ARMOR

January-February 2009

ARMOR

The Professional Bulletin of the Armor Branch, Headquarters, Department of the Army, PB 17-09-1

ARMOR (ISSN 0004-2420) is published bimonthly by the U.S. Army Armor Center, ATTN: ATZK-DAS-A, Building 1109A, 201 6th Avenue, Ste 373, Fort Knox, KY 40121-5721.

January-February 2009, Vol. CXVIII, No. 1

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COVER ART adapted from original photo by SSG Jimmie McCormack.

Periodicals Postage paid at Fort Knox, KY, and additional mailing offices. Postmaster: Send address changes to Editor, ATTN: ATZK-DAS-A, ARMOR, 201 6th Avenue, Ste 373, Fort Knox, KY 40121-5721.

USPS 467-970

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

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LETTERS

Breaking Free of Institutional Inertia and Doctrinal Lethargy to Save the Cavalry

Dear *ARMOR*,

Two articles concerning reconnaissance, "The Battlefield Surveillance Brigade," by Major Jaren K. Price, and "Post Hoc, Ergo Propter Hoc (A Logical Fallacy)," by Sergeant First Class (SFC) Phillip K. Trainer, in the November-December 2008 edition of *ARMOR*, suggest to me that armor, TRADOC, and Army leaders are utterly muddling themselves into confusion. Armor needs to break out of its institutional inertia and doctrinal lethargy and take charge of its assigned cavalry role.

In "Post Hoc, Ergo Propter Hoc (A Logical Fallacy)", SFC Phillip Trainer raises valid concerns, but has misread key points of cavalry-armor and armor-infantry merger, split, and merger.

In 1942, General Herr's testimony did *not* result in the cavalry being absorbed by the Armored Force. All of the combat arms chiefs were eliminated and their functions transferred to the newly formed Army Ground Forces (AGF) [an early predecessor to today's Training and Doctrine Command (TRADOC) and Forces Command (FORSCOM)]. The Armored Force itself was also downgraded twice, first to Armored Command on 2 July 1943, and then to Armored Center on 20 February 1944. Cavalry remained a distinct branch throughout World War II. It fielded reconnaissance troops for infantry divisions, armored reconnaissance battalions for armored divisions [later divisional cavalry], and mechanized cavalry reconnaissance squadrons and groups for corps and Army [later armored cavalry squadrons and regiments]. Not until Congress passed the Army Reorganization Act of 1950 was the cavalry branch finally and officially disbanded, and its role, history, and traditions officially merged into armor.

The 1970s military occupational specialties (MOS) conversion was not a "separation" of armor and infantry. Rather, it was an administrative change recognizing reality. All combat arms soldiers have some overlapping skills, and from a management point of view at the time, it was theoretically easier to train an infantryman into a tanker (or vice versa) than starting with, say, a cook or bandsman. But as new combat equipment became far more sophisticated with electronic ballistic computers, laser range finders, gun missile launchers, mechanized infantry fighting vehicles (vice APCs), fire-and-forget missiles, night-vision optics, and so on, it became too disruptive to swap trained soldiers into supposedly similar units with which they were completely unfamiliar; hence, the separation of distinct armor/cavalry and infantry MOS groups.

History aside, SFC Trainer also misperceives a problem of reconnaissance not having a "…single proponent …for training and developing these soldiers," and also on the role of reconnaissance to "develop the situation for maneuver brigades." Let me address these in reverse order.

We do not need centralized reconnaissance training any more than we need centralized marksmanship training. These are common tasks performed and executed by any and all types of units and at all levels and echelons.

As far as cavalry is concerned, reconnaissance is only one of its many tasks. In turn, armor is the proponent for cavalry regiments, squadrons, and troops and has been since 1950, as previously mentioned. The roles and missions of cavalry are [or at least were] clearly spelled out in U.S. Army Field Manual, (FM) 17-95, *Cavalry Operations*, dated 24 December 1996:

Chapter 1; Section I. The Role of Cavalry; Fundamental Role: "The fundamental purpose of cavalry is to perform reconnaissance and provide security in close operations. In doing so, cavalry facilitates the corps or division commander's ability to maneuver divisions, brigades, and battalions and to concentrate superior combat power and apply it against the enemy at the decisive time and point."

Regarding "heavy and light/stealth or fight" reconnaissance, see Chapter 3; Reconnaissance Operations; page 3-2, the second full paragraph: "Cavalry needs the capability to perform reconnaissance using both methods. Scouts require vehicles and aircraft that allow reconnaissance by stealth and the ability to fight when necessary. The troop and squadron support scouts with tanks or other heavier vehicles, attack helicopters, and fire support, which provide the primary fighting capability."

I encourage you to re-read the two paragraphs quoted above as they are key to understanding cavalry operations.

Cavalry is a *combined arms mounted combat organization* employed by division and corps commanders. The countless infantry patrols; battalion scouts; nuclear, biological, and chemical (NBC) recon; engineer recon; signal intercept; military intelligence (MI) collection; and so on, although may be employed in support of or as part of reconnaissance operations, are *not* cavalry specific.

Cavalry and MI roles are complementary, but not interchangeable. Cavalry conducts reconnaissance, security, and combat operations; MI collects and analyzes information, including that provided by cavalry operations, the ubiquitous and countless tactical and technical reconnaissance efforts, routine and special reports, and any and all pertinent information that might be collected from all sources.

This leads me to the next article, "The Battlefield Surveillance Brigade" by Major Jaren Price. As I read the description of the organization, I noticed an abomination — it ignores existing doctrine and satisfies Goodness-Only-Knows-What mission requirements. The brigade may *claim* an ability to "operate across the spectrum of conflict," but I cannot imagine how such a lightly equipped organization with no real combat power can survive, let alone accomplish a mission in anything but a benign environment.

Personally, I see no need for yet another brigade headquarters and headquarters company to coordinate two battalions that should be directly under division command. I am bemused at how loudly the Army proclaims modern communications and electronics capability allows flat organizations and horizontal integration while, in reality, it fields ever taller and steeper stovepipe-filtered, multiechelon units with ever-diminishing combat power.

Price's article describes an MI battalion that may or may not be functionally sound given its mission. It's out of my lane, so I defer to the "experts." However, the described reconnaissance squadron is not a cavalry combined arms organization, nor even a mounted one, but rather a lash up of incompatible units. If I understand the article (Major Price is vague on details), the one long-range surveillance (LRS) company is a company headquarters with 15 separate, 6-man dismounted patrols, evidently relying on helicopters (unit relationship unspecified) for their insertion. Meanwhile, the two ground recon troops appear to be essentially the recently created "brigade reconnaissance troops," which are merely a grouping of HMMWV-scout platoons. Such scout troops lack combined arms capability. Based on the mission profile of scout platoons in FM 17-95, *Cavalry Operations*, Figure 1-4, while suitable for recon (route, area, and zone), they are limited in security to "screen" only — you can forget "economy of force" missions altogether. This recon squadron is a mere shadow of a "real" divisional armored cavalry squadron — how it is meant to function alongside the MI battalion is a complete mystery to me. [If I misunderstood the organizations, I apologize and hope for clarification in a subsequent article.]

The obvious answer is to simply bring back a *doctrinally sound* divisional cavalry squadron *and* a divisional MI battalion, both under division control. The "enhanced capability" should come from technical and organizational improvements within the respective squadron and battalion. However, if we *must* proceed with such "combined" foolishness, the first issue is whether this should be a divisional cavalry organization supplemented with MI capabilities, or a divisional MI organization supplemented with cavalry capabilities. That determination focuses the organizational concept development one way or the other. Since proponency for the brigade has been officially assigned to armor, I suggest that the issue is resolved. But don't take my word for it — ask General Wallace if he agrees!

It is time for a new divisional armored cavalry squadron *with enhanced embedded MI assets embedded throughout*. Using the heavy regiment's armored cavalry squadron structure as a guide, the armored cavalry center should develop a squadron base of special and supporting troops and MI companies, and three (or more) identical cavalry troops, each capable of individually supporting a divisional brigade combat team when not operating as part of the cavalry squadron.

Alternatively, you can go the other way with an enhanced MI battalion with its own organic LRS company and ground recon troop. Lose the recon squadron HHC as unneeded overhead and place all of the scout platoons in one larger and flatter ground recon troop. This solution is mediocre at best, but it would be at least

Continued on Page 11

Reconnaissance Expo Update:

The BfSB and the Way Ahead

by MG Donald M. Campbell, Jr., Commanding General, U.S. Army Armor Center

On 13 and 14 November 2008, Fort Knox hosted the Reconnaissance Expo, which focused on the new battlefield surveillance brigade (BfSB), its mission, and its role in current operations. Numerous subject-matter experts and vendors were on hand to provide information on the latest advancements in technology and doctrine for the cavalry force. An impressive lineup of keynote speakers included Major General Custer, commanding general, U.S. Army Intelligence Center, who presented a briefing on intelligence and reconnaissance; Colonel Lane, commander, 5th Brigade Combat Team, 1st Armored Division, the Army's experimental brigade for future combat system (FCS), who briefed reconnaissance and FCS programs; Colonel (P) Phipps, deputy commanding general, U.S. Army Aviation Center, who presented a briefing on air-ground integration; Dr. Milton, director, Army's Night Vision Laboratory, who presented a briefing on night vision sensor capabilities; Colonel Fox, TRADOC Capabilities Manager–Air Sensors, who presented a briefing on military intelligence sensors; and Lieutenant Colonel Schubert, Fort Knox German liaison officer, who presented a briefing on German army reconnaissance and robotics development.

The U.S. Army Armor School is the proponent for the new BfSB, which is a division/corps-level organization that has the mission of answering division/corps commanders' intelligence requirements. At endstate, there will likely be 10 BfSBs, 3 Active Duty and 7 National Guard. The current BfSB design includes a brigade headquarters and headquarters company; a recon and surveillance squadron, consisting of two mounted reconnaissance troops and one long-range reconnaissance (LRS) company; a military intelligence battalion, consisting of a technical collection company; a collection and exploitation company; a counterintelligence (CI)/human intelligence (HUMINT) company; a network support company that contains a robust signal capability; and a brigade support company. Within the recon and surveillance squadron, each mounted reconnaissance troop consists of two platoons with six HMMWV's each, while the LRS company will be made up of fifteen LRS teams. This formation's current mission is to conduct intelligence, surveillance, and reconnaissance operations, which will enable the supported commander to precisely focus joint combat power and simultaneously execute current operations while preparing for future operations.

As expo experts viewed this formation based on experimentation conducted by the Maneuver Battle Lab and input from some of the formation's commanders, we gleaned some insights. First, we identified that the BfSB did not have the capability to provide precision intelligence for precision maneuver; it simply lacks the platforms and manpower to gain and maintain contact or develop the situation after contact with an enemy formation. All agreed the operational and organizational plan needed to be revised. The group was adamant that with the advent of U.S. Army Field Manual (FM) 3-0, *Operations*, the organization must have a full-spectrum capability, and concluded that in its current configuration, it was limited in this respect.

From experimentation, we also noted that the BfSB needs a revised concept of sustainment, noting that simply providing a fuel truck, worth 500 gallons of fuel, may not be sufficient due to the distances this brigade may be required to operate.

Finally, expo experts concluded that the BfSB may gain more capability by leveraging spinouts from the FCS. The mission also needs reworked with an updated version that focuses on the BfSB, covering corps or division areas that were not assigned to brigade combat teams (BCTs), or providing assets to these BCTs that focus on division/corps priority intelligence requirements.

Our next step is refining the operational and organizational plan, with the objective to have the revised version ready to brief the Chief of Staff of the Army by March 2009. This will be a difficult task as the Army is constrained by personnel numbers when reorganizing formations.

The Army is also holistically reviewing all of its BCT formations in an effort to maximize the capability of a fixed number of soldiers. If this formation cannot prove it has a capability above and beyond that of a BCT, the Army may be forced to harvest its manpower in an effort to improve the capability of the BCTs. As we refine the BfSB's organization in an effort to justify its worth, we will continue to actively seek input from the appropriate centers, schools, senior mentors, and operational commanders, which includes visiting the 525th BfSB upon its return from theater.

I want to extend my deepest gratitude to all who participated in the Reconnaissance Expo. Specifically, I want to thank the BfSB and other reconnaissance formation commanders for making the trip to Fort Knox and participating in the summit. I encourage all participants to remain linked via the BfSB Warfighter's Forum, which will soon be available through the Battle Command Knowledge System (BCKS) network on Army Knowledge Online (AKO). Finally, I want to encourage everyone to return to Fort Knox for the 2009 Armor Warfighting Conference, which will be held from 12 through 14 May. This year's conference will provide updates on the BfSB, as well as other advancements the Armor Center is working. This year's theme is, "Armor Strong: Meeting the Full-Spectrum Challenges of the Future;" meeting those challenges depends on input and feedback from every Soldier and leader, which is exactly why the conference is a vital vein to our future success. Mark your calendars; gather your thoughts, ideas, and suggestions — we'll see you in May!

Forge the Thunderbolt!

The Role of Reconnaissance Forces and the Generation of the BfSBs

by CSM John Wayne Troxell, Command Sergeant Major, U.S. Army Armor Center

Greetings to all Armor soldiers! As we continue to prosecute the Global War on Terror, specifically in Afghanistan and Iraq, our reconnaissance forces, for the most part, continue to perform nontraditional reconnaissance missions as battlespace owners much like infantry, armor, and combined arms battalions, as opposed to being the eyes and ears for the brigade combat team or other higher headquarters. Of course, this is due to the nature of our mission in both theaters — stability and counterinsurgency operations in lieu of high-intensity conflict. In some cases, reconnaissance squadrons have been task organized with infantry and armor companies to allow for a more robust role as a maneuver force and land owner, thereby providing the brigade combat team commander with another maneuver headquarters to command and control his battlespace.

As a brigade command sergeant major in the 4th Stryker Brigade Combat Team, 2d Infantry Division, Iraq, we went as far as to replace our human intelligence (HUMINT) soldiers in the reconnaissance, surveillance, and target acquisition (RSTA) squadron with infantrymen to provide the squadron more fighters to go after the enemy in their battlespace. We took HUMINT soldiers and created more human collection teams to enable the brigade commander to spread across the brigade combat team. This squadron would also routinely have a task-organized Stryker infantry company to carry out focused clearing operations.

Based on our successes in Iraq with the ever-improving Iraqi security forces and the stability of the region, is it time to have our reconnaissance unit shift to its core mission of primarily conducting reconnaissance and surveillance? As the urban area becomes more secure and our forces move into overwatch positions outside major cities, is it possible for brigade combat team commanders to use reconnaissance elements to provide early warning and defeat the enemy's reconnaissance? A prime example, for instance, would be Iraq's Diyala Province. If Iraqi security forces took control of the provincial capital, Baqubah, and other major cities used coalition forces in overwatch, the brigade combat team reconnaissance squadron could be used to screen the Iranian border and interdict foreign fighters and weapons smugglers. Our senior leaders have stated that as we progress in this era of persistent conflict, we, in some cases, have to regain our ability to perform full-spectrum operations and traditional-type functions.

In November, we hosted the annual Reconnaissance Summit at Fort Knox. One of the primary topics of discussion was standing up the battlefield surveillance brigades (BfSB). These brigades are being formed to provide a division or corps commander the ability to conduct long-range collection and surveillance, as well as limited reconnaissance. The armor branch is the proponent for the new BfSBs, which replace the military intelligence brigades within the corps, and have a cavalry squadron organic to the brigade. These brigades are similar to the infantry brigade combat team (IBCT) squadron; however, they are much smaller and have no indirect-fire assets. The BfSB will play an important role in both Iraq and Afghanistan because of its ability to cover "white space" in a division/corps area of operations that the commander otherwise would not have the ability to cover.

During the 2009 Armor Warfighting Conference in May, the BfSB will certainly be a primary topic of discussion. Particular issues will be addressed and discussed to further determine what the division commander needs from the BfSB; what doctrinal changes are needed to support the new brigade; exactly how to best organize the brigade; what individual/collective training will be needed; materiel/logistics needs and solutions; if leader development needs to be changed to support the brigade; and if the BfSB needs additional or different facilities. The Armor School values input from the force on these critical challenges and decisions. I encourage each soldier who has ideas or suggestions on any of these issues to share that information with the force. Changing an organization to better accommodate the whole-force concept is a fragile business and soldiers are our best sources of information on critical issues that will shape the future battlefield! Keep in mind, however, that most of our current force will see the "future battlefield," which is why it is so important that our young soldiers and leaders weigh in on these issues.

I realize the demands of the current operating environment and the value of time; however, information sharing has become nearly effortless! The Armor Warfighting Conference in May 2009 is an ideal forum to share and gain information, ideas, and suggestions on many issues facing the armor force; not to mention writing an article or a letter to the editor of *ARMOR* Magazine or sharing information at the soldier level with your platoon sergeant or leader. I encourage each one of you to take a look at how the leaders of this great institution can better shape the battlefield and push that information forward where it will make a difference!

Forge the Thunderbolt!

Transformation and Change: Maintaining the Azimuth

by Mike Gillette and Dan Bowen

The 2005 Base Realignment and Closure (BRAC) decision realigns Fort Knox, Kentucky, by relocating the U.S. Army Armor Center and School (USAARMC/S) to Fort Benning, Georgia. This relocation improves training, better utilizes resources, and creates significant efficiencies and cost savings. It also supports the consolidation of the U.S. Army Armor Center (USAARMC) and U.S. Army Infantry Center (USAIC) at Fort Benning, and creates the Maneuver Center of Excellence (MCOE) for ground forces training and doctrine development. Concurrent with the USAARMC/S relocation to Fort Benning is the enduring requirement to train armor and cavalry soldiers, noncommissioned officers (NCOs), and officers without interrupting or degrading either the quality or quantity of trained soldiers for the operating force.

The relocation of the USAARMC/S to Fort Benning is entirely capability based. Construction at Fort Benning to develop capabilities to support the reception of the U.S. Army Armor School (USAARMS) and establish the MCOE is nearly a $4B capital investment for the Army. The availability of funding to support USAARMC/S construction requirements was the primary cause for establishing projects by fiscal year. The availability of annual funding also determined the sequence in which required capability would become available to support USAARMS and MCOE requirements. Priority of funding was focused on operationally critical facilities such as barracks, headquarters, administrative facilities, ranges, instruction, and maintenance facilities. All quality of life facilities, such as churches, fitness centers, and recreation centers, were identified as noncritical projects and moved in the construction timeline (FY12 and FY13) to accommodate funding required for operationally critical projects. Figures 1 and 2 provide a graphic representation of the major areas at Fort Benning that will experience major construction in support of BRAC and the establishment of the MCOE.

The BRAC funding approach also determined the current facility construction timeline for the entire MCOE. The facility construction timeline was established according to the availability of funds, by project, and the associated project construction timelines were developed by the U.S. Army Corps of Engineers (USACE). As a result of pre-established construction timelines, numerous capability assessments were conducted to identify when capability would become available for each USAARMS

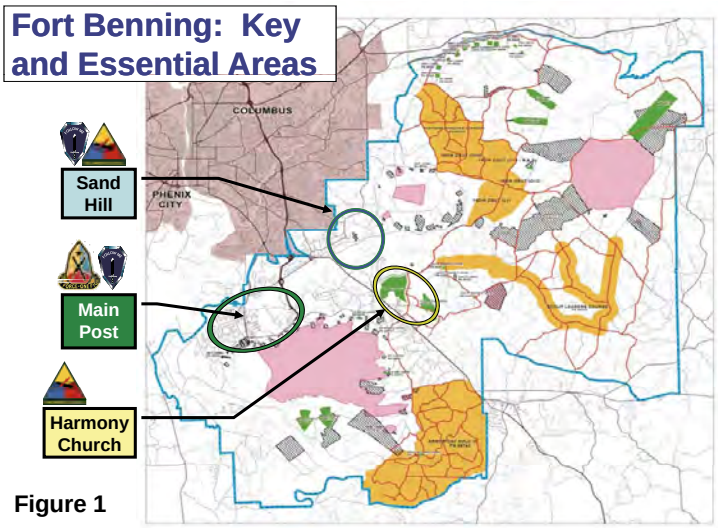


Figure 1

course, and MCOE predecessor unit or activity from USAARMC relocating to Fort Benning. These capability assessments focused on facilities, ranges, maneuver training areas, infrastructure, and logistics. The resultant USAARMC/S relocation timeline is the product of scheduling the movement of the USAARMC/S based on construction project timelines.

An added requirement that transcends all planning activities is the condition for both the U.S. Army Infantry Center and School (USAIC/S) and the USAARMC/S to consolidate to create the MCOE. The organizational transformation of the Armor and Infantry Centers to establish the MCOE is the primary element in establishing the relocation plans for individual directorates, staff elements, and organizations within the Armor Center. The relocation plans for the center-level organizations are linked to transformation timelines vice capability timelines for the Armor School.

MCOE Establishment

In June 2006, U.S. Army Training and Doctrine Command (TRADOC) developed the centers of excellence (COE) concept and the COE standard organization model as a part of the TRADOC Campaign Plan (TCP), Major Objective 4.0. A COE is, in simplest terms, a common TRADOC training center organization. Based on the TRADOC COE model, the organizational construct of the MCOE was approved by the USAIC, USAARMC, and TRADOC commanding generals in January 2007. The MCOE table of distribution and allowances (TDA) concept plan received final approval at Department of the Army (DA) by the Vice Chief of Staff, Army, on 28 April 2007.

The MCOE brings several benefits to the force: it is a major capital investment in the infrastructure of the U.S. Army that will see us through the next half century; it provides a measure to achieve "operate and train as you fight" at every level (within and without the generating force, and not just by soldiers in training); it synchronizes maneuver arms training; it enterprises maneuver arms doctrine development, combat development, and training development; and it centralizes proponency for all three maneuver brigade combat team-type units and the battlefield surveillance brigade. Once established, the MCOE will have more

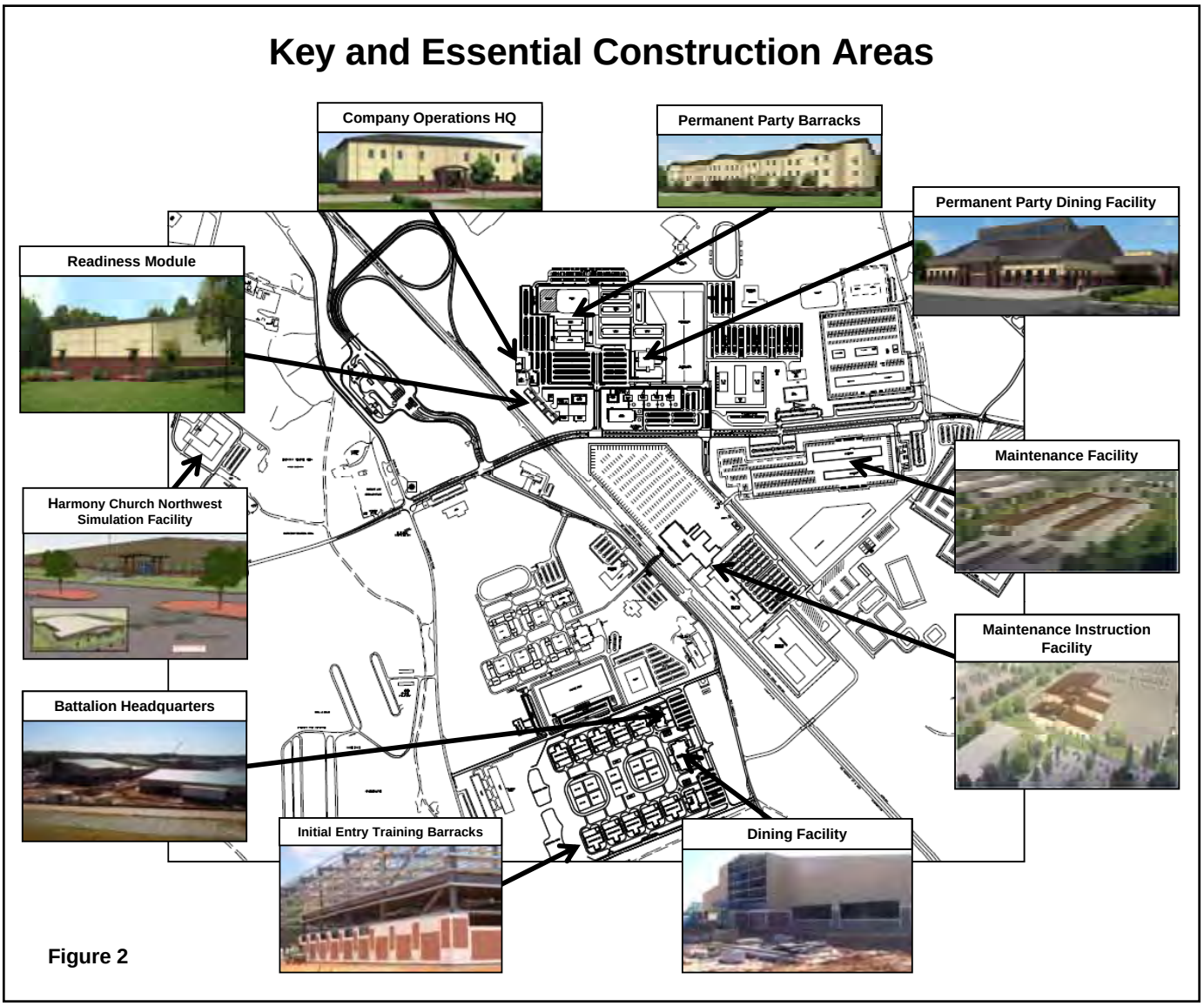


Figure 2

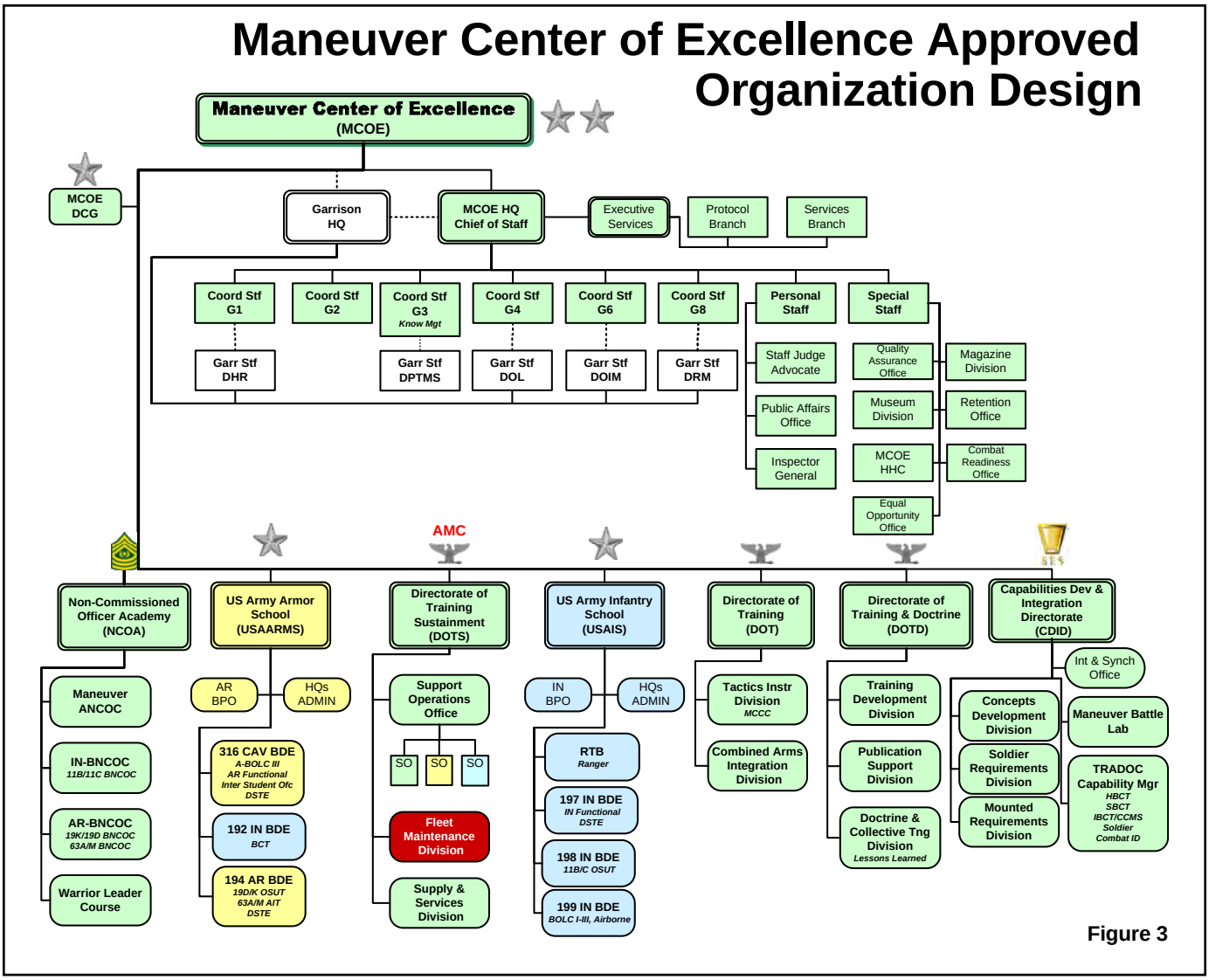


Figure 3

than 6,800 permanently assigned soldiers and DA civilians on staff with the mission to provide the Nation with the world's best trained, armor, cavalry, and infantry soldiers and adaptive leaders imbued with the Warrior Ethos.

