

# Tactics, Techniques and Procedures for Employing Brigade and Task-Force Engineers

by COL Jason L. Smallfield

The creation of 32 engineer battalions in the Active Component over the next two years and 28 engineer battalions in the National Guard over the next four years will provide maneuver commanders with more organic engineer capability than they have recently possessed. The ability to leverage this additional capability, however, will require maximizing a resource that maneuver commanders have not had readily available recently: a task-force engineer. Even more than this, however, an engineer battalion commander, with lettered subordinate companies in the brigade combat team (BCT), is a muscle that neither maneuver commanders nor engineer leaders have exercised in several years.

The purpose of this article is to articulate what has changed and what engineer capabilities are available to a maneuver commander, and to delineate

some tactics, techniques and procedures (TTPs) that result from this analysis.

## Available capabilities

Changes have occurred, and will occur, from three perspectives: organizational, training and personnel.

**Organizational perspective.** There have been three engineer organizational trends over the past 60 years of which maneuver commanders should be aware:

- First, the division-centric Army has been reshaped to a BCT-centric force and will remain the key building block for our Army moving forward;
- Second, maneuver-brigade commanders have clamored for more engineers during combat operations, and this need has often been forgotten when post-conflict

inactivations and reduced budgets have required reductions to Army endstrength and corresponding reductions in engineer force structure; and

- Finally, engineer planners have generally based their organizational structures on the nature and quantity of work to be done in a given area, while Army planners have been influenced by the dictates of deployability and unique operational requirements, forcing in-lieu-of solutions to meet global demands. This trend resulted in echelon-above-brigade (EAB) engineer organizations that were neither available nor optimized to augment BCT formations.

The Engineer Regiment developed the brigade engineer battalion (BEB) initiative in 2009 and 2010. This force-design update was designed to support the two-manuever-battalion BCT. By



the time the BEB was approved, however, the Army Chief of Staff (CSA) decided to increase the BCT to a third maneuver battalion. The BEB did not include a third engineer company for two critical reasons: first, there was not enough EAB force structure to pay the bill, and second, the CSA limited the BCT's size.

The engineer battalion assigned to each BCT will provide increased engineer capability with two companies but will have limited capacity to support the third maneuver battalion within the BCT. More engineer capacity and capability (i.e., defensive operations, engagement-area development, offensive operations, expanding lodgments, stability operations, building partner capacity, defense support of civil authorities, port construction and repair and mission-command headquarters for these EAB enablers) will need to be anticipated, requested and allocated for home-station training, training-center rotations and support to contingency operations. By strategic rules of allocation, the BEB will only provide about 25 percent of a BCT's engineering requirements.

The bulk of engineer force structure currently resides in the Reserve Component: 19 percent of engineer Soldiers are active-duty, 31 percent are Reserve and 50 percent are National Guard. Upon completion of active BEB conversion in Fiscal Year 2015, the active force of 19 percent will be 48 percent BEB and 52 percent EAB. While table of organization and equipment organizations are generally designed and built to meet Phase III (*dominate*) requirements, the strategic impact of this force mix demands recurrent, assured and predictable access to Army National Guard and Reserve units throughout all phases of the operation (*shape, deter, seize the initiative, dominate, stabilize and enable civil authority*).<sup>1</sup> Maneuver commanders should therefore be thinking early and often about their EAB requirements in all phases of their operation.

**Training perspective.** The Army Force Generation (ARFORGEN) model was approved by the Secretary of the Army and CSA in 2006.<sup>2</sup> ARFORGEN was the Army's process for meeting combatant commanders' requirements by

synchronizing the building of trained and ready units.<sup>3</sup> The underlying idea was to tap into the total strength of the Army, leveraging all active and Reserve units while sustaining the process by employing a rotational, more predictable plan for deployments.<sup>4</sup> This placed units on a tiered readiness "duty roster" and rotated units through high readiness as they prepared to deploy. This was necessary to meet wartime requirements but led to vast swings as units went from the trained/ready pool into reset.

This process was exacerbated in the enabler pool since ARFORGEN was really "BCT-FORGEN." Enablers like EAB engineers were forced to operate at a higher operational tempo than the supported BCT forces and were typically out of cycle with the units they would support in combat. In addition, the focus of engineer training in the 1990s was upon the broad spectrum of mobility / countermobility / survivability. This broad focus narrowed in the 2000s to be almost exclusively upon explosive-hazard defeat. This caused a degradation of 12B skill sets in other than explosive-hazard defeat.

Also, both the CSA and the U.S. Army Training and Doctrine Command commanding general have noted that historically the combat training centers (CTCs) have been our primary leader-development training sites. The global war on terrorism, overseas contingency operations and ARFORGEN requirements forced the Army to use the CTCs as "readiness factories" rather than for their intended purpose of leader development.

