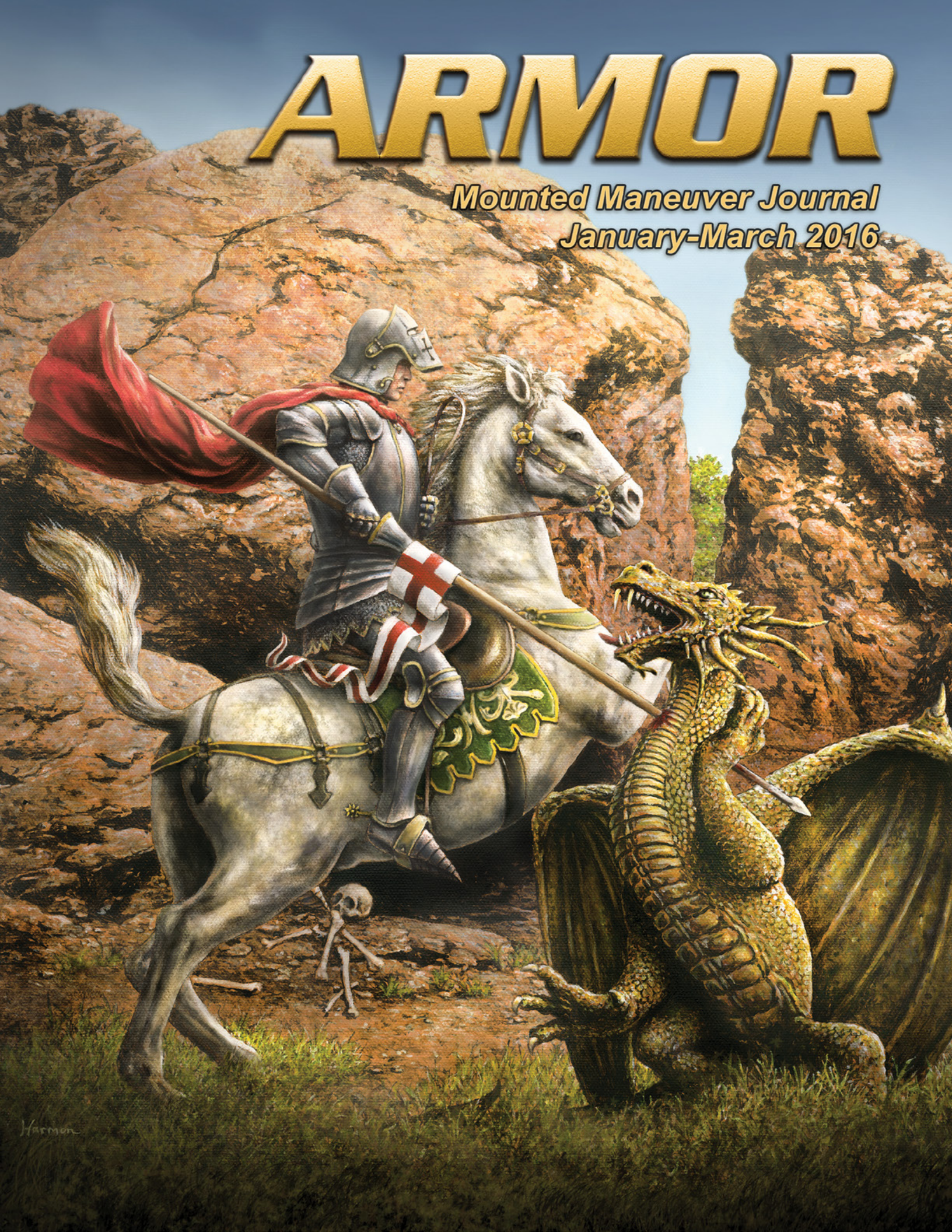
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CHIEF OF ARMOR'S HATCH

BG Scott McKean
Chief of Armor/Commandant
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Readiness, Sullivan Cup

From Feb. 24-28, 1991, the Army's Air-Land Battle doctrine proved to be decisive. Specifically, the Armored Force once again demonstrated its role as the combat arm of decision. It's important to remember that just 15 years prior, our Army was characterized by images of the U.S. Embassy evacuation in Saigon, inferior equipment and low morale. However, in those 15 years, our Army transformed into a high-quality all-volunteer force, fielded the Big Five systems – including the M1 Abrams main battle tank – and honed our skills in Air-Land Battle doctrine.

Today, 25 years after Desert Storm, the Armored Force is in high demand across the Middle East, Republic of Korea and Eastern Europe. Every armored brigade combat team (ABCT) is committed to rotational missions, and 2nd ABCT, 1st Armored Division, is coming out of the network-integration evaluation requirements to allow for rotational employment. The demand on our Armored Force requires the highest level of readiness, a requirement that we are fully confident of achieving and maintaining across the force. Our gunnery and maintenance programs will be the cornerstone of our readiness, but the task will also require increased attention across the spectrum from fundamentals of mounted land navigation to more complex air-ground operations and synchronization of fires. In this edition, we begin the discussion on issues regarding the decisive-action training environment that armor formations are experiencing.

The 2016 Sullivan Cup will be held at Fort Benning May 1-6 and will challenge the best tank crews from our ABCTs, the Marine Corps and Canada in many of the skills discussed previously. These competitions play a pivotal role in developing a culture of excellence that produces the next generation of lethal and competent tankers and cavalrymen. The tradition of excellence is promulgated throughout our formations as crews vie for unit "Top Tank" or similar recognition, but more importantly, this culture is demonstrated at combat-training centers and, when called, on our battlefields. As MacArthur stated many years ago, "Upon fields of friendly strife are sown the seeds that upon other fields, on other days, will bear the fruits of victory."

The Saint George Ball on Friday, May 6, will culminate a great week of competition as the winning crew is recognized. The ball will also be the venue to induct retired GEN Fred Franks and retired SMA Ken Preston into the Order of St. George-Gold Medallion. These great warriors have provided a lifetime of service to our community, and I could not think of two more deserving recipients – congratulations, gentlemen! All information for these events are listed in this edition, and we hope you can join us.

In Memorium: Retired GEN Charles C. 'Hondo' Campbell

GEN Charles C. "Hondo" Campbell has dismounted his iron steed after 40 years of service to our nation. After a lengthy illness, he joined his fellow warriors Feb. 8, 2016, in that good old-time canteen and eternal resting place known as Fiddler's Green. Upon his retirement in June 2010, he was the last continuously serving general officer who saw action in Vietnam to leave active duty.

After graduating from Louisiana State University, Campbell served in Vietnam as a Special Forces adviser, A-Detachment executive officer and commander. He commanded with 2nd and 3rd Armored Divisions, 2nd and 7th Infantry Divisions and 8th Army. He was the 17th commanding general of U.S. Army Forces Command. Campbell also served in several key staff assignments in Germany and at Fort Hood, including chief of staff for U.S. Army Europe and U.S. Central Command.

Figure 1. GEN Charles C. "Hondo" Campbell as commanding general of U.S. Army Forces Command.

Those who served with Hondo flooded social-media outlets with their tributes and condolences. The common denominator of the social-media tributes was Campbell's ability to empower and create a command climate that leveraged everyone's strengths and improved the performance of each Soldier. His confidence and pride were contagious as he brought out everyone's best.

Figure 2. Then-MAJ Charles C. Campbell takes his place for a change of command in front of 2-67 Armor, the armor battalion he commanded in 3rd Armored Division, U.S. Army Europe, 1981.

"GEN Campbell was the proverbial 'anchor in a storm,'" said LTG Mike Tucker, commanding general of First Army. "He was tough on standards but fair on people. He possessed a quiet demeanor, which had a calming effect during chaos. His professional attitude and sage advice were a mainstay in our officer corps. He will be sorely missed and even harder to replace."

"In my 36 years of service, I have never witnessed anyone who championed and cheered for Soldiers and their families more enthusiastically than GEN Campbell," said the 12th Sergeant Major of the Army, Jack Tilley.

MG Thomas James, commanding general of 7th Infantry Division, made the following statement from the division Campbell had once commanded: "The 7th Infantry (Bayonet) Division extends

our heartfelt condolences on the passing of GEN Campbell, former commander of our great division. He was a true Army professional who inspired all of us with his character, competence and commitment to the profession of arms. His legacy will continue in all of us for years to come. God bless his family during this difficult period."

Campbell's military awards and decorations include the Distinguished Service Medal, Defense Superior Service Medal, Legion of Merit (with three oak-leaf clusters), Bronze Star Medal, Meritorious Service Medal (with five oak-leaf clusters), Special Forces tab and the Parachutist Badge.

Figure 4. GEN Charles C. "Hondo" Campbell, retirement day, June 3, 2010. ***(Photo by U.S. Army Forces Command Public Affairs Office)***

GEN Charles Christopher Campbell

Born: Aug. 24, 1948, Shreveport, LA
Died: Feb. 8, 2016 (age 67), Shreveport, LA
Buried: Arlington National Cemetery
Years of service: 1970-2010

Awards include: Distinguished Service Medal, Defense Superior Service Medal, Legion of Merit (three oak-leaf clusters), Bronze Star Medal, Meritorious Service Medal (five oak-leaf clusters), Special Forces Tab, Master Parachutist Badge.

Culminating assignments: 17th commanding general of FORSCOM Jan. 9, 2007 to June 3, 2010. FORSCOM's deputy commanding general and chief of staff April 26, 2006, to Jan. 8, 2007.

Figure 3. Commander of Special Operations A-Detachment in Vietnam, then-2LT Charles "Hondo" Campbell sets out on a mission in 1971. *(U.S. Army photo)*

Early assignments: Initial assignment was as instructor at Infantry Training Command (Provisional), U.S. Army Training Center Infantry, Fort Ord, CA. After Special Forces training, taught tactics at Forces Armeé National Khmere Training Command, Army Advisory Group, Phouc Tuy Training Battalion, U.S. Army, Vietnam. Subsequently served as A-Detachment executive officer and commander in Vietnam.

Other commands: Combat-support company in 2nd Armored Division, Fort Hood, TX; 2-67 Armor Battalion, 3rd Armored Division, U.S. Army Europe; and heavy brigade in 2nd Infantry Division, Eighth Army, South Korea. Also commanded 7th Infantry Division at Fort Carson, CO, and Eighth Army, South Korea.

Staff assignments: Operations officer, 3-63 Armor, Augsburg, Germany; chief, Exercise Branch, 3rd Infantry Division, Wuerzburg, Germany; plans and operations officer, Combined Field Army, Republic of Korea; senior task force observer/controller and later deputy commander, Operations Group, Combat Maneuver Training Center, Hohenfels, Germany; chief of staff, 2nd Infantry Division (Mechanized), Eighth Army, South Korea; assistant division commander, 1st Cavalry Division, Fort Hood, TX; chief of staff, I Corps and Fort Lewis, Fort Lewis, WA; deputy commanding general, Third Army, Fort McPherson, GA; chief of staff, U.S. Army Europe and Seventh Army, Germany; chief of staff, U.S. Central Command; and chief of staff, United Nations Command, Combined Forces Command, and U.S. Forces Korea.

Commission: Through ROTC at Louisiana State University in Baton Rouge; bachelor's of arts degree in history.

Military education: master's of military art and science from U.S. Army Command and General Staff College. Attended a variety of military schools, including School of Advanced Military Studies in 1986 as well as Army War College in 1991.

GUNNER'S SEAT

CSM Alan K. Hummel
Command Sergeant Major
U.S. Army Armor School

Individual Crewmember Task Proficiency

Sullivan Cup is right around the corner, where our top tank crews will compete against each other as well as top crews from the U.S. Marine Corps and our North Atlantic Treaty Organization partners. The deciding factor for the overall winning crew may very well be how proficient each individual crewmember is at their assigned position. Core skills and competencies are the starting point. Mastery will set apart the winning crew.

Individual crewmember proficiency is the cornerstone to a successful gunnery, but how do we get to a high level of crew proficiency or mastery? We get there through our noncommissioned officers, starting with the battalion and company master gunners, then down to the individual tank commanders.

Master gunners need to be active in advising and assisting their commanders in developing a focused and detailed unit training plan. The commander and his master gunner must take a look at the following as a minimum when they develop their plan: upcoming operational deployments, assigned missions, crew turbulence, training days available, training dollars available, resources available, unit-specific mission-essential task list, and past strengths and weaknesses within the unit. The master gunner must advise the commander on all the resources available for training their tank crews.

Once the unit training plan is complete, the onus falls on the platoon leadership to begin the training, with oversight from the commander, first sergeant and master gunner. It is incumbent upon the platoon sergeant and platoon leader as well as each tank commander to clearly communicate the importance of each crewmember's job in the overall success of the crew. Platoon leadership should develop their training plans based on and nested with the companies and battalions, and it should be gunnery-focused. Once the platoon leadership has developed their training plans, then individual tank commanders need to identify space within the plan where they can take advantage of opportunity training to reinforce individual crewmember tasks as well as crew collective tasks. Simple hip-pocket training events such as chair drills, gun-lay exercises and dry-fire exercises will add repetition to gain mastery and can all be done on short notice and with very few resources.

Tank commanders are ultimately responsible for training each crewmember at their specific position as well as cross-training so any member of the crew can operate at another position. The tank commander must clearly state to each crewmember what the standards are for their position and use their time available to constantly and consistently train them up to and beyond that standard. Simply put, the tank crew is a highly integrated team whose ultimate success depends on cohesion and communication at the lowest level.

Competitions such as the Sullivan Cup highlight excellence and encourage a spirit of competition in the execution of training. Most importantly, though, gunneries and gunnery training conducted to standard will continue to build and retain a generation of noncommissioned officers who possess the fundamental skills required to maintain our lethality edge. Future lethal crews do not suddenly arise; they are grown through hard work by NCOs executing standard-based fundamental training and who take advantage of training-time opportunities that exist within a well-developed unit training plan.

Sullivan Cup 2016

The Sullivan Cup, the competition for the title of "Best Tank Crew in the Army," is slated May 1-6 at Fort Benning, GA. The competition is hosted by 194th Armored Brigade at Harmony Church.

The competition will be a physically and mentally demanding world-class event that rigorously tests U.S. Army Soldiers, U.S. Marines and international partners in tank-crew maneuver, sustainment and gunnery skills.

This year's Sullivan Cup will have 16 tank crews: 11 active duty (one from each armored brigade combat team, 11th Armored Cavalry Regiment and U.S. Army Armor School), two National Guard, one U.S. Marine Corps and two Canadian teams.

Scheduled events are a physical proficiency test, a tank-crew mounted situational training exercise, precision gunnery and a four-crew shoot-off as the concluding event.

The award ceremony will be conducted during the Armor Ball May 6 at the Convention and Trade Center, Historic Iron Works, in Columbus, GA.

Also during Sullivan Cup week, the U.S. Army Armor School will host a combat-vehicle modernization and master-gunner update with battalion command and higher leaders attending the competition.

The competition was named for retired GEN Gordon R. Sullivan. GEN Sullivan was commissioned as an Armor officer and commanded many armor formations throughout his storied career. GEN Sullivan retired from the Army July 31, 1995, after more than 36 years of service, which culminated as the 32nd Chief of Staff.

Visit the Sullivan Cup Website at www.benning.army.mil/armor/sullivan. Register for the ball at www.cavalryandarmor.com.

April 24	April 25	April 26	April 27	April 28	April 29	April 30
	Crew arrival Check-in and team registration Crew tank prep in Harmony Church motorpool	**NLT crew arrival** Check-in and team registration Crew tank prep in Harmony Church motorpool	Crew tank prep in Harmony Church motorpool HET-T movement to DMPRC (Group 1) AGTS (if needed)	LFAST @ DMPRC (Group 1) HET-T movement to DMPRC (Group 2) AGTS (if needed)	LFAST @ DMPRC (Group 2) AGTS (if needed) (TBD) Chief of Armor departure ceremony 5-7 p.m. social: introduction of crews and competition order (Regimental Room / Fiddlers Green)	Day of no scheduled activities
May 1	**May 2**	**May 3**	**May 4**	**May 5**	**May 6**	**May 7**
6 a.m.-4 p.m.: armor crewman physical proficiency test (Event 1A)	6 a.m.-6 p.m.: tank crew STX, GHMTA (Event 1B) 10 a.m.-2 a.m.: crew LFX, DMPRC (Event 2)	6 a.m.-6 p.m.: tank crew STX, GHMTA (Event 1B) 10 a.m.-2 a.m.: crew LFX, DMPRC (Event 2) TBD: recon compound dedication (Harmony Church)	10 a.m.-midnight: crew LFX, DMPRC (Event 2) 6-8 p.m.: Cavalry and Armor Association-hosted evening social (Bldg. 4303)	8 a.m.-7 p.m.: crew LFX, DMPRC (Event 2) 9 a.m.-noon: master-gunner discussion (Long Hall) 8:30-11:30 a.m.: Armor Leader Summit (ABCT / CVMS, Armor Update) (Patton Hall)	8 a.m.-3 p.m.: final shoot-off (top four crews) (Event 3) Crew AAR to B6 / B7 Crew outprocessing 7-9 a.m. (T): social: industry breakfast (Benning Club) 5-9:30 p.m.: awards presentation (top three crews) and Saint George Ball (Ironworks)	Crews depart Fort Benning

Figure 1. A Cavalry scout from 6th Squadron, 1st U.S. Cavalry, uses his sensors to observe the enemy at the National Training Center in May 2015. *(Photo courtesy of Cobra Observer/Controller Team, NTC)*

The Stryker Brigade Combat Team Cavalry Squadron in Decisive Action

by LTC Mark H. Hoovestol

The brigade combat team (BCT) Cavalry squadron has been exclusively used as an economy-of-force infantry battalion during our conflicts in Iraq and Afghanistan. It is now time to start some serious discussion about bringing Cavalry back into its traditional role. In this article, I will highlight the various Cavalry operations 6th Squadron, 1st Cavalry, 1st Armored Division, was asked to perform during National Training Center (NTC) Rotation 15-08 and provide some recommendations to improve the Stryker brigade combat team (SBCT) Cavalry squadron's organization.

NTC Rotation 15-08 successfully pitted an SBCT, task-organized with one combined-arms battalion and two Stryker rifle battalions, against the NTC's contemporary-operating-environment force. This rotation was the first in recent years to transition from reception, staging, onward-movement and integration (RSOI) directly into combat operations without a series of situational-training exercises prior to the "force-on-force" portion of the rotation.

The Ready First BCT from 1st Armored Division transitioned from a contested RSOI directly into a movement-to-contact mission against the enemy. As in previous decisive-action (DA) rotations, the Cavalry squadron's success had a direct correlation on the BCT's success. The numbers illustrate the unit's success; 6th Cav, through more than 300 consecutive hours of Cavalry operations, provided intelligence to support the BCT's operations with more than 70-percent accurate reporting of the enemy situation.

Current Cavalry doctrine[1] provides a sound template for Cavalry operations in support of DA, but particular attention must be paid to the fundamentals of security and reconnaissance during training. The current organization of the SBCT Cavalry squadron requires some changes to perform its missions of reconnaissance, security and Cavalry operations to properly allow for its fight for intelligence.

Cavalry operations

Throughout NTC Rotation 15-08, 6-1 Cav was constantly on the move. Understanding the types of operations a Cavalry squadron can accomplish is key to its success. Cavalry performs reconnaissance to answer higher headquarters' priority intelligence requirements, provide security to protect the force or give it time to prepare for operations.

This is what I term "Cavalry operations." These operations, clearly identified in Cavalry doctrine,[2] include raids, attacks and defensive operations for limited duration and limited scope to enable BCT future operations. Often, the mere presence of the squadron forward reduces the enemy's options and forces him to make a decision.

During the initial movement-to-contact mission, the squadron – task-organized with an infantry company and a tank company-team – gained and maintained contact with the enemy disruption zone. Taking the initiative from the enemy by seizing key terrain became a theme throughout the rotation. For example, following the brigade's defense of the Central Corridor, the Cavalry squadron was ordered to seize the key terrain of the Brown-Debnam Pass complex, taking options away from the enemy. The squadron was relieved by an infantry battalion, allowing it to continue reconnaissance to identify the enemy's defensive positions in support of the BCT attack.

Understanding all types of missions that Cavalry can perform if properly task-organized gives the BCT options and provides freedom of maneuver, allowing regeneration of combat power.

Improvements

As discussed, the SBCT Cavalry squadron, unlike Cavalry squadrons in the infantry brigade combat team (IBCT) or armored brigade combat team (ABCT), lacks firepower. Equipped with Stryker recon vehicles and limited in firepower to the Javelin (portable anti-tank (AT) weapon), M2 .50-caliber machinegun and Mk-19 40mm-grenade machinegun, the squadron requires some changes to its organization to achieve the missions outlined previously and those required of it in DA operations. One solution to this shortfall is task-organization based on mission, enemy and terrain. During NTC Rotation 15-08, the squadron at different times was task-organized with a multitude of combat forces: a tank company-team, an anti-tank guided-missile platoon and a Stryker rifle infantry company.

While dynamically receiving attachments are part of the nature of the Cavalry, permanently organizing a force that can fight for intelligence would allow the squadron to train for its mission. As the SBCT continues reorganizing its modified table of organization and equipment, the consolidation of the Mobile Gun System (MGS) into the AT company gives that company six platoons: three AT and three MGS. Task-organizing three of these platoons – either MGS or AT, depending on mission and enemy – to the Cavalry troops would enable hunter-killer teams in the Cavalry squadron. Removing three of the six platoons would still allow the AT company, with three platoons of either MGS or AT, flexibility to serve as the brigade reserve force or to provide firepower for the BCT's main-effort battalion.

Figure 2. Stryker Cavalry elements from 6th Squadron, 1st U.S. Cavalry, conduct link-up and recon handover with task-force scouts from 2-5 Cavalry at NTC in May 2015. The 2-5 Cav scouts are mounted on M3 Bradleys. *(Photo courtesy of Cobra Observer/Controller Team, NTC)*

Figure 3. A prototype Stryker vehicle with 30mm-gun turret. *(Photo courtesy of General Dynamics)*

Materiel options for improving the SBCT squadron's firepower are readily available and need to be fielded at the earliest opportunity. The Remote Weapon System-Javelin (RWS-J) is an available upgrade that mounts the Javelin AT weapon into the RWS, giving mobility to this lethal weapon system. Adding this to our reconnaissance platforms would provide a significant upgrade to our ability to fight for information. Upgunning the Stryker, or at least some of them, to the 30mm turreted Stryker would also meet this requirement. Even converting two of the six Strykers in each scout platoon would provide a much-needed upgrade. This effort is already underway in Europe in 2nd Cavalry Regiment.[3]

As proven during NTC Rotation 15-08, the SBCT Cavalry squadron, if properly task-organized, can accomplish its mission against a mechanized/Armor threat. Our recently published Cavalry doctrine – Field Manual (FM) 3-98 and FM 3-20-96 – provides templates for planning, synchronizing and executing Cavalry operations that provide the BCT with freedom of maneuver. It is time to make a commitment to enabling our Cavalry squadrons, particularly those in the SBCTs, to fight for information. To do this, we need to properly task-organize them with assets that already exist in the BCT, and eventually we need to provide them with some materiel solutions.

LTC Mark Hoovestol commands 6th Squadron, 1st U.S. Cavalry, 1st SBCT, 1st Armored Division, Fort Bliss, TX. Previous assignments include brigade executive officer, 4th IBCT, 4th Infantry Division, Fort Carson, CO; squadron executive officer and operations officer, 3-61

Cavalry, 4th IBCT, 4th Infantry Division, Fort Carson; commander, Headquarters and Headquarters Company, 2-9 Infantry, 1st ABCT, 2nd Infantry Division, Camp Casey, Republic of Korea; commander, Company C, 1-72 Armor, 1st ABCT, 2nd Infantry Division, Camp Casey; and tank-platoon leader, Company A, 1-68 Armor, 3rd ABCT, 4th Infantry Division, Fort Carson. His military schooling includes Command and General Staff College, Engineer Officer Advanced Course and Armor Officer Basic Course. LTC Hoovestol has a bachelor's of science degree from the U.S. Military Academy at West Point, NY, and master's of science degree from the University of Missouri.

Notes

[1] FM 3-98, ***Reconnaissance and Security Operations***, July 2015, http://armypubs.army.mil/doctrine/DR_pubs/dr_a/pdf/fm3_98.pdf.

[2] FM 3-20.96, ***Reconnaissance and Cavalry Squadron***, March 2010, https://armypubs.us.army.mil/doctrine/DR_pubs/dr_c/pdf/fm3_20x96.pdf.

[3] Joe Gould, "U.S. Army: Strykers Need Bigger Gun to Fight Russia," ***Defense News***, July 23, 2015.

Call for Magazine Articles

The U.S. Army Armor School, publisher of ***ARMOR*** magazine, is seeking magazine articles associated with our upcoming themes and enemy threats.

The July-September 2016 edition is focusing on the Sullivan Cup competition. We need most manuscripts by April 22 so that we can concentrate on last-minute Sullivan Cup-related articles.

The October-December 2016 edition is focusing on enemy threats regarding Korea. We need manuscripts by July 19.

We also seek articles discussing mounted-maneuver-leader fundamentals such as:

- Troop-leading procedures;
- Maneuver;
- Employing fires and enablers;
- Sustainment; and
- Managing tactical risk.

See our writer's guidelines at http://www.benning.army.mil/armor/eARMOR/AboutUs.html for more information.

Figure 1. 4-10 Cav scouts conduct a patrol as part of a spur ride. *(Photo by 1LT Kyle Howard)*

Can the Company-Level Intelligence-Support Team Work in Decisive Action?

Lessons-Learned from 4th Squadron, 10th Cavalry Regiment

by SGT Jared C. Clark

The U.S. military has spent more than a decade drafting and refining its doctrinal, strategic and tactical approach to the counterinsurgency (COIN) fight. The result is a more agile and adaptable force, capable of quickly responding to emergent and complex threats. During this time, many new systems evolved from familiar paradigms, which now seek to enable and augment the lowest echelons of our military. Adaptations such as the company-level intelligence-support team (CoIST) contributed to the success of our Army's intelligence collection and analysis throughout this period.

As the emphasis on training shifts from the COIN fight back to the decisive-action (DA) fight, the military's resilient and adaptive spirit must now find new ways to integrate the lessons and structural evolutions from the past 14 years to meet the changing demands of our military and national interests. With that in mind, 4th Squadron, 10th Cavalry Regiment, 3rd Armored Brigade Combat Team (ABCT), 4th Infantry Division, integrated a COIN-style CoIST into its DA fight. The process has not been without growing pains, but our squadron's experience confirmed that the practice yields positive results.

During National Training Center (NTC) Rotation 15-02, our squadron deployed CoIST in support of each Cavalry troop. The Cobra observers/coaches/trainers were impressed with the unit's implementation of CoIST and suggested that its standard operating procedure (SOP) and practices be shared with the broader Army. Contained within this article are many of the training objectives, practices and lessons-learned that were responsible for our unit's success.

Structuring CoIST

Current 4-10 Cav squadron commander LTC Chad R. Foster outlined that the CoIST needs to be comprised of the "right people, with the right direction, right training and right attitude." The main reason Soldiers in the CoIST must be the "right" people is because a DA CoIST must operate in an aggressively mobile, Lower Tactical Internet (TI) environment. Therefore, any successful implementation of the CoIST must proceed from this starting point.

CoIST teams in DA will not enjoy access to the hard-stand structures with robust (or any, in some cases) Internet connectivity. However, structuring and training the CoIST team in a deliberate manner can overcome the constraints of diminished connectivity. Since Soldiers cannot rely on digital systems, the CoIST's effectiveness is predominantly determined by choosing the right individuals to fill the specific roles on the team.

Executive officer is intel officer

The CoIST should be located with key decision-makers of the troop to effectively make accurate assessments of enemy action and provide recommendations for unit employment. The troop commander is occupied with leading and directing his forces, while the first sergeant is concerned with maintaining and sustaining the force. On the other hand, the executive officer in an armored-brigade reconnaissance troop is focused on providing timely and accurate reports to the squadron staff. The executive officer provides running estimates to the squadron, which are critical when

painting the picture of the developing battle.

Therefore, the traditional tasks of a squadron intelligence officer are most naturally commensurate with the responsibilities of the troop executive officer. Increasing the executive officer's influence and oversight over the CoIST team during combined-arms maneuver (CAM) unifies tactical knowledge with the ability to synthesize and report enemy activity to higher echelons. The executive officer's analysis is invaluable to squadron operations in conjunction with hard data (for example, battle-damage assessments (BDAs) and spot reports). Without the leadership of a competent executive officer, a CoIST will fail to provide accurate and timely intelligence to the squadron commander and staff.

S-2 provides CoIST analyst

It almost goes without saying that the responsibility of guiding and staffing the CoIST falls on the squadron intelligence officer and section. However, due to manning authorizations and unit requirements, this is generally not possible. Therefore, the CoIST's manning and direction must be a partnership between the S-2 and the recon troop. The S-2 must provide the troop an experienced and motivated sergeant (or specialist) who is capable of acting independently, without direct supervision or guidance, to serve as the CoIST analyst.

It cannot be overemphasized that the character and drive of this individual is paramount to the CoIST's success. This Soldier must have enough experience, technical ability and confidence to execute the responsibilities outlined in the SOP for the CoIST. This S-2 representative must also be able to conduct refined intelligence preparation of the operational environment (IPOE) and military decision-making process (MDMP) in conjunction with the troop executive officer. The selected Soldier must also be articulate enough to brief products at the troop level.

Other critical character traits to be considered are organizational skills and doctrinal understanding. The analyst often simultaneously functions as the CoIST noncommissioned officer in charge (NCOIC) and must be able to manage the team in the executive officer's absence.

PACE
Primary: FBCB2
Alternate: FM operations/intelligence net
Contingency: LOGPAC
Emergency: Harris radio

Figure 2. PACE plan used in conjunction with CoIST.

Troop provides 2 scouts

Again, staffing the CoIST must be a partnership between the S-2 and the line troop. Our unit found that troops were reasonably able to provide a pair of competent and interested military-occupation specialty (MOS) 19D-scouts at Skill Level 10 to augment the intelligence production of the MOS 35-series (intelligence) Soldier. As such, the scouts became an indispensable part of each CoIST team because they were efficient when employing tactics and knowledgeable of weapons capabilities, an expertise most 35-series S-2 Soldiers lack. Though any Soldier can learn weapons capabilities, the scouts are able to quickly provide the "so what" aspect to the assessments.

With that said, 19D10 Soldiers who are selected for the CoIST should possess analytical skills and be curious about how things work together in the broader picture of a mission. In other words, they should possess critical thinking skills and take personal interest in the assignments they are given.

SOP emphasis

The CoIST SOP should detail what the CoIST will provide the troop commander, and it must establish procedures for a thorough communications plan. Establishing what will be provided not only gives guidance to the CoIST analyst, but it also manages the expectations of the gaining commander.

For instance, the 4-10 Cav SOP establishes that the CoIST is required to report BDAs; conduct patrol briefs/debriefs; conduct troop-level IPOE; and recommend priority intelligence

Figure 3. SPC Kascia Vigil of Hunter Troop establishes and maintains the Global Broadcasting Service in the field. *(Photo by 1LT Kyle Howard)*

requirements and specific intelligence requirements based on changing conditions. It also details that CoISTs are not authorized to task squadron-and-above assets, run or task sources, conduct interrogations or action targets without higher approval.

When it comes to the communications plan, the SOP details how to use the primary, alternate, contingency and emergency (PACE) method. The ability to communicate can determine the success or failure of a CoIST. The communications plan, using PACE, should not only outline the priority of systems (for example, Force XXI Battle Command Brigade and Below (FBCB2), frequency modulation (FM) or high frequency) but also account for the various conditions under which the CoIST will be expected to operate. If reliable and accurate assessments are not flowing laterally between troops, down to the platoons and up to the squadron, the impacts can be devastating to the entire brigade.

Figure 4. SPC Alex Haskin of Apache Troop prepares intelligence estimates during a squadron field-training exercise. *(Photo by 1LT Kyle Howard)*

Training CoISTs

Training the CoISTs requires a substantial dedication of squadron resources and time to do so properly. The 4-10 Cav identified Soldiers 10 months before its NTC rotation and laid out a plan that required squadron, brigade, Foundry and garrison support to accomplish.

The squadron S-2 was responsible for conducting all Skill Level 10 training associated with the teams such as IPOE, radio operations, command-post operations, intelligence-collection management and capabilities, and basic troop-leading procedures. The brigade S-2 assisted with familiarizing the selected CoIST personnel with multiple intelligence disciplines such as the integration of human-intelligence and signals-intelligence teams. The Army Foundry Intelligence Training Program provided multiple classes on IPOE, CoIST responsibilities and duties, tactical-site exploitation, tactical questioning, critical thinking and patrol brief/debrief procedures.

Foundry was also instrumental in integrating brigade-level intelligence and an electronic-warfare tactical-proficiency trainer exercise, which allowed the unit to practice systems in real time. Garrison resources were allocated to assist training; this improved operator competence with the systems in the unit PACE plan.

The outcome-based training plan focused on four key aspects of the CoIST to increase the troop-level CoIST capabilities.

Retraining S-2 analysts

For 4-10 Cav, all the Skill Level 10 Soldiers from the S-2 section had just left advanced individual training (AIT), and most of the unit's junior NCOs were either on their initial location assignment or recently reclassified into the intelligence profession. What this meant to the unit was that the base of its CoIST personnel shared a common set of experience and training: the all-source intelligence schoolhouse.

The U.S. Army Intelligence Center of Excellence (USAICoE) teaches analysts to have a broad-based understanding of the intelligence language (terms and requirements) before arriving at their units so they can quickly integrate into a broad set of missions and requirements. During the time the unit's analysts were in AIT, USAICoE emphasized COIN operations with minimal training on the DA fight. Therefore, as a part of an ABCT conducting CAM, the unit was required to spend a significant amount of time retraining its analysts on IPOE. This training focused on the differences between disruption, battle and support zones, range fans, timed phase lines, order of battle and the role of enemy doctrine throughout a fight.

Less time was spent discussing small-unit tactics such as complex ambushes, and more was spent discussing troop-to-brigade level tactics such as the time and distance between an enemy brigade reconnaissance asset's deployment to the brigade-fixing-force deployment and where long-range artillery would need to be and when it would move to support efforts in a disruption zone. This was important because predictive-analysis training involves identifying and confirming assumptions based on known enemy locations, focusing on battle-tracking and BDAs. CoISTs were challenged to make rapid and deliberate assessments of enemy action, recommend unit employment and answer commander's critical information requirements as intelligence became available to drive commander decision points. Retraining the analysts and helping them focus on DA intelligence needs as opposed to COIN requirements made the CoISTs assigned to 4-10 Cav more effective.

Training scouts

Training scouts to think like intelligence analysts in some ways seemed easier in the unit than retraining the

analysts. The scouts selected to serve in the CoISTs were bright and enthusiastic, and they took a personal interest in their new positions. Furthermore, they brought tactical experience and training to the CoIST, which increased competency when discussing doctrine and weapons capabilities. Specific emphasis was placed on training the CoIST scouts on the basics of IPOE as well as teaching them military-intelligence language and requirements.

The hands-on method proved to be the most effective way to train the scouts. For instance, standing on a piece of terrain and looking at the surrounding area is an excellent way to integrate a lesson on the effects of terrain and weather on military operations. The scouts would draw a military combined-obstacle overlay (MCOO) and then add a template of an enemy mechanized infantry battalion to the terrain. This proved to be an effective way to practice IPOE, and it led to dynamic discussions about the doctrinal accuracy of the Soldiers' assumptions.

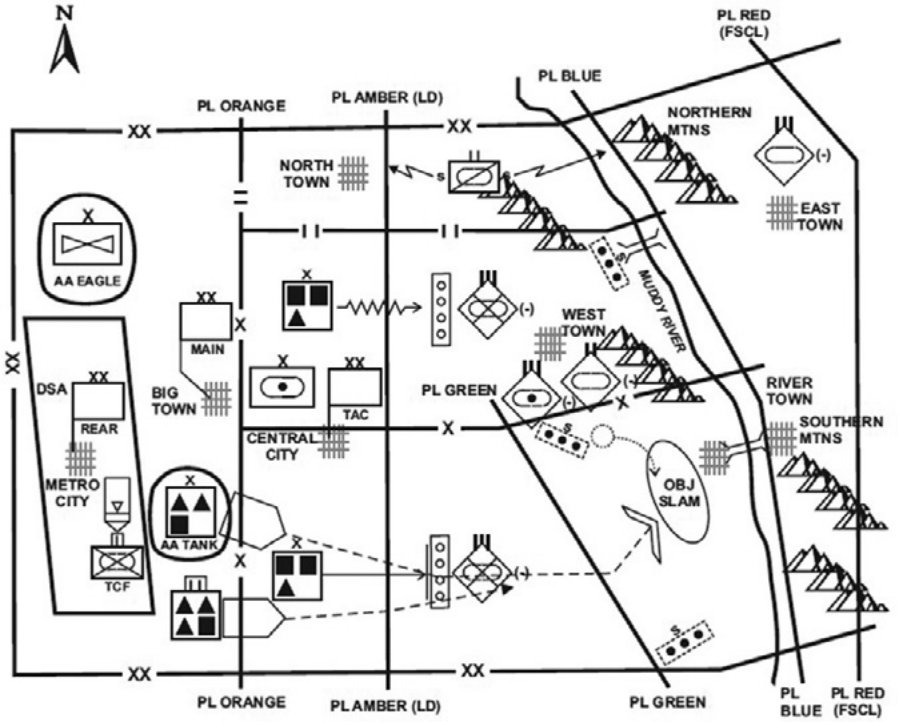


Figure 6. Army Doctrinal Reference Publication 1-02 establishes the doctrinal standard for preparing military graphics and symbology. You may also find this information in Field Manual 101-5. *(From Figure 5-5, FM 101-5)*

Focus on analog

Since the unit identified that its CoIST must be aggressively mobile and function in a Lower TI environment, it focused IPOE efforts on creating analog products. Acetate and map markers became both their biggest enemies and best friends; the materials were invaluable necessities.

During training, the squadron S-2 created multiple small-scale scenarios based on the DA training environment (DATE). The CoIST was then tasked to create multiple analog MDMP products based on the derived DATE scenarios. Through repetition, Soldiers became more familiar with MCOOs, enemy event templates and named-area-of-interest overlays. A simple piece of Plexiglas with a map underneath was a great tool to battle-track while being jostled around in the back of a M1068 Command Post Vehicle or an M3A3 Bradley Fighting Vehicle.

Figure 5. SPC Timothy Fenstermaker of Blackfoot Troop shows that Cav scout CoIST teams often function on the go from within an M1068, reducing reliance on digital systems. *(Photo by 1LT Kyle Howard)*

Focusing on analog products allowed the CoISTs to be mobile and unrestricted in their analytical processes regardless of their environment; they were no longer dependent on connectivity for Tactical Ground Reporting System, Distributed Common Ground System-Army or other network-reliant systems.

Doctrinal terms, graphics

The focal point of intelligence analysis in the COIN fight revolves around understanding the human terrain, how those factors influence the environment, and how individual actions are linked in time and space to various operational factions and players. In the COIN fight, the emphasis was primarily on the human terrain, so knowledge and employment of traditional doctrinal terms and graphics were not always necessary. However, in a true hybrid-threat environment, these disciplines are still required.

For instance, before the squadron moves into wide-area security, the

brigade will often elect to decisively defeat the conventional threat. This was a common theme in both the train-up and execution for our NTC rotation. As a result, we discovered that the squadron commander required both the S-2 section and CoIST teams to be able to think and communicate in more traditional, tactical and doctrinal terms. This was important when the teams had to disseminate products with appropriate symbology and graphics. With that in mind, communicating in precise, doctrinal language became a focus area of our training for the CoIST, which set up our teams for success in many rapid CAM scenarios.

Employing CoIST

For more than 10 months, from inception through integration to evaluation, the unit learned key lessons about employing CoIST teams from both the effective CoISTs and the ones who struggled. These lessons included engaged leadership, headquarters NCO support and a flexible PACE plan.

Engaged leadership. Troop commanders need to be actively engaged, setting expectations and guiding their CoIST to effectively support troop operations. This means understanding

Figure 7. SPC Gabriel Mercado of Hunter Troop and other troopers in the squadron TOC battle-track and report real-time enemy activities. *(Photo by 1LT Kyle Howard)*

the CoIST's role (its capabilities and limitations), establishing the space and means to communicate, and demanding accurate and rapid intelligence assessments. Successful troop commanders in our squadron required CoISTs to produce and brief products during troop MDMP and pre-mission briefs. They helped refine these products and mold the analysts for effective communication with the line Soldiers. The best CoISTs were found to have troop commanders who valued their CoIST's contributions and drove it to constantly improve.

Headquarters NCO support. The troop commander should direct the headquarters NCOs to prioritize intelligence as the CoIST's primary function. This helps mitigate less-than-optimal use of CoIST Soldiers, who sometimes get redirected toward logistical or administrative support.

For example, CoIST analysts who are technically proficient in their MOS skills but lack enough individual responsibility are sometimes viewed as ineffective by NCO leadership in the headquarters. When this happens, the seemingly underperforming attachment gets new priorities that pull the CoIST away from its primary mission. Then the CoIST only supports the immediate operational needs of running a troop. While CoISTs can certainly be integrated into support tasks and still maintain intelligence responsibilities, it is often not the case that both can be accomplished well when performed simultaneously. The headquarters NCOs may tend to overlook the importance of maintaining the CoIST's personnel integrity and its intelligence focus without the commander's support.

Flexible PACE plan. DA fights move quickly and often over large areas of difficult terrain, especially in a Cavalry squadron. During multiple battle periods at NTC, 4-10 Cav was spread over large areas of terrain, near the doctrinal limits of a Cavalry squadron when conducting screening operations. Not only was communication severely limited due to range, but the squadron was inhibited by the several large mountains that separated the troops from one another and from the squadron's tactical-operations center (TOC). Despite these limitations, the brigade commander depended on timely and

Figure 8. 1LT Steven Stringfellow of Apache Troop and his troop observation post reports opposing-force positions over FM to the troop command post. *(Photo by 1LT Kyle Howard)*

accurate reports to defeat the enemy.

The original PACE plan relied heavily on FM communication, forcing the unit to adapt as the fight unfolded. It was necessary to prioritize the use of FBCB2 messaging. Communicating, like moving or accurately leveraging firepower, is essential to victory and survival. The CoIST's ability to switch from FM to FBCB2 allowed the squadron to rapidly transmit time-sensitive reports and assessments to keep the brigade in the fight. This method allowed the squadron to identify and report on more than 85 percent of enemy activity during the final two battle periods at NTC, and it enabled friendly forces to counter enemy movements effectively.

CoISTs should rehearse the full PACE plan in training and take certain elements out to see if the CoIST can still communicate. Without timely reporting and analytical assessments, the squadron and the brigade may be completely blind on the battlefield. CoISTs must be able to communicate up, down and to other friendly units.

Summary

Adapting the squadron CoIST for a DA fight can be a challenging process. Implementing CoIST for 4-10 Cav came at a cost, both to the squadron and to the troops. However, when a troop executive officer assumes the role of troop intelligence officer and oversees a CoIST comprised of a mature, driven intelligence analyst coupled with several bright Skill Level 10 scouts, the payoff exceeds the cost.

