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Underground Combat: Stereophonic Blasting, Tunnel Rats and the Soviet-Afghan War

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The United States Army fought subterranean battles in the tunnels of Vietnam. Following a few tear gas grenades or a charge of C⁴ plastic explosive, "tunnel rats" would go underground to find Viet Cong or North Vietnamese combatants or materiel. Small, slender soldiers, armed with a flashlight and a .45 caliber pistol, would crawl into the Vietnamese tunnels for reconnaissance and possibly close combat. Almost all of the Vietnam-era tunnel rats have left active duty by now, but the need to train for this type of underground combat remains. The US Army's experience was not unique. From 1979 to 1989, the Soviet 40th Army waged war against the Mujahideen in Afghanistan. Part of this war was fought in the tunnels of Afghanistan, which were larger and far more extensive than those of South Vietnam.

Welcome to the Underground

In the Near East, water is life itself. Over the centuries, the local inhabitants of Iran, Afghanistan and Western Pakistan have taken some extraordinary measures to preserve and conserve this precious resource. Since many of the rivers are seasonal, the rural inhabitants have found ways to prolong their agricultural water supply during the dry months. Open-ditch irrigation is used in the northern part of the country, where the water table is relatively shallow, but in eastern, southern and southwest Afghanistan, the extensive underground *karez* (manmade water system) is necessary. ⁽¹⁾ A common sight, when flying over these regions, are the neat lines of mounds

which lead from the foothills across the desert to the "green zones" of vegetation surrounding towns and villages. The mounds are actually the entrances to shafts which intersect the water table and are connected to each other by tunnels. (See diagram 1). The deepest shaft highest on the hillside intercepts the water table. The water then moves through the tunnels and then out in the irrigation ditches and fields by the towns and villages.⁽²⁾ Some of these *karez* stretch for several kilometers underground. Some claim that the *karez* system was already working when Alexander the Great came through Afghanistan in 328 B.C.⁽³⁾

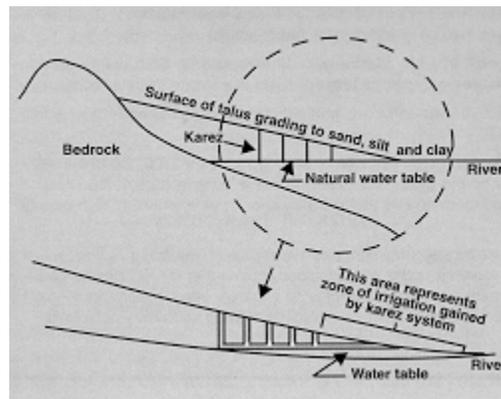


Diagram 1

The karez are dug by farmers. Occasionally they use large ceramic tile drain pipes to shore up weak sections of the strata. It is dangerous work for the shafts reach nine to 15 meters, with some over 30 meters deep. The *karez* are labor and maintenance-intensive. The silt must be cleaned out annually and hauled to the shaft surface by a windlass using goatskin bags.⁽⁴⁾

The *karez* have another use. Since ancient times, these underground waterways have been used by the villagers for shelter against invading armies. Accounts of the chroniclers of Afghan history in medieval times refer to the use of the *karez* by civilians, as well as combatants, during the invasion of Genghis Khans's Mongol armies in 1221 A.D.. The Mongols set out to destroy all major cities in Afghanistan and the neighboring area and made every effort to massacre the inhabitants to the last man.⁽⁵⁾ The Mongols did not go into the tunnels after the refugees. Rather, a day or two after destroying the town, the Mongols would send a small detachment back to the area to cut down the resurfaced survivors. They did this to insure that no potential resistance against Mongol rule remained. The Mongols learned, during their initial campaigns, that the official surrender of a city does not guarantee the permanent submission of the area, since the inhabitants would often rise against the invader, once his main force had moved on.

