

ARMOR

Mounted Maneuver Journal

October-December 2016

**CTC Rotations:
Honing Skills in
the Decisive-Action
Training Environment**



ARMOR

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BG John Kolasheski
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Focus on the Reconnaissance Objective

I would like to start by saying thank you for what each and every one of you do to make our branch and the U.S. Army the best in the world. Without question our individual leaders and organizations are in high demand. Our formations continue to carry out operations on all four corners of the map sheet to illustrate American commitment and resolve, but we can't rest on our laurels.

In the March/April 1988 edition of **ARMOR** magazine, MG Thomas H. Tait (former commanding general, U.S. Army Armor Center) identified shortcomings in the planning and execution of reconnaissance-and-security (R&S) operations. He challenged the Armor and Cavalry community writ large with a simple question: "What are we doing about it?" What is old is new.

Today we are at a similar crossroad as we have shifted our focus from predominately wide-area security (WAS) tasks, like we executed in Iraq and Afghanistan, to combined-arms maneuver (CAM) and WAS. Critical to both CAM and WAS is our ability to plan, coordinate and execute R&S tasks. Based on feedback from unit commanders at all echelons and our combat training centers, this is an area where we can collectively improve.

A critical step in improving the performance of individuals and organizations starts with education and training. Professional military education and functional schools provide the necessary

foundation to educate and train the fundamentals. Department of the Army Pamphlet 600-3, **Commissioned Officer Professional Development and Career Management Guide**, and DA PAM 600-25, **Noncommissioned Officer Professional Development Guide**, are the governing documents we use to identify professional-development requirements. In the years since publication, adherence to and attendance at functional courses has ebbed and flowed, leading in some cases to leaders who are ill-equipped to perform their duties when assigned to Cavalry organizations.

Here at Fort Benning, we offer several R&S functional courses that assist in building individual leader competency. These courses are constantly refreshed based on your feedback. Current courses offered at Fort Benning are the Reconnaissance and Surveillance Leader's Course, the Army Reconnaissance Course (ARC) and the Cavalry Leader's Course (CLC). In addition, several years ago we were able to include a Cavalry-focused elective into the Command and General Staff College (CGSC).

It is our intent, in coordination with the operating force, to have every active-duty Armor Basic Officer Leadership Course graduate attend ARC, every active-duty Armor Maneuver Captain's Career Course (MCCC) graduate attend CLC, and every Armor resident-course CGSC student take the R&S elective. We are working to provide

similar functional-training opportunities to our noncommissioned officers and are facilitating attendance by National Guard Soldiers in coordination with their leadership. While attendance at functional training will increase the time an officer or NCO spends at Fort Benning, we believe it is well worth the investment.

Other initiatives we have put into motion to rebuild competencies is an R&S block of instruction into MCCC, execution of executive-level R&S-focused workshops for brigade combat teams and division leadership and an Adobe Connect R&S forum. We are also working to assist operating-force units in the development of R&S home-station training plans and subject-matter expertise for home-station training events.

This strategy will only succeed when we work together. I encourage leaders across the force to canvas your organizations and identify your organizational shortfalls and allow us to assist. We greatly appreciate feedback from the field, so please keep in touch. Together we can rapidly close the gap on this critical battlefield competency.

We are the "combat arm of decision" ... a team of teams ready to fight and win anytime, anywhere, under any conditions of battle.

Forge the Thunderbolt!

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



Reconnaissance and Security Fundamentals

In the profession of arms, learning from mistakes and avoiding the pitfall of repetitive errors can be the deciding factor on whether you bring everyone home at the end of a deployment or not. We as leaders must remain mindful of the training tools available. We must also learn from the past, use lessons-learned and observe training trends to help avoid making the same mistakes. We must identify areas that our Soldiers, leaders and units continually struggle with and where we need to focus on improvement. Once identified, we must accept our shortfalls; only then can we begin to move forward to become a more effective unit.

We struggle not only as a branch but as an Army in the proper execution of reconnaissance and security missions. The best way to combat this current weakness is to revisit and reinvigorate the fundamentals of reconnaissance, ensuring that the youngest Soldiers through the most senior leaders not only understand but have the skillset and knowledge base to effectively employ these fundamentals. Much like any task we strive to master, we must

instill the fundamentals into all that our Soldiers do. Once the fundamentals are mastered, we must continue to improve and expand on these tasks and skills. As these young Soldiers master their craft and advance themselves professionally, we will once again lay a solid foundation for the future of the Armor Branch and improve our units as a whole in the process.

Another way to combat the trend is to reinforce knowledge in your junior and senior noncommissioned officers by sending them back to the schoolhouse to attend reconnaissance-specific courses. Having leaders who are qualified through the Army Reconnaissance Course, Reconnaissance and Security Leader's Course – or even the Cavalry Leader's Course – ensures that our leaders can properly train our junior Soldiers, arming them with the technical and tactical knowledge to naturally employ learned skills. Having qualified leaders on the appropriate platform also goes a long way to not only more effectively train Soldiers but also more efficiently execute the mission.

Having leaders qualified to fulfill their

assigned positions allows them to confidently fulfill their duties and responsibilities and sets them up for success. It is a working goal at the Armor School to aid the force in completing the connection of follow-on school opportunities for NCOs who come to the schoolhouse for the Advanced Leader's Course and Senior Leader's Course. The overall intent is to have Soldiers trained on skillsets and platform-specific training before they return to their home station.

The key takeaway is to continue sending leaders to the proper schooling and not defer course dates due to the mission. In the long run, deferring course dates is counterintuitive to what the Army expects and what the Armor School intends to accomplish. Bottom line up front: we want to set up our leaders for success!

Visit the following link to download copies of the "fundamentals of reconnaissance and security" posters: <http://www.benning.army.mil/armor/fundamentals/>.



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We are the premier mounted maneuver force comprised of the best trained, best led, best equipped, and most lethal Tankers and Scouts in the world. Soldiers first, we are experts in the art of maneuver warfare; mounted and dismounted reconnaissance and security operations; and the employment of combined arms and joint capabilities on the battlefield.

Armor and cavalry troopers thrive in conditions of ambiguity, uncertainty, and complexity; comfortable away from the main body --- out front or on the flanks --- and decisive when leading it. We operate with a mission command mentality always seeking opportunities to seize, retain, and exploit the initiative; creating and preserving freedom of action for our force while denying the enemy options.

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Armor branch is a team of teams ready to fight and win anytime, anywhere, under any conditions of battle.

FORGE THE THUNDERBOLT!



Alan K. Hummel
CSM, USA
Thunderbolt 7

John S. Kolasheski
BG, USA
Thunderbolt 6

So You've Got a DATE with a Combat Training Center?



Focusing Training for Battalions/Task Forces

by COL Esli T. Pitts

So you are going to a combat training center (CTC) for a rotation in the decisive-action training environment (DATE)? Awesome! Either it will be a nightmare or one of the most professionally rewarding experiences of your career to date.

The determining factor is how well-trained and ready your organization is upon arrival at the CTC. Obviously, your training readiness is a direct reflection of how much time you've had to train, but it's really more a reflection of whether you trained on the right things. All units focus on the basics of squad and platoon maneuver. Some get to company maneuver. Few get to multi-echelon combined-arms maneuver training. It's up to you to set conditions and make opportunities.

I'm writing this article as a former battalion commander who focused solely on maneuver skills for two years – with a successful National Training Center (NTC) rotation followed by assignment as a battalion observer/coach/trainer (O/C/T) at the Joint Multinational Readiness Center (JMRC) in Germany – I know units **can** be well-trained and

ready for a professionally rewarding experience. To that end, this article focuses on how battalions can build opportunities to expand their training time and improve readiness, regardless of external constraints.

Merits of a CTC rotation

First, I need to clarify what I mean by a CTC rotation: It is a training event designed to produce trained battalions that are ready to plan, prepare, execute and assess unified land operations. It is not just another opportunity to train and fight at the squad and platoon level. By that, I mean it is not just your Soldiers' and subordinate leaders' training opportunity; it is yours (as the battalion commander). The best crews, squads and platoons in the world may overcome deficiencies and friction created by a minimally trained staff and an inexperienced (at echelon) battalion commander. Conversely, a well-trained battalion can generate opportunities to put average subordinates into positions where they can fight and win. This means you cannot spend all of your time training your subordinates at crew, squad and platoon level while neglecting the training of your battalion.

Early on (as a battalion commander), I decided to focus on training "the battalion." There was no brigade or division plan to train us above the company level, so it would be up to me to develop a headquarters that could plan, prepare and execute operations, not just generate collective training at platoon level and below.

I decided to focus on several key areas:

- Planning, rehearsals and current operations;
- Implementing a tactical standing operating procedure (TACSOP);
- Conducting the rapid-decision synchronization process (RDSP); and
- Codifying a "daily dozen" of standardized reportable mission-preparation tasks.

As a result of ongoing wars, few of my senior leaders had experience in traditional maneuver. Therefore, I set expectations to gain proficiency in actions on contact and battle drills at platoon and crew; integration of fires; specialty-platoon training; medical evacuation (medevac); and teaching company-grade officers how to fight their organizations. Essentially, I set out to reverse the ingrained habits of the counterinsurgency environment

and restore lethality in mounted maneuver in all conditions, including a chemically-contaminated or night-time environment.

Planning, rehearsing and current operations

There's an old poster that reads: "Battle-staff officer: Remember ... everything you plan and write must be executed by this man. He and his buddies will be the first to pay for your mistakes. Do your job well — futures depend on it." (Figure 1). I wanted staff officers who could do their jobs well and a headquarters that was ready to plan and execute operations when the companies needed that headquarters. I needed the headquarters to be training at the same time as the companies, not waiting for us to eventually get to battalion training. I had my executive officer begin staff training on the military decision-making process (MDMP), but as soon as possible, we moved to practical application on a brigade order. Our first iteration of MDMP was on a simple brigade daily fragmentary order that required us to deconflict gunnery ranges with a bike race. Sure, it was overly simplistic, but we hit every required element and my staff came away with an understanding of the process without being lost in the details of a big tactical order. We also developed our base staff products for future MDMP.

In two years, we participated in two brigade command-post exercises (CPXs), the NTC Leader Training Program and an NTC rotation. Over and above these, I built four battalion training opportunities for myself, including two live dismounted operations in the garrison area, one 40-hour live and virtual exercise incorporating training areas and multiple simulation systems, and a battalion attack using the Close Combat Tactical Trainer (CCTT). On average, we did a battalion operation every

quarter, affording me the opportunity to go through the planning process, an orders brief, rehearsals, troop-leading procedures (TLP) at the company level and then execution, including all mission-command nodes. Nobody built these for me; I planned them, briefed them in a quarterly training brief, resourced them and executed them.

I did so knowing that in each case, I was impacting the companies by cutting into what they believed to be their training time. I knew I was asking them to do collective tasks they may not have trained. To me, the gain in effec-

believer in "FM rehearsals." I've used them at the company, squadron and brigade level, and I continued to use them during battalion command. Having taken a backbrief from subordinates, I understood their scheme of maneuver and didn't need to hear it again during the combined-arms rehearsal (CAR). The purpose of the CAR is to validate that the operation is synchronized and understood. It is also a good time to highlight friction. Therefore we should rehearse those areas where units rub up against each other in the form of maneuver, passages of lines, direct fire-control measures, medevac, etc.

We don't need a laydown of the company scheme of maneuver and a repeat of "my task and purpose is. ..." What better way of rehearsing the operation than to actually execute the operation on a terrain model with all participants "keying the net," making their transmissions and indicating the net they are speaking on. This reinforces net discipline, gets all involved accustomed to speaking on the net, and generates familiarity with whether the tactical-operations center (TOC), tactical command post, commander or S-3 (operations) is taking/submitting reports and when that shifts. It also validates synchronization or highlights the lack thereof.

Lesson: If you want a trained battalion, you will probably have to train it yourself. Training events include the orders process from start to finish. Put events on the calendar and protect them.

TACSOP

Not long after I assumed command, my battalion was off-ramped from the planned Afghanistan rotation. We were told we would shoot gunnery and then go to NTC for a DATE rotation. As such, the battalion's TACSOP for Operation New Dawn was now irrelevant. Nobody had a useful DATE-focused TACSOP available, so I decided to write our own, based heavily on old products from my lieutenant and captain days. We published each card as soon as it was done, and fairly quickly built a real TACSOP. My intent was to get the bulk of it done before we went to the field for platoon and company situational

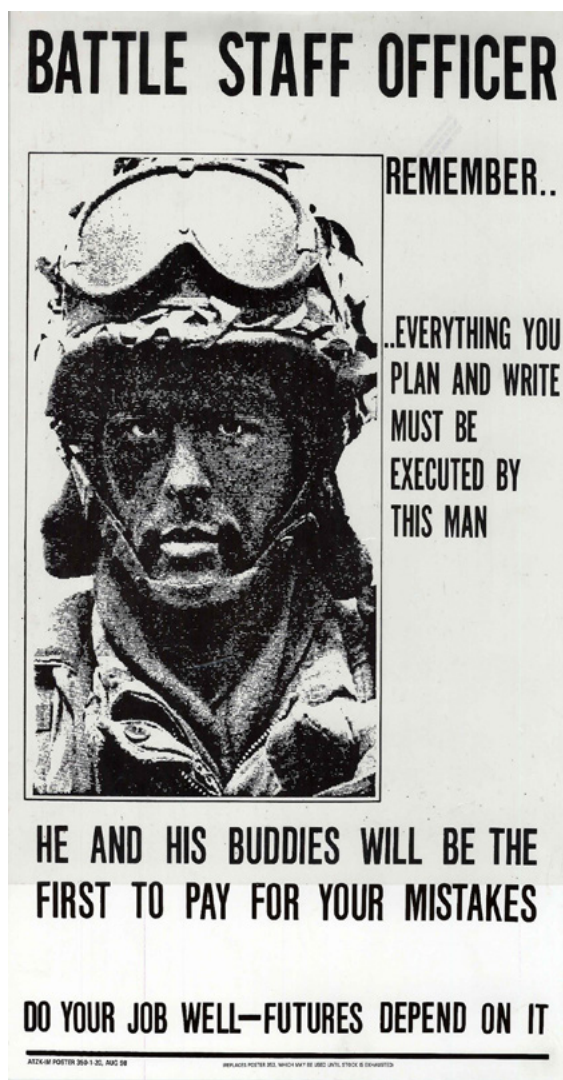


Figure 1. A graphic reminder to the battle-staff officer that mistakes may cause casualties.

tiveness of the battalion as a headquarters more than offset the loss of training time at company level and below, particularly when they were doing tactical tasks during my training time anyway.

Regarding rehearsals, I'm a firm

training exercise (STX) before going to NTC, and we were successful. After NTC, we updated it and continued to add new products throughout my command, including battalion-maneuver battle drills.

Lesson: If you want a TACSOP (or plans, gunnery or garrison SOP), you may have to write and validate it one card at a time.

RDSP

RDSP is how you recognize threats or opportunities emerging on the battlefield, understand how you need to adjust your plan, make decisions and then synchronize the new plan. This process is difficult to train but important to incorporate. I incorporated RDSP in two CPXs by injecting changed circumstances on the staff at the end-of-exercise (endex), requiring them to plan a hasty frago while I released the companies to start recovery. What's important is understanding the idea that the staff must stay engaged during the operation. They must look for indicators that something has changed. Given enough planning time, the staff can identify likely points at which RDSP might be required and identify them as decision points, branches or sequels. Even if we don't have that time, it is critical that the battle captain, S-3 and S-2 (intelligence) are alert to indicators of pending opportunities or threats to alert the executive officer.

Lesson: Units must learn to identify threats and opportunities. They must subsequently take action to synchronize a new plan.

Daily dozen

Units focus on what is tracked and reported. TOCs and company CPs can take a huge load off the commander by tracking to completion those things the commander has directed to occur. With that in mind, I established a "Warhorse Daily Dozen" as a pre-mission checklist of actions for platoons and companies. Subordinate units were directed to report completion prior to line of departure. It included both routine activities – such as orders, rehearsals and boresight – and mission-specific requirements such as the status-of-obstacle efforts.

As we prepared for an upcoming

mission, at any time companies would report completion of the various requirements. Any final updates were due prior to execution. Before movement, the TOC would call me with an update on who was not complete. Tracking requirements empowers the TOC's battle noncommissioned officer (NCO) to gather data on mission readiness, and it allows the commander to immediately see who is delinquent both by the tracking charts in the TOC or over the radio. It was initially a struggle to implement, but the team got on board and embraced it.

Lesson: If it is important to you, the TOC should track it to allow you to see yourself. Establish a standard list of

reportable items and supplement them with mission-specific variables as necessary.

Actions on contact and battle/crew drills

For me, everything platoons do is a battle drill, whether that is changing formation, establishing a support-by-fire (SBF) or executing a contact drill. It is the platoon leader's responsibility to understand the situation and apply the correct drill. Company commanders are responsible for writing orders that put platoons in the right place to execute the right battle drills. Platoon leaders are responsible for recognizing the need for, and execution of, the correct drill.



Figure 2. The crewmen of Headquarters 60 practice crew evacuation during crew training. (Photo by COL Esli Pitts)

Tactical tasks and battle drills	
Receive frago	Change formations
Issue warning order	Contact drill
Issue frago	Action drill
Conduct rehearsals	Passive air-defense measures
Conduct pre-combat checks/pre-combat inspections	Salvo vehicle smoke grenades
Move tactically	Change movement techniques
Conduct forward-passage-of-lines	React to indirect fires
Occupy SBF	React to engine or turret fire
Occupy attack-by-fire	Conduct crew evacuation
Plan platoon direct-fire control measures	Conduct medevac
Assault	Cross-level Class V
Call for fire	Manage muzzle-reference sensor at platoon level
Plan smoke	Conduct in-stride/assault breach
React to anti-tank guided missile	React to electronic warfare/jamming
Consolidate and reorganize	Prep vehicle for recovery
Submit reports	Conduct emergency resupply
Integrate dismounts	Emplace target-reference points
Prepare hasty defense	React to chemical attack
Provide security/operations security	

Figure 3. Tactical tasks and battle drills.

First among equals are the battle drills for actions on contact, which were codified in my battalion TACSOP with separate cards for each drill. Every officer in the battalion had to memorize the four steps to actions on contact as I learned them:

- Deploy and report;
- Develop the situation;
- Recommend a course of action (CoA); and
- Execute a CoA.

I have specifically deviated in Step 3, which was originally “select a CoA.” In my opinion, the subordinate in contact does not have the right to select and execute a CoA that may obligate his higher headquarters to fight in a particular way. It is the responsibility of the subordinate to develop the situation, report accurately and recommend a CoA while the senior leader makes that decision based on “the bigger picture” and prioritization of assets.

Rapid and violent execution of drills allows platoons to survive contact and buys time to figure out what to do next. Everything from establishing a battle position to crew evacuation, reloading tube-launched optically-tracked wire-guided missiles or prepar-

ing vehicles for recovery is a drill.

Note I also referenced crew drills, which is the most overlooked echelon of training. We think crew training consists of gunnery, and then we put four qualified crews together in a platoon without taking the time to train those individual crews how to fight their vehicles. To mitigate this, I allocated one of our few real training opportunities to the companies for them to train at crew level. We followed that up with a week in the field for platoon training that culminated in a platoon STX requiring some or all of each platoon to demonstrate proficiency in multiple drills (Figure 3). Also, we used the CCTT as often as we could. We also conducted maneuver physical training (PT) in the morning and focused on platoon maneuver and battle drills. (See the April-June 2015 issue of **ARMOR** magazine for details.)

One of the most critical drills for me, at all echelons from platoon to battalion, was the breach. We spent a significant amount of time learning the breach, including in professional development, and during platoon and company training events. Incorporating breach considerations into most

training events resulted in thorough grounding in the operation.

Lesson: Everything is a drill. Actions on contact is first among equals. Know it.

Integration of fires

By definition, maneuver includes fire support – or at least the potential for it. My expectation was that we would always have a plan for fires at every echelon from platoon to battalion. I reinforced this during maneuver PT and in every training event. Early on, I had an officer professional-development session consisting of a fire-coordination exercise (FCE) in a large classroom. It was apparent that we didn’t know how to effectively integrate fires. To improve at this task, I attached my fire-support officers (FSO) to their supported companies most of the time. We ran another FCE and conducted a leader certification/competition in the Guard-fist trainer as part of a week-long leader-training event. Also, we emphasized “do not move without fires” in every training opportunity. I did caveat that platoons and companies won’t always get fires, but they should still know how to employ them if they do.

My mortar platoon was my asset used to shape the battalion's fight. Only after that was accomplished was it allocated in support of company maneuver. It was my asset to the extent that I occasionally called missions to them myself just to expedite the process. I trained on this every time they were in the field, including at NTC. This might have been unusual, but it was my asset, so I conditioned the mortars and the FSO to the priority to get the mortars into the fight. I wanted them to shoot where I wanted them to focus. Because I expected them to fire, and fire a lot, I allocated them a truck to manage their own resupply for all training missions at home station and at NTC.

Lessons:

- **Develop a habit of always integrating fires.**
- **Mortars shape the battalion fight first and then enable the companies in their fights.**

Incorporation of attack aviation

I followed two guiding principles in the planning and employment of attack aviation. First, if attack aviation was allocated to me, I kept it as a battalion asset to shape the fight for the companies rather than enabling the companies. Despite that, I would allocate either live or notional aviation assets during platoon and company training to get them familiar with employing it. Secondly, it is more appropriate to mass attack aviation at the right time and place it to kill the enemy than it is to have long-term coverage up at non-essential times.

Lesson: Mass attack aviation assets at the right time and place to kill the enemy in support of the battalion fight. Don't push them lower and don't dilute assets to provide long-duration "coverage."

Specialty-platoon training

Focusing first on the line companies, it took me a while to turn to the scouts' and mortars' training plans. We started by putting an external evaluation on the calendar for each platoon with enough time available to train for it. Working with key leaders, we

established training objectives and then built a concept for each platoon. The model was a 96-hour exercise during which the platoon received a battalion order on the first day and then participated in confirmation and back briefs, CAR, fires and sustainment rehearsals. On the second day, they continued platoon TLPs and conducted mounted rehearsals. The third day consisted of a battalion attack, transitioning to a hasty defense in the evening.

All elements but the platoon were replicated by scripted radio traffic. That night, they received a frago directing a battalion counterattack to occur on the fourth day.

A hot wash with the platoon leadership and the observers/coaches would identify the areas to retrain, and those would be incorporated into the counterattack mission on the fourth morning with a final after-action review on the afternoon of the fourth day. We wrote a battalion operations order that worked for both platoons. I provided a cadre of officers and NCOs from the S-3 shop (including fires) to run the exercise, which primarily consisted of replicating battalion operational traffic and calls for fire. We used scouts or mortars from an adjacent battalion for the actual evaluations. Ultimately, we completed two external evaluations of both platoons.

Findings:

- **Scouts:** Don't forget the sniper for the scout platoon. While I planned to have a well-trained sniper section, I did not achieve it. This was partly due to my own neglect and partly to manning shortfalls. If you want a sniper section, man it, protect it and ensure that it gets training time. I was not successful.
- **Mortars:** I worked extensively with my mortar platoon. For success, you must share your vision and expectations for mortars with the platoon leader and the FSO. It's also important for all to understand the types of missions they can shoot and to ensure training is conducted for all of them. A well-designed exercise evaluation ensures that the platoon gets multiple repetitions, both dry and live, for all missions you expect them to fire. In my opinion, it is a

mistake to use the mortars to support Table XII because that training is highly scripted, and you can achieve the training effects of integrating fires without actually firing canned mission data.

Medevac

The first leader professional development (LPD) I conducted for the battalion was in **ground** medevac. I say "I" because it literally was me teaching the class. Even my medical-platoon leader did not understand how to do it. The reality was that the frame of reference for essentially every officer and senior NCO in the battalion was air medevac.

Medevac training can be broken into several component parts. Company leaders have to get proficient at point-of-injury (PoI) and casualty-collection-point (CCP) operations. Company medics need to get proficient at evacuation of crewmen from combat vehicles, treatment and triage at CCPs and evacuation to the forward or main aid station (MAS). Aid stations need proficiency in triage, treatment and evacuation to the ambulance exchange point. Lastly, the combat-trains CP and S-1 need practice at tracking casualty flow and requesting replacements. All this requires a high volume of casualties. Unfortunately companies usually want to get their casualties back quickly, and trainers are hesitant to inject too many casualties. A few of the selected casualties are evacuated further than the company CCP.

Given a short amount of time before NTC and limited institutional knowledge, I did the following things:

- Conducted the previously mentioned LPD;
- Addressed medevac in our TACSOP with markings and standards for PoI and CCP; and
- Included medevac in our sustainment rehearsals.

Once we set baseline standards, we included medevac in all field training, including a directed mounted medevac rehearsal during Gunnery Table (GT) XII. The most complex event was during company STX lanes. On the final day, during four simultaneous company lanes, I directed that we conduct

medevac until 70 casualties had been evacuated to the aid station and the S-1 shop had correctly documented all of them. It was their one opportunity to battle-track casualties in the volume I anticipated taking at NTC. I also ensured that all damaged vehicles underwent recovery or battle-damage assessment and repair as necessary before I allowed endex.

After NTC, we turned to improving the quality of training for the medics. During a random training event, I had my crew call for a medic to come evacuate us. After taking nearly 30 minutes to evacuate myself and my crew (the buttoned-up driver being the primary issue), we trained all medics on how to evacuate crewmen from combat vehicles.

Next, we programmed them for an external evaluation. We put the medic platoon's MAS in the field and exercised the treatment squad in receiving, triaging and treating a high volume of casualties while also jumping periodically to simulate participating in a battalion attack. Then we did another evaluation, this time with the full platoon and using the line medics to bring casualties to the aid station.

The final training event prior to my departure from the battalion was a company-level medevac live-fire. We used the battalion's GT XII range, but instead of running a platoon down four lanes, we ran a section from each platoon down a lane under the platoon sergeant. During the range, we injected casualties and, while the commander "fought" from the range tower, the first sergeant managed assets to evacuate crews from the tracks, treat at the Pol, move to the CCP and evacuate them to the aid station. This was done while nearby combat vehicles continued to fight.

How to fight

I thought it was important to coach company-grade officers how to fight their organizations. Some of that instruction was the sum total of all the aforementioned focus areas. Understanding the fundamentals was big, but the intangibles are even more important. I vividly recall as a mortar-platoon leader listening to how my commander fought the battalion at NTC. I



Figure 4. The battalion stages before conducting the NTC task-force live-fire exercise. (Photo by COL Esli Pitts)

decided I wanted to fight like he did. Moreover, I had a theory of how leaders should fight their organizations, and I wanted to pass that vision on to my platoons and companies, none of whom had ever heard of a battalion fighting in the field. In the field, particularly during GT XII, I dropped onto the platoon or company net and added as much of a load on the platoon leaders as they could handle, and then added one more thing. Some could handle more than others, and they became my specialty-platoon leaders and executive officers.

Time spent listening to lieutenants and captains fight their organizations and then coaching them was invaluable. I wasn't above pulling the platoon leader's driver out of the simulator in CCTT and jumping in myself (much to their surprise) to drive for them and listen to them fight their platoons.

What did we talk about? We talked about:

- The balance of control and reporting between platoon leader and platoon sergeant;
- When to speak and when to listen on the net;
- How much talking is too much talking;
- When to engage, direct or redirect on the radio, vs. how much we can lead just by monitoring;

- How much leaders physically do rather than supervise.

The key is that, first, you have to understand how you want to fight your organization, and then you have to articulate that to your subordinates. Another important teaching point was that leaders who talked too much were unable to think ahead. Because of that, my expectation is that platoon sergeants, and both battalion and company executive officers report up, freeing platoon leaders and commanders to fight their organizations.

My vision was of an old stagecoach driver. As long as the horses (or tanks, platoons or companies) are running down the right trail, there is no need for the driver to do anything but loosely hold the reins and watch. It's only when something changes that the driver needs to grab the reins and take control. In the same way, a platoon leader, company commander or battalion commander can just sit back and watch the mission unfold, listening to the crosstalk. Only when something big happens or when changes are required does the leader need to key the net.

Lesson: Leaders eavesdrop, listen to the crosstalk and interject only when necessary. Leaders who always talk are not always hearing.

I've spent the last two years at JMRC watching a variety of U.S. and multinational battalions fight in one of the most complex training environments available. What I've seen has validated that I focused on the right things while in battalion command. My time at JMRC also added significantly to my thoughts on the topic.

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Figure 5. A plow tank from Dragoon Company conducts a breach during a platoon STX. Note the loaded vehicle smoke grenades. (Photo by COL Esli Pitts)

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Maximizing Combat Training Center Rotations

by CPT Robert W. Stillings Jr.

As the Army refocuses brigade combat teams (BCTs) on the complexities of decisive action (DA), it has become evident that some capabilities have atrophied.

It has been accepted that it will take time for the Army to transition from counterinsurgency (COIN) or advise-and-assist brigade (AAB) missions to conducting DA operations. This acceptance stems from realism among leaders of the tasks that must be accomplished to execute the transition. It also comes from an understanding that our country faces a decade-long generational gap between high-intensity conflict/full-spectrum operations and DA with COIN in the middle.

It is critical that we compress the timeline as much as possible as the Army, and specifically our BCTs, make this transformation because our future adversaries have not been embroiled in a decade-long COIN fight. They have been honing their warfighting

capabilities and desire to see our transformation take as long as possible. Therefore we **must** alter how the Army uses combat training center (CTC) rotations to compress the transformation timeline and prepare our Army to fight and win our nation's future wars. The cost and time commitments, along with the yearly changeover of people and command teams, make it imperative that CTC rotations no longer train only one BCT. The CTC rotations must train one BCT directly and the other 29 BCTs indirectly.

Captured knowledge

The CTCs are not a "final exam" for battalion and brigade commanders, as was the case in the 1980s and '90s, nor should they be in our Army's current state. The Army stands to gain much more from the CTCs actually being training centers. As such, the lessons-learned from CTCs should be available for public consumption. In fact, those lessons-learned should not only be available for public consumption, they

should be **forced** public consumption (within the Army). This is a matter of training readiness.

Lessons-learned at CTCs are captured in a myriad of ways. Observers/coaches/trainers (O/C/Ts) capture photos at platoon through brigade levels each rotation. These photos depict things units do well and things they need to improve. The O/C/Ts also use after action-reviews (AARs) and storyboards to summarize battle periods or phases. There are more large-scale AARs done throughout the CTC rotation.

Also, there are "Star Wars" video presentations. They show how enemy and friendly elements moved, where decisive points were and how enablers were used. The Star Wars presentations have a voice-over to orient viewers as they "walk" through the battle. These videos are normally, by far, the best representation of how a battle went and what action or inaction led to the eventual outcome. Finally, at the end of each rotation, Operations Group

builds a post-rotational packet for the brigade and battalion commanders to take home. However, lessons-learned by the BCT serving as the rotational training unit and lessons-learned by the Operations Group (because the O/C/Ts will admit to learning every day) end where they started: at the CTC. This is a problem because it means no other units or leaders see those lessons, and individuals in those BCTs quickly (or at least eventually) leave the unit. This outcome is simply not acceptable as our Army continues its transformation and fights with budget constraints. It costs \$15.5 million just to get a unit to a CTC. For that dollar amount, our Army must get more from the experience.

Spread knowledge

There are two ideal venues to achieve this. First is Maneuver Captain's Career Course (MCCC) at the Maneuver Center of Excellence, Fort Benning, GA. It is the only place in the Army where there is a conglomerate of experienced maneuver officers.

MCCC should be able to build a course comprised of documents, images and videos they put together in coordination with the CTCs. I emphasize that **MCCC** builds the product to ensure that they don't get watered-down versions and that course materials provide the information future company commanders need. This course should be specific, not generic, and point at things you should or shouldn't do (e.g., good vs. bad camouflage, boresighting, tactical-assembly area location, use of terrain, formations, gaps in the screen line, security, fires planning, engineer efforts, casualty evacuation, tempo, recon-planning guidance). With MCCC building the product, it would also be possible to incorporate tactics, techniques and procedures (TTPs) from the opposing-force elements at the CTCs to identify best practices and enemy TTPs.

Future company commanders should be able to learn via images and AARs what previously worked and what did not so that, as they train their formations, they can make new mistakes that progress the Army – instead of encountering old pitfalls. This could potentially provide the best way to proactively

close the generational gap. There is also the advantage of unforeseen possibilities when small-group instructors at MCCC begin interfacing with O/C/Ts and incorporate advancing lessons-learned into daily work with their small groups. The possibilities could be endless when a relationship is cultivated that allows our most highly achieving former company commanders to teach our future company commanders by using lessons-learned from our current company commanders on the "battlefield" at CTCs. Worst-case scenario: our future maneuver company commanders leave with a chapter on a disk that they can refer back to once they are in command or when they get word of a pending CTC deployment.

The second venue (or opportunity) to spread the knowledge gained at the CTCs is to get it into the hands of all battalion and brigade commanders across the Army. This could be done as a breakout group during the Pre-Command Course or simply by mailing the "post-rotational take home packets" to the other 29 brigade commanders in the Army. The Army's initial reaction is to protect the units and commanders as the lessons-learned may embarrass them; an answer is to "sterilize" the packets, removing bumper numbers and unit identifiers from AARs and images. Our goal as an Army is to get better as quickly as possible as a team, not as individual units. Thirty lethal brigades are better than one.

Be 'real'

There is simply too much knowledge being gained and lessons-learned happening at the CTCs to fail to pass them on to our other units. However, this method only works if the products being developed are specific, credible and not watered down due to too much review or a lack of candid observations. This method would also allow lessons-learned to get into the hands of artillery battalions, sustainment battalions and other enablers. Battalion and brigade commanders could then incorporate them into home-station training, professional development, leader-training programs or as they deem necessary to help improve their unit's training readiness.

