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## **Mine Warfare and Counterinsurgency: The Russian View**

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The Soviet Army trained and prepared for the Third World War. This war would involve large-scale nuclear exchange and/or conventional maneuver, where modern, fast-moving armored forces probe for enemy weak spots, break through enemy defenses using massed or nuclear artillery strikes and the shock action of armor, and then drive deep into the enemy rear area to fight the deep operation. While this vision may still apply to a future war, military theorists in the Russian Ground Forces are considering their last two large-scale conflicts--in Afghanistan and Chechnya--and drawing some conclusions about other possible types of future war.<sup>(1)</sup> Soviet military theorists envisioned war on the rolling plains of northern Europe or in the high Manchurian plains near China. Instead, their last two conflicts were fought in rugged mountainous terrain against irregular forces. One conflict occurred on the soil of a neighboring country, and the other was fought on Russia's own territory. Instead of swift wars of maneuver and massed combat power, those conflicts were protracted civil wars that were fought in mountains, forests, and cities.

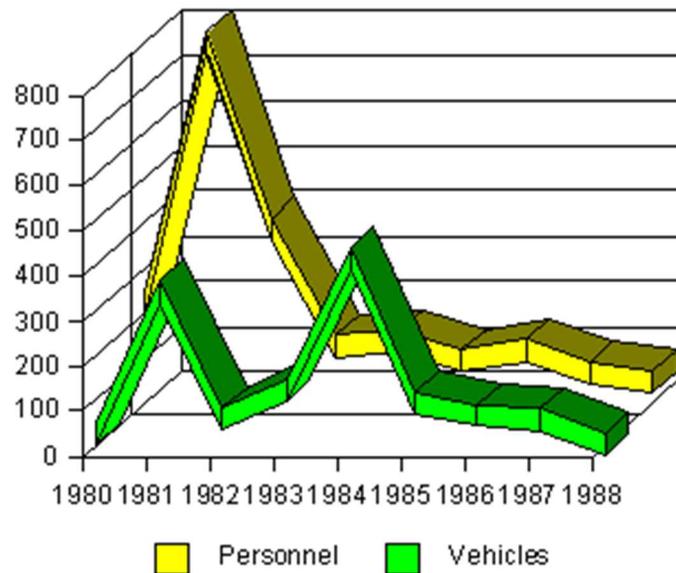
While armies must train and prepare for the most dangerous future conflict, they also should train and prepare for the more likely future conflicts. Some Russian military theorists think that their armed forces are more likely to fight guerrillas or local wars than world wars. The force structure, weapons, equipment, tactics, training, and military theory required to counter an insurgency or fight a local war differ from those required for a world war. As Russian military theorists gather data and develop tactics and methodologies to fight local wars and counter insurgencies, one of their interests is to prepare their sappers and other forces to deal with land mines in these conflicts.<sup>(2)</sup> The applications of land mines in world wars, local wars and guerrilla wars are distinct and different. The following discusses the Soviet/Russian experience with land mines in Afghanistan and Chechnya and lessons learned from these conflicts.

### **Afghanistan**

Mines are used differently in guerrilla wars than in conventional wars. Whereas the Soviet 40th Army used millions of land mines in Afghanistan to protect communist installations and deny the Mujahideen use of their lines of communication (LOC), the Mujahideen used their limited

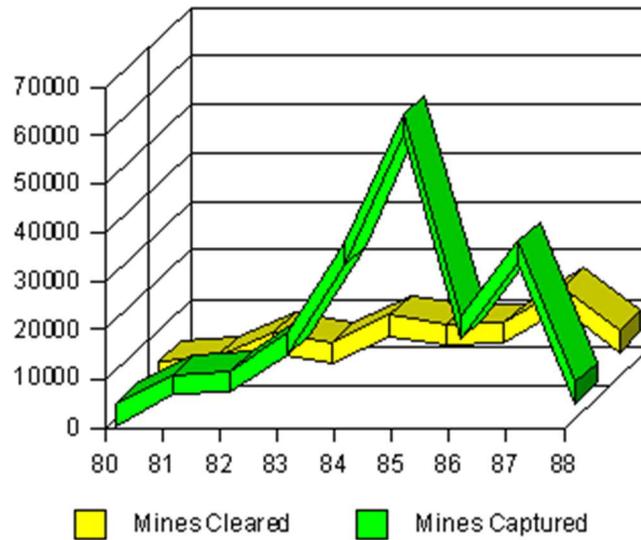
number of mines more selectively and probably more effectively. The Mujahideen antitank mines ranged from homemade to a variety of foreign-designed and manufactured mines. These designs included the Soviet TM-46, the Italian TC-2.5 and TC-6.1, the U.S. M19, the British Mark 5 and Mark 7, and the Belgian H55 and M3 antitank mines. Their antipersonnel mine inventory was primarily Soviet PMN, POMZ-2, and MON-50 mines but also included the Italian TS-50, the U.S. M18A1, and the British P5 MK1. Many of these mines were manufactured in Pakistan, Iran, Egypt, and China.<sup>(3)</sup>

