accomplishment of similar purposes within NATO and Europe. It is the most likely, and requires active forces with a high degree of combat readiness and training, but carries the least potential for danger.

The second strategic function, defending external national interests and contributing to international security, focuses on managing crises in the area of strategic interest, and non-bordering areas. Italian forces might act alone in these cases, but are more likely to participate as part of an international initiative led by NATO, the UN, or the West European Union. This strategic function provides for both a limited use of forces and a low level of risk, but may result in direct conflict.

It has an overall associated danger that is variable and difficult to quantify and requires active forces with a high level of combat readiness and training, highly mobile and transportable, and falls, in the majority of cases, within the pre-established commitments made within the Alliance or regionally.

The third function, defending the national territory, would respond to direct threat or an actual act of aggression

against our national territory (land, airspace, and sea). Italian forces would perform this function within national boundaries, but might have to carry the defensive response beyond national boundaries to remove the offensive capabilities of an aggressor. This function has a low possibility of occurrence, but can present differing degrees of danger, usually inversely proportional to the amount of forewarning.

Beyond these three strategic functions, the “New Defense Model” provides for two further functions within the nation itself:

Support in safeguarding free institutions, when required. These would be missions carried out within our national territory. They have a low probability of occurrence.

Support for the collective national good. Italian forces could also be used in relief of national emergencies. These missions carry an almost nonexistent associated level of danger.

So, in practical terms, the tasks entrusted to the Italian armed forces by our government laws are:

- To ensure the defense of our national territory
- To aid in safeguarding free institutions
- To contribute to the collective national welfare in public disasters
- To carry out peace missions and international security operations.

Consequently, the missions assigned to our ground forces can be boiled down to **Traditional Operations and Operations Other Than War.** That

would include safeguarding national territory, or that of an allied nation against direct aggression, and peace support and humanitarian relief, primarily in a multinational context.

Land Forces

Given the reconfiguration of the traditional threat of the past and the globalization of the security concept, the Italian Army General Staff has reorganized the Army's structure within the limitations imposed by political authorities, who have determined the size of our ground forces — 150,000 soldiers, organized in 13 brigades of 40-50 maneuver regiments — and the financial resources available.

Territorial Organization

In this sector as well, there is the problem of revising the organization without compromising the effectiveness of various agencies involved in fields like logistic support, medical support, recruitment,...etc. The number of Military Region Commands is to be reduced from 7 to 5. Within the Recruitment and Selection sector, 30 of 55 now-existing offices will be inactivated. Medical support is being revised, with plans for one general military hospital, six convalescent hospitals, and 11 service hospitals. Similar cuts affect the Transportation and Materials section, Administration, and General Services.

Scholastic Training Organization

Special attention has been addressed to reconfiguring the Army's school system in line with the strength of our future Army. The “New Defense Model”



This is the 6x6 version of the Puma, under consideration as a troop carrier to accompany the Centauro armored car in cavalry units.

calls for 15,000 officers, 35,000 NCOs, and 100,000 troops, of which 60,000 are volunteers and 40,000 draftees. The move from a conscription Army to a largely professional Army will require improved schools in order to maintain overall current training capabilities. A substantial reduction has been planned in the number of training regiments, now 29. Under the new organization, there will be 5-6 for volunteers and 11-12 for draftees.

The new Italian combat forces will be made up of units, typically brigades (thirteen), of differing degrees of combat readiness, differentiated by reaction time and level of professionalism (conscripts or volunteers).

The brigade will be characterized by flexibility, mobility, versatility, and high combat readiness and operational capability. They will be earmarked for operations both inside and outside Italy's national territory. They will be fully capable of participating as elements of multinational forces. Each brigade will be formed with four combat arms regiments made up entirely of volunteers.

The other eight brigades will be employed as back-up forces for any other requirement and for the support and safeguarding of free institutions and the collective good. These brigades will each consist of two to three combat arms regiments, principally manned by conscripts.

Overall, the Italian Army will include four mechanized brigades, two armored brigades equipped with combat tanks, two light armored brigades equipped with wheeled armored carriers, three

mountain brigades, an airborne brigade, a cavalry brigade, and an amphibious brigade with both Army and Navy units.

These brigade-level units will be clearly integrated with adequate quantities of combat support and combat service support units, to include:

- 23 land and anti-aircraft artillery regiments;
- 10 engineer regiments;
- 13 signal regiments;
- 32 logistic regiments;
- 15 aviation battalions.

Acquisition and Modernization Programs

In order to achieve the objectives established by the "New Defense Model," various areas of the Army organization will be affected by procurement and modernization programs. The most important ones involve basic weapons and equipment, maneuvers and tactical and logistic mobility, support for land and anti-aircraft weapons, communications, command and control.

Basic weapons and equipment

Italy is also modernizing its equipment and individual weapons. The army is getting the Beretta 9mm pistol (the same as the U.S. M9), and rifles and machine guns are being acquired in 5.56mm to replace the current 7.62mm weapons. All of these weapons will be made in Italy. Important programs are also under development in the antitank (AT) weapons sector.

After the introduction and successful use of the TOW (basic and improved) and of the MILAN, it has recently been decided to introduce the TOW 2-B and the MILAN with an improved warhead. PANZERFAUST 3 was chosen as the short range antitank weapon, and some of them are already in commission.

