Soviet Landmine Operations

Part 2

EDITOR'S NOTE: This is the second of two articles compiled from various unclassified sources and prepared by the Threat Directorate, U.S. Army Infantry School, Fort Benning, Georgia.

The first article (INFANTRY, May-June 1988, pages 27-31) dealt with types of mines and minelaying organizations. This second one covers minelaying doctrine, types of minefields, and methods of emplacement.

The Soviets believe that the key purpose of a minefield is not so much to inflict damage on attacking vehicles as to slow enemy forces and channel them into predetermined kill zones and fire sacks that are covered by massed artillery fire and long-range antitank missiles. They consider a defensive operation a temporary measure intended to gain time and consolidate forces before resuming the offense. The fewer mines emplaced in the defense, therefore, the fewer obstacles there will be to clear when returning to the attack.

The extent of minelaying will depend upon the Soviets' intentions, the tactical situation, and the engineer support available. In the same vein, the difference between a hasty and a prepared defense will be primarily a function of time. If only a temporary halt or defensive action is planned, then small protective minefields will be laid by mechanical means on the surface of the ground to facilitate their rapid recovery and reuse. If better prepared defensive measures are necessary and more time is available, then the Soviets will emplace denser, more extensive, and better camouflaged minefields. In either case, the Soviets stress the importance of covering minefields with long-range antitank weapons.

Mine warfare platoons are considered valuable assets and are used selectively. Soviet maneuver commanders commit minelaying assets first to the axes of advance that are most vulnerable to enemy counterattack. It is unreasonable, then, to expect that most maneuver battalions or companies would benefit, at least immediately, from the services of the mine warfare platoons and their minelaying equipment when assuming the defense. In setting up a prepared defense, the troops of all units are likely to be involved in preparing obstacles and laying mines.

In spite of the capability of the PMR/PMZ minelaying trailers or the GMZ tracked, armored vehicles to plant mines underground, the Soviets normally lay them on the surface, except in prepared defenses. Mechanical minelaying platoons are trained to operate under radio silence using flags and light signals for communication. They also frequently use smoke screens to obscure their actual minelaying operations from enemy observation.

Since a regimental engineer company has only limited transport capability (eight or nine general purpose trucks carrying a variety of engineer equipment), mines must be pushed forward by truck to the maneuver forces from higher levels.

The Soviets generally lay minefields in a predictable linear, parallel fashion. (An exception to this rule is scatterable minefields, whose configurations are much less predictable.) These simple minelaying practices allow relatively inexperienced personnel to emplace mines, and they also expedite both the installation and the retrieval of minefields. Bent (non-linear) mine rows are rarely used unless they are hand emplaced on a small scale.

Minefields are not normally continuous but are employed along with other obstacles and terrain features as part of a total obstacle plan. Tilt-rod mines are rarely used, because they are not compatible with high-speed, mechanized emplacement techniques. Antitamper devices and antipersonnel (AP) mines are not normally included in antitank (AT) minefields, since they would slow down recovery operations.

The Soviets occasionally speak of laying a certain number of mines per kilometer of frontage, but they are not necessarily saying that every minefield will be a kilometer in length. Rather, these figures represent the norms for mine density.

Officially approved U.S. literature distinguishes between two major forms of Soviet minefields—"hasty" and "deliberate"—but these designations are misleading and somewhat inappropriate. The implication is that a hasty minefield is one that is almost always randomly laid, with no specific pattern or density and little forethought as to how its emplacement supports the operational plans of parent or higher units.

In practice, all Soviet minefields are to some extent

"deliberate"; that is, Soviet commanders are not indiscriminate about using or placing them. They carefully calculate how minelaying assets can best be used in the total scheme of offensive or defensive operations. Unlike U.S. practice, there is little evidence that Soviet tanks, armored personnel carriers, and infantry fighting vehicles carry mines for the purpose of emplacing local hasty, protective minefields. Sub-units are dependent on parent or higher units for mine delivery and minefield protection.

A better way of distinguishing Soviet minefields is by the amount of time needed to emplace them and the different types of mines that will be found in them. For purposes of this article, therefore, minefields can be divided into two principal categories: those that are rapidly laid and those that support prepared defensive positions.

Both rapidly laid minefields and minefields that protect prepared defensive positions are marked for friendly passage. An alternate method for allowing friendly passage of a minefield is to use "controlled minefields," which can be armed and disarmed remotely.

