Soviet Landmine Operations

Part 1

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

This first article deals with types of mines and minelaying organizations. The second, to appear in INFANTRY's July-August 1988 issue, will cover minelaying doctrine, types of minefields, and methods of emplacement.

Soviet minelaying capabilities in support of both offensive and defensive operations are impressive, and current Soviet minelaying practices reflect the fluid nature of modern warfare with its emphasis on maintaining fast-paced, continuous offensive operations and high rates of advance.

Although engineer minelaying units are found at all echelons down to and including the regiment, the Soviets will not waste their time and resources laying minefields beyond what they consider necessary. On the modern battlefield, therefore, the Soviets will rarely employ the kind of extensively prepared minefields that were common to many of the great World War II defensive battles.

Accordingly, engineer minelaying sub-units operating in mobile obstacle detachments use mechanical minelaying equipment to emplace minefields rapidly to support a unit's maneuver operations or to protect its flanks. More often than not, these minefields are composed primarily of antitank (AT) mines laid on the surface so that they can be quickly emplaced and easily recovered.

The following are the antipersonnel (AP) and antitank mines most commonly used in the Soviet Army:

Antipersonnel Mines

POMZ-2 and POMZ-2M AP Fragmentation Mines. The POMZ-2 stake mine resembles a fragmentation hand grenade mounted on a stake. The mine contains six rows of metal fragments (the body) propelled by a 750-gram explosive charge. The mine is not internally threaded to accept a fuze.

The newer version, the POMZ-2M, a post-World War II design, uses a modified fuzewell that is threaded to accept externally threaded fuzes, and the rows of metal fragments on the POMZ-2M are reduced to five.

The lethal radius of both mines is about 25 meters. The POMZ-2 is normally employed in groups of at least four mines equipped with trip wires, but it can also be employed individually.

PMN AP Blast Mine. The PMN antipersonnel mine is one of the most common Soviet AP mines and has been employed in Vietnam, in Afghanistan, and on the East German border. The casing is made of duroplastic and has openings for inserting the firing mechanism and priming charge. The top half of the mine case is a rubber mantle secured by a metal clasp, and the case houses a spring-driven striker assembly. This mine is equipped with a delay-arming mechanism located on the side of the mine in the firing assembly. The main charge is 0.237 kilograms of cast TNT, and the PMN has a lethal radius of 10 to 15 meters.

This mine actuates when pressure on the top forces a retaining wall down until an opening in the wall aligns with the striker, allowing the striker to be driven by the spring against the percussion cap, which starts the firing chain.