Italy, together with France and Germany, is working on a new antitank fiber-optic guided missile system (POLYPHEM), which includes a video camera in the warhead capable of sending images to the operator. The weapon range is some 20 km, to be improved to 50 km.

Tactical and logistic mobility

Our "New Defense Model" will bring about a considerable reduction in the number of tanks available. In spite of this reduction in quantity, a qualitative improvement will characterize our new fleet of tanks. This objective will be achieved by the introduction of modernized tanks. We are procuring 200 Ariete-1, entirely Italian-made combat tanks, and we've ordered 120 Leopard-1A5 turrets to be installed on Leopard 1 tanks already in service.

By the beginning of the year 2000, the Army's tank fleet will consist of 450 tanks, including 200 Ariete, 120 Leopard-1A5 and 130 Leopard-1 A2s.

"The new Italian combat forces will be made up of units, typically brigades, of differing degrees of combat readiness, differentiated by reaction time and level of professionalism...."

Studies are also underway to increase the lethality, survivability, and mobility of the Ariete.

The Italian Army's cavalry regiments have just received 400 of their new wheeled armored carriers, called Centauro, which have a 105mm gun and are particularly suited to operating with a high degree of strategic mobility in large open spaces.

In order to have personnel carriers that can operate at the same speed and operational effectiveness of the Centauro, we are considering the possibility of outfitting reconnaissance squads with light wheeled armored carriers, called Pumas, in either the 4x4 (four-

wheel drive) and/or 6x6 (six-wheel drive) versions.

The M113 remains in service as the standard tracked armored personnel carrier, pending the introduction of the Dardo, a new infantry fighting vehicle similar to your Bradley. At least two mech infantry regiments and the infantry training schools will be outfitted with this vehicle by the end of this year.

Army aviation is also being modernized, both attack helicopters and tactical transport helicopters. Thirty-eight of the sixty Mangusta A-129 antitank helicopters, similar to the U.S. Apache, have just been delivered. In addition, some Mangustas are being converted from AT helicopters into scout aircraft. France, Germany, the Netherlands and Italy are collaborating on a tactical transport helicopter, the NH-90, to replace older aircraft such as the AB 205, AB 212 and AB 412. Finally, in the fixed-wing sector, we have begun to gradually replace the L-19 and SM-1019 light aircraft with the twin-engine Dornier-228.

Antiaircraft and land weapons

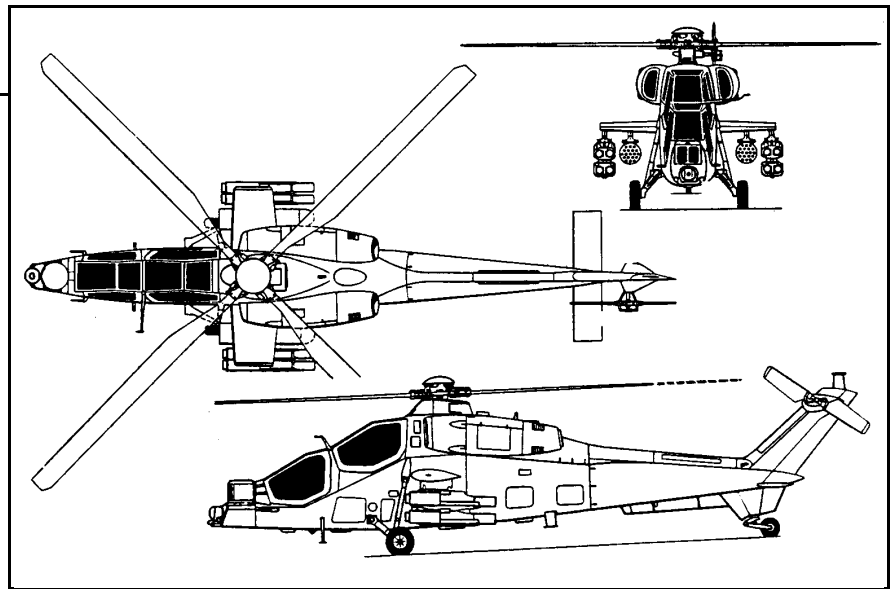
The most important programs in the land warfare sectors involve the introduction, already underway, of MLRS rocket launchers and development of the FIROS-30 rocket launchers which are designed to give the artillery system the necessary fire-saturation capability needed in the 30-km battlefield area. The M-109 self-propelled howitzers are being modernized with new barrels to offer longer range.

Air-defense is being modernized with SIDAM four-barreled 25 mm SP guns, along with Skyguard-Aspide, a low and very low altitude air defense missile system.

A replacement for the Stinger shoulder-fired antiaircraft missile system, due by the year 2000, will offer reprogrammability. In addition, a new, advanced, medium-range surface-to-air missile system is being developed as part of a joint venture between Italy and France. The SAMP-T will replace the Hawk in the XXI century.

Communications, Command and Control

A new, integrated battlefield communication system, called CATRIN, is being designed. It will strengthen battle-



Italian Army equipment modernization includes 60 A129 Mangusta ("Mongoose") antitank helicopters. These twin-engined two-seaters can carry TOW, Hellfire, and HOT missiles, rockets, and .50 cal. machine gun pods.

field surveillance and target acquisition, and offers a modern system for managing Army airspace and weapons systems. Another program will create an automatic and digital command and control system called SIACCON, which is a natural complement to CATRIN. CATRIN primarily supports intelligence, while SIACCON is to be used for command and control.