This method would also help solve the long-standing uphill battle we face with Army National Guard units. They have significant constraints on training time and dollars. Distributing lessons-learned from the CTCs would be a creative way to maximize their training and knowledge without any more dollars or training time being allocated. Regardless of which method we use, or if there is a different one developed, it is imperative that we maximize training value at the CTCs as an enabler to compress the transition timeline from COIN/AAB to DA. Units arriving at CTCs often make the same mistakes as the unit before them, regardless of the echelon of command. While it is important that each unit be able to make mistakes at the CTC and learn from them, it is equally as important for the Army as a whole to progress past the mistakes its units make. If the Army can make "progressive" mistakes while maintaining ideas that are working, there is no downside.

Spreading ideas may be nothing more than a battalion commander giving a group of company commanders tips about what to expect from a CTC rotation. But there could be more. The potential could be limitless for the Army's maneuver force if lessons-learned were implemented in training and schools instead of being shelved.

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Lessons-Learned for a Tank Company at Joint Readiness Training Center

by CPT Benjamin M. Staats

This article's purpose is to review a few lessons-learned from a tank company in support of an infantry brigade combat team (IBCT) at the Joint Readiness Training Center (JRTC). These lessons-learned were observed from Troop D, 1st Squadron, 1st Cavalry Regiment, 2nd Brigade, 1st Armored Division, during JRTC Rotation 16-07 in support of 3rd Brigade, 101st Airborne Division. When I served as the team senior and guest observer/coach/trainer (O/C/T) at JRTC, several other 19K-series guest O/C/Ts and I observed various challenges and the developed tactics, techniques and procedures (TTPs) that were established to help mitigate them.

A tank company at JRTC faces challenges that vary drastically from those faced at the National Training Center (NTC) such as vulnerabilities exacerbated by the local terrain, integration as an enabler unit, protection from enemy air assets and security against

enemy anti-armor capabilities. Mitigating the negative effects of these challenges helps to maintain combat power and maximize the lethality provided to the supported IBCT.

Understanding vulnerabilities

Employing a tank company in the restricted JRTC terrain presents several vulnerabilities the tank company and supported IBCT must anticipate and subsequently mitigate. Tanks are vulnerable to enemy anti-armor capabilities in situations where there is reduced visibility.¹ Reduced visibility occurs when tanks have closed hatches and when operating within restricted terrain; both of these instances occur constantly throughout operations at JRTC.

Closing hatches is a measure taken to ensure crew survivability within urban areas, in contaminated environments

and when potential sniper threats are in the area of operations. When hatches are closed, situational awareness surrounding the tank is significantly degraded.² Commanders need to enforce operating with closed hatches and in mission-oriented protective posture conditions to ensure crews gain confidence when operating under this restriction. These training objectives should be trained more often than just in Gate III, Gunnery Table VI training;³ they should be included in Gates IV-I training events.⁴

Restricted terrain is prevalent in environments such as Fort Polk, LA; this includes wooded areas, urban terrain and avenues of approach throughout. These areas significantly reduce one of the advantages tanks have in open terrain: the ability to use terrain to gain and maintain 360-degree observation and to reach out and immediately influence areas or targets thousands of meters away. Yet in restricted terrain, this advantage is nullified and enables inferior armor elements and dismounted anti-armor capabilities to leverage



these conditions to initiate ambushes and develop refined engagement areas (EAs). This is why platoon leaders and section sergeants need to understand how to develop and implement intelligence preparation of the battlefield (IPB) at their echelon and have a detailed understanding of military terrain analysis as shaped by an effective company common operational picture.⁵

Another significant vulnerability tanks face is enemy air assets. Enemy air catastrophically destroyed seven of D/1-1 Cav's tanks throughout the operation at JRTC. The IBCT has inadequate air-defense enabler support, and a tank company has limited organic anti-air capabilities. Due to these factors and the lack of realistic training for active measures, the primary method for enemy air capabilities is taking a passive approach.⁶ At JRTC that means finding concealment within the trees and wooded areas, and dispersing tanks during both offensive and defensive operations.

However, when tanks move further into woodland or vegetation areas to provide concealment from enemy air, they increase their vulnerability to enemy anti-armor. The restricted terrain at JRTC forced crews to realize that their lines of sight, engagement lines and EAs are significantly reduced due to the micro-terrain (intervisibility lines and tree density), often limiting sectors of fire to no more than 500 meters. This allows enemy anti-armor teams to maintain standoff while employing their weapon systems.

Another vulnerability presented in this context is the limited ability for an IBCT to mass all tanks during an operation. This typically leads to the tank company being task-organized among several different echelons, which leads to the unintentional mitigation of a company command post, Bradley fire-support team (BFIST) and command team. Therefore junior leaders must be developed at the platoon and section level to enable them to effectively communicate and operate with other organizations. Although infantry-platoon leaders and commanders have a general understanding of armor, they must still rely on armor leaders' in-depth armor skills, knowledge and proficiencies during the planning and execution

phases of an operation.

The next two sections analyze each of these vulnerabilities in more detail and provide examples, insights and observations on how to mitigate these concerns to ensure the success of future tank companies at JRTC and in similar operating environments.

Integration

Tank companies are task-organized across an IBCT formation at JRTC or similar operating environments, so they must be prepared to operate among the battalions and/or with sections attached to other companies.⁷ However, the IBCT must determine the battalion in which to establish the initial task-organization to create accountability for the tank company.

This accomplishes three things:

- It ties the company to a particular battalion S-1 shop for all personnel and administrative functions;
- It ties the company to a specific battalion's maintenance system, either the Standard Army Maintenance System-Enhanced or Global Combat Support System to streamline ordering of parts; and
- It ties the company to a specific battalion with respect to operations and receipt of information.

Based on my observation, I recommend that the tank company be task-organized to the brigade engineer battalion (BEB) or the infantry battalion that will more often serve as the decisive operation. This task-organization initially facilitates the tank-company commander's involvement in the military decision-making process at brigade level. The BEB is also the most experienced battalion when it comes to preparing subordinate companies and units to be attached to other battalions. However, if there is one infantry battalion that will consistently serve as the decisive operation, task-organizing the tank company to them can help build the operating relationship between the two. From our observations throughout, the transition of the tank company from one battalion to another led to the parent battalion no longer providing acceptable sustainment and administrative support with respect to human resources and maintenance

support (personnel-accountability reports and Form E5988s).

Another task-organization consideration is the distribution of sustainment resources specifically designed for the tank company across multiple units within the brigade. The IBCT is already limited with M1098 fuelers (2,500 gallons), and it has zero recovery assets capable of recovering the tanks or even the BFIST from the tank company.⁸ Tank companies are task-organized with one combat-readiness team equipped with only one M88A2 Recovery Vehicle and no M1098 fuelers. To alleviate these constraints, 1-1 Cav provided the tank company with two more M88A2s from the forward-support company (FSC) recovery section and three M1098 fuelers that are organic to the squadron's FSC. These vehicles were recently added to the squadron's FSC modified table of organization and equipment (MTOE)⁹ to support the addition of a tank company to the cavalry squadron.

Careful consideration should be put toward the task-organization of sustainment assets for a tank company assigned to an IBCT. For example, in the given scenario where each platoon is attached to a different company in support of offensive operations, one M88A2 and one M1098 fueller could be task-organized to each supported company trains to ensure the requisite support is available during operations.¹⁰ However, commanders can assume risk by not doing this, but the risk limits hours of tactical employment of the tanks without being able to efficiently refuel. This limits their effectiveness when having to conduct self-recovery. During the JRTC rotation, there were several instances when task-organizations separated the tank platoons by only a few kilometers, allowing the tank-company trains to remain consolidated and still provide the requisite support by the executive officer and first sergeant via logistics release points.

Another important circumstance to consider is that when a tank platoon or section is task-organized to another company, they need to be proactive in troop-leading procedures (TLPs). The receiving organization must understand the necessity of incorporating

the armor leaders (the platoon leader, platoon sergeant and/or section sergeants) from that platoon or section into the TLP process. Platoon leaders and section sergeants must be subject-matter experts (SMEs) when it comes to the employment of platoons and sections, respectively.¹¹ Many, if not most, infantry commanders have never employed armor assets outside of a Maneuver Captain's Career Course (MCCC) experience. It is even more likely for infantry-platoon leaders to be new to the employment of armor assets because they have received very little exposure to the tactical employment of tanks at this point in their careers. They have a general understanding yet lack the experience in armor tactics.

Tank-platoon leaders and section sergeants should be encouraged and allowed to provide detailed information on their own capabilities, limitations and vulnerabilities. They can offer valuable input on tactical considerations. Even more important, these leaders understand the current conditions unique to their platoon or section, such as current maintenance issues affecting capabilities, who their best or most lethal crew is, ammo distribution and type/effects of main gun rounds on hand. They can also bring operational armor experience to the planning process. Based on my observation, I recommend that leaders ensure development programs are instituted within the tank company that focus on IPB, direct-fire-control measures and tank capabilities to include limitations / vulnerabilities and tactical employment.

Protection and security

As mentioned in the vulnerabilities section of this article, the two significant threats against tanks at JRTC are enemy anti-armor and air capabilities. The disposition of enemy insurgents rarely fits within a unit's contiguous boundaries when operating in a complex and dynamic environment. Therefore, the tank company must constantly plan security and anticipate enemy attempts at probing tactical assembly areas (TAA).

We know the terrain at JRTC significantly impacts the range effectiveness

of our thermal-optic capabilities and enables enemy anti-armor systems to get well within range of tanks. This allows them to take keyhole shots with anti-tank guided missiles (ATGM) or rocket-propelled grenades (RPG), and then subsequently displace. Regardless of the echelon of tanks (section, platoon or company), they must maintain 360-degree security and security patrols at all times. Providing internal security, security patrols and observation posts (OPs) at each of those echelons is a limitation inherent within tank organizations. However, to deter enemy anti-armor capabilities, tank organizations need to conduct local security, particularly as dispersion increases.¹²

The most effective method observed in TAAs is to attach dismounted infantry or scouts to the tanks or vice versa. This ensures the tank crews can maximize the weapon systems and capabilities on the tank, and implement priorities of work such as more security measures (sector sketches), maintenance, lube orders, resupply and planning. Tanks return the favor for infantry by providing immediate and overwhelming precision direct-fire support.¹³

When employing dismounted elements, armor leaders need to consider several factors with respect to defensive direct-fire-control measures (DFCM). First, to maintain unrestricted sectors of fire for the main gun, they should maintain dismounts 70 meters left and right of their front-line trace and not within one kilometer forward.¹⁴ This prevents friendly dismounts from the possibility of being injured from the discarding sabot petals, but it also prevents maximizing security functions from the infantry support. To counter this, infantry OPs should be forward and in between tanks with rear cover or positioned on the other side of an intervisibility line, yet still far enough away to prevent blast overpressure. DFCMs such as establishing target-reference points (TRP) to keep OPs outside of surface danger zones (SDZs) should also be emplaced to prevent fratricide. This all goes back to the tank-platoon leader and section sergeants being involved in the supported company's TLPs.

However, when infantry or dismounted

support is not available, tanks must be able to provide internal local security. The motto of "death before dismount" should be left in the past, regardless of the culture shift back to getting tanks out of the motorpools. When tanks occupy a TAA or a defensive position, the first priority of work should be establishing security and developing sectors of fire. Tank crews must develop their sector sketches and tie in with adjacent tanks (or dismounts when available). The tank-platoon leader then dismounts and adjusts tank positions as required to develop the platoon sector of fire while developing the platoon sector sketch.

Also, the platoon must have dismounted elements that maneuver to clear dead space and identify any more terrain features that could influence EA development (such as trails or intervisibility lines). Without setting a pattern, these dismounted patrols must routinely occur to deter the enemy from using the micro-terrain to get within range for anti-armor weapons. It was observed that whenever the tank company failed to conduct these patrols, enemy dismounts were able to sneak up to tanks and cause several catastrophic mobility and/or firepower kills.

The commander assumes risk with these patrols coming into contact, yet these patrols preserve the combat power provided by the tanks. To mitigate this risk, I recommend that dismounted patrols consist of three to four crewmen armed with M4s and at least one M240. The M240 should be one of the loader's M240s that is modified with the loader's dismount kit (which adds the buttstock and trigger assembly). If feasible, tank companies should add team or live-fire exercises during their integrated weapons-training strategy planning to ensure crewmen understand dismounted fire and maneuver.

Tank crews should also ensure use of the local foliage to conceal the front of each tank. This foliage should be cut down from areas behind the tank to maintain consistency in concealment. Tanks should also never orient in the same direction without rear security; a common enemy TTP with insurgency forces is to disable tanks by any means

necessary since catastrophically destroying them is typically outside their capabilities. This includes satchel charges, rudimentary RPGs, improvised explosive devices or other explosive devices to disable the tracks or significantly damage the engine. As demonstrated in combat, tanks have great survivability against these attacks,¹⁵ but repair times can become long enough to affect operations. Also, if the logistical support is not in place, repair times become even more extensive.

Another protection concern is the threat of enemy air. It is assumed that most enemy commanders place friendly tanks on their high-payoff target list, and tanks in the open present a target of opportunity for the enemy's Russian-made MI-24 Hind helicopters or their variants. During JRTC, the enemy battalion commander tends to focus more on destroying combat power, particularly tanks, rather than sustainment or mission-command infrastructures. Therefore, tank companies need to prepare for this and continuously train passive and active air-defense measures.

The description of passive and active measures can be found in Army Technical Publications (ATPs) 3-20.15 and 3-90.1. Concealment and staying mobile is key. To prepare for the threat of enemy air, tank commanders should identify enemy air avenues of approach when in TAA or defensive positions. If feasible, two tanks can orient on a specific point above the woodland along that air avenue of approach to create a "wall of steel."¹⁶ Also, another tank should orient a sector of fire along that same air avenue of approach and battle-carry the multipurpose antitank (MPAT) round set on "air" mode. The commander establishes a clearly understood weapon-control status and the DFCM needed to determine a passive or active approach.¹⁷ In addition to this, commanders must ensure that tank commanders plan for and understand that SDZs are not just left and right. They are three-dimensional, meaning up and down as well.

The distribution of rounds from an area-effect weapon (the M2 and M240s) follow a slightly different trajectory,

forming a pattern of rounds called the cone of fire.¹⁸ Therefore, firing weapon systems, including the main gun, over the heads of other tanks (depending on the elevation of the target point) could put friendly personnel and platoons at risk for injury or damage.

The commander must balance the risk and operating-environment considerations to determine whether to take a passive or active approach. It is best to maintain the passive approach if the terrain or context does not allow an effective active approach (i.e., massing machinegun fire and MPAT air rounds) against enemy air, as it will just give away your position with a very low probability of effects. By not taking an active approach, tanks risk being identified and attacked first – yet if well concealed, they remain undetected, or at least enemy air is forced to have to take another pass after tanks are identified to effectively engage.

Even if the commander determines a passive approach is best, tanks must always prepare active measures against enemy air within the TAA position, short halt or battle position, to mitigate, deter or destroy enemy air. Taking an active approach can be effective if an EA is developed effectively along the enemy air's likely avenue of approach. It's also more effective if the tanks are securing a key piece of terrain or infrastructure the enemy knows friendly forces have secured. Taking an active approach is also an effective deterrence against enemy air. Even if firing a volley of machinegun fire at enemy air does not cause effects, pilots will refrain from flying within that vicinity or air corridor but will also report your general position. Nevertheless, if your tanks are in the open, an active approach is recommended and should be more feasible because of the open fields of fire.

DFCM

This topic requires its own article, but based on JRTC observations, a few points should be mentioned. First, armor leaders from section sergeant and higher must understand the effects of their weapon systems. Most units train on standardized ranges in open terrain and without integrating dismounts. Unfortunately, this does not reinforce

the meticulousness required to be truly proficient and lethal while maximizing dismounted support. On ranges at home station, due to range limitations or restrictions, the key to a successful platoon live-fire (Gate II, Table 6) is staying on-line as you maneuver a platoon downrange.

Also, NTC's open terrain typically only requires a simple maneuver in which the only DFCM required is TRPs established from a specified attack or support-by-fire position. However, at JRTC and similar operating environments, tank commanders must understand principles of direct-fire control¹⁹ to maximize weapon capabilities while also mitigating friendly fire, particularly when operating with friendly dismounted infantry.

Employing multiple DFCM while maneuvering and considering effects on friendly dismounts is very complex. It requires education and training. Yes, it's a skill taught at MCCC, but students typically only demonstrate basic proficiencies with implementation of direct-fire control. There are four weapon systems on each tank that tank commanders must consider. They must also understand the various effects of the different main-gun rounds available to them. As tanks maneuver, commanders must understand their position in relation to TRPs as the angles for SDZs shift. The tank commander must also consider the weapon-control status of each weapon system with respect to TRPs assigned for each weapon, and those effects with respect to maneuvering or repositioning of local friendly dismounts.

More recommendations

The training environment JRTC provides presents unique terrain challenges that replicate potential combat theaters that are different from those that NTC replicates. NTC still serves as the most effective and proficient method of evaluating armored brigade combat teams (ABCT). However, there is value in increasing the number of tank companies that attend JRTC in support of Stryker BCTs (SBCTs) and IBCTs; only two or three tank companies currently attend JRTC per year.

I propose that a tank company attends every rotation for two purposes:

- It increases the operational learning and knowledge gained by military-occupation specialties 19K and 19A Soldiers across the ABCTs as discussed in this article; and
- It provides an enabler to SBCTs and IBCTs that can compellingly increase protection and lethality during offensive and defensive operations.

The capabilities of hybrid threats, prevalent in our current and future operating environments, will employ main battle tanks (MBTs) in such terrain, which consequently befits us to support our IBCTs with enablers such as tank companies to counter the advantages enemy protective firepower presents in combat. To ensure success at JRTC under these two propositions, JRTC should set conditions by creating an O/C/T team under one of the O/C/T task forces that consists of permanent-party 19Ks. The only 19-series Soldiers who currently serve as permanent-party O/C/Ts at JRTC are 19Ds. The 19Ks who serve as O/C/Ts when tank companies are at JRTC are guest O/C/Ts from varying ABCTs who most often have little experience at JRTC. This doesn't mean that the guest O/C/Ts are not successful – yet having a team of 19Ks permanently stationed at JRTC ensures there are SMEs who have continuity to pass lessons-learned from one tank company to another during each rotation. It also ensures that the team senior (a post-command tank-company commander) has the ability to develop and mentor his team of 19Ks through each rotation to maximize O/C/T proficiencies, increasing the value of feedback provided to the rotational-training-unit tank companies.

Look into future

New technology will also shape security and protection TTPs. Currently the Israeli Defense Force uses the Trophy, which is an active-protection system emplaced on the Merkava Mk4 MBT. This system uses radar to detect incoming ATGMs, RPGs and even high-explosive anti-tank rounds. It then immediately deploys multiple explosive-formed penetrators in a similar manner to buckshot to destroy the incoming round.²⁰ Of note, these systems will not prevent any sort of tungsten armor-piercing, fin-stabilized, discarding

sabot-tracer rounds. This system was already proven in combat, during Operation Protective Edge in Gaza, while equipped on the Merkava tanks.^{21, 22}

The U.S. Army and several civilian companies are currently assessing the Trophy system. Civilian industry has also developed and is currently testing a similar system called Quick Kill.

While these systems can provide 360-degree security against anti-armor weapons, they pose harm to nearby dismounted infantry or scout support. Quick Kill claims to minimize the effect on nearby dismounts by blowing the initial blast upward so that it then targets the incoming projectile in a downward motion – unlike Trophy that just blows out laterally.²³ Shrapnel from the blast is still a concern to consider. Nevertheless, either system could potentially alter small-unit tactics when it comes to the employment of tanks in restricted or urban terrain equipped with these systems.

I hope some of these lessons-learned are added to tank-company tactical standard operating procedures to ensure current and future tank companies are that much more lethal at JRTC. There are several other lessons-learned I captured, including DFCM, breaching tenets and sustainment TTPs. If you would like to know more, find me on global e-mail and ask away.

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Notes

¹ ATP 3-20.15, *Tank Platoon*, Department

of the Army, December 2012.

² Ibid.

³ Training Circular (TC) 3-20.31, *Training and Qualification, Crew*, March 2015.

⁴ TC 3-20.0, *Integrated Weapons Training Strategy*, June 2015.

⁵ Field Manual (FM) 3-21.10, *The Infantry Rifle Company*, Department of the Army, July 2006.

⁶ ATP 3-90.1, *Armor and Mechanized Infantry Company Team*, Department of the Army, January 2016.

⁷ FM 3-90.1, *Tank and Mechanized Infantry Company Team*, Department of the Army, Dec. 9, 2002, Appendix C (Note: superseded by ATP 3-90.1, yet still provides valuable information not included in the updated doctrine.)

⁸ Maneuver Center of Excellence Supplemental Manual 3-90, *Force Structure Reference Data, Brigade Combat Teams*, January 2015 (IBCT).

⁹ Brigade-support battalion (ABCT) MTOE, <https://FMSweb.army.mil>, prepared June 10, 2016.

¹⁰ 1LT Anderson, U.S. Marine Corps, *USMC Tank Operations in Afghanistan*, after-action report, Sept. 14, 2011.

¹¹ ATP 3-20.15.

¹² Ibid.

¹³ Anderson.

¹⁴ ATP 3-20.15.

¹⁵ Anderson.

¹⁶ ATP 3-90.1.

¹⁷ ATP 3-20.15 and ATP 3-90.1.

¹⁸ FM 3-22.68, *Crew-Served Machine Guns*, Department of the Army, July 2006.

¹⁹ ATP 3-90.1.

²⁰ Sydney Freedberg, "Missile Defense for Tanks: Raytheon Quick Kill vs. Israeli Trophy," *Breaking Defense*, March 9, 2016, <http://breakingdefense.com/2016/03/missile-defense-for-tanks-raytheon-quick-kill-vs-israeli-trophy/> (accessed June 9, 2016).

²¹ 1LT Kier Elmonairy, "The Tank is Dead! Long Live the Tank!" *ARMOR* magazine, January-March 2015, http://www.benning.army.mil/armor/earmor/content/issues/2015/JAN_MAR/Elmonairy.html.

²² Barbara Opall-Rome, "Israel to Equip Troop Carriers with Trophy APS," *Defense News*, Jan. 28, 2016, <http://www.defensenews.com/story/defense/land/vehicles/2016/01/28/israel-trophy-active-protection-system-aps/79460018/>.

²³ Freedberg.

Logistics Forecasting and Estimates in the Brigade Combat Team

by CPT Michael Johnson and
LTC Brent Coryell

(Authors' note: This article presents proven sustainment tactics, techniques, procedures, observations, insights, lessons-learned and best practices as observed by the observers, coaches and trainers (O/C/Ts) of the Operations Group's Goldminer Team. It provides demonstrated methods of forecasting logistics at different support echelons to create maximum operational reach, flexibility and logistics synchronization. The intended audience is junior logistic planners and maneuver officers / noncommissioned officers working in logistic positions at the brigade combat team (BCT) level and below. We discuss all classes of supply with the exception of Classes VI and VII. We do not discuss the Logistical Estimate Workbook and Operations Logistics Planner. This is not an authoritative source or alternative for sustainment doctrine because it is not inclusive of all the subject matter; we tied it only loosely to sustainment doctrine as outlined by Army Doctrine Publication (ADP) 4-0.)

Accurate forecasting of logistic requirements is a crucial, yet often overlooked, process in the mission-analysis phase of BCT logistics planners'

military decision-making process (MDMP). BCT logistics planners tend to submit the same requests day-to-day instead of conducting analysis based on the future mission and factors such as requirements, consumption rates, time and distance. Many BCTs rotating through National Training Center (NTC) decisive-action operations rely on a "swag" or "auto," depending on a default push of supplies from higher echelons to satisfy requirements with no analysis of what requirements actually are.

This failure to forecast commits unneeded distribution assets and often results in a backhaul of large quantities of supply, wasting manhours and increasing risk to Soldiers. It also fails to anticipate requirements for changing missions such as a transition from defensive to offensive operations. While occasionally effective in sustaining units for the short term, this methodology is very inefficient and is not sustainable over long periods.

Forecasting support requirements begins in mission analysis and is the most important mental process for the logistics planner. Mission analysis for logistics planners should be a focused means to define the current operational environment in terms of capabilities,

requirements, assessment and mitigation. In short, what do I have, what don't I have, what do I need and how do I get what I need? With that understanding, the foundation for accurate forecasting is the use of standard logistics-estimation tools that analyze distances and usage hours, derived from the scheme of maneuver, with calculated consumption rates to task-organized equipment densities. This produces a logistics estimate that mitigates shortfalls and eliminates unnecessary backhaul.

Historical data is a good starting point or guide, but it should not be the primary forecasting method when conducting an estimate for a new operation. Historical data is valuable only when an operation has matured enough to be applicable to the situation. For example, consumption rates for an attack in a forested, temperate environment will differ vastly from one in an arid desert. In addition, training data, while historical, will not completely mimic deployed combat operations.

Following are procedural estimates and examples for each class of supply, based on published consumption rates. We list each class of supply by class, not necessarily in order of importance.

Class I transportation planning factors for MREs	
Ration package	Weight
Meals per case	12
Cases/pallet	48
Weight/case	22.7 pounds
Weight/pallet	1,089 pounds
Class I transportation planning factors for UGRs	
Ration package	Weight
Servings/module	50
Modules/pallet	8 (400 servings)
Weight/module	128 pounds
Weight/pallet	1,020 pounds
Pallet size	40 inches/48 inches/40 inches

Table 1. Class I MRE and UGR weight and pallet conversion.

Class I: subsistence

Forecasting Class I (CLI) meals and water is crucial for sustainment planning. Since it is primarily population-based, CLI is not as influenced by the maneuver operation, as are most other supply classes. This provides more consistency to planners.

Meals: Logistics planners forecast meals to sustain the force based on headcount (how many Soldiers) multiplied by the ration cycle (what type of meal) multiplied by the issue cycle (how often bulk rations are delivered). There are three categories of meals: Meals Ready to Eat (MRE), Unitized Group Ration (UGR)-A Option and UGR-Heat and Serve. When multiple ration types are used, planners account for each type individually, with the forecasted rations being the final sum.

Meal example: If 100 Soldiers on an M-M-M ration cycle are issued a “2” cycle, the total MREs needed would be 600 meals (100 headcount x 3 M per day x two days). Since meals are transported by cases/modules and pallets, the value would be converted using the charts shown. In the example, 600 meals would equate to 50 cases, or one pallet of MREs plus two additional cases.

If conducting phased operations, the issue cycle could cover each phase, so a four-day phase would be an issue of “4,” pending unit haul and storage capabilities.

Planners should adjust their total values to account for variances and unforeseen changes – for example, planners should add 10 percent to account for an unforeseen change such as an unexpected attachment of a unit. More meals may be required for humanitarian aid, such as internally displaced personnel, and personnel holding, such as detainees and enemy prisoners of war.

There are two primary considerations when transporting CLI meals: storing perishable items and transporting cooked UGR meals. Units must consider the use of ice and Multi-Temperature Refrigerated Container Systems (MTRCSs) when incorporating perishable items into the ration cycle. Failure to do so results in supplements being spoiled and wasted. Module 3 UGRs are the only meals that need cold storage to remain safe to consume.

Time is important when cooking UGR meals. Once heated to the correct temperature, there are only four hours allotted to eat them. Therefore planners must be cognizant of where a unit’s assault/containerized kitchen is located in relation to the forward troops. General planning factors are 20-35 minutes upload/download time (40-70 minutes), plus actual time traveled.

Water: Categorize it into bulk, ice and decontamination planning when forecasting requirements.

- **Bulk water.** During Fiscal Year 2015, 59,800 gallons of bulk water were

backhauled between forward-support companies (FSC) and brigade-support battalions (BSB) units at NTC, resulting in unneeded use of personnel and equipment. Bulk water planning follows the same MDMP in terms of identifying capabilities, requirements and shortfalls. The brigade-support operations section and brigade/battalion S-4s can calculate available water capabilities at echelon based on on-hand asset availability to understand the maximum water capability at each unit.

Bulk water planning is similar to CLI meals in that you calculate it on a per-person, per-day cycle. Table 3 of the *Theater Sustainment Battle Book* highlights planning factors with this methodology based on the climate. Planners should use this in their initial analysis to forecast proper requirements. Adjust the water consumption requirements with historical data as the operation progresses.

Mortuary affairs operations are an additional planning factor considered at the BSB level. You need four gallons per set of remains for processing.

- **Ice.** Forecast ice on a per-person, per-day basis based on the operational environment. Recommended planning factors in pounds per bag per person are Arid-6, Tropic-5, Temperate-4 and Artic-3. The bag size determines how many bags per pallet (e.g., 103 20-pound bags fit on one wooden pallet). Use MTRCS for ice

Bulk water storage and requirements								
Modes of movement (capacity in gallons)					Bulk fixed storage (capacity in gallons)			
Buffalo	Blivots	Hippo	Camel	3K SMFT	5K SMFT	Onion skin	20K	50K
400	500	2,000	900	3,000	5,000	500	20,000	50,000

Table 2. Bulk water-storage capacity.

Use	Temperate	Tropical	Arid	Artic
Drinking water	1.5	3.0	3.0	2.0
Personal hygiene	1.7	1.7	1.7	1.7
Field feeding	2.8	2.8	2.8	2.8
Heat injury treatment	.1	.2	.2	.1
Vehicle maintenance	--	--	.2	--
Standard planning factor	6.1	7.7	7.9	6.6

Table 3. Water-consumption factors in gallons/persons/day.

storage; 14 pallets fit into one MTRCS.

- **Decontamination.** Decontamination operations require substantial water requirements for each contaminated Soldier and vehicle. The unit decontamination crew conducts vehicle wash-down in the unit area of operations (AO). For operational decontamination, the vehicle wash-down crew may use 100 to 150 gallons of hot, soapy water on each vehicle to wash off gross contamination. For combat vehicles like the M1 series of armored fighting vehicles, 200 gallons or more of water may be required per vehicle. Each 100 gallons of water provides a two- to three-minute wash.¹

More gallons are required (see Table 4) for detailed equipment decontamination. For troop decontamination beyond mission-oriented protective posture exchange, it takes 250 gallons of water per 10 Soldiers or 25 gallons per person.²

Class II: clothing and equipment

Regular inventories conducted at unit supply level are the key to successful Class II (CLII) forecasting. This avoids a stock-out of critical office supplies, clothing and equipment. Soldiers deploy with an initial load of clothing and equipment and are fielded theater-specific equipment during the unit's reception, staging, onward movement and integration into theater. CLII is difficult to forecast in relation to phases of the maneuver operation because each echelon consumes supplies at a different rate. Planners should be aware of the need for CLII and work in close coordination with the BSB's

supply-support activity (SSA) to determine transportation requirements CLII requests need.

Class III petroleum, oil and lubricants

Class III (CLIII) can affect the success or failure of any unit conducting combat operations. CLIII is categorized into bulk fuel (CLIII (B)) – including gasoline, diesel and aviation fuel – and packaged (CLIII (P)) – including greases, oils and lubricants.

- **Bulk CLIII.** Bulk CLIII is complex to forecast due to the large variety of vehicle types, consumption rates, varied terrain and hours of use. Determining bulk fuel-carrying capability is the same as bulk water: multiply available assets by their capacity amounts. Remember, though: never fill storage assets to maximum capacity; consider expansion to avoid damage to personnel and equipment. Determining CLIII requirements requires detailed analysis of the maneuver concept of the operation. Forecasters determine estimated fuel usage for each vehicle using the following formula: number of vehicles x gallons per hour consumption x time in operation.

CLIII bulk example: An armor company comprised of 14 M2 Bradley Fighting Vehicles (BFVs) is conducting a one-day operation on cross-country terrain. During a 24-hour period, the unit expects to be at a tactical idle for 16 hours and traverse cross-country for eight hours. Expected fuel consumption at idle is 14 x 1.4 x 16 = 314 gallons. Expected fuel consumption during cross-country operations is 14 x 18

x 8 = 2,016 gallons. Total estimated fuel consumption for the operation is 2,330 gallons.

Use this process for each vehicle type within a unit. While detailed, it provides an accurate estimate of CLIII (B) consumption that helps identify and mitigate shortfalls to ensure operational success. As with other classes of supply, adjust amounts based on historical data and actual consumption.

Calculate aviation fuel requirements the same as ground equipment. The number of aircraft multiplied by air hours allows planners to compute the estimated fuel needed.

- **Packaged CLIII.** Packaged CLIII forecasting requires coordination with supporting maintenance elements. There is currently no single source manual for CLIII (P) requirements by vehicle type. Moreover, unit standard operating procedures (SOPs) usually do not address the CLIII (P) basic loads required by vehicle platform. Unfortunately, poor planning for packaged lubricants has detrimental effects. Commonly seen problems at NTC are engines low on oil or tracks that can't be adjusted due to the lack of "grease, artillery automotive." Most units deploy with 15-30 days of packaged lubricants on hand as part of their stockagelisting. Environmental considerations such as dust, snow and rain affects the consumption rate of CLIII (P). Therefore, sustainers must also analyze transportation trends, regarding how long items take to arrive at the SSA to ensure timely replenishment occurs.

Equipment	M12A1 PDDA rinse		M17 LSD rinse	
	Gallons applied	Minutes applied	Gallons applied	Minutes applied
M1 tank	325	12	57	14
M2 BFV	325	12	57	14
M113 APC	203	9	38	10
M109A Paladin	325	12	57	14
HEMTT	180	8	30	12
5-ton truck	158	7	42	11
Humvee	90	4	23	6
Note: The rinse is done with the spray wand for the M17.				

Table 4. Detailed equipment decontamination planning factors for a rinse station.

Fuel planning factors							
	Bulk tanks	M1062 7.5K	M969 5K	M978 HEMTT	500-gallon blivot	TPU pods	MFS
Usable capacity		7,425	4,800	2,250	500	500	2,500
Bulk-fill rate (gpm)	600	300	600	300	125	125	
Self-load rate (gpm)	600	300	300	300			
Retail flow per nozzle	50		60	50		25	
Number of nozzles	2		2	2	1	2	

Table 5. Bulk fuel-storage capability.

