Terrain-Shaping Operations

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Current doctrine focuses a brigade combat team's (BCT's) engineer efforts on engagement area development (EA DEV). However, to take full advantage of terrain within the BCT area of operations (AO), units must address terrain forward of the engagement area to reinforce natural and man-made obstacles. This forward obstacle reinforcement within the BCT's close fight has been defined as terrain-shaping operations (TSO).

Aligned with Field Manual (FM) 3-90-1, *Offense and Defense*, these operations support the BCT by:

- Preparing the ground to force the piecemeal commitment of enemy forces and their subsequent defeat in detail at the desired location and time;
- Preparing the ground to force the enemy to fight where the enemy does not want to fight; and
- Allowing units to employ and strengthen obstacles (forward of EAs) and fortifications to improve the natural defensive strength of positions to mass sufficient combat power.

Commanders choosing to execute TSO greatly reduce their risk to mission and risk to force. Allowing enemy forces the space and time to maneuver out of contact in the deep and close fights increases prudent risk. These operations allow commanders to minimize the risk in both areas, requiring the enemy to maneuver where defending forces want, employ reduction assets outside the main battle area, and change their operational tempo. When enemy forces make contact with defending forces in the main battle area, they will arrive when, where, and in a formation that is digestible by the defending force. Friendly forces, as defenders, will have their chances of mission success greatly increased.

Observations from Combat Training Centers (CTCs) indicate that BCTs are focusing their countermobility efforts solely within the EAs. While EA DEV has been improving, there is still a severe lack of effort in the deep and close TSO gaps. Through the lens of a CONUS BCT executing an area defense, we will identify each of the countermobility gaps, apply TSOs to achieve effects in each gap, and propose when each level of TSO can occur in an operational timeline. Employing TSOs within each gap will allow units at echelon to engage the enemy at the desired place, time, and combat formation.

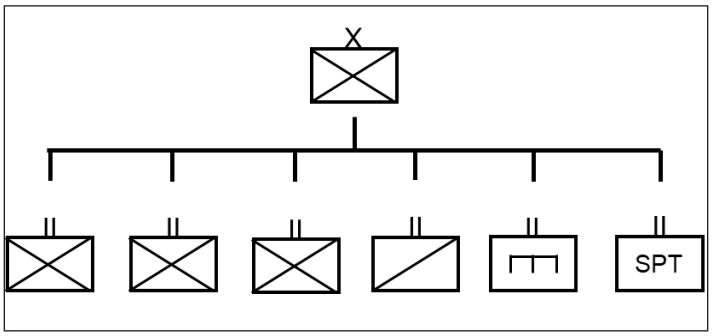


Figure 1 — CONUS BCT Task Organization

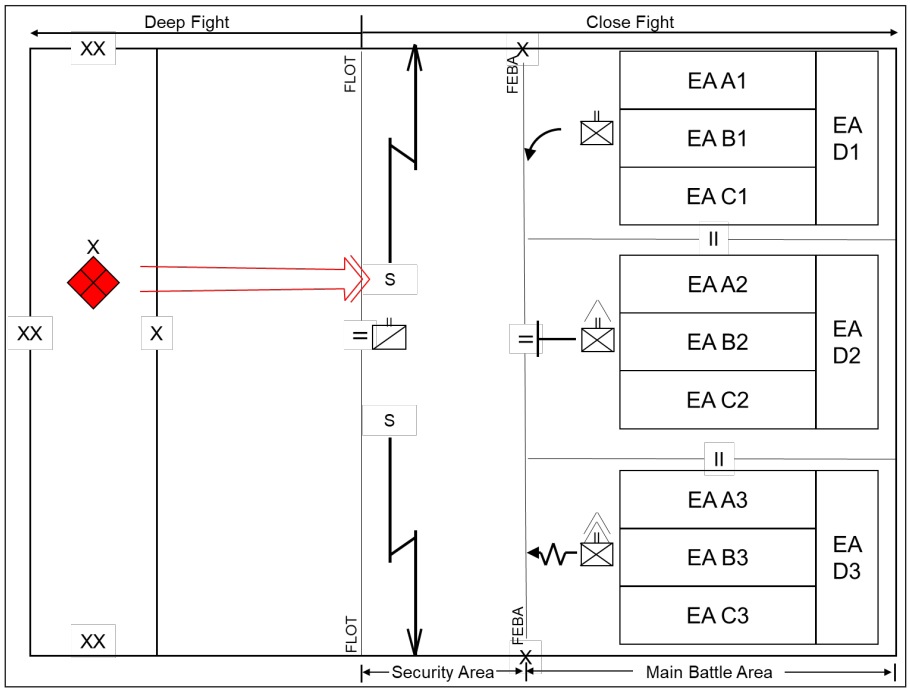
TSO Application

For the purpose of explaining TSO and the impacts to the BCT scheme of maneuver (SoM), I will utilize a CONUS BCT scenario tasked with an area defense (see Figure 1).

