IF FIRES ARE THE ANSWER, WHAT IS THE QUESTION?

Not obstacles…

Russian doctrine is heavily reliant on the use of preemptive and concurrent indirect fires: if a tactical, operational or even strategic question on the battlefield can't be answered with fires, then the question is simply wrong[11]. This over dependence directly influences the employment of combat engineers and challenges the Western perception of friendly and enemy mobility and counter-mobility support. The often-observed integration of drones and fires has led to the grim conclusion that there is no sanctuary on the modern battlefield – concealment, dispersion and digging seem the only escape.

The Russian use of mines in Ukraine stretches from structured minefields, employed as part of combined obstacles, to much more opportunistic employment, often where you would least expect it – the latter much more prevalently the case. In most examples mined obstacles are a mix of anti-personnel and anti-tank mines. The opportunistically mined obstacles are used as a means of short-term area denial and are left under little or no observation, often unmarked and left behind when units move on (in advance and in withdrawal)[12].

Figure 3. Hasty emplacement of AT mines by AFRF (Mail Online, Oct 22)

Larger combined obstacle belts are held under observation by drones and units in fortified positions. The so-called Wagner-line is the best example with multiple rows of dragons' teeth, antitank ditches, mixed minefields and defensive positions for dismounted infantry. The extent, uniformity and placement near the Russian border suggest a focus on political messaging and morale boosting. The main advantage seems to be the ability to mass endless artillery on the Russian side of the border, which would make both preparatory fires and counter-battery fires an attack on Russian soil. From an engineer point of view the Wagner line leaves much to be desired as the barrier value does not justify the time and resources spent. Only when the presumably vast artillery support is factored in does it make sense. So how does NATO counter this and is our doctrine adequate? In short - yes. Combined arms manoeuvre conducted in accordance with doctrine and by a well-trained force is the simple answer, which requires deliberate action and a concentration of (enabling) forces delivering effects in close and deep. The Russian adaptation of non-contact warfare[13] has blurred the lines between tactical and operational (kinetic) effects on the battlefield and this development should adapted by NATO at the tactical level as well, employing a multi-domain mindset where possible.

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[11] Online article: Russia is now reliant on heavy artillery, The Conversation, Mar 22

[12] In June 2023, it was published in open-source media that Russian troops were taking major casualties as they were forced to withdraw through their own minefields in Makarivka and Storozheve

[13] The Russian way of war in Ukraine: A military approach nine decades in the making (Randy Noorman, Modern War Institute, 15 Jun 2023)

In Ukraine the Russians use mines and obstacles by trained engineer units as well as less trained units. Mined obstacles are not meant to block, turn, fix or delay, but to act as a tripwire for employment of artillery and not necessarily in support of an infantry fighting position. Indirect fires are not necessarily called on spotted units, but indiscriminately and over a large area around the "tripwire", when activated. Opportunistic mined obstacles, as well as an abundance of UXO's, are to be expected everywhere, which requires an increased awareness for every soldier – just like protecting the force in an IED-seeded environment is a balancing act between using engineers and awareness as a basic skill. The Ukrainians have trained manual, mechanical and explosive breaching methods and employ all regularly – the pros and cons of each remain unchanged[14]. Effectiveness and speed of explosive breaching is preferred, but only if carried out as a combined arms maneuver. Breaching obstacles and wide gap crossing is only successful if planned and carried out according to doctrine – which requires training and engineer support. Training must be realistic; it must include all elements of maneuver, large and complicated obstacles, an un-simplified opponent and include cycles of darkness. Many technical improvements can be made, including deception by autonomous systems emitting electronic and acoustic signals on the ground, decentralized drone-jammers and an integrated sea, air and land capable autonomous system to recce and identify obstacles through machine learning and artificial intelligence and identifying possibilities for bypassing, marking, breaching and crossing an obstacle.


Figure 4. A Ukrainian Pioneer manually clearing mines (The Economist, Jul 2023)

Conversely the Russian standard procedure when encountering an obstacle is to use indirect fires on positions up to 6 km behind the obstacle before and while breaching[15]. Rather than waiting for engineers to clear a path, they breach by powering through with armored vehicles. As vehicles are immobilized by exploding mines, new vehicles are sent in either to push the immobilized vehicle forward or by trying new paths through the obstacle field Combined with limited to no dispersion of the units trying to cross the obstacle, this massing of troops does offer a fixed target, though not for as long as one might assume. Limited understanding of combined arms maneuver is mitigated by acceptance of the risk to personnel and materiel in order to gain speed and momentum. The Ukrainians have adapted their procedures to counter this Russian doctrine and are placing own positions up to 10 km away from combined obstacles[16] and use mainly drones for observation rather than risking personnel[17].

The Russian approach to breaching decreases the planned worth of simple minefields. Little time is wasted reorganising forces in order to breach an obstacle, meaning size, complexity and overwatch become essential. Obstacles must be deep and combined in order to fix the enemy and must stand under layered direct and indirect (drone) observation and IDF cover. Fires must be precise in order to target single vehicles while minimizing damage to the obstacle itself, maintaining barrier value.

Cover, concealment and dispersion are characteristics of stationary fighting – and a stationary target is what the artillery needs. So if moving makes you a harder target, the engineer units providing mobility support should be the first on the list when composing a capable NATO force. The German "Division 2025",

[14] Interview with German Engineer School, LTC in charge of training UKR soldiers in combat engineering.
[15] Interview with UK MOD, Anecdotal evidence based of observations in theatre.
[16] Le Monde, Jun 23
[17] Interview with UK MOD

future yardstick of the Bundeswehr, leaves something to be desired with an unfavourable engineer-to-infantry ratio of two armoured engineer companies to two infantry and armoured battalions. Will the battalions take turns being brought to a halt because every other will have little or no engineers in support? A battalion with no close engineer mobility support will be of little use on NATOs eastern flank.

Planning and training large-scale combined arms engineer-lead maneuvers in a NATO-setting will require a high level of interoperability within the engineer branch as engineers are spread thin in all contributing countries, which means that not only will the complexity of the maneuver be challenging to master, but also the multinational engineer effort. A look at the NATO New Force Model shows a lot of flags in each country, which translates to a lot of different equipment, engineer capabilities and training. Engineers will quickly become a scarce resource in battle on NATOs eastern flank and concentrating troops for an obstacle crossing will require multinational interoperability, as only few countries will have enough engineer capabilities to enable large scale maneuvers.

CONCLUSIONS

- **Combined arms manoeuvre**. Combined arms obstacle crossing is a deliberate action, which requires planning, training and the means to fight close and deep.
- **Training.** must be realistic; it must include all elements of maneuver, large and complicated obstacles, an un-simplified opponent and include cycles of darkness.
- **Non-contact warfare.** Has evolved and engineers need to evolve with it, both technological advances as well as doctrine.
- **Opportunistic mined obstacles and UXO**. Expected everywhere and countering them is a balancing act between using engineers and awareness as a basic skill.
- **Engineers resource**. Is scarce and interoperability will be as important as the ability to conduct combined arms maneuvers.