An effective CoIST can provide assessments and data in a timely manner, shaping the direction of the entire brigade's fight. The 4-10 Cav witnessed this multiple times during its NTC rotation. The takeaway from this is that when units set aside time to properly train CoIST Soldiers on doctrine, IPOE, analog product production and how to execute a flexible PACE plan, the entire organization will truly benefit in the DA environment.

Responsibly integrating the lessons-learned from the past decade of war will ensure that our nation's military continues to be adaptive, responsive and effective when meeting the growing threats to our nation's security. CoISTs have been vital in the success of our nation's intelligence collection and analysis over the last decade of war, and CoISTs can continue to be a powerful tool to shape the future battlefield in a DA environment.

SGT Jared Clark is the S-2 NCOIC for 4-10 Cavalry, 3rd ABCT, Fort Carson, CO. He is currently deployed to Camp Buehring, Kuwait, in support of Operation Spartan Shield. His previous assignments include Blackfoot Troop's CoIST NCO within the squadron; S-2 NCOIC, 1st Brigade Special Troops Battalion, 1st ABCT, Camp Hovey, Korea; and targeting analyst, Task Force 3-10, Kandahar Airfield, Afghanistan. SGT Clark's military schooling includes Electronic Close-Access Targeted Reconnaissance, CoIST and Warrior Leader's courses. He holds a bachelor's of science degree in theological studies from Summit University of Pennsylvania.

Rethinking the Transition between Intelligence and Maneuver: the Cavalry Squadron

by LTC Mark H. Hoovestol

There is healthy debate in the Cavalry/Armor community about the future of Cavalry in decisive action (DA). Some of this discussion centers on the role of the chief of reconnaissance and the integration of the squadron operations center into the brigade's operations center. I argue that the Cavalry squadron provides the brigade more than simply reconnaissance. A quality liaison officer can perform the same task as a "chief of reconnaissance" as long as the brigade commander and squadron commander share visualization of the battlefield.

The recently published Army doctrine on Cavalry operations, Field Manual (FM) 3-98 (July 2015), states that "[t]he fundamental purpose of Cavalry is to set conditions for successful operations of the unit for which they are conducting reconnaissance and security tasks." As such, the squadron provides the brigade commander with options. Often, simply the presence of the Cavalry squadron in the enemy's zone of operations takes options away from the enemy. Destroying or reducing the enemy's reconnaissance forces, protecting the brigade combat team (BCT) while it generates combat power and securing key terrain for future operations are all types of operations the modern BCT Cavalry squadron must be prepared to accomplish.

Some discussion centers on making reconnaissance a separate warfighting function. Again, I argue that reconnaissance, more specifically Cavalry operations, provides the transition between intelligence and maneuver. Therefore it is not a separate warfighting function.

BCT in DA

To properly consider the role of the Cavalry squadron in a BCT DA, we must establish a template or a construct to understand the roles and responsibilities on the BCT DA battlefield. The brigade's fight is to identify the enemy's defeat mechanism and employ its assets to enable its maneuver battalions to achieve the brigade's objective. To achieve this, the brigade is primarily focused on the warfighting functions of intelligence and fires. The battalion fight is to close with and destroy the enemy. This is achieved primarily through the warfighting functions of maneuver and fires.

The Cavalry squadron fight overlaps both of these operations. Whether answering intelligence requirements in a recon pull of the maneuver battalions or providing time and early warning in a security operation, the Cavalry squadron must focus on fires, intelligence and maneuver. The squadron provides the transition of the brigade's deep fight to the battalions' close fight.

Figure 2 is provided by the National Training Center (NTC) as a template to help understand how the brigade fights and plans in DA.

Figure 3 gives more fidelity to how the Cavalry squadron overlaps these operations, and the warfighting functions and where they overlap. The squadron is the brigade's maneuver force during the brigade deep fight. The squadron's operations generate intelligence for the maneuver battalions. This is passed through reconnaissance hand-over with the maneuver-battalion task-force scouts.

Solving nonexistent problem

Earlier draft versions of FM 3-98 included discussion about establishing a "chief of reconnaissance" at the brigade command post to direct and synchronize reconnaissance and security operations. I liken this to an attempt to solve a problem that doesn't exist. The published version of FM 3-98 wisely deleted any reference to this method. Chapter 4 of FM 3-98 describes the collaboration required among all elements of the BCT staff and the squadron staff to properly synchronize the brigade's intelligence-collection plan. Some of my peers have argued that this function belongs in the squadron command post as an attachment to the brigade tactical-operations center. Our current doctrine (FM 3-98) provides the proper method.

My view is that planning, resourcing and synchronizing Cavalry operations is commander business. Commanders

Figure 1. PFC Alec M. Delzer, a Cavalry trooper with 6th Squadron, 1st U.S. Cavalry, scans for the enemy from his observation post at NTC. *(Photo courtesy of Cobra observer/coach team, NTC)*

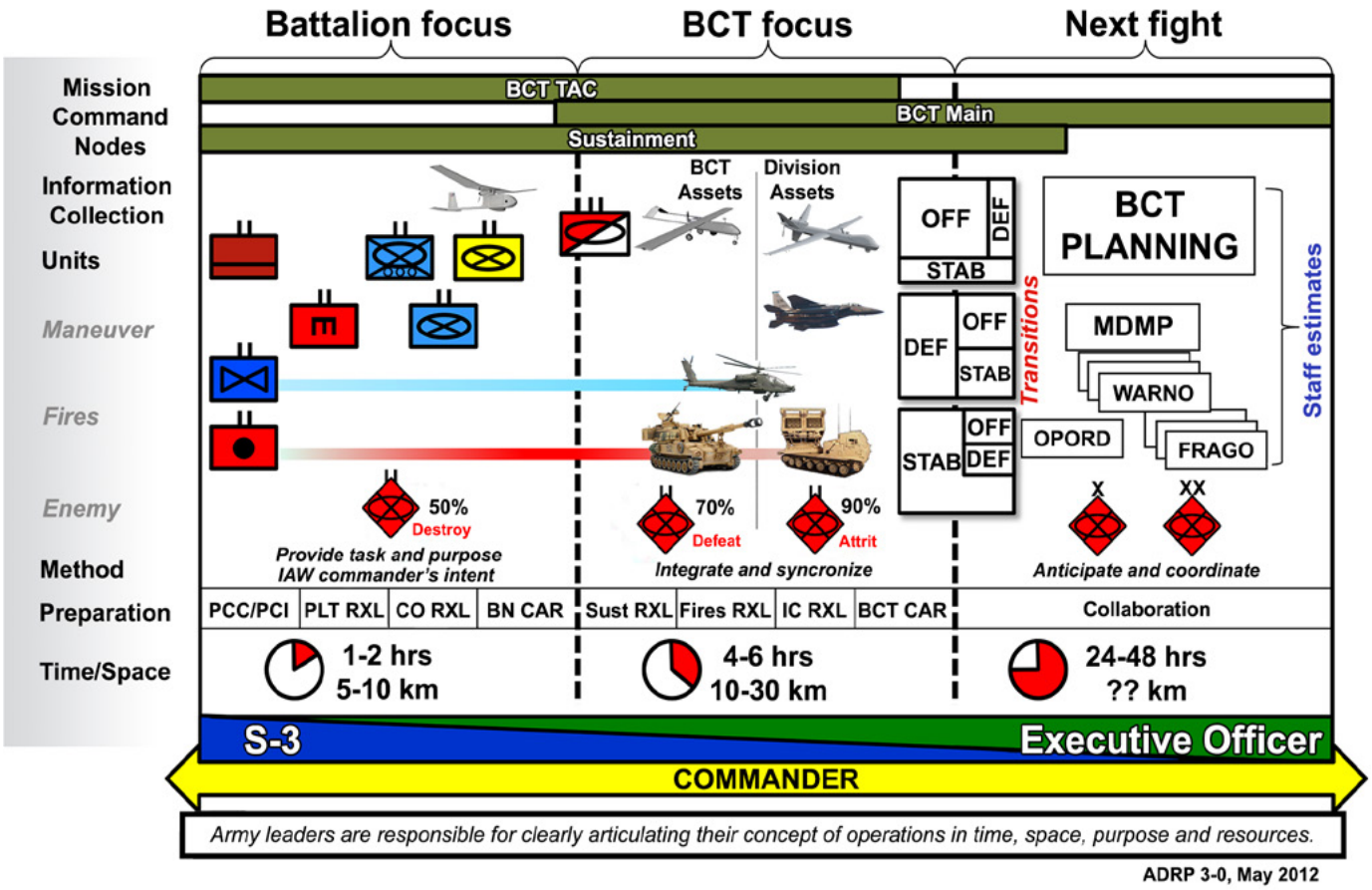
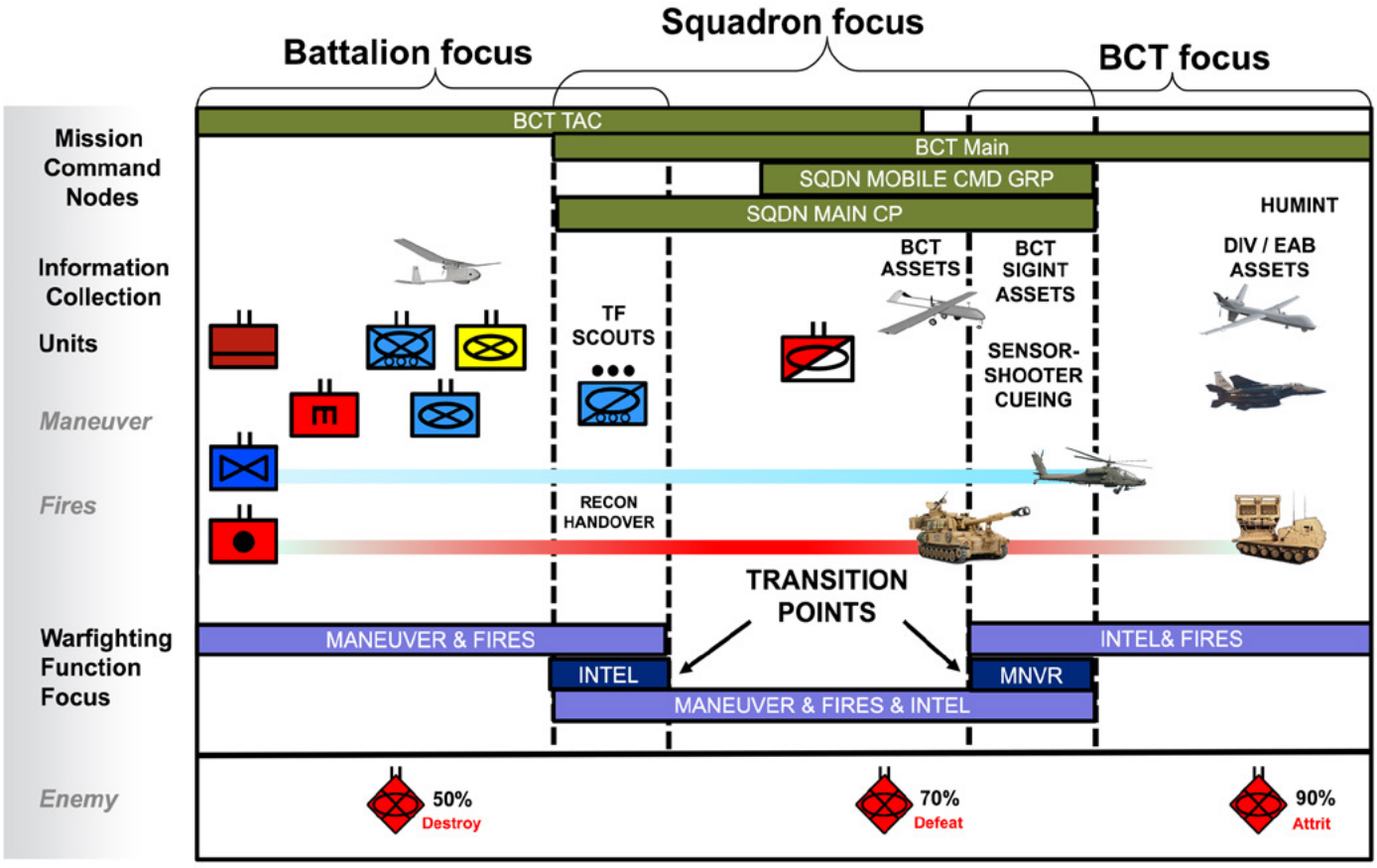


Figure 2, above. The BCT fight. Figure 3, below. The Cavalry squadron fight.



and staffs use the understand-visualize-describe-direct model of the operations process to execute effective Cavalry operations. Dialogue – either face-to-face or over collaborative means – between the BCT and squadron commanders and their staffs are key to shared understanding during the planning and execution phase. An officer detailed as the "chief of reconnaissance," a billet that is not authorized on any manning document, would likely be a secondary additional duty for either an assistant operations officer at the brigade or squadron. Cavalry operations are too important to the success of the BCT fight to entrust to the level of an additional duty.

Another perspective is that making the squadron commander the chief of reconnaissance would be a slippery slope to the squadron becoming the brigade S-2. Recent thought regarding the chief of reconnaissance has tilted toward making the squadron commander fill that role, similar to how the BCT's artillery-battalion commander is also the BCT fire-support coordinator and the brigade engineer battalion commander serves as the brigade engineer officer. Just as a commander provides guidance for fires and engineer efforts, a commander must provide guidance for Cavalry operations (reconnaissance, security and other operations).

The brigade S-3 and S-2, through the military decision-making process (MDMP) and guided by the commander's vision, must identify the tasks and purpose for the Cavalry. This "what" and "why" provides the framework for synchronizing intelligence collection and fires for the brigade's fight. The squadron commander, through his liaison officer, can advise and guide the implementation of intelligence-gathering assets he controls (the "how"), but this process must remain separate from determining the "what" and "why" of intelligence-gathering. Should the squadron commander become the sole owner of all intelligence as others propose, the brigade S-2 would become a backbench player.

The brigade S-2 is a key player in the brigade's operations. The brigade S-2 plays critical roles during the planning phase and MDMP, specifically with intelligence preparation of the battlefield (IPB) and wargaming. The brigade S-2 also integrates echelons above brigade intelligence assets, national-level feeds and human intelligence (HUMINT) into the collection plan. These roles must remain the brigade S-2's sole purview. The analysis section of the military-intelligence company (MICO) and the brigade S-2 section provide the capability to integrate many feeds of different forms of intelligence into a cohesive assessment, so this must remain a capability and responsibility of the brigade S-2.

Figure 4. CPT Dan Wagner, commander of Troop A, 6th Squadron, 1st U.S. Cavalry, plans his next operation at NTC. *(Photo courtesy of Cobra observer/coach team, NTC)*

Some of the brigade's military-intelligence capabilities are inside the operations dominated by the Cavalry squadron. Giving control of the brigade Shadow platoon and signals-intelligence (SIGINT) assets would streamline active intelligence-gathering and would not undermine the brigade S-2's responsibilities. Unity of command under the squadron simplifies tasking authority and synchronizes the overlap of the squadron portion of the brigade fight.

Figure 5 summarizes recommendations of functions that should remain in the brigade S-2 and MICO vs. those that should be moved to the squadron's control. These assets should be reorganized into the squadron's headquarters and headquarters troop to avoid standing up another company-level organization.

Also, the current table of organization for the squadron's S-2 section is not significantly different than that of an infantry-battalion S-2 section. Since the squadron's focus is generating intelligence for the brigade and its maneuver battalions, the squadron's internal intelligence section must be augmented with an intelligence warrant officer and a sergeant first class. This additional experience level would provide the capability in the squadron operations center to properly analyze information gathered by the Cavalry troops and other assets into quality intelligence assessments and streamline answering the brigade commander's priority intelligence requirements.

After 13 years of Cavalry squadrons serving with distinction as economy-of-force infantry battalions, it is time to start some serious thinking about Cavalry operations. FM 3-98 provides an excellent starting point for the conversation and has captured recent trends

Brigade S-2 area of responsibility	Squadron S-2 area of responsibility
Echelons-above-brigade intelligence, surveillance and reconnaissance assets	Brigade-level UAV assets (Shadow)
National-level intelligence feeds	SIGINT (Prophet, Low-Level Voice Intercept)
Special Operations Forces liaison	Squadron MDMP and IPB
Brigade MDMP and IPB	
HUMINT	
All-source analysis section from MICO	

Figure 5. Recommended brigade and squadron S-2 areas of responsibility.

from the combat training centers. The Cavalry squadron plays a crucial role in the BCT's DA fight. Massive organizational changes are unnecessary, and our Cavalry doctrine is sound. I argue the squadron is truly the transition between intelligence and maneuver, and it's also the transition between the brigade and the battalion fights. Minor modifications to the organization of intelligence functions – specifically the Shadow unmanned aerial vehicle (UAV) and SIGINT capabilities – at the BCT level will empower the brigade's fight for intelligence and streamline Cavalry operations.

There is power in the current organization of our Cavalry squadrons, but we can make them better by synchronizing our intelligence-gathering and analysis capability into the squadron while maintaining the planning and analysis sections at the brigade level.

Figure 6. A Cavalry trooper with 6th Squadron, 1st U.S. Cavalry, camouflages his observation post at NTC. *(Photo courtesy of Cobra observer/coach team, NTC)*

Figure 7. SSG Michael J. Viger, a Cavalry trooper with 6th Squadron, 1st U.S. Cavalry, directs his scout squad at NTC. *(Photo courtesy of Cobra observer/coach team, NTC)*

LTC Mark Hoovestol commands 6th Squadron, 1st U.S. Cavalry, 1st Stryker Brigade Combat Team, 1st Armored Division, Fort Bliss, TX. Previous assignments include brigade executive officer, 4th Infantry BCT (IBCT), 4th Infantry Division, Fort Carson, CO; squadron executive officer and operations officer, 3-61 Cavalry, 4th IBCT, 4th Infantry Division, Fort Carson; commander, Headquarters and Headquarters Company, 2-9 Infantry, 1st Armored Brigade Combat Team (ABCT), 2nd Infantry Division, Camp Casey, Republic of Korea; commander, Company C, 1-72 Armor, 1st ABCT, 2nd Infantry Division, Camp Casey; and tank-platoon leader, Company A, 1-68 Armor, 3rd ABCT, 4th Infantry Division, Fort Carson. His military schooling includes Command and General Staff College, Engineer Officer Advanced Course and Armor Officer Basic Course. LTC Hoovestol has a bachelor's of science degree from the U.S. Military Academy at West Point, NY, and master's of science degree from the University of Missouri.

Getting Left of Launch: Guided Missiles and the Threat to Our Force

by MAJ Michael J. Trujillo and MAJ Frank Adkinson

During the conflicts in Iraq and Afghanistan, the Department of Defense (DoD) and the U.S. Army expended massive amounts of capital to mitigate the threat of the improved explosive device (IED). The demands placed on teams such as the Joint Improvised Explosive Device Defeat Organization yielded frustration, endless trials of various risk-reduction techniques and, fortunately, an immeasurable amount of lives saved, both civilian and military.

With that said, what if we could rewind the clock to study IED emplacement and attack techniques while refining maneuver-based countermeasures before the first IED attack against coalition forces ever occurred? What if we had current and real-time information on an effective enemy weapon system, used asymmetrically, that through study we discovered ways to mitigate its threat through maneuver?

Such an opportunity exists today with a close examination of the anti-tank guided missile (ATGM) threat posed by non-state organizations.

The ATGM is not a new concept on the modern battlefield. Following the moderate success of unguided rockets against armored targets in World War II, the Germans developed the X-7, or Rotkappchen, specifically designed for the anti-armor role. The concept of the X-7 was simple: deliver a formidable warhead, capable of penetrating armor, with increased range, accuracy and lethality.[1] The X-7 has inspired 70 years of guided-missile innovation to date, leading to development and proliferation of ATGMs in an estimated 130 countries and various non-state groups, including Jabhat al-Nusrah and the Islamic State in Iraq and Syria.

Figure 1. The 9M133 Kornet, a tripod-mounted ATGM of the Russian ground forces. *(Photo from Wikipedia; used under license)*

ATGMs are now widely proliferated, highly lethal and, much like the IED, their simplicity, availability and effectiveness make them a tactical weapon system with strategic implications. Also like the IED, the ATGM comes in many forms, making a singular, uniform response to this varied threat a difficult and improbable proposition.

Syrian conflict

The Syrian Civil War began in 2011 with a popular uprising in response to President Bashar al-Assad's oppressive government. Following the onset of hostilities between the Syrian government's Arab Army (SAA) and the Syrian opposition, weapons captured by the opposition included various types of Russian- and European-made ATGMs. The opposition began posting ATGM firings as propaganda and training aids in early 2012 and continues postings to the present day.[2]

Perhaps the most applicable explanation of the current ATGM proliferation in Syria dates back nine years to the 2006 Israel-Hezbollah war. Following cessation of hostilities, the Israeli Defense Force was aware of the requirement to develop its manpower, training and anti-ATGM protection.[3] Learning from experience that small, mobile teams equipped with anti-tank weapons are a decisive force against a heavily armored adversary, they increased the armor balance within their frontline units.[4] As a result of this increased threat from Israeli armor, the Syrians focused on importing the latest ATGM technology, largely favoring ATGMs produced in Russia.[5]

With the experience gained from conflicts with Israel and the huge stockpile of ATGMs within the country, the perfect combination of factors was present to see an introduction of ATGM use in Syria. The current tactical employment of ATGMs by non-state groups in Syria demonstrates very clearly that potential. It also demonstrates how adversaries use asymmetric tactics,

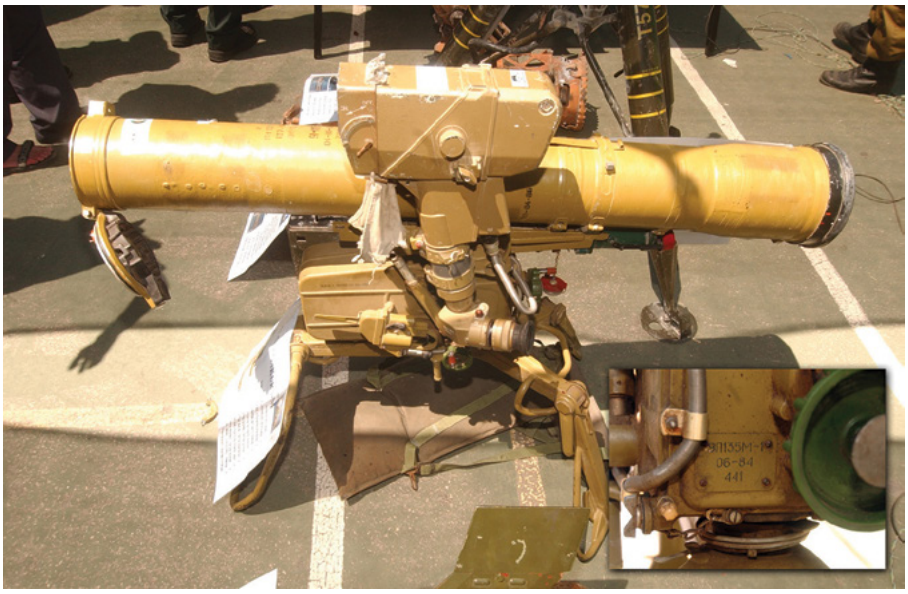


Figure 2. This Konkurs, a Russian-made anti-tank missile launcher, was captured by the Israeli Defense Force in southern Lebanon in 2006. It belonged to Hezbollah. Pictured in the lower right are Russian serial numbers on the weapon. *(Photo by Israeli Defense Force)*

techniques and procedures with advanced weaponry.

ATGM in Syria

There are several competent organizations within DoD, and more specifically the intelligence community, providing real-time and real-world analysis on foreign ATGM systems. The Short-Range Missiles Branch of Defense Intelligence Agency's (DIA) Missile and Space Intelligence Center (MSIC) is the intelligence community's center for excellence for analyzing development, proliferation, performance and mechanics of foreign ATGMs.

Through analysis of the more than 1,000 videos from open sources, MSIC determined there are eight ATGM systems currently in use by non-state groups operating in Syria. The top three most frequently used ATGM systems in Syria are the Russian Konkurs, Chinese Red Arrow-8 and the U.S. tube-launched, optically tracked, wire-guided (TOW) system.[6]

Although not the most technologically advanced or frequently used ATGM (by the Syrian opposition), the Russian Kornet-E system is probably the world's most dangerous ATGM due to its wide deployment.[7] The system has an effective range of 5.5 kilometers and a penetration into rolled homogenous armor, having defeated explosive reactive armor of 1200mm.[8]

Unlike rockets and rocket-propelled grenades (RPGs), ATGMs provide the operator with the ability to guide the missile onto the target after launch, thus improving accuracy. Also, ATGMs provide the user excellent standoff from his intended target. The Russian Konkurs/-M ATGM, for example, provides the user four kilometers of standoff from his target. (However, increased range equates to a potential for decreased accuracy, as the user may lose sight of the intended target.)

All eight active systems in use by non-state groups in Syria provide the gunner with semi-automatic, command to line-of-sight (SACLOS) guidance. SACLOS guidance simply means that wherever the user's optical crosshairs rest is where the ATGM will strike. All the active systems in Syria require very little operator training, and – due to the effectiveness of the link between missile and launcher – the user builds proficiency very quickly.[9]

Target selection

The non-state use of the ATGM serves a multitude of tactical purposes, making it more of an "all-purpose tactical guided missile." Although firing trends demonstrate a clear preference for engaging Syrian army tanks, there are many examples of the ATGM's effectiveness against other high-profile targets. In September 2014, the opposition successfully engaged a Syrian MI-8 helicopter with a Kornet ATGM shortly after landing at an airbase in Northern Aleppo.[10]

Analysis of open-source ATGM firings in Syria shows tank engagements only represent half of ATGM attacks in the open source, with the other 50 percent representing attacks on military positions, armored personnel carriers and large-caliber cannons (artillery pieces and anti-aircraft weapons).[11]

Non-state ATGM tactics, techniques and procedures

Perhaps the greatest advantage of the ATGM is the standoff inherent in the system design, which makes it harder for the target to detect an engagement. The ATGM system works to increase security through distance between gunner and target. In many cases, the target of a non-state ATGM attack in Syria has no indication or warning an attack is about to occur (much like the IED of past and current conflicts).

The tactical advantage of the ATGM over the IED, however, is the distance between gunner and target. An ATGM gunner can engage his target from several thousand meters away, outside of direct-fire contact. Following the attack, the gunner can either retrograde or reposition for an exploitation attack.

In all the attacks observed in the open source, the ATGM team's preparation of the kill zone probably only involves a map recon, launcher set-up and tactical patience in the ambush position. There is no burial of an explosive or preparation of sensors and initiators.

Although the ATGM offers increased security to the ATGM team through standoff, max ranges vary depending on the system used.[12] Non-state groups recognize that system choice depends very heavily on system availability and thus favor launch locations that mitigate the risk of counterfire yet provide good long-range shot lines. Rooftop attack positions account for most non-state ATGM launch points; firing positions that offer an elevated attack profile compared to the intended target

are also commonly used.[13]

Implications for current, future warfare

DoD's and the Army's response to the IED threat was nothing short of professional and life-saving. The IED's rapid evolution and increased attacks against our warfighters forced reactive instead of active solutions. SAA is experiencing a similar scenario against the non-state ATGM threat. After almost four years of attrition of Syria's armored force, there are signs that this conventional force understands the threat and is adapting. In one recent attack on an SAA tank platoon, a destroyed tank's wingman recognized the ATGM attack and implemented appropriate maneuver-based countermeasures to mitigate – and in this case, eliminate – the effectiveness of a second ATGM attack. Through maneuver and concealment, the wingman was able to force the ATGM gunner to lose line-of-sight and therefore fail to achieve impact during a second ATGM launch.[14]

The continued proliferation of both ATGM systems and ambush techniques among non-state groups is an absolute certainty. The combination of lethality and effectiveness makes the ATGM a clear threat to both armored and unarmored formations, including low-flying and parked aircraft.

Training for threat

It is essential that we model our training and tactics, techniques and procedures (TTPs) against the current use of these highly deployable weapon systems. The Army's Combined-Arms Training Strategy (CATS) is a highly useful tool for leaders within our formations as they design their mission-essential tasks list (METL), unit tasks list (UTL) and supporting individual tasks. The use of CATS is decisive in the development of a highly effective and efficient training plan that prepares an organization for its assigned mission. Although it's nearly impossible to assign a task against all scenarios that our Soldiers and leaders face in combat, it's important to identify training opportunities based on the high probability of encounter with a specific type of enemy weapon system.

As an example, the UTL for a tank company provides the user a consolidated list of 97 recommended tasks. Each entry includes the requisite tasks, conditions and standards required for training and evaluation. The measures required for combined-arms maneuver and wide-area security are clear, with inclusions such as "Secure Civilians During Operations (07-2-4054)" and "Conduct an Attack in an Urban Area (07-2-1261)." Also, and in recognition of the persistent IED threat to our force, there are two separate tasks for preparation and response to IED attacks.[15]

Within our combined-arms training strategy, there is an opportunity to implement and evaluate ATGM risk-reduction measures with minor adjustments to the UTLs. One could very easily argue that ATGM threat mitigation through training should occur as a part of a unit's development of TTPs through such prescriptive documents as a unit tactical standard operating procedure (TACSOP). Although this is certainly true, it does not afford the emphasis required in the face of this growing threat. The Army and the training and doctrine-development community go to great lengths to analyze and predict the best practices for training against current and future threats. Part of the recipe for success is evaluation criteria during culminating training exercises. If maneuver against current threats is not part of the Army-wide evaluation criteria for training, the threat is essentially ignored.

Back to basics

Tankers and cavalryman reared before 9/11 remember a battle drill called the "Sagger Drill." The drill carries the name of the Russian-made Malyutka (AT-3) ATGM that, in its original design, used manual command to line-of-sight (MCLOS) guidance. MCLOS guidance simply means the ATGM gunner uses a joystick to manually control the flight path of the missile as it approaches its target. The "Sagger Drill" used several measures, including smoke and varied maneuvers, to force the MCLOS gunner to lose sight of his target, thus decreasing the hit probability.

Although all the current ATGM systems posing a tactical threat to our formations use SACLOS guidance, which is more accurate, the Sagger Drill is still an effective means of ATGM threat mitigation. Any quick snap maneuver or concealment technique causes the ATGM gunner to lose sight of his target and thereby decreases hit probability. Our senior noncommissioned officers (NCOs) can easily integrate this drill (or a variation, depending on the vehicle formation) into field-training exercises or home-station training.

Unit deployment METL

At a minimum, a unit's deployment METL should include counter-ATGM maneuver tasks regardless of regional alignment. A two-day working group – in concert with ATGM analysts from DIA/MSIC and representatives of the doctrine and development community – is enough for development of the specificities and components of these tasks.

Temporary-duty costs are eliminated through videoteleconferencing; however, face-to-face is ideal for this type of working group. This working group includes representatives from each control branch and must include senior NCOs and officers (current or retired) from Infantry Branch and Armor Branch with experience in high-intensity conflict training, which characterized the Army's AirLand Battle concept before the beginning of counterinsurgency operations in Iraq and Afghanistan.

Replication at combat training centers

Modern ATGM systems and employment techniques are not accurately replicated at our combat training centers (CTCs). As an example, opposing-force anti-tank weapons targeting rotational training units (RTU) at the Joint Multinational Readiness Center (JMRC) replicate the effects of RPGs. The vehicle-mounted AT-4 Spandrel (Russian Konkurs) represents the only semi-modern ATGM the opfor at JMRC replicates. Non-state groups employ ATGMs from both mounted and dismounted platforms, but very rarely are these platforms military in design. Also, the average engagement range of an ATGM ambush in Syria is significantly further than the maximum range of

any RPG. Although non-state groups use non-tactical vehicles for mobility of heavier ATGM systems, dismounted ATGM teams represent the vast majority of ATGM attacks against conventional targets in Syria.[16]

This replication gap does not require development of a brand-new Multiple Integrated Laser Engagement System (MILES). Because the reality of fiscal constraint provides us the opportunity to exercise creativity in training, short-term adjustments to the training and evaluation techniques suffice. All pre-rotational operations orders provided to the RTU should include ATGM threat types with associated their range rings. During the beginning of the military decision-making process, the RTU's intelligence officer needs to account for this additional threat layer in the modified combined-obstacle overlay. Early phases of the operation involving the use of reconnaissance assets must account for potential ATGM launch locations (based on the characteristics and capabilities of the system being replicated). The RTU's S-2 recommends prioritized named areas of interest based on potential ATGM launch locations, and through approval of the operations officer, chief of staff and task-force commander, supporting assets are tasked against the most probable launch locations during movement and maneuver.[17]

The requirement for a signature during MILES engagements is a reality of training at a CTC. We recommend the use of existing opfor MILES systems (such as the Spandrel) in a dismounted configuration at ranges no less than two kilometers (where possible). We fully recognize the limitations of laser ranges for certain types of MILES. In light of this constraint, observer/controller/trainer adjudication is required. Replication of dismounted ATGM ambush teams and the associated attrition of successful attacks provide real-time feedback for analysis by the RTU's S-2, enabling development of counter-ATGM TTPs for inclusion in the RTU's TACSOP.

Figure 3. The Baktar-Shikan ATGM, a licensed-manufactured variant of the HJ-8 (or Hongjian-8, translated as Red Arrow-8), is a second-generation TOW anti-tank missile system originally deployed by the Chinese People's Liberation Army. Pakistan produces this missile system under license as the Baktar-Shikan. *(Photo from Wikipedia; used under license)*

Much like the IED, the non-state use of dismounted ATGM teams provides another layer of complexity to the asymmetric battlefield. Our training centers offer world-class training to RTUs and have the opportunity to increase the realism through inclusion of non-state ATGM ambush techniques.

Existing products

At the tactical level, units with no ATGM threat mitigation TTPs can implement simple measures with an understanding of ATGM basics. MSIC developed several products for widest distribution to the warfighter. These products include guidebooks, smartcards and defense intelligence reports.

Guidebooks provide a system digest of all ATGMs in use, with physical descriptions, proliferated locations and range and warhead capabilities.

MSIC maintains three smartcard products, already digital and ready for distribution to the force, including recommendations for ATGM countermeasures (maneuver-based) and vehicle-load-plan techniques. Also, legacy products from Armor/Cavalry officers assigned to MSIC maintain relevancy as they revive pre-9/11 techniques for ATGM mitigation.

These products are ready and available for any maneuver or support formation. Provision of these guidebooks and smartcards are available at little no cost to the receiving unit. Leaders within our maneuver formations need only to contact the authors for all current and relevant data relating to worldwide ATGM proliferation and use.

Conclusion

The Army has an opportunity to train against a current threat before staring it down on the battlefield. The ATGM is an effective, easy-to-use weapon system that deserves our respect and attention as professional warfighters. We need tactical and operational leaders to emphasize the ATGM's high potential against our force and to respond through replication in the training environment and education of our Soldiers and leaders. The cost of saving our Soldiers' lives and shaping a decisive victory is but a slight modification to the Army's training concepts and the return to the basics of counter-ATGM maneuver. The benefit is substantial.

If you are a tactical-level leader reading this article, you've taken the first step to increasing your formation's proficiency against this threat, and more importantly, saving your Soldiers' lives.

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The Commander's Role in Combined-Arms Breaching Operations

by CPT John D. Barrington and CPT Stephen M. Harmon

Your unit receives orders to seize an objective beyond an identified enemy obstacle belt at Refrigerator Gap while at the National Training Center (NTC), Fort Irwin, CA. After seizing the objective, your unit conducts passage of lines with a follow-on unit. Your enemy is a mechanized-infantry company deployed in an area defense (Figure 1). There is a reconnaissance platoon in the disruption zone, six 152mm 2S19s (self-propelled howitzers) in support and one air-defense-artillery team.

You believe the obstacle belt needs a breach, so you have to decide how to enable your subordinates to effectively conduct it. How will you, the commander, apply doctrine and forces to generate situational understanding within the time available to meet your superior's intent?

As company-team observer/controller/trainers (O/C/Ts) at NTC, we observed more than 100 breaching operations like this scenario. We noted some trends within that group; better-performing units used similar techniques when they planned and executed their plans. We determined that units achieved success when their commanders controlled synchronization of assets and maneuver in time and space, executed timely decisions based on situational awareness and ensured timely casualty evacuation (casevac) and resupply operations. Although there are myriad tasks implicit with breaching, commanders who applied leadership primarily on these areas were typically successful.

Planning, briefing

Foremost, we observed that successful commanders create a common operating picture (COP) for subordinates by using members of their and higher elements' staffs to describe the battlefield and its effects. They define the area of operations (AO), area of interest and area of influence by orienting to the general location. They provide graphical boundaries to box the areas, physically tracing important internal boundaries and terrain features. They familiarize their Soldiers with graphic-control measures (GCMs).

Successful commanders also explain the military aspects of terrain to ensure understanding of how their primary effects can influence the operation. They describe obstacles, including reinforcing tactical obstacles such as wire and mines and enemy protective obstacles like bunkers and trench lines. They also describe natural obstacles such as hills, mountains and hydrology.

The challenges associated with each

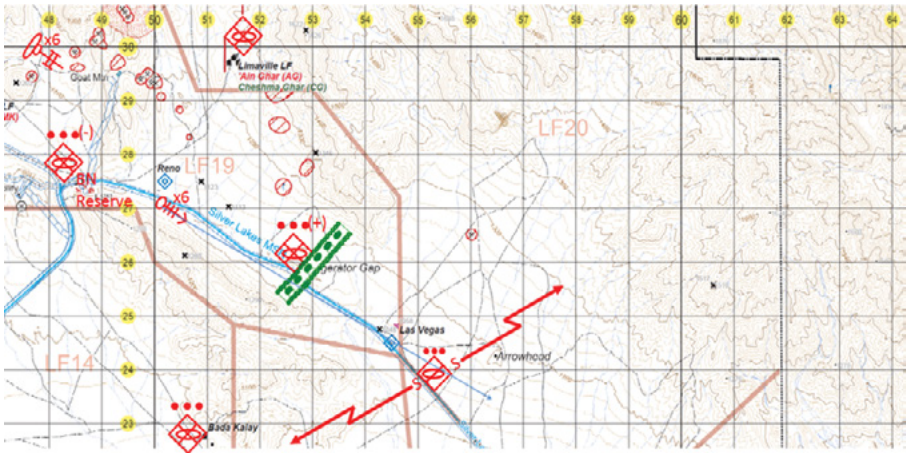

Figure 1. Mechanized-infantry company force array.

obstacle changes significantly depending on the capabilities of organic and attached equipment available. For example, a Stryker infantry battalion will find an obstacle containing wire, buried mines, an anti-tank ditch and berms more challenging than will a combined-arms battalion. Conversely, an armor organization finds that an enemy in rugged, hilly terrain surrounding a narrow corridor provides more challenges than will an organization with more infantry. Therefore, successful commanders must know the capabilities of the units under them when planning.

Successful commanders also must address avenues of approach for mounted and dismounted elements across high-speed, undulating and cross-country mobility corridors. They group mobility corridors and classify appropriate size, speed and formations for avenues of approach. As a result, subordinates can plan routes and understand time calculations for fires, resupply and reinforcement. The mission and intended avenues of approach determine key terrain. Successful commanders know that control of key terrain provides an advantage; thus, they make sure their plans affect the key terrain to their unit's advantage. These commanders also ensure shared understanding of information collection (IC) assets available from binoculars to thermal sights to air assets. They ensure observation and fields of fire encompass the capabilities of available IC platforms for both friendly and threat organizations.

Effective commanders depict significant surface danger zones or risk estimate distances, then discuss their impact on fire and maneuver during the operation with their subordinates. They also discuss cover and concealment for all eight forms of contact along identified avenues of approach and near planned mission-task locations. The take-away for future commanders who execute this type of operation is to consider using the highest level of protection for each weapon-system type. An example of this level of detail is "the wadi's walls will provide cover for 35mm and below weapons, but provide no overhead cover." On the example map (Figure 2), how will your unit use the obstacles, avenues of approach, key terrain, observation and fields of fire, and cover and concealment to your advantage?

Describe threat

Describing the threat is crucial, so successful commanders develop threat-force concept sketches for two levels up and include any hybrid threat when applicable. Threat graphics show the location, task and purpose for two levels down within a commander's area of operations. The goal is to provide subordinate elements with a shared understanding of how the threat will fight in sequence.

The threat plan must be as detailed as the friendly plan. Instructors at the Maneuver Captain's Career Course (MCCC) teach how to transition from traveling to traveling overwatch to bounding overwatch. Some graduates of MCCC said they felt rushed as company commanders. As a result, they developed their threat plans without enough detail to understand when contact became possible (traveling overwatch) or likely (bounding overwatch). However, successful commanders understand when and how their threat plan affects the friendly operation before creating the friendly plan, and they plan adjustments to maneuver accordingly.

Better units refine intelligence information until it is specific enough for the most junior squad leader to understand. Their rehearsals provide the right amount of threat detail two levels down and ensure friendly plans specifically address each threat element. This level of detail provides understanding of the threat's direct and indirect fire ranges and sectors.

In Figure 1, the mechanized-infantry platoon (MIP) your unit will attack occupies the objective along a linear obstacle. Figure 2 shows how to plan the enemy's defense. How could your plan and rehearsals improve understanding for your subordinates?

Direct, indirect fires

Synchronization of direct and indirect fire-control measures (FCMs) is critical across the formation when conducting the breach. Commanders found it exponentially more difficult and time-consuming to redirect fires and their effects based on a changing threat situation without planned control measures. However, successful commanders use the restrictive fire line, maximum engagement line, target-reference point, target array, enemy quadrant, formations and weapon-control status and engagement area. They also plan FCMs in conjunction with the fire-support officer (FSO) and incorporate FCMs from higher headquarters.

Better units also mass fires to generate the greatest effect for the least amount of fires used. An often-used example of effective massed fires is "if 14 Abrams tanks fire 14 sabot rounds, we should see 14 burning hulks." During planning and execution, the

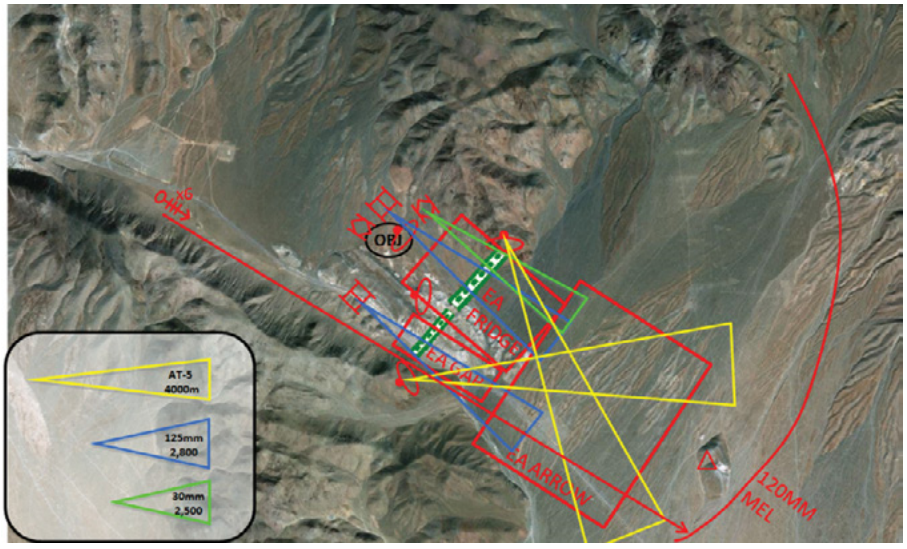

Figure 2. MIP(+) at Refrigerator Gap.

most successful commanders focus on synchronizing effects across assets. For example, their Multiple-Launch Rocket System fires suppression-of-enemy air defense (SEAD), then shifts to the enemy's reserve or destroys the mission-command nodes identified through signal intelligence or IC. Simultaneously, field artillery concentrates on antitank positions and mortars obscured with white phosphorous. Close-combat attack uses airspace deconflicted laterally by altitude or by time to destroy armored vehicles. Tanks and infantry fighting vehicles engage point targets prioritized within their sector of fire to achieve suppression and destruction of threat platforms that could affect the breach lane or objective. Synchronization of assets often determines the effectiveness of a plan.

