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Russia's Secret Weapon: Armored Vehicles That Can 'Fly'

Sebastien Roblin
7/20/2017

Since the 1970s, the Russian military has possessed a diverse fleet of armored vehicles it can drop out of airplanes … with parachutes, of course.

The BMD family of infantry fighting vehicles is armed to the teeth with autocannons, machine guns and anti-tank missiles. And despite being very much a product of the Cold War, the little fighting vehicles have continued to see combat — and the new BMD-4 variant is even packing a 100-millimeter gun.

How did an airborne assault tank even come about?

Following World War II, the Soviet Union expanded its elite air landing forces — a separate branch of the military known as the VDV, which at its peak consisted of 15 Guards Airborne divisions and 13 independent brigades. Soviet strategists foresaw deploying the VDV far inside enemy territory as part of their "deep battle" doctrine, with different airborne units dedicated to strategic, operational and tactical missions.

For example, an operational airborne regiment or division might drop 100 to 300 kilometers behind enemy lines to capture river crossings, enemy command centers, logistical bases and nuclear weapons facilities.

However, Soviet military theorists were aware of the problems airborne infantry had faced during World War II, particularly in massive air-landing operations such as Operation Overlord and Market Garden — the latter which resulted in the virtual destruction of the British 1st Airborne Division.

Upon hitting the ground, scattered and disorganized paratroopers lacking mobile anti-tank weapons were likely to be slammed by counter-attacking enemy tanks. Furthermore, once landed, airborne infantry were slow to advance on objectives because they lacked their own motor vehicles.

The Soviet solution, of course, involved giving the airborne troopers their own armored vehicles — ones that can either be air dropped, lifted by helicopter, or rolled readily from a transport plane at a rough satellite airfield recently captured from the enemy.

In 1966, the Soviet Union introduced the BMP-1 infantry fighting vehicle [3], a new type of armored personnel carrier which gave mechanized infantry squads the firepower to take on tanks and entrenched ground troops. The 14.6-ton BMP-1 packs a machine gun, an anti-tank missile launcher for sniping tanks at long range, and a 73-millimeter low-pressure cannon.

Soviet designers crammed the same formidable armament package onto the much smaller and lighter aluminum-hulled BMD-1, or Boyevaya Machine Desanta, meaning "Airborne Combat Vehicle." The vehicle even boasts two additional machine guns on the corners of the front hull.

The smaller, eight-ton BMD-1 is most easily visually distinguished by its shorter front hull compared to the BMP-1.

The speedy, tracked vehicles can attain roads speeds of 50 miles per hour, 25 percent faster than the BMP-1. By 1982, each 6,500-man Soviet airborne division had 330 BMD-1s on its organizational chart, effectively making them into light mechanized units.

BMDs are compact enough that Mi-6 and Mi-26 transport helicopters can carry them, and up to three can fit inside larger Il-76 transport jets, or two within an An-12 medium transport. Heavy-duty hydraulic suspension helps the BMD cope with the impact of an air drop, and also allows for adjustable ground clearance ranging between 10 and 45 centimeters.

Originally, the Soviets' plan was to drop the vehicles in cargo palettes separately from their crew of four, but the operators often landed far away from their tanks and had trouble finding them. The solution — simple enough — was for the driver and commander to hit the ground with a jeep and drive to their BMD.

The armored vehicles still experienced rough landings while floating down to the earth at 15 to 20 meters per second, so the Soviet Union developed a rocket parachute. Touch-sensitive rods dangling below the BMD pallet activates a retro rocket upon hitting the ground, helping slow terminal landing velocity to a safer six meters per second.

The BMDs can float in more ways than one.

The light vehicles are fully amphibious, propelled through water at speeds of up to six miles per hour by two water jets similar to those on the PT-76 light tank [4]. Transitioning the vehicle for water operations merely involves lowering a trim vane, raising a driver's periscope and activating a bilge pump.

BMDs brought paratroopers one more key advantage — the vehicles are protected from many of the effects of nuclear, chemical and biological weapons, giving the crews a chance to survive on a contaminated battlefield.

However, the BMD-1 arrived with several major downsides. Its smaller, cramped passenger compartments have a lower passenger capacity of just three or four paratroopers, who must exit out a top hatch, a far more vulnerable disembarkation method than via the rear ramp on a BMP. In recent fighting in Ukraine, infantry have often elected to ride on top of their BMDs, rendering somewhat absurd the entire premise of an armored transport.

For this reason, some observers consider the BMD to be more of a light tank than a true infantry fighting vehicle.

Furthermore, the BMD has lightweight aluminum armor — not steel — which is prone to catching fire and melting, resulting in many battle-damaged BMDs being reduced to charred skeletons after the fuel ignited in combat.

The BMD-1 shares some problems in common with the BMP-1. The BMD's armor is roughly just as thin, with a maximum of 33 millimeters on the front for protection from 12.7-millimeter machine guns, and as little as 13 millimeters along the vehicles side. That's just enough to protect those inside from rifle bullets but little else.

The 73-millimeter "Grom" gun has also performed poorly in combat due to limited range and accuracy beyond 500 meters, and insufficient vertical traverse to hit targets on steep hills or at

the bottom of deep valleys. The early Malyutka anti-tank missiles carried on top proved difficult to fire, guide and reload.

Neither weapon can be fired accurately while moving.