Vehicle	Idle	Cross-country	Road
M1	17.3	56.6	44.6
M2/3	1.4	18.0	8.6
M113	1.0	10.5	8.9
M88	2.0	42.0	31.0
M9 ACE	1.4	12.6	9.3
M109A6	2.2	16.0	11.8
MLRS	1.3	15.0	8.6

Table 6. Vehicle consumption rates in gallons per hour.

Class IV: construction material

Class IV (CLIV) planning is conducted when preparing for a phased defensive operation and for sustained unit defense. Every echelon participates in materials planning and resourcing. Division echelons determine each module configuration for their subordinate units. Each module will dictate the National Stock Number, nomenclature, quantity and unit of issue for a given defensive combat-configured load (CCL). These modules are found in the division operations order's Annex G (engineering), Appendix 3 (general engineering), Tab C (engineer-specific CCLs).

Logistics planners must coordinate closely with the brigade engineer planner to forecast CLIV at the brigade-and-below level. The brigade engineer planner determines the number of CCLs based on the brigade's defensive operation. He or she tasks the number of modules needed for each battalion and where in the brigade's AO to initially place the CCLs. The CCLs are built

on container roll-in/roll-out platforms or on flat racks using a brigade-tasked detail supervised by the brigade engineer battalion. Echelons-above-brigade units can build the CCLs if multiple brigades are operating within the same area.

The BSB support operations officer coordinates transportation of CCLs to supported units based on the brigade engineer planner's tasking. Each CCL should arrive at the supporting FSC no later than 48 hours before defensive operations start to give maneuver units time to establish and improve defensive positions.

Aside from planning phased defensive operations, CLIV helps sustain unit defense for force protection. Unfortunately, units training at NTC consistently fail to plan adequate CLIV resources when building a triple-strand concertina wire defense. This happens because units lack understanding of CLIV resources needed for defense.

Planning for a sustained unit defense is a collaborative effort between the battalion executive officer and the S-4

(logistics) officer when three primary defensive methods are integrated:

- The first method is the use of engineer assets to construct berms and hasty fighting positions. This is the preferred method due to the increased protection, lower use of unit resources and decreased transportation assets.
- The second method is the construction of triple-strand concertina wire around the unit's perimeter (Table 8). Planners should ensure they request adequate materials.³
- The third method is a combination of the previous two that integrates each strength against the terrain defended.

Class V: ammunition

Forecast ammunition requirements through the Total Ammunition Management Information System (TAMIS) operated by the brigade ammunition office (BAO). Weapon density, number of personnel and specific mission requirements determine the requirement – unit basic loads (UBL) – that can vary with each operation. There is

no “one size fits all” UBL for an entire operation. Each combat phase may require unique ammunition. For example, a unit may require high-explosive grenades for an attack and need Field Artillery Scatterable Munitions for a defense. Planners should consider controlled supply rates by referencing the brigade operations order, Annex F, Paragraph 4, Section 3 (supply).

The BAO, brigade master gunner and brigade S-4 determine the UBLs and validate them through TAMIS. Then, the ammunition supply point issues the UBLs as mission-configured loads, which are reconfigured into combat loads for each subordinate unit.

Ammunition planners reference the Conventional Ammunition Packaging and Unit Load Data Index to determine transportation requirements for issuing to units; they analyze the compatibility, weight and cubic dimensions of each set of ammunition. This determines the number of CCLs for each subordinate unit. The planning factor for UBLs is three basic loads for a brigade-size element: one for the unit with the weapon system (company level), one for the combat-trains command post at the FSC (battalion level), and one stored at the ammunition-transfer holding point (ATHP) (brigade level). This enables the smooth issue of ammunition as a phase progresses. Sustainers need to account for the basic loads and should be able to transport all combat loads with organic assets.⁴

The final forecasting consideration is how to replenish ammunition beyond the first two basic loads. Unit replenishment from the ATHP to battalion

units happens through expenditure reports. The exact process for these report is determined by unit SOPs. However, expenditure reports are the only method to bring unit UBLs back to 100 percent after each combat engagement. Companies should incorporate an expenditure-reporting process through their platoon sergeants to ensure accurate replenishment. Battalion S-4s must ensure each logistics-status report captures the amount of expended ammunition. The expenditure reports allow the BAO time to request more ammunition (as needed) prior to subordinate units turning in their requests. The expenditure report itself is not an ammunition request; unit S-4s must still request replenishment on a Department of the Army Form 581, “Request for Issue and Turn-In of Ammunition.”

Class VIII: medical material

Medical elements typically deploy with three days of Class VIII (CLVIII) in support of their battalion. When forecasting CLVIII requirements for medical operations, planners should consider the mission, location, projected casualty rates and available medical assets. Determining multiple courses of action and methods of execution will ensure accessibility of supplies. It also ensures the frequency of their delivery. Also, understanding projected battle casualty rates is crucial when forecasting unit requirements. Other considerations, such as disease and accidents, should also be included in estimates.

Class IX: repair parts and components

Class IX (CLIX) is extremely difficult to forecast during an operation due to the unknowns involved with equipment wear and tear. Planners must work in coordination with their SSA and maintenance-support elements to predict the type and quantity of CLIX needed for an operation. The time of year and operational environment will also factor into CLIX requirements.

For example, winter operations require more batteries, whereas mountainous terrain requires more tires. Units deploy with the SSA’s authorized stockage list that contains common-use items for the unit. Coordination with the warrant-officer SSA technician will help determine the transportation assets needed to transport CLIX to subordinate units.

Transportation

Planners should interconnect transportation requirements to every class of supply they forecast because transportation capabilities and requirements must be accurate for support units. When plans forecast too few capabilities/requirements, it forces multiple trips to distribute supplies. Planning too many capabilities/requirements is just as bad: it increases CLIII and CLIX supplies required and results in a backhaul of large quantities of supply, wasted manhours and the commitment of unneeded logistics assets.

With that in mind, planners should forecast transportation based on two things: the analysis of how many pallets needed per class of supply, and the

Aircraft	AH-64A	AH-64D	OH-58D	CH-47D	UH-60L
Max speed (knots)	170	150	120	170	193
Cruise speed (knots)	120	120	90	120	120
Endurance (hours)	2.3	2.3	2.0	2.5	2.5
Range (miles/kilometers)	260/430	260/430	180/300	345/575	300/500
Passenger seats	N/A	N/A	1	33	11
Litter evacuation	N/A	N/A	N/A	24	6
Ambulatory evacuation	N/A	N/A	N/A	31	7

Table 7. Aviation planning factors.

Entanglement type	Pickets			Reels of barbed wire ¹	Number of GPB-TO	Number of concertinas	Staples	Manhours to erect ²	Kg of materials per linear meter of entanglement ³
	Long	Medium	Short						
Double apron, 4 and 2 pace	100		200	15-16 (19) ⁴				71	4.6 (3.5) ⁵
Double apron, 6 and 3 pace	66		132	15-17 (18) ⁴				59	3.6 (2.6) ⁵
High wire (less guy wires)	198			19-21 (24) ⁴				95	5.3 (4.0) ⁵
Low wires, 4 and 2 pace		100	200	11				59	3.6 (2.8) ⁵
4-strand cattle fence	100		2 ⁷	6-7 (7) ⁴				24	2.2 (1.8) ⁵
Triple-standard concertina	160		4 ⁸	3 (4) ⁴		59	317	30	8.2 (7.3) ⁵
GPBTO					(8) ⁶			(1) ⁶	2.7
¹ The lower number of reels applies when you use U-shaped pickets; the higher number applies if you use wooden pickets. If there is only one number, use it for both pickets. ² Manhours are based on the use of driven pickets. Multiply these figures by 0.67 if experienced troops are being used, and by 1.5 for night work. ³ Average weight when you use any-issue metal pickets (1 truckload = 2,268 kilograms). ⁴ Number of barbed-tape carrying cases required if barbed tape is used in place of barbed wire. ⁵ Kilograms of material required per linear meter of entanglement if barbed tape is used in place of barbed wire and barbed-tape concertina is used in place of standard barbed-tape wire concertina. ⁶ Based on vehicular emplaced obstacles placed in triple belts. ⁷ Only two required for one belt. ⁸ Only four required for one belt.									

Table 8. Requirements for 300-meter sections of various wire obstacles.

determination of time needed to deliver supplies to subordinate units.

Proper transportation forecasting relies on understanding how many assets will fit on a vehicle. For classes of supply, warehouse pallets are the common transportation-planning factor because all physical equipment is bound to pallets and the endstate for most requirements is the number of pallets needed for transportation. Planners must factor in the required passenger seats and the available litter and ambulatory spots when forecasting personnel transportation. Table 9 indicates standard planning factors.

Supplies bound on pallets can sometimes be double-stacked, effectively doubling the available space. Planners should be cautious when doubling loose items, as the top stack will lose integrity in tough terrain.

Transportation time/distance factors are important to forecast because they allow synchronization of efforts at echelon by dictating movement times and the total time on the road. Convoy times can be determined by dividing the distance traveled by the speed limit (time = distance/speed). Leaders must also take into account “on-station” time, the time needed to upload and download equipment. This analysis helps leaders plan the total time needed for a convoy and helps subordinate units synchronize their efforts for maneuver units.

Fighter management is the final planning factor for transportation assets. The distribution company and FSC distribution platoon manage transportation assets to ensure vehicles and personnel are readily available for convoy operations. Units that place all assets into operation at one time assume

increased risk, preventing allocation of resources for emergencies that arise. If missions allow, units should strive to place one third of their equipment and personnel in a stand-down status at any time to conduct maintenance, administrative and rest operations.

Conclusion

Accurately forecasting logistics requirements is a crucial yet often overlooked process in a sustainment planner’s duties.

Unfortunately, relying on a default push of supplies results in wasted man-hours, increases risk to Soldiers and commits unneeded logistic assets. However, proper forecasting and mission analysis conducted at each phase of the operation provides units the ability to provide their commanders a logistics estimate that will sustain the force through any operation. Defining

	Number of warehouse pallets	Number of 463Ls pallets	Minutes to up-load / down-load	Maximum personnel	Maximum litter	Maximum ambulatory
20' container	16		10			
40' container	32		10			
M872 trailer	18		10	30		
M871 trailer	12	4	8	50		
Supply van	12	3	8			
463L pallet	4					
PLS flat rack	10	2	2			
LMTV	6		4	16		
MTV	8		6	18		
HEMTT	8		6			
Bus				50		
UH-60 / HH-60 Blackhawk				12	6	1
CH-47 Chinook	12	3		33	8	19
UH-72 Lakota					2	8
CH-46 (Sea Knight)					6	15
CH-53 (Sea Stallion)					8	19
V-22 (Osprey)					12	24
Sherpa	4			30	24	30
C-130 (Hercules)		6		90	50	27
C-141 (Starlifter)		13		200	48	38
C-5 (Galaxy)		36		73		70
C-17 (Globe-master)		18		54	36	102
C-21					1	3

Table 9. Pallet and time factors per major transportation asset.

unit capabilities, shortfalls and mitigations through detailed analysis and forecasting ultimately shapes the sustainment battlefield, expanding the combat commander's operational reach, freedom of action and operational endurance.

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Maneuver Self-Study Program

Afghanistan: <http://www.benning.army.mil/MSSP/Afghanistan/>

Armor and Cavalry Heritage: <http://www.benning.army.mil/MSSP/Armor%20and%20Cavalry%20Heritage>

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1/101st (Bastogne) Lessons-Learned from Joint Readiness Training Center Rotation 16-06

by MAJ Rick Montcalm and
MAJ Joseph Mickley

The 1st Brigade Combat Team, 101st Airborne Division (Air Assault) “Bastogne,” completed its first decisive-action (DA) Joint Readiness Training Center (JRTC) rotation in April after more than a decade’s absence – a significant departure from the many counter-insurgency (COIN)-focused mission-readiness exercises to which it had become accustomed.

JRTC presented a genuine hybrid threat that combined everything from enemy network-compromise capabilities to threat aviation to chemical attacks. After years of training tailored to fight an insurgency in stability-focused scenarios in support of repeat deployments, our ability to fight a hybrid threat like the one we faced at JRTC had largely atrophied. In this article we attempt to group our lessons-learned into broad themes that cross over several, if not all, warfighting functions. While not a comprehensive list – and separate articles could be written about each – the following were chosen because they drive the brigade’s training as it moves forward.

Shifting training paradigm

The positive side of the repeat deployments of the last 13 years is the warfighting experience of our noncommissioned officers through field-grade officers. This is a group accustomed to dealing with uncertainty, evolving threats and partnered operations. The downside is that the experience is limited, to a great extent, to the capabilities and limitations of the threats in Iraq and Afghanistan. Operations in those two countries don’t come close to the hybrid threats we faced from the “Arianan threat” at JRTC.

A perfect example of the early learning curve was a report from a combat patrol in which a leader said, “The enemy has helicopters that keep shooting at us. What do we do?” The guidance from the brigade tactical-operations center (TOC): “You have .50-caliber machineguns, Javelins and

[tube-launched, optically tracked, wire-guided missiles]. Shoot back.”

Seems simple enough, but those aren’t threats we’ve replicated in collective training in quite some time. We lack the general experiences of Soldiers from previous generations who trained AirLand Battle and understood the nuances of planning for and dealing with a wider spectrum of enemy capabilities.

The Arianan threat covered the full spectrum of capabilities from conventional armor and infantry units to special-purpose forces; criminal/insurgent threats; chemical, biological, radiological and nuclear capabilities; aviation and unmanned aerial systems; and even “red” news media. Where the brigade struggled was not in engagements with traditional capabilities – we are adept at combating any ground threat in an offensive engagement. Our tactical difficulties and pre-deployment training shortfalls were highlighted in the unexpected threats. For example, our experience fully prepared us to deal with an isolated improvised-explosive device followed by a recovery mission, but it did not prepare us for an enemy obstacle belt with

integrated fires and an assault force that regularly inflicted mass casualties.

In the end, changing two approaches allowed us to regain the initiative. First, shifting the mental model from COIN to DA started with reinforcing the basics and becoming comfortable with discomfort. Gone are the days of basing operations from a forward operating base with showers, cots and laundry facilities. Soldiers and leaders worked through very deliberate load plans and packing lists to ensure they were equipped for multi-day operations at extended ranges from their battalion or squadron headquarters. Going back to doctrine and employing battle drills produced more shared understanding of how to combat a near-peer threat.

Second, we identified and exploited the opposing force’s operational patterns and preferences. Since weather denied us the use of aircraft for most of the rotation, and roads quickly proved untenable, we walked. Troop C, 1st Battalion, 32nd Cavalry (the light reconnaissance troop) logged 90 kilometers in 10 days. During the final assault, an infantry battalion walked 34 kilometers from the eastern boundary of the



Figure 1. Revised SOPs coming out of the Leaders Training Program in March.

training area to the objective, bypassing mechanized threats enroute to the objective. During our final after action-review (AAR), the opfor commander conceded that our movement of large formations away from roads limited his ability to identify and disrupt our operations, ultimately allowing us to seize our final objective ahead of schedule.

Empowering commander

If the purpose of the brigade staff is to resource subordinate operations, synchronize operations and enable the brigade commander to make decisions, we fell short in developing a standard set of operational products that could achieve that goal.

Early on, the brigade staff produced a myriad of products across the war-fighting functions that made decision-making and synchronization difficult. The increasing number of products resulted in greater likelihood of discrepancies in timing and prioritization. Toward the end of the rotation, we narrowed production to just a few products: standard map with common graphics, synch matrix, execution checklist, target execution list and a decision-support matrix/template. With these five products, the brigade commander could manage the fight, and the reduction in outputs allowed the staff to more effectively focus.

Getting to this point required shared understanding between our commander and the staff's ability to produce products that enabled his understanding and visualization of the fight in front of us. Shared understanding and clear commander's intent are essential to effective synchronization; omitting either allows the brigade staff to lose focus.

Related to this was the overall staff-planning process training that occurred simultaneously with collective training at battalion level. As part of the brigade headquarters' training progression, the brigade staff completed one full iteration of the tactical military decision-making process focused on refining the standard operating procedure (SOP), including all associated briefs and products. From that initial training, the planning SOP (PSOP) and the TOC SOP were updated and redis-

tributed across the staff.

During the JRTC Leader Training Program in March, the brigade staff once again validated the SOPs and further refined briefs, processes and products. While we continued to adjust throughout the actual rotation, we invested time up front to determine how to present information to the brigade; this was vital to the early planning process.

In the four months before the rotation, the brigade and battalion staffs developed and adopted a more comprehensive battle rhythm that was nested with the division headquarters. The revamped version reduced the overall number of meetings, but it provided greater clarity on expected inputs and outcomes from the remaining meetings. As we developed the tactical battle rhythm for JRTC, we adopted a similar approach. First, the battle rhythm had to include a complete daily targeting and planning process that culminated in a nightly fragmentary order. The second requirement, like our home-station battle rhythm, was that it had to be nested with and support the higher headquarters battle rhythm. While we achieved the format and deployed to JRTC with it, we struggled with enforcement, which ultimately reduced the positive impact that such predictability could have provided.

Leveraging all capabilities

During reception, staging, onward movement and integration (RSOI), the brigade staff employed a number of detailed tracking systems to ensure we accounted for the location of all personnel and equipment, where the brigade was in terms of completing RSOI requirements, and the operational status of every possible system as we built combat power. While we had a number of detailed "bubble charts" that captured combat power and readiness snapshots in time, we never transitioned to communicating what that progress meant in terms of capabilities and combat power.

For instance, within three days of consolidating all TOCs, our charts indicated that the full suite of communications systems were fully linked and communicating. What the charts didn't communicate was that operators at

the battalion and squadron level didn't necessarily understand how to employ the system.

Where this shortcoming (perhaps) hurt the worst was upon immediate deployment into "the box" during the initial attack; we failed to communicate employable combat power. We could account for all combat losses, but the battle captains struggled to translate raw numbers into remaining platoons or companies the brigade commander had available. Not until after the mid-rotation AAR did we develop a functional system that leveraged liaison officers from the subordinate units to track capabilities in real time and then brief them to the brigade commander at each evening battle-update brief. This venue ensured widest dissemination and shared understanding across the board, and enabled the brigade commander to make task-organization changes as needed.

Our difficulties in synchronizing and sustaining the fight go back to the importance of the battle rhythm. During RSOI, when all units were consolidated at the intermediate-staging base (ISB), face-to-face meetings were easily conducted and effective. However, once the brigade deployed from the ISB and began dispersed operations across the battlefield, operations-synchronization and logistics-synchronization meetings became infrequent, poorly attended and only marginally effective. Combined with incomplete reports and poor enforcement of reporting requirements, the resulting effect was that most of the resupply operations were done with minimal notice when units were "black" on a certain class of supply.

Perhaps the most important battle rhythm event, the opsynch, suffered the same difficulties as the logsynch. This often resulted in disjointed operations, poor prioritization of enabling assets and missed opportunities to gain access to division-level assets. Two changes helped us correct course, albeit toward the end of the rotation. First, we enforced the battle-rhythm reporting schedule and distributed standard report formats to ensure we received the right information at the right time in the right format. Second, we shifted away from exclusively

relying on subordinate TOCs to submit reports and leveraged the liaison officers (LNO) who were present on the current-operations floor 24 hours per day. This not only freed the battle captains, but it also ensured that LNOs better understood their unit's needs.

Way ahead

As a light-infantry brigade, we shoot and maneuver on the battlefield effectively – this is well within our comfort zone. Where we struggle is leveraging all communication platforms from Capabilities Set (CS) 14 to coordinate and synchronize operations. Moving forward, our TOCSOP and tactical-command-post (TAC) SOP will more clearly delineate which platforms are used for which transmissions and under what circumstances. While we adhere well to standard radio protocol, we have not yet effectively captured standards. In addition to this, we have built new systems to maintain and track digital skill proficiency. The nuances of our mission-command systems require continual sustainment training to maintain individual proficiency.

The collective tasks required to establish and maintain effective mission command are just as important. To this point, the brigade has developed a multi-echelon approach to layering command-post exercises into home-station training.

The benefits of more realistic and rigorous training depend largely on the threat force against which our formations fight. While we can't fully replicate the opfor from JRTC, we can replicate some of the more challenging capabilities. Rather than having a specifically identified opfor, pitting formations against one another in

force-on-force operations provides a thinking enemy with identical capabilities. It also allows leaders at all levels to exercise subordinate leader development from squad through company level.

As the brigade moves farther away from our JRTC DA training environment (DATE) rotation, it remains imperative to effectively integrate our lessons-learned through refinement of our SOPs. We have developed a deliberate plan to codify the most challenging lessons-learned into the newly formed brigade TACSOP. Time management is often our own worst enemy, and nowhere is this more readily apparent than at JRTC. One benefit from a sound SOP is that it will save time as units are permitted to execute an operation freely and stay within the commander's intent by following an agreed-upon standard for the operation.

The condensed timelines at JRTC stress the unit's ability to develop succinct plans that are synchronized across warfighting functions. We are moving forward to codify particular operations (such as a combined-arms breach) and distinct DATE battle drills (like "react to enemy air"). This process will allow us to gain efficiency as an organization and better prepare us to face a hybrid threat.

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Heavy Weapons in a Light Airborne World: a Delta Company in Decisive-Action Combined Arms

by CPT Michael F.R. Freeman

Weapons companies have been employed incorrectly for many years. They have the most firepower within an infantry battalion and the most flexibility, but they are often delegated to stationary security positions such as traffic-control points or base security.

With that in mind, you can predict that a weapons company will not be employed to its full potential as it heads into a training rotation at a combat training center. The various weapon systems and vehicle platforms a weapons company uses are seen as a burden rather than as the advantage they provide. This perceived limitation of a smaller-sized infantry company often prevents weapons companies from

being employed in an appropriate role. However, weapons companies are critical to the battalion because of the way they can be used, the type of training they can conduct and their unique setup.

Unique setup

The unique setup of a weapons company does a few things: 1) it provides an excellent leader-to-trooper ratio; 2) it allows the company to operate alone or task-organized to another element; and 3) it has the advantage of "the arms-room concept." The arms-room concept means the sections have the capability to mount M2 (.50 caliber machinegun),

M240B (general-purpose, medium machinegun), MK19 (40mm grenade machinegun) and/or the Improved Target Acquisition System (ITAS). Typically, each platoon is employed in the hunter/killer methodology where two vehicles have an ITAS and an M240B, while the other two vehicles have M2s.

The leadership ratio and task-organization within a weapons company, or Delta Company, is a fundamental



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reason for its success. The leadership-to-Soldier ratio advantage generates options for the commander, increases flexibility of the assigned platoon and provides tactical agility to the commander. Each platoon has a platoon leader, platoon sergeant, section sergeant, squad leader (sergeant) and many senior and experienced specialists. Each platoon is comprised of about 16 to 18 paratroopers when at 100-percent strength. In contrast, a rifle company has roughly four staff sergeants and eight sergeants per platoon and around 26-30 privates through specialists.

Another advantage of a weapons company's unique setup is the ability it provides a commander to operate independently or task-organized to another element. Weapons companies may not have the quantity of troopers of a rifle company, but they are still able to take action on smaller objectives without the support of another company. Using higher-echelon assets such as battalion mortars or attack aviation, a weapons company can function in the same way as a rifle company.

Another employment method for a weapons company is found in its habitual relationships with the rifle companies within the battalion. Each platoon is aligned to a rifle company, while 4th Platoon remains free to act as the quick-reaction force, escort the forward-support company or provide a personal-security detail as needed. Having such relationships greatly increases the shared understanding and facilitates the development of tactics, techniques and procedures. Also, each relationship is mutually beneficial. A rifle company benefits by gaining the additional firepower of anti-vehicle/anti-tank weapon systems. Support companies are able to focus on resupply by allowing the weapons company to secure the resupply convoy. A headquarters company gains a rapid response and flexible maneuver force to reinforce success or exploit weaknesses with a weapons-company platoon attached.

With many varied employment options available to commanders, they must tailor the loadout of the weapons company to the mission. Each platoon is



Figure 1. Company D, 2-501 PIR, vehicles escort a logistics element to its destination during Joint Multinational Readiness Center (JMRC) Rotation 15-0, Grafenwohr, Germany. (Photo by SSG Javier O. Orona)



Figure 2. SPC Blake L. Pirkel practices with the M240b as Company D paratroopers execute rehearsals prior to airborne operations during JMRC Rotation 15-06 in Baumholder, Germany. (Photo by SSG Javier O. Orona)

broken down into two sections that employ the "arms-room concept" as armament. While a weapons company's unique setup is important, it is not the only thing that makes it successful.

Training

With such a wide variety of roles, training a weapons company can be challenging. You have to train your Soldier's individual skills plus train them to operate mounted and dismounted

as a squad, platoon and company. Each of these areas can be daunting in their own way but, with the right approach and flexible planning, they can be accomplished.

During the past year, Delta Company, 2nd Battalion, 501st Parachute Infantry Regiment (PIR), participated in two major training rotations: a Joint Readiness Training Center (JRTC) rotation in the early spring and a training rotation



Figure 3. SPC Robert F. Mooney and a fellow paratrooper from Company D, 2-501 PIR, reload a weapon on the MK19 range while engaging targets during a platoon live-fire exercise on Observation Post 13, Fort Bragg, NC. (Photo by 1SG Jose M. Trevino)



Figure 4. 1LT Corey L. Greene discusses with 1LT Mike F. Johnson the route Greene's platoon will take during an upcoming operation during Operation Swift Response 2015 in Germany. (Photo by SSG Javier O. Orona)

in Europe. Delta Company's focus during preparation for the initial JRTC rotation was training gunners, qualifying crews and sections and supporting rifle-company platoon live fires from mounted platforms. The gunners became lethally accurate; sections within the platoons did an excellent job of communicating among crews and with the rifle company; and command-and-control on the move became second nature. Unfortunately, there was

friction during actions at the halt or when deciding what to do once there was no longer a 40-Soldier dismounted platoon around the vehicles.

Each vehicle has a driver, gunner, troop commander and one to two dismounts. Some platoons have more than others, but (across the company) that was the task-organization Delta Company, 2-501 PIR, had when it went to JRTC. While at JRTC, Delta Company

executed many missions in as many ways as possible (platoons attached to rifle companies, weapons-company organic, in conjunction with brigade and battalion assets, etc.). Initially, in defense around the forward landing strip, the company was able to repel the enemy's advances. The weapons company ultimately destroyed dismounted, vehicle and armored enemies within the engagement area. The mission then transitioned to offense with the company moving to assault enemy forces in urban areas. During this phase, the company operated within a battalion task force, providing security to the ground-assault convoy. Then, it transitioned to support the assault force upon arrival at the assembly area.

In both phases of the rotation (offense and defense), Delta Company performed well with a few key learning points for each. When operating independently, a focus point for post-rotation training was the use of dismounted tactics, including both offense and defense.

Upon return, Delta Company, 2-501st PIR, transitioned to dismounted tactics, focusing mainly on platoon attack procedures and tasks like entering a building and clearing a room. Admittedly, there was risk assumed by not focusing on as many machinegun ranges or mounted exercises given the short training window before our Europe training rotation. The paratroopers practiced reflexive fire, executed squad and platoon attacks, and executed team-level "enter building, clear room" live-fire training in a shoot-house. This enabled the paratroopers to really learn how to operate dismounted and provided the battalion the capability to use of the weapons company as another rifle company for smaller objectives or missions (i.e., checkpoint security, dismounted reconnaissance of objectives and tactical-operations center locations, and quick-reaction force from a rotary-wing platform).

There were struggles, at least initially. Simple tasks such as mounted land navigation, frequency-modulation communication and logistics status took more time to plan, execute properly, consolidate and reorganize than

we anticipated. Ultimately, Delta Company was able to overcome these obstacles. However, those small setbacks can add up and cause undue stress while detracting from a mission.

What I think is the winning formula in most cases is to train both dismounted and mounted tactics simultaneously. While it may be more efficient or simple to focus on one or the other, it will come at the cost of atrophy in skills not focused on. Working with the battalion operations officer and commander on the importance of being able to train both methodologies will greatly improve the readiness of the company and battalion. Of course, all this cannot be accomplished if you are

unable to balance training with readiness or with your paratroopers and equipment.

Using weapons company

A Delta Company commander needs to be prepared for offensive, defensive and stability operations. As previously discussed, how a weapons company is employed in each of those components of decisive action can vary, but in the offense is where weapons companies can be most destructive. Defensively, a Delta Company can provide the battalion with strong-points to plan and transition to the offense again.

While in the offense, the weapons

company provide a battalion commander a number of options. If the objective is in an urban area, the weapons company can isolate the target area while the rifle companies clear through urban structures. Given a weapons company's four platoons, this mission only requires two to three platoons with 4th Platoon as the battalion reserve. With so many different weapon systems available, understanding the tactical task from the battalion commander and what his endstate is provides the company commander with options to employ his platoons.

For example, the commander can task a platoon to isolate an objective by using the M2, M240B and MK19s to engage forces attempting to retrograde or provide reinforcements. Or, once the objective has been seized, a platoon can reinforce the battalion with the tube-launched, optically tracked, wire-guided ITAS to destroy any enemy armored threat.

In the defense, a weapons company can perform a screen in front of the rifle companies to provide defense in-depth; be divided up among the rifle companies to bolster defenses; concentrate on engagement areas to maximize destruction in a given area; or provide a mobile defense. Having an understanding of the battalion's plan of how and where to destroy the enemy will dictate where the forces are arrayed.

There are advantages and disadvantages to any course of action, mobile defense, defense-in-depth or strong-pointing, but the battalion commander and operations officer will help determine the mission. The ultimate takeaway when performing the defense is that the company is defending to transition to the offense. Delta Company commanders need to keep this in mind when placing the company trains and working with the first sergeant on the resupply plan to stay mobile and agile.

As discussed previously, it is common for a weapons company to attach a platoon to another company. This platoon greatly enhances a rifle company's combat power by being able to provide a base of fire to maneuver on an objective; isolate enemy forces in an urban area; destroy enemy vehicle threats;



Figure 5. Fourth Platoon executes a mission briefing on the hood of a truck before moving out during Operation Swift Response 2015 in Germany. (Photo by SSG Javier O. Orona)



Figure 6. Delta Company serves in overwatch of a chemical reconnaissance team from 127th Engineer Battalion during Operation Swift Response 2015 in Germany. (Photo by SSG Javier O. Orona)



Figure 7. PFC Steven S. Senatus engages targets down-range with his M240b during a platoon live-fire exercise at West McKeithan's Pond, Fort Bragg, NC. (Photo by 1SG Jose M. Trevino)



Figure 8. CPT Michael F.R. Freeman talks to paratroopers in his company — SFC Robert D. Lovell, SSG Jonathan S. Waterbury and SGT Jose M. Tellez —during Operation Swift Response 2015 in Germany. (Photo by SSG Javier O. Orona)

and escort casualties or enemy prisoners of war on or off an objective, as well as many other functions. Forming that habitual relationship with a rifle company will alleviate many of the typical friction points experienced during joint operations (communications, resupply, employment of the weapons-company platoon, etc.).

dropped. This will give that the alpha echelon the initial maneuver and firepower advantage over an enemy force. The bravo echelon increases those advantages until further follow-on forces can arrive.

The way a Delta Company is employed as a weapons company is as diverse as

The mission of 82nd Airborne Division is to “always be prepared to move without notice to any place in the world by air and/or airborne assault, and to fight immediately on arrival” (82nd Airborne Division Standing Operations Procedure Edition IX). In this scenario, the weapons company could have a portion of the weapons company attached to a rifle company for the duration of the time the unit is on a no-notice deployment status. This leaves the rest of the company to be bravo-echelon vehicles or vehicles that will arrive by air-land as opposed to air-drop when the airfield has been seized. During the airborne operation, the portion attached to that rifle company will have vehicles that will be air-

the commander is creative – given the environment. The weapons company has the maneuverability to move around the battlefield and possesses the firepower to destroy most enemies it encounters with little resistance.

Way ahead

In summary, weapons companies are absolutely essential to the battalion because of their firepower, capability set, the personnel within the company and the roles they perform. Another plus for weapons companies is the ability to maintain their organic equipment. Through proper focus on the commander's intent and emphasizing the right training points, weapons companies can be successful in any theater. Whether deployed or at home station, weapons companies are flexible and agile enough to perform any mission.

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Troop-Level Mission Command: a Troop Commander's Approach

by MAJ Amos C. Fox

Military theorist and retired Army officer Robert Leonhard wrote, "The U.S. Army must stress education of its officer corps. ... They (the officer corps) must groom their ranks to produce bold, well-read, dashing battlefield leaders, adept at outthinking their foes."¹

An effective mission-command system is critical to the achievement of these effects. Furthermore, the responsibility for developing an effective mission-command network at the troop level rests foremost on the troop commander. As such, a troop commander must not depend on higher headquarters, the staff or the institutional Army to set the conditions for an effective mission-command structure to develop and proliferate within the unit formation.

I will describe one approach to develop reciprocal trust through a comprehensive platoon-leader development program. Although the approach described is focused on development of platoon leaders, it can also be applied by junior leaders to develop their subordinates as well.

Understanding mission command

The Army defines mission command as "[t]he exercise of authority and direction by the commander, using mission orders to enable disciplined initiative within the commander's intent to empower agile and adaptive leaders in the conduct of unified land operations."² Furthermore, the Army states, "Mission command calls for leaders with the ability to build a collaborative environment, the commitment to develop subordinates, the courage to trust

and confidence to delegate, the patience to overcome adversity and the restraint to allow lower echelons to develop the situation."³ Reciprocated trust is the most fundamental element that binds mission command because "[o]ne-way trust is not beneficial to the individual or the group."⁴ Troop commanders must develop mutual trust within their formation to create an environment in which disciplined initiative, empowered by the commander's intent, can thrive.