### Mine Effects



**Chart 1: Soviet 40th Army Losses to Mines--Personnel Killed in Action and Vehicles Destroyed<sup>(4)</sup>**

Chart 1 shows the Soviet 40th Army's personnel and vehicle losses to mines during their war in Afghanistan. As shown, the Mujahideen did not have many mines when the war started but soon obtained them. Soviet deaths to mines were initially high until they developed countermeasures to cut their losses. Their countermeasures included issuing flak jackets, sandbagging and reinforcing vehicle floors, and riding on top of armored vehicles. Dissemination of these countermeasures was part of the in-country training conducted by the 45th Separate Engineer Regiment.<sup>(5)</sup> With these countermeasures, the number of deaths from mines fell but the number wounded by mines rose. Vehicle losses spiked in 1984 and 1985 during the heaviest fighting in the war and fell off as the Soviets prepared to withdraw.



**Chart 2: Mujahideen Mines Cleared and Captured by the Soviet 40<sup>th</sup> Army.**<sup>(6)</sup>

Chart 2 shows the number of mines captured by the Soviet 40th Army as well as the number detected and disarmed or destroyed. The Soviets captured far more mines before the Mujahideen could deploy them than they found during mine-clearing activities.

### Soviet Wounded

Of the 620,000 Soviet personnel who served in Afghanistan, 14,453 were killed or died from wounds, accidents, or disease. That is 2.33 percent of those who served. An additional 53,753 (8.67 percent) were wounded or injured.<sup>(7)</sup> In the early part of the war, twice as many Soviet soldiers were wounded by bullets as by shrapnel, but by the end of the war, 2.5 times as many were wounded by shrapnel as by bullets. The percentage of multiple and combination wounds increased about four times over the course of the war, while the percentage of serious and critical wounds increased two times. Land mines were the primary reason for the increase in serious and critical wounds. The number of soldiers wounded by land mines increased 25-30 percent over the course of the war.<sup>(8)</sup> Chart 3 reflects this change.

Type of Wounds	1980	1981	1982	1983	1984	1985	1986	1987	1988
% Bullet	62.2	54.7	50.4	46.0	34.1	36.6	31.8	26.5	28.1
% Shrapnel	37.2	45.3	49.6	54.0	65.9	63.4	68.2	73.5	71.9
% Multiple & combination	16.0	21.1	29.5	47.6	65.4	72.8	68.8	65.8	59.4
% Serious & critical	23.1	27.7	31.1	47.1	52.4	51.4	50.2	50.1	45.2

**Chart 3: Type and severity of wounds as a percentage of total hostile fire and mine wounds**<sup>(9)</sup>

During the early years of the war, the Mujahideen guerrillas had rifles but few mortars or land mines. As the war progressed, guerrillas captured or received these weapons and, consequently, the type and nature of wounds changed. Soviet medical evacuation techniques improved during the war, enabling more critically wounded soldiers to survive. The figures in Chart 4, which show the number of war dead and wounded for the Soviet 40th Army by year, reflect their improved evacuation techniques.

Year	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
Dead	86	1484	1298	1948	1446	2343	1868	1333	1215	759	53
Wounded	---	3813	3898	6024	4219	7786	8356	7823	5008	3663	144

**Chart 4: Soviet 40th Army War dead and wounded in Afghanistan, 1979-1989**

As the chart indicates, the ratio of dead to wounded Soviet soldiers improved over time from roughly 1:3 to 1:5, with an overall ratio of 1: 3.6. By comparison, the Russians state that the ratio of dead to wounded U.S. soldiers during the Vietnam War was 1:5.<sup>(10)</sup> Despite the increased severity of wounds, more wounded Soviet soldiers survived. Changes in medical procedures apparently improved the soldiers' survivability rate.<sup>(11)</sup>

Changes in the location of wounds reflect the acquisition of modern armaments by the guerrillas. Chart 5 shows the location of the wounds and their percentage of frequency for the first and last full years of the war. The increase in head and neck injuries is consistent with shrapnel injuries from mines and mortars and matches the increase of these type weapons in the Mujahideen arsenal. The chart is incomplete--the source provided general figures of wounds to upper extremities of 25.4 percent, to lower extremities of 37.9 percent, and for thoracic and abdominal wounds of 1.7 percent, without reference to any change over time. Still, figures in the chart reflect an increase in injuries that is consistent with those caused by shrapnel from mines and a decrease in wounds to the chest, stomach, and pelvis. The decrease probably is due to enforced wearing of flak jackets and the issue of some improved flak jackets.