During the Soviet occupation, the villagers and the local Mujahideen guerrillas used the *karez* system as a hiding place. Since the towns and villages are close to the *karez* system, they are ready-made shelters from bombing and artillery attacks. The guerillas would dig caves in the sides of the shafts to hide weapons and themselves and use the *karez* tunnel network to move undetected to and from ambush sites and attack positions. According to Mujahideen eyewitness accounts, the Soviet forces passing through an area would not usually conduct an elaborate effort to flush out the refugees and guerrillas hiding in the tunnels. However, in major cordon and search actions, the Soviets and Afghan communist forces made special attempts to destroy the underground Mujahideen.⁽⁶⁾

Underground Warfare 101

In the mid-1980s, the Soviets ran a tunnel neutralization course in Paghman Province some 14 kilometers to the northwest of the capital city of Kabul. The course was designed for Afghan special forces soldiers and was similar to courses run for Soviet sappers in Afghanistan. The school was necessary since men do not readily go underground to fight. Tunnels are ideal locations for a booby trap, a knife thrust from a side tunnel and cave-ins.⁽⁷⁾ Further, tunnels teem with snakes, scorpions and other creatures.⁽⁸⁾ After a quick course in theory, the tunnel neutralization course moved out to the field for practical application.

The soldiers conducted a reconnaissance to find the shaft entries (usually marked by a mound). The Soviets taught the soldiers to form into two covering groups and hold two adjacent shafts simultaneously. Since civilians often hid in these *karez*, the first step was to yell into the shaft demanding that anyone sheltering inside come out.⁽⁹⁾ The soldiers were taught to do their yelling without exposing themselves to answering gun shots from within the *karez*. If no one answered and came out, the next step was to throw in two RGD-5 concussion grenades.⁽¹⁰⁾ After the grenades exploded, it was customary to again demand that the occupants surrender since the *karez* was about to be blown up.⁽¹¹⁾

The depth of the shaft could be determined from the sound of a falling rock tossed inside. Then the soldiers would use a mirror to reflect sunlight down into the shaft and examine the shaft. If there were any areas that could not be examined, the soldiers would tie a cord to a grenade and lower the grenade to the suspect area before detonating it. Only after this, would the soldiers lower a blasting charge on detonating cord. Usually they would use captured TS-2.5 or TS-6.1 Italian anti-vehicular blast mines.⁽¹²⁾ They had many of these available. The soldiers would lower the first charge to the bottom of the shaft. Then they would prepare a second charge using three or four meters of detonating cord and 800 grams (two and three-quarters pounds) of high explosive. Then they would tie or tape the detonation cord to a standard hand grenade fuse (See diagram 2). They would weight down this firing assembly with a rock or wedge it near the shaft mouth. Two trained soldiers could prepare a 20-meter shaft for detonation in about three minutes. All that remained was to pull the ring on the firing assembly. After four seconds, the charges would explode. During the explosion, it was necessary to stand some five or six meters from the mouth of the shaft, since the explosion would throw rocks out like a volcano.⁽¹³⁾

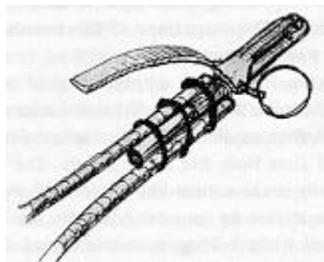


Diagram 2

This charge placement was particularly effective since the top charge would explode a fraction of a second earlier than the bottom charge. This top explosion would tightly plug the shaft with gases. Then the bottom charge would explode. The shock wave from this explosion would

rebound off the higher gas mass and rush back down and against the sides of the shaft and tunnels. This creates a deadly over-pressure between the two charges. The Soviets called this "the stereophonic effect" (See diagram 3).⁽¹⁴⁾

