INNOVATIVE THINKING:
Looking behind
2 look AHEAD

By Maj. Timothy Heck

Author’s Note: Thanks to Margaret Harrison at Joint Forces Staff College, Col. William Wyman, and H.G.W. Davie for source material and translation assistance. Thanks to Maj. Craig Pachlhofer (USAF) for his editorial input and advice.

Innovation remains a buzz word throughout modern military culture. Typically, the notion of innovation carries a requirement to develop new weapons, gadgets or munitions. However, innovation begins in the cognitive domain. Ideas are the birthplace for creating new solutions to old problems or finding new uses for old tools. When exploring ideas, reviewing the past, even analyzing a competitors’ tactics, may provide readily available solutions without the necessity to procure new hardware. Reviewing the historical uses of Soviet and U.S. artillery brings to light the possibility of adding new tactics, techniques and procedures (TTP) to a commander’s playbook: artillery as a breaching tool.

The use of artillery to clear obstacles has a lengthy history. In the American Civil War, large-caliber mortars and siege artillery were used during the Siege of Petersburg, Va., by Union forces to reduce Confederate earthworks and facilitate movement.1 Similarly, the use of artillery to clear wire obstacles during World War I became standard practice and part of the lifting barrage. As demonstrated on the Somme in 1916, this was not always successful, but remained a crucial element in attacks later in the war.2 The Soviets’ historical artillery use brings more specific examples.

During the Great Patriotic War, the primary Soviet artillery manual, which is a combination of doctrinal instruction and how-to on artillery procedures, includes instructions on the use of artillery for minefield reconnaissance and breaching.3 Giving indication of its use, former German officer Armin Scheiderbauer refers to the technique in his chapter on the Soviet Vistula-Oder offensive but, being on the receiving end, provides little in the way of details.4 In the 1970s, Bernard F. Halloran described the method as “costly [but] generally effective.”5 In August 1975, Col. V. Selyavin published an article in Soviet Military Review explaining Soviet artillery procedures for breaching minefields.6 During the Cold War, the U.S. Army’s FM-100-2-1 The Soviet Army: Operations and Tactics lists artillery as part of Soviet tactics to breach minefields at the division and below level.7 The premise, that indirect fire can

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clear obstacles for maneuver forces, has historical precedent, but current doctrine barely mentions this idea as a possibility.

A review of current joint doctrine reveals artillery support in breaching operations is limited to providing suppressive and obscuring Fires. Breaching remains largely the domain of engineer units. A review of Engineer magazine contemporary to Selyavin’s instructions reveals multiple articles where artillery is used to suppress or obscure an obstacle but only one which briefly introduces the idea of reducing a minefield with artillery:

Some U.S. commanders, realizing that they cannot rely on a capability that does not exist, have developed expedient breaching methods such as pushing disabled vehicles through the minefield, aiming unmanned vehicles at the objective, using engineer equipment to scarp the ground or employing indirect Fires in an attempt to provide a safe lane.\(^8\)

**Joint Publication 3-15: Barriers, Obstacles, and Mine Warfare for Joint Operations** reiterates the importance of suppression and obscuration but does not assign artillery a role in reducing minefields in combined arms breaching.\(^9\) Similarly, **JP 3-34: Joint Engineering Operations** discusses the importance of integrating engineering operations with fire and maneuver but does not express the complementary nature artillery can play in breaching minefields.\(^10\)

A modern-day American or NATO maneuver unit, when compared to Soviet units, is significantly lighter in terms of indirect fire assets. Nevertheless, the premise has potential application today should engineer assets not be available and bypassing the obstacle not be an option.

For this historic, yet innovative, idea to take hold, the following example describes how to use artillery to breach a minefield. Golf Company, 2nd Battalion, 6th Marines (G/2/6), a motorized Marine infantry company, is operating in restrictive terrain with limited maneuver space for their vehicles. G/2/6 is supported by an attached fire support team but lacks engineer assets. G/2/6 faces a Soviet-style enemy using Warsaw Pact equipment and doctrine. The enemy is known to follow Soviet templates for mine emplacement, with typical anti-tank minefields being placed on a 200-300 meter front by 60-120 meters in depth.\(^11\)

**Scenario**

While conducting a deliberate movement toward an objective, G/2/6 loses one vehicle when it encounters an unexpected anti-tank minefield of indeterminate size and density. Due to terrain, G/2/6 is unable to bypass the minefield. Lacking attached engineer assets, the company commander asks his fire support team to breach using indirect fire. The company needs a lane 50 meters in width and an unknown depth along its route of march. The commander’s primary concern is anti-tank mines.

