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A Weapon For All Seasons: The Old But Effective RPG-7 Promises to Haunt the Battlefields of Tomorrow

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The RPG-7 On the Battlefields of Today and Tomorrow

The RPG-7 anti-tank grenade launcher is one of the most common and most effective infantry weapons in contemporary conflicts. It is rugged, simple and carries a lethal punch. Whether downing US Blackhawk helicopters in Somalia, blasting Russian tanks in Chechnya, or attacking government strong points in Angola, the RPG-7 is the weapon of choice for many infantrymen and guerrillas around the world.

The RPG-7 is the lineal descendant of the World War II German *Panzerfaust*. It is relatively cheap, quite effective and found everywhere. The RPG-7 was adopted by the Soviet Armed Forces in 1961. Today, it is part of the TO&E of over 40 different countries' armies and several of these countries, besides Russia, are licensed to build their own.⁽¹⁾ Other manufacturers include Bulgaria, China, Iran, Iraq, Romania and Pakistan.

The RPG-7 is a shoulder-fired, muzzle-loaded, antitank and antipersonnel grenade launcher which launches a variety of fin-stabilized, oversized grenades from a 40mm tube. The launcher with optical sight weighs 6.9 kilograms (15.2 pounds) and has a maximum effective range of 300 meters against moving point targets and 500 meters against stationary point targets. The maximum range for antitank grenades against area targets is 920 meters, at which point the round self-destructs after its 4.5 second flight. The antipersonnel grenades reach over 1100 meters. Among the production grenades are the PG-7, PG-7M, PG-7N, and PG-7VL antitank grenades with armor penetrability of up to 600mm of rolled homogeneous steel. The PG-7VR is a tandem warhead designed to penetrate explosive reactive armor and the armor underneath. The OG-7 and OG-7M are high-explosive antipersonnel grenades.⁽²⁾

The Soviet Army assigned one RPG-7 per motorized rifle squad.⁽³⁾ Forces involved in regional conflicts tend to add more RPGs to their organizations. In the Iran-Iraq War, the Iranian 11-man squad had two RPG-7 gunners. In the Soviet-Afghan War, the *Mujahideen*⁽⁴⁾ averaged one RPG for every 10-12 combatants in 1983-1985. By 1987, they were two RPG-7s for every 10-12 combatants. The Mujahideen formed special armored-vehicle hunter-killer teams where 50 to 80% of the personnel were armed with RPG-7s. This could be up to 15 RPGs. When there

were't mortars available, these groups also used their RPG-7s as a form of pseudo-artillery and conducted RPG preparation fires.⁽⁵⁾

Constricted terrain (mountains, forest, jungle, and population centers) leads to close combat. When the combatants are 10-30 meters apart, artillery and air support is practically nonexistent due to the danger of fratricide. Close combat is a direct-fire brawl in which the RPG-7 excels.⁽⁶⁾

Combat in the High Desert

The Soviet -Afghan War lasted from 1979 to 1989 and pitted the local Mujahideen against the Soviet occupiers and the Afghan communist government. Afghanistan is a rugged land, full of towering mountains, vast deserts, "green zones"⁽⁷⁾ and occasional forest. Guerrilla warfare favors the use of light infantry. The Soviets never fielded enough light infantry to match the quality light infantry of the Mujahideen. The RPG-7 was the Mujahideen weapon of choice and they proved its value as a light-weight killer against Soviet tanks, armored personnel carriers, trucks and helicopters. The Soviets tried to stay at least 300 meters away from the Mujahideen--out of AK-47 Kalashnikov assault rifle and RPG-7 moving target range.⁽⁸⁾ The Mujahideen, on the other hand, tried to get in close and "hug" the Soviet force to escape Soviet artillery and air strikes while using their RPGs to good effect.⁽⁹⁾

Among the forces that the Soviets deployed to Afghanistan were two *spetsnaz* brigades.⁽¹⁰⁾ The *spetsnaz* forces were not authorized RPG-7s in their TO&Es. Instead, they were issued RPG-16s or RPG-22s.⁽¹¹⁾ The RPG-16s and RPG-22s lacked the range and punch of the RPG-7, so *spetsnaz* troops used captured Chinese and Pakistani RPG-7s. They preferred these RPGs to the Soviet-manufactured model since they are lighter, and have a folding bipod and a convenient carrying handle.