Typically, in the area defense the cavalry squadron will be forward security for the BCT defensive operations in a screen, providing time and maneuver space for the infantry battalions to establish their defensive plan.[1] The infantry battalions will be arrayed in a linear defense with supporting tactical tasks. Each infantry battalion then arrays its rifle companies in supporting EAs linearly and in depth.[2] (See Figure 2.)

After understanding the likely enemy concept of opera-

Figure 2 — BCT Scheme of Maneuver



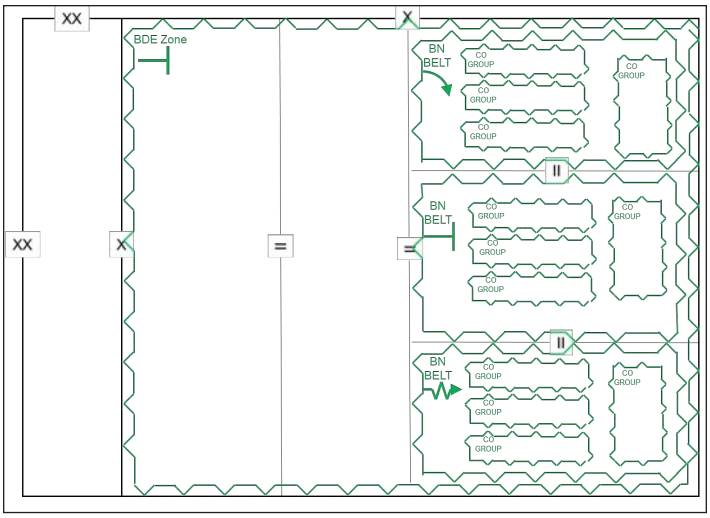
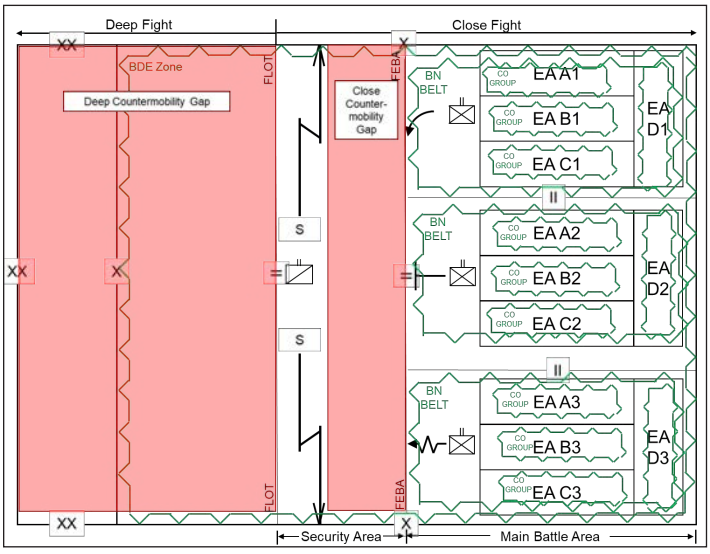


Figure 3 — BCT Obstacle Overlay

tion, likely avenues of approach (AAs), and the SoM, engineer planners at echelon assign obstacle control measures. Each control measure typically is assigned by the next higher echelon and is nested. Zones are defined by the division headquarters for the BCT; belts are defined by the BCT headquarters (HQ) for battalions; and groups are defined by the battalion HQ for companies. Obstacle control measures are assigned nested and supporting obstacle effects at echelon to support the SoM. (See Figure 3.)

When combined, the BCT's SoM overlay and the obstacle overlay identify three areas or gaps allowing enemy freedom of maneuver (see Figure 4). The deep countermobility gap is forward of the BCT screen line. This area would be the enemy's support zone leading to the battle zone where the separate forces maneuver to confirm planned AAs. The close countermobility gap is the area between the screen line and EAs. This is the enemy's battle zone where the fixing, breaching, and exploitation forces penetrate the BCT defense in route to their final objectives.[3] BCTs must apply

Figure 4 — Combined Arms Scheme of Maneuver Overlay with Gaps



obstacle effort to these gaps to prevent enemy freedom of maneuver. The application of effects and resources is TSO.

TSO Explained

In order to best understand how to conduct TSOs at the BCT level, conditions must be set at the division level in the deep fight (see Figure 5). Division deep terrain-shaping operations (D2-TSO) are intended to disrupt enemy forces by changing their formation and tempo, interrupting their timetable, and forcing commitment of breach assets prematurely.[4] Divisions can execute D2-TSO through a use of directed and situational obstacles, ensuring attacking forces enter BCT AOs when and where desired.[5] While initial disruption of enemy attacking forces is the primary intent of D2-TSO, answering priority information requirements (PIRs) and gaining time and space for subordinate commanders can also be achieved with proper employment of assets.