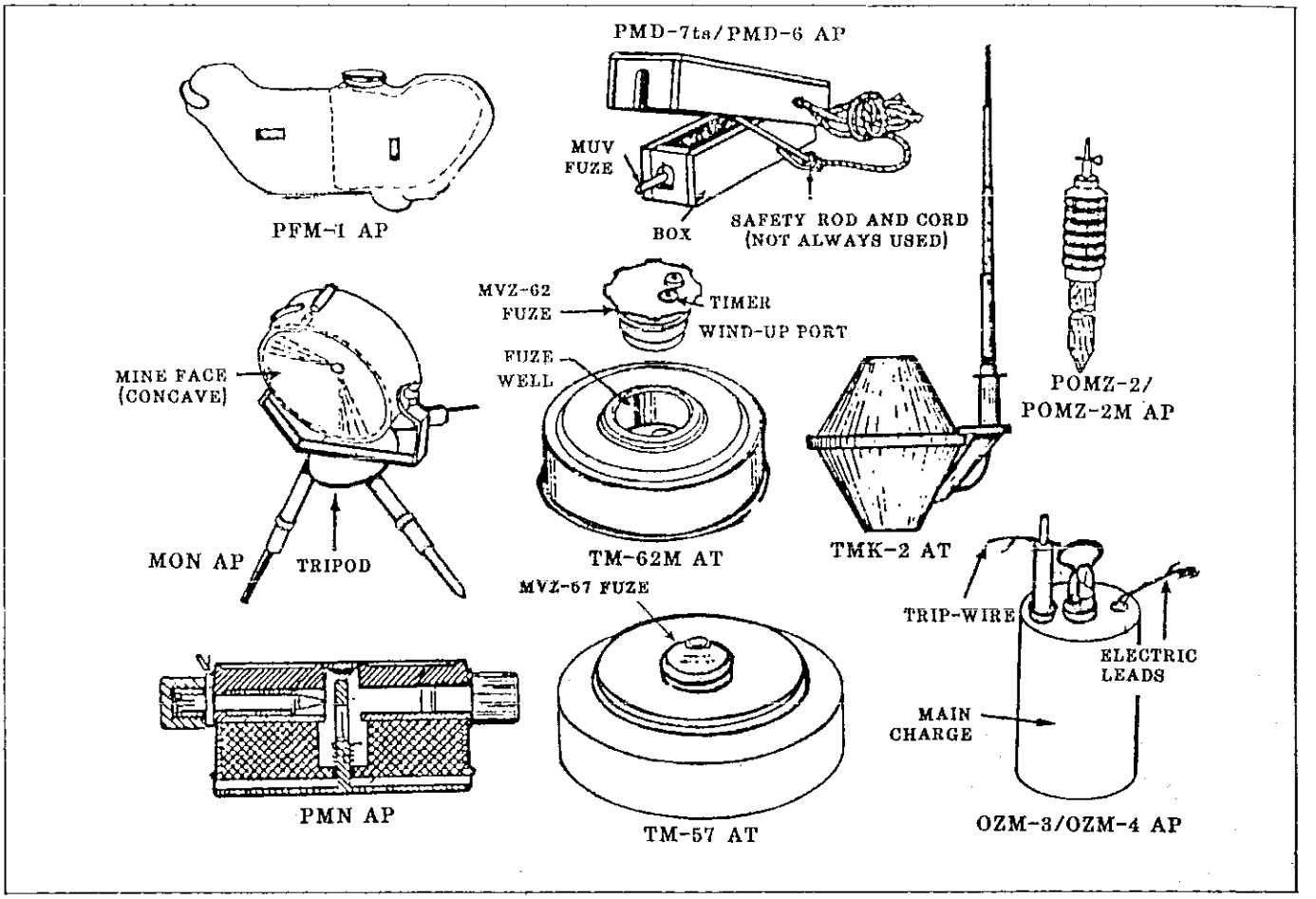
The delay-arming mechanism uses the same concept as the MUV-2 mine fuze. The delay-arming device allows troops to lay and camouflage the mine and reach a safe distance before the mine becomes fully armed 15 to 20 minutes later. Once it has been armed, only highly trained engineer specialists are capable of deactivating it.

PMD-7ts and PMD-6 Wooden AP Mines. The PMD-7ts is a rectangular wooden box mine. The standard main charge is a 200-gram block of TNT. The mine uses the MUV pull fuze with the modified winged retaining pin as the standard fuze.

The lid is hinge-mounted with a sleeve cut on the opposite end of the hinge to facilitate extraction of the MUV winged retaining pin upon application of pressure to the box lid. The PMD-6 is similar in construction and also uses the MUV pull fuze, but it is smaller in size.

The PMD-7ts is pressure-actuated when the hinged lid is forced downward, allowing the sleeved opening to remove the winged retaining pin. The MUV fires the detonator inserted into the block explosive charge in the mine. The mine is very effective against dismounted troops and is difficult to detect because of its wooden construction.

The PMD-7ts is manufactured and issued as a standard



An array of Soviet antipersonnel and antitank mines.

mine, but it can be easily field fabricated as well. Plastic versions have been adapted by both Soviet and Free World armies.