Creating the MCOE relies on relocating the USAARMC/S to Fort Benning and its merger with USAIC. At endstate, the MCOE will consist of a center with two branch schools — infantry and armor and a noncommissioned officers academy (see Figure 3). The USAARMS is currently known as the 194th Armored Brigade and 16th Cavalry Brigade; the USAIS is currently known as the 192d Infantry Brigade, 197th Infantry Brigade, 198th Infantry Brigade, 199th Infantry Brigade, and the Ranger Training Brigade (RTB). All other activities found in USAIC and USAARMC are considered center activities and will merge to form similar successor MCOE activities.

The infantry and armor center will each have a branch headquarters; general staffs (coordinating, special, and personal); noncommissioned officer academies; sustainment activities (arm, fuel, fix, and move); training development, doctrine, and collective training activities; captain and above professional military education activities; and combat developments and experimentation activities. The entire relocation and merger will gradually occur over an 18-month period, culminating with full operational capability (FOC) no later than 15 September 2011. See Figure 3 for the approved MCOE organizational construct.

Transformation

The establishment of the MCOE requires the transition and transformation of organizations that currently exist within both USAIC and USAARMC. The guiding philosophy for establishing the MCOE is for both the USAARMC and USAIC to transform (change) and then transition (move). This approach allows both organizations to leverage existing resources and processes at Fort Knox and Fort Benning to conduct a deliberate merger while reducing risk. The transformation timeline integrates and aligns the USAARMC/S relocation timeline with the DA civilian human resource volunteer process and the effective dates for the MCOE TDA. The transformation approach is supported by the definition of terms that identifies three degrees of operating capability.

The first transformational phase is the virtual operating capability (VOC) where an activity or organization lead has been appointed and organizations are conducting and executing MCOE distributive operations prior to physical realignment. This transformational phase is the critical first step to establishing the MCOE. VOC expands the boundaries of planning and execution by including USAARMC and USAIC personnel in key leader positions. VOC expands ownership and empowerment by leveraging the experience and knowledge of a broader range of key personnel to assist in developing the MCOE. The MCOE represents significant change, in both scope and magnitude and VOC

Maneuver Center: C2 Transformational Timeline

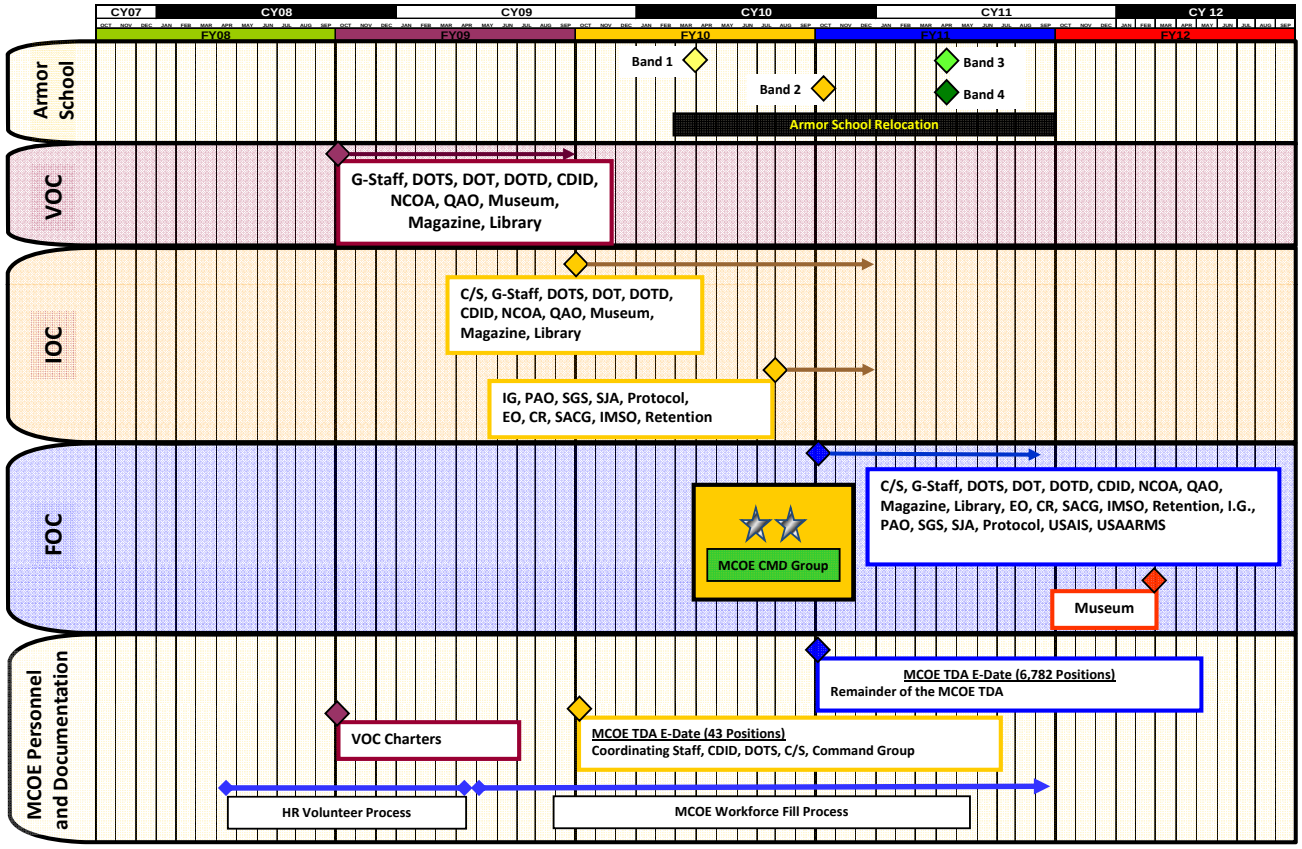


Figure 4

is intended to ensure an orderly and smooth transition. Figure 4 provides a graphical representation of the approved MCOE transformation timeline.

The purpose of VOC for staff elements is to facilitate the establishment of policies and procedures to support the overall operation of the MCOE. VOC results in MCOE-level policies and procedures that integrate the best practices that currently exist within USAARMC and USAIC. The purpose of VOC for directorates is operationally focused on accounting for functional requirements that must be merged between USAARMC and USAIC. VOC ensures that procedures are in place for the transition to initial operating capability (IOC). VOC charters, identifying VOC leads, were developed and formally presented at an MCOE chartering ceremony on 26 August 2008 at Fort Benning.

Harmony Church — New Home of the Armor School

Once relocated to Fort Benning, the USAARMS will be physically located at the Harmony Church cantonment area. Once facility construction at Harmony Church is complete, the area will stretch over more than 1,118 acres and support the majority of USAARMS training requirements and activities. Harmony Church is a historic training area within Fort Benning that dates to World War II.

Currently, the Harmony Church area supports a diverse population of low-density training and facilities. These facilities support the Sniper School, Ranger School, and the 197th Infantry Brigade's functional training. The actual area of Harmony Church, where the Armor School will be located, is essentially undeveloped green space. To facilitate the relocation of USAARMS, 61 facility construction projects are being built, or waiting to be built, within the Harmony Church footprint. The total cost of these projects is in excess of $1.2B. This includes an extensive infrastructure project that will provide water, sewer, electricity, roads, bridge upgrades, and information technology connectivity.

The facility construction footprint of Harmony Church is characterized by five types of areas:

- Area 1: Headquarters and instruction, primarily for the 16th Cavalry.
- Area 2: Industrial (maintenance and sustainment).
- Area 3: Maintenance instruction.
- Area 4: Cantonment/barracks/simulation for the 194th Armored Brigade's initial military training mission.
- Area 5: Simulation for the MCOE.

Highway 27 is a major northwest to southeast running thoroughfare that creates a natural division of facilities within Harmony Church.

USAARMC/S Relocation

Physically relocating the USAARMS to Fort Benning will occur on a by-course, by-class basis. This move will require multiple task organized and equipped "course/class packages" to be developed to support the training requirements at Fort Knox and Fort Benning. The move will be managed using a "D-sequence" timeline of events with "D" defined as, "the start date for a class within a course at Fort Benning." Therefore, D is not a

static one-time event for relocation; a D-date is established for each discreet move.

The relocation of training is directly tied to the availability of capabilities at Fort Benning, and the requirement to simultaneously train and execute the Army Program for Individual Training (ARPRINT) loads in the fiscal year of relocation. The existing course relocation timeline provides for the maximum amount of time between completing a class at Fort Knox and the required start date of a class at Fort Benning. The projected course/class start/stop and movement schedules for FY10 and FY11 have leveraged class sizes and historical class scheduling trends to ensure that training loads are met, there are no degradations in training standards, and a 90-day relocation window is created for each movement serial. Relocation is planned to begin in January 2010 and conclude in September 2011.

90-Day Relocation Window Tasks

Relocating Armor Center (vice school) specific non-training organizations, such as Director, Armor School; Director, Training, Doctrine, and Combat Development; G2; G4/G8; G6; public affairs office; general staff (SGS); headquarters and headquarters company; and quality assurance office, to Fort Benning are directly linked to transformational plans for establishing MCOE directorates and general staff, as well as the availability of capabilities to support the requirements of these organizations. The Armor Center's non-training organizations will integrate with similar organizations at Fort Benning to establish the MCOE directorates and general staff. The relocation timeline for these current organizations is linked to the human resources volunteer process timeline, transformational plans developed by designated VOC leads, and by the availability of physical space at Fort Benning to support relocation of identified personnel. To achieve the move, a 90-day relocation window chart is outlined below:

- **D-90 to D-61**: Pack equipment.
- **D-60 to D-31**: Ship equipment/relocate personnel.
  - D-60 TO D-56: Out-process.
  - D-55 to D-42: Relocation leaves.
  - D-42 to D-33: Permissive TDY.
  - D-32 to D-31: In-process.
- **D-30 to D**: Class preparation at Fort Benning.
- **D**: Start training operations.

The USAARMC/S move will be coordinated between Fort Knox Directorate of Logistics (DOL), the military Surface Deployment and Distribution Command (SDDC), and Fort Benning DOL. Coordination is currently ongoing with all three organizations to determine the most effective and efficient method of packing, conveyance, management, and unpacking equipment and material.

USAARMC/S Management Model

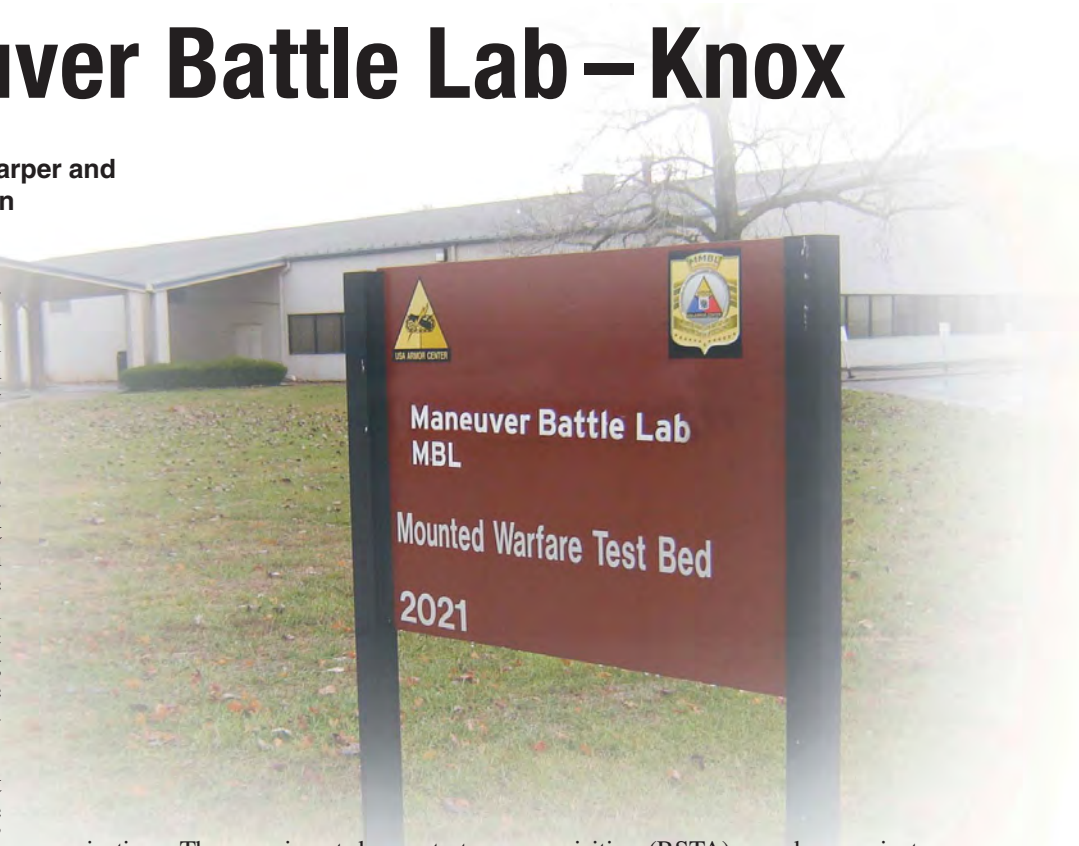
The USAARMC Strategic Plans Cell (SPC) is the central planning organization for the USAARMC/S relocation to Fort

Continued on Page 20

"VOC charters, identifying VOC leads, were developed and formally presented at an MCOE chartering ceremony on 26 August 2008 at Fort Benning."

The Maneuver Battle Lab – Knox

by Lieutenant Colonel Kenny D. Harper and Colonel (Retired) William R. Betson



The Maneuver Battle Lab-Knox (MBL-Knox), formerly known as the Mounted Maneuver Battle Lab (MMBL), has seen much activity since the Unit of Action Maneuver Battle Lab (UAMBL), now known as the Future Force Integration Division (FFID), relocated to Fort Bliss, Texas, in the summer of 2007. The lab has been a major contributor to the progression of armor modernization activities at Fort Knox, and has been involved with experimentation that focuses on how the Army fights in current operations, as well as on the conventional and asymmetric battlefields of tomorrow. Since the spring of 2007, the lab has participated in five major experiments, which have profoundly impacted the Army as a whole.

In March 2007, the lab conducted its last major experiment under UAMBL. The "counterinsurgency (COIN) experiment" was a major effort that required 4 months of preparation, included nearly 300 participants, and involved the efforts of seven U.S. Army Training and Doctrine Command (TRADOC) battle labs across the Continental United States. The objectives from this experiment were designed to assess the effectiveness of the future brigade combat team (FBCT) in an urban COIN situation. This experiment employed a massively complex computer simulation, at the individual soldier level, operated by a huge 3-D virtual terrain database. The results from this experiment demonstrated that an FBCT was quite effective in such an environment, although it identified some organizational and operational issues requiring further attention through future experimentation. Until the FFID has the capability to perform its own experimentation, much of the future combat system (FCS)-related experimentation will remain with MBL-Knox.

The MBL-Knox conducted an experiment during August 2007 that examined the effectiveness of the current heavy brigade reconnaissance squadron in major combat operations against a future enemy force. This particular simulation exercise (SIMEX) involved more than 100 participants and three TRADOC battle labs. The purpose of the SIMEX was to assist the training doctrine and combat development community, specifically the combat development division, in its comparison of the current HMMWV-Bradley mixed force against alternative future organizations. The experiment demonstrated that the current reconnaissance squadron organization has significant operational issues and requires greater dismounted scout capability. It also suggested that this organization may not have the capability to develop the enemy situation from standoff with remote sensors; therefore, reconnaissance units will likely have to fight for information.

During the spring of 2009, the lab conducted another significant experiment; this time exploring how a heavy brigade combat team (HBCT) would fare against an enemy force executing a "complex web defense (CWD)." A CWD involves an enemy who exploits complex and urban terrain, and the presence of civilian populations to deny U.S. forces advantages in sensor and firepower capabilities against more traditional foes. Involving more than 200 participants and another massive terrain database, the experiment clearly highlighted the difficulties of fighting such an enemy. The MBL-Knox is currently the only place where simulations can be conducted in enough detail to address these issues. The TRADOC commanding general, upon learning of the impact this experiment would have on implications for future warfare, directed that the Armor Center commander brief these results to the Chief of Staff, Army.

The significant results of the CWD experiment led the Army to ask the lab to examine the performance of the FBCT's reconnaissance, surveillance, and target acquisition (RSTA) squadron against an enemy employing CWD-like tactics. The lab conducted another experiment in July 2008 in which soldiers from the Army Experimentation Task Force experimented with various differing RSTA organizations against an enemy employing CWD-like tactics. The results suggested that the current all-aviation squadron, found within the FBCT, needs a ground element to enhance its capability to more effectively support the brigade. The lab followed up this event with a series of short-notice excursions that studied ways to help determine the organizational structures found within the RSTA formations at brigade and battalion levels. Efforts from this experimentation continue to be reviewed by the FFID for possible implementation.

In keeping with the lab's critical role to shape the future force, in October 2008, the lab conducted an experiment exploring the capabilities and effectiveness of the organizational design of the new battlefield surveillance brigades (BfSB). Six U.S. Army National Guard BfSBs sent representatives to participate. The results of this effort were briefed at the Armor Center's Reconnaissance Expo in November.

Experimentation at MBL-Knox will continue to support the mounted community for the next 2 years; however, reality remains and this organization will move to Fort Benning as a part of the Base Realignment and Closure (BRAC) initiatives and will combine into one operation, the

Maneuver Battle Lab (MBL), which will support both mounted and dismounted soldiers. The MBL, as a directorate, will be incorporated into the Capabilities Development and Integration Directorate (CDID), a Maneuver Center of Excellence (MCOE) organization.

As of 1 August 2008, the CDID established a virtual operating capability (VOC) to effectively manage its subordinate directorates both at Fort Knox and Fort Benning. The transformation will be a phased operation and will progress through an initial operating capability (IOC — the physical move of personnel and equipment) and culminate in full operating capability (FOC) in 2012. Currently, the Soldier Battle Lab (SBL), the Infantry Center's executive agent for experimentation, and the Mounted Maneuver Battle Lab (MMBL), the Armor Center's executive agent for experimentation, began the formal process of transforming into the Maneuver Battle Lab (MBL). In August 2008, a formal conference was conducted at Fort Benning between both organizations with the intent of formalizing daily operations, as well as future experimentation planning.

Once the MBL becomes a single operation, its support to the MCOE will be threefold: conduct analysis in support of soldier and mounted requirements divisions; support the concept development division and TRADOC capability managers (TCMs) associated with maneuver formations with a focus on MCOE proponency (armor, infantry, and soldier) related projects; and conduct experiments to glean findings and insights to assist with future doctrine, organization, training, materiel, leadership and education, personnel, and facilities (DOTMLPF) development.

To execute these priorities, the MBL is currently operating with three separate divisions, two located at Fort Benning and one at Fort Knox. The divisions at both locations have the ability to conduct live, virtual, and constructive experimentation to gain insight and recommend changes to DOTMLPF to support current force development and future concepts for the soldier and infantry and armor formations, up to brigade combat team. The live experimentation division, located at Fort Benning, focuses on live prototype experiments and is well known throughout the Army as an organization that has successfully assisted soldiers by rapidly fielding equipment into current theaters of operation. The two virtual constructive simulation divisions, one located at Fort Knox and the other at Fort Benning, conduct integrated, distributed experimentation using virtual, constructive, and instrumented live simulations to primarily assist CDID and TCM organizations with insights that will enable justification for programs associated with future Army modernization or program upgrades.

It is currently expected that by the end of 2010, the Fort Knox virtual constructive simulation division will cease operations and the MBL directorate at Fort Benning will assume all experimentation concerning the dismounted and mounted soldier programs. The new MBL will be housed in a new 84,000 square-feet structure, which is expected to be completed by late 2012. The MBL, as a part of the CDID's executive agent for experimentation, will successfully complete its transition process and will be fully capable of performing all associated experimentation for the armor and infantry communities as a member of the Maneuver Center of Excellence.

Lieutenant Colonel Kenny D. Harper is currently the chief, Maneuver Battle Lab Virtual Constructive Simulation Division-Knox, Fort Knox, KY. He received a B.S. from the Ohio State University-Columbus. His military education includes U.S. Army Command and General Staff College, Combined Arms and Services Staff School, Armor Officer Basic Course, Armor Officer Advanced Course, and Simulations Officer Certification. He has served in various command and staff positions, to include chief of operations, Training Doctrine, Combat Development and Experimentation Directorate, Fort Knox; XO, U.S. Army Training and Doctrine Command (TRADOC) Capabilities Manager, Future Combat Systems, Fort Knox; XO and operations officer, 1st Squadron, 8th Cavalry, 1st Cavalry Division, Fort Hood, TX; and assistant G3, Battle Command, III Corps, Fort Hood.

Colonel (Retired) William R. Betson is currently employed as the assistant vice president, Alion Science and Technologies, Fort Knox. He received a B.S. from the United States Military Academy, an M.A. from the University of Pennsylvania, and an M.M.A.S. from the School of Advanced Military Studies. His military education includes U.S. Army War College, U.S. Army Command and General Staff College, Infantry Officer Advanced Course, and Armor Officer Basic Course. He has served in various command and staff positions, to include special assistant, Chairman, Joints Chiefs of Staff, The Pentagon, Washington, DC; garrison commander, Fort Stewart, GA; senior armor and senior brigade observer controller, Operations Group, National Training Center, Fort Irwin, CA; G3, Berlin Command, Germany; and commander, 6th Battalion, 40th Armor, Berlin Brigade, Germany.

LETTERS from Page 2

equally effective without the bloated organizational structure of a brigade.

CHESTER A. KOJRO
LTC, U.S. Army, Retired

"Cold War Troopers" Share Summer of '58

Dear *ARMOR*,

I write in response to LTC Burt Boudinot's letter to the editor on wheeled versus tracked vehicles in the November-December 2008 edition of *ARMOR*, specifically, his request for information on "Pegasus," the M20 in front of 3d Squadron, 8th (3/8) Cavalry headquarters at Coleman Barracks. I was assigned to 3/8 Cavalry from 1976 to 1979 and Pegasus was on the concrete pad the entire time. I have several photographs of Pegasus done up in desert camouflage. During those years, all of our vehicles were painted in desert camouflage, which seemed strange since we were in Germany.

We were also still hanging around with the same French army reconnaissance unit; 20 years later, they had the same vehicles described by LTC Boudinot, but we had the M551 Sheridan and motorcycles from local purchase.

It was fun reading the colonel's account of life at Coleman Barracks in 1958. It took me back to my own time there. I have an aerial photo of the entire squadron on parade at the athletic field next to the Alpha Troop barracks, circa 1958-1961. It was given to me by one of my fellow lieutenants from those days, Douglas Rives Brown, who got it from his father, Don Brown, who commanded Bravo Troop in the early '60s.

I wonder if 3/8 Cavalry still has the Spanish spur? Honor and Courage!

JOHN L. RODDY
LTC, U.S. Army, Retired

Dear *ARMOR*,

Your letter to the editor from LTC Burt Boudinot in the November-December 2008 *ARMOR* brought back wonderful memories of Budingen, Germany, and inprocessing at Coleman Barracks. I arrived there in October of 1984 and was assigned to B Troop, 3d Squadron, 12th Cavalry until 1989. I also had the privilege of serving with two great leaders, our squadron commander, Colonel J.W. Thurman, and our first sergeant, Milton Jackson. In regards to the 'wheel versus track' debate, I prefer a track, but also realize I am a "cold war trooper."

As missions change, there is a need for a wheeled vehicle armored personnel carrier (APC) (Stryker). It is much more forward deployable and requires less maintenance. However, I am concerned about the "submission" of the Armor Corps to the Infantry School at Fort Benning. It is inevitable that armor will become a redheaded step child to the 11-series guys. In my humble opinion, it is a priority that we retain, prepare, train, and continue to field at least two legacy divisions that are armor heavy and will serve as the "commander's fist." I may be an old "dat" stuck in the past, but the tank strikes fear and respect in the enemy's mind. I'd like to thank LTC Boudinot for his candid observations.

