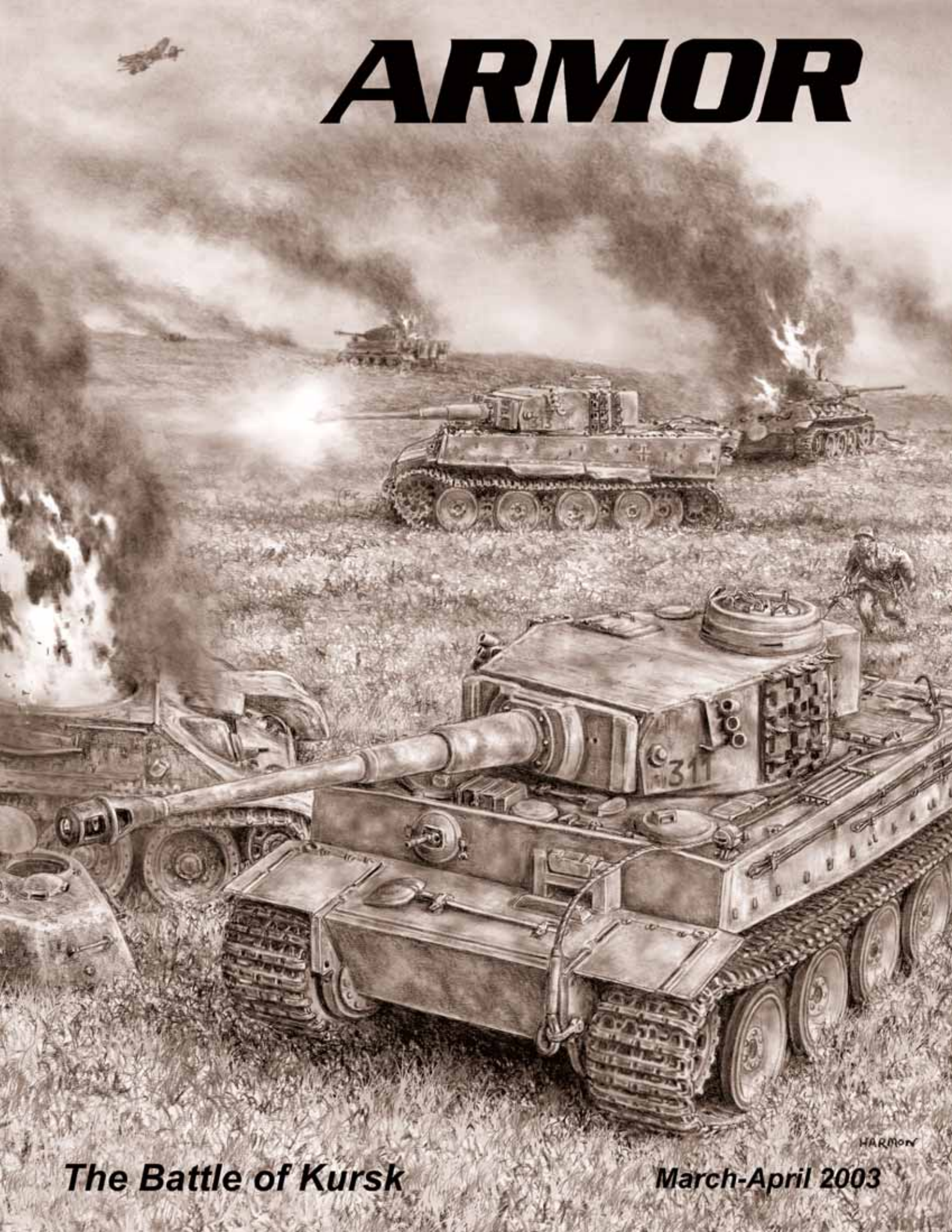


ARMOR



The Battle of Kursk

March-April 2003

HARMON

Once More Unto the Breach



As we go to print, diplomatic efforts to resolve Iraqi disarmament issues have almost reached the terminal stage. Unless a significant breakthrough occurs, U.S. Armed Forces will once again act as the hammer. I know we are up to the task, but we cannot become overconfident in our equipment, tactics, and soldiers. Our leaders must stay focused on the basics and maintain our high standards. Good luck to all.

The Battle of Kursk is considered one of the most epic tank battles of all time. To the Germans, it was an opportunity to repeat their 1941 and 1942 successes, encircling vast Soviet armies and destroying them in the process. The German losses are put at over 3,500 armored vehicles, with the true number unknown. To both sides, the salient around Kursk — 200 kilometers wide and 150 deep — was the single most obvious target for the Germans to attack. Captain Benjamin Simms' analysis of the battle provides important lessons learned that are applicable today.

In 1917, Lieutenant Colonel Edward Davis, U.S. Cavalry, was sent by the U.S. War Department to the headquarters of General Sir Stanley Maude to serve as an observer to the combined British-Indian Expeditionary Army — later renamed the Mesopotamian Expeditionary Force. This army waged a multi-front campaign against the Turkish army in what is now present-day Iraq. During his assignment, Davis recorded his daily observations in a journal and later submitted these observations as a report to the War Department. Although the information contained in the report may not have been "pertinent to current operations then ongoing on the Western Front," Davis thought the report would serve as a useful primer on an extremely important area of potential military operations. Reading through the report, one can see the low-intensity conflict nature of the final phase of the Mesopotamian campaign where British and Indian troops carried out extensive combined small-unit operations were similar to the United States' ongoing operations against the remnants of the Taliban and al-Qaeda.

Is technology the answer to battlefield confusion? The real confusion of battle is not the so-called fog of war created by imper-

fect or incomplete information, but the friction generated in the commander's mind by uncertainty, exhaustion, and fear. Captain Scott Thomson advises that heavy cavalry is designed to fight for information. However, the distances over which the troop operates, combined with the uncertain enemy situation inherent in being the first force to cross the battlefield, presents the commander with the most difficult situation in which to concentrate his firepower. This is what makes the cavalry mission a dangerous and frustrating one.

Transforming the armor cavalry force remains a topic of considerable discussion. Captain Ryan Seagreaves provides insight on how to effectively transform the Task Force Scout Platoon. Seagreaves proposes the critical limitations of the Task Force (TF) HMMWV Scout Platoon can be corrected by a transformation to the light armored vehicle (LAV)-25 reconnaissance vehicle, the Coyote.

The Armor Association and community extend its deepest sympathy and heartfelt condolences to the Abrams family on the recent death of Mrs. Creighton W. Abrams at the age of 87.

Julie Abrams was a genuine rarity, a polished diamond. She remained connected to the Army and active in many of its organizations even after the death of her husband in 1974. In the early 1970s, she and a group of other concerned women became founding members of the Army contingent of Arlington Ladies, a group of dedicated, caring women who still ensure that no soldier's funeral at Arlington National Cemetery goes unattended. She cared about soldiers and families. She also pioneered many of the programs now espoused through the Army's Well-Being program. For over 66 years, Mrs. Abrams graciously served and blessed our Army and this great country as a wife and mother.

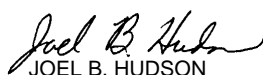
One last thing, my well of articles for future issues is drying up. I am hoping in the near future to receive some outstanding articles and lessons learned from our latest deployments.

— DRM

By Order of the Secretary of the Army:

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

Official:


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

0300704

ARMOR

The Professional Development Bulletin of the Armor Branch PB 17-03-2

Editor in Chief
LTC DAVID R. MANNING

Managing Editor
CHRISTY BOURGEOIS

Commandant
MG TERRY L. TUCKER

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

Disclaimer: The information contained in *ARMOR* represents the professional opinions of the authors and does not necessarily reflect the official Army or TRADOC position, nor does it change or supersede any information presented in other official Army publications.

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

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

Material may be reprinted, provided credit is given to *ARMOR* and to the author, except where copyright is indicated.

March-April 2003, Vol. CXII, No. 2

Features

- 7 **Analysis of the Battle of Kursk**
by Captain Benjamin R. Simms
- 13 **Focused Reconnaissance and Developing Battlespace in the Armored Cavalry Troop**
by Captain Scott K. Thomson
- 20 **The Future of Scout and Cavalry Systems**
by Major Harold A. Buhl, Jr.
- 25 **The Mesopotamian Front!**
As Observed by Lieutenant Colonel Edward Davis, U.S. Cavalry, 1918
Edited by Leo J. Daugherty III, Ph.D.
- 36 **Integrating Tactical UAVs Into Armor and Cavalry Operations**
by Lieutenant Colonel Jeffrey R. Witsken
- 40 **Transforming the Task Force Scout Platoon**
by Captain Ryan Seagreaves
- 43 **Task Force Steel Tigers**
by First Lieutenant John DeRosa
- 46 **Planning Scout Casualty Evacuation**
by Captain Geoffrey A. Norman
- 52 **2003 Armor Conference:**
"The Cutting Edge to Victory — On the Ground for America"

Departments

- 2 **Contacts**
- 3 **Letters**
- 4 **Commander's Hatch**
- 5 **Driver's Seat**
- 50 **Reviews**

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

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

USPS 467-970

Points of Contact

DSN prefix – 464-
Commercial prefix– (502) 624-

ARMOR Editorial Offices

Editor in Chief
LTC David R. Manning 4087
E-mail: david.manning@knox.army.mil

Managing Editor
Christy Bourgeois 4582
E-mail: charlotte.bourgeois@knox.army.mil

Editor
Vivian Oertle 2610
E-mail: vivian.oertle@knox.army.mil

Staff Illustrator
Mr. Jody Harmon 3923
E-mail: jody.harmon@knox.army.mil

Editorial Assistant
Kathy A. Johnson 2249
E-mail: kathy.johnson@knox.army.mil

ARTICLE SUBMISSIONS: To improve speed and accuracy in editing, manuscripts should be originals or clear copies, either typed or printed out double-spaced, with a 3½-inch disk in Microsoft Word, WordPerfect, WordStar, Rich Text Format, or ASCII (please indicate wordprocessing format on disk or cover letter). Tape captions to any illustrations or photos submitted. Additionally, we accept articles as e-mail or attachments at:

ArmorMagazine@knox.army.mil

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

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

GRAPHICS AND PHOTOS: We prefer conventional photo prints, but will accept electronic graphic and photo files in no less than 300 dpi format. (Please do not send photos embedded in PowerPoint and Word.) If you use PowerPoint for illustrations, please try to avoid the use of excessive color and shading. If you have any questions concerning electronic art or photo submissions, call Vivian Oertle at the phone number above.

CHANGE OF ADDRESS-PAID SUBSCRIPTIONS AND ST. GEORGE-ST. JOAN AWARDS: For paid subscription service, address changes, and delivery problems, or for awards information, contact Connie Stiggers or Darlene Kennedy, United States Armor Association, P.O. Box 607, Fort Knox, KY 40121; E-Mail: *Brightcg@bbtel.com*; phone (502) 942-8624; or FAX (502) 942-6219. You can also access the Association through their website at *www.usarmor-assn.org*.

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

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

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

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

U.S. Army Armor Center

Commanding General (ATZK-CG)
MG Terry L. Tucker 2121
E-mail: terry.tucker@knox.army.mil

Deputy Commanding General (ATZK-DCG)
BG Robert W. Mixon 7555
E-mail: robert.mixon@knox.army.mil

Chief of Staff (ATZK-CS)
COL Robert T. Gahagan 1101
E-mail: robert.gahagan@knox.army.mil

Command Sergeant Major (ATZK-CSM)
CSM William J. Gainey 4952
E-mail: william.gainey@knox.army.mil

Command Sergeant Major to DCG (ATZK-DCG-CSM)
CSM James E. Dale 7091
E-mail: james.dale@knox.army.mil

Unit of Action Maneuver Battle Lab (ATZK-UA)
Joe Hughes 5050
E-mail: joe.hughes@knox.army.mil

Experimentation and Analysis Directorate (ATZK-UAE)
COL Douglas L. Fletcher 7809
E-mail: douglas.fletcher@knox.army.mil

Cavalry and Armor Proponency Office (ATZK-CA)
LTC(P) Timothy R. Reese 1050
E-mail: timothy.reese@knox.army.mil

Office, Chief of Armor (ATZK-AR)
Aubrey Henley 5155
E-mail: aubrey.henley@knox.army.mil
FAX 7585

Special Assistant to the CG (ARNG) (ATZK-SA)
COL Randal Milling 1315
E-mail: randal.milling@knox.army.mil

TRADOC System Manager for Abrams (ATZK-TS)
COL Dennis J. Szydoski 7955
E-mail: dennis.szydoski@knox.army.mil

TRADOC System Manager for Force XXI (ATZK-XXI)
COL Timothy D. Cherry 4009
E-mail: tim.cherry@knox.army.mil

**Assistant TRADOC System Manager
Soldier - Mounted Warrior** (ATZK-ATS)
LTC J. B. Iddins 3519
E-mail: jeffrey.iddins@knox.army.mil

Directorate of Training, Doctrine, and Combat Development
COL John D. Rosenberger (ATZK-TD)
E-mail: john.rosenberger@knox.army.mil 8247

U.S. Army Armor School

NCO Academy (ATZK-NC)
CSM George DeSario Jr. 5150
E-mail: george.desario@knox.army.mil

16th Cavalry Regiment (ATZK-SBZ)
COL George Lockwood 7848
E-mail: george.lockwood@16cav.knox.army.mil

1st Armor Training Brigade (ATZK-BAZ)
COL John L. Ballantyne 8736
E-mail: john.ballantyne@knox.army.mil

Gaining Connectivity: The Decisive Point for FBCB2

Dear Sir:

Force XXI Battle Command, Brigade and Below (FBCB2) is a command and control system used by units at the tactical level to aid commanders to visualize, describe, and direct combat operations. It is an integral part of the transformation to the Objective Force. However, its full potential remains unrealized. There are many ways skeptics can explain the challenges of FBCB2, but I believe in only two. Some are simply resistant to change. Others believe FBCB2 is unreliable. I have spent countless hours training soldiers in the use of FBCB2 and gaining connectivity over the past 2 years. The bottom line is that FBCB2 works.

My opinions are based on my experience as a company commander from January 2000 to May 2001. During those months, I commanded the first company to field the M2A3. I participated in the Initial Operational Testing and Evaluation (IOT&E) of the M2A3 during which the M2A3 with integrated FBCB2 was tested. Additionally, I took the company to the Division Capstone Exercise (DCX) at the National Training Center from 1 March 2001 to 1 May 2001. I have completed new equipment training and FBCB2 training. I have spent an inordinate amount of time gaining connectivity and employing FBCB2 in training.

First, the commander must realize the purpose of FBCB2. FBCB2 is a battle command system. It is a tool for commanders to visualize, describe, and direct the battle. I realized its full potential during a night mechanized infantry attack. If you have never been on such an attack, let me paint you a picture. Imagine yourself on top of a loud vehicle, with a CVC and NODs strapped to your head, moving toward your objective. You navigate using a map and small flashlight. Radios blare in your head. You barely know where you are, much less where your three platoons and associated infantry squads are located. FBCB2 mitigates those conditions. With FBCB2, I could "see" the locations of all three platoons represented by their icons on my digital map. These icons were real time position updates being transmitted via radios (SINGARs and EPLRS). When we made contact, the platoons sent SPOT reports that posted as icons directly on my map. This aided me in confirming my read of the enemy. The lit map provided a clear picture of the terrain. Line-of-sight analysis allowed me to determine the intervisibility lines and where we would likely make contact with the enemy.

Although FBCB2 provides numerous tools for crews, sections, and platoons to use, its primary function is to help the commander make decisions. The more connected your systems are, the more you can visualize and describe yourself, the enemy, and the terrain. The better you do that, the better

direction you can provide for your subordinates.

The user must accept FBCB2. Younger soldiers accept FBCB2 faster than older soldiers. My younger soldiers — junior NCOs, enlisted, and lieutenants — displayed an aptitude for computers and understanding the connectivity between FBCB2 and the communications hardware. Older soldiers (higher-ranking NCOs) were quicker to surrender. If the system was not immediately combat ready, they would denounce technology. Without acceptance, digitized units will negate one of the tools available to them to win on the battlefield.

Commanders must correctly train soldiers to use the system. Our training facilities at Fort Hood, Texas, spend a significant effort training digital skills. We use emulators, desktop trainers, or the actual equipment, but in a pristine, classroom environment. Unfortunately, digital skills are not what we needed. We needed connectivity training. To be successful in a digitized unit, commanders must make their communications operators experts in what I refer to as the communications trinity: EPLRS, SINGARs, and precision lightweight GPS receiver (PLGR). These three systems are the major organs that supply the FBCB2 with what it needs to communicate. All three are required to be correctly operating before connectivity can occur.

Commanders must provide the same level of maintenance to their communications systems as applied to their vehicles and weapons. User maintenance of the communications system is even more critical to a digitized unit. Even though we typically could get voice communication, connectivity did not always occur. Dust, condensation, and damaged and loose components can prevent connectivity. Analysis of the trends led me to the conclusion that my operators were not conducting maintenance on their entire communications systems.

Commanders must prepare for increased sustainment of communications components. Due to the increased usage of the components and U.S. Army operating conditions, commanders need to consider maintaining a larger bench-stock of communications peripheral components.

Additionally, we implemented a float system. When a major component (radio, VAA, hard drive, or FBCB2 computer) was non-mission capable, we could hand receipt a temporary item from the signal platoon to keep our command and control systems fully functional.

Finally, commanders need to encourage thorough troubleshooting before calling for help. Troubleshooting the connectivity and the FBCB2 is not magic. The battalion signal personnel are not specially trained to conduct troubleshooting. They simply use a systematic approach to determine which component is the cause. There are two types of troubleshooting: software and hard-

ware. Ninety-five percent of my reliability issues were crew-induced errors caused by lack of expertise on the communications trinity.

Although I don't like to admit it, crew error typically caused many reliability problems. FBCB2 was finicky, but certain negative trends developed over time can be reversed. Additionally, system developers are developing ways of making FBCB2 more reliable. FBCB2 still has significant challenges, but I'm convinced that if someone can track every aircraft in the air as we saw during CNN footage of the 11 September attack, we will be able to track every vehicle with ease.

CPT MICHAEL D. ACORD
Fort Benning, GA

Armor Badge Status

Dear Sir:

I've been out of the loop while assigned to ROTC command. I still receive *ARMOR* magazine and try to stay up on the latest issues concerning the armor force. I am, however, troubled by the status of the Armor Badge.

Not long ago, it seemed to be a topic of debate and discussion on whether it should be considered for adoption by the Army. With a possible war with Iraq looming once more and the high probability of U.S. armor and cavalry units being involved, I feel it's time to raise the issue again.

I was a tank commander with D/3-69 Armor during Operation Desert Storm, and I remember how I saw infantrymen receive the Combat Infantry Badge because they met the requirements by being in Iraq or Kuwait — not because they fired their weapons. The same thing applies to medics who received the Combat Medical Badge — the worst thing they treated was a case of bad diarrhea. How was this justified? Hind-sight is 20/20 and what's done is done. Let's look to the future and get this issue looked at again. Thank you for your time.

Steel on Target!!

MSG CHRIS WORICK

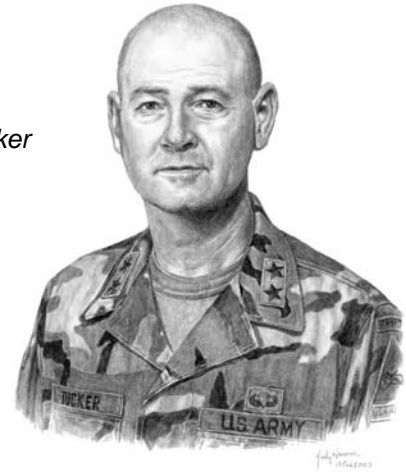
Branch Certification or Check the Block?

Dear Sir:

With the current focus on branch certification, the Army is going back to the good ole' check-the-block era used during the Vietnam war, where leaders were rotated in and out of combat units to get "the right amount of command time and someday receive a star." For those of you who have not read *Self Destruction*, do so; it is very insightful on what went wrong with our lead-

Continued on Page 51

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



Training Troopers, Tankers, and Leaders

ARMOR welcomes Major General Terry L. Tucker as the Commanding General, U.S. Army Armor Center, and bids a fond farewell to Major General Steve Whitcomb — God Speed.

It is a challenging time for the Armor Force, and I have no doubt that our plates will remain full as we continue to have more missions than time or resources can address. This kind of operating tempo requires a team effort to get it right as we move forward.

Major General Steve Whitcomb has done a great job balancing the competing missions and priorities here at your Home of Armor and Cavalry, and he has left our branch in good shape. I am honored to take over the reins as your 40th Chief of Armor, and I promise you we will continue to provide the Armor Force with the best support available. Clearly, one of the most important things that we must do in this area is to effectively train troopers, tankers, and leaders for our Army.

When I left Fort Knox as the Deputy Commanding General, Army Transformation to the Objective Force was just beginning to focus on brigade and below forces. Since then, Fort Knox has led TRADOC and the Army's effort to define the requirements for the Unit of Action, which is the brigade-sized element of the Objective Force. This mission is critical, and we will focus on it at this year's upcoming Armor Conference in May. Let me make it clear that this is important business, and leaders in the current force need to stay en-

gaged in how this Unit of Action is developing and the capabilities it will bring for our soldiers and leaders. At the same time, I acknowledge that the current force has plenty of challenges to keep Armor and Cavalry leaders engaged. We must balance the training needs of the current force with efforts to build the future Objective Force. That's the guidance that I have been given by our leaders, and it is my responsibility to make sure that the Armor Center gets this balance right.

The Armor Force must remain well trained and ready to fight and win our Nation's wars as part of a combined arms and joint force. At Fort Knox, the Armor Center trains troopers, tankers, and leaders from privates to colonels — over 20,000 a year, as a matter of fact. Our time, training dollars, and most importantly, the expertise of our training cadre will remain committed to this training mission that enables mission accomplishment for the Force.

We are resourcing more live training than ever, and we are one of the few branch schools that commits resources to enable our captains attending the Armor Captains Career Course and our senior NCOs attending ANCOG to conduct battle focused, multiechelon training in the field. We continue to improve on the Gauntlet multiechelon training methodology that enables captains to command companies, with our NCOs assigned as platoon sergeants and paired with our lieutenant platoon leaders from the Armor Officer Basic Course. Whether in a live training environment

or virtually in our close combat tactical trainers, these future leaders come from all over the force to train together at Fort Knox in an environment that improves tactical decisionmaking, and then return to the force, better able to accomplish their warfighting missions.

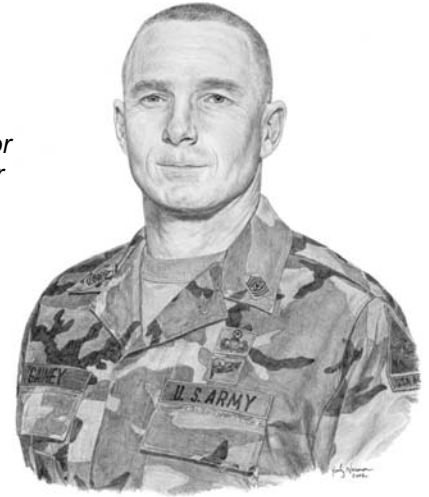
We are also committed to continually improve on tried-and-true tanker and trooper one station unit training (OSUT). We will dedicate the resources and time to ensure our cadre are certified technically and tactically proficient and we will stay engaged with the force to ensure that our instruction is effective and meets your needs. In the near future, we will extend the survey methods to the Force that we have used so successfully in OSUT to maintain and improve the effectiveness of our instruction.

The balance will always exist, and it will always be dynamic. With our three-pronged, life-long education model of institutional training, self-development training, and unit training, continuous dialogue is necessary to synchronize the effort at all levels of responsibility at brigade and below. It is my job to facilitate that dialogue and make necessary adjustments for the good of the force as we move forward.

To Major General and Cathy Whitcomb, thanks for all you have done for tankers, troopers, and families everywhere. Our force was in great hands for too short a time.

Forge the Thunderbolt!

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



19K/19D OSUT Field Surveys, Shaping the Armor and Cavalry Force

Greetings from the Home of the Mounted Warriors; I am glad to report that Fort Knox is doing well and we are as busy as ever.

During my travels out to the force, I am continually asked about the quality of soldiers that we send to the field. My answer is that Fort Knox is dedicated to providing our divisions with trained soldiers. But, all leaders must understand that the training really begins once the new soldiers arrive to YOU!!! When I arrived at Fort Hood, Texas, in 1975, I was not a 100-percent trained fighting machine — I was a young soldier who needed guidance and training. I will never forget SFC Rutherford (War Daddy), who made me feel like I was a part of a team and gave me a training program from day one. So as we all can see, a soldier's training starts the moment he enters basic training and never ends.

You can help ensure young soldiers get the training necessary to become trained fighting machines by completing a simple field survey. To provide specific guidance on the 2003 Fort Knox Field Survey at www.knox.army.mil/survey/OSUTsurvey, we have asked Captain Joshua Keena from the 1st Armored Training Brigade to educate us:

It is 0200 hours on the multipurpose range complex. After issuing the fire command and hearing your gunner yell "on the way," you look carefully through your sight to observe the target. Before the aft-cap hits the floor, the target lowers. What do you do?

You provide feedback to the crew, "Target, cease fire." Based on the information you provide, the tank crew springs into action. The driver prepares to back up; the loader sets up the breech for another round, and the gunner and tank commander breathe a sigh of relief.

The 1st Armor Training Brigade (ATB) at Fort Knox depends on feedback from soldiers and leaders in the force to ensure that the scouts and tankers completing 19D and 19K One Station Unit Training (OSUT) have the skills, qualifications, and attributes necessary to be successful members of cavalry and armor units. The 2003 field survey is an essential tool that provides input to 1st ATB. Comments and evaluations from the field directly affect the type of training that new members of your unit receive at OSUT.

Background and Process

The field survey was developed in 1998 to provide leaders with feedback regarding the scout and tanker skills of new soldiers arriving in their units. During the past 5 years, responses and comments from the force have played an integral part in how scouts and tankers are indoctrinated into the Army. Changes to the program of instruction (POI) and training emphasis are partially shaped by the survey's results.

Debbie Skaggs, director, Customer Satisfaction Measurement Office (CSMO), produces the Fort Knox Field Survey, and the 1st ATB commander provides

direct input to the survey. The survey Skaggs develops gives leaders — from vehicle commanders to battalion and squadron commanders — a forum for rating soldiers and voicing comments. Skaggs states that, "We take what our customers tell us seriously. Each time a survey is conducted, we provide respondents with a commanders' feedback report, which outlines the plan of action for resolution based on the customers' comments and ratings." Evidence of the survey's success is the steady increase in participation and comments over the past 5 years.

From year to year, step 1 of the survey process involves modifying the survey to clarify previous questions. Changing questions is valuable for gaining more information. Step 2 involves posting an electronic survey on the web at www.knox.army.mil/survey/OSUTsurvey, and distributing hard copies to every cavalry and armor unit in the Army. Steps 3 and 4 involve compiling information from both the online and mail-in surveys. At this point, 1st ATB leaders are presented with statistical analyses and pages of anonymous commentary. While the numbers depict trends, candid comments from soldiers in the force illustrate their good and bad experiences, particularly at the platoon level. All comments are recorded anonymously and presented as appendices in the report. The CSMO ensures that the survey is impartial and objective. Step 5 entails using the analyses to modify existing training or creating new focus in the OSUT schedule. The final step

analyzes the results of implementing changes. This is done in-stride during an OSUT cycle.

The Program of Instruction

The POI looks exactly like whatever the force says a 19D or 19K OSUT graduate should. The POI serves as a basis for training requirements for OSUT soldiers. Mel Greenroad, POI director for the 1st ATB, explains that, “tasks are defined as having a definite starting point and ending point, done solely for itself, and measurable.” He uses this definition to ensure that lesson plans are focused on training soldiers for today’s armor and cavalry units.

The POI evolves during steps 4 and 5 of the survey process. Based on feedback from the force, the committee makes necessary changes to the 19K and 19D programs, and the Chief of Armor is the final approving authority for all POI changes. Resource constraints are always a factor in POI and course development. Like all Army training centers, the goal at Fort Knox

and of the 1st ATB is to balance time and resources to produce the best possible graduate for armor and cavalry forces. In 2002, the 19K OSUT battalion graduated 2,962 tankers who were trained on 127 tasks. The 19D OSUT squadron graduated 2,254 scouts who were trained on 165 tasks.

The effort survey respondents put into the field survey is time well spent. Recommendations may lead to changes in the 19K and 19D OSUT programs of instruction. Input from the 2002 field survey was recently used to modify the 19K OSUT POI. In the 2002 field survey, soldiers told us that tank driving and loading tasks were most important for 19K OSUT graduates. To increase proficiency, an additional 8 hours of tank driving and loading reinforcement time was added to the course. The 19K OSUT tanker field training exercise

	19D	19K
1st	Following orders	Level of discipline
2d	Level of discipline	Motivation
3d	Motivation	Mental fitness
4th	Mental fitness	Following orders
5th	Confidence	Confidence
6th	Call for fire	Driver's station
7th	Military bearing	Loader's station
8th	M16A2 proficiency	Perform vehicle maintenance
9th	Map reading	Wear uniform
10th	Emplace Observation Post	Follow ground guide

Table 2. Top 10 Tasks from 2002 Survey

was also modified to incorporate additional driving, loading, and maintenance reinforcement time.

Feedback from the 2002 19D field survey indicates that the field force wants to increase scout proficiency in call for fire, weapons proficiency, and land navigation. As a result, reinforcement time for these tasks was added to the 19D OSUT POI. In anticipation of future fielding, the new 19D OSUT POI will include familiarization with the long-range advanced scout surveillance system. Future additional skill identifier courses currently under development include the Stryker and the Stryker mobile gun system courses.

As depicted in Table 2, the 2002 survey revealed that scouts and tankers consider these top 10 tasks, in priority order, the most important.

Scouts and tankers should have received the 2003 field survey in the mail. We encourage use of the electronic version of the survey at www.knox.army.mil/survey/OSUTsurvey. Participating in the survey ensures that the cadre training initial entry soldiers know what you want. Whether you use the online survey or the hard copy version, participation ensures your comments and ratings are recorded. Please make the time to objectively respond to the survey. Let 1st ATB leaders know which targets you want re-engaged, and which ones they should continue observing.

I hope that this article has shown you a simple way that we can all become involved and help Fort Knox produce better-trained soldiers. I encourage each of you to take the time to complete the 2003 field survey. Your comments and concerns are critical to the future fighting force.

“PRIDE IS CONTAGIOUS”

19K Graduate has:	19D Graduate has:
<ul style="list-style-type: none"> Completed training of 127 tasks Passed the APFT (Minimum 180) Operated tactically for 6 days in the field Qualified with the M9 pistol and M16A2 rifle Fired 6 120mm main-gun rounds Tactically driven 14 miles in an M1A1 Abrams tank and 12 hours in the simulator Passed basic dismounted land navigation Performed –10 level PMCS Passed the armor crewman tests 1&2 and Armor Stakes (TCGST Incorporated) Prepared the driver's/loader's station for operation Familiarized with the gunner's station 	<ul style="list-style-type: none"> Completed training of 165 tasks Passed the APFT (Minimum 180) Operated tactically for 5 days in the field Qualified with the M16A2 rifle Fired 48 25mm rounds Tactically driven 18 miles in an M3 Bradley CFV and M1025 Scout HMMWV Passed basic dismounted land navigation Performed –10 level PMCS Passed Scout Skills tests 1/2/3 and Cavalry Stakes Familiarized with the M2 and M240B machine guns Familiarized with the M203 grenade launcher Trained in mounted and dismounted patrolling techniques Mastered the SALUTE report Participated in CFV, HMMWV, and dismounted STX

Table 1. OSUT Training Highlights



Analysis of the Battle of Kursk

by Captain Benjamin R. Simms

During the winter of 1943, senior leaders of the German army faced a difficult choice. Nearly 2 years of continuous operations on the Eastern Front had resulted in a tenuous stalemate that stretched from Leningrad in the north to the eastern edge of the Black Sea in the south. Near the center of the contested area was a 300-kilometer (km) wide salient that bulged 200km into German lines. At the center of this salient was the city of Kursk, a strategically located focus of road and railways that allowed the German army great flexibility in forward and lateral movements along the Eastern Front, or conversely allow the Soviets a staging point for retaking the Ukraine.¹

The Kursk salient extended into the German Army Group Center and Army Group South's areas of operation. Field Marshal Erich von Manstein, commander of Army Group South, recognized the opportunity to take Kursk after defeating the Soviet counteroffensive, Operation Star, and retaking the vital transportation centers of Belgorod and Kharkov on the southern edge of the Kursk salient in March 1943. His appeal to Field Marshal Gunther von Kluge, commander of Army Group Center, for an immediate coordinated assault of the Kursk salient went unheeded as Army Group Center was exhausted from repelling a massive Soviet counterattack on Orel, a vital transportation center on the north of the Kursk salient.²

With the muddy spring season just a few weeks away, the German army ceded the initiative it had gained during the winter of 1942 and 1943 to refit and rearm in preparation for the coming summer months, which were much better suited to mounted operations. It was a choice between retaining the initiative and attacking a partially prepared defender with exhausted forces, or trading the initiative for a chance to consolidate and prepare for future operations, whether of-

fensive or defensive, against a better-prepared enemy. The Wehrmacht chose the latter.

