



Smoke and dust obscure the battlefield as camouflaged M2 Bradley infantry fighting vehicles support the final assault by members of the 2nd Battalion, 41st Infantry, 2nd Armored Division, during a company team attack exercise on 27 January 1986 at the Shell Point training area on Fort Hood, Texas. (Photo by William U. Rosenmund, courtesy of the National Archives)

Invest in Battlefield Obscuration to Win During Large-Scale Combat Operations

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Russian and Ukrainian tactics in the ongoing Ukraine-Russia conflict highlight the need for the U.S. Army to revive battlefield obscurity.¹ Two types of offensive operations—the combined arms breach and the wet-gap crossing—have shown a lack of obscurity capability, understanding, and use in the Russian and Ukrainian armies. This obscurity gap resulted in debilitating casualties on both sides, delaying progress or causing mission failure. It is prudent for the U.S. Army to learn from its tactics in this ongoing conflict and apply these lessons through doctrinal, organizational, and materiel investments.

When Russia seized more Ukrainian territory in February 2022, Russia quickly consolidated gains and constructed defenses, including a labyrinth of minefields, wire obstacles, and trenches.² These defenses are reminiscent of World War I when the battle lines stabilized and forces on both sides settled into complex defenses in depth across a wide battlefield. To overcome these defenses, Ukrainian forces attempted to breach the Russian lines in multiple locations with limited success. The Ukrainian military suffered casualties from these offensive operations because the Russians were able to observe their movement and mass a variety of fires, including antitank guided missiles, cannons, mortars, and heavy machine guns. The Ukrainians did not employ vast quantities of smoke, white phosphorus, or other means to blind Russian defenders costing Ukrainian lives in the breach.

Similarly, when Russian forces employ their bridging assets, they similarly do not mass obscurity to conceal their movements or enable maneuver. In the spring of 2022, Russia attempted to cross the Donets River using wet-gap crossing techniques. Among the list of failures in their operational planning, the Russian use of obscurity was minimal. It was reported that the Russians suffered the destruction of a battalion during the operation due to failed planning and execution.³ Part of this can be ascribed to the lack of appropriate obscurity that would have temporarily blinded Ukrainian ground and air assets.

A key component missing from Ukraine, Russia, and the U.S. Army's tool kit is a panoply of obscurity means that blunts an adversary's observation capability. To affect large-scale combat operations (LSCO) in the current operational environment, the Army must re-evaluate its position on battlefield obscurants to enable

complex operations and reduce casualties. Conducting a breach on a heavily defended line requires adequate time to reduce obstacles and proof a cleared lane, whether mounted or dismounted. Obscurity is a critical component, providing the breaching force concealment to perform this complicated operation while maintaining combat power. Without an array of obscurity tools, the Army will suffer the same high casualty rates and potential mission failure that Ukraine and Russia suffered in their ongoing conflict.

Current State

The Army has relied on the same breaching fundamentals for decades. These five fundamentals are suppress, obscure, secure, reduce, and assault.⁴ Although these fundamentals have not changed, the tools available for each have. Over the last few decades, the Army has divested obscurity capabilities due to myriad factors. These include the loss of Chemical Corps organizations, including smoke platoons, smoke producing equipment, and obscurity-related doctrine. Currently, the Army relies on mortar and cannon delivered obscurants for area coverage and vehicle mounted systems for individual armor systems (Stryker, Bradley, and Abrams platforms). Unfortunately, these limited capabilities are not enough to succeed in LSCO.

The obscurants available to Army combat units at echelon are at a nadir. At the platoon level, obscurants include hand-employed smoke grenades and grenade launcher (M320) smoke rounds.⁵ At the company and battalion levels, the tool kit is not much larger; it only adds mortar (60 mm, 81 mm, and 120 mm) white phosphorus rounds.⁶ At the brigade level, 105 mm and 155 mm cannon artillery can provide smoke rounds, but these compete for other, arguably equally important high explosive missions.⁷ Individual vehicle systems use a vehicle obscurant smoke system to obscure their location, but these systems only screen a single vehicle and must be reloaded after one use.⁸ These handheld, small arms, and indirect ammunition are a good start, but commanders need more capability to succeed in LSCO.