**Personnel perspective.** Two of the most substantial engineer personnel changes that impact maneuver commanders involved geospatial engineers and the component mix. Changes were made for geospatial engineers to leverage the quantum leaps in technology experienced in this area. Geospatial engineers have changed from 81Q terrain analyst, 81C cartographer and 81L lithographer to the current consolidated military occupational specialty (MOS) 12Y, geospatial engineer. In addition, the Engineer School has partnered with the Military Intelligence School to form geospatial-intelligence cells (imagery analysts and geospatial

engineers) at the BCT, division and corps headquarters levels.

The other substantial change has been the migration of the Engineer Regiment from the Active Component to the Reserve Component. Some MOSs such as 12G quarrying specialist are entirely in the Reserve Component, while the 12P prime-power-production specialist resides exclusively in the U.S. Army Corps of Engineers. This increases the time required to support a maneuver commander's request for forces and therefore increases the lead time required to make the request.

## TTPs

From the preceding organizational, training and personnel information, I recommend TTPs in the following areas for how maneuver commanders should use the engineer battalion, assistant brigade engineer (ABE) and task-force engineers.

**Mission command.** The single most important aspect of the BEB is the mission-command component. The engineer battalion commander is the senior engineer within the BCT and is the final word on all engineer-related issues. The battalion commander has a permanent representative assigned to the BCT staff: the ABE, who is an engineer major. The ABE assists the brigade engineer in developing and providing recommendations to the brigade commander but should never provide engineer advice to the BCT commander without prior coordination with the brigade engineer. The key here is having the right mission command and task-force engineer structure that will allow the BCT to effectively plan for, receive, employ and then return EAB assets. To facilitate this relationship, maneuver brigade commanders should consider having the BEB commander rate the ABE with the BCT commander as senior rater.

**Brigade engineer.** Because the engineer battalion provides limited engineer capability, a BCT will likely be reinforced with varieties of unique engineer companies, an engineer battalion or engineer brigade. This engineer reinforcement is temporary, however, and the assigned engineer battalion commander should always retain brigade-engineer status for purposes of

continuity and familiarity with the brigade commander and staff. This will facilitate continuity and stability for engineer support for the maneuver commander.

**Balancing command and staff responsibilities.** The brigade engineer and task-force engineers will need to balance their command (engineer battalion, company and/or platoon) and their staff (maneuver brigade or battalion) responsibilities. Overemphasis on either responsibility may be necessary in the short term but must be avoided in the long term. Maneuver commanders should help their engineers to achieve this balance by providing upfront guidance and a specific timing and execution timeline from which the engineers can plan to help achieve this balance.

**Nearly simultaneous BCT and engineer-battalion operations orders (OPORDs).** The engineer battalion should publish its battalion OPORD simultaneously, or nearly simultaneously, with the BCT OPORD. This TTP enables the engineer-company commanders and platoon leaders to actively contribute to the development of maneuver-battalion OPORDs rather than passively or reactively contributing.

**Co-location and planning cycle.** The brigade engineer and task-force engineer tactical-operations centers (TOCs) should be co-located and integrated into the BCT's and task force's TOCs and planning cycles. Maneuver commanders and staff should plan for and help enable this co-location.

**Engineer-battalion staff reinforcement of maneuver-brigade engineer staff.** Maneuver commanders should think of the ABE as the engineer tactical-actions center and the engineer battalion staff as the engineer TOC. The engineer battalion can, and should, reinforce the ABE for planning and execution / battle-tracking purposes. This will also enable the simultaneous BCT and engineer-battalion OPORD publication recommended above and is enabled by the co-location recommended above.

**Habitual relationships.** Maneuver-battalion and engineer-unit habitual relationships are an effective means to

facilitate and synchronize training within a garrison environment, especially in a resource-constrained fiscal environment. Habitual relationships, however, are not a default combat task organization. Task-force commanders must expect their engineers to be task-organized to other task forces, depending on the main effort through the operation's various phases. Engineers are a scarce resource on the battlefield and need to be massed at the critical point on the battlefield for greatest effect – that means a maneuver battalion may not be allotted engineer support during an operation or during a phase of an operation.

Habitual relationships need to be established and maintained down to company-team level. This means engineer-squad leaders should integrate into maneuver company-team planning in garrison so engineer formations can be more effectively used both in the field and in combat. Use of this TTP will help gain mutual respect and understanding on capabilities and limitations. It will also assist planning operations at the battalion-task-force level by enabling more educated and informed bottom-up feedback to task-force plans, which in turn will enable a more synchronized / parallel planning effort. Key, however, will be that there will be different habitual-relationship solution sets for different BCTs due to having three maneuver battalions supported by only two engineer companies and three engineer platoons.

**Reserve.** Due to the limited capabilities the engineer battalion provides to the BCT, engineers are never kept in reserve. This means that both task forces and engineer formations need to be adept at seamless and efficient task-organization changes. These task-organization changes, however, do not just happen. They are the byproduct of detailed planning, disciplined execution and solid standard operating procedures.