DENNIS W. WHITE
1SG, U.S. Army, Retired

Reforging the Thunderbolt:

How Railguns Can Revolutionize the Weapons of War

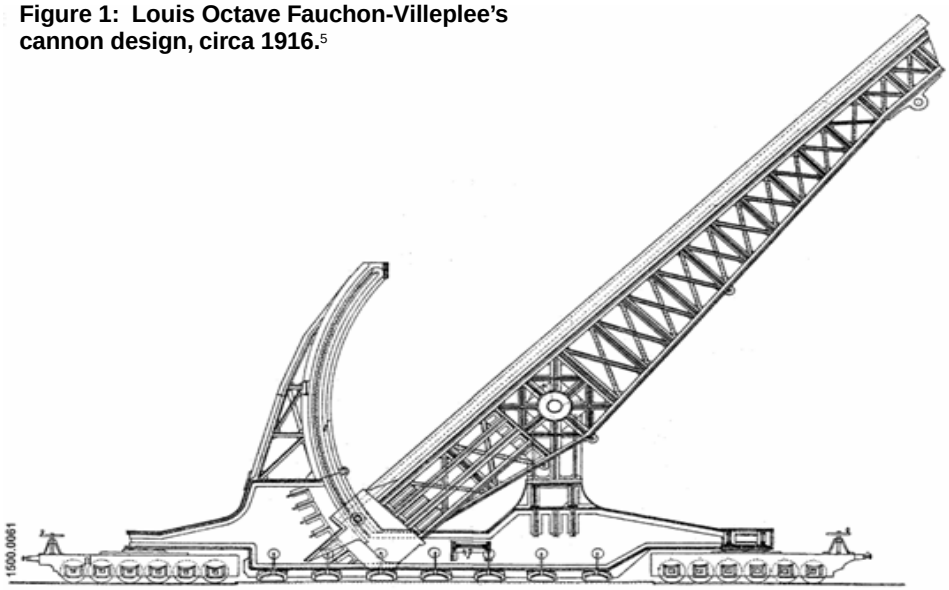
by Major Joshua M. Keena and Captain Jonathan A. Bodenhamer

Historical Development of Electromagnetic Weapons[1]

In the year 1132, the Chinese documented the firing of primitive mortar weapons using gunpowder charges, bamboo tubes, and shrapnel-producing materials.[2] After nearly 1,000 years of advances in the tools of warfare, warriors today fire bullets with this same basic technology. By igniting a chemical propellant behind a projectile, trigger pullers release the energy necessary to propel bullets across the battlefield. There is a compelling vision to revolutionize future military capabilities with the development of electromagnetic weapons. Instead of burning propellant, this type of weapon uses electrical energy to accelerate projectiles to velocities of interest. The most technologically mature class of electromagnetic weapons is the railgun. Railguns promise to expand warfighter capability with increased lethality, improved survivability, and enhanced effects over competing advanced weapons technologies.

The theory of electromagnetic weapons dates back nearly a century. In the early 1900s, the general fascination with electrical energy inspired the theoretical design of various classes of electric

Figure 1: Louis Octave Fauchon-Villeplee's cannon design, circa 1916.[5]



guns. One of the more advanced designs of the time was that of Louis Octave Fauchon-Villeplee. His 1916 concept for the *Canons Electriques* had a 30-meter barrel, intended to fire a 100-kilogram projectile at 1.6 kilometers per second (km/s).[3] In 1920, he received a U.S. patent for his invention. Due to inadequate power supply and unsuitable materials for a full-size cannon, Fauchon-Villeplee built his design as a small-scale demonstration piece.[4]

The impetus for further developing electromagnetic launch technology remains the same today as it was 100 years ago. Given the thermodynamic limits inherent in the combustion and expansion process associated with conventional powder cannons, electromagnetic forces enable faster acceleration and high speeds for the object of interest. While expanding gases operate in velocities associated with the sound speed of the working fluid, electrons move at rates approaching the speed of light. This fact serves as the basis to pursue a launch technology that expands the performance envelope in a revolutionary manner. Laboratory railguns operated by researchers routinely achieve muzzle velocities of 2.4 km/s. There are advanced powder cannon concepts that use longer barrels and larger chamber volumes to gain incremental advances in projectile speed, but none offer the leap in performance afforded by the railgun concept.

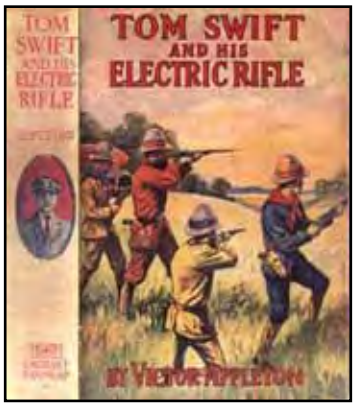


Figure 2: Victor Appleton's book *Tom Swift and his Electric Rifle,* circa 1911.[6]

To achieve a velocity of 1 km/s with a conventional cannon, a weapons designer will plan to use a powder charge weighing approximately three times the mass of the projectile; to achieve 2 km/s, the powder charge jumps to nearly nine times the mass of the projectile; and at 3 km/s, the mass of the powder charge is greater than 27 times that of the projectile.[7] These examples demonstrate the theoretical limit and physical impracticality of conventional cannons achieving velocities greater than what impact physicists refer to as "ordnance velocity." Impact physicists generally define ordnance velocity for direct-fire, large-caliber cannons as 1,600 m/s, or about a mile per second. Hypervelocity is therefore defined as speeds in excess of ordnance velocity. The advantages of operating in the hypervelocity range are substantial enough to justify the continued development of the railgun.

Physics of a Railgun[8]

The science of a railgun is very straightforward; a simple railgun consists of two parallel electrical conductors, called "rails," and a moving electrical connecting bridge, called an "armature." Current introduced at the breech end of the rail flows through the armature and returns via the second rail. Current flow in the rails generates a magnetic field

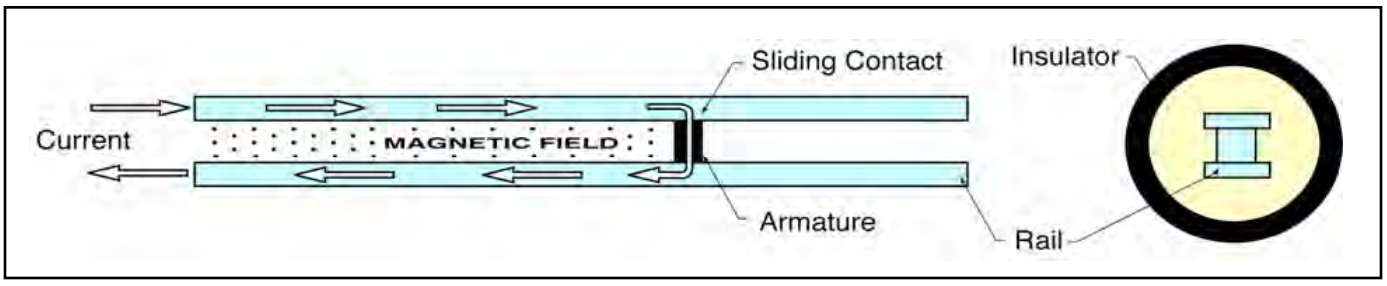


Figure 3: Simple square-bore railgun with propellant force *F*, inductance gradient *L*, electrical current *I*, and magnetic field depicted with black dots.[10]

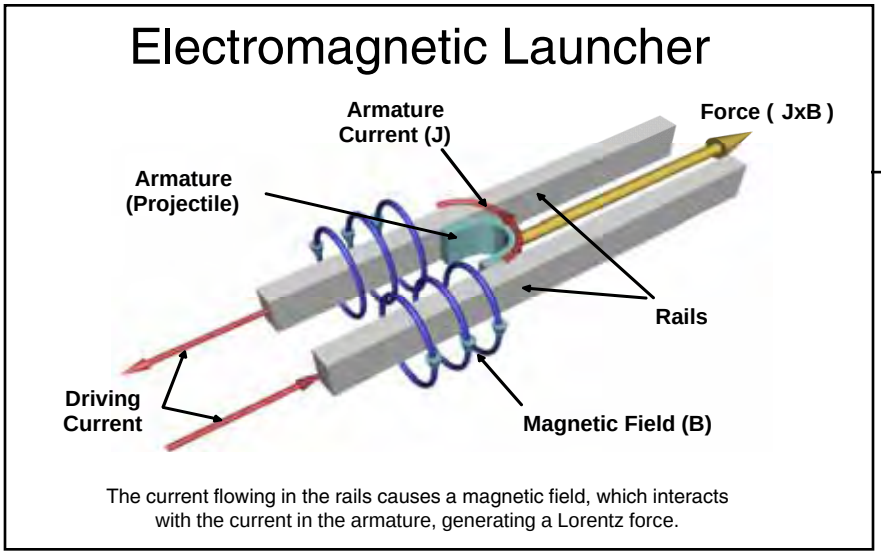


Figure 4: Oblique view of railgun depicting magnetic field wrapping around current flow through the rails.[11]

in the region between the rails. In both the rails and the armature, the current flows at right angles to the magnetic field, thereby exerting a force. Since the armature is free to slide along the rails, the electromagnetic forces can accelerate the projectile to extremely high velocity. The force imparted into the projectile is proportional to the product of the current I squared and the inductance gradient L.[9]

These are the same forces at work in your common rotating electric motor. In this sense, one can consider the operation of a simple railgun as a one-turn, linear, direct-current (DC) motor.[12] "In an ordinary motor, there are hundreds of turns so the current is used hundreds of times as it were. With the (simple) single-turn railgun, the current is 'used once' so it must be 'hundreds of times' higher to enable reasonable propelling forces to be obtained."[13] Railguns therefore require very high levels of electric current flow to fire sizeable projectiles. The requirements for megajoule energy discharge and gigawatt power generation place extreme demands on both the launcher and power supply.[14]

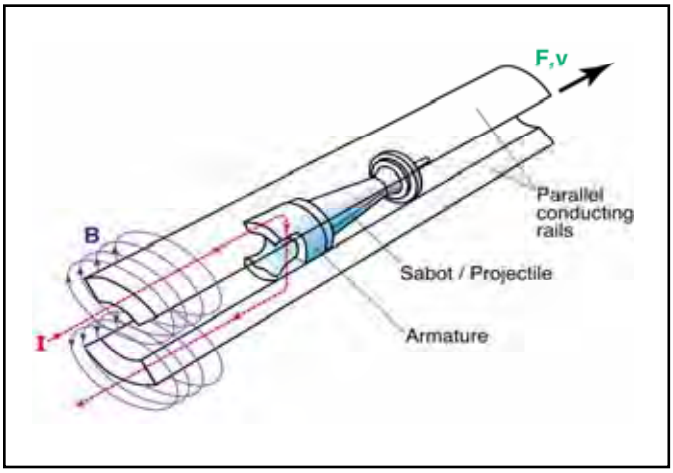


Figure 5: Railgun concept with concave rails and an integrated launch package.[16]

Military Significance of a Tactical Railgun Weapons System[15]

The kinetic energy imparted into a target is described as the product of one-half the mass of the projectile and the velocity squared ($KE = \frac{1}{2}mv^2$). Since the velocity term is raised to a power, in this case two, even modest gains in speed can greatly improve the ability of a round to destroy a threat. At hypervelocity, the results are a dramatic increase in kinetic energy. In a direct-fire or line-of-site (LOS) application, this velocity increase translates to improved penetration efficiency. This means that the same size round traveling at greater velocity has greater destruction capability. This also means that one can induce the same kinetic energy on a threat with a smaller piece of ammunition. Greater efficiency eases the requirements on launcher size, mobile weapons platform, and logistics train. Hypervelocity also dramatically increases what is referred to as "behind armor debris (BAD)." When a projectile penetrates the target, the BAD includes the metal fragments that spray in a nearly hemispherical pattern from the exit hole inside the vehicle or structure. It is the BAD that often disables or destroys the threat by creating sympathetic ammunition detonation, severing hydraulic lines and electrical cabling, and disabling or killing crew members.

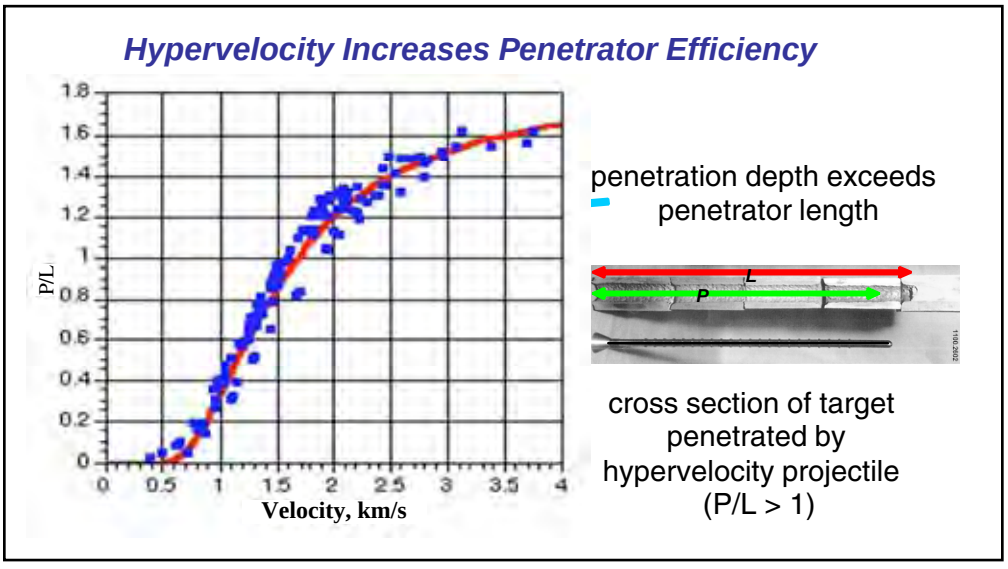


Figure 6: Penetration efficiency *P/L* as a function of impact velocity, illustrating improved performance of hypervelocity projectiles.[17]

In the indirect, beyond-line-of-sight (BLOS) and non-line-of-sight (NLOS) employment, in-

creased launch velocity means that these systems can operate with unprecedented increases in range. These ranges are currently available with complex and expensive rocket systems and bombs delivered by aircraft. Improvements in the direct- and indirect-fire capability of the weapons system are considered first-order, tactical benefits of the railgun.

A second-order benefit of an electromagnetic weapon is improved safety associated with removing propellants from the combat vehicle and the supply chain that supports them. These propellants are especially hazardous since they contain both the fuel and oxidizer necessary to burn inside the cannon chamber and bore. Vehicle fires resulting from sympathetic detonation and deflagration of ammunition are nearly impossible to extinguish and place both the crew and combat platform at high risk.

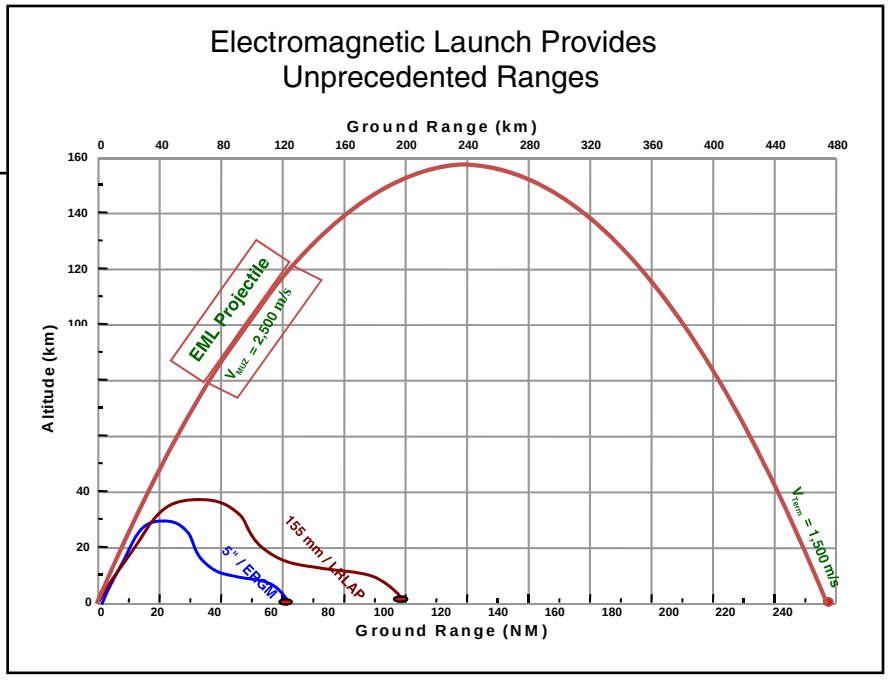


Figure 7: Ranges for conventional ordnance velocity BLOS/NLOS munitions in comparison to theoretical range of an electromagnetic weapon.[18]

A third-order benefit is the potential reduction of collateral damage on the battlefield. The capabilities of a hypervelocity kinetic energy projectile are focused at the point of impact, as opposed to high-explosive ammunition, which dissipates a large portion of its exploding warhead to the environment. Additionally, the energy associated with high explosives decreases as a function of the distance or radius from the point of impact cubed, since the free expansion of the blast occurs in air.

Game Changing Technology

Veterans of Operation Iraqi Freedom have had a great deal of experience with the advantages and challenges associated with heavy armored units operating on the modern battlefield. There is great truth in the simple statement: "when you need a tank, you need a tank." The addition of the M1028 canister round to the family of Abrams main gun ammunition, and the highly effective and versatile high-explosive (HE) bullets for the Bradley, reinforce the assets these heavy-hitters bring to the counterinsurgency fight. A combat system equipped with a railgun could further bolster mounted forces in the contemporary operating environment.

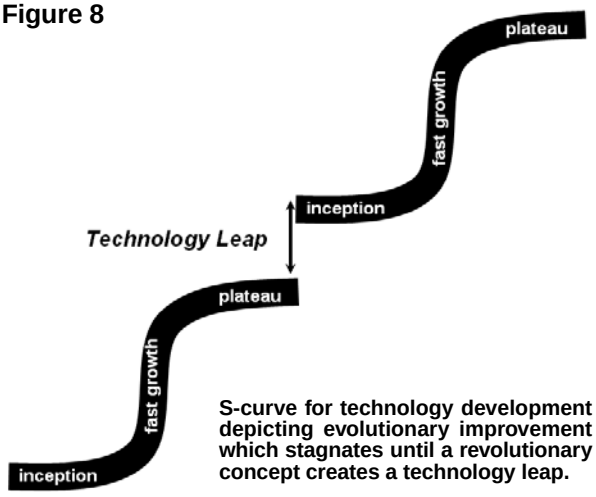
Firing a railgun generates a significantly reduced overpressure region near the muzzle of the weapon primarily because it does not use an expanding column of gas as a means of propulsion. Operating this type of cannon in tightly congested urban areas would reduce the potential for collateral damage to adjacent structures caused by the expanding gas shockwave. From a mobility perspective, the railgun has additional advantages. The length of breech inside the turret of a railgun-equipped vehicle is reduced considerably, allowing the gun tube freedom to elevate higher and conceivably articulate from side to side independent of the turret within a band of considerable azimuth. This could be a major benefit in tight urban areas. From the standpoint of projectile velocity and lethality, the added flexibility of the railgun is clearly superior to conventional cannons.

A theoretical railgun system would afford gunners the ability to dial in a lethality setting by controlling the amount of discharge energy to the cannon system before the shot. The muzzle velocity of a railgun can be reduced to deliver a large-caliber, nonlethal projectile, whose effects would be much more dramatic than current options, and potentially have added uses such as a highly effective dynamic breaching tool for raid teams.

Soldiers must always be cognizant of the second- and third-order effects of the actions they take during a counterinsurgency fight, and adjusting projectile velocity to limit effects to a specific target area would be a tremendous advantage. Many commanders have dealt with negative outcomes when bullets continue beyond their initial target and do further unintended damage. The ability to mitigate these problems before they happen is something all soldiers would greatly appreciate.

Considering a reconnaissance and surveillance perspective, the acoustic and visual stealth operation of a railgun is a strong benefit. We should not construct our force to face only a single threat, and stealth is just as important in traditional high-intensity combat as it is in the counterinsurgency fight. Additionally,

Figure 8



S-curve for technology development depicting evolutionary improvement which stagnates until a revolutionary concept creates a technology leap.

an unobvious potential benefit to this technology is the varied possible uses of the electric power such a system produces; power generation at the company level is always a major issue. From a purely tactical perspective, running a company-level suite of communications and operations support equipment consumes a tremendous amount of electricity. Establishing semi-permanent patrol bases in counterinsurgency environments, especially those that provide luxuries, such as climate control for sleep areas, is very difficult from a power availability standpoint under current modified table of organization and equipment (MTOE) authorizations. Having MTOE vehicles capable of handling these generation needs is clearly a major tactical advantage. Also, during counterinsurgency operations, controlling local power generation is often a tool employed by the enemy; ground commanders with the ability to provide quick reaction power generation to a local clinic, police station, or other such key infrastructure could surely swing the local population's opinion in favor of friendly forces.

Challenges and Opportunities

While there remain many areas of active research and room for growth in current railgun design, power generation and switching are two elements of the concept that must be addressed to make this a viable system for a tactical combat platform. For an Abrams-scaled railgun, the system must generate gigawatt (GW, or one-billion watts) levels of power and discharge megajoule (MJ, or one million joules) levels of energy.

Power is the rate at which energy is consumed. As a practical example, a household electric stove requires about 10,000 watts to operate. While the GW value is quite staggering and represents the output of a typical electrical power plant, the railgun system would require this for a very short duration in what is described as a pulsed power application. Energy is a measure of work and can be considered in the future (potential) or present (kinetic). Smashing an average-sized car into a wall at 80 miles per hour is about equivalent to a MJ. In the laboratory, most railguns operate with a series of capacitor banks. The size and weight make them impractical for an Army system. The focus of current power generation research is on compulsators, or rotating machines, which can be thought of as very high-speed generators. The bridge between a railgun power generator and cannon is a switching mechanism. Safely and efficiently turning on and off GW levels of electrical power is not a trivial matter. Advancements in material science research may yield the formulation for a material that can survive the rigors of a railgun switching application.

Throughout military history, there have been revolutionary designs in the machines of warfare. The technological and capability leaps from sail to steam, horse to vehicle, and propeller to jet all afforded warfighters with dramatic increases in performance. The railgun falls into this same category. Electromagnetic cannons are a revolutionary weapons system that comprise all the attributes of current large-caliber guns and improve them, giving them flexibility to deal effectively with everything from a rioting crowd of civilians to the most formidable enemy tank on the battlefield.

With the advantages afforded by the railgun with respect to lethality, survivability, and effects, this class of electromagnetic weapons warrants the continued support of its research and development to ensure we retain our capability overmatch against current and future threats. In closing, the following quote by Alexander von Humboldt offers some insight into the challenges associated with adopting revolutionary concepts. Recent events make it quite possible we are entering stage three regarding the development of railguns.

"There are three stages in scientific discovery: first people deny that it is true; then they deny that it is important; finally they credit the wrong person."[19]

Notes

[1]Joshua M. Keena, *Experimental Analysis and Predictive Modeling of Thermal Loading in a Railgun*, Institute for Advanced Technology, University of Texas at Austin, 2008, pp. 1-3,

[2]*Jacques Gernet, translated by J.R. Foster and Charles Hartman, A History of Chinese Civilization Cambridge, Massachusetts, 1996, p. 311.*

[3]Richard A. Marshall and Wang Ying, *Railguns: Their Science and Technology*, China Machine Press, Beijing, China, 2004 p. 31.

[4]Ian R. McNab, "Early Electric Gun Research," *IEEE Transactions on Magnetics*, January 1999, pp. 251-253.

[5]Harry Fair, *EM Launcher History and Basics*, Institute for Advanced Technology, Austin, Texas, 2007, p. 27.

[6]James D. Keeline, "Who Invented Tom Swift's Electric Rifle?" 1988, available at *http://www.keeline.com/Electric_Rifle.pdf.*

[7]Don Berry, *A "Primer" (not pr-eye-mer) On Guns*, Institute for Advanced Technology, Austin, Texas, 1992, p. 14.

[8]Keena, *Experimental Analysis and Predictive Modeling of Thermal Loading in a Railgun*, pp. 3-4.

[9]Ian R. McNab, *Pulsed Power*, Institute for Advanced Technology, Austin, TX, 1996, p. 8.

[10]Jerald Parker, *Railgun Launch and Modeling Principles*, Institute for Advanced Technology, Austin, Texas, 2007, p. 19.

[11]Sikhanda Satapathy, IAT-T-1492, Institute for Advanced Technology, Austin, Texas, 2008, pp. 3-4.

[12]Wang Ying, Richard Marshall, and Cheng Shukang *Physics of Electric Launch*, China Machine Press, Beijing, China, 2004, p. 21.

[13]Marshall and Ying, *Railguns: Their Science and Technology*, p. 5.

[14]Ian R. McNab, *Pulsed Power for Railguns*, Institute for Advanced Technology, Austin, Texas, 2007, p. 1-3.

[15]Keena, *Experimental Analysis and Predictive Modeling of Thermal Loading in a Railgun*, pp. 5-6.

[16]Fair, *EM Launcher History and Basics*, p. 24.

[17]Source data and graph provided by Hypervelocity Impact Physics Division, Institute for Advanced Technology, Austin, Texas; and Fair, *EM Launcher History and Basics*, p. 15.

[18]Fair, *EM Launcher History and Basics*, p. 18.

[19]Friedrich Wilhelm Heinrich Alexander von Humboldt, 1837.

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HOW WE OPERATE

by Lieutenant General Rick Lynch and Major Todd Johnson

The 3d Infantry Division (3ID) headquarters deployed to Iraq in March 2007 to take charge of the newly created Multinational Division-Center (MND-C). The division headquarters, known as Task Force Marne, was sent to Iraq as part of the surge operations directed by President George Bush in January 2007. Before long, the headquarters was responsible for security in the provinces of Karbala, Najaf, Babil, and two qadas of Baghdad province (Ma'dain and Mahmudiyah) — better known as the "southern belts of Baghdad."

Task Force Marne was charged by the Multinational Corps-Iraq (MNC-I), under the leadership of Lieutenant General Raymond Odierno, with four primary tasks: interdicting accelerants into Baghdad; defeating sectarian violence; securing the local populace; and increasing the capacity of Iraqi Security Forces (ISF) and Government of Iraq (GOI).

Over the next 15 months, Task Force Marne, operating in a land mass the size of West Virginia, was immersed in counterinsurgency (COIN) tasks ranging from full kinetic operations to humanitarian missions. The task force's soldiers and leaders proved their incredible versatility on a daily basis.

As a part of the new strategy created by the Multinational Force-Iraq (MNF-I), Task Force Marne's commanding general, General David Petraeus, focused on living among the population. Platoon, company, battalion, and brigade combat teams (BCTs) became adept at implementing the responsibilities of a warrior, protecting their area while contributing to a local community. The ability to embrace local citizens, while simultaneously securing the area, proved to be the cornerstone of Task Force Marne's success.

Prior to deployment, the leaders of 3ID codified this approach by developing several lists that highlight key tenets for COIN operations in Iraq. Two specific lists, shown in Figure 1 and 2, "Preparation for Victory" and "Flat-Ass Rules (FARS)," were important references that all soldiers could consult before conducting operations. Another key soldier tool, the division's warfighting handbook, which easily fit in the operator's cargo pocket, provided more in-depth analysis of COIN operations and served as a great reference for those leading the day-to-day fight.

It has been said that conducting COIN operations is like playing 3-dimensional chess in the dark while dodging bullets. COIN operations are very difficult to manage and understand, making it very important for Task Force Marne to identify early on its lines of operation (LOO).

Task Force Marne focused on five LOO during its 15-month deployment, which included security, governance, economics, transition, and rule of law. This LOO framework enabled the task force to simultaneously focus its energies on defeating al Qaeda in Iraq (AQI) and Shia extremists while conducting capacity building with the assistance of the ISF and GOI. As the rotation evolved, it became clear that all LOO would have to be

Figure 1

Figure 2

treated with equal vigor, but the security LOO would be the first among equals.