In addition, we are about to introduce new VHF radio equipment for platoons and companies, and HF/BLU radio equipment for communication at the battalion, regimental, brigade, and division levels. Finally, a new electronic warfare system has been introduced into service for intercepting and locating radar. In sum, the Italian Army will soon be able to count on modern systems suited to meet both SIGINT and electronic-warfare requirements.

Conclusion

The picture presented above, although necessarily an overview, was intended to give an idea of the profound changes which the Italian Army is undergoing, at a time when it is also deeply engaged in many intense and diversified activities.

In addition to downsizing, the modernization of the Italian Army has been and will be another crucial and important key aspect. In a fiscally constrained environment, the introduction of new weapons systems and new advanced technologies will require years of effort

in order to stay within annual budget constraints, but the achievement of the above-mentioned objectives will provide a reshaped land force quantitatively reduced but qualitatively improved so as to meet both the new national and international requirements created by the realities of the 21st century.

Lieutenant Colonel Osvaldo Bizzari, currently the Italian Army liaison to the Armor Center, is a 1979 graduate of the Italian Army Military Academy. As a second lieutenant, he attended the School of Applied Military Science and the Airborne School, and was later assigned to the 7th Armor Battalion as platoon leader. As a captain, he commanded a tank company and has been a battalion S3 and S4 (3rd Armor Battalion). From 1987 to 1989 he was assigned, as staff officer, to the Military Academy and later to the Italian Defense General Staff (Logistic Department-Vice Section Chief, NATO Infrastructure). After attending the Italian Army War College (basic and advanced course), he was assigned, as Chief, Logistic Staff Section, to the 5th Italian Army Corps.

LETTERS (Continued from Page 4)

number of reasons... but one major element is the concentration on high tech solutions that thus overload our soldiers with gear that probably will be too difficult to operate under great stress in terrible weather and humidity and hard to maintain and support. When all this fancy equipment fails, and it surely will at some point, what then?

For the good of the service, let's get back to the fundamentals of leadership development and relegate all this razzle dazzle equipment to secondary effort. How much high tech stuff did the Viet Cong have? What won that war?

COL GEORGE EDDY (Retired)
Via e-mail

Improving Scout Vehicle Capabilities

Dear Sir:

Over the years since the scouts traded in their horses for mounts of steel, there has been a running debate on the perfect reconnaissance vehicle. There have been several vehicles that have served American scouts in their quest to gain and maintain contact. The U.S. Army has used both tracked and wheeled vehicles that seemed to alternate with each new generation of scouts.

In World War II, American reconnaissance platforms were wheeled, with the M8 Scout Car and the venerable Jeep being the most widely used. The M8 was a six-wheeled vehicle based on the 2-1/2-ton truck chassis. It came with a turret which mounted a single shot 37mm cannon.

During the Vietnam War, the U.S. Army relied mostly on tracked vehicles for mounted reconnaissance, utilizing the M551 Sheridan and the diminutive M114. Tracked vehicles remained the primary mounts for scouts through the '70s and '80s, with the M113 and M901 improved TOW vehicle and the M3 Cavalry Fighting Vehicle. In the late '80s, the Army started moving towards the idea of wheeled reconnaissance at the task force level. Currently the U.S. Army uses both tracked and wheeled scout platforms, with the M3A2 CFVs at divisional and regimental (3rd ACR) levels, and the M1025/6 HMMWV (Hummer) at the task force and light cavalry levels. The Experimental Brigade Reconnaissance Troop of 1st Brigade, 4th Infantry Division also utilizes the Hummer with two platoons of nine vehicles each.

Each of the current mounts has advantages and disadvantages when compared to each other. The HMMWV scout's main advantage is stealth. The Hummer is low profile and quiet. It is also easier to maintain and operate. The M3 CFV's main advantage is the sights which are slaved to a weapons system. A CFV platoon also has a greater ability to conduct mounted and dismounted reconnaissance simultaneously. Any future scout vehicle should encompass

each of the advantages of the current systems.

While the debate still rages as to whether tracked or wheeled is the best way to go for a scout vehicle, there are some basic requirements that I believe the FSV must possess.

- A stabilized, turreted weapons system that is capable of rapid, accurate fire. It must be of sufficient caliber to defeat current and near-future infantry fighting vehicles and reconnaissance platforms in a self-protection type of engagement. Given this, the armament should be of 25mm capability.

- Thermal imaging and day sights that are slaved to the weapons system.

- A crew of at least four scouts. This is needed for a greater continuous operations capability and a better dismounted ability than HMMWV scouts currently possess.

- Stealth. As previously stated, this is the HMMWV-equipped platoon's greatest advantage over the M3. The M3 is loud, large, and lethargic in low speed movement.

- Amphibious capability with very little preparation. This is an asset that neither vehicle possesses. While the M3 is amphibious, those of us that have put them in water know that it takes a great deal of preparation and they barely move in still water.

- Armor protection up to 14.5 mm and against shell fragments.

Recommendation:

While my personal prejudice is toward a fully tracked vehicle, the fiscal realities of the current Army budget would make this unlikely. Operating cost and vehicle price would be prohibitive given the relatively small number of vehicles that would be purchased. To hold down the cost, the design should be simple and incorporate as many current-use components as possible. It would be 6-wheeled so that it would have greater mobility than the Hummer and provide a better base for the turret. The turret should be a two man design with the commander and gunner. The turret should consist of composite materials to provide ballistic protection and still be light in weight.