In the interim muddy spring season, both sides ceased offensive operations as the Russian countryside became a quagmire. Both sides realized the obvious importance of the Kursk salient and began preparing for future operations in this strategic area. Using the spring lull in mounted operations to full advantage and using every passing day to prepare a stubborn defense, the Soviet army used the railway and road center of Kursk to bring as much combat power as possible into the salient. By the time the muddy season had abated, the Russian army would mass 20 percent of its forces in the Kursk salient and reserve positions in the East, with one-third of all available tanks and one-fourth of all available combat aircraft.³ The Wehrmacht, well aware of Russia's preparations, rebuilt its armies and contemplated its next move.

On 3 May 1943, German senior leaders from the Eastern Front met with the German central command, including Adolf Hitler, to discuss the German army's overall Eastern Front strategy. Again, the German army had a choice. Should it remain on the defensive and face the Soviets in a mobile defense to wear down the Soviet forces before resuming the offense, or should it seize the initiative and attack? The summit concluded, against the protests of von Manstein, Colonel General Heinz Guderian, Colonel General Walter Model, and the Luftwaffe chief of staff, General Hans Jeschonnek, that an attack against the Kursk salient must be undertaken because Germany "could not appear passive, but had to resume the offensive to reassure its allies and own population."⁴ Von Manstein and Guderian, well aware of the massive Soviet defensive preparations, were in favor of letting the Soviets resume the offensive and pursuing a mobile

defense to attrit the Soviet forces and allow a German counterattack. Both officers were overruled by the German army chief of staff, Colonel General Kurt Zeitzler.⁵ Thus, preparations continued for an attack into the Kursk salient. The attack plan was known as Operation Citadel.

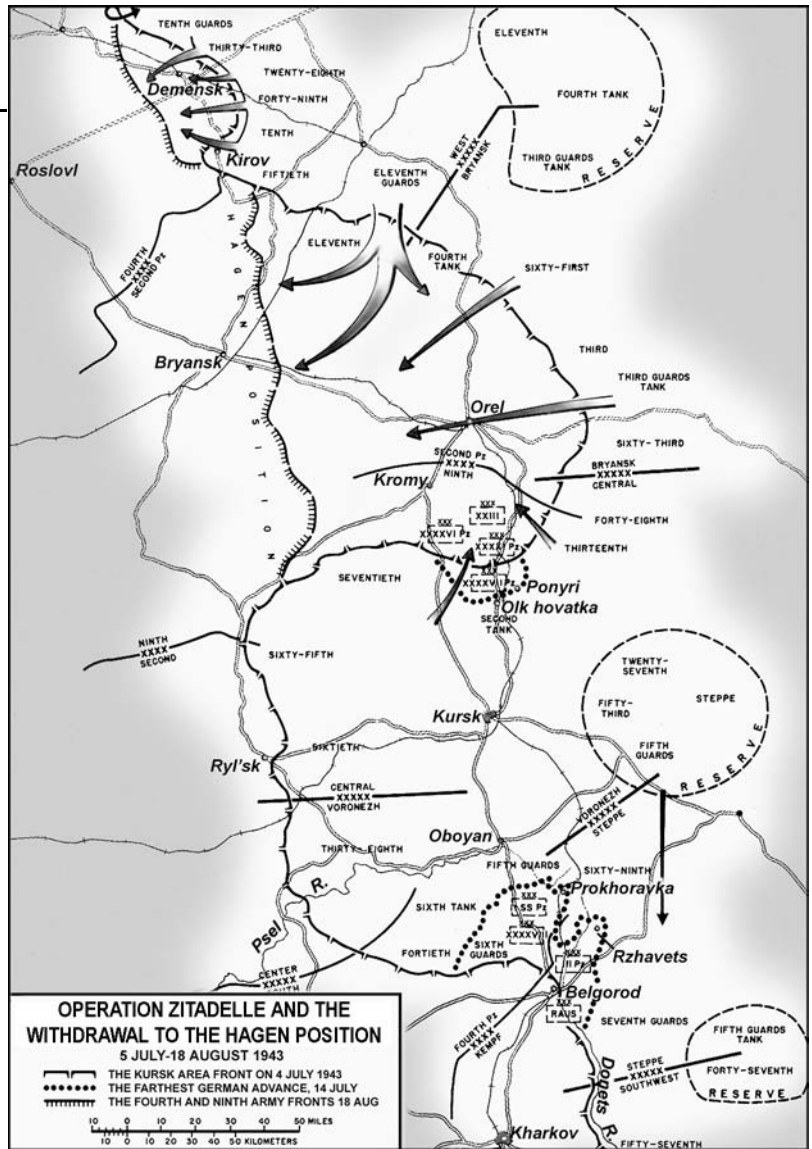
The Kursk Operational Environment

The terrain in the Kursk area of operations generally favored the defender due to a lack of improved roadways, several major rivers running east-west, and numerous swelled streams and muddy areas caused by heavy rains. Additionally, many small rural towns provided cover and concealment for dismounted defending forces. The attacking German forces had both natural and man-made disadvantages to overcome.

The Kursk area of operations had several major obstacles to mounted attack. There are four major rivers running generally east-west that divide the Kursk salient into several sections. The Seim and Svapa Rivers, in the center and north respectively, divide the Kursk salient in half and provide a natural turning obstacle that would greatly impede a large-scale mounted attack from the west toward Kursk. In the south, the Psel and Donets Rivers form a natural obstacle funneling Army Group South away from the center of the Kursk salient. The rivers, though generally fordable in places, afforded the Russian defenses a great advantage by channeling the German advances into more predictable routes.⁶ Besides the rivers, many smaller streams and rivers had swelled from recent rains and became further obstacles to the German advance.⁷ Additionally, many small rural towns, which could restrict mounted movement dotted the landscape. On Army Group South's main route of approach to Kursk, the city of Prokhorovka formed a single large urban restriction.⁸

The major rivers and the salient's geometry forced the German army into two avenues of approach. Army Group Center would attack directly south out of the city of Orel toward Kursk, which would allow the attacking forces to use the shortest route to Kursk and bypass the Seim and Svapa Rivers. In the south, Army Group South would attack to the north from the city of Belgorod, also toward Kursk. This avenue would also allow a shorter route to Kursk and bypass the Psel River. This route would lead, however, directly through the city of Prokhorovka.⁹

Key terrain in the Kursk area of operations included the cities of Kursk and Prokhorovka. Prokhorovka was key terrain because of its location along Army Group South's attack route. As one of the area's larger cities, Prokhorovka was an obstacle to the attacking force and could serve as a major supply node and staging point for reinforcements to the defenders in the area due to its central location and proximity to the rail line from Kursk. Prokhorovka would have to be taken if an advance to Kursk from the south was to succeed. Kursk was key terrain due to its location at the center and rear of the Kursk salient and because it was the main road and railway hub in the region. Loss of Kursk would have "rendered the Soviet salient indefensible."¹⁰ If Kursk were to



fall into German hands, the large concentration of Soviet forces in the salient would be encircled, and the German army would have an ideal staging point for future operations.

Observation and fields of fire in the Kursk area of operations were generally very good. Aside from the scattered urban areas, the terrain was open farmland with sparse groupings of trees. In most areas, observation and fields of fire are unrestricted by terrain. The gentle, rolling farmland with scattered small ravines and trees resembles southern Ohio or central England.¹¹ This lack of cover favored the Russian defenders by allowing unimpeded observation of attacking German forces while not being a major hindrance to a well-prepared defender.

Cover and concealment throughout the Kursk area of operations was generally sparse and limited to small pockets of trees and the numerous farming hamlets that dotted the landscape. The Soviet defenders used the available cover to their advantage, fortifying many of the villages and tying them into their defensive belts. Even though these strong points could be easily bypassed, early German thrusts would become bogged down trying to clear out many of these villages building by building to limit threats to the attacking force's

“Hidden and bypassed infantry strong points were to conceal themselves and assail the flanks and rear of the German forces to further slow the German advance. Antitank reserves and mobile obstacle detachments would continuously and unpredictably change the compositions of the static defenses.... The Soviets also maintained an operational reserve of 1,600 tanks and 573,000 men to the east of the salient on the Steppe front to prevent any German operational penetration of the Kursk defenses.”



flanks and rear. The sparse cover and concealment for attacking forces coupled with the skillful use of available cover for the defense was yet another aspect of the terrain that favored the defender. The Germans often found that the first indication of a Russian position was when the first Panzer exploded.¹²

The weather during the Kursk operation also favored the Soviets. A sudden thunderstorm on the evening of 4 July, just after the German attack had been committed, swelled numerous small streams and turned much of the ground into a quagmire that slowed tracked vehicles and limited wheeled vehicles to road travel only. The sparse and primitive roadways in the Kursk area of operations compounded the mobility problems faced by the Germans. The preceding cloud cover and subsequent storms also hampered the Luftwaffe in its supporting attacks during the initial German advances.¹³ Though the weather after 5 July was essentially clear, it worked against the German army during the critical initial advance into the Kursk salient. Thus, the battlefield environment generally favored the defender.

Historical Outcome of the Battle of Kursk

German attacking forces included large concentrations of armored and mechanized forces from Army Group South and Army Group Center, each making a separate, coordinated assault toward the city of Kursk. Army Group Center’s forces included 1,200 tanks and assault guns initially concentrated on a front of 30km. This force would attack south and penetrate enemy defenses around the city of Kursk to envelop remaining enemy forces in the salient. Subsequently, it would link up with forces from Army Group South and attack to destroy the enemy forces remaining in the salient to enable the German army to retain the initiative and prevent further enemy offensive action. Army Group South’s forces would attack north and northeast from Belgorod, with the same task and purpose as Army Group Center. Army Group South’s forces included approximately 1,500 tanks and assault guns.¹⁴ To maximize combat power for the attack, Hitler had committed the entire strategic reserve of the Eastern Front as a part of these forces. If the attack failed, Germany would have insufficient forces to defend against a determined Soviet counterattack.¹⁵ Hitler committed 2,700 tanks and assault guns, 10,000 field guns, 567,000 men, and 2,500 aircraft to the attack.¹⁶

Opposing the German assault was the bulk of the Soviet Central and Voronezh fronts. Each front formed a coordinated defense of six well-prepared belts. Each belt con-

tained antitank guns, tanks, and infantry strong points arranged to mass fires at key points in the terrain. The Soviets had also taken unprecedented steps to coordinate direct fires with massive amounts of indirect fires and obstacles. Hidden and bypassed infantry strong points were to conceal themselves and assail the flanks and rear of the German forces to further slow the German advance. Antitank reserves and mo-



“...the Soviets had too much combat power and too much ground for the Germans to overcome, and by 12 July, the German attack stalled just 12km from where it started. A Soviet counterattack into the Orel salient, to the rear of the attack column, caused the complete defeat of the attack in the north.”



"The attack commenced on the afternoon of 4 July 1943. The Germans initially conducted reconnaissance in force with several battalion-sized elements. These elements achieved good success by penetrating the lightly defended outer belt of the Soviet defenses and establishing routes for the main attacks."

mobile obstacle detachments would continuously and unpredictably change the compositions of the static defenses.¹⁷ Broadly, the Soviets defended to destroy the attacking German forces to provide freedom of maneuver for counterattack forces. The Soviets defended with 3,300 tanks and assault guns, 20,220 field guns, 1,272,000 men, and 2,650 aircraft.¹⁸ The Soviets also maintained an operational reserve of 1,600 tanks and 573,000 men to the east of the salient on the Steppe front to prevent any German operational penetration of the Kursk defenses.¹⁹

The attack commenced on the afternoon of 4 July 1943. The Germans initially conducted reconnaissance in force with several battalion-sized elements. These elements achieved good success by penetrating the lightly defended outer belt of the Soviet defenses and establishing routes for the main attacks. By the end of the first day, the German probing attacks had penetrated to a depth of approximately 3 miles on both fronts. The main attack was to occur at 0300 hours on 5 July, following a preparatory bombardment at 0230 hours. However, the initial attacks had enabled the Soviet defenders to determine the main thrust of the German advances and at 2230 hours on 4 July, a massive Soviet artillery attack pounded the German units of the main attack in their assembly areas. The Soviet bombardment continued until dawn causing heavy casualties to the German forces. Intensifying the artillery, a thunderstorm began at midnight on 5 July, further disrupting German attempts to coordinate the main attack. Instead of one massive, coordinated attack, Operation Citadel had turned into several smaller attacks.²⁰

In the north, the German attack found initial success. The concentrations of German armor mauled the lead echelon divisions in only 2 days. The Soviets frustrated the German army's attempts to achieve operational freedom by continually repositioning forces into the path of the German ad-

vances. Ultimately, the Soviets had too much combat power and too much ground for the Germans to overcome, and by 12 July, the German attack stalled just 12km from where it started. A Soviet counterattack into the Orel salient, to the rear of the attack column, caused the complete defeat of the attack in the north.²¹

In the south, the German attack had better success. By the end of the first day, it had penetrated the first echelon divisions of the Soviet defenses and began a drive to Prokhorovka. By 12 July, this drive had caused the Soviets to commit operational reserve forces, and resulted in one of the largest single actions during the battle of Kursk — 700 German tanks against 850 Soviet tanks. The German armor included 100 heavy Tiger tanks and a similar number of medium Panther tanks, both designed to outmatch the T-34 in both armor and firepower. The Soviets compensated for the German overmatch by executing a reckless charge directly into the German force and fighting at point-blank range. During an 8-hour period, more than 1,500 tanks fought a seemingly endless melee, with only 350 German tanks and 500 Soviet tanks remaining. This single, decisive battle broke the Germans' ability to attack any further into the Kursk salient. By 24 July, the Germans had lost any ground they had gained into the salient and were incapable of resisting the Soviet counterattacks that followed.²² The battle for Kursk had ended in a German defeat that would eventually lead to the complete loss of the Eastern Front for the Germans.

Battle Analysis Using the Principles of War

U.S. Army Field Manual 3-0, *Operations*, cites nine principles of war as the "enduring bedrock of Army doctrine."²³ These nine principles are objective, offensive, mass, economy of force, maneuver, unity of command, security, sur-

prise, and simplicity. They provide a general guide for successful military operations at all levels and can be used as a tool for analysis of past campaigns. While analyzing the battle of Kursk, I concentrated on only the principles where one side had the decisive edge over the other. In the battle of Kursk, the Soviets had overwhelming advantages in the areas of mass, economy of force, unity of command, security, and surprise.

During the battle, the Soviets displayed overwhelming mass where and when it was needed, and the Germans failed to achieve mass. Mass, as a principle of war, is the concentration of the effects of combat power at the decisive place and time.²⁴ In offensive operations, it is a generally accepted axiom that the attacker must achieve a 3-to-1 ratio of forces to be successful. At the battle of Kursk, the ratio of forces was actually in favor of the defender. The Soviet forces had a 1.9-to-1 advantage in tanks, a 2.5-to-1 advantage in men, and a 2.1-to-1 advantage in field guns.²⁵ The Soviet's advantage is further demonstrated by the density of antitank guns and mines in the region: 12 to 15 antitank guns per km and 1,600 antitank mines per km in the Kursk salient, an increase of 300 percent and 400 percent, respectively, over the densities used at the defense of Moscow and Stalingrad. In certain key areas, the density of antitank guns exceeded 100 per km of defensive front. Furthermore, the Soviet pattern of defense was arrayed in such a way that the Soviet forces were able to bring an unprecedented amount of direct and indirect fires on key points on the battlefield.²⁶ Clearly, the German army did not have the mass it needed to defeat the Soviet defenses.

The Soviets also displayed a better economy of force over the German attacker. Economy of force is the allocation of minimum essential combat power to secondary efforts. More importantly to the Kursk example, economy of force "involves the discriminating employment and distribution of forces" and "accepting prudent risk in selected areas to achieve superiority."²⁷ The Germans, in deciding to attack without regard for a strategic reserve, displayed a poor understanding of economy of force. In undertaking such a gamble, they left the entire Eastern Front open to the subsequent Soviet counterattack. The failure at Kursk may not have been so catastrophic had a mechanized strategic reserve been employed. In essence, they lacked the minimum essential combat power for the secondary effort of a strategic reserve. The Soviets, on the other hand, displayed a conservative view of economy of force and decided that they had enough forces to face the German army in a defense, but not an attack. Their strategy of a defense to absorb the German attack, while maintaining enough of a reserve to continue a counterattack, displayed a better example of economy of force.

Another principle of war the Germans lacked was unity of command. Unity of command is ensuring the unity of effort under one responsible commander. At the strategic level, the German army did not demonstrate unity of command. During the events leading up to the battle of Kursk, it is not clear who was making decisions for the German army. The Citadel plan was written by Army chief of staff Zeitzler and was endorsed by the commander of Army Group Center, von Kluge. However, neither von Manstein nor Model, the nominal maneuver commanders of the southern and northern attack forces, supported the Citadel operation. Guderian, inspector general of Panzer troops, was so outspoken in his opposition to the Citadel plan that von Kluge asked Hitler to be his second in a duel with Guderian. Ultimately, operation-

al concerns were abandoned when Field Marshal Wilhelm Keitel, Chief of the Armed Forces High Command, insisted to Hitler that the attack continue as planned for political reasons. Less than 3 weeks before the attack, however, Guderian appealed to Hitler one last time. Hitler, who had previously endorsed Operation Citadel replied, "You are quite right. Whenever I think of this attack, my stomach turns over." Yet, preparations for the attack continued under intense political pressure.²⁸ Clearly, unity of command had been lost at the highest levels of the German armed forces, with disastrous consequences for the German army.

Security was another vital area where the Soviets had the advantage over the Germans. Security is measures taken by a command to protect itself from surprise, interference, sabotage, annoyance, and threat.²⁹ German security was compromised many times during preparation for Operation Citadel. Several years before Citadel, British intelligence had cracked Germany's enigma communications security code. On 22 March 1943, British intelligence intercepted communications dealing with troop movements and tentative start dates for Operation Citadel, then passed on the information to the Soviets.³⁰ Armed with this information, the Soviet high command had a much clearer picture of Germany's intent for the 1943 summer offensive. Another frustrating aspect of Germany's security efforts was the susceptibility of German lines of communication to partisan attack. The occupied Soviet territory contained vast expanses of dense woodlands and marshes that resisted pacification by German occupation forces. The partisans were under the control of the Soviet government and were even supported by a resupply system that used Soviet cargo planes at remote landing fields at night. The rudimentary road system and German reliance on rail during the muddy spring months made resupply convoys and trains especially vulnerable to partisan attack. German rear areas in the occupied territories were not safe from the partisans unless heavily guarded, and the guerrillas attacked barracks, headquarters, railroads, bridges, and even reinforcements. From January to July 1943, the Germans recorded almost 1,500 separate attacks on the railroads between the Eastern Front and Germany. Even more damaging to Citadel was the valuable intelligence on German troop dispositions that the partisans provided.³¹ Such activities made it next to impossible for the Germans to maintain operational security of their rear areas.

By contrast, the Soviets had great success in securing their operations in and around the Kursk salient. The Soviets made extensive use of deception by carefully camouflaging real positions while emplacing 1,000km of false trenches, 900 mobile dummy tanks, and 13 false airfields. In addition, troop movements were executed in the salient at night as much as possible, and any mention of preparation for the operation over the radio was prohibited. Furthermore, any orders to subordinate commanders were by face-to-face coordination only.³²

The final principle of war that the Germans failed to consider was surprise. Surprise is to strike the enemy at a time or place or in a manner for which he is unprepared. Clearly, the Germans ceded surprise during Operation Citadel. The initial date for Operation Citadel was 3 May 1943. The German forces were clearly prepared for war, but a series of orders postponing Citadel eventually pushed the attack to 4 July because of the weather and Hitler's desire to include the newest tanks in his offensive.³³ Concurrent to this, the Soviets were aware of plans for a German offensive into the



“With the hindsight of historical perspective, it is possible to use tools, such as analysis of the battlefield environment and the principles of war, to determine where previous armies made mistakes and what disadvantages they had to fight through. The battle for Kursk is a historically important battle that holds important lessons at all levels of war.”

Kursk salient as early as the last weeks of March 1943.³⁴ Despite the fact that it was impossible to conceal the intent and even the location for an offensive and that the Soviets were building a well-prepared defense, the Germans attacked without the element of surprise. With the hindsight of historical perspective, it is possible to use tools, such as analysis of the battlefield environment and the principles of war, to determine where previous armies made mistakes and what disadvantages they had to fight through. The battle for Kursk is a historically important battle that holds important lessons at all levels of war. It also provides one of the earliest historical examples of what would become modern Soviet doctrine. The application of the principles of war is but one of many ways to learn from this complex and historically important battle.

Notes

¹Martin Caidin, *The Tigers are Burning*, Hawthorne Books, New York, 1974, pp. 9-11.

²David M. Glantz and Jonathan M. House, *The Battle of Kursk*, University Press of Kansas, Lawrence, Kansas, 1999, pp. 10-14.

³Caidin, pp. 15-19.

⁴Glantz and House, pp. 1-3.

⁵Ibid., pp. 1-3, 23-24.

⁶Ibid., pp. 79-81.

⁷Caidin, p. 65.

⁸Glantz and House, p. 83.

⁹Thomas E. Griess, ed., *Campaign Atlas to The Second World War*, Department of History, U.S. Military Academy, West Point, New York, 1989, p. 27.

¹⁰Glantz and House, p. 80.

¹¹Ibid., p. 79.

¹²Caidin, pp. 159-162.

¹³Ibid., pp. 161, 164-6.

¹⁴Colonel David M. Glantz, *Combat Studies Institute Report #11: Soviet Defensive Tactics at Kursk*, U.S. Army Command and General Staff Col-

lege, Combat Studies Institute, Fort Leavenworth, Kansas, September 1986, pp. 25-26.

¹⁵Glantz and House, pp. 25-26.

¹⁶Kenneth Macksey, *Tank Warfare: A History of Tanks in Battle*, Stein and Day, New York, 1972, p. 213.

¹⁷Glantz, pp. 61-63.

¹⁸Macksey, p. 213.

¹⁹Glantz, pp. 26-27.

²⁰Caidin, pp. 162-165.

²¹Glantz, p. 29.

²²Caidin, pp. 212-223.

²³U.S. Army Field Manual (FM) 3-0, *Operations*, U.S. Government Printing Office, Washington, DC, 14 June 2001, pp. 4-11

²⁴Ibid., pp. 4-13

²⁵Glantz and House, pp. 64-65.

²⁶Janusz Piekalkiewicz, *Operation Citadel*, Presidio Press, Novato, California, 1987, pp. 77-79.

²⁷FM 3-0, pp. 4-13.

²⁸Glantz and House, pp. 1-3.

²⁹FM 3-0, pp. 4-14.

³⁰Piekalkiewicz, pp. 63-67.

³¹Caidin, pp. 131-143.

³²Piekalkiewicz, pp. 81.

³³Glantz and House, pp. 23-26.

³⁴Piekalkiewicz, pp. 61-62.

CPT Benjamin R. Simms is an assistant S3, 2d Brigade, 4th Infantry Division, Fort Hood, TX. He received a B.S. from the U.S. Military Academy. He is a graduate of the Armor Captains Career Course, CAS3, Scout Platoon Leader's Course, and both Airborne and Air Assault Schools. He has served in various command and staff positions, including battalion adjutant, 1-35th Armor, Baumholder, Germany; tank company XO, A Company, 1-35 Armor, Baumholder; and tank platoon leader, D Company, 1-35 Armor, Baumholder.



Focused Reconnaissance and Developing Battlespace in the Armored Cavalry Troop

by Captain Scott K. Thomson

Heavy cavalry's primary purpose during reconnaissance is to allow the division or corps commander to see the terrain and the enemy. There is a common misconception that reconnaissance does not fight. In the case of heavy cavalry, nothing could be further from the truth. Even a cursory glance at the table of organization and equipment of any heavy cavalry unit reveals the nature of the organization — heavy cavalry is designed to fight for information. However, the distances over which the troop operates, combined with the uncertain enemy situation inherent in being the first force to cross the battlefield, presents the commander with the most difficult situation in which to concentrate his firepower. This is what makes the cavalry mission a dangerous and frustrating one. This is also why the cavalry mission is considered to be elite, and requires the best soldiers and leaders the Army has to offer.

The limited time available to reconnaissance forces prior to crossing the line of departure often does not allow the troop commander and platoon leaders to conduct their intelligence prepa-

ration of the battlefield (IPB) in sufficient detail. Vague and numerous tasks to subordinate units compound the difficulty in correctly identifying the decisive point and, quite often, the reconnaissance objective. Although there is sufficient combat power available to defeat enemy reconnaissance, we often fail to bring the maximum amount of firepower to bear when and where we need it most. Subsequently, we may fail to obtain the reconnaissance objective. During the maneuver of the heavy armored cavalry troop, applying combined arms to maximize battlespace is a difficult task at best. Units tend to spread their combat power evenly throughout their zones. This one-size-fits-all execution can cause the commander to lose the ability to mass fires at the decisive point on the battlefield.

This article focuses on mission analysis for conducting troop-level reconnaissance that allows armored cavalry leaders to maximize the density of their battlespace. The intent is to incite cavalrymen to think about how to apply assets to maximize speed, survivability, and lethality during reconnaissance. This

article is also intended to familiarize commanders at all levels with the difficulties troop and platoon leaders face while conducting reconnaissance.

Organization

The heavy armored cavalry troop is organized with a troop headquarters, two scout platoons, two tank platoons, a mortar section, and a maintenance section. Typically, there exists a habitual relationship between 1st platoon (scout) and 2d platoon (tank), as well as between 3d and 4th platoons (scout and tank, respectively). The scouts' primary task is to conduct reconnaissance. The tanks follow the scouts and provide support, overmatch, and provide the commander with the ability to destroy or fix enemy reconnaissance. Depending on the tempo and the terrain, the typical order of battle during reconnaissance is dismounts, Bradleys, and then tanks.

Tasking versus Capabilities

Cavalry is typically tasked immediately following the course of action analysis phase of the higher headquarters' military decisionmaking process. To allow

for a productive focus for reconnaissance, and avoid over tasking reconnaissance assets, the commander and staff must consider the capabilities and limitations of the heavy cavalry troop. The heavy cavalry troop can reconnoiter up to a 10-kilometer-wide zone or up to two routes simultaneously. The typical rate of reconnaissance is about 1-kilometer per hour, depending on the terrain. Built-up areas and areas with predominately restrictive terrain will take longer.¹

One common problem impeding the speed with which cavalry can conduct their reconnaissance is a lack of focus. Often, the operations overlay for the squadron and troop is covered from one end of the area of operations to the next with checkpoints and named areas of interest (NAIs) that must be cleared and/or observed during the reconnaissance.² This can lead to more contact with the enemy than necessary to support the division's maneuver. The heavy cavalry is obviously designed to fight, but the application of their combat power should be judicious. Unfortunately, staffs and commanders can have a tendency to assign NAIs to every piece of terrain that could support any enemy maneuver.

From the onset of planning, the staff must accomplish several tasks. First, they must define the reconnaissance objective that will allow the commander to best conduct his decisive maneuver. The reconnaissance objective is usually either terrain or enemy based. Second, they need to focus reconnaissance on gaps in friendly knowledge that must be filled to support maneuver; namely, routes and areas to support the maneuver of follow-on forces, and on NAIs that support the higher commander's decision support template. NAIs must be linked to specific priority intelligence requirements (PIR) and decision points. The information sought in an NAI must give the staff the ability to differentiate between enemy courses of action or to clarify information that supports refining the maneuver plan. To help manage the efforts of the reconnaissance forces, the staff must ensure that there are times associated with the NAIs, when applicable. Attempting to clear and classify every piece of ground between the line of departure (LD) and the limit of advance not only slows the reconnaissance, it produces no significant advantage for the higher headquarters and wastes precious assets. Al-

though it is preferable to have perfect knowledge of the enemy situation, the cavalry does not own the assets to provide it.³ Cavalry reconnaissance must be focused on information that other systems cannot provide. Their contribution to the parent unit's fight must be unique and critical.

Commanders and platoon leaders should resist the temptation to double their workload by adding even more NAIs to clear. The only additions that they should consider are those pieces of terrain that support tank maneuvers, fire support (to include mortar firing points), command post locations, and trains. Obviously, it is desirable to add checkpoints to support branch plans and sequels (decision-point tactics), but one statement that should be avoided during

coordinating instructions or tasks to maneuver units is, "clear all checkpoints in zone." Troop-level IPB must focus on lateral routes, routes in depth, and the location and composition of probable contact in zone. The commander must be able to quickly mass fires and shift from reconnaissance to fighting, and then back to reconnaissance or security.

Currently, a disparity between capstone tactical doctrine and user-level doctrine exists. This may contribute to the confusion over what commanders and staff expect of their division and regimental cavalry, and what the cavalry can reasonably accomplish and still remain viable for follow-on missions.⁴ Division and higher-level staffs will rarely refer to the same doctrine as squadron com-

FM 3-90, <i>Tactics</i>, July 2001	FM 17-97 <i>Cavalry Operations</i>, December 1996	FM 17-97, <i>Cavalry Troop</i>, 3 October 1995
Find and report all enemy forces within the zone.	Find and report all enemy forces in zone. (Primary task.)	Find and report all enemy forces within the zone.
Locate any fords, crossing sites, or bypasses for existing and reinforcing obstacles, including built-up areas.	Locate a bypass around built-up areas, obstacles, and contaminated areas.	Locate a bypass around built-up areas, obstacles, and contaminated areas.
Determine the trafficability of all terrain within the zone, including built-up areas.	Reconnoiter specific terrain within the zone. (Primary task.)	Reconnoiter all terrain in zone.
Locate and determine the extent of all contaminated areas in the zone.	Reconnoiter all terrain in zone.	Inspect and classify all bridges within the zone
Evaluate and classify all bridges, defiles, overpasses, underpasses, and culverts in the zone.	Inspect and classify all bridges within the zone.	Inspect and classify all overpasses, underpasses, and culverts.
Locate any fords, crossing sites, or bypasses for existing and reinforcing obstacles (including built-up areas) in the zone.	Locate fords or crossing sites near all bridges in the zone.	Locate fords or crossing sites near all bridges in the zone.
Locate all obstacles and create lanes as specified in execution orders.	Inspect and classify all overpasses, underpasses, and culverts.	Locate and clear all mines, obstacles, and barriers in the zone within its capability.
Report the above information to the commander directing the zone reconnaissance, to include providing a sketch map or overlay.	Report reconnaissance information. (Primary task.)	Report reconnaissance information.
	Locate and clear all mines, obstacles, and barriers in the zone within its capability.	
Table 1. Doctrinal critical tasks for conduct of a zone reconnaissance.		

manders and staffs. At higher echelons, the planners will tend to refer to U.S. Army Field Manual (FM) 3-90, *Tactics*.⁵ At the squadron level, commanders and staff will typically refer to FM 17-95, *Cavalry Operations*.⁶ Troop commanders will invariably use FM 17-97, *Cavalry Troop*.⁷ The problems that minor phraseology differences can cause is seen in Table 1. The order of the listed tasks has been altered to allow for easier comparison. The differences in the phraseology between FM 3-90, FM 17-97, and FM 17-95 are critical. If a troop commander believes that he has to clear every piece of terrain in zone, he will undoubtedly take unnecessary risks in conducting reconnaissance. Commanders have a responsibility to be very clear and very precise when tasking reconnaissance assets. Failure to do so can easily lead to unnecessary deaths on the battlefield.