Troop commanders must approach developing trust and creating an effective culture of mission command no differently than the execution of any other mission. Troop commanders must remember that "[i]n carrying out a mission, the promulgation of the order represents not more than 10 percent of your responsibility. The remaining 90 percent consists in assuring by means of personal supervision on the ground, by yourself and your staff, proper and vigorous execution."⁵

Training is the apex at which reciprocal trust is developed between leaders and subordinates. Commanders who personally train their platoon leaders develop trust in those individuals. At the same time, commanders who take a hands-on approach to the growth of their platoon leaders engender trust in those leaders because they see that their supervisor cares about their development and growth, both personally and professionally.

My experience found a platoon-leader integration program to be a very useful way to develop an effective mission-command culture. The approach operated along five lines of effort (LoE):

- Administrative;
- Command supply discipline;
- Training management;
- Operations; and
- Maintenance.

Each LoE was linked to the next, and they work in conjunction with one another to establish a solid foundation of



Figure 1. Platoon Leader Integration Program.

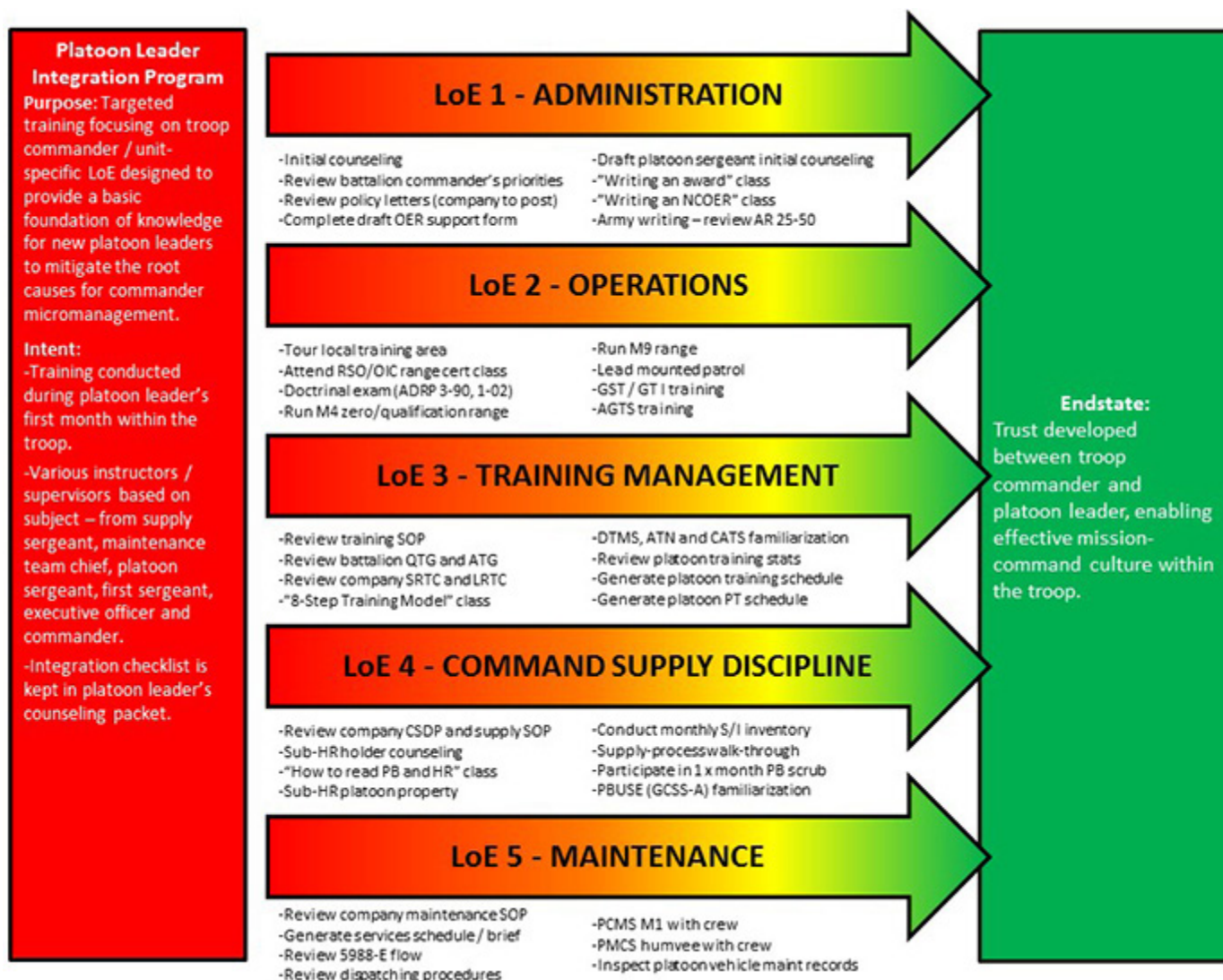


Figure 2. How the LoEs link at a glance.

training and knowledge to develop mutual trust within the unit.

Furthermore, this approach is in line with developing armored units in accordance with the U.S. Army Armor School's "foundations of the armored force." The Armor School's foundation focuses on developing a competent, confident, agile and adaptive armored force that is highly skilled in gunnery, fighting from the hatch and sustainment.⁶

Administrative

The purpose of the administrative LoE is twofold: provide the platoon leader with overarching guidance and familiarize the platoon leader with the procedural side of unit and Army operations. The administrative LoE should be the first LoE a commander focuses on because it lays the foundation for

expectations, priorities and local standard operating procedures (SOPs) within the unit.

Completing initial counseling is the most critical task of the administrative LoE. The troop commander's initial counseling with new platoon leaders is vital to ensure subordinates are oriented in the proper direction from their first day in the organization. Therefore, the troop commander must conduct initial counseling with the newly assigned platoon leaders as soon as possible. In addition to providing platoon leaders with expectations, priorities and responsibilities, quickly providing the new officers with detailed counseling demonstrates the importance of counseling to the commander. In turn, platoon leaders should reciprocate this behavior with their platoon sergeants and within their respective platoons.

There are a few other important tasks that must occur in the administrative LoE. Some of these include reviewing the battalion commander's intent and priorities, reviewing unit SOPs and reviewing policy letters. Troop commanders must modify this LoE as needed to meet the specifics of their unit and its associated mission. Figure 3 provides an example of additional tasks to complete within the administrative LoE.

Command supply discipline

I have heard several senior leaders say, "Tactics won't get you fired, but not adequately accounting for property will." With that in mind, the command-supply-discipline LoE is vitally important to development of mutual trust between troop commanders and

platoon leaders. The primary focus of this LoE is ensuring platoon leaders understand the troop's command-supply-discipline program (CSDP), the sub-hand-receipt (HR) process and that they must successfully sign for their platoon equipment.

Additional tasks that should be conducted along this LoE include completing multiple inventories (i.e. sensitive-items (S/I) inventory and/or shadowing the commander during a cyclic inventory) and observing the commander sign the property book (PB) at the brigade PB office.

This LoE is a great opportunity to integrate multiple Soldiers from across the troop, as well as outside the troop, to assist with development of new platoon leaders. The troop commander should leverage the supply sergeant, the troop executive officer, the battalion S-4 officer and PB officer to augment personal efforts. The troop first sergeant is also a valuable resource to use during completion of this LoE.

As with each of the LoEs, troop commanders must modify the CSDP LoE to meet the needs of their troop and their mission. Figure 4 provides an example of additional tasks to complete along the command-supply-discipline LoE.

Operations

The focus of the operations LoE is to ensure platoon leaders have completed the benchmarks and leader-certification tasks that will enable them to effectively train and lead their platoons. This LoE, above all others, is dependent on the type of unit and the commander's input. I commanded a tank company, a headquarters troop and an Armor Basic Officer Leader's Course troop. I adjusted the tasks along the operations LoE in each of these troops to address the differences in each of those commands.

As an example, I chose to focus on tank-specific areas in the tank company I commanded. Some of the major tasks I included in this LoE included touring the local training areas, attending the range safety officer (RSO) / range officer-in-charge (OIC) certification, conducting a mounted tactical exercise without troops and completing the Gunnery-Skills Test (GST), Gunnery

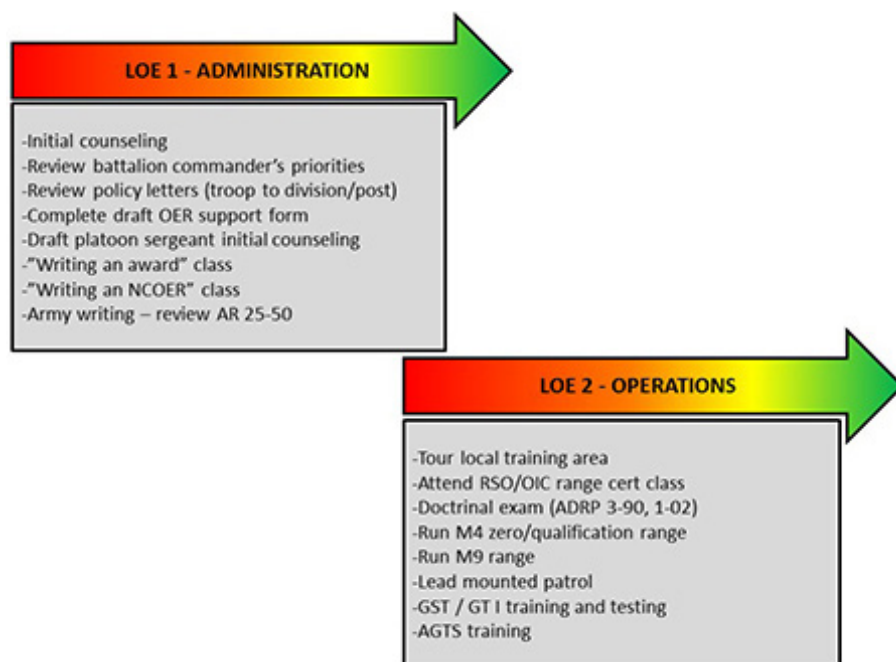


Figure 3. Administrative and operations LoEs.

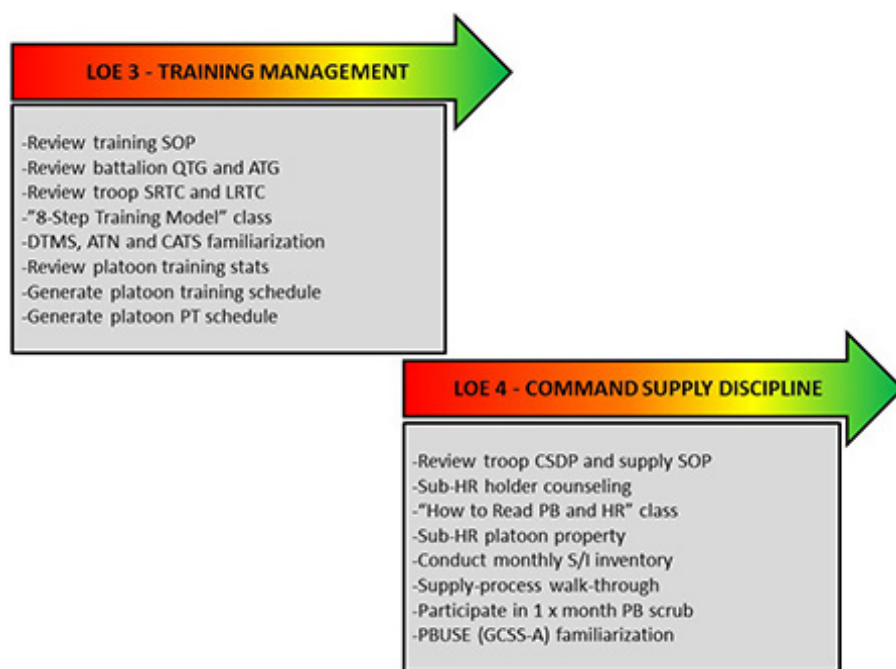


Figure 4. Command supply discipline and training-management LoEs.

Table (GT) I and Advanced Gunnery-Skills Trainer (AGST). Planning and executing an M9 and M4 range were tasks I added to the operations LoE. Furthermore, I administered a doctrinal assessment to the platoon leaders to assess their level of understanding of tactics and doctrine, which drove where I focused my efforts when developing my officer professional-development program.

Like the command-supply-discipline

LoE, the operations LoE provides a great opportunity to integrate multiple Soldiers from across the troop to assist with development of new platoon leaders. If done properly, the new platoon leaders will interact with other platoon leaders and noncommissioned officers within the troop. They will coordinate with the staff for land and ammunition, and they will interact with personnel from the distribution platoon to ensure range operations are

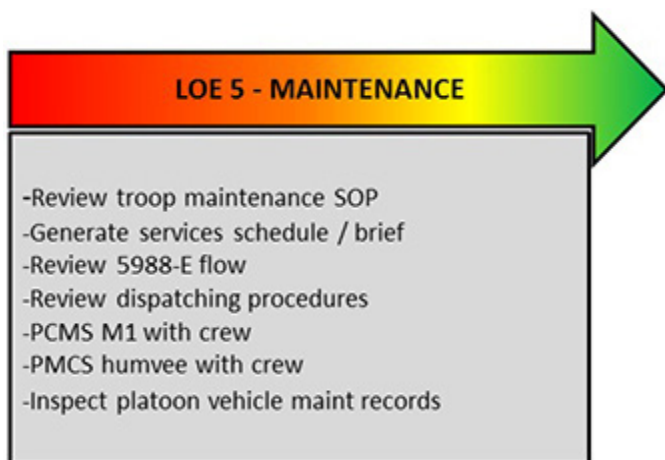


Figure 5. Maintenance LoE.

adequately supported. Moreover, the crew-level training in this LoE enables new platoon leaders to quickly integrate with their tank crews, allowing them to rapidly become valued members of their crews and platoons.

Training management

The goal of the training-management LoE is to teach the planning processes that enable the operations LoE. The key tasks in this LoE include reviewing the troop's training SOP, reviewing the battalion's quarterly (QTG) and annual training guidance (ATG), reviewing the troop's training calendars (short-range (SRTC) and long-range (LRTC)), reviewing training statistics (platoon and troop) and providing platoon leaders with instruction about the Eight-Step Training Model.

As with the others, this LoE is open to interpretation by the troop commander. However, there are a few more tasks I found critical to development of my platoon leaders' understanding of training management. I found training my platoon leaders on the Digital Training-Management System (DTMS), Army Training Network (ATN) and Combined-Arms Training Strategies (CATS) extremely valuable. Their ability to manipulate these programs enhanced the troop's overall training-management capability, which made my life as the commander quite a bit easier.

Similarly, training the platoon leaders on the Eight-Step Training Model and then having them develop a platoon training schedule that was nested with the troop training schedule was

important to their development. Also, having platoon leaders attend a battalion training meeting in an observer role benefits them because it allows them to frame how training management nests beyond the platoon and troop echelon. Moreover, it helps platoon leaders understand the purpose

and method associated with troop training meetings.

Maintenance

The goal of the maintenance LoE is to train platoon leaders on the maintenance processes and programs executed at the troop and battalion levels. This allows platoon leaders to be more capable of leading and supervising their platoons.

The maintenance LoE is also quite dependent on the type of unit in which leaders find themselves. For armored brigade combat teams, a troop commander would be well-served to focus on reviewing the troop and battalion maintenance SOPs, reviewing the maintenance and preventative maintenance checks and services (PMCS) process – including the process for completing the 5988-E (equipment and inspection worksheet) – and reviewing dispatching procedures. Furthermore, having the platoon leader participate in the PMCS of each vehicle type in the troop is beneficial because it exposes the officers to multiple vehicles within the troop's fleet.

Similar to the command-supply-discipline LoE, the maintenance LoE will allow new platoon leaders to meet Soldiers who are critical to sustaining their platoons and the troop's fleet of vehicles and combat systems. Platoon leaders should also interact with the troop maintenance noncommissioned officer in charge, the troop executive officer, the battalion maintenance officer, the battalion maintenance chief and the battalion executive officer.

These interactions enhance the growth and development of the officers by providing insights and thoughts from multiple positions and multiple echelons.

Conclusion

The responsibility for developing an effective mission-command network at the troop level rests on the troop commander. The troop commander must not depend on higher headquarters, the staff or the institutional Army to set the conditions for an effective mission-command structure to develop and proliferate within their formation.

Mutual, reciprocated trust is paramount to developing an effective troop-level mission-command system. Training is the key to unlocking mutual trust. As military theorist and retired Army officer Douglas MacGregor wrote, "American Soldiers, noncommissioned officers and junior officers can exercise independent judgment and make good decisions under the pressure of combat, but they will only make the right decisions if they are trained and encouraged to do so before a war begins."⁷

With that in mind, an effective approach to training new platoon leaders is to use a program aligned along five lines of operation: administrative, operations, training management, command supply discipline and maintenance. By doing so, troop commanders will develop trust within their organization and build formations in line with the Armor School's foundations of the armored force.

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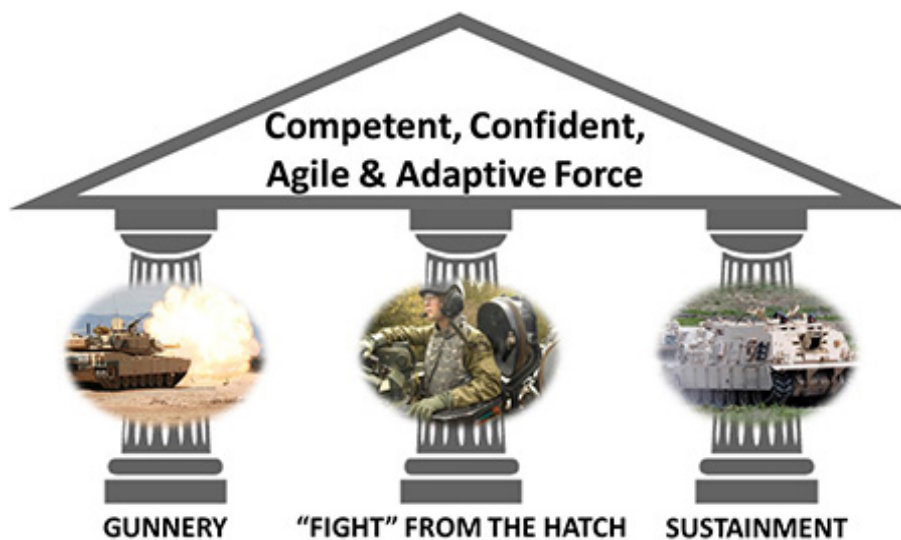


Figure 6. Foundations of the Armored Force.

Leader's Course, Bradley Fire-Support Vehicle Commander's Course and the Field-Artillery Officer Basic Course. He has a bachelor's of science degree in secondary education from Indiana

University and a master's of arts degree in secondary education from Ball State University. MAJ Fox is a recipient of the Draper Armor Leadership Award, Fiscal Year 2013.

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- Winter 2017 edition: Nov. 15, 2016
- Spring 2017 edition: Feb. 27, 2017
- Summer 2017 edition: May 24, 2017
- Fall 2017 edition: Aug. 17, 2017
- Winter 2018 edition: Nov. 21, 2017

For planning purposes, **ARMOR** magazine suspenses are an average of 10-11 weeks before the edition is published.

2016 Sullivan Cup: Demonstrating Mastery of Fundamentals and Relentless Pursuit of Excellence

by COL John M. Cushing and
MAJ Wes Wilhite

The U.S. Army Armor School hosted the third biennial Sullivan Cup competition at Fort Benning, GA, May 1 to 6. Named for retired GEN Gordon R. Sullivan, it pitted the top tank crews from the U.S. Army, U.S. Marine Corps and allied North Atlantic Treaty Organization nations against each other with the intent of identifying the “top tank crew.”

The competition drew 16 crews: 10 equipped with the M1A2 Abrams, four with the M1A1 Abrams and two crews from Canada equipped with Leopard 2A4 tanks. The six-day competition tested the physical, tactical and technical prowess of the crews through a battery of testing, situational-training exercises (STXs) and an enhanced live-fire exercise (LFX).

The M1A1 crew from 1st Battalion, 252nd Armor Regiment, 30th Armored Brigade Combat Team, North Carolina Army National Guard, was crowned the Sullivan Cup top tank crew at the 2016 Armor Ball. The M1A2-equipped crews representing 3rd Battalion, 66th Armored Regiment, and 1st Battalion, 68th Armored Regiment, captured second and third places, respectively.

This article discusses the Armor School’s preparation for the third iteration of the Sullivan Cup and provides feedback to the Armor community about how to improve tank-crew proficiency. Ultimately, only the best tank crews demonstrated continuous mastery of the fundamentals, remained resilient when encountering uncertain situations and maintained controlled aggression throughout the competition.

Planning and preparation

Planners at the Armor School were careful to define the purpose of “the tank crew” and to answer the fundamental question of “what makes a tank crew distinct?” Framing these important aspects allowed the planners to identify the most critical tasks tank crews must perform to prevail in a

complex world. Ultimately, this concept served as the foundation for the events in the 2016 competition, producing a physical event – a mounted STX that included land navigation, critical 19K military-occupation specialty-specific tasks and a two-part LFX.

Armor School leaders began planning for the 2016 competition immediately after the 2014 Sullivan Cup had ended with a comprehensive after-action review (AAR) to ensure the event continues to improve with each iteration.

Critical concerns from the previous Sullivan Cup included:

- Competitor acclimatization;
- Tank maintenance and preparation;
- Evaluator certification; and
- Firm standards of evaluation.

These observations led to several structural changes to the 2016 competition:

- **Better acclimatization and preparation of tank crews** – The Armor School allotted a full five days for tank crews to exercise their vehicles with the Fort Benning fleet-maintenance team before the start of the competition and a complete live-fire accuracy screening test (LFAST) under the observation and guidance of the Abrams Master Gunner School. Early arrival allowed crews to conduct physical training in the Georgia climate.
- **Firm standards and evaluator expertise** – The 194th Armored Brigade worked in partnership with many training brigades and tenant



Figure 1. Cadre from 1st Battalion, 81st Armor Regiment, lead U.S. Marine Corps armor crewmen through the tow-cable crawl event – part of the Armor Crewman Physical Proficiency Test – during the 2016 Sullivan Cup. Only the best evaluators were selected from Fort Benning’s training brigades and tenant units. (Photo by 194th Armor Regiment Public Affairs)

units at Fort Benning to select only the best evaluators. Abrams master-gunner instructors evaluated every tank engagement and completed every AAR in the live-fire competition. The Noncommissioned Officer Academy provided its combat-vehicle identification instructor to enforce the standards of evaluation for the Advanced Leader’s Course. Lastly, 14th Combat Support Hospital provided medical experts to grade the tactical combat-casualty lane during the mounted STX. All evaluators were certified by the brigade commander and command sergeant major during a series of rehearsals prior to the arrival of the tank crews. Thus, only experts from across the Maneuver Center of Excellence evaluated the tank crews.

Physical event

In 1974, while serving as the chief of the Armor School, GEN Donn A. Starry created the Armor Crewman Physical Proficiency Test (TC 17-15-8) to instill morale and *esprit de corps* in the Armored Force by providing a challenging physical event using tank-specific

equipment. Leaders from 1st Battalion, 81st Armor Regiment, transformed the test to capture changes in tank equipment during the last 40 years while maintaining the original five-event test's traditions.

The five events included:

- **Ammunition lift** – A crewman must lift a 120mm high-explosive anti-tank, or HEAT, round from the ground to above his head as many times as possible in two minutes.
- **Track block shuffle** – Each crewman must move 10 two-block tank-track sections 20 meters as fast as possible.
- **Tow-cable crawl** – Each crewman must crawl 15 meters with a tow cable and sprint back to the start line as fast as possible.
- **Road-wheel roll** – Each crewman must roll an M1 Abrams tank road wheel around the distance of a baseball diamond (about 240 feet) as fast as possible.
- **One-mile run** – Each crew must complete a one-mile run in duty uniform. Crews were allotted a minimum of two minutes between each event.

STX lane

After testing the physical grit of our crewmen, the Armor School tested 19K technical proficiency in the STX lane. Developed by the leadership of 5th Squadron, 15th Cavalry Regiment, the STX lane required tank crews to receive a platoon operations order and successfully navigate to 12 graphic-control measures in less than six hours. During the lane, crew members reacted to five

situation-based training lanes:

- Prepare vehicle for combat;
- Perform tank maintenance;
- Provide tactical combat-casualty care;
- Complete a sector sketch; and
- Conduct vehicle identification.

The Armor School selected these tasks with the vision that a tank crew must demonstrate mastery in the following areas:

- Mounted land navigation without digital aids;
- Crew-level evacuation and combat-lifesaver tasks;
- Mastery of hull maintenance and recovery tasks;
- Swift preparation of a vehicle for combat operations;
- Accurate identification of combat vehicles; and
- Preparing a hasty battle position.

Crew-level LFX

Shortly after the 2015 Maneuver Warfighter Conference, 194th Armored Brigade, the Weapons and Gunnery Branch of Directorate of Training and Doctrine and the Abrams Master Gunner School began developing the crew LFX for the 2016 Sullivan Cup. The Armor School commandant cautioned that the scenario “will not be your father’s gunnery qualification table.” Therefore, the scenario was designed to evaluate the most challenging performance measures on the most challenging range at Fort Benning. Based on the feedback of the Maneuver Warfighter Conference and

communication with training-center live-fire teams, it was determined the following areas present the greatest challenges to the Armored Force:

- Multiple target engagements;
- Change of weapon systems;
- Changes of ammunition type;
- Broad lateral dispersion of targets; and
- Speed of target acquisition.

The LFX scenario required crews to demonstrate consistency by firing four day engagements and three night engagements. Then they returned a second day to fire another three day engagements from a different lane. Each engagement featured multiple target scenarios, requiring crews to engage two to four targets while frequently changing ammunition type and weapon systems.

All target engagements required the entire crew’s full participation. Each crew member had to be proficient in his assigned position to produce successful results – drivers assisted in the acquisition of troop targets; loaders scanned out of the hatch to assist with target acquisition while sometimes called on to engage troop targets; and both gunners and tank commanders used all sights available to acquire targets.

Highlighting specific challenges, the first day run featured a graded call for fire engagement without digital capability or the Global Positioning System. Each crew’s score was determined by the accuracy of their call for fire request and the proximity to a target group. The night run featured a call for illumination engagement (supported by 198th Infantry Brigade’s Mortar Leader Course) during which the competing tank crews called a pre-planned illumination target to identify and engage two unheated vehicle targets. Both days featured engagements that required operation of the tank in emergency mode, requiring crews to manually lead targets from both the gunner and tank commander stations.

In addition, the crews were introduced to the Fort Benning Digital Multipurpose Range Complex and to the efficient employment of ammunition. Traditionally reserved for platoon LFXs,



Figure 2. A tank crew demonstrates upper-body strength during the ammunition-lift event of the 2016 Sullivan Cup’s Armored Crewman Physical Proficiency Test. (Photo by 194th Armor Regiment Public Affairs)

the range featured a width of 1,600 meters and elevation changes of 75 meters. The terrain produced a broad lateral dispersion of targets and required crews to use all crew positions available to acquire targets.

Crews were not allocated a full ammunition load (in accordance with Training Circular 3-20.31, **Training and Qualification, Crew**) for each engagement. Instead, tracer rounds were removed from all coaxial engagements to minimize range fires while also ensuring that crews demonstrated mastery of machinegun engagement techniques. Also, no more tank rounds were allocated for re-engagement of missed targets. All M1A2 crews were equipped with thru-sight video, and all target effects were vetted by both digital and visual means by master gunners to ensure the highest standards and quality of the competition. These constraints produced extremely challenging conditions, forcing the crews to make every round count and to engage targets in a timely and aggressive manner.

Evaluation

The overall scoring of the competition

was based on a cumulative total of 2,000 points: 400 points for the physical event, 600 points for the STX lane and 1,000 points for the LFX. The top-four highest scores advanced to the final event, the shoot-off.

Shoot-off

The shoot-off was the final event of the competition, with only the best four crews chosen to vie for the Sullivan Cup. It required tank crews to destroy remnants of an "Arianan Mechanized Infantry Battalion" reinforced with a tank company in a decisive-action training environment-based scenario. In only three engagements, the tank crews were presented 22 targets (15 vehicles, six soldiers and one helicopter). Tank crews were provided only one tank round for each vehicle target and a

total of 400 rounds of small-arms ammunition for troop targets.

Observations and challenges

The last 14 years of combat demonstrate today's Armor crewmen must be physically fit, situationally aware and technically proficient to dominate their opponents and overcome harsh terrain



Figure 4. GEN Robert "Abe" Abrams, U.S. Army Forces Command commander, selects the firing order as part of the 2016 Sullivan Cup shoot-off lottery. (Photo by 194th Armor Regiment Public Affairs)



Figure 3. The Royal Canadian Armoured Corps Crew assembles tank track on the tank-maintenance lane during the situational-training exercise of the 2016 Sullivan Cup. (Photo by 194th Armor Regiment Public Affairs)

conditions. With that in mind, the Armor School stressed the need to maintain a competitive mindset of physical dominance and resiliency throughout the physical and STX events. Crews rose to the challenge and performed exceptionally in the physical and STX lanes events, with only 180 points separating the first and last crews when they entered the final event (live-fire scenario). None of the crews were out of the competition until the final day.

The Abrams Master Gunner School ultimately provided an incredibly challenging live-fire scenario. Crews quickly learned the scenario was not a traditional Table VI qualification table. While most observers believed the Commander's Independent Thermal Viewer (CITV) would provide the M1A2 crews a distinct advantage over M1A1 crews, tank-crew evaluators (TCEs) (using thru-sight video during evaluation) found that most M1A2 tank commanders did not employ the CITV for target acquisition, but instead only used it to assess effects during multiple target engagements. The M1A2 crews who used the CITV during the entire engagement process performed better than the crews who only used CITV to assess effects. Also, when faced with multiple targets or change-of-weapon-system engagements, the synchronized and aggressive crews clearly distinguished themselves from the rest of the field.

Lastly, tank crews must continue to understand and develop confidence in the fire-control system while operating under degraded conditions. For example, both day runs featured emergency-mode engagements. The first run required the gunner to manually (calculate) induce lead on a moving flank target. The next run required the tank commander to do the same. While few crews successfully qualified both engagements, the master gunner-led AARs gave the crews an opportunity to recall and demonstrate mastery on their second run.

In summary, the challenging scenario provided an excellent learning model to identify gaps and potential atrophied skills within our live-fire training program.

Ultimately, the Sullivan Cup tank crews demonstrated they are physically fit,

mentally resilient and technically competent in their chosen profession. The competing crews once again proved why they are the best armored crewmen.

Looking to the future, armored brigade combat teams should continue to focus on mastery of the fundamentals, and they should seek more opportunities within their formations to challenge and develop the Armored Force. Gunnery should not be just a calendar event; it should be trained throughout the year to truly obtain platform mastery. Table VI is not the end. Rather, it's the beginning of tank-crew proficiency. Company and battalion leaders must ask: "What am I doing after crew qualification to continually develop crew-level coordination and proficiency?"

Units should continue to employ both live and simulated training following crew qualification to continue improvement. The Advanced Gunnery Training Simulator (AGTS) program must be continued after crew qualification. After Table VI qualification (based on availability of ammunition), master gunners should identify additional scenarios for their best crews to test them with increasingly challenging engagements.

Units must strive to return to mastery of the basics that set the foundation for successful crew live-fire qualification – for example, prep-to-fire checks, LFAST procedures, boresighting and effective armament accuracy checks (AACs) – while developing precision-gunnery competencies. Ultimately, these areas set the stage for future crews to pursue excellence at the next Sullivan Cup competition and to hone their skills to fight and win our future conflicts. Leaders must sustain the competence and commitment of the Armor crewman to maintain our prominent position on the world stage.

The Armor School will continue to improve the Sullivan Cup competition in subsequent iterations to ensure our best crews are prepared, challenged and poised to meet the new challenges that await them in an uncertain world.

The 2018 Sullivan Cup competition will be April 29 to May 4, 2018, at Fort Benning. The Battlehard Brigade and the

U.S. Army Armor School are now planning it ... see you on the high ground.

COL John Cushing commands 194th Armored Brigade at Fort Benning. His other assignments include division operations officer, 1st Cavalry Division, Fort Hood, TX, and Kandahar Province, Afghanistan; Armor Branch chief, Human Resource Command, Fort Knox, KY; commander, 1st Squadron, 9th Cavalry Regiment, Fort Hood, TX, and Nineveh Province, Iraq; executive officer, 3rd Brigade, 3rd Infantry Division, Fort Benning; commander, Company B, 1st Battalion, 64th Armored Regiment, Fort Stewart, GA; and commander, Troop E, 9th Cavalry Regiment (Brigade Reconnaissance Troop), 2nd Brigade, 3rd Infantry Division, Fort Stewart. COL Cushing's military schools include the Army War College, Command and General Staff College, Armor Captain's Career Course, Armor Officer Basic Course and Ranger, airborne and air-assault schools. COL Cushing holds a bachelor's of science degree in systems engineering from the U.S. Military Academy, West Point, NY; a master's of science degree in systems and information engineering from the University of Virginia; and a master's of science degree in military studies from U.S. Army War College.

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JAGIC 101 – An Army Leader’s Guide

by MAJ James P. Kane Jr.

The emphasis placed on readying the Army for a decisive-action (DA) combat scenario has been felt throughout the force in recent years. The Chief of Staff of the Army and the U.S. Army Forces Command commander have both focused on the ability of leaders and staffs to wage large-scale tactical operations on a magnitude not seen since the invasion of Iraq in 2003. One of the effects of this effort has been the implementation of the Joint Air-Ground Integration Center (JAGIC) at every division headquarters in the Army.