The weapon system should be automatic, belt-fed with a rate of fire equal to the M242 Bushmaster 25mm. I would recommend the use of only armor-piercing discarding sabot-tracer rounds which would eliminate the need for a dual ammo feeder and reduce the weight of the system. It would also allow for a much simpler weapons design and be lower in cost, both per weapon and in maintenance, than the 25mm Bushmaster.

The vehicle should have a rear-mounted engine and an internal tire pressure system. The driver and the fourth scout would sit forward of the turret area. The height of the proposed vehicle should be no higher than the Hummer at hull level. It should also be no wider than the Hummer. Add an M240 coaxial mounted machine gun and we have, in my opinion, an excellent vehicle for re-

connaissance as well as convoy support and other uses.

In closing, the possible Army-wide adoption of Brigade Recon Troops along with the 2d ACR (Light) means that we need a future scout vehicle to perform scout missions as soon as possible. The HMMWV currently cannot provide scouts with the abilities they need to be successful, and the M3 cannot be utilized in light cavalry organizations. By combining the advantages that each of these vehicles possess, we can quickly design and produce the Future Scout Vehicle. "He who wins the recon fight, wins the battle."

Scouts Out!

SFC MONTY A. MILLER
Scout PSG
Ft. Hood, Texas

LAVs Might Meet the Need For Firepower in Light Cav Units

Dear Sir:

Mr. Crist's article, "Too Late the XM8," and LTC Benson's "Whither the 2d Cavalry" pose a serious question. With the cancellation of the Armored Gun System, what options are available for both the 2d ACR and other units which have a need for a light tank?

An answer which should be explored is buying an off-the-shelf vehicle such as the LAV with a 105mm gun turret. This vehicle would have sufficient firepower to meet mission needs with high mobility. It could be air-dropped and would complement our force structure. Ideal companion vehicles to a large gun, turreted LAV would also include the turreted mortar, air defense, and APC variants. Such vehicles would give us a force that is air transportable with significant combat power. LAV-type vehicles are currently operated by many of our allies and the LAV itself is operated by the Marine Corps and several states.

The 2d ACR and our light forces fill a significant role in our overall force structure. The 2d itself bridges that gap between light and heavy by having a force structure that combines mobility, deployability, and firepower. We must provide them with the equipment necessary to fulfill their missions.

ROBERT J. PARR
SFC, WAARNG
Co A, 1-303rd Armor, 81st SIB

Changes at the Patton Museum

Dear Sir:

At its quarterly March meeting, the Board of Trustees of the Patton Museum elected

new officers and board members. MG (Ret.) Stan Sheridan will succeed COL (Ret.) Owsley Costlow as President. Owsley will continue to participate as a Member Emeritus. COL (Ret.) Don Williams will serve as Vice President and COL (Ret.) Don Appler and Mr. Lloyd Hillard, Jr., as Secretary and Treasurer respectively. New board members elected are Mr. Jack Milne; CSM (Ret.) John Stephens; MG, NGUS (Ret.) Elmer (Lew) Stephens; Mr. George P. Waters; and BG (Ret.) Thomas White. LTC (USAR) Robert Keats was elected as General Counsel.

General Sheridan views the current and continuing mission of the Board of Trustees as threefold: First, continued support of the Museum and its physical plant; second, to maintain and expand the Memorial Park adjacent to the Museum by raising funds to make it self-sustaining and, third, to build and sustain a 60-100,000 sq. ft. technology center to house, restore, exhibit, and study the 100+ combat vehicles dating from WWII that are now stored in condemned wooden buildings on post.

The Museum Board of Trustees will be seeking assistance from the entire Armor Community to support its efforts.

DONALD WILLIAMS
COL, USA (Ret.)
Trustee

DONALD E. APPLER
COL, USA (Ret.)
Trustee

All-around Virtual Vision System Is Still Not in Sight

Dear Sir:

The March-April 1997 *ARMOR* has on page 3 a letter from Mr. J. Migliaccio entitled "Main Gun on Elevating Pedestal Doesn't Solve 'Top Vision' Need." In the letter, Mr. Migliaccio makes the claim that only his conception for a 'virtual reality' vision system will give the 360° vision needed above the top of the gun mount.

He may be right on that, but he is wrong in his claim that such systems will be ready for production by 2010, simply because, according to him, the component and subsystem technology is 'available today.' If it doesn't exist today in a form that has been fully developed and integrated as a part of the vehicle system, which means it has been environmentally tested, demonstrated to be affordable and maintainable, meets volume/weight/cost constraints, then we don't know if it will ever be ready. The history of all development is full of broken dreams — and broken promises.

DON LOUGHLIN
Bellingham, Wash.

1997 Franks Award Winner Recognized at Armor Conference

3d Annual Franks Award Recognizes Individual For Outstanding Contributions To Army's Ground Warfighting Capabilities

by Captain Chip Banks

General William Hartzog, Commanding General of the U.S. Army Training and Doctrine Command, presented Colonel Thomas F. Metz, Director of the EXFOR Coordination Cell, with the Frederick M. Franks, Jr. Award during the recent 1997 Armor Conference at Fort Knox. The award recognized Colonel Metz for the remarkable work he has done over the past 14 months with the planning, coordination, and execution of the Army's Task Force XXI Advanced Warfighting Experiment. The experiment culminated this past March at the National Training Center in an unprecedented series of force-on-force battles between the technologically-enhanced 1st Brigade, 4th Infantry Division (EXFOR) and analog-based OPFOR. The intent of the AWE was to assess the impact of digitization on units' lethality, maneuverability, and survivability, and thus determine the future of modernization efforts in the Army.