Chart 6 compares the percentage of wounds by location for the Great Patriotic War (Soviet soldiers wounded in their war with Germany during World War II), Vietnam (U.S. wounded), Afghanistan (Soviet wounded), and the fighting in Chechnya (Russian wounded). Differences in the percentage of wounds by location partly reflect the type of terrain on which each war was fought, the training and skill of the combatants, and the type and degree of individual protection available.

Location of Wound	1980 (percent)	1988 (percent)
Cranium and brain	4.9	8.5
Backbone and spinal cord	0.1	0.9
Face and jaw	1.4	1.9
Eyes	1.3	3.2

Ear, nose, throat	1.8	3.4
Chest	11.6	6.3
Stomach and pelvis	7.8	4.6

**Chart 5: Location of wounds by percentage over time<sup>11</sup>**

Wound Location	Great Patriotic War (Russian)	Vietnam (United States)	Afghanistan (Russian)	Chechnya-1995 (Russian)
Head and Neck	19	21	15.7	24.4
Chest	9	5	12.2	8.6
Stomach	5	18	7.1	2.3
Pelvis	-	-	3.8	1.6
Arms	30	20	26.3	27.3
Legs	37	36	34.9	35.8

**Chart 6: Percentage of wounds by location in various wars<sup>11</sup>**

## Chechnya

From the beginning of the conflict in December 1994 until the summer of 1995, Chechen forces seldom used mines against the Russian forces. In July or August 1995, Chechen forces began using mines regularly and they continued to use them until the end of the conflict in 1996. The Chechens did not employ many conventional mines but improvised them using artillery rounds, aviation munitions, grenades, and other explosives. They also employed captured Russian mines, including directional mines, which they mounted off the ground to explode on the flanks or above vehicles and personnel. Most of the Chechen mines were laid on or adjacent to roads and highways.<sup>(12)</sup> As a result of their experiences in Afghanistan and Chechnya, the Russian sappers have developed new techniques for clearing roads in a counterinsurgency.

