Force XXI Engineers:

New Organization Misfires in the Breach

By Lieutenant Colonel Bruce Porter

The Army is experimenting with options for a new heavy (armored and mechanized) division design, called *Division XXI*, as part of the Force XXI program. One significant option, promulgated by Training and Doctrine Command (TRADOC), involves reducing the number of mechanized engineer battalions in each heavy division from three to two. This "new" design is not based on innovative concepts or breakthrough technologies. It is a retreat to Cold-War thinking in a myopic attempt to save manpower spaces. The new design replicates a structure that failed in both World War II and the Cold War and was fixed only with tremendous effort during the Persian Gulf War. More importantly, when the principles of *Army Vision 2010* and *Joint Vision 2010* are used as a basis for analysis, the new engineer design proves to be a poor, perhaps catastrophic, choice for the combined arms team of the future.

Background

Army force structures in World War II and the Cold War authorized one engineer battalion to be organic to each division. The resulting task organization of just one engineer company to each ground maneuver brigade (or its equivalent) was absolutely insufficient in close combat operations. The corresponding "fix" in both World War II and the Cold War was doctrinal—to task organize a corps combat engineer battalion to the division. The technique worked well in World War II when the mission involved construction. It did not work for missions requiring synchronized infantry-tank-engineer combined arms operations. To remedy this weakness, the official after-action report for World War II called for a full engineer regiment in each armored division. That recommendation was not acted upon in the rush to demobilize after the war.

The various types of divisions established during the Cold War experienced similar problems with insufficient division engineers. Again, they relied on a corps engineer battalion for augmentation. Task organization of two engineer battalions across three ground maneuver brigades (a matchup of eight engineer companies against 10 ground maneuver battalions), plus a cavalry squadron, was highly problematic. There was no way to coherently organize a division-level staff and three battalion staffs out of two standard battalion staffs.

Evolutionary Progress

The revolution in training inspired by the National Training Center (NTC) resulted in an unintended evolution of the maneuver/engineer task organization throughout the 1980s. Over time, maneuver units established that the "natural" pattern of operation was one engineer company per maneuver battalion task force (to include cavalry squadrons). When the NTC first opened, one engineer platoon usually was task organized to each deployed battalion task force. After a few years, a full three-platoon engineer company became the norm for each rotation to the NTC. After another few years, each battalion task force arrived at the NTC with a full engineer company (a total of two engineer companies). By 1988, each brigade deployment included major pieces of the engineer battalion headquarters. In the NTC's close-to-combat environment, even when not a main division effort, the natural evolutionary process resulted in one engineer company per battalion task force and one engineer battalion headquarters per maneuver brigade headquarters.

This relationship was fully recognized by commanders at all levels at the start of Operation Desert Shield. Each heavy division deployed with its organic engineer battalion, plus two corps engineer battalions and some type of colonel-level headquarters. (The exception was the 1st Cavalry Division, which was placed in theater reserve.) For example, the 24th Infantry Division deployed to Operation Desert Shield with its organic 3rd Engineer Battalion, the 5th Engineer Battalion from Fort Leonard Wood, the 299th Engineer Battalion from Fort Sill, and the 36th Engineer Group headquarters from Fort Benning.

The practical process of force modernization leads to equipment fielding at uneven rates across the Army. Corps units are almost always out of step with any specific division with regard to modernization. For most corps units, the problem is one of inconvenience rather than actual danger, because corps units reinforcing a division typically don't engage in direct combat. The problem is more critical for combat engineers. For the 24th Infantry Division, the result was almost catastrophic: Corps engineer battalions had older rifles (with incompatible ammunition) but newer (and also incompatible) communications equipment than the divi-

sion. Perhaps worst of all, neither of the corps engineer battalions had started the mechanization process—the spectacle of engineers in dump trucks fighting alongside Bradleys and tanks was heroic but institutionally shameful.