Fires and effects often happen sequentially at NTC rather than simultaneously. Units struggle with this because they retain too much control over weapons employment. Rather than issuing engagement criteria or rehearsing employment triggers, poor-performing units require rigorous reporting requirements. Unfortunately, this slows the operation to the rate of communication with, and approval by, the commander. Conversely, successful commanders achieve synchronization of fires that allows the quickest effect on the threat and the least amount of combat power lost by employing the following:

- FCMs unified across all attached assets, which gives the best opportunity for simultaneous engagements;
- An orders process – including a combined-arms rehearsal with internal and enabler assets – that provides a good COP and a clear, concise scheme of maneuver;
- A solid understanding of all assets assigned and their capabilities; and
- An operations schedule or execution matrix complete with brevity codes.

Sustainment

Sustainment provides the means for a commander to fight and is exceptionally critical in the breach. While it is the executive officer's job to plan and support sustainment, the commander must incorporate key areas into his plan and execution. Better units produce graphics for the location of sustainment assets and discuss them thoroughly during the troop-leading procedures process. Ammunition expenditure is very high in the breach across all platforms, especially in engineering assets. Therefore, successful commanders position caches and company trains as close to the breach as possible while allowing for cover and concealment. Usually a "terrain feature back" enables quick resupply or recovery if required. The maneuver commander provides special emphasis on emergency resupply of Class III and V, with specific emphasis on Engineering Class V, and ensures incorporation into rehearsals.

In many instances, operations follow a different tempo than expected. Successful commanders and their staffs calculate and plan for resupply, refuel and rearm time across all platforms organic and attached to their units.

Casevac and recovery are an important part of almost any breach lane, including in the decisive-action training environment at NTC. Successful commanders ensure their units understand the evacuation plan for casualties and combat platforms. Soldiers can die of wounds when commanders fail to understand the availability of casevac platforms and the distance to higher levels of care. Successful commanders and staffs who estimate casualties during wargaming and plan mitigation measures often decrease the numbers of Soldiers lost.

They also rehearse the loss of combat platforms in the breach lane and ensure subordinates understand when and how recovery occurs. Normally, this recovery only extends to clearing room in the breach lane until all enemy elements are cleared from the objective. Some GCMs successful commanders use are casualty-collection points, ambulance exchange points, supply or emergency caches, trains positions at echelon and chemical-decontamination routes and areas. Commanders risk pyrrhic victories or an inability to accomplish follow-on missions without appropriate planning.

Preparation, execution

Successful commanders assign roles for their key personnel: senior noncommissioned officer, executive officer, FSO and subordinate maneuver leaders. They must ensure key personnel understand the higher element's IC matrix, and commanders request more assets if they are available. Also, they manage internal or assigned IC assets to provide timely feedback and to influence the planning process while maintaining availability for actions during the operation. Commanders must ensure they or their subordinates who manage the IC understand the capability of the cone or sphere specific to each IC sensor so they can employ the most effective asset.

Successful commanders also gather obstacle intelligence and update products throughout the planning process. They disperse the obstacle's description as soon as possible to increase parallel planning effectiveness. They also employ fire-support teams, maneuver elements and scouts to employ fires, isolate the threat, defend the obstacle and conduct target handovers. Scouts, mortar crews, snipers and supporting isolation elements must understand the position of artillery assets, gun target lines for SEAD, and preparatory fires and reporting requirements. Successful commanders provide scouts and snipers focus, tempo, engagement criteria specific to each weapon system and displacement criteria. They destroy threat observation and disruption forces while ensuring all elements maintain a viable casevac and resupply plan.

Suppression

The primary objective of the support force is to enable the breach force to create a lane and reduce the threat forces' ability or will to engage breaching assets. Also, the support force and breach force must reduce the threat forces at the objective to a number small enough for the assault force to destroy. If they fail to do so, the assault force typically suffers high numbers of casualties, fighting a larger than 3:1 ratio. Circumstances may require an increase in rates of fire, changes to FCMs or commitment of attached assets fast-

Figure 3. An Armored Combat Earthmover fills a ditch. Engineering assets like this one are of high value to enemy forces. *(Photo by CPT John Barrington)*

er than planned.

With this in mind, successful commanders position themselves where they can make these decisions. During execution, some commanders use the operations schedule to keep fires in order and deconflicted. Whatever the commander uses to understand the situation, success requires a system to synchronize timely fires and decision-making.

Obscuration, breach force

Successful commanders place friendly forces in advantageous positions that offer survivability while retaining effectiveness. Engineering assets like the Armored Breaching Vehicle are precious to friendly forces and of exceptionally high value to enemy forces. Better units use and implement a combination of elements to achieve obscuration. They use terrain on approach to the breach passage point, and smoke or white phosphorous targets to conceal the breach force from the last covered and concealed position to the breach release point. Vehicles and dismounts also employ smoke salvos or smoke grenades to obscure their own positions. Many thermal sights can see through most smoke, so the most effective obscuration for the breach force is a destroyed or effectively disrupted enemy.

Securing breach lane

The commander ensures the breach force is lined up and prepared to execute once the support-by-fire element gains fire superiority. Successful commanders do this through reports from subordinate maneuver elements and/or from a senior leader who controls actions in the assault position. When commanders decide to commit the breach force, they consider many variables. They develop breach criteria to codify the circumstances that must be achieved before committing the breach force. The criteria is specific enough to ensure the suppression force understands the effect they must achieve to trigger the breach force.

Once the unit sets those conditions, successful commanders ensure the synchronization of subordinate elements to shift fire and the passing of information on approach to the battle handover line. Most often, priorities of fire shift to the breach force. We recommend commanders be ready to make this decision quickly by monitoring progress toward breach criteria, employing an execution matrix to include fires and understanding the ammunition expenditures of the support force.

Better units also shift air assets using informal airspace-coordination areas to attack deep targets out of the artillery gun-target line and ensure each element understands its sectors of fire and primary targets. In doing so, they avoid target overkill and improve effectiveness of direct fires. As the breach force moves forward, successful commanders ensure the breach assets keep at least 50 percent redundancy ready and prepared to execute. Commanders also must track casevac to ensure assets remain available for follow-on operations. This graphic provides a recommended example of GCMs and FCMs.

Reducing obstacle

Successful commanders develop a reporting system or brevity codes to track progress while reducing the obstacle. All subordinate elements must understand the progress of breaching

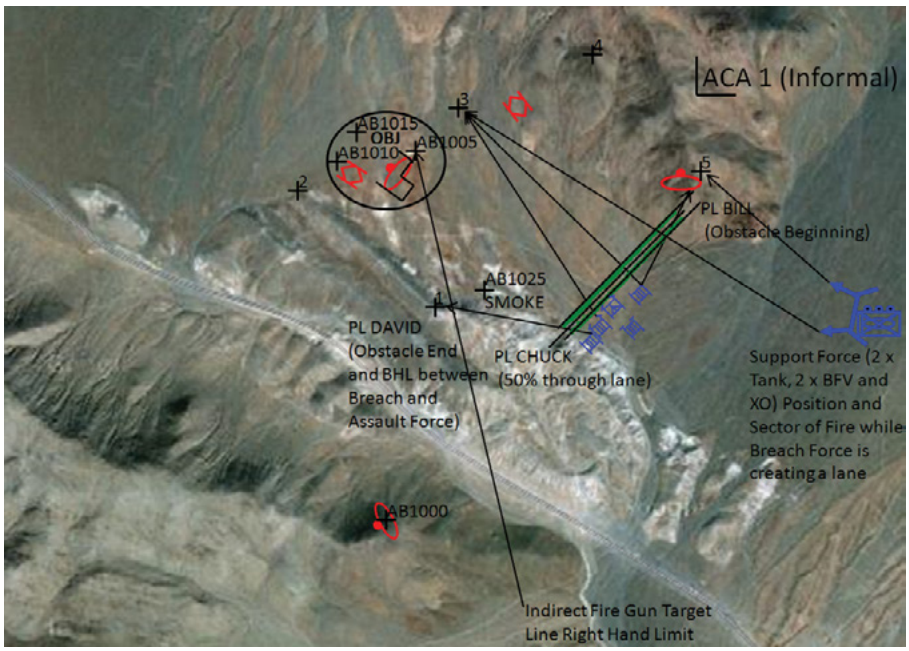

Figure 4. Suppression shifts, breach begins, assault force prepared to seize.

assets through the lane to ensure fires suppression on the enemy; obscuration of the breach continues while the breach force suppresses the enemy on the far side of the obstacle and the assault force prepares to execute.

Successful commanders develop a trigger that allows the assault force to begin its movement based on time-distance analysis. They synchronize the approach of the assault force so that it arrives as the breach force reduces the obstacle and secures the far side with the lane clear and the passage point marked.

For example, the breach force identifies the leading edge of the minefield and prepares to deploy the mine-clearing line charge (MICLIC). The assault force reports Readiness Condition 1. The breach force reports 50 percent through the obstacle. The assault force reports initiation of movement. The breach force reports breach lane marked and clear. The assault force reports entering the breach lane and assumption of priority of fires.

Simultaneously, the commander reports to the higher element to prepare for passage of lines. This synchronization reduces the chance of the assault force arriving too soon or too late, either of which could allow the enemy time to adjust fires against the assault force.

Assaulting objective

Commanders initiate the assault with a simple code word in ideal situations. The assault force usually doesn't have visibility of the passage point from its assault position. This makes the rehearsed lane marking standard operating procedure (SOP) and execution critical to success when passing through the breach force while executing the assault on protective obstacles or the objective. If possible, the assault force incorporates assets with breaching capability such as plows, rollers and demolitions, or even attached engineer assets, to defeat enemy protective obstacles and continue the assault. FCMs and positive identification are critical during the assault to prevent fratricide in an AO filled with obscuration and undulating terrain.

Generally, successful commanders move through the obstacle with the assault force. Doing so allows the commander control of all planned and unplanned fires faster than anyone else from a position best for making timely decisions in case of counterattack. Once the assault is complete, usually units are required to pass subsequent formations through their own.

The passage-of-lines SOP should be coordinated with the higher echelon to avoid confusion. In absence of a SOP, successful commanders coordinate with adjacent units during the planning phase and then directly on internal frequency-modulation nets or through digital systems during execution. Typical observed points of friction include positive identification, lane location and vulnerability of the adjacent unit to counterattack during its passage through the lane. Digital tracking systems, marking SOPs and quick, efficient reporting enables the most success.

In summary, successful commanders understand their role and the systems needed to control and synchronize a formation. They ensure their unit is ready to execute casevac and resupply. By making timely decisions, the commander can apply doctrine within the time available to best prepare forces for breaching operations. Planning tools to understand friendly forces, enemy capabilities, synchronization of time and space, and a COP allow commanders to place themselves in the best position mentally and physically for timely decision-making. By applying systems and procedures, rehearsing the planning process with subordinates and ensuring subordinates understand the commander's intent, a unit is prepared for successful execution in the decisive-action training environment.

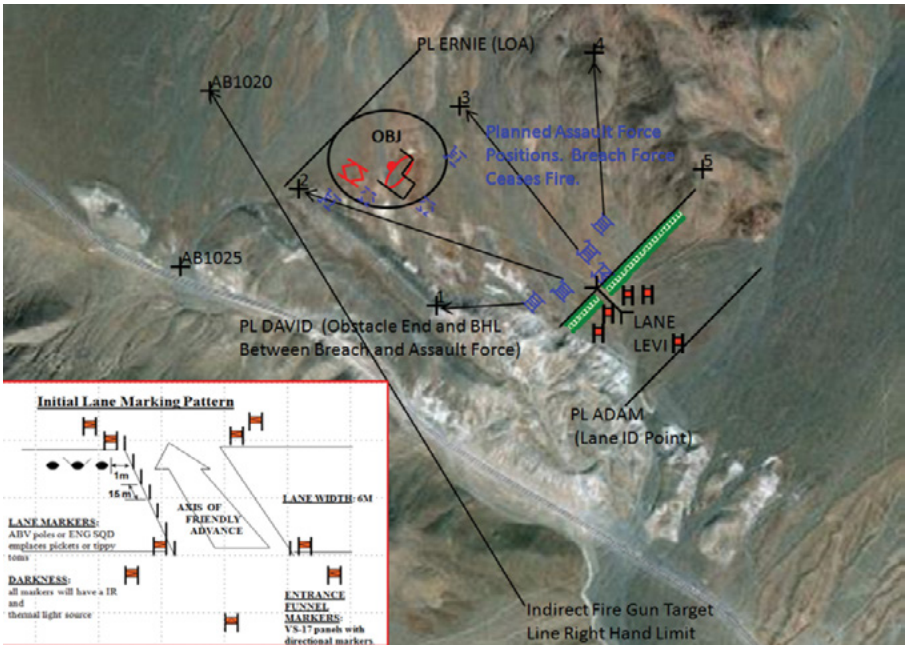

Figure 5. Lane open, breach force ceases fire, assault force seizes.

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CPT Stephen Harmon is a student of Arabic at Defense Language Institute, Monterey, CA. His past duty

Figure 6. Soldiers use a MICLIC to clear the lane at NTC. *(U.S. Army photo)*

Figure 7. An obscuration and plow tank moves into position at NTC. *(Photo by CPT John Barrington)*

assignments include senior task-force analyst, task-force operations O/C/T and infantry-company O/C/T with Scorpion Team, Operations Group, NTC; commander, Company D, 1-15 Infantry, 3rd ABCT, 3rd Infantry Division, Fort Benning, GA; and commander, Troop D, 1-16 Squadron, 316th Cavalry Brigade, Fort Benning. His military schooling includes Aviation Captain's Career Course, Armor Officer Basic Course, Officer Candidate School and the Survival, Evasion, Resistance and Escape School. CPT Harmon holds a bachelor's of science degree in marketing from the University of Alabama-Birmingham.

7 More Breaching Habits of Highly Effective Units

by CPT Damian M. Krebsbach

*(**Editor's note:** The title refers to "7 Breaching Habits of Highly Effective Units" by LTC T.H. Magness, as published in **Engineer** magazine, October-December 2003 edition, http://www.wood.army.mil/engrmag/PDFs%20for%20Oct-Dec%2003/Magness.pdf. An earlier version of the article was published in the May 2002 edition of **ARMOR**.)*

Before Sept. 11, 2001, Engineer Regiment training focused on providing mobility and countermobility to maneuver units and enabling our forces to project power via land, sea and air. We trained using offensive and defensive missions in a force-on-force environment; supplies and infrastructure were provided strictly from the rear, if at all.[1]

The years following the 9-11 assault saw a shift in the attack methodology of these new enemy forces, causing the Engineer Regiment to largely focus on counterinsurgency operations (COIN) in Iraq and Afghanistan. The engineers' main effort during this period centered around providing support, such as route clearance or construction capabilities, from a generally static location (forward operating bases or combat outposts) with a great deal of infrastructure already established.[2] With most of our mission sets focusing on COIN, little time was spared to get back to our roots: providing mobility to maneuver forces.

Most of our leaders experienced with traditional force-on-force missions against near-peer enemy forces (armor and mechanized infantry) have by now left the Army or have been promoted to a level where their experience is available for setting training goals and standards at combat training centers (CTCs) and in U.S. Army Training and Doctrine Command doctrine, but they are not available to directly influence Soldiers at the company level and below. This poses a problem for the Engineer Regiment in the near future. The next enemy we fight will more than likely be in a land without an intermediate staging base (such as Kuwait) like we have enjoyed exploiting during operations Iraqi Freedom and Enduring Freedom; instead, we will likely be forced to project our power directly from the United States, where we expect 99 percent of our troops to be stationed by 2020. We will have to establish a staging base, or lodgment, into our area of operations.[3]

Our enemy will also be different. Instead of facing a traditional enemy (blue vs. red) or guerrilla-like insurgents, we will face a hybrid threat in a very dynamic environment, much like Hamas. The enemy will pit us against aggressive anti-access and area-denial measures that include defenses in depth and complex layers of improvised explosive devices.[4] Therefore, the Engineer Regiment must refocus its training to meet these future requirements. Now is the time to start as the U.S. Army transitions out of missions in Iraq and Afghanistan; we need to realign our training objectives and mission sets, and we need to train to this purpose with Armor Branch Soldiers.

Way ahead

The way ahead will require engineers to be part of the initial-entry force and set the conditions for the joint force commander. Engineers assist in the seizure and expansion of lodgments, and they set conditions for follow-on forces and the generation of combat power. After initial-entry operations, engineers support the maneuver force with several missions, most notably the establishment of tactical assembly areas and force-protection measures; route clearance and offensive breaching; lethal countermobility operations; and the construction of survivability positions against a hybrid threat.[5]

In an effort to evolve our mission-essential task list to focus on traditional engineer tasks in a hybrid environment (while maintaining proficiency in the COIN environment), 5th Engineer Battalion executed a combined-arms

Figure 1. LTC Sebastien Joly, commander of 5th Engineer Battalion; MG Leslie Smith, commanding general, Fort Leonard Wood; and BG Maria Gervais, commandant, U.S. Army Chemical, Biological, Radiological and Nuclear School, Fort Leonard Wood, discuss the integration of SOSRA during a combined-arms breach in the January 2015 FTX at Fort Leonard Wood.

breach (CAB) field-training exercise (FTX) Jan. 26-30, 2015, at Fort Leonard Wood, MO. The FTX included more than 400 Soldiers from 5th Engineer Battalion, 988th Military Police Company/4th Maneuver-Enhancement Brigade and elements from 1st Infantry Division. The 1st Infantry Division sent five M1 Abrams tanks, two M2 Bradley fighting vehicles, three OH-58 Kiowa helicopters and five UH-60 Blackhawk helicopters.

The FTX's purpose was to certify the platoons of 515th Sapper Company for National Training Center (NTC) Rotation 15-06. In addition to breaching a complex obstacle (comprised of an anti-tank ditch, a 10-foot berm, anti-tank mines and protective obstacles), we evaluated 515th's ability to produce warning orders, operation orders and fragmentary orders. We also evaluated the troop-leading procedures of all units involved, the air-to-ground Integration of breaching elements and combined-arms rehearsals.

The 5th Engineer Battalion staff planned and resourced the CAB FTX to force both the maneuver and engineer commanders to address issues at the company level that LTC T.H. Magness, the "Sidewinder" S-3 at NTC, observed in 2002 after several CTC rotations and CABs. Following is a summary of his thoughts, but the article in its entirety is available on the Internet.[6]

Planning

- In terms of planning, the staff most poorly analyzed the terrain. The military decision-making process (MDMP) is not enough for a good terrain analysis; the engineers needed to answer the "so what" question and identify information that could prove detrimental or advantageous to both the enemy and friendly units.
- While resourcing and planning the mission, units failed to conduct reverse-breach planning, which created less than favorable conditions for the breach on the battlefield.

Preparation

- The maneuver scouts did not provide detailed obstacle intelligence to the maneuver commander. Scouts identified the location of the obstacle and the obstacle's basic construction but failed to provide any real detail that would allow the maneuver commander to reallocate resources during the breach, if required.
- Maneuver elements tended to focus on preparation for offensive operations only and did not consider missions to interdict enemy engineer defensive preparations.
- Most units conducted inadequate rehearsals before missions and did not prioritize breaching rehearsals. Units typically excel at rehearsing the reduction of an obstacle; instead, they need to focus on the suppression, obscuration, securing and assaulting (SOSRA) through the obstacle. These portions of the breach are where the most friction occurs.

Execution

- In most cases, the breach was unsynchronized. The friendly forces lacked mass at the point of breach, and when they did breach, they did so only in pieces. Also, when the conditions for the breach were set, the engineers were usually not in position.
- After the breach, most of the units failed to consider employment of the military police (MPs) for traffic control once the breach was secured.
- Units were so worried about moving forward in the operation that they did not consider expanding the breach once the site was secure.

After the FTX, 5th Engineer Battalion conducted an after-action review (AAR) with all participating elements. From that AAR, the participants identified the following seven habits and the resulting tactics, techniques and procedures (TTPs) that, in addition to the original seven habits Magness created, will greatly increase the probability of successful breaches when training at NTC and while fighting in a decisive-action environment in the future.

1. Engineers are not a one-trick pony. Enemy engineers rarely lie; if you encounter enemy engineers constructing a defense, observe 1,200-2,000 meters into enemy territory, and you will find the enemy's battle positions. The same can be said for the engineers in offensive operations. Engineer equipment and assets are rare enough that their use or presence on the battlefield anywhere indicates evidence of the enemy's main effort. At the CTCs and in combat, the opposing force will likely assume the same thing about our engineers.

TTP: Include engineer assets with scouts. Engineers will recognize complexities of obstacles that scouts will not. Reporting size, composition and location may seem enough, but take it one step further: a seasoned engineer will recognize the enemy engineer's intent, will be able to tell where the obstacle is the strongest and the weakest, and most importantly, if the obstacle is even worth breaching. This will save time and resources, not to mention lives, in the long run.

TTP: Lie with your engineers/main effort. In other words, hide your intent with your breach force like Roman general Cornelius Scipio Africanus (236-183 BC) did during his siege of Cartagena, when he used his main body (including his sappers) to feint an attack against the main gates of the city. After the enemy was decisively fixed and facing toward their greatest (perceived) threat, Scipio lead a small assault force of 500 men and breached the walls of the city from a seemingly impassable swamp to the rear and destroyed the enemy from behind as they faced his main body to the front. Use your engineers the same way. Find a way to tell a deceptive story without losing the ability to mass effects at the point of penetration. Take it one step further: don't just feint with your armor and infantry, sell it with your engineers. The opfor, assuming you are predictable, will focus its attention toward your engineers. Use this knowledge to your advantage.

2. Tactics are useless without sustainment. When we rehearse, we rarely consider the follow-on forces and supply trains. Usually, we make only enough time to rehearse actions on the objective but leave the sustainment portion to chance, or say "we'll figure that out when we get there." Unfortunately, future operations will more than likely not have Kuwait or the port of Karachi to push our supplies through to Iraq or Afghanistan. It is imperative we address our

sustainment issues and synch with our sustainment leaders, especially during initial entry.

Figure 2. The ACE is a vulnerable asset on the battlefield. Reverse-plan in case of failure.

TTP: Plan for traffic control. This TTP was listed in the original "seven habits," but it is worth further development. Identify a trigger or decision point to bring the MPs forward and rehearse this in both the combined-arms rehearsal and sustainment briefs. Use the MPs to control traffic through the breach. Give them this control point as soon as possible. This will ensure the continued flow of supplies forward behind the main body and free up maneuver assets to fight at future points of friction instead of pulling security in the unopposed rear.

TTP: Plan for the progression of the combat trains. These are our lifeline, especially in a decisive-action engagement. Do not be like GEN George S. Patton Jr. (World War II) and outrun your supplies. As the great tactician said himself, "At the present time, our chief difficulty is not the Germans but gasoline. If they would give me enough gas, I could go all the way to Berlin!" Do not neglect the supply trains and sustainment functions in your planning; it may not be essential for the first breach, but it will become instrumental in the follow-on offensive operations. Do not forget what the "A" in SOSRA represents: assault. This is key because it means to continue the mission, and that "the breach is enroute to a larger objective, and never an objective unto itself." Therefore, we need to remember to plan for our troops to get to that objective.

3. Plans should be more water and less stone (don't be set in your ways). While we insist that our Army should train innovative Soldiers and leaders who can think critically, we often prove otherwise, especially when conducting training. The breach assets used during our FTX took more than 90 minutes to breach two lanes through the berm. During the AAR, the senior leadership asked the company commanders several questions, including "What assets for berm reduction do you have at your disposal?"

TTP: Have a primary, alternate, contingency and emergency (PACE) plan for "reducing" with clearly identified triggers. The Armored Combat Earthmover (ACE) is designed to breach a typical berm in 20-25 minutes. We know that more often than not, the ACE will take much longer (provided it is still operational). Ask yourself what assets do you have available that could otherwise (even if unconventionally) accomplish the mission. Have you planned for an additional plow to breach the berm if the ACE fails? How about a platoon of sappers with mattocks and spades? There are many ways to reduce a berm besides an ACE; the point is to have a plan with a decision point or trigger identified during reverse planning so you do not have to make that plan under fire. Be creative and do not be stuck to your plan. The best plans are flexible and allow for rapid change in any direction.

4. Prepare to fight "Murphy" in the breach. "Murphy" was ever-present at our FTX. The snow and ice on top of the training area melted three days before the breach and the clay retained all that water, increasing its weight and decreasing the traction of our vehicles. For example, in one of the breach lanes, a tank stopped all traffic (and momentum) when the chain securing its plow snapped and required 45 minutes to repair. These are all events that are impossible to predict but can cause a breach to come to a halt just as quickly as a well-dug-in enemy.

TTP: Identify the worst things that could happen in the breach … and mitigate them. When we conduct MDMP, we emphasize planning against the enemy's most likely course of action and most dangerous course of action. These are of utmost importance in the breach and should always be considered. However, we do not typically

Figure 3. Muddy terrain decreased tanks' traction; one's broken chain stopped all traffic for 45 minutes.

plan for the "Black Swan" event: an event that is an outlier and a surprise, having a major effect or impact on the operation and is rationalized in hindsight as being both explainable and predictable, and thus avoidable. This event could be both of your tank-plows throwing their tracks in their lanes, or a mine-clearing line charge misfiring. Murphy's Law will complicate the battle as much for the Blue Forces as the opfor will; plan for the show-stoppers. We cannot mitigate all risk, but we can moderate the events that will cause us failure that do not necessarily relate to the enemy. We ***must*** have redundant capabilities of all kinds at every breach lane to be sure of success.

5. A successful breach requires empowered troops (i.e., mission command). During rehearsals, the maneuver force planned to identify the launch point for the Armored Vehicle-Launched Bridge (AVLB) with a smoke grenade for the breach. During the operation, the smoke grenade bounced off a rock and landed in an ineffectual spot. The operator deployed the AVLB to the marker anyway because "that was the plan" and he "didn't want to mess things up." Knowing it was likely going to fail, he still deployed the AVLB to that spot. Ultimately, he was forced to redeploy the AVLB to a location 30 feet adjacent, which took an extra 15 minutes – time that could have been saved if he had felt comfortable and empowered enough to make that decision to move of his own accord.

TTP: Use mission command properly: empower your Soldiers! Empower your operators, especially your special-engineer-equipment operators, to make decisions based on their knowledge, training and expertise. Ensure they have the ability and permission to make decisions at a moment's notice to allow the momentum to continue. Confirm your operators have the ability to talk directly to the breach-force commander during the operation to relay changes in conditions or limitations of their capabilities. Finally, ensure their knowledge and expertise is not squashed by "the plan." Common sense is just as important as tactics in the breach.

6. When expanding, go for breadth before depth. During our breach, both lanes closed at one point for at least 45 minutes due to equipment failures/malfunctions or conditions of the terrain. In a training environment, these are great learning events. However, while under fire, these failures to even a single lane could cause the destruction of the entire company.

TTP: Expand horizontally before you expand vertically. Certainly, in a company-sized breach, we need to breach completely through the obstacle to destroy the enemy and secure the area before we can expand the breach. The suggestion is focused at the battalion or brigade level: expanding horizontally prior to expanding vertically allows us to project power much more effectively. The Roman army led by Titus executed this TTP during the siege of Jerusalem in 70 A.D. Titus besieged the city and breached through two of the ancient city's walls before breaching the Fortress of Antonia. Once he had all three positions secured, he used the fortress to provide indirect fire on the Jewish stronghold in the temple, while soldiers used the other two breach lanes to skirmish through the city and surround the temple, thus securing victory.

7. Know thyself … and make sure your commander does too. The breach is not the place for your commander to find out what you realistically can do. Planning based solely on factors in our doctrine often leads to disappointing results. During our FTX, the commanders planned for the ACEs to breach the berm in 20-25 minutes. Instead, one ACE took well over an hour to breach through the berm and the other ACE got stuck. Thus, the breach took far longer than we originally planned (90 minutes longer). This, in turn, had a drastic effect on the amount of fuel left in the support force and assault force, as well as the amount of ammunition unexpended in each vehicle. It also limited the unit's capability to conduct follow-on missions after the breach.

TTP: Ensure your capabilities are understood two levels up and two levels down. Your leadership needs to understand the capabilities of the equipment (deadlines, faults, repairs) as well as the capability of your individual Soldiers. The 515th Sapper Company solved this problem by creating a capabilities card that succinctly demonstrates what the company is capable of providing on the battlefield, including its special-weapons systems. Also, they created a sustainment card to take with them to NTC. This card clearly described the various classes of supply, Department of Defense Ammunition Codes, National Stock Numbers, etc., needed to conduct the unit's mission effectively. This eliminated all guessing by our supporting units who were unfamiliar with our equipment.

The challenge for most units is how to translate these habits into executable tasks. The only way to develop these habits is to constantly practice them and expose Soldiers to as much repetition as possible. Conduct leader professional-development classes with your Soldiers and leaders on how to breach in a dynamic environment. Do not just brief them but discuss it with them. They probably have an idea you

Figure 4. CPT Pete Blades, commander of Company C, 1-18 Infantry, 2nd Brigade Combat Team, 1st Infantry Division, discusses the role of the armor company during the combined-arms rehearsal with BG Maria Gervais, commandant of the U.S. Army Chemical, Biological, Radiological and Nuclear School, Fort Leonard Wood, at the FTX in January 2015.

have not considered. Incorporate their thoughts and ideas into your training.

Conclusion

Make sure to use mission command when you train. It's critical to empower your leaders to be creative and decisive in the training environment, especially those special-equipment operators. The time to make mistakes (and learn from them) is back in garrison in the training environment, not on a battlefield. Encourage them to try new things and to learn from their failures.

You should also take time to do some research, read vignettes and publications about previous rotations (and their successes and shortfalls). Fort Riley, KS, recently published "Training for Decisive Action – Stories of Mission Command" (2014). It has several vignettes from NTC written by battalion and brigade commanders. Use this source of recorded knowledge to your advantage; emulate their successes and account for their mistakes.

These habits alone will not guarantee success at NTC or on our Army's next decisive-action battlefield. What they do is provide guidelines and reminders for maneuver commanders and their engineer supporters. Transitioning from a COIN to a decisive-action mindset will not be easy for our forces. However, practicing these habits with our Soldiers and continually exercising our staff with the relevant MDMP will make us once again ready to breach obstacles anywhere in the world.

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Notes

[1] COL Adam S. Roth (assistant commandant of the U.S. Army Engineer School-Reserve), discussions with the author, March 2012-May 2013.

[2] Roth, "Initial Entry Capability for the Engineer Regiment in Support of Army 2020," ***Engineer***, April 2013.

[3] BG Duke DeLuca (commandant of the U.S. Army Engineer School), discussions with the author, March 2012-May 2013.

[4] Roth, "Initial Entry Capability for the Engineer Regiment in Support of Army 2020."

[5] Ibid.

[6] Link to the original seven habits article, http://www.wood.army.mil/engrmag/PDFs%20for%20Oct-Dec%2003/Magness.pdf.

Multinational Engineers in a Decisive-Action Training Environment

by CPT Taylor M. Lee

As an Army, we focus on standards, procedures and doctrine to guide operations and gauge effectiveness. Those same standards assist leaders in identifying strengths and weaknesses within their units to design training to meet those needs.

In the multinational environment, the way units plan and execute in accordance with doctrine is often used as a measuring stick. While many of our multinational partners draw from our doctrine, many of them deviate from doctrine for various reasons. No area exemplifies this better than multinational engineer operations, specifically mobility and breaching operations. It is important not to assume these partner units are incorrect for deviating from U.S. doctrine but rather look closer at how many of them arrive at the same endstate despite what many U.S. units would view as shortfalls in breach assets and equipment.

When planning for and conducting breaching operations, U.S. engineer units work hand in hand with maneuver elements to integrate the breaching tenets and synchronize their efforts. These tenets serve as the foundation that allows elements to place equipment and personnel appropriately on the battlefield to ultimately achieve the endstate of expeditiously moving a maneuver force through an obstacle. While the tenets of *intelligence*, *breaching fundamentals*, *breach organization*, *mass* and *synchronization* guide the planning and execution of breaching operations, what actually allows us to execute our plan is our superior and constantly improving inventory of combat vehicles and equipment.

For example, how would our maneuver commanders choose to employ engineers if not for platforms like the Armored Breaching Vehicle or breach assets such as the mine-clearing line charge (MICLIC)? What if those same maneuver commanders didn't have equipment as advanced as our Bradley Fighting Vehicles or M1A2 Abrams tank to provide overwhelming combat power to destroy the enemy and seize the objective on the far side of the breach?

After considering those questions, assume that the enemy dug in on the other side of the obstacle possessed similarly advanced equipment to our own. It's safe to assume there would be slight deviations to our planning and execution of breaching operations. During decisive-action training environment (DATE) exercises at the Joint Multinational Readiness Center (JMRC), this is the scenario many of our multinational partners confront and overcome each rotation by employing various methods that play to their strengths.

Many multinational units embrace a breaching approach that relies more on finesse than raw combat power but that still adheres largely to the breaching tenets. The tenets of breaching fundamentals, breach organization and mass are very much approached and employed in the same manner as our own units do. It is in the other two tenets, intelligence and synchronization, that you can often see a more deliberate approach by multinational units to ensure the necessary amount of emphasis is placed in each of these areas during breaching operations.

Multinational differences

Again, intelligence can be attributed to the limited equipment many multinational units bring to the fight and their reluctance to place it in harm's way unless absolutely necessary. During JMRC's Exercise Combined Resolve II, scouts from Lithuania were able to provide the ground truth for much of the enemy obstacle effort to the maneuver commander through their aggressive methods of reconnaissance. These aggressive reconnaissance efforts are shared by many of our multinational partners and undoubtedly allow the commander the ability to see how the enemy is using the battlefield and terrain to shape engagements.

In addition to intelligence, many multinational units manipulate their task-organization in ways that often force synchronization. In breaching operations, synchronization is arguably the most important due to the complex nature of a combined-arms breach. To account for these challenges, many of our partners allow their leadership to become absorbed into the higher headquarters of the maneuver element they are supporting.

This has been observed in slightly varying ways at JMRC but most recently with the Dutch during Allied Spirit I. While at home-station, engineer-company commanders and platoon leaders serve a similar role as our own by concentrating their efforts to train and prepare their soldiers for combat. Once in a combat scenario, however, we observed company-grade officers become absorbed by the headquarters of either the maneuver company (platoon leaders) or battalion (company commander). In both cases, the officers assumed an advisory role to the maneuver commander, which allowed for ease in synchronizing engineer support to maneuver operations. The decision to task-organize in a way that absorbed the engineers into the maneuver element from the squad level to the company headquarters allowed the companies and battalion to operate as one unit, thus eliminating much of the challenge with synchronizing forces.

Playing to strengths

Many of the multinational engineer units that participate in JMRC exercises bring with them a firm grasp of U.S. doctrine and how U.S. units employ it. Although shared understanding exists, most units have enough self-awareness to know that committing their breach and mobility-support assets to an enemy obstacle that is observed and covered with direct and indirect fire would likely have catastrophic effects. A scenario that would prompt a U.S. unit to

Figure 1. A Dutch pipe fascine emplaced in an anti-tank ditch.

Figure 2. A Leopard engineer tank crosses the gap after engineers emplace the fascine.

fire a MICLIC to reduce a lane through an enemy obstacle does not translate to most of our partner nations' engineer breaching capabilities. Most simply do not have an effective means to quickly reduce a lane, and when a breach is attempted, it often results in an overwhelming amount of casualties due to excessive time being spent at the breach. To mitigate the threat to personnel and equipment, a number of our multinational partners employ an engineer reconnaissance section.

To illustrate, during a recent DATE exercise at JMRC, 412th Armored Engineer Company from the Royal Netherlands Army employed this capability in support of their 42nd Mechanized Infantry Battalion with excellent results. The reconnaissance platoon, comprised strictly of engineers, proved to be an incredibly versatile tool for the maneuver commander by providing accurate obstacle intelligence, which allowed him to alter his scheme of maneuver to better concentrate combat power at the weakest point of the opposing force's defense. In this particular case, the engineers identified a bypass that allowed the 42nd to maneuver their forces to the far side of the enemy's obstacles without ever committing engineers to breach anywhere along the opfor's extensive obstacle effort.

Despite our own doctrine (Army Tactics, Techniques and Procedures 3-90.4, ***Combined-Arms Mobility Operations***) stating that bypassing a known obstacle is always the preferred method, during exercises at JMRC, most U.S. units generally do not place a heavy emphasis on this method but rather opt to breach along their planned axis of advance. Not only does bypassing achieve the same endstate, but it also allows the maneuver force to maintain momentum as well as the offensive characteristics (Field Manual 3-90-1, ***Offense and Defense***, Vol. 1) that doctrine identifies as critical to defeating the enemy.

When thinking of combat engineers, most people envision sappers on the front lines placing demolitions in the breach and cutting through enemy obstacles. With many multinational engineers, this is not always the case. Often times, as the maneuver element advances toward the objective, engineer units are positioned in the rear to provide mobility support to combat-service-support elements preparing to move forward to resupply and refit personnel and equipment. Multinational engineers are able to reduce enemy obstacles but do this in a manner more closely resembling a clearance. Again, this is largely due to the equipment they are outfitted with and their ability to replace damaged equipment. Employing engineers in the rear allows them to better safeguard limited engineer equipment while also enabling mobility for rear elements.

To say that multinational units only stick to bypass routes would be inaccurate. Some do have unique capabilities that provide flexibility to the maneuver commander during force-on-force operations at JMRC. One such capability is the pipe fascine employed by the Dutch during Exercise Allied Spirit I. This simple piece of equipment, employed by their Leopard engineer tank, allows quick crossing of an anti-tank ditch by tracked vehicles. With additional time, the fascine can also allow for wheeled-vehicle crossing.

Summary

A look at how engineers are employed by our multinational partners shows a number of differences in how we each accomplish our mission. Doctrine shows us a proven way; however, many of our multinational partners have demonstrated that just as important is the ability to focus their own strengths even if it appears to veer away from what most would view as the preferred method. By capitalizing on strengths, many multinational engineers have demonstrated the ability to achieve the same end state with less resources.

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Figure 3. A Dutch soldier of Charlie Company, 42nd Infantry Battalion, 13th Mechanized Brigade, lassos a land mine before removing it from the open road during Exercise Allied Spirit at JMRC in Hohenfels, Germany, Jan. 15, 2015. Exercise Allied Spirit included more than 1,600 participants from Canada, Hungary, Netherlands, the United Kingdom and the United States. Allied Spirit exercised tactical interoperability and tested secure communications within alliance members. *(U.S. Army photo by SPC Justin De Hoyos)*

The Power of the Full-Dress Rehearsal

by MAJ Jeffrey J. Barta

Dating back to 1990, more than 65 professional articles about rehearsals were published in the Center for Lessons Learned,[1] ***ARMOR*** magazine[2] and ***Cavalry and Armor Journal***. This critical step of the troop-leading procedures (TLP) is essential to mission success, and the importance of effective rehearsals continues to be relevant now that we've returned to decisive-action training exercises at the National Training Center (NTC) for the past two years.

Conducting a full-dress, combined-arms rehearsal (CAR) is the most powerful method to create shared understanding; it prepares units for complex operations while serving as an efficient use of time in consideration of concurrent subordinate rehearsals and pre-combat checks.

The Army's operational environment in Iraq and Afghanistan changed the way the current generation of leaders used rehearsals. With units spread across disparate outposts and bases, back-brief rehearsals via digital or Integrated Tactical Network Environment systems became the primary means to prepare for operations. However, in a decisive-action training environment (DATE), CARs are necessary. They present the opportunity to bring subordinates together for a key-leader or full-dress rehearsal on their combat platforms.

Observations by observers/controllers/trainers (O/C/Ts) at NTC show that terrain-model CARs are the technique most frequently employed. Further observation illustrates this type of rehearsal is actually a back-brief with leaders standing on the terrain model as a platform to read back their portion of the script, and then they exit before the next participant enters the terrain model. Out of the 10 rotations during Fiscal Year 2015 at NTC, only seven full-dress rehearsals were conducted at the brigade combat team (BCT) echelon. The division headquarters directed six of the seven rehearsals in preparation for BCT-level live-fire attacks. Units conducting full-dress mounted rehearsals improved their tempo, synchronization and lethality compared to missions in which they conducted only terrain-model or back-brief rehearsals.

Another training unit further improved the processing time of fire missions by an average of nearly 12 minutes and the tempo of a combined-arms breach by more than one hour after conducting a full-dress CAR.[3]

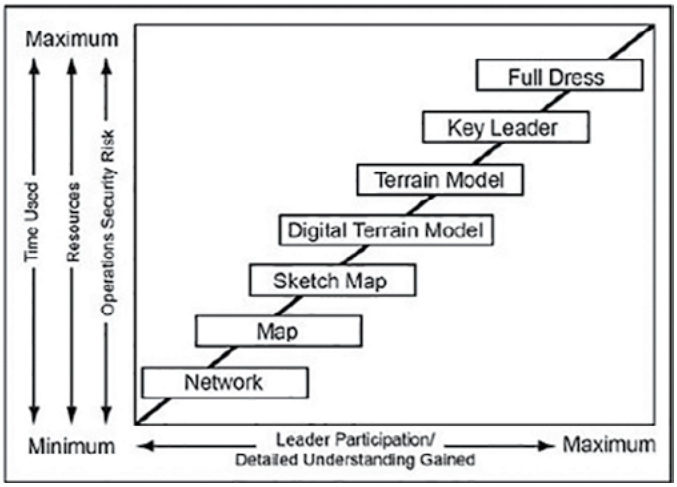

Figure 1. The direct relationship between the complexity of rehearsal techniques and the understanding they produce. *(Original is Figure 12-1 from Field Manual 6-0)*

During live-fire training, full-dress rehearsals are an institutionally practiced method to prepare for complex training events. It's common for key leaders to conduct back-briefs about their concept, and the collective unit conducts dry and/or blank-fire full-dress rehearsals on the range where they will execute. This process creates a shared understanding for all participating in a challenging event as well as mitigates risk.

Concurrently, the full-dress rehearsal drives participants to complete their pre-combat checks well before execution. These practices all align with the tenets of rehearsals described in Chapter 12 of Field Manual 6-04[4] and the performance measures detailed in the Combined Arms Training Strategies (CATS) Task 71-8-5122, "Perform a Rehearsal."[5] These practices should be performed with equal energy while preparing for a live-fire training range or preparing for live, virtual, constructive and operational missions.