The JAGIC is a modular, scalable joint coordination center that now resides within the division current operations integration cell (COIC).¹ By co-locating representatives from all the division’s airspace users and putting them under the direction of a single person (the JAGIC chief), the division creates an organization to synchronize joint fires and deconflict the use of the airspace within the division’s area of operations.

This article’s purpose is to familiarize Armor Branch leaders with the JAGIC. It sits at the center of division

operations in DA, and any Armor officer who works at division level will either interact with the JAGIC or directly employ the JAGIC to enable combined-arms maneuver. Leaders at brigade and lower echelons are also directly affected by the JAGIC’s ability to deconflict airspace and provide air and artillery support to maneuver. Understanding the JAGIC helps leaders see how maneuver forces fit within the modern three-dimensional battlefield, and it helps junior leaders understand how the division fights in DA.

History

The JAGIC, as described in Army Technical Publication (ATP) 3-91.1, *The Joint Air-Ground Integration Center*, and Air Force Tactics, Techniques and Procedures Publication 3-2.86, also *The Joint Air-Ground Integration Center*, is the combination of two separate efforts – one from the Air Force and the other from the Army – to find common ground and a common solution with the JAGIC.

The Air Force effort began in response to the Army’s transformation to a brigade combat team-centered modular force starting in 2004. Before then, the Air Force supported Army forces by aligning a tactical air-control party (TACP) at every echelon from battalion through corps, and an air support-operations center (ASOC) at the senior tactical ground command headquarters (typically with each Army corps). The Air Force created the ASOC/TACP Transformation tiger team to evaluate Army force structure and strategy. This included visiting

forces in Operation Iraqi Freedom (OIF) and Operation Enduring Freedom (OEF) to capture lessons-learned and best practices. In January 2005, the tiger team recommended aligning ASOCs with each active division, based on the Army’s concept that a corps headquarters would primarily function in the role of a joint task force or joint force land component command.²

On the Army side, the Chief of Field Artillery at Fort Sill, OK, created the Joint and Combined Integration (JACI) Directorate to spearhead the integration of joint fires into Army operations. The issues of employing joint fires in support of targeting and deconflicting airspace above ground forces (an especially important issue for the field artillery) became the driving impetus behind efforts for JACI, which also studied lessons-learned from Army forces in both OEF and OIF.

After coordination between the services, the JAGIC proof of principle was endorsed by the chiefs of staff of the Army and the Air Force at the 2009 Army-Air Force Warfighter Talks. Following the talks, the Air Force began the re-alignment of ASOCs to divisions in 2011. More than just aligning ASOCs, this effort required the Air Force to expand the number of ASOCs within the force from six to 10. The process of expansion is projected to continue into 2019.

Based on lessons-learned in OEF and OIF, the Army and Air Force developed the idea of integrating the newly-aligned ASOC crewmembers into a single center with representatives from all the division’s airspace users capable of controlling airspace and employing joint fires. After seven years of experimentation, testing and analysis, the JAGIC became a reality with the publication of ATP 3-91.1 in 2014.³

Organization

At its most basic level, the JAGIC is a seating arrangement (Figure 2) that consolidates several pre-existing elements of the division current operations battle staff into one location. The division’s fires-support cell, airspace

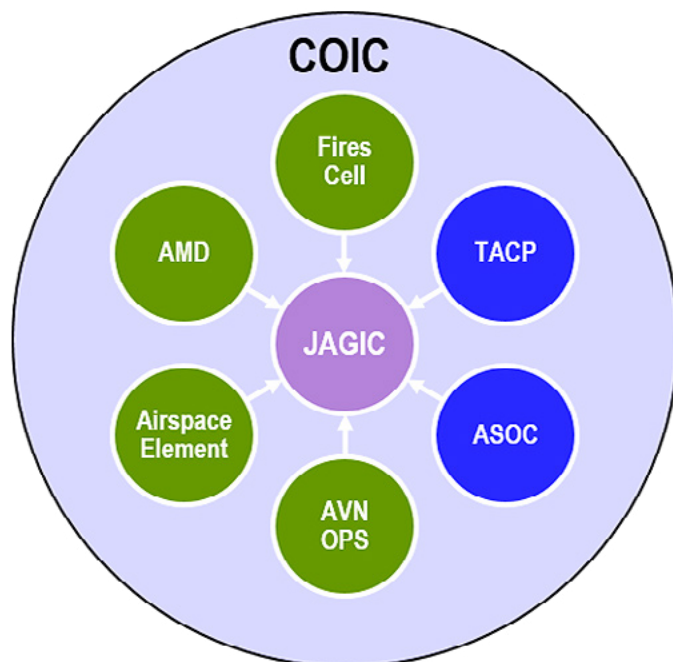


Figure 1. The JAGIC co-locates airspace users in the division COIC.

element, aviation operations and the air- and missile-defense section co-locate in a seating arrangement that facilitates collaboration for the use of the airspace they all share.

In addition to co-locating several of the division's organic assets, the JAGIC includes members of the division's TACP and the ASOC.

The ASOC's role is to distribute strike aircraft (close air support (CAS) and air interdiction) and to control airspace through procedural control. Procedural control differs from positive control (as with an air-traffic-control radar) in that aircraft are deconflicted using a separation of space and/or time. To illustrate the difference in procedural and positive control from an Army perspective, imagine the difference between controlling the movement of subordinates through the use of unit boundaries (procedural control) vs. controlling their movement by watching a Blue Force Tracker feed and providing guidance over the radio (positive control). The ASOC has no way to "see" airspace users in real time and so instead controls airspace by organizing the airspace and manually tracking aircraft.

The addition of the ASOC is critical from the perspective of the airspace-control authority (ACA) because it provides an Air Force control center the ACA trusts to control airspace. With the ASOC in the JAGIC, the ACA delegates authority to control a section of airspace (i.e., division assigned airspace) and requires all aircraft entering the airspace to coordinate with the JAGIC. This means that through the ASOC, the JAGIC can deconflict and clear all airspace users, including indirect fire, immediately in the COIC.

When delegating authority to control a block of airspace to a ground unit, the ACA takes into account the effect of this delegated airspace on other airspace users and on the capacity of the controlling organization to track aircraft and deconflict airspace. These two considerations limit the size of the airspace the ACA will allocate for the division's use.

The ACA recognizes an Air Force ASOC as an organization capable of managing airspace and will allocate airspace

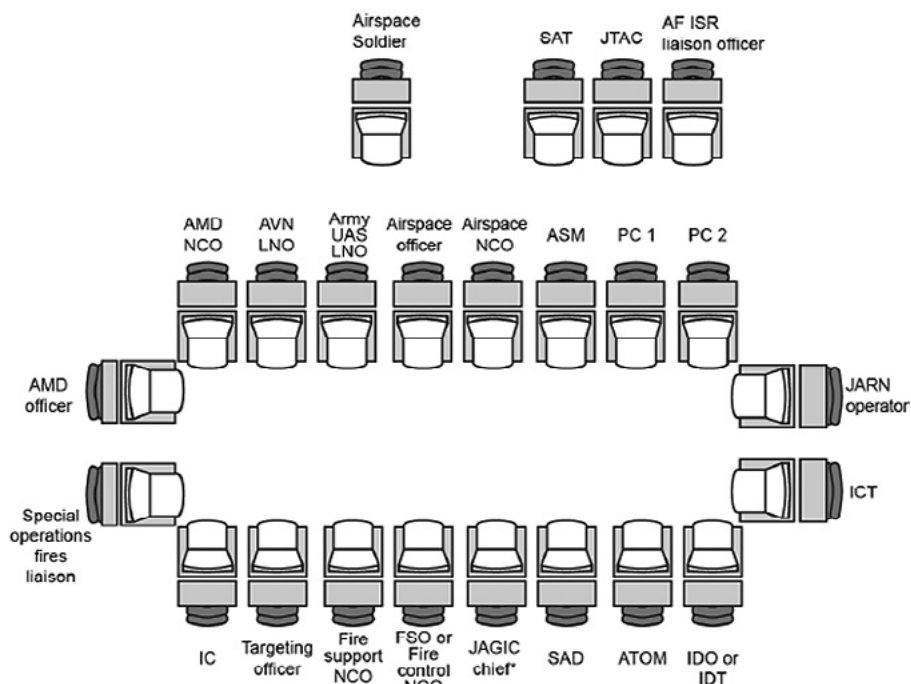


Figure 2. JAGIC layout per ATP 3-91.1.

to a JAGIC because it includes an ASOC. This is an important nuance for Army divisions because as divisions organize "JAGIC-like" configurations that do not include a functioning ASOC (when only part of an ASOC is deployed with a division tactical-actions center, for example, or for divisions that have not yet received their aligned ASOC), the ACA may not recognize the division JAGIC's ability to control airspace or may limit it to a lower altitude.

Even with a fully ASOC-enabled JAGIC, the ACA will not provide unlimited airspace for the division to use. The ASOC's ability to manage/control airspace is limited compared to an Airborne Warning and Control System (AWACS) or a Control and Reporting Center (CRC). Accordingly, the ACA will limit the maximum altitude the JAGIC controls; 18,000 to 20,000 feet has been used as a general rule of thumb as an altitude high enough to encompass most cannon artillery and mortar fire but is not so high that it would require the ASOC to control the large number of aircraft that may transit over the division's battlespace at higher altitudes.⁴ This altitude is designated as the *coordinating altitude* and marks the transition from JAGIC-controlled airspace to AWACS/CRC-controlled airspace.⁵

Controlling the airspace above the

division area of operations at the JAGIC inherently simplifies airspace deconfliction and makes actual integration possible. Specifically with regard to firing artillery, the JAGIC can either verify that fire missions are clear of aircraft as they arise or can organize the airspace so that aircraft and indirect fires are pre-cleared to operate within boundaries without having to coordinate each action with the JAGIC.

When division-controlled airspace users or indirect fire leave the JAGIC-controlled airspace (such as when the trajectory of artillery goes higher than the maximum altitude of division airspace), the JAGIC must coordinate with the ACA's controlling agency, either an AWACS or CRC, to clear the airspace. This becomes a serious issue for Army indirect-fire systems that fire higher than the coordinating altitude. Using 20,000 feet as a reference, some cannon fires will break the coordinating altitude, and almost all Army rocket and missile field-artillery munitions (Army Tactical Missile System (ATMS), Guided Multiple-Launch Rocket System and M26 Multiple-Launch Rockets) will travel higher than the coordinating altitude.

The take-away for maneuver leaders here is that indirect fire that goes higher than the coordinating altitude will

usually be less responsive than lower-angle artillery because clearance authority will be higher than the division. Therefore precision cannon and rocket artillery may take significantly longer to clear than traditional low-angle cannon artillery, which should become far more responsive with a JAGIC present.

Capabilities

The JAGIC allows the division to manage its own airspace. With a functioning JAGIC, the division has enough situational awareness of the location of airspace users within the assigned airspace that the division can know with certainty that aircraft and indirect fires do not occupy the same airspace at the same time. The call on whether or not airspace is clear resides at the JAGIC for all airspace users within the division assigned airspace. This simplifies deconfliction and integration immensely since the division is not required to contact external agencies for airspace clearance. In this role, the JAGIC is the final clearinghouse for the synchronization of airspace use throughout the division.

The JAGIC also becomes the primary tool for the division commander to shape the battlefield with lethal fires. By controlling and coordinating all the division's joint-fires delivery assets (field artillery, Army attack aviation, CAS and air interdiction) into one location with representation from targeting and collection management, the division has consolidated all the assets that directly affect the battlefield at division level. The organization of these

assets into one place (the JAGIC) under the leadership of a single JAGIC chief (usually the division deputy fire-support coordinator) synchronizes the efforts of these enablers in support of division objectives. In this role, the JAGIC is able to synchronize and mass joint fires to destroy the enemy.

Limitations

The JAGIC is limited in the amount of airspace that it controls; this means that anything that travels outside the division assigned airspace still requires coordination with higher echelons. ATMS fire missions, for example, usually travel far over the top of the division assigned airspace and require coordination with the ACA before firing (Figure 3). The ASOC located in the JAGIC will assist with coordination, but the division may end up competing with the needs of airspace users working directly for three- and four-star headquarters.

The orbit of the refueling tanker is an example of an airspace user whose priority usually trumps that of division indirect-fire missions. If the tanker is forced to move, it could potentially disrupt air support throughout the joint operations area (JOA).

The existence of the JAGIC does not eliminate the need to deconflict and integrate joint fires and airspace users within the division-controlled airspace. Because there is a JAGIC at the division, commanders should not expect that airspace no longer needs to be cleared. If planning and coordination has not been conducted ahead of time

to pre-clear missions, the JAGIC must still check each mission to ensure that aircraft and artillery rounds do not occupy the same location at the same time. This degrades the responsiveness of air and artillery support for ground forces.

The JAGIC is also not a planning organization. It is located on the COIC floor, and it is designed for execution in the current fight. If coordination measures are not created during planning prior to execution, this forces the JAGIC to determine if there is a conflict of airspace use at the moment of execution, causing delays. At best the JAGIC will create hasty coordination measures to facilitate airspace use, but this adds to the workload of a JAGIC, which is already busy managing the current fight and is often not detailed enough to integrate the use of joint assets.

Taking to next level

The JAGIC should always be able to manage the division's airspace and deconflict joint fires and air operations. That being said, there is a significant difference between a JAGIC which operates by solving problems as they arise (dynamic) vs. a JAGIC that manages a detailed fires and airspace plan that is prepared ahead of time (pre-planned) in support of the maneuver plan. This difference is not a minor one. Enough fire support and airspace planning that establishes rules for airspace use and right-of-way prior to execution will reduce or eliminate the JAGIC's processing time.

For instance, if fire support and aviation planners establish ingress and egress routes for aviation, field-artillery units will know they are clear to fire as long as they don't fire into those routes or other restrictive measures. This pre-planning changes the JAGIC's role to one of maintaining situational awareness of the current airspace plan and managing any changes to the plan as they arise. Armor officers working as division planners should expect this kind of detail out of their fires and aviation representatives, and should make sure the plan for the third dimension of the division's battlespace gets attention alongside the plan for ground maneuver.

Likewise, having a clear delineation of

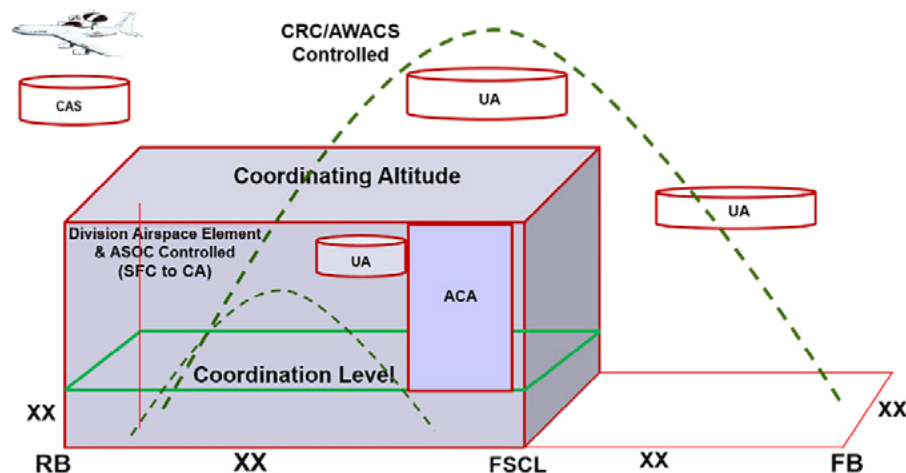


Figure 3. JAGIC-controlled airspace is depicted in blue. All other airspace is controlled by Combined Forces Air Component Command assets.

the authorities given to the JAGIC is important for the employment of responsive and effective joint fires. The JAGIC needs to know what level of authority the JAGIC chief has to authorize the employment of strike assets on targets, to order airspace users to move and possibly to order the movement of collection assets. These authorities also need to be defined outside the JAGIC to staff organizations that are required to support the JAGIC in the current fight. Beyond the level of the staff, the JAGIC may be given authority to provide direction to some of the division's subordinate commands, frequently the division artillery and the combat aviation brigade. Whatever the level of authority delegated to the JAGIC, this must be clearly communicated to the division by the commander or conflicts will arise.⁶

Conclusion

The JAGIC adds new capabilities to the division headquarters and reorganizes staff elements to focus them on the division fight. This is especially important in DA when the pace and scale of combat requires the division to take an active and immediate role in shaping the battlefield. By understanding how the division employs joint assets to support the division through the JAGIC, Armor officers will gain a better understanding of how the division fights in decisive action.

The JAGIC will not solve every challenge faced by the division commander in combat, but it helps. Especially as the Army struggles to overcome the cultural biases learned in 15 years of decentralized counterinsurgency warfare, the JAGIC becomes a

coordinating, integrating and controlling tool⁷ not just for joint fires and airspace control, but also a tool for the division commander to focus the staff on fighting as a division and shaping the enemy at the division level.

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Notes

¹ ATP 3-91.1, *The Joint Air Ground Integration Center*, June 2014. In some cases, the JAGIC may be located within the corps COIC. The ATP states that the JAGIC will be located at the senior tactical echelon, which is where the Air Force will align the ASOC supporting ground forces. In a scenario employing the corps in a tactical role, such as during large-scale DA operations, the ASOC will migrate to the corps level and doctrinal JAGIC functions will move with it.

² Field Manual 3-94, *Theater Army, Corps and Division Operations*, April 2014.

³ Conversation with Curtis Neal, Air Combat Command's A-3 Joint, June 7, 2016. Neal is the senior Theater Air-Control System analyst and former ASOC/TACP Transformation tiger team lead. (A-3 is the Air Force equivalent of G-3 on an Army staff. The "joint" section is the section of the A-3 that integrates with the other services.)

⁴ In addition, the ACA considers the impact a large block of airspace may have on other airspace users.

⁵ Joint Publication 3-52, *Joint Airspace Control*, November 2014. *Coordinating altitude* is defined as "An [airspace coordination measure] that uses altitude to separate users and as the transition between different airspace-control elements."

⁶ In addition to authorities granted by the division commander to the JAGIC, the ACA will provide guidance that must be adhered to by the JAGIC in the form of the airspace-control order and special instructions. These two pieces of guidance apply to all airspace users in the JOA, and JAGIC personnel must be familiar with them and able to communicate them to the rest of the division staff.

⁷ ATP 3-91.1.

Developing the Panther: Valuable Lessons in Rapid Development, Fielding

by MAJ Matthew Prescott

In today's resource-constrained environment the procurement, development and fielding of new equipment for the U.S. military remains just as scrutinized as equipment procurement was during both world wars and in the subsequent Cold War.

New equipment such as the F-35 multiple-purpose fighter, littoral combat ships or the Joint Light Tactical Vehicle remain contested topics not just for our political decision-makers but also the military communities that ultimately operate this equipment under combat conditions. Bureaucracy, favoritism, ambitions and prejudice often attribute to either delays in getting new equipment to the warfighter or to military personnel not getting the right piece of equipment needed to accomplish their objectives.

The development of the German Mark V "Panther" Tank in World War II provides a great example with tremendous lessons-learned on how bureaucracy, ambitions and prejudice can get in the way of warfighters receiving the equipment they need to be successful on the battlefield.

Germany faces T-34

Germany fought in early World War II with a rapid combined-arms doctrine that enabled the Wehrmacht to annihilate its opponent. This rapid offensive doctrine was initially formed toward the end of World War I through use of combined-arms operations where fast, well-equipped infantry would penetrate areas within the battlefield with the assistance of aircraft and artillery. Although the quality and quantity of Germany's armored fighting vehicles were not as robust and strong as the allied nations Germany fought in Belgium and France, its doctrine, command-and-control and adherence to the principles of war allowed the German army to win a stunning operational-level victory. When Germany invaded the Soviet Union in June 1941, the army's overmatch of the Soviet military solidified Germany's



Figure 1. After the Battle of Kursk, Soviet soldiers take the time to inspect a knocked-out Panther tank to learn about its strengths and weaknesses.

ideological perception that the Soviets were inferior with a second-rate military, placing German decision-makers in a state of harmony.

By late Summer 1941, German army leaders realized they had a problem. Their best tank, the Mark IV, was inferior to the Russian T-34 tank, and it was having demoralizing effects on German forces as their offensive drive toward Moscow drew to a halt, blunted by early winter conditions and a determined Soviet defense.

The Germans were quick to identify this problem; in a great display of procurement, development and fielding, the Mark V "Panther" tank rolled into battle on the Eastern Front battlefields. This was within only 18 months of the problem being identified.

When German GEN Heinz Guderian's Second Panzer Group first encountered the Soviet T-34 in Summer 1941, German commanders realized the tank's significance and superiority over their Mark III and IV tanks. The T-34 tank, with its sloped armor and effective 76.2mm main gun, proved demoralizing to German soldiers who did not have an anti-tank weapon that could penetrate the T-34's frontal armor and, in many cases, its flank armor. Believing the Soviet army was unable to produce such effective equipment, the T-34 came as a surprise to the Germans as they drove toward Moscow.

German combat leaders quickly requested the development of a new medium tank capable of destroying the T-34.

To complement the successful combined-arms tactics used from 1939-1941, German tank designers emphasized mobility first, firepower second and protection third within their tank priorities.¹ Before it invaded Russia in 1941, the Wehrmacht had two medium tanks, the Mark III and Mark IV, both originally produced in 1937. Although these tanks had positive effects during Operation Barbarossa, they were quickly losing relevancy against more modern Allied tanks. As the Germans went deeper into Russia and found that the T-34 outperformed German tanks in all three categories, panzer leaders realized their workhorses either needed an overhaul or a complete replacement because they lacked protection for their crews and a main gun lethal enough to destroy the more modern Soviet tanks.

Quest for new design

Impressed by the T-34's sloped armor, wide tracks, diesel engine, off-road capability and a high-velocity main gun that gave it both the range and power to knock out most German armored vehicles, panzer leaders wanted the same in their future medium tank. In fact, in November 1941, when German tank designers evaluated captured

T-34s, Guderian and his fellow panzer leaders recommended they should simply copy the T-34 since this would lead to the quickest way to mass-produce a new tank.² Guderian knew the recommended reverse engineering was impossible due to German prejudice and a lack of aluminum and other essential elements needed to replicate and produce the T-34's best qualities. Therefore, Guderian asked the armament ministry to concentrate on the most immediate need, an upgraded main gun able to penetrate the T-34's armor.³ Also, he requested thicker armor, an improved suspension system with wider tracks and a more powerful engine to provide enough horsepower to traverse Russia's difficult terrain.⁴

Supplied with enough information, German manufactures began producing prototypes to meet the Panther's design priorities. Unlike traditional U.S. Army procedures where one contractor generally builds a new piece of equipment, the German army divided and awarded contracts to produce different components that made up military equipment. The Panther was no different. The German firm Rheinmetall-Borsig was awarded the contract to produce the turret that housed the 75mm gun. The two leading German firms competing to produce the chassis for the Panther were Maschinenfabrik Augsburg-Nürnberg (MAN) AG and Daimler-Benz. Each took different approaches in designing their version of the Panther.

There are three main reasons why the contract for the Panther chassis was awarded to MAN. First, Hitler mandated that the Panther needed to be in production no later than December 1942 to have at least 250 Panthers available for the 1943 summer offensive.⁵ Second, the Daimler prototype, initially approved by Hitler because of

its diesel engine and other impressive characteristics, did not fit the approved turret by Rheinmetall. Daimler knew they did not have enough time to produce another prototype that could fit Rheinmetall's turret, nor would their innovative diesel engine be ready in time to begin mass production by December.⁶ Lastly, once Hitler initially awarded the contract to Daimler, ambitious representatives within MAN, the German army's ordnance department and Karl-Otto Saur, Albert Speer's principal deputy, began a "whisper campaign" claiming the Daimler prototype was "too Russian" looking.⁷ MAN claimed their prototype was more "German looking," and although both Speer and Hitler saw great qualities in Daimler's prototype, they shifted the contract to MAN, who promised they would produce enough Panthers prior to the deadline.⁸

This decision was based on production speed vs. procurement of the best product for German troops. This proved disastrous in the Panther's development, making the Panther Guderian's "problem child" in his new role as inspector-general of armored troops.⁹

To be fair to MAN, the Daimler-Benz prototype looked similar to the T-34 because Daimler took the T-34's best qualities to produce their prototype. It was powered by a 650-horsepower diesel engine with rear-wheel drive and the leaf-spring suspension that both Hitler and Guderian wanted. In other words, the Daimler prototype incorporated everything learned from the T-34, but it could not be realistically produced in the required numbers or the time allotted from the ordnance department.¹⁰

MAN's version took a more traditional German approach in tank development with a centrally located turret, front-wheel drive and gasoline engine. Their version fit the approved turret, enabling them to move into production



Figure 3. Panther with full Schürzen spaced armor attached, intended to supplement the side armor above the large wheels.

in Spring 1942, vs. Daimler, who still had to master engineering solutions for their diesel engine and then redesign the turret ring to fit Rheinmetall's turret.¹¹

Unfortunately, MAN's design team simply built an overcomplicated and too-sophisticated tank for what was needed at the front. Two relevant examples of this problem were its torsion-bar suspension and amphibious capability (that no panzer leader asked for within the tank's requirements).¹² These extra features added to the Panther's problems because the torsion-bar suspension forced a higher turret that increased the Panther's vulnerability, and its rubber-seal lining (required to enable the tank's amphibious capability) was blamed for the fires that resulted due to engine overheating.

Complicating matters further, Hitler feared the 60mm frontal armor would not suffice against future anti-tank guns and insisted the Panther have 80mm frontal armor.

This change pushed the Panther's weight to 45 tons compared to the 35-ton approved prototype. This placed great strain on the vehicle's engine and transmission. Rather than develop a solution to handle the increased weight, MAN instead refined the existing engine, severely hindering the tank's deployment; it was not until the upgraded Model A, introduced in Fall 1943, that engineers were able to partially fix the vehicle's problems.¹³

Recent U.S. examples

Two recent examples of U.S. Army force-management projects that show similarities to the Panther's production and fielding are the mine-resistant, ambush-protected (MRAP) vehicle and



Figure 2. A wooden model of Daimler-Benz's recommended version for the Mark V Panther. The prototype was named VK3002 and had some clear similarities to the Soviet T-34 tank.

the Army's new mission-command Capability Set 15 (CS-15) system.

The MRAP was developed and rapidly fielded to the warfighters in Afghanistan and Iraq to provide the necessary troop capacity and survivability Soldiers needed on the battlefield to combat the enemy's use of improvised-explosive devices in ambushes. These vehicles were only meant to be a short-term solution to the very real problem Soldiers faced.

The MRAP's procurement, development and fielding provides a great modern-day example of getting lifesaving equipment to military personnel as quickly as possible.

The intended purpose of the CS-15 system was to provide a larger variety of mission-command communication systems within a brigade combat team (BCT). The new mobile communications system provides improved connectivity throughout BCTs, reducing the unit's reliance on fixed and line-of-sight communications, ultimately allowing leaders from team level to the brigade commander to maintain better situational awareness of the battlefield.

There are drawbacks to the distribution and sustainment of this equipment. One is the slow way the Army supply system incorporated both the MRAP and CS-15 system into the variety of ordering systems, getting the required part numbers inputted for the hundreds of different parts that make up the CS-15 system and MRAP vehicles. Due to the nature of stressful combat operations and field exercises, or the lack of proper care of equipment by Soldiers, parts can easily break. Some parts become lost, causing potential deadlines to the equipment until new ones arrive. At the tactical level, the Army's fielding of the CS-15 system and the MRAP caused a great burden on a unit's ability to train as it would fight in combat.

When a unit is scheduled to deploy in support of the war on terrorism, where its Soldiers will primarily use MRAPs, parent installations traditionally do not have the required quantity of MRAPs to license and train users prior to deployment.

This places these units at a



Figure 4. A Panther moves toward its assigned railcar. The Panther's lack of range severely limited its operational mobility, and it often had to rely on railcars if moving farther than 100 kilometers.

disadvantage during the first several months of deployment with equipment they are not proficient at operating.

The intended purpose of both these combat systems is noteworthy, but there were apparent shortcomings in the development of these systems; measures should have been included to ensure that once distributed to the warfighters, the MRAPs and CS-15 systems could be easily operated and sustained by the unit that owned the equipment.

'Haste makes waste'

Robert Forczyk writes in his book *Panther vs. T-34: Ukraine 1943*, "If ever there was an example that 'haste makes waste' in warfare, it lies in the Panther development program." Instead of taking the time to fully field, refine and train new Panther crews, the tank was rushed into production and deployed without the proper field trials.

Guderian, to no avail, tried to convey to Hitler in June 1943 that it was ludicrous to place the Panther in combat until it was more reliable and crews were proficient in their new tank.¹⁴ Initial field tests proved the Panther was not ready for combat, as 45 mechanical errors had been identified – including major deficiencies in the drive chain, transmission, motor and fuel

pumps that regularly failed and easily caught on fire.¹⁵ Believing the Panther was the decisive tool to beat the Soviets at Kursk, Hitler ignored these recommendations and placed the Panther in the battle in as large a quantity as possible.

As a result, the Panther's baptism by fire at the Battle of Kursk was fraught with disaster before it got started; 16 tanks broke down while making the short voyage from the rail disembarkation point to their assembly areas at the front. Only 184 Panthers made their combat debut July 5, and only 40 remained operational by July 7, due to mechanical breakdowns and fierce Soviet defenses bolstered by anti-tank mines or side shots by Soviet tanks where the Panther was more vulnerable.¹⁶ Recovering and repairing the Panther at Kursk was difficult, with only four Panther recovery vehicles being deployed as part of the Panther battalions and supply trains unable to provide enough spare parts to keep the vehicles running.¹⁷

Although MAN's approved version had many problems within its first nine months of production, there were tremendous qualities the tank possessed throughout the rest of the war such as its high-velocity 75mm main gun, tactical mobility, excellent gunner's optics, easy track maintenance and heavy

frontal slope armor adding to its impressive survivability record.

In spite of the Panther's maintenance issues at Kursk, the two Panther battalions participating in the battle destroyed more Soviet armored vehicles than any other German tank unit.¹⁸

In conclusion, the Panther tank provides a good example of what happens when bureaucracy and favoritism gets in the way of what the combat soldier actually needs on the battlefield to be successful. As formidable as the Panther was once it became more mechanically reliable, there is little doubt the tank would have had a greater impact if German bureaucracy and individual ambitions had not gotten in the way of the tank's production. Daimler-Benz's prototype was the better choice to replace Germany's aging Mark III and IV tanks.

The Daimler-Benz's prototype may not have "looked German," but it had more of the attributes German leaders were looking for; its rear-wheel drive and diesel engine would have provided German mechanized forces a more mechanically reliable tank with better mobility. Instead, decision-makers chose the design that could be produced the quickest rather than the one recommended by Germany's combat leaders. Thus, the Panther was expensive to produce, a gas guzzler and technically difficult to keep serviceable.

Enticed by the protective aspects and lethal firepower the Panther would bring to the battlefield, the tank was rushed into production without the required time to engineer solutions to the many problems identified during its fielding.

Looking to future

In the future, Army leaders need to be clear on the purpose of a new piece of equipment and specific enough when writing requirements so that developers understand the capability requirements needed for new combat systems. As I wrote this article, GEN Martin Dempsey, chairman of the U.S. Joint Chiefs of Staff, remained committed to ensuring leaders understood force management and the processes required to instill clarity within the force.

"I measure success in force



Figure 5. Before moving into an assembly area, a Panther crew discusses future operations with unit leadership on the Eastern Front.

management in the education and development of leaders who understand how to balance ends, ways and means to ensure we remain the finest fighting force on the planet," GEN Dempsey said.¹⁹

As the U.S. Army looks to develop combat systems to operate in combat beyond 2050, it is vitally important to take a slow approach to ensure these systems can be easily managed by Soldiers at the tactical level and appropriately sustained to maintain serviceability.

History's lessons-learned

The concept of the Panther tank was the right piece of equipment at the right time for Germany to regain the lost initiative on the Eastern Front in 1943. Unfortunately (for Germany), the Panther tank developed by industry was not the medium tank needed or envisioned by military leaders to allow Germany to defeat the Soviets after the hard-fought 1942-1943 winter campaign in southern Russia. Although the Panther had success at Kursk, with so few participating in the battle, there was little value in rushing the Panther to the front lines as an inferior and unreliable tank.

The Panther's operational readiness rate never exceeded 35 percent during all of 1943.

Therefore, the lesson is that the Panther had little value outside the tactical battles where it proved superior to

the T-34.²⁰ Rushed into battle because Hitler believed it would have strategic impact and help Germany regain the initiative on the Eastern Front, Panther designers ignored many of the features that made the Soviet T-34 such an effective armored vehicle and instead produced a tank that proved to be too complicated and mechanically flawed.²¹

Although arguably one of the best tanks produced in World War II, the Panther was never able to make its desired impact due to the cost and man-hours associated with its production. Its production also had to complete with many other requirements for resources throughout the war.

When remembering the Panther, the slogan "haste makes waste" is certainly a fitting example for what not to do, especially when developing and fielding a new piece of military equipment.

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Notes

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⁶ Robert Forczyk, *Panther versus T-34: Ukraine 1943*, Oxford, UK: Osprey Publishing, 2007.

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⁹ Heinz Guderian, *Panzer Leader*, Cambridge, MA: Da Capo Press, 2002.

¹⁰ Forczyk.

¹¹ Hart.

¹² Ibid.

¹³ Forczyk.

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the Blitzkrieg, New York: Stein and Day, 1975.

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¹⁶ Ibid.

¹⁷ MAJ John H. Womack, *Testing and Fielding of the Panther Tank and Lessons for Force XXI*, Quantico, VA: Marine Corps Combat Development Command, 1997.

¹⁸ Mark Healy, *Zitadelle: The German Offensive Against the Kursk Salient 4-17 July 1943*.

¹⁹ *How the Army Runs: A Senior Leader Reference Handbook*, Carlisle, PA: U.S. Army War College, 2016.

²⁰ Forczyk.

²¹ Ibid.