Military professionals are most comfortable operating within the security LOO; Task Force Marne was no exception. As of this writing, more than 6,000 enemy personnel have been captured or killed while conducting operations. It is a fact that the enemy facing Task Force Marne was one that responded to brute force. If they shot at us, we shot back. However, this metric means very little in a COIN environment. What really matters is the amount of kinetic activity the enemy conducts and whether or not he is recruiting support from the local populace.

The metric that mattered most to Task Force Marne was the number of attacks against its assets. The months of May, June, and July 2007 were the toughest with more than 25 attacks per day; by April 2008, that number was down to less than 2 per day and continued to drop. The decrease in enemy attacks was directly linked to the task force's ability to drive the enemy from former sanctuary areas, which resulted in lower attack levels in Baghdad, as well as in the Marne's areas of operation. To accomplish this, the task force devised a three-phased plan that focused operations on joint strengths and used all available enablers at the division level.

The first phase focused on leveraging intelligence, surveillance, and reconnaissance (ISR) assets, along with conventional and unconventional ground forces to shape the battlefield. The division worked very closely with the U.S. Air Force (USAF) and higher echelon G2 resources to identify, and then eliminate, threat areas such as potential improvised explosive device (IED) and high-value target (HVT) locations. The targeting process for the task force was relatively simple; if a specific area had suspicious activity or appeared to be a potential IED cache site, it was blown up by either indirect- or direct-fire assets. This engagement criteria paid huge dividends as secondary explosions confirmed enemy caches and saved the lives of many soldiers.

"As a part of the new strategy created by the Multinational Force-Iraq (MNF-I), Task Force Marne's commanding general, General David Petraeus, focused on living among the population. Platoon, company, battalion, and brigade combat teams (BCTs) became adept at implementing the responsibilities of a warrior, protecting their area while contributing to a local community."

Value added to the operation was the counter-IED cell the task force created. Implementing this cell was a real accomplishment during phase one as several division staff members focused on identifying enemy tactics, techniques, and procedures (TTP) and sharing life-saving lessons learned with the force. Simultaneously, the task force worked with Special Operations Forces (SOF) to target and eliminate high-value individuals (HVIs) who were either planning or directing attacks against coalition forces. It is important to note that these missions were focused on targeting extremists and not specific religious groups. Synchronized operations between the task force and SOF resulted in more than 100 HVIs being captured or killed.

Phase two of the operation normally consisted of focused, kinetic operations and establishing relationships with the local populace. The key component for success during this phase was building a patrol base, combat outpost (COP), forward operating base (FOB), or joint security station (JSS). As of this writing, Task Force Marne had constructed a total of 59 patrol bases, COPs, FOBs, JSSs, and expanded 13 more. This mindset of living and working with the populace led to the task force owning multiple areas where soldiers lived on a daily basis.

Once Task Force Marne soldiers cleared a region of enemy, the focus turned to establishing a permanent presence in the area. When coalition forces began build-

ing a patrol base, many locals asked if they were staying. When soldiers on the ground ensured local citizens they were not leaving, the locals asked how they could help. This was the critical turning point that made soldiers want to provide area security to a population yearning for freedom from oppression. By living and working with the locals daily, leaders on the ground developed a refined *Fingerspitzengefuhl* (fingertip feel) of the area.

Phase three of the operation saw BCTs focused on meeting the needs of the people through a variety of initiatives, which ranged from creating local security groups, such as concerned local citizens/Sons of Iraq (CLC/SOI), to leveraging different funding sites to repair and guard critical infrastructure, such as roads, schools, and government buildings, helping locals create local governing and nahia councils receptive to the people. Local governing councils are a very important part of this process as they serve as a conduit for the people to express their true feelings on future infrastructure development and economic programs.

"Creating the CLC/SOI programs, a by-product of the "awakening" of Sunnis in Al Anbar province in 2007, provided the task force a much needed way of thickening its ground force while simultaneously preventing extremist groups from replenishing their diminished ranks. The task force understood that many citizens in their areas of operations desired to protect and serve their local communities."

Creating the CLC/SOI programs, a by-product of the "awakening" of Sunnis in Al Anbar province in 2007, provided the task force a much needed way of thickening its ground force while simultaneously preventing extremist groups from replenishing their diminished ranks. The task force understood that many citizens in their areas of operations desired to protect and serve their local communities. The task force used commander's emergency response program (CERP) money to cover the salaries of these members, as well as pay individuals for turning in, or pointing out, weapons caches.

The CLC/SOI programs, although very successful in helping Iraqis help themselves, were not intended to be a long-term, major employment programs. They were designed to address security problems in Task Force Marne's areas of operations, and be overwatched by soldiers who had liberated the areas from extremists. These prerequisites ensured the total numbers for these programs did not exceed 32,000.

The task force identified early on in the rotation that employment was a key component of the economic LOO, which drove the task force's concern of shifting CLC/SOI to other employment opportunities. This issue was addressed as the task force transitioned approximately 25 percent of the CLC/SOI membership into the ISF structure. The remainder of the CLC/SOI population was given priority for moving into a civilian service corps (CSC)/department of public works program (DPW). This program focused on transitioning CLC/SOI into employment or educational opportunities that served the common good. To facilitate this process, the task force's G9, civil affairs section, worked closely with vocational trade schools located in the Marne's areas of operations, especially the one located in the Iskandariyah industrial complex, to give priority to those CLC/SOI who desired to learn a trade or skill. Workers not interested in pursuing an opportunity at a trade school were given the option to join CSC/DPW groups, which focused on construction work, as well as cleaning vital infrastructure such as markets, canals, and roadways. Regardless of which avenue the CLC/SOI chose to pursue, each had the opportunity to become a productive community member; but more importantly, not to become a member of an extremist group focused on destroying the future of a united Iraq.

As stated earlier, not all of the local population served in the CLC/SOI movement. One of the major reasons for this was the ability of the BCTs and battalions to resource nonlethal lines of operation. For example, battalion commanders could provide "micro-grants" to local businesses that showed promise for future growth and survival. An important success story is the reemergence of fish and poultry farms in the rural areas of the Marne's operating environment. These farms, with monetary assistance from the task force, reclaimed some of their former status. The forecast for these farms is good as long as they continue to develop capacity and a vision to sustain their gains.

All of the aforementioned programs, the CLC/SOI, the CSC/DPW, and micro-grants, kept the window of opportunity opened for the provincial and local governments of Iraq to develop and mature. The division's senior leaders understood early on the friction at the national level of government. To counter those effects, they realized that the key to winning the hearts and minds of the citizenry in Task Force Marne's operating areas was to engage the local leadership.

It was standard operating procedure for the division's commanding general, the deputy commanding generals (maneuver and support), and the command sergeant major to engage in "helicopter diplomacy" at least 6 days a week. These meetings were held at various locations throughout the Marne's operating environment and attendees were invited based on events affecting the task force area. In the span of a week, it was not uncommon for leaders to meet with several tribal sheikhs, provincial governors, CLC/SOI leaders, small business owners, and Iraqi army division commanders. The ability to interface with common Iraqis and important officials enabled division leaders to stay abreast of issues and monitor events daily. These engagements were also essential in establishing good relationships with important government, local, and military officials in the Marne's battlespace.

Task Force Marne's success during its 15-month rotation is attributed directly

How We Operate

continued from previous page

to its soldiers being prepared at the outset of the mission to implement the vision of clear, hold, and build. After extensive preparation, Task Force Marne focused its efforts along five LOO and simultaneously conducted lethal and nonlethal operations, as appropriate. Whether it was eliminating an IED network or helping local markets develop capacity, the soldiers of Task Force Marne seized the initiative and made a positive impact.

The task force's ability to interact with local government, at the city and nahia levels, proved to be the foundation for all future progress and will facilitate the eventual transition of responsibility to the Iraqi people. While no one knows when the transition will occur, Task Force Marne takes great pride in knowing that it made a difference in the lives of thousands of Iraqis and serves as a positive example for future operations.

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Maneuver Center of Excellence

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Benning and the organizational/operational transformation to establish the MCOE. The SPC was established in June 2006 and is supported with a full-time staff of contract consultants. Strategic contract planners are partnered with USAARMC and completely integrated into the planning process. The SPC is aligned along functional areas, such as personnel, logistics, and training, using a centralized approach to planning, much like a division plans section, in that the SPC develops all products, plans, and orders while working directly with primary staff officers and agencies at Fort Knox and Fort Benning. This approach leverages the experiences of key personnel while maximizing the capabilities of the SPC. When relocation physically begins, the SPC will transition from the current focus of planning through future operations to execution and management of current operations. The SPC will serve as a key organization on behalf of relocating units to assist in movement operations and continue to assist in integration activities at Fort Benning. As a non-enduring function, the SPC will dissolve on completion of BRAC in late 2011.

The USAARMC SPC is partnered with the Infantry Center's Maneuver Center Realignment and Control Cell (MCRC2) at Fort Benning. The MCRC2 was established concurrently with the SPC and is responsible for facilitating planning of preparation to support transformation activities among a myriad of directorates and agencies at Fort Benning. The MCRC2 also serves as the receiving location counterpart to the USAARMC SPC. Both organizations focus on the organizational transformation aspect of the BRAC/MCOE action; however, the SPC has responsibility for moving the USAARMC/S; and the MCRC2 has responsibility for preparation to support all transformation actions at Fort Benning.

Collectively, the two organizations serve as the planning and future operations staffs for the MCOE board of directors (MCOE BOD), jointly chaired by the Infantry and Armor Center commanding generals. The MCOE BOD serves as the guidance and decisionmaking body for all MCOE planning and future operations until the MCOE effective date is reached and a single commanding general is assigned to lead the MCOE.

Once all systems are in place, a transition of authority at both installations will occur: at Fort Knox, the commanding general, USAARMC will transfer authority to the commanding general, Human Resource Center of Excellence (HRCOE); and at Fort Benning, the commanding general, USAIC, will transfer authority to the commanding general, MCOE. This transfer is expected to take place in the summer of 2010; from this date, the MCOE will encompass the Armor School at Fort Knox until the completion of its relocation in late FY11.

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BATTALION TACTICAL OPERATIONS CENTER

by Captain Edward M. Custer and Captain Douglas K. Serota

"The command and control [C2] system is defined as the facilities, equipment, communications, procedures, and personnel essential to directing and controlling operations of assigned forces pursuant to the missions assigned. The term system is deceptive. It does not solely mean an arrangement of equipment such as a communications system. The C2 system is an organization of resources the commander uses to help plan, direct, coordinate, and control military operations to ensure mission accomplishment. The result is combat effectiveness."[1]

The above statement defines the purpose and intent of a tactical operations center (TOC) in a forward deployed environment. The TOC must meet certain basic criteria for any battalion to be successful. According to U.S Army Field Manual (FM) 101-5, *Staff Organization and Operations*, the TOC should, at a minimum, include staff and liaison personnel to help the commander exercise control; communications and related equipment; spaced-based systems; and network/automation equipment, such as phones, computers, and printers, to support day-to-day activities.[2]

There are many important factors, such as mounted/dismounted patrols, lethal and nonlethal targeting, Iraqi Security Force (ISF) integration, route clearance, and managing all other lines of operations (LOO), all of which contribute to a unit's deployment success. There is, however, one area that appears to be underemphasized and will negatively affect the entire battalion if left unattended or ignored. This area, which falls under the broad fields of interest of a commander, is the TOC's functionalities.[3]

This article provides a general outline and discusses the fundamental principals of TOC operations as employed by the 2d Combined Arms Battalion, 69th Armor Regiment, during Operation Iraqi Freedom V. These areas are addressed as they pertain to the TOC layout, tactical operations, administrative operations, and personnel management.

The TOC Layout

Before any unit can conduct successful combat operations, a fully functional TOC must be established. There are several factors the battle captain, or battle noncommissioned officer (NCO), must take into consideration during the planning phase. The first consideration is standing up the "pit" crew, which consists of the radio telephone operator (RTO), the command post of the future (CPOF) operator, an S2 operations soldier, a battle captain, and a battle NCO.[4] We recommend two CPOF systems be used in the TOC, one manned by the CPOF operator and the other by the S2 operations soldier. The best layout for the pit is to establish a horseshoe formation that facilitates good command and control (see Figure 1).

We placed the battle captain and NCO in the center of the horseshoe, which allowed for efficient communications between all elements and an overall view of the situation. The CPOF operator and RTO were positioned next to one another and adjacent to the battle NCO, which allowed for efficient battle tracking. To complete the operations center, we used a projection screen that displayed CPOF imagery on a wall; the patrol tracker and the rolling battle update brief (BUB) on television screens; and commanders critical information requirements (CCIR) on a wall.

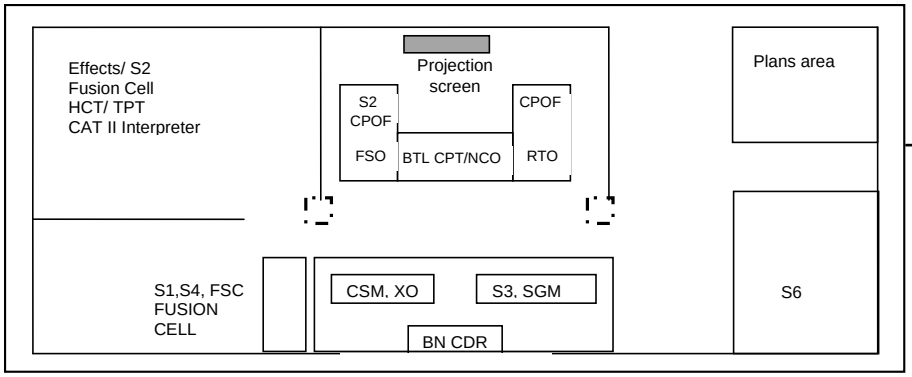

Figure 1

Adjacent to the pit was the effects cell, the S4 desk, and the S1 desk. The TOC was reconstructed with shorter walls, which allowed for better communications, good command and control, and situational awareness when significant actions (SIGACTS) occurred.

Tactical Operations

Like all units preparing for combat operations, it is crucial to train pit crews on all battle drills prior to assuming TOC duties and responsibilities in theater. Common battle drills include reacting to contact improvised explosive device/explosively formed projectile (IED/EFP) attacks; indirect-fire attacks on forward operating base (FOB), combat outpost (COP), or joint security stations (JSS); precision small-arms fire (PSAF) attacks; killed in action (KIA) procedures; mass casualty (MASCAL) events; impromptu offensive operations; time-sensitive targets (TST), or contact involving nonorganic units transiting the unit's operating environment.

Several steps were taken to train our unit and plan for various situations that might occur. The first step was to learn from adjacent units with recent experience in theater. Our battalion TOC personnel visited every battalion TOC on the FOB to collect battle drills. Each drill was analyzed, tested, and improved (if necessary), and incorporated into our unit standard operating procedures (SOP) manual. The standard procedure for battle drills began with the battle captain, NCO, or RTO announcing, "attention in the TOC," quickly followed by the "five Ws:" who; what; where; when; why?

The battle captain and NCO directed assets and communicated with the unit in contact and higher headquarters. The RTO was responsible for monitoring all traffic from the unit in contact, relaying it to the battle captain and NCO, and logging all information on DA Form 1594, "Daily Staff Journal or Duty Officers Log." The CPOF operator also recorded all information that came over the radio and compiled the SIGACT report while the event was occurring.

The S2 automatically pulled a past enemy situational template (SITEMP) for the area so we could accurately prepare for any follow-on attacks. This tactic, technique, and procedure (TTP) was very important because there were different follow-on scenarios for different sectors in our operating environment. For example, in one portion of our operating environment if a unit was struck by an EFP/IED and was dismounted on the ground for more than 20 minutes, they would receive PSAF. Having the ability to go back 2 months and analyze attacks in specific areas is crucial to the decisionmaking process for current SIGACTs, which is why the S2 also has CPOF. The S2 was also charged with communicating with tactical unmanned aerial vehicle (TUAV) assets at brigade level.

It was also beneficial to include the S1, S4, and battalion medical officer (MEDO) in battle drills. The S1 had various reports, such as casualty reports and Purple Heart submissions, which had to be completed and submitted within a specified timeframe. The S4's primary responsibility was to coordinate recovery assets and begin the 14-line report process for battle-lost equipment. The MEDO, who has the responsibility to coordinate with the combat support hospital and mortuary affairs, also served as an important addition to the battle drill. Including each staff section in battle drills greatly increases the TOC's ability to respond to SIGACTs.

Once potential battle drills were identified, we developed specific duty descriptions for each soldier operating in the TOC. Each of these duties was refined through multiple theater-specific vignettes. Full rehearsals were conducted for each battle drill once the pit crew understood its task. Once the vignette and training scenario were complete, we conducted after-action reviews, which helped identify deficiencies in our plan and mitigate confusing instructions. Below is an example of one vignette we used for training purposes:

Situation. *2d Platoon, D Company, 2d Battalion, 69th Armor (2/D/2-69 AR), is conducting a standard route security pa-*

"There are many important factors, such as mounted/dismounted patrols, lethal and nonlethal targeting, Iraqi Security Force (ISF) integration, route clearance, and managing all other lines of operations (LOO), all of which contribute to a unit's deployment success. There is, however, one area that appears to be underemphasized and will negatively affect the entire battalion if left unattended or ignored. This area, which falls under the broad fields of interest of a commander, is the TOC's functionalities."

trol on Route Oilers. Their patrol consists of 4 M1151s, 18 PAX, and 1 interpreter. There is a general support (GS) air weapons team (AWT) in the area and medical evacuation (MEDEVAC) status is green. All routes in Operating Environment Panther are Amber. 2/D/2-69 AR will follow Airport Road, Route Brewers, Predators, Pluto, and Oilers.

Dealer X-Ray: "Panther X-ray, this is Dealer X-ray, Dealer White contact IED on RTE Oilers vic MB 498 858. Currently assessing casualties; BDA [battle damage assessment] will follow."

Battle captain calls, "attention in the TOC," and disseminates all known information using the basic five Ws. At this point, enough information exists to begin movement: the battle captain brings quick reaction force (QRF) to REDCON 1 to standby at the gate for further task and purpose and requests all available ISR assets (S2 operations monitors); the S2 pulls enemy SITEMP in that area; recovery assets go to REDCON 1; the status of friendly elements in sector are identified and their availability to provide assistance (to include nonorganic units) is confirmed.

Dealer X-Ray: "Casualty update follows: 2 urgent surgical, 2 urgent, 1 walking wounded. We have established security, request ETA of AWT."

The battle captain must immediately determine if the unit can self-recover and conduct internal casualty evacuation (CASEVAC), and to which FOB the wounded will be taken. There are several simultaneous actions required, which include providing battle roster numbers, which are needed ASAP to identify the wounded soldier; processing casualty reports; obtaining the wounded soldier's medical file to confirm medical history/medication allergies; processing the serious incident report (SIR), which is due to brigade no later than one hour following the incident; and making contact with the medical facility where the wounded will be transported, ensuring it is prepped and ready to receive casualties.[5]

Dealer X-Ray: "We are unable to self-recover, but need to get 3 urgent surgical soldiers to the 86th combat support hospital. We cannot stay on the scene."

At this point, the battalion should designate another unit to overwatch the damaged vehicle. There are three possible courses of actions: have QRF secure the site; redirect an in-sector unit; or provide overwatch with an AWT until additional forces arrive. By this time, the TOC should have enough information to begin the SIR. This information should include the number of wounded soldiers by battle roster number; a sequence of events; the direction of travel; order of march; the location of each soldier in the vehicle; countermeasures, to include Dukes and Rhinos and their distribution within the patrol; and actions taken by the unit in contact. Recovery assets and operations should also be monitored. The battle captain and NCO must balance the need to maneuver forces with the requirement to complete administrative information.

"Several steps were taken to train our unit and plan for various situations that might occur. The first step was to learn from adjacent units with recent experience in theater. Our battalion TOC personnel visited every battalion TOC on the FOB to collect battle drills. Each drill was analyzed, tested, and improved (if necessary), and incorporated into our unit standard operating procedures (SOP) manual."

The above vignette presents a very complex and difficult event in terms of command and control. The key to success is to push information and assets to the unit in contact. At a minimum, a unit in contact needs rotary wing support and friendly units moving to its location. We found that a contact situation will calm significantly as soon as an AWT arrives on station.

Once the TOC crew completed the training vignette, it moved toward preparing for tactical operations. Under tactical operations, any TOC must be prepared to conduct deliberate, hasty, and QRF combat operations.

Deliberate operations will primarily be synchronized through the battalion's planning cell; however, there are three key areas the TOC crew must supervise and influence to ensure the success of any deliberated operation. These key areas include final synchronization of assets, such as intelligence, surveillance, and reconnaissance (ISR), QRF, AWT, and Iraqi Security Force (ISF) coordination; explosive ordnance disposal (EOD), weapons intelligence team (WIT), combined explosives exploitation cell (CEXC), and adjacent unit coordination (both CF and ISF); and confirmation of timelines. Most operations in the counterinsurgency environment are executed at the company level, but they are executed with battalion- and brigade-level assets.

Hasty operations often result from sensitive reporting, driven by intelligence generated from brigade- or division-level assets, walk-in sources, or requested assistance from the ISF. Common hasty missions include time-sensitive targets to capture or detain high-value targets (HVTs), react to caches, or assist nonorganic units operating in a unit's battlespace. For synchronization, hasty operations follow the same guidelines as deliberate operations: coordinate with adjacent units, coordinate with higher headquarters for needed assets, and locate any ISF units that may be operating in the area. Our biggest lesson learned was simply ensuring that all needed assets were organized and the location of the target was confirmed based on available intelligence. TOC personnel must have the mindset to set conditions for subordinate unit success.

The final tactical operation that the TOC must be prepared to execute is a QRF mission. This is a fast-paced mission, but the TOC must still ensure the QRF's success by identifying its launch criteria, staging location, and reaction time. The battalion must also identify a secondary QRF, a heavy QRF (if required), and a recovery team. Although every unit knows the importance of having a QRF, in case of an emergency, few take the time to synchronize all assets needed to successfully accomplish this mission. A good lesson learned is unfortunately a likely scenario.

Although information and questions arise immediately, tactical patience is prudent prior to fully committing all assets. For example, the battalion QRF may not be the nearest friendly force. Using the battalion QRF for post-blast analysis may not be the most efficient use of friendly forces if another unit is available to provide assistance.[6] Proper management of assets and the use of tactical patience by the battle captain and NCO will facilitate a post-blast analysis without causing a unit to maintain security for extended periods of time, or cause a unit to leave the objective to execute this task. Below is a standard QRF mission:

"Panther X-Ray, this is Cobra X-ray, Cobra Red contact EFP, one vehicle mobility kill, three WIA [wounded in action], request QRF."

In the early months of deployment, our initial reaction was to immediately launch QRF. However, once they arrived and dealt with the immediate needs of the situation, a post-blast analysis was required to determine the type of IED, initiation system, emplacement techniques, and so on. In these situations, EOD is notified and has to be escorted by another patrol, which may or may not be prepared to start point (SP). If the vehicle cannot be recovered, another patrol is identified, or a unit is pulled from the objective to perform escort duties.

The primary mission of the unit in contact will always be CASEVAC; however, a unit cannot leave unsecured equipment on the battlefield. In a contact situation where soldiers are injured, the vehicle will most likely be a mobility kill. Another unit is now needed to recover that vehicle, bringing three units onto the battlefield and significantly lengthening the amount of time on the objective. TOC personnel must manage all other required actions following contact, allowing the unit in contact to take care of its soldiers. After our first QRF mission, we conducted an AAR to identify and correct noted deficiencies, which resulted in:

Issuing fragmentary order (FRAGO) in case of IED/EFP contact. If a unit made IED/EFP contact and needed assistance, we would FRAGO any element in our operating environment to the contact site, which reduced response time to the unit in contact, thus affording options and time needed to synchronize all necessary assets with the QRF before they were launched.

Establishing a battalion recovery QRF. Although the brigade had a recovery QRF available on request, it took a great deal of time, thus making it beneficial to establish the asset at battalion level. We kept a recovery team on standby at all times with a 30-minute response time; a wrecker and M88 were also on standby to react to the needs of heavy and wheeled units.

Immediately requesting EOD assets. On detonation of any IED/EFP attack on coalition forces, or on detonation of any large device, such as suicide vest or vehicle-borne IED (VBIED), we immediately requested EOD assets, which were ready to SP approximately 30 minutes after the initial request. Providing them with a warning order (WARNO) to initiate movement significantly reduced reaction time. We found that the required information to receive EOD assets was almost always available with the initial contact report. EOD will need vital information such as the composition and frequency of the escorting unit, type of incident, grid of attack, link-up point, and current situation report (SITREP). A good pit crew will gather all of this information without specifically asking the unit in contact to provide it.

The changes to our QRF management allowed us to maximize our efforts with efficient allocation of forces, minimizing the number of soldiers on the objective, and reducing the risks associated with flooding the objective with coalition forces.

Administrative Operations

Setting up a unit TOC for tactical success should be the foremost priority; however, administrative operations should also be tightly monitored to ensure daily efficiency. There are several basic areas that a battalion-level TOC operations cell is required to monitor, which include monitoring reports, trackers, and daily patrols and general taskings from brigade, such as FOB force protection, FOB QRF, and third-country national (TCN) escorts.

Tracking day-to-day patrols can be challenging, especially if the battalion is operating out of two COPs, three JSS, with three maneuver companies forward deployed from the FOB, three based on the FOB, and an average of 20 patrol elements in sector throughout any given day. We used a simple tracker that showed patrols 24 hours ahead, tracked by a patrol number, which was hyperlinked to each patrol's concept of operation (CONOP) slide, unit, call sign, mission, patrol composition, SP and return point (RP) times, and whether or not the patrol was a combined patrol with Iraqi army, Iraqi Police, or National Police (See Figure 2).