Obviously, the capstone doctrine in this case is FM 3-90.⁸ But an interpretive approach to defining the critical tasks for a zone reconnaissance is necessary to prevent confusion. Corps, division, and squadron standing operating procedures should all define critical tasks identically. Even though it is "refining" doctrine, FM 17-95 probably takes the best approach to tasking reconnaissance forces.⁹ That is, it defines three primary tasks, and allows the commander to assign other tasks as time and mission dictate.

The cavalry should not be used to attempt to provide a risk-free environment for follow-on maneuver forces. These forces are equipped and trained to secure themselves during movement. The popular technique of "clear all enemy from zone" may allow for more success in today's mission, but invari-

bly, there will not be enough left of the cavalry to support future operations. The higher commander would be forced to reconstitute his reconnaissance with forces less trained, and therefore less suited, for the mission.

The heavy cavalry troop should not be expected to destroy larger than a platoon-sized enemy formation when at full strength and employed in a reconnaissance role. Even if the troop can gain more than a 3 to 1 force ratio, at least 25 percent (one scout platoon) of its strength will be continuing the reconnaissance on other parts of the battlefield. This leads to a unique application of combat power comparison. To compare combat forces, the commander should probably only estimate his troop at 75 percent of his current capabilities. The staff must anticipate that the troop may be unable to choose the time and place for enemy engagements. Remember that cavalry probably has less knowledge of enemy locations and intentions than any other force on the battlefield. Additionally, there is a finite amount of terrain that supports the movement of reconnaissance forces. The enemy uses the same routes we do, and also looks for our reconnaissance and main-body forces. Chance engagements are the norm in cavalry operations.

Reconnaissance efforts should be echeloned parallel to the supported unit. Regiments support corps maneuver, divisional cavalry squadrons support division maneuver, brigade reconnaissance troops support brigade maneuver, and the battalion scout platoons support battalion maneuver. Violating this principle leads to too many requirements for reconnaissance forces. Higher reconnaissance efforts will answer some

of the requirements for subordinate units and allow for more focused collection efforts if the information is disseminated timely and is still valuable when needed.

Commanders must be aware of the nature of the different kinds of reconnaissance and their mission focus. Higher levels of cavalry are more capable of fighting for the information they need. The overriding theme here is that from corps or division down to troop, planners should resist the temptation to casually pile on the "good ideas," and help ensure that reconnaissance has a focused task and purpose. Generally, too much targeting is the result of poor planning.

Decisive Point

During course of action comparison, such as the war game, the reconnaissance fight probably receives about the same amount of scrutiny as combat service support, possibly less. This is probably due to the difficulty in predicting when and where reconnaissance forces will fight — it is difficult to war game in a vacuum. Therefore, staffs should focus on the cavalry's reconnaissance objective during this portion of the war game. A piece of terrain or an enemy formation, or a combination of the two can usually define this. Destroying this enemy formation or completing reconnaissance on key terrain is usually the decisive point for the troop or squadron. Commanders and staff must seek to mass the troop's firepower at this point, and it must be communicated in the task and purpose given to the troop by the squadron. This helps to prevent the attrition of cavalry forces in the reconnaissance, and leads to a higher chance of mission success.

The decisive point is the event or location that will allow the troop to achieve its purpose for reconnaissance. Using a decisive point in the concept of operations allows the commander to prioritize the use of his combat power and focus his reconnaissance efforts. Cavalry troops should not be stopped because of small enemy forces such as dismounted reconnaissance. Although they must seek to find and destroy enemy reconnaissance, the possibility of finding all of the enemy's reconnaissance is remote. If the identification, location, composition, and orientation of the enemy's main obstacle belt will allow the following brigade to successfully destroy the enemy in the defense, then this may be the troop command-

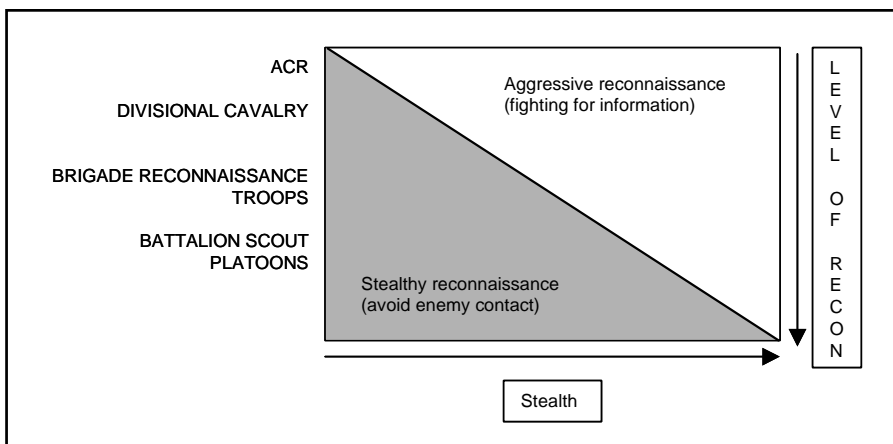


Figure 1. Stealthy reconnaissance vs. fighting for information

er's decisive point. All other tasks would be secondary. Allowing the troop to lose speed in dealing with issues that do not support the decisive point and reconnaissance objective, often leads to mission failure.

The troop commander should have a focus that is essentially provided by the corps or division commander. Cavalry will almost never be tasked to provide only one piece of information, which makes it essential for the higher headquarters to prioritize the tasks given to the troop. The troop must be given a focused purpose to allow the commander to make decisions that will facilitate the tempo of operations and stay within the commander's intent.

METT-TC Analysis

When determining how to employ the organic assets available to the heavy cavalry troop, the troop commander and platoon leaders should consider the factors of mission, enemy, terrain, troops, time, and civilians (METT-TC). To effectively task organize and employ forces for the mission, METT-TC should be considered as: terrain, enemy, mission, troops, time, and civilians. Addressing METT-TC factors in this order facilitates making decisions about employment of units and assets in a logical sequence. However, the focus is more detailed than deciding whether to use a troop vee or a split vee, for example. The issue is where to employ the tanks and mortars, which scout platoon organization to employ, and whether to let dismounted scouts, Bradleys, or tanks lead the reconnaissance.

When conducting METT-TC analysis, the commander must address several issues regarding:

Terrain, such as determining how wide the sector is; determining if tanks can be massed quickly on enemy contact; identifying lateral routes that will support rapid movement by tanks; determining if mortars can range the entire sector; determining if the terrain is too restrictive to allow tanks to easily bypass the Bradleys; deciding to use reconnaissance avenues of approach or main body avenues of approach; and determining how many routes should be reconnoitered.

Enemy, such as where to expect to encounter enemy reconnaissance; identifying enemy weapons systems; identifying where will engagement be and with what; and determining the task and purpose for the enemy's different elements.

Mission, such as meeting the commander's needs; understanding priorities; and determining the desired end-state.

Troops and equipment, such as selecting systems that can provide weapons overmatch; determining what force ratio can be achieved; deciding if reinforcement or a narrower focus from the commander is necessary; and determining if tankers and dismounted scouts are trained to work in close proximity.

Time available, such as determining how much time before the earliest move; determining how much time is needed to plan and how planning time effects rehearsal priorities; determining how much time is needed to move to the limit of advance; determining the expected rate of movement through sector; and determining how quickly combat power can be massed in the event of enemy contact.

Civilians, such as determining if the local populace is friendly, or if they sympathize with the enemy; determining if they provide location and operations intelligence to the enemy; and determining if refugee movement will hinder movement through sector.

The factors that most influence the employment of organic assets are the terrain, the enemy, and the time available. Understanding these three elements gives the commander the information

he needs to deploy his formations in the most lethal manner.

Battlespace and Force Ratios

FM 3.0, *Operations*, defines battlespace as, "the environment, factors, and conditions commanders must understand to successfully apply combat power, protect the force, or complete the mission. This includes the air, land, sea, space, and the included enemy and friendly forces, facilities, weather, terrain, the electromagnetic spectrum, and the information environment within the operational areas and areas of interest."¹⁰ This basically tells a commander that he has to know everything about everything and everyone. This probably briefs well and generates tons of discussion in the joint arena, but a definition more useful at the troop and squadron level used to exist. FM 100-5, *Operations*, 14 June 1993, defined battlespace as, "the components determined by the *maximum capabilities* of a unit to acquire and dominate the enemy; includes areas beyond the AO; it varies over time according to how the commander positions his assets."¹¹ Cavalrymen need to ensure they understand this concept. Scouts take great pride in leading the fight at all times, and being able to operate independently. Unfortunately, this pride often leads to lost engagements.

FM 3-90, *Tactics*, does not address battlespace at all.¹² That may be be-



"The heavy cavalry troop should not be expected to destroy larger than a platoon-sized enemy formation when at full strength and employed in a reconnaissance role. Even if the troop can gain more than a 3-to-1 force ratio, at least 25 percent (one scout platoon) of its strength will be continuing the reconnaissance on other parts of the battlefield."

cause the current definition has no real utility at the tactical level. FM 17-97, *Cavalry Troop*, gives only cursory attention to the development of battlespace.¹³ The explanation in FM 17-98, *Scout Platoon*, focuses only on the ability of the scouts to acquire targets.¹⁴ It focuses on having the maximum area of battlespace, and neglects to discuss the *density* of that battlespace.

Battlespace density (a non-doctrinal term) is a description of the amount of firepower that friendly forces can bring to bear on the enemy at any one time. It is simply a variation of force ratio; an evaluation of force ratios at a specific time and place on the battlefield. Understanding this concept is vital to the employment of heavy cavalry. Many engagements at the combat training centers are lost due to even fights on

restricted terrain with enemy reconnaissance. Although the employment of multiple integrated laser engagement simulators (MILES) and the units' level of training influence many fights, they are most influenced by the failure to employ combat power quickly and decisively.

The concept of battlespace density requires evaluating both friendly and enemy forces. No different than maneuver forces, but on a smaller scale, at least a 3-to-1 ratio is desired in an attack against a defending enemy. The density of the defending unit's battlespace is extremely high when compared to an attacking unit of the same size. The combination of registered, massed indirect fires, obstacles, massed direct fires, as well as the protective benefits provided by fighting positions, make it

virtually impossible for a force of equal size to gain any ground. Conducting an aggressive reconnaissance is similar in theory to conducting a movement to contact by maneuver forces. The difference is that the purpose of the reconnaissance is to gather intelligence.

When evaluating battlespace density, some calculated risks must be taken, and some educated assumptions made. For example, does terrain facilitate the use of all weapons systems? At the Combat Maneuver Training Center in Hohenfels, Germany, most direct-fire reconnaissance fights take place at extremely short ranges in restricted terrain. These fights typically do not support the use of wire-guided missiles due to limited time and distance. These same fights also usually negate the use of indirect fire, again due to time and distance — a 25-meter fight is definitely a dangerous close-fire mission. Direct fire reconnaissance fights tend to be almost exclusively at short range in restricted terrain. Certain terrain supports the movement of reconnaissance forces, and there is a finite amount of it.

Certain other factors affect battlespace density. Factors, such as surprise, fields of fire, and firepower versus protection, all have a very definite affect on the ability of cavalry to survive a firefight. So if we consider an engagement between a BMP-2 and an M3A2 at short range in a forested environment, the resulting battlespace density would be effectively even. Both vehicles have the ability to kill infantry or cavalry fighting vehicles, and they both offer similar levels of protection. If the Bradley were to approach the BMP-2 from the rear, and engage before the BMP-2 could traverse, the battlespace density would be increased, because a gun pointed in the wrong direction would not be able to kill anything.

Additionally, we should consider the number of systems or forms of contact that can be brought to bear on the enemy at any one time. Assume the BMP-2 was conducting his reconnaissance without a wingman providing immediate support, and our scout was operating with his wingman in immediate support (which should always be the case). During the initial engagement, the force ratio would be even as the first scout acquires the BMP-2. As the wingman maneuvers into a position of advantage, and both scouts can engage the BMP, the battlespace density would rise markedly as the force ratio reached



"Tanks in the cavalry are often employed over very restricted terrain. When the avenue of approach is on a "goat trail" with trees very near the sides of the tank, the tank has a very limited ability to traverse. He can only kill to his direct front. His ability to engage to his sides and rear is defined by his ability to traverse and his minimum angle of depression for his weapons systems."



“The heavy cavalry troop is an organization designed to fight for information. It is lethal and survivable, but difficult to employ. The first and most important issue in improving our employment of cavalry is providing focus during the orders process. Failure to provide specific focus violates the principle of orient on the reconnaissance objective.”

a 2 to 1. If the dismounts of our scout section were the first to acquire the BMP, and were armed with an AT-4 or Javelin, then the initial force ratio is unfavorable, as the dismount obviously has issues with his survivability, but he still has a very real ability to destroy the vehicle. If he exercises patience, and maneuvers the section of Bradleys into the fight, the density rises dramatically, with three friendly systems in the fight. When possible, mortars should be employed close to the scouts to support the fight and isolate the enemy as the fight develops in depth.

To further refine the concept of battlespace density, we need to examine the survivability of the weapons platforms involved in the fight. For example, does our platform have less survivability than that of the enemy; how are our platforms roughly equal (IFV vs. IFV, or tank vs. tank); is our survivability greater than the enemy's (M1A1 vs. BMP-2); and are either of the vehicles

dug in? The preferred method is to employ your most difficult systems to identify first (dismounted scouts) to set the conditions for the fight, and then maneuver your most lethal and most survivable systems (tanks) into the fight as quickly as possible. Bradleys are often best employed in a suppression or support-by-fire role. Of course, if vegetation or terrain restricts the tanks ability to maneuver, then the Bradley may be the weapon of choice.

As noted before, battlespace density is directional. Tanks in the cavalry are often employed over very restricted terrain. When the avenue of approach is on a “goat trail” with trees very near the sides of the tank, the tank has a very limited ability to traverse. He can only kill to his direct front. His ability to engage to his sides and rear is defined by his ability to traverse and his minimum angle of depression for his weapons systems. Infantry that are able to gain the dead space next to the tank are

in a favorable position to fight the tank. This dead space can be easily covered to the rear and sides of a vehicle if the wingman is doing his job in overwatch. Twenty-five-millimeter high-explosive rounds are extremely effective in suppressing infantry near a vehicle.¹⁵

During reconnaissance, friendly scouts often fail to evaluate how the width of a route can affect their battlespace density. Heavy cavalry in restricted terrain are prone to operating in hunter-killer teams. This organization has a section of tanks closely trailing and directly supporting a scout section. The commander should only allow this type of organization during the conduct of the reconnaissance when contact with tanks or platoon-sized units is not expected, as it severely limits the ability to mass tank power at key points during the fight. It is extremely effective if the scouts can acquire with dismounts, and the tanks can maneuver to engage the enemy. However, the very terrain that

lends itself to this type of task organization often contributes to the death of the lead scouts. The reason is that if the enemy can force an engagement on our scouts at an area where the tanks are incapable of passing the scouts, the tanks are useless. The scouts can also be forced to operate without support of their wingman due to the difficulty in reconnoitering restricted terrain. The result is the lead scout is killed, effectively becoming an obstacle and none of the following vehicles can pass or maneuver to engage.¹⁶ This usually happens when scouts are tasked to clear all terrain in sector, as discussed in the tasking versus capabilities section above.

When encountering these choke points, the troop commander should strongly consider leading with dismounts, followed by tanks, and trailing with the Bradleys.¹⁷ This accomplishes several things: the scouts will not lead tanks down trails that cannot support the tank's movement; during a chance engagement with enemy reconnaissance, the tanks will almost always have a favorable battlespace density; the Bradleys are in the rear where they can conduct effective medical evacuation, if needed; and if the dismounted scouts are pulled back, the tank has the ability to survive extremely close indirect fire. This formation may lead to the tanks being decisively engaged before being able to maneuver. This consideration is usually negligible in tight terrain because the fight rarely lasts long enough to maneuver the tanks.

The heavy cavalry troop is an organization designed to *fight* for information. It is lethal and survivable, but difficult to employ. The first and most important issue in improving our employment of cavalry is providing focus during the orders process. Failure to provide specific focus violates the principle of orient on the reconnaissance objective.¹⁸ Another overriding issue is skillfully employing assets available to the cavalry. Due perhaps to the stigma within the cavalry community that tanks should almost never lead during reconnaissance, cavalry leaders often fail to maximize density in their battlespace. In effect, this violates three more principles of reconnaissance: maximum reconnaissance force forward, if the tankers are waiting 1000 meters to the rear in restricted terrain, they are effectively out of the fight; if we fail to have tanks where they can engage the enemy quickly and decisively, then we may or

may not have freedom to maneuver (the purpose of maneuver is to gain a position of advantage over the enemy — if our scouts are dead, and the tanks have no idea where the enemy is, then they are not really maneuvering toward anything. When dealing with vehicles other than tanks in close proximity, tanks can move with relative impunity); and, most importantly, develop the situation rapidly. This requires foresight and flexible thinking. Small unit, direct-fire engagements with modern, lethal killing systems rarely last beyond the first volley. If not in position to immediately influence the fight, the tanks will have little, if any, influence on the battle's outcome.

Notes

¹U.S. Army Field Manual (FM) 17-97, *Cavalry Troop*, U.S. Government Printing Office (GPO), Washington, DC, 3 October 1995, p. 3-4; see FM 34-2-1, *Tactics, Techniques, and Procedures for Reconnaissance and Surveillance and Intelligence Support to Counterintelligence*, U.S. GPO, Washington, DC, 19 June 1991, p. 4-4, for an example of the lack of understanding of the capabilities of reconnaissance forces, staffs must calculate the time needed to conduct the reconnaissance and incorporate this into their timeline. Time must be allocated to allow reconnaissance assets to conduct MDMP and troop-leading procedures. For a reconnaissance of a 10km x 10km zone, the troop must receive their final operations order 16 to 18 hours prior to the time the staff expects them to reach the limit of advance. This assumes that the troop is not conducting security operations concurrently with planning, and that they are located to allow for an efficient parallel planning process.

²Typical tasking of cavalry units requires that they clear assigned NAIs and checkpoints to provide a more secure movement for following forces. Commanders must weigh the risk to reconnaissance forces against the need for secure movement of his maneuver units.

³“Perfect knowledge” of the environment in which a unit must fight is probably a pipe dream. Military intelligence assets should provide most of the “gross” intelligence needed by corps and divisions. The strength of the armored cavalry lies in its ability to look into restricted terrain that is shielded from satellite and aerial reconnaissance, and locate and destroy enemy reconnaissance when necessary.

⁴FM 3-90, *Tactics*, U.S. GPO, Washington, DC, 4 July 2001, provides a good discussion on recuperation and reconstitution of reconnaissance assets.

⁵Ibid.

⁶FM 17-95, *Cavalry Operations*, U.S. GPO, Washington, DC, 24 December 1996.

⁷FM 17-97.

⁸FM 3-90.

⁹FM 17-95.

¹⁰FM 3-0, *Operations*, U.S. GPO, Washington, DC, 14 June 2001, supersedes FM 100-5.

¹¹FM 100-5, *Operations*, U.S. GPO, Washington, DC, 14 June 1993, superseded by FM 3-0.

¹¹FM 3-90.

¹³FM 17-97.

¹⁴FM 17-98, *Scout Platoon*, U.S. Government Printing Office, Washington, DC, 10 April 1999.

¹⁵This limitation of tanks in cavalry organizations should be addressed with an M1 variant with a shorter barrel. Unless operating in desert terrain, tanks in the cavalry rarely have the opportunity to engage at maximum range. Much more important than range to the cavalry is the ability to traverse and quickly destroy enemy in restricted terrain. This, coupled with greater elevation, would also be useful to other units involved in MOUT scenarios. The First Battle of Grozny is illustrative of this point. My guess is also that M551 Sheridan tankers fighting in Vietnam were also thankful for their vehicles' ability to traverse in tight terrain.

¹⁶One other possible TTP to address this situation is to maneuver the tanks on a less restrictive avenue of approach parallel to that being used by the scouts. The tanks identify lateral routes and provide support by enveloping from the rear or flank.

¹⁷For a good illustration of a similar technique, refer to the discussion of defile drill in FM 71-1, *The Tank and Mechanized Infantry Company Team*, U.S. GPO, Washington, DC, 26 January 1998.

¹⁸See FM 17-95, FM 17-97, or FM 17-98 for discussions of principles of reconnaissance.

CPT Scott K. Thomson is the G3 air and emergency deployment readiness exercise officer, 3d Infantry Division (M), Fort Stewart, GA. He enlisted in the Army as a 19D in 1987. During his enlistment, he served in various scout positions in TF 1-32 Armor, 1st Cavalry Division, Fort Hood, TX. He is a graduate of Georgia State University. As a commissioned officer, he has served in various command and staff positions, including tank platoon leader, scout platoon leader, and troop XO, B Troop, 1-4 Cavalry, 1st Infantry Division, Schweinfurt, Germany; and HHT XO and assistant S3, 1-4 Cavalry, 1st Infantry Division, Schweinfurt.



The Future of Scout and Cavalry Systems

by Major Harold A. Buhl, Jr.

What does the future hold for cavalry scouts? This question is increasingly unclear in today's environment. A HMMWV-mounted scout for a couple of more decades is a sobering thought. Perhaps more sobering is the thought that scouts are irrelevant in the future given intelligence assets that are increasingly more capable.

The case is the exact opposite. As our current experiences in Afghanistan and our interim brigade analyses have shown, robust manned reconnaissance has no technological equal. Many Army professionals agree that the ground scout is the most efficient, high-resolution, all-weather, continuously operating, on-site intelligent decisionmaking, intent-determining, and most timely terrain-

retaining information asset for the commander to answer critical information requirements (CCIR). A scout is at that critical point in the battlespace where timely information gives the commander capability for immediate decisive action. In the new lexicon of doctrine, the scout is the point where the infosphere — the sum of relevant battlefield information — merges with the battlespace — the sum of battlefield geography, time, threat, and resources.¹ The infosphere must have high enough resolution to provide information dominance for the commander to execute shaping and subsequent decisive operations out of contact — a dangerous place to operate. This single fact is why some see the scout as an unnecessary risk.

Some Army professionals see networked unmanned systems becoming

just as capable as the networked scout. Based on multiple studies and analyses, ground scouts can compensate for a loss of air scouts and intelligence surveillance assets, but these systems cannot compensate for a lack of ground scouts (see Figure 1).² While the commitment of scouts to force-oriented reconnaissance has higher risk than surveillance sensors, the payoff is exponentially greater. Air and ground scouts are the only reconnaissance assets available to the commander — in the pure sense of reconnaissance as a process.

First postulate: ground scouts will remain critical to the commander throughout Army modernization and beyond. The search for an answer to the original question then becomes, what organization, tactics, and equipment do scouts need to maximize this benefit to the commander at tactical, operational, and strategic levels, and mitigate the risk he must accept. Truck-mounted scouts do not have on-the-move sensors, cavalry scouts do not have any reasonable stealth, and Stryker brigade reconnaissance incorporates both deficiencies — lack of on-the-move capability and reasonable stealth. At present, these three platforms are the only answer for ground scouts in the next decade and beyond.

Second postulate: scouts are at parity or are overmatched by the threat.³ Without correction, scouts will continue to die short of the reconnaissance objective — the critical subspace in infosphere and battlespace where command information is most critical.⁴ Solutions to this decades-long problem were sought in doctrine, organizations, training, ma-

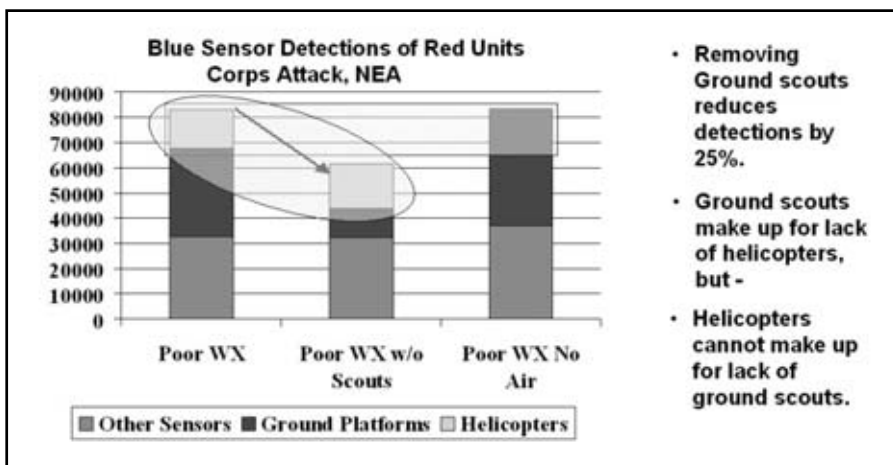


Figure 1: The Unique Contribution of Ground Scouts (TRAC 2001)

teriel, leadership and education, personnel, and facilities (DOTMLPF). Across all these domains, experimentation failed to correct the deficiency. The result was a scout modernization strategy (see Figure 2) to work cooperatively across all domains. This strategy resulted in the short-term answer to scout parity with the Brigade Reconnaissance Troop, the Long Range Advanced Scout Surveillance System (LRAS3) for scouts, and the M3A3 Cavalry Fighting Vehicle (CFV) for cavalry. These solutions were seen as risk mitigation until a comprehensive scout materiel solution could be fielded — the Future Scout and Cavalry System (FSCS). Our British allies identified the same deficiency in their army — to a more time-critical degree. To correct this deficiency, two international consortia, comprising eight of the nine largest defense contractors in the United States and the United Kingdom, executed a combined Advanced Technology Demonstration (ATD). This demonstration has shown both nations the art of cutting-edge integrated solutions that will be fielded for scouts in 2008.

The short-term and risk-mitigating steps to correct the scout deficiency will remain acceptable until threat proliferation of second-generation forward-looking infrared (SGF) returns us to parity and threat overmatch.⁵ At the force level, the Stryker Brigade Combat Team (SBCT) is the Army's short-term, risk-mitigating solution to deployability — lethality balance deficiency. The SBCT will rely on the Stryker family of vehicles for scouts. A Stryker recon variant will carry the LRAS3. The HMMWV, Bradley, and Stryker have been analyzed during operational simulations and composite technical studies.⁶ The results firmly demonstrate that these three materiel solutions all fall short in correcting the scout deficiency beyond 2008. Thus, a materiel solution is required for commanders to exploit the promise of information dominance, thereby setting the conditions for shaping operations and enabling decisive operations.

Emerging doctrine seeks to develop the situation out of contact and shape the battlefield with effects, information, and resources to a decision timeline for the application of decisive maneuver.⁷ This doctrine maintains as its basic key for success — the ability to set the conditions in the “red zone” with precision and generalized shaping effects, then enter and score in a decisive action. Defined by mission, enemy, terrain, troops,

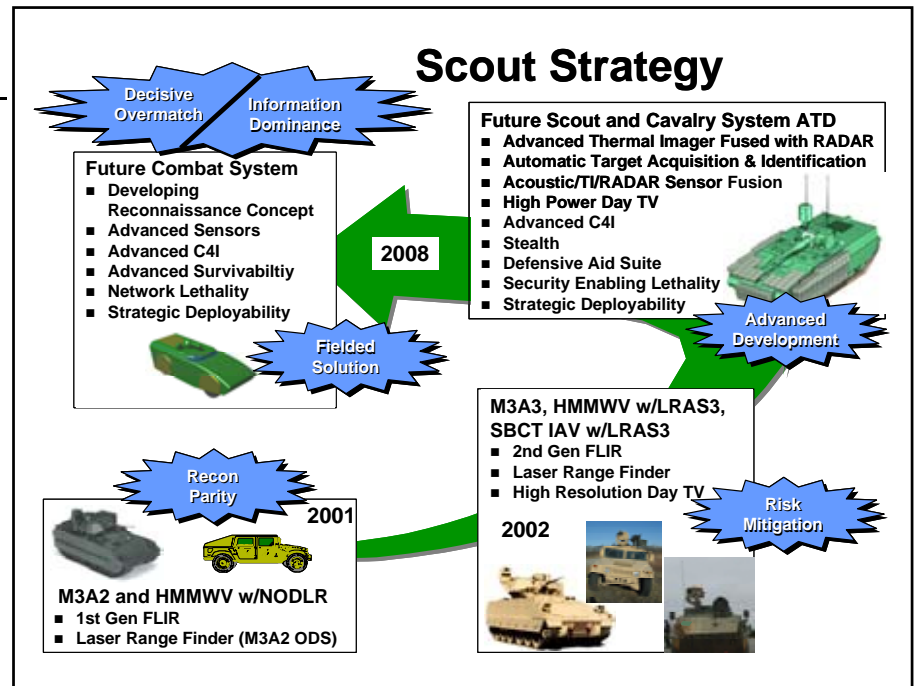


Figure 2: Scout Modernization Strategy (USAARMC 2000)

and time available (METT-T) and line-of-sight (LOS) weapons to be 3-to-5 kilometers (km) at present, the red zone is the final direct fire and contact area encompassing objectives. Given information operations, extended-line-of-sight (ELOS) weapons, beyond-line-of-sight (BLOS) weapons, and acquisition overmatch, the new red zone will approach 15km. The battlefield architecture will then define a tactical deep zone for higher echelon shaping operations and high payoff threat interdiction. Scouts — teamed as air and ground — are key enablers to establishing this expanded red zone, and serve as the commander's only responsive bridge between the red zone and tactical deep zone. NLOS and BLOS weapons for maneuver assets are a critical complement to the indirect fires and air-delivered effects in establishing this expanded red zone. In the tactical deep zone, conditions for operational success and strategic decisive points will require stealthy and highly capable manned reconnaissance.

Parallel and spiral development of doctrine with technology advances enables each domain to provide a capability greater than the sum of their parts. Enabling technologies — ELOS, BLOS, and acquisition overmatch — are well underway. Fire control systems, seeking munitions, and extended range sensors are all making advances. The synergy of these capabilities on the battlefield depends on designation and identification — a U.S. tenet for applying lethal effects. The current effort is to

place these assets within integrated combat solutions that are in the right place in the battlefield geometries. To this end, we again find scouts as a fulcrum for the capability required. Scouts with acquisition overmatch and maneuver forces with NLOS/BLOS weapons have the flexibility to fight large-scale linear battles and nonlinear, noncontiguous small-scale contingencies. The materiel solutions that provide this capability to leaders and soldiers are programmed for fielding before the end of this decade. This timeframe remains critical, as it is the point where proliferated threat systems will overmatch our risk mitigating solutions — the truck- and Stryker-mounted LRAS3 and the M3A3. FSCS and the tank extended-range munitions (TERM) were the U.S. military's solutions to restore dominance over the threat in reconnaissance, security, and economy-of-force missions. However, FSCS and TERM programs are both terminating.

Future Scout and Cavalry System

The FSCS ATD has centered on providing a scout solution that is dominant across the spectrum of conflict, can fight off-the-ramp of a C-130 for 48 hours, can identify the threat before it can detect us, is an adaptive network information node, leverages stealth technology, can survive a 3-to-1 counterreconnaissance engagement, is more mobile than threat and supported forces, can provide security and economy-of-force lethality, and has growth to be relevant throughout its life span.⁸ Many

of these objectives sound similar to the Army Vision, which has proven both prophetic and detrimental to the FSCS ATD. The FSCS is responsive to the requirements for the Objective Force, but is no longer funded to move from the ATD into low-rate initial production and subsequent fielding.⁹ The issue then, is how to correct existing scout deficiencies.