OZM-3 and OZM-4 Bounding Fragmentation AP Mines. The OZM-3 has a cylindrical metal case. It has two electrical lead wires protruding from the top, a wing-shaped fin, and a fuze well to accept a threaded fuze. The mine contains 0.075 kilograms of TNT as the main charge in addition to a separate propelling charge at the base of the mine. The mine's lethal radius is 25 meters.

The OZM-4 uses an improved bursting charge and does not have electronic leads for command detonation.

The electrical leads on the OZM-3 allows it to be command detonated for use in ambushes, but it can also be employed in conventional minefields. Mechanical fuzing is accomplished through the use of the MUV-2 pull fuze inserted into the fuze well.

The OZM-3 mine does not have an inner and outer mine case like the U.S. M-16A2 (Bouncing Betty) mine. The hole in which the mine is emplaced acts as the outer projectile tube. When activated, the propelling charge propels the mine to a height of about one meter, as determined by the tether wire, where it detonates. Although this is primarily an antipersonnel mine, it is also capable of disabling thin-skinned vehicles.

MON-Series Directional Fragmentation AP Mines. The mines in the MON AP series (MON-50/100/200) are all directional fragmentation mines. The MON-100 is cylindrical with a concave face mounted on a swivel tripod. Its plastic casing houses about 450 steel fragments embedded in five kilograms of plastic explosives. The MON-200 is similar in appearance and function but it is longer. The MON-50 is similar in appearance to the U.S. M-18A1 claymore mine.

The MON mines are command detonated. An electrically fired detonator fires the plastic explosive charge that shatters the face of the mine and allows the steel fragments to be propelled into a concentrated area.

MON mines are used for protective type mining and ambushes in much the same way as the U.S. claymore is employed. The lethal range of each of these mines is indicated by the number that follows the MON acronym; the MON-50, for example, has a lethal range of 50 meters.

PFM-1 Scatterable Blast AP Mine. The PFM-1 has a plastic body that contains one ounce of a binary liquid explosive and a hydraulic pressure-actuated spring-loaded fuze. After it is armed it is extremely sensitive and produces an incapacitating injury.

The PFM-1 is emplaced in large numbers from airplanes or helicopters. It automatically arms when it hits the ground and is believed to become inert after four to six weeks due to the decomposition of the liquid explosive.

Pressure on the mine is transmitted hydraulically to a diaphragm that moves upward against the firing pin housing, forcing it forward. The retaining ball in the firing pin

housing clears the shoulders of the guide sleeve, escapes, and enables the spring to drive the striker against the percussion cap, which starts the firing chain.

This mine has been used extensively in Afghanistan.

Antitank Mines

TM-57 Metallic AT Mine. The TM-57 metal-cased mine is similar in appearance to the now obsolete TM-46, but it incorporates a larger charge (seven kilograms of TNT) and uses improved fuzing. There is no antihandling fuze well at the underside of the mine because it is designed to be laid by mechanical minelayers.

The TM-57 uses the MVZ-57 delay armed pressure fuze, although it can be used with the MVSh-57 tilt-rod fuze when it is emplaced by hand. Upon activation, the HE can break the track of an armored vehicle.

TM-62M Metallic AT Mine. The TM-62M is the current standard Soviet AT mine. It has a cylindrical metal casing that houses an HE main charge. It uses a time-delay fuze and may also use a seismic fuze. There are no secondary or antihandling fuze wells on it. The arming mechanism is housed in a cylindrical fuze and contains an arming button on top.

This mine uses the MVZ-62 time-delay pressure fuze. Upon actuation, the HE can break the track of an armored vehicle.

TMK-2 AT Tilt-Rod Mine. The TMK-2 has a conical metal body with a tilt-rod well protruding from its lower side. It is equipped with an adjustable length tilt rod to allow maximum camouflage upon emplacement. The mine uses a directed-charge warhead of about 5.7 kilograms of TNT.

This mine is normally buried with the tilt rod exposed to detonate against the belly of an armored vehicle. When it is actuated the main charge propels a steel plate with such velocity that the plate becomes a molten slug and penetrates the belly of the vehicle. Shrapnel is sprayed internally, and the crew is killed or wounded and the vehicle disabled or destroyed.