Maneuver units receive artillery support via small fire-support cells using remote communications (the artillery is out of sight and well to the rear). Combat engineer units, however, execute missions from *within* the maneuver formation. Engineers, infantrymen, Bradleys, and tanks operate side by side in virtually every task from squad through battalion levels. Sapper teams are integrated into dismounted infantry squads. Tanks with mine plows operate as part of breaching engineer platoons, which in turn are task organized to infantry companies. Comprehensive tactics, techniques, and procedures must be developed at every echelon to coordinate and blend the talents and capabilities of specific commanders and their units.

Synchronizing a combined arms breach is arguably the most complex, difficult operation a commander can undertake. Engineers, infantrymen, and tankers must have absolute trust and confidence in one another, trust and confidence born of repetitive training and habitual relationships. Those capabilities cannot be assumed when some unknown unit from outside the organization arrives on the battlefield. Mutual trust and confidence certainly were not present when corps engineer battalions joined the 24th Infantry Division during the initial deployment for Operation Desert Shield. They were built over a 4-month period *after* the units deployed and intensively trained together in Saudi Arabia. Given that extended training period, strong motivation based on the certainty of imminent combat, and lack of distracters, the corps engineer units effectively became "divisional" units.

Almost immediately after American ground forces departed from Iraq, the Chief of Staff of the Army approved a new heavy division engineer structure that included a brigade headquarters and three lean engineer battalions. That approval was based on years of analytic study and modeling by the Army. Additionally, the approval affirmed what had evolved over years of training at the NTC and acknowledged what had been proven to work in combat during Operation Desert Storm. The resulting force structure used no more manpower spaces than the previous two-battalion ad hoc design. It may be called the Army's first Force XXI organization.

Future Challenges

In contrast, the Division XXI engineer design now promulgated by TRADOC is just a rehash of already discounted concepts, disproven theories, and flawed Cold War designs. In fact, problems will be worse than those experienced in the Cold War. While engineer mobility assets decrease in the Division XXI design—

- Organic mobility capabilities of the maneuver unit remain constant.
- Requirements for maneuver unit mobility increase drastically.
- Enemy countermobility capabilities increase significantly.

The command and control problem of two engineer battalions applied against three ground maneuver brigades grows worse in Division XXI. The Division XXI engineer battalions are smaller and less capable than current battalions. The ability of corps engineer units to reinforce contingency divisions for close-combat synchronized operations has virtually evaporated due to the downsized Active Component force. (Almost 100 percent of all corps mechanized engineer battalions now are in the Reserve Components.)

The new division, to be fielded by 2010, will include only "product improvements" in the way of major weapons systems, with no improvement in the maneuver unit's mobility. Improved electronics will give commanders better intelligence about the enemy and terrain—but they will be unable to use it, because they will lack the engineer mobility assets to maneuver across the battlespace and overcome complex, dynamic enemy obstacles. Yet, the theme of "Dominant Maneuver" in *Joint Vision 2010* is clear:

> *Through a combination of asymmetric leverage, achieved by our positional advantages, as well as* ***decisive speed and tempo****, dominant maneuver allows us to apply decisive force to attack enemy centers of gravity at all levels and compels an adversary to either react from a position of disadvantage or quit ... Dominant maneuver will require forces that are adept at conducting sustained and* ***synchronized operations from dispersed locations****. They must be able to apply overwhelming force... These forces must have the ability to* ***outpace and outmaneuver the enemy****. Current systems, enhanced by information superiority, will provide a clearer picture of enemy and friendly locations. Information superiority also will allow joint commanders to* ***coordinate widely dispersed units****, receive accurate feedback, and execute more demanding, higher precision requirements. [Emphasis added.]*

Army Vision 2010 establishes "Decisive Operations" as the Army's equivalent of "Dominant Maneuver." The vision specifies the concept of "simultaneous, brief, violent attacks" enabled by "simultaneous application" and "mobility, speed, and agility."