Figure 6. The MRAP is an example of an Army force-management project that shows similarities to the Panther tank's production and fielding. The MRAP was developed and rapidly fielded to warfighters in Afghanistan and Iraq to provide the necessary troop capacity and survivability Soldiers needed on the battlefield to combat the enemy's use of IEDs in ambushes. The MRAP's procurement, development and fielding provides a great modern-day example of getting lifesaving equipment to military personnel as quickly as possible.

Integrate Cognitive Training to Optimize Performance

by CPT Aaron B. Price

It's important to explore the Army's current training methodology to identify areas where scientific research and performance experts can be leveraged to help leaders increase efficiency in achieving or maintaining an objective "T" (trained). The current "one size fits all" approach to training results in wasted time and energy and does not take into account that every Soldier is different.

To solve this, we hope to create a shared understanding of how individuals learn and what makes an individual "a novice" or "an expert" at a specific task. The ability to identify novices and experts in our formations will allow leaders to tailor their training approach to each individual Soldier. We can then create empowered team leaders, armed with scientific knowledge and assisted by performance experts, who can minimize the time it takes to achieve expertise at the individual level.

Background

For example, to train paratroopers, sustained airborne training (SAT) is conducted before every airborne operation. SAT is comprised of pre-jump, static-line control, activation of the reserve parachute onboard the aircraft, red-light procedures (including amber-light procedures), jump refusals and exiting procedures (SARJE), mock-door training and parachute-landing falls (PLF).

The intent of SAT is to allow individual jumpers to rehearse the actions they will take during the airborne operation with an emphasis on safety. SAT is currently conducted *en masse*, with little consideration given to the experience level of individual jumpers and in conditions that are not conducive to true understanding (large groups, poor acoustics and multiple distractions).

A possible reason for the "one size fits all" approach to SAT is our lack of a true assessment methodology for airborne proficiency.



Figure 1. Troops head out on their fifth and final jump from 1,200 feet in a C-130 before earning their wings during the Airborne School's Jump Week at Fort Benning, GA. (Photo by Susanna Avery-Lynch)

A typical assessment methodology for individual expertise is based on the number of jumps, whether or not the individual is jumpmaster-qualified and, to a lesser extent, the individual's time on airborne status. An apparent issue with this approach is that many individuals spend large amounts of time out of the airborne community and then return to the airborne community years later.

If an individual jumps 64 times as a young trooper, moves on to another unit, and then years later returns to airborne status and executes one jump, he or she could potentially reach the prerequisites to become a master-rated parachutist. However, in the time the individual was not on airborne status, equipment, training, techniques and procedures may have changed dramatically.

Also, airborne proficiency degrades over time if not exercised frequently. The result is an individual who is wearing the symbol of expertise (the Master Parachutist Badge) but who may not truly be an expert.

Role of memory

Cognitive scientists describe memory as having multiple components, including procedural, declarative and working memory. Procedural memory is commonly referred to as "muscle memory," and it generally operates outside of conscious thought.

Declarative memory is responsible for the recall of facts or events. For example, jumpmasters use declarative memory to recite pre-jump verbatim.

Both procedural and declarative memory can be likened to different forms of information stored on the hard drive of a computer. These memory systems are where all our knowledge, skills and abilities are stored, ready for use if we need them. While skills stored in procedural memory can be retrieved automatically (without conscious thought), information stored in declarative memory must be retrieved and used by an additional memory system called working memory. Working memory is responsible for temporarily holding, processing and manipulating information that we retrieve from declarative memory.

An analogy for working memory would be random-access memory (RAM) in a computer. RAM is used by computer programs to temporarily store information required to execute a specific function. Like RAM, working memory is finite, so attempting to process too much information in working memory can overload you, reducing your ability to react quickly to changing circumstances.

When acquiring a new skill, people rely heavily on their declarative memory system. For example, a paratrooper first learns how to exit the paratroop door in the Basic Airborne Course through mock-door training, exiting the 34-foot tower and eventually exiting actual aircraft. At this stage of training, the paratrooper must consciously (use working memory) think about making eye contact with the safety, hand off his or her universal static line, turn 90 degrees into the door and conduct a vigorous “up six inches and out 36 inches” exit. As the paratrooper becomes an “expert,” this information transitions into the procedural memory system; the paratrooper no longer needs to hold each step in mind while executing the task. Building procedural memory for a specific task requires repetition and time and must be supported by declarative memory to achieve expertise. During a rapidly changing and dangerous task, like jumping out of an airplane, an individual must be able to physically execute the task without consciously thinking about it (procedural memory) and be able to recall the actions

necessary to respond rapidly to changes in the environment (declarative memory). If the individual is a novice, instead of using his or her procedural memory to jump out of the aircraft, it’s necessary to shuttle information out of declarative memory using working memory, which is a finite resource and can be seriously affected by stress or other factors.

Dr. Joe Moran of Natick Soldier Research, Development and Engineering Center (NSRDEC) tells us that “the basic differences between expert and novice skill performance are that experts are able to use procedural memory for a skill, which means that performance requires less access to declarative memory.” In other words, experts “just do it.”

In addition, Dr. Caroline Davis, also from NSRDEC, said “experts can rapidly and flexibly transition between procedural and declarative memory systems” in response to unexpected stimuli. Therefore, an expert paratrooper will activate his or her reserve parachute very quickly after realizing something is wrong with the main because he or she can rapidly transition from the muscle memory required to jump to the declarative memory required to recall what to do in response to a malfunction. Novices, on the other hand, need to consciously access the steps for the task from declarative memory and move it to working memory. In other words, novices need to think about it.

The impact is that experts can detail

the specific steps to a task easily but have less ability to recall each individual time they used that expertise. Novices, meanwhile, tend to be able to recall specifics about the last time they did the task but cannot describe how to do the task in general with as much clarity or detail.

Recommendations

Questionnaire. Our collaboration with the cognitive-science team at NSRDEC led to a deeper understanding of basic learning and memory processes, giving us the intellectual toolkit needed to improve current training practices. For example, in addition to the current methodology for assessing expertise at airborne operations, something as simple as a questionnaire aimed at determining what an individual can retrieve about jump standards will provide leaders insight as to the level of expertise of their paratroopers.

Experts within our formations should be able to accurately describe specific steps in great detail, while novices will be able to describe the steps in very general terms. For example, an expert may respond to the airborne questionnaire’s question “describe what you do when you receive the command hook up” by stating that they would hook the static line snap hook to the appropriate anchor line cable, ensuring that the spring opening gate is facing toward the skin of the aircraft and then form a four in the hand, two below bite, ensuring the double-sewn portion of the static line is left free for the safety.

A novice answer may be as generic as the individual stating that he or she would hook up the static line to the anchor line cable. The airborne questionnaire compares responses to the performance steps outlined in the 82nd Airborne Standard Operating Procedures and Technical Communication 3-21.220.

The questionnaire could be validated by administering it to a control group of jumpmasters (known experts) and brand-new paratroopers (known novices) to confirm that the results differentiate the two groups. Additional validation could be achieved by increasing the sample size and by using “blind raters” to sort individuals based on their

Figure 2. Students at Fort Benning’s Airborne School complete mock-door training at Fryar Drop Zone in October 2014. Students must have five successful airborne jumps from 1,250 feet to earn their wings. (Photo by Patrick Albright, Maneuver Center of Excellence Public Affairs Office photographer)



results. If the accuracy in sorting experts from non-experts is high, we would have a potentially useful tool. Then leaders could place their jumpers into ability groups based on the results of the questionnaire. During SAT, jumpers in the novice ability group would receive pre-jump, SARJE and PLF instruction in small groups (three to five personnel per group) with jumpmasters and expert jumpers, ensuring novice jumpers achieve complete understanding.

Combination of procedural and declarative learning. To achieve expertise (the objective “T”) at a task, we must teach Soldiers with a combination of procedural learning (repeating a task over and over) and declarative learning (acquiring information one can speak about). Then we must test both procedural memory related to the task as well as declarative memory.

Many senior leaders in the Army already employ this strategy using the crawl-walk-run methodology. For example, to train a fire team to “react to contact,” a leader first holds a class to explain the basic steps (the crawl phase) and continues to teach the basic steps until an individual can recall them and show comprehensive understanding. Next, the leader talks through the steps of “react to contact” while combining it with a half-speed walk-through of the physical tasks necessary. This is generally conducted in an environment with minimal complexity or distractions (e.g., a parade field), while continuing to enforce and test each individual’s ability to recall the steps of the task verbally.

Once understanding is reached in the physical walk-through and verbal talk-through, leaders have Soldiers execute the task at full speed (run), testing the physical actions through observation and the declarative understanding through questions (why are you doing what you are doing?) in a much more complex scenario (a squad training exercise lane or a live-fire exercise). At this point, we can validate that the objective “T” was either attained or if further training is necessary, whether declarative (the individual did not know what to do) or procedural (the individual didn’t know how to physically execute).



Figure 3. A U.S. Army paratrooper with 1st Brigade Combat Team, 82nd Airborne Division, jumps out of an Air Force C-17 Globemaster III aircraft June 27, 2013, during Joint Operational Access Exercise (JOAX) 13-03 at Fort Bragg, NC. JOAX is designed to enhance cohesiveness between Army, Air Force and allied personnel, allowing the services an opportunity to properly execute large-scale heavy equipment and troop movement. JOAX is an example where Soldiers could be expected to transition between procedural and declarative memory systems. (Photo by Senior Airman James Richardson)

Performance experts

The Army has been using this crawl-walk-run methodology to one extent or another for many years. The concept behind it is not new; however, it is not executed for every task we must conduct. Throughout this process, it is important to leverage the expertise of performance experts before, during and after testing. Their ability to teach techniques to reduce anxiety and stress as well as obtain the focus to transition between different forms of memory can enable a more efficient use of time when training Soldiers to master a task.

Basic Army training uses the crawl-walk-run methodology to train Soldiers, but once an individual arrives at a unit, he or she typically stays in the

“run” phase. Unfortunately SAT (as it is conducted now) is not really training; instead it’s a rehearsal of the actions a jumper is about to execute. That may be true as applicable to other Army branches.

A novice jumper will eventually acquire expertise through repetition, though the number of repetitions required varies greatly among individual paratroopers. Therefore we can gain greater efficiency when creating expert jumpers by identifying novice jumpers early by using the methods described. Then leaders can apply the crawl-walk-run methodology to train novices to become expert jumpers.

Leaders can place more emphasis on declarative memory by giving classes that cover the fundamentals of



Figure 4. Paratroopers from 82nd Airborne Division jump from a C-17 Globemaster at Fort Bragg, NC, during Exercise Joint Forcible Entry in April 2005. The “run” phase of airborne training is conducting airborne operations like this one. (Photo by Scott F. Reed)

jumping out of an airplane and then testing that knowledge through verbal or written exams. Leaders can train procedural memory by conducting mock-door training in small groups initially.

Then both procedural and declarative memory can be trained by conducting walk-through, talk-through training in the mock door where individuals describe and perform the necessary actions under the guidance of an expert jumper.

The “run” phase of airborne training is actually conducting airborne operations. Efficient time spent before airborne operations will likely result in jumpers who are able to achieve

expertise more quickly, with fewer repetitions.

It will also reinforce that every paratrooper is a professional who is expected to know the job, regardless of rank. Jumpmaster School creates expert jumpers by training and testing both declarative and procedural knowledge. We can do the same in our formations by creating true understanding using similar methods.

One way to increase efficiency in achieving an objective “T” for a task is to ensure that leaders at all levels:

- Are experts at the tasks they are training;
- Understand the need to train and test

both the declarative memory and procedural memory to achieve expertise; and

- Understand how to determine whether a Soldier has mastered the material.

The takeaway from all this is that we must arm our team leaders with the understanding that every Soldier is different.

Some may need more emphasis in training their declarative memory (knowledge) instead of training their procedural memory (skills), or vice versa. This can happen when we empower team leaders with appropriate background knowledge by leveraging performance experts and NSRDEC

scientists. This will allow team leaders to tailor training methods to individual Soldiers to reach a shared understanding and mastery for the collective group.

Leaders at all levels must understand the science behind the crawl-walk-run methodology and the need to train and test both declarative and procedural memory to create true experts who can react to changes in their

environment by quickly accessing the appropriate type of memory to execute their tasks with adaptability and agility.

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Figure 5. SSG David Harp prepares paratroopers with 1st Brigade Combat Team to jump from a UH-60M Black Hawk helicopter at Fort Bragg, NC. Harp, the noncommissioned officer in charge of airborne operations, is assigned to 82nd Airborne Division's 2nd Battalion, 325th Airborne Infantry Regiment, 2nd Brigade Combat Team. Leaders like Harp can place more emphasis on declarative memory by giving classes that cover the fundamentals of jumping out of airplanes / helicopters and then testing that knowledge through verbal or written exams. (Photo by SGT Michael J. MacLeod)



Figure 6. SPC Ronald Turner, 325th Airborne Infantry Regiment, provides security for fellow Soldiers who are searching for insurgents and weapons in Mianashin, Afghanistan. (U.S. Army photo)

The Tactical Intelligence Officer's Role in the Stryker Cavalry Squadron

by 1LT Michael Dompierre

This article encompasses my personal perspectives, influenced by both doctrine and successful experiences at National Training Center (NTC) Rotation 15-10, on the role of the military intelligence (MI) lieutenant (or assistant S-2 officer) who is serving on the cavalry squadron staff as well as at the (forward) tactical command post (TAC CP). These perspectives focus both on what I view as our S-2 section's triumphs as well as shortcomings in the fast-paced, decisive-action (DA) environment of NTC.

Doctrinal lack

First, it should be noted that the role of the assistant S-2 at the squadron TAC CP is not addressed in the canon of Army doctrine. Field Manual (FM) 3-20.96, *Reconnaissance and Cavalry Squadron*, as well as FM 6-0, *Commander and Staff Organizations and Operations*, do not clearly define the role of the intelligence officer at the TAC CP. Army Technical Publication (ATP) 2-01.3 *Intelligence Preparation of the Battlefield* [IPB], fails to mention the forward TAC CP whatsoever.

ATP 2-19.4, *Brigade Combat Team Intelligence Techniques*, does highlight the activities associated with the TAC CP but only at the brigade level, as the title suggests. In Paragraph 2-2, it states, "Commanders employ the [TAC CP] as an extension of the main [CP]. ... The [TAC CP] relies on the main [CP] for planning, detailed analysis and coordination."¹

This reference goes on to detail the responsibilities of the TAC CP, which are, in sum, current-operations battle-tracking and "short-range planning."² What this passage fails to account for is the role of the TAC CP when the main command post is "jumping," or re-locating closer to the forward-line-of-own troops. That is, what is not mentioned is what is supposed to occur when the forward CP has to replace the main CP and all its associated functionality to the greatest extent possible



Figure 1. The 2-1 Cavalry staff wargame as part of MDMP during NTC Rotation 15-10.

to support the commander's situational awareness and decision-making process until the time when the "jump" is complete and the main CP has been re-established.

If there exists a legitimate reason to outline doctrinally defined duties for the assistant S-2, the established practice of the TAC CP fulfilling the temporary role of the main CP and "taking the fight" would satisfy the need. Regardless, discussion of the role of the intelligence warfighting function (IWff) at the forward CP is omitted.

Too often, what is lacking in MI doctrine is clear guidance about the roles and associated duties the MI junior officer must successfully perform to provide the commander intelligence that is timely, accurate and relevant – and with enough detail to enable situational understanding and effective decision-making.³ Fortunately, throughout my time in 2nd Squadron, 1st Cavalry Regiment, I was never at a loss for what intelligence outputs my squadron commander expected of me and through what medium he expected me to deliver them to both the staff as

well as our reconnaissance troops. However, that was because my squadron commander mentored me based on both his experience and expansive understanding of maneuver doctrine and made his intelligence requirements clear. As an MI professional, I consider this MI doctrinal void of clearly defined roles and responsibilities for my fellow junior MI officers in the tactical environment both puzzling and problematic.

Instead of merely observing this problem, I will next put forth my recommendations for what the assistant S-2 must be fully trained and prepared to do to contribute to the IWff in support of the squadron commander's intent, underlying tactical objectives and the desired endstate.

Assistant S-2 role

The assistant S-2 in a cavalry squadron, according to the 2-1 Cavalry squadron modified table of organization and equipment (MTOE), is billeted as the "tactical intelligence officer."⁴ It makes the MI junior professional wonder where this term originated from

because it certainly does not have current MI doctrine as a source. Army Doctrine Reference Publication (ADRP) 3-90, *Offense and Defense*, defines the tactical level of war as “the level of war at which battles and engagements are planned and executed to achieve military objectives assigned to tactical units or task forces. Activities at this level focus on the ordered arrangement and maneuver of combat elements in relation to each other and to the enemy to achieve combat objectives.”⁵

It is clear the tactical intelligence officer for the squadron, in performing his or her duties at the TAC CP, must focus on the enemy threat in relation to friendly maneuver. In other words, the focus should be on current operations. While this is a rudimentary interpretation of the role of the squadron assistant S-2, I will now outline what I consider to be the fundamental responsibilities of the squadron tactical intelligence officer, using my experiences as a foundation.

First and foremost, the assistant S-2 is considered (and must be) the subject-matter expert on all things that pertain to any potential threats the cavalry squadron may encounter within its area of operations. This is a big task; it requires at least several months of focused, dedicated preparation in formal and informal training contexts, including rigorous self-development outside of normal duty hours. This expertise also must be tailored to the squadron’s mission.

For example, one of the priorities an assistant S-2 who is preparing for a rotation at NTC should focus on is 11th Armored Cavalry Regiment’s Multiple Integrated Laser-Engagement System (MILES) ranges (as well as Donovanian Red Book ranges for simulated weapon effects). Understanding the technical aspects of the MILES system and the actual ranges of those Donovanian weapon systems helps the squadron and troop commanders better conceptualize possible enemy courses of action (CoAs) and associated tactics, techniques and procedures.

Of course, being able to communicate the “so what” to the squadron commander is of utmost importance. For

example, knowing the Russian scout vehicle *Boyevaya Razvedyvatelnaya Dozornaya Mashina-2* with mounted AT-5 Spandrel anti-tank guided missile has an improved MILES range of 5,000 meters is of less immediate intelligence value than understanding this is a contributing factor that explains why it has had a 20:1 kill ratio in prior rotations, according to information gathered in the Leaders’ Training Program and from members of the Wrangler Team at the NTC. The endstate of communicating this may lead to its “high-value target” nomination in the military decision-making process (MDMP) by the squadron targeting and fire-support officers (FSOs). Understanding both the technical aspects of a defined set of weapon systems and how they relate to enemy tactics and decision-making should be what the tactical intelligence officer strives for in service to the commander’s situational awareness.

Second, the assistant S-2 must recognize that to synchronize the IWfF at squadron level, one must be closely tied to the S-2 – who traditionally will lead the intelligence section in IPB product development and dissemination through MDMP – as well as with the FSO in the target-nomination process. I place emphasis on this planning consideration because it is not always a given that the assistant S-2 will be present for most of MDMP at the squadron tactical-operations center (TOC) and may be forward for an extended time with the squadron commander and operations officer. This is crucial to understand because while advising the commander at the TAC CP, when there is a question about enemy attrition levels, threat-component identification (fixing force vs. exploitation force and so forth), or the enemy’s timing on the battlefield, the commander will usually defer to the assistant S-2 and not the S-2 for the sake of time, expediency and occasional degraded frequency-modulation (FM) communication.

Thus one must understand all key outputs from the product-development period of mission preparation – from the analysis involved in developing the enemy most likely and most dangerous CoAs to critical enemy decision points,

such as the trigger for Field Artillery Scatterable Munitions employment. The assistant S-2 can best inform the commander from a common baseline, enabling predictive assessments on threat activity at the TAC CP, by remaining consistently involved and synchronized with both product development (the process) and the products (the outputs).

Being proactively nested with future operations planning at the main CP or TOC while the TAC CP is not deployed is an efficient method for remaining on the same page as the staff, S-3 and, most importantly, the squadron commander. Our 2-1 Cavalry squadron staff realized from an early point in our training glidepath (Sustainable Readiness Model) that, due to time constraints unique to the cavalry mission, it was necessary to drastically reduce the length of the operations-order products we developed and to make them more packageable and complementary.

We commonly referred to these products as the “eight troop-commander products.” The S-2 contribution to this product package was the most-likely CoA (MLCoA), the most-dangerous CoA (MDCoA) and the information-collection (IC) matrix.

Ironically, the collective decision on the part of the staff, acting from the squadron commander’s guidance, to focus on these products benefitted the staff as much as it did our troop commanders.

Troop commanders could attend the opord brief and receive all the products as handouts (instead of a 25-page written opord lacking enough operational graphics). This made it easier for them to clearly understand what was expected because it was clearly outlined in eight well-defined, manageable products. I affirm that this method of product dissemination saved the troop commanders time in their efforts to adhere to the “one-thirds, two-thirds” planning principle and ultimately reduced confusion.

From the staff perspective, the adoption of the eight troop-commander products enabled clear expectation management from the beginning of the MDMP. This helped the S-2 know

exactly what products we needed on which to focus most of our efforts. Then we adjusted our planning accordingly.

I highlight the eight troop-commander products because this medium for understanding the underlying components of the traditional opord was best suited for maintaining situational awareness with the squadron commander and S-3 through successive battle periods at NTC, especially when I (as the assistant S-2) was absent from the MDMP while forward with the TAC CP. It is hard to argue an opposing viewpoint on this matter; when deploying with the TAC CP, it is most expedient to quickly review and refresh oneself on mission requirements and staff outputs while oriented on eight packaged, graphical products rather than trying to make sense of a 25-page written opord.

This proved especially true during the later battle periods at the NTC when fatigue had become a fact of tactical life. In the end, tailored, refined opord products enable an assistant S-2 to remain the most value-added during the performance of his or her designated duties at the TAC CP.

Third, the assistant S-2 must have an intimate knowledge and a rolling assessment of the threat's disposition and composition at the ready for the squadron commander at all times. On occasion, this may require more than a verbal brief. It may require a graphical presentation on acetate to the S-3 and squadron commander for subsequent presentation to another battalion commander. It may require producing Joint Capabilities Release (JCR) overlays representing up-to-the-minute threat locations.

Being successful in this duty to the commander involves leveraging the intelligence enterprise at all echelons, higher and lower. It involves establishing a squadron intelligence primary, alternate, contingency and emergency means of communication (PACE) plan (or being nested with the BCT S-2 PACE plan if one has been implemented) that facilitates quick, reliable access to company intelligence support teams (CoISTs) as well as to BCT S-2 via Lower Tactical Internet (TI) platforms.

Before sending our CoIST analysts to the reconnaissance troops, I would ensure they understood I would communicate to them first on the squadron operations and intelligence (O&I) net and second via JCR. I implemented this plan based on feedback I received from the CoIST from the collective-training events we conducted as a squadron in the months before our NTC rotation. I determined (based on their input) that it was usually easier for them to get on the O&I net than to communicate via JCR because of the other competing requirements at the troop CPs and the preferences of the troop executive officers.

In addition to establishing a communications plan with CoIST, I ensured that the BCT S-2 section understood that the only way to communicate with our squadron S-2 section during a TOC jump was through Lower TI via FM or JCR with me at the TAC CP. I intimated many concerns from the beginning of our rotation with our squadron S-2 about how effective intelligence-sharing with higher headquarters would be under these circumstances since the BCT S-2 section expected that battalions and our cavalry squadron almost always had established Upper TI platforms in place (which was routinely not the case because of the mission set).

We had a superb S-6 and S-6 section, but veterans of cavalry organizations understand how often Upper TI platforms must be broken down and re-located in the midst of a DA fight. It took two battle periods at NTC for the battalions and BCT S-2 section to iron out these communication issues.

A solution to this problem is to ensure the BCT S-2 section has an active JCR (or FM) operator from the start of operations to ensure intelligence-gathering and analysis is captured and disseminated. This is important even when the cavalry squadron and battalions are re-locating their main CPs and exercising mission command from their TAC CPs without Upper TI.

Challenges

I begin the final section of this review of recommended responsibilities for a squadron assistant S-2 by considering the most challenging aspects of MI junior-officer duties from both the

analytical and leadership perspectives. First, a major analytic challenge while conducting IPB and developing products for the squadron and troop commanders was creating quality assessments about the enemy's desired end-state. ATP 2-19.4 states – in a discussion of the critical functions of performing IPB Step 3, "Evaluate the Threat" – that "knowing how the threat conducted previous operations can provide insight into possible objectives and the desired endstate. ... Against a conventional military force, the analysis should start at more than one level above the friendly echelon unit."⁶

Thus, what our squadron intelligence section should have emphasized in every mission analysis brief, wargaming session and MLCOA/MDCoA brief was what the enemy brigade tactical group – and, if possible, the division tactical group – missions were and what military, economic, political and social objectives served as the basis of these missions. Instead, our section and likewise the BCT S-2 section rarely discussed these threat higher-echelon mission statements.

In the absence of this assessment of the threat, our section proceeded to base our threat CoA development on prior threat activity in previous battle periods in addition to focused analysis from the outcomes of internally "playing red" and thinking in terms of how the threat would see U.S. forces in the given tactical situation.

My squadron commander, LTC Steven T. Barry, emphasized that when I was conducting threat analysis to frame my thinking in terms of four points of view: "How red sees blue, how blue sees blue, how blue sees red and how red sees red."

If ongoing IC efforts are unable to provide timely intelligence pertaining to formulating a predictive enemy end-state, these methods are used as a next resort from which the enemy threat model is built from the ground up, using what information is available.

This orientation on previous patterns of enemy activity – as well as an examination of the threat's understanding of the four points of view mentioned – facilitate creating IPB products that can

much better articulate what the threat will most likely choose as a CoA in the absence of assessments based off recent IC efforts.

One excellent set of resources that enabled us to create enemy CoA products that were commended by commanders at multiple echelons was threat doctrine manuals (such as FM 100-2-1, FM 100-2-2 and FM 100-2-3, which articulate Soviet land-warfare doctrine, as well as the Training Circular 7-100 series).

As an MI lieutenant and leader on the squadron staff and as a representative of the IWfF at the commander's TAC CP, it is imperative one has a solid, clear understanding of what the Army pays you to do and what the MI Branch has trained you to do.

Bob Kizlik artfully states in his definition of what embodies a profession that "the profession collectively, and the professional individually, possesses a body of knowledge and a repertoire of behaviors and skills (professional culture) needed in the practice of the profession; such knowledge, behavior and skills normally are not possessed by the nonprofessional."⁷

Recap

The purpose of this review of my personal experiences as a squadron assistant S-2 at NTC is to enhance the MI professional's and maneuver leader's understanding of the role and duties that should be attributed to the assistant S-2 or squadron tactical intelligence officer. I used anecdotes of successful experiences, lessons shared from my squadron commander and a doctrinal foundation when possible to illustrate my points.

If MI doctrine, as embodied in the current canon, will not fully define what the tactical intelligence officer must do to be successful on both the staff and at the TAC CP – and likewise make it readily apparent – then junior MI professionals must take this task on and define it ourselves.

The assistant S-2 must understand the repertoire of behaviors and skills, or professional tradecraft, necessary to both conduct the IWfF and to master the duties necessary to paint a predictive, accurate and timely intelligence picture for the commander.



Figure 2. A TAC CP established during NTC Rotation 15-10.

As staff MI lieutenants who have not served any time "on the line," it is easy to succumb to the psychological fallacy that, by extension, we provide less value during the MDMP, have little to base our assessments on during briefs and product development, and must be unduly influenced by our other staff peers into adopting their line of thought or assessment when providing feedback to the commander. This form of thinking must be discarded.

The U.S. Army Intelligence Center of Excellence trains MI junior officers well; it is my aspiration that this review helps elucidate the principles and personal procedures the assistant S-2 in a cavalry squadron should adopt to fulfill the requirements of the commander. I also hope to describe what it means to be an MI professional, second to none.

Our credibility is established among

our (usually) more experienced peers on staff through knowledge and articulation of doctrinally sound assessments; the capacity to describe the big picture for the squadron commander, executive officer, S-3, FSO and troop commanders; and our ability to remain adaptive enough to respond quickly and intelligently to updated information requirements from the squadron commander and troop leadership.

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Intelligence Basic Officer Leaders' Course. 1LT Dompierre has a bachelor's of arts degree in political science from the University of Notre Dame.

Notes

¹ ATP 2-19.4, *Brigade Combat Team Intel-*

ligence Techniques, Feb. 10, 2015.

² Ibid.

³ Ibid.

⁴ UIC WJHCAA MTOE, effective date March 16, 2016.

⁵ ADRP 3-90, *Offense and Defense*, Au-

gust 2012.

⁶ ATP 2-19.4.

⁷ Robert Kizlik and Associates, *Characteristics of a Profession*, Nov. 20, 2015, www.Adprima.com/profession.

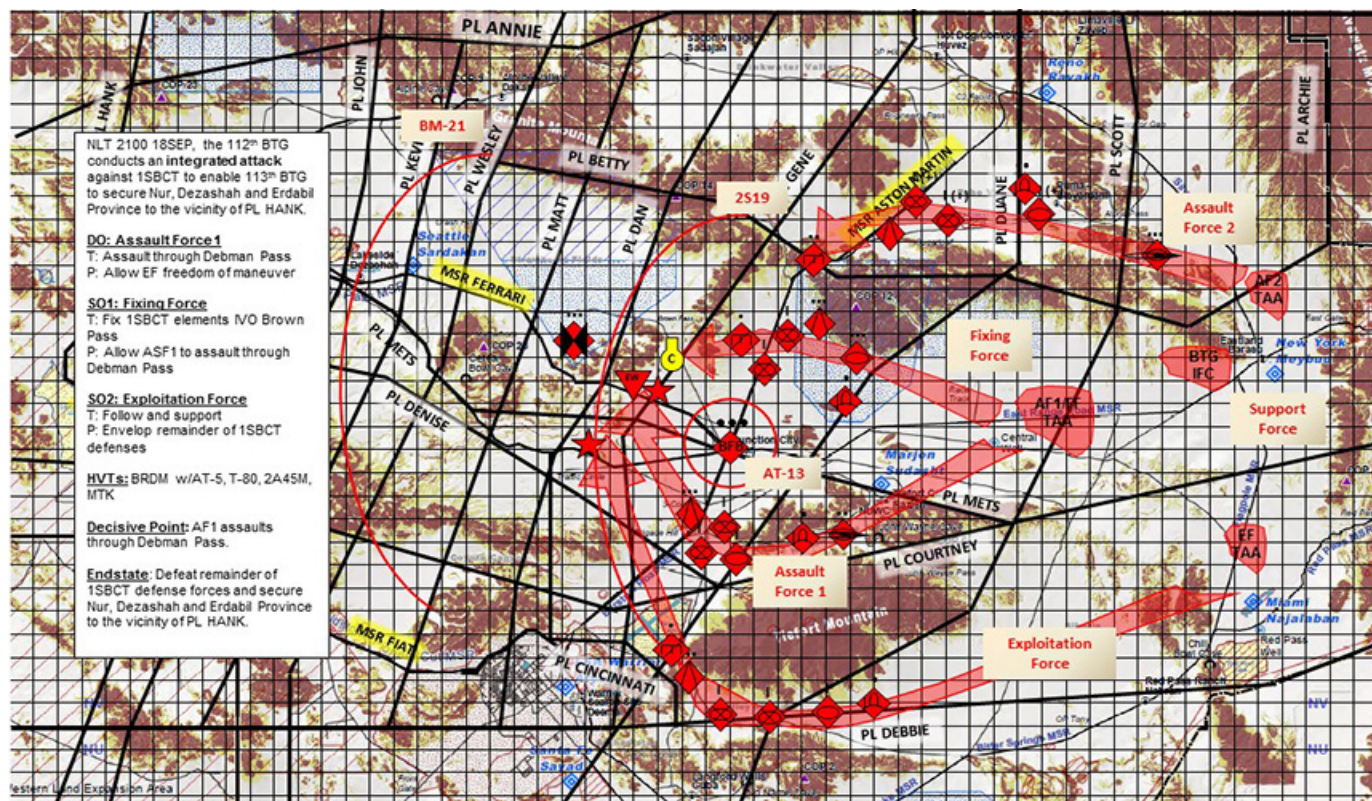


Figure 3. The MLCOA/MDCoA troop-commander product as part of the eight troop-commander products.

Ranger School Provides Tips for Shaping Training Plans

by COL David G. Fivecoat, CPT
Ronnie L. Cunningham Jr. and CPT
Sam S. Rieger

The challenges current leaders face on the contemporary battlefield are more demanding than that of our forefathers. Ranger-qualified Soldiers are physically and mentally tough, technically and tactically proficient in small-unit tactics, and able to think, act and react effectively in stressful environments. Producing Ranger-qualified leaders remains a top priority for the Maneuver Center of Excellence (MCoE) at Fort Benning, GA.

Over the past three years, a consistent trend is that Ranger students struggle to successfully complete the Ranger Physical Assessment (RPA), the 12-mile foot march and the land-navigation test during the Ranger Assessment Phase (RAP). In fact, a Ranger class will lose almost 50 percent of its students during RAP week, the first 96 hours of Ranger School.

*(Editor's note: In the upcoming update to Department of the Army Pamphlet 600-3, Chapter 9, **Armor Branch Commissioned Officer Professional Development and Career Management**, second lieutenants assigned to infantry brigade combat teams (IBCTs) and Stryker brigade combat teams (SBCTs) will attend the Army Reconnaissance Course and Ranger School. Second lieutenants assigned to armored brigade combat teams are strongly encouraged to attend Ranger School. Captains assigned to IBCT Cavalry squadrons will attend Cavalry Leader's Course and are highly encouraged to attend Ranger School.)*

The following blueprint provides Soldiers and units assistance in shaping training plans to increase their success at Ranger School.

