

# ARMOR

*Mounted Maneuver Journal*

*September-October 2012*



**ARMOR-MOBILE PROTECTED FIREPOWER  
NOW AND ON THE FUTURE BATTLEFIELD**

# ARMOR

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# LETTERS

## Master gunner deserves tab

Dear **ARMOR**,

Drill sergeants, recruiters, sappers, Rangers, jumpmasters, Pathfinders and many other specialty skills receive some form of tab or badge that identifies who they are and what special skills they bring to the fight. Why is the master gunner not given the same?

Many of the people who wear these special skill tabs/badges do not even perform the duties in line with the skills they have learned after a certain timeframe. For instance, drill sergeants and recruiters receive identification badges for their tours of three years of service in that respective line of duty, and they are rightfully earned. However, master gunners will serve in positions in-line with their training at various levels for the rest of their military career.

The title of master gunner is not easily earned, and the execution of the skills obtained can be as equally demanding. In all aspects of gunnery training, the master gunner bears many burdens, and with great proficiency and professionalism, he handles them with decisive and clear action. I currently serve as my battalion's master gunner, and the hours I contribute to my unit's success are no less than that of a recruiter or drill sergeant. If I get promoted and serve as a platoon sergeant, I will once again be called upon to serve as a "Mike Golf" at some level upon the completion of my tour as a platoon sergeant.

The skills a master gunner possesses are no less than that of any other specialty in the Army; I believe the demanding training that goes along with that skill deserves more recognition. The master gunner is the linchpin of all aspects of gunnery training, and he should be recognized just as equally as any other special skill in our Army.

SSG ERNEST L. BRUMMITT  
Battalion master gunner  
1<sup>st</sup> Battalion, 22<sup>nd</sup> Infantry,  
1<sup>st</sup> Brigade, 4<sup>th</sup> Infantry Division

## Bring back the armored cavalry regiment

Dear **ARMOR**,

My compliments to CPT Joshua T. Suthoff and CPT Zachary S. Byrnes for their can-

did assessment, "Validating the R&S Squadron and the Future of Reconnaissance." (April-June 2012 edition, **ARMOR** magazine) They have "been there, done that," and they report that it doesn't work. From their experience, they offer interesting solutions, but I suggest that these are only "band aids" to a doctrinal mess that needs to be dumped into the ash heap of U.S. Army Training and Doctrine Command failures.

The reconnaissance and surveillance squadron of the battlefield surveillance brigade is essentially a headquarters and headquarters troop commanding two brigade recon troops (each with only two scout platoons) lashed together with an utterly incompatible long-range surveillance company. As a mounted force, the entire squadron has only four scout platoons with no combined-arms capability (the added 60mm mortars hardly count) and, in fact, is barely more than a company. Lacking heavy weapons, it is suited only for "sneak and peak" reconnaissance, while its heavy, cumbersome mine-resistant vehicles negate any such capability.

The LRS company has no functional tie-in with the scouts other than (in someone's imagination) the scouts possibly acting as the quick-reaction force to rescue them if their location is compromised. Good luck with that!

The authors suggested redistributing the LRS platoons, one to each of three R&S troops, but that won't work either since they cannot keep up unless they are mounted in similar vehicles. Granted, more mounted infantry is a reasonable idea, but that's not what highly specialized LRS platoons are for.

The authors envision the R&S troops and LRS company being chopped up and sliced to combatant commands. Yes, that's a likely use of a "corps asset," but is loaning a scout platoon or two to a division commander really worthwhile?

How the newly minted BfSB is supposed to tie in an R&S squadron alongside a military-intelligence battalion is beyond the scope of the article, and I dare say that I haven't a clue! But the obvious solution is to end this charade. Eliminate the BfSB outright and assign the MI battalion directly to the corps. Assign the LRS company as a separate corps or theater asset. Ideally, resurrect the heavy armored cavalry regiment before all its institutional memory is lost. Failing that, at least replace the R&S squadron with a conventional armored cavalry squadron –

with all the combined-arms combat power it commands.

Next, I wish to assess retired U.S. Marine Corps LTC Robert W. Lamont's "Brigade Combat Team 2020." (April-June 2012 edition, **ARMOR** magazine) I understand what he is trying to do to improve the brigade combat team, but the proposal is doomed to failure, misconceived from the start by TRADOC's conflation of "modularity," "flexibility" and "commonality." The author states that according to the Army's capstone manual **Operations**, a single large fixed formation cannot support the diverse requirements of full-spectrum operations and that future BCT structure must work in the context of their roles in accomplishing the joint task force's intent. That is nonsense. Not the author's statement, but the Army capstone he cites! If a division lacks the required diverse assets, how can a mere brigade expect to have them unless it is tailored for the mission, as would be the division?

The heavy BCT is neither flexible nor tailorable. It comes with only one-each tank and mechanized battalion equivalent, commonly organized into two balanced tank/mech task forces. The newly structured "cavalry squadron" is added as a sop to have a doctrinal third maneuver element, but it lacks combat power to accomplish such a role.

The author suggests adding a truck-borne infantry battalion and limited aviation lift assets to round out the BCT, making it "triple capable." That's a huge mistake at this low an echelon. Leg and mounted forces do not work well when armored combat maneuver is required. Regards "truck-mounted" infantry, consider the history of the failed "motorized infantry division" of World War II. Lavishly equipped, it was certainly mobile, but its maneuver ended with enemy contact. Worse, the proposed aviation assets are inadequate to airmobile and sustain an infantry battalion, so aviation support will be required anyway. Conversely, frequent smaller-scale (company and platoon) airmobile operations will rapidly disperse the infantry battalion, reducing its effectiveness from its main mission.

Finally, completely ignored in the discussion is the logistical supporting footprint of this expanded BCT and its rear-area security, or lack thereof. Let's say you maneuver those two armored/mech battalions, screened by the cavalry squadron, and surprise the enemy with that airmo-

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# COMMANDANT'S HATCH

COL Paul J. Laughlin  
Commandant  
U.S. Army Armor School



## Mastering the art of mobile, protected, precision firepower

Battle handover from BG Thomas James is complete – thanks to him for his distinguished service to our branch as the 46<sup>th</sup> Chief of Armor. It is truly a distinct honor and privilege to serve the Armor force as the 47<sup>th</sup> Chief of Armor and commandant of the Armor School. Stoked to be here! Looking forward to leading the great team of Armor and Cavalry leaders and Soldiers at Fort Benning as we continue to develop agile and adaptive Soldiers and leaders who are competent in combined-arms maneuver and reconnaissance and security skills.

In this article, I would like to touch on two points: one, there is now and will always be a need for armored and reconnaissance forces in our Army, and two, I want to provide a quick Armor School update.

Former Defense Secretary Robert Gates said Feb. 25, 2011, that "... The need for heavy armor and firepower to survive, close with and destroy the enemy will always be there, as veterans of Sadr City and Fallujah can no doubt attest." We absolutely agree. As such, it is my belief that we as a branch must focus on emphasizing that Armor and Cavalry are imperative to the Army's application of combined-arms maneuver in unified land operations.

In the combined-arms fight (which we must always strive for), our unique contribution is providing mobile, protected, precision firepower to ensure success on the battlefield. Although relatively simple in concept, combined-arms maneuver takes much study and practice to master. Once we make contact with the enemy, we must isolate him both physically and psychologically to bring the full weight of the combined-arms team to bear against him in an unfair fight. At its essence, combined-arms maneuver requires that our armored forces provide protec-

tive and devastating cover fire so our infantry brothers can maneuver across all types of terrain – open, restrictive and urban – to gain a foothold and fight through the last hundred yards to defeat the enemy.

The lethal application of combined-arms maneuver described above requires that we remain experts in our profession and mindful of our history, particularly the history that Armor Soldiers are writing today in Afghanistan and Israel. In speaking with some of the Marine tankers returning from southern Afghanistan, they inform us of tremendous contributions they bring to the fight there, mostly without fanfare. During a recent trip to visit the Israeli Defense Forces, it became very apparent that they have applied the lessons from 2006 in Lebanon. Follow-on experiences in Gaza (as recently as June 2012) prove that vehicles offering mobile, protected, precision firepower are critical for success against all threats. The Israelis are unambiguous advocates for the application of combined-arms maneuver in all fights and in all types of terrain.

History tells us that our adversaries will always seek ways to counter and mitigate our strengths with the assets they have at hand. Examples of this from across the globe dictate the necessity to maintain a balance of all types of forces – armored, Stryker, infantry and reconnaissance/security – to remain superior on any land battlefield. While some consider the future of conflict to be uncertain, we can be absolutely certain that based on history, the only logical conclusion is that there will always be a role for Armor in the combined-arms fight.

To that end and in providing a brief update from my perch, we at the Armor School continue to work hard in developing agile and adaptive leaders and Soldiers for the modern battlefield as com-

bined-arms warriors. Since July 2012, we are conducting mounted maneuver training on Fort Benning's Good Hope training area. The synergy created by being at Fort Benning and part of the Maneuver Center of Excellence with the infantry is amazing, and we continue to look at ways to take advantage of this. We are currently integrating tanks into Infantry Basic Officer Lieutenants Course by having captains from the Maneuver Captains Career Course issue operations orders to the lieutenants and then exercise mission command while the lieutenants maneuver on the ground. Sometimes this is the first experience these captains have ever had with tanks, and they learn a great deal!

Whereas this issue is dedicated to the concept of mobile, protected, precision firepower, we have not forgotten our reconnaissance troopers and formations. We will discuss their vast contribution to the combined-arms fight in future issues as we prepare for the Reconnaissance Summit in March. Also, we will host our first Gainey Cup to determine the best scout squad in the Army in the first quarter of 2013. More to follow.

At the Armor School, we continue to develop the future generation by implementing innovative training techniques from the 2015 Army Learning Model in courses like our Army Reconnaissance Course for Reconnaissance Leaders and our Blended Rotational Interactive Training Environment for our mechanics. These innovative courses have recently received accolades from key leaders throughout the Army and, more importantly, from the Soldiers and leaders who have undergone

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# GUNNER'S SEAT

CSM Miles S. Wilson  
Command Sergeant Major  
U.S. Army Armor School



## Mobile, Protected Precision Firepower – Our Responsibility

We in the Cavalry and Armor force know what we offer, what we are capable of, and the amount of death and destruction we have inflicted on our enemies the last 10-plus years. Those feats, as well as our ability to operate, think and act independently and decisively, have not gone unnoticed by senior leaders of the Army and Defense Department. Former Secretary of Defense Robert Gates, current Army Chief of Staff GEN Raymond Odierno and MG H.R. McMaster, commanding general of the Maneuver Center of Excellence, are all on record as passionately expounding on the past exploits and future need for an armor force that can survive, close with and destroy the enemy.

What the platform will be, how many there will be and in which component our Army's armor force will be in are all issues affected by many things – sequestration, election turnover and determining exactly what the "enemy" is going to look like in 2020. These issues are well above the average Cavalry and Armor leader's level. But there are a couple of things we can do all the way down to the platoon level that will set the armor force up for success as we shape the Army of 2020. These two things are the Army Reconnaissance Course and Master Gunner Course.

I grew up in the Army as a 19D, reconnaissance specialist. I can understand how many of our 19D SSGs and SFCs in the operating force feel when they hear the term "ARC." The point of this course is not to qualify or certify you as a "cavalryman" able to conduct all types of reconnaissance with a single look at a map

and a quick shot of an azimuth. However, ARC develops your level of fundamental skills and makes you a more adaptive and agile leader.

GEN Odierno laid out eight leader expectations in his document, "38<sup>th</sup> CSA Marching Orders." I'll make note of these five:

- Learn, think, and adapt;
- Balance risk and opportunity to retain the initiative;
- Build agile, effective, high-performing teams;
- Develop bold, adaptive and broadened leaders; and
- Communicate – up, down and laterally; tell the whole story.

ARC is designed, taught and executed to get after all these. It is imperative that we in the cavalry force embrace and support this course. The time your noncommissioned officers will be away is more than worth it. We have received nothing but positive feedback from both graduates and their unit leadership. For more information, I highly recommend you visit the ARC Webpage at [www.benning.army.mil/Armor/316thCav/content/pdf/ARC.pdf](http://www.benning.army.mil/Armor/316thCav/content/pdf/ARC.pdf).

For our tankers, we have to put a focus and priority back on the Master Gunner Course. Armor units at all levels have put precision gunnery on the shelf over the past 10 years as we used the tank less and less in Iraq and simply left them at home station when deploying to Afghanistan. As the subject-matter expert for all weapon systems within the unit, the master

gunner advises and assists the commander in the development, execution and evaluation of all combat- and gunnery-related training.

The 316<sup>th</sup> Cavalry Brigade currently conducts the M1A1, M1A2 and MGS Master Gunner courses. The M1A1 course rate is dropping as the Active Army transitions to a fully M1A2 force. The number of M1A2 master gunners in the Army is dropping as we lose qualified NCOs to attrition and course seats go unfilled. We need first sergeants, command sergeants major and commanders to start identifying the right NCOs and then train and mentor them for attendance. Right now it takes completion of one of the M1 courses and the MGS course to be a qualified MGS master gunner. Feedback from the Stryker community said it was not beneficial to keep their NCOs away for more than 16 weeks; we listened and in January 2013, 316<sup>th</sup> Cav Brigade will conduct the first 8½-week standalone MGS master course. Again, I highly recommend you seek more information at [www.benning.army.mil/Armor/316thCav/content/pdf/m1a1a2.pdf](http://www.benning.army.mil/Armor/316thCav/content/pdf/m1a1a2.pdf).

We here at the Armor School welcome your feedback and ideas; value your dedication to training and leading our troopers and Soldiers; and appreciate your service to the nation!

Let us also never forget those who have paid the ultimate price and can no longer be with us, and all those great Americans currently serving in harm's way.

'Til we all ride again.

Forge the Thunderbolt! Armor Strong!

# Making a Cavalry Scout

by CPT John D. Grounds, CPT Jonathan K. Goodman and SSG Jason P. McMullen

The 5<sup>th</sup> Squadron, 15<sup>th</sup> Cavalry Regiment, transforms volunteers into Soldiers through 19D Cavalry scout one-station unit training. OSUT prepares Soldiers to be tactically and technically competent Cavalry scouts who embrace Army Values and the Warrior Ethos. Training encompasses a range of tasks and abilities, including physical fitness, individual weapon qualifications, land navigation, communication and the use of basic chemical, biological, radiological and nuclear equipment. Soldiers also receive valuable training on the operation and maintenance of the M3A3 Bradley, the M1025 humvee and the M1127 Reconnaissance Variant Stryker Combat Vehicle.

Upon graduation, these Soldiers are ready to take their place in a values-based organization. They are capable of contributing from the first day they report to their final units as a member of a combined-arms team operating in a full-spectrum environment.

The 19D OSUT course trains both active Army and Reserve Component Soldiers to perform basic Soldier tasks and to function as Skill Level 10 cavalry scouts. The course scope includes basic combat training and military-occupation specialty-specific skill sets. The 16-week course incorporates 864 academic hours with more than 270 hours in challenging field-training exercises. Soldiers also spend 114 hours in basic and advanced rifle marksmanship and an additional 86 hours on a variety of U.S. weapon systems, including the M240B, M2 .50-caliber machinegun, MK19 40mm grenade launcher and AT-4 anti-tank rocket launcher.

Throughout the course, each BCT and 19D advanced individual training objective reflects the seven core Army Values of loyalty, duty, respect, selfless service, honor, integrity and personal courage. Every lesson and training event throughout the 16-week course emphasizes and discusses these values, engraining them into the new Soldiers.

## 'Dime drills'

A hallmark of 19D OSUT is the weapons-immersion program. Each Soldier-in-training is issued his personal weapon, a M4 carbine, during Week One. He is then responsible for the weapon and accountable for its 10-level maintenance through completion of the course. WIP's natural progression leads directly to one of the largest training events Soldiers go through: basic rifle marksmanship.

Each Soldier goes through a structured process, taking him through a series of steps leading to final qualification. This process begins with Soldiers learning the basics of firing their weapons and conducting dry-fire drills such as "dime drills," where Soldiers place a coin or washer on the front sight-post of the weapon and practice the basic principles of firing the weapon to ensure a smooth trigger pull. When a Soldier pulls the trigger and the dime falls off, the Soldier knows he didn't pull the trigger smoothly.

Soldiers then get a preview of what it will be like to fire the weapon at the Engagement Skills Trainer. This is where Soldiers get the chance to fire in a virtual environment to understand what they will fire with live rounds when they reach the range. These Soldiers then group, zero and qualify on the M4-series rifle.

Weapons familiarization and training is extensive. Each Soldier will be familiar with the M203 grenade launcher, M249 Squad Automatic Weapon, M136 AT4 Launcher, .50-caliber M2 heavy-barrel machinegun, MK19 40mm machinegun, 7.62mm M240B machinegun, various hand grenades and the Javelin Weapon System. In addition to instruction on operations under usual conditions, each Soldier receives training in fundamental engagement techniques and judgment-based skills training in the escalation of force.

## Physical strengthening

Soldiers also participate in the Army's physical-readiness training beginning on the first day. Soldiers are initially assessed by the 1-1-1 Diagnostic Physical Fitness Test, which records the number of repetitions of correctly performed push-ups and sit-ups, along with the time it takes each Soldier to run one mile. This initial assessment allows cadre to tailor physical-training sessions to Soldiers' needs through the PRT program, which focuses on strength, endurance and mobility.

Soldiers need strength to march under load, enter and clear a building or trench line, repeatedly load heavy rounds, lift equipment and transport wounded Soldiers to the casualty collection point. The PRT program seeks to provide a well-designed strength-training program that improves performance and controls injuries. Endurance training enhances both the ability to sustain high-intensity activity of short duration (anaerobic) and low-intensity activity of long duration (aerobic). It uses sprints, individual-movement techniques, obstacles, continuous running, foot marches and cross-country movement to improve the endurance of individual Soldiers.

The component of mobility functionally applies strength and endurance to enhance performance of physical tasks. PRT mobility exercises consist of eight qualitative performance factors: agility, balance, coordination, posture, stability, flexibility, speed and power. The PRT program's overall goal in the 19D OSUT environment is to physically prepare Soldiers to successfully complete the Army Physical Fitness Test prior to graduation.



Drill sergeants from Troop B, 5-15 Cavalry, conduct Army physical-readiness training. (Photo by CPT Steven K. Morelli)



**SSG Anthony D. Bordano, a senior drill sergeant, makes an adjustment for a Soldier at the MK19 Grenade Launcher Range. (Photo by CPT Steven K. Morelli)**

tion. No Soldier earns the title of Cavalry scout or ships to his first duty assignment without passing the APFT – according to Army standards, this requires a minimum score of 60 points in each event.

As an enhancement to the PRT program, each Soldier receives instruction in the fundamentals of hand-to-hand combat, which enhance the Soldier's willingness to close with, engage and destroy the enemy. Soldiers learn simple techniques of hand-to-hand fighting, both on the ground and while standing. Combatives build the Soldier's confidence and instill a spirit of aggressiveness, which complements the Soldier's skills with individual- and crew-served weapon systems.

## Scout gunnery

As Soldiers progress through the first three phases of OSUT – which are equivalent to Army BCT – to the last two phases – which equate to other MOS' AIT phases – they begin to focus on skills specific to the 19D Cavalry scout MOS. This training must remain relevant with the technological advances available in the operational force and the current manning requirements new Soldiers will be filling.

The squadron maintains contact with units in the field and Army technical proponents to ensure training and equipment currency. One example is the recent collaboration with the product manager for Forward-Looking Infrared. PM-FLIR provided a virtual-environment trainer for the Long-Range Advance Scout Surveillance System, providing critical hands-on experience to both cadre and trainees. This critical training is increasingly important as most Cavalry scouts are now serving on lighter armored platforms equipped with the system.

Light scout gunnery and the end-of-cycle field-training exercise are the capstone training events all future Cavalry scouts are challenged with before being certified as 19D Cavalry scouts and graduating the course. In early 2012, the deputy commanding general for initial military training at U.S. Army Training and Doctrine Command approved elimination of M3 Bradley gunnery from the 19D program of instruction.

Introducing light scout gunnery in place of the M3 gunnery will allow 19D trainees to become familiar with actual gunnery techniques such as target acquisition, target engagement, threat discrimination and fire commands. These techniques are immediately ready for use in U.S. Army Forces Command units while saving the Army more than \$5 million annually. Also, the time saved from Bradley gunnery is now available to familiarize all 19D trainees on the M1127 Reconnaissance Variant Stryker Combat Vehicle, further enhancing the Army-wide emergence of SBCTs.

A humvee platform is used for light scout gunnery training. Training on these unstable, direct-fire platforms incorporate machinegun engagement techniques such as target detection and threat discrimination using the detect, identify, decide, engage and assess process.

The EoC FTX evaluates these future scouts in a field environment under conditions of stress. The EoC FTX is the most challenging five days these Soldiers have yet experienced. Trainees are required to perform virtually all the individual skills they have learned during the course under the umbrella of collective tasks and missions in a tactical environment. The troop conducts this

FTX under a collective, multi-echelon framework that will also provide training to the cadre of the troop as squad, section and platoon leaders to hone their warfighting skills. Soldiers face challenges with both mounted and dismounted reconnaissance patrols, patrol-base operations and military operations in urban terrain scenarios. The EoC FTX concludes with a 20-kilometer road march.

Training concludes with a rites-of-passage ceremony, where successful Soldiers are welcomed into the ranks of Cavalry Soldiers. Each ceremony is unique and designed to instill pride and panache into the U.S. Army's newest 19D Cavalry scouts while reflecting on the proud and distinguished history of the U.S. Cavalry.

Gaining-unit commanders should expect Cavalry scout graduates to be familiar with the reconnaissance and scout platoon's multifaceted role in supporting a reconnaissance troop and squadron in the development of situation awareness and understanding. Each new Cavalry scout will be able to pass an APFT, comply with the Army height and weight standards, and have discipline. They will have the ability to incorporate themselves into the gaining unit's operations with minimal adjustment. Commanders can appreciate gaining new scouts who are familiar with the unit's weapon systems, who know how to conduct themselves on ranges and who are accustomed to challenging FTXs.



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Mullen holds a bachelor's degree in public-safety management from Franklin University, graduating cum laude.

## ACRONYM QUICK-SCAN

**AIT** – advanced individual training  
**APFT** – Army Physical Fitness Test  
**BCT** – basic combat training  
**BCT** – brigade combat team  
**EoC FTX** – end-of-cycle field-training exercise  
**IBCT** – infantry brigade combat team  
**MFR** – memorandum for record  
**MOS** – military-occupation specialty  
**OSUT** – one-station unit training  
**PM-FLIR** – product manager, Forward-Looking Infrared  
**PoI** – program of instruction  
**PRT** – physical-readiness training/test  
**SBCT** – Stryker brigade combat team  
**WIP** – weapons-immersion program

## Cadre certification

The process of turning fresh volunteers into qualified 19D Cavalry scouts involves a strict certification process for all instructors and leaders. The squadron's purpose is to ensure quality of training; it is therefore imperative that the squadron maintains qualified and highly trained instructors. This is achieved through the squadron's certification program. The program's purpose is to prepare all instructors to be professional trainers so they can provide relevant tactical training to the squadron's students.

Instructor certification is a vital part of the unit's in-processing procedures. This program ensures the squadron's instructors are technically and tactically proficient. Also, instructors are trained in the treatment of Soldiers undergoing initial-entry training, and they receive certification to conduct 19D10 OSUT training.

The squadron commander is the course manager for 19D Cavalry scout OSUT. He is responsible and accountable for the overall execution, administration and quality control of training the squadron conducts. No subordinate commander has the authority to alter the training standard without the squadron commander's approval.

"Training to the standard" means that only certified instructors will teach the objectives contained in the approved PoI using the prescribed student-to-instructor ratios, equipment, facilities, training aids, devices and ammunition. Instructors and drill sergeants who have not met the qualification re-

quirements for certification are not eligible to be primary instructors. They may be assistant instructors with no adverse action if approved by the troop commander.

The chief instructor is responsible for managing and supervising the squadron's instructor-certification program. He has overall responsibility for the instructor-certification process within the squadron. He initiates the instructor-certification package of records and maintains records of certification for each instructor or drill sergeant. The chief instructor inspects the program to ensure administration of training according to the squadron commander's training guidance. He serves as the primary point of contact with brigades on all squadron instructor-certification matters.

Once a chief instructor certifies an instructor or drill sergeant, a memorandum for record is submitted to the squadron commander requesting that the instructor be approved to instruct all required lessons in the PoIs within the squadron. The MFR goes in the instructor's or drill sergeant's certification packet as a permanent document with the instructor's record, then is transferred to the instructor's assigned troop for maintenance from that point on.

To maintain certification, instructors and drill sergeants must have no adverse actions, pass all required evaluations in the program and receive quarterly evaluations in conjunction with quarterly counseling. Each evaluation is conducted on a lesson plan the instructor has not been evaluated on, with the goal of eventually having each instructor or drill sergeant evaluated on all lesson plans he teaches.

# Armor Basic Officer Course Training Outcomes

by CPT Matthew J. Quiggle

The 2<sup>nd</sup> Squadron, 16<sup>th</sup> Cavalry Regiment, is responsible for providing the operational force with physically fit, mentally agile, technically and tactically proficient leaders who are prepared to lead platoon-level combined-arms operations. As the proponent organization for the Armor Basic Officer Leader Course, 2-16 Cav trains more than 700 Army, Marine Corps and international military officers per year in a challenging 19-week program of instruction. This article outlines the training program for ABOLC and defines the training outcomes for the course. This information assists commanders in targeting training opportunities for lieutenants assigned to 2-16 Cav, finding where gaps exist and building on the skill sets developed.

## 4 phases

ABOLC consists of four phases: foundations, gunnery, tactics and a capstone field-training exercise. The course phases are sequential. Each phase incorporates the Common-Core Task List tasks as directed by U.S. Army Training and Doctrine Command as well as branch-specific tasks.