In 1995, the Chief of Armor, Major General Larry Jordan, then Commander of the Armor Center and Fort Knox, created the Frederick M. Franks, Jr. Award to annually recognize an individual who has made a significant and lasting improvement to the Army's ground warfighting capabilities. The award's namesake, General (Retired) Franks was the TRADOC Commander from August 1991 to October 1994 and Commanded VII Corps during Operation Desert Shield/Storm. The award was named after him in recognition of the leadership values he embodied and the significant impact he had on shaping today's Army.

This year will be the third time the Franks Award has been presented. Previous recipients include Master Sergeant Bradley Guile, a detachment operations sergeant with the 5th Special Forces Group, and Lieutenant Colonel Kevin Wall, an instructor at the Command and General Staff College. Nominees for the award can be any Active Duty or Reserve Component officer, noncommissioned officer, enlisted soldier, or Department of the Army civilian. Thirteen individuals were submitted this year, with nominees coming from across the spectrum of the

Department of Defense, to include representatives from numerous Forces Command units, the National Training Center, Tank-Automotive and Armaments Command, Soldier Systems Command, Test and Evaluation Command, and the Army's Program Executive Offices. The selection committee is comprised of seven members representing all of the categories from which the nominees may come. The committee evaluates each person with respect to four qualities during the year or years prior to nomination. These are: offers a vision for the future of the mounted warfighting force that significantly improves combat survivability, lethality, or mobility; develops an innovation in equipment, materiel, or doctrine that significantly enhances the effectiveness of the mounted elements of the combat arms; exemplifies professional excellence in demeanor, correspondence, and leadership on issues relevant to mounted warfare; and displays a love of soldiering through leadership skills, recognition of the sacrifice and achievements of subordinates, and attention to the intent and directions of higher commanders. Recommendations are forwarded to the Chief of Armor for final approval.

Colonel Tom Metz is credited with organizing and leading the EXFOR Coordination Cell (ECC) which was created at Fort Hood, Texas, in May of 1995. The ECC has been the Army's focal point for making Force XXI a reality. As its director, he has been at the center of doctrinal, organizational, materiel, and training innovations Army-wide. Throughout the Army's Advanced Warfighting Experiment, Colonel Metz and his staff of 11 personnel, were responsible for synchronizing the efforts of over 3,000 industry participants, every major Army command, and numerous officials within the Defense Department and Congress. As a result, tomorrow's mounted force will be equipped with the state-of-the-art, precision information technologies that will allow it to continue its dominance across the entire spectrum of crisis. Colonel Metz has truly made a significant and lasting contribution to the warfighting capability of our Army, and thus is a fitting recipient of the 1997 Frederick M. Franks, Jr. Award.

BOOKS

Tank Aces by Ralph Zumbro. Pocket Books, New York, N.Y., 1997. 373 pages. \$6.50 paperback.

When I saw *Tank Aces* in the bookstore, I bought it without hesitation. I based this impulse on my enjoyment of Mr. Zumbro's previous work, *Tank Sergeant*, which told the story of the 1st Battalion, 69th Armor in Vietnam. I liked that book so much I made it required reading for the NCOs in my platoon. *Tank Aces*, however, did not live up to my expectations. It is an anthology of primary historical vignettes that covers the entire history of America's armored forces. The vignettes are well-chosen, informative, and moving. They are ideal for professional reading and development. It is the author's unprofessional style and lack of documentation in his narrative framework that detracts from *Tank Aces*. Should you buy it? For \$6.50, yes, you should.

Mr. Zumbro is a former tanker who served with the 1st Battalion, 69th Armor in Vietnam. His prior book, *Tank Sergeant*, is a personal memoir of his experiences in Vietnam. Being a combat veteran makes one qualified to have and tell a story (sometimes with the help of a professional writer); it does not make one qualified to compile and narrate a historical work. Mr. Zumbro's reach exceeded his grasp in *Tank Aces*.

Tank Aces opens with a short prologue that foreshadows Mr. Zumbro's emotional and provincial writing style. The following chapters cover American armored forces through their experiences in World Wars I and II, Korea, Vietnam, Desert Storm and Somalia. The historical vignettes are varied, interesting, and full of lessons learned about every type of armored warfare. There are stories from drivers, loaders, gunners, tank commanders, platoon leaders, company and battalion commanders, among others. The stories are drawn from professional journals, magazines, manuscripts, and personal interviews.

Each chapter contains a narrative of the historical background of each conflict to support the vignettes. In this framework that detracts from the enjoyment of *Tank Aces*.

Objectivity in history is not always possible, but it should be a goal. Zumbro uses propaganda-like phrases such as, "burned the Sons of Nippon out of heavy cover and roasted them" and "Hitler's 'Thousand Year Reich' was about to be terminated with extreme prejudice" — hardly professional or necessary. The author also devotes an extensive amount of attention to the German and Japanese nuclear research programs and the exchange of information between the two countries. I am not an expert on the topic, but his assertions are not backed by any documentation, and I don't know where he got his information.