Although this appears to be a wealth of obscurity, it is not. These are most of the widely available obscurants available to Army combat units, and they are not enough to succeed in LSCO. One concern for the mortar and cannon obscurants is they are meant

to be used in a two-dimensional fashion. This means that they are employed between friendly and enemy units. They cannot obscure friendly units from aerial observation. Another concern at the tactical level with these tools is the binary choice commanders must make. For every cannon-delivered smoke round, a high-explosive round is not being directed against enemy equipment or troops. The same applies to hand grenades, grenade launcher rounds, and mortar rounds. The United States does not use white phosphorous rounds against troop formations due to a convention on certain conventional weapons.⁹

As seen in Russia's wet-gap crossing operation, there is a need for a ground-based, persistent, area obscuration solution. Dated solutions such as the M56 Coyote and M58 Wolf provided the capability to obscure visual and infrared observation. However, they are old systems and are not widely available to combat units. The Army does have the Screening Observation Module (SOM) that is more capable than the M56 Coyote but is not widely available.¹⁰ Compounding the availability concerns, the SOM does not produce a large enough cloud for an extended length of time. The SOM can only screen half an acre for twelve minutes before it needs refueling.¹¹ The M56 was capable of screening visually for ninety minutes or against infrared for thirty minutes across a much larger area. Further, the SOM's weight at sixty-four pounds is too large for dismounted operations. The Army needs more tools to enable obscuration at echelon supporting critical operations like combined arms breaches and wet-gap crossings.

Beyond the limited tools available, new technologies complicate the issue. Again, the Ukraine-Russia War provides salient examples of the need for obscuration. The proliferation of unmanned aircraft systems (UAS) has exacerbated equipment losses and casualties. Russia has been able to field UASs to observe, report, and destroy Ukrainian forces.¹² A single kamikaze-style UAS has been capable of destroying main battle tanks at an alarmingly low cost. And they are effective attacking the least protected part of the tank: the top. Due to Russia's massing of observation platforms, Ukraine changed its tactics to using dismounted infantry to clear mines only at night.¹³ This methodical means of breaching will not gain ground quickly and goes against combined arms theory. And Russia is not the only U.S. adversary in the UAS game.

Iran has been supplying Russia with drones as well because Russia has been unable to keep up with its own demand.¹⁴ Iran has been reported to have a well-established production capacity that not only fills its need but is also capable of supplying others.¹⁵ Iran has been reported to support other potential adversaries, including Houthis in Yemen.¹⁶ It is probable that the United States or its allies could face a similar scenario where a large quantity of observation assets can observe and attack breaching operations.

Obscuration is needed for other critical battlefield operations. Wet-gap crossings are arguably more complex and difficult than a combined arms breach. A brigade combat team owns all the capabilities to conduct a combined arms breach; a wet-gap crossing requires more capability, making it a division or corps operation. Not only does it require more capability, but it also takes more time to accomplish. The time required to conduct a wet-gap crossing could be measured in hours or days whereas a combined arms breach would be measured in minutes. Erecting an assault float bridge is a time-consuming process that happens without natural cover as vehicles cross.

Many of the currently fielded counter-UAS focus on destroying the UAS or breaking one of its communication links. As shown at the 2023 Association of the United States Army annual conference, many vendors are attempting to sell the military counter-UAS

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systems.¹⁷ The Army has fielded interim solutions including fixed site, mounted, and dismounted/handheld systems.¹⁸ These are necessary because obscuring an operational environment all day, every day is unreasonable. However, these solutions appear to be the main effort of the Army's counter-UAS efforts. The Army needs to expand counter-UAS solutions including obscuration means and methods.