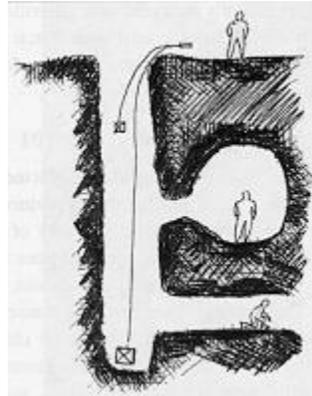


Diagram 3

The stereophonic effect can be multiplied by preparing two adjoining shafts for simultaneous detonation. The Soviets would prepare each site as described above. Then they would join the detonation cord at the midpoint between the two shafts. They would again tape the detonation cord to a standard hand grenade fuse. When the charges were set off, a wider area of over-pressure and destruction resulted. The Soviets called this "the quadraphonic effect" (See diagram 4).⁽¹⁵⁾

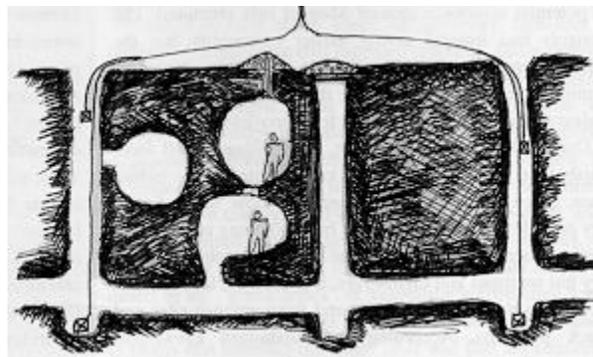


Diagram 4

A Fistful of Roman Candles

After the dust had settled, the Soviets would toss a smoke pot down each shaft. The smoke is non-toxic and the ventilation in a *karez* system is excellent. If the smoke disappeared, that meant that some tunnels were intact and that the search team could go in without wearing respirators. Search teams consisted of three or four men. Two of these would search to the front while the remainder would guard their backs from a sneak attack from the rear. The lead man had a line tied to his leg. In case the lead man found enemy material, he would tie the line to it and come back so they could all drag it out. In case the lead man was killed or wounded, his team members could drag him back by this line.⁽¹⁶⁾

The search group was armed with knives, entrenching tools, hand grenades, pistols, and assault rifles.⁽¹⁷⁾ A flashlight was taped to the forestock of the automatic rifles. The magazines of the assault rifles were loaded with tracer ammunition.

The Soviets developed a psychological weapon for underground combat using their SM signal mine. The SM is basically a Roman candle which shoots a series of red, green or white signal stars some five to 20 meters. The signal mine simultaneously emits a siren-like sound. Although designed for trip-wire release by an unwary enemy, the SM can safely be ignited while holding it in one's hand. The Soviets would tape three to six of these signal mines together and, holding them in one hand, ignite them and fire them ahead into a tunnel. For nine seconds, a brilliant shaft of light, screams of sirens, and a fountain of signal stars would fill the tunnel. The signal stars would ricochet off the tunnel walls like tracers. The Soviets would find the unsuspecting foe covering his head with his arms, even though there was no real danger unless a signal star hit someone in the eye.⁽¹⁸⁾

Flame, Fuel-Air Explosives and Fuel

Flame throwers were also used against *karez*. The Soviets replaced the short-range LPO-50 backpack flame throwers with the RPO-A flame thrower. The RPO-A is a disposable system with a maximum range of 1000 meters, a maximum effective range of 600 meters and a minimum range of 20 meters. The round is 93mm in diameter. It has three types of projectile: thermobaric (fuel-air), incendiary and smoke.⁽¹⁹⁾ The fuel-air round was most effective against *karez*. The problem was that flame thrower gunners drew more small-arms fire than radio men. An incendiary round from an RPO-A could clear out any opposition on the surface around a shaft entrance, but no flame thrower gunner wanted to lean over the mouth of a *karez* to fire down the shaft. He might be shot before he could get off a round. The Soviets would secure the shaft entrance and then lock and cock an RPO-A with a thermobaric round. They would tie two lowering lines on the RPO-A and a string on the trigger. Then they would slowly lower the RPO-A down the shaft until it was facing a tunnel. They would then pull the trigger string to fire the thermobaric round down the tunnel. The resulting over-pressure of the fuel-air round could be devastating.⁽²⁰⁾