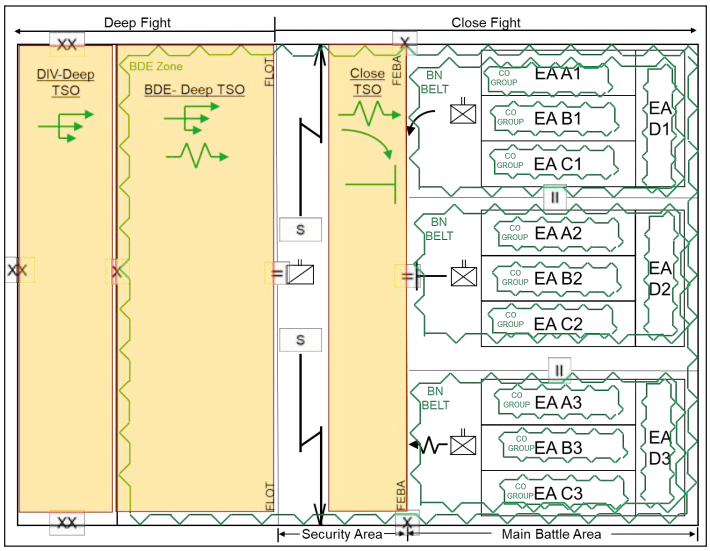


Figure 5 — Combined TSO with Effects

Brigade deep terrain-shaping operations (BD-TSO) are owned by the BCT in the area between the AO boundary (or division-BCT fire support coordination line, whichever is closer) and the cavalry screen line.

The intent for BD-TSO is to disrupt and/or fix the attacking forces forward of the screen line on AAs suitable for joint fires attacks and for cavalry reconnaissance. BD-TSO are not intended to serve as EA DEV for cavalry reconnaissance elements. Engineer reconnaissance teams (ERTs) can emplace local directed or situational obstacles to support the information collection plan (ICP) but not as part of EAs, as troops generally are not to destroy enemy. When executed as a part of the BCT deliberate defense, BD-TSOs are initiated after the BCT issues warning order (WARNORD) 2 and split between deliberate obstacle and situational obstacle emplacement (see Figure 6).

Deliberate obstacles would be emplaced early in the BCT timeline in order to allow rearward elements to establish with obstacle security forward. As the BCT develops the enemy course of action (COA) or as the enemy is confirmed along

AAs, the BCT can employ situational BD-TSO obstacles. Fixing attacking forces would allow the BCT to attrite enemy engineer breaching assets and combat power into a formation that can be defeated in detail at the desired time.

Close terrain-shaping operations (C-TSO) are designed to fill the obstacle gap between the screen line and EAs (see Figure 5). As C-TSO is between maneuver elements, it is owned by the BCT but can be divided and delegated to subordinate battalions. If separated, the C-TSO area must be included in maneuver battalion AOs with BCT directed obstacles and assets aligned. If BCT directed obstacles and assets are not aligned and tasked, maneuver battalions (i.e., assigned engineers) will be overwhelmed with the scope of work. The obstacle intent for C-TSO is fix, turn, or block as it aligns with the BCT's overall intent for tactical effects on the enemy. If C-TSO is divided and tasked to maneuver battalions, the intent should support the battalion's tactical task.

After the cavalry establishes the screen line, the BCT can begin conducting C-TSO (see Figure 6). Constructed, mined, and limited horizontal obstacles can be emplaced to complete directed obstacles. As with any obstacle emplacement, C-TSO obstacles should be emplaced from the enemy to friendly lines. ERTs can begin emplacing obstacles behind the screen moving towards EAs. To gain efficiency, echelon above brigade (EAB) Sappers (not habitually aligned with maneuver) can be tasked to emplace obstacles forward of the EAs. This would allow habitually aligned Sappers and horizontal assets to work in parallel time on maneuver battalion EA DEV. No matter what type of obstacle is emplaced, lane closure must be deliberate and clearly communicated to responsible units. If the cavalry is to retrograde through the C-TSO area and maneuver EAs, ERTs should rehearse primary, alternate, and contingency routes as a part of their final condition checks.

Many units execute effective EA DEV during the defense phase of JRTC rotations. However, it is not in the EAs where the enemy gains momentum and the majority of the seized terrain. The enemy gains momentum and land in the BCT's security area both deep and close. The lack of reinforced terrain allows the enemy to move when, where, and how they want, limiting the effects fires can achieve. Division deep, BCT deep, and close TSOs create reinforced terrain in depth across time. TSOs in all areas will set conditions for subordinate formations to fight the enemy when, where, and how they want as defenders. In conclusion, BCTs that focus their defense from the deep enemy side back through the entirety of the close area will find their subordinate units better prepared.

Executing TSOs will allow each echelon to make use of allotted time and resources to achieve a more lethal defense by controlling who is entering the battle area when and how the defender wants.

Notes

[1] Army Techniques Publication (ATP) 3-20.96, *Cavalry Squadron*, May 2016.

[2] ATP 3-21.20, *Infantry Battalion*, December 2017.

[3] Training Circular (TC) 7-100.2, *Opposing Force Tactics*, December 2011.

[4] ATP 3-90.8, *Combined Arms Countermobility Operations*, September 2014.

[5] **Directed obstacle** — An obstacle directed by a higher commander as a specified task to a subordinate unit; **situational obstacle** — An obstacle that a unit plans and possibly prepares prior to starting an operation, but does not execute unless specific criteria are met (Field Manual 1-02.1, *Operational Terms*).

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Figure 6 — Deliberate BCT Defense TSO Timeline