

Through the Breach: A Tanker's Perspective

By Captain Jeffrey Erdley

"Operation Desert Storm showed that our World War II vintage minefield breaching and clearing capability, coupled with the lack of demolition expertise, resulted in an inability to technically or tactically breach the modern minefield that we faced."

Operations Desert Shield/Desert Storm Engineer Observations

Quotes such as this may stir emotions of disbelief in U.S. forces, because all of the breaches during Desert Storm were successful. It is important to note, however, that the majority of our forces (except the Marine divisions and a 2d Armored Division brigade) maneuvered far to the west of the main defenses. In every case, the Iraqi resistance was vastly weaker than predicted—a fact that thankfully negated the 80 percent casualty predictions for U.S. breaching forces.

I served as an acting engineer platoon leader with B/23rd Engineers (1st Armored Division) for a Combat Maneuver Training Center, Hohenfels, rotation and conducted well over 100 breaches as a tank platoon leader, executive officer, and acting commander of armor-heavy teams. I have held both tanker and engineer viewpoints through field training in local training areas and combat training centers and formal schooling at Fort Knox and Fort Leonard Wood. Through my experience, one fact has proven itself over and over: the maneuver arms and engineers lack a common understanding of breaching and only work together when forced to conduct a breach.

Breaching Issues

FM 90-13-1, *Combined Arms Breaching Operations*, lays the framework for a common vision, but the principles of this manual are not always followed or understood by units in the field.

FM 71-2, *The Tank and Mechanized Infantry Battalion Task Force*, states, "Combat engineers are located with the breaching force of the battalion to perform hasty breaches. However, time and distance factors may require a hasty breach by maneuver units without direct engineer participation." Likewise, engineers are often thrust forward of both light and mechanized units and are told to reduce obstacles with little more than direct-fire support. The disjointed guidance may be corrected in future versions of FM 71-2, because engineers don't use the term "hasty," and the new FM 90-13-1 will eliminate each distinct operation (deliberate, in-stride, etc.) and designate them all simply as a "breach."

In my experience, engineer and maneuver soldiers when faced with a breach often view each other as adversaries who get in the way of the mission. An important point is that creating a lane through an obstacle is not conducting a breach; it is one small part of the operation. A breach is a combined arms operation involving not just engineers and tankers but every battlefield operating system (BOS) element. Somewhere in the middle of the engineer and armor "high grounds" is an effective way for these branches to work together to breach an obstacle and continue with an attack. This is where task force and brigade combat team

rehearsals and training become essential—before units deploy to the field. It is imperative for the unit to develop a cohesive plan for a breaching operation as early as possible and to bring all participating elements together to orchestrate the complex operation. Through refinement, the breaching plan is developed and captured in the unit's standing operating procedure (SOP) as an effective reference for both maneuver and support units.

Current doctrine does not provide insight concerning an effective middle ground for breaching operations. Most armor manuals reserve a few pages to roller and plow operations and simply state that armor units will get support from the engineers for large obstacles. Engineer manuals are also lacking. For example, the obstacle-reduction capability of tanks is viewed as an afterthought, mainly for proofing. Even FM 90-13-1, the doctrinal bible on breaching operations, barely mentions tank obstacle reduction. It states that plows and rollers are mechanical reduction assets but does not explain how to employ them. FM 20-32, *Mine/Countermine Operations*, devotes one page each to the plow and roller. (Lest we forget how important tanks are, it was the introduction of British tanks that opened the wire and trenches in France to help end the stalemate of World War I.) Since there is no effective manual on the tactical employment of either the plow or the roller, tankers must discover the tactics, techniques, and procedures (TTPs) for unit SOPs and operations on their own. To spur ideas and raise awareness, I offer some personal observations on identifying obstacles, ways to maneuver to them, notes on equipment, and breaching techniques that have proved successful in the field.

