

Hey engineer, *make your*

BY MAJ Ralph R. D'Elosua

The Blade Effort Triangle, or BET, offers maneuver commanders and supporting engineers a method of agreeing on the blade effort required to support the scheme of maneuver.

The Engineer School teaches the BET as a successful technique for integrating engineer plans with maneuver in combined arms operations, and it has been proposed for the Armor and Infantry schools.

The BET

Simply stated, the triangle (Figure 1) shows the extent to which engineers can support the blade effort priorities first established by the maneuver commander.

The Y-axis initially represents the amount of unconstrained countermobility effort (antitank ditch in meters) the commander wants.

The X-axis represents the unconstrained level of survivability (described in FM 5-103, page 2-6) he desires.

Since the engineer has a limited number of blades to support the operation, there is a direct relationship between the effort available for survivability and the blade effort allocated to countermobility. What's directed toward countermobility is not available for survivability.

Mutual Appreciation

A quick look at the BET while planning his operation shows the maneuver commander the tradeoffs he must make in establishing priorities. There are limits on what can be accomplished given the time and assets available. Once he has a reasonable best guess estimate of the engineer effort required to achieve a goal, he quickly realizes the engineers cannot achieve the impossible.

The BET gives the commander and engineer a framework for discussing priorities, shortfall problems and options. It also gives the engineer an appreciation for the difficult decisions facing the commander.

Simplicity

The beauty of the BET is its simplicity. It can be drawn quickly by virtually anyone. It can be vague (describing only concepts) or specific (showing exact numbers)—whatever is appropriate to the situation.

The BET is of greatest benefit early in the planning process when it can be drawn up to support the unconstrained engineer estimate.

This gives the engineer and his maneuver commander their first glimpse of how extensive the required engineer support will be.

Once the constraints on time and resources are known, the BET is redrawn to show the optimum mix of countermobility and survivability support to be accomplished by "defend time." This gives the engineer and maneuver commander a working agreement.

For example, a brigade with three battalion task forces (two mechanized infantry and one armored) is preparing to defend within 72 hours.

The brigade commander has directed effort to preparation of a counterattack route; overall priorities are to countermobility, survivability and other mobility tasks.

He wants Survivability Level VI with one initial and one subsequent battle position for each task force (see page 2-6 of FM 5-103).

The engineer has 20 blade equivalents within the brigade area for mobility, survivability and countermobility. The directed mobility effort requires 100 hours. (Note: a blade hour is a blade equivalent working for 1 hour.)

After accounting for the effects of travel, maintenance and refueling, he estimates he has 980 blade hours remaining. That's enough time to construct either 33 km of antitank ditch or 1,633 survivability positions

BET!

or some combination thereof.

Based on the unconstrained engineer estimate, he determines he needs 10 kilometers of antitank ditch to support the countermobility plan. Survivability Level VI for two battle positions per task force requires 1,110 blade hours—unattainable even if all blade assets were directed to the mission.

Given these realities, the question becomes how should the 980 blade hours available be allocated to best support the commander's intent? The BET (Figure 2) helps the engineer show the commander the trade-offs at a glance.

The engineers can carry out the countermobility mission and provide Level IV or 1,133 survivability positions (Point A).

Or the commander can direct Level V for 1,550 battle positions and settle for less antitank ditch (Point B).

During the planning stages for defensive operations, the BET accomplishes several things:

- The maneuver commander and engineer agree early on how to accomplish established priorities realistically.
- The triangle provides a simple picture of how the engineer support is programmed.

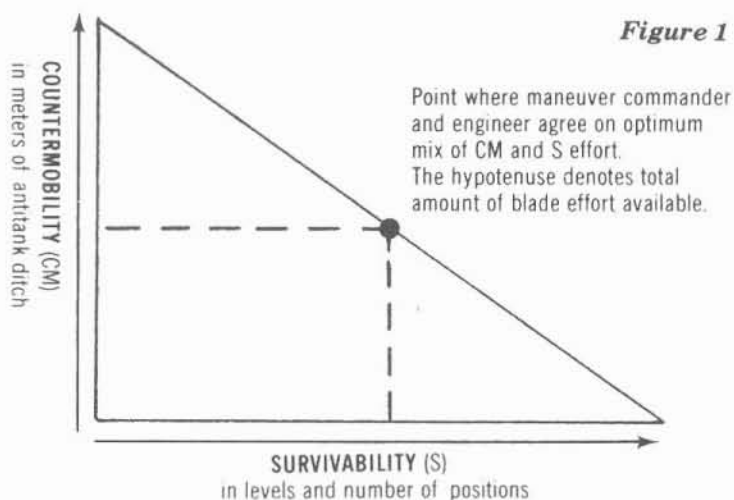


Figure 1

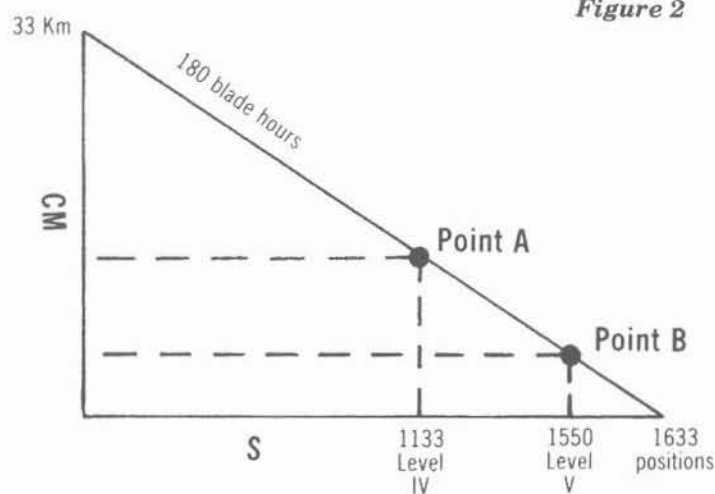


Figure 2

- The graph becomes a point of reference for reallocating resources as the situation dictates.
- Planners have a basis for considering alternate countermobility methods such as employing minefields, reinforcing targets or using manpower instead of blades.

Used properly, the BET is a tool for preparing engineer estimates in the defense that greatly enhance the integration of engineers into the maneuver plan.

Engineer, are you ready to make your BET?

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