The *spetsnaz* found that the RPG-7 was ideal for taking out Mujahideen firing positions dug into mountain slopes. They would aim the RPG-7 to hit above and behind the firing position, showering the firing position with shrapnel and pieces of rock.⁽¹²⁾

The Mujahideen used the RPG antitank grenades against both vehicles and personnel. The antitank round has a lethal bursting radius of some four meters and can kill with blast and shrapnel. The Mujahideen learned that the best way to destroy a vehicle was to engage it with two or three RPGs simultaneously from a range of 20-50 meters. The chances of hitting the target with a lethal shot are greatly increased by firing a number of shots at close range. Further, the vehicle under attack has less of a chance to react to the attack.

The rebels in Tadjikistan in 1992 applied this same technique when attacking T-72 tanks equipped with reactive armor. Since they lacked the anti-reactive armor PG-7VR tandem warhead, the first gunner would hit the tank to blow a hole in the reactive armor and the second and third gunner would fire the kill shots at the exposed area. This "double-teaming" also usually took out the tank's vision blocks, so if the tank survived, it was blind allowing the RPG gunners time to reposition, reload and reengage. Another "trick of the trade" was to throw a fragmentation grenade on the T-72's front deck to take out the driver's vision block before the

massed RPGs opened up on the tank. The optimum shot for the Tadjik rebels was against the rear section of the T-72 turret.

The biggest danger to the RPG gunners was infantry accompanying tanks, so they tried to take out tanks that were out of immediate infantry support range. Further, RPG gunners usually were accompanied by supporting snipers and machine gunners and an assistant RPG gunner carrying an assault rifle. These could protect the RPG gunner from enemy infantry. It was absolutely necessary, if the RPG gunners were not firing from prepared positions, that they change firing positions after every shot. This was especially true if they failed to kill their target with the first shot or the target had a supporting vehicle in overwatch. RPG gunners who were caught up in the heat of the moment and stood their ground were quickly killed.⁽¹³⁾

RPG-7s were especially valuable in executing an ambush. RPG positions were selected with particular care, then dug-in, reinforced and camouflaged. The area behind the firing positions were soaked for two-four meters in depth with water to prevent a tell-tale cloud of dust. The firing position was hidden within local foliage--brush, reeds, corn and tall grasses up to two meters high. It was only necessary to have a clear view of the target and an unimpeded pathway where the grenade could fly without be deflected by twigs and foliage.

No matter how well camouflaged and watered-down a position, the launching signature of a RPG is unmistakable. The flash and the whitish blue-grey smoke is a clear give-away and the surviving RPG gunner is one who quickly shifts positions or dives deep into a hole.

Helicopter hunting

While the RPG was designed to kill tanks and other combat vehicles, it has brought down a number of helicopters as well. During the fighting in Mogadishu, Somalia in October 1994, the two US Army Blackhawk helicopters shot down were by the RPG. In Afghanistan, the Mujahideen found that the best anti-helicopter tactics were anti-helicopter ambushes. The first variant was to identify likely landing zones and mine them. Then the Mujahideen would position machine guns and RPGs around the landing zone. As the helicopter landed, massed RPG and machine gun fire would tear into the aircraft.⁽¹⁴⁾

If the Mujahideen could not lure helicopters into an ambush kill zone, the RPG could still engage helicopters. The Mujahideen found that a frontal shot at a range of 100 meters was optimum against an approaching helicopter.⁽¹⁵⁾ As before, the more RPGs firing simultaneously, the better chance of a hit and escape from an avenging wingman.⁽¹⁶⁾ Should the helicopters be flying further away, it was better to wait until the helicopter was 700-800 meters away and then fire, trying to catch the helicopter with the explosion of the round's self-destruction at 920 meters distance. Chances of hitting a helicopter at this range by the self-destruct mechanism were very limited, but they served to discourage reconnaissance helicopters and air assault landings, particularly if a SA-7 *Strela* or a Stinger shoulder-fired surface-to-air missile was also firing.⁽¹⁷⁾

Combat in Cities

In December 1994, the Russian Army entered the break-away Republic of Chechnya and attempted to seize the Chechen capital of Grozny from the march. After this attempt failed, the Russian Army spent two months in deliberate house-to-house fighting before finally capturing the city.⁽¹⁸⁾ During the fighting, the Russian conscript force was badly mauled by the more-mature, dedicated Chechen force. During the first month of the conflict, Russian forces wrote off 225 armored vehicles as nonrepairable battle losses. This represents 10.23% of the armored vehicles initially committed to the campaign.⁽¹⁹⁾ The bulk of these losses were due to shoulder-fired antitank weapons and antitank grenades.