Below is an overview of FSCS requirements:

- **Multispectral RS3:** Identify the threat beyond the scout's recognition and weapons ranges.
- **C4I:** Exploit the fusion of sensors and data throughout the network.
- **Mobility:** Off road and high sustained road speed above the threat and supported forces.
- **Survivability:** Survive in close threat proximity and across the spectrum of conflict.
- **Lethality:** Exploit fleeting opportunities and retain self-defense.
- **Deployability:** Maintain strategic and operational flexibility of movement.
- **Reliability/Sustainability:** Minimize overhead to eliminate the logistics center of gravity.

The FSCS ATD sensor solution is a primordial spiral development that has integrated cross DOTMLPF synergy into the solution. Scouts with high-performance forward-looking infrared (FLIR) achieve threat standoff. Adding radio detection and ranging (RADAR), acoustics, and other technologies then fusing them to a cutting-edge FLIR, provides the scout with sensor overmatch — capability exceeding a single dimensional threat FLIR. This multispectral sensor suite is simplified by powerful onboard computing power, automatic target detection, and aided recognition software. This software then presents the scout with a single intuitive picture of all the sensor data, with symbols to draw attention to specific areas of heat, movement, and sound for human resolution. The elegance of an integrated scout solution is then achieved when this sensor overmatch is coupled with acquisition standoff provided by stealth and integrated signature management. Analysis shows that when sensor overmatch is teamed with acquisition standoff, an acquisition overmatch is

achieved, which radically degrades threat capabilities. This means scouts dominate at all ranges, even if they are moving. Adding far-target location and target-designation capabilities with point-and-shoot network links provides scout-enabled effects to shape the battlespace, with human control, out of enemy contact. Analysis has shown that scout-enabled fires within acquisition overmatch provides significantly fewer friendly losses, greater decision time and space of the commander, and facilitates decisive maneuver.¹⁰ To audit this effort, a parallel and independent ATD was executed to define a data set for a multifunctional staring sensor suite (MFS3). These data were to be the baseline for evaluation of FSCS sensor capability and possibly third-generation FLIR. MFS3 is transitioning to an off-platform hardware program, and has provided minimal audit data.

FSCS integration of cutting-edge technology continues beyond this centric scout capability. Advanced command, control, communications, computers, and intelligence (C4I) with gigabyte bandwidth is 100 times faster than desktop computers, and 1,000 times faster than the data bus on the M1A2 SEP. Commercial technology, such as *Firewire*, will be integral design components. Embedded training and onboard mission rehearsal will provide leaders the opportunity to train in the motor pool or plan and rehearse the battle in the attack position. Advanced medium-caliber cannon lethality solutions will enable the scout to provide security and economy of force, with significant dismount defeat capability. Modular armor will take the basic ballistic protection levels off a C-130 that require dedicated antitank weapons for penetration, and up-armor to protect against hand-held HEAT rounds and medium-caliber cannons. Advanced mobility provides tactical and operational dash capability in excess of threat and supported forces. Cutting-edge technology, like hybrid electric drives and drive by wire, provide reliable functionality integrated into a solution designed for 97 percent mission reliability.¹¹

A significant point of concern in any manned reconnaissance solution is the number of scouts in the solution. While the low-tech Stryker is packed with as many as five dismounts, Legacy Forces have two dismounts per CFV and, in practice, only one per HMMWV. The acceptance of three scouts per HMMWV

haunts the scout community. The other end of the spectrum — no scouts and no scout platforms — may be realistic someday, but not soon.¹² As such, FSCS considered a manned and unmanned balance within the capabilities of both throughout the next 20 years.

From analytic perspectives, minimizing manpower is always a challenge to balance against the operational necessity. Given the need for manned reconnaissance, a minimum of three men was considered necessary for endurance operations.¹³ To effectively execute off-platform tasks, such as local security and manning observation posts (OP), and clear local critical points, such as hills, curves, and obstacles, two men were considered minimum. An empirical answer of five scouts per platform was the starting point. Considerations of the scout and cavalry mission set tended to increase manpower, while design and technology offered mitigation for smaller crews. The constraints of a C-130 deployable system include trade-offs between men and machine. The mission set is not tradeable. Soldiers require gear and supplies, which necessitate significant under-armor volume and additional weight. The machine has a C-130 and survivability induced limit on volume and weight. With the high-tech capabilities of mast-mounted sensors, manned OP time can be reduced. With future marsupial unmanned ground and air systems, clearing critical points can be done without a dismount drill, and comprehensive local awareness can be facilitated with proximity alarms. Thus, to balance between men and machine, while simultaneously protecting the mission, a three-man crew was recommended. User requirements relaxed to a four-man crew initially, with consideration for future marsupial unmanned systems. These unmanned ground and air systems were termed marsupial to define their relationship to the FSCS. In direct analogy to the biological definition, these systems would launch from the FSCS, move autonomously to their target areas, relay information, and be retasked to another target, loiter for surveillance, or return to the FSCS platform. Once recovered, these systems would latch and suckle at a port for additional programming and power before being launched on another mission set. With the limitations of a C-130 deployable system and the benefits of task reduction inherent in aided recognition, these

future marsupial unmanned systems' operational analysis supported a three-man-minimum crew (see Figure 3). Subject matter experts, including cavalry scout noncommissioned officers and officers, have been integral in the development from the beginning. Their impartial analysis also supports a three-man-minimum crew with a fourth scout highly preferred.

The integrated solution of FSCS has been remarkable in another way. Cost effectiveness is a primary concern of the Department of Defense and the Defence Procurement Agency of the U.K. The total cost of \$428 million dollars to develop the FSCS has been shared at 33 percent U.S., 33 percent U.K., and 33 percent consortia. This cost and technology share is of great benefit to both nations, and exploits economies of scale. More directly at cost, with the C-130 constraint as the key design driver, all subsystems had to be balanced to achieve the required capability. This balancing resulted in the contractors abandoning the technique of maximizing performance of every subsystem. Sure, we could have better sensors, or more ballistic protection, or a bigger cannon, but to provide the capability a scout needs in the objective battlespace and fit on a C-130 with a 48-hour fight-off-the-ramp capability, serious and innovative design work and system balancing has provided an operationally effective

solution, which by virtue of the design constraints is cost effective.¹⁴

Future Combat System of Systems (FCS)

The materiel solution for the Objective Force and the current vision of a deficiency correction for scouts and cavalrymen is the FCS. This concept, like the Legacy Force and SBCT, is a cross-DOTMLPF force-level solution. The difference between FCS and the Stryker or Abrams, is an objective system outlining the capabilities to fully achieve the Army Vision. The realization of scouts and cavalry as reconnaissance, surveillance, target acquisition, and economy-of-force assets is but an integral piece of this holistic solution.¹⁵ The RAH-66 Comanche has already been identified as the probable air component of the objective reconnaissance system.¹⁶ Ground and air scouts are the commander's most effective tool for application of fires effects to shape the battlespace and the best facilitator for maneuver to decisively engage the enemy; however, details on the ground-scout solution are still to be determined. A lead system integrator has been designated for FCS to facilitate development for a milestone decision. During 2003, the FCS proposals will be reviewed at an acquisition milestone. The decision authority will then determine the timeframe and solutions for the Ar-

my over the next 50 years. At the end of the day, something will roll off an assembly line to gather information for the commander. Will this *thing* be an armored manned system or some combination of unmanned systems and close combat platform sensors? For scouts, this research development effort means a defined strategy on how to correct the scout deficiency with which we currently live and die.

The possibility of FCS being fielded by 2008 is not idle; however, it faces several challenges. Requirements degradation and schedule extension are two scout-specific concerns. Cost is fixed, thus forcing any FCS-program compromise to come in a watered-down capability, or push back production and fielding. FSCS lessons learned that demonstrate these risks and how to overcome them are integration engineering, systems balancing, and parallel manufacturing process development. Integrating components into subsystems, and subsystems into platforms that meet the requirements to fit into a C-130, is the primary engineering risk facing any development. FCS further complicates this risk by adding integration of platforms into a common solution set. The temptation to degrade and trade-off capabilities is great. The Stryker is a case in point — this nondevelopmental program initially thought to be C-130 transportable, now must sacrifice functionality to meet the critical C-130 gauge.¹⁷ FSCS maintained requirement integrity with some difficult decisions.¹⁸ This highly detailed integration consumed significant time, analysis, and engineering. Time is one resource in short supply for FCS — schedule is also a risk. The science and technology community will always have something better on the horizon — just give them some time and money.

While all programs face challenges, FCS faces even greater innovation challenges. Technologies that can be manufactured for the scheduled fielding require a lead-time that requires system-level decisions now. An example of this challenge is third-generation FLIR. We can make individual versions of third-generation FLIR — as currently defined — on a lab bench. The process technology to manufacture these sensor subsystems is, however, nonexistent. This fact prohibits counting on third-generation FLIR in the initial FCS. When these requirement and schedule challenges are dissected, "perfect" is not

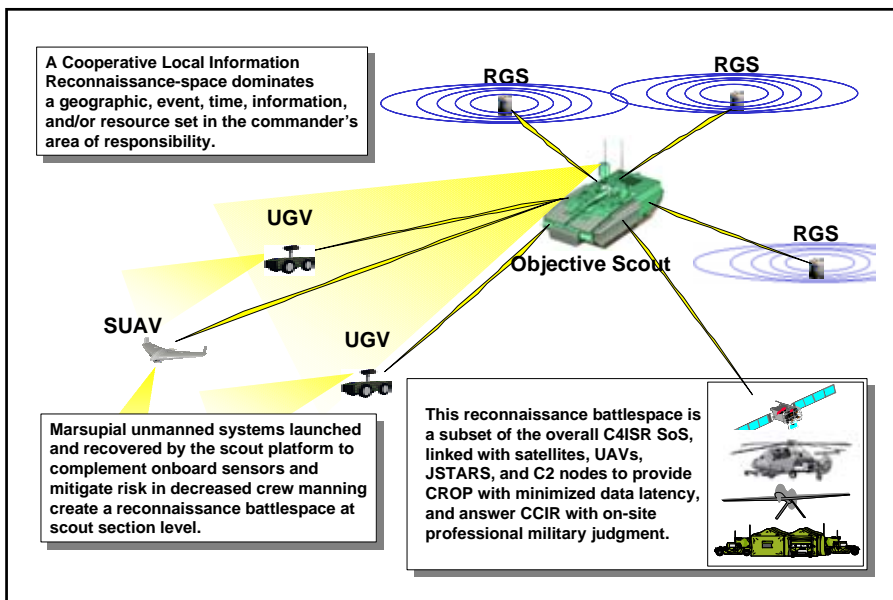


Figure 3: FSCS within the C4ISR System of Systems (USAARMC 2000)

attainable by 2008 and probably not by 2010.

Logically, one would think that since FSCS has already done significant work in line with FCS, it could be incorporated as risk mitigation into FCS. The FCS consortia teams and the objective force concept have at their disposal some of the deliverables of the FSCS ATD. The end result is uncertain. There is however, a one-year gap between the FSCS ATD and the FCS milestone decision. FSCS was developed in complement to Comanche, and FSCS is responsive to FCS requirements.¹⁹ Should the milestone decision authority determine significant risk with FCS delaying schedule or degrading requirements, FSCS deliverables can be a risk-defeating option. However, the greater the delay, the less effective any integration and manufacturing advantage, as engineers are reassigned, hardware and production is mothballed, and studies and designs filed away. Using FSCS deliverables for risk mitigation is not a major issue. Under Federal Acquisition Regulation, part 6, it is a government right to do so. FSCS is not the perfect solution, but is borne out of analysis as a “good enough” capability.²⁰ Conceivably, troops, commanders, and taxpayers could have “good enough” in 6 years as opposed to “perfect” in 15 or more years.

We have a fleeting opportunity for an integrated solution to correct scout deficiencies and provide objective capability in this decade within the Army Vision. Assume we can no longer give scouts interim equipment fixes and require leaders and troopers to “make it happen.” Information dominance for commanders is too critical to be overlooked. Key to the process of providing scouts with capable equipment, and the Army with dominant reconnaissance capability is leveraging technology to attain an integrated fieldable solution before threat overmatch. This critical timeline is hostage to the lead-time required of technology, integration, and manufacturing processes. Under these discussed constraints, our initial question — what does the future hold for cavalry scouts — has three possible solutions.

FCS is the preferred solution; if FCS triumphs over significant schedule and requirement risks, the question is moot. Second, if FCS challenges conspire to degrade requirements or delay schedule, a risk-mitigating answer and option is prudent. Given the need for infor-

mation dominance to set the conditions for success, and that Comanche is expected to be the air reconnaissance component of Objective Force, a responsive ground scout solution would make sense as an initial phase of FCS. This initial phase would mitigate FCS program risk, solve the scout deficiency and establish the information dominance requirement. Finally, FCS shall be the solution regardless of schedule delay and requirements degradation. This solution risks accepting that the threat may overmatch our capabilities, while we are in pursuit of perfect solutions. For scouts, this risk can mean either HMMWV and Bradley against BMP-2 PIP or BM-2T with SGF, or a Stryker recce against a T-55 with modern fire control and SGF. Within the intelligence, surveillance, and reconnaissance infosphere, the threat will seek to apply local overmatches, such as asymmetry, mitigating our low-density stand-off surveillance systems, such as unmanned aerial vehicles and joint surveillance target attack radar systems, and neutralize our reconnaissance to provide for their success.

Scouts are necessary, but currently lack the platforms and networks to succeed. The Objective Force is reliant on the condition of information dominance. An air-ground reconnaissance team can be ready to set this condition for the Objective Force. Leveraging FSCS under the FCS program with Comanche can deliver the literal and figurative scout for the Objective Force during this decade.

Notes

¹The Objective Force C4ISR Concept, 16 Nov 2001.

²Rand Studies 87, 93, 94, 95, 96, 98, RAND Corporation; NTC Trend Analysis 91-93; Desert Storm Lessons Learned; Center for Army Lessons Learned (CALL) 88, Fort Leavenworth, KS; U.S. Army Armor Center Studies 95-99, Fort Knox, KY; U.S. Army Training and Doctrine Analysis Center (TRAC), FSCS Combined Analysis Report 2001, Fort Leavenworth, KS; TRAC Combined Arms Reconnaissance Study 2000, Fort Leavenworth, KS; and IBCT Organizational Analysis 00-01.

³FSCS Combined System Threat Assessment Report, 2000.

⁴Rand Studies 87, 94, 98, NTC Trend Analysis 91-93.

⁵FSCS Combined System Threat Assessment Report, 00.

⁶TRAC FSCS Combined Analysis Report to the FSCS Combined IPR, January 2001.

⁷FM 3-0, *Operations*, U.S. Government Printing Office, Washington, DC, 14 June 2001; Whitepaper: *Concepts for the Objective Force*, November 2001.

⁸JROC validated FSCS Mission Needs Statement 30 April 1997; USAARMC and UK DEC ISTAR Approved Combined Operational Requirements Document, FSCS v 10.0, 2001.

⁹FSCS Combined Operational Requirements Document (CORD) v. 10.0, 2001, compared to Army approved FCS Mission Need Statement (MNS), 2 November 2001; and draft FCS Statement of Required Capabilities (SORC) 2 November 01.

¹⁰TRAC FSCS Combined Analysis Report to the FSCS Combined IPR, January 2001.

¹¹FSCS Combined Operational Requirements Document, v. 10.0, 2001.

¹²Unmanned Ground Vehicle (UGV) Demo III, 00-01.

¹³Director of Requirements – Land, UK Ministry of Defence Studies.

¹⁴User Brief to FSCS Affordability Review Panel, 1 February 2001.

¹⁵FM 17-95, *Cavalry Operations*, U.S. Government Printing Office, Washington, DC, 24 December 1996.

¹⁶The Army Modernization Plan, Department of the Army, 2002.

¹⁷Frank Tiboni, “Most New Armored Vehicles Exceed U.S. Army’s Medium-Weight Needs,” *Defense News*, 4 March 2001, p. 6.

¹⁸c.f. paragraph under FSCS - crew size.

¹⁹Army approved FCS Mission Need Statement 2 November 2001; draft FCS Statement of Required Capabilities, 2 November 2001.

²⁰Federal Acquisition Regulation, Part 6, pp. 302-2, 3,4,6,7.

MAJ Harold A. Buhl, Jr. is an assistant product manager with the Theater High-Altitude Area Defense (THAAD) Battle Manager, Huntsville, AL. He is a graduate of the U.S. Army Command and General Staff College, Fort Leavenworth, Kansas. He has served in various command and staff positions, to include branch chief, Future Scout and Cavalry Requirements, Directorate of Force Development, U.S. Army Armor Center, Fort Knox, KY; resident trainer, 3/278th Armored Cavalry Regiment, Cookeville, TN; commander, D Company, 1-72d Armor, Camp Casey, Korea; and scout platoon leader, A Troop, 1-1 Cavalry, Katterbach, Germany.

The Mesopotamian Front!

As Observed by Lieutenant Colonel Edward Davis, U.S. Cavalry, 1918

Edited by Leo J. Daugherty III, Ph.D.

From December 1914 until the end of World War I in 1918, the Indian Expeditionary Army (IEF), later renamed the Mesopotamian Expeditionary Force (MEF), waged a multi-front campaign against Turkish forces under the able command of British General Sir Stanley Maude.¹ After almost 3 years of relative neglect in favor of the strategically more important Western, Balkan, and Palestine Fronts, as well as the incompetence at all levels of command and lack of inertia that characterized the first 3 years of campaigning in Mesopotamia, a combined British-Indian Expeditionary Force under the command of General Maude, eventually defeated a large Turkish force after he first reorganized his supply lines and his depleted forces received reinforcements from India and England.

Reinforced and resupplied, the IEF launched a multifront offensive against the combined Turkish-German forces positioned in front of the Turkish-controlled city of Baghdad. To observe the Indian (British) army in Mesopotamia in action, the U.S. War Department sent Lieutenant Colonel Edward Davis, U.S. Cavalry, in 1917 to the headquarters of General Maude, and the now-renamed Mesopotamian Expeditionary Force. Prior to his assignment to the Mesopotamia Front, it might be noted that in 1916, Davis observed British General Edmund Allenby's operations in the Sinai in Palestine.

While somewhat dated, Davis' observations, collated into a report to the War Department, nevertheless serves as a useful guide to the difficulties General Sir William R. Marshall, General Maude's successor, faced on his march toward Baghdad. While Davis admitted that the War Department may not find information therein contained "pertinent to current operations then ongoing on the Western Front," he stressed that the report nonetheless serves as useful primer on an extremely important area of potential military operations.

Davis' report is broken down into several parts, including a geographic introduction to Mesopotamia with an overview of the country's major transportation routes; the composition and distribution of the MEF; a front-by-front military analysis; navigation on the Tigris; and an synopsis or resume of military operations on the Mesopotamian Front. While some of Davis' analyses are dated, the report serves as a useful reminder for U.S. Army planners of the problems associated with operating in Iraq. Readers will note that Davis makes specific reference in several instances to "a white battalion." These were the British troops interspersed with the native Indian troops of the MEF. Because of India's proximity to Mesopotamia, the British Imperial General Staff used the Indian troops in this far-flung portion of the Empire. Davis' report discusses the problems associated "insofar as movement over land and water along the Tigris-Euphrates Fronts" was concerned. Davis also discusses the "humanitarian" work accomplished by the MEF, as well as the political activity carried out by British military officers who worked among the Iraqi peoples.

One can see the "low-intensity conflict nature" of the final phase of the Mesopotamian campaign where British and Indian troops carried out extensive combined small-unit operations similar to the U.S. Army's ongoing operations against the remnants of the Taliban and al-Qaeda in Afghanistan. In many cases, these operations were carried out with infantry, aircraft, cavalry, and armored cars. In sum, Davis' report is a reminder that oftentimes a war's name may change and the combatants may differ, but the manner in which it is fought is timeless.

Editors Note: To preserve authenticity, ARMOR did not edit the terminology used in Lieutenant Colonel Davis' journal.

The Report of LTC Edward Davis, dated 29 July 1918

Military Intelligence Branch: Executive Division

Subject: The Mesopotamian Front

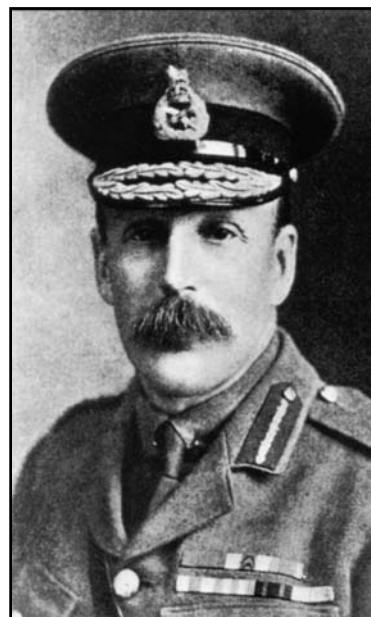
To: Chief, Military Intelligence Branch-G5

From: Lieutenant Colonel Edward Davis, U.S. Cavalry
Military Observer

Date Submitted: July 12, 1918²

1. Although sometimes objectionable, it would seem that the narrative form is best suited for the purpose of this particular report, and it therefore will be used.

2. When I received orders to join the British army in Palestine, for duty as observer, in 1917, it occurred to me that here



"Immediately upon joining the British army in Palestine, I took up the question of going to Mesopotamia and in due course received an invitation from General Sir Stanley Maude to come to Baghdad with a view to service on that Front."



was an opportunity to serve as well in Mesopotamia, a Front which I had desired to visit when I was with the British army in the Sinai Peninsula in 1916, but which I had refrained from doing on account of a supposed lack of time and for other reasons. I felt that the government should have at least one officer with personal knowledge of all the Fronts, including the Mesopotamian Front and its related associations of India and Persia. Logically, as the Macedonian and Palestine Fronts, and the Egyptian War area had been under my observation during the preceding two years, the addition of the Mesopotamian area would be appropriate and would give me personal acquaintance with all the Fronts of the war, except the Italian, which I hoped might be subsequently added — and which has been. It appears now that I was probably mistaken in believing that the government would be able to utilize an officer with this comprehensive knowledge of all existing Fronts but there is always the possibility of a changed attitude, and, in any event my professional experiences have been immeasurably enriched, which is naturally a great personal satisfaction.

3. Immediately upon joining the British army in Palestine, I took up the question of going to Mesopotamia and in due course received an invitation from General Sir Stanley Maude to come to Baghdad with a view to service on that Front. Although death unfortunately removed Sir Stanley from the scene of his successful accomplishments, I interpreted his invitation as the wish likewise of his successor, General William R. Marshall. The brilliant success of the Palestine Campaign and the amount of professional material, which I gathered there as an observer, held me in that area for a longer time than I had expected, but this delay resulted eventually in good fortune because it enabled me to go to Mesopotamia in company with Major General Webb Gillman, Chief of Staff, Mesopotamian Expeditionary Force,

who had been Chief of Staff of the British Salonica Force until the Spring of 1917, and who happened to be one of my best friends. He had been in Egypt attending a conference with General Sir Reginald Wingate, the British Resident, General J.C. Smuts, and General Allenby. It was a great advantage as well as a great pleasure to accompany General Gillman from Egypt to Baghdad, not only because of his great knowledge of the Mesopotamian area and of the war situation in general, which made his perspective of real value, but because of his acquaintance with the places and the people with whom we came in contact.

Leaving Cairo March 3rd 1918, we arrived at Aden on March 9th and while there, inspected the small, but essential, Aden Front in company with the commanding general thereof. Aden will be made the subject of a separate report.

India

We arrived at Karachi, India, March 15th as it was necessary there to transfer to another steamer in order to get to Mesopotamia, and as no such steamer was to sail for several days, General Gillman took advantage of the interval to visit Delhi, the capital of India, for the purpose of conferring with the Viceroy and the commander in chief regarding the entire Eastern situation. General Gillman was kind enough to ask me to accompany him to Delhi, which I did as the guest of the government of India. During our brief stay in Delhi, I was received by the Viceroy and by the commander in chief, and had such an opportunity likewise to discuss the Eastern situation with various other officers pertaining to the Indian government and Indian army. Our trip to Delhi was across the Sinai Desert and the plains of Kajputana, while on their return journey. We were able to go north almost as far as Lahore, thus seeing something of the Punjab and the valley of the Indus River down to Karachi. In Karachi, we had sev-



eral talks with the commissioner in Sind, a man of life-long experience in India and as an able official of the government.

Persia

March 24th, we left Karachi on a transport that carried a battalion of the 124th Baluchistan Infantry, which was being sent to reinforce the British and Indian Detachments then in Southern Persia for the purpose of maintaining order in that area as against the plots and disturbances initiated by German agents. On March 27th, we landed this battalion at the port of Bandar Abbas, on the south shore of Persia near the entrance of the Persian Gulf. We went ashore with the battalion and met the Persian Lieutenant Governor of the District, and other officials.

The condition of Persia was chaotic; the government being very weak and vacillating, scarcely knowing which way to turn between the two contending forces of the Allies represented by the British authorities, and the Central Powers represented by a large numbers of agents. The Persians as a people are an unfortunate lot, without advantages as to character and education and greatly lacking in that quality of cohesion, which we call a national conscience. The British had given considerable encouragement and direction to a locally recruited force called the South Persian Rifles and had also sent into the country about 10,000 British Indian troops but, in spite of this, the tribes were far from tranquil.

Busrah — The Base

On March 31st, we arrived at Busrah, the Base of the Mesopotamian Expeditionary Force, which lies 67 miles from the Persian Gulf up the Busrah River, or Shatt-al-Arab, the stream formed by the junction of the Tigris and the Euphrates.³ Late in 1914, when the operations commenced on this

Front, Busrah was a small, sleepy, oriental town almost entirely landing, handling, sorting, and transshipping large quantities of stores. The anchorage for all steamers was in midstream. The country around Busrah is absolutely flat in all directions and is only two or three feet above the level of the river, which tends to overflow and flood the town from the north, while the backwater from the Persian Gulf makes the same threat from the southeast. All along the river are groves of date palms. There are several million of these trees in the Busrah area and they are the mainstay of the region in the line of remunerative productivity and local food supply. As the entire country is intersected by deep, muddy creeks and irrigation ditches, its conversion into a base was just that more difficult. There was only one road in the region that ran from the river town of Ashar back to Busrah proper, a distance of about two miles. Thus, in the early days of the Mesopotamian campaign, the inadequacy of Busrah as a base contributed in full measure to the unfortunate circumstances, which brought those early operations to an almost fruitless and regrettable conclusion.

Improvements At Busrah

At the time of my arrival, Busrah was in many respects a well-equipped and adequate base. Practically all the work was performed during the preceding 18 months. About one mile of fairly good landing stages had been constructed along the river, and at Magill, several miles up the river, excellent wharfage facilities were being installed along a river frontage that would permit 15 ocean-going steamers to tie up and work cargo at the same time, instead of anchoring in midstream and discharging and loading cargo by lighters. This is a very expensive project because every bit of the wood and metal used has to be imported from India or some more remote place.

To prevent the water from the Busrah River from flooding the many establishments of the base, a huge bund or dam has been built south and southeast of the town. Many roads have been built connecting the many elements of the base along the river front and a great belt road has been constructed and properly metalled, connecting the river area with the outlying groups of base camps, hospitals, and various other features. All of the stone and other material used in metalling this road had to be brought from India.

Before the war, there were very limited facilities at Busrah for the repair of the few steamers that were on the river, and of course these facilities were insufficient for the first inadequate river transport, which was provided for the Mesopotamian army in the early days. As part of the subsequent reorganization and in order to provide for the upkeep of the greatly increased number of river steamers, a large shipyard was installed at Busrah on which over six millions dollars had been spent. The yard comprises dry dock facilities for the river steamers, machine shops, foundries, and supply depots of various sorts.

As a part of the hospital establishment at Busrah, a herd of 1,000 milk cows is maintained. This wise provision emphasizes another inadequacy of Mesopotamia as it exists today, that is to say, no milk in any quantity is obtainable locally and the distance from India prohibits shipment of the commodity.

Abbadan

Coming up the river from the Persian Gulf, about 40 miles below Busrah, one saw the town of Abbadan, the site of the offices, works, storage-tanks, and general depot of the Anglo-Persian Oil Company, the institution that caused the Mesopotamian operations in the first instance; a subject which will be referred to in another paragraph.

Mesopotamian Railways

The distance from Busrah to Baghdad by river is 502 miles, but this distance has been somewhat shortened by the railways, which have been built for the supply of the army. The railways currently in operation consist of a standard gauge railway from Busrah to the west as far as the town of Nasiriyah on the Euphrates, which is used only to support troops in that vicinity; a standard gauge railway from Busrah up the right bank of the Tigris as far as Amara; a standard gauge railway from Kut-al-Amara up the left bank of the Tigris to Baghdad; a standard gauge line forms the Baghdad line from Baghdad west to the town of Dhibban, beyond Feluja, on the Euphrates; the original Eastern section of the "Berlin-Baghdad Ry," from Baghdad North to Samarra, this being a standard gauge railway of the latest and most substantial type; narrow gauge railways northeast from Baghdad to Baqubah and Shah Roban, where the grading has been completed over the Jebel Hamrin Hille to Kizil Robot, the idea being to carry the railway eventually on into Persia through Khan-i-Khin, Kasr-i-Shirin, Hamadan, and Kermanshah to Teheran, which, I believe, was the original idea of the Germans in connection with the main line of the Berlin-Baghdad Railway. (At present, this is a narrow gauge line as far as Shah Roban, the work of converting it into a standard gauge having commenced at the Baghdad end before I left that place); and a standard gauge railway south from Baghdad toward Hilla and now completed as far as Museyib, this line will serve to bring out the prospective great grain yield from the region indicated.

Journey to Baghdad

In order to save time, my trip to Baghdad was not made by river steamer, but by rail to Amara, thence, by steamer to

Kut-el-Amara — the scene of General Townsend's surrender, thence, by rail to Baghdad where I arrived April 4th.

Composition and Distribution of the MEF

At this time, the disposition of the MEF could be marked by a half circle, with a radius of 90 miles drawn around Baghdad as a center, which would roughly coincide with selected lines of resistance in various sectors, though it must not be thought that this half circle represents a line held continuously. As a matter of fact, there is no contact between the various sectors or fronts, the presence of insuperable natural barriers in the form of desert country being sufficient to keep the enemy from penetrating between sectors. The troops were disposed as:

- Base and headquarters lines of communications at Busrah.
- Lines of communications divided into five areas all on the Tigris or Shatt-al-Arab, including Busra, Kurna, Amara, Kut-al-Amara, and Baghdad Advanced Base.
- GHQ at Baghdad.
- III Indian Army Corps (13th British Division, 14th Indian Division, 6th Indian Cavalry Brigade, and a detachment of armored cars) on the Eastern or Persian Fronts, occupying the Jebel Hamrin Hills north of the Teheran Road, and the regions Kizil Robot, Khan-i-Khin, Kasr-i-Shirin, and other points along the road into Persia with the ultimate object of prolonging the line through Persia to the Caspian Sea, via Teheran.
- Ist Indian Army Corps (17th and 18th Indian Divisions) on the Northern or Tigris Fronts, occupying lines on the right and left banks of the Tigris just north of Samarra.
- The 15th Indian Division, 11th Cavalry Brigade, and armored cars on the Western or Euphrates Fronts, with advanced headquarters at Khan Bagdadie about 130 miles up the river from Baghdad. This division has since been consolidated with the cavalry into what is called "The Euphrates Force."
- A brigade at Hilla and a corresponding detachment in the Kerbela-Nedjef Region, 60 to 80 miles south of Baghdad. This is the Southern Front.
- A cavalry division (half British Regulars and half Indian Cavalry) divided between the various fronts and employed wherever and whenever an offensive was to be undertaken.

These fronts are now supplied, at least in part, by standard gauge railways built by the British, except the section of the Berlin-Baghdad Ry.

The force on the four Fronts was equivalent to a little more than six combat divisions; the others were Indian divisions. An Indian division has one white battalion in each brigade. The total ration strength of the army was just about 400,000. When one sees the length and character of the lines of communications, this large ration strength is understood.

The corps artillery of each corps consisted of two batteries of 60 pounders and four batteries of 6-inch Howitzers.