Obstacle Intelligence

As with any successful combat operation, a successful breach begins with accurate reconnaissance. Through trial and error, 3-67 Armor learned that the most effective method of locating obstacles, bypasses, and potential reduction sites was to put an engineer in a scout vehicle that overwatched named areas of interest and have him gather obstacle intelligence. Armor battalion scouts know the task force or brigade combat team commander's intent and have the "maneuver view" of how to conduct the operation. But no one has more knowledge of obstacle composition, dimensions, and purpose than engineers. When they are in the same vehicle, armor and engineer soldiers form an efficient team to locate obstacles and locate and mark potential bypasses or create lanes not covered by fire. Other reconnaissance assets, such as the brigade reconnaissance troop, unmanned aerial vehicles, scout helicopters, and combat observation lazing teams, may be available depending on the priority of the mission in the overall scheme of operations.

Breach Operation Planning

Even as reconnaissance personnel are being deployed, the commander and staff must start planning for a breach in every offensive course of action. It is safe to assume that our forces will be under both direct and indirect fire, because the enemy uses obstacles to channel and separate forces just as we do. With the speed of breaching operations in mind, the task force or brigade combat team breach force must maneuver toward the front of the formation. If a breach is imminent, their best location is second in the order of march.

Both FM 17-15, *Tank Platoon*, and FM 71-2 state that the roller tank should lead in a breach, because it is designed to detect minefields. This technique may be effective if units cannot visually identify mines or locate them with the tank's thermal sites. The roller tank may also find enemy scatterable mines. With the density of conventional and scatterable mines, however, the roller tank may be well past the leading edge of the minefield before the roller hits a mine and thus determines the minefield's location.

I have not observed this order of march to be effective, because the roller tank is a massive, lumbering beast that is ill-suited to lead a combat formation. Lead tanks should not have mounted equipment, because they must be killers on point that clear the immediate area for the formation and fix enemy vehicles with direct fire. Tanks with plows and rollers should then move behind terrain or at a safe distance to the rear of the lead tanks.

Within a tank company, the modified table of organization and equipment distributes one plow to each



An A/3-67 Armor M1A1 moving to a company assembly area. Note the deliberate orientation of the gun tube away from the roller assembly.

platoon and a roller on another tank in the company. Since tank platoons rarely maneuver on their own and never maneuver alone in a breach, this division of resources is a serious violation of unity of command that is usually corrected through task organization in the field. The most effective breach forces I have seen have had *all* of the reduction assets massed in one platoon. In a few missions, we attempted to attach this platoon under an engineer company commander. However, these attempts had disastrous results because the units did not use guns in the battle. Tanks were treated as engineer vehicles, and the company's killing capability was reduced by one-third.

To be successful, both maneuver and engineer chains of command must remain intact. Although the maneuver commander commands the breach force, the engineer commander may control the reduction element within that force. This organization allows the maneuver commander to concentrate on the security element and the critical task of controlling direct fire at the reduction site.

Mobility Assets

The equipment available for a breach is not limited to tank and engineer armored vehicle-launched bridges (AVLBs), mine-clearing line charges (MICLICs), armored vehicle-launched MICLICs (AVLMs), bangalore torpedoes, and grappling hooks. A successful breach is a combined effort involving engineers; indirect, counterbattery, and smoke missions of field artillery; mortars; aviation fires; infantry support; and sometimes chemical corps smoke. All these systems are excellent in their own way, but this article concentrates on integrating the M1 tank with mine-clearing plows and rollers with engineers.

Armor Equipment

Armor manuals are fairly weak on describing breaching missions. Three breaching methods are discussed in FM 71-2: employing an M1 tank with a plow/roller combination, using an M88 recovery vehicle with its blade down, and simply driving through. FM 17-15 describes the disastrous method of staggering plow tanks to create wider lanes. This method often leads to a live mine in the spoil that explodes on the second tank. FM 17-15 also instructs tank platoon leaders to use the cleared-lanes marking system (CLAMS). I believe that most of these systems were turned in after they proved to be ineffective.