Provincialism in the military is hard to escape: we all think we are in the best branch, battalion, company, platoon, tank crew, etc. This attitude is good for morale, but I think we all realize that whatever branch or unit we are in, we are part of a bigger team. Mr. Zumbro's book leaves the reader with the impression that the armored force is more than "The Combat Arm of Decision:" we are all "Tank Aces... a force of heroes."

My advice: buy the book, but skip the author's narration and read the vignettes!

CPT JERRY A. HALL
Ft. Knox, Ky.

The Raiders of 1862 by James D. Brewer, Praeger Publishers, 1997. 206 pages. \$39.95 hardcover.

Nothing succeeds so well as a bold plan executed with audacity, and in 1862, Confederate cavalry raids were not only bold and audacious, but successful as well, especially those in the Civil War's western theater. Tactical cavalry raids behind Union lines had significant strategic impact, disrupting Yankee plans, destroying supplies and lines of communication, defeating Union forces, and raising Yankee blood pressure and hysteria in the west.

Three of these Confederate cavalry raids in 1862 are superbly showcased in James Brewer's thoughtful and comprehensive analysis, *The Raiders of 1862*. Brewer is a noted Civil War historian, reenactor and author, with works of Civil War fiction and nonfiction to his credit. He is also a retired Army officer, and readers may recognize him as a former editor-in-chief of *ARMOR* Magazine. With this work, Brewer combines his skills as a researcher and storyteller, producing a well-crafted and compelling historical analysis of the dash and daring of the South's cavalry raids.

As Civil War stories go, few are more romantic and inspiring than those of the cavalry. Glory, danger, and prestige all contributed to the colorful image of the mounted cavalier, especially Southern cavalry. Brewer has selected the raids of three of the South's most successful cavalry leaders — Frank C. Armstrong's raid into western Tennessee in August-September 1862, Nathan Bedford Forrest's raid in west Tennessee in December, and John Hunt Morgan's Christmas raid into central Kentucky.

Brewer chronicles each raid with an analytical eye on the mission, intelligence, terrain, tactics, leadership, and the fog of war which made all such cavalry operations fluid indeed. Additional factors considered include the roles of railroads, reconnaissance, artillery, weather, and deception operations. Of course, luck, confusion, mistakes and

missed opportunities also played important roles for both Confederate and Union forces during these cavalry raids.

Brigadier General Frank Armstrong was the only general officer to have fought for both sides in the Civil War, first as a Union captain at Bull Run. In 1862 he was a Confederate cavalry commander leading 2,700 men into western Tennessee to disrupt and occupy the attention of Grant's and Rosecrans' forces, allowing Confederate General Bragg to invade Kentucky. Initially, his raid was very successful, as his cavalymen destroyed railroads, harassed Union troops and threatened a major Union supply center. Missed chances and some tactical errors, however, soon had Armstrong struggling to avoid encirclement and defeat. Never was the cavalry raider's dilemma more true — getting behind the enemy was always easier than getting out.

General Forrest was known as "The Wizard of the Saddle," for his tactical skills and ferocity in battle. His winter raid into west Tennessee was designed to destroy Grant's supply lines into Mississippi in order to relieve pressure on besieged Vicksburg. Leading 3,000 men with two guns, and riding in miserable December weather, Forrest exploited every opportunity to outmaneuver, mislead, confuse, disrupt, and destroy Union forces, facilities, railroads and supply centers. Even the redoubtable General Grant was flummoxed by Forrest's "bluff and dash," to move fast, strike hard, envelop, deceive, and demand surrender. But Forrest gets surprised when an unexpected Union force attacks his rear.

In central Kentucky, Brigadier General John Hunt Morgan's Christmas raid was intended to disrupt General Rosecrans' supply lines to Nashville, buying time for repositioning of Confederate forces. With 4,000 men and seven guns, Morgan truly combined mobility and firepower, relying on speed and shock as combat multipliers. Morgan was also one of the first to employ electronic warfare, tapping into telegraph lines to taunt, mislead, and confound Union forces. Aggressive offensive action, spiced with Morgan's own brand of "bluff and dash," made this raid of destruction particularly successful.

Union forces and their reactions are analyzed as well, with a balanced appraisal of their leadership, movements, blunders, and obstacles to countering the Confederate raiders. This book is an excellent advocate for daring cavalry operations even today. With this study completed, it would be most interesting to see a similar book on selected Union cavalry raids, like Colonel Ben Grierson's raid through Mississippi and General James H. Wilson's raid of Selma, Alabama.

COL WILLIAM D. BUSHNELL
USMC, Retired
Sebascodegan Island, Maine

Before The Rain, directed by Milcho Manchevski. Starring Rade Serbedzija, Katrn Cartlidge. Running Time 112 minutes. PolyGram Video.

Modern technology makes briefing the soldier on the topography of Bosnia a relatively easy task. Satellite imagery, digital mapping, videos, even pictures of soldiers' actual accommodations can be part of predeployment training sessions. But it is almost impossible to capture the feelings of the Bosnians, whether Catholic (Croatian), Serbian Orthodox (Serb), or Muslim, which drove them to mutilate such a beautiful country, destroying in the process historically priceless structures, while committing such outrageous atrocities on neighbors that there is little hope for reconciliation, perhaps for generations. It is a training challenge to portray the sentiments of the people who live in Bosnia for those about to serve there.

