

Cold War Armor After Chechnya:

AN ASSESSMENT
OF THE RUSSIAN T-80

by Major James M. Warford



The two-man vehicle inspection team had its hands full. Sergei Lebov and Yuri Medved would only be allowed a short visit to the combat zone prior to their return flight to Moscow and the bumpy drive back to the Russian Armor Development Center at Kubinka. The report they were to present had very quickly become one of the highest priorities in the Russian Army. Their mission was to inspect as many of the damaged and destroyed Russian armored vehicles in Chechnya as was physically possible. In addition to the large number of destroyed light armored vehicles, the two inspectors were able to examine 23 various T-72 main battle tanks (MBTs) and 10 T-80BV premium tanks (PTs). While not all the damage done to these tanks by the rebels was severe, some of it was indeed catastrophic. In one case, two Russian T-72A MBTs destroyed during the battle around the presidential palace in Grozny looked like some strange monument to the fighting with their disembodied turrets arranged neatly on the street next to their destroyed hulls.

Lebov and Medved had the task of piecing together the cause of these de-capitalations. This type of work was not new to the inspectors. They had seen similar destruction on the battlefields of Desert Storm and in the former Yugoslavia. It was clear to both men that what ordnance scientists called a “munitions event” was the cause of the turret-hull separations. The ignition of the Russian tank’s onboard ammunition following penetration of the armor, would frequently cause an explosion powerful enough to blow the doomed tank’s turret off the hull and high into the air. In spite of what was being reported in the

West, Lebov and Medved knew the problem was not the design of the tanks themselves. Since the beginning of tank warfare, tanks had been going into battle with ammunition stored in open, unprotected areas within their fighting compartments. It had to be something else. What was dooming Russian tank crews by turning a significant number of hit and damaged tanks into such catastrophic losses?

Located approximately 60 miles outside Moscow, the Kubinka military base is the home of what was a very secret armored vehicle development and test facility. According to published reports, a collection of vehicles maintained in a museum at Kubinka includes some armored vehicles that had never been seen before. Additionally, several fully operational Western armored vehicles are also on hand, including a U.S. M60A1 MBT, two U.S. M48 MBTs, one Israeli Patton 105 (M48A5) MBT, and one British Chieftain MK 5 MBT. It was here, on 20 February 1995, that the Russian Minister of Defense, General Pavel Grachev, spoke during a special armor conference. His comments may have a huge impact on the capabilities and development of Russian armor, but they may also encourage reactionaries in the West to mistakenly underestimate current and future Russian tanks.

Although a complete text of General Grachev’s comments is apparently not available, it is possible to present an examination of the key points. The focus of his remarks was the reported poor performance of Russian armor during the fighting in Chechnya. Ac-

cording to General Grachev, the Russian Army deployed 2,221 armored vehicles into Chechnya starting on 14 December 1994. Of that total, 225-250 were total losses.¹ Western sources reported that Grachev was dissatisfied with the performance of Russian armor in general, and with the T-80 PT in particular. According to the *Boston Globe*, “The T-80 tank — the army’s main fighting vehicle, which gave Pentagon chiefs nightmares in the last decade of the Cold War — has turned out to be a junk heap on the battlefields of Chechnya.”² Published sources report that General Grachev specifically identified three areas as shortcomings of the T-80: insufficient armor protection; the gas turbine engine’s thirst for fuel; and the automatic loading system’s difficulty with semi-combustible ammunition cartridges. While General Grachev apparently did not criticize the T-80 as a whole, or say that it was an unsatisfactory tank, he made it clear that changes would have to be made.

Before we examine these reported deficiencies, we must determine the exact tank type and model in question. The Russian Army deployed a wide range of armored vehicles in Chechnya and, from the information available, it is not clear which tanks actually took part in the fighting. Video reports carried by network news services show various T-72 MBTs, with very little evidence of T-80s. The few T-80s that are known to have participated were photographed in Grozny, and are in fact T-80BV PTs. This variant of the T-80 is based upon the T-80B PT that entered Soviet Army service in 1978. With the adoption of first-generation reactive armor, the T-80B became the T-80BV (V=Vzryvnoi,

or explosive) in 1984/85. It is important to point out that the T-80BV is only one of up to 12 different variants in the T-80 series. While some reports claim that the much more modern and improved T-80U PT variant was the target of General Grachev's comments, there is no solid evidence that any T-80Us took part in the fighting.