In my opinion, the most effective method of tank obstacle reduction is with the plow tank. It digs below mines and then uses spoil to push them to the sides. Any vehicle that stays within the track of the tank is safe from mines.

Contrary to the belief of some soldiers, a plow does not necessarily slow a tank during movement. The main planning consideration for plow tanks is to keep them away from wadis, streambeds, bridges without the appropriate military load classification, and other restricted terrain that would impede movement. A tank is much longer with a plow attached and cannot drive through steep dips. If a plow digs in, crews must scrape the mud and dirt off immediately. If they don't, the added weight may cause seals to burst on the suspension in the front of the tank.

Roller tanks have some uses but generally are considered to be more trouble than they are worth in the armor community. Several tank manuals suggest leading an attack with a roller tank to find the leading edge of the minefield. However, anyone who has maneuvered with them understands that an attack with a roller point man would have all the momentum of a lethargic snail. Rollers were designed to be carried to the battlefield on a lowboy trailer, and the receiving tank would already have a mounting kit secured to the front slope. The crew only installs rollers on a tank in the attack position before crossing the line of departure, then it maneuvers through the breach as the proof tank and drops the rollers on the far side to be retrieved later. In this mission, and this mission only, a roller is effective. Prolonged use of a roller is suicide to a tank. During one field exercise, a wingman left the roller on a tank for an entire month because the unit lacked support to transport it. It took about nine months to replace or repair all the shocks and seals of the tank's suspension that were destroyed by the extra weight.

There is a major Class IX supply problem with both the plow and the roller. These systems are not reportable and can lose deadline visibility. Neither system is reportable, so we could order all the parts 02 priority, nondeadline. Even with this priority, the average shipping time for plow parts is about nine months and about a year for roller parts. Crews that cannot repair deadlined systems do not train on them. After a short time, no one in the unit is familiar with the equipment and it is ignored. Even item managers could not help us get parts faster because of the lack of emphasis on this vital equipment.

Engineer Equipment

During most of the heavy task force operations I have been involved with, engineers believed that the best breaching equipment was the MICLIC and the AVLM. The prevailing belief among armor personnel when they saw the MICLIC or AVLM being prepared for the point of breach was: "Get the plows ready, the MICLIC won't work." Engineer after-action reports from Desert Storm contain the following conclusions:

"Units placed an overreliance on the MICLIC as the answer to all their breaching problems. This was due to the ignorance of threat mine capabilities, poor MICLIC training at home station, and the general lack of an effective training device or training strategy."

"The MICLIC system suffered from several serious shortcomings. During test firings the system suffered a 50-percent failure rate."

Even when the MICLIC fires successfully, it can only clear a 100-meter-long path in an obstacle. This is excellent for small obstacles, but not for the deep obstacles found in many breaching operations. FM 90-13-1 acknowledges that the MICLIC has a "skip zone," where mines are left untouched. Also, deeply buried mines, nonpressure-fuse mines, and overpressure-resistant mines are very resilient against the MICLIC. A major advantage of tank-mounted systems is that they can keep going through an obstacle without a lengthy firing process. Since engineers cannot accomplish a breach alone, it is essential that they work closely with tankers to perform the operation.

Reduction Techniques

The possible combinations of breaching assets and methods to use them are almost unlimited. The methods I have used most are the MICLIC/plow tank combination and the plow tank/roller combination. But regardless of the method, all breaches must be the task force's or combat team's main effort. Because an attack hinges on the breach mission, every asset—including most of the ammunition, close air support, fire priority, firefinder radar, and smoke platoons—must be concentrated at this decisive point. Using these assets, the commander must build the breach fundamentals of suppress, obscure, secure, and reduce. To accomplish this, he organizes the breaching unit into support, breach, and assault forces. When forming these forces, he must retain unit integrity and the existing chain of command.