RPA

The RPA is the No. 1 cause for Ranger students to be dropped from the course. Over the course of Fiscal Year

(FY) 2015, 862 students – or 35 percent of those who arrived at Camp Rogers – failed one of the RPA's four events, which consist of 49 push-ups in two minutes, 59 sit-ups in two minutes, a five-mile run in 40 minutes and six chin-ups. To be successful, Soldiers and units should focus their training to ensure all Ranger students can exceed the RPA standards.

The RPA starts at 4 a.m. at the combatives pit next to Malvesti Field near Camp Rogers. All students, regardless of rank, gender or unit, will be placed in one formation. Students will then randomly move to one of 25 Ranger instructors (RI) for push-up grading. On the command "Go," students will begin executing correct push-ups. A correct push-up is described in the **Army Physical Readiness Training Manual**, Training Circular (TC) 3-22.20, (Appendix A, Page A-6).

A correct push-up is performed when a student bends his/her elbows, lowering his/her entire body as a single unit until his/her upper arms are at least parallel to the ground. The student will assume the "start" position by placing his/her palms on the ground with arms fully extended, body in a general straight line from the shoulders to his/her feet and with feet no more than 12 inches apart. He/she raises his/her entire body until his/her arms are fully extended. The student's body must remain rigid in a generally straight line and move as a unit while performing each repetition.

The RI will count aloud and provide feedback to the student on his/her push-ups. If the student fails to complete the first 10 push-ups correctly, the RI will stop the student and explain why he/she is not performing correct push-ups and send the student to the retest area, where he/she is tested again by a different RI after 10 minutes. If the first 10 push-ups are completed correctly, the RI will not stop the student until the two minutes have

expired. If the student fails to complete 49 push-ups in two minutes, he/she is sent to the retest area and has 10 minutes of rest before retesting with a different RI. Once the student successfully completes 49 push-ups, the RI will tell him/her to stop, regardless of the amount of time remaining, and he/she will proceed to a separate formation to prepare for sit-up testing.

The sit-up assessment and retest will proceed in the same fashion as the push-up event. Once the last student has completed 59 sit-ups in two minutes, students will be given 10 minutes before the five-mile run begins.

The five-mile run is an individual run to assess the cardiovascular endurance of Ranger students. Students are allowed to wear a watch to pace themselves. Students can fail the five-mile run test for three reasons: failure to reach the 2.5 mile turnaround within 20 minutes; failure to return to the finish line with the popsicle stick given at the 2.5 mile turnaround; and failure to finish the entire five-mile course within 40 minutes. There is no retest for the five-mile run.

Ten minutes after the 40 minutes expire for the five-mile run, students are tested on performing six chin-ups. When instructed by the RI, students will mount the chin-up bar with palms facing in and arms fully extended. Students are not allowed to wear gloves, cross their legs, swing or rock, and must not touch the RI positioned about 12 to 18 inches in front of the student.

When given the command "Up," students will pull themselves up until their chin is completely over the bar. Once his/her chin is over the bar, the RI will give the command "Down," and the student will lower himself/herself back to the start position with elbows locked and feet remaining off the ground. There is no time limit for the chin-up event. If a student fails to meet the standard, he/she will be given a retest 10 minutes after his/her failed



Figure 1. Ranger Class 4-11 (Feb. 20, 2011) begins the mountain phase by learning lower-mountaineering skills, including rappelling and how to tie various types of knots at Camp Merrill, Dahlonega, GA. (Photo by John D. Helms)

attempt. If a student is unsuccessful for a second time, he/she will be dropped from the course.

The events of the RPA and standards are not a secret. The Army pushup as defined in TC 3-22.20 is the standard and the only standard RIs use to evaluate the pushup. The best way for units to increase success rates and properly prepare students is to hold every Soldier to the Army standard. The

Airborne and Ranger Training Brigade (ARTB), which is responsible for conducting the Ranger Course, wants Ranger students and units to know what is expected of them so they are successful.

Another tool to assist a Ranger student's physical preparation is a physical-training program located on the ARTB Website (<http://www.benning.army.mil/infantry/RTB/>).

12-mile foot march

The 12-mile foot march is the second-highest cause of student attrition from the Ranger Course. In FY 2015, 415 students, or 16.8 percent, failed to meet the standard of the 12-mile foot march. The 12-mile foot march is an individual event that assesses a Ranger student's ability to move rapidly along 12 miles of uneven terrain within three hours. For safety reasons, a student



Figure 2. A Ranger student performs push-ups under the watchful eye of SSG Dustin Ketterl, an RI. (Photo by CPT Michael La Rocque)



Figure 3. SFC William Hall leads Ranger students in the five-mile run. (Photo by CPT Michael La Rocque)

must reach the six-mile mark by 100 minutes and the eight-mile mark by 128 minutes, or he/she is dropped from the course.

The 12-mile foot-march course is six miles out and six miles back over hardball and trail roads. The students wear/carry Army combat uniforms/operational camouflage pattern uniforms, boots, fighting load carrier, patrol cap, head lamp, an M4 rifle and a modular, lightweight, load-carrying equipment rucksack. The designated packing list is a 35-pound rucksack with an

additional 12 pounds of water, totaling 47 pounds.

Based on Ranger-student feedback, there are two main causes for foot-march failure. The first, and most prevalent, is that students' training plans do not include weekly scheduled six-, eight-, 10- or 12-mile foot marches with a 47-pound rucksack for at least eight weeks before arriving at Fort Benning. Students must have time under the ruck to strengthen their back, legs and shoulders, and to toughen their feet. There is a physical-training plan on the ARTB Website.

The second reason is that unit training plans fail to mimic the cumulative effect of RAP week. The foot march is the last event after the RPA, the combat water-survival assessment, the Malvesti Confidence Course, land navigation and four days with little sleep. Soldiers who are not physically prepared struggle at completing the foot march. Units' pre-Ranger programs should try to mimic the cumulative nature of RAP week by replicating the back-to-back events to truly assess a Soldier's physical and mental endurance.

Land navigation

In FY 2015, 382, or 15.5 percent, of Ranger students did not pass the land-navigation test and were dropped from the Ranger Course. The land-navigation test assesses a Ranger student's ability to successfully locate four out of five points in five hours starting at night and transitioning to daylight. Students have 2.5 hours during limited visibility and 2.5 hours during the day to complete the test using only a pencil, map, compass, protractor and red-lens flashlight. It is a self-correcting course, and distances traveled between points are typically 1,000 to 1,500 meters. The total distance of the course averages five to eight kilometers, depending on the Soldier's navigation proficiency.

The first navigation test is on the morning of the second day of RAP week. If a student fails to meet the standard during this testing period, the retest is on the morning of the third day. The retest is on the same course, but the student is given a different set of points. If the student fails this second evaluation, he/she will be dropped from the course. It is important to note that if he/she meets the standard on the second land-navigation test, he/she will have walked an extra five to eight kilometers, which may impact his/her potential success during the 12-mile foot march the next day.

At Ranger School, students struggle to meet the standard for a variety of reasons. The first, and most prominent, is the Army's shift away from traditional land-navigation skills and reliance on Global Positioning System technology. A second reason is the students' lack of ability to terrain-associate and



Figure 4. Ranger Course students engage in the 12-mile foot march. (Photo by CPT Michael La Rocque)

develop attack points. Potential students should focus on training the basics of land navigation as outlined in TC 3-25.26, **Map Reading and Land Navigation**, and successfully complete at least three tests on land-navigation courses before attending Ranger School.

If resources at the Soldier's home station are scarce, virtual training on land navigation using Virtual Battlespace 2 is available on the ARTB Website.

Additional factors

During FY15, 175 students, or 7.8 percent, of attendees failed patrols. Before attending the course, Ranger students should read and have a solid understanding of Chapter 2, "Operations," and Chapter 7, "Patrols," of the **Ranger Handbook**. Students can obtain the latest version of the Ranger Handbook at the ARTB Website.

If a student can physically succeed at meeting the standards of RAP week, his/her chances at eventually graduating Ranger School substantially increase.

Outsourcing the solution

Fortune 500 companies outsource to maximize efficacy of an organization when organic resources are inadequate. The same can be done for preparation for Ranger School. The Ranger Training Assessment Course (RTAC) is taught at the Army National Guard (ARNG) Warrior Training Center (WTC)

located on Fort Benning. The course trains on similar terrain as Ranger School and affords students the opportunity to acclimatize to the Fort Benning weather. This provides an obvious advantage over other division-level pre-Ranger courses. Also, the close relationship maintained by the WTC and the ARTB historically affords their graduates with a 15-percent higher success rate at Ranger School over other division pre-Ranger programs.

RTAC is a free resource for active-duty Soldiers and can be provided at minimal cost to ARNG units.

RTAC is a two-week-long course that concentrates on the high-attrition events of RAP week. Students complete a Ranger physical-fitness assessment (49 push-ups in two minutes, 59 sit-ups in two minutes, five-mile run in 40 minutes and six chin-ups), five days of land navigation, multiple obstacle courses, combat water-survival test and a three-day field-training exercise with patrolling classes. During the course, RTAC cadre focus on push-ups, the foot march and preparation and execution of land navigation – events that historically and currently cause the most failures during Ranger School.

In addition, WTC's medical staff will review and correct as many deficiencies as possible in a student's medical records during this time. Upon successful completion of RTAC, students take a three-day pass prior to in-processing into Ranger School.

More information on RTAC can be found at <http://www.benning.army.mil/tenant/wtc/pr.htm>.

Improving pre-Ranger courses

Installation pre-Ranger courses can take advantage of several resources at the ARTB. Division-level pre-Ranger courses can visit ARTB, observe RAP week events and visit the Ranger Instructor Training and Education Program to get the latest classes taught at Ranger School, and maximize time with RIs to understand lessons-learned.

Another avenue of approach is for division-level pre-Ranger courses to request a visit from ARTB cadre to enhance and standardize their existing course structure. In this instance, if training and manning requirements allow, the ARTB will send a cohort of senior RIs to a division's pre-Ranger program and provide feedback on current course standards to ensure students are well prepared to succeed. To coordinate a visit, contact the ARTB S-3 at (706) 544-6602 or usarmy.benning.tradoc.mbx.artb-s3-operations@mail.mil.

Finish strong

Units and Soldiers can increase their success at Ranger School by focusing pre-training on being successful during RAP week. This includes strictly executing push-ups during the RPA, sustaining the mental and physical toughness to meet the three-hour standard on the 12-mile foot march, and honing the basic navigation skills required to pass the land-navigation test on the first attempt. A proven method to increase success at Ranger School is to take advantage of the WTC's RTAC. Units can improve their home-station pre-Ranger course by reaching out to the ARTB and either visiting Fort Benning or requesting a visit.

"Without a doubt, Ranger School is the most physically and mentally demanding course in the U.S. Army," said MG Scott Miller, MCoE's former commanding general. "By using the assets described in this article and focusing pre-training on the top three events that students fail, Soldiers and units will increase their success at Ranger School."

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include J-35, the Joint Staff, U.S. Central Command Division chief, Washington, DC; commander, 3rd Battalion, 187th Infantry Regiment, Fort Campbell, KY; and commander, Company C, 3rd Battalion, 504th Parachute Infantry Regiment, Fort Bragg, NC. His military schooling includes Ranger, air-assault and airborne schools. He holds a bachelor's of science degree in military history from U.S. Military Academy, West Point; a master's of arts degree in military arts and science from U.S. Army Command and General Staff College; and a master's of arts degree in national security strategy from the National War College. His awards and honors include four Bronze Star Medals, an Army Commendation Medal with V and a master parachutist tab.

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FSNCO, 3-325 Airborne Infantry Regiment, Fort Bragg, NC. His military schooling includes Maneuver Captain's Career Course, Infantry Basic Officer Leader's Course, Joint Forward Observer Course, Officer Candidate School and air-assault, Jumpmaster, Ranger and Pathfinder schools. CPT Cunningham holds a bachelor's of science degree in finance from Hawaii Pacific University. His awards and honors include a Bronze Star Medal with V, Bronze Star Medal, Purple Heart and Meritorious Service Medal.

CPT Sam Rieger is an assistant operations officer at HHD ARTB. Previous assignments include chief of optometry, U.S. Army Health Clinic-Katterbach; project manager, U.S. Army Center for Health Promotion and Preventive Medicine-North, Fort Meade, MD; and brigade environmental-science officer, 3rd



Figure 5. Ranger students test themselves on the Darby Queen confidence course. (Photo by CPT Michael La Rocque)

Brigade Combat Team, 82nd Airborne Division. CPT Rieger's military schooling includes Army Medical Department (AMEDD) Captain's Career Course, AMEDD Basic Officer Leader's Course, Expert Field Medical Badge and air-assault and airborne schools. CPT Rieger holds a bachelor's of science degree in biology from Wake Forest University and a doctorate of optometry from University of the Incarnate Word Rosenberg School of Optometry.

The Overlooked Mentors

by MAJ Terron Wharton

My military journey started in 1997 the day I walked into my first high-school Junior Reserve Officer Training Corps (JROTC) class, where I met retired SFC Alan Conrad. Conrad had served 20 years in Special Forces and then retired to his hometown to teach at his old high school. He was a huge part of why I joined the military, and he had a major impact on my leadership style. Ten years later, as I patrolled in Baghdad as a platoon leader, I encountered many moral and ethical dilemmas. In every case, one thought always came to my mind: What would Conrad think of my actions?

Without knowing it, Conrad became my first mentor. He taught and instilled a work ethic, persevering spirit and moral foundation that would serve me at West Point, in Baghdad's streets and on Afghanistan's hills. I am proud to

say we still keep in touch, and this past year he made the trip to Fort Leavenworth to promote me to major.

We often talk about mentoring junior officers and how important it is for senior officers to find and develop protégés. I have two senior-officer mentors, one active and one retired, who have been invaluable and irreplaceable in the things they have done for my growth and development.

What we overlook is that the most important mentor for a young officer is not a senior officer. It is a noncommissioned officer (NCO). At each stage of my career, it was an NCO who molded, shaped and developed me into the leader I am today. NCO mentorship is critical to an officer's success – a criticality that, while acknowledged to a degree, is drastically understated.

NCOs are the primary mentors in the

three most critical stages of officer development: the cadet, the platoon leader and the company commander. Unfortunately, NCO mentorship's criticality to officer development is often overlooked by both the officer and NCO corps. However, better understanding this criticality will enable the Army to leverage this relationship to improve junior officer leader development.

Establishing character in cadets

NCOs are present at every level of officer professional military education (PME) from cadet to captain. Every Reserve Officer Training Corps (ROTC) program and cadet company at West Point has a tactical NCO. Cadet summer training is led by NCOs. The primary instructors at my Armor Officer Basic Course (OBC) were NCOs. Officer PME contains a heavy NCO presence



until the captain's career course.

Retired MSG James Gentile, my former first sergeant, finished his Army career as an ROTC instructor. He said he strongly believed that early interaction with mature, experienced NCOs helped cadets establish good foundations, a view that grew stronger after he taught ROTC.

"Listening to their concerns regarding development made me wish I had that assignment prior to becoming a platoon sergeant. I learned that despite being a new platoon leader, these were people/leaders who truly cared and were passionate about leading teams in complex environments and wanting to win. ... Their No. 1 fear was they would not be competent enough at first and would potentially lose credibility in the beginning of their tenure. I found that part not surprising but was shocked at how much importance they placed on that vs. the other leadership attributes, especially personal character."

At the cadet stage, NCO mentorship should focus on the single most important officer trait: character. Army Doctrine Publication (ADP) 6-22, **Army Leadership**, defines character as the leader's values and identity. Further, it states leaders with a strong, values-based identity offer an example for followers to emulate. Conversely, it posits that a leader's lack of confidence could stem from lacking a strong idea of their own identity. In short, who are **you** as a person and as a **leader**, and what is that based on?

Any college-age kid has a hard enough time figuring out who they are as a person, let alone as an Army leader. However, that sense of identity, rooted in values, will establish a leader's character. This is why the NCO's role in cadet development should center on character demonstrated by example. By modeling the Army Values, the NCO-officer relationship and professionalism, cadets get a comprehensive example of what "right looks like," both in themselves as leaders and the NCOs with whom they will serve.

Molding future leaders begins at the pre-commissioning stage and has a lasting impact. This is especially true when helping to mold and establish

character rooted in the Army Values, morals and ethical behavior.

Need proof?

Nearly 20 years after our first meeting, every tough decision I make is accompanied by the same question: What would Conrad think of my actions?

Critical takeaways:

- **Mentorship focus:** Character.
- **For all:** NCO mentorship plays a critical role in officer development during the early years of an officer's career that will help define how those officers lead Soldiers during their careers.
- **For cadets:** How does my tactical NCO embody the Army Values and professionalism? How do they interact with their officer counterparts?
- **For NCOs:** My actions have a tangible, lasting impact on shaping future officers. How am I modeling the Army Values and professionalism? How am I modeling the NCO role in the NCO-officer relationship? Am I taking an active role in developing the cadet or am I simply following the program of instruction?

Growing platoon-leader competence

I met my platoon sergeant, SFC Victor Gutierrez, on a late afternoon deep in the Fort Hood, TX, training area. He was waiting at the company command post to grab me, and as I exited the humvee, he walked up, saluted and laid out the next 12 hours: What would happen, what I'd say when I met the platoon, how I would brief my operations order, the things I'd say to my tank commanders, and the way I'd deliver my opord. I gave a rather stunned "Why, yes, that sounds good. We'll do that." Over the next three hours I saw that Gutierrez had set me up for success, ensuring I made an excellent first impression with the platoon and my NCOs. It was the start of a great relationship that lasts to this day.

Gutierrez acted as a sounding board, giving advice and teaching me my craft. He possessed never-ending patience and would let me step in it (as long as it didn't violate ethics or place a Soldier at risk) so I would learn from

my mistakes. Most of all, he led by example. That example, attention to detail, adherence to standards and the importance of presence made a permanent impact I've carried forward through my whole career.

NCOs are the Army's primary teachers, trainers and instructors, and SFC Conrad Vasquez said he believes that role covers officers as well as Soldiers. Vasquez served as a platoon sergeant for nearly four years, as a first sergeant for two more, and he is now with the University of Oregon ROTC program. His opinion on the NCO role was very blunt: "If you see a jacked-up company commander, chances are he had a jacked-up platoon sergeant when he was a platoon leader."

Vasquez served as one of my platoon sergeants while I was in command. Before every range, field-training exercise, gunnery or lane, I would see Vasquez off with his platoon leader, helping the lieutenant rehearse opords, going over parts of the plan or teaching a new tactic, technique or procedure. Whether employing fires, setting a screen line or teaching shooting techniques on the range, Vasquez trained his platoon leader as much as he trained his Soldiers.

Vasquez helped instill a high level of competence that demonstrated itself in his platoon leader's behavior, confidence and how the lieutenant led his platoon. Did the lieutenant have potential?

Yes, he did.

Did I have a role as his commander?

Of course.

However, Vasquez was the primary mentor who molded and developed that potential. When I look at that officer today, I see Vasquez, not myself.

Note that ADP 6-22 defines three categories of competencies: "The Army leader serves to lead others; to develop the environment, themselves, others and the profession as a whole; and to achieve organizational goals. Competencies provide a clear and consistent way of conveying expectations for Army leaders."

Competency is how officers lead and influence Soldiers, accomplish

missions and maintain a positive command climate rooted in Army Values, morals and ethics. ADP 6-22 further describes that leader competencies can be grown and that growth happens somewhere very specific: the direct-leadership level. For officers it does not get more direct than being a platoon leader.

At the cadet level, the NCO focused on mentoring character to provide a foundation. At the platoon leader-platoon sergeant level, the NCO should focus mentorship on competence to build upon that foundation. Both Gutierrez and Vasquez had a single focus: ensure their officer knows his job so he can lead effectively in combat. In both cases, character and judgment were mentored as issues arose, but the day-to-day focus was on teaching the platoon leader his craft.

Platoon sergeants have seen many officers, good and bad, during their careers. The platoon leader arrives with a (relatively) blank slate, while the platoon sergeant has greater experience, technical and tactical knowledge, time in service and a higher maturity level. At this point in their careers, new officers will have very few examples of how NCOs should act, what they should know or what they should do. As a result, new officers typically look back on two things. First, what did their officer instructors tell them their platoon sergeants should be like? Second, what examples did their tactical NCOs and OBC instructors set?

If those expectations are positive and platoon sergeants understand their role and position, typically mentorship can begin fairly easily. However, if cadets saw NCOs modeling poor values, low competence and unprofessional behavior, it can breed suspicion of NCOs in general. This can make it hard to establish the trust necessary for mentorship to occur.

The platoon leader-platoon sergeant relationship is special. An officer never forgets his first platoon sergeant, whether the NCO was good or bad. Similarly, a platoon sergeant never forgets the first platoon leader he trains. For the officer, being a platoon leader marks the first step in his or her career. For the NCO, this is his or her first real leadership job as a senior NCO. Instead

of reducing this relationship to clichés, we need to appreciate what it (the relationship) is to maximize it when developing junior officers.

Critical takeaways:

- **Mentorship focus:** Competence.
- **For all:** NCOs mentor platoon leaders to increase their competence, thereby building on a character-based foundation established during pre-commissioning.
- **For platoon leaders:** How will I establish trust with my platoon sergeant? Does the example my tactical NCOs and OBC instructors set match what my platoon sergeant does? Why or why not? How will I use my platoon sergeant to increase my competence?
- **For NCOs:** How will I establish trust with my platoon leader? Does my platoon leader have a solid character-based foundation? What am I doing to ensure the platoon leader knows his or her craft?

Developing commander's judgment

As a cavalry-troop commander, I was fortunate to have Gentile as my initial first sergeant. Gentile had already been a platoon sergeant and a first sergeant for two other commanders. I met him on a small combat outpost in Kandahar City, Afghanistan, and he had incredible impact on mentoring me as a troop commander. We started every morning with coffee, a cigarette and talk: old business, new business, his thoughts on how the troop was doing, and even my own concerns and doubts.

A defining trait for our troop was disciplined Soldiers. One day, as will happen in command, a Soldier screwed up and landed before my desk. This Soldier had been in the troop a while, but he was a relatively new NCO. Still, he was very good at his job. I really did not want to take any action other than a slap on the wrist. However, there was a problem: the screw-up involved a sensitive item and had occurred in front of other Soldiers. The NCO had directly set conditions for the equipment to be stolen and, despite the item being recovered, this was a pretty big lapse in judgment on his part.

I had constantly preached discipline, justice and holding people accountable regardless of their rank. I certainly did not want to ruin the NCO's career, but I had few options. In a moment of intense personal conflict, Gentile told me something I would never forget: "Sir, at the end of the day it comes down to this: Do we have the strength to do what the Army tells us to do as leaders?" That was it: black and white, right and wrong, a single standard.

I let the NCO keep his stripes, but the cost was steep. I suspended the loss of rank but took the maximum amount of pay I could, and maxed him out on restriction and extra duty. On top of that, we were a week from coming home from deployment, and his restriction and extra duty would not start until we returned. I held the NCO accountable, sick to my stomach the whole time, but the lesson stuck with both of us. Doing anything else would have been abdicating my legal and moral responsibility. I had heard that time and again from more senior officers, but I learned it from Gentile that day.

Over those morning coffee-and-cigarette sessions, Gentile mentored me by molding, shaping and refining my sense of judgment. My officer mentors gave it to me in stark, discrete terms. Gentile helped me understand the nuance, to read the unit's pulse and adjust accordingly, and to ensure my actions communicated my intent. He taught me how to be a commander by living what he preached: standards, discipline, attention to detail and knowing your craft. Most of all, he helped develop my sense of judgment.

ADP 6-22 does not mention judgment directly but captures it under the "intellect" leader attribute: "The leader's intellect affects how well a leader thinks about problems, creates solutions, makes decisions and leads others. ... Sound judgment enables the best decision for the situation at hand. It is a key attribute of the transformation of knowledge into understanding and quality execution."

The ADP makes a critical point: It is not enough for the officer to have knowledge to execute sound judgment. Intellect's awareness must advance to understanding and must be actively ap-

plied, not passively maintained.

Do I take rank or just pay? Do I take Uniformed Code of Military Justice action at all? Do I formally counsel, or sit down and have a heart-to-heart talk? Do I chew ass or give praise? Do I hang out with the Soldiers and clean weapons after mission, or do I keep distance? Am I being too hard or too soft? Am I communicating the right commander's intent with my action or not? Learning the answers to those questions is the essence of a commander's judgment.

There is no other responsibility like command. I could drastically alter someone's life with a single word or stroke of pen. I could take rank and pay, erasing years of work and imposing financial burden. I could send a Soldier to jail. Most of all, my decisions in combat, right or wrong, could cost Soldiers their lives, potentially widowing a spouse or orphaning a child. That weight is tremendous.

Judgment comes from the character established during the cadet years and the competence grown as a platoon leader. Applying these to a situation and making a decision is judgment. Company commanders have tremendous responsibilities when exercising judgment. However, the key is establishing good judgment during the company-command years before the impact grows exponentially. A company commander can send a man to jail; a general can send a man to prison. I can take a specialist's rank and pay; a brigade commander can end a 15-year career. My bad judgment in combat may kill a squad; a battalion commander's bad judgment could kill a whole company. Therefore, an NCO's ability to mentor, or failure in mentoring judgment, can have serious implications for hundreds or thousands of Soldiers in the future.

Critical takeaways:

- **Mentorship focus:** Judgment.
- **For all:** The judgment officers develop as company commanders will typically follow throughout their careers with greater repercussions the higher they ascend.
- **For company commanders:** How does my first sergeant exercise judgment in Soldier issues? How

does my judgment tie into "good order and discipline?" What are indicators that my judgment has been good or poor?

- **For NCOs:** Does my commander have any character or competence flaws that must be addressed? How do I help my commander evaluate his or her personal judgment? How do I shape my commander's judgment?

Tying it all together

I have had many influential NCOs throughout my career – for example, Conrad as a JROTC instructor, Gutierrez as my platoon sergeant and Gentile as my first sergeant. Each one provided mentorship during critical, formative years that informed and solidified the leadership and mentorship style I use today. However, the NCO role in officer mentorship is often reduced to cliché soundbites. Officers hear: "Listen to your platoon sergeant and first sergeant" and NCOs hear: "Don't let your officer screw it up."

If both sides reduce the NCO mentorship role to clichés, this prevents us from taking full advantage of NCO mentorship when developing junior officers. NCO mentorship to cadets establishes character rooted in Army Values. This character provides a foundation for the platoon sergeant to grow his or her platoon leader's competence. Together, character and competence gives the first sergeant the basis to begin developing a company commander's judgment. The next stage builds on the previous, and an uncorrected flaw early on becomes harder and harder to repair in the future.

Unfortunately, these flaws can impact the lives of hundreds – possibly thousands – of Soldiers and their families as the officer advances through the ranks. Also, at high enough levels, these flaws can affect strategic partnerships and civil-military relations, and they can impact operational and strategic success. By not giving the NCO mentorship role the emphasis it deserves, we risk both sides not taking it seriously. Not taking it seriously risks losing out on a golden opportunity to truly shape future leaders for the better.

So what is the key to NCOs effectively mentoring officers?

Gutierrez, Gentile and Vasquez all said variations of the same: trust, character and competence. Each believed trust was the most important. The relationship must be founded on trust, candor and honesty. Trust allows the NCO to develop the officer's competence and character. However, if an NCO loses trust, or it fails to develop at all, none of the NCO's knowledge or skills matter. The officer is no longer receptive.

Character comes into focus when trust is established. Vasquez was adamant about NCOs helping to shape character. I vividly remember Gutierrez and the tone and look he would give me when I said something that even alluded to choosing an easier path over doing the harder, correct thing. Every NCO must reinforce Army Values, standards and discipline through leading by example. Gentile said he believes NCOs who can articulate what personal courage, values and professionalism mean in everyday leadership challenges will help their officers navigate tough decisions as they arise.

Competence comes to the fore once trust is established and character has been reinforced. As such, NCOs are the Army's subject-matter experts, teachers and trainers, and part of their responsibility is to share that knowledge with their officers. NCOs must take an active role in developing their officer's competence, whether that's fire and maneuver, how to write NCO Evaluation Reports or planning. Developing an officer's competence gives him or her the confidence and skills to lead effectively.

There is a reason every officer has an NCO counterpart. As cadets, platoon leaders and company commanders, officers are exploring, developing and refining their leadership style. NCO advice and mentorship is critical during this time to crystalize how officers will lead Soldiers the rest of their careers.

Need proof?

Nearly 20 years after our first meeting, every tough decision I make is still accompanied by the same internal question: What would Conrad think of my actions?

Critical takeaways:

- **Mentorship focus:** Tactical NCOs

establish character in cadets. Platoon sergeants grow competence in platoon leaders. First sergeants develop judgment in company commanders.

- **For all:** Each level of mentorship builds on the previous. Flaws early in the process become more difficult to correct as time goes on.
- **For officers:** Am I making the most out of my relationship with my NCO? Have I set the conditions for mentorship or simply mission accomplishment?
- **For NCOs:** Am I making the most of my opportunity to shape the officer corps? Have I set the conditions to enable mentorship, or am I just focused on mission accomplishment? Are there flaws in my officer's

development that I must stop and correct before proceeding with the current level of mentorship?

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Figure 1. SFC Mark Leavens, right, issues a troop-level operations order to fellow students during the reconnaissance phase of the Cavalry Leader's Course at Fort Benning, GA. NCOs are the primary mentors in the three most critical stages of officer development: cadet, platoon leader and company commander. Unfortunately, the NCO mentorship's criticality to officer development is often overlooked by both the officer and NCO corps. However, better understanding this criticality will enable the Army to leverage this relationship to improve junior-officer leader development. (Photo by MAJ Joe Byerly)



FROM THE SCREEN LINE

316th Cavalry Brigade Begins Teaching Tactical-Network Lethality

by CPT Derek Harris and Rick Hughes

The 316th Cavalry Brigade, located at Fort Benning, GA, teaches the students of Stryker Leader's Course and Stryker Master Gunner Course a block of instruction in tactical-network lethality (TNL). This coincides with the decision by the product manager (PdM) and Training and Doctrine Command Capability Manager-Stryker to implement this capability within selected Stryker units. (First Stryker Brigade Combat Team (SBCT) at Fort Carson, CO, was the first unit equipped with TNL functionality and successfully employed it during their last National Training Center rotation.) By providing training now, 316th Cav Brigade prepares Soldiers to employ this emergent capability upon their return to a TNL-equipped SBCT.

The SBCT sensor capable of supporting TNL is a network-capable version of the scout's Long-Range Advanced Scout Surveillance System (LRAS3). By "netting" LRAS3, an Ethernet connection from the sensor to the vehicle's Joint

Capabilities Release (JCR) or Joint Battlefield Command Platform (JBCEP) system enables robust bidirectional data exchanges, creating a powerful collaborative-engagement tool.

The sensor's netted software provides a varied tool chest of electronic functionality. These include routine task automation, battlefield sensor management, capture and forwarding of branded imagery and a basic anti-fratricide capability. However, the primary TNL enabler is centered on cue-to-target (CTT) functionality.

CTTs are very easy to perform. Each time the sensor operator performs a valid lase, with a single button press the system performs an operation that packages the self-location, bearing and elevation of the target, all into the CTT message format. The CTT is then forwarded to the local JCR or JBCEP system.

Off-platform exportation of the CTT is no different than any command-and-control message routinely sent by the vehicle commander. One, or several, remote netted sensors can be tagged to receive the message.

Remote sensors, upon receipt of a CTT message, compare their current self-position to the CTT data. On-screen directional arrows generated on the sensor's display guide operators to the target's lased position. Images taken at the time of lase can be optionally attached to the CTT message and

viewed as a picture-in-picture (P-n-P) image simultaneously with the directional arrows. P-n-P imagery helps increase Soldier confidence that the correct target is identified.

Currently within the SBCT formation, CTTs are shared only between scout vehicles mounting the netted LRAS3. However, the potential exists for other Stryker variants to become TNL capable in the future. This would more closely emulate the infantry brigade combat team (IBCT) TNL capability which has, in addition to LRAS3, the netted version of the Fire-Support Sensor System (FS3) found on the M1200 Armored Knight and the tube-launched, optically tracked, wire-guided (TOW) Improved Target Acquisition System.

CTTs can be employed for various purposes, but a standard IBCT scenario is "sensor-shooter" collaboration. For instance, although scouts have limited ability initiating basic call-for-fire requests with the netted sensor, the real force-multiplier resides in the ability to now team with a netted FS3-equipped fire support or netted TOW platform. Advantages include the fire-support crews employing a wider palate of munition choices while being electronically assisted by more detection devices to potential targets. On the other hand, scouts can remain undetected longer while simultaneously creating added lethality through collaboration.

The CTT capability can be effective on either the attack or in defense. A basic battlefield assumption is that the people firing at you are the same people that detected you. CTTs allow premeditated collaborative engagements by whom, when and with weapon which best entices the enemy to their least advantaged line of attack.

From a program-office standpoint, development of the TNL capability proved



Figure 1. Stryker Leader's Course students learning TNL.

to be extremely economical. The effort consisted primarily of developing the TNL software that was loaded into the existing sensors. Tactical networks currently in use provide paths for battlefield data movement. The result is a modernized, cutting-edge, tactical capability that allows the Army to extend the network-lethality sensor's service life as an option. One more benefit is that, as tactical-network bandwidth improvements are made, network lethality is also improved with no further effort; however, network-lethality software enhancements are always possible.

This is not to imply that other legacy or new systems cannot take advantage of the network-lethality functionality. PM-JBCP maintains – and can make available to other program offices – the network-lethality Interface Control Document (ICD) detailing current technical information.

TNL is the result of a collaborative effort by PdM-JBCP, PdM-Ground Sensors, PdM-Close-Combat Weapons Systems, PdM-Stryker's M1200 Armored Knight Program Office and the Army's Software Engineering Directorate, along with support from corporate partners.