The TMK-2 is the only anti-hull mine in the current Soviet inventory. It has a wider area of coverage than a blast mine since it does not have to be struck by a vehicle track in order to explode. TMK-2 mines are therefore normally emplaced 9 to 12 meters apart, as compared with the 4 to 6 meters used for the blast AT mines.

The primary disadvantage of this mine is that it must be manually emplaced. It is best emplaced in tall grass or in areas where the tilt rod is naturally camouflaged.

Mine Warfare Organizations

Trained engineers normally perform, or at least supervise, minelaying in the Soviet Army. Each motorized rifle or tank regiment has an organic mine warfare platoon as part of its engineer company. This mine warfare platoon consists of one officer and 24 enlisted personnel and is equipped with three trucks that tow either the PMR-3 or PMZ-4 minelaying trailers.

The PMR-3 and PMZ-4 are unarmored mechanical minelayers that can be towed by a variety of vehicles such as the Soviet ZIL-131, Kam-AZ-4310, Ural-4320, Ural-375, and BTR-152 (different variations of a five-ton truck). Special movable racks installed in the towing vehicles allow more mines to be transported more efficiently. Load capacities for these vehicles vary. It is estimated that the Ural-375, for example, can carry 350 mines. Since the PMR-3 and PMZ-4 and the vehicles that tow them are not armored, these systems would be highly vulnerable if used within range of enemy direct or indirect fire weapons.

When employed together, and given average soil conditions, the three PMR-3 minelayers of a regiment's engineer company can lay a three-row mine belt of 900 AT mines 1.2 kilometers long in only 12 minutes.

The PMR-3 is capable of arming and placing mines at a predetermined spacing of 4 or 5.5 meters. Antitank mines are buried 6 to 12 centimeters beneath the soil.

At the motorized rifle and tank division level, there is an engineer battalion that includes a minelayer platoon equipped with three GMZ self-propelled, tracked, mechanical minelayers.

The GMZ tracked minelayer is an armored vehicle that affords its crew better protection than the PMR/PMZ, because its armor can stop shell fragments and small arms fire. It can be expected that the GMZ would be used even closer to the enemy than the PMR/PMZ.

The GMZ can lay mines somewhat faster than the PMR/PMZ, but it must be manually reloaded. The PMR/PMZ can be reloaded as quickly as a new towing vehicle loaded with mines can be hitched to the minelaying trailer. The GMZ would therefore take considerably longer to lay an extended minefield.

When laying a single row of mines, Soviet mechanical minelayers are not capable of alternating between antitank and antipersonnel mines. In other words, rows planted by the PMR/PMZ or GMZ will be either all AP or all AT. The Soviets consider a minefield to be mixed, however, if both AP and AT mine rows are represented.

The Soviets have at their disposal minelaying chutes that can be attached to trucks, armored personnel carriers, and helicopters to lay a surface minefield quickly.

The Mobile Obstacle Detachment

Engineer mine warfare platoons normally operate in what the Soviets call the mobile obstacle detachment (POZ, using the Russian acronym). The POZ is a temporary *ad hoc* task organization composed primarily of combat engineers and usually has a mission of denying key terrain to the enemy, particularly those avenues of approach that are most suitable for tanks. The POZ is specifically designed to give the greatest possible minefield and explosive obstacle support to the maneuver forces during combat operations.

