Combined Arms Breaching

By Captain James R. Brannon

Breaching is one of the most critical engineer missions on the battlefield. Advances in mine technology, debate over breaching methods, and a continuing real-world threat—like that recently posed by Iraq—all combine to make breaching a hot topic among engineers.

Well, take note, because FM 90-13-1, *Combined Arms Breaching Operations,* is finally on the street. Breaching operations, particularly during tactical maneuvers at the National Training Center (NTC), have been under intensive study by the Engineer School for the last two years. This article describes that study, and its impact on our breaching doctrine. A 1988 study conducted by then-Lieutenant Colonel Robert J. Greenwalt, from the Engineer School's Department of Combined Arms, has been replicated and verified in a follow-up study completed by the School's Directorate of Evaluation and Standardization (DOES). The purpose of this follow-up study was to complete the work started by LTC Greenwalt as an on-going part of NTC Engineer Trendline Analysis. This summary will present the final conclusions of those studies and a brief overview of tested and verified doctrine for combined arms breaching.

Study Conclusions

Our combined arms breaching doctrine is sound, it works, and has been field-verified at the NTC in more than 100 battles. The proper application of our breaching doctrine virtually assures a successful breach. Study confirms that units which correctly employ proper doctrine succeed. Those that do not—fail. It cannot be overemphasized that your best assurance of success in breaching is proper application of our new doctrine.

Using METT-T (mission, enemy, terrain, troops and time available), an IPB (intelligence preparation of the battlefield) process with sufficient detail, good reconnaissance, combined arms team rehearsal, and synchronization of forces and SOSR (suppression, obscuration, security and reduction) are central to that doctrine. Commit the fundamentals of breaching doctrine (page 11) to memory and file it in your "smart book."

Time and experience shape doctrine. But once put on paper, few components of the military art are as challenging to test and validate as doctrinal concepts. Solid, quantifiable evidence often does not exist. But perhaps the greatest challenge is the acceptance of doctrine by those who stand to benefit from it. Revised methodologies, especially when they differ from former, more familiar ways of doing business, are often viewed with suspicion. This natural reluctance to change must be met with clear and convincing evidence.

Research

In 1988, LTC Greenwalt reviewed the results of 47 battles fought at the NTC during FY 1988. The DOES conducted a similar study of 56 battles which took place during FY 1989. Each of these studies compared the application of combined arms and engineer breaching methods with the outcome of breaching operations. The results of the study, reported at the Engineer Commanders Conference in

May 1989, examined these trend issues: reconnaissance of obstacles, templating of obstacles, rehearsal of breaching obstacles, breaching doctrine application, and breaching equipment.

LTC Greenwalt's study surfaced conclusions that were both interesting and alarming. First, doctrine was applied only 25 percent of the time in combined arms breaching of obstacles. Not surprisingly, 72 percent of the breach efforts fell below standards and 57 percent failed at the obstacle. The standard used in his study was 30 minutes effort, with light casualties. This should not be construed as "the" standard, but it was used as a point of departure for classifying various breaching operations in the study.

Secondly, the application of breaching doctrine resulted in an 80 percent success rate. Those parts of doctrine contributing most to successful breaching were:

- Rehearsal of combined arms team with engineers (100 percent successful).
- Application of breaching fundamentals (SOSR) (80 percent successful).
- Reconnaissance of enemy obstacles (75 percent successful).

These results come as no real surprise. It should be noted that this particular order of merit was not fully conclusive in the 1988 study. However, the very same observations were repeated in the 1989 DOES study.

While breaching doctrine was being reviewed and FM 90-13-1 was being staffed, DOES set out to replicate the original 1988 study. The purpose of our study was to clarify, confirm and complete the observations of the earlier study, to examine the use of doctrine and the effects of using it, to determine the interrelationships between doctrinal elements (if any), and to attempt to build a regression equation that would permit prediction of battle success.

The 1989 study director was Dr. William Dannenmaier, chief of the DOES analysis division. Study team members were Captain Neal Lovell and Captain Anthony Bailey.