The Tigris Front — Samarra

My journey in seeing all the Fronts began with the Tigris Front. Left Baghdad April 5th, by train, arriving 75 miles north of Samarra on the morning of April 6th. The day was spent in going over the trenches of the 17th and 18th Divisions, which have each a frontage to the north of about two miles, with their flanks then refused and extended some distances down the stream and parallel thereto. By extending the refused flank well down the river, great additional secu-

ity is obtained, should the enemy attempt to turn the flank, he would find himself at a prohibitive distance from water, while the British defending troops with their superior mechanical facilities and their proximity to the river would not be handicapped in this respect. These trenches look like the trenches on all the other fronts but here, as elsewhere, there are interesting local problems in the selections of positions. On the right bank of the Tigris, the trenches lie on high ground near the river, with an almost perfect field of fire to the north; further away from the river, the position trends south among rolling hills where much study has been necessary to ensure a proper sweep of fire along the ground in front.

On the left bank of the river, the works lie north of the present city of Samarra, which is a walled city. Along this bank lies 20 or 30 miles of ruins, marking the sites of ancient Samarra at various stages of its growth and decay. Among these ruins, which extend several miles north of Samarra, there are no structures of any considerable height, but there is an endless mass of heaps of bricks in a confused jumble, overgrown for the most part by a light turf. To select a proper line amidst this huge field of ruins, without going too far north of Samarra, was a very difficult task. About two miles east of Samarra, rises the Tomb of Julius, a huge tumulus about 200 feet high, rising from the level plain. The presence of this isolated elevation adds difficulty to the situation.

The Tigris was about 300 yards wide at Samarra, when I was there. The water had risen considerably and the storm of a few days before had carried away the pontoon bridge that the British had installed. Communications were maintained by steam launch and lighter. While this caused no embarrassment with regard to the supply of the division on the left bank, there was naturally some uneasiness regarding the question of transfer of heavy guns and troops, should occasion have risen for any such movement. However, at this time, the Turk was in a mood of great discouragement and had no effective force nearer than 50 miles. It was considered that he could not affect a surprise because the British cavalry patrols many miles to the front were an insurance against this. Aeroplane reconnaissance also assisted in this security. I use the term "assisted" because even in the great flat stretches of the Eastern Fronts, the lesson has been driven home that concentration can be effected and large bodies of troops can move without the knowledge of such activity being gained by aeroplane reconnaissance.

As the text above has indicated, the valley of the Tigris at a point so far north as Samarra loses the feature of extreme flatness. Here, ranges of hills about 100 feet in height come almost up to the river's bank in places, receding again until they are sometimes two or three miles back from the river. This is a very great change from the country below Baghdad, which is everywhere as flat as a billiard table.

In general, the feeling on the Tigris Front was one of quietude, the trenches being very lightly held and most of the time being devoted to instruction; although preparations were about to be undertaken for a thrust northeast across the Jebel-Hamrin hills, into the region of Kifri-Kirkuk, where it was hoped a considerable capture of Turkish soldiers and guns might be made and the entire triangle between the Jebel-Hamrin and the Persian border cleared of a considerable Turkish detachment, which had afforded for a long time a convenient rendezvous and a means of access to Western Persia for an active organization of German and Turkish political agents. This thrust northeast from Samarra was carried out later and pushed through with great success as far north as the Lesser Zab River.

With a view to being ready for any Turco-German attempt to push down the Tigris, the British had made extensive plans for holding the Samarra position with the same end in view. These plans arose from the double necessity of being prepared for an enemy offensive and at the same time sending two divisions to the Palestine Front.

It should be added that while there was at one time considerable information that there would be a Turco-German attempt to push down the Tigris, the evidence in hand at the present time indicates that they have little intention of doing so and that it would take them a very long time to prepare for it after they reach such a decision.

Berlin-Baghdad Railway

My journey to Samarra was over the only section of the Berlin-Baghdad railway that the Germans built in Mesopotamia. I inspected this section on this occasion and also saw the terminal facilities at Baghdad on the other occasions.

The first material for this section was landed at Baghdad in June 1912; work was commenced about a month later and was completed in the latter part of 1914. In the meantime, a branch had been surveyed from Baghdad northeast to Khan-i-Khin on the western side of Persia in that rather indefinable region, which is more or less correctly referred to as Lower Kurdistan. However, there is no evidence that any work, other than survey, was done on this Khan-i-Khin Branch.

The Baghdad-Samarra section of this railway is very substantially built. The road bed is heavily ballasted; concrete culverts are established over all streams; the rails and cross ties are of the heaviest and the best steel employed for such purposes; the attachment of the rails to the cross ties and the fishplates is most thoroughly done. Switches, turntables, engine houses, station houses, platforms, and all the appurtenances of a railway system are built of the very best material and in a very substantial manner. The Turks in their retreat made some effort to ensure complete destruction of all rolling stock and other necessities of operation, but they did their work so stupidly and carelessly that the British were able to restore the railway to running order, with considerable rolling stock, including at least six first-class German locomotives, within a few weeks time.

The Euphrates Front

On the night of April 7th, I left Samarra and arrived at Baghdad April 8th, leaving that place the same day for the Euphrates Front, going by rail as far as railhead at Dhibban, from which place on April 9th I proceeded by automobile to Ramadie and on April 10th by automobile to a point a little west of Khan-Bagdadie, which is 130 miles up the Euphrates from Baghdad.

The Euphrates Front, at the time of my visit, was in what might be called a fluid condition. The 15th Indian Division and the 11th Cavalry Brigade, with a reinforcement of armoured cars and some heavy guns, had just reached out from Hit as far as Khan-Bagdadie and captured the entire 50th Turkish Division during an operation.

During this round-up of the 50th Division, a very creditable piece of work was done by an American, who held at that time a commission in the British army, to wit: Captain Kermit Roosevelt, of the Light Armoured Motor Car Brigade.⁴ These armoured motor cars made a successful effort to recapture two British officers of considerable rank who had been taken prisoners by the Turks when they had been forced to descend during an aeroplane flight over the Turkish lines, and who were being sent under escort to Aleppo at the time

of the battle of Khan-Bagdadie. Learning the whereabouts of these officers after the battle, the British division commander sent the armoured car brigade up the Euphrates, which they followed to a point 75 miles about Ana, or just about half way from Baghdad to Aleppo. During this push up the Euphrates, a part of the British forces chanced to encounter a very important German agent. They captured him, but left most of his baggage, together with a lot of papers, scattered about the bivouac where they had captured him. Later, Captain Roosevelt came along in his car, saw these papers, recognized the importance of them, gathered them up, and later turned them over to the appropriate staff officer. Upon careful examination, the papers proved to be of the very greatest importance and Captain Roosevelt was, for this act and for other instances of admirable conduct, suitably rewarded. I might add appropriately, that Captain Roosevelt by his work with the armoured cars, as well as by his generally admirable conduct, made a very favourable impression on the officers of the British Mesopotamian Expeditionary Force, all of whom spoke of him in terms of the greatest praise.

The main British position on the Euphrates prior to General Brooking's advance had been at Ramadi, about 75 miles up the Euphrates from Baghdad. I went over the Ramadi position, but a description of the same is of little importance now. The trenches were the same in appearance as on all the fronts. I have walked through scores of miles of them without seeing any especially important points of superiority on one front as opposed to another. The Ramadi position lies on the right bank of the Euphrates and covers the west and south sides of the town. The positions were well selected and the work very thoroughly done. I also went over to the fields of the two battles for the possession of Ramadi.

The battle at Khan-Bagdadie, which resulted in the capture of the entire 50th Turkish Division, was fought in the hills of the right bank of the Euphrates. These hills are very jagged, rough, and irregular in direction, having no definite trend, although there are several fairly well defined ridges running back at right angles from the river. The Turkish commander made a very great mistake in sticking to these hills so long that General Brooking's cavalry was able to get round behind him, blocking the only road north by which he could retreat. The Cavalry commander had the armoured cars with him and was later reinforced by 1,500 infantry soldiers who were sent forward in Ford cars. It was a very definite and clean-cut victory.

A feature of the upper Euphrates region beginning about 40 miles up the river from Baghdad is the high range of hills seen for the most part on the right bank. As on the Tigris at Samarra, the presence of these hills is a great change from the Irak Arabi — as the country south of Baghdad is called in order to distinguish it from Mesopotamia proper, which lies entirely between the Tigris and Euphrates north of Baghdad. Beginning opposite Dhippan and continuing up the right bank of the Euphrates, as far as I went, that is at Khan-Bagdadie, the hills are exceedingly rich in gypsum, so much



"The main British position on the Euphrates prior to General Brooking's advance had been at Ramadi, about 75 miles up the Euphrates from Baghdad. I went over the Ramadi position, but a description of the same is of little importance now. The trenches were the same in appearance as on all the fronts."

so that the hillsides flash in many places with the reflected sunrays. At the town of Hit, there are large deposits of bitumen.

The feeling on the Euphrates Front was a very natural air of great elation following a most complete and easy victory. I spent the best part of one day with the advanced headquarters of the 15th Division at Khan Bagdadie and there, as well as at points further south, I saw the Turkish prisoners brought in. The physical appearance of these prisoners is shown fairly well by the photographs which will be forwarded.⁵ Most of them were in good physical condition, although some were thin and sick looking. Their resources as to food had been very slim, as it is slow work floating it down the river from Aleppo, and the Turk is exceedingly inefficient regarding all his management of supplies. Several hundred Turkish horses and carts were captured. The conditions of the horses was very poor — most of them being so thin that they could have been of little use for draught purposes.

Several hundred Armenian refugees also came under my observation on this front. They had been passed down the Euphrates river and were billeted, in a way, among the Arab villages along the river as far south as Khan-Bagdadie. The almost complete extermination of the Turkish-Euphrates Force by the action at Khan-Bagdadie made these Armenians masters of their own fortunes for the moment, and most of them accepted the British invitation to move further south where they could be protected and cared for. Most of these Armenians were in a very good humor when I saw them, but this was a temporary and significant mood due to the elation resulting from the change in their condition and from the fact that most of them were enjoying the luxury of a first ride in a Ford car. In a few instances, Armenians had decided to continue their life among the Arabs, but these were cases where individual arrangements had evidently been made.

On April 11th, while returning to Baghdad, I visited the 11th Cavalry Brigade, which I had also seen on April 9th. This brigade consisted of the 7th British Hussars and the "Guides Corps" Cavalry Regiment of the Indian army. This was the brigade, which had contributed the essential element to the capture of the Turkish 50th Division. The brigade has

a most excellent esprit-de-corps and gave the impression of great efficiency.

I arrived in Baghdad the night of April 11th from the Euphrates Front, and left on the morning of the 12th from the Hilla-Babylon, or Southern Front, making this trip in an automobile and arriving at brigade headquarters near Hilla on the night of the 12th.

At that time, the two features of the Southern Front were the German inspired hostility of the inhabitants of Nedjeh, and the great agricultural revival in effect under the British director of local resources at Hilla. The hostility of the people of Nedjeh was embarrassing to British authorities, because the Shi'a sector of Mohammedans regard Kerbula and Nedjeh as holy places. The hostility of the tribes in the neighborhood of Nedjeh is the only serious native threat that has arisen within the British zone of activity, and as it might easily develop into a very troublesome factor along their lines of communications, the authorities wished to suppress it but felt that very great tact was necessary, in order that they might not be accused of damaging or violating any of the holy places. A crisis was caused by the murder of a British political officer who was stationed in Nedjeh with a very small guard. The plan, which was being carried out at the time of my visit, was that of blockade. The offending city was surrounded by the larger part of a brigade and this shut off all supplies from outside, which would ultimately force the surrender of the murderers. In addition to this blockade feature, however, the authorities were preparing an assaulting force for use, if necessary. The assault was to be directed against only a small quarter of the city, where the murder had taken place and where there were no holy places. It was to be carried out by infantry soldiers armed only with hand grenades, their action to be preceded by very low flying bomb-dropping aeroplanes. I am not informed if that ultimately took place, but the plans indicated ultimate success in obtaining possession of the murderers of the political officer, and after that, the complete pacification of this particular sector of the Euphrates. This pacification is important, because the best route for the railway from Busrah to Baghdad is along the line originally surveyed by the Germans, that is to say, along the right bank of the Euphrates.

It is in this Euphrates region — 60 to 80 miles south of Baghdad — that the British are making very great agricultural efforts which are intended, beginning with the year 1918, to feed the entire British Mesopotamian Force, in so far as cereals and forage for men and animals.

Throughout the Southern Front, one observed considerable agricultural activity, and the splendid crops of growing grain throughout the Hilla Babylon area indicated the tremendous possibilities of the whole Mesopotamian country. The great canal system of the ancient Babylon days are still very much in evidence, so much so that as one moves across the country, one seems to see on every hand miniature mountain ranges, but these are in reality only the walls of the ancient canals traversing the countryside on every hand. The condition of these walls, which are merely dirt embankments, is so good that hundreds of miles of irrigation facilities can be recovered merely by repair, without reconstruction.

The British authorities are very much alive [aware] of these possibilities and have accomplished a great deal through the agency of their department of local resources. While motor-ing back to Baghdad from the Southern Front, I visited the Hindie-Barrage (Hindiyah). This substantial engineering work is in the form of a weir across the Hindie branch of the Euphrates and regulates and corrects the flow of the river so as to throw a sufficient amount of water into the Hilla

branch. This correction was a very great necessity, because by 1910, the Hilla District had begun to suffer very seriously from lack of water, so necessary in that great fertile area. The work was done by a British company and was completed in 1914. It is unique, in that efforts by the Turkish government to improve anything have been marvelously few and far between.

The Persian, or Eastern Front

Having returned to Baghdad on the night of April 13th from the Southern Front, I left there on the morning of the 14th by automobile for the Eastern Front, arriving the same day at the Headquarters of the 14th Division at Kizil-Robat, 70 miles northeast of Baghdad in the first valley east of the Jebel-Hamrin hills. Opposite Kizil Robat, the Turkish lines are several miles distant across the Diala River in the angle of the two branches thereof. In order to see the Turk at this point, one must take a considerable journey across "no man's land," and this we did the same afternoon with a detachment of armoured cars. Accompanied by four British officers, pertaining to the local forces, I crossed the Diala River and went with the armoured cars north to the hills in the vicinity of Kara Tepe. We encountered no Turkish patrols and were able to get right up to their line of outposts, and having made our own observations after the manner of a patrol, we returned across this wide "no man's land."

The 14th Division was the nucleus, at that time, of the elements that were moving into Persia, a movement which had been somewhat delayed on account of the snow in the passes of the Persian mountains and by reason of difficulties pertaining to supplies.

On the morning of the 15th, I continued by motor along the road through Khan-i-Khin, and on to Kasr-i-Shirin in Persia, where I found the 36th Infantry Brigade and a regiment of Hussars. This latter cavalry regiment had sent one section still farther forward into Persia. From Kizil-Robat to Kasr-i-Shirin the road is, for the most part, through high but well-rounded hills, and much work is being done here by way of road improvement and preparations for the railway line, which will be put through here before long. The road is protected by a line of outposts and by patrols over toward the north, where the Turk at that time held the other bank of the Diala River. This region is in that somewhat ill defined borderland between Persia and Turkey, and the inhabitants are for the most part Kurds. They are a lazy and very dirty lot. The town of Kasr-i-Shirin, although the site of the ruins of some of the most magnificent structures pertaining to the days of Persia's glory, is itself one of the dirtiest towns in the East. It is the dirtiest place I have seen. From the hills above Kasr-i-Shirin, one saw the snow on the mountain passes further east — the snow that delayed the British advance. From among these mountains, however, the considerable stores of fuel in the form of wood. The supply obtained was really only just sufficient for the 30th Brigade, but it was unique in that the firewood for the rest of the Mesopotamian Expeditionary Forces was imported from India.

The situation along this Eastern Front was one of expectancy, in that the troops were all anxious to move forward, but the conditions of the roads at that time of the year made the contemplated advance to the Caspian Sea by way of the Teheran road a matter of too much difficulty. The Turk, in the area across the Diala, was very lacking in enterprise and took very little advantage of the many opportunities to raid and interrupt the British lines of communications along the road between Kizil-Robat and Kasr-i-Shirin. To keep the natives quiet, the British were employing a number of Kurdish irregular horsemen in patrolling the road and surrounding

country. These Kurdish horsemen are a very picturesque and wild looking lot — probably ready to serve on one side quite as quickly as on the other.

The Old Russian Front

This region is the southern end of the old Russian Front of the days when the appearance of Russian troops in this part of Persia caused the Allies to have such great expectations. However, this Russian advance was merely a great fake. It did far more harm than good to the cause of the Allies.

The Russian force, which came down here, had no supply line behind it and lived off the country. Whatever they needed, they took from the villages and towns. This included firewood, which they obtained by tearing down the houses of the people. In every way, looting and all sorts of violations mark their expeditions. It would be very difficult to decide whether the Russians or the Turks did the greatest damage in Western Persia and Lower Kurdistan. The British, as they advanced East after the withdrawal of the Russians, found the Persians unfriendly. The Persians said, "You are the Allies of these Russians, are you not?" The British, of course, had to answer in the affirmative. Upon this, the Persians exhibited an attitude of unfriendliness, saying, "We find it difficult to be friendly with those who are Allies of such people as the Russians." I was reliably informed that the discipline of these Russians was practically nil.

The British tried to effect an improvement by detailing liaison officers, but these officers found themselves practically helpless. One of them stated that the Russian inefficiency was so great that they marched without advance or flank guards and made camp without outposts, with the result that they were frequently shot into and suffered losses from the Kurdish tribesmen, who hovered near these indifferent Russian troops.

After the withdrawal of the main Russian force, a detachment of about 1,200 of them decided to remain behind and fight with the British troops. They were refitted and supplied with rations and ammunition by the British, but were so lazy and worthless that they would consume as much of their rations as they could, wherever they happened to be, and when ordered to march, abandoned whatever supplies they had rather than expend the energy necessary to carry the supplies with them. At their next camp, they would loot the surrounding villages in order to get whatever food they needed. They also abandoned the greater part of their equipment. After a little of this, the British authorities decided that it was useless and wasteful to maintain this Russian detachment, and it was accordingly disbanded and started back North toward Russia.

On April 16th, I motored back to Baqubah (3rd Indian Army Corps Headquarters), stopping en route at Shah-Roban, where I had the good fortune to see the 6th Cavalry Brigade, the advanced element of which I had seen at Kasr-i-Shirin. On April 17th, I returned to Baghdad and left there on my return to Europe, the night of April 19th, going all the way to Busrah by Tigris River steamer. I arrived at Busrah the night of April 22nd and after several days as the guest of the inspector general of the lines of communications; I took another steamer on April 26th, arriving in Koweit Bay in the Northwest corner of the Persian Gulf on April 27th. There, I transferred to a transport, carrying Indian troops from Mesopotamia to Palestine and proceeded on my voyage to Suez, touching en route at Muscat, but not at Aden.

Navigation on the Tigris

While the Tigris River is of great assistance in the transportation of supplies, its course is so crooked and its channel is

so subject to change that it is far from being a good or reliable means of communication. Owing to the sinuosity of its course, one travels 502 miles in going from Busrah to Baghdad by river, whereas the distance by railway, when the line is completed, will be little more than half that distance. The river steamers employed are practically all of the side wheel and stern wheel type of the sort employed on the Mississippi, the Ohio, and other rivers of America. They are all now equipped with oil burning engines and are divided into three general classes as to size, varying from 100 to 250 feet in length, with corresponding power and carrying capacity. They are seldom used singly but carry habitually a barge on each side. These barges are of the same length as the steamers and most of them are roofed or provided with canopies so that men and animals are carried very comfortably and protected so far as possible from the extreme heat of this region. It is a fact, and not at all an exaggeration, that the Tigris is so crooked that in going around some of the curves, the barge on the one side strikes the bank and the whole tow caroms off across the stream and sticks the other side, thus bumping around the curve. As the mud of the bank is very soft and slippery, no damage is done. At all of the bands where the river is so narrow that this bumping is habitual, the mud on the banks is worn very slick and shiny, where the sides of barges have polished it.

On my trip down stream from Baghdad to Busrah, I experienced the sensation of this bumping process with considerable interest and amusement. One of the worst curves in the river is the "Devil's Elbow," which is located in "The Narrows," not far above Kurna, which later place, according to local tradition was the site of the "Garden of Eden."

Another striking feature in connection with the sinuosity of the Tigris is that, at various points, one can see the smoke of river steamers at all four cardinal points of the compass; they are all on the Tigris but they seem to be scattered all over the landscape. It is not unusual to observe an average of one steamer temporarily stuck in the mud, in each of these areas of the lines of communications. As a rule, passing steamers dislodge the unfortunate one after a greater or less length of time. While the river is habitually smooth, there are variations in its calmness, for instance, on my trip down, the wind, late one afternoon, blew up waves that would have done credit to the high seas; and this is probably 50 miles North of Kut-al-Amara. The personnel of the river service are entirely under the control of the inspector general of the lines of communications and navy personnel are not employed at all.

Resume of Operations

One of the highest authorities of the British army informed me that the Mesopotamian Campaign had its origins officially in the decision of the British to protect the pipelines and properties of the Anglo-Persian Oil Company. This company has valuable oil fields in the Ahwaz District, about 100 miles up the valley of the Karun river, which runs down the south-western corner of Persia and empties into the Busrah river at the town of Muhammerah, about 25 miles South of Busrah. To affect this protection, in anticipation of Turkish hostilities, the British sent a Poona Brigade to the island of Bahrain in the Persian Gulf in October 1914. This brigade, with subsequent reinforcements, captured Fao, the Turkish fort and cable station at the mouth of the Busrah River. Then followed the evacuation of Busrah, by the Turks and the subsequent British pressure, which drove the Turks up the Tigris; Kurna, Amara and, Kut-el-Amara being captured in sequence. Then followed General Townsend's ill-advised ad-

vance on Baghdad with one division. He was victorious in the battle of Ctesiphon, 20 miles southeast of Baghdad, but the Turks counter attacked (sic) with heavy reinforcements, driving Townsend's back to Kut-el-Amara, where he was surrounded, barely having time to get his cavalry away on the afternoon before the Turks cut him off. Then followed the unsuccessful and grossly mismanaged operations for the relief of Kut-el-Amara. I had a view of the positions which figured in these operations, namely at Falayah, Abu-Roman, Sannayat, Es-Sinn, and Dujailah, and the town of Kut-el-Amara itself; but an extended account of these features need not be incorporated in this report. It suffices to say that the British advances had to be across country as flat as a billiard table, under a burning sun from which the soldiers had almost no protection; and during a part of the time their trenches came dangerously near inundation from the river and the marshes. One of their greatest difficulties pertained to artillery observation, which was rendered futile at times by the presence of mirage; the only means of observation during these operations was the observation ladder. A complete and searching review of this campaign can be found in the report of "The Mesopotamian Commission," published by the British Government in July 1917.

General Sir Stanley Maude next appeared upon the scene and saw to it that the Mesopotamian army was plentifully reinforced and properly equipped before undertaking the operations, which terminated so successfully in the capture of Baghdad and the securing of a proper line of resistance on the East, North, and West, then at an average distance of 30 to 40 miles in each direction.

The features of General Maude's success were as follows:

- His army was decidedly superior to the Turkish force in number of men and weight and number of guns and strikingly superior in every sort of mechanical equipment having to do with the transport of supplies and the comfort and protection of troops.
- His preparations for each advance were marked by the most painstaking attention to detail, most of which General Maude supervised in person and had a remarkably intimate knowledge with regard thereto.
- Every advance involved, to some extent, a heavy frontal attack; this was unavoidable in this region. Even when he turned the Turks out of Kut-el-Amara, his extreme left had to make a frontal attack in forcing a passage over the Tigris River at the Shumran Bend, West of Kut, where the losses were serious.
- His successes were gained at the price of very heavy losses. All the information indicates that his average losses were between 60 and 65 percent.
- This average loss of 60 to 65 percent was also suffered in the operations east of Baghdad as late as the middle of 1917, namely, at the southern end of the Jebel-Hamrin Hills; in the attack on Tekrit, north of Samarra; and in the first and unsuccessful attack of Ramadi about 60 miles up the Euphrates.

Later Operations

Operations subsequent to those above-mentioned have been characterized, on the other hand, by remarkably small losses on the part of the British and by very heavy losses on the part of the Turks, as to prisoners and guns captured. This change in the degree of Turkish resistance is undoubtedly due to deterioration in the numbers and quality of their personnel and in the skill of their leadership. Another reason for the

decrease in British losses in these comparatively recent operations is the fact that they have been selected and optional enterprises, prepared at leisure and with great care. They have also profited by the expensive lessons of the past.

Employment of Cavalry

While the cavalry of the MEF was not so numerous nor so essential, and did not operate on so vast a scale as did the cavalry of the Palestine army, it was employed effectively and was the essential element in some of the most important operations. A detailed description of these various cavalry operations need not be included in this report. The Khan-Bagdadie enterprise of General Brooking can be referred to as a type. I was not fortunate enough to be in Mesopotamia at the time of any large cavalry operations, but I was in the finale of the Khan-Bagdadie show and saw something of the cavalry in general. At a later date, many of the cavalry records of the MEF may be placed in my hands, when, at a time of leisure, I shall be able to compile or review them. For the moment, one records herein, for the benefit of the U.S. Cavalry, certain conclusions, which are drawn from a knowledge of the work of the British cavalry in the Mesopotamia area. These conclusions are as follows:

- Under conditions of Mesopotamian terrain, there was no need for the employment of a large body of cavalry on an independent mission of reconnaissance — strategical as opposed to tactical reconnaissance. This was partially true in Palestine.
- There was no proper opportunity in this area for successful employment of mounted shock action of cavalry versus cavalry, because Turkish cavalry was so poorly mounted and otherwise so weak that they avoided meeting a mounted attack or, if they had to meet it, they did so with dismounted fire action. This was exactly the case in Palestine, also.
- The Mesopotamian conclusion was that cavalry could not be expected to attack a position held by the infantry by purely dismounted action with any hope of success, as they were neither armed nor trained for such employment; but, this conclusion should be looked upon by the U.S. Cavalry as an error, or phenomenon peculiar to Mesopotamia, as contrasted with the Palestine experience, because, as I have heretofore reported, the Palestine cavalry habitually attacked infantry dismounted, although it also achieved some very brilliant victories by mounted shock action against infantry and guns. The difference between these conclusions on these two fronts is due to the fact that on the Palestine Front, the Australian and New Zealand (ANZAC) mounted troops, being trained in dismounted action, set an example, which was ultimately followed by the British Yeomary, who although armed with sword, as well as with rifle, finally became successful in the dismounted attack. It is no exaggeration to say that the cavalry of the Palestine army fought dismounted just as well as the infantry; and the cavalry of the Mesopotamian army would have achieved a similar degree of dismounted efficiency had there been in that theatre of war a cavalry leader of modern ideas, sufficiently high in rank to have forced his idea upon the army.

• As to armament, it was concluded that the sword or sabre is superior to the lance, the latter being merely an encumbrance to the cavalry soldier in the majority of his work. This fact was also generally admitted in the Palestine army, where the lance was not used and was only recommended by a few officers of the old British cavalry who were hopelessly blind as to modern conditions. The U.S. Cavalry, except in

the cases of a few rare individuals, perceived that the lance was out of date more than 50 years ago.

- Another Mesopotamian conclusion is that the cavalry soldier should carry a bayonet and that the rifle should be slung on the back of the trooper, using perhaps a short bucket with the purpose of keeping most of the weight off the troopers back. It will be recalled that the Australian and New Zealand troopers had a bucket of this type when they first came to Egypt, and that they discarded it long before the Jerusalem campaign, finding that it was better for them to carry the rifle sling on the back, without the additional support of the bucket.

- The existing instructions for the training of cavalry for shock action are now being cut down, so that more time can be devoted to instructions in other points which are found to be more important in view of modern experience.

- More training in night marching, especially in order to carry out the effective pursuit of an enemy who makes it his practice to withdraw at night, by anticipating him at some suitable position astride his line of retreat.

- The Vickers guns of a machine gun squadron with their rapid and sustained fire for considerable periods may be regarded as a reserve of firepower in the hands of the cavalry commander. They were found most useful in holding definite positions, in supporting cavalry by covering or indirect fire, and in holding strong points for determined defense. The flat nature of the ground in this theater did not lend itself to the free and safe use of overhead covering fire from these guns in a purely offensive and fast moving action, so advantageously as did the more broken and rolling terrain of Palestine.

- The Regimental Hotchkiss guns, while more mobile than the Vickers machine guns, could not produce such sustained or effective fire. They were regarded as a supplement to, not as a substitute for the Vickers machine guns. They were usefully employed nearer the enemy and in lighter and quicker work, always with their units, and were especially useful with patrols or smaller detached bodies. In purely dismounted action, they were employed in the same manner as Lewis guns with infantry. Exactly similar conclusions were reached in Palestine with regard to the employment of the Hotchkiss and the Vickers guns.

- Armored cars were employed in cooperation with cavalry in Mesopotamia, with striking success. As bad ground is the only thing which will stop them and a direct hit by a shell is the only thing they have to fear, the advantages of having armored cars to work in cooperation with cavalry are obvious, but one must bear in mind that the terrain of Mesopotamia was ideal in most places for the armored cars, while in Palestine, because of difficult terrain, the armored cars were of little value and were not much used. In Mesopotamia, these cars were invaluable for carrying out long and rapid independent reconnaissance or close tactical reconnaissance or positions. They tempted the enemy to open fire at once; and in a short time, induced him to disclose his dispositions, strength, and guns, generally with no damage at all to the cars. They were of great value in dealing with irregulars, mounted or dismounted, and also against bodies of hostile cavalry and were also the most convenient and economical form of escort for other motor vehicles, that is to say, motor convoys, motor ambulances, and so forth. In cooperation with dismounted cavalry and in covering the retirement of cavalry from dismounted positions, they have also proved of great value.

- In a flat and featureless country, it appears that a cavalry brigade (U.S. Regiment) can work very effectively with an allotment of two batteries of eight cars each.

- For cavalry to defend itself against hostile armored cars, it was concluded that the best method was for the horse artillery to come rapidly into action with HE shells, while the cavalry cleared the field for the artillery, taking advantage of any obstacles or available cover.

- It was concluded that in broken country, the best formation when under artillery fire, is "troop columns" (U.S. platoon columns) at irregular intervals and distances; while in open and flat country the best forms were found to be "extended columns of squadrons" (U.S. columns of troops) at 100 to 200 yards, or greater distances.

- Training in the use of the bayonet and instruction in the sitting and digging of trenches, both night and day, were considered essential for cavalry in order to enable it to hold on to an important position, until the arrival of the infantry.

- It was thought that the horse artillery guns of the cavalry should be 18-pounders, rather than 13-pounders, and that the guns should have a maximum range of 9,000 yards and be capable of firing effective shrapnel at 7,000 yards; that the weight behind the teams should not exceed 34 cwt. It will be recalled that the cavalry of the Palestine army discarded the 18-pounder and adopted the 13-pounder. When I arrived in Mesopotamia, I found that there they had discarded the 13-pounder and were being re-equipped with the 18-pounder. There were reasons for this diametrically opposed decision. The Palestine cavalry, on finding the 18-pounder too heavy in the zone of the Sinai Desert, and when the Turks started to retreat from lower Palestine, they desired the maximum of mobility in order that their guns might keep up during the pursuit. Furthermore, in Palestine, there was a good deal of heavy work in dragging guns uphill. Also, the spirit of the Palestine horse artillery was, from the first, that of the offensive and the initiative. On the other hand, during the earlier operations in Mesopotamia, the cavalry was engaged with the infantry in a long period of uncompromising trench warfare and found their 13-pounders of no particular value because they were constantly outranged. This caused the 13-pounder to lose favour from the beginning. Later, when the pursuit of the Turk started, it was over terrain where a heavier gun could have been moved with equal rapidity, and so a general desire arose for a heavier gun.