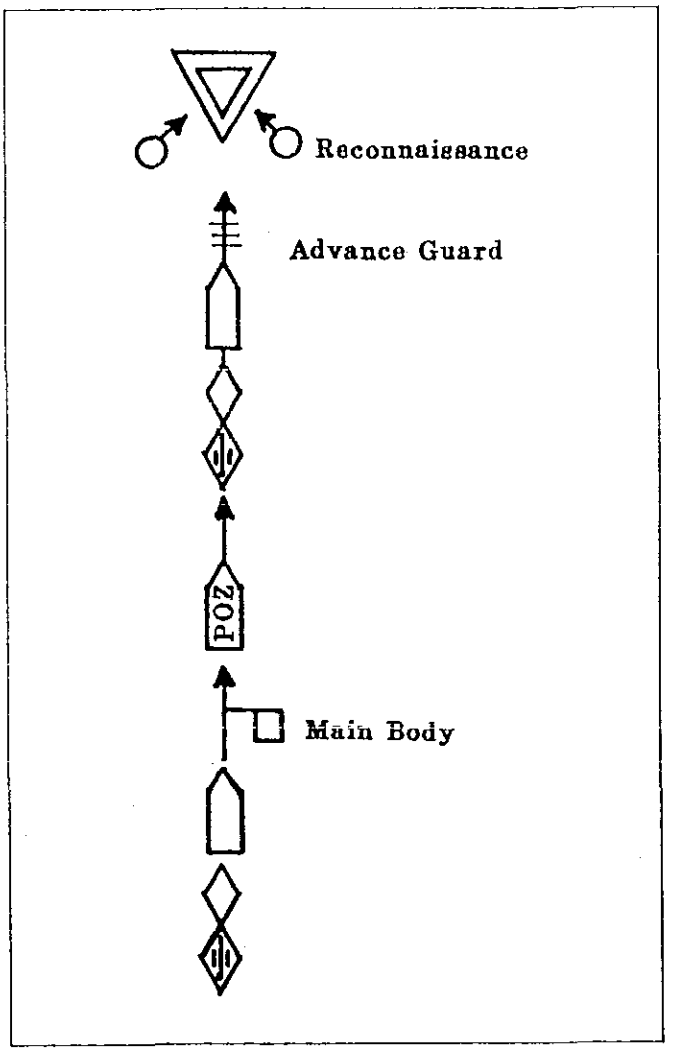


Figure 1. Soviet reconnaissance detects and reports enemy.

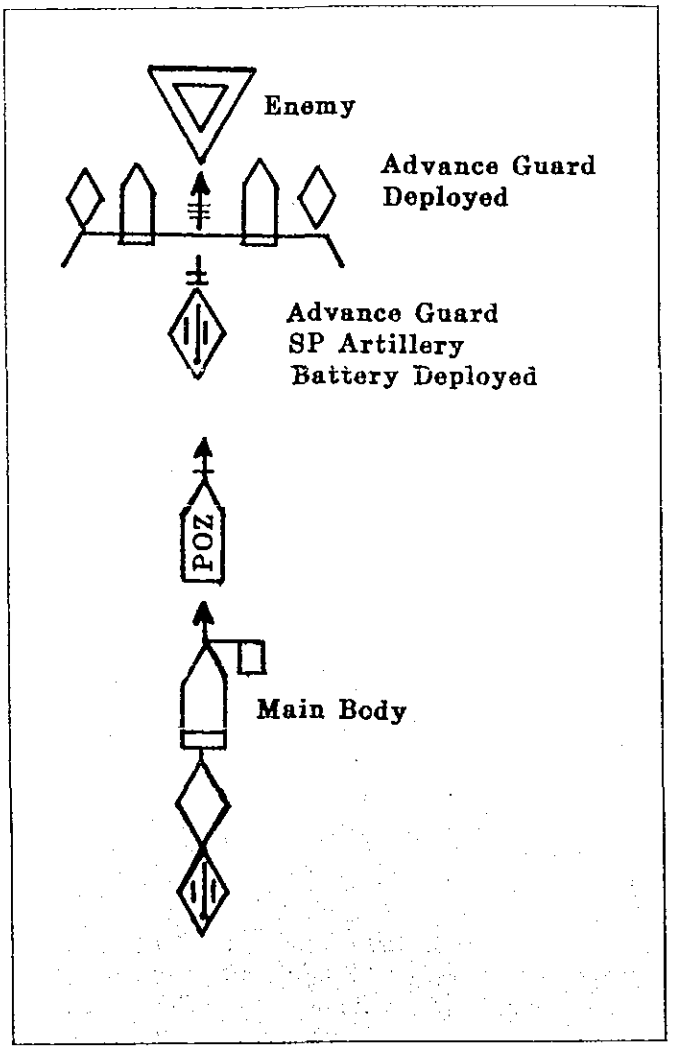


Figure 2. The advance guard engages the enemy while the main body begins a sweep into the enemy's flank.