This challenge can be met by a recent movie, *Before The Rain*. It does not follow a chronology. It does not have a happy ending. It is really three stories wound together. Made by Macedonians to describe the situation in Macedonia as of 1994, the film was nominated for an Academy Award, so it is accessible to most audiences. The film does provide insight into the mindset of the inhabitants of the Former Yugoslavia. While the ethnic composition in Macedonia is not exactly the same, the problems and the feelings are.

The first story revolves around the dilemma of a young monk in an Orthodox monastery faced with the question of whether to shelter a young Muslim girl fleeing from a vigilante mob. The insignificant role of religion in the ethnic struggle is clearly shown. Although religion provides an identifying label, acting in accordance with religious tenets is not part of the scene.

The second story may seem to have little to do with Bosnia or even Macedonia. There is, however, reference to Bosnia which indicates the disregard for human life which has affected the participants. Meaningless violence can reach a modern European city, as is made clear in this sequence. Important to the overall portrait, this particular story also brings home the point that people's feelings and determination to kill don't stay behind at frontiers.

The final story outlines the attempt of an individual to reconcile the two warring communities. It is important to note what role, if any, that the players from the outside world have. Conspicuous by their absence from this chronicle are organs of local government, the police, or the church.

An important question to ask the audience is what would motivate a brother to kill his sister or a cousin to kill his cousin? Belligerents do not kill their opponents in this film. The members of each community kill their

own! This is how the Macedonian filmmakers saw Macedonia, and their former country of Yugoslavia in 1994.

After three months service in Macedonia (1993) and nine months in Sarajevo (1993/94), I could relate to this film, as have many of my colleagues. One can conclude a viewing by emphasizing that, at least in the minds of these Macedonians, their communities had lost the capacity for reconciliation. For there to be a positive ending to ethnic conflict, at least in the view of the filmmakers, outside intervention such as SFOR would appear to be necessary.

MAJOR ROY THOMAS
Peace Support Training Centre
Kingston, Ontario

Civil War Generalship: The Art of Command by W.J. Wood, Praeger Publishers, Westport, Conn., 1997. 269 pages. \$59.95.

The subtitle hints that this book may be of value to other than Civil War buffs, and so it is. The art of senior level command may change somewhat from war to war, but the principles remain the same. In fact, as the post-Cold War U.S. Army once again faces the reduction in size so typical of post-war periods, the study of the challenges of senior leadership in a rapidly expanding Army seems a good investment of time and effort.

When the Civil War broke out, few officers in the U.S. Army had experienced command of more than small units in the field. Serving mostly as company and battery officers in the Mexican War and on the pre-Civil War western frontier, both Union and Confederate newly promoted general officers suddenly found themselves in command of untrained masses of recruits. Nor could the senior ranks of either army be filled with even this level of experience. As a result, officers were appointed to senior positions with no military experience, with commissions based on the ability to recruit or to exercise political influence. Meanwhile, military tactics had not progressed significantly since the Napoleonic Wars of a half-century earlier. Thus, the influence of the rifled bore, with the increase in effective range it brought, was not reflected in tactics. Clearly, Civil War generals were faced with awesome challenges.

In this study of Civil War generalship, author Wood has selected three battles to illustrate the challenges and how the six generals on both sides faced them. He has selected well and analyzed each battle and its generals in a detailed and perceptive way. To lay the groundwork for his analyses, he begins the three-part book with a background discussion that includes an overview of Civil War tactics, a discussion of the Napoleonic lessons reflected in the Civil War, and a brief

generalization of the art of command. The second part is a discussion of each of the three battles selected: Cedar Mountain, Chickamauga, and Nashville. In the third part, Wood reflects on the performance of each of the generals.

The battle at Cedar Mountain, Virginia, was a minor one in significance compared with the Seven Days and Second Bull Run before and after. Major General Thomas J. "Stonewall" Jackson was charged by General Robert E. Lee in August of 1862 with crushing General John Pope, as he advanced south from Washington, before Pope could be joined by General George B. McClellan withdrawing from the Peninsula. It was at Cedar Creek that Jackson met Pope's lead corps, commanded by Major General Nathaniel Banks. How Jackson and Banks, the former already famous from his successful Shenandoah Valley campaign, the latter a competent businessman and politician, but inexperienced militarily, met the challenges each faced forms the basis for Wood's analysis. Initially successful, Banks quickly fell victim to the superior generalship of Jackson.

In the second example, Major General William S. Rosecrans, crossing the Tennessee and maneuvering General Braxton Bragg out of Chattanooga, found that his enemy, far from retreating south, was prepared to fight him along Chickamauga Creek. While neither general himself fought the battle particularly well, two awful days of fighting left the Confederates in possession of the battlefield and the Union forces back in Chattanooga.

In the third example, Wood discusses the last great Confederate gamble in the west, when General John B. Hood attempted to draw the Union forces out of Georgia by attacking north against the Union lines of communication. This effort brought him to Nashville, where he faced Major General George H. Thomas. Hood was defeated in what became almost a battle of annihilation for the Confederate Army of Tennessee.

In each case, Wood has provided great insight into the performance of the six commanding generals. He traces the background of each and shows how each was a product of his environment. He provides the logic of command decisions by careful presentation of the circumstances facing the generals as they were called on to make their decisions.

The book is not a study of battles; it is a study of generals. The battles merely provide the vehicle for the study of senior leadership in the Civil War. The examples chosen are excellent, providing a fascinating variety of talent and performance. The book is not only a unique and significant contribution to Civil War literature, but should endure as a study of the timeless art of senior leadership as well.

PHILIP L. BOLTÉ
BG, USA, Ret.

