



IEDs, Land Mines, and Booby Traps in the Soviet-Afghan War

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The 1979-1989 Soviet war in Afghanistan lasted more than nine years, and mine warfare was a major component of it. Both the Soviets and their Afghan counterparts from the Democratic Republic of Afghanistan employed millions of anti-personnel land mines in pattern minefields. General Boris Gromov, who commanded the Soviet 40th Army during the withdrawal, stated that the 40th Army turned over 613 minefields (with records) to the Afghanistan army before it withdrew from the country.¹ The Soviets supplemented these fixed fields with scatterable mines employed from aircraft, helicopters, cannon, and multiple rocket launchers. The Mujahideen deployed a wide variety of anti-tank mines and anti-personnel mines that were supplied by the United States, China, NATO members, and Arab countries. The Mujahideen also reused Soviet mines and manufactured their own blast mines (fougasse), which we now refer to as improvised explosive devices (IEDs). Soviet figures for mine injuries include IEDs and booby traps.

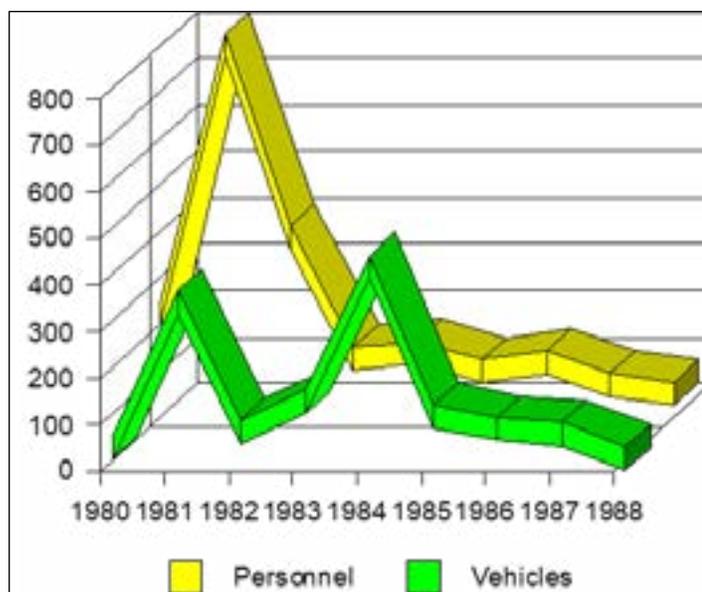
The graph below shows Soviet 40th Army personnel deaths and vehicle losses to mines during their war in Afghanistan. As the graph shows, the Mujahideen did not have many

mines at the start of the war but soon obtained them. Soviet deaths to mines were initially quite high until the Soviets developed mine countermeasures which cut their losses. These countermeasures included issuing flak jackets, sandbagging and reinforcing vehicle floors, and riding on the tops of armored vehicles. Dissemination of these countermeasures was part of the in-country courses conducted by the 45th Separate Engineer Regiment.³ After that, the number of deaths from mines fell, but the number wounded by mines rose. Vehicle losses peaked in 1984 and 1985 during the heaviest fighting in the war and fell off as the Soviets prepared to withdraw.

Of the 620,000 Soviet personnel who served in Afghanistan, at least 14,453 were killed or died from wounds, accidents, or disease. This is 2.33 percent of those who served. Another 53,753 (or 8.67 percent) were wounded or injured.⁴ In the early part of the war, there were twice as many Soviet soldiers wounded by bullets than by shrapnel, but by the end of the war there were 2.5 times more Soviet soldiers wounded by shrapnel than by bullets. The proportion of multiple and combination wounds increased four times over the course of the war, while the number of serious and critical wounds increased two times. Land mines were the primary reason for this increase in serious and critical wounds. The number of wounded from land mines increased by 25-30 percent over the course of the war.⁵ Improved Soviet medical evacuation during the war allowed more of the critically wounded to survive.⁶ Throughout the course of the war, land mines caused 30-40 percent of the trauma cases treated by Soviet medical personnel.⁷

Interest in training Russian soldiers to deal with mines, IEDs, and booby traps remains high. All of these systems were also used by the Chechens in their long war with the Russians. In August 2008, the following article appeared in the *Russian Army Digest*. It reflects Russian experience with IEDs in Afghanistan and Chechnya and reflects their efforts to train their soldiers to avoid becoming IED casualties. The IEDs in this article use simple triggering mechanisms of almost 40 years ago. They are all mechanical triggering devices with no remote mechanisms. This article also gives a great deal of credit to foreign (Arab) instructors, although during the war the Soviet press characterized the foreign instructors as Pakistani and American. The Arab instructors became a problem for the Russians during their war in Chechnya.