During the foundations phase, training reinforces skills learned in BOLC-A. The training includes a diagnostic Army physical-fitness test, basic rifle marksmanship, advanced rifle marksmanship, a day/night land-navigation practical exercise and training on branch history, the profession of arms and supply and maintenance.

Once lieutenants complete the foundations phase, training shifts to gunnery and branch-specific skills. This intensive training phase encompasses reconnaissance platforms and tanks. Lieutenants receive training on organic weapon systems to include machineguns (M240, M2A1, MK-19), crew stations and responsibilities, maintenance and services, and pre-gunnery certification using the Advanced Gunnery Training System and Engagement Skills Trainer (Heavy). Each lieutenant completes Gunnery Table 1 in accordance with Field Manual 3-20.21 as a pre-requisite to live-fire gunnery. The capstone event of this phase is a two-day light cavalry (M2A1 and M240B) and tank live-fire on a modified Gunnery Table 6 under day and night conditions.

Instruction covering troop-leading procedures begins our tactics phase. During this phase, lieutenants receive additional branch-specific training on platoon-level armor and reconnaissance tasks, incorporating practical exercises on the terrain board and in close-combat tactical training. Lieutenants also conduct a reconnaissance-focused, 48-hour dismounted situational-training exercise and two five-day mounted STXs. (Each lieutenant will complete this STX exercise, once with a tank platoon and once with a reconnaissance platoon).

The final event of ABOLC is the capstone FTX, an eight-day force-on-force maneuver exercise. The FTX evaluates a lieutenant's ability to plan operations, maneuver his platoon, react to contact and sustain his element during continuous operations. It is the final gate prior to graduation.

## 5 tasks

A graduate of ABOLC must demonstrate proficiency at five major tasks:

**Firing and employing M1A1/M1A2 Systems Enhancement Program tanks.** Lieutenants receive platform-specific technical instruction during pre-gunnery training, with 35 PoI hours allocated for instruction on the gunner, driver and tank commander's station – and more instruction on maintenance. During gunnery, lieutenants expand their training to fire commands,

crew drills and precision gunnery. As the course progresses through tactics phase, the Close-Combat Tactical Trainer reinforces employment of the M1 series tank. Finally, lieutenants are evaluated on the tactical employment of the M1A1/M1A2 SEP platoon during the STX and FTX, with evaluation criteria based on performance as an Armor crewman (gunner, driver, tank commander) and as a platoon leader.

**Maneuvering a mounted/dismounted platoon.** ABOLC graduates are trained as both reconnaissance- and tank-platoon leaders. Each graduate demonstrates proficiency at planning and executing missions in a variety of organizations and controlling platoon-level maneuver, regardless of the associated platform.

To achieve this objective, the 2-16 Cav cadre leverages traditional classroom instruction, terrain boards, virtual training, live training and gaming. Classroom instruction lays the foundations for understanding the principles of maneuver, basic platoon-movement formations, platoon battle drills and reconnaissance and armor tasks. The ABOLC PoI allots specific and distinct blocks of instruction for fundamentals of offense, fundamentals of defense, area reconnaissance, zone reconnaissance, route reconnaissance and security operations. Reinforcement of this training shows in the CCTT with four days of virtual operations. Lieutenants conduct a dismounted STX, which focuses on reconnaissance tasks and platoon dismounted maneuver. Further reinforcement of all these tasks is evident during live, mounted STXs.

**Use TLPs to develop platoon-level operations orders.** Critical to the development of an officer is his understanding of the TLP and how he applies this tool to develop an operational order. The 2-16 Cav allocates 12 PoI hours to classroom instruction on operations-order development nested within the TLPs' framework. Moreover, each lieutenant has the opportunity to rehearse and refine this essential skill set throughout the course, developing and briefing OPORDs to his platoon trainer and peers during every phase of training.

In the course of tactics classroom training, CCTT practical exercises, and mounted and dismounted STXs, each lieutenant develops and briefs eight to 10 platoon OPORDs. During the capstone FTX, each lieutenant is evaluated on his ability to develop his plan and express his intent to his platoon in a time-constrained field environment.

**Frequency-modulation communications and reporting.** As Armor officers, it is essential that ABOLC graduates are able to effectively manage information and send clear, concise reports



Troop H lieutenants conduct mounted-maneuver training during an ABOLC STX. (Photo by SSG Raymond Whitener)



**ABOLC lieutenants conduct an OPORD briefing in the field during the ABOLC FTX, the culminating event for ABOLC lieutenants.**  
(Photo by SSG Raymond Whitener)

that “paint the picture” for their higher headquarters. ABOLC lieutenants are introduced to the Advanced System Improvement Program radio, Simple Key Loader and Force XXI Battle Command Brigade and Below communications during the gunnery phase of training.

During the tactics phase, lieutenants receive instruction on standard report formats (situational report, spot report, medical evacuation, etc.) that they will employ during the CCTT and STX practical exercises. During these practical exercises, lieutenants are expected to receive, filter and format FM and digital reports to be sent to the troop commander. As training progresses, lieutenants learn to balance the flow of information from within their platoon and enforce net discipline, resulting in a more confident officer who can control his platoon’s maneuver and battle-track from his platform while keeping the commander informed.

**Critical thinking and decision-making.** The 2-16 Cav has targeted training designed to enable junior officers to think critically in ambiguous situations and take decisive action. Chief among these training opportunities is the five-day advanced situational-awareness training, which offers a deeper understanding of how the brain recognizes and cues on changes to the environment, processes that information and then uses the information to predict the solution to complex problems.

Demonstrated proficiency at the five outcomes listed is the requirement for all ABOLC graduates. The course has expanded to integrate enablers such as close-combat aviation, close air support and indirect fires. Subject-matter experts on these systems (pilots, joint fires observers and artillerymen) provide classroom instruction on the planning, employment and integration of these enablers, and then lead virtual training in simulators. The addition of CCA, adds more depth to the battlefield and poses additional challenges for ABOLC lieutenants.

## Training shortfalls

ABOLC graduates arriving at their first units of assignment are competent and confident officers able to lead platoons in combined-arms operations. However, some training shortfalls exist between the scope of the course and the needs of U.S. Army Forces Command units. By nature, these tend to be technical skill sets that require dedicated time and training to achieve a level of proficiency (among these is technical expertise in a variety of platforms).

The 2-16 Cav works alongside the Armor School and Fort Benning to ensure that lieutenants have the opportunity to attend the Bradley Leaders Course or the Stryker Leaders Course as follow-on schools to gain more insight into the maintenance and employment of these systems. Also, while lieutenants have limited instruction on the FBCB2, they rarely have the opportunity to employ the system to its full capacity and nest within the framework of a fully digitized company-/troop-level organization. As such, the squadron seeks to maximize lieutenant throughput into the 40-hour qualification course at Fort Benning.

To develop leadership attributes further, the squadron also maximizes the throughput of lieutenants into the Army Reconnaissance Course, Reconnaissance and Surveillance Leader’s Course and Ranger School. This relationship has yielded excellent results, with the majority of officers graduating from one or more of these follow-on schools before reporting to their follow-on assignments.

Armor and Cavalry leaders throughout the Army rely on 2-16 Cav to provide physically fit, well-trained, adaptive and tactically competent leaders. The squadron views this mission as critical to the success of the Army and is constantly seeking ways to challenge lieutenants, incorporate emerging doctrine and provide the force with lieutenants who are ready to take over a platoon upon arrival at a new duty assignment.

To this end, commanders in the force can expect a graduate of ABOLC to be a standard-bearer, arriving fit and ready to hit the ground running. An ABOLC graduate has undergone intensive training while assigned to 2-16 Cav and has the foundation for success in any Armor or Cavalry organization. Targeted training opportunities and reinforcement of technical and tactical skills will assist units in developing platoon leaders and building the next generation of leaders for the mounted force.



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## ACRONYM QUICK-SCAN

- ABOLC** – Armor Basic Officer Leader Course
- BOLC** – Basic Officer Leader Course
- CCA** – close-combat aviation
- CCTL** – Common-Core Task List
- CCTT** – Close-Combat Tactical Trainer
- FBCB2** – Force XXI Battle Command Brigade and Below
- FM** – frequency modulation
- FTX** – field-training exercise
- OPORD** – operational order
- PoI** – program of instruction
- SEP** – Systems Enhancement Program
- STX** – situational-training exercise
- TLP** – troop-leading procedure

# 19K One-Station Unit Training: Creating the Army's Future Tank Forces

by 1-81 Armor Battalion command team (CPT Justin McCrary, CPT Justin Oakley,  
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19K one-station unit training continues to evolve as our missions, battlefields and enemies change. Eighteen years ago, dismounted patrolling and urban operations were virtually unheard of during 19K OSUT. Sayings such as “death before dismount” and “why walk when you can ride” were also commonplace among Soldiers during that time. However, today’s 19K OSUT graduate can conduct dismounted operations and still effectively retain his knowledge of main-battle-tank operations at the -10 level of execution.

Further, with the implementation of the Army’s physical-readiness training program, injuries due to exercise have been reduced in virtually all categories, and final Army Physical Fitness Test failures are less than 5 percent (60/60/60 scale).

Under the guidance of the Maneuver Center of Excellence and Armor School, all new Armor crewmen that units receive in the U.S. Army come from one place: Fort Benning, GA. The 1<sup>st</sup> Battalion, 81<sup>st</sup> Armor Regiment, has four companies that train these new 19Ks. Each new volunteer is introduced to the Army through a five-phase, 15-week long OSUT. The five phases are Red, White and Blue for basic combat training, and Black and Gold for advanced individual training/military-occupation specialty-specific training.

Let’s examine each phase in a little more detail.

## Introduction to PRT and weapons-immersion program

The Red Phase is the foundation that builds an adept and agile Soldier. Drill sergeants deliberately attempt to force trainees out of their comfort zones. During the three weeks of the Red Phase, future 19Ks have maximum face-to-face time with their drill sergeants, who are all 19Ks. Normally, a drill sergeant is present from the 5 a.m. wake-up until 10 p.m. lights-out during this phase. Constant interaction with drill sergeants facilitates proper discipline and teaches new Soldiers how to live by the seven Army Values.

Other than receiving mandatory briefings covering general military subjects such as rank structure, basics of the Uniform Code of Military Justice and Sexual Assault Prevention and Response Program orientation, new Soldiers are introduced to PRT and the weapons-immersion program.

PRT is designed to help new Soldiers adjust from an increasingly sedentary society to a culture where physical fitness is extremely important. Many Millennials struggle with Army physical-fitness standards, and many of them experience muscle-skeleton injuries – mainly due to sedentary lifestyle prior to joining the Army.

The 194<sup>th</sup> Armored Brigade, of which 1-81 Armor Battalion is a part, is fortunate to have a team of athletic trainers on standby to help trainees safely continue their overall physical training, even when the Soldier has a physically limiting injury or profile. Throughout their stay at Fort Benning, future Armor crewmen are gradually exposed to more elements of PRT in accor-

dance with the Army PRT Manual, Training Circular 3-22.20, *Army Physical Readiness Training*. By the time of graduation, new Soldiers are well-versed in the PRT preparation drill, conditioning drills one and two as well as the climbing drill, and various cardiovascular training regimens commonly known as 30-60s, 60-120s, ability group runs and hill repeats.

WIP is crucial to introducing new Soldiers into the Army and teaching proper weapon-handling procedures. This training focuses on safe weapons handling, orientation, proper loading and clearing procedures, and maintaining situational awareness at all times. After the new Soldier receives his weapon during the first few days of 19K OSUT’s BCT portion, that weapon stays with him all 15 weeks until graduation. Moreover, Soldiers are issued blank ammunition to constantly practice clearing procedures and further increase personal weapons familiarization.

During the rest of the Red Phase, Soldiers participate in Combat Life Saver Course Training with a chance to receive full certification upon passing the final exam. Lastly, each Soldier participates in the chemical, biological, radiological and nuclear chamber confidence exercise and receives his first classes on basic rifle marksmanship.

## Shoot, shoot and shoot

Instead of the more frequently used “shoot, move and communicate” slogan, the motto for the White Phase is “shoot, shoot and then shoot some more.” The primary focus during this phase is development of basic combat skills, with an emphasis on weapon proficiency and physical training. Soldiers are expected to maintain the basic Soldier skills learned in the Red Phase and begin to conform to establish standards.

Soldiers spend the entire White Phase conducting training at various firing ranges, which increases their knowledge about their personal weapon system, generally the M4, and introduces them to other weapons commonly used in the Army. After zeroing their personal weapon at a 25-meter range, they receive further weapons familiarization with the Location of Miss and Hit system and field-fire ranges prior to actual qualification.

LOMAH is a projectile-detection target system for small-arms marksmanship training. The LOMAH system detects a projectile as it passes through or around a target silhouette and alerts shooters to their performance by displaying the shot location on a computer screen next to them. This system allows immediate feedback to the shooter and continued use of silhouette targets, even with many gaps/holes in the silhouette surface. Qualifying with the individual rifle or carbine is just one of the many requirements for a 19K Soldier.

After qualification, Soldiers receive advanced rifle marksmanship training, where they are introduced to advanced firing techniques and a get a chance to use day- and night-time scopes during range firing. To complete their White Phase training, trainees get a chance to fire the M203 Grenade Launcher, M249 Squad Automatic Weapon and M240B machine gun, and throw a live hand grenade.

## Last phase of BCT

Blue Phase includes all the high-intensity events. Future Armor crewmen gain a great deal of knowledge about improvised explosive devices, their content, concept of operation and common employment tactics, techniques and procedures the enemy uses. The IED-defeat training range provides them hands-on experience in what our troops faced in Iraq and still are facing in Afghanistan. Our drill sergeants, all combat veterans, further provide vignettes from their recent deployments and share their knowledge with the new generation.

During the last phase of OSUT's BCT portion, each Soldier in the battalion engages in a buddy-team live-fire exercise, repels from a confidence tower and crawls under M240B overhead fire during the Night Infiltration Course. For more preparation for the modern battlefield, trainees get urban-operations training and are introduced to convoy operations.

Finally, all the training they have received up to this point is tested during the 96-hour field-training exercise that encompasses all the warrior tasks and battle drills. Our company commanders employ rigorous lane training as well as more land-navigation training to test Soldiers' skills.

## How about that M1 Abrams tank?

The purpose of OSUT's Black Phase is to introduce the Soldier-in-training to the M1 Abrams and the associated systems and equipment the tank's crew uses. The process of creating an Armor crewman starts immediately following the BCT portion of OSUT and lasts three weeks. During this time, Soldiers have a slightly more relaxed learning environment to encourage retention of skills taught by the instructors and also prepare them to transition from a tightly controlled OSUT environment to their first unit. We want Soldiers capable of making the right decisions after duty hours. This starts the process of transitioning from a trained Soldier to a 19K MOS-qualified Soldier.

Black Phase truly starts in the motorpool, where Soldiers are introduced to M1A1 and M1A2 Systems Enhancement Program tanks. Soldiers are broken down into small groups, and each one of them is trained on the process required to conduct 10-level preventive-maintenance checks and services on the M1A1. This leads into their initial training in the drivers' station. This training teaches them the basics of what is expected of them as the tank driver and what steps and actions they must take to prepare the vehicle for operation.

Soldiers spend many hours at the Tank Driver Simulator. This system is a full mockup of the driver's station and allows the Soldier to understand the way the M1 Abrams handles before they actually drive one. Once the Soldier has completed the TDS, he moves to the Basic Drivers Course, where he drives the M1 Abrams and a humvee for the first time on an actual road. Upon completion of Black Phase training, Soldiers become proficient enough to join a tank crew as a driver.

In addition to learning the driver's station, Soldiers also learn the other 10-level positions for the tank crew, and that is at the loader's station. Soldiers learn the basics of how to operate the breach and load the 120mm ammo into the three ammunition storage racks inside the vehicle. They also learn to prepare the radios and the communication systems of the vehicle to ensure that every station can communicate and that the vehicle can communicate with the rest of the unit. Finally, Soldiers are trained in all the vehicle's weapons systems, including the .50-caliber, the M240 and the M9 pistol, on which they are also required to qualify before graduation.

The Armor Crewman Test administered at the end is the final event during OSUT's Black Phase – this testing is the culmina-

tion of all the training Soldiers have received during previous weeks. It covers the tasks involved with preparing the driver's and loader's stations, along with assembly and disassembly of all the weapons systems on the M1 Abrams. Soldiers' skills are tested on basic maintenance and safety drills to ensure retention of their newly acquired MOS skills. This test is the final gateway for Soldiers to move into Gold Phase training and to complete the OSUT process.

## Gold Phase FTX and gunnery

The 96-hours end-of-cycle FTX, combined with tank gunnery, is the final step taken by new Armor crewmen before graduating from 1-81 Armor Battalion. This culminating event not only tests basic warrior knowledge obtained during OSUT's BCT portion, but it also ties it with new 19K Soldiers' MOS-related skills.

During gunnery, Soldiers engage stationary targets using their personal weapon, the M9 pistol and the M240B mounted on the loader's station, with the endstate of destroying the target through the use of proper engagement techniques in the least amount of time. Each Soldier also serves as a loader during tank engagements. Those who demonstrated high qualities through the entire OSUT cycle and met all the qualifications for Excellence in Armor have the privilege of shooting a few rounds from the gunner's station.

The Gold Phase FTX reinforces 19 tasks outlined by the 19K program of instruction. During the FTX, Soldiers demonstrate all the skills they have obtained during their stay at Fort Benning. Company commanders ensure that each Soldier participates in the land-navigation course, reacts to contact during mounted and dismounted situational-training exercise lanes, engages in the urban-operations mission and conducts basic PMCS on his assigned tank. The final FTX is finished with a 16-kilometer ruck march and a memorable rites-of-passage ceremony welcoming new Armor crewmen onto our team.

## 19K warrior

The 19K Soldiers leaving our training program and entering the operational force are trained in the basics of soldiering and the operation of a M1 series tank. These Soldiers obtain a solid foundation in weapons handling and receive familiarization with major weapon systems they will encounter in the force. They are physically fit and ready to perform the duties of a loader and driver on an M1 series tank.



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## ACRONYM QUICK-SCAN

**BCT** – basic combat training  
**BCT** – brigade combat team  
**FTX** – field-training exercise  
**HHC** – headquarters and headquarters company  
**IED** – improvised explosive device  
**LOMAH** – location of miss and hit  
**MOS** – military-occupation specialty  
**NCO** – noncommissioned officer  
**OSUT** – one-station unit training  
**PMCS** – preventive-maintenance checks and services  
**PRT** – physical-readiness training  
**TDS** – Tank Driver Simulator  
**WIP** – weapons-immersion program

# The Foundations of Maintenance Support: Training 91As and 91Ms in Advanced Individual Training

by CPT Daniel Lichlyter

When most commanders think about the Soldiers departing the Armor School, they think about filling in their tank crews or scout sections and training them up to unit standards. Some might think about the new lieutenants and their eagerness to take charge of a platoon. Not many would think about the Abrams and Bradley mechanics that, although they may not be part of their modified table of organization and equipment, will be working with their company as a critical part of their support element. Therefore, the same question of “what will this Soldier know when I get him?” is just as applicable to the new mechanics as the scouts and tankers.

## Starting as an ‘easy rider’

Training Abrams and Bradley mechanics is the responsibility of Easy Rider Company. Easy Rider Company, in coordination with the Ordnance Training Detachment, both part of 3<sup>rd</sup> Battalion, 81<sup>st</sup> Armor Regiment, is the only pure advanced individual training element within the Armor School, Fort Benning, GA. When we receive our Soldiers, they are basic combat training graduates with training in basic rifle marksmanship, warrior tasks and battle drills and the military traditions expected of every Soldier.

The battalion’s structure is based on a team approach and combined arms-like methodology to training. Easy Rider Company is responsible for Soldiers’ daily mentoring and movement. Their AIT platoon sergeants are much like drill sergeants in that they do a small portion of the training. However, AIT platoon sergeants also have to know the material because they are the ones available throughout the day to assist Soldiers with homework and training while continuing the development of the Soldiers’ physical fitness.

OTD provides the instructors and subject-matter experts on the program of instruction and the expertise on vehicle maintenance. They are the Soldiers’ primary trainers. The instructors are a team of seasoned noncommissioned officers and experienced civilians with decades of experience on the platforms they are training. All NCOs have recent deployment experience and provide the latest “know how” from a tactical environment. The combination of civilian continuity and long experience with NCOs’ recent real-world knowledge greatly enhances training for the newest mechanics. While they bring different perspectives to the training, the ultimate goal is teaching the AIT Soldier how to repair the equipment in accordance with doctrine and the manuals, as well as emerging techniques from the field. They do not allow the compromise of shortcuts on standards.

## Maintenance and recovery training

Line commanders should expect the Soldiers coming from 3<sup>rd</sup> Battalion, 81<sup>st</sup> Armor Regiment, to be competent in the basic skills required to maintain the M1A2 Systems Enhancement Program Version 2 or the M2A3 family of vehicles. Out of a 14-

week course, they spend about four to six weeks focused on turret maintenance and another seven to nine weeks learning hull maintenance. The primary focus is on the 10-level tasks, especially on how to troubleshoot the vehicle, how to fix very basic faults and the basics of recovery. Soldiers graduating also conduct a field exercise in which they have to perform the tasks in a tactical environment.

During this process, Soldiers become familiar, not experts, with several tools and systems. The primary diagnostic tool used is the Maintenance Support Device to assist them in troubleshooting. They also know how to use various towing systems, including a tow cable and tow bar, but they are most practiced on using a tow bar. They have also been familiarized, but not well trained, on the M88A2 vehicle. (In-depth training is provided through the Additional Skill Identifier H8 Track Vehicle Recovery Course, provided to a few outstanding Soldiers.) Also, Soldiers have been taught the uses of the Forward Repair Station. Again, they receive baseline training on all these systems so, although they can’t run a shop by themselves, the NCOs at their unit won’t have to start from scratch.

If commanders see that they are receiving mechanics with the H8 ASI, they have received more training as part of the Tracked Vehicle Recovery Course. AIT is open to Soldiers across the Army; the privates and specialists who go directly from AIT to the tracked vehicle recovery course are selected to attend based on their AIT academic-order-of-merit list. Priority goes to those slated to go to recovery teams. They receive an additional four weeks of training, which covers the M88A1 and M88A2 in-depth and the various tools that can be used for recovery (i.e., tow bars, winch and boom). They also spend a good amount of time on the Sandy Hook Vehicle Recovery Course on Fort Benning. Once they successfully complete the course, they receive the H8 ASI.

One of the recurring themes the unit instills in its Soldiers is the ability to find an answer. They are trained to ask senior NCOs and civilian mechanics for help and guidance. They know how to research using the -10 technical manuals and higher-level maintenance manuals and schematics. They know how to use both digital manuals and resources in addition to the hard-copy technical manuals. They are capable of doing research on their own to solve problems they may face.

While we attempt to provide as much hands-on experience as possible to Soldiers, we simply do not have the time to make them experts on their systems, the maintenance process and recovery. The battalion’s goal is to produce mechanics that can easily make good team members. It will take unit level leadership, experience and time to turn them into leaders of maintenance teams.

## Training initiatives

In addition to maintenance tasks, Easy Rider Company ensures that Soldiers remain trained on Skill Level I warrior tasks to keep



**Class 05M Soldiers show what they learned in a field environment.** (Photo by SFC Dennis M. Dutton)

them fresh. They spend one to two weeks refreshing several of the key tasks they learned in BCT. They conduct training on land navigation, perform three Army physical-fitness tests and conduct M4 training with the Engagement Skills Trainer 2000 system. Commanders can expect Soldiers to retain these skills during the 3½-month course.

While the focus will always remain on basic maintenance skills, the battalion has identified several other topics in which Soldiers need to be skillful. Since mechanics control a large amount of property, the Soldiers coming out of the course will have an increased understanding of property accountability and responsibility. Also, 3-81 Armor trains its Soldiers in discipline and leadership beyond their grade, capable of making the right basic decisions in the absence of guidance. This applies to both the maintenance bay and in basic military leadership. Finally, 3-81 Armor is preparing to transition from training on the M1A2 SEP V2 to the SEP V3 to be able to keep up with state-of-the-art technology.

The battalion is very excited to be piloting several Army Learning Model 2015 initiatives, including use of the newly developed mobile-classroom trainer and a barracks learning center. The BLC is military computer network that provides the mechanic access to the latest technical manuals and to resources on-line that will support their continued learning and troubleshooting.

The MCT, which is still under development by OTD, is a camera mounted to a head harness and linked to a computer that projects the image on a screen. An instructor or Soldier wears the camera while conducting a task, which is under observation by the rest of the class observing in seats.

Each Soldier gets an opportunity to work with the vehicle and the instructor, and this system ensures that those not doing the physical labor are still effectively learning when they are not the ones on the vehicle. This video also can be shown later as part of the BLC by Soldiers studying – and ideally, months down the

road as they are performing these tasks for real for the first time in their unit motorpools. It also enhances training for the individual Soldier who is no longer attempting to look over the shoulder of the demonstrator turning the wrench. While not intended to replace the instructor, this tool improves the learning of the individual mechanic by keeping him more engaged in the training and able to see multiple demonstrations of a solution.

The end goal is to establish a capability for units downrange, with a camera and video system, to be able to use real-time video feed (Skype-like) to the Ordnance School or to OTD, and work through a problem with us from anywhere in the world. In the event that a field service representative is not available, this capability will become critical for maintaining a unit's equipment. This system is still being developed, but the Soldiers graduating from 3-81 will have a basic understanding of the system and will be trained individuals as the system is fielded.

Commanders should expect 91As and 91Ms to come to their unit with a basic understanding of their specific vehicle. They will be able to use most of the specialized tools of their trade while retaining their proficiency in the basic common tasks of Soldiers. However, most importantly, they are willing and capable of working through the problems presented to them to ensure the

mission gets accomplished. They will ensure their 19-series brothers are not waiting for them when it comes time for the mission.