As previously reported in the pages of *ARMOR*, specific information concerning the armor protection of modern former Soviet and Russian tanks is very limited. It is known that the T-80BV is fitted with composite/laminate turret front and front-slope or glacis base armor. Referred to as "multi-element combination armor" by the Russians, it is of an advanced design and is certainly not a weak characteristic of the T-80B. With the addition of first-generation reactive armor, the T-80BV becomes a very tough tank to kill. The capabilities and influence of this "two-tier" frontal armor protection system (advanced composite/laminate base armor and first-generation reactive armor) are well documented and have already been discussed in the pages of *ARMOR* in some detail. According to *International Defense Review* 4/1995, "Chechen weapons failed to penetrate the T-80's armor in direct fire."³ The one place where the T-80BV (and virtually all other modern tanks) was vulnerable to Chechen rebel fire was the top surface. In fact, fire from RPG-type antitank weapons from positions in the upper floors of buildings may have been the most dangerous threat to Russian armor.

Although not a revelation in any way, demonstrations of the Russian response to this battle damage assessment (BDA) was part of the agenda for the conference at Kubinka and will be discussed below.

The T-80BV is powered by the GTD-1000TF gas turbine engine, which provides 1100 hp, a maximum road speed of 70 kph, and an operating range of 370 kms. Reportedly, General Grachev was critical of both this engine's fuel consumption and the flammability of the fuel used in combat. While the fuel used by this multi-fuel engine is an easy fix, the *type* of engine is another matter. General Grachev apparently in-



Diesel-powered T-80U parades in Red Square.

sisted that the tank's operating range be improved to allow for eight hours of operation between refuelings. To accomplish this, General Grachev announced that the Russian Armed Forces would move away from using gas turbine engines. "I say clearly to everyone, directors and constructors, [that] we are going to switch over to only using diesel. We are not going to work with gas turbine engines anymore."⁴ This announcement is very interesting for a couple of different reasons. First, the Russians have been working with gas turbine engines since at least the mid-1960s. In fact, the T-80 Base Model PT was the first tank in the world to be fielded with a gas turbine engine when it was put into service in 1976. The GTD-1250 1250-hp gas turbine engine that powers the T-80U is by all Russian accounts a very efficient and successful engine. Although a newer model than that fitted to the T-80BV that fought in Chechnya, the GTD-1250 has been a very strong performer.

Secondly, the timing of this announcement seems very suspect. The March-April 1995 issue of *ARMOR* included an article describing the new Russian T-90/T-90S Hybrid Premium Tank (HPT). A series of competitive trials were held in June 1993 putting the new diesel-powered T-90/

T-90S up against the gas turbine-powered T-80U. The goal of this competition was apparently the selection of a single "unified tank" for the Russian Army. Since the publication of that article, the Russians have confirmed that the T-90/T-90S was the winner. According to *Voyennyye Znaniya* #9 1994, the T-90/T-90S "has been selected as the (new) main tank for the Russian Armed Forces."⁵ This means that the decision to go with a single, diesel-powered tank for the Russian Army was made sometime prior to September 1994. Based upon the available information, the first combat use of the T-80BV in Chechnya occurred around 31 December 1994. It appears that when General Grachev made his pro-diesel announcement, supposedly based upon the tank's performance against the Chechen rebels, the decision had actually been made before the outbreak of the fighting in Chechnya.

The T-80BV is armed with the well-known 2A46A1 125mm smoothbore main gun, firing HVAPFSDS, HEATFS, and FRAG-HE conventional ammunition, and the KOBRA Antitank Guided Missile (ATGM). This main gun-launched ATGM, known as the AT-8 SONGSTER by NATO, is radio frequency guided and has a maximum range of 4000 meters. The missile is fed to the main gun by a fully automatic loading system.

First fielded with the T-64 Base Model PT in 1967, the "Korzina," or basket autoloader, moves the tank's ammunition from the 28-round storage carousel located below the turret floor.



T-80U in first public appearance on parade in Red Square.

In operation, the autoloader carries both the separate-loading projectile and propellant charge up to and level with the breech and loads both with a single action of the rammer. This complicated design requires a unique ammunition arrangement, with the projectile placed horizontally (pointing toward the center of the circular carousel) and the propellant charge positioned vertically. While the Korzina autoloader is used by both the T-64 series and the T-80 series, the T-72 is fitted with a less complicated system, known as the "Cassette" autoloader, which first appeared in 1973 in the T-72 Base Model MBT. The primary differences between the two autoloaders are the arrangement of the ammunition and the operation of the system. In the T-72, the separate loading projectile and propellant charge are both stored horizontally, with the propellant charge attached to the top of the projectile. The autoloader lifts both both propellant charge and projectile up to and level with the breech, and then loads the projectile and propellant charge in two separate actions. Although the Cassette autoloader of the T-72 is a simpler design, the T-80BV and the T-80U are both equipped with the Korzina system.