**Focused missions.** Time is critical for engineers to shape the terrain, so engineers need to be employed early and focused on those missions only engineers can perform. General missions such as security need to be performed by other formations. Maneuver commanders should consider assigning

missions to engineers that only engineers can perform rather than missions that any formation should be able to perform.

**Combined-arms integration.** Engineers should be integrated as a combined-arms team for all operations, including offensive, defensive and stability operations. Surprisingly, this is a lesson we had to relearn during combat operations in Operation Iraqi Freedom (OIF) and Operation Enduring Freedom (OEF). Experience has shown that when conducting route clearance, engineer units that operated independently had less effect and received higher casualties than when route-clearance operations were conducted as a combined-arms formation and tied to a task-force scheme of maneuver.

**Recon / counter recon fight.** Engineers should be integrated into the BCT's recon and counter-recon fight to better inform the BCT's military decision-making process as well as to enhance maneuver and engineer effectiveness. The counter-improvised-explosive-device fight in OIF and OEF can be thought of as the recon/counter recon battle we did not recognize as such and therefore did not fully leverage as we should have. Success or failure in the recon/counter recon has a direct causal linkage to success or failure in the main battle area.

**Expanded capabilities.** Engineers now have survey and design as well as horizontal capability that will expand the BCT's capabilities during expeditionary deployments. These capabilities need to be known and leveraged. In addition, every BCT will have a 120A warrant officer and an operational energy adviser. These leaders will provide a level of expertise BCTs have not previously had.

In conclusion, recent history of the Army and the Army's Engineer Regiment means the engineer battalion assigned to the BCT is a muscle that has not recently been exercised and is a skill that has atrophied. This necessarily means there is an experiential and generational gap that cannot be bridged by merely executing what we did as an Army in the 1990s. Maneuver and engineer leaders must understand

what has changed, along with what has not changed, so we can critically and creatively develop new TTPs for the effective use of the engineer staff and formations, both organic and attached to the BCT.

*COL Jason Smallfield is director of the Directorate of Training and Leader Development at the U.S. Army Engineer School, Fort Leonard Wood, MO. He has served as the engineer adviser to maneuver formations at the lieutenant, captain and major ranks (maneuver battalion, brigade and division), including deputy brigade commander, 36<sup>th</sup> Engineer Brigade, Fort Hood, TX; battalion commander, 1-395<sup>th</sup> Training Support Battalion, Fort Hood; deputy district commander, Huntington District, U.S. Army Corps of Engineers, Huntington, WV; battalion S-3, 2-508 Infantry Battalion, 4<sup>th</sup> BCT, 82<sup>nd</sup> Airborne Division, Fort Bragg, NC; squadron executive officer, 4-73 Cavalry, 4<sup>th</sup> BCT, 82<sup>nd</sup> Airborne, Fort Bragg; and assistant division engineer, 307<sup>th</sup> Engineer Battalion, 82<sup>nd</sup> Airborne, Fort Bragg. COL Smallfield's military schooling includes U.S. Army School of Advanced Military Studies (SAMS), U.S. Army Command and General Staff College (CGSC), U.S. Army Combined Arms*

*and Services Staff School, Engineer Officer Basic Course and Engineer Officer Advanced Course. He holds a master's of science degree in engineering management from the Missouri University of Science and Technology; and master's degrees from both CGSC and SAMS in military arts and science. He also earned a bachelor's of science degree in international political science from the U.S. Military Academy. He is a project-management professional and a certified facility manager. His notable awards include the 1999 General Douglas MacArthur Leadership Award, 2009 General Frederick M. Franks Award, Corps of Engineers' Bronze de Fleury medal and Armor Association's Noble Patron of Armor.*

## Notes

<sup>1</sup> Joint Publication 5-0, *Joint Operation Planning*, Aug. 11, 2011.

<sup>2</sup> Hemmerly-Brown, Alexandra SSG, "ARFORGEN: Army's deployment cycle aims for predictability," Army News Service, Nov. 19, 2009, <http://www.army.mil/article/30668/>, accessed Dec. 8, 2013. Also in Army Doctrinal Reference Publication 7-0, *Training in Units*.

<sup>3</sup> Ibid.

<sup>4</sup> Ibid.

## Acronym Quick-Scan

**ABE** – assistant brigade engineer

**ARFORGEN** – Army Force Generation

**BCT** – brigade combat team  
**BEB** – brigade engineer battalion

**CGSC** – (U.S. Army) Command and General Staff College

**CSA** – Chief of Staff of the Army

**CTC** – combat training center

**EAB** – echelons above brigade  
**MOS** – military occupational specialty

**OEF** – Operation Enduring Freedom

**OIF** – Operation Iraqi Freedom

**OPORD** – operational order  
**SAMS** – (U.S. Army) School of Advanced Military Studies

**TOC** – tactical operation center

**TTP** – tactics, techniques and procedures