While deployed, our unit received numerous taskings via brigade and battalion FRAGOs, which required a system to

PATROL TRACKER

PATROL #	CO / PLT	Call Sign	MISSION	PAX CF/LN	COMBAT POWER	SP (T)	SP (A)	RP	MP	DATE	COMBINED PATROL
D1178	D/1/B	RED	RTE PLUTO OVER WATCH	8	2XM1A1	20:00	20:31	1:00	Y	31-Jan-08	N
B0855	B 1/504	SKT	OPERATION MARION	8	NONE	21:30	21:39	2:21	Y	31-Jan-08	N
HM0179	MTR	STEEL	ECTR W/DEALER	21/1	6XM1151	22:00	[redacted]		Y	31-Jan-08	N
D1179	D/4	GREEN	DISMOUNTED PATROL AROUND COP 727	25/1	N/A	5:00	4:58	6:01	Y	1-Feb-08	Y
D1180	D/1	RED	RTE PLUTO OVERWATCH	8	2XM1A1	7:00	6:54	11:38	Y	1-Feb-08	N
E0566	E/2	OUTLAW	RTE CLR	24	10 VEH	7:30	7:48	14:05	Y	1-Feb-08	N
D1183	D/4	GREEN	COMBAT PATROL TO FOB RUSTIMIYAH	26/1	6XM1151	8:00	7:52	12:17	Y	1-Feb-08	N
C0861	C/1	RED	PATROL HAAY WEDAH	23/1, 17/1	4XM1151	8:00	7:57	10:40	Y	1-Feb-08	Y
B0856	B	B HQ	PATROL TO FOB [redacted]	19/1	4XM1151	8:30	7:19	13:10	Y	1-Feb-08	N

Figure 2

SUSPENSE TRACKER											
Document	Date	Task	Suspense	B 1/504	Aco	Bco	Cco	Dco	Eco	Fco	HHC
FRAGO 194 to 07-07	19-Jan-08	NLT 20 FEB 08 all companies will ensure all assigned personnel receive the cold weather awareness briefings, Appendix 169 to Annex I, & chlorine awareness briefing, Appendix 170 to Annex I, to protect the force by increasing awareness of cold protective measure, chlorine protective measures and emergency actions down to the lowest level. Companies will utilize their trained field sanitation team (FST) or medical personnel (68W) to conduct classes. NLT 20 FEB 08, company CDRs, XOs, or 1SGs report completion to the BN MEDO. POC for this action is...	20-Feb-08								
FRAGO 21 to 08-01	18-Feb-08	All companies, NLT 221700FEB08 will mark all company containers IAW the attached guidance (Appendix 26 to Annex I). Reference the company spreadsheet for information needed (Appendix 27 to Annex I). Excluding Renegade all updates will be returned to POC. POC for this action is...	22-Feb-08								
FRAGO 19 to 08-01	16-Feb-08	All companies will submit FRG newsletters to S1 NLT 27 FEB 08 to facilitate the timely processing of newsletters to each company FRG leader in the rear. POC for this action is...	27-Feb-08								
FRAGO 19 to 08-01	16-Feb-08	All companies will submit to P1 NLT 27 FEB 08 the name and achievement of one (1) lieutenant per company for P6 achievement AAM and one nomination for the Pink Panther Award.	27-Feb-08								
FRAGO 19 to 08-01	16-Feb-08	All companies will conduct 3ID redeployment safety briefing (LINK) and report completion to S1 NLT 28 FEB 08 to facilitate discussion on safety topics relating to the battalion's upcoming redeployment. Briefings may be squad size with leadership facilitating the discussion. POC for this action is...	28-Feb-08								
FRAGO 19 to 08-01	16-Feb-08	All companies, the next Panther OPD is 021430MAR08 at the Rustamiyah D-FAC VIP room. The OPD is mandatory for all 2-69 AR officers; Cobra has an exemption for one officer at COP 927. The OPD will be executed in two parts. Part I is an adaptive leadership presentation (one platoon from each company will brief one slide for 5 minutes) Part II is a lessons learned presentation (each company commander will brief one slide for 5 minutes – one lesson learned during tactical phase – issue/discussion/ recommendation formation). Companies will submit slides to S3 training officer NLT 291700FEB08.	29-Feb-08								
FRAGO 15 to 08-01	12-Feb-08	All companies, NLT 01 MAR 08 identify soldiers on OIF V awards roll up matrix and submit combat badge recommendations for soldiers who have not received a combat badge while in theater to the S1 section. All companies utilize 3-3 BCT multiple submission SOP at - LINK - of the 2-69 AR shared folder. POC for this action is...	1-Mar-08								

Figure 3

manage. We created a simple matrix that tracked each tasking by company and was hyperlinked to the FRAGO for reference. The battle NCO updated the tracker daily and forwarded it to the companies and staff to ensure accountability. This tracker was a great benefit to the battalion and prevented missed suspense times/dates (See Figure 3). We used color codes in the unit-designation boxes to represent task statuses: green = complete; yellow = in progress; red = missed suspense; and grey = not applicable to a particular unit.

Shift work and power generation are two systems that, when improperly managed, create an inefficient and sometimes non-mission capable TOC. These two systems are often overlooked by deployed units, until the system fails. Since operations run 24 hours a day, it is imperative to select the right individuals to perform each TOC duty. These individuals must be intelligent, quick witted, and have the ability to handle a great deal of stress. We ran two 12-hour shifts, with shift changes at 0700 and 1900 hours, which were hours of low enemy and friendly activity during a normal day. The pit-crew shifts were staffed with three soldiers, one NCO, and one officer; the three soldiers rotated between CPOF and RTO duties, which provided flexibility for chow rotations, rest periods, and facilitated block leave. Each staff section, including the S1, S2, S4, S5, and S6, had representatives in the TOC 24/7.

Although we operated in a hard-standing building with a dedicated power source, power failure is very common, especially during summer months in Iraq. We found that using a 3K generator was sufficient as a backup supply for essential TOC operations. A 3K generator produces enough energy to power radios, blue force tracker, projection screens, the Advanced Field Artillery Tactical Data System (AFATDS), and backup lighting. We added a "loss of power" battle drill to our training requirements, which enabled us to provide backup power to the TOC within 2 minutes of a power loss.

Running an efficient combat TOC in a forward environment may not be the most glamorous position, but it is vital to the battalion's success. Posting battle drills where every soldier, NCO, and officer in the TOC can constantly see them and reference them instills a firm understanding of how the TOC will operate during contact. This system also improves the pit crew's efficiency, connects them to high standards, and results in better support to subordinate units in the operating environment. Emplacing systems to monitor daily patrols and taskings, and training and preparing the TOC to support combat operations, creates a 90-percent solution to running an efficient TOC. Using training vignettes daily for the first 2 weeks, followed by weekly vignettes, will keep pit crews efficient and successful. Experience and lessons learned from enemy contact will refine the pit crew's reaction and drive necessary changes to systems.

Notes

[1]Headquarters, Department of the Army, U.S. Army Field Manual (FM) 101-5, *Staff Organization and Operations*, U.S. Government Printing Office, Washington, DC, 31 May 1997.

[2]Ibid.

[3]Broad fields of interest are the areas that the commander oversees during operations and include personnel (G1/S1), intelligence (G2/S2), operations and training (G3/S3), logistics (G4/S4), civil-military operations (G5/S5), and signal operations (G6/S6).

[4]The CPOF is a linked system designed to promote situational awareness and standardized reporting of all significant activities throughout the area of operations.

[5]Once coordination is made with the receiving combat support hospital, the battalion S1 and medical officer tracks the status of individuals.

[6]A post-blast analysis, conducted by EOD assets, is crucial to the collection of actionable intelligence and is required for all IED/EFP attacks on coalition forces.

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The Karada Operating Environment: A Counterinsurgency Case Study

by Captain Mark K. Snakenberg

To those blind to the lessons of history, the ongoing wars in Iraq and Afghanistan illustrate that no two operating environments (OE) are alike.[1] Each theater presents unique challenges and conditions, and these varying circumstances permeate down through national and regional levels to area, municipal, and neighborhood levels. From March 2007 through May 2008, C Company, 2d Battalion, 69th Armor, conducted counterinsurgency (COIN) operations on the Karada Peninsula and throughout the surrounding areas of Baghdad, Iraq.[2]

This article explores C Company's OE, provides a framework for understanding the dynamics of this vibrant area, and proffers some solutions developed to counter particular problem sets. This study by no means implies that these solutions are the best conceivable or that their application is universal — it simply presents *a way* of conducting counterinsurgency (COIN) operations, which may aid others in their quest to find solutions that work.

An Overview of Karada

C Company's OE consisted of two separate areas: the Karada Peninsula (Zones 10 and 13) and Zone 14 West (14W), which lies to the immediate east of a major thoroughfare that runs from the northern shoulder to the southern shoulder across the base of the peninsula (see Figure 1). The 22-square kilometer OE sits squarely in the center of Baghdad, on the east side of the Tigris River.[3] It is home to some 107,773 people, which includes ordinary Iraqis; Americans; nongovernment organizations (NGOs); political parties; foreign embassies; the Badr organization, the largest legitimate militia in the country and militant arm of the Islamic Supreme Council of Iraq (ISCI), which is operating within the structure of the Karada Peninsula Force (KPF); and key government of Iraq (GOI) leaders, including the Iraqi president and vice president.[4]

Karada is bounded on three sides by the Tigris River; to the north lays the international zone (IZ), formerly known as the green zone; to the south lays the restive, mostly Sunni area of Dora; and to the west lays the sectarian-contested Karkh district. East of the peninsula lays Zone 14W and the rest of East Baghdad — with its massive Shia enclaves, including Sadr City. Because of its high-visibility residents, central position, and close proximity to the IZ, the Karada OE has been called the most strategic and politically sensitive area in all of Baghdad, attracting visitors commensurate with the claim, including visiting U.S., Iraqi, and foreign generals, leaders, and dignitaries.


EXCHANGE
HARMON

The greatest obstacle to movement onto the peninsula is the Tigris River, and movement to and from the IZ, Karkh, and Dora is canalized over one of three bridges, which include the 14th of July to the north, the Jadriyah to the west, and the Babil to the south. Each of these bridges contains at least one Iraqi Security Force (ISF) checkpoint. A fourth bridge, the Dora Bridge, is located south of the OE outside the company's control, but within its area of interest (AI).[5]

To the east of the peninsula, no natural obstacles exist to restrict movement, so the ISF have resorted to a series of checkpoints to control movement into and out of the area. These checkpoints are oriented on the four major east-west running, and one north-south running, avenues of approach into the peninsula; however, a savvy enemy can still infiltrate the gaps via vehicle if he is familiar with the neighborhood. As a result, the ISF established checkpoints within the peninsula as a defense in depth to disrupt enemy movement along major avenues of approach.

Barriers erected by Iraqi citizens, leaders, coalition forces (CF), and foreign embassies to counter the vehicle-borne improvised explosive device (VBIED) threat prevalent in Karada served as reinforcing obstacles, which further limit both CF and enemy maneuver options on the peninsula. Zone 14W is generally free of obstacles, except for reinforced concrete obstacles in the north used to protect key civil installations, and has only a few ISF checkpoints, which are supplemented by the Sons of Iraq, who are citizens recruited by the local government and security forces to augment security at fixed sites. The tight alleyways of many muhallas (neighborhoods) throughout the entire OE further restrict CF mounted movement (but not the enemy's) due to the excessive size of military vehicles, thus demanding the use of dismounted movement/maneuver.

Key terrain abounds in the OE. The CF combat outpost (COP) is a vital base from which to project combat power into the area.[6] The joint security station (JSS) is the venue for regular coordination between the CF, ISF, and GOI, and serves as a symbol of ISF and GOI legitimacy. The homes of the Iraqi president and vice president add further legitimacy to the GOI and contribute to a sense of security. A key mosque serves as a sanctuary headquarters for both Shia extremist military activities and political activity for the legitimate Office of the Martyr Sadr (OMS) political block.

Observation/fields of fire and cover/concealment are all determined by the urban canyons of downtown Baghdad. Karada features two of the tallest structures in Baghdad, as well as many multistory buildings, particularly along major routes. These buildings make ideal observation posts (OP) for IED triggermen making it difficult for CF soldiers to identify a triggerman after an IED incident, regardless of vehicle speed, scanning technique, or even dismounted. Further, the size of multistory structures makes targeting individuals difficult without either precise intelligence or the massing of significant combat power. Single home dwellings are prolific at the west end of the peninsula and grow sparse farther to the east.

The weather also plays a major role in operations within the OE; the chill and rain of winter nights tend to reduce enemy activity and increases the frequency of vehicle and weapon maintenance. The 120-degree summer heat significantly reduces CF soldier endurance and provides the enemy, unencumbered with 35 pounds of protective gear, a great advan-

"To the east of the peninsula, no natural obstacles exist to restrict movement, so the ISF have resorted to a series of checkpoints to control movement into and out of the area. These checkpoints are oriented on the four major east-west running, and one north-south running, avenues of approach into the peninsula; however, a savvy enemy can still infiltrate the gaps via vehicle if he is familiar with the neighborhood."

tage in rapidity of dismounted maneuver and withdrawal. It also significantly reduces the effectiveness of thermal acquisition during the heat of the day, impairing armored fighting vehicle effectiveness. During summer months, combat patrols are shorter, but more frequent. High winds are also a factor, grounding or reducing the effectiveness of all aerial platforms, including air medical evacuation (MEDEVAC), close-combat attack (CCA), and unmanned intelligence, surveillance, and reconnaissance (ISR) assets, as dust is blown in from the rural areas surrounding Baghdad.

Seeing Human Terrain

Traditional intelligence preparation of the battlefield (IPB) focuses on "seeing the terrain and seeing the enemy" so one can see himself.[7] During COIN operations, however, seeing the human terrain is a critical component of "defining the battlefield environment" and "describing its effects" before moving on to the threat.[8]

Our company OE included five haays (districts), divided into twenty muhallas, which made up one of the largest company OEs in Baghdad during the "surge" of January 2007 through July 2008. The peninsula encompasses three haays — Jamia, Babil, and Karada — divided into fifteen muhallas. Zone 14W is comprised of Wehda and Riyadh Haays, with the remaining five muhallas. Each haay has a neighborhood advisory council (NAC), which is administratively subordinate to the Karada district council (DC). The DC is also responsible for haays outside the company's OE. The OE is predominately Shia mixed with small enclaves of Christians. Although some Sunnis reside in the OE, they are generally unwilling to admit their true sect for fear of being targeted by Shia extremists.

Figure 2

"Observation/fields of fire and cover/concealment are all determined by the urban canyons of downtown Baghdad. Karada features two of the tallest structures in Baghdad, as well as many multistory buildings, particularly along major routes. These buildings make ideal observation posts (OP) for IED triggermen making it difficult for CF soldiers to identify a triggerman after an IED incident, regardless of vehicle speed, scanning technique, or even dismounted."

Jamia is an extremely affluent haay, whose residents include the vice president of Iraq, prominent ministers, members of parliament, and foreign embassies. The majority of its area consists of Baghdad University and a riverfront park currently under construction. Most residential structures are single family dwellings. The area is also home to the Karada DC building.

"During summer months, combat patrols are shorter, but more frequent. High winds are also a factor, grounding or reducing the effectiveness of all aerial platforms, including air medical evacuation (MEDEVAC), close-combat attack (CCA), and unmanned intelligence, surveillance, and reconnaissance (ISR) assets, as dust is blown in from the rural areas surrounding Baghdad."

Karada Haay, not to be confused with either the Karada political or security districts, is comprised of multistory residences and shops and becomes less affluent as one travels from west to east. It is home to Karada Dakhil, perhaps the most vibrant market area in the city, making it a tempting target for VBIED attacks with its masses of consumers filling the streets. Its southern boundary is Karada Street, another active market area. Karada Haay is home to many prominent Iraqis, including members of parliament and foreigners connected with NGOs. It features the Karada Security Center (KSC), a JSS that integrates CF, Iraqi army (IA), Iraqi police (IP), traffic police, KPF, emergency services, NAC, and DC representatives under one roof. On its eastern extremity, it is home to the National Theater, a symbol of resurgent Iraqi pride and culture. Karada Haay also has a darker side — it is home to a prominent mosque that serves as the hub of extremist political and military activities in the OE. This mosque is off limits to CF and ISF due to political and cultural considerations, which is a critical factor in any COIN study where political ramifications often outweigh traditional tactical concerns.

Babil Haay includes the president of Iraq's residential compound, the headquarters compound of ISCI, old state-run factories, former Baathist retreats, political party headquarters, foreign embassies, booming businesses, and the OE's hub of activity — the headquarters of the CF, IA, and IP. It also includes many wealthy citizens, but like the peninsula as a whole, becomes less affluent as one travels east.

Wehda Haay features a roughly even mix of Christian and Shia. Its landmarks include the Baghdad technical college, electronics markets, a high concentration of hospitals, and the former Iraqi air force headquarters (and former American Embassy), which is now occupied by squatters. The muhallah in the far east-

ern portion of the haay is very poor and is a former/potential future hotbed for extremist Shia activity.

Riyadh Haay is mostly industrial, including active factories for a variety of products such as candy, flour, vegetable oil, and other consumer goods. It features numerous warehouses for storing these goods, and multiple automotive shops specializing in repairs and parts for various types of vehicles. There are residences in the northern portion of the haay along Karada Street and its eastern tip in Kamsarrah. Mostly, residents are poor and live in multi-family dwellings. This area is another hotbed for extremist activity.

Seeing the Enemy

There is no monolithic enemy in the Karada OE that constitutes the 'insurgency,' although a number of organized and semi-organized groups compete for influence among themselves and with legitimate Iraqi institutions. Among these groups (in descending order of hostility to CF, ISF, and GOI) are hardcore Shia extremists, directly supported by outside powers; so-called Jaysh al-Mahdi Special Groups (JAM-SG); rouge Jaysh al-Mahdi (RJAM) individuals and groups, defying the Sadrist edict to cease violent operations; and militias such as mainstream Jaysh al-Mahdi (JAM) and the Badr organization. These groups are responsible for the bulk of direct and enabling operations against CF, ISF, and the GOI, and are the greatest insurgent threats. Lacking a significant Sunni base, al-Qaeda in Iraq (AQI) enjoys very limited influence in the OE and is a force to be reckoned with only when it succeeds in conducting a spectacular attack in the Karada OE, usually in the form of a VBIED in a crowded market.

It must be pointed out that there is yet another "enemy," in greater numbers, who threatens the security of the Karada OE. This enemy fights under no banner or ideology and his alliances shift on a whim; part insurgent, part crime family, his motives and tactics vary individually. He defies easy definition and acts purely in self-interest. He may belong to a political group, militia, or gang, and is influenced, but not limited, by that group's diktats. Generally, on the peninsula, this enemy conducts murder, extortion, kidnapping, rape, and counterfeiting — all criminal acts. In some cases, he conducts these activities as part of a larger program to intimidate the civilian population, destabilize the GOI, and discredit the government and ISF; much more often, he acts to enrich himself. As one moves further east to Zone 14W, these criminal activities continue, but dovetail into efforts to directly or indirectly target CF, ISF, and the GOI through insurgent activities — both lethal and nonlethal. This enemy is much harder for military forces to neutralize, yet he is as great a threat to the population as the insurgent, and efforts must be taken to target or marginalize him to accomplish the ultimate objective of protecting the population.

Defining the Mission

Given the vast size of the Karada OE and the host of complications resulting from its dynamic inhabitants, it quickly became clear that the company could not hope to protect the population, a fundamental tenant of COIN operations and a specified priority of Multi-National Forces-Iraq (MNF-I) and Multi-National Corps-Iraq (MNC-I) commanding generals, alone.[9]

To accomplish its mission, the company needed to integrate every available ISF element to have a reasonable chance of success. Even then, our partnered ISF units seemed far from ready for the task of COIN, and we decided that even with our ISF partners, we could not hope to secure the population or OE according to any doctrinal definition of the task.[10] We could, however, control the OE, maintain physical influence over it, until our Iraqi partners were ready to assume responsibility for its security.[11] Then, with our combined capabilities, we could reduce the violence in the OE to a level where we could transition some of its responsibility to ISF and GOI control. For our mission to succeed, however, our company required two elements: physical presence in the OE and dedication to develop the ISF and GOI. As it turned out, these preconditions were guaranteed by the framework provided by our parent battalion.

"Karada Haay, not to be confused with either the Karada political or security districts, is comprised of multistory residences and shops and becomes less affluent as one travels from west to east. It is home to Karada Dakhil, perhaps the most vibrant market area in the city, making it a tempting target for VBIED attacks with its masses of consumers filling the streets."

The Combat Outpost

Establishing a COP is no easy task; however, the effort paid off by placing CF in the OE, eventually adjacent to our IA partners on their arrival in July 2007. Already the groundwork for our two preconditions for success was laid. The COP's location

"Lacking a significant Sunni base, al-Qaeda in Iraq (AQI) enjoys very limited influence in the OE and is a force to be reckoned with only when it succeeds in conducting a spectacular attack in the Karada OE, usually in the form of a VBIED in a crowded market."

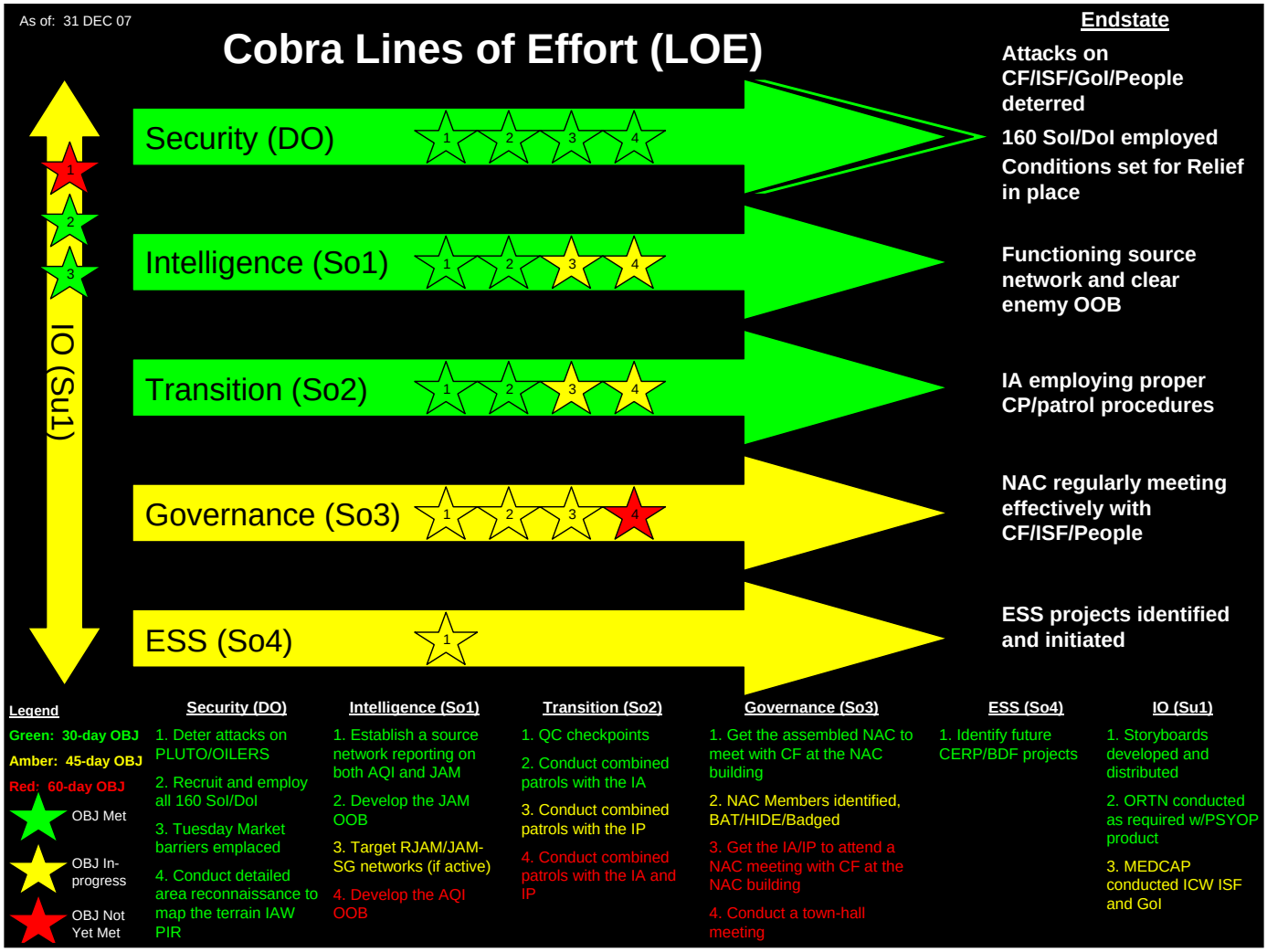

Figure 3

in the heart of the OE dramatically reduced the amount of dangerous routes our platoons were required to transit en route to controlling the OE through patrols; although it dramatically extended our logistics lines of communication (LOC) and isolated us from many mission-essential and luxury services at our forward operating base (FOB). Logistics support thus required a tremendous amount of planning, foresight, sweat, and trial/error. Fortunately, our headquarters officers, noncommissioned officers, and soldiers were up to the task. Slowly, the company accumulated the logistics and capabilities required to sustain and project combat power into the OE, making life more bearable at the COP. With the COP in place, patrols could maintain physical presence in the OE 24 hours a day and still be close to required services and support as necessary.

The Lines of Effort

In addition to requiring and aiding in the establishment of a COP, our battalion further allowed us to meet our two preconditions by providing an intellectual approach to our operations. Termed "lines of effort" (LOE), the battalion required us to focus on security and intelligence, transition, governance, communications, employment, essential services, and economics.[12] Although many benchmarks within some of these lines were primarily battalion-level efforts, the focus on security and intelligence, as well as transition, nested exactly with our preconditions. Governance-complemented transition, as the only long-term solution to stabilizing the OE, was through GOI involvement at the NAC level. Efforts along the communications LOE focused on interaction with citizens on patrols, and directed consequence management after major events in the OE. NAC-approved projects (contracted efforts to improve employment, essential services, and economics) and micro-grants (CF donations of money or required materials to small businesses designed to grow business capability) were the main vehicles at company level to address the employment, essential services, and economics LOE.

Arraying Forces

With the LOE and its associated requirements in mind, the company OE was divided into platoon OEs, making platoons responsible for all LOE within their OEs. Each platoon patrolled its OE primarily (although not exclusively) to build relationships with the populace and gain situational understanding, partner with an IA company to develop its capability, and partner with at least one NAC to build GOI capability. Then, using local knowledge gained by each platoon in its respective OE, we shared our understanding of the OE as a whole, and massed platoons anywhere in the OE as required for deliberate company operations or to respond to events.

Looking at the OE as a whole, Zone 14W was the most volatile, requiring one platoon each in Wehda and Riyadh. We accepted risk in Jamia, Karada, and Babil, and our largest platoon, the infantry, received the economy-of-force mission, responsi-

ble for partnering with three NACs in addition to its IA company; a tremendous feat. We further augmented the capability of one tank platoon by attaching to it a reinforced infantry fire team; a tactical decision that paid tremendous dividends in the form of a combined-arms platoon capable of executing any COIN mission. We later designated newly assigned infantrymen as replacements to replicate this arrangement with our remaining tank platoon. Having arrayed the company for COIN operations, we began focusing on the security and intelligence LOE.

LOE: Security and Intelligence

We first had to learn the OE and understand exactly who the enemy was before we could target and eliminate enemy influence over the population. We began to patrol for intelligence. Initially, we conducted area and route reconnaissance to understand the location of physical landmarks in the OE and map the existence of obstacles to mounted/dismounted movement. Information requirements (IR) during this phase focused on identifying obstacles and locations, which contributed to answering our number one priority intelligence requirement (PIR): which roads are blocked and with what type of obstacles? This specific PIR, which endured as the physical layout of the OE, was absolutely critical to understanding our mounted and dismounted movements, and drove planning for everything from routes to emerging incidents, reconnaissance patrols, and major operations targeting extremists. Associated obstacles to movement/maneuver constantly changed as a result of our actions, enemy reactions, and targeting the populace. Reconnaissance also assisted in identifying key terrain, which helped us define objectives and potential objectives for our many adversarial groups.

Once we understood the physical layout of the OE, we began establishing a source network. Historical and personal experience from previous tours in Iraq indicated that human intelligence (HUMINT) was the key to the campaign and provided the framework while the other intelligence disciplines filled in the gaps. Fortunately, the company had a tremendous HUMINT control team (HCT) in direct support of its operations. The HCT accompanied the company's platoons on nearly every patrol, making contacts and eventually developing more than two-dozen sources.