Rapidly Laid Minefields

Rapidly laid antitank minefields in support of Soviet maneuver operations or hasty defensive positions are the ones the Soviets will most likely use on the future battlefield. Such minefields are distinguished from minefields that protect prepared defensive positions in that rapidly laid minefields are almost always laid on the surface of the ground by mechanical minelayers and normally do not include antipersonnel or tilt-rod mines.

In addition, rapidly laid minefields are usually made up of only one or two minebelts in contrast to the two or three belts used for protecting a prepared defensive position. A rapidly laid field, therefore, has fewer mines, and its overall area of coverage is smaller. The TM-62M AT mine is the one most frequently used in such fields.

A rapidly laid AT minefield supporting a hasty defensive position will contain about 500 mines per kilometer (or one every two meters) of frontage. According to Soviet combat engineer doctrine, a typical AT minefield has a frontage of 200 to 300 meters or more and a depth of 60 to 120 meters or more. Therefore, if a one-belt AT minefield 250 meters long is laid, it would contain about 125 mines. The mines are placed in three rows per belt with 20 to 40 meters between rows. The mines are separated from each other by a distance of four to five and one-half meters for anti-track mines such as the TM-62M (Figure 1).

Rapidly laid minefields are used for flank protection and hasty defense and are laid by GMZ vehicles, PMR-3/PMZ-4 trailers, or chutes.

Some Soviet engineer literature holds that it is more expedient to emplace mines in small concentrations of about 50 to 100 AT mines with a density of not more than 60 mines per 100 linear meters of minefield. Rather than lay one minefield with 300 mines covering a zone of up to 600 meters, some Soviet engineers believe it is sometimes more effective to place five minefields of about 60 AT mines in each, with gaps of 100 to 150 meters between the fields. In this way, an area of 1,000 meters or more can be covered.

The normal sequence when mechanically laying mines is for the minelayers to emplace the forwardmost belt or row first and to work back to their own defensive trenches or positions. The reasoning is that this is the safer method. If an enemy suddenly attacks, the minelayers can withdraw without risking running into a previously laid belt or row. The distance of the far boundary of the minebelt from Soviet defensive positions is determined by the maximum effective range of the available direct-fire weapons.

The boundaries for mechanically laid minefields are marked for friendly forces, and their positions are reported to subordinate, adjacent, and higher units. Records for the individual mines within a minefield can be less precise, of course, particularly if they are laid while the Soviet unit is in close contact with the enemy.

Maintaining high rates of minelaying requires an adequate number of towing vehicles, conveniently situated mine stockpile sites, and very efficient reloading operations.

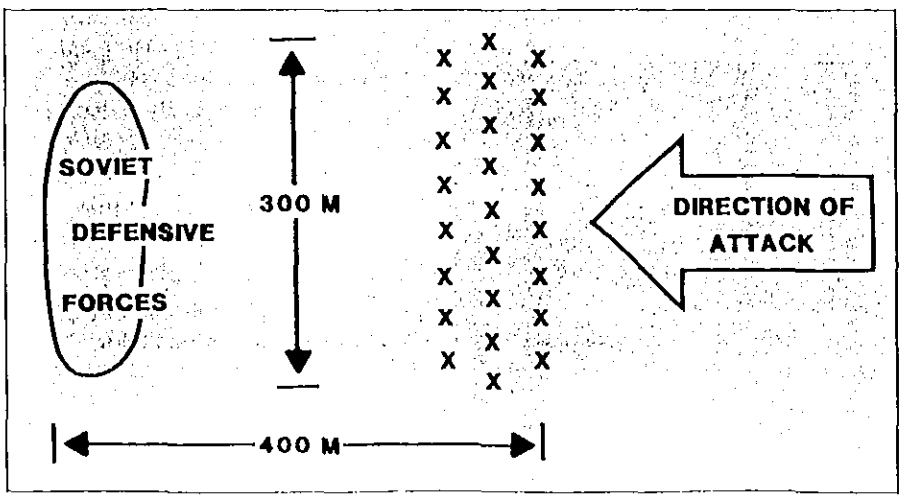

Figure 1. Rapidly laid antitank minefield.

Because of the limited number of towing vehicles organic to a minelaying platoon, additional vehicles from other units are often required, but it is unclear which units would provide them.