Tactical and Supply Employment of Ford Cars

The Ford car was used on several occasions in Mesopotamia for the transportation of infantry soldiers in large numbers, in cooperation with the cavalry, for the purpose of gaining the enemy's flank or rear. On that flat terrain and with favourable weather, the scheme works perfectly. Ford cars were also used as supply columns for the cavalry and made possible their long marches. The forage and baggage came into camp promptly, and this contributed greatly to celerity of movement and comfort for man and beast. Another ruse of the Ford cars was in the supplying of water to the combatant troops.

The "Hush-Hush Brigade"

In company with a British Major General, I had the opportunity to inspect a battalion of this unique organization, composed very largely of soldiers of fortune from the United Kingdom, Canada, Australia, New Zealand, France, and Russia. These men had been recruited throughout the Allied forces, and by virtue of their previous experience and reso-

lute characters, were considered specially fitted for their mission.

The "H.H. Brigade" was organized at Baghdad and sent into Persia for the purpose of working up into various parts of the Caucasus, with the view of serving as nuclei in various parts, for Armenian, Georgian, and other military organizations, which it was hoped might be established. There was great hope at the time of my visit that these men would be able to venture successfully into the region mentioned, but I am inclined to think that very great obstacles were encountered in the way of Turco-German troops and agents, so that probably the enterprise has not been successful. The officers and men were equipped as British troops; and were altogether the most efficient looking crowd of high-class patriotic, and altogether worthy cutthroats and desperadoes that I have even seen — they were superb. The battalion commander knew something of America and was referred to among his intimates as "Pistol Pete."

Persian Occupation

The British intention, when I was in Mesopotamia, was to occupy the road from Baghdad on through Persia, via Kasr-i-Shirin, Hamadan, and Teheran to the Caspian Sea, in order to cut off as effectually as possible the inroads of Turco-German agents and bands of irregulars en route to Southern Persia for the purpose of stirring up trouble among the tribes. This extension of the British right will be a very considerable undertaking, involving as it does the garrisoning of some 600 to 700 miles of road and a consequent extension of the lines of communications over difficult country. In this connection, it is the intention of the British to push their Baghdad-Kizil Road railway as far into Persia as time and circumstances permit and necessitates.

Mesopotamia as a War Prize

Mesopotamia is the biggest prize of the war. The soil is rich, its extent is vast, a system of irrigation can be installed with little difficulty, and great productivity will ensue almost everywhere, once water is supplied. To a very great extent, the ancient system of irrigation is still in existence and only needs repair in order to restore the land to all the richness of the days of Nebuchadnezzar.

All along the Upper Euphrates are rich deposits of gypsum while there are at Hit, bitumen wells. These deposits of bitumen have been worked by the natives for a time "whence the memory of man runneth not to the contrary." Modern methods will result in a considerable establishment here, and it happens that bitumen is a product that will serve as a multitude of purposes in this part of the East today, just as the ruins of Babylon show its considerable use in ancient times. Some coal has been found beyond the Jebel-Hamrin hills northeast of Samarra.

The region of the Tigris and Euphrates possesses all the potential wealth of ancient days; its present condition of poverty being due, not only to the blight of Turkish government, which would ruin anything, but due to the fact that successive wars and other misfortunes have deprived the region of a population.⁶ It is, in a way, an empty country.

Among many British authorities, the idea is gaining strength that Mesopotamia will be a good place for the surplus population of India. Some others with whom I've talked were positive that the region should be kept for the Arab, whom it was thought could be developed in time, and who, under the greater percentage of increase, which would mark the hygi-

enic teachings of a good government, might provide sufficient population for this region at as fast a rate as the projects of irrigation could be developed.

Summary

The 1918 British campaign in Mesopotamia, as observed by Lieutenant Colonel Davis, serves as a reminder that any successful military operation in Iraq will require a well-organized logistical infrastructure, troops trained in quick, mobile operations, and a force structure capable of dealing with a multitude of problems — both military and civil — not unlike the ongoing operations in Afghanistan. The campaign in the so-called "Garden of Eden" serves also as a reminder to the pitfalls that Iraq's road and rail network, beset by a decade of neglect, due in large part to the post-Desert Storm economic sanctions placed on her by the United Nations, may be as bad as they were in 1918, and thus unusable from a military standpoint. As for the requirements for a military campaign in Iraq, Lieutenant Colonel Davis' observations reinforce the need for a quick-hitting, mobile force capable of covering Iraq's vast space. Like the cavalry of 1918, armor will once again lead the charge, as it did during Operation Desert Storm, in February 1991.

Notes

¹General Maude died of cholera on 18 November 1917, prior to Lieutenant Colonel Davis' arrival in the spring of 1918. For the best overall account of the Mesopotamian campaign, see A.J. Barker, *The Bastard War: The Mesopotamian Campaign of 1914-1918*, The Dial Press, NY, 1967, p. 374; For an up-to-date view of the Mesopotamian campaign, see Paul K. Davis, *Ends and Means: The British Mesopotamian Campaign and Commission* Associated University Press, Rutherford, NJ, 1994.

²See Report of Lieutenant Colonel Edward Davis, U.S. Cavalry, Military Observer to Chief, Military Intelligence Branch, G-5, dated 12 July 1918, Subject: "The Mesopotamian Front," Washington, DC, National Archives, Military Intelligence Branch Records, Accession No. 2017-20, dated 29 July 1918, copy 1 of 3.

³Lieutenant Colonel Davis is referring here to the city of Basra, located at the mouth of the Shat-al-Arab leading into the Tigris River Basin.

⁴Captain Kermit Roosevelt was the son of former President Theodore Roosevelt; see Captain Roosevelt's account of the Mesopotamian Campaign in his semi-autobiographical account, *War in the Garden of Eden*, Charles Scribner, Inc., NY, 1919.

⁵The photographs Lieutenant Colonel Davis mentioned here were not attached to this report in possession of the author.

⁶This was before oil was discovered in 1927 in what is now Iraq.

Leo J. Daugherty III is an assistant professor of Military History, The Ohio State University (Lima Campus), Lima, Ohio. As a gunnery sergeant in the U.S. Marine Corps Reserve, he is currently assigned as a historian, History Museums Divisions, Washington Naval Yard, Headquarters, U.S. Marine Corps, Washington, DC. He received a B.A. from John Carroll University, an M.A. from John Carroll University, and a Ph.D. from The Ohio State University. During his Marine Corps career, he has served in various positions, including S2 chief, 3d Battalion, 25th Marines, 4th Marine Division, Cleveland, Ohio, with duty in Desert Shield/Storm; S2, Headquarters Company, 6th Marines, 2d Marine Division, Fleet Marine Force, Camp Lejeune, NC; and S2 clerk, 3d Battalion, 6th Marines, 2d Marine Division, Camp Lejeune.



Integrating Tactical UAVs Into Armor and Cavalry Operations

by Lieutenant Colonel Jeffrey R. Witsken

Unmanned aerial vehicles (UAVs) are frequently featured in headlines as key weapons in Operation Enduring Freedom. They are providing critical intelligence and targeting information to joint forces. Despite the current publicity, UAVs have been in use by all military services for decades, as a means for reconnaissance, surveillance, and targeting. For example, the Army used UAVs during Operation Desert Storm and during operations in Bosnia and Kosovo. But generally, UAVs were limited and special purpose assets, providing intelligence and targeting for echelons well above the brigade level.

This is all changing. The Army is in the early stages of providing maneuver forces —armor, infantry, and mechanized brigades, as well as cavalry regiments — a valuable ally: the tactical unmanned aerial vehicle (TUAV). In addition, the Stryker Brigade Combat Teams (SBCTs) boast organic TUAV platoons within the reconnaissance, surveillance, and target acquisition (RSTA) squadrons. The TUAV is expected to be a key enabler in improving situational awareness and expanding battlespace

for maneuver brigades. Recent studies and operational experience point to the potential of this new, brigade level combat multiplier. Recognizing this promise, this article highlights attention on proper integration of the TUAV into armor, cavalry, and RSTA operations. Observations stem from training center experience, recent experimentation, and recent studies.

TUAV Description

The TUAV system is the Shadow 200 TUAV, recently approved for full-rate production. It can carry a 60-pound payload, has a range of up to 125 kilometers, and its flight duration is 4 hours at a 50km radius. Currently, the TUAV is equipped with an electro-optical/infrared (EO/IR) sensor payload and additional payloads are planned in the future.¹

These TUAVs are being fielded in a platoon-sized element to maneuver brigades, providing a capability for 12 hours of operations every 24 hours, with a surge capability for limited periods of time. The TUAV system sends video from its sensors to the ground control

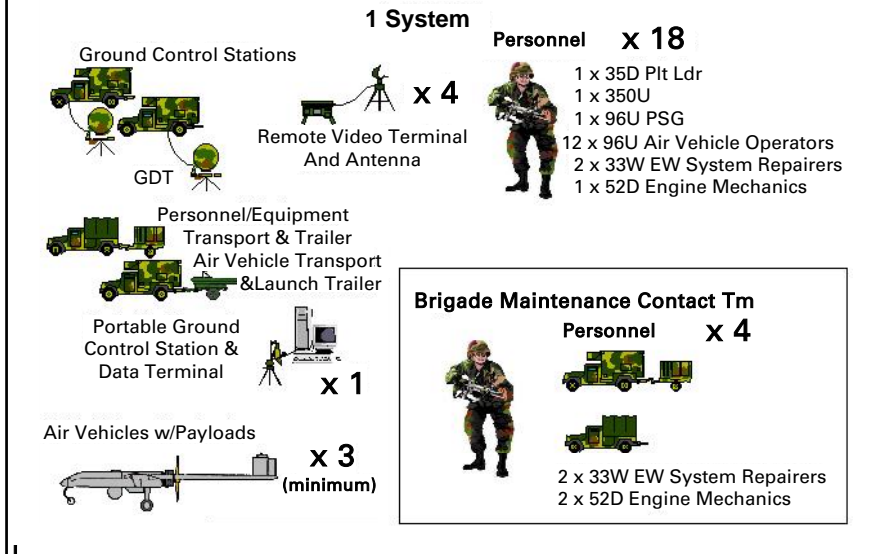
station, and to four remote video terminals (RVTs). RVTs are positioned where needed to best support operations, providing that line of sight communications with the TUAV is maintained. The TUAV interfaces with the all source analysis system (ASAS), and is also being developed to interface with the Force XXI Battle Command Brigade and Below (FBCB2) system. These interfaces will allow TUAV-derived information to be quickly disseminated.²

Because of the potential suggested by previous UAV experience and studies, the Army is aggressively fielding the TUAV. Current fielding plans hope to provide a TUAV system to nearly every maneuver brigade in the Army within the next 6 years. The TUAV will therefore be and Objective Forces.

The TUAV System That Matters

The TUAV airframe is not very remarkable. But, it is part of a larger “system” that can have a profound impact on unit performance. The actual TUAV system includes the airframe, the ground station, the analysts interpreting the sensor’s raw information, the unit com-

Brigade Commander's TUAV System Description AAIs Shadow 200



mander, his staff, and the command, control, communications, computer and intelligence (C4I) system that is used to disseminate the acquired information. Both field experience and simulation experience point out that the key factor in the usefulness of the TUAV is how well its information is analyzed, interpreted, and disseminated. Essentially, the TUAV must be embedded into a unit's command and control processes.

The true impact of the TUAV is a product of how many leaders in a unit receive TUAV-acquired information and can act on it. Robert Leonhard notes that the correct way to assess the value of a system is, "focusing not on a weapon's lethality, but rather on its complementary effects on other friendly weapons."³ In this regard, although a TUAV is not lethal, it can profoundly affect the lethality and survivability of every other system within the brigade. This is a matter of key tactics, techniques, and procedures (TTP) development, and is a critical issue for any unit equipped with TUAVs.

"The TUAV system is the Shadow 200 TUAV, recently approved for full-rate production. It can carry a 60-pound payload, has a range of up to 125 kilometers, and its flight duration is 4 hours at a 50km radius. Currently, the TUAV is equipped with an electro-optical/infrared (EO/IR) sensor payload and additional payloads are planned in the future."

CTC Experience with UAVs

For several years now, Hunter UAVs employed at the brigade level during combat training center rotations reinforces the versatility of UAVs. Obviously, the primary benefit of a UAV is that it offers a "bird's-eye view" to the unit. This capability allows a unit to extend its situational awareness further than possible before. Units can also use this bird's-eye view for any aspect of their operations, such as intelligence, confirming targets, observing for indirect fires, and providing critical "eyes-on" information to unit leaders. As a result, a TUAV-equipped unit can employ its weaponry out to maximum range, and dominate more battlespace than previously possible. In fact, this versatility causes considerable competition within the brigade for use of the UAV.



The brigade staff is continually torn between the demands for intelligence, fire support, and situational awareness. Each subordinate unit desires some degree of UAV support, often simultaneously. Clear and tough decisions have to be made regarding when and how to employ a UAV within a given operation. The TUAV is a valuable tool, much in demand by all echelons for multiple purposes.⁴

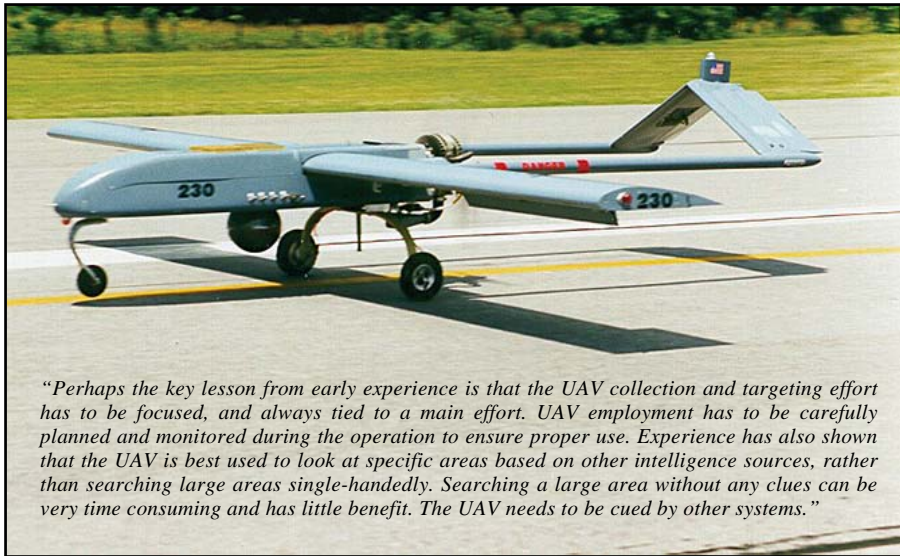
Perhaps the key lesson from early experience is that the UAV collection and targeting effort has to be focused, and always tied to a main effort. UAV employment has to be carefully planned and monitored during the operation to ensure proper use. Experience has also shown that the UAV is best used to look at specific areas based on other intelligence sources, rather than searching large areas single-handedly. Searching a large area without clues can be time consuming and has little benefit. The UAV needs to be cued by other systems.⁵

During reconnaissance missions, UAV derived information needs to be quickly passed to ground reconnaissance elements. Units have used the UAV as part of reconnaissance "waves" and to "recon pull" ground reconnaissance elements forward. Ground reconnaissance elements picked up surveillance of enemy elements after initial detection by the UAV, permitting employment of the UAV elsewhere.⁶

It should be noted that these insights were gained from units with partial fielding of modern C4I systems. UAV information was generally provided to the brigade staff through RVTs. Because of the limited dissemination means, UAV-derived information was generally confined to the brigade staff.⁷

Initial SBCT Experience

As the Army's Stryker brigades proceed in their training cycles, they are



“Perhaps the key lesson from early experience is that the UAV collection and targeting effort has to be focused, and always tied to a main effort. UAV employment has to be carefully planned and monitored during the operation to ensure proper use. Experience has also shown that the UAV is best used to look at specific areas based on other intelligence sources, rather than searching large areas single-handedly. Searching a large area without any clues can be very time consuming and has little benefit. The UAV needs to be cued by other systems.”

building their own UAV experience. Since SBCTs rely on information dominance for successful execution of their operations, reconnaissance and surveillance are incredibly important. The TUAV is one of the SBCT commander’s primary RSTA systems for gaining information dominance.⁸

Recent SBCT field experience confirms much of the experience with the UAVs discussed above. A primary issue for the Stryker brigade is who controls the TUAV, given its importance to brigade operations, and how to share its information. These early SBCT exercises have preceded the full integration of FBCB2 and other digital command and control systems. As noted earlier, when dealing solely with RVTs, leaders must carefully consider information flow management within the headquarters, and establish procedures for sharing situational awareness. This is easier with careful TUAV management and close attention to image analysis and information flow. This is an essential consideration, one that will still remain as use of the Army Battle Command System and FBCB2 continues to increase within the IBCT.⁹

These IBCT exercises reinforced the importance of TUAV integration with other recon platforms.¹⁰ TUAVs need to be integrated into reconnaissance operations with the same level of care that divisional and regimental cavalry units currently integrate their air and ground scouts.

The Division Capstone Exercise

The Division Capstone Exercise (DCX), conducted in two phases during April and October 2001, represented the first large-scale exercise marrying UAVs with a digitized brigade, capable of rapidly disseminating information internally.¹¹ In addition to the RVTs used

previously in other training exercises, UAV-generated information was quickly analyzed and passed into the All Source Analysis System. This information, in turn, was forwarded to the FBCB2 systems throughout the brigade. This linkage of the TUAV with advanced command and control systems made the TUAV a key source for brigade situational awareness.¹²

Integrated with other battlefield sensors, such as joint surveillance and target attack radar system (JSTARS), TUAVs played a critical role in building situational awareness for the brigade and division. They helped extended situational awareness beyond the area covered by ground reconnaissance assets. In addition, TUAVs were used to “intensify” the level of situational awareness at critical events in each battle. The Blue Force commander was able to shape the battle, adjust his scheme of maneuver, deny opportunities to the enemy, dominate key terrain, and mass necessary combat power at the decisive point. TUAVs also served to enable indirect fires and close air support.¹³

DCX highlighted the complexity of integrating TUAVs into the brigade warfight. To attain information superiority, the brigade had to integrate internal and external intelligence, surveillance, and reconnaissance (ISR) assets to observe its battlespace continuously — in spite of enemy action and environmental conditions. The brigade also had to fix responsibility for this integration and management of all available ISR assets to ensure the success of the mission.¹⁴

The Combined Arms Reconnaissance Study

So what might happen as brigades receive highly capable, robust C4I systems, enabling even closer integration

between weapons systems and supporting TUAVs? The U.S. Army Training and Doctrine Command Combined Arms Recon Study used constructive and virtual simulation to explore how fully internetted combined arms teams would perform. These simulations permitted use of advanced, highly robust C4I systems to integrate sensors and weapons platforms.

Study findings aligned with the combat training center experience outlined above, while providing further insights regarding the potential uses of TUAVs. During the study, TUAVs — highly integrated with other sensors — greatly aided ground and air reconnaissance. Reconnaissance units performed their jobs faster, directed lethal fires, enabled maneuver out of contact for the brigade, and improved survivability across the force. The TUAV was a means to raise the level of situational awareness in any specific area, thereby supporting the overall reconnaissance effort, enabling fires, and supporting overall mission success. Interestingly enough, even in a robust C4I environment, the study noted the need for intensive TUAV management.¹⁵

Keys to Success

This brief review of TUAV-related experience highlights several important principles relevant to TUAV integration. These principles are:

- Integrate the TUAV with all other sensors and reconnaissance means. Cue it, have it confirm information and support other systems, and use other systems to cover areas the TUAV sensors cannot reach or see.
- Closely manage the TUAV. Ensure it is always at the critical portions of the battlefield, and closely supporting the commander’s intent. Be able to quickly switch the TUAV from one function to another such as switching from intelligence gathering to observing for fires. The level of synchronization and teamwork linking the TUAV and the rest of the unit should be of the same quality as cavalry units have achieved with air and ground scouts.
- Have trained personnel watch the video. RVT only helps if you know what you are looking at. Focus standard operating procedures on having the analyst’s assessment or “running commentary” disseminated immediately to all relevant leaders.
- Tie the TUAV into the unit’s command and control processes, as well as command and control systems. TUAV-derived information needs to get out quickly to the right people. Frequent

training ensures quick dissemination of information by voice and digital means.

- Employ the TUAV where you need the highest level of situational understanding developed. Note that “situational understanding” in this case does not mean “video.” It refers to situational understanding about current battlefield conditions, provided by skilled analysis of the TUAV sensors. The situational understanding gained may be used for further maneuver by reconnaissance forces, to employ fires, to support combined arms maneuver, or a combination of all. Restated, this principle says “employ the TUAV, with supporting analysts, tied deeply to your C2 system, where you need the highest level of situational understanding.”

In sum, leaders and staffs at the brigade/regiment and battalion/squadron levels must pay attention to properly exploiting TUAVs. The TUAV must be understood as a means to enable the reconnaissance effort, as well as one of its primary means of reconnaissance. The TUAV is not just another “collector,” but a system that must synergistically work with other reconnaissance means to provide situational understanding for the entire force.

The TUAV is not just another sensor platform. It is part of a complex system of operators, analysts, and TTPs that must be integrated into the force. The TUAV has to be properly placed on the battlefield, properly cued by other sensors, and the information it provides must be properly disseminated to key leaders. Armor leaders must consider the TUAV not as a platform, but as a connected, integrated system.

The TUAV represents a critical intelligence, situational awareness, and targeting system. Because of this, no unit can just let the TUAV “bore holes in the sky.” It is of such value that its employment should be closely planned and directed. The TUAV should be heavily used in reconnaissance and surveillance planning. It should also be considered a key means of directing effects. But its key strength is providing situational awareness, and it should be used to support the creation of situational understanding at each critical phase of the battle. During the decisive phases of the operation, the commander and staff should manage the TUAV and the information it produces with the same effort as any critical weapons system.

TUAVs should be considered part of the scheme of maneuver and not pigeonholed within a single battlefield operating system. It is clear that this asset must be considered an integral part



“The TUAV represents a critical intelligence, situational awareness, and targeting system. Because of this, no unit can just let the TUAV “bore holes in the sky.” It is of such value that its employment should be closely planned and directed. The TUAV should be heavily used in reconnaissance and surveillance planning. It should also be considered a key means of directing effects. But its key strength is providing situational awareness, and it should be used to support the creation of situational understanding at each critical phase of the battle.”

of the scheme of fires and maneuver, not simply a collection tool or an indirect fire sensor. The challenge for future operations is to best exploit the TUAV system for battlefield dominance. For an armor cavalry officer, a TUAV does not directly change the way you do your business. What it *can* do is dramatically change the circumstances under which your business is done.

Notes

¹Headquarters, US Army Intelligence Center and Fort Huachuca, *Tactical Unmanned Aerial Vehicle (TUAV) Concept of Operations (CONOPS)* (Draft, Version 1.1), 10 May 2000, p. 8.

²*Ibid.*, 7.

³Robert R. Leonhard, *The Principles of War for the Information Age*, Presidio Press, Novato, CA, 1998, p. 221.

⁴Major Charles W. Innocenti, “Applying the Unmanned Aerial Vehicle (UAV) to Brigade Reconnaissance & Surveillance (R&S) Operations,” *CTC Quarterly Bulletin*, Center for Army Lessons Learned (CALL), Combined Arms Center, Fort Leavenworth, KS, March 2000, p. 41.

⁵*Ibid.*, pp. 37-39.

⁶*Ibid.*, p. 39.

⁷*Ibid.*, p. 36.

⁸Major Brad C. Dostal, “Enhancing the Situational Understanding through the Employment of Unmanned Aerial Vehicles,” *CALL Newsletter*, No. 01-18, July 2001, Fort Leavenworth, KS, p. 71.

⁹*Ibid.*, pp. 75, 80.

¹⁰*Ibid.*, p. 75.

¹¹In this exercise, Hunter UAVs again performed as a surrogate TUAV system.

¹²TRADOC Analysis Center, Final Report for the Division Capstone Exercise (DCX), TRAC-F-TR-02-006, Fort Leavenworth, KS, March 2002, pp. C-23, C-107.

¹³*Ibid.*, pp. C-5 to C-7, C-13 to C-14, C-83 to C-85, C-91 to C-93, and C-97 to C-100.

¹⁴*Ibid.*, pp. C-23 to C-26.

¹⁵TRADOC Analysis Center, TRADOC Combined Arms Reconnaissance Study Phase II (TRAC-L-TR-01-005), Fort Leavenworth, KS, 15 December 2000, pp. 81, 94-101, 109-116, 118-127, 129-135, 149-151, 153-161, and 237-242.

LTC Jeffrey Witsken is a seminar leader at the School of Advanced Military Studies, Fort Leavenworth, KS. He received a B.A. from Xavier University, an M.B.A. from Embry-Riddle University, and an M.M.A.S from the U.S. Army Command and General Staff College. He is a graduate of the U.S. Army Command and General Staff College and completed a 2-year Advanced Operational Art Fellowship at the School of Advanced Military Studies. He has served in various command and staff positions, including senior military analyst, TRADOC Center, Fort Lee, VA; chief, current operations branch, C/J3, U.S. Forces Korea, Seoul, Korea; battalion XO, 2-70 Armor, Fort Riley, KS; chief, Analysis Division, Directorate of Combat Developments, Fort Knox, KY; and S3, 3-17 Cavalry Squadron, Fort Drum, NY.



Transforming the Task Force Scout Platoon

by Captain Ryan Seagreaves

Reconnaissance operations have become even more important under the Force XXI redesign of battalions from four maneuver companies to three. Additionally, over the past 2 decades, the U.S. Army has changed its task force scout platoon vehicle from the Bradley Cavalry Fighting Vehicle to the M1025/6 high-mobility multipurpose, wheeled vehicle (HMMWV). Neither platform was designed with reconnaissance solely in mind, and each has critical limitations in executing recon missions.

For years, discussion has raged over creating, or purchasing, and fielding a true reconnaissance/cavalry vehicle for task force scout platoons. Selecting the Stryker as the interim force platform led me to wonder, what if that (or something similar) was my vehicle to fight from as a scout? Could it solve dilemmas when I lacked the capabilities to solve them? The conclusion I came to was a resounding “yes,” the critical limitations of the Task Force (TF)

HMMWV Scout Platoon can be corrected by a transformation to the light armored vehicle (LAV)-25 reconnaissance vehicle, the Coyote.

Limitations of the HMMWV Scout Platoon

The current M1025/6 HMMWV-equipped task force scout platoon lacks capabilities in five areas that hinder mission accomplishment — optics, survivability, dismounted capability, casualty evacuation (CASEVAC), and lethality.

Optics. First and foremost among these deficiencies is the lack of quality optics equipment to improve target acquisition and identification. The Long Range Advanced Scout Surveillance System (LRAS3) could solve this problem, however, the majority of scouts in Legacy Force-equipped units have never seen this piece of equipment, as it has only been fielded in the 4th Infantry Division.¹ Currently, most scouts use binoculars that have 7-power magnification, and for night sights they use AN/PVS-7D, AN/PVS-4, AN/TVS-5, and the AN/TAS-4B. Of the four night-

vision systems, the AN/PVS-7D delivers reliability and a clear image but is only effective from 250 to 300 meters. The PVS-4 and TVS-5 are less reliable but give the user a slightly better range for acquisition. Only the AN/TAS-4B — basically the old TOW sight — provides effective target identification greater than 500 meters. The AN/TAS-4B is limited in its acquisition, however, to about 1500 meters. Essentially, we force the scout to maneuver closer to the enemy to accomplish his mission — inside the enemy’s direct-fire range.

Survivability. The second serious limitation is a platform with no survivability. Most of today’s scouts are still equipped with the M1025/6 models, and not the up-armored HMMWVs that are slowly being fielded to military police units. The M1025/6 models will not provide protection for even 5.56mm fire. Now the scout is forced inside direct-fire range of the enemy in a vehicle with no survivability.

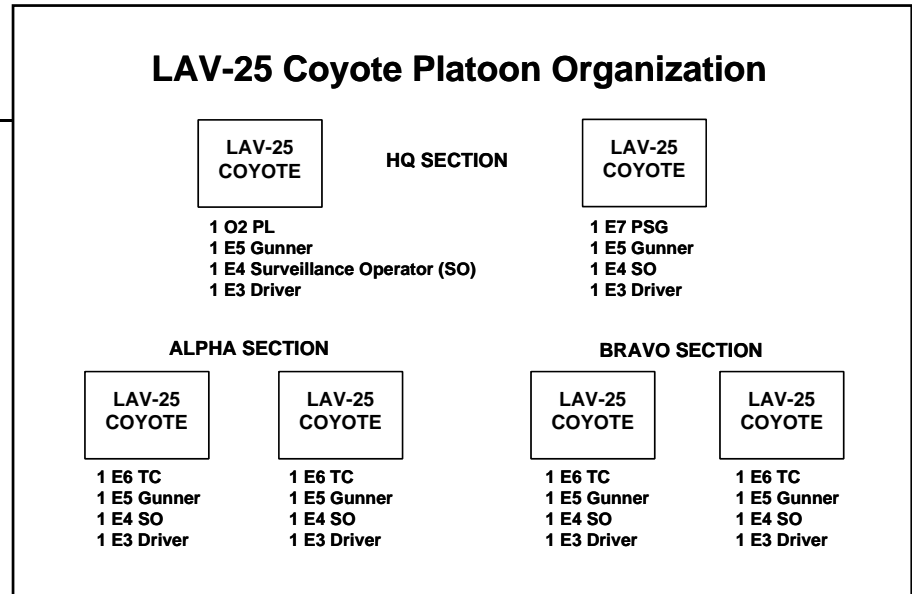
Dismounted Capability. No problem, you say. The scout should be conduct-

ing recon missions using the oldest and best method — dismounted. This overcomes our optics' deficiencies and the problem of limited vehicle survivability. The problem, however, is simple and stated best in U.S. Army Field Manual (FM) 17-98, *Scout Platoon*, "The HMMWV scout platoon has very limited dismounted capability; it must be carefully task organized to conduct dismounted operations."² Any scout can tell stories of complex task organization schemes worked out and placed in a scout platoon SOP that lives and dies on paper. The bottom line is the scout platoon's dismounted capability is limited to manning a two-man, long duration observation point (OP), or to conducting a local area reconnaissance by each section. Anything more manpower intensive causes the platoon to operate outside the normal SOP, which is more than likely beyond the platoon's capabilities. When one considers the Force XXI redesign that reduces the platoon to six vehicles, the dismounted capability is even further diminished.

Lethality. Primarily equipped with "area target" weapons, such as the MK19 40mm machine gun and the M2 .50 caliber machine gun, even the scouts' best gunners are hard pressed to achieve suppressive fire quick enough to support them if they have to break contact — no stabilization, no laser rangefinder. This is a critical need, because help is more than likely far away in the form of indirect fire or another, more lethal, maneuver force.

Casualty Evacuation. CASEVAC remains an issue for scouts operating forward of the task force main body. Often, the CASEVAC plan for the scout platoon is paid lip service during the military decisionmaking process in an effort to deploy the scouts and achieve "eyes downrange" as quickly as possible. The thinking enemy knows that U.S. forces will not leave their wounded and dead on the battlefield, thus creating an opportunity for the enemy to ambush U.S. forces coming to the aid of the scouts. Scout platoon leaders face a dilemma if they attempt to evacuate those casualties because they are in serious risk of becoming casualties themselves and of jeopardizing mission accomplishment.

As a result of the CASEVAC problem, the "rescue team method" is born — a platoon equipped with an M1 (or an M2) and an M113 ambulance on standby with the "be-prepared-to" mis-



sion of performing scout CASEVAC. This team has the survivability and lethality to fight through to the casualties and evacuate them. There are multiple problems with this, however, and all revolve around the fact that it will take a long time. This rescue team may have to perform its own passage of lines, and may have to navigate to the scouts (probably at night, or be guided by another scout, which takes him away from his mission), thus placing the task force commander in a situation where he may be using 1/9th of his combat power to evacuate scouts. The entire scenario is based on a situation where there is only one site to evacuate casualties. Consider a determined enemy that causes 50 percent casualties in one scout platoon! The problem becomes infinitely greater. The bottom line is scouts need help in performing medical evacuation, and there is no easy solution to the problem with the assets available to the task force.