The most powerful technique to employ full-dress CARs is to choose a piece of terrain in the unit rear area with enough space to maneuver the rehearsal attendees. The selected terrain should mirror the terrain for the upcoming battle. Creating a small-scale area of operations will allow unit members to see each other in time and space as well as to identify and fix friction points. Some goals and guidelines:

- Smaller-scale graphics should be produced specifically for the full-force rehearsal and ideally distributed in conjunction with the operations order.
- The execution of the rehearsal will also serve as a pre-combat check for all systems and tools such as the communications network, the fire-control infrastructure, reconnaissance platforms and sustainment processes.
- All participants are able to mount their combat platform and maneuver in space and time with their adjacent, forward and rear units.
- The direct-fire plan can be validated while combat identification markings of friendly forces are verified.
- The integrated indirect-fire plan links will be verified from the observers to the fires assets.
- All can understand the spatial relation of each echelon of aid stations and critical resupply elements.

An important aspect of executing a full-dress rehearsal is to induce friction and rehearse the planned branches, sequels and contingencies. The induced elements of friction should not become new wargaming, but rather should focus on the enemy courses of action and contingencies developed

Figure 2. An M777 cannon crew conducts drills as part of a BCT full-dress CAR at NTC.

during the military decision-making process. The rehearsal is not the time for collaborative brainstorming, but rather for the validation of shared understanding among the higher headquarters and subordinates, as well as the resolution of friction identified in the plan.

Another counterintuitive benefit to a full-dress or reduced-force CAR is that it saves time for subordinates. A full-force rehearsal is able to create shared understanding across multiple warfighting functions simultaneously, reducing the requirement for pulling subordinate staff members away from their units for separate warfighting-function rehearsals.

In a time-constrained environment, terrain-model or digital-terrain-model CARs are still relevant. To improve the outputs of a terrain-model rehearsal, it needs to be structured and facilitated in a manner that takes it beyond a back-brief. While conducting a back-brief is an approved type of rehearsal and increases the understanding between the leader and subordinate, this type limits the collaboration among all participants. Placing all participants on the terrain model in relation to each other in time and space leads to greater collaboration and shared spatial understanding of their place on the battlefield. Similar to a full-dress rehearsal, friction must be induced and contingencies practiced to identify potential challenges and ensure synchronization of all participants.

The DATE at NTC is complex and challenges units to fight against a near-peer enemy force. Preparation for each mission using effective rehearsals is necessary to achieve success. While this may be the latest in a number of articles on the subject, the suggestions listed in this article offer techniques to gain the most value from this crucial part of the TLPs.

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Notes

[1] Web search of indexed topics focused on rehearsal techniques through the Center for Army Lessons Learned.

[2] Web search of indexed articles focused on rehearsal techniques through past issues posted on the e***ARMOR*** Webpage.

[3] Empirical data collected during a BCT live-fire attack at NTC observed by the author.

[4] Field Manual 6-0, Change 1, ***Commander and Staff Organization and Operations***, Headquarters Department of the Army, May 11, 2014.

[5] CATS identifies the performance standards for Army tasks, per Army Training Network, 2015.

Figure 3. Brigade leadership at NTC conducts a terrain-model rehearsal in preparation for a deliberate attack.

Sustaining the Cavalry Squadron at the National Training Center

by 1LT Ian A. Murdoch

As CSM Alan Hummel said in Gunner's Seat (October-December 2015 edition), mission success historically has been "directly tied to logistics and maintenance." I'd like to enlarge that to all sustainment in this article as applies to the Army 2020 Cavalry squadron.

Overview

During a train-up for deployment in support of U.S. Central Command (CENTCOM), 3rd Armored Brigade Combat Team (ABCT), 4th Infantry Division, conducted a rotation at the National Training Center (NTC), Fort Irwin, CA. There the brigade tested its skills while conducting a decisive-action fight – the combination of wide-area security and combined-arms maneuver against a hybrid threat in a complex environment that includes multiple military and civilian factors.

This NTC rotation was the largest in recent history, with the ABCT organized under the ABCT 2020 model. As such, the brigade gained a third combined-arms battalion (CAB), and its brigade special-troops battalion was reorganized into a brigade engineer battalion to add the capability of an extra engineer company. Including attachments, more than 7,000 Soldiers fell under the ABCT's control during four force-on-force battle periods and one BCT-minus live-fire exercise. These four battle periods consisted of three brigade-level movements-to-contact, a brigade defense and a brigade-level attack.

Cavalry support was provided by 4th Squadron, 10th U.S. Cavalry. The squadron supported the ABCT's mission by continuously providing forward reconnaissance and security assets for 16 consecutive training days. During the four battle periods and the live-fire, the squadron conducted zone and area reconnaissance, screen and guard operations, as well as limited-area security missions for ABCT-level assets scattered throughout the area of operations.

The foundation for success at NTC was built during the intense six-month

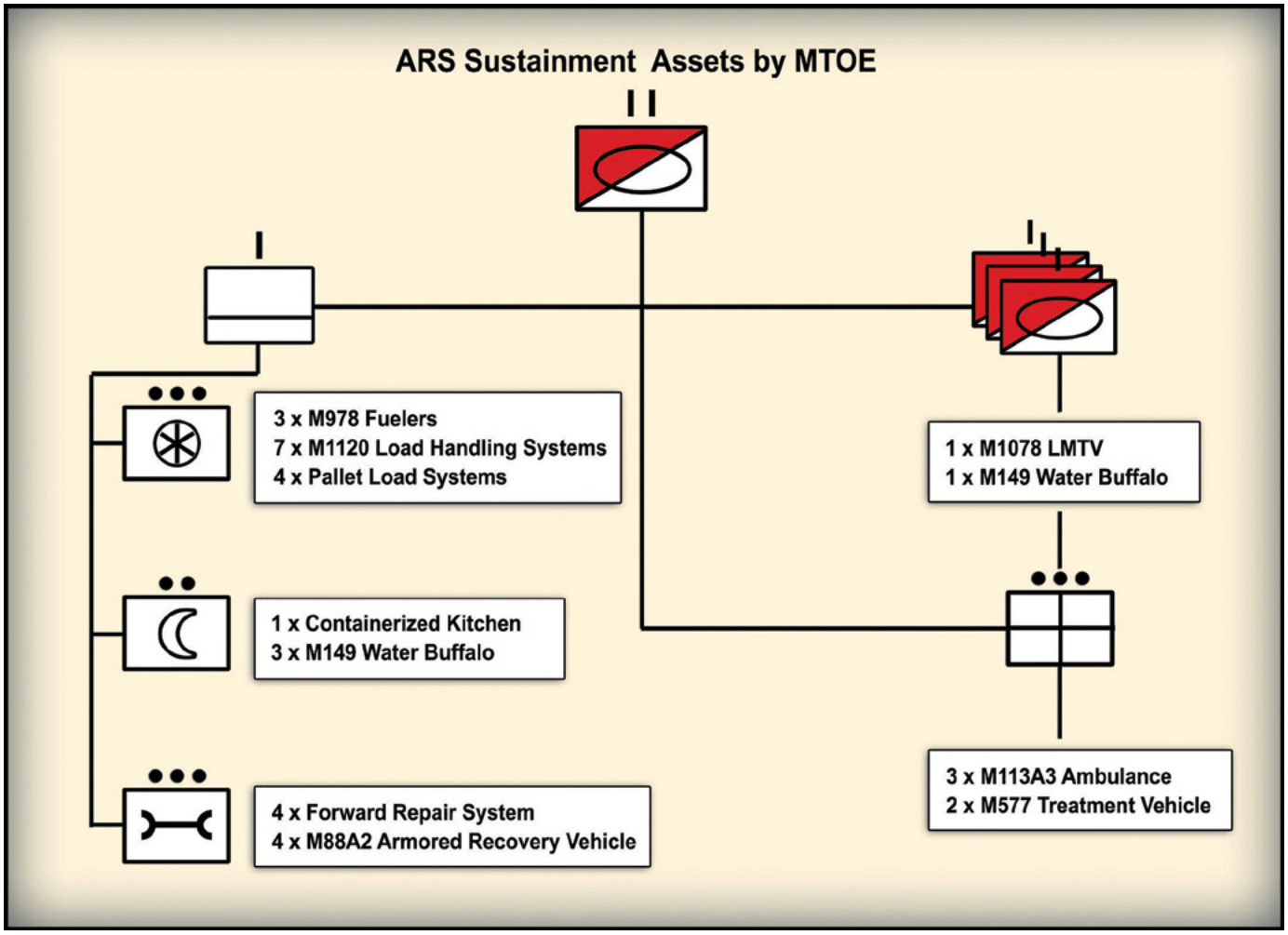

Figure 1. Task-organization table – Cavalry squadron sustainment.

train-up for the NTC rotation. The squadron's leaders identified three main friction points:

- Sustainment assets available;
- Echeloning of trains; and
- Sustainment planning/forecasting.

This made it possible for solutions to be identified before the NTC rotation. The solutions were implemented during the training, which allowed the squadron to enable decisive 3rd ABCT success in each battle period.

Available sustainment assets

The ABCT 2020 Cavalry squadron is comprised of more than 500 troopers (including the forward-support troop (FST)), more than 20 M2 Bradley-family vehicle platforms, more than 30 other tracked vehicles (M113-family of vehicles and M88A2 Recovery Vehicles) and more than 100 wheeled vehicles from humvees to Heavy Expanded Mobility Tactical Trucks and the Palletized Load System (PLS).

Supporting this heavy formation is an FST with a distribution platoon, maintenance platoon, headquarters element (including a field-feeding section) and maintenance-control section (MCS). The troop-sustainment assets consisted of the troop supply sections. Outside the FST, the squadron was sustained by its organic medical platoon, which was capable of providing role-one medical care.

As for sustainment staff, the squadron was supported by a two-Soldier logistics (S-4) shop, a six-trooper administrative (S-1) shop and the medical officer, who was dual-hatted as both the medical-platoon leader and the medical operations planner.

See Figure 1 for more details on the squadron's sustainment assets.

Due to personnel and equipment shortages, and after careful analysis by the FST and S-4 shop, the distribution platoon decided to bring only four of its Load-Handling System (LHS) vehicles from home station and draw three M1151 gun-truck platforms from the NTC draw yard. The headquarters element also drew two M1151 vehicles from the draw yard.

The squadron FST was hard-pressed or ultimately unable to simultaneously sustain each subordinate troop with these assets. The modified table of organization and equipment (MTOE) authorization is designed for the distribution platoon to operate as a single unit and either sequentially resupply the troops or resupply troops from a logistics-resupply point (LRP). However, the loss of even one of the FST's three fueler assets would have made this sustainment technique problematic during the rotation. Also, the extended distances over which the squadron operated degraded or eliminated an LRP's utility. At times during the rotation, the squadron had reconnaissance elements arrayed across a frontage of 30 kilometers with a distance of 25 or more kilometers from the brigade-support area (BSA) to the forward-most element; this required the distribution platoon to task-organize into smaller elements and attach to the scout troops. This process will be discussed in more detail in the next section.

Disseminating sustainment assets in this manner helped the squadron complete its mission in the short term, but it still forced it to rely on the brigade consolidation and reorganization process every 72 hours. Any operation that lasted longer than 72 hours between these refit periods would have been problematic for the squadron.

The brigade-support battalion (BSB) leadership task-organized their fuel assets to increase the FST's capacity, but between maintenance issues in the austere NTC environment and the additional fuel requirement of the BCT's third CAB, the BSB was unable to provide the squadron's FST with any more fuelers. The FST leadership identified several possible long-term solutions to this issue before and during the rotation. By adding more fuel assets to the Cavalry squadron's MTOE, the distribution platoon would have more depth and flexibility for logistical-package (logpac) operations. Also, adding 55-gallon fuel drums and hand pumps to either the FST MTOE or to each supported troop would add a decentralized resupply capability to the units without pulling personnel and vehicles from the FST.

The Fiscal Year 2016 MTOE for the BSB and the FST adds flat rack-mounted transfer pumping units that will allow LHS and PLS vehicles to carry fuel as part of squadron logpacs, lending more flexibility. Structural changes of this type offer a long-term solution that would reduce the need for *ad hoc* task-organization changes during training and operations.

Echeloning of trains

With a limited number of assets available for sustainment, the use and dispersal of these assets proved to be critical time and time again. Different schools of thought exist on how the combat trains of battalions and squadrons should be arrayed across the battlefield during decisive-action training environments involving a hybrid threat. The squadron experimented with several techniques during the train-up for NTC. Eventually, 4-10 Cav decided to echelon its sustainment into four separate nodes: field-trains command post (FTCP), unit-maintenance collection point (UMCP), combat-trains command post (CTCP) and an element in the tactical-operations center (TOC). This sustainment system also included four field-maintenance teams (FMTs) and three evacuation sections with two independent aid stations.

Within the BSA, the FST maintained its own command post, forming the nucleus for the squadron's FTCP. The headquarters and field-feeding elements – as well as the distribution platoon – were located at the FTCP with their assets. Each troop attached their supply sergeants along with their M1078 Light-Medium Tactical Vehicles to the distribution platoon to facilitate and streamline the logpac process.

The FTCP was responsible for receiving the separate classes of supply from the BSB, building them into logpacs and sending them out to sustain the squadron. By locating itself within the BSA, the FTCP was included in the BSA's wider security plan, and it was mere steps away from the BSB's supporting units and the support-operations (SPO) cell to deal with any issues in a timely manner.

Just outside the BSA, the squadron maintained a separate UMCP. This cell consisted of the MCS, the headquarters maintenance and

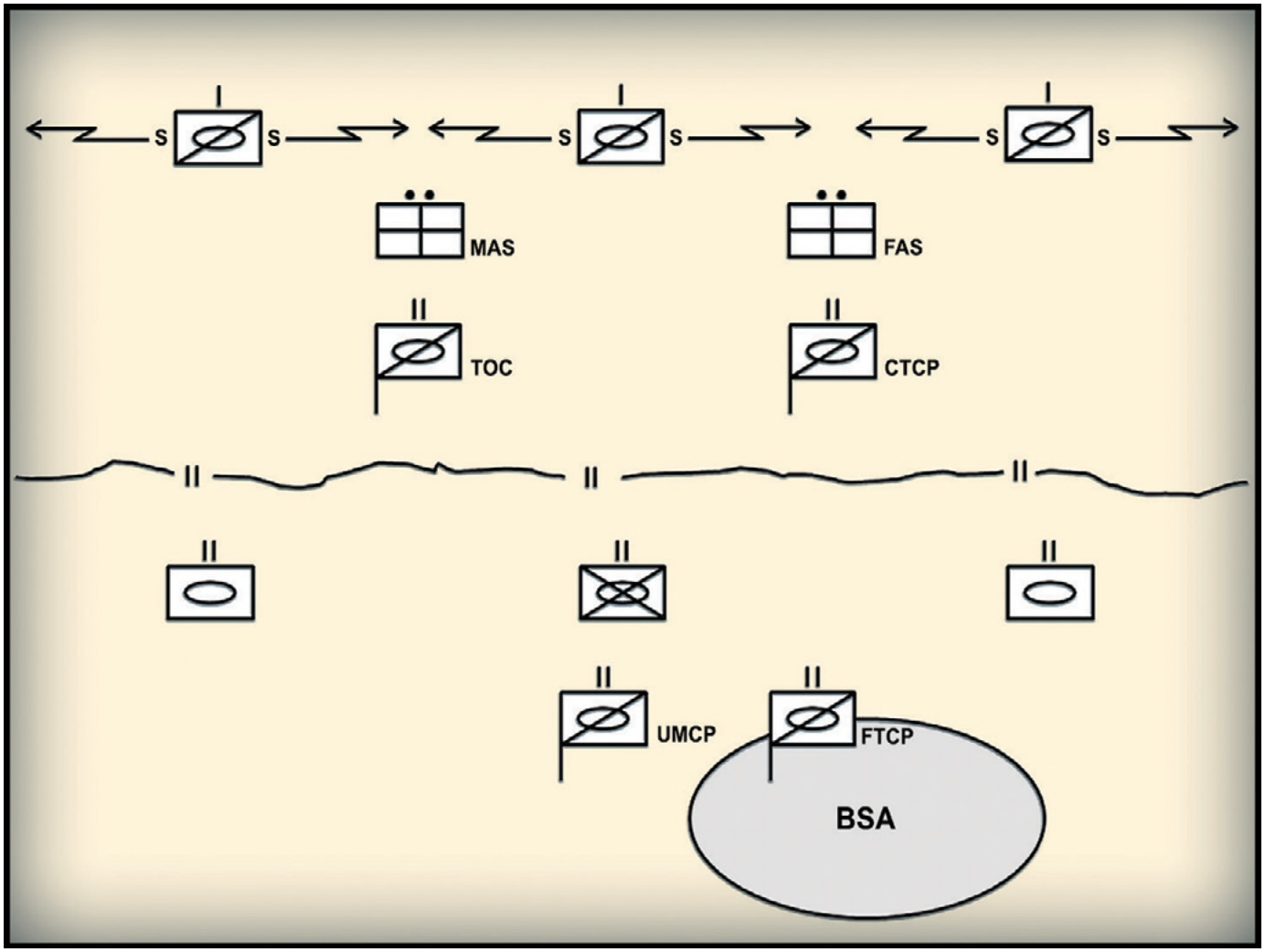

Figure 2: Echeloning of trains.

service-and-recovery sections, and roughly half the mechanics normally allotted to the troop FMT. Due to the rough terrain and the squadron's rapid operational tempo, the squadron maintenance officer decided to retain all four PLS-mounted forward-repair systems at the UMCP, along with additional mechanics. This decision made maintenance assets available to "surge" to non-mission-capable vehicles as needed. No dedicated security assets were provided to the UMCP, but the squadron standard operating procedure was to send personnel from the vehicles being repaired to the UMCP to assist with maintenance and to man weapon systems as needed. The value of this technique was validated in the first battle period of the rotation when a battle-damaged Bradley Fighting Vehicle (BFV) engaged an opposing-force vehicle maneuvering to attack two tactical assembly areas and the BSA.

By placing the UMCP near the BSA, the proscribed-load-listing clerks (Military-Occupation Specialty 92A) were able to rapidly pick up and process repair parts from the BSA with their own organic vehicles without the need to wait for the daily logpac. This technique, along with surging maintenance teams to mission-critical vehicles, helped the squadron maintain the highest operational-readiness rate on BFVs throughout the brigade.

Perhaps more importantly, the squadron's personnel officer and supply noncommissioned officer remained at the UMCP throughout the rotation. To turn in destroyed vehicles and equipment and to request replacements, as well as process casualty packets and request replacement troopers, the S-4 and S-1 needed access to Upper Tactical Internet (Upper TI), which was only available at the squadron TOC and at the MCS, located at the UMCP. These staff members embedded themselves with the MCS shop – instead of their traditional location at the CTCP – to draw Upper TI from the MCS' Very Small Aperture Terminal (VSAT), which is normally used only to send maintenance data and request repair parts. Normally, the Combat Service Support Automated Information System (CAISI) is capable of getting Upper TI connectivity from the Satellite Transportable Terminal or the VSAT to distant nodes, but CAISI's antennae line-of-sight requirement and NTC's difficult terrain precluded its use.

The squadron maintained the CTCP forward of other battalions but behind the troop command posts. That way, the squadron maintained the S-1 section; the chemical, biological, radiation, nuclear and (high-yield) explosives section; and the headquarters and headquarters troop (HHT) command team. With the TOC focused on

mission command of the fight and the FTCP out of position to accurately track the squadron's logpacs once they left the BSA, the squadron needed a node capable of mission command of all sustainment operations in the squadron's support zone.

Also, when the squadron's forward momentum required the TOC to move to a more advantageous position, the squadron required a node capable of taking over mission command of the fight along with the tactical-action center. Since the CTCP was equipped with both frequency modulation and Force XXI Battle Command Brigade and Below (FBCB2) systems, it was selected to track all sustainment-related movements between the screen line and the BSA, and to assume mission command during TOC "jumps." Missions that were tracked included medical and casualty evacuations, vehicles recoveries and logpacs, among others.

The final piece of the squadron's sustainment infrastructure was located within the TOC itself**.** The S-4 officer in charge was located in the TOC to participate in planning for each battle period and to ensure all sustainment needs were forecast and tracked correctly. By embedding in the TOC, the S-4 was able to ensure sustainment requirements were accurately synchronized with operations as each situation developed. As the TOC was resourced with the best mission-command equipment, this layout also allowed the S-4 to receive up-to-date logistical reports and statuses. The S-4 was also able to ensure the FTCP and brigade S-4/SPO were tracking operational requirements through Lower TI and Upper TI. Also, the TOC was assigned several mechanics, both for generators and tracked vehicles, who moved as part of the TOC to ensure the Deployable Rapid-Assembly Shelter systems and M1068 command vehicles received maintenance support as needed.

At the troop level, each line troop was assigned half its normal FMT to increase maintenance capability at the UMCP. This FMT was equipped with a contact truck and an M88A2 Recovery Vehicle. Also, each troop was assigned one M113 track ambulance manned and operated by attached line medics. With an assigned surgeon, the squadron was capable of manning both a forward aid station (FAS) and a main aid station. At times during the rotation, squadron elements were separated by impassable terrain features, necessitating separate logpacs for isolated or separated units.

In such situations, the squadron established a forward logistical element (FLE) and attached it to the isolated unit. These FLEs consisted of one fuel vehicle, one LHS with ammunition resupply and the FAS for medical support. In addition to the FLE, the squadron coordinated with friendly units in the isolated unit's to provide any more sustainment requirements.

Sustainment planning/ forecasting

With a highly effective and proven setup for its trains, the squadron needed a system to correctly forecast its sustainment needs and ensure resources made it to the Soldiers on the reconnaissance screen line. The S-4 used the Logistics-Estimation Worksheet (LEW), school-provided consumption tables (Command and General Staff College's Student Table 101-6) and historical data from the squadron's training to forecast the squadron's sustainment needs for every critical event during the rotational battle periods. The LEW and historical data also helped project the number of casualties by type and the number of vehicle losses to enemy action; it also helped project the amount and type of maintenance that could be expected during each critical event. Once the forecast was complete, the S-4 compiled the twice-daily troop-logistics status reports and sent both the on-hand status data and the projections to the brigade S-4 and SPO via Upper TI.

With the squadron S-4 being the only sustainer located at the TOC and other sustainment leaders scattered across the battlefield, the S-4 was vital to the squadron's sustainment-planning and forecasting process. At NTC, it was a rare occurrence for the squadron medical officer, S-1, FST leadership or the maintenance officer to be able to travel to the TOC to participate in every step of the planning process. However, the S-4 was able to plan all sustainment requirements for each battle period, not just for logistics requirements – thanks to digital input from the other sustainment leaders delivered via FBCB2 or email if available. Also, during prior military decision-making process sessions, all sustainment leaders assigned to the squadron collaborated to produce the sustainment paragraphs of operations orders, ensuring each was capable of performing the others' job to standard. This cross-training allowed the squadron S-4 or any other squadron sustainment leader to plan and forecast the squadron's sustainment needs alone if need be.

Squadron sustainment rehearsals were key to the squadron's success during the planning process. Pulling in the troop executive officers and first sergeants, the squadron S-4 and executive officer rehearsed the sustainment plan with the units and refined forecasts or timelines based on feedback from the operator level before execution of each battle period. Taking these refinements to the brigade-level sustainment rehearsal, the S-4 and squadron executive officer coordinated with the brigade staff, SPO section and other units in the brigade specifically about planned timelines and the SPO cell's own forecasts for the units. Once again, the other squadron sustainment leaders were not always able to attend the rehearsals due to distance and operational requirements. The S-4 had to be capable of briefing not just resupply but also maintenance, medical and personnel support as well. By interacting face-to-face with as many sustainment leaders as possible during the rehearsals, both brigade and squadron leadership ensured a better plan to get the right support where and when needed.

Every unit has its own personalities and its own challenges with equipment and personnel when it trains for a combat-training-center rotation and, ultimately, a deployment. By leveraging the assets available to the unit, constantly updating the way those assets are employed based on the mission and the situation, and aggressively forecasting and planning for sustainment activities, the unit will be able to do what the Army needs it to do – win!

1LT Ian Murdoch is 4-10 Cavalry's S-4

(logistics officer), forward-deployed to CENTCOM's area of operations. Other assignments include squadron unit-movement officer, HHT, 4-10 Cav; squadron maintenance officer, D FST, 4-10 Cav; troop executive officer, Troop C, 4-10 Cav; and scout-platoon leader, Troop C, 4-10 Cav. Murdoch's military education includes the Unit Movement Officer Course, Army Reconnaissance Course and Armor Basic Officer Leader's Course. He holds a bachelor's of science degree in biology from Virginia Polytechnic Institute and State University.

2016 GEN William E. DePuy Special Topics Writing Competition

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Possible topics include but are not limited to:

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- How should the Army measure the effects of PME on the conduct of Army operations? What metrics should it use?
- How should the Army measure the effects of Army education on Soldiers' careers?
- How well is the Army taking advantage of any educational opportunities it provides Soldiers?
- How well are the civilian study programs the Army pays for benefitting the force or the careers of Soldiers? What fields of study does the Army need most?
- How should the Army change the way it uses the expertise Soldiers gain through civilian study?

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For information on how to submit an entry, go to http://militaryreview.army.mil.

Fighting the Combat-Trains Command Post in a Decisive-Action Training Environment

by CPT Kyle S. Marcum and 1LT Andrew J. Prunty

During National Training Center (NTC) decisive-action (DA) Rotation 15-02, Headquarters and Headquarters Company (HHC) 1-68 Armor (part of 3rd Armored Brigade Combat Team (ABCT), 4th Infantry Division) successfully employed the combat-trains command post (CTCP). This article's purpose is to describe the doctrinal employment of a CTCP as well as the unit-specific tactics, techniques and procedures and standard operating procedures (SOPs) we employed to better sustain the fight in a DA environment.

Doctrinally, the role of the unit's combat trains are to trail from one to four kilometers behind the fighting elements and manage the Class III and V resupply. They are co-located with the unit maintenance-collection point (UMCP) and battalion aid station (BAS). The combat trains, run by the battalion S-4 officer in charge (OIC), act as a forward resupply element responsible for short-duration sustainment of the battalion.

Comparatively, the field trains, located four to 12 kilometers behind the combat element, are comprised entirely of the forward-support company (FSC), battalion S-1 and S-4 representatives, and the HHC command team. The HHC commander was responsible for coordinating sustainment support and served as OIC of the field-trains command post (FTCP), focusing on command-post (CP) operations. Also, the HHC commander understood and was responsible for security of the entire FSC element, and coordinated sustainment between the CTCP and the FSC.

The FSC commander coordinated for the battalion's logistical resupply through the brigade-support battalion while simultaneously focusing on commanding the company (U.S. Army Field Manual 3-90.5, Chapters 2-4, Paragraphs 12-1 through 12-8).

The most clearly identified flaws in executing a doctrinal CTCP are the correct distribution and placement of key personnel to most efficiently employ mission command. Through practical application, we found the S-4 OIC best served at the battalion tactical-operations center (TOC) – this allowed him to participate in logistical planning and clearly understand the fighting elements' sustainment needs. It also allowed the unit to incorporate the battalion executive officer's guidance on logistical and sustainment operations based on the contemporary operating environment.

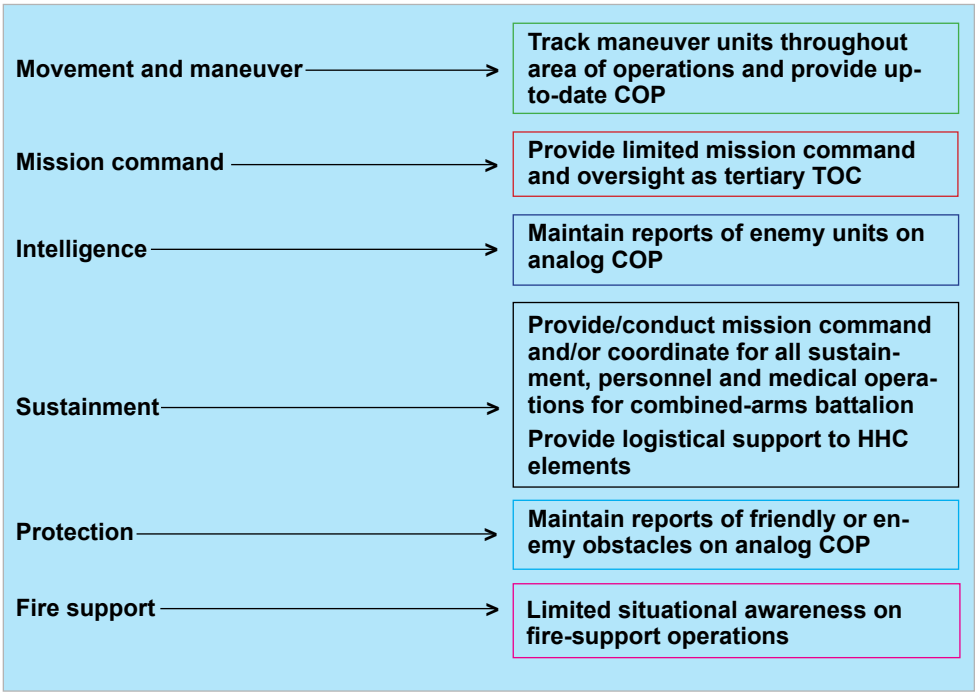


Figure 1. Breakdown of the CTCP by warfighting functions as executed during NTC Rotation 15-02.

Co-located with, and commanding, the field trains, the FSC commander ran the FTCP and UMCP, leveraging the abilities of the attached S-1 and S-4 noncommissioned officers (NCOs) in charge to coordinate sustainment, maintenance, casualty-tracking (regeneration) and major resupply operations. The HHC command team was best leveraged commanding the redefined CTCP within the area of the combat trains because of their maneuver experience and the HHC commander's seniority within the battalion.

CTCP establishment

Establishing the CTCP was conducted very similarly to patrol-base occupation. (See Figure 2 for patrol base vs. CTCP establishment characteristics.)

The combat trains established a short halt before CTCP occupation, at which time the HHC executive officer was responsible for conducting the leader's reconnaissance and quartering-party operations. The quartering party consisted of the executive officer's vehicle, a humvee with Deployable Rapid-Assembly Shelter (DRASH) tent and generator attached. The supply Light-Medium Tactical Vehicle accompanied the executive officer, facilitating set-up by allowing the executive officer and supply sergeants to establish the site while the combat trains' main body moved to the newly established location.

Once the executive officer had determined a suitable location that met basic tactical characteristics for occupation, the HHC commander moved the main element – task-organized as himself; the HHC first sergeant; two fuel specialists; M88 "Hercules" Recovery

Characteristics of a patrol base	CTCP-specific characteristics
• Terrain the enemy would probably consider of little tactical value • Terrain that is off natural lines of drift • Terrain that would impede foot movement • Terrain that can be easily defended • Terrain that provides cover and concealment	• Terrain that allows infiltration and exfiltration of ground medical evacuation • Terrain that allows access to fuelers, PLS and other logistics vehicles • Terrain that can be defended by minimal manning • Terrain that facilitates good communication (line-of-sight)

Figure 2. Characteristics of patrol base vs. characteristics of CTCP as employed during NTC Rotation 15-02.

Vehicles; Class V Palletized Load System (PLS), consisting of M1A2 Abrams main battle tank, M2 Bradley Fighting Vehicle (BFV) and infantry platoon unit basic loads – and the BAS forward to the new CTCP occupation site. (See Figure 3 for Green CTCP security perimeter and vehicle locations.) The HHC commander and first sergeant moved to the middle of the CTCP, marked by the executive officer's vehicle. The remaining vehicles in the combat trains established an initial security perimeter based on SOP and mission variables.

During the NTC rotation, the unit discovered that aggressive forward positioning of the CTCP allowed maximum efficacy to facilitate forward sustainment operations. It was imperative to analyze the risk vs. reward for forward positioning of the CTCP. The closer the combat trains established to the fight, the better the ability to sustain the battalion and increase the survivability of casualties by having the Role I closer to the forward line-of-own-troops (FLOT); however, the security risks had to be continuously evaluated. Reducing the amount of time required to push emergency Class III and V resupply forward enabled continuous operations.

Also, most vehicles were able to self-recover back to the CTCP because of the forward location. Because self-recovery is inherently a slow and tedious task, reducing the distance that combat elements needed to travel before transitioning non-mission-capable vehicles to recovery assets allowed the combat power to remain closer to the fight.

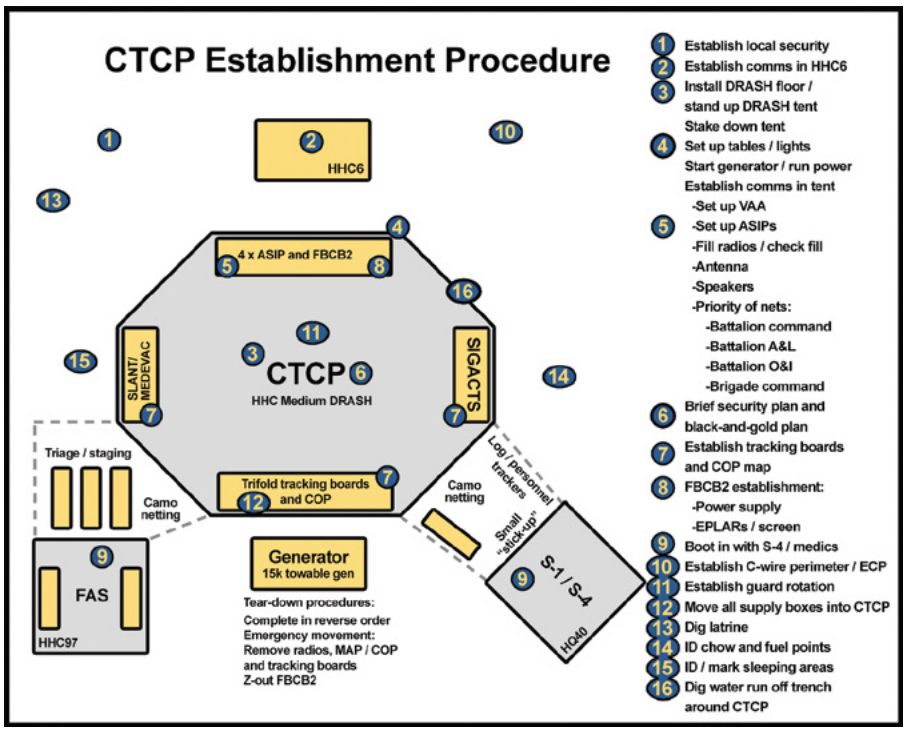


Figure 3. CTCP establishment procedures outline the priority for set-up during normal operations. Average set-up time from initial occupation of Green CTCP takes about 40 minutes.

The HHC commander and executive officer closely battle-tracked and forecasted emergency resupply logistical needs for combat elements. Because the resupply assets at the CTCP were not allocated for routine resupply, it was imperative that the HHC first sergeant closely manage resupply assets, determining to which element they were allocated in relation to what routine resupply assets were available within the field trains.

There were several key positions found necessary to most efficiently run CTCP operations. As in any operation, the commander is responsible for the overall success and operation of the element; in the CTCP's context, the HHC commander was responsible for ensuring continuous mission command for the battalion in case the TOC jumped location. He was also responsible for maintaining situational awareness of the fight to determine the location for the CTCP (closer or further from the battle). Further, the commander determined at what level the CTCP would be established (green, amber, red), based on anticipated future movement, and remained forward-thinking to continuously assess the situation and anticipate the battalion's needs.

Contrary to the HHC executive officer's traditional garrison duties, there was minimal responsibility for logistical coordination of the HHC elements. Because most platoons were task-organized with a line company, resupply needs to the mortars, scouts and snipers were minimal. As part of the CTCP, the executive officer led the quartering party and determined the most viable location based on the commander's risk analysis. Once the CTCP was established, the executive officer ran day-to-day operations in the CP to allow the commander freedom of maneuver to command and refine CTCP operations. Within the CTCP, the executive officer was specifically responsible for logistical estimates and forecasting, whereas the CP NCO was responsible for

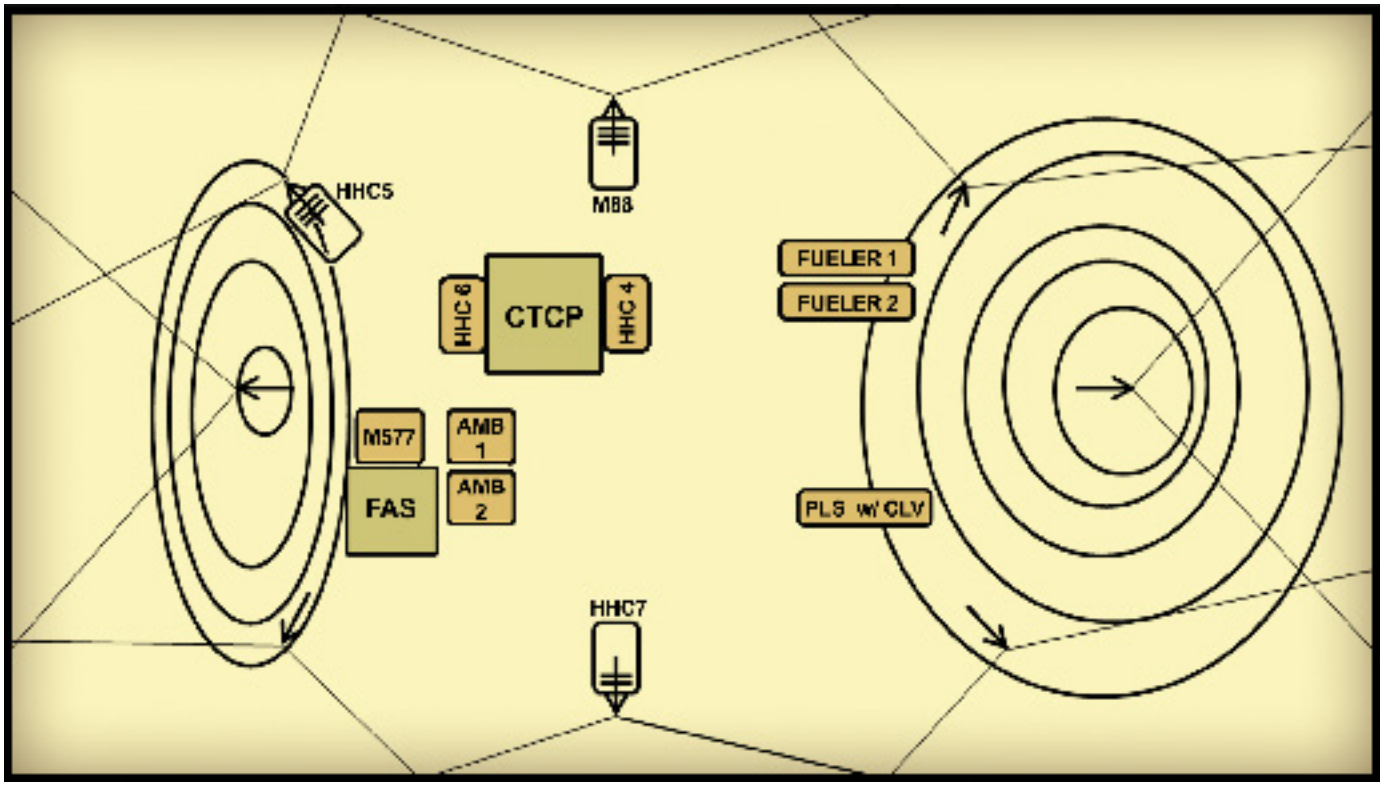


Figure 4. Typical security perimeter and placement of vehicles used for Green CTCP. Formal CTCP priorities for establishment followed the company SOP.

battle-tracking. In conjunction with the force-protection NCO, a large aspect of the executive officer's time outside the CP was consumed by coordinating and refining the security plan.

The HHC first sergeant's primary responsibility at the CTCP consisted of managing the current levels of emergency supplies, directing resupply operations on the ground and supervising the security situation with the force-protection NCO. The first sergeant also directed the location of the BAS and, when attached, the S-1 and S-4 personnel's vehicles and equipment. The first sergeant conducted continuous coordination among those elements and the CTCP, and was responsible for the logistical sustainment of all elements at the CTCP. The HHC first sergeant also attended all battalion logistical-synchronization meetings and ensured that logistical needs and coordination was being completed for the specialty platoons.

Aside from the obvious HHC command team, it was determined that a force-protection NCO and CP NCO were necessary to maximize CTCP operations. Critical to this node was a proficient signal-support-systems specialist (Military-Occupation Specialty 25U) or radio-telephone operator; we found this position was a "make or break" position in the CTCP set-up that allowed us to establish communications and maintain mission command throughout the mission. The force-protection NCO was responsible for establishing the individual security positions, establishing the guard roster, ensuring the creation of a detailed sector sketch and acting as the sergeant of the guard. The CP NCO supervised the establishment of the CTCP at each new location, maintained and updated the common operating picture (COP) and all trackers, and ensured all mission-command platforms remained operational.

Battle-tracking

One of the CTCP's primary responsibilities is to maintain a COP. This is critical because it creates a redundant system for maintaining mission command and situational awareness in case the battalion TOC and tactical-actions center are no longer capable of doing so. Also, by maintaining a current COP, this allows the HHC commander and first sergeant the ability to continually adjust the CTCP's location in relation to the FLOT and to update logistical estimates for the line companies based on their current disposition.

To maintain a current COP, a combination of frequency modulation (FM) tactical reporting from the companies and battalion and the use of Force XXI Battle Command Brigade and Below (FBCB2) were necessary. All reports received were captured on the appropriate tracking boards, and movements of both friendly and enemy forces were displayed on an analog mapboard down to the platoon level using a system of pushpins. We found the analog-map technique updated from rapid FM reporting to be very effective and frequently more reliable than using FBCB2.

Due to the significant dispersion of battalion elements across the battlefield, specifically between the TOC and FTCP, the CTCP was further used to relay information between the FSC commander and the TOC.

Forecasting logistical needs

One of the CTCP's most beneficial aspects was the ability to accurately forecast logistical needs of the combat

elements, specifically Class III and V requirements. Pulling logistical usage and needs from the companies proved to be extremely difficult based on their focus on combat operations. Therefore, a formula and way of estimating usage based on situation reports and in-house battle-tracking was developed to assist.

The formula in Figure 5 allows calculated estimation of fuel consumption based on two variables: distance traveled and time idled. Based on the line companies' differing configuration, there are four choices for the constant that best represents the task-organization.

A logistical-consumption COP was developed with notes annotating movement time vs. stationary/idle time of each company-sized element. This allowed the unit to use aggressive forward positioning to push the emergency resupply to the companies – often before they knew they needed to request it.

For example, assume that we are following Charlie Company and want to know how much fuel is remaining at any given time throughout the operation. Charlie Company has called the following reports:

4 a.m. Ready Condition (Redcon) 1

5:10 a.m. Cross line of departure

5:45 a.m. Support-by-fire (SBF) at breach site established

8:20 a.m. Moving to SBF at subsequent objective

8:50 a.m. SBF established on main objective

10 a.m. SBF broken down; moving into defensive positions in preparation for counterattack

10:30 a.m. Set in defensive positions

Noon End of mission

Based on these times, we can determine the total fuel consumption for the company. Let us assume that Charlie Company was task-organized as a company-team with two tank platoons, one mechanized-infantry platoon and one Bradley fire-support team (BFIST) – therefore, for these calculations, we will be using the constant D_D/D_T because it matches that task-organization. Based on the reports, we know that Charlie Company idled for a total of 385 minutes (4-5:10 a.m., 5:45-8:20 a.m., 8:50-10 a.m. and 10:30 a.m.-noon); we also know that Charlie Company was moving for a total of 95 minutes (5:10-5:45 a.m., 8:20-8:50 a.m., 10-10:30 a.m.). Let us also assume that we tracked them moving a total of 50 kilometers during those 95 minutes.