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### ACRONYM QUICK-SCAN

- AIT** – advanced individual training
- ASI** – additional skill identifier
- BCT** – basic combat training
- BLC** – barracks learning center
- MCT** – mobile-classroom trainer
- NCO** – noncommissioned officer
- OTD** – Ordnance Training Detachment
- SBCT** – Stryker brigade combat team
- SEP** – Systems Enhancement Program



# Into the Future with Mounted-Maneuver Reconnaissance

by Dr. Robert S. Cameron

Change characterizes the historical evolution of mounted-maneuver reconnaissance. New platforms, improved equipment, organizational shifts, evolving doctrine and training modifications have been an inherent part of the scout's experience since the first incorporation of motor vehicles into reconnaissance organizations.

Yet, amid change, the individual scout's purpose and capabilities have remained consistent, summarized by then-COL Crosbie E. Saint in 1977: "He must be capable of finding the enemy and knowing what he sees. He should be able to go forward to find the enemy and have the firepower with and behind him to get out of trouble. Most of all, he must be capable of semi-independent operations on the battlefield. He must be resourceful – he must be the most clever of all fellows. He takes individual actions that are not dictated by the actions of what other squads or platoons are taking; no one is constantly looking over his shoulder."<sup>1</sup>

These qualities are especially relevant given the variable location, topography and demographic conditions expected to characterize tomorrow's operational environment. Potential threats will likely employ a mix of high- and low-tech capabilities in addition to terror tactics to achieve area denial and disrupt U.S. operations. Their expected reliance upon unmanned systems, robotics and an array of electronic measures ensures a complex environment designed to offset current American military supremacy. In all cases, threat forces are expected to be highly adaptive and employ a range of different capabilities to create tactical conundrums and target U.S. vulnerabilities. Threat tactics will likely change repeatedly to create confusion and opportunities to exploit at the expense of the U.S. Soldier and overall American objectives.

How then do we organize, equip, train and imbue the "most clever of all fellows" with the right principles to operate successfully against such a threat? The answer lies in the extraction of insights and lessons-learned from the operational history of mounted-maneuver reconnaissance. In the 80 years since the creation of motorized reconnaissance platoons and

mechanized cavalry, a wealth of experience has been accumulated across the spectrum of military operations. What have we learned?

## Scout survivability

Scouts need the means to determine hostile intent, disposition and activities through multiple methods. Traditionally, reconnaissance organizations, doctrine and training have tended to favor either an aggressive approach that accepted the need to fight for information or a passive stance that emphasized stealth, combat avoidance and undetected observation. The meandering evolutionary path that resulted created widespread turbulence, since the organizational, training and materiel needs necessary for stealthy reconnaissance starkly contrasted with those required for more aggressive information collection. It also generated confusion in the field, especially during periods of rapid shifts between these extremes. The 1950s and early 1960s, for example, witnessed the reorganization of the battalion scout platoon three times in less than 10 years.<sup>2</sup>

Ironically, fighting for information and collecting intelligence through undetect-

ed observation are equally valid methods of reconnaissance. They are not mutually exclusive but complementary, and battlefield experiences since World War II have demonstrated the value of each. Given the Army's current global perspective and the uncertainty surrounding the precise identification of the future threat and battlefield, commanders need the flexibility to adjust their operations to fit unique operational environments. The ability to use stealthy or aggressive reconnaissance methods as appropriate and on-demand increases adaptability and gives commanders more options to develop uncertain situations.

Reconnaissance organizations require a degree of combat power and survivability. The maneuver battalion scout in World War II trained to conduct reconnaissance via stealthy movement and undetected observation. When successful, his actions often guided the parent battalion's operations. However, the jeep-mounted battalion scout possessed minimal firepower and even less protection. German combined-arms counter-reconnaissance teams too often forced the platoon to withdraw or face destruction. In either event, the reconnaissance mission ended. When not detected, battalion scout platoons often



Scouts train in dismounted observation and movement techniques in the 1980s. (U.S. Army photo)

found themselves immobilized by a hostile presence. Lacking the means to overcome even light resistance, the platoon became pinned, unable to continue its reconnaissance mission without endangering itself.

Initial or chance contact is detrimental to scouts; they must be able to survive it. Otherwise, their information collection ends upon contact, and situation development does not occur. In the Korean War, jeep-mounted scouts followed an aggressive reconnaissance doctrine that ensured their forward presence. They often were the first to encounter the enemy and suffered accordingly. Related training stressed the importance of abandoning the vehicle when under fire – a practice that saved lives at the cost of the scout's mobility. Similar survivability issues surrounded the later employment of the humvee-equipped scout units. Therefore commanders in both Operations Desert Storm and Iraqi Freedom often marginalized their use to prevent their destruction through enemy action.

In the examples noted above, scouts lacked requisite capabilities. They could not fight for information, overcome light resistance or block enemy reconnaissance efforts. They could not respond to evolving tactical situations or accelerate their operational tempo without significant risk. Adaptive and aggressive enemies understand the importance of reconnaissance and information dominance, making scouts high payoff targets and their named areas of interest positions to be defended. This lesson became clear to the Israeli Defense force during operations against Hezbollah in the 2006 Second Lebanon War and to our own forces during the Heavy Brigade Combat Team Reconnaissance Squadron Experiment the following year.

Reconnaissance platforms must provide scouts the ability to survive a sudden contact situation and maneuver in proximity to an enemy. The absence of ballistic protection transforms the scout into a victim waiting to happen – a circumstance well understood by scouts who served in jeep units during World War II and Korea, and later by reconnaissance personnel assigned to humvees. Indeed, the notion of unprotected platforms was denounced as early as 1938 as “the most inane, asinine proposal that’s ever been submitted.”<sup>3</sup>

## Scout vehicles

Conversely, heavily armed and armored platforms are not the answer. The 1970s witnessed reconnaissance units heavily endowed with combat power and the proliferation of main battle tanks and improved tow vehicles at the platoon level. The emphasis given to antitank firepower and survival on a mechanized battlefield increased the firepower of reconnaissance units but at the cost of their ability to gather information. This trend called into question whether such units constituted reconnaissance organizations or merely maneuver units by another name.

The fielding of the M3 Cavalry Fighting Vehicle in the 1980s did not resolve this issue. Its size, weight and noise signature made it the antithesis of what most scouts desired in a platform, resulting in the quip that “reconnaissance in a Bradley is like doing reconnaissance in a Winnebago.”<sup>4</sup> The M3's array of weapons solved the problem of firepower, but it also encouraged firefights at the expense of information collection.

Scouts today need a balance between the extremes represented by the humvee and the M3. In fact, they are overdue for a new vehicle. No purpose-built reconnaissance

vehicle has been fielded in significant numbers since the M114 in the 1960s – and it proved a disappointment. Since then, scouts have made use of vehicles designed for purposes other than tactical reconnaissance, including the M113, the M3, the humvee, the Stryker and even the mine-resistant, ambush-protected vehicle.

Simultaneously, they have watched the demise of reconnaissance-specific vehicle programs, particularly the Future Scout Vehicle, the Future Scout and Cavalry System and the Reconnaissance and Surveillance Vehicle. The last ended with the Future Combat Systems program. Scouts need a platform with armor and armament to ensure initial contact survival, enable destruction of resistance when necessary and permit mission execution in the enemy's presence.

## Recce organization

Organizationally, reconnaissance units require a mix of capabilities and the ability to perform more than one type of mission. These capabilities need not be concentrated at the platform or platoon level. Past attempts to create entirely self-sufficient platoons have not lasted long. The combined-arms reconnaissance platoon of the late 1940s and Korean War era posed training, command and employment problems difficult to overcome. The standardized M3 scout platoon of the early 1980s quickly fell into disfavor because it lacked qualities later sought in the humvee platoon.

For the future, it may be more appropriate to concentrate desired capabilities at the troop level. In the 1950s, redesign of the armored division resulted in a proposed reconnaissance organization with pure platoons that could be integrated at the troop level. The platoons benefited



Jeep-mounted scout platoon patrols in North Africa, February 1943. (U.S. Army photo)



**The M114.** Initially considered an ideal scout platform due to its combination of armored protection and relatively small size, in fact the vehicle suffered from mobility constraints and poor operational readiness rates. (U.S. Army photo)

from simplified training, command, supply and maintenance, while the troop possessed a variety of task-organization options. The notion of pure platoons and troop-level integration later found expression in the 1980s “2x2” configuration of the armored cavalry regimental troop. The latter included a headquarters, mortar element, two tank platoons and two scout platoons. The pure platoon composition was balanced by a combined-arms capability at the troop level. A similar design using current platforms in lieu of the tanks and Bradleys of the Army of Excellence era offers a variety of employment options that can be tailored to different environments.

Reconnaissance, security and economy-of-force roles are missions with proven utility and which encompass a broad range of activities. Building an organization to satisfy these roles creates by default an adaptable unit. Such organizations generally transition to a more limited focus mission easily, while single-purpose organizations struggle when forced to broaden their activities.

The armored cavalry regiment has proven its value across the spectrum of military operations precisely because it possessed the means and orientation to transition from one mission type to another on short notice and without additional assets. Throughout much of its history, the regiment’s basic structure remained unchanged, while other reconnaissance units

underwent repeated fundamental redesign. Despite the removal of this unit type from the Army force structure, its heritage of success derived from a capability mix should not be ignored in the design of future mounted-maneuver reconnaissance units.

Reconnaissance units optimized for information collection lack flexibility and the organic assets necessary for a broader mission focus. Too often such units have been forced by the nature of their operational environment into roles for which they were neither configured nor trained. A painful adjustment process followed in which trial and error measures predominated. In World War II, mechanized cavalry organizations deployed to Europe oriented upon the singular mission of pure reconnaissance.

Operational realities, however, led to their employment in a much broader mission set. Reconnaissance occurred, but generally in the context of other activities rather than as a stand-alone mission. Security, economy-of-force, mobile reserve and combat operations proved much more frequent.<sup>5</sup> This reality led one mechanized cavalry officer to conclude:

“Efforts and doctrine directed towards making the cavalry squadron exclusively a reconnaissance unit, not participating in combat other than as a necessity of extrication from enemy reaction or in the exceptional case of limited engagement by fire to obtain information desired, is [sic] faulty. It is evident that there is no occasion, no opportunity and justification for the maintenance in large commands of such an extremely costly, highly trained organization simply for the purpose of executing ‘reconnaissance.’”<sup>6</sup>



**A mechanized cavalry reconnaissance column in France, August 1944.** (U.S. Army photo)



**An armored humvee of 1<sup>st</sup> Cavalry Division during the fighting in An Najaf. The gunshield and added ballistic protection improved crew survivability at the cost of scout mobility. (U.S. Army photo)**

Mounted-maneuver reconnaissance units experienced a similar broadening of scope in later wars. In the nonlinear and unconventional Vietnam War, “the elusive nature of the enemy and insufficient friendly intelligence regarding the location and activities of the enemy require that units must expect contact with the enemy at any time and from any direction.”<sup>7</sup> Consequently, battalion scouts and armored cavalry organizations frequently performed reconnaissance in force operations that culminated in combat to fix and/or destroy hostile forces before they could escape. After reconnaissance-in-force, security and economy-of-force missions proved among the most frequently performed.

Operation Iraqi Freedom witnessed the operational debut of the reconnaissance, surveillance and target-acquisition squad-

ron. This unit possessed an array of information collection and analysis capabilities linked via a digital communications network to provide situational awareness for its parent brigade. Its information-collection orientation and lack of combat power resulted in initially timid employment to minimize losses. However, theater requirements to secure territory from insurgent influence soon outweighed concerns about the squadron’s limited capabilities.

RSTA squadrons found themselves assigned an area of responsibility to secure and charged with the same mission set as maneuver battalions. Moreover, subordinate platoons needed to engage insurgents upon discovery to ensure their destruction. RSTA squadron commanders therefore improvised and adopted ad hoc measures, and sought augmentation. The success of

these efforts reflected soldier ingenuity and the willingness of senior leaders to divert assets to bolster an organization whose design emphasis upon information collection minimized its ability to adapt.

Reconnaissance organizations reconfigure in the field or employ in peripheral roles when they cannot adjust to their operational environment. In World War II, corps commanders transformed their mechanized cavalry groups into more broadly capable organizations through the attachment of tanks, tank destroyers, engineers, infantry and artillery. The enhanced groups proved capable of a broader range of actions more suited to corps needs, particularly reconnaissance, security and economy-of-force roles. Tank-battalion commanders assigned light tanks to their jeep scouts to provide them a degree of survivability and permit them to operate in the presence of enemy counter-reconnaissance elements.

Operation Desert Storm witnessed the use of modified reconnaissance platoons to offset the prior removal of tanks from the division cavalry squadron. Similarly, survivability concerns led to alteration of humvee scout platoons in Operation Iraqi Freedom, to include an M3/humvee mix.

The high operational tempo established for the drive to Baghdad in 2003 forced reconnaissance organizations to deviate from the time-intensive, stealth-based practices stressed in scout doctrine and training. The 3<sup>rd</sup> Infantry Division’s division cavalry squadron relied upon its mixed tank and Bradley hunter-killer teams to achieve success in a series of movement-to-contact situations. It had little difficulty performing the screen, guard and economy-of-force missions the division commander required.



The vulnerability of the brigade and battalion scout platoons, however, led to their deliberate employment very close to maneuver units for protection or in non-reconnaissance roles. Analysis of initial operations in Iraq concluded, "In short, they [commanders] elected to give up their 'eyes' rather than risk losing them. Put another way, commanders chose not to employ scouts and brigade reconnaissance troops in the role for which they were intended."<sup>8</sup>

Augmentation or cross-attachment has often been used to bolster mounted maneuver reconnaissance capabilities. The additional combat power thus provided permitted a broader mission set and offset perceived capability shortcomings. In World War II, mechanized cavalry and battalion scouts benefited from augmentation, while Vietnam witnessed the routine cross-attachment of assets to ensure that reconnaissance organizations possessed a robust, combined-arms capability. Similarly, Operation Iraqi Freedom witnessed the light 2<sup>nd</sup> Armored Cavalry Regiment's exchange of a ground cavalry squadron for a tank battalion initially

to boost its combat power in Baghdad and later to facilitate operations against the Mahdist militia.

Periodic attachments to perform a special mission or overcome a unique challenge make sense. Regular augmentation to perform common missions does not. The latter suggests an ineffective organizational design and a resource drain upon the augmenting unit or formation. Given the current size of the Army's brigade combat teams, this diversion of capability will be difficult to sustain, especially in the face of a more robust threat than what has been encountered in Iraq and Afghanistan. Nor is it realistic to assume that such external assets will always be available and not required for other missions.

Augmentation enhances one organization at the expense of another. Therefore, the design of mounted-manuever reconnaissance organizations must reflect their realistic employment in major conventional wars, counterinsurgency and stability actions. Built-in reliance upon augmentation to perform missions likely to be assigned does not create adaptability or responsiveness to command needs.

## Doctrinal balance

Building versatile and adaptive reconnaissance organizations means restoring the doctrinal balance between reconnaissance and security, and accepting the related organizational and training implications. Doctrine traditionally gave equal emphasis to reconnaissance and security, depicting the two as interwoven and related. This balance ensured unit configurations designed to perform the full range of reconnaissance and security actions appropriate to their parent command. The RSTA squadron design deviated from this trend.

Intended to operate via stealth and exploit standoff technologies, doctrine for the RSTA squadron encouraged combat avoidance and sharply reduced security responsibilities. Financial and personnel constraints influenced this decision, but the RSTA squadron's doctrinal retreat from an active security role that entailed combat spread to other reconnaissance organizations. The growing imbalance between the importance attached to reconnaissance and the de-emphasis of security increased with the elimination of the division cavalry squadron and the ar-



**M3 Cavalry Fighting Vehicle at the National Training Center.** Given its size and firepower, some considered this vehicle the antithesis of the ideal scout platform. (U.S. Army photo)

mored cavalry regiment. No reconnaissance organization remained with the doctrinal responsibility or the means to perform a broad range of security missions except in a permissive environment.

Surveillance is not security. Sensors and information-gathering devices have proliferated over the last 20 years. Their growing capabilities support other technologically based trends intended to achieve near-perfect situational awareness. Nevertheless, surveillance remains a passive activity.

In the context of security missions, sensors and related devices collect data over time to help determine threat patterns of activity, provide warning of a hostile presence and assist in information-collection efforts targeting a particular community. Through these measures, surveillance missions and assets help commanders monitor their area of operation. However, they do not offer protection, cannot stop an enemy probe and are not suited to fast-paced combat operations. Hence, they cannot fulfill the traditional security responsibilities of screen, guard and cover. Nor can they replace the analytical and intuitive capabilities of the ground scout.

Reconnaissance organizations at all levels require a robust dismount capability. Since World War II, they have faced the challenge of executing a growing list of dismounted operations while satisfying vehicle-manning requirements. No reconnaissance unit ever protested the assignment of too many scouts, but they have struggled at times to retain even a limited dismounted capability.

Routine losses through casualties, illness, leave and school attendance ensure that organizations are rarely at full strength. Unit commanders therefore improvise to sustain the ability to get on the ground. Faced with an overwhelming demand for dismounted operations, it was not uncommon for the World War II reconnaissance platoon to park its vehicles and operate entirely on foot. In the 1980s and 1990s, understrength scout platoons equipped with the M3 concentrated their available dismount teams on just one or two vehicles. The original recon-platoon design for the RSTA squadron increased the scout-to-platform ratio. It provided a three-man dismount team for each vehicle, but the overall platoon strength dropped to just 21 Soldiers. These platoons encountered significant challenges in Iraq and Afghanistan, where they sim-

ply lacked enough scouts to perform routine missions.

Mounted-maneuver reconnaissance doctrine must provide guiding principles applicable to varied environments. It should provide the conceptual underpinnings for all other facets of reconnaissance and reflect the full range of scout activities. Doctrine that reflects a preferred template superimposed upon operational realities is not likely to survive contact with friendly scouts or the enemy. It needs to incorporate a body of proven principles that are flexible enough to fit operational needs.

The emergence of networked, digital systems and access to a variety of intelligence assets in the late 1990s offered commanders the promise of unprecedented situational awareness. These new digital systems and communications encouraged a belief in the scout's ability to gain contact and develop the situation from afar, avoiding both detection and the risk of engagement. Dubbed "the new contact paradigm," this concept resulted in the skewing of reconnaissance doctrine to a narrow focus upon long-range information detection via stealth.

However appealing, this technology-driven concept proved unrealistic. The move-





A humvee equipped with the Long-Range Advanced Scout Surveillance System. This device's ability to see targets at great distances encouraged the notion that scouts could develop situations from afar. (U.S. Army photo)

ment-to-contact nature of the 2003 march to Baghdad precluded a neat application of the new contact paradigm. In Iraq and Afghanistan, the nature of the conflict, threat and terrain forced scouts to mingle among the populace and close with potential hostile elements to identify them and determine their capabilities and intent. Urban operations in particular often made standoff reconnaissance ineffective. Field manuals, however, remained rooted in the new contact paradigm and discouraged both criticism and the adoption of alternate information-collection methods better suited to the operational environment.<sup>9</sup> Abandoned by doctrine that did not reflect the realities they faced, commanders in the field developed their own tactics. Doctrine became disconnected from the field and marginalized until the emergence of updated doctrinal guidance near the end of the Iraq war.

Conversely, operations overseas demonstrated the utility of multidimensional reconnaissance. This doctrinal concept focused reconnaissance upon a broad range of social and demographic factors in addition to enemy combatants and terrain, and it reflected the growing importance of understanding and interacting with local populations. Multidimensional reconnaissance fit global urbanization trends and the likelihood of future deployments that place American Soldiers among foreign civilian populations. Its codification within doctrine ensured a degree of visibility otherwise dependent entirely on unit commanders. However, the broader range

of information included in multidimensional reconnaissance underscores the importance of issuing scouts clear information objectives to prevent the accumulation of situational data that does not facilitate rapid decision-making.

Training, doctrine and organizational design need to be synchronized. Currently, responsibility for these areas lies scattered among several different offices within the Maneuver Center of Excellence, each reporting to a different chain of command. This arrangement has not prevented the generation of highly trained scouts, but it is nevertheless a collection of stovepiped processes. Centralized coordination with senior command oversight would synchronize these separate but related efforts and ensure the best use of the limited resources available to reconnaissance trainers, training developers, doctrine writers and combat developers.

## Conclusion

The way forward for mounted-maneuver reconnaissance is anything but simple. Yet a robust and effective reconnaissance community is vital to the overall success of the maneuver forces. The range and nature of potential threats underscores the need for reconnaissance assets able to satisfy priority information requirements in all likely operational environments. Scouts must be characterized by a high degree of mental agility and organizational flexibility to keep pace with rapidly changing tactical situations and make

rapid adjustments to their own operations. Their adaptability must be on par with and preferably higher than that of the threat. The challenge lies in actually achieving this desired endstate.

For more information on the historical experiences of mounted-maneuver reconnaissance upon which these ideas were based, see *To Fight or Not to Fight? Organizational and Doctrinal Trends in Mounted Maneuver Reconnaissance from the Interwar Years to Operation Iraqi Freedom* (Fort Leavenworth, KS: Combat Studies Institute, U.S. Army Combined Arms Center, 2010) available via free download from [http://usacac.army.mil/cac2/cgsc/carl/download/csi-pubs/cameron\\_fight.pdf](http://usacac.army.mil/cac2/cgsc/carl/download/csi-pubs/cameron_fight.pdf).



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## Notes

<sup>1</sup> Saint, COL Crosbie E., "Cavalry Today," *ARMOR*, LXXXVI, No. 4 (July-August 1977). Saint graduated from the U.S. Military Academy in 1958. He received his armor commission and rose steadily through the ranks, commanding both cavalry and armor organizations. He served two tours in Vietnam and five in Europe. He retired in 1992 as a four-star general.

<sup>2</sup> The 1956 Reorganization of the Current Armored Division introduced a pure scout platoon, followed by a return of the combined-arms reconnaissance platoon starting in 1962 with the Reorganization of the Objective Army Division. Within a couple of years, another reorganization marked the return to a pure scout platoon.

<sup>3</sup> Quoted in Matthew D. Morton, "Horses for 'Iron Ponies': The Interwar Development of Mechanized Ground Reconnaissance," master of arts thesis, Florida State University, 2001.

<sup>4</sup> Cranston, John, "Assessment by Major General Thomas H. Tait of His Tenure as Commanding General, U.S. Army Armor Center and Fort Knox, June 1986-August 1988, end-of-tour interview, Aug. 18, 1989, Armor Branch archives.

<sup>5</sup> U.S. forces, European Theater, "General Board, Study No. 49: Tactics, Employment, Technique, Organization and Equipment of Mechanized Cavalry Units," Washington, DC: U.S. Army Center of Military History, 1945, Appendices 3-5.

<sup>6</sup> War Department Observers Board, "AGF Report No. 1007: Mechanized Cavalry Organization and Tactics," June 5, 1945.

<sup>7</sup> U.S. Army Vietnam, "Mechanized and Armor Combat Operations in Vietnam," report, March 28, 1967, Armor Branch archives.

<sup>8</sup> Fontenot, retired COL Gregory, Degen LTC E.J. and Tohn, LTC David, Operation Iraqi Freedom Study Group, *On Point: The United States Army in Operation Iraqi Freedom*, Fort Leavenworth, KS: Combat Studies Institute Press, 2004.

<sup>9</sup> See, for example, the August 2006 version of *FM 3-20.96: Reconnaissance Squadron*, Pages 2-23 and 1-9 to 1-10.

## ACRONYM QUICK-SCAN

**RSTA** - Reconnaissance, Surveillance, and Target Acquisition

## Commandant's Hatch

Continued from Page 3

the training. We are listening to your feedback and have taken steps to reduce the Mobile Gun System Master Gunner Course from 16 weeks to 8.5 weeks, thus making it easier for our Stryker Brigade Combat Team commanders and command sergeants major to send great non-commissioned officers to this critical training. Please keep sending us your perspective on the quality of Soldiers and leaders you get from our courses. This linkage to the force for suggestions on

improving our courses at the Armor School – along with our own ideas to make the courses more rigorous – is critical to maintaining relevance and to giving you the Soldier or leader you can be proud of and that our Army deserves.

Bottom line, we continue to do all we can in creating aggressive, agile, adaptive Armor and Cavalry Soldiers who understand that they are part of a combined-arms team and are committed to lifelong

learning and to our profession. These are exciting times to be a leader, Soldier or trooper in Armor and Cavalry. Remember, it is the elan ... the spirit of Armor and Cavalry ... the ability to think and act independently and decisively...that makes us a different breed. I am very proud to be in it and part of the team!

Forge the Thunderbolt!

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## Nominate Soldiers for Frederick M. Franks Award

The Armor School is seeking nominees from Army commands for the 17<sup>th</sup> Annual Frederick M. Franks Award, to be presented at the 2013 Army Reconnaissance Summit in March.

The Franks Award is presented to a mounted active-duty or reserve officer, noncommissioned officer or Department of the Army civilian who has demonstrated a long-time contribution to the Army's ground-fighting and warfighting capabilities. Consideration will be given to the nominee's contributions toward the transformation of the mounted force to fight and win in full-spectrum operations.

Also, this individual should possess two or more of the following characteristics:

- Offered a vision for the future of mounted warfighting force that significantly improved survivability, lethality, maneuverability or mobility;
- Developed an innovation in equipment, materiel or doctrine that significantly enhanced the effectiveness of the mounted element of combat arms;
- Exemplified professional excellence in demeanor, correspondence and leadership on issues relevant to mounted warfare; or
- Displayed a zeal for Soldiering through leadership skills, recognition of the sacrifice and achievements of subordinates, and attention to the Chief of Armor.

Each unit must develop a process that allows recommendations from the lowest level to participate. Packets must contain, at minimum, the Officer Record Brief/Enlisted Record Brief with a photo of the Soldier, a letter of recommendation stating why the nominee meets the preceding criteria and letters of endorsement from brigade and division/post level. More information regarding the quality of the nominee is highly recommended.

Nominations must be submitted to the Office Chief of Armor, ATTN: ATZK-AR/Franks Award, 1 Karker Street, Fort Benning, GA, no later than Jan. 31, 2013. Alternate submittal is encouraged via email to [david.winczewski@us.army.mil](mailto:david.winczewski@us.army.mil). Packets will be evaluated in a competitive board process, with the recommendation forwarded to the Chief of Armor for review and final approval. The winner will be presented the award during the 2013 Army Reconnaissance Summit; the Armor School will fund the award recipient's travel expenses.