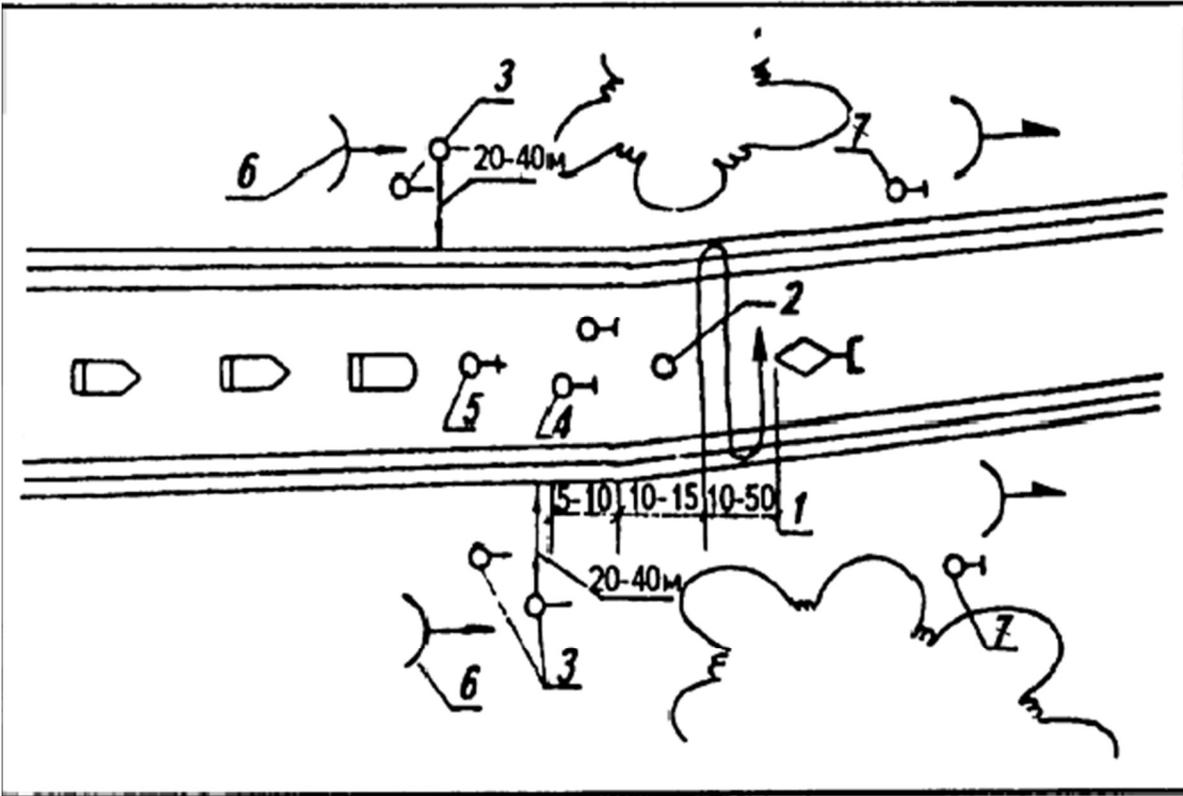
## Russian Road-Clearing Techniques

A Russian motorized rifle regiment normally is given responsibility for clearing roads. If the entire regiment is going to physically move on the road, the regiment constitutes a Movement Support Detachment (OOD--*otryad obespecheniya dvizheniya*), which includes a tank with a mine roller, a sapper squad mounted on a BTR (wheeled personnel carrier), and scouts and mine-clearing personnel. The OOD moves in front of the regiment and clears the road. If the regiment is responsible for clearing and securing a portion of a road on a long-term basis (such as protecting lines of communication in Afghanistan or Chechnya), the Russians deploy a mine reconnaissance detachment to check the section of road that the regiment maintains. The mine reconnaissance detachment normally consists of a tank with a mine roller, a sapper squad mounted on its BTR, and a covering force mounted on two or three BMPs (tracked armored personnel carriers). As they move, the tank uses its main gun to blast any suspicious objects, such as piles of trash or burned-out vehicles. The sappers must be particularly alert in areas

where the enemy might employ command-detonated mines. Once the regiment's section of road is cleared, the regimental commander reports this fact to his higher headquarters. No convoy movement is allowed on the road until all commanders have reported that their sections are cleared.<sup>(13)</sup>

So-called "green zones" were a constant source of trouble in Afghanistan. A green zone is an agricultural area of gardens and vineyards that is bisected by a network of irrigation ditches. In Afghanistan, green zones provided concealment for guerrilla forces and were practically impassible for vehicles. The green zones in many parts of the country bordered highways and provided optimum sites for ambush. Antitank mines, antipersonnel mines, and command-detonated mines were easily concealed in the edges of green zones, where ambush parties and snipers preyed on dismounted scouts and sappers.

The Russians now recommend the formation shown in Figure 1 for clearing roads. A tank or BMP pushing a mine roller moves in front of the formation. On its flanks and slightly ahead move dismounted motorized riflemen and sappers with electronic mine detectors, who clear snipers and ambushes. The mine detection group, equipped with mine-detection dogs, follows some 40 or 50 meters behind the tank. They carefully look for mines on the road and road shoulders. Sappers with electronic mine detectors move on the road about 15-20 meters behind the mine detection group. Walking on the right and left sides of the road, two or three sappers with electronic mine detectors and mine probes clear an area about 20-40 meters on the flanks of the road. A covering force of dismounted motorized riflemen follow the sappers who clear the flanks. The BTR and BMPs follow the dismounted party and the mine reconnaissance detachment commander (usually a platoon leader), who controls the activity from the middle of the formation. The average clearing speed of such a formation is about two kilometers per hour.<sup>(14)</sup> The vulnerability of the sappers to snipers and ambush in Afghanistan and Chechnya was a problem for the Soviets/Russians. This formation protects the sappers with both dismounted infantry and vehicle-mounted direct-fire weapons.



**Contemporary Russian Formation for clearing roads**  
Distance is in meters(m).

1. Tank with mine roller.
2. Mine detection group with dogs and their search pattern.
3. Russian sappers clear road flanks.
4. Sappers with electronic mine detectors clear a road.
5. Detachment commander.
6. Covering force.
7. Sappers moving with flank security elements.