The 1989 DOES study confirmed what LTC Greenwalt had discovered. Doctrine for combined arms breaching operations is employed less than half of the time at the NTC. When doctrine is employed, breaching operations are successful. When doctrine is not used, units are very likely to fail. Shadowing the 1988 study, it was found that those elements of doctrine most critical to successful breaching operations are (in order):

- Application of breaching fundamentals (SOSR).
- Organization for the breach.
- IPB (specifically, reconnaissance and templating).
- Combined arms team rehearsal (with engineers).

The 1989 study applied some sophisticated analysis techniques in an attempt to find correlations between the application of doctrine and success in breaching. Using a nine point scale (nine being highly successful and one being total failure), five points was established as the threshold for successful breaching operations.

All breaching operations were classified first by subdividing them into three categories (poor, average, and successful), and further dividing each of these again into three categories (poor, average, and better). Using a modified Delphi technique, scores were assigned to breaching operations based on the descriptions contained in NTC take-home packages.

After classifying each breach operation, the breaching doctrine employed in each battle was type-classified as either present or not present (assigned a score of one or zero). This allowed the construction of a matrix and the calculation of correlation coefficients between doctrinal procedures and battle success.

Using multiple regression analysis, regression weights that describe the contribution of each component of breaching doctrine were determined. The regression weights computed in the study are shown in the following table:

Item of Doctrine	*Weighting Factor*
1. Application of SOSR	2.54
2. Organized for breach	0.93
3. IPB/templating	0.93
4. Combined arms rehearsal	0.53
5. Reconnaissance	0.05

The usual model employed in multiple regression is an equation that attempts to relate some event (in this case breaching success) to some orderly collection of independent events. Normally, we see this equation as:

Outcome = Constant + Contribution from event 1 (2, 3 and so on)

The constant in this expression represents the minimum expected value for the predicted outcome, given that all contributions from each event are zero. Beyond that description, the constant has no real meaning. The weights from the table may be used in a simple prediction equation with a constant of 3.04.

Breaching Doctrine

- ***Intelligence:*** Perform an IPB (intelligence preparation of the battlefield) with terrain analysis, enemy doctrinal templates, situational templates with enemy obstacles noted, and finally a decision support template. Include an engineer squad with the task force reconnaissance platoon. Understand how the IPB process works and exploit every opportunity to know the battlefield. You must know what to expect and how to counter it in order to maintain your initiative and capitalize on any opportunities.
- ***Breaching Fundamentals:*** Suppress, obscure, secure, and reduce (SOSR) (Figure 1). Understand what these terms mean and make sure your actions are coordinated and synchronized with these key activities. Breaching actions performed by the maneuver forces cannot succeed unless you are aware of the total plan of fire support, the movement through the obstacle and to the objective, the needed lanes through the obstacle, when and where obscuring smoke is placed, how long it will last, and how you can get more. Securing the far side is key to effectively breaching any obstacle; you must know how this will happen, who will do it, and what engineer forces will go forward. Far-side security provides protection and time to reduce the obstacle to support the task force scheme of maneuver.
- ***Breaching Organization:*** Support force, breach force, and assault force. Are you prepared to react and reorganize to breach different types of obstacles? When will the support force be in place? What sector of fire or avenue of approach will they cover? Who's in charge? When and where will you meet?
- ***Mass:*** Crack the obstacle, rupture the defense; find a weakness or create one. You must open enough lanes to push sufficient maneuver forces to the far side (Figures 2 and 3). Doctrine calls for a minimum of two lanes per task force. Mass enough engineer force against the obstacle to reduce it using multiple techniques. To prepare, make this part of your engineer estimate. What resources will you need to open two, three, or four lanes? Where and when will you get them? How will you replace casualties and continue to press the fight?
- ***Synchronization:*** Plan, practice, and execute the synchronization of SOSR, support, breach, and assault forces (Figure 4). Rehearsal is key. Can you find the obstacles under cover of smoke? Do your soldiers know what to do, can they move quickly? Will they confuse enemy artillery with friendly artillery suppressive fires? Do they know where to go after breaching, who links up and where? Timing is critical, you must plan thoroughly to make it happen the way you want it. Start with the reverse planning process: the actions at the obstacle must support the actions on the objective. Which squad or team moves to the objective with the maneuver forces, what is their mission, who will lead them? You must know in advance how you are going to get your soldiers to where you want them to be and when they must be there. It takes a lot of tough thinking. (See Chapter 2, FM 90-13-1)