For more information concerning the Franks Award, contact the OCOA coordinator via email at [david.winczewski@us.army.mil](mailto:david.winczewski@us.army.mil), commercial (706) 545-0577 or DSN 835-0577.



# Stryker Mobile Gun System Gunnery at Battalion and Brigade Level

by CPT Jay Sean Tomlinson and 1LT Bryce M. Markiewicz

Mobile Gun System fielding and operator's new-equipment training provide MGS crews with an iteration of gunnery that is well resourced with civilian-contracted instructors, evaluators and mechanics. However, OPNET does not provide the recurring semiannual gunnery requirement for all Stryker MGS personnel (reference: ST 3-20.13-2). Considering personnel change-over and the possibility that crew rosters six months later don't match crew rosters during OPNET, conducting another gunnery event is the difference between deploying with fully qualified and experienced crews and deploying with crews that have never shot together before.

## Strengths

The M1128 Stryker MGS provides Stryker brigade combat team company commanders with a devastating, precision long-range weapon system that can provide accurate fire from a 105mm high-explosive antitank round out to 3,200 meters; 7.62 mm coax machinegun precision fires to 900 meters; and the flex-mounted M2 caliber .50 machinegun out to 1,800 meters.

It is a vital tool for the company commander, providing attack by fire, support by fire and overwatch capabilities at extended standoff ranges. However, for MGS platoons to bring these ca-

pabilities to the fight, MGS crews must be experts on their vehicles by conducting continuous training, including live-fires. Only by doing so will they have the skills to operate effectively and safely, and be able to adapt to contingencies – including manual loading, degraded operations after improvised explosive device hits or crew loss – or just keep the vehicles operable in austere conditions.

In the current operating environment, the MGS provides immediate response in a way the 120mm mortar does not, since it doesn't require deconfliction of airspace or authorization above company level to shoot. The effectiveness of long-range precision direct-fire weapons in the Corps of Engineers cannot be underestimated. Infantry leaders at the battalion level fully understand the importance of training their mortar sections through semi-annual certification and live-fire. MGS must receive the same amount of command emphasis on training.

## Planning MGS gunnery

Thankfully, MGS gunnery can be done without conducting additional OPNET. With proper resourcing and planning, it can (and should) be done at the brigade or even battalion level. Here are a few key considerations during planning for MGS gunnery:



Day	Task	Notes
1	Advanced echelon deploys	
2	Primary ammunition draw	Advanced echelon setup; billeting; in-process facility; draw targetry; range-safety officer/officer-in-charge classes
3	Alternate ammo draw/setup	Main body deploys
4	Establish/ proof range	Verify targetry, prepare range
5	Boresight, zero, zscreen	Zero weapons systems, verify ballistic computer data
6	Table IV	Focuses on crew fire commands, no live-fire requirement
7	Table V	Day/night, mix of 7.62mm, .50 cal, main gun, stationary and moving, multiple targets per engagement
8	Maintenance	
9	Table VI	Day/night, mix of 7.62mm, .50 cal, main gun, stationary and moving, multiple targets per engagement
10	Table VII	Day/night, mix of 7.62mm, .50 cal, main gun, stationary and moving, multiple targets per engagement
11	Maintenance	
12	Table VIII	Day/night, mix of 7.62mm, .50 cal, main gun, stationary and moving, multiple targets per engagement, the "qualifying" table
13	Alibi Table VIII, Q2s	Another chance for crews who didn't qualify during Day 9
14	Range cleanup/clearing	Turn in targetry, range equipment
15	Ammunition turn-in	Main body redeploys, rear echelon ammunition turn-in
16	Rear eschelon redploys	

**Figure 1. Sample timeline.**

- **Resourcing.** Though MGS gunnery is most easily conducted on a range with a built-in tower and forward-looking infrared system, that equipment is not a requirement. A range that allows 105mm fire, has maneuver lanes between multiple battle positions and includes moving targets can support MGS gunnery. While an on-site tower with integrated FLIR and radio systems is ideal, a dismounted long-range advance scout in a tent or mounted on a reconnaissance vehicle or fire-support vehicle, in conjunction with a tent and a radio stack, will allow graders to evaluate and administer MGS gunnery.

Once the range is reserved, the brigade or battalion master gunner must develop and submit the targetry scenario to range control/range support at the training center. A well-developed packet combined with an on-site recon can be the difference between firing on schedule or falling behind to adjust targets and safety danger zones. Also, ammunition must be forecast far in advance, currently 90 days prior in conjunction with Total Ammunition Management Information System procedures. Forecast enough for alibi firers and multiple iterations, ideally enough for primary and alternate firers.

- **Preparation.** While the support package provided by OPNET contractors is impressive, much of that work can be done by Soldiers organic to an SBCT. A good logistics-support platoon provides vehicles and trailers to draw and transport ammunition. A contact truck with mechanics and General Dynamics contractors is crucial for on-site maintenance support at the range to keep vehicles operable and sustain throughput.

More assets include wreckers for recovery support, Palletized Loading System for Class V draw and transportation, fuelers for Class III and a field feeding team to provide Class I for Soldiers on the range. Combined with a dedicated range-support detail (range safeties, tower personnel, medics, a radio operator, gate guards, recorders and ammunition holding area guards), the MGS gunnery-support package is significant and should be a key planning consideration when determining whether to conduct brigade- or battalion-level gunnery.

In addition to general support, MGS gunnery also requires vehicle-crew evaluators (experienced MGS vehicle commanders that evaluate each crew's gunnery iteration), which, due to the limited number of 19-series personnel inside a battalion, must come from outside the battalion.

As far as crew-level preparation, crews must be allotted dedicated time in the Advanced Gunnery Training System gunnery simulators to rehearse fire commands and train on the MGS crew systems. The AGTS can qualify crews on the first three gunnery tables (Tables I-III) so that range time can focus on Tables IV-VIII. Emphasis must be placed on AGTS reservations since often there are relatively few simulators on SBCT posts compared to the number of MGS crews. MGS crews must also complete the crew-gunnery skills test prior to gunnery to ensure crew proficiency and avoid costly (potentially vehicle debilitating) operator errors.

Once crews complete their gunnery prerequisites and arrive at the range, they meet the support detail. Once the detail finishes drawing the ammunition, preparing life support and preparing the range, MGS gunnery is ready to begin. Our battalion com-

pleted gunnery on a 16-day schedule (11 range days – see sample timeline in Figure 1). Though a brigade might need more time (typically 18 vehicles instead of six), it would not significantly extend the timeline because the brigade would also be able to leverage more resources and fill downtime (waiting for night gunnery or conducting maintenance). Another advantage of having 18 vehicles on the range instead of six is the ability to sustain throughput by hot-seating crews in other MGS vehicles while vehicles are down for maintenance.

With crews who have trained in the AGTS and completed the CGST, MGS gunnery is a culminating event that is rewarding for the crews and exposes areas of improvement for retraining. It also certifies crews for future advanced and collective gunnery training opportunities if the commander decides to include those in his training plan. Also, it certifies MGS crews to participate in platoon/company live-fires, which will allow the commander to integrate his MGS vehicles into his scheme of maneuver during an live-fire exercise and train in conjunction with dismounted elements.

Stryker MGS gunnery is a vital training event that must progress from a one-time OPNET to a recurring training benchmark event, as intended by regulation in the MGS gunnery manual. It can and should be done at brigade or battalion level. Most importantly, gunnery and subsequent training events build Soldier and leader confidence and understanding in employing the most devastating and precise (at times almost surgical) direct-fire weapon system in the Stryker rifle company's arsenal.



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### ACRONYM QUICK-SCAN

- AGTS** – Advanced Gunnery Training System
- BOLC** – Basic Officer Leader's Course
- CGST** – crew-gunnery skills test
- FLIR** – forward-looking infrared
- MGS** – Mobile Gun System
- OPNET** – operator's new-equipment training
- SBCT** – Stryker brigade combat team



# Targeting the Complex Threat: The Art and Best Practices of Targeting during Reconnaissance Operations

by MAJ Morrie J. Fanto

The 173<sup>rd</sup> Airborne Brigade Combat Team's Decisive-Action Training Environment Rotation 12-01 at the Joint Multi-National Readiness Center demonstrated the tremendous challenges presented by the Army's complex-threat opposing forces. The 173<sup>rd</sup> ABCT's rotational training units faced an austere operational environment (without forward operating bases), an opposing near-peer conventional force, special-purpose forces and an insurgent "Southern Atropian People's Army." They also contended with criminal and civilian issues – all while building combat power under severe time constraints. Also, an adversarial threat of this size and complexity presented the brigade with an enemy that could often impose its will through initiative and mass.

Successfully targeting the complex threat requires commanders to use caution in blending the tactics, techniques and procedures learned during the last 10 years of fighting the war on terrorism in conjunction with conventional targeting practices of the "Fulda Gap" Cold War era. With the emergence of the near-peer adversary, units must attempt to understand the conventional enemy's capabilities, and predict and anticipate the enemy's doctrinal framework, while simultaneous-

ly defeating the most prominent threats posed by insurgent forces. Finding the right combination and balance of both old and current methodologies provides the prescription for success on the complex modern battlefield.

## Decisive and shaping operations

The cavalry squadron was highly successful during early airfield security operations and again while providing the screen line against the 306<sup>th</sup> Reconnaissance Brigade Tactical Group. However, while most reconnaissance and surveillance assets were directed against the impending conventional threat, special-purpose forces and SAPA forces maintained relative freedom of movement within the 173<sup>rd</sup> ABCT footprint. These small enemy forces, employing guerrilla techniques, were able to harass, interdict and, most damagingly, collect on friendly positions within the squadron's footprint, and pass that information back to the 306<sup>th</sup> BTG.

The 12-01 DATE complex threat demonstrated that time and resources are finite and precious. With multiple types of enemy forces within an operational envi-

ronment, units must ensure a strict economy-of-force measurement against the right threat, at the right time, and balance in accordance with the brigade's operational timeline.

Both the brigade and squadron staffs should understand concise priority information requirements to best align brigade and squadron assets against lethal and nonlethal. Once PIR is identified, the information must be converted into R&S tasks, and those tasks must be carefully managed within the target-synchronization matrix. Due to the dynamic and fluid nature of the complex threat, the target-synchronization plan must constantly be developed and reassessed to allow the squadron commander to accurately detect the threats in the OE and target those threats in the right order (with regard to space and time).

"It is essential that all R&S assets be used effectively and efficiently," states Paragraph 2-57, Field Manual 3-60, *The Targeting Process* (Nov. 26, 2010). "Duplication of effort among available assets must be avoided unless it is required to confirm target information. ... This allows timely combat information to be collected to answer the commander's intelligence requirements. This information



lets analysts develop the enemy situation and identify targets.”

Effective management of the target-synchronization plan helps commanders to develop a more accurate situational template and a better understanding of the complete enemy situation. During the initial days of DATE Rotation 12-01, human intelligence gathered from communities within the OE could have provided much of the necessary information to disrupt and neutralize special-purpose forces and SAPA operations during shaping operations. Also, requesting help from and joining host-nation security forces could provide a source of cultural and historic background information needed to quickly root out these enemy elements and deny them safe haven.

Regarding non-lethal targeting, troop integration with small elements of HNSF could provide much greater fidelity regarding political, military, economic, social, infrastructure, information, physical environment and time considerations within the OE. Also, HNSF could assist with internally displaced personnel contingencies, information operations to protect and inform the indigenous population, and consequence-management plans (within the scope of culturally accepted norms) to contend with collateral-damage issues. HNSF, as both partnering units and ethnographic guides, allow for the quickest development, validation and confirmation of the enemy situational template.

Because of the complexity of the complex threat, the enemy can often influence and dictate operational tempo. This threat is exacerbated when additional problem sets are added to the equation; fatigue and austerity associated with airborne operations, along with unfamiliar territory, makes delineating essential priorities of work during the initial hours and days of the operation critical to the squadron’s overall success.

## Squadron commander as chief of recon

During the initial hours of 173<sup>rd</sup> ABCT’s defensive operation, a primary task of the brigade’s R&S plan was to confirm the enemy event (doctrinal) template, which was important for the success of the brigade’s shaping operation. Many squadron-dismounted observation posts were to observe and destroy enemy high-value targets identified as the enemy’s fixing force. Once elements of the attack and exploitation forces were recognized as entering the battle area, Soldiers manning the OPs were to then move to a

strongpoint without becoming decisively engaged.

The task of identifying the enemy order of battle was somewhat more ambiguous and challenging for the unit targeting the complex threat. Before the 21<sup>st</sup> Century, the opposing force at U.S. installations and combat-training centers could be expected to adhere to a single doctrine with a well-defined order of battle, and the threat model was therefore more easily predicted.

During the 12-01 DATE rotation, there was greater uncertainty how the OPFOR would organize for battle, which required a thinking S-2 able to place himself in the enemy’s position. To maintain a firm grip on the situation, the squadron commander would rely on both organic squadron assets as well as integrated brigade R&S platforms.

The 1<sup>st</sup> Squadron, 91<sup>st</sup> Cavalry intelligence section performed exceptionally well in developing an enemy doctrinal template and enemy order of battle. This analysis allowed the squadron S-3 operations officer to plan effective named areas of interest and ideal OP positions to observe the suspected maneuver corridors that 306<sup>th</sup> BTG would use during the attack. However, issues would later arise with intelligence management during the force-on-force battle.

The squadron commander is the brigade combat team’s chief of recon but does not own all the R&S platforms that complement this position. The squadron staff does not have the organic analytical capability needed to process this amount of intelligence within the time constraints available, so the title authority for R&S information management and analysis is normally retained at brigade.

How squadron information requirements translate into acquisition criteria and indicators, and ultimately into brigade R&S tasks and integration, is accomplished through a system of continuous dialogue between the squadron and brigade staffs. This function of integration directly supports the squadron commander in his role as the chief of recon, and the missions inherent in that role.

Integration, as Paragraph 2-12, FM 3-20.96, *Reconnaissance and Cavalry Squadron* (March 12, 2010), is “the task of assigning and controlling a unit’s intelligence, surveillance and reconnaissance assets (in terms of space, time and purpose) to collect and report information as a concerted and integrated portion of operation plans and orders (FM 3-0). This task ensures assignment of the best intelligence, surveillance and reconnaissance assets through a deliberate and coordi-

nated effort of the entire staff across all warfighting functions by integrating surveillance and reconnaissance into the operation. In addition, R&S integration supports the targeting process by focusing the appropriate assets on the detection of targets.”

While the enemy event template was accurate, the process of deliberate R&S integration became less effective as the battle evolved. The 306<sup>th</sup> BTG attacking force and exploitation forces were able to mass effective fires on the 173<sup>rd</sup> defensive formation and temporarily overwhelmed the brigade’s capability to manage complete R&S integration. Additionally, bottom-up reporting from the OPs became disorganized over time, and this cascading effect caused the squadron to lose situational awareness. The result was that the brigade lost much of its reconnaissance capability earlier than anticipated, and the squadron withdrawal to the strongpoint was de-synchronized due to the overall loss of the current and complete operational SITTEMP.

This issue highlights the importance for the squadron and brigade staffs to create systems that allow collaboration and seamless integration during missions, regardless of the operation tempo. The number of NAIs, the length and depth of the screening operation, and the size and capability of the enemy must be considered when designing the R&S plan.

With limited analytical capability, the squadron will depend upon the quick and responsive passing of analysis from higher regarding the surveillance of NAIs and the detection of high-value targets by non-organic assets. For internal assets, the staff must provide a R&S collection plan with definitive indicators for squadron analysts to limit acquisitions to a manageable number that will not overwhelm intrinsic systems. During high-tempo operations, information collection must be limited to only what is essential to mission success, which is a departure from the reporting which has become commonplace during the war on terrorism.

The latest time information is of value is a paramount factor during force-on-force conflict due to the complex threat and the time constraints innate to this threat. The nature of the threat also validates the continued need of company/troop intelligence support teams. These teams function as hubs for passing critical information/updates to and from Soldiers on the screen line while targeting complex threats. Also, the company or troop intelligence-support team can assist in answering the squadron’s specific information requirements through collecting, collating, analyzing and reporting troop

updates into a seamless and routine analog report to the squadron tactical-operations center and the tactical command posts.

## Attack guidance and triggers

The complex threat created a new set of leadership challenges for the brigade and to the cavalry reconnaissance squadron's mission. The 1-91 Cavalry screening operation during the brigade's defensive operation illustrated this challenge. Squadron OPs were at the "tip of the spear" and faced an enemy who could rapidly overmatch, overpower and overrun a non-mechanized OP.

To enable the squadron to achieve a higher rate of mission success and afford an acceptable rate of OP survivability, it is vital that Soldiers at the lowest level understand what enemy elements meet bypass criteria as opposed to legitimate targets designated on the high-payoff target list and targets of opportunity. The squadron staff provides and routinely updates this information in the form of the HPTL, the target-selection standards and the attack guidance matrix, which can all be combined into a single document.

"Targeting methodology ... organizes the commander's and staff's efforts to accomplish key targeting requirements," according to Paragraph 1-19, FM 3-60. "The targeting process supports the commander's decisions. It helps the targeting working group decide which targets must be acquired and attacked. It helps in the decision of which attack option to use to engage the targets. Options can be lethal or nonlethal and/or organic or supporting at all levels through the range of operations. ... In addition, **the process helps in the decision of who will engage the target at the prescribed time.** It also helps targeting working groups determine requirements for combat assessment to assess targeting and attack effectiveness."

To synchronize efforts across the squadron, the combined AGM/TSS/HPTL answers what enemy composition(s) (within the construct of an assumed enemy doctrinal template), are legitimate targets and meet attack criteria (triggers). Also, the AGM/TSS/HPTL answers what weapon systems, ranked in order of priority, can be used to effectively engage and destroy specific target groups. The result of

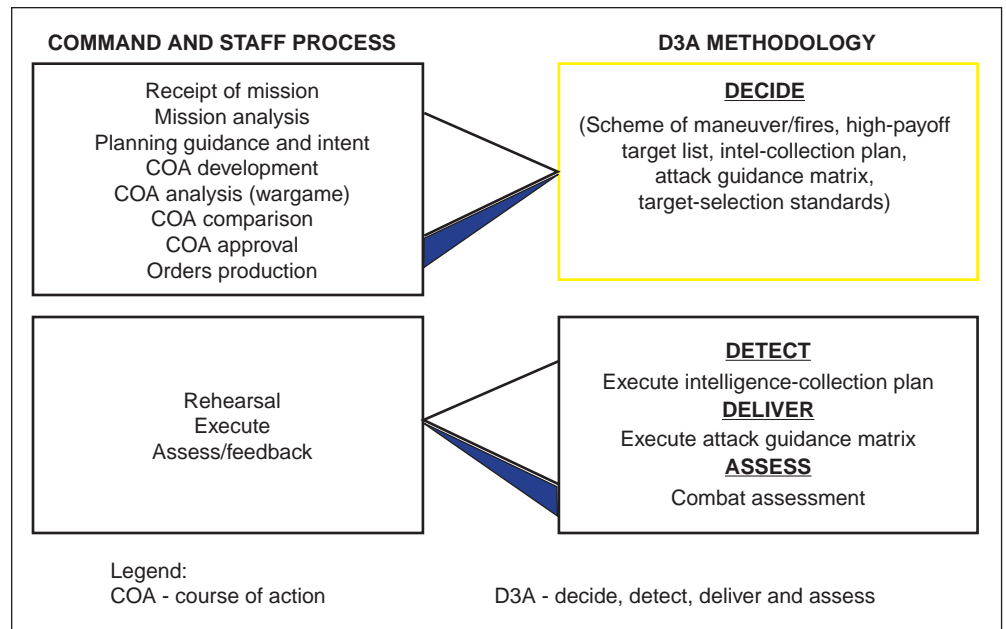


Figure 1. Targeting methodology diagram from Paragraph 1-19, Field Manual 3-60.

a limited understanding of the AGM/TSS/HPTL, especially at the squad and team level, will often result in acquired targets engaged as targets of opportunity. There are four problems associated with this action:

- Appropriate weapon systems might not be selected for the target.
- Targets might not meet the HPTL criteria.
- Calls for fire(s) might inundate fire direction control centers, making them unresponsive.
- Firing might present unnecessary friendly signature acquisition opportunities for enemy reconnaissance.

To create a unity of effort across the six warfighting functions of combat power, all sensor-to-shooter assets fight from the same combined HPTL/TSS/AGM. The creation of this product needs to be of the highest priority within the S-2, S-3 and fire-support element sections. Also, the fire-support rehearsal is absolutely essential in coordinating all fire-support assets against high-payoff targets with regard to the brigade's concept of the operation, as well as restrictions imposed by time, space or rules of engagement. An AGM that is well understood at all levels of leadership will also prevent the unit from overusing their organic assets.

During battle, the easiest and most responsive solution for commanders, subject to pre-established levels of release authority, is to choose weapon systems under their direct control. The AGM delineates what weapon systems are valid

selections for the type of target to be engaged and helps prevent target or weapon mismatches. To maximize the effectiveness of the plan, fire-support rehearsals must take place prior to the combined-arms rehearsal. This practice affords the fire-support cell the additional time necessary to rehearse and validate fire-support plans and products to be disseminated to the leadership prior to the CAR.

## Building and maintaining a common operational picture

There is a leadership challenge presented by the digital/analog divide and the effects this schism has on the targeting process. Unlike the operational tempo of a small-wars conflict that takes place over years, the complex threat and an adversarial near-peer bring about violent conflict in which the winner and loser are determined within hours. For the squadron commander to make decisions, the staff must have processes in place to maintain situational awareness through a common operational picture. Furthermore, effective targeting will be hindered and employment of fires delayed if the SITTEMP is stale due to a lag in accurate and responsive reporting. Effective reporting begins with a tactical standing operating procedure.

The entire unit should report, track and update analog data in the same manner so that information can enter the Army Battle Command System at the battalion and squadron staff level. For the troop

level and below, this means either building graphics in the Blue Force Tracker or ABCS, or using maps with overlays or hand-drawn graphics. Unfortunately, hand-drawn graphic overlays are an art that has fallen into disuse over the course of counterinsurgency operations and has recently been eliminated from the Army's Battle Staff Course.

For overlays to be accurate and effective, the graphic, after the initial production, must be copied from the source document and reattached to different map boards. This requires backwards planning by the staff to ensure that after the CAR is complete, all subordinate elements have access to base documents and are given the time, materials and work area to create the reproductions. Also, the squadron needs a reporting plan in place – which begins immediately after initial movement begins to refresh icons – so that the COP does not become stale.

The CoIST/TrIST, in addition to passing along reconnaissance reporting and unmanned aircraft systems surveillance updates, can also be used in assisting troop commanders as well as the TOC with managing battle positions, acquisitions and other information-management issues. In the conventional fight, the CoIST/TrIST can be used to enhance overall command-post operations and aid in routine reporting.

In addition to providing an accurate COP for the squadron commander and staff, the second function is increasing fires' responsiveness. While the priorities of observers manning OPs are focused on the enemy, the squadron must be equally concerned with friendly positions to clear fires. This becomes increasingly impor-

tant as small units rely on final protective fires and accurate and responsive fires from non-organic weapon systems to engage and destroy targets and to shape the near-term friendly and enemy scheme of maneuver. If the COP accuracy is allowed to deteriorate during high-tempo operations, the enemy undoubtedly gains the advantage in operations, as friendly units can no longer safely mass fires.

## Conclusion

Rotation 12-01 demonstrated the myriad of challenges associated with the complex threat. The 173<sup>rd</sup> ABCT answered this challenge, demonstrating their mastery of warcraft, tactical competence and unyielding tenacity to fight and win in combat. In the new era of the modular force, the squadron commander is the chief of recon for the brigade that the squadron supports. This demands that leadership at all levels in the squadron staff become proficient at the ever-growing list of available assets, how and when to request the asset, and how and what ABCS can receive reports from the asset – as well as how to best use those systems within the brigade/squadron combined-arms operation.

The brigade staff must ensure a functional system exists that will provide synergy between the ground units organic to the squadron and the aerial platforms that are retained at brigade and higher. Also, ground units observing, engaging and reporting at the Soldier/team level must result in a seamless COP for the squadron and brigade command that matches the tempo expected during the complex threat. This proves to be no easy task during an operation with severe time constraints, a

capable enemy and a fluid battlefield. Effective systems for information management are a high priority across the entire spectrum of warfighting functions and ensure the best use of all fire-support assets through a responsive targeting process.



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## ACRONYM QUICK-SCAN

**ABCS** – Army Battle Command System  
**ABCT** – airborne brigade combat team  
**AGM** – attack guidance matrix  
**BTG** – brigade tactical group  
**CAR** – combined-arms rehearsal  
**CoIST** – company intelligence-support team  
**COP** – common operational picture

**DATE** – decisive-action training environment  
**FM** – field manual  
**HNSF** – host-nation security forces  
**HPTL** – high-payoff target list  
**NAI** – named area of interest  
**OE** – operational environment  
**OP** – observation post  
**OPFOR** – opposing force

**PIR** – priority information requirements  
**R&S** – reconnaissance and surveillance  
**SAPA** – Southern Atropan People's Army  
**SITTEMP** – situational template  
**TOC** – tactical operations center  
**TrIST** – troop intelligence-support team  
**TSS** – target-selection standard

# Information-Collection Rehearsals in the Brigade Combat Team

by MAJ Michael J. Childs

Rehearsals are critical for mission accomplishment because they enhance situational understanding for the brigade combat team and enable units to synchronize complex tasks at the right time and place. Our Army doctrine highlights the importance of conducting rehearsals, outlining “mission success depends on preparation as much as on planning. Rehearsals help staffs, units and Soldiers to better understand their roles in upcoming operations, practice complicated tasks and ensure equipment and weapons function properly,” according to Paragraph 6-15, Field Manual 3-0.