Minefields in Support of Defensive Positions

Minefields in support of prepared defensive positions are different from rapidly laid minefields in the following principal ways:

- Their purpose is to protect a defensive position the Soviets intend to maintain for some time. Much more time is taken to bury and camouflage the mines, and greater consideration is given to integrating the minefields into the total scheme of the obstacle/barrier plan.
- Mine density is also greater—about 550-750 anti-track mines or 300 to 400 anti-hull mines to each kilometer of minebelt frontage. Such a minefield sometimes has up to three separate belts, with the forwardmost belt extending to just within the effective range of the defending unit's long-range antitank weapons (Figure 2).
- A greater variety of mine types is represented. One out of every five AT mines is the plate-charge, anti-hull TMK-2 mine. Antipersonnel mines are also widely used, although AP and AT mines are not usually mixed within a row.

Since more time is devoted to preparing these minefields, non-engineer soldiers are often used to help combat engineers lay the mines. While most Soviet two-year conscripts are trained in the handling and emplacing of mines, they usually do not do so without engineer support and supervision. Motorized rifle or tank troops, for example, may assist the engineers when a minefield is being laid manually, but the engineers will probably be responsible for the most critical stages of the process such as fuzing and recording.

While AT mines are the primary means by which the Soviets wage mine warfare, they also use AP mines in a defensive role, particularly in support of prepared defensive positions. The AP mine obstacles then serve primarily to protect the AT mines that are placed behind them.

AP minefields can be composed of high-explosive mines (PMN and PMD-6) and fragmentation mines. In areas that are not suitable for tank operations, AP mines may constitute the majority of mixed-mine obstacles.

Soviet combat engineer doctrine prescribes the following mine densities and dimensions for AP minefields: Depending on their purpose, antipersonnel minefields can be emplaced with a front of 30 to 300 meters or more and to a depth of 10 to 50 meters or more. There are usually two to four rows in such a minefield. The distance between the mines in a row is at least one meter for high explosive mines and one to two times the lethal radius for fragmentation mines. The density of AP mines per kilometer of minefield is 2,000 to 3,000 for PMN or PMD-6 high-explosive mines and 100 to 300 for OZM-4 or POMZ-2M fragmentation mines.

Manual Emplacement of Mines

Antipersonnel minefields and other minefields that support prepared defensive positions are often manually emplaced. Although this process is much more time consuming than mechanical minelaying, it is necessary when a unit is in direct contact with the enemy and when a division's armored GMZ minelayers are not available.

Normally, the Soviets manually emplace minefields after the maneuver commander and the engineer sub-unit commander assigned to him carefully coordinate their planning. It appears that the Soviets may lay manually emplaced minefields much closer to their defensive positions than those laid mechanically.

The Soviets also manually emplace a minefield when there is no contact with the enemy and mechanical minelayers are not available or when their use is not advisable because of terrain restrictions. Soviet engineer literature claims that an engineer platoon can hand-lay between 200 and 300 AT mines in one to one and one-half hours. If more mines are delivered forward to maneuver forces, up to 600 AT mines can be laid within four or five hours after a unit goes over to the defense. This would be enough to protect up to half the frontage of a battalion from an enemy surprise attack.

Soviet doctrine states that manual emplacement is not

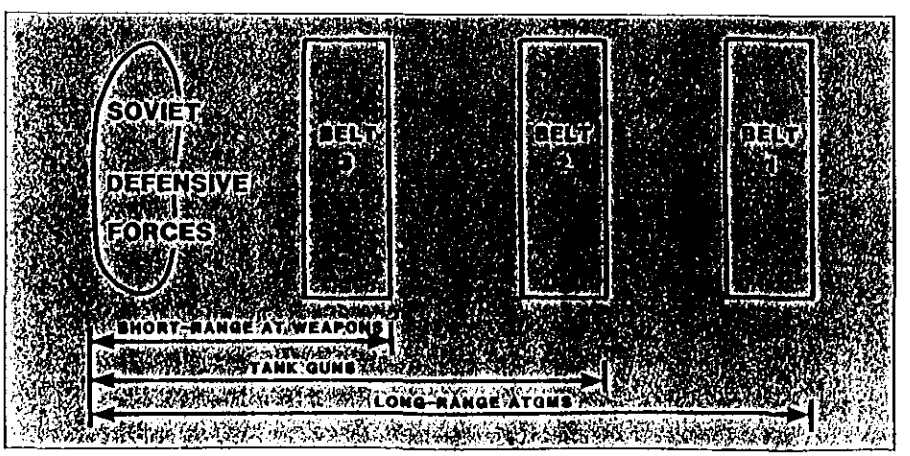

Figure 2. Minefield in support of a prepared defensive position.

to be used in maneuver-type operations or when time is short. Manual emplacement also requires a large number of personnel and cannot be used during daylight or when there is direct enemy fire. In recent years, mechanized emplacement and remote minelaying methods have become more and more prevalent.