A Great Soldier Remembered

by Colonel Bruce B.G. Clarke (Retired)

It is amazing how certain things stick with one after many years and thousands of experiences. This essay captures the thoughts of a great NCO and explains how they have applied to every aspect of a military career. Hopefully, the thoughts presented here will be of great value to future officers and noncommissioned officers.

The story begins in November of 1965 when I arrived in Coleman Barracks, Sandhofen, Germany, as a brand new second lieutenant who had not attended the basic course. I reported in to my first unit, B Troop, 3d Squadron, 8th Cavalry. The first sergeant told me to sit in the corner and that the troop commander would be with me shortly. I obeyed. The troop commander quickly told me that I was going to the 3d platoon and that the platoon sergeant would be with me shortly. I returned to my corner.

In about 20 minutes, SFC Escalante came into the orderly room and helped me carry my bags to the third platoon area. He asked that I sit in the corner of the barracks, where he had an area of his own, while he took care of some business. In about 15 minutes, he joined me and we talked about the platoon. He explained the personalities and the future. But he truly got my attention when he said: "If you do what I tell you, I will make you the best cavalry lieutenant in the whole U.S. Army." He had my attention! He then went on to say that we were going to focus on five things:

- Know our jobs
- Hit what we shoot at, quickly.
- Keep ourselves and our equipment ready to go to war
- Work as a team, and
- Be disciplined

Over the six months that I was with the platoon, we did, in fact, focus on these five precepts and excelled, thanks to SFC Escalante. He would take me aside before the platoon did anything and explain to me what was going to happen and what the courses of action were. He would then coach me into the right decision based on the above. Over time, he would coach less, still mentor, but become the cheering section for what the platoon was doing. We remained focused on the five objectives.

When I was transferred to be a troop commander, I took these precepts with me and applied them to the troop. They worked there, too, as the troop excelled in everything that it did. It would have been better with First Sergeant Escalante, but he had trained me and would always jokingly tell me how his troop would beat mine. This was his way of saying that there was someone to beat. This was the ultimate compliment.

Over the years, these five precepts were also used to direct the activities of a tank battalion, as the S3 and XO (to the extent that they direct anything), the cavalry squadron, and the brigade that I commanded. In each case, the critical elements that were necessary for the success of that unit could be explained in terms of one of these precepts.

Every soldier was briefed on how these precepts applied to them immediately after they joined the unit. Unit activities were discussed in terms of these precepts and policy options were considered in light of how they contributed to these precepts. General Bruce Clarke used to say that a unit does well that which the commander checks. The point was to add an expectation of what the commander was going to check and look for, so as to provide a set of guiding principles for the unit's activities.

Some examples of how these precepts were applied at various levels may be useful.

- Know our jobs
 - SQT preparation
 - EFMB and EIB preparation

- Sergeant Common Task Training
- Spur programs for officers and NCOs
- Hit what we shoot at, quickly
 - Tank and Bradley Gunnery
 - Individual marksmanship
 - Command and control of indirect fires and their timely use
- Keep ourselves and our equipment ready to go to war
 - METL training focus
 - Maintenance by the manual
 - Physical training
 - Emergency deployment preparations (POM packets) of individuals and unit equipment
 - Emergency Deployment Readiness Exercises and other alerts
 - Anti-drug programs
 - Dependent care activities
- Work as a team
 - Squad and platoon immediate action drills
 - Staff coordination
 - Unit synchronization
 - Athletic competition
 - Maintenance of unit/crew cohesion in all activities
- Be disciplined — the glue that holds everything together
 - Self-discipline
 - Do what is right
 - Be responsive
 - Do the work — don't avoid hard work — the soldier who has self-discipline will prepare for the SQT, keep himself fit, not use drugs, and remember that "there is no I in **TEAM**." This same soldier will enroll in correspondence courses and do that which will make him a better soldier and citizen.

The imagination is the only limitation in applying these precepts to day-to-day operations and, more importantly to the goals, of any tactical unit. After more than 30 years of experience, these five precepts are still with me. As a final note, I have taught these five precepts to armor officers at the Royal Saudi Land Force Armor Institute, and they have received an enthusiastic reception.

I commend these precepts and the way they were used as organizing concepts for the leadership that future lieutenants and platoon sergeants will give to their units.

Every unit has a SFC Escalante. It is the combined efforts of all of them that is key to the development of an Army. This is dedicated to all of the SFC Escalantes that are everywhere. To him I say — thank you!.

Colonel Bruce B.G. Clarke (Retired) is the Training Manager at the Royal Saudi Land Forces Armor Institute in Tabuk, Saudi Arabia. Before retiring, he was the Director of U.S. National Security Studies at the Army War College, Carlisle Barracks, Pa. Before that, he commanded the 2d Brigade, 1st Infantry Division (Mechanized), Fort Riley, Kan. Colonel Clarke also commanded the 2d Squadron, 11th Armored Cavalry Regiment, and A Troop (ABN/MECH), 3d Squadron, 8th Cavalry Regiment, 8th Infantry Division, both in Germany. He has served as a District Advisor in the Republic of Vietnam, a Political-Military Analyst in the Arms, Control and Disarmament Agency, Washington, DC, and as a staff officer on the Army staff. He is a 1965 graduate of West Point and taught in the Department of Social Sciences there. He has an MA in Political Science from UCLA and is a graduate of CGSC and the National War College.