As our source network grew, targeting became the greatest challenge due to the heavy volume of reporting. Each day, the company S2 (also my fire support officer) and I read the battalion intelligence summary, brigade HUMINT summary (HUMSUM), and division HUMINT analysis requirements and collection reporting summary (HARCSUM) to facilitate our efforts to "see" the enemy in our OE. Eventually, we prioritized and focused our targeting on specific networks because there were simply too many targets to service.

Unlike many units, our company focused on individuals until it led to the neutralization of an entire cell. If we pursued only high-value targets throughout the OE, we would disrupt insurgent activity, but it would never be neutralized completely. By analogy, if we faced an enemy tank battalion at the National Training Center (NTC), we could direct each friendly vehicle to target the command tank in every enemy platoon in an effort to disrupt the enemy battalion's attack by eliminating the battalion's leadership; or we could mass all our effects on one entire company to eliminate it from the order of battle before targeting another company, massing our effects, and so on. This enemy was not the red army — others would take the leaders' place and continue operations, so the better option was to mass our effects on a specified cell and eliminate it from the insurgent order of battle before turning our attention to the next cell.

This methodology proved successful. Our first target was a cell operating in Muhalla 906 on the southeastern fringe of Wehda Haay. Over the course of two and a half months, the company neutralized the cell by conducting deliberate operations to capture key cell personalities, and a tank platoon conducted effects-based operations at the platoon level to force other cell members to relocate or cease activities targeting CF, ISF, GOI, and the populace. During that span, the attitude of the populace toward our patrols' presence transformed from outright hostility to genuine pleasure, which generated more intelligence that led to operations further targeting the Muhalla 906 cell or other nearby cells.

Between deliberate operations, we continued to patrol for intelligence, but the IR changed. Instead of inquiring into the physical environment, we patrolled to answer specific IR connected to our targeting process. These IR included reconnaissance of a future target personality or building, confirming or denying reports gleaned from HUMINT, and patrolling, which was designed to allow the HCT to interface with the people and expand its source network. As we talked with residents, we received feedback that *our* operations were having an impact on perceptions of increased security. However, something was missing — they were *our* operations, unilateral without ISF involvement. We became fixated on our essential task, control, and not our transition endstate. It was time to shift our focus while continuing our success along the security and intelligence LOE.

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"While projects were an important pillar to the governance LOE, they were but one means of developing long-term capability and legitimacy. The platoons endeavored to coach their partnered NACs to develop and follow agendas that covered old and new business, as well as compile reports from each committee — an endeavor they succeeded in after many months of work."

LOE: Transition

Although the overall goal of transition encompassed all efforts to build the Iraqis' capability to self-secure and self-govern, the transition LOE specifically focused on building ISF confidence and capability, with independent targeting and operations as its endstate. It took our company a few months to truly embrace the transition LOE. At first, it was akin to eating our vegetables — we knew it was important and good for us (it was one of our preconditions for success), but nevertheless, we did it because we had to.

Suddenly, conditions changed; the chain of command began placing a greater emphasis on combined patrols with the IA and IP. A new police transition team (PTT) arrived and began a much more ambitious program of partnering with and training the IP. Recognizing the IP were key to neutralizing the enemy's criminal element, we immediately coordinated our efforts and included the PTT and IP into our combined patrols with the IA. Although they never completely trusted each other, these combined patrols did much in reducing the suspicion and mistrust the IA and IP felt toward each other in the Karada OE. It also produced exponential benefits along the communications LOE, as ISF were visibly seen working with CF to protect the populace. This synergy provided a tenuous, but positive, foundation for transitioning the Karada OE to ISF and GOI control.

A CF deliberate operation turned out to be the major event that fostered greater integration with ISF. Multiple HUMINT reports indicated that an IA company commander we partnered with was involved in criminal activities and attacks on CF. After much deliberation and meticulous consequence management planning, our battalion allowed our company to capture the individual. The initial reaction within the IA company, and the community at large, was mixed, but our detailed consequence management plan paid off by quelling serious negative consequences. A central theme in this plan was immediate: we increased partnership with the company to dispel doubts that CF distrusted the IA and to prevent significant regression in capability. This theme was also expanded to our other two partnered companies to reduce a residual effect.

This event was a blessing in disguise for our campaign. First, it forced us to dramatically increase our commitment and efforts along the transition LOE across the OE, which increased trust and contact — an effort that continued until our eventual departure from the OE. Second, it replaced a corrupt IA company commander with a proven leader — a veteran officer with experience in major battles against insurgents alongside CF. The improvement was immediate, the company dramatically increased its patrolling and quickly went from being the weakest IA formation in the OE to the strongest. At the same time, the company began to include the IA on reconnaissance patrols to develop intelligence on cell leaders, and on deliberate operations to capture these same individuals. In no other way could we have hoped to successfully achieve our endstate of transitioning the OE to ISF control.

LOE: Governance

By far the most frustrating LOE, our governance efforts advanced sporadically and were unbalanced depending on the haay. That said, perhaps no other LOE (including transition) was as vital to long-term success in the Karada COIN fight. Our objective throughout was to build governance capability and legitimacy through the NACs; we influenced the advisory councils to identify problems and solutions instead of recommend answers. This approach was particularly vital with regards to the fusion of employment, essential services, and employment LOE with that of governance. Instead of unilaterally identifying and pursuing civil-works projects, we used the NACs to guide our efforts — they identified requirements, built the scopes of work, and solicited bids — we simply provided the money. Thus, we simultaneously ensured NAC buy-in on any project and provided the NACs with the knowledge to pursue future projects once we transitioned our OE to ISF control.

All this was much easier in concept than reality. Early on, it was very difficult to initiate any projects using this model. In addition to a lack of funding, the NACs simply did not possess the knowledge, or will, to effectively implement these procedures. Projects languished for months due to inaction or the inability to agree on the scopes of work, and more importantly, the contractor. All parties had their favorite contractor, usually a relative, and because the stakes for these projects were high as a result of the influx of cash into the selected business, every NAC member wanted *his* contractor to receive the work. Finally, out of exasperation, our company pushed a project with force-protection implications (road sanitization to limit concealment for IEDs) directly through our chain of command. The NACs protested vigorously, and we countered with equal vehemence that we were not going to stand idly by and get one of our soldiers killed due to the NACs' ineffectiveness. This incident had two important outcomes. First, in Wehda and Riyadh, the NACs realized that CF would provide funding and it was in their best interest to ensure one of their contractors did the work instead of CF selecting a random contractor. Second, on the peninsula, the incident caused the NACs to turn toward the GOI and NGOs for support and funding — the ideal outcome when

considering transition as the ultimate objective. It was not until we prepared to transition and CF funding for projects ceased that Wehda and Riyadh began to understand the importance of pursuing Iraqi solutions.

While projects were an important pillar to the governance LOE, they were but one means of developing long-term capability and legitimacy. The platoons endeavored to coach their partnered NACs to develop and follow agendas that covered old and new business, as well as compile reports from each committee — an endeavor they succeeded in after many months of work. The platoons also encouraged NAC members to accompany CF to locations of planned projects, which not only provided awareness to CF, but also visibly demonstrated the CF/GOI partnership to the populace. Including ISF leaders at NAC meetings, beginning at mid-campaign, also contributed to integrating all key players in each haay. This practice and the institution of town-hall meetings, where NAC members met directly with the local populace to discuss key issues, increased the NACs' exposure and popular perception of legitimacy. Finally, the practice of calling NAC leaders as part of consequence management after events, both positive and negative, assisted our efforts along the communications LOE and helped bridge the gap between CF themes/messages and the Iraqi people.

LOE: Communications

Our efforts along the communications LOE were very simple. The most effective way for CF to influence and communicate with the Iraqi population was at the company level through patrolling and talking with the people. This fact remained true throughout the campaign. Although the company's leaders explored various options to expand our information operations (IO) capability, all were either well beyond our means or simply not worth the effort. Our soldiers, effectively armed with the knowledge of their successes along the other LOE, were the best IO medium we had available. As they walked, they communicated with the populace, highlighting recent CF/ISF/GOI successes, and informing the populace of what we were doing to resolve their issues, if we were already aware of them. If a new issue was brought to our attention, we considered the issue, and if it was valid, we either took action (on some security and intelligence issues), passed it off to the ISF (on other security and intelligence issues), or engaged the NACs (on governance and economics, essential services, employment issues). Subsequent actions to resolve these issues fed back into the IO cycle.

Our patrols also enjoyed success handing out preapproved psychological operations (PSYOPS) products, handbills, and "tip cards" with phone numbers to local security forces, emergency services, the JSS, and our HCT. Eventually, the company took existing storyboards generated to meet reporting requirements, erased the sensitive or classified data, and one of our interpreters replaced it with a simple handwritten explanation in Arabic to tell the story. We then copied these storyboards and distributed them to the NACs, or while on patrol, to aid in conveying the intended message. The practice was wholly successful and was easily accomplished at our level with existing resources. Occasionally, the attachment of a tactical psychological operations team (TPT) enabled the company to broadcast a specific message for a specific effect.

Combined medical engagements (CME) were an extremely successful venue to advance along the communications LOE, which was our most positive nonlethal operation. The general concept was to completely plan and prepare the CME in advance, then notify the respective NAC that we would like to conduct a CME. We encouraged the NAC to select a site we preferred and then told them we had to conduct further planning before setting a date. Forty-eight hours prior to execution, we notified the NAC of the date and directed them to take specific actions (remove vehicles, etc.). This practice limited the enemy's time available to prepare an attack on the CME, but afforded the NAC enough time to notify the populace to ensure participation.

Security was the primary consideration throughout; during execution, we established blocks to deny vehicular traffic and placed the IP in outer cordon to control traffic, which "put an Iraqi face" on the operation. Located behind the outer cordon, the IA, along with a local national female searcher, served as the inner cordon to control access through a single entry control point and search all personnel. On the CME site, IA and facility protection service (FPS) personnel conducted a second search. CF combat soldiers remained behind the ISF positions and out of site, as much as possible, to reinforce the perception of an Iraqi operation; however, TPT broadcasted messages and engaged the populace as they arrived. Upon entering the waiting area, HCT spoke with individuals and made contacts with potential

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informants and sources. From there, CF and ISF/Iraqi civilian medical personnel conducted screening, made medical recommendations, and prescribed medications when required. These operations generated a tremendous amount of goodwill between the populace and CF/ISF/GOI, and had the added benefit of providing new sources for HUMINT reporting. The increase in goodwill also produced second- and third-order effects, which advanced our progress along all the LOE.

LOE: Employment, Essential Services, and Economics

The employment, essential services, and economics LOE were more of a battalion focus than company focus. At the company level, we supported this LOE by executing directed tasks such as conducting reconnaissance to identify a given location and interacting with the NACs. Our primary means to influence this LOE were through projects funded under the commander's emergency relief program (CERP), using micro-grants and the process discussed under the governance LOE. The micro-grants, of up to $2,500, targeted small businesses and sought to provide an infusion of cash for physical expansion or address a shortfall dramatically affecting business, usually a lack of electricity, which was remedied by the purchase of a generator.

Micro-grants and CERP aside, our greatest impact on the employment, essential services, and economics LOE resulted from our sheer presence in the OE. Historically, Karada served as a center for commerce in Baghdad. Shops, goods, services, and merchants existed; they simply had to be afforded the opportunity to return to work in a secure environment.

Improvement along this LOE was a byproduct of our successes along the other LOE. As the populace began to feel more secure, they returned to their livelihoods. At first, they kept their shops open only for only a few hours a day and business was slow. But, almost imperceptibly, a noticeable improvement occurred: vehicular and pedestrian traffic doubled; merchants were keeping their stores open past dark; consumers walked the streets for most of the daylight hours; and merchandise was literally covering the sidewalks in the central Karada and Karada Dakhil market areas. Commerce had returned to Karada! Although AQI and criminal elements later attempted to reverse this trend through VBIED attacks and extortion, the trend toward greater commerce continued throughout our campaign.

Lessons Learned

It is impossible to capture a campaign's worth of lessons learned in this article; however, I will address some highlights:

Lethal targeting. Targeting drives operations during COIN. An effective targeting process at company and battalion level is necessary to develop intelligence, synchronize assets, and effectively target enemy networks. Like IPB, targeting must be the commander's business. Using the company fire support team (FIST) as the company intelligence cell worked wonders. The company attached a forward observer to each platoon to assist with intelligence tasks, and the fire support officer and noncommissioned officer combined to form the company intelligence cell. The cell used the commander's IPB and intent to produce a detailed enemy order of battle for the enemy on Karada Peninsula, including composition of the network (by cell and leader), disposition (by cell area of responsibility), relative strength, strengths and weaknesses, courses of action, and high-value targets. The cell then focused its collection efforts on targets, developed them, and recommended engagements to the commander. The decision was to initially focus on developing an effective HUMINT network and then rely on the other intelligence disciplines to fill in the gaps.

Raids. Initially, raids were quite simple for the company; we targeted personnel in single-family dwellings, which were easy to isolate and clear. However, as the enemy adapted to our methods and targets began to reside in more complicated urban terrain, meticulous preparation was required. Complete reconnaissance, inside and out, of target buildings and all possible entrances and exits was required, necessitating a good deception plan. We committed greater combat power and varied the tactics of cordon and search operations. HUMINT in the form of source ride-alongs or pictures was required to positively identify targets. Integrating HUMINT with other disciplines, combined with eventually including the IA in raids, further necessitated deception stories and contingency plans to explain to the IA and our sources why particular actions were taken when the intelligence disciplines disagreed.

Nonlethal targeting. In Karada, almost all company-level engagements occurred at the platoon level because of the OE's immense size. The commander served as a mentor or a "bump up" to assist platoon leaders in solving difficult issues. Platoon leaders did a tremendous job integrating with five NACs. Engagements were carefully planned and rehearsed, with a desired outcome identified, and linked to produce an overall effect in the OE. Nonlethal engagements must be approached methodically, and the principles of detect, decide, deliver, and assess (D3A) must be applied to achieve a desired outcome.[13]

COP establishment. The company approached establishing a COP like establishing any defensive position, incorporating the seven steps of engagement area (EA) development.[14] Adopting the mindset of improving our position daily, initially the company worked with materials on hand to shape the EA by limiting the avenues of approach, determining where to best kill an assaulting enemy, establishing obstacles, planning final protective fires and no-fire areas, emplacing weapons systems, and rehearsing the defense plan. As more materials became available, including barriers, towers, concertina wire, cables, cameras, and early warning devices, we replaced stop-gap measures. The company focused on force-protection improvements first and quality of life improvements second. Commanders tasked to establish a COP should develop early on a bill of materials that envisions minimum and optimal requirements to aid in resourcing and work priorities.

Partnership. As frustrating as partnerships with indigenous forces and government organizations can be, they are vital to long-term success. Patience is critical; progress often comes only after many months of frustrating work with no apparent results. The key to effective partnership is routine, almost daily, contact with indigenous forces, which focuses on both listening and mentoring. Partnerships with both the ISF and local government provide solid intelligence once trust is established, and a CF mentorship program focusing on Iraqi solutions to Iraqi problems develops our partners' ability to act independently. This, in turn, provides the competence and confidence necessary for ISF and local governments to succeed in COIN operations after the CF departs.

Money as a munition. As an incoming commander, I had little understanding of the various processes or venues for spending money. Although I understood the importance of spending money and had the desire, it took a long time to gain an understanding of the many options for projects and how the monies were spent. Initially, I pursued projects and initiatives to meet requirements, not to achieve a well-thought-out effect. I also found myself not massing this form of combat power, but dissipating it throughout the OE. Although our efforts improved with time, this LOE remained our company's weakness throughout the cam-

paign. All commanders, and potential commanders, must be educated on the types and use of money as a munition early in the campaign so they can effectively mass nonlethal effects to gain the desired outcome.

Information operation products. Official U.S. Army channels for new-product approval can be cumbersome. Therefore, it behooves commanders to develop combat-configured loads (CCL) of preapproved PSYOP products and storyboards for daily use. These products include CCL to respond to particular events, such as VBIED attacks, high-value target (HVT) capture, and IED attacks, as well as CCL for patrols, which reinforce CF themes and messages. Companies must be creative in this arena. Existing PSYOP products must be stockpiled and expended as nonlethal ammunition, and homemade storyboards should be translated to Arabic so the Iraqi populace will know what advances are occurring along each LOE.

Training. Training is very difficult to maintain in contact, however, it is vital to tactical success. Leader training is instrumental to successful COIN operations. Our company expended tremendous time and effort on officer professional development seminars to provide young lieutenants with the intellectual capability to make quick, effective decisions that reinforce success along predetermined LOE. This program was later expanded to the staff sergeant level to address observed weaknesses in basic troop-leading procedures, such as failing to meet the standard on pre-combat checks. It also aided in our attempt to overcome an Armywide erosion of junior-NCO technical and tactical competence, which results from rapid promotions and decreased opportunities for formal schooling due to operational deployments.

Training headquarters personnel on basic command post procedures was a particular challenge; much time was invested in training commander's critical information requirements (CCIR), radio-telephone procedures, proper battletracking, and proper maintenance. For example, training on the proper establishment of communications equipment expanded our FM reach in Karada, and headquarters personnel must understand FM architecture, capabilities, limitations, and ranges to maximize communications capability.

As far as training the ISF, CF-led training is often the only formal exposure ISF leaders receive in the areas of combat leadership and tactics. Both CF and ISF NCOs should focus on individual soldier tasks, such as marksmanship, first aid, IED awareness, and proper search techniques, during patrol breaks and recovery periods.

Our company served in Karada during a watershed period and benefited tremendously from variables outside our control. The increase in combat power in East Baghdad, as a result of the "surge," and the August 2007 Sadrist edict directing Jaysh al-Mahdi (JAM) groups to cease violent activity, simplified the company's problem set along the security and intelligence LOE tremendously during the second half of the campaign. That said, the same conditions created new challenges along other LOE; our soldiers were not well trained or disposed toward succeeding in the beginning of the campaign — we needed a tremendous amount of leadership and intellectual energy to adapt. I can say with confidence that our soldiers performed as well as could be expected; however, there is much we could have done better.

This article intentionally focuses on successful approaches at the expense of failed ones in the hopes of assisting other units to craft a framework for COIN that works. This is not intended to minimize our failures or shortcomings; failure and frustration are a part of COIN and it is only from these that success can be realized. It is our hope that by sharing our story others might benefit from our experiences; recognizing, however, that no two OEs are the same and that solutions must be formulated in response to the problem set at hand and not some rigid pattern.

Notes

[1]Chairman, Joint Chiefs of Staff (JCS), Joint Publication (JP) 3-0, *Joint Operations*, defines the operational environment as "a composite of the conditions, circumstances, and influences that affect the employment of capabilities and bear on the decisions of the commander. While they include all enemy, adversary, friendly, and neutral systems across the spectrum of conflict, they also include an understanding of the physical environment, the state of governance, technology, local resources, and the culture of the local population," U.S. Government Printing Office (GPO), Washington, DC, 17 September 2006. See also U.S. Army Field Manual (FM) 3-0, *Operations*, Headquarters, Department of the Army (HQDA), GPO, Washington, DC, June 2001, p. 1-1.

[2]Chairman, JCS, JP 1-02, *Department of Defense Dictionary of Military and Associated Terms*, defines counterinsurgency as "those military, paramilitary, political, economic, psychological, and civic actions taken by a government to defeat insurgency. In counterinsurgency, host-nation forces and their partners operate to defeat armed resistance, reduce passive opposition, and establish or reestablish the host-nation government's legitimacy," GPO, Washington, DC, 12 April 2001. See also FM 3-0, *Operations*, p. 2-11; and FM 3-24, *Counterinsurgency*, (HQDA), GPO, Washington, DC, December 2006.

[3]Rough estimation by factoring the amount of grid-squares within the OE.

[4]Data taken from a civil affairs survey of the Karada District Council via e-mail dated 3 February 2008.

[5]Chairman, JCS, JP 2-03, *Geospatial Intelligence Support to Joint Operations*, defines area of interest as: "that area of concern to the commander, including the area of influence, areas adjacent thereto, and extending into enemy territory to the objectives of current or planned operations. This area also includes areas occupied by enemy forces who could jeopardize the accomplishment of the mission," GPO, Washington, DC, 22 March 2007. Also see FM 3-0, *Operations*, p. 5-5.

[6]Chairman, JCS, JP 1-02, *Department of Defense Dictionary of Military and Associated Terms*, defines combat outpost (COP) as: "A reinforced observation post capable of conducting limited combat operations," GPO, Washington, DC, 12 April 2001, p. 1-35. Our COP was actually nearer in function to a doctrinal patrol base than a COP. See U.S. Army FM 1-02, *Operational Terms and Graphics*, HQDA, GPO, Washington, DC, 21 September 2004, p. 1-144, for the doctrinal definition of a patrol base.

[7]U.S. Army FM 34-130, *Intelligence Preparation of the Battlefield*, HQDA, GPO, Washington, DC, 8 July 1994.

[8]The C Company 2d Battalion, 69th Armor IPB process was adapted from Sun Tzu, *The Art of War*.

[9]U.S. Army FM 3-24, *Counterinsurgency*, Chapter 1.

[10]U.S. Army FM 1-02, *Operational Terms and Graphics*, defines secure as: "A tactical mission task that involves preventing a unit, facility, or geographical location from being damaged or destroyed as a result of enemy action," p. 1-168.

[11]U.S. Army FM 1-02, *Operational Terms and Graphics* defines control as: "A tactical mission task that requires the commander to maintain physical influence over a specified area to prevent its use by an enemy," p. 1-44.

[12]U.S. Army FM 3-24, *Counterinsurgency*, defines line of effort as, "links multiple tasks and missions using the logic of purpose — cause and effect — to focus efforts toward establishing operational and strategic conditions. Lines of effort are essential to operational design when positional references to an enemy or adversary have little relevance. In operations involving many nonmilitary factors, lines of effort may be the only way to link tasks, effects, conditions, and the desired endstate. Lines of effort are often essential to helping commanders visualize how military capabilities can support the other instruments of national power. They are a particularly valuable tool when used to achieve unity of effort in operations involving multinational forces and civilian organizations, where unity of command is elusive, if not impractical." In Chapter 5, the manual refers to this concept as "logical lines of operation (LLO)." The line of effort concept complements lines of operation (LOO), which focuses on the physical positioning of units. Also see FM 3-0, *Operations*, Chapter 6, for more on these two concepts.

[13]Doctrinally, the order is decide-detect-deliver-assess; however, in COIN, detection is often a prerequisite to decision because CF do not always know what targets (lethal and nonlethal) exist.

[14]U.S. Army FM 3-90.1, *Tank and Mechanized Infantry Company Team*, HQDA, GPO, Washington, DC, 9 December 2002, p. 6-16.

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Sail Through Training Management:

Leading a Company through the Waves of Unpredictability

by Captain William C. Taylor

Leading a company is no simple endeavor; commanders and first sergeants have many agents simultaneously competing for their time. Orders from higher headquarters, information requests from battalion and brigade staffs, soldier issues, personnel changeover volatility, and training requirements all vie for a leader's attention; each one petitioning to be the priority. Add to this the waves of e-mail, incessant phone calls, and mandatory meetings, and company leaders can quickly become disillusioned by the very position they believed would be the most rewarding of their Army careers.

In today's Army, the ubiquitous information requirements placed on leaders are like tumultuous currents. As soon as company first sergeants and commanders assume control of the guidon, they begin the struggle to stay afloat. Company leaders labor to manage information requirements to create a company environment that promotes predictability, efficiency, and order. Many company leaders admit that they either ignore these information directives altogether or expend a lot of organizational energy creating a training management tool to adequately rudder the company toward a predictable operational tempo. Those who fail to conceive an effective training management tool find themselves embittered by relentless obligations from higher. Their labors to guide the company toward tranquil waters of efficiency and productivity seem fruitless. A leader's internal frustrations concerning lack of predictability, missed deadlines, and late nights are ultimately externalized, to the detriment of company performance.

It is time for the Army to revamp its training management curriculum to truly equip company-grade leaders to run companies. Leaders should hit the ground running instead of spending the first 4 months settling on an effective, efficient training management system. More time should be devoted in captain career courses to training students how to lead a company outside of the tactical and staff arenas. Captains career course curricula should expose captains to several different training management systems and allocate class time for them to formulate their own systems prior to graduation. While training junior captains on tactics, primary staff functions, and the military decisionmaking process (MDMP) is of paramount importance, training future company-grade leaders to lead a company is equally valuable — in fact, indispensable — to the health of our Army. The Army should build on its training management manuals, U.S. Army Field Manual (FM) 7-1, *Battle Focused Training*; FM 7-0, *Training the Force*; U.S. Army Regulation (AR) 350-1, *Army Training and Leader Development*; and U.S. Army Training Circular (TC) 25-30, *A Leader's Guide to Company Training Meetings*, by creating a publication that is more detailed in addressing specific training management solutions to meet the requirements of the 21st-century Army.[1] Two excellent sources for material to update training management manuals and curricula for career courses are *www.companycommand.com*; and Nate Allen and Tony Burgess, *Taking the Guidon*.[2]

This article proposes one training management system that could lessen the burden of information management at the company level, providing company com-

manders and first sergeants time to focus on leader and soldier development, space to provide a predictable schedule and an effective training program, and freedom to leave work with a clear conscience to spend needed time with family and friends.[3] A balanced training management structure should:

- Outline the purpose and scope of weekly meetings.
- Keep individual and collective tasks constantly trained.
- Quickly organize multiple information requirements.
- Limit imbalance within the company when key personnel vacate a position.
- Provide a means for candid and periodic feedback.

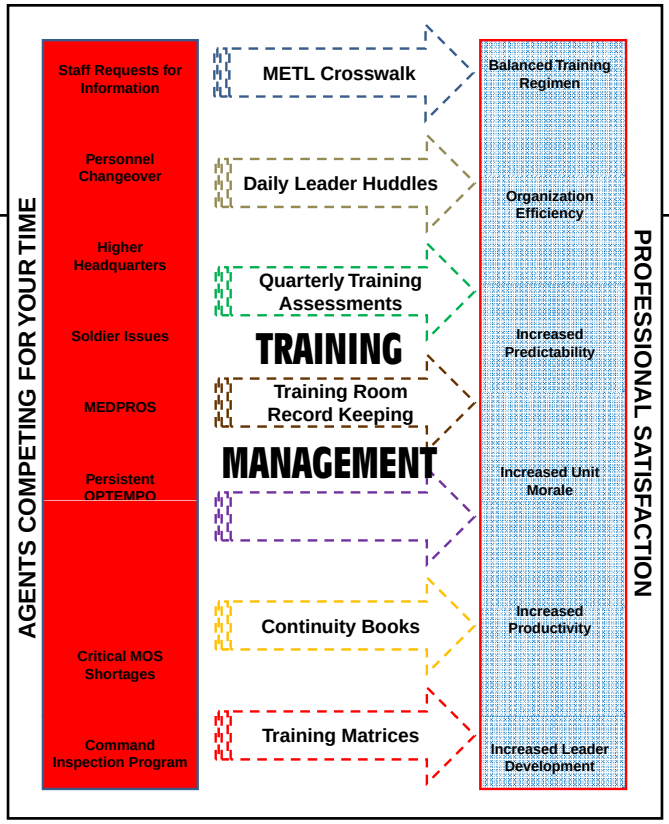

Figure 1. Training Management Flow Chart

A Method for Training Management

"Training in all its phases must be intensive…it must be intelligently directed so that every individual, including the last private in the ranks, can understand the reasons for the exertions he is called upon to make."