Soviet 40th Army Losses to Mines — Personnel KIA and Vehicles Lost²



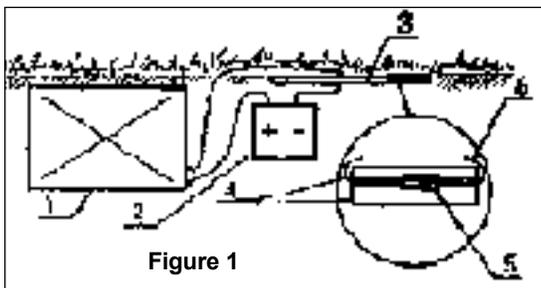
Dirty Tricks of the "Ghosts"¹⁸

E.I. Kaminsky

The "ghosts" [Mujahideen] learned about making explosive obstacles in specialist schools and training centers run by experienced foreign instructors. The methods and means of mining and their application are varied, cunning, and perfidious. Most often, the Arab "wolves" mined stretches of road, roadside buildings, and mountain paths; areas at risk also included water wells, oases, groves, and paths to them; abandoned buildings and caves suitable for accommodation or resting people. At the bottom of the list were major assets: weapons stores and valuable material; armaments, combat equipment, and various devices deliberately left on the terrain; and so on. The "ghosts" [Mujahideen] used a wide range of various booby traps.

All of these seriously impede the movement of forces, their maneuver and transfer, and the transport of cargo. Along with this is the experience of combat in the Republic of Afghanistan that shows how mine blasts occurred through carelessness and lack of caution. But there will be no surprise explosions if soldiers are observant and cautious; study enemy tactics, tell-tale indicators, and secret signs left behind during mining; and call in the sappers in a timely fashion.

Figure 1. A roadside bomb [fougasse or IED] triggered by an electric push button switch made of plastic plates wrapped in polyethylene: (1) explosive charge, (2) power supply, (3-4) electric switch, (5) contacts, (6) polyethylene film.



For example, combined arms unit commanders and drivers must strictly observe march discipline. Without an order, drivers must not pass other vehicles, pull off the road onto the shoulder, or pull off the road into places that have not been checked by sappers.

In a "mine war," all personnel, and not just the platoon-assigned lookouts, must keep an eye on the road. Remember that no matter how much the enemy camouflages a mine site, there are always traces — loose wrappers strewn on the road, wire bits, or metal contacts used in a roadside bomb's switch — barely noticeable bumps on the road, "scraps" of explosive packing material, and so on.

If a driver spots any such thing, he must stop the vehicle, mark the suspicious site, report to the unit commander, and follow his orders. In his turn, the commander calls in sappers or uses his own assets to survey and demine (or bypass) the suspect section.

Sappers also continuously survey while on the move. Survey is one of the key methods of detecting mines and is based on sound knowledge of where they are likely to be set, telltale indicators, and secret signs used by the "ghosts."

For example, more often than not the "ghosts" would lay individual anti-tank (or anti-vehicle) mines in places where the explosion would halt traffic for a long time and kill personnel — chiefly at steep hairpin turns in passes; places with road and bridge structures; road sections alongside steep inclines, ledges, and side-hill cuts; in narrow gorges and hollows; and on high embankments.

Figure 2. A roadside bomb [fougasse or IED] triggered by a probe-activated electric switch made of two metal grids insulated from each other by polyethylene: (1) mine probe, (2) metal grid-contacts, (3) polyethylene layer, (4) electric wire.