Because commanders recognize the importance of rehearsals, this critical event is often a prioritized training task at the National Training Center, specifically the brigade combined-arms rehearsal, which is conducted on average two to three times per rotation. Leaders and key staff throughout the brigade, like the fires and sustainment community, also take the opportunity to conduct support rehearsals, synchronizing their respective warfighting functions so units can accomplish their missions. However, observations from the last 15 rotations (January 2011-June 2012), reveal that BCTs routinely deploy to the NTC without practicing effective information-collection rehearsals to synchronize the brigade’s reconnaissance and surveillance plan inside the intelligence warfighting function.

This article is for brigade staff planners who are preparing for a rotation to the NTC or a follow-on combat operation. It describes why the IWfF must execute support rehearsals in preparation for R&S missions and how they can synchronize the plan with the BCT’s overall maneuver operations. Most of all, through observations and lessons-learned at the NTC, this article provides a technique for conducting a successful IC rehearsal based on recent trends and lessons learned at the NTC.

## Each proponent should rehearse

Because our rehearsals “assist the commander, staff and subordinates to fully understand the plan” (Paragraph 4-4, FM 5-0), it is critical for staff proponents in each warfighting function to execute a support rehearsal, helping units synchronize details of the plan and key friction points, and to later set the conditions for a successful CAR. A good established model of this is the brigade fire-support rehearsal and the fires technical rehearsal.

Both set conditions for the fires warfighting function to demonstrate the details of their fire-support tasks and discuss how artillery missions relate to the

brigade’s overall maneuver plan. These rehearsals are “within the framework of a single or limited number of warfighting functions [fires], involving coordination and procedure drills.” (I-10, FM 5-0). It is led by an experienced brigade staff officer, the fire-support officer, and is chaired by the artillery battalion commander or brigade fire-support coordinator, who leads the fires warfighting function.

Why is it then that the brigade’s IWfF habitually does not conduct effective support rehearsals, namely an IC rehearsal? One argument is that every other warfighting function’s support rehearsal includes input from the IWfF. For example, a fire-support or sustainment rehearsal includes an S-2 who presents terrain and weather effects, the threat as it relates to the plan and induced enemy friction points throughout the event. While this is true, these independent support rehearsals do not capture all the key R&S tasks that lead to situational understanding for the brigade.

Another argument is that the reconnaissance squadron conducts the rehearsal responsible for IC operations, making it unnecessary for the brigade S-2 to serve as the proponent for this rehearsal. While the reconnaissance squadron certainly does rehearse key R&S tasks for key phases of the operation, it does not incorporate enduring reconnaissance tasks accomplished by the brigade’s organic collection assets or the reconnaissance tasks executed by other subordinate battalions. This rehearsal requires a centralized proponent to holistically tie the IC plan together.

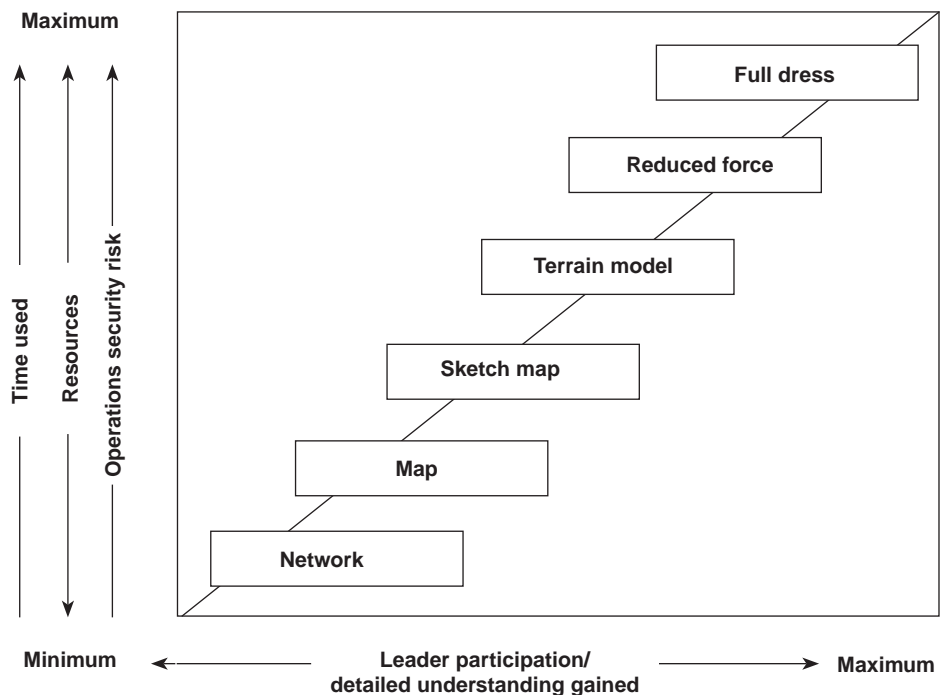


Figure 1. Rehearsal techniques.



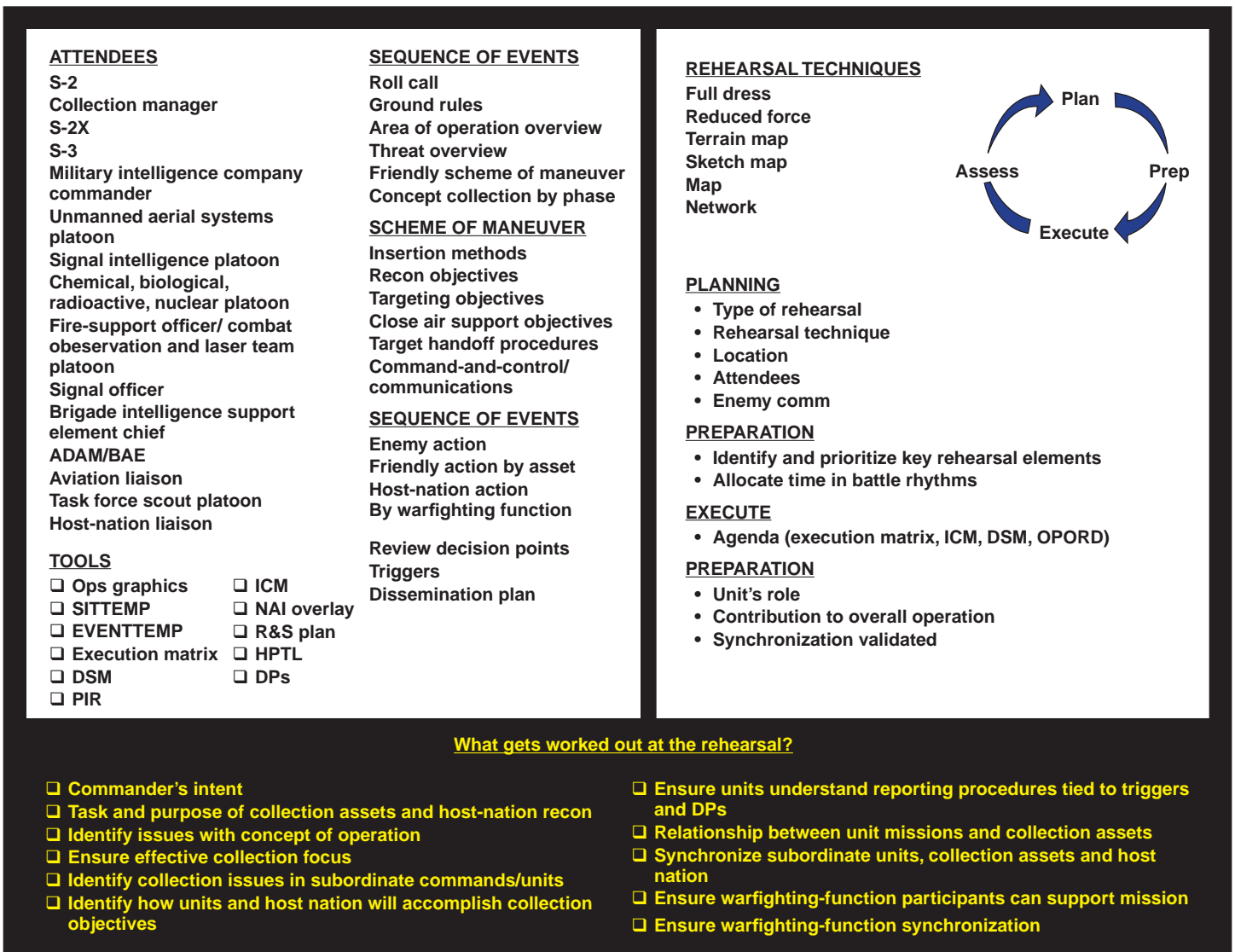


Figure 2. Information-collection rehearsal checklist.

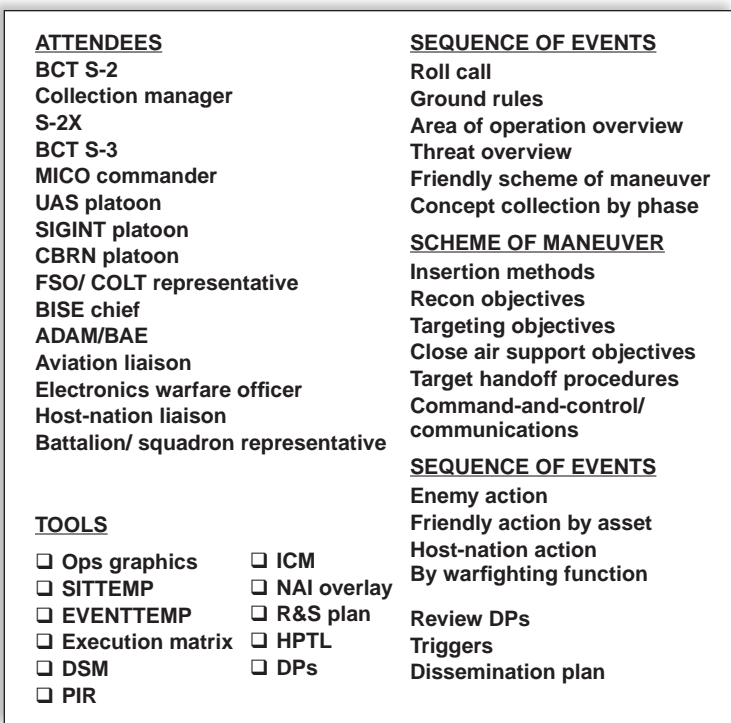


Figure 3. Rehearsal agenda and script.

A final argument is that the R&S plan is discussed and reviewed during the brigade's CAR, negating the need for the brigade S-2 to conduct an independent support rehearsal. While key R&S tasks are discussed during the CAR, they seldom get into the rigorous details of enemy indicators, sensor-to-shooter links and the dissemination plan. This is mainly because the brigade CAR is more focused (rightfully so) on synchronizing subordinate unit plans with one another, ensuring that each battalion achieves the BCT commander's intent. (I-9, FM 5-0)

Like the fires and sustainment counterparts on the brigade staff, the brigade S-2 section must own its respective support rehearsal. It must execute the IC rehearsal, serving as the proponent who synchronizes the brigade's R&S plan. Ideally, this rehearsal is conducted prior to the brigade CAR, with follow-on refinements or adjustments afterward.

Like the fire-support rehearsal, the IC rehearsal should be led by an experienced brigade staff officer and chaired by the officer who will ultimately publish the R&S tasking order. Therefore, this rehearsal, led by the brigade collection manager and chaired by the chief of reconnaissance (if assigned) or BCT S-3, serves as a "coordination event, not an analysis" and "does not replace wargaming."

## Conducting the rehearsal

The endstate is to "help the BCT commander make only those changes essential to mission success and risk mitigation." (I-5,

FM 5-0) The first step is deciding which rehearsal technique the brigade should use. This is determined by the proximity of subordinate units, resources available and allotted time. When executing missions decentralized over a vast area of operation, a network rehearsal over the Army Battle Command System works well. When centralized and given time, a terrain model is a better alternative. When time and resources are limited, this rehearsal can be accomplished effectively with a map and some key overlays.

After choosing the right technique, the most important element of the IC rehearsal is to have an agenda or script. Next, the collection manager must gather the following decision-making tools: friendly-operations graphics, threat situational template, threat event template, execution matrix, decision-support matrix, priority intelligence requirements, information-collection matrix, named-area-of-interest overlay, the high-payoff target list, current R&S plan and the commander's decision points. With these tools in hand, the rehearsal becomes a much more effective event, ultimately helping battalions identify collection issues, synchronize assets and efficiently disseminate information.

The script or agenda must be both simple and logical to make the IC rehearsal a worthwhile event. List all attendees on the script for roll call. A list of minimum tools helps the collection manager adapt this script for any type of rehearsal technique he chooses given the time, proximity of subordinate units and resources available.

Figure 3 presents an example agenda, which provides a simple and logical outline for conducting this rehearsal. Note the attendees listed in the left-hand side with the minimum tools list-

ed at the bottom. To make this event successful, representatives from the military intelligence company, S-3, air-defense airspace management/brigade aviation element, electronic warfare officer and battalions (at a minimum) must participate. Together, each member contributes to the rehearsal by identifying their specific reconnaissance or surveillance task throughout each sequence or "turn" of events.

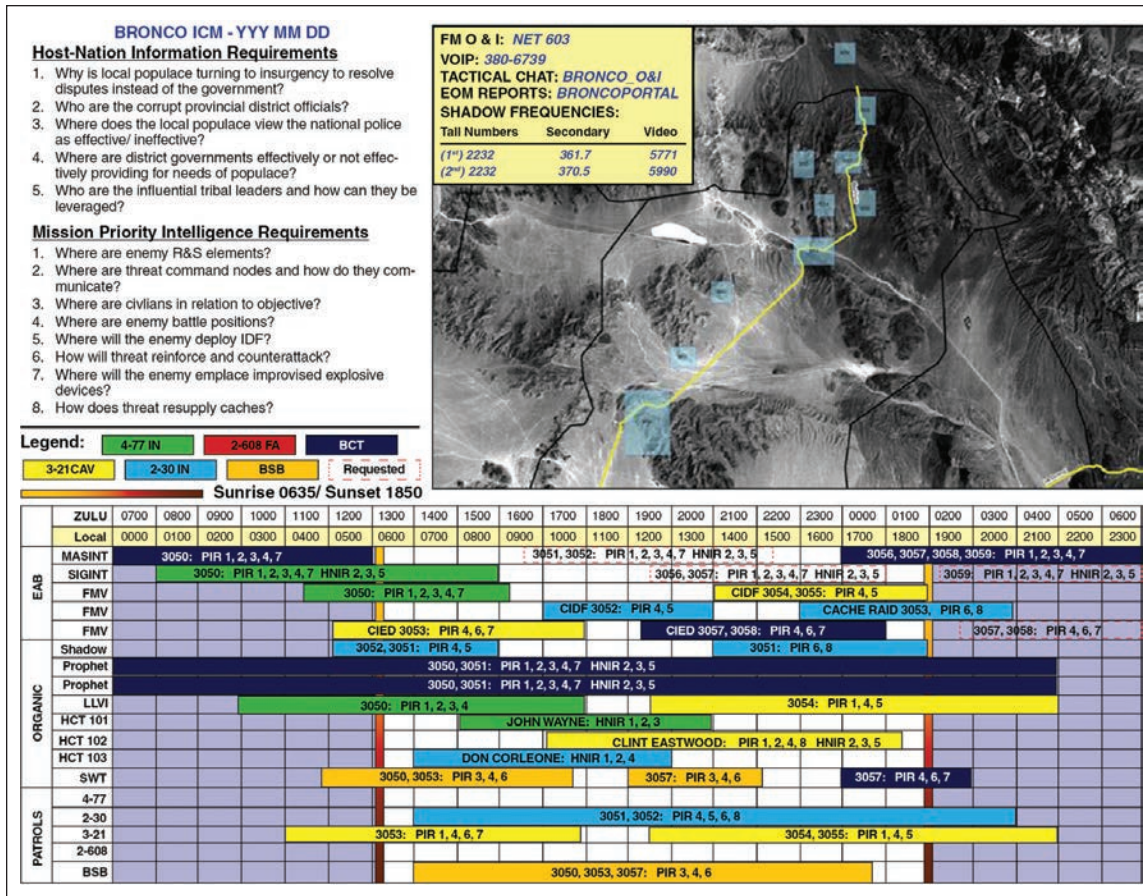
Another critical component of the IC rehearsal is the list of commander's priority intelligence requirements. Ideally, during mission planning, these information requirements are approved by the commander and nested with his decision points. As the brigade R&S plan was developed, each PIR should have been broken down into essential elements of information indicators and specific information requirements. This crosswalk or breakdown is precisely what drives each collection task, and the collection plan must be on hand to synchronize the following:

- PIR, a question to answer;
- NAI, a place to answer that question;
- Observation window or latest time intelligence is of value, a start and stop time to answer that question; and
- Tasked observer, an asset or unit assigned to go out and get the answer.

Figure 4 displays an ICM, which a BCT collection manager could use to tie each asset to PIRs, NAIs and start/stop times. With this tool in hand, each participant in the rehearsal understands exactly what question they must answer and where. The EEIs, indicators and SIRs translate into taskings; as the rehearsal works through the collection scheme-of-manuever and se-

PIR	EEI	Indicators	SIR	NAI	START TIME	END TIME	XX - Primary R- Request																
							BCT						Division/ Higher										
							3-21 CAV	4-77 IN	2-30 IN	2-608 FA	BSB	PROPHET	SHADOW	SWT	HCT	SIGINT	Full-motion video	FMV	FMV	Measures & Signal Intel.			
Where are enemy battle positions?	Where are wheeled or tracked vehicles (BMP-2M, BRDM, T-80)	<ul style="list-style-type: none"> <li>• BMP-2M</li> <li>• T-80</li> <li>• BRDM</li> <li>• Track marks</li> <li>• Fighting positions</li> </ul>	Report presence of BMP, BRDM, T-80 vehicles or track marks	305003051	01000	1000		XX	XX					XX									XX
	Where are the enemy obstacles emplaced	<ul style="list-style-type: none"> <li>• C-wire</li> <li>• Mines</li> <li>• Ditches</li> <li>• Enemy artillery (overwatch)</li> </ul>	Report presence of mine, wire, ditches Report grid of enemy IDF	305113052	091300	2100			XX			XX	XX								XX		R
	Where are enemy fighting positions in relation to engagement areas	<ul style="list-style-type: none"> <li>• Obstacles tied into natural chokepoints</li> <li>• Enemy LP/OPs</li> <li>• Disturbed earth IVO FA</li> </ul>	Report 2 or more individuals Identify/ report disturbed earth	30573058	1200	1800								XX		XX			R	R		R	XX

Figure 4. Information-collection matrix.



**Figure 5. Synchronized collection.**

quence of events, these taskings are reviewed in time and space. Simply put, during each turn of the rehearsal, key leaders and asset operators discuss their task and purpose, describing where they are looking (NAI), what indicators they are tasked to look for (EEI/SIR) and what times they are observing (LTIOV).

As the collection manager reviews each critical event, he should refer to the ICM, which graphically displays how assets at different echelons relate to one another across the entire depth of the brigade's operating environment. Figure 5 shows how the ICM can be combined with the information-collection overlay to synchronize collection in time and space. Notice how assets are connected to NAIs, and the color-coding used on this matrix shows which subordinate unit has priority of support (or control) of each asset.

All participants can clearly discuss where they fit into the plan, to include human-intelligence collection teams, who can discuss sources they have, when they plan to meet them and which battalion benefits from their source as they answer PIRs for the brigade. In addition, it shows gaps in coverage and allows the collection manager to highlight areas of friction.

With this matrix in hand, participants in the rehearsal can recommend ways to close the gap, request more assets or mitigate risk when assets are not available to answer PIRs. If members of a host nation participate as part of a combined operation, this graphic can also overlay their collection priorities as they relate to the operation. In short, this combined synch matrix serves as a very powerful briefing tool as the BCT collection manager synchronizes the R&S plan's complexities.

Each critical event of the IC rehearsal concludes with a review of triggers, asset handover criteria and how information will be disseminated throughout the brigade, enhancing situation-

al awareness for each subordinate unit. This is often the most neglected part of the rehearsal, but is a vital element.

Before subordinate units can take control of an asset, they must demonstrate the ability to establish the right dissemination feeds, acquire video (if applicable) and communicate over the right nets. For this reason, the collection manager must review what conditions must be met (handover criteria) and discuss how assets will push information through the primary/alternate/contingency/emergency plan. Finally, the collection manager must discuss how he will disseminate time-sensitive or flash traffic, as well as how he will share the current threat read when assets confirm or deny the brigade's situational template/event template.

Figure 6 displays a sample dissemination plan that addresses what systems must be operational to receive assets, what nets are used to push data, how feeds will be pushed for full-motion video and where final analyzed post-mission products will be archived for follow-on analysis. At the rehearsal, the collection manager should compile all key Force XXI Battle Command Brigade and Below addresses from battalions to send hourly free-text intel messages coupled with periodic broadcast calls on the brigade operations and intelligence frequency-modulation net.

## Summary

In summary, the brigade's IWfF must execute the IC rehearsal before the brigade CAR to synchronize the brigade R&S plan and help units close on intelligence gaps. The IC rehearsal is critical because it helps the brigade work through the complexities of the collection plan.

When the collection manager owns the process, develops a simple and logical agenda, compiles the right tools and gathers the

ASSET	HANDOVER CRITERIA	PRIMARY NET	ALTERNATE NET	CONTINGENCY NET	EMERGENCY NET	VIDEO FEED	END OF MISSION DEBRIEF
MASINT	BCT CGS	JABBER WARRIOR_DIV_O&I	HARRIS PRC-117G	PRC-148	PRC-152		WARRIOR PORTAL
SIGINT	JWICS NSAnet	JABBER WARRIOR_DIV_O&I	HARRIS PRC-117G	PRC-148	PRC-152		WARRIOR PORTAL
FMV (PREDATOR)	JTAC ROVER	JABBER WARRIOR_UAS	HARRIS PRC-117G	PRC-148	PRC-152	FREQ 1 _____ TAIL 1 _____ FREQ 2 _____ TAIL 2 _____	WARRIOR PORTAL
FMV (GREY EAGLE)	JTAC ROVER	JABBER WARRIOR_UAS	HARRIS PRC-117G	PRC-148	PRC-152	FREQ 1 _____ TAIL 1 _____ FREQ 2 _____ TAIL 2 _____	WARRIOR PORTAL
PROPHET	T-LITE JWICS NSAnet	JABBER BRONCO O&I	BRIGADE O&I NET 603	SAT PHONE	SVOIP		Bronco Shareportal_S2_EOM_S2_GINT
LLVI	FM RADIO O&I NET 603	BDE O&I NET 603	FBCB2	TACSAT	SVOIP		Bronco Shareportal_S2_EOM_S2_GINT
HCT	FM RADIO O&I NET 603	BDE O&I NET 603	FBCB2	SAT PHONE	SVOIP		Bronco Shareportal_S2_EOM_HUMINT
SHADOW UAS	JABBER BRONCO_UAS	JABBER BRONCO_UAS	HARRIS PRC-117G	PRC-148	PRC-152	FREQ 1 (5771) TAIL 1 (2232) FREQ 2 (5530) TAIL 2 (2234)	Bronco Shareportal_S2_EOM_UAS
TASK FORCE SCOUTS/ MANEUVER PLATOON	FM NET JABBER FBCB2	BDE O&I NET	BDE O&I NET 603	JABBER BRONCO_OSI	TAC SAT		Bronco Shareportal_S2_EOM_DEBRIEF

Figure 6. R&S dissemination plan.

right participants together, he sets the brigade up for success. Using the model in this article, the brigade IWfF will successfully execute an effective IC rehearsal that contributes to shared knowledge for all units in the brigade, ultimately driving maneuver operations towards mission accomplishment.



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surveillance troop commander in support of both Operation Iraqi Freedom and Operation Enduring Freedom. His military education includes the Military Intelligence Officer Basic Course, Infantry Captain's Career Course and Signals Intelligence Electronic Warfare Officer Course. He is a graduate of the Army's Airborne and Air Assault schools. He received a bachelor's of arts in English literature from Temple University, Philadelphia, PA, and has been selected to attend intermediate-level education at the College of Naval Command and Staff in Newport, RI.

## ACRONYM QUICK-SCAN

**ADAM/BAE** – air-defense airspace management/brigade aviation element  
**BCT** – brigade combat team  
**BISE** – brigade intelligence-support element  
**BMP** – Boyevaya Mashina Pekhoty (Russian fighting vehicle)  
**BRDM** – Boyevaya Razvedyvatelnaya Dozornaya Mashina (Russian scout vehicle)  
**C2** – command and control  
**CAR** – combined-arms rehearsal  
**CAS** – close air support  
**CBRN** – chemical, biological, radioactive and nuclear  
**CGS** – common ground station  
**COLT** – combat observation and lasing team  
**DP** – decision point  
**DSM** – decision-support matrix  
**EEI** – essential element of information  
**EVENTTEMP** – event template  
**FM** – frequency modulation  
**FMV** – full-motion video  
**FSO** – fire-support officer  
**HCT** – human collection team  
**HNIR** – host-nation information requirements

**HPTL** – high-payoff target list  
**IC** – information collection  
**ICM** – information-collection matrix  
**IDF** – indirect fire  
**IVO EA** – in vicinity of engagement area  
**IWfF** – intelligence warfighting function  
**JTAC** – Joint terminal attack controller  
**LP** – listening post  
**LTIOV** – latest time intelligence of value  
**MASINT** – measures and signals intelligence  
**MICO** – military-intelligence company  
**NAI** – named area of interest  
**NSAnet** – National Security Agency Network  
**NTC** – National Training Center  
**OPORD** – operations order  
**PIR** – priority information requirement  
**R&S** – reconnaissance and surveillance  
**SIGINT** – signals intelligence  
**SIR** – specific information requirement  
**SITTEMP** – situational template  
**T-LITE** – Trojan Lite  
**UAS** – unmanned aerial system

# Intelligence Support to Combined-Arms Maneuver

by MAJ Michael J. Childs

On short notice your brigade combat team is deployed for an initial-entry operation to protect the government and populace of Atropia from the aggressor nation to the north, Donovia. Your enemy is capable, determined, trained and well-equipped. Your company is at the spearhead of the Atropian defense. Your orders are to partner with host-nation forces and engage in close combat to stop the invading Donovanian army.