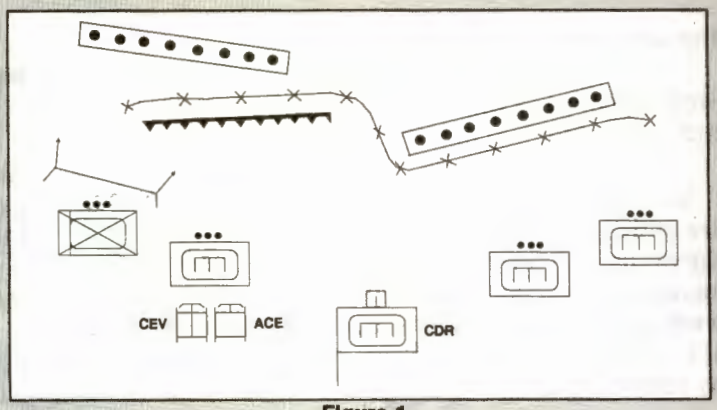

Figure 1

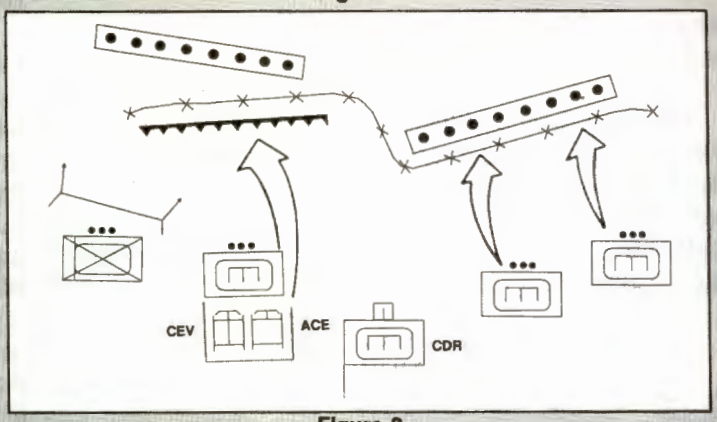

Figure 2

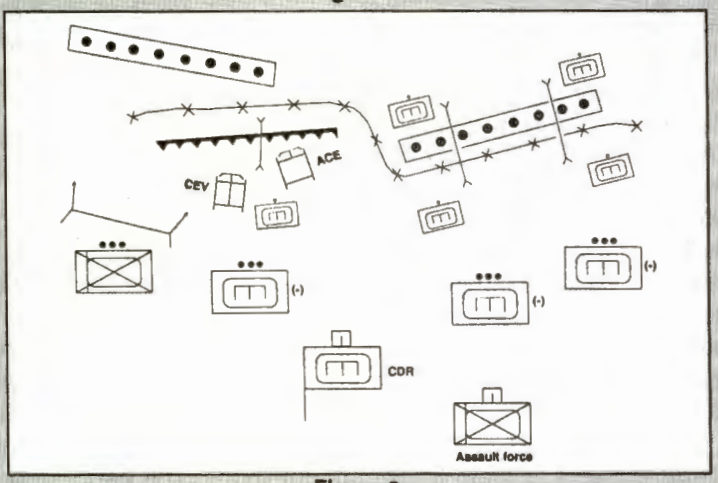

Figure 3

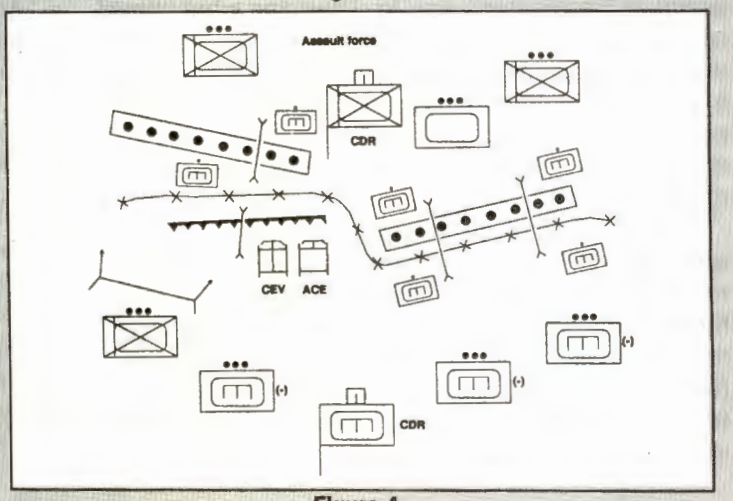

Figure 4

This equation may be expressed as:

Breach score = 3.04 + (sum of doctrine weight factors)

Developing this prediction equation was one objective of the study. The more doctrine employed, the higher the score. A score of near 8 was classified as representing successful multiple breaches. Using the prediction equation and employing all of the elements of breaching doctrine, a breach score of 8.02 would be calculated as:

Score = 3.04 + 2.54 + 0.93 + 0.93 + 0.53 + 0.05 = 8.02

We can simply add the contribution weights because we ascribed a score of zero or one to each doctrinal element (either the doctrine was used or it was not). It is important to note that the weights (regression coefficients) were determined from evaluation of the interrelationships.

Insight

Hard data were scarce, and the DOES study had to make some reasonable assumptions. Foremost was the assumption that breaching at NTC is sufficiently real to validate doctrine for the battlefield. Also, it was assumed that after action reports (AARs) from the NTC accurately reported exercise results. Of course, the study was limited to NTC rotations in FY 89 and also by the degree of detail in AARs. These assumptions and limitations became less of a concern when the 1989 study independently confirmed the observations made in 1988, and supported the significant, unsolicited feedback from subject matter experts, observer/controllers, and others at the NTC.

In the two years of study concluded by DOES, we found answers to many important questions. The essence of the research was to determine what impact combined arms breaching doctrine had on the outcome of breaching efforts. Admittedly, doctrine is not a lock-step, by-the-numbers application of isolated procedures. The fact that breaching can require just as much art as science made the analysis very challenging.