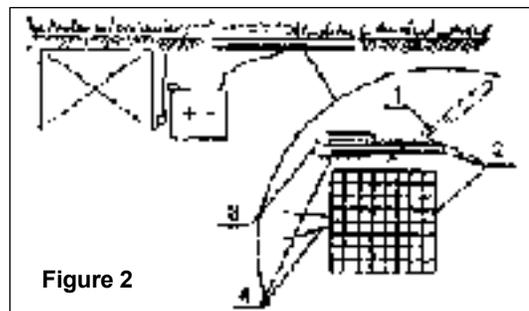


Figure 3. Two TC-6 mines laid one on top of the other with a layer of one-two centimeters of soil between them, with the lower mine booby trapped [with an anti-lift device]: (1) pull fuse, (2) wire, (3) pin.



Let me cite an example of actual combat using this tactic. Working in scouting and obstacle-clearing groups, sappers located and deactivated several anti-tank mines on the approach to a steep mountain road turn. They checked several dozen more meters of the road — no mines. However, it was disquieting that all the mines that had been found were metal (meaning that they were easily located by mine detectors) and placed at a minimal depth.

They continued to search and just beyond the turn they found a powerful roadside bomb [IED] triggered by an electric push-button switch made of two plastic plates with metal contacts secured between them (Figure 1). This is the usual design of the switches that the "ghosts" used. The pressure of the moving tracked vehicle of the wheel or track of a passing vehicle on the switch's upper plate brings the electric contacts together.

LESSONS FROM THE PAST

Another roadside bomb that we found was built in the same way, only this time both plates of the switch were wrapped in polyethylene, meaning that the electric circuit could close only after this improvised insulation had been destroyed, that is, after it had been run over several times. Apparently the "ghosts" were hoping that we would start moving once we found mines located before the turn but not search for those mines after the turn. They calculated that the passage of the first vehicles would convince us that this section of the route was "safe." And then, after a while, there would be a powerful explosion.

Figure 4. A booby-trapped TC-6 mine with an electric pressure-release switch: (1) electric switch, (2) electric blasting cap, (3) wire, (4) power source.

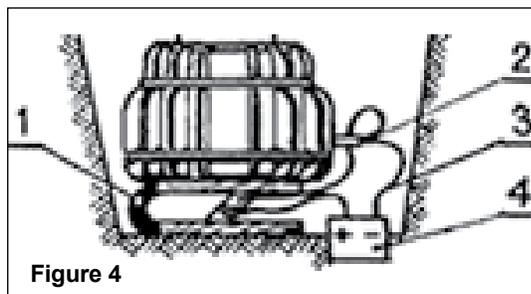


Figure 5. A roadside bomb [fougasse or IED] triggered by an electric switch using pieces of metal cable lying in the right and left furrows of a tank trail. The electric circuit is closed when a tracked vehicle runs over them: (1) cable pieces, (2) roadway, (3) location of the tracks.

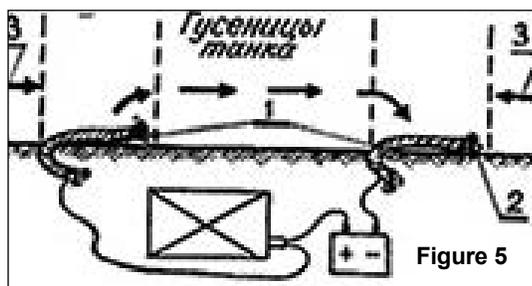


Figure 6. A powerful roadside bomb [fougasse or IED] is laid in a narrow stretch of tree-lined road. It is activated by an electric switch using a clothespin secured to a tree. The pull on the tripwire pulls the insulating plug out of the clothespin which brings the electric contacts together: (1) explosive charge, (2) electric switch, (3) tripwire, (4) power source, (5) electric wire, (6) electric blasting cap, (7) electric switch contacts, (8) insulating plug fastened to the tripwire. The wire is stretched at a height of 1.2 to 1.6 meters high.