The fight will be unlike any you have faced before. You are expected to execute a wide range of missions, from conducting combined-arms maneuver to establishing wide-area security. To make matters more complex, your BCT will execute these tasks simultaneously, engaging an organized force of T-80s and BMP-2Ms one moment and an insurgency sympathetic to the Donovanian cause the next.

You have the latest technologies like Force XXI Battle Command Brigade and Below (Blue Force Tracker or Enhanced Position-Location Reporting System-based systems), the world's most lethal armored fighting vehicles and a company-level intelligence-support team equipped with the latest suite of digital systems capable of accessing classified

networks via the Secure Internet Protocol Routed Network. You can connect anywhere on the battlefield to pass and receive critical information in real time. As a leader in this organization, you are to harness our nation's incredible capability to decisively engage the enemy and win.

This may sound like a script for the next Hollywood blockbuster action film, but, in fact, this scenario reflects reality for Soldiers who deploy to the National Training Center. The NTC prepares our warriors for future conflicts and trains our leaders to defeat any type of enemy, from aggressive nations with organized military capabilities to decentralized extremist threats like al-Qaeda or Hezbollah.

## Lessons-learned

Today many of our Soldiers are experienced veterans of Iraq and Afghanistan. Our company formations are organized with the latest equipment, training and manpower based on lessons-learned over the last 10 years of combat. Our Army has shown a remarkable ability to adapt to our enemies in a counterinsurgency environment.

We learned the value of pushing reconnaissance and surveillance assets to the lowest levels. We resourced our companies with intelligence-support teams, sharing information through our SIPRNet, accessible down to the company level. We trained our leaders to operate in an uncertain and complex environment and made remarkable progress sharing intelligence from the bottom up, especially as our brigades accomplished WAS tasks.

However, this newfound experience came with a cost. Recent observations from the NTC revealed that our brigade intelligence warfighting function does not effectively collect, analyze and disseminate intelligence when we are engaged in CAM operations. Moving forward, the brigade IWfF must be prepared to live in both the digital and analog worlds.

U.S. Army Training and Doctrine Command Pamphlet 525-3-1, *The United States Army Operating Concept 2016-2028*, states that our Army must be capable of accomplishing both CAM and WAS missions simultaneously. However, the way we organize for combat and pass relevant information differs based on our military objectives and the specific type of enemy we face. For example, when fac-



<u>DIVISION</u>	<u>BRIGADE</u>	<u>BATTALION</u>	<u>COMPANY</u>
<u>LOWER TI</u>	<u>LOWER TI</u>	<u>LOWER TI</u>	<u>LOWER TI</u>
<ul style="list-style-type: none"> <li>• Combat radio (frequency modulation)</li> <li>• FBCB2 (BFT-EPLRS)</li> <li>• Remotely operated video enhanced receiver</li> <li>• Tactical satellite</li> <li>• High frequency</li> </ul>	<ul style="list-style-type: none"> <li>• Combat radio (FM)</li> <li>• FBCB2 (BFT-EPLRS)</li> <li>• One Station Remote Video Terminal</li> <li>• TACSAT</li> <li>• HF</li> </ul>	<ul style="list-style-type: none"> <li>• Combat radio (FM)</li> <li>• FBCB2 (BFT-EPLRS)</li> <li>• OSRVT</li> <li>• TACSAT</li> <li>• HF</li> </ul>	<ul style="list-style-type: none"> <li>• Combat radio (FM)</li> <li>• FBCB2 (BFT-EPLRS)</li> <li>• OSRVT</li> </ul>
<u>UPPER TI</u>	<u>UPPER TI</u>	<u>UPPER TI</u>	<u>UPPER TI</u>
<ul style="list-style-type: none"> <li>• CPOF</li> <li>• Ventrillo</li> <li>• Jabber</li> <li>• Secure Voice Over Internet Protocol</li> <li>• Portal</li> <li>• Exchange</li> <li>• SIPR/NIPR - Joint Network Node</li> <li>• Joint Worldwide Intelligence Communication System/ National Security Agency Network - Trojan</li> <li>• Air and Missile Defense Work Station</li> <li>• Intelligence Analysis System</li> <li>• Battle-Command Sustainment Support System</li> </ul>	<ul style="list-style-type: none"> <li>• CPOF</li> <li>• Ventrillo</li> <li>• Jabber</li> <li>• SVOIP</li> <li>• Portal</li> <li>• Exchange</li> <li>• SiPR/NiPR - JNN</li> <li>• JWCS/ NSAnet - TROJAN</li> <li>• AMDWS</li> <li>• IAS</li> <li>• BCS3</li> </ul> <p>WHAT SYSTEM IS OUR <u>LOWEST COMMON DENOMINATOR</u> WHILE IN CONTACT?</p> <p>HOW DO WE FIGHT WHEN DIGITAL AND ANALOG IS BLENDED?</p> <p>WHAT MINIMUM SYSTEMS AND OVERLAYS DO WE NEED?</p>	<ul style="list-style-type: none"> <li>• CPOF</li> <li>• Ventrillo</li> <li>• Jabber</li> <li>• SVOIP</li> <li>• Portal</li> <li>• Exchange</li> <li>• SIPR/NIPR - Command-post Node</li> <li>• JWCS/ NSAnet - Trojan</li> <li>• AMDWS</li> <li>• IAS</li> <li>• BCS3</li> </ul>	<ul style="list-style-type: none"> <li>• Jabber</li> <li>• SVOIP</li> <li>• Portal</li> <li>• Exchange</li> <li>• SIPR/NIPR - SIPR-to-NIPR Access Point</li> </ul>

- DECISION-MAKING TOOLS/GRAPHICS**
- OPS OVERLAY
  - OPS SYNCH MATRIX
  - EXCHECK
  - FIRES OVERLAY
  - NAI OVERLAY
  - SITTEMP / EVENTTEMP
  - BDA/ BLOOD CHARTS
  - COLLECTION MATRIX

Figure 1. Digital-to-analog mission command at different echelons.

ing an organized conventional enemy force, we may employ collection assets to identify key weapons systems and pass intelligence through our frequency modulation or FBCB2 nets while formations are on the move. However, when facing an insurgent force, we may employ collection assets to identify the whereabouts of key enemy personalities and pass intelligence through our established classified networks right from our CoIST because we are stationary and focused on “consolidating our gains to ensure freedom of movement and action.”<sup>1</sup>

## Same responsibilities, CAM or WAS

In spite of how we pass information, we are charged with the same responsibilities when conducting both CAM and WAS operations. First, all five functions of the intelligence process – plan, prepare, collect, process and produce intelligence – must be met. Second, we must constantly analyze, disseminate and assess information to help commanders at echelon maintain initiative and exploit success.<sup>2</sup>

Our intelligence process does not change when we transition between CAM and WAS. Yet we must be cognizant of how formations receive and process relevant

information when engaged in CAM operations.

Truthfully speaking, our intelligence community is not proficient in passing information over both analog and digital systems of record. Therefore, it is imperative that intelligence Soldiers and leaders from the company to the brigade become comfortable using mission-command systems that reside on both the upper and lower tactical Internet. This means that intelligence Soldiers must be able to operate a wide range of Army systems from the FM radio and FBCB2 to the upper TI systems like command post of the future, Distributed Common Ground System-Army, Tactical Ground Reporting System and tactical chat programs like Jabber or Microsoft Windows Internet Relay Chat.

We must realize that when formations are on the move or in contact, the primary means for receiving and disseminating intelligence will be on the lower TI over systems like FBCB2 and FM radio. In addition, intelligence support through the orders process must be applicable to the CAM fight, and products must translate to both our analog and digital systems. In reality, during CAM, intelligence Soldiers must be prepared to communicate and support maneuver commanders in two worlds.

As we plan for operations, the IWfF plays a heavy role in mission analysis. During the military decision-making process, the brigade staff must make many assumptions for the planning process to continue.

## Intelligence products

When conducting CAM operations, these assumptions often are focused around enemy capabilities, vulnerabilities, composition, disposition and strength. From this, our brigade staff develops a prioritized high-payoff target list and analyzes in both time and space how the brigade should collect on the enemy and ultimately defeat or destroy his critical assets. Therefore, by the first warning order to the subordinate battalions, the brigade collection manager (or chief of reconnaissance) must employ collection assets to answer these assumptions about the enemy and continue to drive the planning process.

WARNO 1 should be heavy on R&S tasks. Subsequently, Soldiers must examine the threat and develop a series of products to drive the planning process. Included are the intelligence estimate, threat order-of-battle charts, threat templates derived from enemy doctrine, terrain and weather analysis, named-area-of-interest

overlay, threat situational template, threat event template and collection plan.

Our analysts are very comfortable developing intelligence products in DCGS-A and PowerPoint. However, this presents two significant issues. The first issue is that DCGS-A is not designed as an expeditionary system, meaning that it requires a stationary and stable network to effectively pull information from databases, analyze this data and distribute overlays over the Publish and Subscribe Server via our brigade's Army Battle Command System.

The second issue is that PowerPoint (even compressed files) are too large to send over our lower TI systems and require subordinate units to access Web portals, an extremely difficult task while on the move or in contact with the enemy.

Intelligence products are packaged into an operations order and may be posted to a Web portal accessible in three clicks or less. When units are stationary under the optimal mission-command architecture, this works great. However, when formations are postured in temporary tactical assembly areas, ready to maneuver at a moment's notice, these PowerPoint products are not practical, nor are they easily accessible, as we strive rapidly to disseminate intelligence across the brigade to the lowest levels possible.

In a CAM fight, this can be very challenging, as companies and, in some cases, battalions do not have access to Web portals or classified networks. These systems usually come on line when maneuver units consolidate their gains, establish stationary mission-command nodes and transition to WAS.

As the brigade moves from the planning process to operations, our IWfF must prepare commanders with the critical intelligence they need to understand both the terrain and threat. To accomplish this during CAM, we must maximize systems that are universal at echelon like FBCB2 and FM radio.

To accompany these systems, brigades need standardized reporting formats and defined nets to build in efficiencies, ensure brevity and communicate quickly on the battlefield. When we examine our communications systems from the company to the brigade level, FBCB2 and FM radio emerge as our universal systems. Both are ideal for communicating in a CAM fight.

It only seems logical for our IWfF to communicate over these two critical systems of record as well. As such, our intelligence products from company to brigade should be passed verbally over FM and graphically over FBCB2. Battalions and companies that establish their upper TI systems can also use tactical chat programs to pass written information as well as files without tying up significant bandwidth.

In both the planning and preparation phases of combat operations, brigades benefit from developing their products and especially their critical decision-making overlays on FBCB2. For the IWfF, it is crucial to develop a NAI overlay and a situational template/event template in FBCB2 using the shape-file feature inside the system. This can be accomplished in the very early stages of planning.

When these overlays are sent to a prebuilt address book (ideally with company com-

manders, battalion commanders, battle captains and key staff), they become dynamic decision-making tools, ensuring the brigade fights from a common set of graphics. In addition, items like the HPTL, weather effects and current intelligence estimate can be drafted as a free-text message and sent to the same distribution list.

If the commander chooses, he can insist that subordinate units acknowledge receipt as a means to guarantee widest dissemination. In each shape file or enemy icon, more information can be added such as a grid describing the graphic – or in the case of a digital SITTEMP, the analyst building the overlay can write the task and purpose of the enemy or even describe the enemy course of action as it pertains to that particular threat icon.

When updates are made and published to the force due to current battle tracking and reporting from the bottom up, units across the board have the latest and most accurate snapshot. When these digital overlays are disseminated with the operations order, subordinate units are provided a common set of graphics – and they are armed with situational awareness about the enemy, whether stationary or on the move.

Developing digital overlays in FBCB2 also contributes to bottom-up refinement from the company level up to the brigade, which is crucial as the brigade transitions to the execution phase of its operation. When companies make enemy contact, members of the CoIST (who are also drivers, gunners and fighters) are able to confirm or deny the threat read and provide bottom-up assessments through their enemy contact reports or follow-up debriefs and threat assessments.

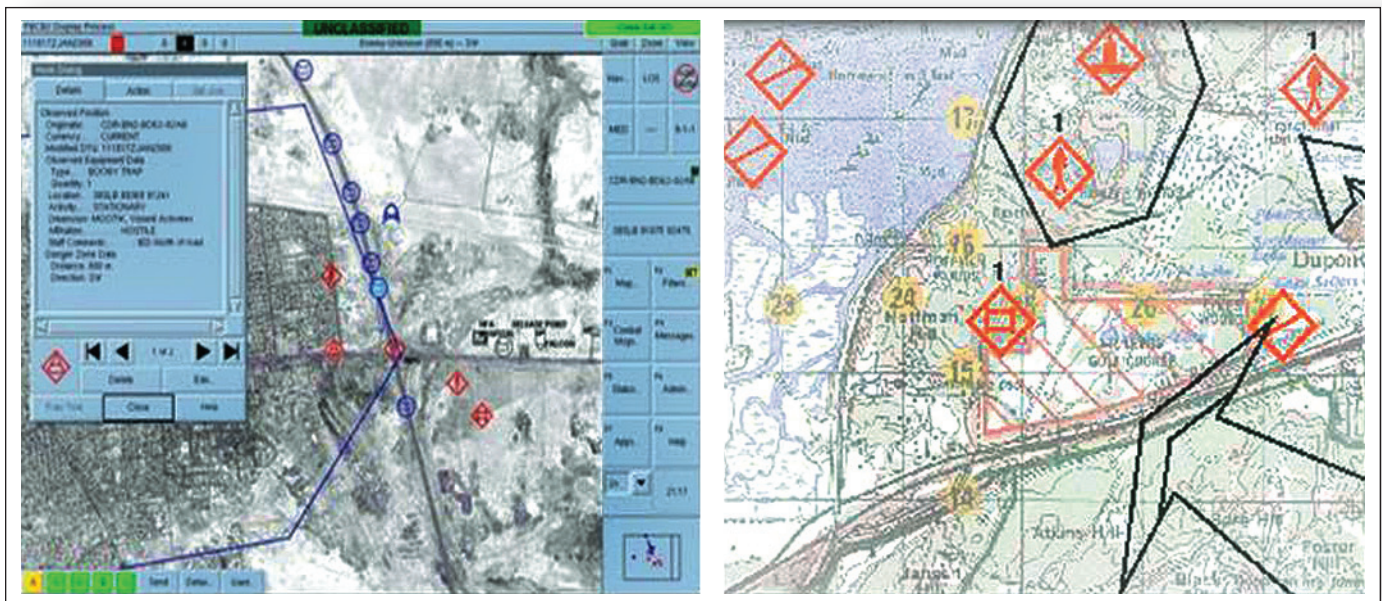


Figure 2. FBCB2 situational template.

Display Free Text · ·

**UNCLASSIFIED**

**BRONCO BRIGADE INTEL ASSESSMENT:**

Our brigade reconnaissance efforts have confirmed the presence of an obstacle at grid NV60331075. It is comprised of c-wire and mines. We have identified a platoon-sized enemy element overwatching the obstacle. We assess this as a fixing force made up of 3x BMP-2M and 82mm mortars.

Current collection efforts are focused on IVO NAI 3139. We believe this is where the enemy reserve is staged. We have updated the BFT SITTEMP to reflect the disposition of the reserve force. Each enemy icon has an attached task and purpose.

OR

Reply to    Message addressing    Save    Save as    Delete

Send    Forward    Print    Close    Help

**THREAT TASK AND PURPOSE:**

**INTEL RECON:**  
 P: Screen elements of approach  
 P: Identify and report ICAF patterns comprising dispositions, & strength.

**MAIN CMD:**  
 P: Plan, finance, and resource assets in Grande Paso  
 P: Provide tactical guidance to enemy equal's defending the pass

**SMART MNTS:**  
 P: Gain and maintain contact, establishing kill zones and/or ICAF  
 P: Destroy ICAF patterns, maintaining pressure to Chinese Chai

**FIRES:**  
 P: Overwatch obstacles, providing ICAF support to reach K2  
 P: Destroy ICAF formations and Styler fighting vehicles

**INSTANTMENT:**  
 P: Conductively and cache operations through wire and drug smuggling  
 P: Fund attacks, ensure supply of munitions, maintaining pressure on ICAF and ICAF

**PROTECTION:**  
 P: Provide overwatch of Air Mobility Operations and maintain K2 with obstacles  
 P: Prevent ICAF from providing effective close combat aviation and force ground forces to become fixed into established kill zones

**ENEMY SCHEME OF MANEUVER:** The threat will conduct an area defense in the Grande Paso in order to defeat ICAF maneuvering south to Chinese Chai. Enemy assets will gain and maintain contact to the and disrupt ICAF pattern. Series of kill zones will be established to engage the ICAF pattern from over the obstacle, along these formations, and after their tanks. K21 (SOT) initially gains and maintains contact, drawing ICAF to K2.2 and 2. K22 (SOT) and K23 (SOT) handle enemy with HMG and RPGs while the 82 mm mortar system of K22 destroys Styler vehicles (MPT) in the kill zones. K24 (SOT) will defend water/mortars, but prepared to transition to an attack that negates the initiative. Reserve prepared to exploit success or reinforce within 30 minutes.

**ALT RELAY SYSTEMS: ICA**

- 1) 82mm Mortars: RNG 3.04 km
- 2) DSHK HMG: RNG 3.5 km max effective
- 3) RPG-7: Range 300m
- 4) Motorola HT100 Radios: 136-174MHz
- 5) PRED: KR radius 35 m



- Build threat SITTEMP in FCB2 (EPLRS or BFT)
- Publish overlay as shape file
- Place operator near S-2
- Build key-leader address book
- Send updated "free text" as tactical situation unfolds
- Adjust overlay as threat read changes and BDA is confirmed

- Build threat SITTEMP digitally or analog
  - Screen capture "snipping" tool
  - Disseminate in daily graphical intelligence summary
  - Print SITTEMP or recreate drop
- CONSIDERATIONS**
- Printers to lower levels, ColST
  - Standard drops, acetate, markers
- Does our ColST standard operating procedure address this critical equipment?

- Establish O&I net
  - Dedicate a linguist
  - Push assessments periodically or as tactical situation unfolds
- "Attention on O&I this is Bronco 2 with your hourly threat assessment. We have confirmed the presence of an obstacle at grid NV60331075. It is comprised of c-wire and mines. Believe this is a fixing force overwatching the obstacle with 82mm mortars. Translated transmission to follow....over"

Figure 3. Digital-to-analog checklist for intel sharing — a "way."

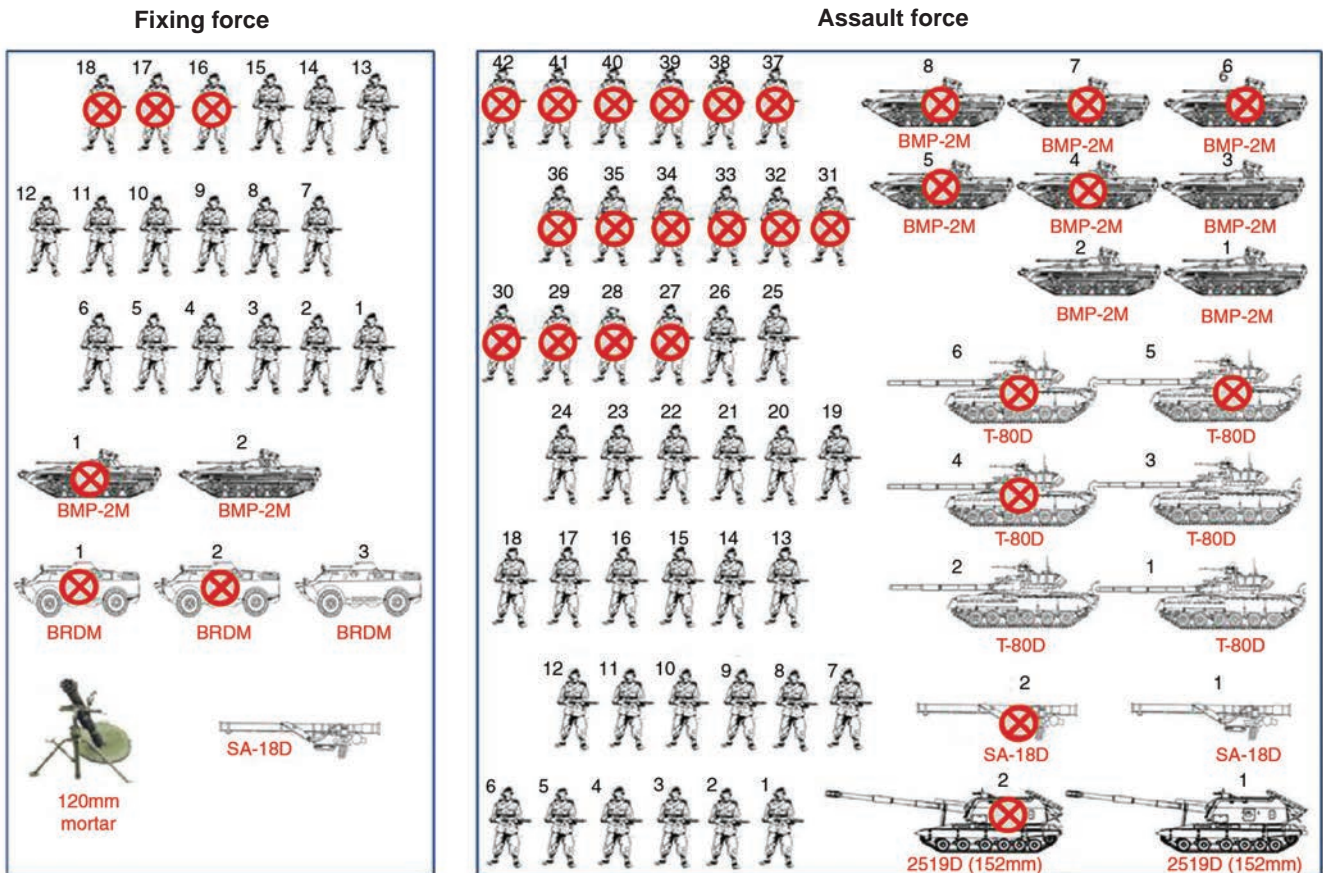


Figure 4. Enemy BDA (blood) chart.



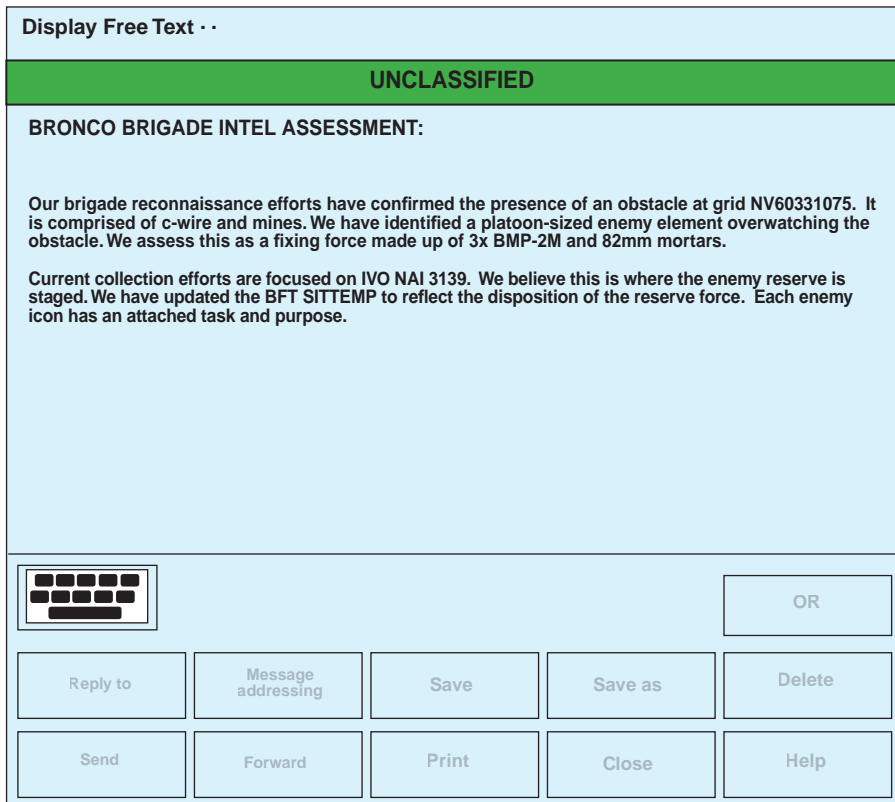


Figure 5. FBCB2 free-text intel assessment.

Coupled with this digital information-sharing, the brigade must operate an operations and intelligence FM net to pass voice data in real time. In 15 rotations from January 2011 to June 2012, only three brigades established an O&I net, and of those three brigades, only one used it. That brigade reaped great benefits, successfully providing the entire formation with a common enemy sight picture. The IWfF soldiers from the CoIST to the brigade level were able to regularly listen in to a FM broadcast call and share intelligence about the threat, further contributing to crosstalk and bottom-up refinement.

As mentioned before, the IWfF must be prepared to live in two worlds. When conducting simultaneous CAM and WAS missions, the brigade headquarters becomes the echelon that must translate both analog and digital information to subordinate units. With this construct in mind, the brigade S-2 section must establish the right systems to make the brigade successful.

Recent observations during the Decisive-Action Training Environment exercise in March 2012 revealed the brigade S-2 must have access to a FBCB2 in the brigade's main command post to stay a step ahead of the threat and pass indicators to maneuver units in contact. In addition, the brigade S-2 section must have a dedicated FM radio in both the brigade intelligence-

support element and the S-2 current operations section to make rapid assessments and disseminate them to the force.

Putting this infrastructure into practice results in subordinate units empowered to receive critical information and push refinements to the brigade, confirming or denying enemy activity in their operating environment. Because the BCT supports subordinate units who are using upper and lower TI systems at any given time, the onus is on the brigade to echo updates from FBCB2 into tactical chat to level the bubbles and achieve the maximum amount of information-sharing possible, especially if one battalion is conducting CAM missions while another is simultaneously establishing WAS.