Success hinges on keeping those platoons or companies intact under the maneuver commander, with the engineer commander as a right-hand man. When teams are in place and firing on the enemy, the support force commander calls for indirect fires and smoke missions. His mission dictates a good view of the battlefield, which gives him the best overall view to control these fires. Artillery and armor battalion mortars must be used to the fullest for fires and smoke missions. If they fail, tanks can fire volleys of high-explosive antitank rounds in front of enemy positions to create obscuration from soil. When the effects of all these systems peak, then and only then has the force set the conditions for commitment of the breach force. Regardless of the breaching method used, the end state must be the same: The maneuver force must get through a breach quickly to continue the assault and kill the enemy.

MICLIC/Plow Tank Method

After setting the conditions for commitment of the breach force, most engineers I've observed have moved the plow tank in position in front of the obstacle with the MICLIC directly behind it. In this technique, the MICLIC is the reduction asset and the plow is the proofing system. This technique provides some cover for the MICLIC crew while they are exposed to the enemy for the minutes it takes to raise, lock, fire, and detonate a charge. A well-trained tank crew also may help set up the engineers for success on the MICLIC launch by halting at the correct stand-off distance for launching and then positioning the tank perpendicular to the obstacle. After the explosion, the tank is in position to plow through the obstacle while the enemy is still disorganized from the detonation. While the MICLIC crew is getting ready to fire, the tank crew can drop the plow and verify that it is locked down. Once the rocket is fired, the obstacle is quickly reduced.

From a tanker's perspective this technique works, but it includes actions that could lead to failure for the breach force. It is critical that the attacker place a large volume of fire on the defender during the entire mission. However, with the plow tank directly in front of the breach, where our obscuration smoke and burning enemy vehicles may obscure the enemy's view, his main gun is effectively taken out of the fight. When the enemy sees the tank and MICLIC at the point of breach, he has a large target (two vehicles end to end) to aim at for several minutes. This is when everyone learns if the suppressive fire was effective or not. During this time, enemy forces can destroy the attacker's best tools for getting through the breach and deny the commander the best place to enter the lane. Even if the plow tank crew survives the enemy fire, a 25-year-old friendly vehicle with a misfire rate of about 50 percent is about to fire almost a ton of high explosives over their heads.

Immediately after the MICLIC fires, the plow tank begins to move through what is left of the wire and mines. The tank must go on a straight path, because it cannot turn without risking damage to the plow tines. The turret should be traversed to the left, so that any mine blast to the front does not damage the gun tube. If the turret is traversed to the right, the tank commander is farther back and has problems seeing the front to determine the far edge of the obstacle. Some crews install a makeshift wire-cutting device in the center of the blades. This allows them to cut and push away the wire, so it won't be dragged along. The wire won't stop the tank, but it could damage the plow by cutting the nylon lifting straps or getting caught in the track.

Armor and engineer doctrine on plow tank employment present the extremes of plow performance, while the best answer lies somewhere in between. Many armor and joint doctrinal publications state that the crew can drop the plow blade as little as 10 meters in front of the obstacle and then plow up to 10 miles per hour (see FM 71-2). (The M1's speedometer is in kilometers per hour.) The tank platoon Army Training and Evaluation Program lists no standards. Engineer manuals bring the blade drop point back to 100 meters with a speed below 10 kilometers per hour (see FM 20-32). Both specifications are partly right and partly wrong.

The only way to be sure the depth setting and plow speed are effective is to conduct a rehearsal. By plowing two or three practice lanes in the area of

operations with conditions similar to those at the obstacle, the commander can determine the best depth and speed to dig out mines and produce sufficient spoil to push them to the sides. The blade drop point and speed also can be refined during a rehearsal. It is best to drop the blade before beginning to move to avoid possible damage to the plow tines. After the plow creates a lane, the roller follows the same path through the obstacle to detonate any remaining mines. The roller should travel at the same speed as the plow, with the gun tube to the left, and then exit the lane to the right in a hasty defensive position. In theory, each roller can withstand two mine hits and continue to effectively proof the lane. Regardless of the method used, several systems must work together to breach, proof, and mark lanes.