LAV-25 (Reconnaissance) Coyote

For soldiers with the mission of answering the commander's priority intelligence requirements, we have ill-equipped them with a vehicle that has no survivability, optics that cannot acquire or identify anything at night outside the enemy's direct-fire range, and weapons that will help him break contact successfully only if the enemy fails at attrition. If scouts are forced to operate dismounted, we task organize them with severely limited dismounted capabilities. Scouts are a critical asset and should be equipped for success, and consequently, to accomplish the task force mission.

In an effort to correct these deficiencies, transforming to the TF Scout Pla-

toon, based around General Motors Defense, LAV-25 (Reconnaissance) Coyote, offers an affordable, completed, and readily available platform built by the same company that produces the Stryker platforms. The Canadian army has already fielded more than 150 Coyotes throughout their mounted forces, and has had much success with Coyote-equipped units participating in NTC rotations with U.S. forces.

The Coyote variant of the LAV-25 overcomes many of the shortcomings of the HMMWV-mounted scout platoon. A sample platoon organization is shown above.

Optics. The Coyote offers an extensive sensor suite, which would increase the current scout's target acquisition and identification capabilities by tenfold. The first of these is a long-range television camera with high performance forward-looking infrared that is capable of all-weather day or night target acquisition out to 12 to 15km, and identification out to 8 to 10km.³ An eye-safe laser rangefinder linked to the vehicle's global positioning system can provide 10 digit grids to targets out to 10km. Additionally, a Doppler ground surveillance radar can detect moving targets out to 24km, and identify targets at 8 to 10km. These three systems can be employed in two ways: in the brigade kit where they are mounted on a hydraulic-powered 7m mast; or in the battle group kit where they are mounted on two tripods. Both systems can be employed remotely up to 200m away. On the turret, the optics include up to a 7.5-power daylight and thermal magnification with laser rangefinder.

Survivability. The Coyote provides protection against small arms, and with



"Equipped with daylight and thermal optics and a laser rangefinder, the Coyote offers the scout a much superior weapons system to enable him to accomplish the mission. This is not to say that the scout mounted on the Coyote platform should be aggressively engaging the enemy; on the contrary, the scout should follow the adage, "Cross LD with a full magazine and an empty notebook and return with a full magazine and a full notebook."

the same add-on armor package applied to the Stryker, it can provide protection against 14.5mm fire across the frontal arc.

Dismounted Capability. Four-man Coyote crews can conduct two-man dismounted operations, allowing two crewmen to remain behind, thus preventing a lone scout, which is always a problem for HMMWV scouts. The Canadian army prefers to keep the integrity of a section and execute three-man dismounted patrols.⁴

Lethality. The Coyote mounts the Bushmaster 25mm cannon with a coaxial 7.62mm machine gun on a fully stabilized turret, as well as another 7.62mm machine gun on the commander's cupola. Equipped with daylight and thermal optics and a laser rangefinder, the Coyote offers the scout a much superior weapons system to enable him to accomplish the mission. This is not to say that the scout mounted on the Coyote platform should be aggressively engaging the enemy; on the contrary, the scout should follow the adage, "Cross LD with a full magazine and an empty notebook and return with a full magazine and a full notebook." Breaking contact with the enemy if you have been compromised is much easier if you destroy him and reposition unopposed rather than engaging with sup-

pressive fire and breaking contact by fire and movement.

Casualty Evacuation. The capabilities that the Coyote adds to the scout platoon also alleviate the burden on the task force assets to perform CASEVAC for the scouts. The Coyote has the additional survivability and "point target" weapons systems to fight through the hypothetical situation addressed above by the rescue team method. Although definitely a nonstandard CASEVAC platform, the Coyote can at least offer protection from small-arms fire.

Admittedly, there are disadvantages to the LAV-25 Coyote. The "stealth" capability in our current HMMWV scout platoons would be negated in a transition to the Coyote, which has a much larger profile and a height of over 8 feet, as well as a significantly louder noise signature. Secondly, the logistical burden on the task force is also increased in class III, V, and IX. Lastly, the sensor suite, a major advantage of the Coyote, requires extensive effort and significant time to collapse, should the scout have to break contact and reposition. I argue that these disadvantages, however, are outweighed significantly by the Coyote's capabilities.

Information dominance, a recently coined doctrinal term, is making its way through the Army in discussions

about transformation. While focused on the Interim and Objective Forces, we cannot simply ignore information dominance in the Legacy Force, since it will be a major part of our Army for the next 2 decades. We continue to stress how important reconnaissance is to the mounted force, and the problems we have with the means to conduct those missions. The Coyote possesses the technical capabilities to solve these problems, and give our Legacy Force the tools to make information dominance a reality for units throughout the next 20 years.

Notes

¹CPT Sean Fisher, a small group instructor at the Armor Captains Career Course, reminded me of the LRAS3 and its limited fielding among current units.

²U.S. Army Field Manual (FM) 17-98, *Scout Platoon*, U.S. Government Printing Office, Washington, DC, April 1999, pp. 1-12.

³"The Canadian Coyote Reconnaissance Vehicle," *Center for Army Lessons Learned Newsletter*, No. 98-24, Center for Army Lessons Learned, U.S. Army Combined Arms Center, Fort Leavenworth, KS. I used the ranges for acquisition and identification from this newsletter of actual Coyote use at the NTC, rather than the figures advertised in *Jane's Armour and Artillery*.

⁴Ibid. This article gave me ideas on how to solve the dismounted capability problem, as I was originally hoping the vehicle would support carrying an additional two personnel to be dedicated dismounted scouts.

CPT Ryan Seagreaves is currently the assistant brigade S4 for maintenance, 3d Brigade, 1AD, Fort Riley, KS. He received a B.S. from the U.S. Military Academy. He is a graduate of Ranger School, Air Assault School, Armor Officer Basic Course, Armor Captains Career Course, and CAS3. He has served in various command and staff positions, including tank company XO, D Company, 3-8 Cavalry, 1st Cavalry Division (1CD), Fort Hood, TX; scout platoon leader, 3-8 Cavalry, 1CD, Fort Hood; and tank platoon leader, 1st Platoon, A Company, 3-8 Cavalry, 1CD, Fort Hood.



Task Force Steel Tigers

by First Lieutenant John DeRosa

With news reports fresh on their minds predicting bloody urban warfare in a possible U.S. invasion of Iraq and portraying scenes of Israeli army tanks in the densely packed Gaza Strip, the officers and noncommissioned officers (NCOs) of Task Force 1-77, “Steel Tigers,” began pondering their role in an urban fight. Retired Israeli army general, Yehuda Admon, said of the current use of Israeli armor in the urban fight, “This is not a normal way of using the tank for a low-intensity conflict. If we had something else to use, we would use it. Tanks are for mass fights.”¹ Despite its normal role, the tank continues to make a presence on the urban battlefields of Israel and Chechnya.

The Steel Tigers’ current mission in Kosovo peacekeeping forces (KFOR), peace support operations presents a non-traditional role for an armor battalion.

The current task organization of the Steel Tigers is a mixture of armor, infantry, and engineer company teams. Specific mission requirements also require the additional task organization of military police, civil affairs, and aviation assets. The task force is maximizing the tenets of combined arms, albeit not in a high-intensity conflict mission. Overall, the nontraditional role of the Steel Tigers and those portrayed in the Israeli and Chechen conflicts raised a myriad of questions.

To help answer questions about military operations in urban terrain (MOUT), the Steel Tigers hosted a professional development session with Chechen war veterans from Russia’s 13th Tactical Group — their KFOR partnership unit. The Chechen war veterans participating in the discussion included soldiers from airborne infantry, engineer, artillery, maintenance, supply, and sniper/recon-

naissance units. To frame the discussion, the officers and NCOs prepared the following questions for their Russian guests:

- How much of a role did combat stress play in the operations in Chechnya?
- Based on the Israeli experience in Palestine, they concluded that the need for armored vehicles in a MOUT environment is undeniable. How does this compare to the situation with Chechnya? Did you have a need to integrate infantry and armor into the fight?
- Do squads or platoons composed solely of contract soldiers perform better than conscripts? If not, what is needed to turn contract soldiers into professionals?
- How were engineer assets used during the MOUT fight?

- How did Russian soldiers counteract psychological tactics used by the Chechen soldiers?
- What special techniques were identified and later implemented when clearing MOUT locations such as building and bunkers?
- Did you integrate Army aviation or close air support? In what ways?
- How did you interdict rebel supply lines/lines of communication? What worked and what did not work?
- How much intelligence did you have about the rebels before you got into the area of operations? What rebel techniques, tactics, and procedures were you unaware of?
- What were the medical aspects of the fight — did you evacuate directly back to your main bases or attempt to fix forward and push recovered wounded back to their units?

This article highlights the extensive lessons offered by Chechen war veterans, all of which prepared the soldiers of the Steel Tigers for the implications of modern urban warfare.

Armor

According to our guests, one of the largest mistakes made during the first Chechen campaign was the Russian army sent tanks and armored vehicles into narrow streets without previously checking for enemy presence. The narrow streets inhibited both vehicle and main gun maneuvering. This error allowed the Chechens to fire rocket-propelled grenades (RPG) into the front and rear of armored columns. By destroying the first and last vehicles, the Chechens blocked the patrol's escape, then fired on them from all directions and angles. From holes in walls, windows, and rubble mounds, the Chechens fired from the various portals and levels that the surrounding infrastructure provided. The Chechens would also shoot from one opening and move to another, increasing the difficulty of a counterattack.

Based on lessons learned from the first campaign, the Russians changed their approach to armor implementation during the second campaign. Tank and armored vehicle use switched from a focus on armored presence to targeting specific strong points of the Chechen defenses. Initially, they chose a strong

point to destroy with artillery. Then, Spetnaz troops and scouts were sent ahead of the armor to eliminate RPG-armed snipers. Infantry secured danger areas before the armor passed. While keeping outside the range of the strong point's main weapons system, Russian tanks attacked pre-planned targets. For the most part, using armor was restricted to suburbs and sparsely built-up areas.

MOUT

The commander of a reconnaissance company during operations in Grozny from December 1999 through March 2000 recalled that combat operations in Chechnya were completely different from what the Russians had prepared for, in particular, the lack of open fighting with the enemy. Russian combat manuals have a formula emphasizing a 3 to 1 combat ratio for MOUT operations. However, the officer recalled how 10 to 15 Chechen soldiers could tie up a Russian army battalion for several hours because of their preparation and use of the various angles of the MOUT environment.

The veterans expressed that the main tactics of the Chechens were "terrorist acts" against formations of troops, vehicles, and separate groups of personnel along main routes. The main remedy against such action was "to learn the terrain." Then, imagine where you would place ambushes; when you approach danger areas, send forward a squad of rangers to provide initial reconnaissance. One officer recalled, "We had to search everywhere. They (Chechens) were creative in their hide locations... trash mounds, sewers, rubble, and so on."

The extensive use of mine warfare on the part of both parties introduced yet another dynamic into the MOUT environment. A veteran recalled how Russian army drivers, during short halts in areas not clear of mines, would approach a potentially mined area with a vehicle that had no personnel to minimize potential casualties.

In the MOUT environment, the Russians used indirect assets predominantly for preparatory fires before an attack, but not during the actual conduct of an attack. An engineer platoon leader explained that in one attack on the capital of Grozny, a particular target was a hospital used by the Chechens because of its subterranean facilities. It was not

possible to push them out of the building using ordinary means. To compensate, they used artillery to shave the building, level by level, to the ground. Additionally, they used anti-aircraft guns — World War II-era weapons mounted on armored chassis — because of their range and piercing ability for effective direct fire.

The Russians blockaded cities and allowed noncombatants to leave in an effort to reduce their influence on the battlefield. Before the attack on Grozny, the Russians gave the noncombatant residents of the city several days to evacuate before the assault. Therefore, when the assault on Grozny began, so the logic goes, those that remained were Chechen terrorists.

A particular strength of the Chechens was the high level of preparation for the conflict. Before the first campaign, the Chechens prepared intricate supply networks and caches hidden in the cities and surrounding countryside. The Russian officers explained that they faced an enemy without a large organized support structure. They recalled a "criminal enterprise" of preplanned supply networks that the Chechens exploited.

Engineer

Detailing his experiences in Chechnya, one officer highlighted engineer tactics, techniques, and procedures (TTPs) as a platoon leader of an explosive ordnance (EOD) platoon. Although his mission was to handle such missions as demining vehicles, his platoon also conducted nontraditional EOD/engineering tasks. For example, it was standard practice to use an analog of mine clearing line charge to deliver a charge into buildings where Chechens were defending particularly stoutly. The resulting explosion flattened the target building and the surrounding infrastructure, crushing the defenders.

A particular challenge faced by the engineers was the extensive Chechen lines of communications. The native inhabitants used underground caves, holes, and sewage canals to route communications lines. Russian engineers placed explosives to expose or collapse canals and underground passageways in the asphalt where the Chechens hid communications lines. Additionally, during assaults on cities and small towns, the Russians made it a point to include EOD engineers on cordon and search

teams, where the EOD engineers blew up sewage canals and opened holes in buildings.

As a result of the many separate assets the engineers brought to the MOUT fight, they increasingly found themselves specifically targeted by the defenders. This led to the evolution of new TTP inside the city, necessitating closer cooperation between the engineers and other units to provide internal support. As the Chechens began to target the engineers during assaults, scouts and snipers were set up in overwatch positions.

Intelligence Preparation of the Battlefield (IPB)

Repeatedly, the veterans expressed how important IPB is to successful missions. Critical points of IPB in the MOUT environment were composition/disposition of the enemy, strongholds and direction of attacks, anti-armor capabilities, obstacles, potential ambush sites, potential chemical weapons, and anti-aircraft positions. They particularly stressed that knowing your enemy was an important part of MOUT. With the Chechens being “highly trained professionals” from extensive training camps and veterans of the Afghan war, they initially were able to exploit their training in nuclear, biological, and chemical warfare, special explosive devices, and extensive anti-aircraft defense networks. Chechens also were involved in subversive activities such as smuggling, kidnapping, and extortion. All of these enemy considerations figured substantially into the planning and execution of Russian missions.

Close Air Support (CAS)

The executive officer of a Special Forces reconnaissance company explained that CAS — primarily Mi-24s — was used mainly in mountain regions and not in towns. Additionally, he detailed how they used several techniques to confirm targets and direct CAS. During one mission, his company spotted a formation of troops at a distance of three kilometers. The company’s snipers identified the formation as Chechen rebels, and the company’s electronic warfare soldiers confirmed the identification as well as the coordinates. When CAS arrived, the Mi-24s hovered at a distance beyond the range of anti-aircraft weapons to observe and then attack the rebels. Although very similar to the techniques of employing

CAS in a high-intensity conflict environment, close cooperation between different units proved critical for success.

Psychological Impacts

The discussion on the psychological affects of continuous MOUT combat proved to be the most enlightening and valuable aspect of the officer’s professional development. Battlefield effects on soldiers affected everyone — veterans and young soldiers alike. One veteran, a visibly scarred sniper/reconnaissance soldier, recalled the extensive pre- and post-deployment training he received as a result of the psychological impact of the Chechen war. Among his preparations were extensive tests to rate his psychological readiness. Moreover, his psychological preparation included training to avoid shaking hands and visits to morgues so that he could get used to viewing dead bodies. The veterans also recalled that when a soldier came under fire for the first time without psychological preparation, he tended to fire sporadically when engaged. Therefore, they began classes for soldiers new to the theater in which they were put under fire, preparing them for battlefield sounds and effects.

With the bloodiness and intensity of the conflict, and the added psychological impact of the Chechens torturing and mutilating captive Russian soldiers, post-deployment training became an important requirement for the Russian army. The Russians sent soldiers, like the aforementioned sniper/reconnaissance soldier, to 3-month long psychological decompression programs. In these programs, psychologists would use music, sports, and mundane tasks to distract soldiers from their experiences as they helped them overcome the psychological impact of the war and prepared them to exercise such duties in the future. It should be noted, though, that the sniper/reconnaissance soldier was the only one of our guests to have served in both the first and second campaigns.

Medical Assets

On the topic of medical assets, an airborne infantry officer recalled one operation where he and four other soldiers in his company were wounded. They did not have any medics assigned to them for this mission. Therefore, combat lifesaving skills were necessary to

treat the casualties. Through both first aid for incapacitated soldiers and self-aid for the officer himself, they were able to treat their casualties and evacuate them in a personnel carrier to a nearby town where a field hospital had been established. In another example of the traumatic affects of combat, however, the infantry officer recounted his evacuation in an armored personnel carrier filled with both dead and wounded soldiers.

Overall, the veterans expressed that individual medical training was essential since not all the units had extensive medical assets. “If your formation is too small for medical assets,” one reminded, “you must have at least one person skilled in medical assistance.” However, if medical platoons are available, they should include personnel trained in trauma, to include surgeons.

As a whole, the interaction with veterans from the Russian 13th Tactical Group steered the officers and NCOs of Task Force 1-77 for the implications of modern urban warfare. Many of the lessons offered by the Russians reinforced preexisting standard operating procedures of the Steel Tigers, namely maintaining a close relationship between armor, infantry, and engineer assets, placing an emphasis on IPB, and standardizing one combat lifesaver per vehicle. Other lessons have been taken to heart and have found a place in the Steel Tigers’ MOUT tool bag.

Notes

¹John Brosky, “Tank Still Has Role, But Future Uncertain,” *Defense News*, 24 June 2002, p. 6.

1LT John P.J. DeRosa is the battalion maintenance officer, 1-77 Armor Battalion, 1st ID, Schweinfurt, Germany. He received a B.A. and an M.A. from California State University-San Bernardino. He is a graduate of the Armor Officer Basic Course, Battalion Maintenance Officer Course, and Airborne School. Prior to active duty, he served 9 years as both an officer and an enlisted soldier in the U.S. Army National Guard.

The author would like to thank Major Michael A. Boden for his assistance with this article.

Planning Scout Casualty Evacuation

by Captain Geoffrey A. Norman

3 September, 2330 hours, Porta Potti Wadi, Republic of Mojavia:

Darkness set in almost 4 hours ago as Sergeant Smith's scout section moved south down a large wadi and neared observation point (OP) 2B. His two M1025 scout HMMWVs made little noise, but it seemed deafening from inside the truck where he was sitting. Suddenly, a bright flash washed out his night vision goggles as a rocket-propelled grenade slammed into his wingman's truck 50 meters to his front. A moment later, another explosion from a command-detonated mine blasted a crater in the trail between his two trucks and sent a hail of rock and debris through Smith's hood, radiator, windshields — and gunner.

In an instant, his focus shifted from reconnaissance to survival. Smith knew that his section's only chances rested with rapid casualty evacuation (CASEVAC) — but what was the scout CASEVAC plan?

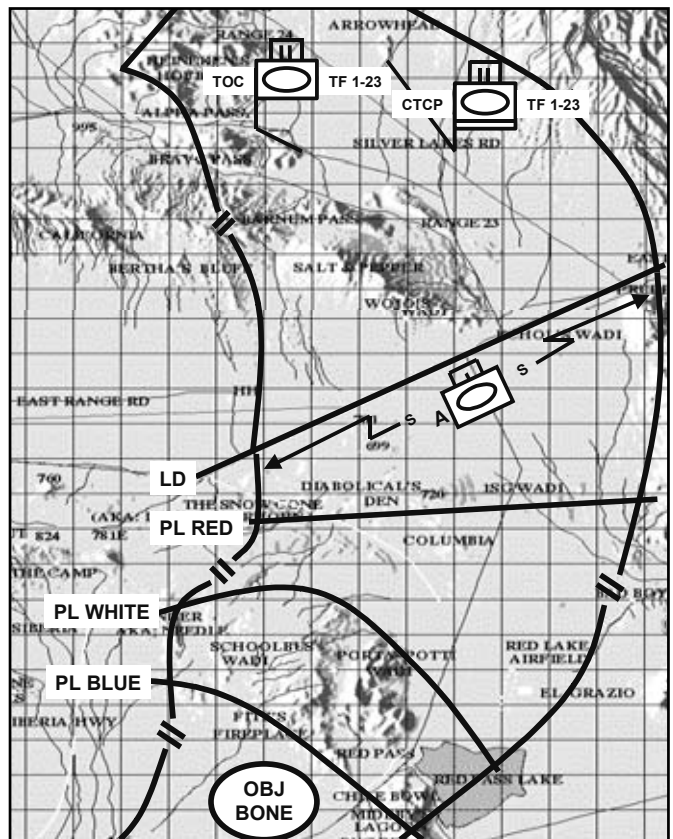
U.S. Army Field Manual (FM) 17-98, *Scout Platoon*, states the “treatment and evacuation of wounded personnel are two of the most difficult tasks the scout platoon must execute. This is particularly true for the battalion scout platoon.”¹ Unfortunately, at the National Training Center, scouts die from wounds in very high numbers. However, proactive officers and noncommissioned officers in nearly every scout platoon work diligently to overcome their organization's shortcomings and successfully execute their CASEVAC tasks. Some of their creative solutions include using a cargo HMMWV or 5-ton truck for resupply and CASEVAC, assigning medics to the scout platoons as drivers or dismounts, and maximizing the combat lifesaver qualifications of their 19Ds.

These efforts and ideas greatly improve the scout platoon's ability to rapidly treat and transport casualties. Yet, these measures alone will not ensure successful CASEVAC — the scout platoon needs the support of the task force (TF) S4 to save lives.

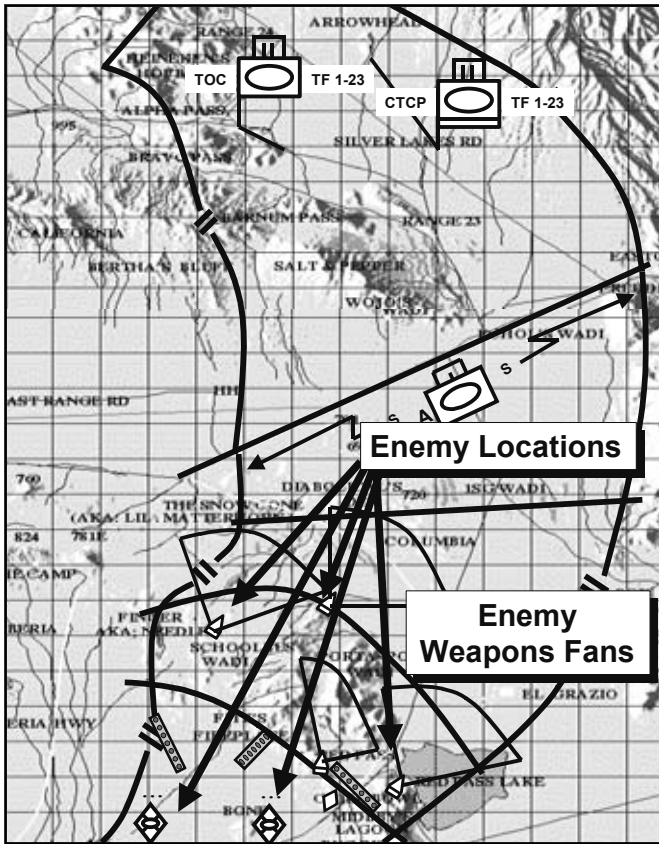
The S4 is responsible for planning combat service support (CSS) operations, including CASEVAC. The S4 may receive assistance from the S1 or medical platoon leader. However, the S4 normally does not participate in reconnaissance and surveillance (R&S) planning. This R&S planning results in Annex L of the operations order and serves as the basis for the scout platoon's plan. If the S4 fails to participate in the

process, scouts like Smith are left with casualties forward of the line of departure (LD) in the middle of the night asking, “what was the scout CASEVAC plan?”

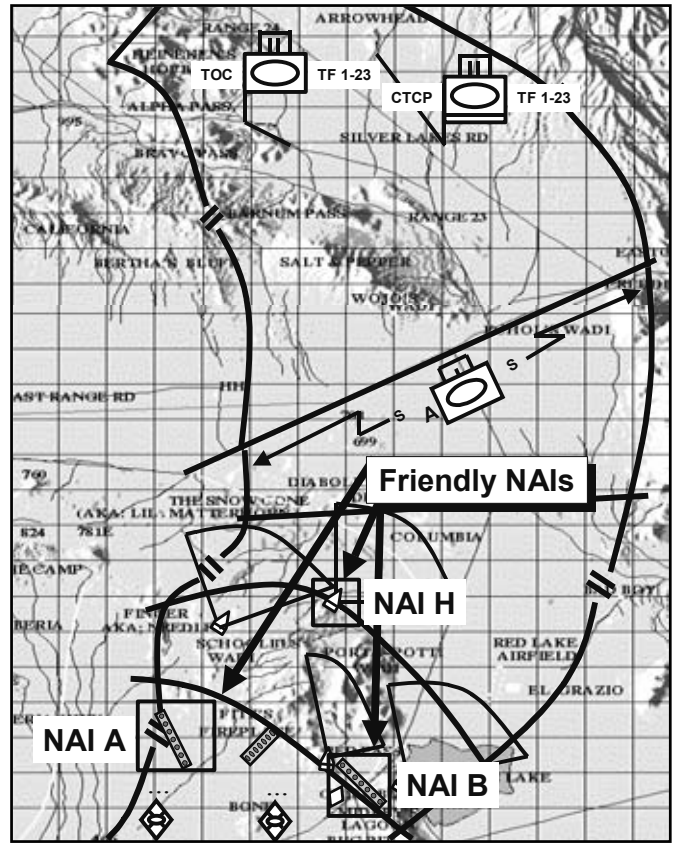
How do S4's plan scout CASEVAC? No single doctrinal reference spells out how to plan battalion scout platoon CASEVAC. However, the following 12-step method combines principles from several doctrinal manuals, which enables S4s to thoroughly and efficiently plan scout CASEVAC.



Step 1. TF AO and Base Graphics



Step 2. Template Enemy Locations



Step 3. Template Friendly NAIs

Step 1. The S4 must participate in R&S planning. The S2, S3, and fire support officer (FSO) are too busy to plan CSS in the S4's absence. So the S4 must be present, make himself relevant, and develop a sound CASEVAC plan. All it takes is a map, some acetate, and a few alcohol pens.

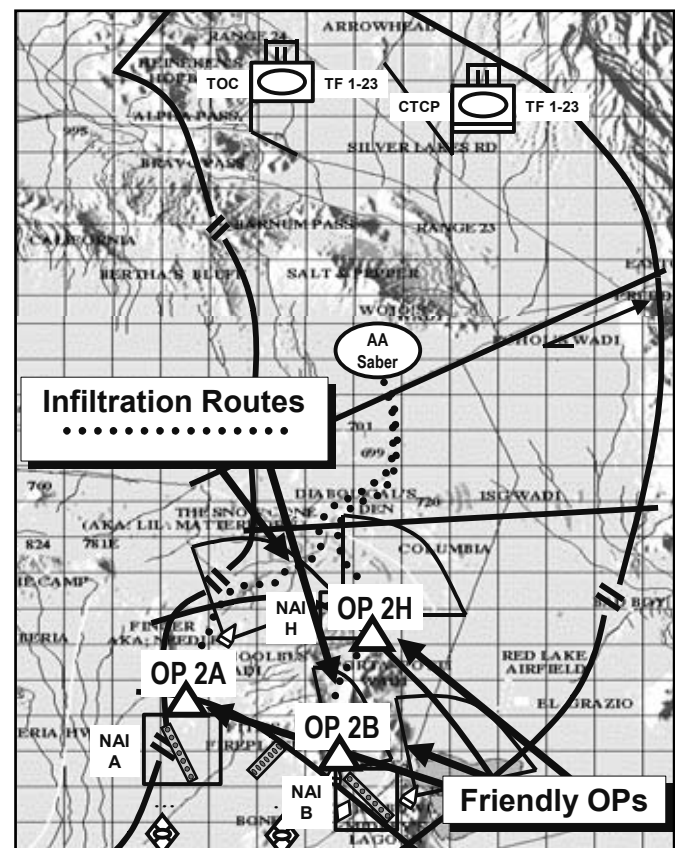
Step 2. Template enemy positions and weapons/observation ranges. The S2 and scout platoon leader will likely do this. The S4's endstate for this step is an overlay with known and probable enemy locations plotted in red — a refined situational template (SITTEMP). This should include nested range fans depicting the enemy's observation ranges during daylight and limited visibility, and weapons ranges for his direct and indirect fire systems.

Step 3. Template named areas of interest (NAIs) and reconnaissance objectives. The S2, S3, and scout platoon leader establish NAIs based on the commander's priority intelligence requirements (PIR) and other factors. The S4 posts these on his overlay in black.

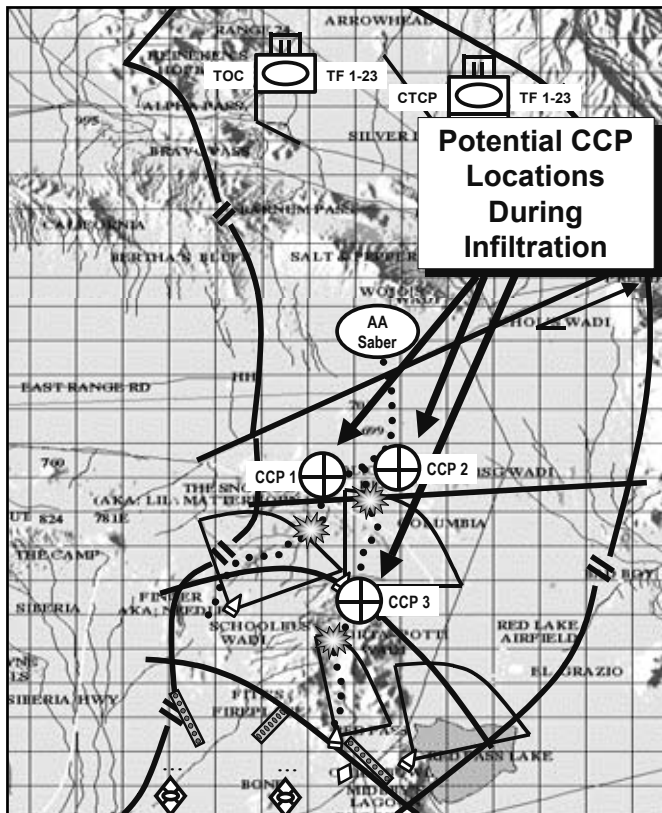
Step 4. Template projected scout OP locations. The scout platoon leader and S3 analyze the terrain near the NAIs or reconnaissance objectives, consider his capabilities and vulnerabilities, and determine where to place the OPs. The S4 adds these OP locations to his overlay in black.

Step 5. Identify scout infiltration routes. The scout platoon leader now knows where his scouts must go. He must then find routes (mounted and/or dismounted) to get them to their OPs. The scout platoon leader identifies these routes and the S4 adds them to his overlay as dashed black lines.

Step 6. Template scout casualty collection point (CCP) locations. The scout platoon leader and S4 determine where the scouts will make contact along their routes. They consider



Steps 4 & 5. Identify Friendly Ops and Infiltration Routes



Step 6. Identify Potential CCPs

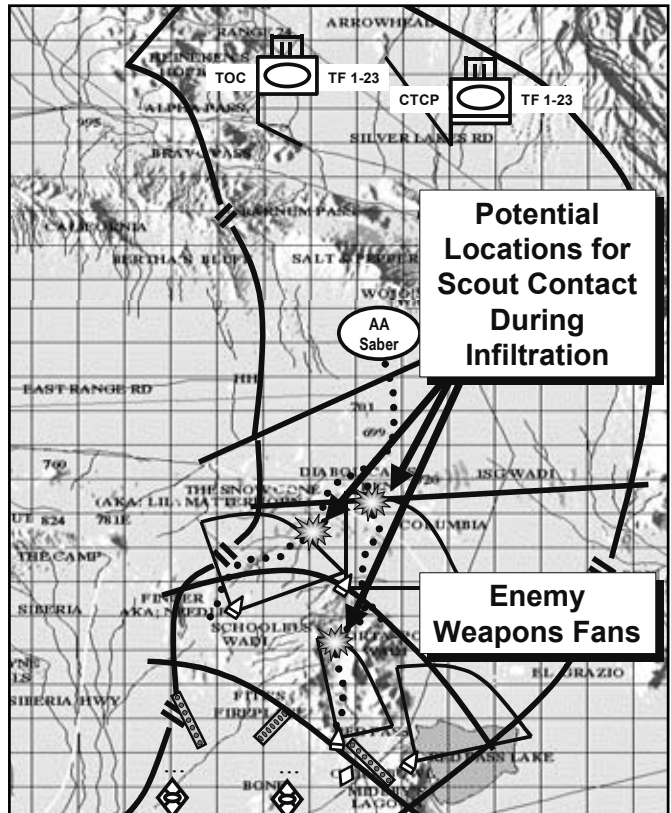
several factors to make this determination. First, are scouts infiltrating during daylight or during hours of limited visibility? The answer will tell them which enemy observation fan to use. Second, where do our infiltration routes intersect the enemy's observation and weapons ranges? These two factors will allow the scout platoon leader and S4 to establish locations of probable contact along the routes or in their OPs. The S4 marks these locations on his overlay in red.