In order to conduct a minefield clearance using artillery, two distinct phases occur. The first is minefield reconnaissance, in or-

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Phase 1: Minefield reconnaissance

In Phase 1, the fire support team finds an observation post or asset that allows for observation of the entire suspected minefield. This could be from a physical observation post or through the use of available technology such as drones or aircraft with downlink capabilities. From this vantage point, the forward observer (FO) accurately plots the minefield’s known or suspected boundaries, estimated depth and G/2/6’s desired route of march. This becomes the breeching lane.

The FO requests one round in-order to determine the depth of the minefield. The second is breaching the minefield.

**Phase 2: Breaching the minefield**

Returning to the mouth of the breach lane, the battery fires using time fuzes set to burst shells approximately 3 to 5 meters above the ground. Time fuzes produce downward shock waves and fragmentation in order to detonate the mines. After firing a battery 8 at each range, the adjust gun fires two or three check rounds while the FO observes for mine detonations. If none are observed, that segment is considered clear and

<table>
<thead>
<tr>
<th>Range</th>
<th>Firing Unit</th>
<th>Number of Rounds</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td>Battery</td>
<td>8-16</td>
<td>Minefield Clearing</td>
</tr>
<tr>
<td>X</td>
<td>Adjusting Piece</td>
<td>2–3 Rounds</td>
<td>Confirmation of Clearing</td>
</tr>
<tr>
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<td>8-16</td>
<td>Minefield Clearing</td>
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<td>Adjusting Piece</td>
<td>2–3 Rounds</td>
<td>Confirmation of Clearing</td>
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<td>Adjusting Piece</td>
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Table 2. Example sequence of phase 2 fire (155 mm). (Judy Oman/FCoE CPG)
the battery shifts fire to the next point. This process is repeated until the breach lane is clear. See Table 1 for an example sequence of fire (Figure 1).

This example sequence of fire is designed around the 155 mm. This TTP is not limited to 155 mm; however, the ranges and rounds will vary for different caliber of artillery or even mortars.

**Risks**

Using artillery to breach a minefield is not without risk to the maneuver element or the firing unit.

i. By deliberately breaching the minefield using indirect Fires, the company risks losing the element of surprise. As such, the use of artillery eliminates the advantage of surprise inherent in an in-stride breach.\(^{12}\)

ii. Enemy obstacles, including minefields, are likely under observation, putting halted elements at increased risk of being targeted by enemy direct and indirect assets.

iii. An enemy with counter-battery capabilities poses a significant risk to the firing battery.

iv. Ammunition consumption is quite high (between 90 and 180 rounds per 50 m increment of breach), possibly reducing the battery’s ability to support follow-on calls for fire.

Using this TTP provides a foundational basis for an alternative means for fire supporters to assist maneuver commanders. Though draining on ammunition stocks and time-intensive, the use of artillery to breach a minefield gives maneuver commanders an alternative to risking their men and machines forcing a breach when traditional methods are unavailable or undesirable. Conversely, units observing Russian forces firing similar patterns into known or likely allied obstacles and minefields have an indication that the Russian maneuver unit lacks organic engineer support.

Innovation may mean more than the newest weapon, hardware or munition. In this case, an idea from the past sparked a new way to use artillery. This idea clearly is not meant to replace all other uses for artillery. Instead, this TTP offers fire supporters an additional tool to support maneuver commanders. Much like this example, the warfighter may benefit from reviewing the historical uses of their current tools to identify new uses. The limited number of tools available to commanders does not prohibit using ideas to innovate TTP.


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**U.S. Army Soldiers assigned to Brigade Engineer Battalion, 1st Brigade Combat Team, 1st Cavalry Division and Observer Coach Trainers assigned to Operations Group Sidewinder Team observe a mushroom cloud form from a Mine Clearing Line Charge detonation during Decisive Action Rotation 18-02 at Fort Irwin, Calif., Nov. 29, 2017. (U.S. Army photo by Sgt. Nathan Franco, Operations Group, National Training Center)**

\(^{12}\) JP 3-15, pg. III-5.