— Dwight D. Eisenhower,
General of the Army

Training meetings. Training meetings constitute a critical component of training management. Company commanders must provide a forum that transmits information on future training events, assigns responsibility for tasks, deconflicts training issues, and encourages constructive criticism.[4] Information relayed in training meetings should be comprehensive, yet concise. Training meetings with little organization or direction have a deleterious impact on the company. Additionally, prolonged meetings sap the energy of company leaders and create a hesitancy to share information because participants are disinclined to add more time to the meeting marathon.

The company commander and first sergeant should make a collective decision on the scope, participants, and duration of the training meeting. The topics of a training meeting depend on a myriad of factors as used in the questions below, which will aid in developing efficient and effective training meetings. The following questions should be answered prior to settling on a training meeting template:[5]

What training information does battalion require from companies? It may serve everyone's interest to discuss these requirements during the training meeting.

How well does the battalion conduct training management? Deficiencies in forecasting training requirements, calendar volatility, and limited notification on the support cycle will provide parameters for what is practical to cover at the company level.[6] For example, if the battalion rarely forecasts training beyond 3 weeks, it would be counterproductive to spend too much organizational energy planning training events 4 to 6 weeks out. Also, if you typically ascertain the support cycle requirements immediately prior to execution, planning company-level training will be difficult at best.

How do your company leaders respond to meetings? If there is widespread resistance to formalized gatherings, compress the scope of your training engagements and research another medium to communicate guidance and garner feedback.

Is there enough time in the week to have separate training and logistics meetings, or is it best to combine the two? If there are logistics and maintenance trends significantly impacting training, then address some of these issues in the training meeting.

Is your company weak in certain additional-duty areas? If so, perhaps an add-

"More time should be devoted in captain career courses to training students how to lead a company outside of the tactical and staff arenas. Captains career course curricula should expose captains to several different training management systems and allocate class time for them to formulate their own systems prior to graduation."

TRAINING MEETING AGENDA
DATE:

A. Roll Call

1. 1SG 2. XO/Recorder 3. PLs/PSGs 4. Reenlistment NCO 5. Maintenance Team Chief
6. Master Gunner 7. Medic NCO 8. Training Room NCO

B. Phase I, Completed training (previous week)(10 minutes)

1. T+1 AAR (includes training not conducted)

2. METL Assessment

(a) Company: (CDR Briefs)

METL	4th QTR	1st QTR
Alert, Assemble, Upload	T/P/U	T/P/U
Assault an Enemy Position	T/P/U	T/P/U
Defend in Sector	T/P/U	T/P/U
Breach an Obstacle	T/P/U	T/P/U
Cross an NBC Contaminated Area	T/P/U	T/P/U
Occupy an Assembly Area	T/P/U	T/P/U
Clear/Secure a Built-up Area	T/P/U	T/P/U

(b) Platoon: (PL Briefs)

(c) Individual: (PSG Briefs)

3. 350-1 and Warrior Task/Drill Update: (use this to update your matrix)

4. Arms Room Deadline Report & Issues: Officer/NCO provides paper copy.

5. NBC Room Deadline Report & Issues: Officer/NCO provides paper copy.

C. Phase II, Near-term training (30 minutes) (Detailed specific instructions for all events)

1. T-1 (Final Review of Training, Updates to Platoon Training Requirements Review Chart)

Event	Land or range	AAR Facility/Classroom	Barracks	CL (IN)	CL I (A, B, or M) Resupply	CL II (B) Resupply	CL IV	CL V Ammo Forecast	CL V Ammo Pickup	CL IX Resupply	TADSS/Training Equipment	OCs, Evaluators	O/C/NCO/C/Safeties	Instructor	OPFOR	AVN SPT	Scenario coordination	TOP-SIMF SPT	KNP SPT	Comms SPT/SEN/Retrans	Chemical SPT/DOS/MK	Maintenance SPT	FLA/Medics	Buses/HETS	CCN Request	Site recon	OPORD	Graphics	Rehearsals

2. T-2 (Resources Finalized)

3. T-3 (Training Events Locked In)

4. T-4 (Updates to Platoon Training Requirements Review Chart)

5. T-5 (Finalize Objectives, Confirmation of Resources, Identify Trainers)

6. T-6 (Identify Tasks to Train, Identify Needed Resources, Submit Initial Resource Requests)

D. Phase III, Short-term training: (3 months) (5 minutes)

E. XO Issues: Maintenance & logistics issues (2 minutes)

F. Master Gunner: Battle roster updates, AGTS schedule/progress, gunnery training plans (2 minutes)

G. Medic: Dental/Shots/Physical Updates (2 minutes)

H. Reenlistment NCO: Soldiers in window, benefit/incentive updates (2 minutes)

I. 1SG: (2 minutes)

1. STT Training T-4 2. Issues

J. Comments/Alibis

1. Platoons 2. XO 3. 1SG 4. CDR

K. At risk Soldiers:

1st: 2d: 3d: HQ:

L. Misc. Notes:

Figure 2. Training Meeting Agenda Template

ed level of accountability should be emplaced by requiring junior leaders to report during leader get-togethers.

Once the scope of the training meeting is decided, the attendees can be designated. The presence of the first sergeant, executive officer, platoon leaders, and platoon sergeants is imperative. However, the merits of having the maintenance team chief, company medic, reenlistment noncommissioned officer (NCO), and master gunner in attendance should be considered.[7] With these individuals present, the training meeting becomes an expedient forum in which to illuminate a clearer picture of the company's performance with the entire company leadership. This will also reverse the trend of constantly scheduling meetings throughout the week to address issues not covered in the training meeting. However, if time and conflicting schedules are not an issue, it may be best to hold separate meetings with logistics, maintenance, and sustainment leaders throughout the week. However, be cognizant that the weekly company training meeting is one of the only sacrosanct events unmolested by battalion and brigade leaders; it will be very difficult to protect other scheduled meetings during the week.

The duration of the training meeting should never exceed one hour.[8] Remember, long meetings, regardless of how important or interesting to some, rarely appear that way to others and will quickly result in diminishing returns. There are several ways to manage a one-hour time limit:

- Do not tolerate side bar conversations; dialogue that does not contribute to the objectives of the meeting will only disrupt tempo and group communications.
- Know when to make a decision or address others in the decisionmaking process. Including others who are not relevant to the issue will needlessly convolute a pending decision.
- Know when to say "no" or table a discussion and address it at a later time; debates prattling on for several minutes frustrate and anger other participants as the same points are made repeatedly. If a pending decision is tabled, immediately schedule a follow-up with pertinent individuals to finalize it.
- Place a time limit on each discussion point to preserve time for each topic on the agenda. This precludes becoming mired in one area of the training meeting, which allows full discussion of all important topics.
- Consider assigning the executive officer as a timekeeper to keep the meeting on task.

The template at left (Figure 2) proposes a more detailed agenda for a company training meeting than outlined in FM 7-0 and TC 25-30.[9] It includes an assessment on previous training, updates to mission essential task lists (METL), near- and short-term training, as well as at-risk soldiers. Logistics, sustainment, and additional duty themes are also listed and covered as necessary. Additionally, the arms room and nuclear, biological, and chemical officers in charge (OICs) provide a current deadline report with a concise statement on issues requiring command emphasis.

Including the master gunner in training meetings will rivet command emphasis on gunnery sustainment training every month, instead of the typical hurried ramp-up prior to a live fire. The master gunner provides a gunnery tracking sheet, marking the proficiency of each crew. He also distributes crew position updates (important for monthly unit status reports) and petitions for pre-gunnery training.

The reenlistment NCO has the important task of providing the commander, first sergeant, and platoons a brief update on soldiers within the reenlistment window and new reenlistment policies affecting various military occupational specialties. The maintenance team chief, medic, executive officer and first sergeant provide updates and present issues for command direction. The meeting terminates with an assessment of at-risk soldiers to address potential issues before they catch the chain of command off-guard.

Embedded in the near-term training section of the training meeting agenda is a pre-execution checklist (Excel spread-

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sheet), which ensures that each training event receives the necessary planning to be successful (essentially an eight-step training model). It covers all the classes of supply, equipment and land reservation, desired external support, rehearsals, safety, graphics, and an operations order (OPORD). Lastly, each segment of the training agenda has a time limit, which serves to keep the company commander on course to tackle every topic within the allotted hour.

Training matrices and record keeping. An effective training management instrument holds a firm grip on the breadth of training requirements within a division. A unit's training requirements are always codified within the division's 350-1 regulations. Although not always easy to decipher, these regulations outline training obligations for every company throughout the fiscal year and ensure each company receives a well-balanced training regiment at the individual, crew, platoon, and company levels. For example, these regulations comprise individual common task training, physical fitness, field exercises, ranges, values classes, safety, inspections, and maintenance on all equipment. Unless amalgamated into a coherent picture, it is nearly impossible to accomplish all of these requirements. Not only is it difficult to capture all of a company's training requisites, but required personnel schooling, leave, and soldier appointments make it difficult to guarantee that everyone receives training at the appointed time. Companies typically discover these shortcomings during a command inspection program (CIP) and receive a failing mark for their efforts.

Using an Excel spreadsheet to manage these eclectic requirements makes it easier to track unit training progress. By using a commander training requirement tracker (see Figure 3) every calendar month to verify everyone meets training requirements not only serves as a training-monitor tool, but also helps build training calendars. This method will require some ingenuity and flexibility, but commanders can fulfill nearly every training requirement by planning a few training events each week. This also helps avoid a "training crunch" one week prior to a CIP inspection or quarterly training brief, as well as cutting corners on training to simply check the block.

Recordkeeping in the company training room is also imperative. The training room NCO should create another Excel spreadsheet to track training and administrative requirements for every soldier by name, including uniform sizes, addresses, next of kin, GT scores, weapons qualification date and score, rifle zero, Army Physical Fitness Test (APFT) scores, date of last 350-1 class, and other pertinent information. This enables the training room NCO to sort by particular fields and provide quick and accurate data with a few clicks of a computer mouse. For example, if the company first sergeant wants to know each soldier's APFT score from highest to lowest, the training room NCO can quickly sort and print off those statistics. Additionally, when the first sergeant is scheduling make-up training classes, he needs to know who missed a particular training event, so he simply asks the training room NCO to do a field sort for this requirement. It will take some up-front time and effort to create these large databases, but it creates high, long-term payoffs.

Daily leader huddles. As much as an effective training management system will alleviate the need for excessive meetings, daily leader huddles will keep the company locomotive running at full steam. A quick huddle 10 minutes prior to physical training will allow the commander and first sergeant to voice a quick reminder of daily priorities, address any subtle

CIP	Event/Briefing/Training	Who	Frequency	References	Instructor/Trainer/POC	OCT					NOV					DEC					JAN					FEB				
						1	2	3	H	M	1	2	3	H	M	1	2	3	H	M	1	2	3	H	M	1	2	3	H	M
	ARRIVAL																												
	Commander's Orientation	All	Arrival	2ID REG 600-2	BN Commander																								
X	Commander's Orientation	All	Arrival	Company Policies/SOP	CDR																								
X	Crime Prevention	All	Arrival	AR 190-31/REG 350-41	Crime Prevention Officer																								
X	Drug & Alcohol Training	All	Arrival	AR 600-53, AR 600-85, DA PAM 360-530	UADC																								
X	KATUSA, EO & Unit Policies	All	Arrival	2ID REG 350-1	CDR																								
	Officer Orientation	Officers	Arrival	2ID REG 600-2	CDR																								
	OPSEC	US	Arrival	2ID REG 350-1	OPSEC Officer																								
	Reenlistment	US	Arrival		CDR																								
	SAEDA	All	Arrival	2ID REG 350-1	CIT Tng																								
X	SOFA Training	All	Arrival	2ID REG 350-1	2ID SOFA Representative																								
X	Zero M16	Sel Pers	Arrival	FM 23-35	1SG																								
X	Pass Policy	All	Arrival	2ID REG 350-1	CDR																								
	Human Trafficking & Prostitution	All	Arrival		CDR																								
	MONTHLY																												
	CCTT	PLTs	Monthly	CDR Directed	CDR/PL																								
	CCTT	CO	Mon/Bimon	CDR Directed	CDR/PL																								
	Combat PT	All	x2 a Month	PRT/CDR Directed	PL/PSG																								
	Combatives	All	Weekly	PRT Directed	PL/PSG																								
	Commander's Combat PT	Sel Pers	Mon/Bimon	CDR Directed	CDR/PL																								
X	Crime Prevention	All	Monthly	AR 190-31/REG 350-41	Crime Prevention Officer																								
	EST	PLTs	Mon/Bimon	CDR Directed	PL/PSG																								
	Foot march	All	Monthly	2ID REG 350-1	PL/PSG																								
X	KATUSA Directed Training	KATUSA	Monthly	EUSA REG 600-2	Senior KATUSA																								
X	KATUSA English Training	KATUSA	Weekly	2ID Policy Letter 18	PL's/XO																								
X	MOPP 4 (2 hours duration)	All	Monthly	2ID REG 350-1	PL/PSG																								
X	OPD/NCOPD	Sel Pers	Monthly	2ID REG 350-1	CDR/1SG																								
	Physical Fitness Assessment	All	Mon/Bimon	PRT/CDR Directed	PL/PSG																								
	Readiness Exercise	All	Monthly	2ID REG 350-1/Alert SOP	BN Commander																								
X	SINCGARS Training	All	Monthly	2ID REG 350-1	Commo Plt/PL & PSG																								
	Spirit (PT) Run	All	Monthly	2ID REG 350-1 App T	CDR/1SG																								
X	Drug testing	All	Monthly	AR 600-85/REG 350-41	UADC																								
	QUARTERLY																												
	Company Training Exercise	All	Quarterly	CDR Directed	CDR																								
X	Consideration of Others	All	Quarterly	EUSA Policy Letter	PL/PSG																								
X	Drug & Alcohol Training	All	Quarterly	AR 600-53, AR 600-85, DA PAM 360-530	UADC																								
X	Equal Opportunity	All	Quarterly	2ID REG 600-2, EUSA Reg 350-41	CDR/EOR																								
X	Field Sanitation Team	All	Quarterly	EUSA REG 350-40	Field Sanitation NCO																								
	Fire All Weapon Systems	All	Quarterly	DA PAM 350-38	PL/PSG																								
X	Fire Prevention/Protection	All	Quarterly	2ID REG 350-1	Fire Prevention Officer																								
X	Foot March w/ remedial RM(6 mi)	All	Quarterly	FM 21-18/FM 384-4	PL/PSG																								
	Human Trafficking & Prostitution	All	Quarterly		CDR																								
	Korean-US Cultural Event	All	Quarterly		CDR																								
X	NBC Equipment Proficiency Tng	All	Quarterly	2ID Reg 725-360	NBC NCO																								
	Nutrition/Health Class	All	Quarterly		PL/PSG																								
	Risk Management	All	Quarterly	2ID REG 350-1	CDR/Safety Officer																								
	Tae Kwon Do	All	Quarterly	2ID REG 350-1	1SG																								

Figure 3. AR 350-1 and Commander Training Requirement Tracker

tweaks to the day's schedule, and place a continued command emphasis on time management and productivity.

Company METL. The company METL should be a significant cornerstone to training management structure. Once the company METL is decided, commanders can guide platoon leaders through their respective platoon tasks for each company METL task. The first sergeant should then consult with platoon sergeants and decide on crew and individual tasks that are nested under each platoon collective task. This process, coined "the METL crosswalk," is a valuable tool to keep a company's training continually nested under its training focus. For example, after a company METL task is selected to train during a company field training exercise (FTX), platoon leaders can then choose platoon-level tasks nested under the company task. Likewise, the first sergeant and platoon sergeants can decide which crew and individual tasks they will train, which are appropriately nested under the platoon task.

To keep tabs on METL proficiency, commanders should display a METL crosswalk form in their office. Request the Training and Audiovisual Support Center (TASC) enlarge the METL crosswalk form to a poster board sized display that can be easily hung on the commander's office wall. Following every training event, platoon leaders and platoon sergeants should update their respective platoons, crews, and individual tasks as untrained/proficient/trained (U/P/T). This, in turn, allows leaders to classify their company collective tasks. Hanging the METL on the wall in the commander's office or training room sends a clear message to subordinate leaders and soldiers that a high premium is placed on focused training.

Continuity books. Every specialty room (training, supply, arms, and NBC) and additional duty and key leader personnel should have a continuity folder. This ensures that institutional knowledge does not recede when key personnel go on leave, depart the company, or change positions — the number of soldiers and leaders who change positions as soon as they become proficient in their jobs is staggering. Promotions, discipline issues, permanent changes of station, and shortages in key military occupational specialties keep personnel in flux.[10]

The Army's intent is to assemble a team early in a brigade's inception and keep it together throughout a rigorous training cycle and deployment. A new soldier in one of these positions, however, should not have to struggle to figure out the scope of his responsibilities. At a minimum, a continuity book should have points of contact and phone numbers, Army/unit regulations pertaining to particular/key positions, detailed explanations of job responsibilities, and a CIP checklist, which is available from a battalion or brigade staff member who scrutinizes the CIP and follow its requirements.

Quarterly training assessments. Successful organizations have a system in place to change deficient bureaucratic norms and procedures; the company should not be any different. Just as bottom-up refinement is critical in creating successful combat operations, it is equally important to refining training management systems. Although a commander and first sergeant should be open to constructive criticism of training programs at any time, it is valuable to set aside "white space" on the company's calendar once a quarter to address improvements to the

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company's operation, function, direction, and productivity. This will streamline company operations and provide soldiers a "buy-in" to the training program. Below are some questions designed to help commanders develop an assessment of their training programs:

- Are we accomplishing our mission?
- What are we currently doing that fails to match up with our vision? (contingent on creating a vision for company to esteem).
- What are three things our company can do better?
- What are three things we are doing right and should continue doing?
- What are the top five individual tasks we need to work on next quarter?
- What are the top three collective tasks/ battle drills we need to work on next quarter?
- What are two topics for professional development classes we need to focus on?
- What is one thing I can do to improve as your commander?[11]

It is best to choose a location away from the work environment to conduct this assessment. Being away from the military atmosphere helps leaders relax and disarms the barriers that rank creates; commanders should be open to suggestions and focus on issues within their realm of influence.[12]

Effective training management will do several things: efficiently organize time, provide a balanced training regimen, encourage initiative, increase productivity, and boost morale. While this particular training management outline may need to be tweaked to fit individual circumstances, it is critical to decide on a comprehensive system that will address every aspect of the company prior to taking the guidon.

This article provides new commanders a platform from which to adjust fire, instead of groping around for an elusive system 6 months into command. Company commanders and first sergeants have a responsibility to support their chain of command to the fullest while providing a refuge for their soldiers from the daunting training and information requirements that swarm them daily. A comprehensive training management system will placate the information pull from higher headquarters and provide a professionally rewarding environment in which to grow soldiers and leaders.

Notes

[1]U.S. Army Field Manual (FM 7-1), *Battle Focused Training*, Headquarters Department of the Army (HQDA), U.S. Government Printing Office (GPO), Washington D.C., September 2003, p. xii. The emphasis in the U.S. Army's training manuals is to get leaders to think through the training process, as opposed to simply following a prescribed method. This article argues that the creation of another manual with specific training management techniques, building on the theory outlined in FM 7-0, *Training the Force*, HQDA, GPO, Washington, DC, 22 October 2002; U.S. Army Regulation (AR) 350-1, *Army Training and Leader Development*, HQDA, GPO, Washington, DC, 3 August 2007; and U.S. Army Training Circular (TC) 25-30, *A Leader's Guide to Company Training Meetings*, HQDA, GPO, Washington, DC, 27 April 1994, would greatly benefit company leaders.

[2]Nate Allen and Tony Burgess, *Taking the Guidon: Exceptional Leadership at the Company Level*, The Center for Company-Level Leadership, Delaware, MD, 12 January 2007.

[3]FM 7-1, p. 2-13. Administrative support burdens cannot be ignored; however, they can be managed using an effective time management system.

[4]TC 25-30, *A Leader's Guide to Company Training Meetings*, p. 2-1.

[5]FM 7-1, *Battle Focused Training*, clearly states that a training meeting should be set aside specifically for training. I disagree. In an ideal environment where every Army leader and unit adheres to the doctrine found in FM 7-1 this would be feasible. However, it has been my experience, as well as numerous of my colleagues, that the Army does not adhere fully to its espoused training doctrine. Company leaders may be best served by considering other topics to include in a training meeting that ultimately impact training and time management purposes.

[6]TC 25-30, p. 1-3. The battalion commander is the key leader with the power to protect companies from training detractors by ruthlessly enforcing the lock-in of major events agreed on during training briefings and contained in signed training schedules.

[7]FM 7-1, *Battle Focused Training*, p. B-2; and TC 25-30, *A Leader's Guide to Company Training Meetings*, p. 2-2.

[8]FM 7-1, *Battle Focused Training*, and TC 25-30, *A Leader's Guide to Company Training Meetings*, both agree with this statement.

[9]FM 7-0, *Training the Force;* and TC 25-30, *A Leader's Guide to Company Training Meetings.*

[10]AR 350-1, *Army Training and Leader Development*, Chapter 1, section 1-6. The Army tries to mitigate this personnel volatility through the Army Force Generation (ARFORGEN) model, which generates operationally ready brigades through a structured progression of training and mission preparation. Under ARFORGEN, a designated brigade increases readiness over time, moving through the reset/train, ready, and available force pools in the operational readiness cycle.

[11]Nate Allen and Tony Burgess, *Taking the Guidon: Exceptional Leadership at the Company Level*, p. 72.

[12]Ibid, pp. 72 thru 78.

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Unity of Effort: A Culture of Cooperation and the Cooperation of Cultural Systems

by Captain Nathan Finney

For a couple of years, the Department of Defense has intensely searched for means by which combat forces could overcome the gap of cultural knowledge in theaters of operation. This gap was identified as early as 2004 in an article by Lieutenant Colonel George W. Smith Jr., titled "Avoiding a Napoleonic Ulcer: Bridging the Gap of Cultural Intelligence," and coalesced into two U.S. Army programs: the Human Terrain System and the University of Foreign Military and Cultural Studies.[1]

Each program produces highly trained and knowledgeable teams that deploy to support commanders and staff from brigade to combined joint task force and corps levels by providing cultural knowledge to advise and focus military plans and operations. The Human Terrain System deploys five- to nine-person teams called, "human terrain teams," while the University of Foreign Military and Cultural Studies train "red teams." Both programs have deployed these teams into theater and have gained a better understanding of what is needed by units on the ground and are thereby refining training to reflect these requirements.

The members of a human terrain team are trained in three main areas: counterinsurgency, military staff functions and plans, and most importantly, anthropological research methodologies. This training allows team members to "provide brigade commanders and staffs with relevant, socio-cultural data, information, knowledge and understanding of the local cultures, and the dedicated expertise to integrate that understanding into the military decisionmaking process."[2] The most innovative aspect of a human terrain team is the make-up of the team. Military members are built around academicians with strong social science credentials, bringing both unique research capabilities and legitimacy to the team.

These teams are deployed and integrated into a brigade staff to provide cultural knowledge that could positively affect combat and civil-military plans and operations. Integrating human terrain teams into military units began at the brigade level, based on the knowledge that the most influential commander and groundholder in both Iraq and Afghanistan is the brigade commander. Human terrain teams provide three primary capabilities to the brigade commander and staff. First, the human terrain team provides expert human terrain and social science advice based on a constantly updated, user-friendly ethnographic and socio-cultural database of the area of operations. Second, it provides the ability of focused study on social science, cultural or ethnograph-

ic issues of specific concern to the commander. Finally, it maintains a tactical overwatch and reachback link to the Human Terrain System's Research Reachback Center, which provides direct support to the human terrain teams.

The overall focus of a human terrain team is to use socio-cultural research and knowledge of the population to advise and make recommendations to the brigade during planning and operations that positively affect both the population and the military unit, preventing violence before it starts, or decreasing it after inception.

Members of a red team are trained in a graduate-level course designed to effectively anticipate change, reduce uncertainty, and improve operational decisions. They learn concepts in anthropology, joint military doctrine, and red teaming. This training teaches red teamers the ability to conduct "a structured and iterative process executed by trained, educated, and practiced team members with access to relevant subject-matter expertise, and that are uniquely suited to this kind of critical analysis. This process provides the commander with an independent capability to continuously challenge operational environment concepts, plans, and operations from partner and adversary perspectives."[3]

Red team members are uniquely trained to encourage combat units to avoid group thinking, mirror-imaging, cultural missteps, and tunnel vision in their plans and operations, as well as help them identify when they make poor assumptions and fail to account for the complexity of the operational environment.

Red teams have been placed at corps and division, and will soon be placed at combined joint task force levels. While integrated into these staffs, they provide critical thinking skills and cultural information that could focus or adjust plans. The team has multiple roles, the two most recognized being "devil's advocate," to impartially and critically look at plans as they are being produced, and "threat emulators" that can accurately depict the enemy without "mirror-imaging." More importantly, they are trained to "challenge the organization by providing alternatives through critical thinking in order to improve decisionmaking and achieve the endstate."[4] By understanding group dynamics and how to constructively question a staff, a red team can help focus plans away from the means and toward the ends. A red team also focuses on ensuring the unit staff is taking all aspects of the environment (including its own unit) into account when planning, to include both tactical and cultural assumptions made by the staff. Through this critical analysis of plans, the team can positively affect the operational environment of the supported unit.

Signifying many of the similarities between the two programs, both the Human Terrain System and the University of Foreign Military Cultural Studies require specific personnel characteristics for their teams. The most important characteristic in a human terrain team or a red team member is the ability to critically analyze the world around them and think about the operational environment of their supported unit. This critical analysis leads these teams to ask "how others — our enemies, allies, or other parties — will perceive a situation and American actions in the streets Baghdad," and based on this knowledge, the most effective way to reach the endstate.[5] By using this knowledge to advise the commander and staff early in decision and planning cycles, both teams can enhance and focus the resources the American military has to bring to the situation.

Another important characteristic needed by both types of team members is the ability to easily relate to other people. Members of both teams are not indigenous to the organizations they support, so when they introduce an outside perspective, while productive, they also challenge assumptions and biases that have been accepted by the unit. This can cause friction between the two parties if good personal and professional working relationships have not been introduced. These relationships can smooth friction and allow senior leaders to decide whom to trust with their thinking and analysis. This also helps both teams support the unit by "productively challenging ideas and decisions, bringing fresh perspectives, and ensuring the cultural factors are injected into the decision cycle."[6] Bringing alternate perspectives will not make a difference, however, if poor communication exists between the staff and the team, as minds will be closed based on clashing personalities alone.

The third characteristic needed by both human terrain team and red team members is an understanding of cultural-gaining methodologies and their role in the current operating environment. Both teams are a result of the capabilities gap in cultural knowledge; therefore, both are trained how to recognize key signifiers and influences in cultures around them, whether through semiotics, participant observation, or surveys. To use the knowledge of these methodologies, team members must be able to translate them so that both academicians and military officers

"Each program produces highly trained and knowledgeable teams that deploy to support commanders and staff from brigade to combined joint task force and corps levels by providing cultural knowledge to advise and focus military plans and operations. The Human Terrain System deploys five- to nine-person teams called, 'human terrain teams,' while the University of Foreign Military and Cultural Studies train 'red teams.'"