The S4 and scout platoon leader then analyze the terrain near the points of probable contact to find terrain that offers concealment for templated CCPs. Once they find these, the S4 posts them on his overlay in black.

Step 7. Project scout casualties. The scout platoon leader and S4 now know where the scouts may make contact and sustain casualties. Now they must estimate the type and number of casualties using several considerations. First, will the scouts be mounted or dismounted at the points of probable contact? Second, what type of weapons will engage the scouts at the points of probable contact? The S4 and scout platoon leader can estimate the effects of the enemy contact by answering these questions and assessing other factors affecting the scouts' vulnerability.

A general rule of thumb for a crew making direct fire contact while mounted is one litter urgent or priority casualty, one walking wounded casualty, and the rest of the crew are routine casualties. The scout platoon will probably make contact along two-thirds of its routes. This means that a six-truck platoon using three routes may sustain four litter casualties, four walking wounded casualties, and between four to eight routine casualties.

Step 8. Identify standard and nonstandard evacuation requirements and assign responsibility. The S4 knows that the scout platoon may have up to four litter casualties needing



Step 7. Project Scout Casualties

rapid evacuation. Each M1025/6 scout HMMWV can carry only one litter casualty and does so at the expense of its reconnaissance mission. Each M113 ambulance or M996 front-line ambulance can carry up to four litter casualties. However, the S4 may not have resources to attach an ambulance to the scout platoon. In this case, he may have to rely on nonstandard casualty evacuation vehicles to transport the scout casualties from their CCP to the aid station. In a nonstandard casualty evacuation role, an M998 cargo HMMWV with troop seats can carry three litters; an M1078 light medium tactical vehicle holds up to eight litters; and an M1095 medium tactical vehicle or an M923 5-ton holds up to 12 litters.

The S4 will probably have to rely on nonstandard evacuation vehicles based on the availability of the TF's standard evacuation assets. The S4 contacts the headquarters and headquarters company commander or support platoon leader to verify the feasibility of using one of their trucks. He then assigns responsibility to whoever will provide the truck and coordinates its linkup with the scout platoon.

Step 9. Assign escort responsibility to a company team. Unarmed and unescorted evacuation vehicles will likely suffer the same fate as the scout's vehicles if they move forward to a CCP. Using a tank section to escort an evacuation vehicle to a CCP offers many advantages. First, an enemy observer will be reluctant to engage a tank section with direct fire since that would reveal his location and draw lethal 120mm cannon and machinegun fire. Second, the thermal sights, high quality optics, frequency-modulated communications, and enhanced navigation systems enable the tank section and evacuation vehicle to quickly communicate with, identify, and move to the CCP during daylight or limited visibility conditions. Third, once at the CCP, the tanks continue to provide security and loaders can assist as litter bearers as necessary.

The S4 should assign the escort responsibility to the forward most company team, whether the TF is in the offense or defense. This company team usually has the best situational awareness forward of the TF's main body and can respond quickest if the scouts need evacuating.

Escort forward using a tank section makes up one of the most crucial pieces of the scout CASEVAC puzzle and may require the involvement of the TF S3, XO, or commander. The TF needs implicit approval from its higher headquarters to launch this tank section to escort the CASEVAC vehicles forward of the line of departure or main battle area. The scouts will probably die from their wounds if the TF waits for brigade approval, which tends to occur more slowly at night when scouts will likely sustain casualties.

Step 10. Position an aid station forward and under an air corridor. The S4 puts an aid station under tactical control of the escort company team for the duration of the reconnaissance or security fight to streamline command and control. He also plots the Army airspace command and control graphics to find the air corridor closest to the escort company team's trains and closest to the start points of the scout infiltration routes. The S4 templates the aid station's location under this air corridor and ensures that the escort company's first sergeant understands why it must go there.

Utility helicopters, such as UH-60 Blackhawks and CH-47 Chinooks, are a precious and very limited asset. The S4 and scout platoon leader must understand that brigade will not release these aircraft to fly forward of the line of departure to

a scout CCP to pick up casualties. However, these aircraft greatly reduce the casualties' travel time from the aid station to a Level II facility such as the medical company in the brigade support area where the scouts can receive definitive care. Thoughtful placement of the aid station allows the medics to have a pre-planned and marked landing zone. This offers them the ability to get the aircraft there quickly due to their proximity to an air corridor.

Step 11. Aggressively disseminate plan to key players and rehearse. The S4 formalizes the scout CASEVAC plan focusing on infiltration routes, CCP locations, standard and nonstandard vehicle requirements and responsibility, escort unit composition and responsibility, aid station location, and command and control plans and responsibilities. The S4 includes this information in Annex L, but that is not enough. He must publish a fragmentary order (FRAGO) for the support of scout CASEVAC. This FRAGO must be disseminated as soon as possible to allow all parties time to meet their requirements before the scouts cross the line of departure.

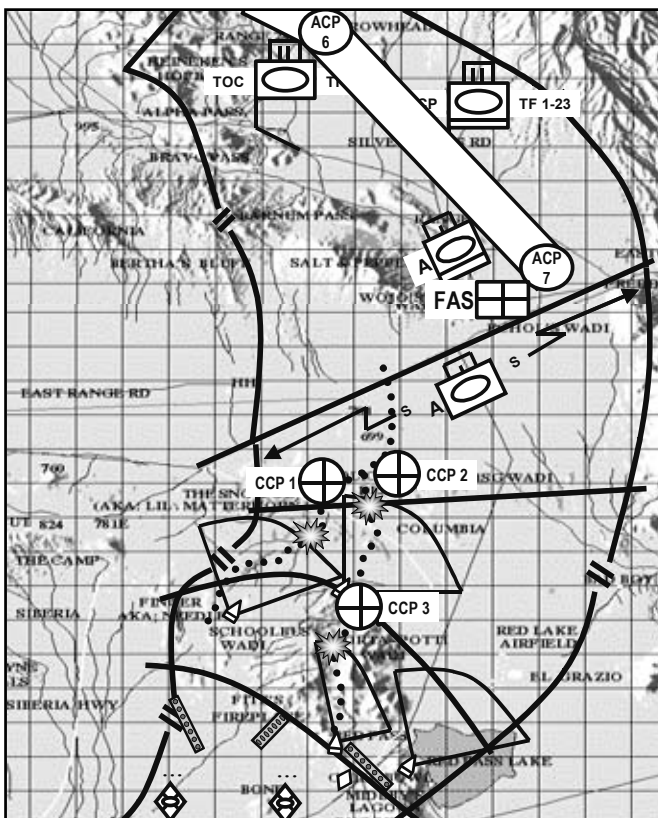
The S4 and medical platoon leader attend the TF R&S rehearsal along with the escort company team first sergeant and tank platoon leader or platoon sergeant.

Step 12. S4 manages scout CASEVAC during execution. Now that the S4 has developed, disseminated, and rehearsed the CASEVAC plan, he must decide how to manage it. He may choose to personally manage it or have his night CSS battle captain or the S1 manage it. They may decide to manage scout CASEVAC from the combat trains command post and must be in position to maintain communications with the scouts, escort unit, and aid station. Whether the S1 or S4 manages CASEVAC, and from where it is managed is immaterial, as long as someone other than the scout platoon sergeant manages it. The scout platoon sergeant will ensure his casualties make it to a CCP then the TF CSS leadership manage their evacuation as a TF-level fight.

Successful scout CASEVAC involves more than just the scout platoon. The TF S4 plays an essential role in synchronizing the various elements, which come together to save the lives of wounded scouts. Rapid and efficient CASEVAC allows them to continue their mission and fight another day. Leaders owe the scouts a well-conceived and well-resourced plan to evacuate their casualties.

Notes

¹U.S. Army Field Manual 17-98, *Scout Platoon*, Washington, D.C., U.S. Government Printing Office, 10 April 1999.



Step 10. Identify Air Corridors and Position Aid Station Forward

CPT Geoffrey A. Norman is an observer controller on Cobra Team, National Training Center, Fort Irwin, CA. He is a graduate of the United States Military Academy in 1994. He has served in various command and staff positions, to include tank platoon leader, tank company XO, HHC XO and BN S4, 1st Squadron, 12th Cavalry Regiment, 1st Cavalry Division, Fort Hood, TX; and S1 and commander, A Troop, 4th Squadron, 7th Cavalry, 2d Infantry Division, Camp Garry Owen, Korea.

REVIEWS

The Sword and the Olive: A Critical History of the Israeli Defense Force by Martin van Creveld, Public Affairs, A member of the Perseus Books Group, NY, 2002, 448 pp., \$17.00 (soft cover).

In *The Sword and the Olive: A Critical History of the Israeli Defense Force*, Israeli academic Martin van Creveld provides the reader with a detailed understanding of the development and nation-building role of the Israeli Defense Force (IDF) during the 20th century. He begins from the IDF's earliest roots as loosely organized Jewish Defense Groups that were formed to protect Jewish settlements in Israel when it was part of the Ottoman Empire prior to World War I. He then traces these defense groups through the interwar years of British rule, the underground struggle against the British toward the end and following World War II, and then the formation and employment of a regular Israeli military force during the 1947-1949 War of Independence. Following the War of Independence, he covers the subsequent wars fought with Israel's neighbors and the ensuing developments that transformed the IDF from an improvised military force into a lethal modern combined arms force. For each of the military operations, van Creveld demonstrates the operational set of units and their scheme of maneuver with uncomplicated maps. Additionally, he prefaces each chapter with a photo to convey the chapter's theme. Van Creveld presents a well-researched and documented academic work that accurately portrays the strategic circumstances facing Israel and the development of its military forces for the better part of the 20th century.

Transitioning from conventional to unconventional operations, van Creveld leaves the reader with some of the dilemmas facing a modern military force in dealing with an unconventional civilian *intifada* (uprising) in the Gaza Strip and the West Bank in the 1990s. Unfortunately, as an academic, van Creveld primarily deals with the sociopolitical aspects of the IDF's handling of the *intifada* and almost none on the tactics, techniques, and procedures the IDF developed as a result of conducting these types of operations.

The Sword and the Olive is an excellent resource for the military historian, student, or researcher interested in the personalities, intrigue, and challenges surrounding operations and developments within the IDF at the strategic and operational levels. For academic research, van Creveld's book is an excellent resource and the list of extensive sources in his notes pages are a gold mine for anyone doing research work on the evolution of the Israeli state, the wars it has fought, and the culture of its military. In the area of national military strategy and doctrine, the book demonstrates the development of conventional weapons and tactics, the impact of the unconfirmed introduction of nuclear weapons on the strategic environ-

ment in the Middle East, and the nation-building role of the IDF.

For the ground tactical military officer interested in gleaning tactical maneuver warfare and military operations other than war lessons learned, there are some, but you have to take time to wade through a lot of information to pull out the nuggets of what has historically worked for the IDF. A book that I would recommend for this type of reading is written by retired IDF Lieutenant Colonel David Eshel titled *Chariots of the Desert: The Story of the Israeli Armoured Corps* (ISBN 0-08-036257-5). Even though published in 1989, Eshel's book is more geared for military professional reading and does a much better job of focusing on what the military professional wants to know: *Bottom-line, how did the Israelis employ firepower, maneuver, and flexibility to defeat better-equipped Arab forces?* Eshel answers this question with an easy to read book, written by a military professional, backed up with lots of pictures and maps.

CPT DONNIE R. YATES
ACRC Company Trainer
1-118th Infantry Training Team
3d Battalion, 307th Regiment (TS)
(218th eSB)
Mount Pleasant, SC

America's Last Vietnam Battle: Halting Hanoi's 1972 Easter Offensive by Dale Andradé, University Press of Kansas, Lawrence, KS, 2001 (originally published in 1995 by Hippocrene Books, Inc., as *Trial By Fire: The 1972 Easter Offensive, America's Last Vietnam Battle*), 551 pp., \$24.95.

In 1968, President Lyndon Johnson ordered a halt to the bombing of North Vietnam. Johnson, stung by the Tet Offensive, domestic opposition to the Vietnam War, and the overshadowing of his domestic programs, bought into the idea that somehow the Communists might respond to his magnanimous bombing halt by ending their war to reunify Vietnam. He was wrong. Just as the Nazi's would not be appeased in the 1930s, Communists were not appeased in the 1960s. Four years after the bombing halt, Hanoi launched a full-scale invasion designed to conquer South Vietnam.

Several elements converged between 1968 and 1972 that made the Easter Offensive possible. The first was Nixon's victory in the 1968 election. Nixon ran on a platform that promised an end to the Vietnam War. He took steps to train and equip the South Vietnamese to handle the war in a process called *Vietnamization*. At the same time, North Vietnam built up their forces and logistic support apparatus in preparation for what the Communists called the Nguyen Hue Offensive. This offensive, known as the Easter Offensive in the United States, began on 30 March 1972 with a massive artillery barrage targeting Quang Tri Province.

Andradé is a historian with the U.S. Army Center of Military History and author of two previous books on Vietnam. He uses an extensive collection of interviews and reports from participants on both sides. The narrative tells the compelling story that, unlike most other books about the Vietnam War, gives the reader insight into the little known lives of North Vietnamese soldiers. The story of the Easter Offensive is one of character and occasional cowardice on the part of South Vietnam's infantry, armor, aviation, artillery, and logistics soldiers. From the American point of view, it is the story of an advisory effort that frequently made Americans the virtual commanders of South Vietnamese units.

The U.S. Army assigned soldiers to advise and bolster South Vietnamese units according to their tactical specialty. Unfortunately, regardless of the bravery of South Vietnamese soldiers, their officers were frequently incompetent, corrupt, or both. Advisors had to cope with Vietnamese commanders that were more worried about the political machinations of Saigon than about prosecuting the war. Many advisors found themselves saddled with counterparts that refused to fight and planned to surrender in the face of opposition. In some cases, the presence of American advisors was the only thing that stopped South Vietnamese units from surrendering or running. Many advisors were not successful and had to be extricated under fire or were forced to escape and evade the enemy. Over 100 Americans died during the offensive.

The author tells many detailed stories of the gallant American advisors. Any reader looking for examples of American heroism should read this book just for these examples. Out-numbered and usually operating alone or in very small numbers, these soldiers epitomized all that is good in the American soldier.

One of the most interesting of these advisors was neither a soldier, nor technically an advisor, in the purest sense. John Paul Vann, Vietnam veteran and retired Army lieutenant colonel, returned to the war as a civilian. After a series of jobs, Vann eventually became the senior man in the Second Regional Assistance Group. Designating this unit as a group, rather than as a command, enabled a civilian to run it. Vann had a military assistant who commanded the military on paper, but, in truth, Vann is probably the only civilian in American military history to command troops in combat. The story presented of this controversial figure is representative of the entire Vietnam experience and is well worth the time that it takes to read. A study of this man reveals all that was right and wrong with the Vietnam War. Only Neil Sheehan's *A Bright Shining Lie* surpasses Andradé's sketch of Vann.

The Easter Offensive was America's last Vietnam battle, but the battle did not slow down the process of ending America's par-

ticipation in the war. Even as the battle raged and men died, American combat power was drained from the country. The exodus of troops continued unabated throughout 1972, leaving just a few units to Vietnam. The Offensive failed from a combination of Communist ineptitude and massive aerial retaliation. That retaliation, including tactical air by fixed wing and rotary aircraft, countless B-52 Arc Light strikes, and attacks on the North Vietnamese homeland, ended the Offensive

and brought the Communists to negotiate. Those negotiations resulted in 'peace with honor' for America, but guaranteed the ultimate Communist victory in Vietnam.

America's Last Vietnam Battle is an excellent read. The narrative is smooth, organized, and professionally documented. In fact, if a reader is searching for a point of criticism, one will find it in the documentation. A reader who follows the endnotes will dis-

cover at least one chapter where the notes in the text do not coincide with the endnotes. This discovery, however, detracts not one iota from the value of the book. Hopefully, future editions will correct this mistake. That minor flaw notwithstanding, soldiers should add *America's Last Vietnam Battle* to their Vietnam collection.

CSM JAMES H. CLIFFORD
52d Ordnance Group (EOD)
Fort Gillem, GA

LETTERS from Page 3

ership in the late 1960s and into the 1970s. I fear we are repeating history with our current branch-qualification focus.

I would like to offer some insight on the current branch qualification process, its problems, and a suggested fix.

An armor staff sergeant (SSG) is considered branch qualified after 18 months of successful tank commander time. An armor sergeant first class (SFC) is considered branch qualified after 18 months of successful tank platoon sergeant time.

Armor noncommissioned officers are counting TDA platoon sergeant time, and because of the limited number of available platoons and the three-company concept forces, this has to be standard practice.

The problem we run into is identifying the branch certification standard. For example, a SSG in my unit was a promotable sergeant tank commander for 10 months, then was promoted to SSG. Two months later, he received his annual NCOER rating him for 12 months as a SSG tank commander. Another 6 months passed and he received orders to PCS, which required a change of rater NCOER, giving him the required 18-month branch certification time, when he actually had only 8 months, but nonetheless, the two NCOERs reflect that he is branch certified as a SSG tank commander. This is a failure of the system. I have seen many cases involving SFC platoon sergeant branch certification as well. I was a SSG (P) platoon sergeant, promoted to SFC, received an NCOER, which reflected that I had 8 months rated time as a SFC platoon sergeant with 2 months time in grade. I went on to do 30 more months as a SFC platoon sergeant, but this is not always the case, as demonstrated above.

It is essential that we keep our leaders in positions so that they become proficient in branch-qualifying jobs, and branch qualification should be for specific grades, not by adding time from previous grades.

This can be fixed. I recommend that once an NCO is promoted, he receive a complete-the-record NCOER, stating he has entered the new grade. It does not have to be a formal evaluation as the soldier may have just received a rating. But a complete-

the-record NCOER would confirm exactly when the soldier started branch certification for his current grade.

SAMUEL D. CARLSON
MSG, USA
K Troop, 2/16 Cavalry
Fort Knox, KY

American Civilian Engineers and VandenBergh's 194th Tank Battalion

Dear Sir:

I read MAJ VandenBergh's article on the actions of the 192d and 194th Tank Battalions in the Philippines during the opening days of World War II. My Dad, Ed Begole, participated in many of those movements, even though he was an American civilian.

Omitting unrelated details (which are another story), Dad was employed in Mambalao, on the east coast of Luzon, by the Marsman Mining Company as a (very) junior engineer. When war thrust itself into their lives, the Marsman Americans (including my mother and me) headed for Manila, seeking the safety of the (Japanese-ignored) Open City. Dad had been born in Moberly, Missouri, to parents of French and Scots lineage, and had graduated from University of Missouri; during his time there, he was in ROTC for two years.

When he tried to enlist in the U.S. Army in Manila, he recalled "all that military training got me designated as a captain in the Philippine Army — at no pay." Dad's assignment was to take a unit of "Philippine engineers (actually Filipino miners and powder-monkeys) and take the train north to Tarlac. Once we got there, we were to join up with the tanks and go south with them." Their duty was to precede the column of tanks — which turned out to be the 194th — and mine bridges, then blow them up after the tanks were across.

Only once was a bridge blown "prematurely" on Dad's watch, and that occurred when "some major or light colonel SOB ordered me to. It did protect the tanks that HAD got across from the very rapidly advancing Japs, but I still didn't like doing it."

He would laugh about the Bren Gun Carriers that joined the column as they moved on Lubao. Dad recalled, "The column was moving at a pretty fair clip, and those Bren Carriers would throw their tracks in a heartbeat. In fact, it happened so often their crews would throw a track, get it back on, and never lose their place in the column!" He did say they carried a "right good load of 75mm shells, though."

At some point after that, Dad received instructions to return to Manila and await further orders, where he briefly rejoined Mom and me. Around 11 January 1942, those orders came — from the Imperial Japanese army. He was ordered to report to Rizal Stadium, with enough clothing and food for 3 days, and was among the first contingent of American civilian internees at Santo Tomas Internment Camp.

My mother and I were ordered into Santo Tomas Internment Camp in April 1942, and the three of us remained there until March 1945. While the treatment of civilians by the Japs was nowhere nearly as horrendous as that doled out to military prisoners, it was no picnic; we were fortunate that the Japs had no information of Dad's connection with the Philippine Army (tenuous though it may have been).

I just thought you and MAJ VandenBergh, might be interested in some civilian involvement with the 194th.

MICHAEL C. BEGOLE
Richmond, VA

Society of the First Infantry Division

The Society of the First Infantry Division (Big Red One), which is composed of soldiers who served in World War I, World War II, Vietnam, Desert Storm, and the Balkans during the Cold War and in peacetime, will hold its 85th Annual Reunion from 30 July to 3 August 2003 in Reno, Nevada. For information please write the society at 1933 Morris Road, Blue Bell, PA 19422; call 1-888-324-4733; fax 1-215-661-1934; or email Soc1ID@aol.com.

EDWARD J. BURKE
Executive Director
Society of the First Infantry Division

“The Cutting Edge to Victory — On the Ground for America”

The Armor Center and Fort Knox are preparing for the 2003 Armor Conference to be held from 17-22 May 2003. Armor Conference 2003 will continue the tradition of providing an open forum for professional development and discussion on an array of issues facing the mounted force. Also scheduled are several premier social events for attendees, which makes this conference the conference to attend.

The 2003 conference theme is, “The Cutting Edge to Victory — On the Ground for America.” The Chief of Armor will inform and update the Armor community on Armor and Cavalry initiatives along the Army’s three major thrusts of Transformation: Current Force, the Stryker Brigade Combat Team, and the Objective Force. Several of the Army’s top leaders and subject matter experts are scheduled to attend and will deliver presentations on timely topics for the combined arms and joint audience.

The Armor Trainer Update (ATU) marks the beginning of the 2003 Armor Conference. This year the ATU is scheduled for 18 and 19 May. Armor and Cavalry leaders and trainers from Army National Guard mounted formations and Army Reserve Divisions (institutional training) will attend the 2-day ATU. The ATU will share the most current information on programs, priorities, and initiatives affecting the Armor/Cavalry Force. This year’s ATU will feature presentations and discussion from a distinguished group representing the National Guard Bureau, the 278th Armored Cavalry Regiment, and the Fort Knox Team, which includes the Fort Knox Armor Center commanding general and command sergeant major, the 16th Cavalry Regiment, the 1st Armor Training Brigade, and the Directorate of Training, Doctrine, and Combat Development.

This year’s ATU-TASS Battalion Update is scheduled on 19 May and will provide even more focus on identifying and fixing problems. The Armor proponent will present additional critical information affecting courseware and regional accreditation, and an extra half-day will be scheduled to discuss Title XI concerns. We hope you are able to attend this important training update as the ARNG and the USAR continue to take on increasing roles in meeting the Armored Force’s mission requirements.

In conjunction with the ATU, the Fort Knox G3, Directorate of Plans, Training and Mobilization, kicks off the Annual External Unit Scheduling Conference on 19 May at the Armor Inn. This program affords the Reserve Component, Army National Guard, external Active Army units, and other service branches the opportunity to schedule the Armor Center’s premier facilities for training.

Throughout the course of Armor Conference 2003, attendees will have plenty of activities. For the first time, the Armor Conference is pleased to announce a CSM/SGM social to be held on 18 May. Senior leaders of the NCO Corps now have an opportunity to get together in a more relaxed atmosphere before the USAARMC CSM Update. This year’s Armor Conference Golf Classic will be held over 2 days on Lindsey Golf Course. The Brigade and Regimental Commander’s Meeting, the Armor Center Command Sergeant Major’s Briefing, and the Honorary Colonels and Sergeants Major of the Regiment Meeting are all scheduled for 19 May. There will be social events every evening and the Chief of Armor’s luncheon will be held the final day of the conference. If you are interested in attending one of these events, but have not received an invitation, please contact the Armor Conference Coordinator, (502) 624-5398/7364, for information.

Continuing the recognition of contributions made to the Armored Force is an important part of the Armor Conference and MG Tucker will present the 9th Annual General Frederick M. Franks Award on 21 May. The Franks Award is given to a mounted active duty or reserve officer, noncommissioned officer, or a Department of the Army civilian who has demonstrated a longtime contribution to the ground fighting and warfighting capabilities of the U.S. Army. Nominees must demonstrate the leadership characteristics of the award’s namesake and must have achieved one or more of the following: offered a vision for the future of the mounted warfighting force that significantly improved combat survivability, maneuverability, or mobility; developed an innovation in equipment, material, or doctrine that significantly enhanced the effectiveness of mounted elements of the combat arms; exemplified professional excellence in demeanor, correspondence, and leadership on issues relevant to mounted warfare; displayed a love of soldiering through leadership skills; demonstrated the ability to recognize the sacrifice and achievements of subordinates; and understands the intent and directions of higher commanders. Last year’s award went to MAJ Michael C. Kasales for his exceptional contributions to the concept, design, and deployment of the armored force, and his impact as a trainer and mentor of mounted leaders. For more details, please visit the conference web site at www.knox.army.mil/arconf.

Defense industry companies and agencies will also be on hand to showcase the latest in military technology and practice at their vendor displays throughout the conference. The display site is open to the public and will include static vehicle displays from local and surrounding units.

The Armor Conference continues as a great opportunity for the mounted community and associates to gather professionally to honor the greatest mounted force ever and to enjoy the camaraderie of colleagues, friends, and acquaintances. See you in May!

Administrative note: Due to threat condition/force protection measures, all those who plan to attend the Armor Conference will need to show current military/DOD ID card or driver’s license, vehicle registration, and proof of insurance, and be prepared to have your vehicle searched prior to being admitted onto the installation. As on all military installations, all vehicles and personal items are subject to search at any time while on the Fort Knox military reservation.

Event	POC	Phone*
Armor Conference	CPT Nathan Woods SFC Douglas Kennedy	(502) 624-5398 (502) 624-7364
Armor Trainer Update	COL Randal Milling	(502) 624-1315
CSM Update	SGM Rollie Russell	(502) 624-1321
Ext. Scheduling Conf.	William Rosacker	(502) 624-3555
Contractor Displays	Kim Thompson	(502) 624-2708
Armor Association	Connie Stiggers	(502) 942-8624 No DSN
VIP Billeting	Reservations Desk	(502) 624-6180
On-post Housing	Carolyn Burton	(502) 943-1000 DSN 464-3491
Golf Scramble	Golf Manager	(502) 624-4218

* DSN Prefix: 464

2003 Armor Conference and Armor Trainer Update

17 – 22 May 2003

“The Cutting Edge to Victory — On the Ground for America”

<u>DATE</u>	<u>TIME</u>	<u>EVENT</u>	<u>HOST/SPEAKER</u>	<u>LOCATION</u>
Saturday 17 May	0900-1600	Vendor Displays Setup	UA/MBL	Skidgel Hall
	1300-1800	Registration for ATU/Armor Conference	G6	Skidgel Hall
Sunday 18 May	0730-1600	Registration for ATU/Armor Conference	G6	Skidgel Hall
	0900-1500	Vendor/Static Displays Setup/Registration	UA/MBL	Skidgel Hall
	0900-1620	ATU/Welcome Presentations	SACG	Haszard Auditorium
	1830-2130	No-Host Social for ATU (Induction of Armor Regiments' colors – TBD)	SACG	Leader's Club
	1930-2130	CSM Social	PCSM	Leader's Club
Monday 19 May	0730-1600	Registration	G6	Skidgel Hall
	0800-UTC	External Unit Scheduling Conference	G3/DPTM	Armor Inn
	0800-1200	Master Gunner Forum	Chief, MG	Richardson Hall
	0830-1645	USAARMC CSM's Update/Workgroups	PCSM	Leader's Club
	0900-1600	ATU TASS Battalion Workshops	QAO	Skidgel Hall
	0900-1615	Brigade and Regimental Commanders Meeting	OCOA	HQ Conf Rm/Skidgel
	0900-1530	Subject Matter Expert Briefings	Varied	Boudinot Hall
	1000-UTC	8th Annual Golf Classic	DCFA	Lindsey Golf Course
	1000-1600	Vendor/Static Displays	UA/MBL	Skidgel Hall
	1030-1400	Honorary Colonels and SGMs of the Regiment	OCOA	Rivers Auditorium
	1600-UTC	Golf Classic Social	DCFA	Leader's Club
Tuesday 20 May	0730-1600	Registration	G6	Skidgel Hall
	0800-1200	Master Gunner Forum	Chief, MG	Richardson Hall
	0900-1530	Subject Matter Expert Briefings	Varied	Boudinot/Gaffey Halls
	1000-UTC	8th Annual Golf Classic	DCFA	Lindsey Golf Course
	1000-1600	Vendor/Static Displays	UA/MBL	Skidgel Hall
	1530-1615	Boudinot Hall Rededication	TBA	Boudinot Hall
	1630-1830	CG's Garden Party	CG	Quarters One
	1900-2100	- Inclement weather location Regimental Buffet and Assemblies - Draper Print Presentation – TBD	OCOA	Leader's Club
Wednesday 21 May	0730-1600	Registration	G6	Skidgel Hall
	0800-1400	Vendor/Static Displays	UA/MBL	Skidgel Hall
	0800-0950	Senior Leaders/VIPs Displays Review	CG/Knox LDRs	Skidgel Hall
	1000-1010	Armor Conference Intro/Video	TBA	Haszard Auditorium
	1010-1100	Chief of Armor Update	CG	Haszard Auditorium
	1105-1200	Keynote Presentation	TBA	Haszard Auditorium
	1200-1230	Armor Association Meeting	Pres., Armor Assoc.	Haszard Auditorium
	1330-1345	Presentation of 9th Annual Franks Award	CG/TBA	Haszard Auditorium
	1345-1445	Keynote Presentation	TBA	Haszard Auditorium
	1500-1600	Keynote Presentation	TBA	Haszard Auditorium
	1600-1700	Personal Time (prep for dedication and banquet)		
	1700-1800	Armor Leader Dedication	CG/TBD	Regimental Room
	1800-1845	Cocktails	Armor Association	Candlelight Room
1845-UTC	Armor Association Banquet	Armor Association	Candlelight Room	
Thursday 22 May	0630-0800	U.S. Armor Association Executive Council Breakfast	Armor Association	Leader's Club
	0800-0805	Admin Announcements	TBA	Haszard Auditorium
	0805-0900	Keynote Presentation	TBA	Haszard Auditorium
	0915-1015	Keynote Presentation	TBA	Haszard Auditorium
	1000-1200	Vendor/Static Displays	UA/MBL	Skidgel Hall
	1030-1130	Keynote Presentation	TBA	Haszard Auditorium
	1200-1320	Chief of Armor Luncheon	TBA	Leader's Club
	1415-1515	Former Commanders Update	CG/Former CGs	HQ Conf Rm/Bldg 1101
	1700-UTC	Command Group Photo	CG/SGS	Brooks Field Flag Pole

An expanded schedule will be available at registration or you can get up-to-date information at the Armor Conference website: www.knox.army.mil/arconf



Analysis of the Battle of Kursk
by Captain Benjamin R. Simms

See Page 7

“The German armor included 100 heavy Tiger tanks and a similar number of medium Panther tanks, both designed to outmatch the T-34 in both armor and firepower. The Soviets compensated for the German overmatch by executing a reckless charge directly into the German force and fighting at point-blank range.”

HARMON

ARMOR

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

Periodicals Postage
Paid at Louisville, KY