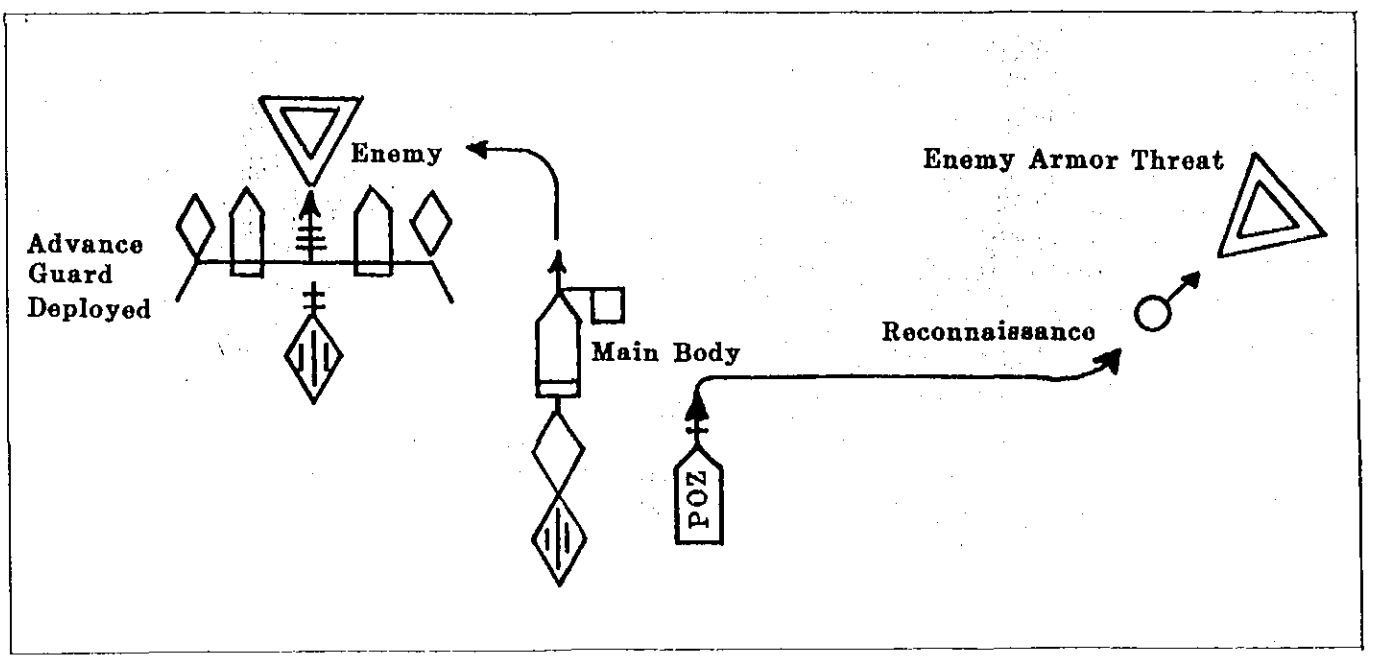


Figure 3. As the main body drives toward the enemy's flank, reconnaissance detects an enemy armor threat to the main body's flank.