In addition to using dogs, electronic mine detectors, and probes, Russian sappers are taught to look for signs of soil disturbance, soil discoloration, dents or depressions on the earth's surface, and other signals. Such signals include tunneling, broken branches and debris, trash associated with mines or demolitions, trip wires, wire leading away from the site, patches in road work, loose cobblestones, or other indications of mining. When a member of the detachment finds a mine, the detachment stops and the finder marks the mine's location with a small red flag. The detachment commander and an experienced sapper move to the site and examine the mine. If the

commander decides to destroy it, every member of the group draws a circle on the ground where he is standing and marks it with the first letter of his last name and whatever else is necessary to find it again. All the members, except the one-man demolition party, then move behind the armored vehicles or into a ditch for protection. The demolition party places an electrically-primed charge on the mine, moves to a safe location, and detonates the charge. After the mine blows up, the group members return to their last location and resume the search. <sup>(15)</sup>

If the commander decides to disarm the mine, a single sapper is given the mission. He carefully examines the area within a radius of at least 1.5 meters around the mine for other mines, trip wires, or detonator wires. Then he carefully scrapes the concealing layer off the mine; exposes the sides of the mine; and looks for antilift devices, other mines underneath the first, and booby traps. He removes the mine fuze and uses a grappling hook and rope to pull the mine from the hole. He then examines the hole to check for additional mines. Disarmed mines are collected for destruction or evacuation. <sup>(16)</sup>

### **The Dangerous Road Ahead**

Although international efforts are underway to ban the use of mines in future conflicts, they will remain a constant feature of insurgencies. Mines are cheap, easy to manufacture and deploy, and provide an effective countermeasure to a modern, mechanized force. Guerrilla forces often operate outside the parameters and without the protection of international law. Thus, a guerrilla force may find that the efficacy of mines outweighs their prohibition by international treaty--particularly if the guerrilla force does not represent the state and is not signatory to the treaty. Countering mines increases the logistics burden on a force--from the necessity to carry additional equipment and clearing personnel to the need for additional medical and mortuary services. Mines that wound rather than kill are more efficacious since every wounded soldier ties up many support and medical personnel. Mines also rob a modern mechanized force of its high-speed mobility and reduce the rate of movement to the speed of a cautious sapper. For these reasons, the problem of countering mines will remain a constant for armed forces well into the next century.

Consequently, modern armies should train to deal expeditiously with mines placed by irregular combatants. If the modern army is not trained to deal with this form of land mine warfare, it may, like the Soviets and Russians, find its tempo reduced to that of a cautious dismounted sapper picking his way through the rough country controlled by the indigenous guerrillas.

### **ENDNOTES:**

1. This article follows the convention where Soviet refers to the period before the breakup of the Soviet Union (1991) and Russian refers to the period afterwards.
2. Adam Nizhalovskiy, "Na dorogakh Chechni" [On Chechnya's roads], Armeiskiy sbornik [Army Digest], January 1997, page 27.
3. Russian General Staff Material currently being translated for a book by the author.

4. Aleksandr Lyakhovskiy, Tragediya I doblest' Afgana [The tragedy and valor of the Afghanistan veteran], Moscow: Iskona, 1995, Appendix.
5. Petr Antonov, "Chemu učit opyt" [What does experience teach?], Armeyskiy sbornik [Army Digest], January 1997, page 35.
6. Ibid.
7. G. F. Krivosheev, Grif sekretnosti snyat [The secret seal is removed], Moscow: Voenizdat, 1993, pages 401-405. A portion of this article is taken from "Handling the Wounded in a Counter-Guerrilla War: The Soviet/Russian Experience in Afghanistan and Chechnya" by Lester W. Grau and William A. Jorgensen, published in U.S Army Medical Department Journal, January-February 1998.
8. E. A. Nechaev, A. K. Tutokhel, A. I. Gritsanov, and I. D. Kosachev, "Meditsinskoe obespechenie 40-I armii: Tsifry I fakty" [Medical support of the 40th Army: Facts and Figures], Voенno-meditsinskiy zhurnal [Military medical journal, hereafter *VMZ*], August 1991, page 4.
9. Ibid, 6.
10. P. G. Brusov and V. I. Khrupkin, "Sovremennaya ognestrel'naya travma" [Modern bullet and shrapnel-induced trauma], *VMZ*, February 1996, page 26. Russian source of U.S. statistics is unknown.
11. Readers interested in the medical treatment of mine casualties are directed to Lester W. Grau, William A. Jorgensen and Robert R. Love, "Guerrilla Warfare and Land Mine Casualties Remain Inseparable" Army Medical Department Journal, October-December 1998, pages 10-16.
12. Nizhalovskiy, pages 27-29.
13. Mikhail Firsov, "Nepisanye pravila" [Unwritten rules], Armeyskiy sbornik [Army digest], January 1997, page 30.
14. Firsov, page 30.
15. Ibid., pages 30-31.
16. Ibid.