Both the Korzina and Cassette autoloaders are very effective and reliable systems. They have been a part of Soviet and Russian tank design since the mid-1960s and have been proven in combat. The reported problems with these autoloaders apparently mentioned by General Grachev, covered in the defense-related press, and seen on battlefields ranging from 73 Easting to the streets of Grozny, are not hardware-related. The problem is what the hardware is feeding into the main gun. The 125-mm separate-loading ammunition, fired by the T-64 series, the T-72 series, the T-80 series, and the T-90/T-90S, uses a semi-combustible cartridge case. When the main gun is fired, the cartridge case that holds the propellant charge is consumed, with the exception of the small metallic base plate. This is almost identical to the system used by the M1A1/M1A2 with its 120-mm fixed (one-piece), semi-combustible ammunition. With the Russian Korzina autoloader, the remaining base plate is returned to the now-vacant spot in the ammunition carousel. The Cassette autoloader, on the other hand, ejects the base plate out through a small circular hatch in the top of the turret.

To ensure that this semi-combustible cartridge case burns properly in the

breech, it is designed to be very flammable and clean-burning. This is what has doomed the crews of so many Russian tanks. In the West, the development and adoption of semi-combustible ammunition has been accompanied by a supporting redesign of how tank main gun ammunition is stored aboard the tank. The result is the incorporation of an ammunition magazine separated from the tank crew by armored blast doors, and equipped with "blow-out panels" to direct the force of an ammunition explosion or fire away from the crew. This design philosophy has the additional benefit of virtually ensuring that the turret will not be separated from the hull by even a massive explosion of the main gun ammunition. In fact, the necessity of separating the new 120-mm semi-combustible ammunition from the crew and the fighting

Defense Ministry Main Motor Vehicle and Armor Directorate, insists General Grachev did not say some of the critical remarks he was alleged to have said. Some people may be fooled, but potential buyers of arms and military equipment, let alone rivals, are well aware of the merits of Russian equipment. And that includes the T-80 tank.⁶ In an interview published in *Krasnaya Zvezda* on 25 March 1995, Colonel-General Galkin made some interesting comments concerning the T-80 and the fallout from the fighting in Chechnya. First, in response to critical remarks published concerning Russian tank autoloaders, he made the following statement in their defense: "The shells (in Western tanks) are kept separate from the crew. But this is only really a psychological advantage. In the event of a direct hit, the ammunition



One of the first declassified pictures of the T-80U, seen on maneuvers in 1989.

compartment may have been the key factor in the final design of the U.S. M1/M1A1 Abrams MBT. In Russia, the adoption of semi-combustible tank ammunition was not accompanied by the necessary separation of ammunition and crew. The Russians continued to field tanks designed along the same lines as older tanks that fired conventional (non-combustible) cartridge case ammunition. The significance of this outdated policy continues to mark battlefields around the world.

As mentioned above, it's not possible to assess exactly what General Grachev said at the armor conference at Kubinka. Apparently, even what little is known about his remarks is being disputed. Colonel-General Aleksandr Galkin, chief of the Russian Federation

load would still be detonated and the crew would still die."⁷ This is a very surprising comment in the light of the information available since the end of DESERT STORM. Colonel-General Galkin did admit, however, that the main gun-launched ATGMs used by modern Russian tanks are particularly vulnerable to enemy fire. The two-piece KOBRA ATGM fired by the T-80BV is stored in the Korzina's ammunition carousel just like a standard round of ammunition. "If a shaped-charge jet is fired at the T-80 on its poorly protected side and hits a (stored) missile, there may be an explosion; in fact, the entire ammunition load may be detonated. This has happened in a combat situation."⁸ According to Colonel-General Galkin, this problem was brought to light during combat operations and it will be solved very soon.

In response to the destroyed Russian armored vehicles in Chechnya and the General Grachev's criticisms, the special armor conference held at Kubinka included demonstrations of new Russian armored vehicle technology and current capabilities. Vehicle defensive system demonstrations conducted on 20 February and 2 March 1995 included a BMP-3 IFV fitted with reactive armor being engaged by an anti-tank grenade launcher at a range of only 30 meters. The new armor fitted to this well-protected BMP-3 reportedly defeated multiple hits from RPG-type weapons. Additionally, a tank fitted with "built-in dynamic defense" (probably a T-80U fitted with standard KONTAKT-5 second-generation reactive armor) defeated attacks by both HVAPFSDS and HEAT-FS ammunition. Finally, a T-72 fitted with a "grill against shaped-charge shells" was engaged by KONKURS ATGMs from 100 meters and RPG-type weapons from 40 meters. None of the missiles or grenades fired hit the targeted T-72. The defensive system that was probably being demonstrated was the ARENA active Defensive Aids Suite (DAS). The joint Russian/Franco-German ARENA DAS consists of a mast-mounted multi-directional radar that detects incoming ATGMs and launches munitions against the attacking projectiles. The ATGMs are then destroyed in flight prior to hitting the targeted tank.⁹ During this demonstration, all of the projectiles were destroyed 6-7 meters away from the target. According to Colonel-General Galkin, "No one else has this type of defense. We do, and it works."¹⁰