Not only does the brigade have to be the echelon that translates analog and digital data, it also must be the point of consolidation for enemy battle-damage assessments during the CAM fight. The brigade intelligence section has the manpower and systems necessary to assess the effects subordinate units are having on the enemy. Therefore, prior to execution, the brigade S-2 must develop and disseminate BDA or "blood" charts.

The key to developing a useful chart begins with the brigade wargame during MDMP. The brigade S-2 must take the order-of-battle chart and task-organize the enemy the way they will fight on the bat-

tlefield. In addition, the enemy's strength must be taken into account. When this is complete, the chart can be built. Number systems to build in efficiencies so that intelligence Soldiers can make rapid assessments to the commander on how many enemy fighters and key threat assets remain.

During CAM execution, the brigade must be able to confirm or deny its threat SITTEMP and EVENTTEMP. Battalions are given R&S tasks to accomplish, and sometimes they are given organic assets like the Shadow unmanned aerial system or low-level voice-intercept teams. In addition, the brigade often controls division- and corps-level assets, identifying the threat across the entire depth of the brigade's operational environment.

When synchronizing the collection effort, the brigade must help paint the threat picture. This is when the O&I net and the use of FBCB2 overlays become most crucial to the fight. On the O&I net, the brigade S-2 benefits from giving periodic or scheduled intelligence estimates through a broadcast call to all subordinate units who tune in.

Immediate or "flash" traffic should also pass as enemy indicators are identified. When these indicators are passed over voice, all stakeholders listening immediately have situational awareness. However, when coupled with a written FBCB2 free-text message, the brigade S-2 ensures widest dissemination. This message also provides a written assessment for reference later by CoIST or battalion S-2 sections when sending bottom-up refined intelligence.

As upper TI systems come on-line, the same message should post concurrently to a common O&I tactical chat room, ultimately serving as a current intelligence running estimate accessible to every battalion main command post and any adjacent brigade command post monitoring tactical chat nets.

## Follow-up

After the dust settles and battalions begin to consolidate their gains, the brigade can take advantage of upper TI systems and publish a graphic intelligence summary assessing the post-BDAs and effects on the threat. Incorporated in this assessment should be an updated SITTEMP.

This is also the ideal opportunity for the brigade S-2 to update the digital overlays on FBCB2 and publish an updated intelligence summary, which can occur over FBCB2 free-text or FM radio as a broadcast call to all stations on the net.

This completes the intelligence cycle and opens the dialogue with subordinate units, who can provide bottom-up refined information for the next meeting engagement on the battlefield.

In conclusion, while our intelligence process does not change between CAM and establishment of WAS, the way we share information does. When our intelligence Soldiers are provided the equipment to share information on both the upper and lower TI, our maneuver units in contact are more informed. Furthermore, the IWfF, from company to brigade, understands its analysis and reporting requirements across all communication systems available.

Brigade S-2s must develop intelligence products that are accessible in our tactical fighting vehicles, and we must be will-

ing to share information over our FM nets. With these considerations in mind, the brigade IWfF will make a considerable impact to help drive maneuver operations during the planning, preparation and execution phases of the CAM fight. Ultimately, when intelligence Soldiers operate in both the digital and analog worlds, commanders at echelon are empowered with the critical intelligence they need to engage and defeat our enemies on any battlefield.



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*education includes the Military Intelligence Officer Basic Course, Infantry Captain's Career Course and Signals Intelligence Electronic Warfare Officer Course. He is a graduate of the Army's Airborne and Air Assault schools. He received a bachelor's degree in English literature from Temple University, Philadelphia, PA, and has been selected to attend intermediate-level education at the College of Naval Command and Staff in Newport, RI.*

## Notes

<sup>1</sup> Chapter 3, "How the Army Fights," TRADOC Pam 525-3-1, **The United States Army Operating Concept 2016-2028**, August 2010.

<sup>2</sup> Chapter 1, "Intelligence Process," Field Manual 2-0, **Intelligence**, March 2010.

## ACRONYM QUICK-SCAN

**ABCS** – Army Battle Command System

**AMDWS** – Air and Missile Defense Work Station

**BCS3** – Battle-Command Sustainment Support System

**BCT** – brigade combat team

**BDA** – battle-damage assessment

**BFT** – Blue Force Tracker

**BMP** – Boyevaya Mashina Pekhoty (Russian fighting vehicle)

**CAM** – combined-arms maneuver

**CoIST** – company intelligence-support team

**CPN** – command-post Node

**CPOF** – command post of the future

**DCGS-A** – Distributed Common Ground System-Army

**EPLRS** – Enhanced Position-Location Reporting System

**EVENTTEMP** – event template

**FBCB2** – Force XXI Battle Command Brigade and Below

**FM** – frequency modulation

**GRINTSUM** – graphic intelligence summary

**HF** – high frequency

**HPTL** – high-payoff target list

**IAS** – Intelligence Analysis System

**IVO** – in vicinity of

**IWfF** – intelligence warfighting function

**JNN** – Joint Network Node

**JWICS** – Joint Worldwide Intelligence Communication System

**MDMP** – military decision-making process

**NAI** – named area of interest

**NIPRNet** – Non-Secure Internet Protocol Routed Network

**NSANet** – National Security Agency Network

**NTC** – National Training Center

**O&I** – operations and intelligence

**OSRVT** – One-System Remote Video Terminal

**PAM** – pamphlet

**R&S** – reconnaissance and surveillance

**ROVER** – Remotely Operated Video-Enhanced Receiver

**SIPRNet** – Secure Internet Protocol Routed Network

**SITTEMP** – situational template

**SNAP** – SIPR to NIPR Access Point

**SVOIP** – Secure Voice Over Internet Protocol

**TACSAT** – tactical satellite

**TI** – tactical Internet

**TRADOC** – U.S. Army Training and Doctrine Command

**WARNO** – warning order

**WAS** – wide-area security

# Simulations: Picking the Right Tool for Training

by CPT Edward R. Stoltenberg

Simulations teach students the implications and outcomes of decisions in a fluid environment. Students learn from each other and from instructor after-action reviews through the interrogation of troop-leading procedures as well as their execution. For example, were movement control and direct-fire control graphics effective in the assault of the objective? Was the support-by-fire element given enough maneuver space to affect the objective during the breach? These in-depth AAR conversations facilitate student visualization and learning in the small-group setting.

Simulations have their weaknesses, as I will discuss following, but offer enough strengths that the Maneuver Captains Career Course sees fidelity in implementing virtual and gaming simulations directly in the classroom to create decision exercises at the tactical level. This article outlines how the MCCC uses simulations.

## Why simulations work

**Simulations exercise the decision framework.** Historically, students used paper maps and acetate to conduct the TLP for a company tactical problem. The student then briefed a small-group leader within a given amount of time, usually 60 minutes, and the SGL critiqued the student on the strengths and weaknesses of his/her operations order. This scenario does not create a strong connection within students' minds on how to orchestrate and employ tactical prowess on the battlefield.

However, placing the student commander in charge of artificial-intelligence units or other students forces him to create and develop the situation. Instructors can observe and annotate the

creation of favorable conditions on the battlefield in real-time. In essence, simulation exercises provide MCCC instructors the ability to evaluate how future company commanders capture, process and act on data and information in real-time.

Also, the SGL can evaluate the student's ability to identify circumstances for actions to maintain momentum, conduct shaping actions that are proactive in influencing the battlefield outcomes and establish what prudent actions the student should execute immediately. This process is outlined for the instructor in the decision-making process diagram in Figure 1.

**Simulations provide an invaluable tool to instructors.** They allow students to visualize complex terrain and tactical situations. The contemporary operating environment resulted in military units focusing on stability operations to ensure continued success in operations Iraqi Freedom and Enduring Freedom. Proficiency in tasks such as the combined-arms breach and a deliberate defense were regulated to a lower training priority. In an attempt to educate the next generation of Army leaders in these unpracticed tasks, MCCC instructors found simulations to be an irreplaceable tool to help students visualize the necessary synchronization and complexities of combined-arms operations.

The Close-Combat Tactical Trainer linked to Fort Rucker's Apache simulators allows students to conduct air mission briefs, TLPs and engagement-area development with actual AH-64 Apache pilots in aviation simulators. Programs such as Steel Beasts by eSim Games allow students to emplace obstacle plans, battle positions and indirect-fire plans within a short period after starting the scenario. The SGL and classmates can then watch

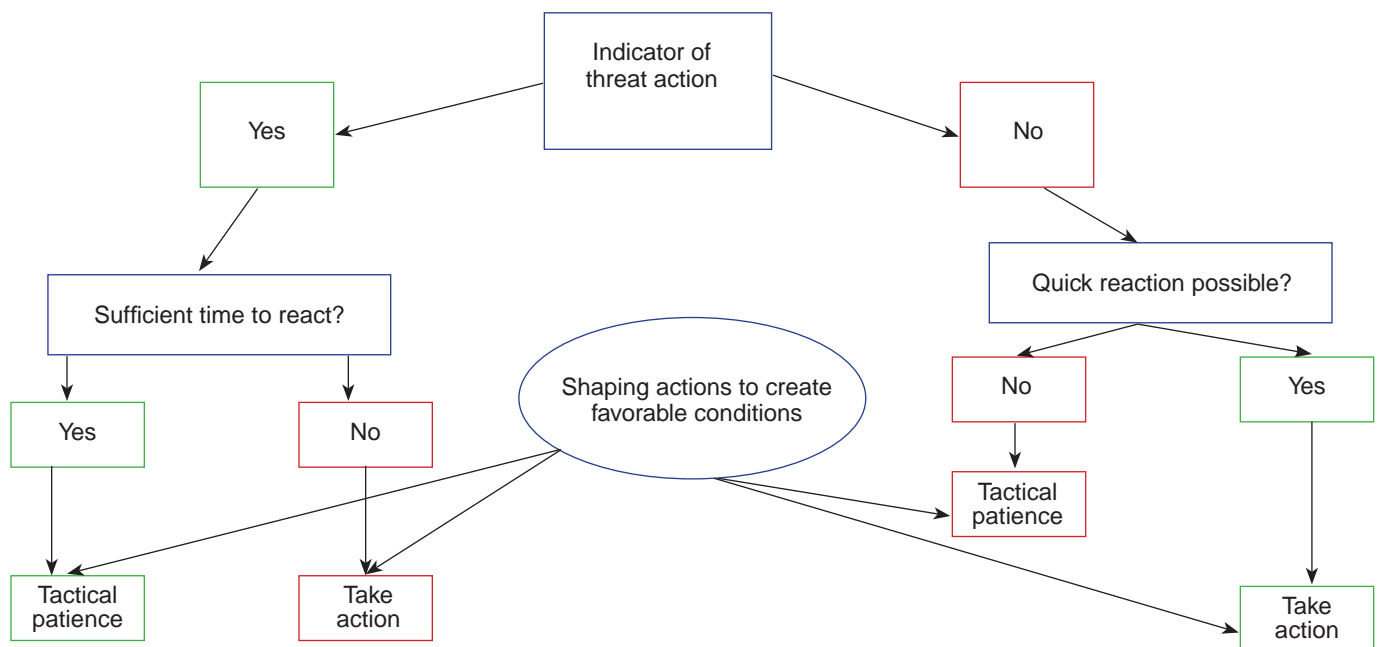


Figure 1. The decision-making process. Taken from Command and General Staff College, "Trident Valley PE, CGSC Term II - 2009-2010," Fort Leavenworth, KS, 2010.

their fellow students' operations unfold and provide invaluable insight and tactical analysis.

## Challenges

**Immersion vs. ease of use.** The largest challenge MCCC faces is inconsistency when it comes to simulations in the classroom. Students will use Virtual Battlespace 2 for their first module, followed by Steel Beasts or CCTT for the second and third, and VBS2 for the fourth. Currently students use Decisive Action for the first battalion module, followed by Joint Conflict and Tactical Simulation for the second. For the stability module, students do a four-hour exercise in UrbanSim.

The result is that students spend an inordinate amount of time learning new systems instead of exercising decision-making or critical thinking. On average, each student is given a 90-minute block of time to quickly familiarize himself with the software prior to execution. Students often receive tutorials to learn controls only to find they spent time on academic assignments that count toward their grade at MCCC.

With the overwhelming majority of students exhibiting the instant technological mindset – i.e., short attention spans created by the iPhone culture – students quickly write off complex simulations with unintuitive interfaces and unresponsive AI.<sup>1</sup> This decision prevents the spread of simulations as a training tool.

**SGL support of the simulation.** Another immeasurable contributor to the student attitude toward any simulation is SGL support of the simulation. All simulations exercises are followed up with a survey that analyzes the ease of use, interface, training value and AI. The simulations and Sim Center staffs noted that instructors who frame the simulation

and enforce standards and discipline have higher student ratings in ease-of-use and training-tool categories across the individual seminars. SGLs must reinforce to students that the simulation will be run in a professional manner similar to an actual field-training exercise or combat operation. Positive comments and ratings on the survey were more likely to occur in individual seminars where the student commander, guided by the SGL, enforced a combat mentality. Examples include precombat inspections, communications check, readiness-condition status, order of march, triggers, brevity on the radio and reporting requirements.

This student mentality directly plays into the significant problem faced by MCCC in introducing simulations. Any organization must select a simulation that fits the training objectives of the organization. When organizations attempt to make simulations go beyond the original scope, the result is often unstable simulations that reduce student learning flow and training value.<sup>2</sup> MCCC requires programs that rely on AI to fill the roles of platoon level and below. This creates significant issues, as most simulations – such as JCATS and Decisive Action – containing AI-driven platoons are in the constructive realm.

In the case of CCTT, unmaneuverable AI units are tethered to human units. This is where VBS2 does not meet all the training objectives of MCCC, as maneuver captains must act as fire-team leaders or squad leaders. Running a company-level exercise requires a minimum of 17 to 18 students over unintuitive command-and-control interfaces. An individual commander or small group of students was not VBS2's intent; it was designed for platoon level and below. Attempting to stretch VBS2 to the company command and higher creates span of control, AI path-finding and immersion difficulties. As a result, students develop a lack of drive to continue training with the software.

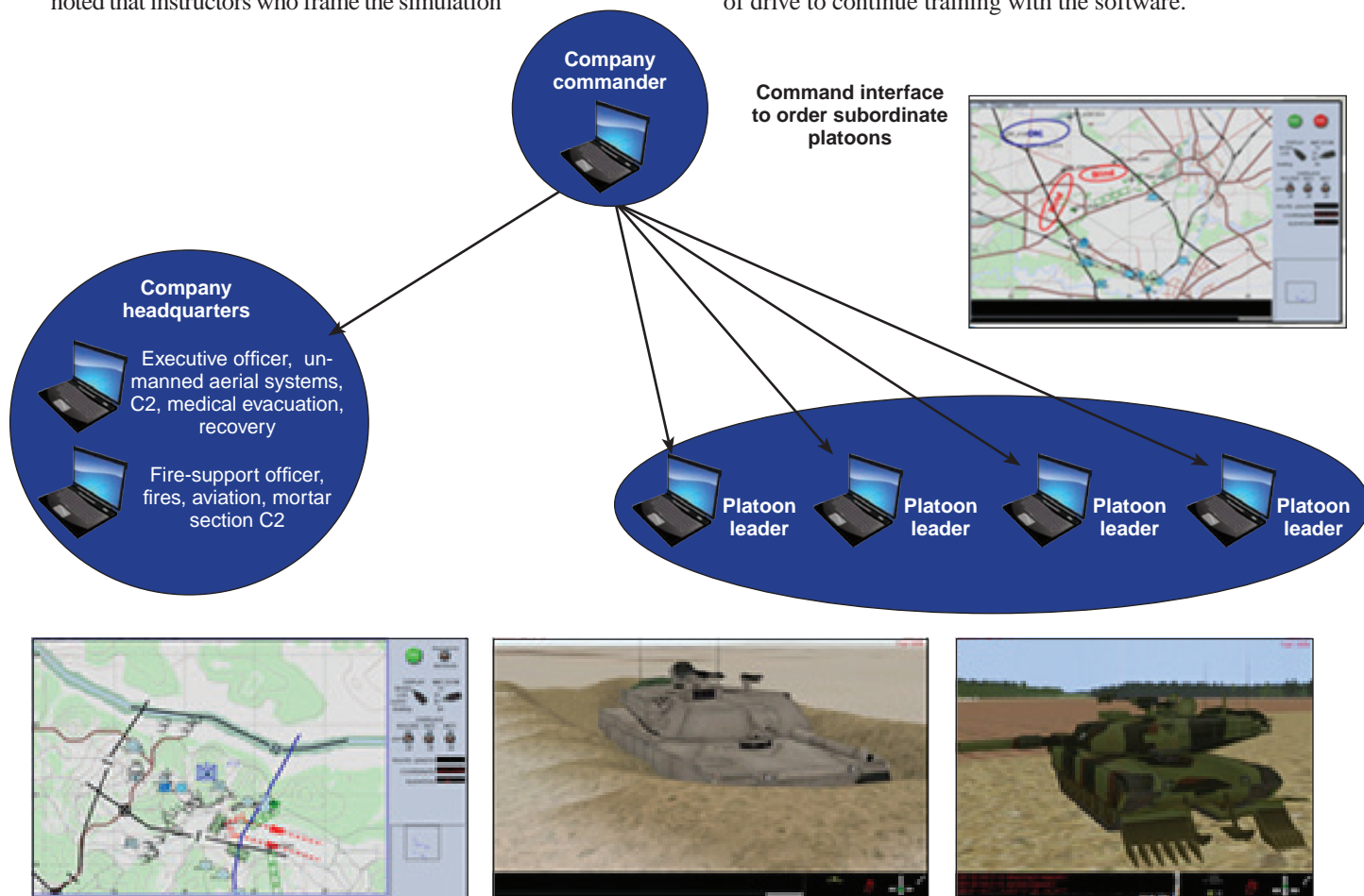


Figure 2. Desired architecture for a company-level tactical-decision exercise.

## MCCC goals, intent

MCCC produces agile and adaptive leaders who are skilled in the art and science of mission command in the conduct of decisive action within current and anticipated operational environments. Students are prepared for the leadership, training and administrative requirements needed for company command. Students also receive training to execute the tactical-planning responsibilities of battalion/brigade level staff officers using the military decision-making process. A graduate of MCCC will:

- Demonstrate ability – the ability to solve complex problems with creative solutions in a timely manner;
- Demonstrate adaptability and flexibility in solving problems, including tactical issues;
- Demonstrate ability to think critically and creatively;
- Demonstrate ability to communicate and lead in a way that is thoroughly understood and inspires confidence in subordinates;
- Demonstrate proficiency in the “science” of tactical planning at company through battalion/task force level and an understanding of brigade level operations;
- Be practiced in the “art” of tactical planning/training management;
- Demonstrate understanding of critical training and leader functions of a company commander.

Graduation from MCCC makes a student academically capable of executing tactical staff positions and tactical company command.

Student negative survey responses to VBS2 grouped strongly around the graphical user interface and AI. Negative responses in AARs across a group of 400 students consistently stayed in the 66-70 percent for these two categories. Taking into account student abilities with simulations and SGL support, these responses indicate the functionality of VBS2 does not support company to battalion-sized engagements where individual Soldiers are controlled by the software AI. Path-finding, react-to-contact and general behavior of a squad controlled by one human in VBS2 results in flow breakdown and significant frustration for the user, regardless of his ability to use the program.<sup>3</sup>

The ideal number of students to run a company-level operation is four. A student can then enter his plan with an unlimited number of repetitions or constraints due to limited space or resources. This can be achieved with commercial-off-the-shelf software not yet certified for use on government computers.

Currently the approval process for units to obtain COTS software to meet their training objectives is cumbersome. Network Enterprise Command is faced with the constant struggle of weighing security and training capabilities through simulations. Future leaders must assist unit training by efficiently streamlining the process without sacrificing security.

## Way ahead

Progress and creativity results when students and leaders challenge the status quo. By allowing students freedom of access to programs like Steel Beasts or VBS2 at MCCC, students can test maneuver-warfare theories and receive unbiased feedback. To create this type of learning environment, an open supportive command climate is necessary. MG Robert B. Brown, former commander of the Maneuver Center of Excellence, stressed this type of atmosphere to encourage creative adaptive thinking.<sup>4</sup> The result is the ability of MCCC to implement a software solution that meets training objectives in all tactical modules.

The MCoE and MCCC seek to leverage simulations in training future agile leaders. All the modules within MCCC’s curriculum will contain a simulation. The goal is to standardize the simulation platform across all modules to reduce the difficulties associated with student immersion and the learning curve. Standardization will significantly increase student flow and allow instructors to facilitate more difficult scenarios based on student ability. The standardized software must meet the institution’s training objectives. Future simulations will include larger simulation exercises that incorporate students from the

Armor Officers Basic Course, Mechanized Leaders Course and other centers of excellence on a limited basis.



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## Notes

<sup>1</sup> Richtel, Matt, “Growing Up Digital, Wired for Distraction,” *New York Times*, Nov. 21, 2010, available at [http://www.nytimes.com/2010/11/21/technology/21brain.html?\\_r=2&pagewanted=all](http://www.nytimes.com/2010/11/21/technology/21brain.html?_r=2&pagewanted=all).

<sup>2</sup> Csikszentmihalyi, Mihaly, *Flow – The Psychology of Optimal Performance*, Harper Perennial, 1990.

<sup>3</sup> Murphy, Curtiss, “Why Games Work – The Science of Learning,” Alion Science and Technology, 2010.

<sup>4</sup> Brown, MG Robert, commanding general’s welcome brief to MCCC, MCoE, Fort Benning, GA, Feb. 12, 2012.

## ACRONYM QUICK-SCAN

**AAR** – after-action review  
**AI** – artificial intelligence  
**C2** – command and control  
**CCTT** – Close-Combat Tactical Trainer  
**CGSC** – Command and General Staff College  
**COTS** – commercial-off-the-shelf  
**JCATS** – Joint Conflict and Tactical Simulation  
**MCCC** – Maneuver Captain Career Course  
**MCoE** – Maneuver Center of Excellence  
**SGL** – small-group leader  
**REDCON** - readiness condition  
**TDE** - tactical decision exercise  
**TLP** – troop-leading procedures  
**VBS2** – Virtual Battlespace 2

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Figure 1. The advanced ground mobility vehicle. (General Dynamics Land Systems illustration)

## How a New Drive Train Can Get the Armed Forces' Tactical Vehicles Off-Road and Avoid Improvised Explosive Devices

by Richard G. DuVall and Bob Hoeltzel

Our adversaries in the current conflict have rediscovered the American and European weakness of being very casualty-adverse. Everywhere forces are located has become a danger zone. The improvised explosive devices and mines have made the logistic side of the battle as dangerous as the urban infantry fight.

In the past, when planners planned an offensive operation, securing enough routes for logistic support had been a paramount part of their process. The large arrows on the map ran up the few existing road networks that could handle the weight and volume of traffic. In conventional warfare, this allows the enemy to refine his defensive strategy since he can read a map as well as we can. In unconventional warfare, these same limitations allow IED/mine users to target these areas and inflict casualties and vehicle losses.

But what if we didn't always have to use the few existing road networks? What if the tactical/logistic vehicle fleet had mobility comparable to the combat vehicle fleet? Adoption of several technologies and their application to existing vehicles could allow planners to draw the big arrows over a far greater area of the map. If IED/mine users don't know where the convoys are routed, since convoys no longer rely on the road network, they will find it very difficult to plant their devices in the right spot. This, of course, doesn't

eliminate chokepoints in terrain, but these can be viewed as danger points and cleared accordingly.

The technologies we recommend are:

- Use in-hub hybrid-capable electric drive as the drive train.
- One of several very high-wheel travel suspensions with an (optional) add-on active capability would be coupled with the drive train.
- Finally, choose a selectable central tire inflation system, coupled with the latest military-tire tread system with run-flat capability.

### IHED

The IHED consists of a diesel engine that drives a generator that provides electric power to wheel motors (mounted inside the wheel hub with a gearbox) that provides motive power to the tires, eliminating the entire mechanical drive train. The e-drive can be augmented (the optional hybrid portion) with a battery pack and battery-power converter, providing power for burst acceleration, periods of silent watch (six to 12 hours), silent movement (up to 20 miles on level terrain), power recovery/storage from regenerative braking, a second source of power and mobile-power-generation capability with an uninterrupted power source.

What does IHED provide vs. conventional mechanical drive? It provides very large quantities of electric power for on-vehicle and export uses. These include communications; navigation; command, control, communications, computers and intelligence / battlefield information; reconnaissance-surveillance-targeting; sensors; unmanned aerial vehicle / unmanned ground vehicle control; electric-powered weapons; electric armor and countermeasures; electric tools; and portable-device battery recharge. It also augments/eliminates trailer-mounted generators.

IHED improves system reliability. The total system-parts count is greatly reduced by 30 percent to 45 percent. (If it isn't on the vehicle, it can't break or fail.) E-drive has very few friction points and some bearings on shafts; all else are magnetically coupled – no friction, no heat, no wear points.

The IHED family of components has 25 years of e-drive maturation in place. Military test vehicles have included systems in Germany, France, South Africa and the United States. U.S. vehicles have accumulated more than 23,000 test miles. Fleets covered more than 60 vehicles that included buses, vans and automobiles. Total mileage driven was more than 10 million kilometers (greater than 6 million miles) with a failure rate at this time of 1.2 million kilometers/90,000 hours for

Vehicle	Test 1	Test 2	Test 3	Test 4	Test 5	Test 6	Test 7	Test 8
RSTV-3	720	--	360	450	380	600	190	450
*RSTV-4	380	700	300	465	830	980	580	605
IFAV	--	--	--	--	960	1,160	1,510	1,210
GMV	480	730	910	810	--	--	--	730

**Table 1. Detection ranges (meters) in Windy Mountain stealth test (acoustic test). \*Squeaky suspension bushings, reported in the Marine Corps Warfighting Lab Report.**

motors/generators and 500,000 kilometers/40,000 operating hours for electronics.