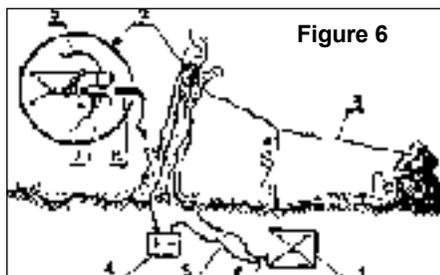


Figure 7. Mined roadblock that is laid on a road section

with no detour. It is activated by an electric pressure-release switch. (It is cunning because the sappers who check the rubble are convinced that there are no mines in it since it is very hard to find an IED hidden deep beneath the roadbed. The blast must occur while the debris heap is being worked on, at the very last moment when the load that is keeping the electric switch deactivated is being removed: (1) explosive charge, (2) power source, (3) electric wire, (4) electric switch, (5) electric switch spring, (6) electric switch contacts, (7) rubble, (8) cliff, (9) wall of stone.

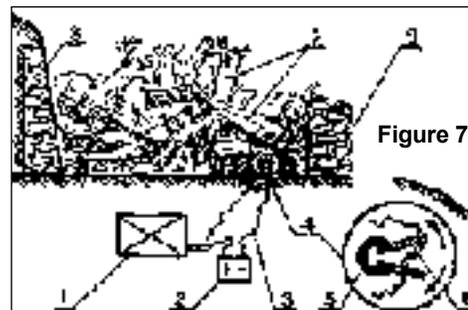


Figure 8. A bounding anti-personnel mine (like the American M2A4) is most often laid in a bush (tall grass) along a mountain path or in places that are convenient for rest (rest halts). It is triggered by pressure exerted directly on the fuse mechanism or by pulling one of the tripwires. The expulsion charge and fuse-delay mechanism detonate the explosive charge at a height of up to 1.8 meters: (1) mine casing, (2) explosive (fragmentation) element, (3) fuse, (4) pin, (5) tripwire, (6) stake. The trip wire is stretched at a height of 10-15 centimeters.

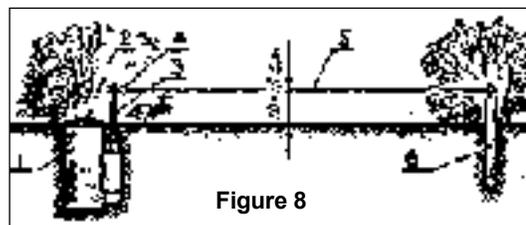
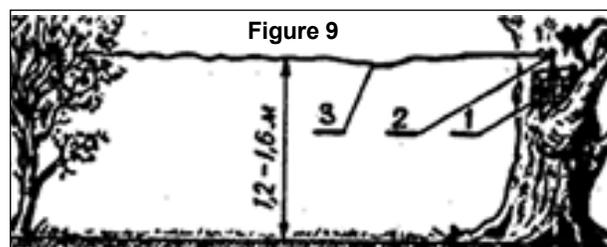


Figure 9. Anti-personnel fragmentation directional mine laid in a tree. An ordinary mechanical fuse is used to activate it. The explosion produces an aimed swath of fragments that hit the target out to a distance of 180 meters: (1) M18A1 Claymore mine (USA), (2) fuse, (3) tripwire. The mine is mounted at a height of 1.2-1.6 meters.



But the "ghosts" did not manage to take us by surprise. They miscalculated because they underestimated our sappers' skill. For our part, we drew certain conclusions for ourselves, in particular that steep bottleneck turns on mountain roads

are mined not only on the approach to them but also on the way down.

There are other “ploys” as well. For example, some buildings and bridges close to or on the roadways that the “ghosts” themselves used were not demolished. Tunnels were most often mined in the middle or at the end in order to “draw” in [concentrate] as many vehicles as possible into the area.

On hard-surface roads, mines were usually laid on the shoulder or in the roadway, primarily where there were oil spots or potholes, where repairs were being carried out, as well as on detours.

On gravel and dirt roads, mines were located practically anywhere on the road surface, on the shoulder, or in ditches. But all the same, most often they were laid on well-traveled tracks. The favorite places for laying mines were mountain passes, steep hairpin curves, ledges, defiles, and so on. In a word, mines were laid where it was difficult to bypass them.

In order to make a blast more destructive and hamper search and deactivation, the “ghosts” often laid two to three mines in a single hole (a mine or roadside bomb with an extra explosive charge, fuse, or pressure-release switch). They usually booby-trapped these mines. Figures 2-7 show some versions of such “booby traps.”