Using the formulas from Figure 5, we multiply the appropriate constant with the number of minutes or kilometers Charlie Company moved or idled. From the time the company went Redcon 1 at 4 a.m. until the end of the mission at noon, Charlie Company used 1,542 gallons of fuel ($(385/15)(D_T)$=914.375 gallons; $50D_D$=627.677 gallons). If each M1A2 Abrams has a fuel capacity of 500 gallons, and each BFV has a fuel capacity of 175 gallons, we know that Charlie Company started out with 5,875 gallons of fuel. Therefore, our estimate is that at noon, when Charlie Company called end-of-mission, they used about 26 percent of their fuel.

In situations where idle time or distance traveled is significantly longer, we found that companies were often too focused on the mission to accurately and frequently report logistical statuses and needs. Therefore, if a company reached a point where it was low on fuel while the mission was still ongoing (for instance, the company reaches less than 50 percent while sitting in the SBF), we would be able to determine the need to send resupply assets during the mission.

Also, the Class V consumption tracker shows infantry, tank and Bradley ammunition consumption based on time. Because there is no definitive way to determine consumption of ammunition as a constant, like fuel, our system estimated ammunition usage as a function of time based on sustained enemy contact; if battle-tracking and reporting indicated more significant or less usage of ammunition, the consumption rate was adjusted by adding or subtracting time.

Estimated ammunition consumption was subtracted from unit basic loads specific to each type of company task-organization. We assumed that a platoon, regardless of task-organization or type, could sustain a firefight for 45 minutes. However, not all elements of a company were always in contact, and a company has the ability to cross-level ammunition. Therefore we assumed the company itself can sustain continuous contact for 60 minutes before exhausting all ammunition.

Organizational structure

Operational needs dictated what level of functionality was required for the CTCP. Before arriving at NTC, we developed a green, amber and red level of CTCP establishment. Green indicated a fully functioning CTCP with all communications systems established and the BAS integrated into the CTCP with tent. In addition, the M577 command vehicle, triage area and S-1 and S-4 tracks fully connected into HHC's DRASH tent. This set-up was used when we needed to maximize mission command; enemy contact was unlikely; and the battalion was mostly stationary. This level was primarily implemented during the

fuel consumption = [(#km traveled) $(A_D/B_D/C_D/D_D)$] + [(#15min idle) $(A_T/B_T/C_T/D_T)$]

A_D = Armor pure = 14.963018 $^{gal}/_{km}$

B_D = infantry pure = 6.528507 $^{gal}/_{km}$

A_T = Armor pure = 47.0250007 $^{gal}/_{15\ min}$

B_T = infantry pure = 7.125 $^{gal}/_{15\ min}$

C_D = 2 infantry platoons, 1 Armor platoon = 8.93932706 $^{gal}/_{km}$

D_D = 1 infantry platoon, 2 Armor platoons = 12.5535416 $^{gal}/_{km}$

C_T = 2 infantry platoons, 1 Armor platoon = 18.5250002 $^{gal}/_{15\ min}$

D_T = 1 infantry platoon, 2 Armor platoons = 35.6250005 $^{gal}/_{15\ min}$

Figure 5. Formula to estimate fuel consumption based on distance traveled and time idled. A_D/A_T is for a tank-pure company with one BFIST. B_D/B_T is for a Bradley-pure company with BFIST. C_D/C_T is for a Bradley company-team (two infantry platoons, one Armor platoon) with BFIST. D_D/D_T is for a tank company-team (two Armor platoons and one infantry platoon) with BFIST.

live-fire as well as during defensive operations.

We also developed an amber-level CTCP which attempted to maximize both mission command and the capability to rapidly break down and move locations. We used this configuration primarily when the battalion was conducting an attack, as it allowed us to set up and break down as the fight progressed.

Finally, we also had the ability to establish a red CTCP; this most basic mode was used by battle-tracking on the move out of the HHC commander's humvee and, when stopped, was tied into a simple table and chair set-up under a camouflage net to understand the COP primarily using the humvee's communications platform as the main means of mission command. This set-up was used mainly during the movement-to-contact where the speed, security and mission were generally unknown and we had to move with the battalion as they developed the fight.

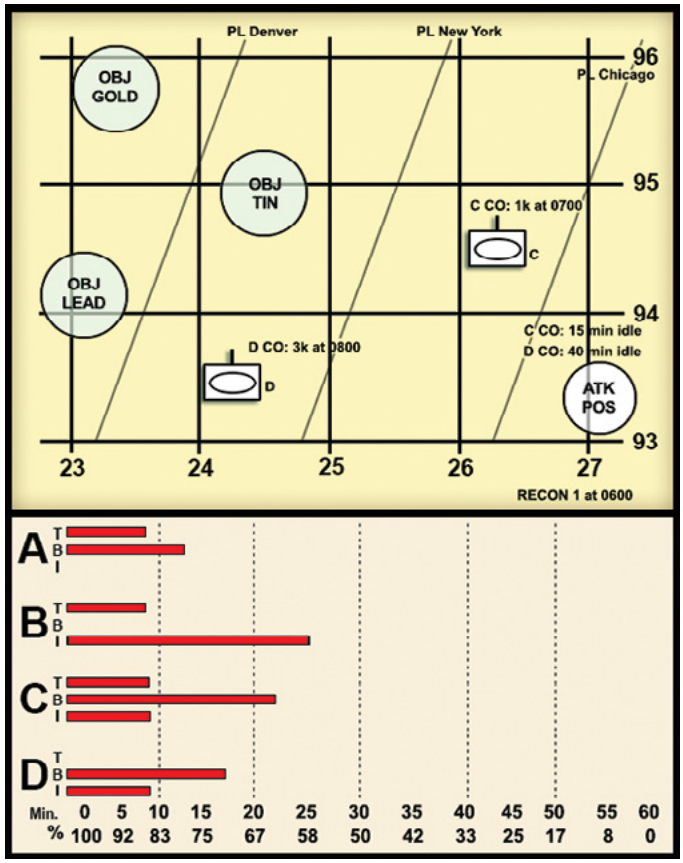


Figure 6. An example of the logistical estimate board. The top portion consists of an operational concept sketch with distances traveled, time expired since Redcon 1 and idle time. The bottom portion consists of each company's estimated ammunition expenditure based on enemy contact and tank, BFV or infantry elements. Minutes of contact vs. estimated percentage of Class V remaining are listed as the X axis.

BAS integration with CTCP

One of the CTCP's critical elements is the BAS. The BAS accompanied the CTCP throughout the NTC rotation. Our frequent forward-positioning in the fight was advantageous to the rapid treatment of casualties as the time from the company casualty-collection point to the BAS was reduced due to the CTCP's/BAS' proximity on the battlefield. By having a higher level of care available to the injured Soldiers, we increased survivability for our casualties in the battalion.

Another advantage to having the BAS positioned further forward was that the unit was able to receive casualties from other battalions, particularly the reconnaissance battalion. Due to the nature of its mission, they were often too far away from their squadron BAS and, through battalion and brigade coordination, we were able to provide aid to their casualties and improve the brigade's overall survivability.

As always, the battalion and HHC commanders must do risk analysis on how close to the FLOT the CTCP and BAS are positioned to avoid one of the battalion's critical nodes from being destroyed.

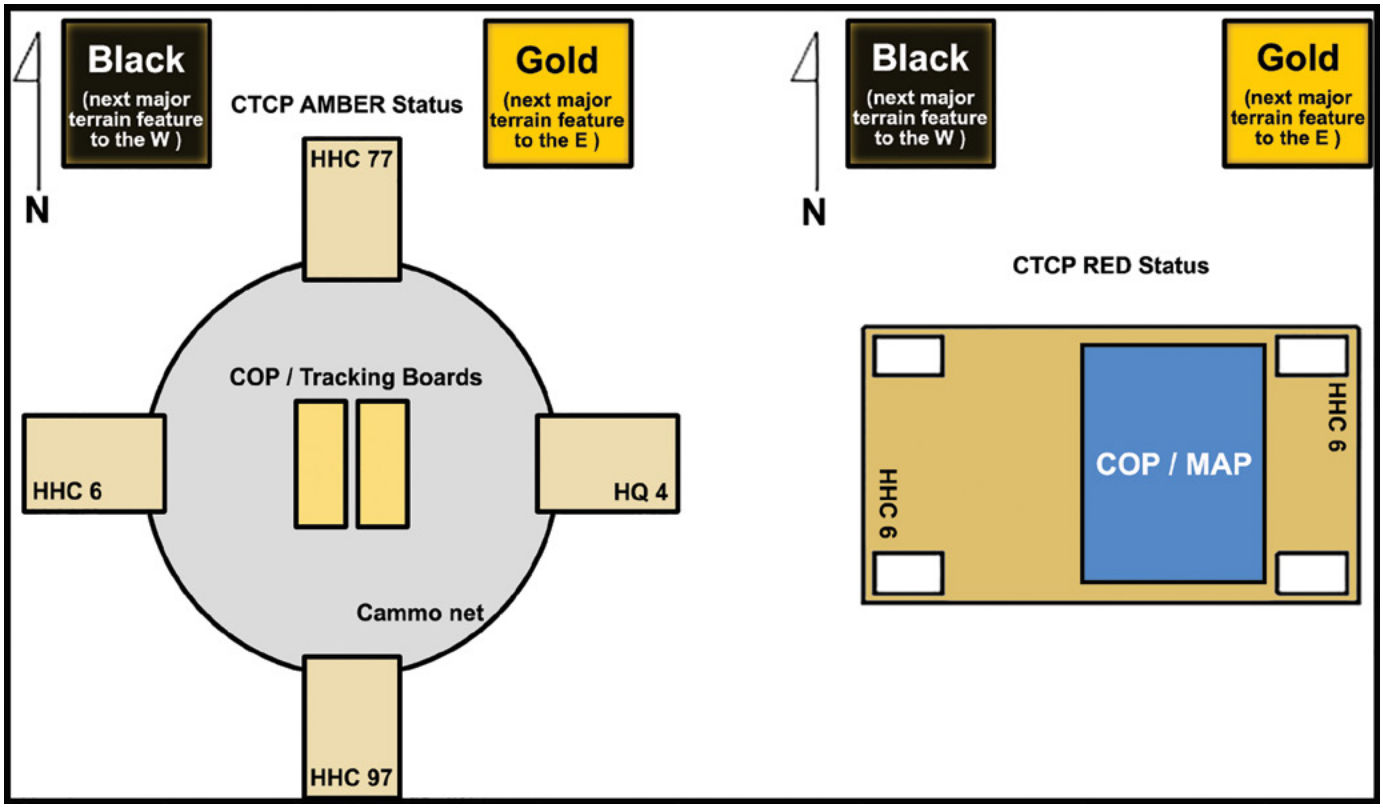
Field-trains integration and coordination

Doctrine specifies that the CTCP is established as an aspect of the FTCP, integrating the CP as a joint operation running the combat and field trains for the battalion. However, after attempting to implement this type of logistical support, we found it extremely difficult to aptly track, coordinate and control the combat trains as a separate forward-logistics element (FLE). Combining the combat trains and field trains, and only maintaining a small FLE for emergency resupply, did not support the way the commander wanted to use and integrate the combat trains into the fight. The field trains were significantly larger and much more difficult to move, and were slower and less reactive, making it a necessity for them to be further from the FLOT. As previously discussed, the concept we used was a forward-deployed emergency resupply node that was flexible and could rapidly move across the battlefield.

Communication between the CTCP and FTCP was still critical to the battalion's logistical support. The HHC commander and executive officer consistently communicated with the FSC commander regarding the status of the emergency Class III and V package to determine quantity on hand and when another push would be required. The CTCP also used the FSC's organic assets to move the resupply package as well as the M88 Hercules for recovery. Also, constant coordination was required for recovery assets to move destroyed or deadlined vehicles back to the UMCP for repair and reconstitution.

Conclusion

Although our methods of CTCP implementation on the battlefield differed from doctrine, we found that pushing the combat trains further forward not only increased our ability to provide logistical support to the combat elements, but also increased survivability of our casualties while assisting the reconnaissance battalion with intra-battalion needs. A significant benefit the CTCP provided the battalion was the ability to provide continuous logistical estimates, aiding the commander in providing timely and accurate logistical recommendations to the battalion commander in stride. The ability to forecast the company's needs and begin pushing resupply before requested



CTCP amber status:

- Speed of battalion movement requires rapid breakdown
- Possibility of indirect fire/chemical, biological, radiological or nuclear threat high
- Unclear mission set that may require CTCP jump
- Unsecure rear area
- Movement of FTCP assets

CTCP red status:

- Situation requires battle-tracking on the move
- Enemy maneuvering in rear area/direct-fire contact
- Insufficient personnel to man CTCP
- Emergency retrograde of battalion rear area
- Limited reporting/battle-tracking requirements

Figure 7. Amber and red CTCP configurations shown. Refer to Figure 3 for CTCP green configuration.

significantly enabled our ability to continuously remain in the fight. The CTCP was found to be better able to support the battalion-enabler platoons; provide forward and emergency resupply; coordinate with the FSC; and battle-track when pushed forward into the fight.

The most significant lesson-learned during the NTC rotation for us was that to get the most effective and efficient use out of the headquarters element, the battalion commander must place trust in his headquarters command team and allow them to fight the CTCP.

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The Combat-Trains Command Post in the Stryker Brigade Combat Team's Cavalry Squadron

by CPT Paul M. Guzman, 1LT Anthony R. Davila and Chaplain (1LT) Marc A. DeLuca

While Field Manual (FM) 3-20.96, ***The Reconnaissance and Cavalry Squadron***, serves as the basic guideline for the organization and employment of the combat-trains command post (CTCP), it fails to account for the unique limitations and requirements of a Cavalry squadron in a Stryker brigade combat team (SBCT).

These unique requirements drive the necessity for a hybrid of doctrine and innovation for the organization and composition of the CTCP. Current doctrine does an excellent job describing the functions of the CTCP. This focus, paired with our organization's[1] tactical standard operating procedures, allowed our squadron to develop a functional and combat-effective CTCP that was able to anticipate and adapt in an ambiguous National Training Center (NTC) decisive-action (DA) training environment rotation.

CTCP, FTCP

Current Army doctrine provides the following framework for the CTCP. The CTCP plans and coordinates sustainment for tactical operations and may serve as an alternate for the main command post (CP). It usually is comprised of elements of the fire-support team, squadron S-1 and squadron S-4. Most of the time, the S-4 is the officer-in-charge (OIC) of the CTCP.

Situations that may dictate the need for a CTCP include:

- Fast-moving, fluid operations;
- Brigade-support battalion forward-logistics element operations; and
- Reception, staging, onward movement and integration (RSOI) operations.[2]

The unit-maintenance collection point (UMCP), squadron aid station (SAS) and forward-support company (FSC) forward cell will typically co-locate with the CTCP. The S-4 works closely with the supporting-unit counterparts to coordinate sustainment for the squadron. The CTCP serves the following functions:

- Track the current battle;
- Control sustainment of the current operation;
- Provide sustainment representation to the main CP for planning and integration;
- Forecast and coordinate future requirements;
- Monitor main supply routes and control sustainment traffic; and

Figure 1. The RSOI squadron staff issues the operation order to troop leadership in the rotational-unit bivouac area at Fort Irwin, CA.

Figure 2. The squadron issues the orders.

- Coordinate the evacuation of casualties, equipment, flat-racks and detainees.[3]

The squadron's field-trains CP (FTCP) is the primary direct coordination element between the squadron and the brigade-support area (BSA). When established, the FTCP usually consists of the elements of the FSC, squadron S-1, squadron S-4 and headquarters and headquarters troop (HHT) personnel, including the HHT commander, executive officer, first sergeant, chemical/biological/radiological/nuclear noncommissioned officer (NCO) and supply sergeant. Generally, the HHT commander is the FTCP's OIC.[4]

Other doctrinal influences

FM 3-20.96 does not account for the FSC headquarters in a SBCT. Doctrine prescribes that the squadron S-4 serves as the CTCP's OIC and the squadron maintenance officer (SMO) is the UMCP's OIC. This command relationship presents two distinct problems: unity of command and local security. Effectively, it places no one in charge of this critical logistics node. The S-4 and SMO are generally unified in effort by virtue of the military decision-making process (MDMP) and the squadron executive officer's serving as the "chief of staff." However, with the distance created by battlefield dispersion required by tactical threat, this relationship is impossible to maintain.

Also, the current modified table of organization and equipment (MTOE) does not provide either unit with the resources to adequately secure themselves in a fixed site and still have the assets necessary to execute logistics-package operations or other battlefield circulation requirements. Moreover, the distances covered by the lines of communication for a Cavalry squadron in an SBCT operating in DA operations are significantly larger than any other unit on the battlefield. Such distances necessitate the echeloning of mission-command nodes – including the tactical-actions center (TAC), tactical-operations center (TOC), CTCP and FTCP – to provide appropriate dispersion and coverage for the squadron.

Personnel roles

To gain efficiency and to create unified effort at the CTCP/UMCP, our squadron placed the headquarters troop command team in charge of the CTCP/UMCP. The HHT commander, first sergeant and executive officer provided the backbone for this combined effort.

The HHT commander is a second-time troop commander and the most experienced captain in the squadron. By virtue of his experience, he fully understands the squadron's technical and tactical requirements and can serve as the unit's logistics troubleshooter, providing the senior-leader check for the S-4's, SMO's, medical officer's (MEDO) and S-1's efforts. Doctrine places him in the FTCP, where he is now redundant with the creation of the FSC commander.

The HHT first sergeant is also in at least his second iteration as the senior NCO in a troop and is the most experienced first sergeant in the squadron. His almost two decades of experience make him the most qualified person to plan and supervise fixed-site security and to provide more experiential knowledge for the company-grade officers planning the squadron's logistics operations.

The HHT executive officer is ideally the most senior lieutenant and by the nature of his position is generally the savviest executive officer in the realm of logistics. He is used as the CP's OIC.

Organizational roles

The HHT command group's organization allows two functions: It can actively track the battle to facilitate the CTCP rapidly assuming the role as the squadron's primary CP, and it can monitor the logistical needs of the two other squadron command nodes.

Establishing this mission-command architecture allowed the S-4, S-1, SMO and MEDO to complete their functions as needed and provided some freedom of maneuver for the primary staff officers to move back and forth between the squadron TOC and the combat trains while conducting their staff responsibilities. Because the CTCP/UMCP receives a prepositioned resupply and rearmament section from the squadron distribution platoon, the squadron is capable of providing emergency resupply with a greatly shortened response time. This package includes a Palletized Load System – including a flat rack pre-loaded with mission-dictated ammunition – and an M978A4 Heavy Expanded Mobility Tactical Truck fuel-servicing truck. Furthermore, squadron prepositions the main aid station (MAS) and forward aid station (FAS) between the forward-line-of-own-troops and itself, dramatically reducing the distance between casualties and Role I care.

In addition to improved logistics and mission-command capabilities, the CTCP created and preserved options

for the squadron and troop commanders to securely store Strykers when they were not needed for a specific mission. This allowed the freedom to either insert Cavalrymen by air or merely carry more scouts per vehicle when the mission required more dismounted observation posts. Cavalry troop commanders also had the option to co-locate a portion of their trains (including their attached maintenance assets from the FSC and other unnecessary portions of its organic troop trains) to the CTCP to allow greater freedom of maneuver or to reduce the troop's signature during reconnaissance or security operations. Although mission conditions may require leaving the CTCP/UMCP in battle configuration without the medical platoon, the addition of a section from the distribution platoon and attachments from the troop trains always allowed for adequate security. Finally, any Strykers that were in the UMCP for maintenance were placed on the perimeter and were used either for its weapon system or optics – or simply as a deterrent to create a hard target.

Our squadron was best able to handle its logistical requirements by consolidating both the CTCP and the UMCP under the HHT guidon at a single location. This singular node facilitates mission command of the squadron's sustainment efforts in a manner that is fully nested with the maneuver plan. Furthermore, this effort is replicated during the planning, execution and recovery phases of the operation by creating a one-stop shop for sustainment requirements.

Figure 3. SGT Joseph A. Gaddison from Apache Troop, 2-1 Cavalry, establishes an observation post overwatching a named area of interest during 1st SBCT's NTC Rotation 15-10.

Consistent with the concept of using the CTCP as a consolidated sustainment node, the unit ministry team (UMT) was initially based at the CTCP. In a combat environment, the UMT mission priority is to care for the wounded and minister to the squadron's Soldiers via battlefield circulation. Basing the UMT at the CTCP helped facilitate these priorities. As long as the SAS was co-located with the CTCP, the UMT was ideally located to minister to casualties. In addition, by staging the UMT at the CTCP, it was able to accompany logpac convoys to forward-deployed units, extending religious-support operations to Soldiers who would otherwise be unsupported. In contrast, the greatest challenge presented by basing the UMT at the CTCP resulted in only minimal participation in the squadron's MDMP due to a lack of mobile security to safely transport the UMT to the squadron TOC. Also, the separation of the FAS from the MAS necessitated relocation from the CTCP to the aid station that was most likely to treat the most casualties.

Needed improvements

While the shifting of personnel allowed the squadron a great deal of success, there was plenty of room for improvement. As it currently stands by MTOE, even with combined efforts, the CTCP/UMCP possess zero organic ability to operate on a secret Internet protocol router (SIPR). The CTCP achieves connectivity via unsecured Internet through the Combat Service Support Automated Information Systems Interface bridge with the UMCP's organic Very Small Aperture Terminal. However, the HHT headquarters, S-1, S-4 and unit-maintenance personnel require SIPR connectivity to use Battle Command and Sustainment Support System, Command Post of the Future or any other Army Battle Command System (ABCS) system. The only secure connectivity these nodes possess is Joint Capability Release Version 6 (JCR-6) and frequency-hop cypher-text frequency-modulation (FM) radio communications.

This created a stovepipe of information that is separate from the rest of the SBCT's communications systems. The administrative and logistics (A/L) FM net-control station is the CTCP and is designed to limit traffic on the command nets. However, because it is a lower priority net than command and fires, it is rarely, if ever, re-transmitted. This imposes a severe limitation on the effectiveness of A/L. Our experience at NTC showed that A/L was marginally effective internally at the squadron level and a complete non-factor on a BCT level due to the wide dispersion of units. This forced the CTCP almost exclusively to communicate on the squadron command net to relay time-sensitive information which would often collide with maneuver traffic.

Also, the JCR provides a less-than-ideal format for transmitting logistics information and, even under ideal conditions, the CTCP/UMCP is limited to only two JCR systems. Worse, the UMCP only had unsecured JCR-LOG, which created a constant need to relay traffic from the squadron TOC or maneuver units to the UMCP as it was received over JCR-6, creating a bottleneck at the terminal as the HHT command team, S-1, S-6 and Maintenance Control all worked to track and transmit across these limited platforms.

The addition of a SIPR/Nonsecure Internet Protocol Router (NIPR) Access Point (SNAP) is critical for the CTCP/UMCP to operate on the upper tier of the tactical Internet (colloquially known as Upper TI). Units may receive a SNAP during RSOI draw and while forward-deployed to support Operation Spartan Shield or Operation Enduring Freedom through theater-provided equipment. To ensure this system is used properly, the squadron would require the augmentation at least one 25B (information-technology specialist) Soldier, sourced through internal displacement from the squadron signal section or cross-training another Soldier to operate the system. This system would greatly increase the efficiency and effectiveness of the CTCP/UMCP by allowing the full use of all ABCS systems and the flexibility

Figure 4. The squadron retransmission team set up at NTC.

provided by Voice-over-Internet-Protocol (VOIP) phones. With the current configuration of brigade-level nodes, both the TOC and BSA are heavily reliant on secure VOIP and ABCS for efforts across all warfighting functions.

Also, because no SBCT in the U.S. Army has the appropriate number of high-frequency (HF) radios to fill their MTOE requirement, the Cavalry squadron's CTCP is the last priority to receive one. This creates a gap in information communicated over HF. We attempted to institute a stop-gap measure by requesting the squadron TOC radiotelephone operator (RTO) to relay HF traffic through JCR chat to the CTCP; however, during peak operations, the RTO could not keep up with the high volume of traffic, resulting in a significant loss of information.

Although our recommended changes will require more costs to units, as the U.S. Army continues to reduce its global footprint, it must reallocate these assets to the Cavalry squadron's CTCP for it to fully accomplish its mission. Until the CTCP/UMCP can move freely on the battlefield and communicate on the Upper TI, it will never meet the requirement to operate as an alternate CP. Currently, the CTCP cannot talk to brigade on the upper tier, which limits its effectiveness with logistics, and if the squadron TOC or TAC were removed from the fight, it would be impossible to provide real-time reporting in either direction. While our squadron's allocation of personnel and the MTOE shortages we identified answer many of the questions, many are left unanswered by existing doctrine. Flexibility will continue to be the key to success in the modern operating environment.

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Chaplain (1LT) Marc DeLuca is the squadron chaplain, 2-1 Cavalry, 1st SBCT, 4th Infantry Division, Fort Carson. Previous assignments include translation team supervisor, 15th Military Intelligence Battalion, Fort Hood, TX; squad leader, 15th Military Intelligence Battalion, Fort Hood; team leader, Royal Air Force Digby, United Kingdom; and signals intercept operator, Company A, Support Training Battalion, 1st Cavalry Division, Mosul, Iraq. His military schooling includes Chaplain Officer Basic Leader Course, Advanced Leader Course, Warrior Leader Course, Arabic Basic Course, Advanced Individual Training and Basic Combat Training. Chaplain DeLuca holds a bachelor's of arts degree in music from Brigham Young University and a master's of arts degree in religious studies (emphasis on military chaplaincy) from Brigham Young.

Notes

[1] 2nd Squadron, 1st U.S. Cavalry, 1st SBCT, 4th Infantry Division.

[2] FM 3-20.96, Section 10-69.

[3] FM 3-20.96, Section 10-70.

[4] FM 3-20.96, Section 10-74.

Don't Harness an Ox to a Racehorse; Get the M113 Out of the Armored Brigade Combat Team ... Now, Please!

by COL William T. Nuckols Jr. and Dr. Robert S. Cameron

The armored brigade combat team (ABCT) constitutes the Army's only remaining heavy ground combat force. It possesses a unique set of capabilities crafted to ensure dominance over conventional and hybrid threats in varied terrain and operational environments. High cross-country mobility, strong ballistic protection and scalable, precision firepower provide this unit the means to seize, retain and exploit the initiative.

The mix of Abrams tanks, Bradley Fighting Vehicles and attached infantry and scout squads also makes the ABCT the only U.S. Army organization capable of both mounted and dismounted operations. Unfortunately, it remains constrained by the performance limitations of the antiquated M113. This vehicle lacks the survivability, mobility and digital-networking capability required for current and future operations, making it a liability on today's lethal, nonlinear battlefield. Nevertheless, it equips many of the combat-support and service-support elements and fully one third of the ABCT's tracked-vehicle strength. To eliminate this blight on the organization's otherwise high versatility, the Army must divest itself of the M113, and accelerate procurement and fielding of its designated successor, the Armored Multi-Purpose Vehicle (AMPV).

M113 in Vietnam

First produced in 1960, the M113 culminated efforts to field a reliable, fully-tracked armored personnel carrier. Conceived as a battlefield taxi, it was not designed to maneuver on the battlefields of Central Europe against a highly mechanized threat with a tactical nuclear capability. Against such lethality, the taxi concept left dismounted infantry highly vulnerable and largely immobile once removed from their transport.[1]

Figure 1. M113s in Armored Cavalry Assault Vehicle configuration move into Saigon during the 1968 Tet Offensive. *(Photo courtesy National Armor and Cavalry Museum)*

In Vietnam, this design philosophy fared little better. The Army of the Republic of Vietnam (ARVN) employed M113s in counterinsurgency operations against the Viet Cong (VC). Dismounting from their carriers and advancing on foot, ARVN soldiers found that the VC simply withdrew before they could be engaged. The ARVN responded through the employment of their M113s in a tank-like role, conducting mounted assaults without stopping to dismount passengers. These tactics proved much more successful, but they resulted in high casualties among unprotected vehicle machinegunners. Field modifications resulted, adding more machineguns and gunshields — alterations that U.S. combat forces later adopted.[2]

Nevertheless, the M113 remained vulnerable. The combination of minimal armor and gasoline engine proved deadly, resulting in the vehicle bursting into flames when hit. Similarly, it offered little protection against the rocket-propelled grenades (RPGs) or mines the VC and North Vietnamese commonly used. Mines in particular tended to result in the complete destruction of the vehicle and its crew and passengers. They became the preferred weapon of choice against American armored combat organizations. Between November 1967 and March 1970, for example, mines accounted for 73 percent of all vehicle losses, including 1,342 M113s.[3]

Several actions resulted to reduce the M113's vulnerability. Replacement of the gasoline engine with a diesel one partially addressed the fire risk and marked the emergence of the M113A1.[4] The Army also developed and fielded a vulnerability-reduction kit. It included a belly-armor plate for improved mine protection and rerouted the fuel lines above the floor to reduce the risk of fire after hitting a mine. Other measures, including a double-floor version and bolt-on kits for the installation of bar armor around the hull were never fielded. The double floor proved too complex, and the applique armor impacted the vehicle's ability to cross bridges, canals and

other common terrain features.[5]

Therefore, American Soldiers in Vietnam improvised their own protective measures. The most successful proved to be the use of chain-link fencing to surround the vehicle when it remained stationary for more than a brief halt. The fencing caused the premature detonation of RPG warheads before they could penetrate the vehicle. Against mines, common practices included the addition of steel plating and sandbags to the vehicle exterior. Inside, a double layer of sandbags lined the hull floor. The additional weight eroded the vehicle's mobility, but the effectiveness of these measures proved problematic. Essentially an aluminum box on tracks, the M113 was not designed to deflect explosive blasts away from the vehicle. Inside, it proved little more a cramped, claustrophobic environment that provided passengers no situational awareness. By the latter stages of the war, Soldiers frequently preferred to ride atop the vehicle behind sandbag castles rather than await an uncertain fate inside.[6]

Figure 2. M113 knocked out during Tet fighting, 1968.
(Photo courtesy National Armor and Cavalry Museum)

Figure 3. An M113 behind chain-link fencing intended to prematurely detonate incoming RPG rounds.

Central Europe

After Vietnam, the Army's focus returned to Central Europe. Combat operations there were expected to be highly lethal and fast-paced, underscoring the importance of survivability. The M113's minimal armor offered protection against small arms and artillery fragmentation but not against hits from weapons of 14.5mm and higher. Although appliqué armor could be applied, it never became standard issue. Hence, the survivability deficiency exposed in Vietnam became more pronounced in Europe, where Warsaw Pact anti-armor capability greatly surpassed that of the VC and North Vietnamese.

This increased vulnerability did not prevent the M113's continued proliferation. The baseline platform's adaptability and ease of sustainment remained attractive qualities. Early variants included the M577 command-post vehicle and the M106 mortar carrier. The family of vehicles quickly expanded to include ambulance, medical treatment, flamethrower, air defense, cargo carrier, anti-tank guided missile, ballistic-missile carrier, repair and recovery and fire-support team variants. Many of these vehicles equipped the combat-support and service-support echelons of maneuver units. By 1999, total M113 production reached 80,000, which ensured continued support for the program as a whole. Moreover, the scale of production kept the cost of the individual platform down, while the inclusion of multiple variants in a single organization simplified maintenance and supply. In short, the expansion of the M113 family of vehicles ensured its longevity, despite its survivability shortfall.[7]

Platform improvements did occur. After the replacement of the gasoline engine in 1964, the next major upgrade to the A2 version began in 1979. It featured better engine cooling and improved suspension for enhanced cross-country mobility. The A3 version began fielding in 1987. It possessed a more powerful engine and a new transmission. Survivability enhancements included spall liners inside the vehicle and mounting points for an external armor kit. The fuel tanks moved from inside the vehicle to an external armored mounting on either side of the rear door. This shift freed internal space, but the collective impact of these changes raised the vehicle's weight to 27,000 pounds.[8] However, these upgrades did not include a significant change in ballistic protection. The vehicle remained vulnerable to a heavy machinegun. Mounting points for add-on armor simplified the attachment of additional protection, but the armor itself never became standard issue.

Operation Desert Storm

In the 1980s the more heavily armed and armored Bradley gradually replaced the M113 as the primary transport and fighting vehicle for mechanized infantry. Bradley fielding occurred simultaneously with that of the Abrams tank, and armored organizations benefited from the deliberately crafted combat partnership of these platforms. Designed to keep pace with the Abrams, the Bradley's dismount team and versatile armament complemented the heavy firepower of the tank. In its supporting role, however, the M113 lacked the mobility and speed of the Abrams/Bradley team.

Operation Desert Storm underscored

this problem. The A2 version constituted the bulk of the M113s that went to war with armored combat units. Postwar analysis highlighted their inability to sustain the operational tempo, insufficient internal space and low survivability.[9]

The M981 Fire-Support Team vehicle, for example, housed a ground vehicle laser locator/designator. Its purpose lay in designating targets for artillery or aircraft to engage. It served as a mobile forward-observation post, employing a hammerhead turret to house its optics. The turret could be raised to permit observation of targets from behind concealment, but the vehicle could not move with the hammerhead raised. The M981's inability to keep pace with the Abrams/Bradley team forced armored units to slow operations, do without the fire-support team or improvise alternative target-designation methods. Faced with these options, 1st Cavalry Division opted to transfer the locator/designator equipment onto a Bradley. This *ad hoc* measure stimulated subsequent development and fielding of the Bradley Fire-Support Team Vehicle, which gradually replaced the M981.[10]

The M577, a modified M113A2 intended to facilitate command-and-control within armor and mechanized units, carried communications equipment and a large tent extension designed to be erected and attached to the rear of the vehicle. Once deployed, the combination of tent and vehicle became a command post with enough space to support limited unit-staff operations. However, the extra workspace only became available when the vehicle halted and the crew had time to set up the tent extension. During the continuous movement and combat characteristic of Operation Desert Storm, the slow speed of the M577 kept most crews in their vehicles for protracted periods, struggling to catch up with the faster Abrams and Bradley combat platforms.

These problems led the Army to consider alternatives, especially the Command-and-Control Vehicle. Built on a Bradley chassis, it significantly upgraded the ability to operate on the move and matched the mobility of the Abrams/Bradley team. However, the Army cancelled the program in 2000 before production began.[11]

Humanitarian and peacekeeping operations

Army deployments increased in the 1990s to support a variety of humanitarian and peacekeeping operations. These actions often placed Soldiers in nonlinear operational environments that carried the potential to become combat zones with little warning. In the absence of established front lines, M113s could not avoid the possibility of coming under fire. When humanitarian support in Somalia necessitated combat actions, culminating in the October 1993 firefight in Mogadishu, M113 survivability concerns again received attention.

Figure 4. M577 command-post vehicle. *(Photo courtesy National Armor and Cavalry Museum)*

The Armor Center recommended the provision of add-on armor to M113s deploying overseas. This action failed. M113 survivability simply was not a high priority amid Army downsizing, digitization and competing futures programs. American Soldiers took this vehicle to the Balkans without any increase in ballistic protection, despite the ongoing ethnic warfare and a significant mine threat. A related effort to secure a commercially produced reactive armor package for the M113 similarly failed.[12] In the absence of funding and senior-leader support, efforts to resolve the M113's survivability deficiency through appliqué armor ended. Noting the danger associated with committing the vulnerable M113 to environments that included heavy machinegun, mine and RPG threats, one action officer lamented, "It seems as if we need another crisis (Soldiers killed) before someone acts."[13]

Operation Iraqi Freedom

In 2003, Operation Iraqi Freedom found the Army with a large fleet of M113s, many of which had yet to upgrade to A3 standards. However, enhancements did occur through the limited fielding of force-protection kits that included belly-armor plates, bolt-on armor and bar armor.[14] However, these kits were not applied to the entire M113 fleet in Iraq. They were designed primarily for the A3 version of the basic carrier, the mortar carrier and the command-post vehicle. When these enhancements were applied, they raised the vehicle's weight to 31,000 pounds, further retarding its already sluggish speed.[15]

Still, the M113 seemed good enough when combat operations began. It supported operations in northern Iraq with Task Force 1-63 Armor, and it participated in 3rd Infantry Division's drive to Baghdad.

The highly publicized fighting in Fallujah in 2004 also witnessed the successful employment of the M113. However, this perception of success derived in part from the humvee's high loss rate. The M113's minimal armor still provided better protection than the unarmored humvees. By late 2004, humvee loss rates had reached unacceptable levels, which was

Figure 5. M113 mortar-carrier variant. *(Photo courtesy National Armor and Cavalry Museum)*

accompanied by a growing number of related casualties. Congress recommended re-equipping Soldiers with M113s until enough numbers of uparmored M1114 humvees and mine-resistant, ambush-protected vehicles became available. In 2005, the Army opted to send more than 700 M113A3s to Iraq. Survivability enhancements included hardened side armor, slat armor, belly armor and a transparent gun shield.[16]

The humvee crisis directly impacted scout platoons. First equipped with humvees in 1990, maneuver-battalion scout platoons went to war in Operation Desert Storm with what they had available. Their lack of survivability led to their marginalization in that conflict, while concerns about their vulnerability intensified during subsequent Army operations in Somalia, Bosnia and Kosovo. Corrective action focused on digital capabilities to permit scouts to operate outside the direct-fire range of enemy forces, but this approach did not survive contact with Iraq's operational environment. Pure-humvee scout platoons reconfigured in theater included a mix of Bradley Cavalry Fighting Vehicles and humvees that provided more survivability and combat power for the organization as a whole. In 2013 the Maneuver Center of Excellence (MCoE) began efforts to restructure humvee scout platoons within the ABCT into pure-Bradley organizations with more scouts.[17] The new organization possessed increased survivability and better compatibility with the tracked combat platforms found in the ABCT. Approved in 2015, it was scheduled for implementation the following year.

Combat engineers in armored units pursued a similar solution. They planned for the replacement of the M113 with a Bradley vehicle, but the transition remained in progress when Operation Iraqi Freedom began. Engineer squads went to war in M113s towing trailers carrying the unit's mine-clearing lane charge (MICLIC) that relied on 2,000 pounds of explosives to blast a lane through a minefield. During the 2003 drive to Baghdad, engineer vehicles from 3rd Infantry Division came under fire from small arms and RPGs. After-action inspection revealed the trailers had had their wheels shot out, and the trailers themselves were riddled with bullet holes. In effect, the M113s had dragged tireless trailers packed with explosives through a fire zone. This experience led the engineers to abandon the trailers and their MICLICs rather than accept the risk of further reducing the M113's survivability.[18] Clearly, the engineers required a more survivable vehicle able to keep pace with maneuver units, and the Bradley ultimately fulfilled this role.

Despite its early success relative to the humvee, the M113 remained vulnerable. It was not optimized for operations in close, complex terrain against an adaptive enemy employing a mix of conventional and unconventional attacks at close range. Survivability concerns increased as the capabilities of terrorists and insurgents in Iraq grew, eroding still further the M113's utility. In response, the Army awarded a contract to upgrade more than 300 M113s to the A3 standard. The specific variants addressed included the M577 command post carrier, M1064 mortar carrier and the M1068 standard integrated command-post carrier. However, this contract only upgraded about 40 percent of the M113 fleet. The vehicle was considered "not suitable for an era of persistent conflict due to survivability shortfalls and space, power and weight constraints." The rising threat level effectively stranded the

Figure 6. M113 ambulance variant. *(Photo courtesy National Armor and Cavalry Museum)*

M113 on forward operating bases and underscored its obsolescence.[19]

Israeli experience

The Israelis faced similar problems with the M113. However, they opted to improve the vehicle's survivability through upgrade programs that targeted the threats posed by heavy machineguns, chemical weapons, antitank missiles and improvised explosive devices (IED). These measures still did not suffice for those carriers transporting mechanized infantry into battle. Therefore, the Israelis modified a number of captured T-54/55 main battle tanks into infantry fighting vehicles by removing the turret and modifying the hull.[20]

They also developed a purpose-built vehicle better suited to the threats facing Israel in the Gaza Strip and on the Golan Heights. Based on a Merkava I hull, the resultant Namer offered mobility equivalent to that of its tank fleet, improved armor protection supplemented with an active defense system and a network capability commensurate with combat maneuver units. Given the nonlinear nature of operations, the highest level of armor protection was expanded from the traditional frontal arc to include the sides and rear. Special belly armor further improved survivability against mines. The Israelis considered these measures a worthwhile investment in soldier protection despite their impact on the vehicle's weight and cost.

Moreover, the program emphasized reliability, the capacity to accommodate future upgrades and minimization of lifecycle costs. Namer constituted a family of vehicles that included command post, weapons carrier, medical evacuation, technical support and recovery versions in addition to the basic infantry-fighting-vehicle configuration. It was the preferred solution to the M113 in these roles for the Israelis. Ironically, while the U.S. Army continued to make do with the M113, the Israeli Namer program benefited from American industrial support.[21]

Russian experience

Russian military experience also suggested the need to improve the survivability of support vehicles. During fighting in the Chechen capital of Grozny in 1994-1995 and again in 1999-2000, Chechen fighters exploited the nonlinear, urban battlefield to attack vehicles from multiple heights and directions. Mobile ambushes, RPG "showers," sniper attacks and extensive use of mines served to damage and destroy Russian vehicles and restrict their freedom of maneuver. The Chechens further deliberately targeted combat-support and service-support vehicles and personnel, noting the adverse impact of such attacks upon Russian morale and combat effectiveness. During the initial battle for the city, the Russians lacked an ambulance with sufficient survivability to evacuate casualties from combat zones. They resorted to the improvised use of the *Bronetransportyor* (BTR) 80 in this role, though survivability concerns limited casualty evacuations to the hours of darkness. In 1999, the Russians employed the tracked *boyeva mashina pekhoty* (BMP) as an armored ambulance. However, both platforms remained highly vulnerable to Chechen attacks, particularly from the sides, top and rear.[22]

Figure 7. M113 and M3 Cavalry Fighting Vehicle in battle positions at the National Training Center.

The demonstrated vulnerability of the BTR and BMP encouraged the conversion of older tank models into infantry fighting vehicles to ensure greater survivability in urban environments. In 2009, development started on the Armata Universal Combat Platform, essentially a family of vehicles based on a tracked, heavily armored main-battle-tank chassis. Initial prototypes were debuted during the 2015 Moscow Victory Day Parade. The T-14 tank quickly gained media attention in the West, but the family of vehicles also included various support platforms.[23]

Combat operations in the Ukraine encouraged this trend toward more heavily armored vehicles. The BTR and BMP models in service with the Ukrainian army and separatist forces proved highly susceptible to anti-tank weapons, artillery and thermobaric warheads. The high loss rates resulted in efforts to keep the vehicles removed from direct-fire threats and to disperse passengers to minimize casualties in the event of vehicle loss.[24]

U.S. way ahead

The United States faces an array of real and potential threats whose capabilities will likely exceed those

demonstrated by terrorist and insurgent forces encountered in Iraq and Afghanistan. Chechen tactics employed against the Russians in the 1990s have been refined and proliferated throughout the Middle East. The Islamic State has secured armored vehicles, including a small number of tanks, anti-tank guided-missile systems and artillery. These systems complement more traditional small arms and mortars. IEDs remain a weapon of choice, but the Islamic State has elevated their lethality by attaching them to armored vehicles operated by suicide drivers.