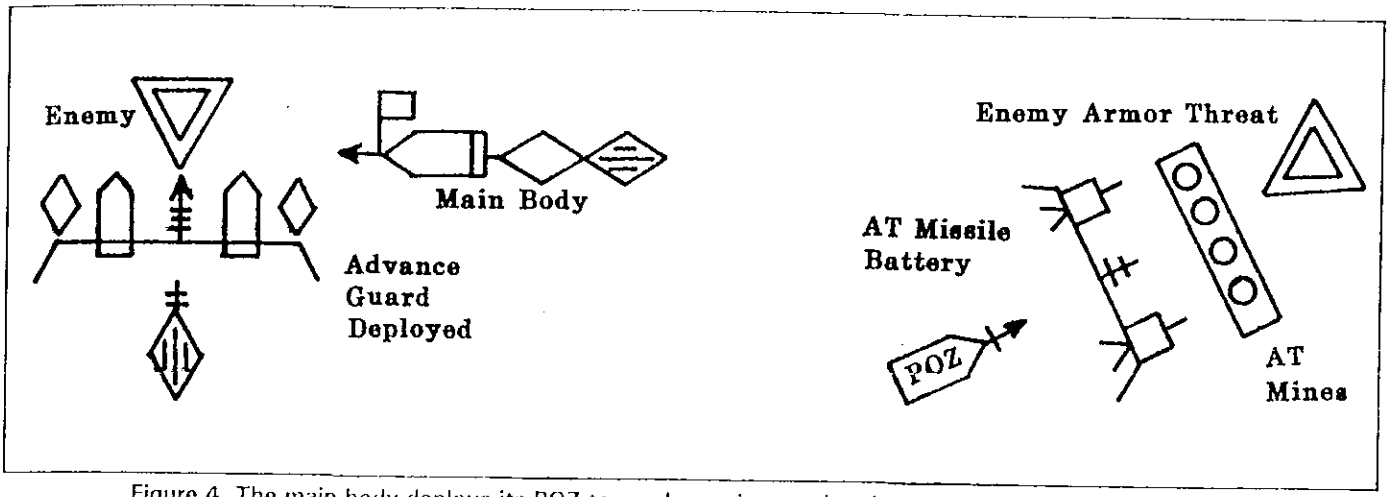


Figure 4. The main body deploys its POZ to emplace mines and antitank weapons to stop the enemy armor threat. Once secure from the armor threat, the main body can continue its drive into the enemy's flank.

The size of a POZ can vary depending on the tactical situation and the maneuver commander's needs. POZs can be found at the regimental, divisional, and army levels, and Soviet literature sometimes describes levels that operate with two mechanical minelaying platoons. A regimental POZ normally consists of a mine warfare platoon sometimes supplemented by an attached motorized rifle platoon.

Although a POZ can operate independently, it normally operates with antitank reserves to provide flank protection and repel enemy counterattacks; it is usually positioned behind the first echelon. The division's antitank battalion and the regiment's antitank missile battery usually act as their unit's respective AT reserves. These AT reserves provide long-range covering fire over minefields once they have been emplaced by the POZ. The Soviets recognize that a minefield can be effective and reliable only if it is adequately covered by fire.

During the march, a POZ normally travels just behind the advance guard and in front of the regiment's main body. In a meeting engagement, it operates primarily on the axis of the holding attack and supports the deployment of the main body for the attack (see Figures 1 through 4). This method of employment is the same for a POZ operating at the divisional level. In the defense, a POZ is used to lay minefields across the axes of enemy advance and in those sectors facing the greatest potential enemy threat.

The Soviets use their POZs aggressively. A POZ maintains close contact with the enemy and attempts to mine the areas to which he has already committed himself. In the defense, for example, the POZ and antitank forces held in reserve can be employed quickly during an enemy attack to mine potentially vulnerable gaps. This tactic demonstrates another advantage of using antitank reserves to provide covering fire for the lightly armed POZ as it actually lays a minefield.

The various mines and minelaying organizations discussed here are used in various defensive and offensive operations and with various methods of emplacement. All of these matters will be covered in Part 2 of this series in the July-August 1988 issue of INFANTRY.