Army offices interested in exploring how TNL may enhance a system or program or are interested in obtaining more netted LRAS3 information should contact Robert Youngblood, robert.e.youngblood2.ctr@mail.mil, (703) 704-4772. For more information concerning the netted FS3, contact Dave Edwards, david.j.edwards82.civ@mail.mil, (586) 282-7963. For information concerning the PM-JBCP ICD, contact Krupal Kapadia, krupal.s.kapadia.civ@mail.mil. For information about Stryker institutional training, contact



Figure 2. SBCT Soldiers receive a netted LRAS3 familiarization brief.

Rich Eggers, richard.w.eggers.civ@mail.mil, (706) 545-8671.

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The Thunderbolt: a Reminder of What Makes Armor Unique

by CPT Lazaro Oliva Jr.

What is Armor? Many in our branch find it difficult to answer this question. Most cannot articulate the difference between Armor and infantry. Others will say that the Armor mission is obsolete and that the branch should focus on the cavalry mission.

I, however, believe that our branch is more than just a tank and more than just infantry support. Armor represents a combined-arms approach to war, and while the infantry and cavalry missions are inherent in what we do, we must not lose sight of what makes Armor unique. It's called **shock effect**, and it's represented by the thunderbolt on our insignia. It's a symbol of our ability to overwhelm our enemy.

Shock effect paralyzes our enemy with fear, both physically and psychologically, and it is a result of our tempo. The Army defines tempo as "the relative speed and rhythm of military operations over time with respect to the enemy." Our ability to make critical decisions, maneuver and destroy the enemy at a time and place we choose allows us to retain the initiative; it's what makes us the "combat arm of decision," the only force on the modern battlefield capable of creating this effect.

But how is it that an Armor officer or noncommissioned officer develops this skill – how does he become the thunderbolt? It is done through training as part of a formation within an armored brigade combat team (ABCT); leaders in our branch describe the experience as "turret time." The "thunderbolt" refers to the speed at which the fight develops and only occurs in an ABCT.

In an ABCT, for example, it is common to operate in an area of operations that is 100K x 100K. What makes us different are the large maps we operate on, our rate of march and a fight that

can and often will begin and end in a matter of minutes – and sometimes seconds – from distances as great as five kilometers away (long before you are capable of seeing the enemy with your own eyes). This forces our leaders to make on-the-spot decisions in rapid succession. Turret time is what produces an agile and adaptive leader, capable of processing large volumes of information very quickly and making decisions that help us retain the initiative, preserve our tempo and ultimately strike paralyzing fear into our enemies, creating our signature shock effect. So it is our ability to employ our weapons systems effectively that makes us what we are, the thunderbolt.

World War I (birth of the thunderbolt)

From its creation as the Tank Corps in World War I, the Armored Force has always understood that to achieve a decisive victory, it had to be part of a larger team – a combined-arms team. Proof of this can be found in the branch insignia first worn by crewmen in the Tank Corps. The insignia was conceptualized in the shape of a triangle and divided into three equal parts. At the top is the color yellow, which symbolizes the mobility associated with the cavalry. To the bottom left is infantry blue, which represents our ability to close with and destroy the enemy. To the bottom right is red, the color of field artillery, known for its ability to engage and destroy the enemy from extraordinary distances, providing freedom of maneuver for its brothers in arms.

This insignia represents the concept of a combined-arms team in which all parts are equally important in accomplishing a mission. Any Soldier who belonged to the Tank Corps wore the insignia.

The tank was a revolutionary weapon

created to restore maneuver to the battlefield through the use of mobility, shock and firepower. The advocates of this new weapon realized they needed a way to cross no man's land with enough combat power to penetrate the enemy's elaborate trench network; the tank was a weapon that did just that.

This new weapon also had a devastating shock effect on the enemy. "Its ability to stun the soldier until his mind was dominated by fear and self-preservation was a weapon commanders used to attack the nerves of an army and spread terror through its organization," according to the Armor School's publication *This Is Armor*.¹

The "demoralizing effect the new machine had"² helped restore mobility to the battlefields of Western Europe and ultimately resulted in an Allied victory over the Central Powers. It was at this moment that the War Department recognized the effectiveness that shock effect had on the enemy, and it became a trademark of the Armored Force.

Forging thunderbolt

Offensive characteristics such as speed and tempo – which are synonymous with the Armored Force today – were not as prevalent in first-generation tanks. The tanks that helped the Allies break the stalemate on the Western Front and win World War I were laden with problems. They were mechanically unreliable, very slow and lacked adequate firepower and protection; this made them easy targets for German artillery. Also, the logistical lines of communications that would allow them to exploit opportunities and achieve early victory had not been conceptualized or assembled. This often allowed the enemy to conduct successful counterattacks and recapture ground they had lost.

These weaknesses led to a lot of

skepticism from senior leaders in the other branches such as infantry and cavalry about the future role of tanks, but in spite of those concerns, "The U.S. Tank Corps under Rockenbach continue[d] ... to endure," wrote historian Mildred H. Gillie. "Then, on June 4, 1920, under the provisions of the National Defense Act ... the Tank Corps was abolished, and its equipment and personnel inherited by a somewhat indifferent infantry arm."³

The situation remained unchanged until Summer 1927 when Dwight Davis, U.S. Secretary of War, witnessed a British demonstration of mechanized warfare. He knew instantly that the United States needed to develop a mechanized force, and as soon as he returned from his trip to England, he met with GEN Charles P. Summerall, the Army Chief of Staff. The results of this meeting "forever altered the development of tanks in America."⁴

At about the same time this new mechanized force was being developed, a cavalry officer named Adna Chaffee received orders to the training section of the Army's G-3. In 1928, just a year after arriving at his new job, Chaffee submitted a paper that "outlined for the first time for official consideration a definite program leading to the creation of the Armored Force. The new force was to be a union of all the arms: cavalry in armored cars for reconnaissance, tanks to strike the enemy, infantry in trucks to hold the ground won by the tanks ... artillery on tracks to provide supporting fire [and] engineers to build and clear."⁵

This force would place special emphasis on speed, armor and operating radius. The goal was to restore mobility on the modern battlefield and achieve a quick and decisive victory in war. The Army approved the proposal, and the uncertainty and opposition that ensued in the following years never deterred Chaffee from pursuing his vision.

Technological advancements during this time solved a lot of the issues that plagued the World War I Tank Corps. The latest models had better protection, could travel at speeds of up to 40 miles an hour, were better armed and were more capable of negotiating very

difficult terrain. The mechanical reliability increased exponentially.

Chaffee assembled 7th Cavalry Brigade (Mechanized) at Fort Eustis, VA, and later moved it to Fort Knox, KY. They trained endlessly; tested new tactics and best practices; and ultimately wrote new doctrine. The shoulder insignia for this new unit was a set of tank tracks, which represented mobility and armor protection; a superimposed cannon, representing long-range firepower; and a lightning bolt to denote the shock effect it produced.

This insignia was superimposed on the World War I Tank Corps insignia, and it became the standard insignia for the Armor School and all the armored divisions before World War II – and it still is today.

Lightning war

On May 9, 1940, German panzer divisions swept through the Ardennes Forest and into France. Within the first 10 days, they reached the English Channel's coast and split the Allies, sending the British into retreat across the Channel. By the end of June 1940, the French government had surrendered. The Germans' use of armor was so effective that they were able to accomplish in six weeks what they failed to do in five years during World War I.

The Germans referred to this new form of warfare as *blitzkrieg*, or "lightning war," denoting both the speed with which operations were conducted and the shock effect created by the concentration and tempo that characterizes it.

Our leaders couldn't ignore any longer Germany's decisive strikes, which served as the catalyst for uniting our leaders to support creation of an



Figure 1. The Armor School's insignia incorporates World War I's U.S. Army Tank Corps insignia and tracks, cannon and lightning bolt of the Armored Force created during World War II.

independent Armored Force. The Armored Force was born July 10, 1940; both tanks and mechanized cavalry fell under the responsibility of this new force.

Chaffee became chief of the Armored Force and commander of the I Armored Corps. His responsibilities also included "the development of tactical and training doctrine for all units of the Armored Force," wrote Dr. Robert S. Cameron, the Armor Branch's historian.⁶ This led to the creation of the Armor School at Fort Knox, which played a critical role during the rapid expansion of the Armored Force leading up to and lasting through World War II.

Unfortunately, Chaffee died of cancer before the United States became involved in the war, and he never got the chance to see the fruits his hard work and unwavering commitment produced. It is for his efforts that he is known as the Father of Armor.

As the war progressed, American armored forces found themselves center stage, playing a pivotal role in every major theater and in every major victory the Allies achieved. These victories weren't attained by tanks alone but through the successful use of the combined-arms team. It was the armored divisions that led the Allies over the Rhine and into victory in Europe,

and history is full of examples like these.

One instance is 101st Airborne Division's defense at Bastogne. As the story goes, the brave paratroopers, operating alone, were able to secure the city and single-handedly prevent the mighty German offensive from seizing the city of Bastogne during the Battle of the Bulge. The part that is not well known is that the 101st wasn't alone but was augmented by elements of two armored divisions: Combat Command Reserve, 9th Armored Division, and Combat Command Bravo, 10th Armored Division. It was this combined-arms team that prevented the Waffen-SS, the armed element of the SS, from enveloping the city. This siege would

not be lifted until Patton's Third Army penetrated the German line and regained the initiative for the Allies.

Modern armor

1990s. The presence of an armored force on the battlefield is a game-changer for the side that employs the capability. Eagle Troop demonstrated the shock effect produced by an armored force during Operation Desert Storm in the Battle of 73 Easting when 2nd Armored Cavalry Regiment, serving as the advance guard for 1st Infantry Division, encountered a division of enemy armor. Through quick, decisive action and the effective employment of mobile, protected firepower, the troop destroyed a division of the elite Iraqi Republican Guard, suffering minimal

casualties in the process. This scene repeated itself many times during the ground offensive, and the tempo set by American armor resulted in a decisive victory against Iraq, which had the fourth-largest standing army in the world at the time of the invasion.

The Battle of Mogadishu in 1993 serves as another example but one when the U.S. operation went awry. The enemy force within the city achieved fire superiority and denied the quick-reaction force access into the city by emplacing tactical obstacles, blocking key avenues of approach. This resulted in staggering losses for the Rangers and Delta Force operators who were attempting to rescue the crews of two downed helicopters. The commanding officers of

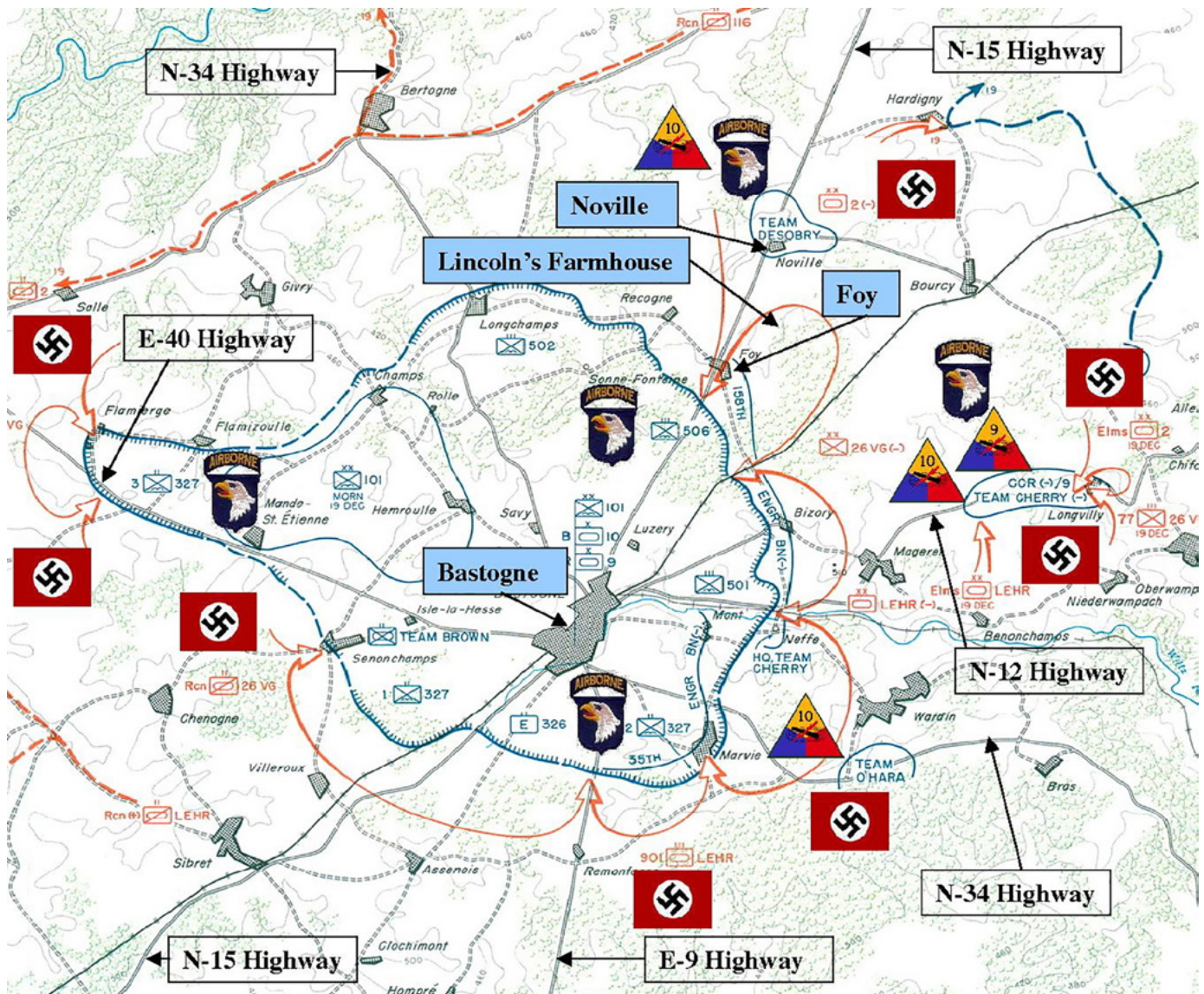


Figure 2. Elements of 9th Armored Division and 10th Armored Division assist 101st Airborne Division in its defense of Bastogne during the Battle of the Bulge.

Special Operations Forces in Somalia had to request armored forces under the United Nations' control to breach the obstacles and fight their way to the crash sites to rescue the surrounded Rangers.

2000s. Twelve years later, 3rd Infantry Division (Mechanized) led a second armored assault into Iraq. Iraq surrendered after two swift strikes – now known as thunder runs – rolled into Baghdad's heart and forced the Iraqi government's collapse during Operation Iraqi Freedom. The same was true of the armored force that recaptured the city of Fallujah just one year after the Iraqi government surrendered. During the 2nd Battle of Fallujah in 2004, two ABCTs cleared the city, and in this instance tankers worked side-by-side with mechanized infantry to clear the city.

Whether in urban terrain against an insurgent force or the open desert against a conventional army, Armor has repeatedly proven its value. Our superior firepower allows us to engage irregular adversaries at distances that exceed the maximum effective range of the weapons employed by an irregular threat. "Heavy armor enables friendly forces to survive initial engagements and respond with precise, timely, direct fire that generates less collateral damage than do artillery or air strikes," wrote David E. Johnson.⁷ The infantry must resist the urge to think that it can do it on its own, or we will be forced to relearn a 100-year-old lesson.

Complex world

In the near future, the United States will likely face a **hybrid threat**. The concept of a hybrid threat is defined in doctrine as "the diverse and dynamic combination of regular forces, irregular forces and/or criminal elements all unified to achieve mutually benefiting effects." Army leaders explain that the "[h]ybrid threat will use an ever-changing variety of conventional and unconventional organizations, equipment and tactics to create multiple dilemmas."

This is not a new concept; the United States faced it leading up to and during the Vietnam War. Russia's ongoing operations in Ukraine are the most recent examples of this hybrid approach. The most dangerous aspect of a hybrid adversary is that it can organize into a conventional force, or it can blend back into the population and operate as an irregular force, making it difficult to destroy.

To defeat such enemies, friendly forces must use combined-arms ground fire and maneuver to close with adversaries and force them to either fight or move, thus exposing them to attack by direct and indirect fires. Heavy forces provide the protected mobility needed for this maneuver, and the joint force provides the fires needed to suppress the enemy and enable maneuver. Dismounted infantry complements heavy forces once the close fight is joined.⁸

We are thunderbolt

As we move forward and prepare for the future, it is critical we do not forget our heritage. From the revolutionary weapon that broke through the stalemate of World War I's no man's land to the thunder run that pushed deep into Baghdad, Armor has proven that it is the combat arm of decision. The mental agility of an Armor warfighter is the hallmark of a branch that has achieved the decisive operation of countless battles and will continue to do so in the future. While the roles of the infantry and field artillery will remain, the need for Armor's swift and overwhelming power is the key to controlling the tempo and securing a decisive victory on the battlefield; Armor is the branch of decision.

So the next time someone asks you what makes Armor different, reply, "We are the thunderbolt!"

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Benning; small-group leader with the Maneuver Captain's Career Course (MCCC), Maneuver Center of Excellence Directorate of Training, Fort Benning; commander, Company C, 3-69 Armor Regiment, 1st ABCT, 3rd Infantry Division, Fort Stewart, GA; brigade assistant plans officer, S-3 Plans, 1st ABCT, 3rd Infantry Division, Fort Stewart; mechanized-infantry-company executive officer, Company B, 1-67 Armor Regiment, 2nd ABCT, 4th Infantry Division, Fort Carson, CO; and tank-platoon leader, Company C, 1-67 Armor Regiment, Fort Carson. His military schooling includes Command and General Staff College, Cavalry Leader's Course, MCCC, ABOLC, Airborne School and Air Assault School. CPT Oliva holds a bachelor's of arts degree in psychology and history from the University of Miami and a master's of science degree in international relations from Troy University.

Notes

¹ U.S. Army Armor School Pamphlet 360-2, **This is Armor**, 2014, <http://www.benning.army.mil/armor/OCOA/content/pdf/This%20is%20Armor.pdf>.

² Mildred H. Gillie, **Forging the Thunderbolt**, Harrisburg, PA: The Military Publishing Company, 1947.

³ Ibid.

⁴ Ibid.

⁵ Ibid.

⁶ Dr. Robert S. Cameron, **Mobility, Shock and Firepower: The Emergence of the U.S. Army's Armor Branch, 1917-1945**, Washington, DC: Center of Military History, U.S. Army, 2015. Dr. Cameron bases his information on memorandums from the Adjutant General (TAG), subject: "Organization of Armored Force," dated July 10, 1940, and TAG to the chiefs of all arms and services, subject: "Report of Board of Officers on Development of Equipment for Armored Divisions," July 16, 1940, both in Item 179, Reel 36, National Archives Project, George C. Marshall.

⁷ David E. Johnson, **Heavy Armor in the Future Security Environment**, Rand Corporation (http://www.rand.org/pubs/occasional_papers/OP334.html), 2011.

⁸ Ibid.

BOOK REVIEWS

Riding for the Lone Star: Frontier Cavalry and the Texas Way of War, 1822-1865, Nathan A. Jennings, Denton, TX: University of North Texas Press, 2016, 402 pages (including photographs and maps), \$32.95 cloth, \$26.36 ebook.

ARMOR readers should recognize the name of an Armor Branch brother-in-arms and author of several articles published in the branch's professional-development magazine. Winner of the Armor School's 2015 Starry Writing Competition for his essay, "Balancing the Combined-Arms Force" (published in **ARMOR**'s July-September 2015 edition), MAJ Nathan Jennings' thoughtful writing has recently been showcased in a book called ***Riding for the Lone Star: Frontier Cavalry and the Texas Way of War, 1822-1865***.

The cavalry officer's subject of frontier Texas is a topic he has previously forayed into in **ARMOR** with "Learning the Long-Distance Raid: Comanche, Rangers and 2nd U.S. Cavalry on the Texas Frontier" (July-September 2014 edition) and "Unleashing Tactical Audacity: 8th Texas Cavalry Regiment in the Civil War" (July-September 2015 edition). In ***Riding for the Lone Star***, Jennings greatly expands on his concepts of the evolution of Texan militarism and Texas' signature "way of war."

The idea of "Texas" – an idea that carries through to today – "was forged in the crucible of frontier warfare," writes Jennings. "It emerged desperately and violently between 1822 and 1865 as Anglo-American settlers encountered mounted combat north of the Rio Grande." This vast land area – long the domain of the Plains Indians and the Spanish – was a cavalry-centric battlefield that included the presence of the most lethal cavalry society in America (the Comanche), among other Plains Indian warriors, so the protection that settlers demanded "compelled an adaptive martial tradition that shaped and informed early Lone Star culture." Beginning with initial tactical innovation in Spanish *Tejas* and culminating with mobilization for the Civil War,

Jennings examines the distinctive "way of war" that Texas society developed: armed horsemanship, volunteer militancy, event-specific mobilization, nationalistic tradition, "outsized firepower" and heightened masculine ideals.

Texas made this way of war its own because it "imported weaponry and tactics from [immigrants'] home states, especially Tennessee, that included predilections for irregular warfare and reliance on field musketry," Jennings writes. "They also adopted horse mobility of Plains tribes and mirrored previous adaptation by Spanish presidios. Fusion of these military attributes resulted in a new type of frontier cavalry which eventually gained regional fame, and notoriety, as the Texas Rangers."

Riding for the Lone Star explores the historic rise of the Texas Rangers and Texas society's passion for mounted combat in general through unflinching examination of territorial competition with Comanches, Mexicans and Unionists. While statesmen Stephen F. Austin and Sam Houston emerged as influential strategic leaders, captains like Edward Burleson, John Coffee Hays and John Salmon Ford attained fame for tactical success – success often achieved due to cultural, racist and ethnic contempt of their federal, tribal and international opponents.

"[Jennings] recognizes that the Texas way of war often entailed a fearsome, racially and ethnically charged ferocity," comments Robert Wooster, author of ***The American Military Frontiers and The Military and United States Indian Policy 1865-1903***.

The U.S. Army bears some culpability once the United States annexed Texas as a state, as federal military forces could not protect Texas's borders and Anglo settlements. "Federal protection remained comprehensively inadequate to protect rapidly expanding settlements lines and left ambitious pioneers to grapple with ethnic competitors, victims and opportunists," Jennings writes. "This security lapse, even though often exaggerated by settlers, politicians and [newspaper] editors alike, ensured that Texas's way of war

remained relevant. ... The Lone Star military tradition, which could have potentially elapsed had the U.S. Army managed to pacify volatile border regions, was sustained and validated by continuous border warfare. As a result, Texas again called citizens to militarize against the chaos of its volatile position between competing tribes, lawless marauders and an unstable Mexico."

So Texas learned some lessons that would (controversially) apply today: its Rangers were equipped, trained and organized as highly mobile formations, able and willing to proactively carry the fight to the enemy. Unfortunately, Texas' way of war was also to conduct warfare against the "civilian population" (women and children in Native American villages, for example); capture horses (the means of attack) in those villages; and destroy the villages (centers of supply and rest).

In addition to the articles mentioned in this review, Jennings' work for **ARMOR** includes "Cavalry Branch: a Re-designation for the 21st Century" (January-February 2014), "Arming for Impact: Empowering Cavalry to Enhance Joint Combined-Arms Operations" (January-March 2015) and "Armored Forces: an Indispensable Component of Strategic Deterrence" (July-September 2015).

LISA ALLEY

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Patton at the Battle of the Bulge: How the General's Tanks Turned the Tide at Bastogne, Leo Barron, New York: Penguin Random House Publishing, 2015, 410 pages (including endnotes and cited works), \$16 softcover.

In ***Patton at the Battle of the Bulge: How the General's Tanks Turned the Tide at Bastogne***, Leo Barron discusses 101st Airborne Division's relief during one of World War II's famous battles. Barron – who is coauthor of the book ***No Silent Night*** and who has written articles about the Battle of the Bulge and World War II published in

professional military journals – pulls from mostly primary-source interviews and official reports of personnel and units to support his thesis that 4th Armored Division's successful mission to relieve 101st Airborne was due to its exceptionalism as unit, combined with the U.S. Army's superior capabilities.

It's not primarily about Patton, as the title suggests it is.

The book exhibits excellent depth and multiple points of view. It incorporates not only American primary sources, but also German and Belgian first-hand accounts. The narrative is organized chronologically, focusing on initial movements of both the United States and Germany and then engagements between 4th Armored Division and the Germans in towns on the approaches to Bastogne. Barron's points are well supported by multiple sub-arguments, focusing on logistics and leadership, backed by credible evidence from his primary sources.

One of Barron's best sub-arguments centers on the gifted mid-level officers of 4th Armored Division. He highlights how many of these officers, such as Creighton Abrams, were some of the best in the Army, and their success was due to their "tactical acumen and quick thinking," which "led directly to the division's success." Abrams' tactical decision-making, in particular, is well dis-

played in the final breach at Assenois.

In addition to the unit's great leadership, Barron also highlights 4th Armored Division's advantages. Another one of the most detailed sub-arguments contrasts the motorized capabilities of the two armies. Barron clearly demonstrates the U.S. Army's advantage of being "almost completely motorized, [while] the German army still relied heavily on horse-drawn transport." This provided a logistical advantage for the United States and a severe disadvantage for the Germans, as they were unable to transport food or vital equipment such as anti-tank weapons.

Another key point Barron highlights were advantages in U.S. air support. The "Luftwaffe never seriously challenged the American advantage in close air support" and 363rd Fighter Group "wreaked havoc on the Wehrmacht."

Clearly the strength of Barron's book is the superior level of research. Although it is a very detailed account of 4th Armored Division's path of advance, the book's organization represents its greatest weakness. Since it is organized by battles, it is harder to interpret and assess his sub-arguments since the focus of each chapter rests on that particular engagement, requiring the reader to focus hard on each chapter.

Another criticism, as referred to, is that the title is misleading; there is actually little discussion of Patton's role in this event. *Foreign Affairs* expressed a similar critique in its review. (See Lawrence Freedman, "Three Books on the Battle of the Bulge," *Foreign Affairs*, March/April 2015, <https://www.foreignaffairs.com/reviews/capsule-review/three-books-battle-bulge>.)

Barron's claim that the exceptional 4th Armored Division, supported by U.S. industrial advantages, was key in relieving 101st Airborne is a valid argument and is well-asserted and well-defended. Overall, it is a well-written book providing multiple perspectives through its in-depth research. Despite its misleading title, this book deserves serious attention for its depth of scholarship and relevance to the military profession. Barron provides an excellent example of how an officer – in this case Abrams – exercised disciplined initiative to seize fleeting opportunity in battle and achieve great success. This work also provides a detailed account of the individuals who fought during the Battle of the Bulge and explains why 4th Armored Division was so successful.

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CONSOLIDATED ACRONYM QUICK-SCAN

A

AAB – advise-and-assist brigade
AAC – armament accuracy check
AAR – after-action review
ABCT – armored brigade combat team
ABOLC – Armor Basic Officer Leader's Course
ACA – airspace-control authority
ACR – armored cavalry regiment
ACSC – Air Command and Staff College
ADP – Army doctrine publication
ADRP – Army doctrinal reference publication
AGST – Advanced Gunnery-Skills Trainer
AGTS – Advanced Gunnery Training Simulator
AO – area of operations
ARC – Army Reconnaissance Course
ARNG – Army National Guard
ARTB – Airborne and Ranger Training Brigade
ASOC – air support-operations center
ATG – annual training guidance
ATGM – antitank guided missile
ATHP – ammunition-transfer holding point
ATMS – Army Tactical Missile System
ATN – Army Training Network
ATP – Army technical publication
AWACS – Airborne Warning and Control System

B

BAO – brigade ammunition office
BCT – brigade combat team
BEB – brigade engineer battalion
BFist – Bradley fire-support team
BFV – Bradley Fighting Vehicle
BMP – *Boyeva Mashina Pekhoty*
BP – battle position
BSA – brigade-support area
BSB – brigade-support battalion

C

CAM – combined-arms maneuver
CAR – combined-arms rehearsal
CAS – close air support
CATS – Combined-Arms Training Strategies
CCL – combat-configured load
CCP – casualty collection point
CCTT – Close Combat Tactical Trainer
CGSC – Command and General Staff College
CITV – Commander's Independent Thermal Viewer
CLC – Cavalry Leader's Course
CLI – Class I
CLII – Class II
CLIII – Class III
CLIII (B) – Class III bulk

CLIII (P) – Class III petroleum
CLIV – Class IV
CLVIII – Class VIII
CLIX – Class IX
CoA – course of action
COIC – current-operations integration cell
COIN – counterinsurgency
CoIST – company intelligence-support team
CP – command post
CPX – command-post exercise
CRC – Control and Reporting Center
CS – capability set
CS-15 – Capability Set 15
CSDP – command supply-discipline program
CTC – combat-training center
CTT – cue to target
Cuops – current operations

D

DA – decisive action
DATE – decisive-action training environment
DFCM – direct-fire-control measure
DP – decision point
DTMS – Digital Training-Management System

E

EA – engagement area
Endex – end of exercise
EUCOM – (U.S. Army) European Command

F

FCE – fire-coordination exercise
FFE – fire-for-effect
FM – field manual
FM – frequency modulation
Frage – fragmentary order
FS3 – Fire-Support Sensor System
FSC – forward-support company
FSO – fire-support officer
FY – fiscal year

G

GST – gunnery-skills test
GT – gunnery table

H

HR – hand-receipt

I

IBCT – infantry brigade combat team
IC – information collection
ICD – interface-control document
IPB – intelligence preparation of the battlefield
ISB – intermediate-staging base
ITAS – Improved Target Acquisition System
IWff – intelligence warfighting function

J

JACI – joint and combined integration
JAGIC – Joint Air-Ground Integration Center
JBCP – Joint Battlefield Command Platform
JBLM – Joint Base Lewis-McChord
JCR – Joint Capabilities Release
JMRC – Joint Multinational Readiness Center
JOA – joint operations area
JOAX – Joint Operational Access Exercise
JP – joint publication
JROTC – Junior Reserve Officer Training Corps
JRTC – Joint Readiness Training Center

L

LFAST – live-fire accuracy screening test
LFX – live-fire exercise
LNO – liaison officer
LoE – line of effort
Logsynch – logistics synchronization
LPD – leader professional development
LRAS3 – Long-Range Advanced Scout Surveillance System
LRTC – long-range training calendar

M

MAN – Maschinenfabrik Augsburg-Nürnberg
MAS – main aid station
MBT – main battle tank
MCCC – Maneuver Captain's Career Course
MCG – mechanized combat group
MCoe – Maneuver Center of Excellence
MDCoA – most dangerous course of action
MDMP – military decision-making process
Medevac – medical evacuation
MI – military intelligence
MILES – Multiple Integrated Laser-Engagement System
MLCoA – most likely course of action
MPAT – multipurpose antitank
MRAP – mine-resistant, ambush-protected
MRE – Meal Ready to Eat
MTOE – modified table of organization and equipment
MTRCS – Multi-Temperature Refrigerated Container System

N

NATO – North Atlantic Treaty Organization
NCO – noncommissioned officer
NSRDEC – Natick Soldier Research, Development and Engineering Center
NTC – National Training Center

O

OBC – officer basic course
O/C/T – observer/coach/trainer
OEF – Operation Enduring Freedom
O&I – operations and intelligence
OIC – officer in charge
OIF – Operation Iraqi Freedom
OP – observation post
Opfor – opposing force
Opord – operations order
Opsynch – operations synchronization

P

PACE – primary, alternate, contingency and emergency (means of communication)
PB – property book
PdM – product manager
PIR – parachute infantry regiment
PL – phase line
PLF – parachute-landing fall
PMCS – preventative maintenance checks and services
PME – professional military education
P-n-P – picture-in-picture
Pol – point of injury
PSOP – planning standard operating procedures
PT – physical training

Q

QTG – quarterly training guidance

R

R&S – reconnaissance and security

RAM – random-access memory
RAP – Ranger Assessment Phase
RDSP – rapid-decision synchronization process
RI – Ranger instructor
ROTC – Reserve Officer Training Corps
RPA – Ranger Physical Assessment
RPG – rocket-propelled grenade
RSO – range safety officer
RSOI – reception, staging, onward movement and integration
RTAC – Ranger Training Assessment Course

S

SARJE – static-line control, activation of the reserve parachute onboard the aircraft, red-light procedures, jump refusals and exiting procedures
SAT – sustained airborne training
SBCT – Stryker brigade combat team
SBF – support-by-fire
SDZ – surface danger zone
SEAL – SEa Air Land
SI – sensitive item
SME – subject-matter expert
SOP – standard operating procedures
SRTC – short-range training calendar
SSA – supply-support activity
STX – situational training exercise

T

TAA – tactical assembly area

TAC CP – tactical command post
TACP – tactical air-control party
TACSOP – tactical command post standing operating procedures
TAG – the Adjutant General
TAMIS – Total Ammunition Management Information System
TC – training circular
TCE – tank-crew evaluator
TI – Tactical Internet
TLP – troop-leading procedures
TNL – tactical-network lethality
TOC – tactical-operations center
TOCSOP – tactical-operations center standard operating procedures
TOW – tube-launched, optically tracked, wire-guided
TRADOC – (U.S. Army) Training and Doctrine Command
TRP – target-reference point
TTP – tactics, techniques and procedures

U

UA – unmanned aircraft
UAS – unmanned aerial system
UBL – unit basic load
UGR – Unitized Group Ration

W

WAS – wide-area security
WTC – Warrior Training Center



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<http://www.benning.army.mil/library/content/Virtual/CavalryArmorJournal/index.htm>

70TH ARMOR REGIMENT



The shield is green with five gold spearheads representing a platoon of five tanks entering into combat in a flying wedge formation. The distinctive unit insignia was originally approved for 70th Tank Battalion (Medium) Jan. 9, 1941. It was redesignated for 70th Tank Battalion (Light) May 18, 1942. It was redesignated for 70th Armor Regiment March 29, 1963. The insignia was amended to add a motto Nov. 4, 1965.