A similar mix of capabilities can be found among many of the Syrian rebel organizations fighting against the Assad regime. Syrian government forces have employed conventional, thermobaric and chemical weapons, while their Hezbollah allies possess capabilities similar to those of the Islamic State.

An operational environment in which these or similar threats exist underscores the importance of survivability considerations, particularly for specialized support platforms.

The known vulnerability of the M113 makes it a targeted platform. No simple upgrade or modernization path exists for the M113 family of vehicles. The platform lacks the ability to host future command-and-control networks considered vital to ABCT modernization. It has reached the end of its effective service life. The Army acknowledged this reality in 2007 when it terminated the program.[25] Sustainment support remained for those platforms still in service, but this knowledge provides cold comfort to Soldiers required to operate the M113. The current array of conventional and hybrid threats ensures that employment of this vehicle in any operational environment will constitute a high risk.

The AMPV constitutes the Army's intended replacement for the M113 within the ABCT. In the wake of the M113's termination, the AMPV program offered a more survivable and mobile platform with the capacity to accommodate digital systems and future upgrades. The Army's decision to base the AMPV on the Bradley offered more benefits. The mortar carrier, mission command, medical treatment, medical evacuation and general-purpose variants of the AMPV will possess comparable mobility to the combat vehicles within the ABCT.[26] Moreover, they share automotive components, parts and supply requirements with the Bradley vehicles used by the engineers and scout platoons.

A lesser degree of commonality also exists with some of the parts and components of the Bradley-derived chassis of the Paladin Integrated Management M109A7, intended to re-equip the ABCT's mobile-artillery component. With the exception of the Abrams tank and the M88 Recovery Vehicle, most of the tracked vehicles in the brigade will share the same power train and suspension system, greatly streamlining maintenance and supply.[27]

In addition to simplified vehicle and organizational sustainment, the AMPV offers advantages in space, power and cooling over the M113. The AMPV provides more internal space and boosts electrical power through the inclusion of two 400-amp generators. This combination of space and power capacity enables the new vehicle family to carry the latest digital-networking systems and support future upgrades. These improvements benefit all the AMPV variants. They are especially valuable to the mission-command platform, which possesses the means to collect and share data while remaining forward with combat elements. It constitutes a critical command-and-control node whose digital-networking systems facilitate data analysis and command decisions. Similarly, improved survivability permits the medical-evacuation variant to recover casualties from forward areas.[28]

The AMPV's Bradley basis makes it eligible to accommodate upgrades intended for the Bradley family of vehicles. MCoE began a modernization initiative for the Bradley in 2007, the same year the Army terminated the M113 program. In 2011, the Army's Vice Chief of Staff directed modernization to proceed via incremental engineering change proposals (ECP). Consequently, near-term upgrades to the Bradley were grouped into ECP I and II. The first focused upon the track and suspension, while ECP II addressed electrical and mechanical improvements. Once implemented, these latter changes will boost the vehicle's automotive power, transmission, electronics, digital capabilities and power distribution.[29] Some of these upgrades are already included in the AMPV design, and further upgrades to the Bradley family of vehicles will likely apply to the AMPV as well.

However, not until December 2014, seven years after the M113's termination, did the Army award an engineering and manufacturing development contract for the AMPV to BAE Systems Land and Armaments, L.P. This contract covered a 52-month period during

Figure 8. M113A3s from 3-7 Cavalry during the invasion of Iraq in 2003.

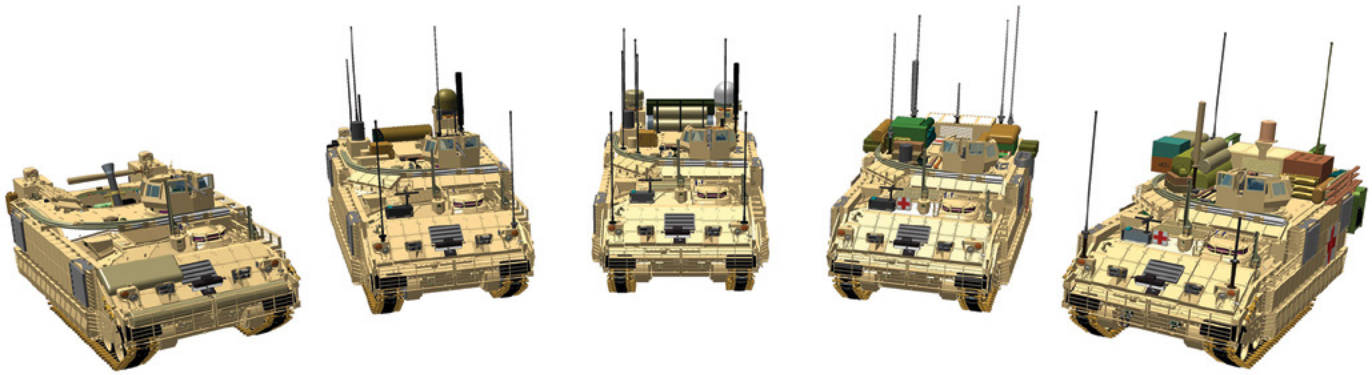

Figure 9. Artist depiction of the AMPV variants. From left to right, they are the mortar carrier, general-purpose, mission command, medical evacuation and medical treatment vehicles.

which BAE Systems agreed to build 29 vehicles over four years for testing to ensure they meet Army AMPV requirements. The contract also included a low-rate initial-production option under which BAE systems would build 289 more platforms. A subsequent contract for full-rate production of another 2,897 vehicles will replace M113s in all ABCTs. Budget restrictions and a production rate capped at 180 vehicles per year further ensures full fielding will not complete before the mid-2020s.[30]

Congressional concerns regarding the replacement of M113s in echelons above brigade threatened even this leisurely development and production schedule, necessitating an Army report on its plans and assessment of the viability of a wheeled vehicle for these organizations. The report requirement reflected the corporate dispute between BAE and General Dynamics Land Systems, which supported a wheeled version of the AMPV. Having opted not to contest the Army's decision for a tracked platform for the ABCT, General Dynamics continued to advocate for a wheeled vehicle suited for employment in other organizations.[31] These developments, coupled with the uncertainty surrounding the Fiscal Year 2016 budget, cloud the AMPV's future.

For Soldiers assigned to M113s in the ABCT, AMPV fielding dates in the 2020s mean little. They serve in an obsolescent platform whose vulnerabilities are common knowledge to friend and foe. Nor is their longevity improved by the M113's deadly combination of a specialized role and minimal ballistic protection. The vehicle is a lucrative target whose loss will impair parent unit operations.

Required network upgrades to the ABCT remain in abeyance since the M113 cannot currently accommodate them. Unable to keep pace with the Abrams/Bradley team it is supposed to support, vulnerable to hybrid and conventional threats alike, the M113 is overdue for replacement. Hence, the AMPV program requires acceleration. Waiting years for the first AMPV platforms to reach the field is an avoidable risk that makes little sense — particularly for the Soldiers who will enter combat in the interim with the M113. Until the ABCT is completely purged of the M113, it will continue to endanger Soldiers and degrade armored brigade operations. Should the AMPV program become the next acquisition casualty, this state of affairs will continue in perpetuity.

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3rd Battalion, 353rd Armor Regiment Assists Units with Security Cooperation and Security-Force Assistance Training

by MAJ Richard W. Duncan

When 162nd Infantry Brigade at Fort Polk, LA, deactivated in October 2014, this consolidated the brigade's training capabilities into 3rd Battalion, 353rd Armor Regiment, to support the Army operating concept. The new operating concept called for the Army to engage regionally to shape security environments and set the theater of operations.

The 3-353rd, a battalion within Operations Group at the Joint Readiness Training Center (JRTC), supports these requirements by training Army and joint individual advisers and units on security cooperation (SC) and security-force assistance (SFA) mission requirements.

Leveraging JRTC's capabilities, the 52nd Translator and Interpreter Company and the adviser deployment experience of JRTC's observers/controllers/trainers, 3-353rd Armor Regiment develops tailored training programs to meet unit training objectives in preparation for SC or SFA mission requirements. The training programs include:

- Classes;
- Threaded scenario practical exercises; and
- Scenario immersion covering core competencies in basic advising, culture, history, use of interpreters, rapport-building, influencing and negotiations, training host-nation security forces, SC and SFA principles, and combat skills.

Engaged regionally, 3-353rd Regiment integrates lessons-learned and best practices from theater, coupled with Army and joint doctrine, to enable units to meet mission requirements. For coordinating unit training or for more information on the lessons-learned, best practices, programs of instruction and published articles, visit the unit's Website at http://www.jrtc-polk.army.mil/Transition_team/index.html or contact the battalion operations officer at (337) 653-3120.

MAJ Richard Duncan is the battalion course director, 3-353rd Armor Regiment, Fort Polk, LA. His military schooling includes the Field Artillery Officer Basic Course, the Field Artillery Captain's Career Course, Military Transition Team Training and Joint Firepower Course. MAJ Duncan holds a bachelor's of science degree in management information systems from Auburn University and a master's of science degree in business administration from Columbus State University. His awards and honors include the Bronze Star Medal (with oak-leaf cluster), Meritorious Service Medal, Defense Meritorious Service Medal and Combat Action Badge.

Re-establishing an Expeditionary Force:
An Interview with LTG Gustave F. Perna, U.S. Army Deputy Chief of Staff for Logistics, G-4

Inside the Pentagon, Chief of Staff GEN Mark A. Milley's chief adviser on logistics is LTG Gustave (Gus) F. Perna, a 32-year Army veteran. LTG Perna is responsible for developing the policies and procedures to maintain, supply and transport everything our million-Soldier Army needs.

LTG Perna's primary focus is developing a more expeditionary logistics force that can quickly respond to global hotspots. We talked with him about how this is going, what it means to Armor personnel, and what's new in the maintenance field. We also asked him his advice for new commanders.

***ARMOR:* We know the future Army needs Soldiers to have an expeditionary mindset, no matter what their basic branch is. What are your observations from your travels around the Army?**

My standard for expeditionary capability goes back to 2001, before the wars in Iraq and Afghanistan, when the entire Army was geared toward being expeditionary. We have to relearn how to both project and support an expeditionary Army — how to be ready to execute expeditionary logistics from fort to port, port to port, port to foxhole, and beyond. We have to focus on executing core missions to standard, missions that provide the basis for everything else we do in support of the warfighter.

While much work remains to get us back to that standard, I am noticing progress. Would I like to see it happen more quickly? Of course, but what is encouraging is that it is leader-led, and it is supported by noncommissioned officers (NCOs).

As an example, recently, I visited 1st Cavalry Division, and I felt good after that visit. They are taking on many challenges, ensuring their maintenance posture is where it needs to be. They are getting after supply accountability aggressively. Leaders are involved in figuring out how to stuff containers and how to load their vehicles on rail. I saw many positive things on my visit.

Figure 1. LTG Gustave Perna meets with leaders of 1st Cavalry Division at Fort Hood, TX.

***ARMOR*: Given GEN Milley's focus on readiness, what is your vision of maintenance readiness for the future?**

I think an appropriate goal is to be so good at executing maintenance, managing our Class IX supply chain and ensuring that we have the right equipment and special tools that we will no longer need LARs [logistics-assistance representatives] and FSRs [field-service representatives] to help us execute maintenance. We put those representatives in formations as safety nets — to ensure high maintenance standards while we were deployed — and I know our leaders and Soldiers have grown used to them. But our readiness standard should be to execute without them.

***ARMOR*: How do we make that happen?**

Most importantly, we need to make sure Soldiers at all levels – privates, NCOs and warrant officers – get the training they need so they can properly maintain all the equipment in their formations. And we have to make sure our leaders get the coaching, teaching and mentoring they need to be able to run effective maintenance programs.

At the operational level, we have to ensure we have the right supply chain to support maintaining our own equipment – this means from industry all the way down to SSAs [supply-support activities]. We need the right tools in place and fielded to everybody who needs them.

In a perfect world, at the strategic level we would enable this by providing a greater focus from the birth of a piece of equipment until we decide that equipment is no longer needed. Our acquisition strategy would focus on bringing in new equipment in a timely manner and then getting rid of the old equipment so we are not sustaining two types of equipment. Then when we field the equipment, we would bring it out in full capability sets so Soldiers understand what they have.

That is a perfect world I am describing, and the world is not perfect. But if we were to execute it as I've described, we

would no longer need LARS and FSRs. Soldiers would be able to execute maintenance on their own, and I am completely confident they have the skills and determination to do so. However, right now we are teaching bad habits. There are absolutely areas in which we can improve at the strategic, operational and tactical levels.

***ARMOR*: What are your thoughts on unit-level maintenance over the past decade?**

Unfortunately, we haven't been executing unit-level maintenance to what I believe the standard should be. That is not the fault of any unit. We have been in a very high [operational tempo] environment, which has required Soldiers, units and leaders to deploy every other year. So it has forced us to focus on that mission.

To alleviate stress, we have brought in contractors to do unit-level maintenance, both in garrison and overseas. We also brought them in to do supply management. We also had the luxury of having not just one fleet, but two and three fleets to support our mission. As a result, our maintenance skills have atrophied across the board – from the leader who is responsible for supervising it to the Soldier who has to execute it.

Fortunately, we are bringing those skills back, but it only has been in the last 12 to 18 months that that we started this surge. In my opinion, it will take some time to get our skills back completely.

***ARMOR*: Given competing demands and limited resources, what's the No. 1 investment a maneuver leader can do to impact readiness?**

I believe commanders are responsible for vision, resources, time and risk assessment. The greatest impact they can provide starts with articulating a clear vision about what they are trying to achieve and then setting the conditions and providing time – time being the most precious resource their Soldiers need to accomplish the requirement.

Personally, my approach has been to ensure that an appropriate battle rhythm is executed with discipline across the formation so that both Soldiers and leaders can be in the right places for mission accomplishment. The last thing you want to do is have Soldiers waiting around because leaders are in meetings. What you want is Soldiers who are executing based on your intent and able to use all the time available to them.

What some leaders miss is that the most important thing about a battle rhythm is that it must be connected to output. So motor stables are connected to maintenance meetings, maintenance meetings are connected to training meetings, training meetings are connected to command and staff updates, and all are connected to the readiness of the unit, which will be presented in quarterly and annual training briefs to division and corps commanders. So it is the synchronized integration of our ability to execute mission command. That is the key.

***ARMOR:* Can you share some of the best maintenance-readiness practices for the company, battalion or brigade level?**

First and foremost, standards and discipline are the key. You must hold yourselves accountable for execution. You cannot lower your standards. As soon as you let them start to slip, as soon as you approve something at less than 100 percent, as soon as you accept poor performance in the supply chain, you will have a degradation of maintenance that will build on itself like a snowball going down a hill.

The second thing is what I said earlier. You must have processes and systems to enable the things you want accomplished. That is leaders' business, and it is enforced by NCOs.

The third thing, leaders must understand the output of the processes and systems they are putting in place. You can't just arbitrarily have meetings because you think that is what you are supposed to do. You have to operationalize the execution of everything you do.

***ARMOR*: If you are a brand-new brigade executive officer leading your first brigade maintenance meeting, how do you synchronize all maintenance efforts**?

This may sound obvious, but first you must have an agenda, and it has to be an agenda designed to achieve the output you want. You must personally be involved in developing the agenda and understand what each agenda task is trying to achieve. Don't be a bystander, be a participant.

Second, you have to make sure your maintenance meetings are connected to the other processes and routines within your formation. There is no such thing as a stand-alone maintenance meeting. Maintenance meetings are connected to motor stables, to training meetings and to quarterly and annual training briefs.

Third, you must be the keeper of the standards and hold all accountable. It's not an excuse to say you're not a logistician. You need to learn what right looks like and hold everybody accountable.

Fourth, you have to ensure the right people are playing. It does the formation no good if you don't have the right leaders in your meetings. You must ensure leaders are involved so that when subsequent briefings go to the brigade and division commanders, leaders at all appropriate levels are involved. So my coaching is that executive officers, warrant officers, motor sergeants – these types of leaders – need to be involved.

Fifth, the meeting is not about you. It is clearly about the output. Check your ego at the door and develop a team approach to the output. You will garner much more success when those around you figure out the solution. What I mean by that is, it is time to coach, teach, mentor and hold people to standards; it is not time for theatrics with one person's ego taking center stage.

With these positive approaches, you will get so much more out of the team's collective efforts. The key is that when you go across the line of departure, you want maintenance and other critical processes to occur without you, not because of you.

***ARMOR*: How will the Global Combat Support System-Army (GCSS-A) impact the future of maintenance readiness?**

GCSS-A is a game changer. It brings

together all the necessary information for you to have in real time. It brings you the supply status of your property as well as for your Class IX and Class II. It adds your financial status. Then it brings all your equipment maintenance into one sight picture. Never before have we had this. This is a huge enabler to those who take the time to learn the system. It saves time. It allows you to focus your energies. And it creates a culture of personal pride. It helps create organizations that know how to see themselves and hold themselves accountable and bring themselves to the highest standard, and not just for an inspection, but on a routine basis. This tool will truly enable Army readiness.

Last year we finished fielding Wave I at all the SSAs. Now we are executing Wave II, putting it into motorpools and supply rooms. In future waves, we will bring in aviation maintenance and business intelligence. It will be a tremendous asset for the Army.

But the key is leaders must be involved. They cannot delegate. They have to own it. They won't be expected to be the technical expert, but they clearly need to understand how it works. They need to understand the data it provides and give guidance on how to use that data. Otherwise it will just be another computer sitting in the room.

ARMOR: **In an expeditionary environment, what are some cultural changes leaders can make to enable operational endurance?**

Every opportunity needs to be a training event to learn how to be expeditionary. Every time you go out to the field, there are ways to be expeditionary. For example, if you are going out to do lane training, platoon live fires, gunneries or company field-training exercises, the SSA ought to deploy out to the field. They ought to learn how to be mobile and how to issue parts from the field. They ought to learn how to operate GCSS-A in an expeditionary environment. Units need to figure out how to do showers, how to cook, how to do laundry.

My feeling is you go hard, you learn the lessons, and you get yourself to the right levels. Soldiers will adapt. They will figure out how to pack rucksacks. They will figure out how to load equipment onto trains and how to pack their trucks. They will figure out how to eat. But leaders have to create conditions for Soldiers to learn. Soldiers will figure out how to do PMCS [preventive maintenance checks and services] in the rain and in the mud because they will need their trucks for their next objective. If you call off PMCS because you are in the field for a week, you are not teaching them how to be expeditionary.

But I leave that to commanders. They have the imagination. They can bring that home. They are the ones who are making us ready so when we go into a decisive-action environment, everything will fall into place.

Armor Units Should Prepare for Emergency Deployment-Readiness Exercises

by Diana Nalli, LTC William J. Shinn Jr. and MAJ Harry York

With recent and rapid changes to the strategic security environment, it is becoming increasingly critical for the Department of Defense to project expeditionary landpower globally. For example, the recent publication of the ***2016 Index of U.S. Military Strength*** by Heritage.org claims that many North Atlantic Treaty Organization (NATO) countries, especially those of the former Warsaw Pact, see Russia's recent bellicose behavior as a threat to their existence. Simultaneously, the United States continues to draw down its permanent basing in Europe, consolidating its forces in the continental United States and requiring the Army to project power from U.S. bases for NATO exercises.

Senior Army leaders remain increasingly concerned that the Army's readiness to deploy quickly has atrophied over the last decade of rotational counter-insurgency-type deployments. For example, the last time an armored brigade conducted a sealift emergency deployment-readiness exercise (SEDRE) was 1998. Many leaders wonder if an armored brigade is actually capable of clearing its installation within a week of deployment notification, in accordance with Army Regulation (AR) 525-93, ***Military Operations: Army Deployment and Redeployment***.

How can the Army shift toward an expeditionary mindset and improve on its ability to conduct deployment/redeployment operations? We are energizing two lines of effort. First, we will add "conduct deployment activities" to all operational units' mission-essential task list in the training plan. Second, we will conduct large-scale emergency deployment-readiness exercises (EDREs). These exercises test the readiness of not just the units that deploy, but also the organizations, installations and transportation networks responsible for deploying them. For example, recent studies suggest the possibility of industry-wide capability gaps in railcars and rail infrastructure, which can only be verified by conducting an EDRE. The EDRE program provides the next step in demonstrating global power projection.

The deployment-readiness program consists of three levels of training events, with each successive level building on the training from the preceding exercise in preparation for and execution of unit deployment. Level I tests the unit's ability to alert, assemble and conduct Soldier-readiness tasks. Level II adds an assessment of the unit's ability to conduct load-out operations and installation turn-in activities. Level III adds the movement of the unit's equipment and personnel off the installation via air or surface. An EDRE/SEDRE adds a no-notice element to a DRE, testing the Army's ability to rapidly deploy to support requirements unannounced.

Last year, the Department of the Army and Forces Command kicked off the deployment-readiness program with two EDREs conducted using Defense Chemical, Biological, Radiological, Nuclear and Enhanced Conventional Weapons Response Force units with a homeland-defense mission, and a rapid-ready force. Four events are planned for the current fiscal year, one of which is the first SEDRE in more than a decade, and integrates Reserve Component port-operations support.

The Army's Chief of Staff has directed even larger brigade-size EDREs to be conducted in the coming years, some in conjunction with overseas exercises such as Atlantic Resolve in Europe or Pacific Pathways in the Pacific Command area of operations. It is the responsibility of commanders to ensure their units are ready and capable of conducting deployment and redeployment operations, which is no small challenge after nearly 15 years of known rotational deployments.

AR 525-93 governs deployment and redeployment. Although deployment operations typically seem to fall under logistics and sustainment, it is an operational task and the proponent for the regulation is Department of the Army Deputy Chief of Staff G-3/5/7 Strategic Plans and Policy Directorate. The regulation describes four phases of the deployment process: pre-deployment activities; movement from installation to port of embarkation (PoE) (aka "fort to port") (Figure 1); movement from PoE

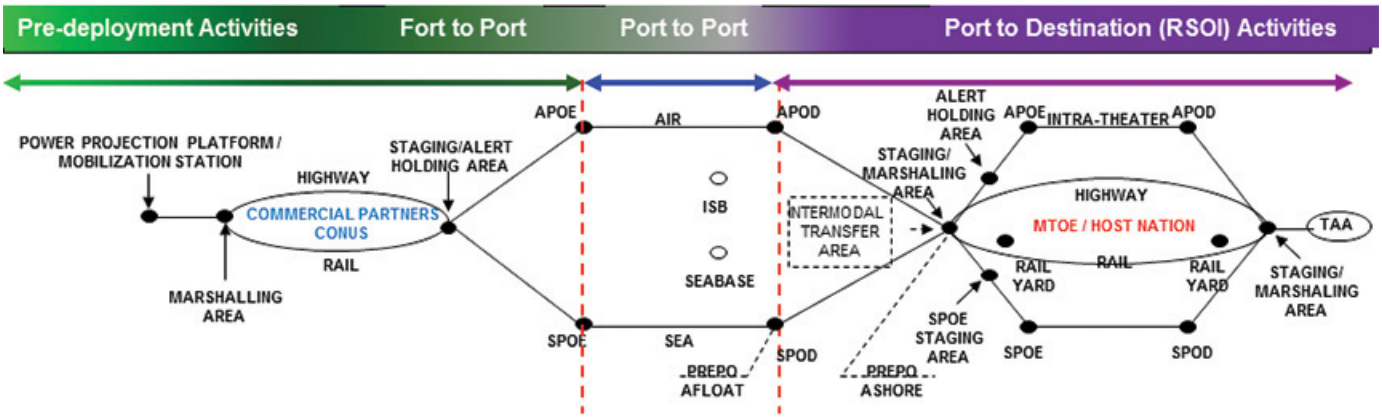

Figure 1. Phases of the deployment process.

to the port of debarkation; and reception, staging and onward movement and integration ("port to foxhole"). However, some senior Army leaders are describing it differently: "The PoE is the new line of departure." This suggests that Soldiers must be organized and ready for combat earlier in the deployment process.

Diana Nalli is a logistics-management specialist in Headquarters Department of the Army's G-4, specializing in strategic mobility. Previous jobs include executive officer to the assistant deputy chief of staff (DCS), G-4, for sustainment; logistics-management specialist, 595th Transportation Brigade, Camp Arifjan, Kuwait; and transportation-management intern, Fort Eustis, VA. Her military-provided schooling includes the intermediate course at U.S. Army Management Staff College and the Army Transportation Intern Program. She holds a master's of science degree in acquisition and supply-chain management from University of Maryland University College and a bachelor's of science degree in marketing and management from Penn State University.

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MAJ Harry York is a strategic planner in HQDA DCS G-3/5/7's Strategic Plans and Policy Division. Previous assignments include senior adviser, Iraqi Army Aviation Command, Iraq Train and Assist Mission, Baghdad, Iraq; UH-60 fleet manager, National Guard Bureau, Arlington, VA; assistant brigade S-3, 81st Brigade Combat Team, Ramadi, Iraq; mobilization-training equipment manager, National Guard Bureau, Arlington; and battalion battle captain, Task Force Storm, Kandahar, Afghanistan. MAJ York's military schooling includes Basic Strategic Art Program, U.S. Army War College, Defense Strategy Course, U.S. Army War College; Advanced Military Studies Program, School of Advanced Military Studies; Command and General Staff School; Aviation Officer Advanced Course; Aviation Maintenance Officer Course; Aviation Basic Officer Course; and CH-47 Chinook Advance Qualification Course. He holds a master's of business administration degree in operations from St. Martins University and a bachelor's of arts degree in Russia and East Europe studies from the University of Washington.

Reconnaissance Formations and Civil Reconnaissance in Stability Operations

Using Field-Expedient Methods to Conduct Hasty Assessments of Host-Nation Transportation Infrastructure and Contribute to Civil Information Management

by CPT Thomas Westphal

Despite the conclusion of operations Iraqi Freedom and Enduring Freedom, there is little doubt that instability will remain a growth industry in our time. However, recent trends seem to indicate the nature of this conflict will remain unconventional for the foreseeable future. Even conventional formations, such as reconnaissance squadrons or armored combat teams, are now arguably more likely to be deployed in support of stability operations in the near term than they are in support of more traditional contingency operations.

As such, today's Armor leaders need to be prepared to adapt their existing skillsets and competencies to fit the requirements of stability operations. One such requirement is the gathering and management of civil information, which assists the commander or other U.S. government authorities in understanding the battlespace's civil component.

Civil-information management (CIM) is a core task carried out by Civil Affairs Soldiers that directly contributes to the commander's ability to understand the situation on the ground in a given area. During the CIM process, data relating to the civil component of the operating environment (OE) is collected, collated, processed, analyzed, formatted into useable products and disseminated (Field Manual (FM) 3-57). By understanding this component of the OE, commanders are able to make better-informed decisions and leverage existing conditions for maximum effect, which could potentially have a significant impact on mission success.

Civil reconnaissance is one of the methods by which Civil Affairs personnel collect relevant civil data as specified by the information-collection requirements formulated by their chain of command. Although doctrine allocates this function to Civil Affairs forces, the capabilities and traditional competencies of a reconnaissance formation place them in a unique position to contribute civil information about the state of host-nation (HN) transportation infrastructure, and therefore enhance the commander's understanding of the OE.

This article will lay out a few field-expedient methods for gathering information relevant to the HN transportation infrastructure during contingency operations with minimal specialized equipment and will pair these methods with common applications. This is not meant to be an exhaustive catalogue but a review and reference for an application of reconnaissance competencies not specifically addressed in current Armor doctrine.

An annotated bibliography of more doctrinal references is included at this article's end to provide a few suggestions for further study. Also see the sidebar, right, for doctrinal definitions.

Future relevancy

During future contingency operations, commanders or other appointed U.S. government authorities will need to gather relevant civil information to enhance their understanding of the OE. This can potentially include gathering information about the status of the HN transportation infrastructure to facilitate specific missions.

For example, if a particular HN is vulnerable to natural disasters in a certain region, an authority might begin gathering information about the transportation infrastructure in that area. In the event that it then becomes necessary to transport humanitarian assistance to the region, the ground commander – as well as collaborating government agencies, non-governmental organizations (NGOs) and HN institutions – has a basic idea of the HN infrastructure's capabilities. This will help answer questions in the planning process such as what routes can support

Doctrinal definitions

Civil information – Information developed from data with relation to civil areas, structures, capabilities, organization, people and events within the civil component of the commander's OE that can be fused or processed to increase Defense Department/interagency/intergovernmental organizations/NGOs/indigenous populations and institutions' situational awareness, situational understanding or situational dominance. (FM 3-57)

CIM – Process whereby civil information is collected, entered into a central database and internally fused with the supported element, higher headquarters, other U.S. government and Defense Department agencies to ensure the timely availability of information for analysis and the widest possible dissemination of the raw and analyzed civil information to military and nonmilitary partners throughout the area of operations. (FM 3-57)

Civil reconnaissance – A targeted, planned and coordinated observation and evaluation of specific civil aspects of the environment. Civil reconnaissance focuses specifically on the civil component, the elements of which are best represented by the mnemonic ASCOPE (areas, structures, capabilities, organizations, people and events). Civil reconnaissance can be conducted by civil affairs or by other forces as required. (FM 3-57)

Reconnaissance – (Defense Department) A mission undertaken to obtain, by visual observation or other detection methods, information about the activities and resources of an enemy or adversary or to secure data, concerning the meteorological, hydrographic or geographic characteristics of a particular area. (Joint Publication 2-0) See Army Doctrinal Reference Publication 3-90, FM 3-90-2 and Army Training Publication (ATP) 3-55.6.

Common applications	Pace count	Triangulation	Felling	Slope pace	Time of travel	Compass
Route width	X					
Route slope				X		
Route curve		X				
Underpass and tunnel overhead clearance			X			
Rivers and fords width						X
Rivers and fords water velocity					X	
Bridge length	X					X
Bridge width	X					
Bridge overhead clearance			X			

Figure 1. Quick reference table for common applications of methods for assessing transportation infrastructure.

what volume of traffic, or which routes have obstacles (such as sharp curves, steep slopes, fords or obstacles with low overhead clearance) that prevent heavy-vehicle traffic.

Depending on the OE, the formations tasked with gathering this information may not always have access to sophisticated equipment for collecting the data necessary for effective analysis of common transportation infrastructure (such as routes, tunnels, fords and bridges). This article will lay out a few field-expedient methods for taking measurements of transportation infrastructure with minimal specialized equipment. These methods are paired with common applications in the table in Figure 1 for easy reference. Such methods could enhance the effectiveness of reconnaissance forces and increase their capacity to conduct hasty assessments of transportation infrastructure in austere environments.

Field-expedient measurement methods

Method: Pace count
Equipment required: Known pace count

Application: All the following methods require one to two people with a known 100-meter pace count. This is a foundational method used throughout this article. It is also useful in its own right for taking measurements of short horizontal distances such as the width of a road or tunnel. Use the pace count to take any distance measurements unless otherwise specified.

Process:

- Step 1: Pace the distance of the measurement needed.
- Step 2: Divide the number of paces by the 100-meter pace count of the Soldier performing the measurement.
- Step 3: Multiply the result by 100. The resulting number is the measured distance in meters.

Method: Triangulation
Equipment required: None

Application: The ability of vehicles to move along a given route is impacted by sharp curves. This is especially true for larger cargo vehicles. To understand how curves on a route may impact traffic, it is necessary to find the radius of the curves. Any curves with a radius of 45 meters or less need to be recorded, and any curves with a radius of 25 meters or less are considered to be an obstruction for route-classification purposes.

Process:

- Step 1: Find the point of curvature (PC) and point of tangency (PT) on the curve (Figure 2). In laymen's terms, this is where the road begins to curve (PC) and the point at which it straightens out (PT) – i.e., the beginning and ending points of the curve.
- Step 2: Pace off right triangles at both points that are equal in proportion (3:4:5 proportions are recommended).
- Step 3: Extend the legs of the triangle that is perpendicular to the road at both PT and PC as shown in Figure 2. Ensure these two lines are as straight as possible. Mark where these two lines intersect (marked O in Figure 2).
- Step 4: Measure the distance between the intersection (Point O) and the road (either PC or PT) – this distance is the radius of the curve.

Method: Felling
Equipment required: Small, straight object (e.g., stick, screwdriver, pencil, etc.)

Application: The "felling" method provides a rough estimate of the height of a given object. It can be used to estimate the height of infrastructure like underpasses and tunnels that can pose a possible obstruction to traffic along a route. The overhead-clearance restrictions of a route can be an important factor in the planning movement along it.

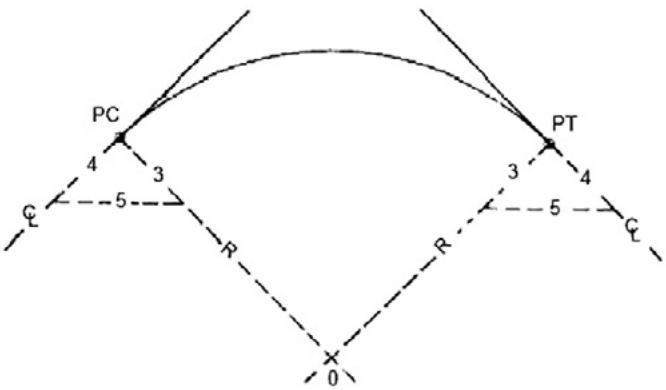

Figure 2. Calculating triangulation. *(From Figure 5-4, FM 3-34.170)*

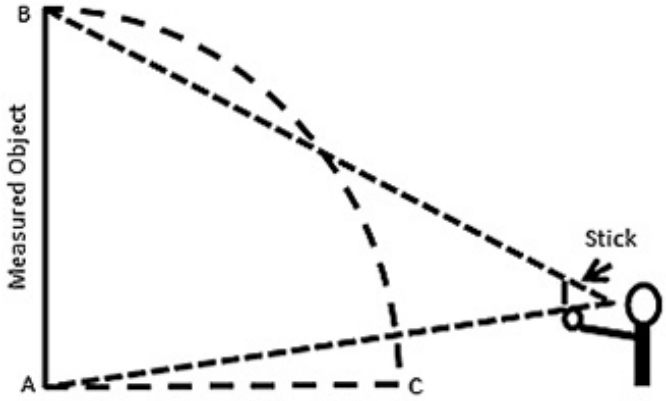

Figure 3. Applying felling.

Process:

- Step 1: Stand a reasonable distance away from the object you need to measure (Line AB – see Figure 3).
- Step 2: Hold a small, straight object (for example, a stick) at arm's length. Adjust the stick so that its tip appears to touch the top of the object you need to measure (B).
- Step 3: Still holding the stick in the same position, use your thumb to mark the spot on the stick where the base of the object you need to measure is (A).
- Step 4: Rotate the stick sideways 90 degrees to a horizontal position, keeping your thumb in line with the base of the object. Mark the point where the tip touches the ground (C).
- Step 5: Use a pace count to measure the distance from that point to the base of the object you need to measure (AB = AC).

Method: Slope pace
Equipment required: None

Application: Routes that contain particularly steep uphill slopes may not be suitable for all types of vehicles. Slopes of seven percent of greater must be recorded and are considered obstructions to traffic flow.

Process:

- Step 1: Stand at the bottom of the sloped area with head and eyes level. Pick a spot on the slope that is about at your current eye level.
- Step 2: Walk toward the sighted spot, measuring the distance with a pace count.
- Step 3: Repeat until the top of the slope has been reached. Keep record of the total distance measured.
- Step 4: Find the vertical distance traveled by multiplying your eye-level height (in the example in Figure 4, this is 1.75 meters) by the number of times you picked a new spot at eye level. Find the horizontal distance by computing the distance travelled based on your known pace count.
- Step 5: Divide the total vertical distance by the total horizontal distance and multiply by 100. This is the percentage of slope.

Method: Time of travel
Equipment required: A small floating object not affected by the wind (for example, a stick)

Application: This is an expedient method for measuring the velocity of moving bodies of water such as streams and rivers. This is relevant because swift-moving streams and rivers are more difficult for vehicles to traverse. In general, currents less than 1.5 meters per second are considered desirable for fording sites. Normally, a river current is not constant across the width of the river; generally, it is faster in the middle than on the sides and faster on the outside of a curve and along the inside (see FM 90-13).

Process:

- Step 1: Measure a distance (in meters) along a riverbank (i.e., 100 meters).
- Step 2: Throw a small floating object into the river or stream (i.e., a stick).
- Step 3: Record the amount of time it takes for the object to travel the measured distance (in seconds). Repeat several times and take the average time for accuracy.
- Step 4: Divide the measured distance along the riverbank by the average time it takes the object to travel the measured distance. This is the velocity in meters per second.

Method: Compass
Equipment required: Lensatic compass

Application: This method can be used to quickly determine the distance across an obstacle that Soldiers are not

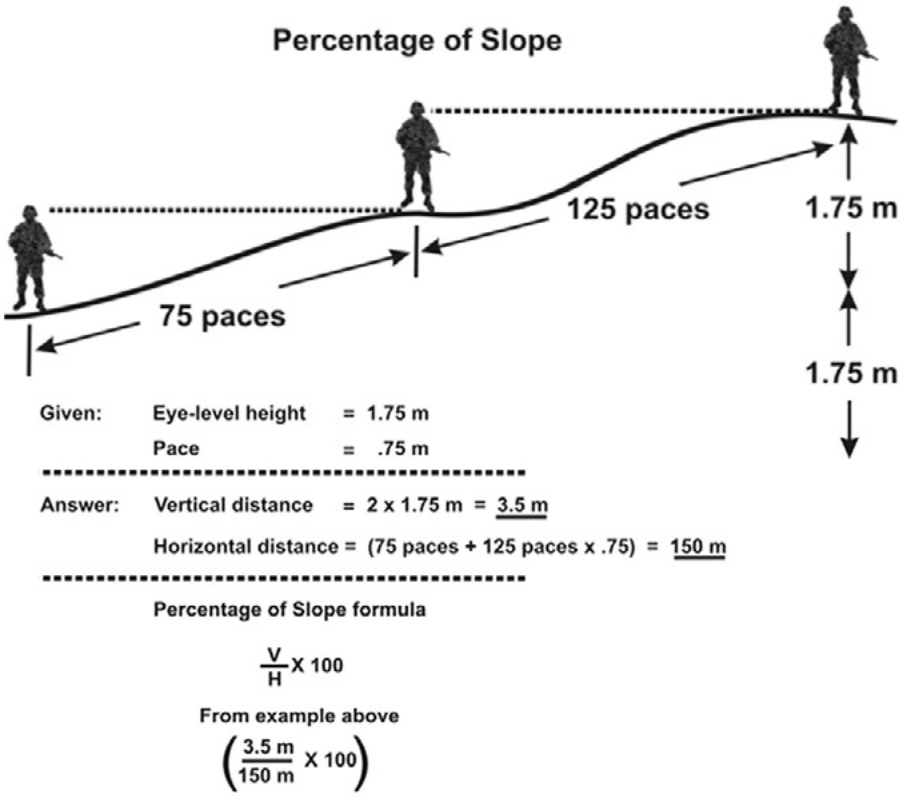

Figure 4. Estimating slope pace. *(From Figure 3-7, ATP 3-20.98)*

able to cross, such as a river or a structurally unsound bridge.

Process:

- Step 1: Take an azimuth from any point on the near side (A) to a point directly across on the far side (B) (see Figure 5).
- Step 2: Find another point on the near side (C) that ensures Angle D is 90 degrees and Angle E is 45 degrees.
- Step 3: Measure the distance between points A and C. This is equal to the distance between A and B, the distance across the obstacle.

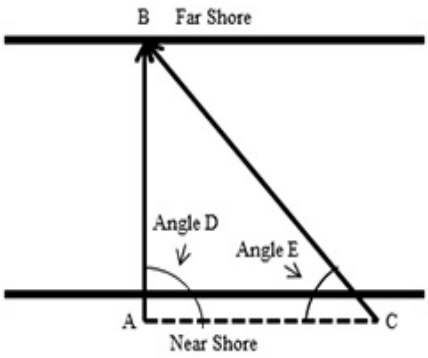

Figure 5. Sighting a compass.

Conclusion

Leaders of conventional reconnaissance need to continue to look for innovative ways to adapt their traditional competencies to meet the realities of the battlefield as the nature of the contemporary OE continues to evolve. During future contingency operations, reconnaissance formations that need to assess HN transportation infrastructure may not have quick or easy access to sophisticated equipment or the expertise necessary to use it. Using some of these field-expedient methods may increase their ability to collect the necessary data and allow better analysis of the HN infrastructure's capabilities. This, in turn, should help improve a commander's situational awareness and understanding of the OE's civil component, and make contributions to mission success.

CPT Tom Westphal is currently a Civil Affairs team leader in 96th Civil Affairs Battalion (Airborne), 95th Civil Affairs Brigade (Airborne), Fort Bragg, NC. Previously he served as an Armor officer, both as a company executive officer with the Headquarters and Headquarters Battalion of 2nd Infantry Division at Camp Red Cloud, Republic of Korea; and as a tank-platoon leader in Troop C, 1st Squadron, 3rd Armored Cavalry Regiment, Fort Hood, TX, and Babil Province, Iraq. He has also completed deployments to Iraq (Operation New Dawn, 2010-2011) and Tajikistan (Civil-military engagement, 2014-2015), and is a graduate of the Civil Affairs Qualification Course, Army Special Operations Captain's Career Course, Army Reconnaissance Course and Armor Officer Basic Course. He holds a bachelor's of arts degree in political science (with minors in economics, philosophy, history and global studies) from Washington State University.

Further reading

ATP 3-20.98, ***Reconnaissance Platoon***, April 2013. Contains useful information regarding route classification from a maneuver reconnaissance platoon's perspective. Includes a discussion of different field-expedient methods and examples of the methods being used to evaluate routes.

FM 3-34.170, ***Engineer Reconnaissance***, March 2008. This is the definitive field manual for evaluating transportation infrastructure. Includes a detailed discussion of different methods and examples, as well as data about military load classifications and conducting hasty evaluations the structural integrity of bridges, which are not covered in this article but could potentially be helpful to a Civil Affairs team conducting civil reconnaissance.

FM 3-57 C1, ***Civil Affairs Operations***, January 2014. This manual describes in broad terms the Civil Affairs core tasks, including civil information management. Also, it is the proponent manual for civil reconnaissance.

FM 3-57.50, ***Civil Affairs Civil Information Management***, September 2013. Provides an in-depth discussion of the civil information management process.

FM 90-13, ***River-Crossing Operations***, September 1992. Gives in-depth information and data regarding favorable conditions for military river-crossing operations, which gives insight into what sort of information commanders might want in future contingencies, as well as what may be important to non-military personnel attempting to traverse a route that includes un-bridged rivers.

ST 3-20.983, ***Reconnaissance Handbook***, April 2002. A condensed and easy-to-use publication that includes information about route classification from the Armor Branch's perspective.

Soldiers Encouraged to Submit Items for Soldier Enhancement Program

by Rochelle V. Bautista-Niggemann

Have you purchased any commercial-off-the shelf items (COTS)? Such as gloves, eyewear, load carriage or military-occupation-specialty (MOS)-specific items? If so, have you heard of the Soldier Enhancement Program (SEP)?

For more than 20 years, the Army's SEP has been providing Soldiers with COTS items that help them effectively complete their missions. And yet many people have never heard of SEP.