When hand emplacing mines, the Soviets stress making careful and detailed records of the mine positions, and marking minefield boundaries for friendly forces. Mines should be recovered whenever possible. A mine warfare platoon can recover about 200 AT mines an hour.

Clustered Minefields

The Soviets sometimes manually lay mixed minefields in a clustered configuration. Since an AT mine weighs about 10 kilograms (22.2 pounds), Soviet combat engineers have developed special barrel-shaped cassettes and carts that they claim can considerably reduce the time for laying a clustered minefield. The cassette, for example, carries four AT and 12 AP mines and is rolled forward perpendicularly from the trenches.

A typical clustered minefield is sown using the TM-62M AT mine and the PMN or POMZ-2 AP mine. A cluster of three AP mines are laid around each AT mine. The distances and spaces between AT mines and rows in a clustered minefield are similar to those in a general defensive AT minefield.

Remote Minelaying

The Soviets continue to develop methods of remote minelaying that include delivery by air and artillery. Remote mining is offense oriented with maneuver forces using this technique to protect their flanks from an enemy counterattack. The Soviets write that remote minelaying can also be used against columns and areas of enemy concentration, command posts, firing positions, and other enemy objectives. The key to success in employing mines, in their view, is the element of surprise, which leads to great losses in enemy manpower and equipment.

They sometimes use helicopters fitted with minelaying chutes, particularly MI-8 "Hips," to lay an AT minefield quickly on the surface of the ground. When laying mines, helicopters fly in pairs at a speed of four to six knots and at a height of six meters above ground level. A flight of two Hips can lay a two-row minebelt of 800 AT mines in five minutes. The MI-4 "Hound" can carry 200 mines, and its chute can lay one mine every two seconds.

The principal advantages of helicopter mine delivery over ground delivery are earlier arrival at the area to be mined and greater tactical flexibility. A division commander can have mines laid rapidly to protect his flanks and can have them laid deep in the enemy's area to inhibit the enemy's movements.

One of the disadvantages of this method is that minelaying helicopters must fly at a low speed, which makes them vulnerable to approaching enemy formations. In addition, the mines are not buried, which limits their effectiveness in open terrain, and the fields may not be covered adequately by fire.

Laying Scatterable Mines

Helicopters and close support bombers can deliver scatterable antitank mines for use in an interdictory or area denial role. (The BM-27 multiple rocket launcher can also deliver scatterable antitank mines.) Scatterable mines give the maneuver elements an on-call system that can be used rapidly at any location on the battlefield. In contrast with conventional densities of 2,000 AP mines per kilometer of frontage, scatterable mines in densities of 4,000 per kilometer have been reported. The Soviets have widely used helicopter-delivered PFM-1 AP mines in Afghanistan.

Because of logistical constraints, the Soviets will not use these systems indiscriminately. Motorized and tank divisions have an organic helicopter squadron of 18 helicopters, some of which may be called upon by a division commander to perform minelaying missions. On the other hand, these helicopters will probably have a variety of other missions that will take priority over minelaying. Similarly, helicopters and air assets at front and army levels may be preoccupied with higher priority demands. Problems with marking and neutralizing scatterable and remotely laid minefields may also reduce Soviet freedom of movement and affect the use of these systems.

The perception that the Soviets will often employ extensive, echeloned minefields is inconsistent with their current doctrine, which stresses maintaining fast-paced and continuous offensive operations. Elaborate minefields were common in World War II when the Soviets were forced to fight great defensive battles with siege-like qualities, such as those of Leningrad, Stalingrad, and Kursk. The Soviets' current employment of minefields is determined by the tactical situation and the available ground assets.

The dimensions and densities of Soviet minefields are not rigidly set. While the length of a rapidly laid minefield is typically 300 meters, for example, its actual dimensions will depend more upon the particular tactical conditions and the available engineer support. If an AT minefield 100 meters long is considered sufficient to block a potential enemy flank attack, the Soviets will not waste time and resources laying a larger one.

While Soviet soldiers are not known for personal initiative, they certainly can be expected to make the most of the mines and minelaying equipment that they have.