A plow can dig down to 8, 10, or 12 inches. The depth must be set before the mission begins and is based on ground conditions (the softer the soil, the deeper the setting). The depth is critical, as is installation of the plow's moldboards, which force spoil farther to the sides of the tank and create a wider lane while preventing mines from falling back into the lane. After the tank commander is sure that the plows have plowed beyond the far edge of the obstacle, the tank must briefly stop, back up, and raise the plow. This only takes a few seconds. Then the plow tank should move to the left of the breach lane and remain in a suppressive fire position. Because the plow control cables run through the driver's right vision block, he should drive to the left so he can see where he is going. Meanwhile, the gunner traverses and looks for targets.

Although the lane is now well established, it is not complete until it is marked. The MICLIC and the path dug by the plow are very distinctive, so the immediate concern is to mark the exact entrance and exit. VS-17 panels are excellent markers at each end. We used the red side on the right and orange on the left. The exit point is the most critical under fire, because many combat vehicles turn off too early in training and run into the minefield. At night, plastic water bottles filled with chemical light fluid enhance the VS-17s. We used markers called "tippy toms" to mark the left handrail of the lane because engineers can throw them out as they move through, but they usually are not very useful after the path is dug. Any initial method that clearly marks the entrance, exit, and path of the lane is satisfactory but should be continually improved for follow-on units (see FM 90-13-1, Appendix E).

Plow/Roller Tank Method

When tank units train to reduce obstacles without a MICLIC or AVLM, they use only a plow and roller. They follow the basic tenants of breaching as with the MICLIC/plow combination, but this method uses the plow to reduce and the roller to proof. Without a roller, tank units are forced to drive a "Hollywood" tank through the obstacle first to proof the lane. It is a grim job, but if the tank doesn't hit a mine, then the lane is proofed. Regardless of which reduction/proofing combination the commander uses, the plowing portion is almost identical to the process described for the MICLIC/plow combination. The only difference is in how the plow tank begins its mission. When terrain allows, a plow tank is most effective if it remains behind an intervisibility line while conditions are set for the breach. The commander can talk directly to the tank commander and position him directly in front of the desired breach point, so that when he orders the plow forward it quickly drives straight to it. This is another instance where doctrine falls apart. Determining the blade drop point and tank speed may seem simple, but they drastically affect the quality of the lane.

Synopsis

In heavy-force breaching operations, the maneuver commander must synchronize every available BOS to set the conditions for a successful breach and continued attack. No one system or branch can accomplish this mission without direct involvement and assistance from others. A major problem facing the combined arms team today is a lack of understanding of the common doctrine in FM 90-13-1 on how to execute this mission. The primary soldiers in a breach are tankers and engineers, but our schools teach different execution methods. Then, when we come together in the field to plan and execute a mission, the officers disagree on exactly what to do.

To eliminate this confusion, we must develop more effective combined arms doctrine and TTPs for obstacle reduction. If we begin by locking a group of tanker sergeants and captains in a room with their sapper counterparts, they may be able to find some common ground before the next balloon goes up. Common techniques will allow tankers and engineers to complement each other in a combined arms breach and be reinforced by every available BOS. Through combined TTP development, refinement, implementation, and training, we can set the conditions for a successful combined effort of all BOS elements on the battlefield. As individuals, or individual units, we can do many great things. Acting together as a cohesive team with common doctrine, we can accomplish anything—even an operation as demanding as a breach.

Captain Erdley is working on a master's degree in engineering management at the University of Missouri-Rolla. He has served as a tank platoon leader, executive officer, battalion maintenance officer, and S1 for 3-67 Armor in 2d Armored Division and 4th Infantry Division (Mechanized). He is a graduate of the Airborne, Air Assault, Armor Officers Basic, and Engineer Officers Advanced Courses. CPT Erdley is a 1994 Distinguished Military Graduate of Lehigh University, Bethlehem, Pennsylvania.