SEP is applicable to all MOSs and enhances what is already available. SEP was established by Congress in 1989 to purchase items that improve lethality, survivability, command and control, mobility and sustainability for all Soldiers.

Anyone can submit a proposal for a new item, and SEP can provide that capability for our Soldiers in less than three years. The SEP executive council meets each February and August to approve initiatives for the next fiscal year.

Enhance what is already available: Unlike many military acquisition programs, SEP relies on COTS technologies that are adapted to meet Soldiers' specific requirements. Ideas for the program come from Soldiers, commanders, units with specific needs and industry leaders worldwide. The range of items includes individual weapons, ammunition, optics, combat clothing, individual equipment, water supplies, shelters and navigational aids.

Identifying Soldiers' needs: The requirement for a new piece of equipment for Soldiers could be as simple as an individual hand tool or a Bluetooth hand-held electronic organizer that is capable of passing logistics data. The Program Executive Office (PEO) for Soldier Systems Integration, in coordination with the Training and Doctrine Command's Capability Manager-Soldier, reviews submissions and decides whether to evaluate an item further, buy or produce it, conduct field testing or standardize and issue it to Soldiers in the field.

Figure1. Example of submission form from SEP Website, http://www.peosoldier.army.mil/sep/**.**

With the Army immersed in conflicts around the world, Soldiers need equipment that reflects the best technology, and they need it fast. Before transformation was part of the Army lexicon, SEP was promoting transformation of the Soldier system with an accelerated acquisition process that gets better weapons and gear into Soldiers' hands. SEP continues to play a key role in the effort to meet Soldiers' requirements.

Proposals can be submitted on line at www.peosoldier.army.mil/sep/. Anyone can submit a proposal. Nearly 100 proposals are received and reviewed every six months. PEO-Soldier will consider proposals for items that:

- Currently are available as COTS.
- Will enhance the effectiveness of individual Soldiers in a tactical environment.
- Can be worn, carried or consumed by all Soldiers in a tactical environment.

Need more Information? Contact Rochelle V. Bautista-Niggemann, B70 3rd Floor, Room 3101, phone (706) 545-7738, or email Rochelle V. Bautista-Niggemann.civ@mail.mil.

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senior capabilities developer in the Electronics and Special Developments Branch, Soldier Divison, Capabilities Development and Integration Directorate (CDID), Maneuver Center of Excellence, Fort Benning, GA. Previous jobs include combat developer, Mounted Requirements Division, CDID; combat-developments liaison, Office Chief of Armor, U.S. Army Armor School, Fort Benning; combat developer, Directorate of Combat Developments, U.S. Army Infantry Center, Fort Benning; security officer, U.S. Army Infantry Board, Fort Benning; and test officer, Capabilities Developments Experimentation Command, Fort Ord, CA. Ms. Bautista-Niggemann's military schooling includes the Field Artillery Basic Course, Lance Missile Officer Course and Test Officer's Course. She holds a bachelor's of arts degree in criminology from Saint Leo College, a master's of science degree in personnel management from Troy State University and a master's of science degree in international relations from Troy State University. Her awards and honors include the Order of Saint George, the Order of Saint Maurice and the Army's Achievement Medal for Civilian Service.

Donovan Research Library,

Maneuver Center of Excellence,

hosts Armor student papers on various subjects,
http://www.benning.army.mil/library/content/Virtual/virtual.htm,
and back issues of *ARMOR* magazine,
http://www.benning.army.mil/library/content/Virtual/CavalryArmorJournal/index.htm
— currently through 1888-1973 but building up to the early 1980s.
Some back issues are also available on e*ARMOR*,
http://www.benning.army.mil/armor/earmor/

Forging Forward: Capturing Armor Expertise for this Fight and the Next

by CPT Jabari M. Jackson

Before the Armor force spreads Armor expertise, we must first capture Armor expertise. We have lost the experts in the noncommissioned officer (NCO) corps. We have lost our ability to sustain our formations. Our Cavalry cannot visualize the battlefield for the commander. We compromise combined-arms proficiency because we lack the habitual relationships.

"The doer does what the checker checks" is a popular Army phrase. What if the chcker doesn't know what to check? What happens when the checker knows what to check but not how to check? After-action reviews from decisive-action rotational exercises at our combat training centers describe atrophy as the cause of a lack of proficiency in what are considered basic Armor skills: failure to provide maintenance support in conjunction with decisive maneuver; failure to visualize the battlefield with a common operational picture; and failure to provide effects in the engagement area.[1]

These results are symptoms of a much larger problem. We need to forge a branch of confident and experienced Armor and Cavalry professionals. We will capture expertise for this fight by making our NCOs experts by:

- Creating a platform-based regimental system for scouts;
- Adding Armor Advantage to the Excellence in Armor (EIA) program;
- Forging in Armor Soldiers the maintenance mindset;
- Redesigning the maintenance-control element (MCE);
- Establishing combat collection teams (CCTs) to overcome battlefield blindness; and
- Investing in the Close-Combat Tactical Trainer (CCTT) to facilitate combined-arms training.

Forge NCO leader development

Leader development of enlisted Soldiers, from private to sergeant first class, is the most important investment the Chief of Armor can make in capturing and sharing Armor expertise throughout the Army and the joint environment because the Armor proponent directly impacts the training curriculum and developmental assignments.[2] The NCO corps is the strength of the Armor force. NCOs are the experts and train every individual in our force, including the commissioned officer – and not only the commissioned officer, but our partners in both contingency and conflict.

To ensure our NCOs meet these expectations, we must invigorate a regimental system for scouts associated around platforms to promote organizational and platform expertise, commit to functional training attendance and add the "Armor Advantage" program to the EIA program.

Forge platform-based regimental system

We need to invigorate a platform-based regimental system because experience builds uncanny resourcefulness among NCOs that inspires troop commanders and platoon leaders to do as retired GEN Carl Vuono wrote, "Through the ages, the most celebrated leaders in the profession of arms began their rise with the simple words, 'Sergeant, show me how.'" Tankers need to be around tanks. A platoon sergeant in a Bradley organization must have expertise and experience as a crew member, gunner and in a dismounted leadership position to resource and train his platoon. Only time in similar organizations will allow him to fully develop the skills and experience to perform his task.

Atrophy may not be the appropriate word to describe the status of basic Armor skills. As stated earlier, maybe we don't know how to check. NCOs need more practice and multiple duty positions within the same organization to fully develop the competence and resourcefulness to properly conduct pre-combat checks and pre-combat inspections under condensed timelines and in stressful environments, and to fix deficiencies before executing the operation.

We must apply a similar model for a platoon sergeant in a Stryker or truck-cavalry organization.

Forge functional-training attendance

The Armor community must work with the Armor School to encourage functional-school attendance. The Armor School must collaborate with other proponents to deliberately synchronize primary-military-education course dates with functional-school dates to allow optimal opportunity for class attendance immediately after the course. Organizational commands must commit time and training funds to support attendance during critical times in the NCO's career. Technical and tactical experts are educated in our functional classrooms and training environments.[3]

The courses I believe most relevant for the Armor community are the Master Gunner's Course (tank and Bradley), Army Reconnaissance Course (ARC), Joint Fires Course, Battle Staff Course and Reconnaissance Surveillance Leader's Course (RSLC). A good time to go to Master Gunner School is immediately after Senior Leader's Course or Advanced Leader's Course (ALC). A good time for a scout to attend ARC is immediately after ALC.

Forge Armor Advantage

EIA is our program of record, and we must use it as a vehicle to maximize Armor and Cavalry individual skill-building and expertise. EIA promotes pride and confidence in the Soldier by recognizing individuals with the aptitude and attitude to lead with distinction in the future. The program provides tailored mentorship and promotes continuous achievement and learning by providing the personnel-development skill-identifier code E4J.[4]

We are missing a critical component to the program. In the late 1980s and early 1990s, EIA membership featured an initiative similar to the Airborne Advantage by providing 35 promotion points for specialists promotable and sergeants promotable.[5] Adding another 35 to 50 points in an Armor Advantage program will energize the EIA program and provide considerable prestige to it.

Also, the tank master gunner and first sergeant is the perfect administration team for the program in tank companies. A composite of the first sergeant, ARC, RSLC and master-gunner graduates can best develop the scouts in the program.

Forge maintenance mindset

"Forget logistics, you lose" are the pragmatic words of LTG Fredrick Franks. Tactical maintenance organizations have encountered three major organizational transitions since the Division 86 force design. In 2004, the Army transitioned from a four-level maintenance system to a two-level maintenance system.[6] While these changes closed gaps for the sustainment community, the Armor community has gradually divested itself of an active role in maintenance-leader development.

We need a study and proof of principle, similar to a standardized scout platoon, focused on reorganizing the MCE, assigning the right mechanics in the organization, moving the MCE to battalion headquarters and investing an Armor officer in maintenance planning.

Capture proper expertise

While serving as the squadron maintenance officer, I told a newly assigned maintenance-control sergeant that replacing engines and transmissions during our rotation would require a considerable amount of oil, coolant and liquids (Class IIIP), and that we must coordinate for security and movement equipment. He said it shouldn't be a big deal, but after I walked him to the maintenance bay and had one of the maintenance-team chiefs show him the process, his attitude changed. He is not an incompetent NCO; his experience as a wheel mechanic in transportation units and brigade-support battalion maintenance companies had not prepared him for the needs of supporting an Armor and Cavalry unit.

U.S. Army Training and Doctrine Command's Capability Manager-Armored Brigade Combat Team (TCM-ABCT)

plans to assign a Military-Occupation Specialty (MOS) 91Z50 (mechanical-maintenance supervisor) master sergeant to combined-arms battalions (CABs) and Cavalry squadrons. The master sergeant will provide mentorship to the maintenance team chiefs and peer leadership to the first sergeants.

The ABCT motor sergeant must have previous 91A, 91M or 91H experience. The Armor School trains 91M Bradley system maintainers and 91A Abrams system maintainers. These professionals serve their key developmental assignments in ABCTs and provide critical sustainment support to the Armor formation. They understand "turret turbulence," and they are developed in the same culture and formations as our tankers and scouts. Tank and Bradley mechanics learn the entire platform: drive train, optics and gun. Most wheel mechanic positions only address the drive train.

The 91H tracked-vehicle repairer is the only 91X feeder MOS with key developmental assignments exclusively authorized in the ABCT.[7] The other 91X feeder MOSs are generator mechanic and wheel mechanic.

Forge experience into maintenance mission

Mounted organizations demand organizational oversight and a greater understanding of employment of combat platforms and the impact of ancillary equipment. We must move the maintenance-control section to the Cavalry squadron headquarters and CAB headquarters. The battalion maintenance officer (BMO) is the cornerstone of the organization's maintenance planning and a staff officer who provides unique information to staff assessments.

Recode the BMO position to O2A combat-arms officer in the CAB and to 19C in the Cavalry squadrons, and consider them in a primary staff-officer position. Maintenance is critical to Armor expertise, and we must address it with functional-enhancement training and leadership roles at the company-grade level. Unit maintenance-collection point (UMCP) operations and shop-supply-list management require a career-course graduate with Armor/Cavalry platoon-leader and troop/company executive-officer experience. This will provide the battalion's commander and executive officer the option to operate the UMCP independently of the combat-trains command post (CTCP).

The BMO may also provide critical staff-officer coverage at the CTCP during transitions in the battle and mentor company executive officers in the garrison environment because he or she possesses the conviction to understand the competing demands associated with maintenance and tactical operations.

Armor expertise is rooted in combined arms. As GEN Carl E. Vuono said, "The Army of today and tomorrow will be an integrated combined-arms team. The colors of the Armor patch say it all. The red, blue and yellow symbolize the spirit of combined arms."[8]

Everything we do is for the benefit of someone else. We must not forget our responsibility to pursue excellence in combined arms. The Chief of Armor must promote advancement in the CCTT; construct the emergence of a combat collection team to assist in battlefield visualization and targeting; and ensure we identify mission-command requirements in our current and future systems.

Forge simulation training

Fiscal pressure will force the Army to restrict and cut funding to programs. The Armor force reduction will force a shift to sustain high readiness levels. Armor and Cavalry formations can no longer accept "crawling or walking" into resource-intensive live-fire training events. Simulations training allows us to "run" faster and execute live-fire training better.

The Armor School must invest, protect and continue to improve CCTT because it is the most important simulation trainer we have. CCTT provides equipment that allows individuals, crews, squads, platoons and companies to simultaneously build muscle memory while executing key and collective tasks and missions – ultimately producing company teams ready to "run" into the live-fire training event. The simulated environment also provides the opportunity to introduce new threats and capabilities and effects on terrain.

To restore historical relationships, Cavalry and Armor leaders must master engagement-area development by integrating aviation, field artillery and engineers. When I was a troop commander, we trained in CCTT with an Apache 64 unit operating in the Aviation Combined-Arms Tactical Trainer. (At the time, the pilots' aircraft were in reset.) We worked through integration and coordination. We discussed communications and worked through hunter-killer training, followed by informal capabilities training at the company level. Two months later, to our surprise, we arrived to our pre-flight brief, and the same unit flew in support of our operation. It was very comforting hearing a familiar voice over the net. We were able to execute a much more complex exercise than originally planned.

Forge CCT

Combat collection is an Armor expertise that allows supported commanders to visualize the battlefield. Cavalry units and officers must master collection. Collection mastery requires an integrated relationship with the intelligence and fires communities.

Legacy doctrine provides answers to what may be perceived as new problems. We need to look at old doctrine and bring forward aspects that are still relevant so that we can not only win the next war but be prepared for future wars, according to LTG H.R. McMaster.[9]

A case in point is 1-7 Cavalry's problem set of defining "functional tools to reduce the complexity of variables and not add pages of data."[10] The unit presents a good professional line of discussion for focused reconnaissance and security doctrine. It lays out a systematic approach of processing tactical intelligence by identifying linking decision points to priority intelligence requirements, leading to the development of specific information requirements that battalion staffs translate to specific orders and requests (SOR) to troops, squads and teams.

The 1993 ***Intelligence Preparation of the Battlefield*** manual states that an

SOR is "[t]he order or request that generates planning and execution of a collection mission or analysis of database information. SORs sent to subordinate commands are orders. SORs sent to other commands are requests. SORs often use system-specific message formats but also include standard military operations and fragmentary orders."[11]

The Cavalry Leader's Course (CLC) has emerged as the course requiring less adjustment in our functional school systems.[12] The course lacks the interdependency with the centers of excellence (CoEs) to ensure emerging Cavalry doctrine keeps pace with tactical intelligence and targeting. We need to build a CCT with intelligence, aviation, fires and mission-command CoEs to establish synergistic reporting systems to visualize the battlefield and provide accurate targeting data over the digital and voice network.

Forge digital requirements

Collection mastery is limited to accuracy and timeliness of reports. We must spread the "spirit" by getting the information to the guns. Digital has become the primary means to pass targeting information.[13] Collection mastery also impacts the development of new digital systems.

Since information systems are critical components of battle-tracking and passing combat information, emerging joint doctrine emphasizes interdependency. Our systems must easily collaborate with other systems, particularly in the software department. The Armor force needs to provide compliance standards that enhance information-management systems capable of distributing detailed information quickly and efficiently without bogging down the information network.

Conclusions

Adopting a platform-based regimental system ensures competence in our fighting force.

Increasing functional-school attendance forces professional growth.

Armor Advantage provides a vehicle for advancing Armor basics, forging an NCO corps of experts.

The MCE's reorganization places the right mix of people in the right place to ensure the maintenance mission is accomplished.

Armor expertise is nothing without the team. Investing in CCTT improves the mounted warrior and the combined-arms team.

Creating a CCT keeps doctrine relevant to our consumers.

Commitment to this plan ensures we forge forward and spread Armor expertise to this fight and the next.

CPT Jabari Jackson is the plans and readiness officer, Officer Personnel Management Directorate, Officer Readiness Division, at Human Resources Command, Fort Knox, KY. Previous assignments include commander, Blackfoot Troop, 5-4 Cavalry, 2nd ABCT, 1st Infantry Division, Fort Riley, KS; squadron maintenance officer, 5-4 Cavalry; officer career manager, Office Chief of Armor (OCoA), U.S. Army Armor School, Fort Benning, GA; and executive officer and scout-platoon leader, L Troop, 3rd Battalion, 3rd Armored Cavalry Regiment, Fort Hood, TX, and Operation New Dawn. His military schooling includes Armor Basic Officer Leadership Course, ARC, CLC and Maneuver Captain's Career Course. CPT Jackson holds a bachelor's of science degree in liberal studies from Tarleton State University. His awards and honors include the Draper Armor Unit Leadership Award, 1st Infantry Division, Fort Riley.

Notes

[1] Capabilities Development and Integration Directorate, August 2014. TCM-ABCT's semi-annual report.

[2] Department of the Army Pamphlet (DA PAM) 600-25, Washington, DC: Government Printing Office (GPO), 2008.

[3] Ibid.

[4] OCoA, EIA Program, http://www.benning.army.mil/armor/OCOA/content/PDF/Excellence%20In%20Armor%20MOI.pdf.

[5] C.R. Davis, "Excellence in Armor," ***ARMOR***, January-February 1996.

[6] D.M. Menter, ***The Sustainment Battle Staff and Military Decision-Making Process (MDMP) Guide,*** Bloomington, IN: AuthorHouse, 2009.

[7] DA PAM 600-25, Washington, DC: GPO, 2011.

[8] GEN Carl E. Vuono, "Six Imperatives for the Armor Force," ***ARMOR***, July-August 1990.

[9] LTG H.R. McMaster, "Continuity and Change: The Army Operating Concept," ***Military Review***, March-April 2015.

[10] LTC Jason A. Miseli, MAJ Gregory W. McLean and CPT Jeremy Bovan, "Intelligence Support to a Cavalry Squadron," ***ARMOR***, July-September 2014.

[11] Field Manual 34-130, ***Intelligence Preparation of the Battlefield***, Washington, DC: GPO, 1993.

[12] TCM-ABCT semi-annual report, 2014.

[13] Armored Warfighter's Forum Symposium 01-2015 notes, Dec. 2, 2014.

Think We're the Best? A Look Down Under Might Change Your Mind

Comparing Tactics Training between Armor Basic Officer Leadership Course and Australia's Regimental Officer Basic Course

by LTC Terrence H. Buckeye

For the last two years I've served in an exchange billet at Australia's School of Armour (SOArmd) as the senior instructor for tactics. My primary takeaway from this assignment is that Australian mounted tactics training at the company level and below is much better than our U.S. tactics.

A comparison of tactics training for new Armor lieutenants between the Armor Basic Officer Leadership Course (ABOLC) and Australia's Regimental Officer Basic Course (ROBC) illustrates why. SOArmd produces competent, confident cavalry- and tank-platoon leaders who are prepared to lead a platoon in combat upon graduation. ABOLC does not do this. My thesis is simple: Our tactics training for new Armor lieutenants is insufficient; the Australian ROBC mounted tactics training is markedly better than our ABOLC tactics training and should become the model we emulate to reform our tactics training at the Armor School.

With a resurgent Russia and a more aggressive China, the U.S. Army needs an armored-mechanized fighting capability proficient at conducting combined-arms maneuver (CAM) warfare. We can no longer rely on mass and superior technology to compensate for tactical incompetence, especially with the Army downsizing and the number of armored brigade combat teams (ABCTs) decreasing from 17 to 10. Currently, as a branch, we are failing to deliver that capability. ABOLC provides a useful case study to understand how and why our Armor Branch is not delivering.

ROBC overview

Australian armoured ROBC is 116 training days long and divided into two tracks – tank and cavalry. Tank lieutenants focus on the M1A1 platform, while cavalry lieutenants focus on the Australian Light Armored Vehicle (ASLAV) with 25mm Bushmaster stabilized turret. Both courses follow the same general progression (Figure 1).

SOArmd is a squadron-size organization subdivided into four training wings. Lieutenants spend 16 days in the Communications Wing, 15 days in the Driving and Maintenance Wing and 35 days in the Gunnery Wing. With a foundation of technical proficiencies established, they go to the Tactics Wing for 50 days of training. There are 31 assessments for cavalry and 34 for tank throughout ROBC, in addition to several physical-fitness assessments.

ROBC tactics synopsis

ROBC tactics training lasts 10 weeks and is divided into three phases: individual vehicle skills (three weeks),

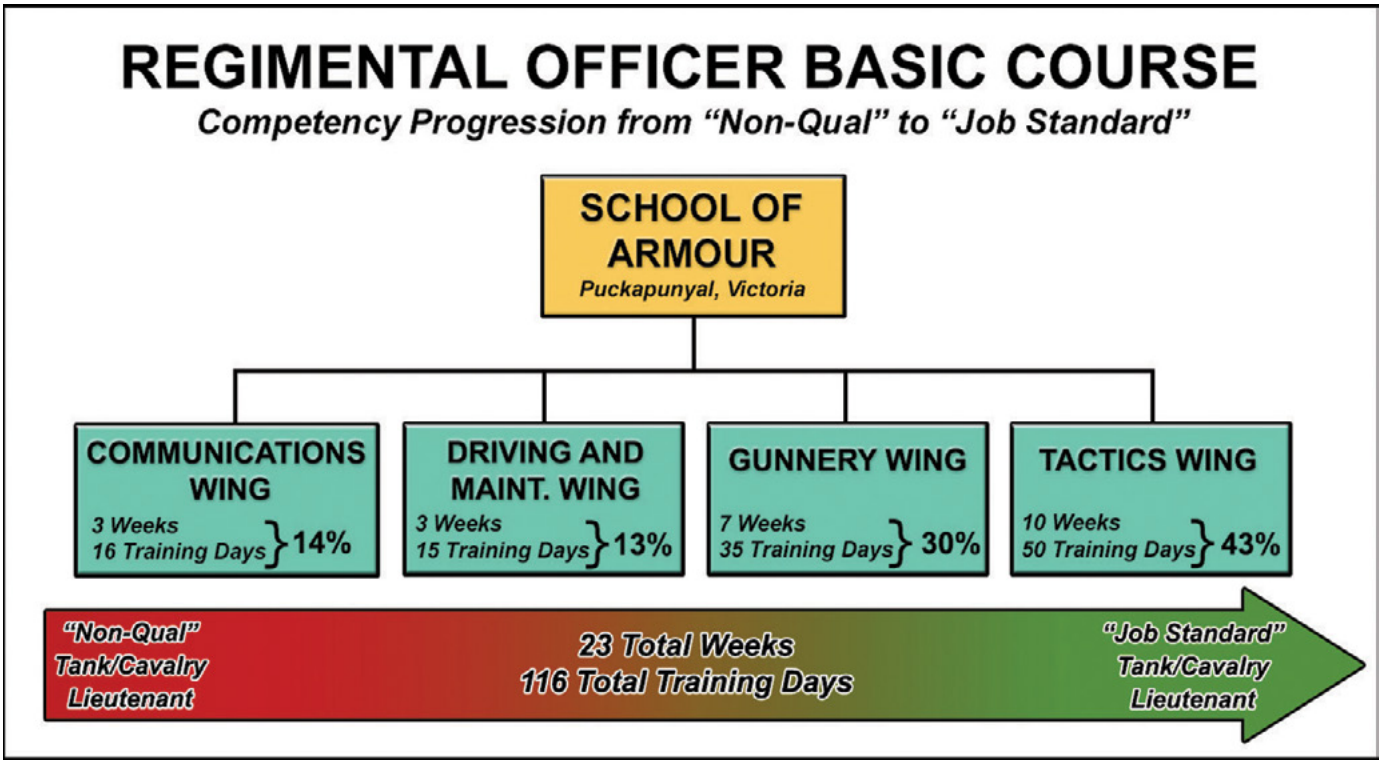

Figure 1. ROBC course progression. *(Based on a chart by LTC Terrence Buckeye)*

section-level skills (three weeks) and platoon-level skills (four weeks). The overarching training focus is on CAM. Each phase culminates in a live-fire maneuver assessment the lieutenants must pass to continue in the course.

Of the 50 days, roughly 37 are in the field. A typical week involves classroom instruction Monday morning with vehicle prep and deployment to the field Monday afternoon for practical application. The students return from the field Friday afternoon, conduct maintenance and prepare their vehicles to deploy the next week. Instructors counsel the lieutenants on their performance weekly. The Puckapunyal Training Area is 25 kilometers by 20 kilometers and ideally suited for mounted-maneuver training.

For the individual vehicle skills phase, the first week focuses on mounted land navigation in both day and night conditions. No Global Positioning System (GPS) or digital aids are allowed. The lieutenants must navigate purely off their map and terrain association or celestial navigation at night. Concurrently, they are taught terrain analysis and appreciation, the basics of crew command-and-control through crew briefs, and the methods of tactical approach and occupation of a vehicle fighting position. During individual vehicle maneuver, they learn how to maneuver their vehicles tactically between two locations using terrain and vegetation to cover and conceal their movements while not exposing vulnerable flanks. They also learn how to occupy a position (hull-down/turret-down), jockey (backing out of a fighting position), report their movements up (instructors fill the role of platoon leader), brief their crew on fire-control measures while both stationary and on the move, and establish a platoon battle hide. The phase ends with a live-fire maneuver assessment where the lieutenants command-and-control their vehicle as part of a section through a four- to five-kilometer lane (Figure 3).

For section-level skills, the lieutenants continue to build on their individual skills while learning how to provide effective mutual support to their maneuvering wingman. As section leaders, they must control and direct their wingman while reporting the status of both vehicles. The students are also introduced to indirect-fire planning and engagement-area development. Australian companies operate on a single net so their platoon leaders learn how to report quickly and succinctly.

In platoon-level skills, the lieutenants learn how to maneuver a platoon tactically through platoon battle drills, movement formations, movement techniques and rapid troop-leading procedures. This phase culminates with a week-long exercise called Reaper's Run. The exercise integrates the ROBC cavalry platoons and the ROBC tank platoon into a company-team, conducting a guard mission against an

WEEK	LEVEL	SUN	MON	TUE	WED	THU	FRI	SAT
1	INDIVIDUAL VEHICLE SKILLS		Classroom Lessons	Navigation	Navigation	Navigation Assessment	Navigation Assess / Recovery	
2			Lessons / Ind Vehicle Man	Individual Vehicle Maneuver	Individual Vehicle Maneuver	Individual Vehicle Maneuver	Ind Vehicle Man / Recovery	
3			Lessons / Ind Vehicle Man	Individual Vehicle Maneuver	Individual Veh Live-Fire Assessments	Individual Veh Live-Fire Assessments	Ind Veh IF Assess / Recovery	
4	SECTION LEVEL SKILLS		Lessons / Section Maneuver	Section Maneuver	Section Maneuver	Section Maneuver	Section Man / Recovery	
5			Lessons / Section Maneuver	Section Maneuver	Section Maneuver	Section Maneuver	Section Man / Recovery	
6			Lessons / Section Maneuver	Section Maneuver	Section Live-Fire Assessments	Section Live-Fire Assessments	Section LF Assess / Recovery	
7	PLATOON LEVEL SKILLS		Lessons / Platoon Offense	Platoon Defense	Platoon Offense	Platoon Offense	Platoon Off / Recovery	
8			Lessons / Platoon Defense	Platoon Defense	Platoon Defense	Platoon Defense	Platoon Def / Recovery	
9			Lessons/ Simulations	Battle Prep/ TLPs	Reaper's Run - Company - Team Live-Fire Maneuver Assessment			
10		Reaper's Run - Company - Team Live-Fire Maneuver Assessment			Recovery	Administration/ Student Evals/ Course Survey	Graduation/ ROBC Dining in	

Field Training | Live-Fire Assessment

Figure 2. ROBC tactics training – 10-week generic model. *(Based on a chart by LTC Terrence Buckeye)*

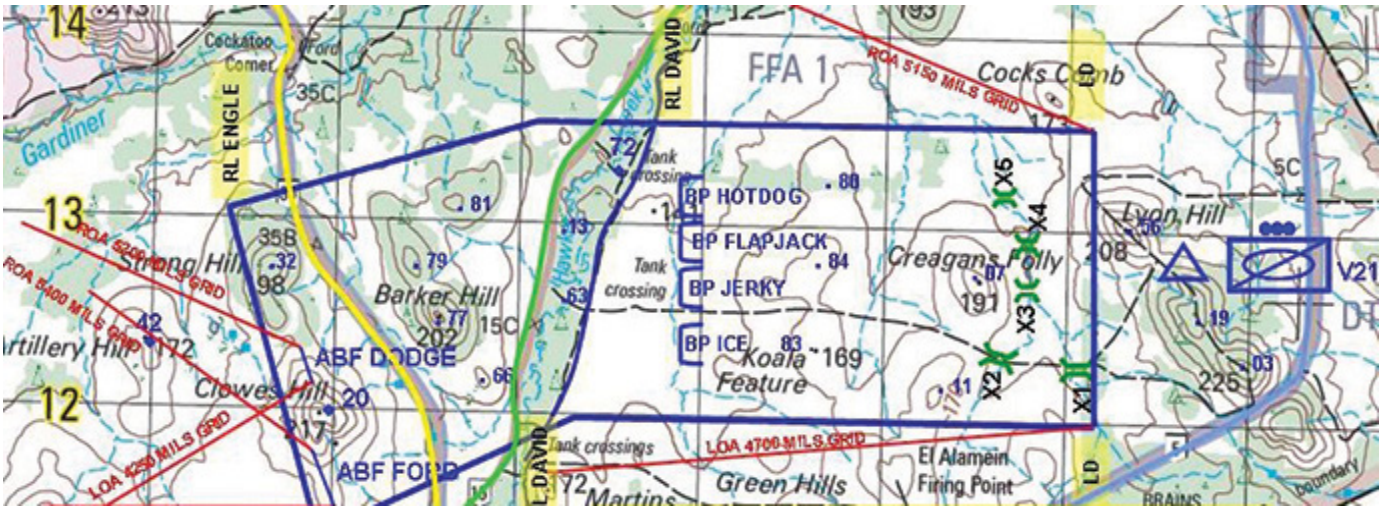

Figure 3. Individual maneuver live-fire assessment. *(Map by SGT Clint Johnson)*

attacking enemy battalion. The lieutenants must work through the added pressure of reporting to a company commander, conducting platoon cross-talk and coordination, and employing fire support and engineers. Moreover, Reaper's Run alternates between live-fire events and force-on-force with live opposing forces. Each lieutenant is assessed as the platoon leader for a 20- to 30-hour period in a combination of both force-on-force and live-fire tactical tasks (Figure 4).

ABOLC overview

ABOLC is run by 2nd Battalion, 16th Cavalry Regiment. Although 2-16 Cavalry falls under 199th Infantry Brigade, the Armor School remains the course's proponent. ABOLC is a 95-day course subdivided into three phases: individual phase (27 days), crew phase (26 days) and platoon phase/tactics instruction (33 days). Students receive gunnery and tactics training for both the M1A2 tank and the M3A3 Cavalry Fighting Vehicle (CFV) during the course.

During Phase I (individual phase),

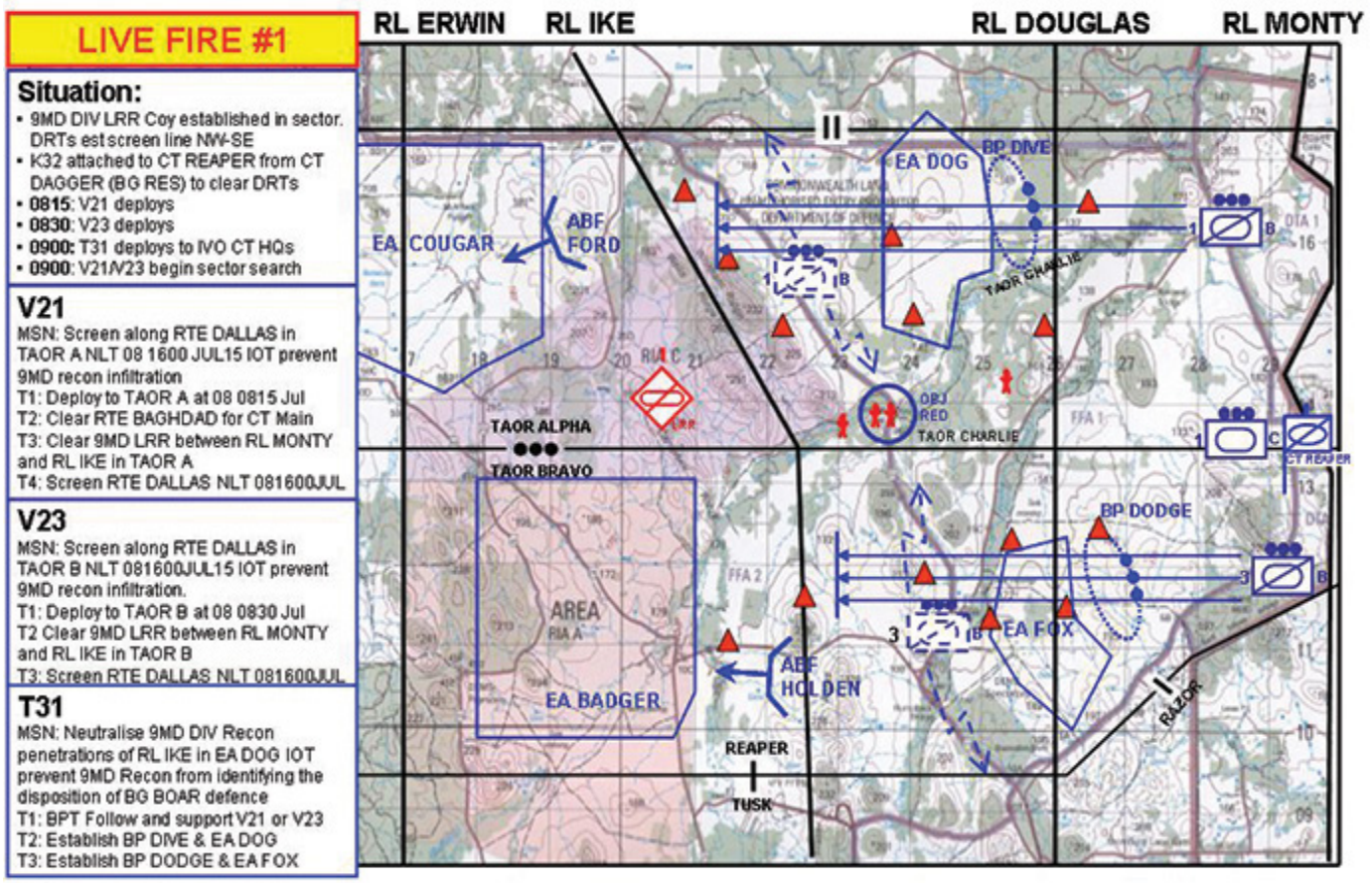

Figure 4. Exercise Reaper's Run on the morning of Day 1 during the ROBC culminating platoon assessment. *(Map by LTC Terrence Buckeye)*

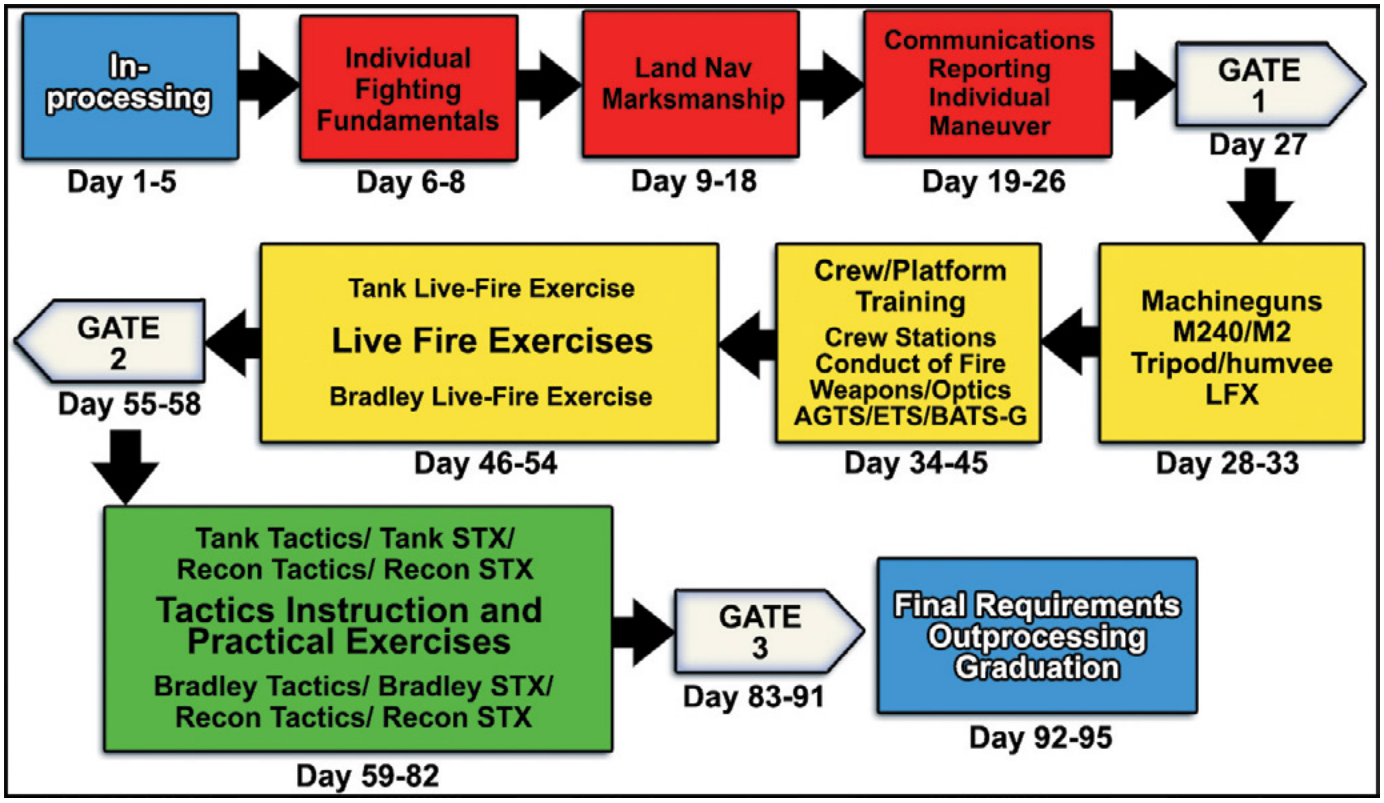

Figure 5. ABOLC progression. *(Based on a chart in the ABOLC briefing on the Website http://www.benning.army.mil/infantry/199th/216/abolc/content/PDF/ABOLC%20oI%20Brief_ck_04MAY15.pdf)*

lieutenants are trained on individual tactical movement (dismounted), combatives, M4 weapons qualification, dismounted land navigation and radio communication. They are evaluated on the Army Physical Fitness Test (APFT), M4 qualification, a five-mile run, an obstacle course and a writing requirement. The phase ends with the Phase I gate event, a one-day test of Phase I skills.

During Phase II (crew phase), lieutenants are trained on vehicle preventative maintenance checks and services, advanced gunnery training system (AGTS) gunnery simulations, gunnery-skills training and live-fire engagements from an M1A2 tank and an M3A3 CFV. They are objectively evaluated on AGTS, Bradley Advanced Training System (BATS), Gunnery Skills Test (M1A2 and M3A3), Gunnery Table I (M1A2 and M3A3), and tank and Bradley live-fire. The phase ends with the Phase II gate event, a three-day event in which students, serving in both vehicle commander and gunner positions for both M1A2 and M3A3, must demonstrate their ability to engage targets effectively.

During Phase III (platoon phase), lieutenants are trained on commanding and controlling a platoon, with 13 days devoted to the situational-training exercise (STX). The students are objectively evaluated on an armor/recon tactics written assessment, a 24-kilometer foot march, a writing requirement, an APFT and briefing a platoon operations order (opord). The phase ends with the Phase III gate event, a six-day test of the students' ability to execute mission command in a training environment through offensive, defensive, reconnaissance and security missions in a force-on-force, decisive-action training environment scenario.

Comparing ABOLC and ROBC

Table 1 shows the major differences in tactics training between ROBC and ABOLC.

ROBC lieutenants must pass the following assessments during the tactics phase:

- Employ basic military symbology;
- Navigate from an armored fighting vehicle (AFV) (day and night);
- Command an AFV during an individual battle practice;
- Command an AFV section during a battle practice;
- Command an AFV platoon during a battle practice (20 to 30 hours); and
- Tactics phase field assessment.

ABOLC lieutenants must pass the following assessments during Phase III-platoon phase:

- Armor/recon tactics assessment – written test, 100 points;
- 24-kilometer foot march;
- Writing requirement: three- to four-page history paper, group project;
- Prepare and brief an opord;
- APFT; and
- Phase III gate event: command-and-control a platoon.

Of note, out of the eight objective assessments for the entire ABOLC, four are physical-fitness based – APFT, obstacle course, five-mile run and 24-kilometer foot march. As a result, the course appears to focus less on preparing lieutenants to lead AFV platoons and more on preparing them for Ranger School.