The “ghosts” often covered anti-tank minefields (mine clusters) with anti-personnel mines. They clustered anti-personnel mines or laid individual mines in ditches or on the shoulder, on detours around destroyed road structures, in rubble, near to and in craters, in vehicle parking and maintenance areas, close to water sources, and so on. The “ghosts” most often laid anti-personnel blast mines on mountain paths, and tripwire-activated fragmentation mines on the adjacent slopes (see Figures 8-9).

The obstacles’ locations are marked with signs of a sort — a broken branch or shrub, a notch on a tree, a barely noticeable pyramid of two to three stones on or close to the road, and so on. Areas where anti-personnel or mixed minefields and powerful roadside bombs have been laid were most frequently marked.

To gain the upper hand over an adversary, one must be well acquainted with his strengths and weaknesses and tactics. Sappers must have a sound knowledge of enemy explosive items, mining methods, and the marking system that the enemy uses. Only then, by combining their knowledge with strong mine neutralization skills, can they effectively figure out all sorts of “tricks” to prevent casualties and the destruction of materiel. It is the duty of commanders to teach sappers all of this.

IEDs are nothing new to the Afghanistan battlefield, and the Soviet experience still holds value today. This is a look back at the history of the IED before the introduction of the high-tech, remote fusing systems. The Mujahideen used some remote fusing during the Soviet-Afghan War, but they were primarily hard wired. High-tech counter-IED systems are valuable, but the trained soldier, who understands the enemy’s patterns,

history, and techniques is still the most effective counter-IED system in the force.

Notes

¹ Boris V. Gromov, *Ogranichennyi kontingent [Limited contingent]*, Moscow: Progress Publishers, 1994, 312.

² Aleksandr Lyakhovskiy, *Tragediya i doblest’ Afgana [The Tragedy and Valor of the Afghanistan Veteran]* (Moscow: Iskona, 1995), appendix. This figure and the preceding and following paragraphs were used from 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, 10-16. Similar information is available from Lester W. Grau, “Mine Warfare and Counterinsurgency: The Russian View,” *Engineer*, March 1999.

³ Petr Antonov, “Chemu učit opyt” [What does experience teach?], *Armeyskiy sbornik [Army Digest]*, January 1997, 35.

⁴ G. F. Krivosheev, *Grif sekretnosti snyat [The secret seal has been removed]* (Moscow: Voenizdat, 1993), 401-405. These are official figures, but recent material suggests that the actual casualty rates are higher — some suggesting twice the reported figures. See “The Russian General Staff” (Lester W. Grau and Michael Gress translators and editors), *The Soviet-Afghan War: How a Superpower Fought and Lost* (Lawrence, KS: University Press of Kansas, 2002).

⁵ E. A. Nechaev, A. K. Tutokhel, A. I. Gritsanov, and I. D. Kosachev, “Meditsinskoe obespechenie 40-iy armii: tsifry i fakty” [Medical Support of the 40th Army: Facts and Figures], *Voenno-meditsinskiy zhurnal [Military Medical Journal]*, August 1991, 4.

⁶ For an examination of the nature of injuries and evacuation procedures, see Lester W. Grau and William A. Jorgensen, “Handling the Wounded in a Counter-Guerrilla War: The Soviet/Russian Experience in Afghanistan and Chechnya,” *Army Medical Department Journal*, January-February 1998.

⁷ Yu.K. Yanov, V.R. Gofman, L.A. Glaznikov, A.T. Grechko and Yu.A. Shulev, “Diagnostika povrezhdeniy slukhovoy sistemy v ranniy period minno-vzryvnoy travmy i optimizatsiya lecheniya postradavshikh” [“Diagnosis of Damage to the Auditory System in the Early Period of Mine-explosion Trauma and Optimum Care of the Victim”], *Voenno-meditsinskiy zhurnal [Military Medical Journal]*, April 1997, 26.

⁸ E. I Kaminsky, [“Dirty Tricks of the ‘Ghosts’”], *Armeyskiy sbornik [Army Digest]*, August 2009.

⁹ The Italian plastic TC-6 antitank mines were a great favorite with the Mujahideen, and they received a good quantity of them. Afghans often double-stacked these mines in order to insure that they killed their target.

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