Certainly, the Russian T-80BV is not a "junk heap," and the reported poor performance demonstrated by the Russian Army in Chechnya was not due to the poor quality of the deployed Russian armor. Admitting that the ammunition carried by tanks like the T-80BV is potentially dangerous to the crews, the Russians also stated that the problem would be solved. This single shortcoming may in fact have already been solved since this information, like the T-80BV's vulnerability to attack from above, is unlikely to have come as a surprise to the Russians. As was demonstrated at Kubinka, Russian tank technology is very capable and is not only able to deal with whatever problems were actually encountered during the fighting, but also is continuing to advance. In some areas (the various DAS systems for example), they are far

ahead of the tank developers in the West. While General Grachev targeted his armor force with his comments at Kubinka, it's clear that the problems encountered in Chechnya were problems of leadership and not of hardware. Regardless of what was actually said, it appears that General Grachev's motivation for making comments critical of Russian armor was an attempt to deflect comments critical of Russian generalship.

As it currently stands, the threat presented by the Russian T-80 actually is a "three-pronged" threat, including three different tanks and three former Soviet Republics. The first tank in question is the Russian T-80U. Equipped with the AGAVA/BURAN PA thermal sight since 1992,¹¹ the T-80U is also fitted with KONTAKT-5 second generation reactive armor (capable of defeating both shaped-charge and kinetic energy ammunition) and fires the 3BM32 depleted uranium (DU) HVAPFSDS round and the 9K120/9M119 REFLECKS laser beam-riding ATGM. The T-80UK command variant shown at the IDEX 95 defense exhibition in Abu Dhabi was also equipped with the TSHU-1-7 SHTORA 1 DAS. Secondly, the Ukrainian T-84 PT is not only serious competition for the T-80U on the export market (it was also shown at IDEX 95), it also constitutes a serious threat to the West. Based upon the very similar diesel-powered T-80UD PT, the T-84 is equipped with the SHTORA 1 DAS, KONTAKT-5 reactive armor, and a new welded turret reported to provide up to 150 percent better armor protection than any Russian tank turret.¹² The third tank of this three-pronged threat is the one that actually fought against the Chechen rebels. In this case, however, the T-80B (T-80BV) is a product of the Republic of Belarus. Not previously available for export from Russia, the T-80B (T-80BV) is now being marketed by "BelTechExport" and represents the best of Russian Cold War tank technology.

These three tanks, along with the T-90/T-90S, represent the worst-case threat that Western armor could face on the next battlefield. They are all for sale, and are currently generating a lot of interest with potential buyers around the world. If the impressive capabilities of these three tanks are overlooked, and the threat that they present is naively reduced due to overreaction and the memory of burning Iraqi T-72s in DESERT STORM, our next fight could be far more dangerous than the last.

Notes

¹Journal Staff, "Russian military assesses errors of Chechnya campaign," *International Defense Review*, April 1995, p. 5.

²Kaplan, Fred, "Russian T-80 tank found to be lacking," *Boston Globe*, February 25, 1995.

³Journal Staff, "Russian military assesses errors of Chechnya campaign," *International Defense Review*, April 1995, p. 5.

⁴Zhigulsky, Anton, "War Exposes Russian Tank Flaws," *Defense News*, February 27-March 5, 1995, p. 36.

⁵Zayets, A., "Comparative Analysis of T-80U, Leopard 2M," *Voyennyye Znaniya*, No. 9, (September) 1994, pp. 20-21.

⁶Yegorov, Aleksandr, "Galkin: Converting Everything to Diesel, Reorganization, T-80 Flaws," *Krasnaya Zvezda*, March 25, 1995, p. 3.

⁷*Ibid.*

⁸*Ibid.*

⁹Foss, Christopher F., "Russia to export tank anti-missile system," *Jane's Defence Weekly*, April 8, 1995, p. 4.

¹⁰Yegorov, Aleksandr, "Galkin: Converting Everything to Diesel, Reorganization, T-80 Flaws," *Krasnaya Zvezda*, March 25, 1995, p. 3.

¹¹Geuckler, Andreas, "The T-80U Main Battle Tank," *Military Technology*, April 1995, p. 41.

¹²Zaloga, Steven, "Stepping Out of Russia's Shadow," *Armed Forces Journal International*, May 1995, p. 31.

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