"The overall focus of a human terrain team is to use socio-cultural research and knowledge of the population to advise and make recommendations to the brigade during planning and operations that positively affect both the population and the military unit, preventing violence before it starts, or decreasing it after inception."

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can understand them, avoiding jargon that only one side or the other can fully understand. Team members can achieve this by understanding the cultures in which they are working, visualize how important culture understanding is to the unit being supported, and describe it to commanders and staff, clearly enumerating its importance and how it influences their operating environment.

All three characteristics must be present in both teams. Because of a shared personnel requirement, how they both approach problems, and the type of knowledge they require to positively affect the situation, cooperation between the two organizations is a natural and necessary fit. The quickest and easiest way to work toward cooperation between the two programs is to crosstalk and share information between teams deployed down range.

Cooperation at the present time would be particularly beneficial, based on the different levels of command that each program is supporting. Human terrain teams support brigade combat teams, while red teams support division, corps, and joint task force levels. Each organization can collect and analyze cultural data at their respective level, while providing that information to their counterparts at other levels of command. Cultural information and analysis at lower levels, where the "ground truth" can be found, would be particularly beneficial to groups at higher levels, who have less opportunity to talk to the people and research the local cultures while in their element.

The second area of cooperation is one of the keystones of the Human Terrain System — its Research Reachback Center. This organization is designed to provide deployed human terrain teams a 24/7 communications connectivity, which provides reachback research and expertise through open-source cultural research, the support of a subject-matter expert network, cultural debriefings for units without a human terrain team, research working groups, and focused military research.

The research and products produced by the Research Reachback Center can as easily and applicably be used by customers other than a human terrain team. Currently, the center is being used by the 101st Air Assault Division in preparation for deployment to Afghanistan, and by the red team supporting the 4th Infantry Division currently deployed to Iraq. Both units found the products to be very valuable and informative. By adding qualified analysts, as well as integrating personnel who understand the mission and focus of red teams, the Research Reachback Center would be even more valuable to both organizations, as well the military overall. With both organizations feeding data to the Research Reachback Center, the amount of cultural information archived would exponentially increase.

The Human Terrain System and the University of Foreign Military and Cultural Studies should also collaborate prior to deployment. Separate training programs provide top-rate instruction that parallel each other. Both programs revolve around instruction in anthropology and other cultural-gaining disciplines, while other portions of the instruction are used by only one program or the other. Using beneficial selective portions from each other's training program could enhance the knowledge and abilities of all team members. This cross-pollination of instruction has already begun. The University of Foreign Military and Cultural Studies provides expert communications and negotiation instruction to human terrain team members during their training in preparation for deployment.

Using selections of each other's training is not the only, or even most effective, way to create a productive link between the Human Terrain System and the University of Foreign Military and Cultural Studies. Team members trained in both

"Cultural information and analysis at the lower levels, where the 'ground truth' can be found, would be particularly beneficial to groups at higher levels, who have less opportunity to talk to the people and research the local cultures while in their element."

programs would be more beneficial to both deployed teams and in the Research Reachback Center. The Human Terrain System's training is centered on gathering tools and methodologies to conduct cultural research that can positively affect the operating environment in which their supported unit is working. The University of Foreign Military and Cultural Studies' training focuses on critical thinking and analysis of the operating environment, and the staff's processes of its supported unit to more effectively and efficiently frame and answer the unit's problems. Both cultural research and critical analysis are necessary and beneficial skills for both teams.

Now that both programs have teams in theater supporting different levels of command, the time is perfect for coordination between the Human Terrain System and the University of Foreign Military and Cultural Studies, and the resources they both bring to bear on the wars in Iraq and Afghanistan. These teams are in the field learning tactics, techniques, and procedures (TTP) that improve the operating environment and gathering cultural knowledge that can support operations across the military for government and nongovernment agencies. Sharing TTP and cultural information can only improve our understanding of the operating environment. Cooperation and knowledge sharing are also having positive effects through the support of the Research Reachback Center of deployed red teams and human terrain teams. Finally, training support between the two organizations has already begun, improving the skill-sets of deploying team members.

The way forward for both organizations depends on a closer working relationship; the first step is cross-leveling people in both training programs and on deployed teams. The knowledge and experience gained from a reciprocal training and support program will enhance team members, particularly team leaders, and analysts of each program. Further steps for cooperation and integration between the programs could develop from the solid base built by cross-leveling. In the end, both programs are attempting to inject socio-cultural knowledge into our military institutions and should join together to push this evolution of military affairs and ensure its success.

Notes

[1]George W. Smith, "Avoiding a Napoleonic Ulcer: Bridging the Gap of Cultural Intelligence (Or, Have We Focused on the Wrong Transformation?)," In Chairman of the Joint Chiefs of Staff Strategy Essay Competition Essays 2004, National Defense University Press, Washington, DC, 2004, available at: *http://www.mcu.usmc.mil/mcwar/IRP/Documents/CJCS%20Essay%20-%20Smith.pdf.*

[2]The concept for the current Human Terrain System was suggested by Montgomery McFate Ph.D., J.D., and Andrea Jackson as described in their article, "An Organizational Solution for DoD's Cultural Knowledge Needs," *Military Review*, July-August 2005. Most of the practical work to implement the concept under the title "Human Terrain System" was done by Captain Don Smith, U.S. Army Reserve, Foreign Military Studies Office, Fort Leavenworth, KS, between July 2005 and August 2006. Under this concept, "human terrain" can be defined as the human population and society in the operational environment (area of operations) as defined and characterized by socio-cultural, anthropologic, and ethnographic data and other non-geophysical information about that human population and society. Human terrain information is open-source derived, unclassified, referenced (geospatially, relationally, and temporally) information. It includes the situational roles, goals, relationships, and rules of behavior of an operationally relevant group or individual.

[3]Gregory Fontenot, "Seeing Red: Creating a Red-Team Capability for the Blue Force," *Military Review*, September-October 2005, pp. 4-8.

[4]University of Foreign Military and Cultural Studies, "Red Team Handbook," Fort Leavenworth, KS, 12 Oct 2007," p. 6.

[5]Colonel Allen Batschelet, Major Mike Runey, and Major Barry Hafer, "Risking Critique," *Armed Forces Journal*, November 2007, available at *http://www.afji.com/2007/11/3072814*, accessed 30 October 2008.

[6]Ibid.

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"Growing Pains:"

The Army's Transition to Two-Level Maintenance

by Alan C. Wyatt

In the 1980s and 1990s, executive officers (XOs), along with their maintenance officers and technicians, constantly struggled to get equipment evacuated, inspected, and accepted by support units. Simultaneously, these leaders managed an enormous organizational workload, resulting from scheduled services and command maintenance periods. Maintenance leaders constantly searched for buried work order and supply requests in preparation for lengthy maintenance meetings that occupied the majority of their time and efforts. An abused priority system in both maintenance and supply prevented support assets from focusing efforts on the most immediate needs; personal intervention was constantly required. The level of effort required by XOs to manage equipment maintenance in the complex four-level system was certainly excessive when compared to the amount of resources available in the support structure.

Transformed modular forces have been built with a new maintenance system, two levels of maintenance, which is designed to address many of these maintenance frustrations. The Army maintenance transformation (AMT) plan explains the conversion from a four-echeloned maintenance structure to a two-echeloned structure. This article explains the new concept, the revised processes, and addresses some of the challenges units face while implementing this transition.

The Reason for Change

Our previous maintenance system was characterized by the term "fix forward." In this system, support maintenance companies were pushed forward to make repairs and return equipment to operational condition. Maintenance tasks were accomplished at the lowest possible level; if maintenance requirements exceeded resources at a particular level, then the task was either evacuated to a higher level, or higher-level assets were sent forward to complete the repairs.

	Four-Level	Two-Level
Number of total steps in the process	78	27
Number of steps updating forms and records	47	10
Number of people involved in the evacuation process	10	4
Number of people who confirmed the fault	5	3
Number of people who validated work order	5	2

Figure 1

Specific capabilities existed only at certain levels, which required the Army to deploy three echelons to have a full range of capabilities in a theater of operations during deployment. This resulted in a large maintenance footprint, requiring an even larger logistics foot-

print to support additional maintenance units. The previous system, developed during World War II, served the Army well; however, with new technologies in information, maintainability, and diagnostics, and the speed at which we can move personnel, equipment, and parts, we needed to commensurately update our processes.

Why this New System is Better

Consider this example of a typical maintenance action:

Under the four-level maintenance system, an operator identified a class III leak from a differential output seal. The operator annotated the fault on the Department of the Army Form 5988-E (Equipment Maintenance and Inspection Worksheet) during the after-operations checks. The fault was then reported to organizational maintenance on the 5988-E upon closing the dispatch.

Receiving a 5988-E with a deficiency, organizational maintenance verified the fault and began the process of evacuating the truck to the support maintenance company. Prior to evacuation, all unit-level faults had to be corrected. A unit-level logistics system (ULLS)-generated work request was produced. Since the vehicle was in a "not mission capable" (NMC) status, the commander had to circle "X" the fault, or tow the truck to the support maintenance company's area. Once there, the inspection section conducted an initial acceptance inspection to verify the fault, but would most certainly identify additional shortcomings for the unit to correct. The vehicle would then be taken back to the unit's location to correct these faults, and then back to the support maintenance company to verify corrective action, and so on.

By following "by the book" instructions, U.S. Army Field Manual (FM) 4-30.3, *Maintenance Operations and Procedures*, to correct this fault, the unit executed 78 total steps, 47 of which were merely updating records, and the vehicle was transported to or from the support shop four times.[1] Figure 1 shows a comparison of the steps necessary to complete the evacuation and repair process in the four- and two-level systems.

In an effort to get systems repaired and reduce system down time, critical steps were often bypassed. Figure 2 is a simplified comparison of the steps necessary to complete a repair action in the two different systems and shows the reduction in evacuations and redundant inspections by implementing two-level maintenance. With the merger of unit and direct-support maintenance, the process is much more streamlined; redundancies in paperwork, evacuations, inspections, and verifications are reduced, providing reduced repair cycle time and greater efficiency in all processes.

Comparison of the Work Flow				
Action	**Four-Level**		**Two-Level**	
Create a unit-level work order number	✓	Unit	✓	Field
Maintenance supervisor verifies fault	✓		✓	
Prep for evacuation	✓			
Transport to support activity location	✓			
Acceptance/rejection inspection by support	✓	DS		
Transport back to unit to work off faults	✓	Unit		
Work off faults from direct support initial inspection	✓			
Re-inspect at support	✓	DS		
Create a DS work order number	✓			
Order parts, receive, and issue needed parts	✓		✓	
Assign to shop section, supervisor inspects	✓			
Mechanic repairs	✓		✓	
In-process inspection	✓		✓	
Shop section supervisor final quality control inspection	✓		✓	
Inspection sections final inspection	✓	Unit		
Customer inspect/accepts	✓			
Transport to unit	✓			

Figure 2

Consolidating Four Levels into Two

A significant difference in the two-level maintenance system is its introduction of a "replace forward/repair rear" concept, as opposed to the previous fix-forward philosophy. The new concept employs maintainers on the battlefield to identify a faulty component and replace it, thereby returning equipment to the fight more quickly and leaving the lengthy time-consuming repair work to the next echelon.

The new two-level maintenance system combines the previous echelons of unit and direct-support maintenance to form field maintenance (see Figure 3). Field maintenance focuses on returning equipment to the battle quickly by troubleshooting a system to isolate and replace the malfunctioning component. The previous system would attempt to repair components as far forward as possible. In the new two-level maintenance system, replacements occur within brigade combat teams (BCT) and repairs are generally done at echelons above brigade. Field maintenance includes tasks necessary to bring the system back to operational status and return it to the fight.

The previous echelons of general support and depot maintenance are now combined to form sustainment maintenance. Sustainment maintenance tasks are focused on overhauling, rebuilding, and repairing components, assemblies, and modules, and ultimately returning them to the supply system (see Figure 3). Modular BCTs will have no sustainment maintenance capability; most repair tasks, previously direct support, have been shifted to the sustainment maintenance level. Ideally, sustainment maintenance activities will provide support to the supply system from the Continental United States. However, in an effort to return equipment to the supply system as quickly as possible and support surges in demand for critical readiness drivers, sustainment maintenance activities may be located anywhere in the supply chain.

On-System and Off-System

Field maintenance, the maintenance a unit conducts on its organic equipment, is now referred to as "on-system maintenance," which focuses on returning end items, systems, or subsystems to a fully mission-capable status. On-system tasks include preventive maintenance services, diagnostics to identify faulty components, replacing faulty components, and battle damage

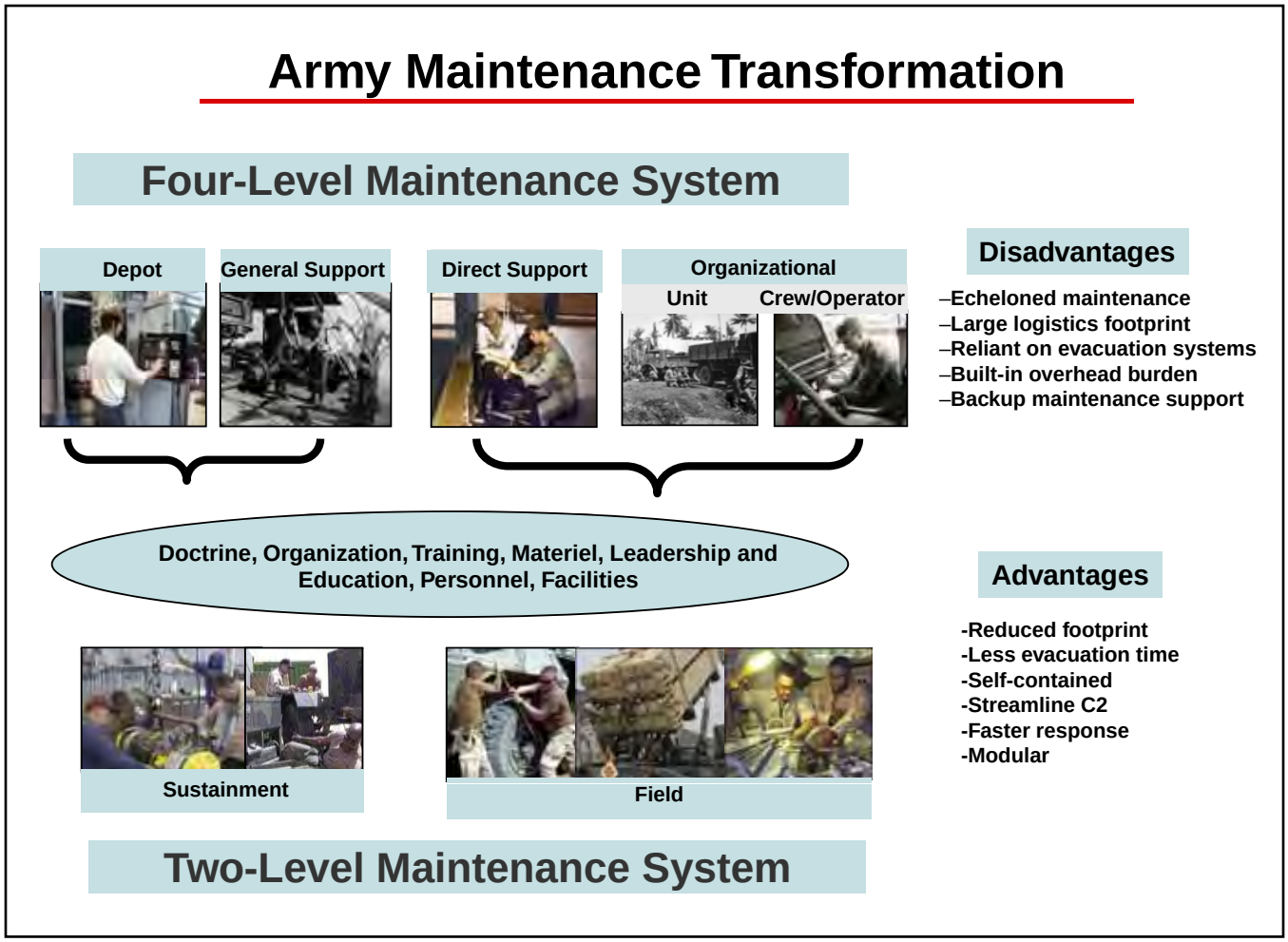

Figure 3

assessment and repair (BDAR). All maintenance activities, including sustainment activities, in the Army will conduct field maintenance.

A limited number of previous direct-support repair tasks will continue to be performed at the field-maintenance level due to their criticality in sustaining equipment readiness. We now refer to these tasks as "near-system maintenance." A good example of a near-system task is repairing line replaceable units. Technically, this task is to repair a component and would be categorized as sustainment maintenance; however, due to its criticality in maintaining equipment readiness, the decision was made to keep this near-system task in the BCT, thus making it a field maintenance task.

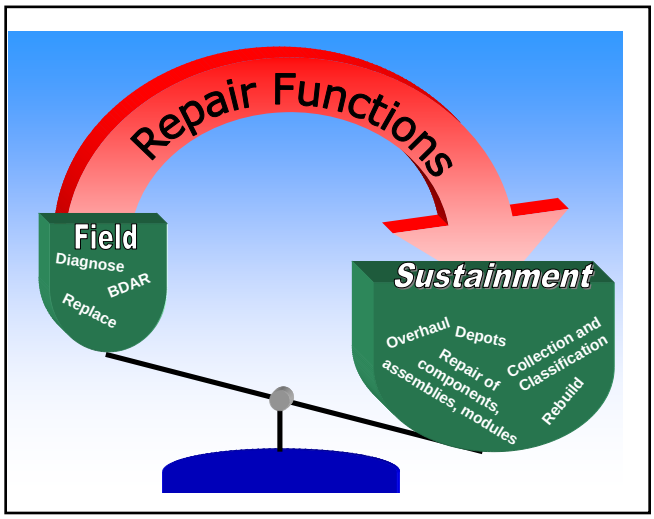

Figure 4

Sustainment maintenance task is characterized as, "off-system maintenance," which includes tasks necessary to return components, modules, assemblies, and end items to the supply system. Sustainment maintenance activities will perform diagnostics and repair components, modules, or assemblies.

Segregating on-system and off-system tasks has removed the lengthy time-consuming repair work from the battlefield and placed it back at the sustainment echelon, for which Army Materiel Command has responsibility. This allows maneuver commanders to focus on the fight (see Figure 4). Additionally, these improved business processes will reduce the logistics footprint and eliminate redundancies and unnecessary steps. Figure 5 shows some key differences between the two levels of maintenance.

Implementation

The changes needed to implement two levels of maintenance have stretched across all levels of doctrine, organization, training, materiel, leadership and education, personnel, and facilities (DOTMLPF). For example, maintenance doctrinal publications have been updated; unit structure has changed, merging previous organizational and direct-support organizations; and soldiers have been retrained from organizational or direct-

"Our previous maintenance system was characterized by the term 'fix forward.' In this system, support maintenance companies were pushed forward to make repairs and return equipment to operational condition. Maintenance tasks were accomplished at the lowest possible level; if maintenance requirements exceeded resources at a particular level, then the task was either evacuated to a higher level, or higher-level assets were sent forward to complete the repairs."

support mechanics into multicapable maintainers. However, many units are not sure if they have the necessary components to operate under the new two-level maintenance concept, and many are not sure how to tell.

To evaluate an organization's ability to conduct maintenance under the two-level maintenance concept, log on to Army Knowledge Online (AKO), then use *https://www.us.army.mil/suite/doc/13626371* to open the two-level maintenance scorecard. The scorecard provides commanders a mechanism to evaluate each DOTMLPF area for essential components necessary to conduct maintenance under the two-level maintenance concept, and provides a red, amber, or green result.

The Army has provided many new enablers, such as tools, automation systems, facilities, and training, to assist in the performance of maintenance in this new two-tiered system. However, all these things are not necessarily required to implement two-level maintenance; all you need are the basics — tools and training. Two-level maintenance is a simpler, more streamlined system that gives commanders more control of their maintenance resources and assets. Leaders at all levels must implement this new system, and learn and understand its capabilities.

	Field Maintenance	Sustainment Maintenance
What?	Replace	Repair
Characterized by	On or near system	Off system
Support what?	Weapon System	Supply System
Done where?	In every organization in the Army	Echelons above brigade

Figure 5

Notes

[1]Headquarters, Department of the Army, U.S. Army Field Manual (FM) 4-30.3, *Maintenance Operations and Procedures*, U.S. Government Printing Office, Washington, DC, 28 July 2004.

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Improving the Combat Vehicle Crewman's Body Armor System

by Debi Dawson, PEO Soldier

In the small, crowded space of an M1 Abrams tank, current body armor is a tight fit, which is why the Army, with input from Soldiers and Marines who work in armored vehicles, is seeking a better solution.

Program Executive Office (PEO) Soldier and the U.S. Army Armor Center at Fort Knox, Kentucky, are evaluating the results of a recent combat vehicle crewman's modular body armor system demonstration in which Soldiers and Marines tested several types of body armor in a variety of drills to see which features worked best and which need improving. The drills included many of the real-world hazards, such as rollovers, casualty evacuations, and mounting and dismounting, that Soldiers experience in theater.

"It was good to merge the materiel development community, Product Manager (PM) Soldier Survivability, the combat development community, and users here at Fort Knox. We were able to put our heads together with the Infantry and Armor Centers, as well as other proponents, and think, 'What is right? What does 'right' look like?' " said Lieutenant Colonel Scott Rew, Chief of Mounted Soldier Capabilities in the Armor Center's Combat Development, Maneuver Requirements Division.

The demonstration was both a proving ground for the current system and a forum for Soldiers and Marines to identify areas that need improvement in next-generation sets.

"The main feedback I heard from participants is that they are really excited the Army is moving forward and looking for solutions that will enhance their ability to operate on the battlefield — any battlefield — and be compatible with their specific platforms," said Lieutenant Colonel Robert Myles, Product Manager for Soldier Survivability, Project Manager Soldier Equipment.

Myles also commented that: *"The currently issued body armor has been great for Soldiers wearing it downrange, especially for those doing frequent dismounts, and that of course includes most of the Army. But the armor community has experienced some problems with vehicle crawl space and with conducting day-to-day tasks on various platforms. Soldiers are telling us that the currently issued body armor could be improved on for Soldiers in tight spaces. For gunners on M1 tanks, that means a smaller vest that contains fewer snag hazards and the ability to maneuver around the vehicle."*

Private First Class Josh Guevarra, an armored security vehicle (ASV) gunner, assigned to 1st Battalion, 77th Armor, commented that mobility is key: "*As the gunner, I need mobility in the arms, mainly if I have to turn around or raise my arms to open the hatch*," said Guevarra. He also noted an improvement in the weight of the armor tested at the demonstration, compared with the body armor he ordinarily uses.

Sergeant Antione Gray, a team leader and ASV commander, commented that the four different vests he tested distributed the weight more evenly over his shoulders, back, and chest, stating, "*It's just more comfortable*." Gray remarked that the quick release, which eliminates the need for Soldiers to reach from side to side to open the straps and remove the vest, *was "vital in saving lives and precious seconds."*

"I think it's cool to be able to test the armor," said Gray, who was quick to appreciate PEO Soldier's ongoing efforts to balance protection and bulk. He added that, *"The challenge is adapting the new armor we're trying out now with the gear we still use. With some of the new vests, there's more protection, but they're bigger. So you have to find new ways to manipulate your body to get through the vehicles."*

Marine Staff Sergeant Christopher Honold, an ASV section leader with the 2d Assault Amphibian Battalion, put it this way: *"I just need to be able to move my arms from the left to the right or across, up, and down. If my vehicle goes down and I need to evacuate, I need to be able to get out of there quick."*

There will be numerous challenges in developing body armor to fit all tasks on all platforms, but ultimately the Army's goal is to field a system that will provide better form, fit, and life-saving capability to Soldiers fighting in M1 tanks, M113 armored personnel carriers, and M2/M3 Bradley fighting vehicles, as well as in other small spaces, such as the heavy expanded mobility tactical truck, or artillery pieces such as the M109A6 Paladin self-propelled howitzer.

The findings and lessons learned from the demonstration will also be used in developing better, more capable body armor for Army aviators, who have many of the same challenges as the armor community.

"Though the optimal design to suit all operational requirements remains to be seen, the focus is, and will continue to be, squarely on saving lives," said Myles.

"In a perfect world, we would have a body armor solution that would work equally well for both dismounted Soldiers and mounted Soldiers," said Rew. *"They could adjust their body armor kit to the requirements they have, whether they're on or off a platform. And if that's not possible, if we find that we need a totally separate system, that solution would be integratable with all other requirements we have for body armor."*

However, Rew does admit that, *"Realistically, if you're surrounded by a 70-ton platform, I don't think there's a whole lot you can do to protect me if a munition pene-*

trates that platform, or punches a hole in it. Body armor isn't really going to do anything for me." However, body armor becomes critical as soon as a Soldier emerges outside the tank. Clearly, if a guy is on a platform and he has to stick his head out of a hatch, or he's 'nametag defilade' on the turret, he's going to need protection; something that is light and flexible enough to allow easy exit and entry. The solution for combat vehicle crew members should be one that is tailorable, scalable, and integratable with what we now have. For example, tailorable indicates that mobile gun system (MGS) gunners could configure body armor to suit their needs on that particular weapons platform; scalable indicates that a Soldier could wear no body armor or the full spectrum of protection available with the currently issued body armor; and integratable means that ideally, the crew member's body armor would be compatible with the currently issued body armor.

"The field is not being shy about what they like and dislike about Soldier equipment," said Sergeant Major Thomas Coleman, Sergeant Major, PEO Soldier. *"We're taking it to heart, and we continue to move forward with getting improvements out to the field as quickly as possible."*

Based on user input, there are a number of basic requirements that need to be considered for a new mounted body armor system. In addition to providing the same protection as the currently issued body armor and conforming to widely different vehicle spaces, it must:

- Be compatible with all current clothing and equipment for combat vehicle crew members, including the enhanced small-arms protective inserts (ESAPI), and the new XSAPI ballistic inserts.
- Safeguard the Soldier's abdomen and torso, deltoid, upper shoulder, and arm without impeding the ability to operate a vehicle or perform during drills.
- Be flash and flame-retardant, like the current spall vest, or "chicken suit," that Soldiers wear beneath the one-piece combat vehicle crewman coverall to protect them from munitions penetration and vehicle explosions.
- Fit Soldiers in sizes ranging from the 5th through the 95th percentile.
- Include a quick-release feature.
- Provide the capability to extract an unconscious Soldier from a vehicle.

The next step in the design-improvement process includes additional demonstrations. Coleman emphasized that, *"We learned that clearly we've got some things to work on, and we will step out aggressively to work toward a solution to answer these challenges. Like so many other equipment issues in the Army today, we never stop the continual improvement process. We learn by doing and make improvements based on feedback from the field, so that Soldiers on the current battlefield will always have the best."*

For more information visit the PEO Soldier website at:

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