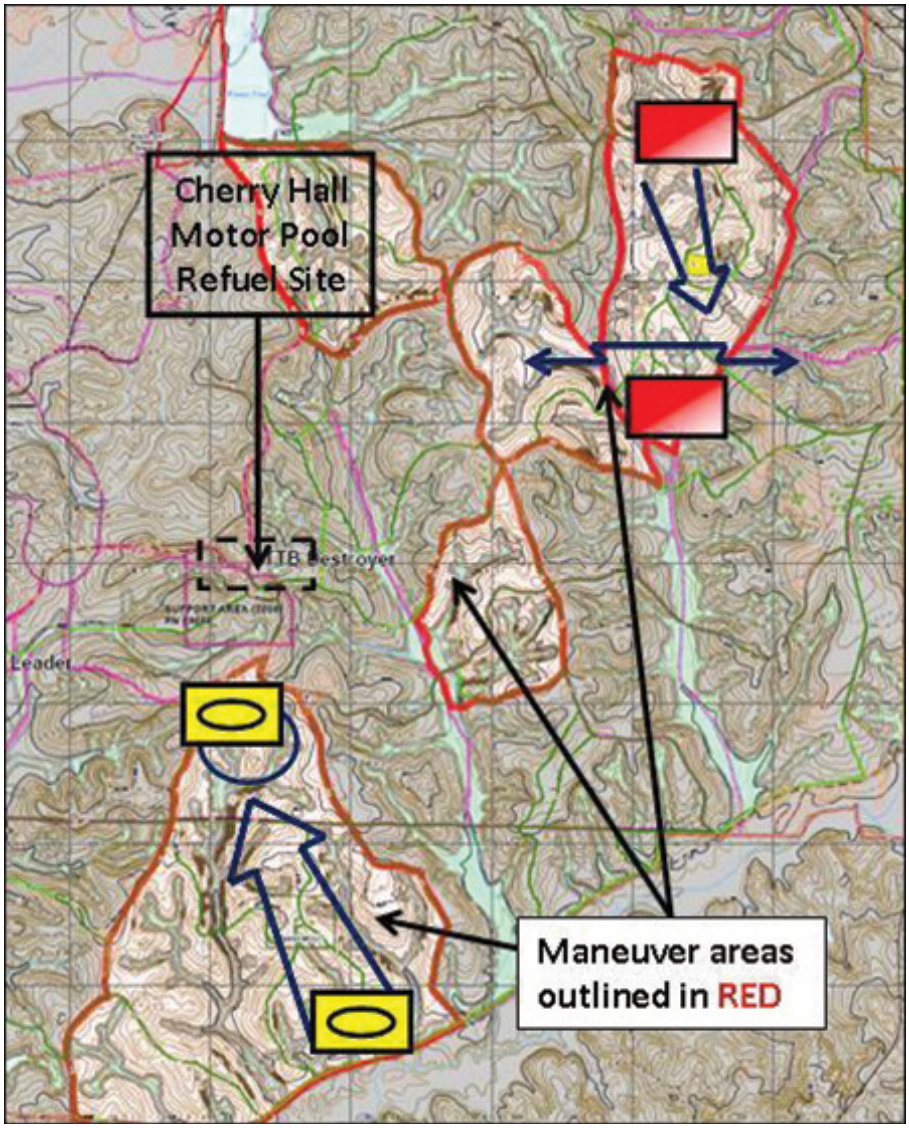

Figure 6. ABOLC STX during Phase III (platoon phase) in the Good Hope Training Area, Fort Benning, GA. *(Map by CPT Daniel Schmidt)*

U.S. training issues

Following are general issues or beliefs that are pervasive throughout the Armor Branch and the ABCTs:

- **"We're the best" mindset**. Heavy brigade combat teams (BCTs) performed very well during the CAM battles against the hapless Iraqi army in 1991 and 2003. Our senior leaders relentlessly tell us we are the best Army in the world. These considerations certainly do not prompt us to question the efficacy of our training. However, we might benefit from questioning our assumption of superiority and consider that our measures of comparison have been poor. The Australian Armoured Corps would be a good place to start.
- **Armor Branch identity and core competency**. Armor Branch has suffered an identity crisis in the last 15 years as we have evolved from CAM experts into a jack-of-all-trades branch. Iraq and Afghanistan were both infantry-centric operational environments that prompted us to focus on wide-area security (WAS) over CAM. Modularity further disaggregated tank battalions, division cavalry squadrons and armored cavalry regiments (ACRs). This diluted the resident CAM expertise once found in those units. The Armor School's move to Fort Benning to join the Maneuver Center of Excellence was part of a larger Army-wide trend that favored generalizing over specializing. This identity crisis is apparent in ABOLC now. Armor lieutenants are assigned to infantry BCTs, Stryker BCTs and armored BCTs. While this presents more opportunities for Armor officers, it also makes it difficult for courses like ABOLC to focus training.
- **Gunnery Table VI (GTVI) qualification equals tactically competent crew**. Throughout the Armor community, we operate on the core belief that an AFV crew's training culminates with qualification on GTVI. We confuse the technical proficiency that comes from GTVI qualification with tactical competence. Driving down a range road, executing predefined engagements in a flat and open area and using perfect vehicle fighting positions constructed from concrete is hardly tactical. We see the same issue in the structure of ABOLC. Once the crew phase is complete with the gunnery live-fire, the lieutenants skip over individual AFV tactics and jump straight into collective training at the platoon level. We are missing a fundamental building block in tactical competence by equating GTVI qualification with a tactically competent crew.
- **Loss of experience in AFV tactical maneuver**. The focus for the Army and Armor Branch during the last 14 years has understandably been stability operations and counterinsurgency (COIN). Not surprisingly, this produced a generation of officers and noncommissioned officers (NCOs) who have little to no experience in executing CAM tasks. We find ourselves in a blind-leading-the-blind cycle where neither our schoolhouses nor our company/battalion leaders know how to train tactics. With companies and battalions unable to competently run quality tactics training, the Armor School must assert itself as the standard bearer for mounted-maneuver tactics training. Conversely, Australian schools and training centers have remained focused on CAM during the last 14 years, despite deploying as frequently as we do.
- **Risk aversion to AFV maneuver live-fire training**. Nothing tests a student's

	ROBC	ABOLC	Comments
General time allotted	Allocates 50 days to tactics training.	Allocates 33 days to Phase III platoon training.	Overall, ROBC is about 21 days longer, or four weeks longer, than ABOLC. While the differences are not substantial, they are notable.
Training methodology	Employs a crawl-walk-run approach to AFV tactics training; students spend three weeks in individual vehicle tactics and another three weeks in section tactics before they even start platoon training in Week 7.	Begins tactics training during Phase III at platoon level without having established foundational competencies at individual vehicle and section level necessary to be proficient in maneuvering a platoon.	ROBC relentlessly focuses on terrain analysis and maneuver while adding layers of complexity as students demonstrate proficiency in tasks.
Field time for tactics training	Lieutenants spend about 37 days in the field for tactics training (Monday afternoon to Friday morning for 10 weeks).	Lieutenants spend about 19 days in the field during Phase III – about half as much as ROBC.	With a vastly better training area and more time in the hatch, the quality of ROBC field time is much better than ABOLC.
Hatch time	SOArmd's Support Squadron provides ROBC with drivers, loaders and gunners, so lieutenants (students) spend 50 to 100 percent of their field time as an AFV commander, depending on course size.	Lieutenants rotate through all crew positions and only spend 25 to 33 percent of their field time as the vehicle commander, depending on platform.	
Training areas	Conducts tactics training in the Puckapunyal Training Area, an area of open rolling hills, interspersed forests and assorted water features (Figure 7).	Tactics training is conducted at Good Hope Training Area, Fort Benning, with small, dispersed two kilometers by one kilometer maneuver areas that are inadequate for AFV maneuver (Figure 6).	
Land navigation	Dedicates a week to terrain association and mounted land navigation during night as well as day. Lieutenants must pass a day-navigation assessment (find four of six points in 60 minutes) and a night-navigation assessment (find three of four points in 60 minutes) in a 60-square-kilometer area with only a map and night-vision goggles.	Students spend two days doing dismounted land navigation in Phase I.	Navigation is not objectively assessed in ABOLC and is only subjectively assessed during the Phase I gate event. It is difficult to lead a platoon, or any formation, when the leader is uncertain where to go or how to get there tactically.

Table 1 Part 1.

	ROBC (continued)	ABOLC (continued)	Comments (continued)
Live-fire maneuver	Lieutenants must pass three live-fire maneuver assessments (battle runs) as an AFV commander, section leader and platoon leader to pass the course. These assessments are usually 1½ to two hours long, extremely stressful and conducted over five- to 10-kilometer lanes on the same terrain where they conduct dry training (not fabricated ranges).	Students conduct stationary live-fire engagements from a tank and Bradley during Phase II on built-up ranges. There is no live-fire maneuver during Phase III collective training.	
Platform focus	Focuses on one AFV platform – the ASLAV for cavalry ROBC or the M1A1 for tank ROBC.	Divides its training between M1A2 and M3A3.	
Instructor experience and student ratio	Instructors are senior captains and post-platoon sergeant NCOs (U.S. sergeant first class equivalent) who are specially selected by their career adviser. ROBC maintains an instructor-to-student ratio of no more than 1:2.		Most important, the Australian army remained focused on CAM training during the last 14 years, so its officers and NCOs have maintained their CAM competencies. Through no fault of their own, most ABOLC instructors have very limited (if any) experience in tactical maneuver and no official training in tactics for NCOs (the military-occupation specialty 19-series Noncommissioned Officer Education System has no field-tactics training). The Army's focus on COIN and WAS for the last 10-12 years has denied our NCOs the CAM experience that used to come from dozens of NTC rotations.

Table 1 Part 2.

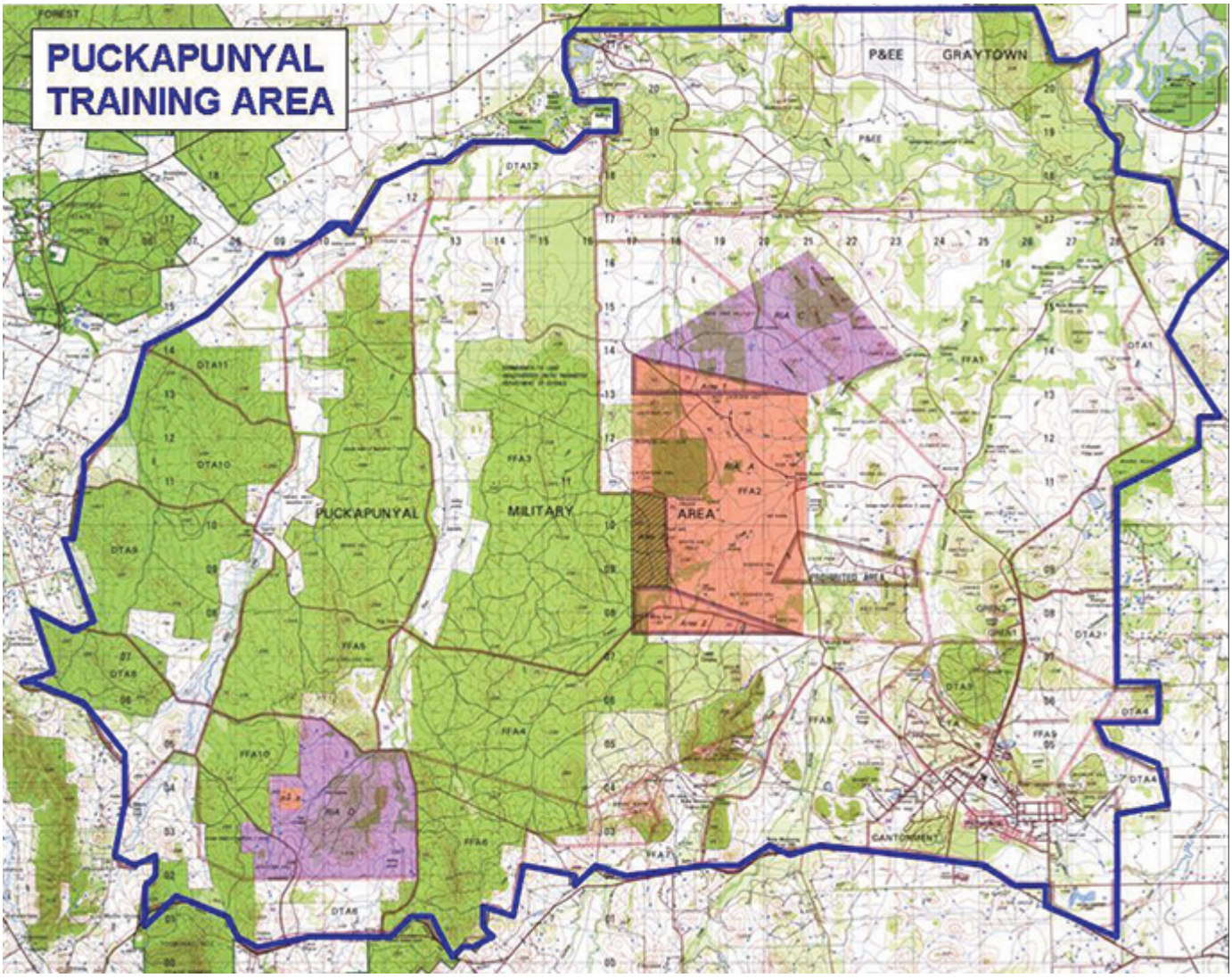

Figure 7. Puckapunyal Training Area, Victoria, Australia. *(Map by LTC Terrence Buckeye; picture of map produced by Geoscience Australia under direction of Defence Imagery and Geospatial Organisation, Commonwealth of Australia)*

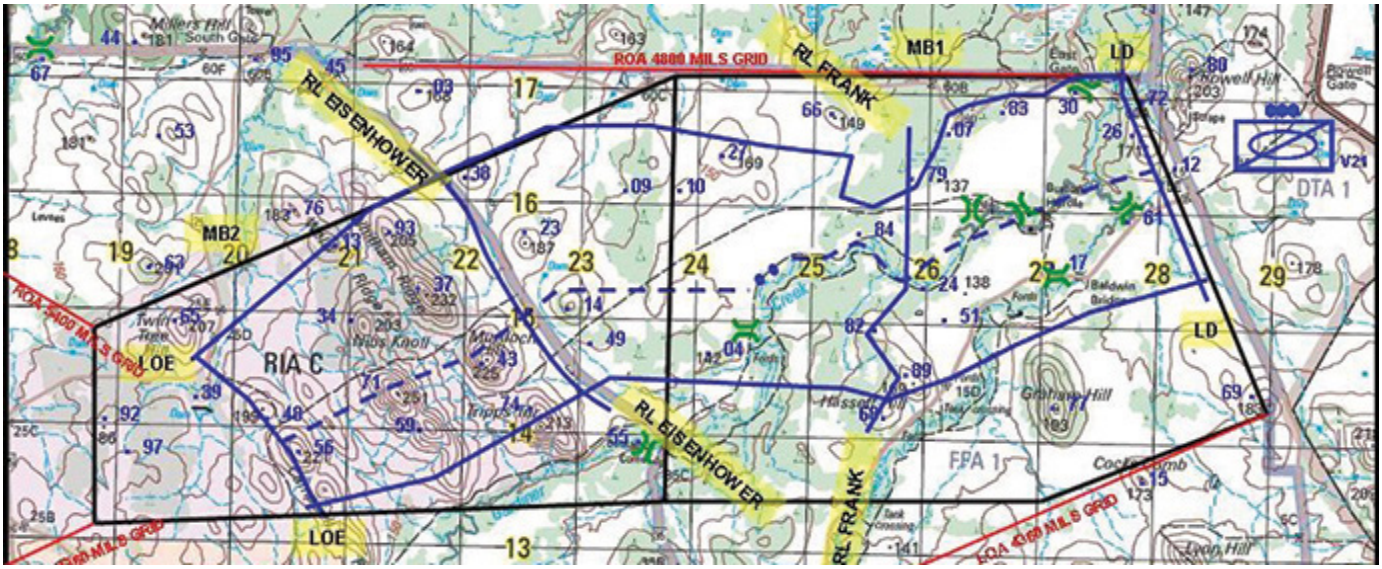

Figure 8. ROBC AFV section live-fire maneuver lane (Hassetts Battle Run). *(Map by SGT Paul Williams)*

ability to maneuver an AFV, a section or a platoon better than the stress of maneuvering while live-firing. In the U.S. Army, we like to conduct our live-fire training on built-up ranges and our maneuver training with Multiple Integrated Laser Engagement System equipment in dry training areas. When we do conduct a platoon or company live-fire, the exercise is so heavily choreographed and controlled that it loses almost any value as tactical training. This separation between live-fire gunnery and maneuver training stems from a debilitating focus on risk aversion. Australians view live-fire training as part of the natural training continuum for maneuver training. They build their live-fire battle runs on the same land they use for dry training. The routine manner in which Australians conduct maneuver live-fire training is impressive; it begs the question, "Why can't we do the same thing?"

- **Substituting field training with simulations**. Simulators are an inadequate replacement for field training. If we want to train our lieutenants to think and lead effectively, they need to be regularly confronted with the environmental impediments to effective thinking and leading. Simulators fail to adequately replicate environmental factors (extreme heat/cold, precipitation, dust, mud and wind), physiological factors (fatigue, hunger, dehydration, pain, discomfort, live-fire fratricide stress) and mechanical factors (weapons malfunction, communications problems, thrown tracks, mired vehicles).

- **Overreliance on technology**. We implicitly assume our technological overmatch will compensate for any tactical shortcomings in future conflicts. Many assume that technologies like Blue Force Tracker (BFT) and Force XXI Battle Command Brigade and Below (FBCB2) negate the need to be able to navigate off a map, and, by extension, maneuver. The proliferation of GPS and weapons technology in the last 20 years among our potential adversaries should disabuse us of this assumption.

Figure 9. LT Gareth Gardner delivers a platoon opord for his final live-fire assessment during Exercise Reaper's Run. *(Photo by Australian CPT Anthony Bamford)*

Recommendations to improve

Following are some recommendations to improve U.S. Army Armor training:

- **ABOLC status**. Armoured Corps ROBC is widely recognized as the most difficult and demanding ROBC in the Australian army. Graduation from Armoured Corps ROBC carries a degree of prestige that is noticeably missing when lieutenants graduate from ABOLC. The Armor School must transform ABOLC into a demanding, selective course that creates platoon leaders who can lead an AFV platoon in CAM combat upon graduation. Failure rates of 15 to 20 percent should be acceptable and expected.

- **New curriculum focused on CAM**. ABOLC's curriculum needs to be redesigned with a singular focus on competently leading an AFV platoon during live-fire maneuver. Phase III, in particular, should be remodeled on the Australian ROBC tactics phase. The only physical-fitness assessment should be the APFT. ABOLC should also make the changes shown in Table 2.

When considering improvements to ABOLC Phase III-tactics, it's important to acknowledge that Fort Benning does not have adequate AFV maneuver training areas. Therefore, ABOLC needs to mitigate this by conducting its Phase III tactics training at a remote location. Adequate armor maneuver training areas are available at Fort Hood, TX; Fort Bliss, TX; Fort Riley, KS; and National Training Center (NTC) at Fort Irwin, CA. Another possible location could be the Pinyon Canyon Maneuver Site, an enormous training area (955 square kilometers) three hours south of Fort Carson, CO. Pinyon Canyon is extremely underutilized and would be an ideal location for AFV tactics training. Phase III could evolve into a 30-day combat training center-like rotation and would not have to be too expensive.

- **One platform focus**. The attempt to

Phase	Recommendation
Communications and driving	Reduce Phase I by 10-12 days and shift those days to Phase III
	Eliminate dismounted individual movement and combatives training
	Eliminate dismounted land navigation (replace with mounted land navigation in Phase III)
	Eliminate five-mile run and obstacle course
	Add communications technical courses on Advanced System Improvement Program/Single-Channel Ground and Airborne Radio System, Simple Key Loader, BFT/FBCB2, Harris Radio
	Add two to three days of driver familiarization training
Gunnery	Maintain largely as is, but focus on one platform
	Increase scope and difficulty of range live-fire activity at end of Phase II – modified GTVI – day/night, moving/stationary and chemical-biological-radiological-nuclear
Tactics	Increase Phase III by 10-12 days
	Eliminate 24-kilometer foot march
	Decrease classroom instruction from seven to four days
	Eliminate STX, competitive maneuver exercise and simulation days
	Add five days (field) for AFV land navigation (with day and night assessments)
	Add seven days (field) for AFV individual maneuver with live-fire maneuver assessment
	Add seven days (field) for AFV section maneuver with live-fire section maneuver assessment
	Add 10 days (field) for AFV platoon maneuver with live-fire platoon maneuver assessment

Table 2.

service both the M1A2 and M3A3 in Phase II of ABOLC takes away time that could be better used to make the Phase II live-fire more demanding and prepare students for live-fire assessments in Phase III. The M3A3 Bradley would be the logical choice for one platform due to its cheaper ammunition, lower fuel and maintenance costs and more complicated turret. The Armor School could establish a two-week M1A2 leader's course for students going to combined-arms battalions.

- **Instructor quality and experience**. To bridge the gap between now and when the Armor Branch regains a depth of CAM-experienced officers and NCOs, ABOLC should consider the following options:

  —First, the Armor School should broaden the exchange program with the Australian School of Armour. Officers and NCOs slated to be ABOLC tactics instructors could either attend a SOArmd tactics course or serve as a guest instructor at the SOArmd for three to four months. Conversely, the same opportunity to instruct at ABOLC should be offered to Australian NCO instructors.

  —Second, ABOLC should recruit its instructors from 11th ACR. With substantially more time conducting AFV CAM in the field than any other unit, 11th ACR is the best place to find tactically competent Armor NCOs and officers.

  —Lastly, the Armor Branch should develop a selective policy to send its best officers and NCOs to instruct at the ABOLC with appropriate career incentives. This policy would have a positive and pervasive effect across the branch and ABCTs.

Recommendations for Armor Branch

- **Recognize the problem**. The most difficult step to remedy this situation described above is recognizing that our tactics training is insufficient. For those who doubt how poor our tactics training is now, a visit to an Australian ROBC or Crew Commander's Course (six-week tactics course for corporal and sergeant vehicle commanders) will likely change your view.
- **Embrace CAM as core of the branch**. Attaining proficiency and competence in mounted CAM tactics is harder and takes longer than attaining a commensurate level of competence in WAS tactics. WAS tactical tasks at the company level and below are

fairly simple and easy to train within a unit during a pre-deployment train-up. To say that we should focus on CAM is not to say we need to ignore WAS and forfeit future deployment opportunities. It is simply saying that we should prioritize the more difficult, dangerous and risky mission over the easier, less risky mission. After a two- or three-month home-station train-up, ABCTs could just as easily perform a WAS mission in a deployed environment as an infantry BCT or Stryker BCT.

- **Embrace live-fire maneuver exercise.** We must overcome our debilitating risk aversion to live-fire training and stop relegating it to fabricated ranges. Wherever we conduct maneuver training, we should also conduct live-fire training. The Australians do this quite effortlessly and safely; there's no reason it should be too hard or too dangerous for U.S. units.

Figure 10. A Cavalry ROBC screening during Reaper's Run. *(Photo by Australian CPT Tom Johnson)*

Conclusion

Critics of the changes recommended in this article will shake their heads and say, "No, can't do it – too hard, too expensive, too much work." While these measures would be hard, would require some expense and would entail significant work, they are all very feasible. The Army needs a lethal, mechanized force capable of aggressively executing CAM. The Armor Branch and the Armor School are not adequately providing the Army with that capability. Our most immediate challenge is realizing we are not providing that capability and then generating the will to fix it. ABOLC is a great place to start, and our Australian allies have a ready-made solution for us in ROBC.

The U.S. Army's historical tendency is to fail to implement necessary changes during peacetime, enter a war unprepared, suffer enormous casualties and then adapt and overcome. Perhaps we can avoid this costly cycle and become the learning organization we claim to be.

U.S. Army LTC Terrence Buckeye is the senior instructor for tactics, Australian School of Armour, Puckapunyal, Australia. His previous assignments include executive officer/operations officer, 7-10 Cavalry, Fort Carson, CO; G-5 maneuver planner, 4th Infantry Division, Forward Operating Base Speicher, Iraq; commander, Headquarters and Headquarters Troop, 1st Battalion, 3rd ACR, Sinjar, Iraq; commander, Troop C, 1st Battalion, 3rd ACR, Al Qaim, Iraq; and executive officer/platoon leader, 2-37 Armor Regiment, Friedberg, Germany. His professional military education includes School of Advanced Military Studies, Intermediate-Level Education, Armor Captain's Career Course and Armor Officer Basic Course. He holds a master's of science degree in military arts and sciences from Command and General Staff College and a bachelor's of science degree in history from U.S. Military Academy.

More Than a Ceremony:
Conducting Battalion-Level Changes of Command

by MAJ Thomas N. Anderson

Transitions are natural and frequent occurrences in an Army unit, and it is typically during those moments of transition where the unit encounters the most risk to the success of its mission. Consequently, units that can best anticipate and prepare for transitions typically are the most successful units, whether the transitions involve a physical movement such as a deployment or the loss of key personnel from the unit. Conversely, units that fail to plan well for periods of transition tend to suffer significant setbacks and lose momentum during challenging times. Good staffs help their commanders manage transitions and mitigate potential risk.

As the squadron executive officer for 4th Squadron, 10th Cavalry Regiment, I was the commander of troops for the squadron change-of-command ceremony in Spring 2015 as we welcomed our new command team to the squadron. The Soldiers looked sharp, and the ceremony was flawless. We succeeded with the official change of command.

During the weeks leading up to the ceremony, our staff helped the new commander learn about the organization before taking command. I was relatively satisfied our new commander had every bit of information needed for success. However, five months later, events in the life of the squadron demonstrated I could have helped manage the transition better for my commander; I should have tailored our pre-change of command timeline better to ensure the incoming commander received what he really needed to know and see.

New battalion commander's checklist	Go/No-go
Staff conducts MDMP on change-of-command "operation"	
Schedule command-climate survey	
Tour post facilities (Range Control, simulations center, etc.)	
Experience all weekly battle-rhythm events	
Receive introduction/brief from all shops/specialties	
Receive introduction/briefs from all subordinate units at their headquarters	
Staff plans/resources change-of-command ceremony	
Meet battalion families	
Meet FRG leaders	
Counsel subordinates and view counseling of subordinates	
Counsel subordinate units' property-accountability procedures	
Schedule new commander counseling with brigade commander	
Receive SHARP/EO programs in-briefs	
Receive overview of non-deployable roster	
Update battalion policy letters	
Order more battalion coins	
Schedule visits with other battalion commanders	
Schedule visit with brigade command sergeant major	
Tour barracks and motorpool	
Receive overview of BOSS program	

Figure 1. Battalion-level change-of-command ceremony checklist.

What we did right

Treat it like an operation. When our squadron staff received news a change of command would occur, we immediately initiated planning through the military decision-making process (MDMP). We briefed our outgoing commander on each staff section's analysis of the events required to properly educate the new commander on the status of our unit and its activities. This was probably the most important thing we did right because we incorporated the various concerns of the leaders in the staff. We developed a timeline that addressed nearly all the staff's concerns. Therefore, most of the things we did right resulted from this collaborative process.

Schedule command-climate survey. Army Directive 2013-29 requires battalion-level commanders to complete a command-climate survey within 60 days of a change of command. The survey offers the new commander another way to assess the unit, in addition to personal observations and others' input. Command-climate surveys are currently processed through a software application on the Defense Equal Opportunity Management Institute Website (www.deomi.org).

Tour post facilities. Based on recent guidance from the Infantry and Armor Branches, most battalion commanders will not be allowed to serve at the same duty location where they served as majors. Consequently, each new battalion commander requires a tour of the post facilities and an introduction to the key individuals at each facility. Especially critical to most commanders will be a tour of the training ranges, simulation facilities and the Range Control facility so they can understand the unit's current training plan in context.

Conduct weekly battle-rhythm events. It is crucial for the new commander to experience "how" the battalion executes routine events such as the weekly training meeting and command-and-staff updates. These events provide the new commander an opportunity to conduct an initial assessment of leader personalities and communication abilities.

Plan and resource change-of-command ceremony. Perhaps the most obvious part of the battalion change-of-command process is the ceremony because it requires the most detailed coordination – including reservation of the ceremony site, inviting distinguished visitors (including the commanding general) and planning rehearsals. Many aids are available online for this process.

Schedule counseling with brigade commander. Once the new commander begins in-processing, it is critical to schedule initial counseling for him/her with the brigade commander. Accomplishing this early in the process ensures the new commander can nest initial guidance for subordinates with the brigade commander's guidance.

Conduct Sexual Harassment/Assault Response and Prevention (SHARP) and Equal Opportunity (EO) programs in-briefs. "SHARP remains a top priority for both the Secretary of the Army and the Chief of Staff of the Army,"[1] so we ensured the new commander understood the status of the program within the battalion. This included briefings about ongoing cases and the training history of the subordinate units. Also, our EO program leader briefed the new commander in a similar manner. This interaction with the SHARP and EO leads for our squadron ensured the new commander knew who to go to if issues developed that required immediate action in these areas.

Review non-deployable roster. With the current drawdown in the Army, every Soldier who can deploy matters to the unit's ability to accomplish its deployed mission. This is especially true now because the Army will no longer fill our ranks at more than 100 percent strength as it did at the height of the wars in Iraq and Afghanistan. At the squadron level, our unit conducts a review, with the squadron physician's assistant and the subordinate commanders present, once every two weeks to track the status of all non-deployable Soldiers within the squadron. Facilitating the new commander's understanding of the specific details of the unit's non-deployable personnel provides an accurate picture of what the battalion's assigned strength really means when coupled with the non-deployable roster.

Update battalion policy letters. Outside of "command philosophy," most policy letters should not be altered significantly until the new commander has a chance to evaluate the unit. Soldiers need to be aware the policies of the former commander remain in effect until the new commander changes them. However, posted policy letters still bearing the previous commander's signature weeks after a change of command reflect poorly on the organization's staff.

Tour barracks and motorpool. The new commander needs to know where the Soldiers primarily work and live to understand the unit. Therefore touring the barracks before assuming command lets the Soldiers know the new commander cares about their quality of life. Inspecting the motorpool allows the new commander to check the unit's safety conditions and assess how the unit takes care of its vehicles and equipment.

Figure 2. LTC Chad R. Foster and CSM Dean J. Lockhart case the unit's colors during the deployment ceremony for 4th Squadron, 10th Cavalry Regiment, at Fort Carson, CO, May 7, 2015. *(Photo by SPC Analaura Polanco)*

What we missed

Receive introductions from staff sections / specialties. Although we planned aggressively for each staff section to individually brief the new commander on the unit's personnel, duties and responsibilities, time constraints resulted in our failure to have all staff sections brief the new commander. This could have biased the new commander toward particular staff sections (positively or negatively), and it could also have created a less accurate understanding of all the staff's activities.

Receive introductions from subordinate units at their headquarters. We were successful in having several subordinate unit commanders brief the new commander on their teams at their own headquarters (which allowed the new commander to see the subordinate commanders in their daily environments). Unfortunately, not all the subordinate commanders were able to do so. In this sense, the staff failed to prioritize the new commander's calendar to enable one of the most important events to happen at the subordinate-unit level, a proper introduction to the new commander.

Meet the battalion's families. Because our unit deployed immediately after the change-of-command ceremony (within one week), there was not enough time for the squadron commander to meet with the families without taking time away from their last week with their Soldiers prior to the deployment. Without the impending deployment, a "unit family day" after the change-of-command ceremony would have been an appropriate way to introduce the families to the new commander.

Meet family-readiness group (FRG) leaders. We also failed to provide the

new commander an opportunity to meet FRG leaders from the subordinate units. This would have made the squadron more effective during its subsequent deployment because the new commander would have heard directly from the FRG leaders about the status of their unit's FRG program. This would have helped the commander better direct assets to support the units with respect to the programs that support families at home station.

Counsel subordinates and view counseling of subordinates. Although we scheduled time for the new commander to counsel his subordinate commanders and field-grade officers individually, our staff did not allocate time for the new commander to inspect and review the counseling of subordinate leaders. This would have shown the new commander whether or not counseling was being conducted to standard at the lower echelons. It would have also provided insight into which subordinates had good leadership-development plans within their organizations.

View subordinate units' property-accountability procedures. At the troop and company levels, changes of command focus significantly on property accountability and the transfer of property from one commander to another. During a battalion change of command, there is no property book transfer, but property accountability procedures are still vitally important. New commanders must be given the opportunity to inspect subordinate-unit property-accountability procedures and paperwork because company-level property concerns can quickly become battalion-level problems through the initiation of Financial Liability Investigation of Property Loss procedures.

Order more battalion coins. Battalion commanders are authorized the purchase of unit coins to recognize excellence and reward high-performing individuals. More often than not, though, an outgoing commander will wish to reward the Soldiers and leaders he/she worked with during the preceding years by giving out those coins until they are exhausted. Therefore, a good staff needs to order new coins prior to the new commander taking command to allow for the continued recognition and reward of excellence without interruption.

Schedule visits with other battalion commanders.[2] The new commander needs to meet subordinates, superiors and future peers. Allocating time for the new commander to meet with peers is particularly important. The other battalion commanders represent a new commander's peer set for the next several years, and getting acquainted with the more experienced battalion commanders allows the new commander to be able to reach out and ask questions of peers during the crucial first two or three weeks in command.

Schedule visit with brigade command sergeant major.[3] No one has a more important relationship with the brigade commander than the brigade command sergeant major, so meeting with him/her provides the new squadron (battalion) commander good insight into the brigade command team's real concerns. The brigade command sergeant major can also provide important feedback to the new commander about the unit's reputation and the state of morale and training in the ranks.

Receive overview of the Better Opportunities for Single Soldiers (BOSS) program.[4] The battalion's families are important for the new commander to get to know, but taking care of single Soldiers should also be a priority for the new commander. Therefore it's important for the staff to allocate time for the battalion's BOSS representative to provide a program overview to the new commander. This overview provides key perspective on the concerns of the unit's single Soldiers.

Conclusion

In conducting research for this article, I observed there is no widely used checklist for the execution of a battalion-level change of command (many books and checklists exist for company-level changes of command). Most resources focus only on the proper procedures for conducting the battalion-level change-of-command ceremony itself. It is my hope that this article, and the checklist provided, can help future battalion and squadron staffs better prepare to conduct the whole change of command well, not just the ceremony.

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Notes

"Army establishes U.S. Army Sexual Harassment/Assault Response and Prevention Academy," Washington, DC, Sept. 8, 2014, www.army.mil.

[2] Thomas P. Gannon, editor, ***The Battalion Commander's Handbook***, Carlisle Barracks, PA: U.S. Army War College, 1996, available at http://www.au.af.mil/au/awc/awcgate/army-usawc/bchandbook.htm.

[3] Ibid.

[4] Ibid.

BOOK REVIEWS

General Lesley J. McNair: Unsung Architect of the U.S. Army, Mark T. Calhoun, Lawrence, KS: University Press of Kansas, 2015, 412 pages, $39.95.

A plethora of military biographies have hit the marketplace over the last few years about the "forgotten" American Army general officers from the World War II era. Many of these figures attained three- and four-star rank and made seminal contributions to the war effort, but their endeavors were often overlooked or not fully understood by an entire generation of historians. Thankfully, this 70-year trend has been reversed by a new class of historians who have uncovered new primary and secondary sources and have produced exceptional tomes like ***The Last Cavalryman: The Life of General Lucian K. Truscott Jr.*** by Harvey Ferguson and ***General Albert C. Wedemeyer: America's Unsung Strategist in World War II*** by Dr. James McLaughlin, as well as the very readable ***Jacob L. Devers: A General's Life*** by James Wheeler.

However, I believe one of the better books that have been produced during this spike of recent scholarship is Mark T. Calhoun's ***General Lesley J. McNair: Unsung Architect of the U.S. Army***. It is an extensive look into the career of a man who played a pivotal role in the U.S. Army's development during a critical time in the nation's history. McNair, referred to by GEN George C. Marshall as "the brains of the Army," was arguably one of the brightest and hardest-working officers serving in the U.S. Army during the first half of the 20th Century.

Superiors – including such luminaries like Marshall, GEN John Pershing and GEN Malin Craig – routinely selected him for critical and demanding jobs, and in all these postings, he left behind a legacy of innovation and scholarship that was second to none. Unfortunately, McNair's relative obscurity is the result of him serving in primarily staff billets during most of his career and a lack of self-promotion. Yet, his extensive 40-year career saw him create and implement significant changes to Army doctrine and training, equipment development and unit organization.

There are many strengths in Calhoun's narrative, but his exhaustive and impeccable use of primary and secondary documents to enhance his analysis of McNair's contributions to the Army really stand out. Calhoun's dynamic use of these sources enables the reader to not only gain a better appreciation of McNair's talents, but also to gain a more thorough understanding of the challenges facing the U.S. Army officer corps during the interwar period.

Calhoun's argument that American ground troops were victorious in World War II due to McNair's efforts during the interwar period is a unique claim and well-substantiated. Calhoun writes: "These ideas guided the mobilization training and doctrine development that provided the foundation for America's mechanized, combined-arms fighting methods, instilled in the psyche of the American soldier by the most effective premobilization training effort the nation has ever implemented." Of particular interest to noncommissioned officers and officers serving in today's force are solutions developed by McNair and his peers when dealing with diverse issues like combined-arms operations, professional education and physical fitness.

Calhoun's book is a significant accomplishment, but it has a few flaws. One deficiency of the book it is that it lacks organizational charts. There were many times I found myself wishing the author had included operational unit diagrams, especially when discussing the unique command relationships that existed between the various units McNair led during his service in World War II.

The other blemish is that the author doesn't spend enough time discussing McNair's relationships with officers who served under him. It would have enhanced the narrative if the writer had been able to insert more anecdotes about McNair's leadership from the perspective of those who worked for him, especially during his time at Army Ground Forces (1942- 1944).

However, these criticisms aside, ***General Lesley J. McNair: Unsung Architect of the U.S. Army*** is remarkable biography, and its importance cannot be overstated. It will be a valued resource for World War II historians as well as any modern staff officer/NCO and is a significant contribution to the study of the U.S. Army. It deserves a spot on the shelf of any military professional.

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Consolidated Acronym Quick-Scan

(for entire edition)

A

AAR – after-action review
ABCS – Army Battle Command System
ABCT – armored brigade combat team
ABOLC – Armor Basic Officer Leader's Course
ACE – Armored Combat Earthmover
ACR – armored cavalry regiment
AFV – armored fighting vehicle
AGTS – Advanced Gunnery Training System
AIT – advanced individual training
A/L – administration and logistics
ALC – Advanced Leader's Course
AMEDD – Army Medical Department
AMPV – Armored Multi-Purpose Vehicle
APFT – Army Physical Fitness Test
AR – Army regulation
ARC – Army Reconnaissance Course
ARNG – Army National Guard
ARTB – Airborne and Ranger Training Brigade
ARVN – Army of the Republic of Vietnam
ASLAV – Australian Light Armored Vehicle
AT – anti-tank
ATGM – anti-tank guided missile
ATP – Army technical publication
AVLB – Armored Vehicle-Launched Bridge

B

BAS – battalion aid station
BATS – Bradley Advanced Training System
BCT – brigade combat team
BDA – battle-damage assessment
BFIST – Bradley fire-support team
BfSB – battlefield surveillance brigade
BFT – Blue Force Tracker
BFV – Bradley Fighting Vehicle
BMO – battalion maintenance officer
BMP – *boyeva mashina pekhoty* (Russian fighting vehicle)
BOSS – Better Opportunities for Single Soldiers (program)
BSA – brigade-support area
BSB – brigade-support battalion
BTR – *bronetransportyor* (Russian fighting vehicle)

C

CAB – combined-arms battalion
CAB – combined-arms breach
CAISI – Combat Service Support Automated Information System
CAM – combined-arms maneuver
CAR – combined-arms rehearsal
CATS – Combined-Arms Training Strategy
CCT – combat collection team
CCTT – Close-Combat Tactical Trainer
CENTCOM – (U.S. Army) Central Command
CFV – Cavalry Fighting Vehicle
CIM – civil information management
CLC – Cavalry Leader's Course
CoE – center of excellence
COIN – counterinsurgency
CoIST – company-level intelligence-support team
COP – common operating picture
COTS – commercial-off-the-shelf
CP – command post
CTC – combat training center
CTCP – combat-trains command post

D

DA – decisive action
DA PAM – Department of the Army pamphlet
DATE – decisive-action training environment
DIA – Defense Intelligence Agency
DoD – Department of Defense
DRASH – Deployable Rapid-Assembly Shelter
DRE – deployment-readiness exercise

E

EBOLC – Engineer Basic Officer Leader's Course
ECP – engineering change proposal
EDRE – emergency deployment-readiness exercise
EIA – Excellence in Armor
EO – Equal Opportunity (Program)
EST – Engagement Skills Trainer

F

FAS – forward aid station
FBCB2 – Force XXI Battle Command Brigade and Below
FLE – forward-logistics element
FLOT – forward-line-of-own-troops
FM – field manual
FM – frequency modulation
FMT – field-maintenance team
FRG – family readiness group
FSC – forward-support company
FSNCO – flight safety noncommissioned officer
FSR – field-service representative
FST – forward-support troop
FTCP – field-trains command post
FTX – field-training exercise
FY – fiscal year

G

GCSS-A – Global Combat Support System-Army
GPO – Government Printing Office
GPS – Global Positioning System
GTVI – Gunnery Table VI

H

HF – high frequency
HHC – headquarters and headquarters company
HHD – headquarters and headquarters detachment
HHT – headquarters and headquarters troop
HN – host nation
HUMINT – human intelligence

I

IBCT – infantry brigade combat team
IED – improvised explosive device
IPOE – intelligence preparation of the operational environment
IPB – intelligence preparation of the battlefield

J

JCR – Joint Capability Release
JMRC – Joint Multinational Readiness Center
JRTC – Joint Readiness Training Center

L

LAR – logistics-assistance representative
LEW – Logistics-Estimation Worksheet
LFX – live-fire exercise
LHS – Load-Handling System
Logpac – logistics package
LRP – logistics-resupply point

M

MAS – main aid station
MCCC – Maneuver Captain's Career Course
MCE – maintenance-control element
MCLOS – manual command to line-of-sight
MCoE – Maneuver Center of Excellence
MCOO – military combined-obstacle overlay
MCS – maintenance-control section
MDMP – military decision-making process
MEDO – medical officer
METL – mission-essential task list
MGS – Mobile Gun System
MICLIC – mine-clearing line charge
MICO – military-intelligence company
MILES – Multiple Integrated Laser Engagement System
MiTT – military transition team
MOS – military-occupation specialty
MP – military police

MSIC – Missile and Space Intelligence Center
MTOE – modified table of organization and equipment

N

NATO – North Atlantic Treaty Organization
NCO – noncommissioned officer
NCOIC – noncommissioned officer in charge
NGO – non-governmental organization
NIPR – non-classified Internet protocol router
NTC – National Training Center

O

OCoA – Office Chief of Armor
O/C/T – observer/controller/trainer
OE – operating environment
OIC – officer in charge
Opfor – opposing forces
Opord – operations order

P

PACE – primary, alternate, contingency and emergency (communication planning)
PC – point of curvature
PEO – program executive office(r)
PLS – Palletized Load System
PMCS – preventive maintenance checks and services
PoE – port of embarkation
PT – point of tangency

R

RAP – Ranger Assessment Phase
Redcon – ready condition
RI – Ranger instructor
ROBC – Regimental Officer Basic Course (Australia)
RPA – Ranger Physical Assessment
RPG – rocket-propelled grenade
RSLC – Reconnaissance Surveillance Leader's Course
RSOI – reception, staging, onward movement and integration
RTAC – Ranger Training Assessment Course
RTO – radiotelephone operator
RTU – rotational training unit
RWS – Remote Weapon System

S

SAA – Syria Arab Army (Syrian government entity)
SACLOS – semi-automatic, command to line-of-sight
SAS – squadron aid station
SBCT – Stryker brigade combat team
SBF – support by fire
SC – security cooperation
SEDRE – sealift emergency deployment-readiness exercise
SEP – Soldier Enhancement Program
SFA – security-force assistance
SHARP – Sexual Harassment/Assault Response and Prevention (Program)
SIGINT – signals intelligence
SIPR – secret Internet protocol router
SMO – squadron maintenance officer
SNAP – SIPR/NIPR Access Point
SOArmd – Australian School of Armour
SOP – standard operating procedure
SOR – specific orders and requests
SOSRA – suppress, obscure, secure, reduce, assault
SPO – support operations
SSA – supply-support activity
STX – situational-training exercise

T

TAC – tactical-actions center
TACSOP – tactical standard operating procedure
TC – training circular
TCM-ABCT – (U.S. Army) Training and Doctrine Command Capability Manager-Armored Brigade Combat Team
TI – Tactical Internet
TLP – troop-leading procedures
TOC – tactical-operations center
TOW – tube-launched, optically tracked, wire-guided
TTP – tactics, techniques and procedures

U

UAV – unmanned aerial vehicle
UMCP – unit-maintenance collection point
UMT – unit ministry team
USAICoE – U.S. Army Intelligence Center of Excellence
UTL – unit tasks list

V

VC – Viet Cong
VOIP – Voice over Internet Protocol
VSAT – Very Small Aperture Terminal

W

WAS – wide-area security
WTC – Warrior Training Center

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13TH CAVALRY REGIMENT

The distinctive unit insignia was approved Oct. 22, 1957. This regiment was organized at Fort Sam Houston, TX, in 1901 and spent its first two years at that post. The cactus shows the birthplace of this regiment, as well as its service on the Mexican border. The motto translates to “Always Ready.”

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