Part of the analysis required researchers to examine doctrinal interrelationships and make reasonable judgments regarding the strength of those relationships and their impact on the execution of a breach. Fortunately, the tools of analysis (regression and correlation) produced results with a high margin of confidence that was statistically significant.

Conclusions

The battlefield is a highly unpredictable place. This study does not claim to set in concrete any type of cause and effect relationships. It does, however, help formulate reasonable conclusions. The range of possibilities runs from a highly successful breach employing no doctrine at all, to a completely failed breach employing all doctrinal elements.

What we are concerned with are the probabilities, the actual likelihood of events. The importance of this study is that it quantifies those likely events into reasonable form.

The facts of the study are fairly clear. Breach failures at NTC were conspicuous by their lack of sound doctrine. Successful breaching operations were consistently characterized by the application of breaching doctrine. The strength and reliability of these characterizations is the real essence of the numerical analysis. The numbers tell us that properly applied combined arms breaching doctrine is highly effective.

While the DOES study confirms that our breaching doctrine is sound, the "fog of war" provides unpredictable variables that can never be tested or quantified. It's often said that "no plan survives the first enemy contact." What happens to you when you attempt a breach under fire cannot be predicted by any study or any equation.

What the study does prove, however, is that you can stack the odds in your favor by correctly employing breaching doctrine.

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