In the early days of the war, the Soviets reportedly used POL products against *Karez*. In the spring of 1982, Soviet soldiers entered the village of Padkhab-e Shana in Logar Province. A *karez* passes through the village and many of the villagers took refuge there. According to eyewitness reports, "... villagers who fled spoke of soldiers wearing gas masks, pouring mysterious things into an underground irrigation canal where villagers, including children were hiding. Our investigation showed that the soldiers had actually used gasoline, diesel fuel and an incendiary white powder, an evil-smelling [substance] designed to ensure that the gasoline would properly burn in a tunnel with little oxygen. After the 105 people including the little children were burned to death, the population in a panic decided to run away to Pakistan."⁽²¹⁾

There were also many reports that the Soviet forces used chemical agents during the early part of the war to flush out or kill Mujahideen hiding in the *karez*.⁽²²⁾

Tunnel Rats and Future War

Digging the enemy out of tunnels appears to be a constant in guerrilla warfare and the combat engineer always seems to be the first one called for the task. Differentiating innocent civilians from combatants underground will also prove a challenge for combat engineers. Underground combat will not disappear from the future battlefield. In the quest for high-technology answers to the complex problems of tomorrow's battlefields, there are few high-technology solutions for underground combat. After all the charges are blown, determined soldiers still have to go underground to meet equally determined opponents. Specially-trained soldiers will be better prepared to cope with future subterranean combat, but subterranean combat remains the realm of raw courage, cunning and nerve.

ENDNOTES:

1. *Karez* is the Pashto term for the manmade underground water system. *Qanat* is the Arabic term used in Iran and Afghanistan. Louis Dupree, Afghanistan, New Delhi: Rama Publishers, 1980, 40. Diagram 1 is from page 41 of this book.

2. Ibid.

3. A. Bek, "Smertel'naya volna: Podzemnaya voyna v Afganistane" [Deadly wave: Underground combat in Afghanistan], Soldat udachi, [Soldier of fortune], November 1994, 4. This article is based on Colonel Bek's article and diagrams 2, 3 and 4 are Colonel Bek's.

4. Dupree, 40.

5. Ali Jalali, The Military History of Afghanistan, Volume 1, Kabul, 1964, 437-442.

6. Accounts of Mujahideen commanders from Ghazni Province made to Ali Jalali in 1984.

7. Bek, 5. Lieutenant Colonel Bek ran this school.

8. Afghanistan has two species of cobra, the deadly krait and many types of vipers. Dupree, 53.

9. Most Afghans would state that they seldom, if ever, gave warning.

10. Fragmentation grenades, such as the cast-iron body Soviet F-1, are fairly ineffective underground.

11. Bek, 5.

12. The Italian TS 6.1 mine has some six kilograms (13.2 pounds) of explosive. Soviet engineers often used a box of TNT in lieu of a mine.

13. Bek, 5.

14. Ibid.

15. Ibid.

16. Ibid, 5-6.

17. The entrenching tool was a weapon of choice for Soviet soldiers in hand-to-hand combat. Elite forces normally kept a razor-sharp edge on their entrenching tools.

18. Bek, 6.

19. Terry J. Gander and Ian V. Hogg, Jane's Infantry Weapons 1995-1996, Surrey: Jane's Information Group Limited, 1995, 203-204.

20. ²⁰ Russian General Staff material that Mr. Grau is currently translating and editing for publication.

21. Mike Barry, International Afghanistan Hearing, edited by the Committee for International Afghanistan Hearing, Oslo, 1984 as cited by M. Hassan Kakar, Afghanistan: The Soviet Invasion and the Afghan Response, 1979-1982, Berkeley, 1995, 234-235.

22. State Department Special Report # 106, Afghanistan: Three Years of Occupation, Washington: US Government Printing Office, December 1982, 5.