These visions provide a clear concept of tomorrow's battlefield: battalions that must disperse and fight autonomously on an increasingly nonlinear battlefield. Commanders will be expected to act quickly based on near-real-time intelligence. Implicit in this requirement is the need to preserve freedom of maneuver for the task force commander, to allow him to maneuver *where he wills* to best accomplish his mission, then to emplace dynamic

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material, material takeoff lists, and quality assurance and inspection procedures. When engineers from light units deploy to undeveloped countries such as Somalia and Haiti, they are often among the first soldiers on the ground. They need engineer construction skills to build base camps, provide waste disposal, upgrade or build main supply routes, and perform many other engineer-related tasks. To fill that need, all engineers will receive the training required to perform their missions during operations other than war.

Conclusion

The Engineer School's goal is to produce the best-trained lieutenant it can in 17 weeks. Although these young officers cannot become experts in all the subjects taught at the school, they will receive a broad range of training opportunities and experience. This will be a tremendous advantage when they arrive at a unit. Lieutenants leave the basic course excited about being an Army officer and eagerly look forward to leading a platoon and serving their country. It then becomes the unit's responsibility to sharpen their warfighting and leadership skills. These young officers are the future leaders of the Engineer Corps. Soldiers are our credentials, but our junior leaders are our legacy.

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obstacles that will allow him to disengage when he chooses. Wide dispersion will negate the already difficult concept of shifting engineer units across task forces to support multiple operations.

At the same time, maneuver units will be faced with an increasingly complex array of countermobility threats. Among these are the use of mines and other obstacles in great number, plus better use of the terrain's natural countermobility effects, to asymmetrically combat American superiority in speed and firepower. Land mines are a cheap, deadly, and almost-insurmountable threat to the mobility of U.S. forces. The problem will get worse as more countries acquire a dynamic obstacle-emplacing capability by using systems equivalent to our Volcano and artillery- and helicopter-delivered scatterable mines. The lesson of Desert Storm will be very clear to our enemies: The American Army cannot be allowed to freely maneuver its armored forces.

Even the nature of the threat will pose an increasingly difficult problem. The mountains of Bosnia and Iran, the ricefields of Korea, the jungles of Africa and South America, and urban sprawl everywhere are certainly more challenging to our mobility than the north German plain or the Iraqi southern desert.

Despite *Army Vision 2010*'s claim that the Army is the service of choice to ensure full-spectrum dominance, divisions become *less* capable of full-spectrum operations with the loss of an engineer battalion. Combat engineer battalions often are the unit of choice in operations other than war. They deploy as mechanized infantry when Bradleys are inappropriate, as firefighters, and as relief for all kinds of disasters. In all operations (garrison, combat, and operations other than war) TRADOC's Division XXI design will result in a huge increase in operational tempo and personnel tempo for the two engineer battalions.

While the basic organizational structure of an engineer brigade and three battalions remains sound, heavy division engineer battalions still need major internal changes to meet the rigorous requirements of both today's and tomorrow's battlefields. Clearly, we must resource key staff officers such as the S2, signal officer, and maintenance officer; restructure the maintenance section to provide company-oriented contact teams; and provide a desperately needed organic medical evacuation and treatment capability.

Focus on Success

The 299th Engineer Battalion in the 4th Infantry Division's experimental force has worked diligently to improve the battalion's capability by using recent lessons learned and future warfighting concepts. The differing approaches taken by TRADOC and the 4th Infantry Division are extraordinary: One whittled away at an old structure to arrive at a predetermined manpower cap, while the other focused on warfighting and improved capabilities.

Deletion of an engineer battalion from the division structure does indeed save personnel spaces, but it creates a poor warfighting design. It repeats mistakes of the past. It fails to capitalize on lessons learned, recent innovations, and battle-proven structures. It fails to address the challenges of the future. It is the wrong force design for the Army's division of the 21st century. The Army needs to reinforce, not destroy, the successes of today's heavy division engineer brigade.

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