The Chechen forces were armed with Soviet and Russian-produced weapons and most Chechen fighters had served in the Soviet Armed Forces. The Chechen lower-level combat group consisted of 15 to 20 personnel subdivided into three or four-man fighting cells. These cells had an antitank gunner (normally armed with the RPG-7 or RPG-18 shoulder-fired antitank rocket launcher), a machine gunner and a sniper.⁽²⁰⁾ Additional personnel served as ammunition bearers and assistant gunners. Chechen combat groups deployed these cells as anti-armor hunter-killer teams. The sniper and machine gunner would pin down the supporting infantry while the antitank gunner would engage the armored target. Teams deployed at ground level, in second and third stories, and in basements of buildings. Normally five or six hunter-killer teams simultaneously attacked a single armored vehicle. Kill shots were generally made against the top, rear and sides of vehicles. (See diagram 1) Chechens also dropped bottles filled with gasoline or jellied fuel on top of vehicles.⁽²¹⁾ The Chechen hunter-killer teams tried to trap vehicle columns in city streets where destruction of the first and last vehicles will trap the column and allow its total destruction.

The elevation and depression angles of the Russian tank barrels were incapable of dealing with hunter-killer teams fighting from basements and second or third-story positions and the simultaneous attack from five or six teams negated the effectiveness of the tanks' machine guns. The Russians attached ZSU 23-4 and 2S6 track-mounted anti-aircraft guns to armored columns to respond to these difficult-to-engage hunter-killer teams.⁽²²⁾

Staying Alive

The Soviets were not the only modern army to worry about the effectiveness of the RPG. South African and Namibian forces fighting Angolan guerrillas in Namibia during the 1980s learned to give the RPG a wide berth. Their standard drill, when travelling in an armored personnel carrier and encountering Angolan guerrillas with an RPG, was to immediately begin driving around the guerrillas in an ever-widening circle. They would fire into the circle with automatic weapons. The moving vehicle was harder for the guerrilla RPG gunner to hit and the soldiers were able to exploit their mobility and firepower.⁽²³⁾ Dismounting troops to advance on guerrillas while the stationary personnel carrier provides supporting fire is a good way to lose the carrier.

Tanks and other ground combat vehicles need to be protected against the RPG. Sandbagging and mounting reactive armor were reasonable solutions until the introduction of the anti-reactive armor PG-7VR tandem round. The best short-term solution appears to be fitting combat vehicles with a light-weight stand-off screen.

When the Soviets moved through heavy vegetation in Afghanistan, they would sometimes walk a wall of high-explosive fragmentation rounds in front of the vehicles to keep the RPG gunners at bay--or at least to ruin their aim.⁽²⁴⁾ This is an expensive option in terms of artillery or mortar rounds, but it does work.

When practical, the best way to protect ground vehicles from the RPG is to put infantry well forward of the vehicles to find and destroy the RPG gunners. Combat vehicles should stay out of urban areas or areas dominated by overwatching terrain and tall trees until the infantry has cleared and posted the area. Moving under smoke or at night also helps protect ground vehicles. Convoys should have a security escort, smoke laying capability and helicopter coverage. All vehicle drivers should have several smoke grenades.⁽²⁵⁾

There are several ways to protect helicopters from the RPG:

- Vary the take-off and landing directions from the helipads.
- Never fly a "race-track" or other identifiable pattern.
- Never follow streets, roads, canyons or river lines for any length.
- Always allow 500 meters between the helicopter and its wingman. This allows the wingman full range of his weaponry to engage RPG gunners.
- Vary the flight tactics and flying pattern, sometimes flying with two helicopters and sometimes with three.
- Prep a LZ with an over-pressure system (fuel-air) before landing.
- Use pathfinders on any LZ before committing the full landing force.
- Never set patterns by time, formation or sequence of events.⁽²⁶⁾

The RPG-7 and asymmetrical future combat

The RPG-7 will be around for a good while yet. It is a proven, cheap killer of technology which will continue to play a significant role--particularly when conventional forces are pitted against irregular forces. Russian veterans are enthusiastic about the RPG-7 and have suggested that the Russians need to develop an antipersonnel round, an incendiary round, a smoke round, an illumination round and other special-purpose rounds to give the RPG-7 more flexibility in future combat.⁽²⁷⁾ US soldiers need to be aware of the RPG-7 and how it has been deployed. The chances are, whenever a US soldier is deployed to a trouble spot, the RPG-7 will be part of the local landscape.