Commanders do not have enough material solutions to enable a multicorps conflict in any geographic combatant command. Near-peer threats loom large, and the potential for LSCO has increased. It is time that the Army recognizes this gap and begins to fill it.

Solutions

Using the doctrine, organization, training, materiel, leadership and education, personnel, facilities, and policy (DOTMLPF-P) model, several recommendations can improve the current state of the Army to better prepare for LSCO.

Doctrine. The Army needs to adopt obscuration in its lexicon more formally. A potential solution could be the addition of obscure as a tactical mission

Ukraine's Ministry of Defence shared satellite images 11 May 2022 of destroyed pontoon bridges and military vehicles littering the banks the Siverskiy Donetsk River, an area Russia previously controlled about twenty-five miles east of Kharkiv. The bridges were destroyed to thwart a Russian advance. (Photo courtesy of the Defence of Ukraine via X)

task in Field Manual (FM) 1-02.2, *Military Symbols*. As the foundational field manual describing operational terms and graphics, a friendly focused tactical mission task of obscure could be defined as "a tactical mission task in which the unit employs all available means to conceal the location of friendly units and/or terrain features from enemy observation." An enemy focused task to obscure could be "a tactical mission task that denies the enemy the ability to locate friendly forces and target them with direct and indirect fires." Either of these would provide commanders the ability to tactically direct assets to preserve combat power through denying enemy observation. Without a formally defining and codifying obscure as a tactical task, commanders will assume it is being incorporated. If it were formally defined, commanders would

focus combat power, use it as a shaping effort, and enable critical events like wet-gap crossings and combined arms breaches.

Further, the Army needs to revive significant elements of FM 3-101-1, *Smoke Squad/Platoon Operations*.¹⁹ This manual described battlefield applications of smoke (e.g., obscuring, screening, protecting, and marking) and visibility criteria (e.g., haze, blanket, and curtain). When thinking of using obscuration methods, commanders and staffs must be sure to provide a clear task and purpose. At times, there may even need to be multiple tasks and purposes to distinguish the effect of the obscuration such as facilitating movement to a position or enabling an assault element.²⁰ Combined with a formal definition of obscuration, these doctrinal definitions will enable combat formations to employ the tools appropriately.

Organization. At times, organizations are thought of as a magic wand. Create an organization to do something, and it will be done. Caution must be maintained, especially considering the latest Army structure changes that Secretary Christine Wormuth recently enacted.²¹ It is true that the Chemical Corps, at one time, trained its forces to provide obscuration. The Chemical Corps no longer includes smoke as part of its mission. The proponent of FM 3-101-1 was the Chemical Corps when it was published in 1994. The manual included the organization of heavy division mechanized smoke platoons, corps mechanized smoke platoons, and corps motorized smoke platoons. It is worth reevaluating the need for smoke generating units that can provide another means of battlefield obscuration as the Army continues to evaluate future needs supporting LSCO. The proliferation of UAS should encourage this look as well when evaluating the protection warfighting function.

This is not to say that the Army of the 1990s must return. With the latest change to Army structure, the Army is making greater organizational investments at the theater strategic and operational levels. With fewer tactical units available in the current force, units may need to be able to execute obscuration tasks in their current structure. It is, however, worth evaluating whether tactical units responsible for critical operations, including wet-gap crossings and mounted breaches, need additional combat power. Including a smoke squad in multirole bridge companies or in a combat

engineer company-armored are potential solutions worth investigation.

Materiel. The Army needs to evaluate the breadth of tools available to deploy, fight, and win against a near-peer adversary. Even as the Army pursues unmanned systems, the need for obscuration is paramount. As of the writing of this article, Ukrainians continue to pour manned platforms into the breach, and Russians continue to inflict high casualty rates. If the Ukrainians were inserting unmanned platforms into the breach, there is a finite quantity that they possess. Although soldiers are at a reduced risk from an unmanned platform, the regenerative capability of these platforms is not infinite. Obscuration would conceal the movements of any platform and assist in preserving combat power. They could also deceive an adversary if used at multiple breach points or crossing locations to blunt an adversary's ability to mass effects.