IHED increases mobility because having no half-shafts allows uncomplicated, very large wheel travel. The suspension increases cross-country speed, reduces crew/vehicle fatigue and increases weapons effectiveness and survivability. IHED raises the vehicle's ground clearance by eliminating the mechanical drive train and, in many cases, increases stability and safety. It also provides for computer-controlled all-wheel traction control, anti-lock braking system and stability control.

## RSTV

For example, the U.S. Marine Corps' reconnaissance, surveillance, targeting vehicle has received high marks. The Marine Corps Warfighting Lab Report of Dec. 31, 2003, reported that "[t]he traction and suspension of the RSTV, and its resulting mobility characteristics, are far superior to any other vehicle tested. ... Some operators said that inasmuch as the vehicle could do nearly everything attempted at these sites [on Yuma Proving Ground,

AZ], a more challenging site needed to be used."

The same report compared vehicles: "Mobility testing was performed on the Rock Ledge Course, a three-mile course of extremely rocky roads and a few steep slopes. The RSTV (e-drive) handled the course with ease. The test organizers ... set aside the [humvee] after its first trip out of concern that it would be damaged. ... De-facto mobility testing also occurred at the Windy Mountain site. ... This overland driving was actually more challenging than the Rock Ledge Course, but again the operators praised the performance of the RSTV (e-drive), saying it performed feats of which the interim fast-attack vehicle, [humvee] and ground mobility vehicle were incapable."

The RSTV also shattered the speed record for the Army's Rock Ledge Course at Yuma with a time of 13 minutes, 50 seconds. The previous record was more than 32 minutes.

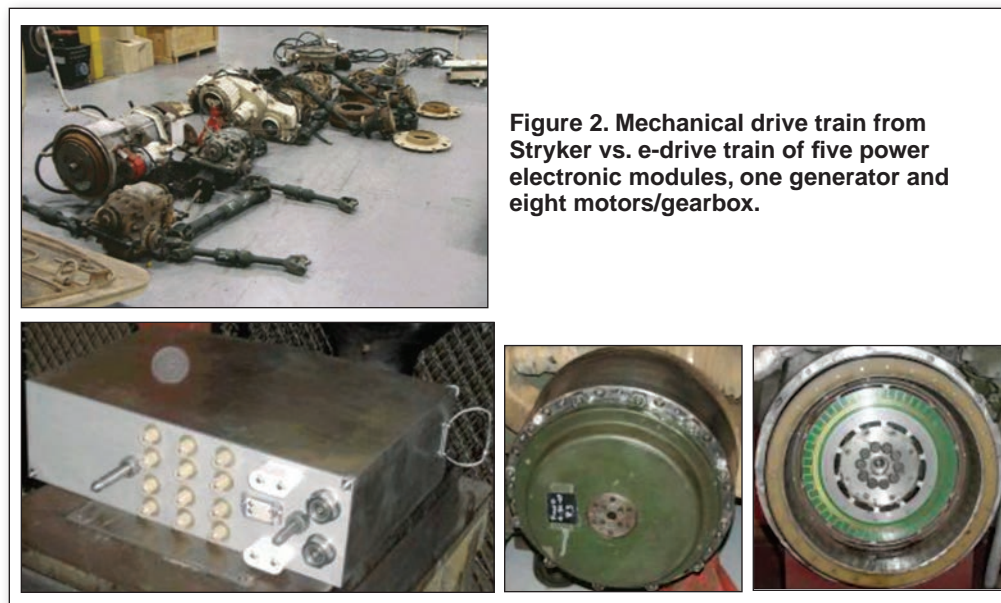
The Marine Corps Warfighting Lab Report found that "[i]n all cases, the shooting score from weapons mounted on the RSTV was superior to those of the other vehicles under test."

## Stealth

The IHED increases crew and system survivability by providing-silent movement capability and long silent-watch periods. It provides greater redundancy (fewer single-point failures). The raised ground clearance mentioned earlier provides greater standoff distance from mine/IED blasts. It allows hull shaping for ballistic protection without loss of ground clearance since there is no drive train. IHED also provides dual-power-source usage (engine plus batteries or capacitors or fly-wheel, etc.).

The Marine Corps Warfighting Lab Report found that "[t]he RSTV outperformed the baseline vehicles in stealth." Other vehicles tested included the IFAV and GMV.

The advanced ground mobility vehicle, another vehicle using the IHED, received similar high marks in stealth. "The driver and company commander reported [that] the silent-running mode (hybrid mode) allowed the AGMV to sneak up on an enemy observation post within a distance of roughly 60 meters," stated the Army Expeditionary Warrior Experiment Spiral F final report (2010).



**Figure 2. Mechanical drive train from Stryker vs. e-drive train of five power electronic modules, one generator and eight motors/gearbox.**

## Weight, fuel savings

IHED improves logistics and reduces the expeditionary footprint. Analyses based on Aberdeen Proving Ground, MD, testing shows that a reduction in fuel consumption of greater than 40 percent is possible. The longer silent-watch periods reduce fuel use as well as increasing survivability and stealth. On an IHED system, all wheel stations and supporting electronics are common parts, reducing system-part count and spares by eliminating the mechanical drive train (for example, greater than 42 percent less line-replaceable units on the e-drive Stryker vs. the present Stryker).

IHED can lower system lifecycle costs 40 percent to 50 percent



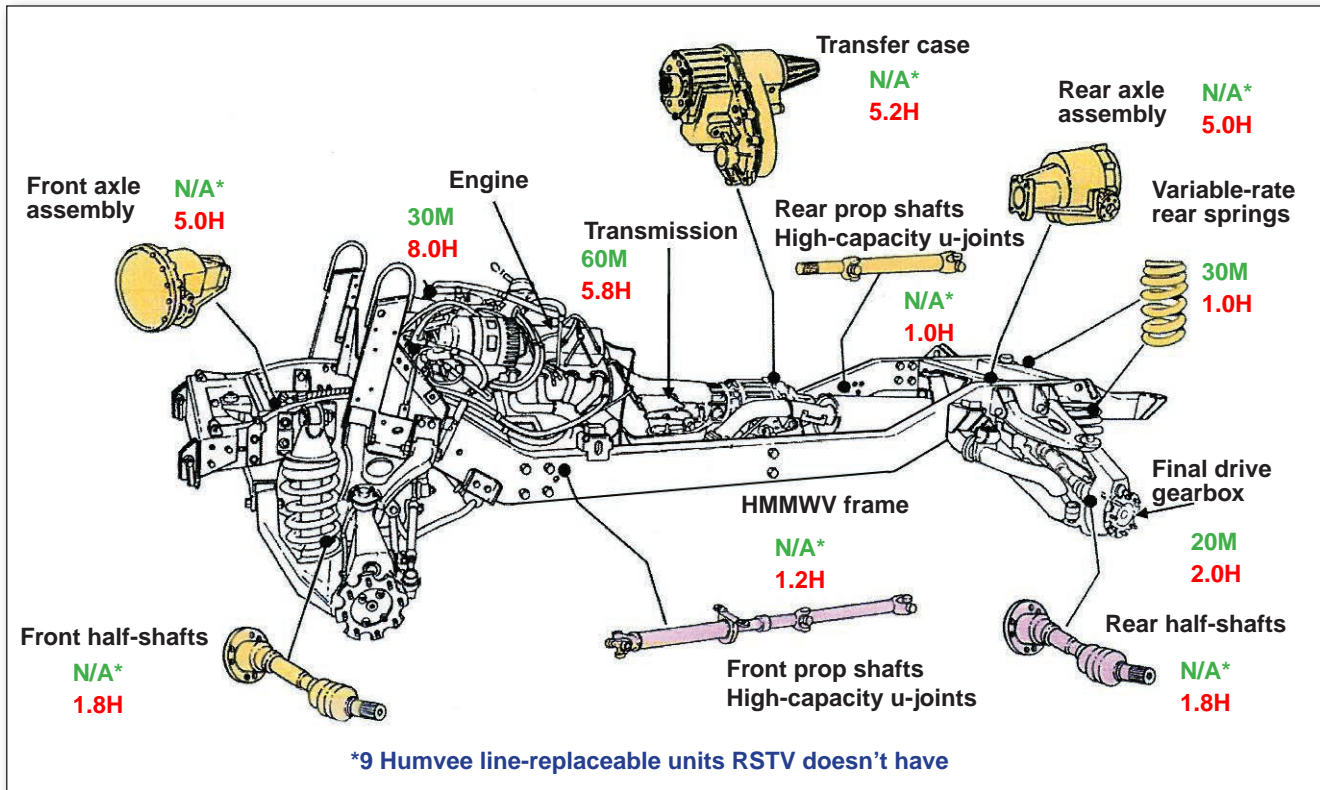


Figure 3. Humvee drive-train schematic with RSTV replacement time comparisons. RSTV maintenance times are in green and are minutes; humvee maintenance times are in red and are hours. Humvee maintenance times come from Army figures. RSTV times are derived from testing. Items marked N/A represent LRU that do not exist on the e-drive RSTV. For example, in place of a transmission, the RSTV has a generator and, in place of a final drive gearbox, the RSTV has an in-hub motor and gearbox.

based on the United Kingdom's Future Rapid Effects System Study, which compared the Light Armored Vehicle III to an 8x8 IHED vehicle. Reliability is raised by eliminating so many parts and using proven electric technology. IHED's modular nature provides easy upgrade when enhanced or new technology appears. IHED also allows the system designer to easily integrate the drive system and exploit a family-of-vehicles concept. It simplifies and reduces maintenance workload and times (fewer parts). It reduces training for operators and maintainers (system simplicity and commonality, not complexity).

Another side benefit is that the battery-pack technology can be used on other vehicles. For example, the M1 tank uses a lot of fuel, resulting in application of an

auxiliary power unit. By applying this battery-pack technology to the M1, APU use could be reduced to just recharging the battery pack after a number of hours of silent watch (dependent on battery-pack size and vehicle-system usage). The battery pack would also provide a very robust starting system for the main engine and APU.

### Mobility, power

The high-wheel travel suspension allows the vehicle to move at greater speed over broken terrain while keeping crew ride within a tolerable level. The addition of an active component keeps the wheel in contact with the ground for greater periods of time, increasing driver control of change of direction and braking. It will

also provide energy recovery that can be put back into the power-budget system. The new tread patterns being applied to military tires, coupled with a CTIS, have led to dramatic increases in wheeled-vehicle mobility.

Several IHED 4x4 vehicles have undergone testing at Aberdeen Proving Grounds. They also have a number of user evaluations from Regular Army and Marine units, as well as Special Operations Forces, at Yuma Proving Grounds and Fort Benning, GA. Test reports have confirmed that vehicles equipped in the manner described have much greater mobility than current vehicles.

An example of mobility gained by the lower ground clearance offered by IHED

Vehicle	Slope degrees, percent, distance	Slope degrees, percent, distance	Slope degrees, percent, distance	Slope degrees, percent, distance
	0, 0, 80 meters	6, 11, 81 meters	9, 16, 78 meters	12, 21, 64 meters
RSTV (8125 pounds)	9.5 seconds	11 seconds	11.5 seconds	11.75 seconds
RSTV (battery only)	12 seconds	14 seconds	16.33 seconds	18 seconds
IFAV (7190 pounds)	16.5 seconds	Did not finish	Did not finish	Did not finish

Table 2. Sandy-slope hill climb times, in seconds.

was achievement of 85 percent to 90 percent side-slope capability and operation at Yuma on 60 percent side slopes routinely. In the soft sand slopes constructed at Yuma, these vehicles were the only wheeled vehicles tested that went up all the slopes on engine and battery only; all other wheeled vehicles became stuck on the first slope.

Having participated in all the demonstrations of these vehicles, the authors heard experienced tracked-vehicle officers from the U.S. Army, Canada, Great Britain, Germany and Australia state that they had been driven in IHED vehicles across terrain they wouldn't have tried with their tracked vehicles.

## No half-measures

The benefits are many, but beware of those who would take half-measures. Adding a generator and replacing a drop-box or differential with a motor in the mistaken belief it reduces risk is incorrect. If the electric system is layered over the mechanical system, all the mechanical system's drawbacks and weaknesses are still there. The risk factor has gone up, not down. The humvee is an example; all four half-shafts are different and are the mechanical fuse in the system. They break to save more expensive parts from breaking. The SOF teams informed the authors that they take four or five sets of half-shafts with them because they break so often.

If an electric motor is substituted for the differential, the half-shaft problem re-

mains. In the world of reliability, the numbers would not get better – they would get worse. IHED drive trains are magnetically coupled and can't break; a strong gearbox can take punishment, as this magnetic coupling feature provides protection. Eliminating the mechanical system for an IHED drive train reduces the number of LRU 30 percent to 45 percent; if an LRU is not on the vehicle, it can't break or fail.

So the question is, with so many compelling benefits, why hasn't IHED been put into military service? The answer, up to recently, has been performance risk and lack of an adequate production base. The remaining technical risk of electromagnetic-impulse compatibility has been successfully addressed in recent component/subsystem-level qualification testing.

The final barrier to production and fielding of IHED is availability of an adequate U.S. production base. This barrier is being rapidly eliminated with substantial U.S. investment in electric traction motors, power electronics and battery-production facilities for hybrid electric cars. This production base will very soon accommodate military needs with a minimum of investment and risk, and will provide enough competition at the component level to assure affordability.

All this is important, but we need to keep in mind that the real benefit is to provide a revolution in combat, tactical/logistic wheeled-vehicle mobility. By changing the way we operate and opening up our options in routing our logistic tail, we can reduce our casualties in personnel and vehicles, and significantly reduce the im-

pact of IEDs/mines on our forces. Employment of silent movement, coupled with high mobility, will allow us to stealthily approach objectives from directions thought impassable by our opponents. The indirect approach, tactically and logistically, becomes a reality with IHED employment.



*Richard DuVall is a retired Marine infantry officer. He served as the Marine liaison officer on the U.S. Army Armored Family of Vehicles Task Force, where he handled all light systems, and retired from the Marine Corps Research and Development Command. DuVall helped form the first LAV battalion in the Marine Corps. His civilian employment has included Teledyne Continental Motors and General Dynamics Land Systems. He was program manager for the low-profile turret, now on the Mobile Gun System vehicle, and the following electric-vehicle programs: armored-systems modernization program 55-ton automotive test rig, RSTV, advanced hybrid electric drive 8x8 and AGMV. He earned a bachelor's of arts degree in history at Old Dominion University. He resides in Spring Lake, MI.*

*Bob Hoeltzel has more than 35 years' experience in advanced military-vehicle development, including 10 years with Tank and Automotive Command's Advanced Concepts Laboratory as senior engineer / weapons-system manager for the tank testbed program; six years at General*



**Figure 4. The Shadow RSTV with 4x4 hybrid electric drive. (General Dynamics Land Systems illustration)**

Motors Defense as the supervisor, advanced turret systems; six years at Teledyne Continental Motors as supervisor, advanced concepts; and 10 years at General Dynamics as lead / chief engineer for advanced hybrid electric vehicles, including the RSTV and AGMV / Joint Light Tactical Vehicle. He holds a bachelor's of science degree in electrical engineering and a master's of science degree in industrial engineering from Michigan Technological University and Texas A&M University. Now retired, he splits his time between Michigan and Florida.

**ACRONYM QUICK-SCAN**

**AGMV** – advanced ground mobility vehicle  
**APU** – auxiliary power unit  
**CTIS** – central fire inflation system  
**GMV** – ground mobility vehicle  
**IED** – improvised explosive device  
**IFAV** – interim fast-attack vehicle  
**IHED** – in-hub hybrid-capable electric drive  
**LAV** – light armored vehicle  
**LRU** – line-replaceable unit  
**RSTV** – reconnaissance, surveillance, targeting vehicle  
**SOF** – Special Operations Forces



Figure 5. U.S. Marines in the intermediate fast-attack vehicle with a tube-launched, optically-tracked, wire-guided missile system. (Photo by U.S. Marine Corps)

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bile infantry assault. Who the heck is securing all those supporting assets and rear-echelon troops?

Instead, I suggest adding a second mechanized infantry battalion to round out the HBCT (one tank, two mech battalions), and I'd further suggest replacing the new cavalry squadron with an old-style armored cavalry troop instead. But the BCT is too small and already busy enough to have to deal with the addition of aviation assets, especially their logistical tail. Aviation should remain consolidated under higher echelon. The higher echelon, corps or Army, should then plan, command and control any such combined air and ground maneuvers.

Now for the "big picture" assessment: The real problem is that the Army screwed up when it went to modular BCTs, which are not and cannot be flexible response forces. We learned all this and solved it in World War II.

The division was the basic combat-manuever echelon. The infantry division was the general-purpose force. It was reinforced with battalions from Army: tank, tank destroyer, mechanized infantry, engineer, field artillery, air-defense artillery, transportation and other specialized battalions as needed for the specific theater and operation. Internally, it could tailor and slice off regimental combat teams, meaning the infantry regiment was reinforced with its slice of division-and-above assets of field artillery, antitank artillery, tanks and tank destroyers, plus whatever support was deemed mission-essential.

The armor division carried tailored task-organization yet further. It was built around a division headquarters, combat commands and a pool of tank, mecha-

nized and artillery battalions, plus whatever was attached from higher. The CCs were task-organized for each specific operation. Two CCs (CCA and CCB) maneuvered while the third, reserve CC (CCR) retained control of remaining and supporting units. Eventually, CCR was expanded to become a third, coequal CCC.

In effect, the armor division brought "combined arms" to what was previously an infantry corps or Army. With experience gained, the armor divisions' CCs were often sliced off and tasked to reinforce individual infantry divisions, broadening the integration of combined arms.

With better communications, combining arms at ever lower levels continued throughout the 1960s Reorganization of the Army Division force structure and through the 1980s Division '86, where battalion task forces and company teams were the norm. But with the 1990s Army of Excellence, the Army got tunnel vision. Leadership focused on fixed force structures as they struggled to reduce manpower and endstrengths. This regressed to an erroneous presumption of "fixed divisions" and the misguided dogma that only full "type divisions" could be deployed. The Army ignored that battalions and separate companies are already modular and tailorable. Instead it became enthralled with designing "universal" but permanent organizations. This ultimately led to the breaking up of three-brigade divisions into five separate modular BCT. Half a century's worth of proven success, ignorantly discarded!

This is LTC Lamont's dilemma. Dutifully following the Army capstone concept, he has no option for mission-tailoring the

BCT and so he tries to expand it into a general-purpose unit. At the "point of the spear" level, this makes sense, but it ignores the spear's short and stubby shaft. My suggestion is to instead replace the flawed shaft with one that gives that spear-point its strength and reach, its combat power, its very reason for existence.

Bring back the heavy ACR, the armored division with its heavy division cavalry squadron and the heavy separate brigade with its heavy cavalry troop.

Forge the Thunderbolt!

CHESTER A. KOJRO  
LTC, Armor,

U.S. Army Reserve, retired

**ACRONYM QUICK-SCAN**

- ACR** – armored cavalry regiment
- BCT** – brigade combat team
- BfSB** – battlefield surveillance brigade
- CC** – combat command
- CCA** – Combat Command-A
- CCB** – Combat Command-B
- CCC** – Combat Command-C
- CCR** – Combat Command-Reserve
- HBCT** – heavy brigade combat team
- LRS** – long-range surveillance
- MI** – military intelligence
- R&S** – reconnaissance and surveillance
- TRADOC** – Training and Doctrine Command

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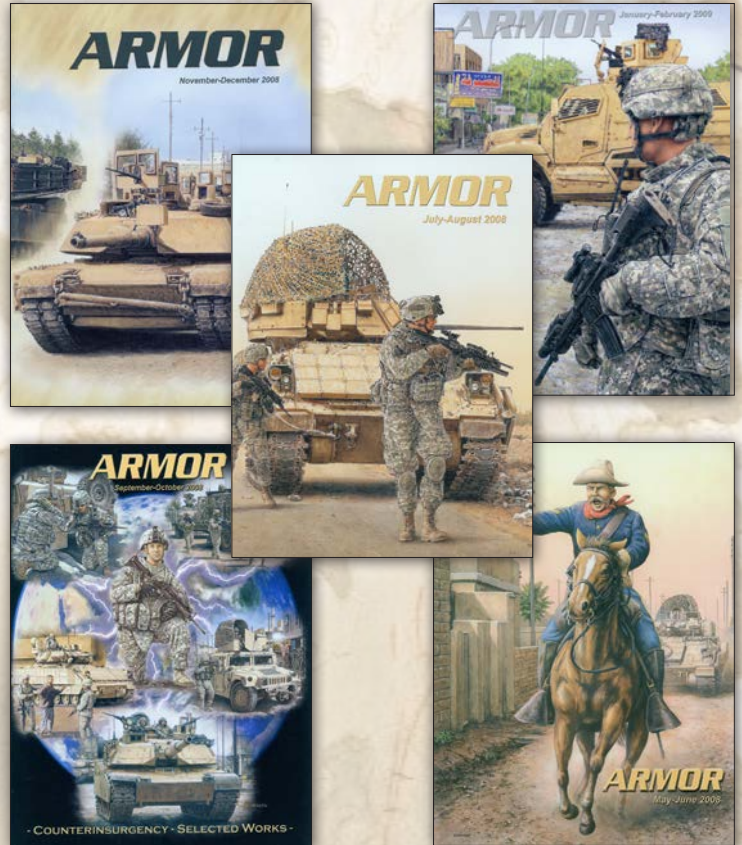
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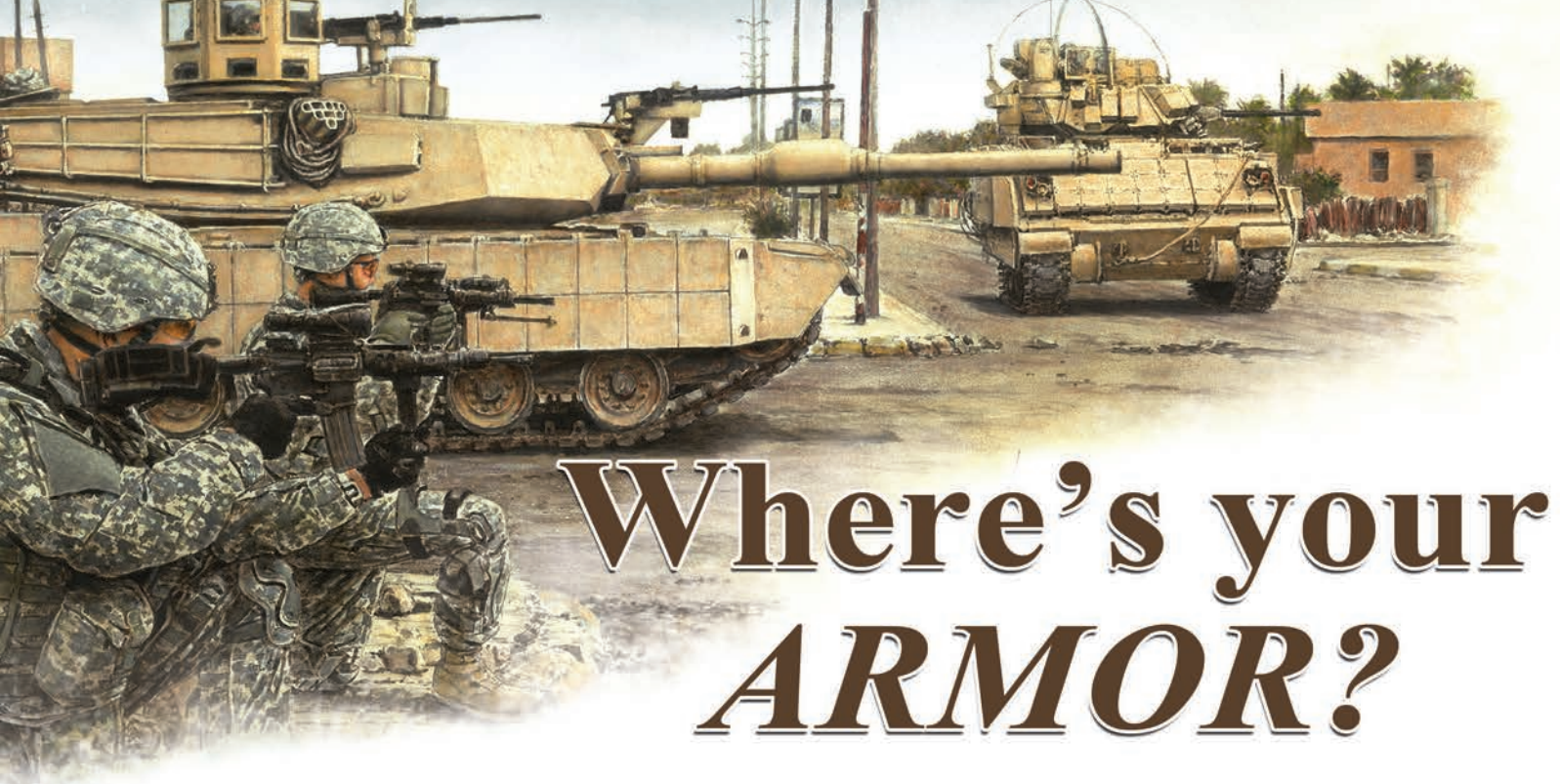
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The distinctive unit insignia was originally approved Aug. 6, 1942 for the 899<sup>th</sup> Tank Destroyer Battalion. It was redesignated for the 899<sup>th</sup> Tank Battalion April 26, 1956. The insignia was redesignated for the 89<sup>th</sup> Cavalry Regiment Dec. 23, 2004. The sprinkling of silver caltrops — an ancient military instrument, sometimes called “cheval trap” (from the French word for horse) from its use in impeding the approach of cavalry — symbolizes the first duty of the tank destroyer battalions, i.e., to stop the advance of enemy tanks by obstacles strewn in their path and sharp attack from all points. The silver band represents the forward path to be traveled as well as Highway 99, the birthplace of the unit and the scene of their first arduous convoy. The inverted pile shooting forward from this band further illustrates advance and the penetrating qualities of the battalion toward any obstacle encountered.

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