ENDNOTES:

1. Aleksandr Sykholeskiy, "Artilleriya partisan: RPG v lokal'nykh vooruzhennykh konfliktakh" [The guerrilla's artillery: The RPG in local armed conflicts], Soldat udachi [Soldier of fortune], February 1996, 42.

2. Terry J. Gander and Ian V. Hogg (editors), Jane's Infantry Weapons, Surrey: Jane's Information Group, 1995, 303-305. For a thorough discussion, see Scott C. Janzen, "The Story of the Rocket Propelled Grenade", Red Thrust Star, April 1997, 21-25 or <http://leav-www.army.mil/fmso/fmso.htm>.

3. I. M. Andrusenko, R.G. Dukov, and Yu. R. Fomin, Motostrelkovyy (tankovyy) vzbod v boyu [Motorized rifle (tank) platoon in combat], Moscow: Voenizdat, 1989, 26-28.
4. Holy warrior. The Mujahideen were fighting for their homes and their Islamic faith.
5. Sykholesskiy, 42.
6. Ibid, 43.
7. The "green zone" is a fertile, agricultural region of gardens and vineyards bisected by a network of irrigation ditches and adobe walls. It is practically impassible for vehicles.
8. Ali A. Jalali and Lester W. Grau, The Other Side of the Mountain: Mujahideen Tactics in the Soviet-Afghan War, to be published in 1998, chapter 15.
9. Sykholesskiy, 43.
10. Special forces. These are a blend of long-range reconnaissance and commando forces.
11. The RPG-16 and RPG-22 are one-shot antitank weapons similar to the US LAW (light-weight antitank weapon).
12. Sykholesskiy, 43.
13. Ibid, 44.
14. A second variant of the ambush was to position heavy machine guns in caves dug into canyon walls where they could fire horizontally across the narrow canyon. They would then bait the aircraft by positioning an attractive target on the canyon floor. The bait would lure the aircraft into the canyon where multiple machine guns would open up on its flight path. Jalali and Grau.
15. Sykholesskiy, 45.
16. In the Somalia fighting, both helicopters were brought down by a tail shot by a single RPG-7. Mark Bowden, "Blackhawk Down", The Philadelphia Enquirer, <http://www3.phillynews.com>.
17. Sykholesskiy, 45.
18. For a discussion of changing Russian urban tactics, see Lester W. Grau, "Russian Urban Tactics: Lessons from the Battle for Grozny", Strategic Forum, Number 38, July 1995.
19. N. N. Novichkov, V. Ya. Snegovskiy, A. G. Sokolov and V. Yu. Shvarev, Rossiyskie vooruzhennye sily v chechenskom konflikte: Analiz, Itogi, Vyvody [Russian armed force in the Chechen conflict: Analysis, outcomes and conclusions], Moscow: Kholveg-Infoglob-Trivola, 1995, 138-139. For the same period of time, forward-support Russian maintenance personnel

repaired 217 armored vehicles, while depot maintenance repaired another 404 armored vehicles according to Sergey Maev and Sergey Roshchin, "STO v Grozny" [Technical Maintenance Stations in Grozny], Armeyskiy sbornik [Army digest], December 1995, 58. These were not all combat-induced losses, but it seems to indicate that 846 of 2221 armored vehicles (38%) were out of action for some period of time during the two-month battle for Grozny.

20. "Pamyatka lichnomu sostavu chastey I podrazdeleniy po vedeniyu boevykh deistviy v Chechenskoy Respublike" [Instructions for unit and subunit personnel involved in combat in the Chechen Republic], Ameryskiy sbornik, January 1996, 37.

21. Novichkov, 145.

22. Ibid, 123 For a more complete treatment of the subject, see Lester W. Grau, "Russian-manufactured Armored Vehicle Vulnerability in Urban Combat: The Chechnya Experience", Red Thrust Star, January 1997, 16-18 or [On Line Version](#).

23. Author discussions with a South African officer at Fort Leavenworth, Kansas during March 1995.

24. Lester W. Grau, The Bear Went Over the Mountain: Soviet Combat Tactics in Afghanistan, London: Frank Cass Publishers, 1998, 24-26.

25. Author's opinion.

26. Author's opinion based on conversations with Major Darr Reimers, an army aviator.

27. Sykholeskiy, 61.