The Army owes it to its soldiers to find health-conscious solutions that reduce exposure risk. That is not to say that there are zero health concerns, but the Army must attempt to reasonably reduce health-related hazards. The Army must find the balance between reduced health risks and effective smoke employment. It has been known since at least 1957 that exposure to certain obscurants create health concerns.²² In 2012, the Army sought to develop high-performance smoke compositions without toxic chemicals. This research, development, testing, and evaluation continues to this day without complete solutions through the U.S. Army Combat Capabilities Development Command's Chemical Biological Center.²³ The Army needs to request additional funding to accelerate these developments. Fighting and winning in LSCO requires obscuration means and methods that preserve friendly combat power to achieve decisive action supporting campaign objectives.

Obscuration is not the only tool needed. We must apply lessons learned when improvised explosive devices became the norm during the Global War on Terrorism. Expanding on these lessons and adding the proliferation of UAS creates the need for a tool kit, not a single tool. Defeating UAS prior to its appearance, known as "left of launch," is a part of the solution.²⁴ Static camouflage nets are another needed capability. The Army must evaluate its needs when mobile to defeat myriad observation platforms to maintain combat



power. Obscuration can add to the tool kit but must not be thought of as the only tool.

Counterargument

Some might say that obscuration is antiquated. In a three-dimensional world with five warfighting domains, and increasing artificial intelligence and autonomous capabilities, they would say obscuration is a wasted investment. Money could be directed elsewhere to speed up decision-making. Although AI and autonomous capabilities need investment, obscuration is not a binary choice. The Army needs to invest in obscuration accounting for these emerging technologies. The Army will still face a shortage of critical systems, no matter if they are manned or unmanned. The preservation of combat power should drive the need to invest in battlefield obscuration tools and technologies. Although autonomous and robotic technologies remove humanity from direct harm, these systems are expensive and will be destroyed en masse.

Others might say that obscuration is unnecessary in large-scale, multidomain combat operations. The speed that they expect war to happen would outpace

A small drone flies through the smoke during a simulated chemical attack against a humvee convoy during the 86th Training Division Warrior Exercise 86-21-03 on 19 July 2021 at Fort McCoy, Wisconsin. The event marked the first time drones were incorporated into an 86th Division training exercise. (Photo by Sgt. William A. Parsons, U.S. Army)

an anachronism such as copious amounts of smoke. War will move too quickly to need prolonged obscuration times or a panoply of tools. This is also inaccurate because the Ukraine-Russia conflict displays how war bogs down temporally and becomes an attritional conflict. Obscuration is needed across the spectrum of conflict—using it at rapid speed when acting with haste as well as when conflicts slow for deliberate operations. Wet-gap crossings might not need to be full closure operations, but even rafting operations require three-dimensional obscuration to preserve combat power in the operation and for future engagements.

Conclusion

Investing in battlefield obscuration doctrine, organizations, and materiel are necessary to deploy, fit, and win in LSCO. The Army needs to identify capability

gaps in this arena to ensure it can deliver the decisive force to the decisive point. Preserving combat power should not be seen as ancillary to seizing an

objective—it is critical to it. The blood and treasure that Russia and Ukraine have shed should show the Army that it is an investment worth making. ■

Notes

- Obscuration is defined as “the employment of materials into the environment that degrade optical and/or electro-optical capabilities within select portions of the electromagnetic spectrum in order to deny acquisition by or deceive an enemy or adversary.” Army Techniques Publication 3-11.50, *Battlefield Obscuration* (U.S. Government Publishing Office [GPO], May 2014), para. 1-1.
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