Airborne armor in Ethiopia and Afghanistan

The Soviet Union exported BMDs not only within the Warsaw Pact, but to Cuba, Iran, Iraq and Angola. Cuban troops were possibly the first to test the Soviet mechanized airborne doctrine in combat during the Ogaden War.

In July 1977, a Somali army of 70,000 troops and 600 armored vehicles invaded Ethiopia in an attempt to capture the Ogaden region in Ethiopia, which was majority Somali in population. The Soviet Union was then allied with both Somalia and Ethiopia.

The Kremlin first attempted to mediate the conflict, and then decided to throw all its support behind the Ethiopians, sending 300 Soviet advisers who joined 15,000 Cuban expeditionary troops.

By September, Somali forces had overrun the 25,000 troops defending the town of Jijiga near the strategic Kara Marda Pass, and in November laid siege to the walled city of Harar, the regional capital. There, an army of 40,000 Ethiopian troops bolstered by Cuban soldiers and Soviet advisers brought the Somali advance to halt.

While the Ethiopians built up their strength during the rainy season, Soviet Gen. Vasiliy Petrov planned a pincer counterattack. As Cuban tanks tackled the Somalis head on in February 1978, Mi-6 transport helicopters landed 70 BMD-1 fighting vehicles and ASU-57 assault guns at Kara Marda, dozens of miles behind the Somali defenses.

Striking in unison with a frontal attack up the pass, the airborne armored offensive swiftly recaptured the pass and Jijiga soon afterward, inflicting 3,000 casualties and spreading panic throughout the Somali army, hastening its total rout from Ethiopian territory.

Two years later, BMD-1s rolled out of the cargo bays of Soviet transport planes in Kabul, Afghanistan, enabling the airborne troops to rapidly seize major Afghan cities. Of course, just as the U.S. military learned, Afghanistan may be easy to invade but it’s difficult to leave [5], and the Soviet 40th Army remained committed to counter-insurgency operations against the mujahideen for the following decade.

Of the four to six divisions in the 40th Army, the 103rd Guards Airborne Division performed the majority of offensive operations. Although the desantniki, or airborne troopers, are best remembered for their use of air-mobile tactics combined with Hind helicopter gunships [6], the paratroopers frequently relied on their BMDs to deploy quickly into combat.

However, the lightly armored vehicles were even more vulnerable to Afghan ambushes than Russia's regular BTR and BMP troop carriers. The little vehicles were vulnerable to mines, and the stony terrain wore down their tracks especially fast.

In 1985, Soviet troops in Afghanistan began receiving the BMD-2, a stop-gap model which swapped the low-pressure gun for a 2A42 30-millimeter autocannon that is more effective against infantry and light vehicles and can be fired on the move. The missile launcher was upgraded to fire newer AT-4 and AT-5 Konkurs anti-tank missiles. New steel rollers improved the vehicle's durability on rough terrain, though the vehicle was now 50 percent heavier, at 11.5 tons.

A decade earlier, the Soviet Union had introduced the slightly lengthened BTR-D, a troop carrier variant of the BMD that replaced the turret and its armament for the capacity to carry a squad of nine paratroopers. Many BTR-D variants were produced including Rheostat artillery observation vehicles, anti-tank missile and drone carriers, and armored engineering and anti-aircraft vehicles.

The most notable spinoff of the BTR-D is the tank-like 2S9 Nona with a turret-mounted 120 millimeter gun-mortar — effective at both direct fire and lobbing shells at targets up to nine kilometers away.

The 2S9 saw action in Afghanistan, where the armored mortar proved useful due to its mobility, low minimum firing range, and ability to plunge shells at steep angles behind walls and ridges.

By 1990, production began of a new 14-ton BMD-3 with a roomier, redesigned hull that accommodates the same two-man steel turret as the BMP-2, and five passengers. However, Russia only produced 143 of these as its military rapidly contracted following the dissolution of the Soviet Union.

Despite the BMD's specialized role, the vehicle did not fade into obscurity. BMDs continued to serve with airborne units fighting in Chechnya and Georgia, and even with Russia's former peacekeeping force in Kosovo.

Exported BMD-1s saw action in Iran, Angola and Iraq during the '80s and '90s. A photo from 2003 credits a tank from the U.S. Marine Corps' 1st Tank Battalion as having blown the turret off a BMD-1 in Al Tubah Habra, Iraq.

'Desantniki' in Georgia

At midnight on Aug. 7-8, 2008, Georgian forces launched an offensive against Russian-backed South Ossetian separatists. The artillery barrage, and the ground offensive that followed it, struck Russian troops based in the South Ossetian capital of Tskhinvali.

By 4:00 p.m. on Aug. 8, Moscow began flying the desantniki of the 104th Air Assault Regiment based in Pskov on Il-76s to a forward staging airfield in Beslan, North Ossetia — earlier, the site of a horrific terrorist attack [7]. The 104th, which operated BMD-1s, was soon joined by the

BMD-2s of the 234th Regiment. Both united and transited into South Ossetia via the Roki tunnel.

The publication The Tanks of August [8] from the Moscow-based Center for Analysis of Strategies of and Technologies details some of the confused action that ensued.

On Aug. 11, a battalion each from the 104th and the 234th spearheaded an offensive aimed at pushing back Georgian artillery units from Tskhinvali. Each battalion had around 20 BMDs, supported by 2S9s and BTR-Ds equipped with 23-millimeter anti-aircraft guns.

The BTR-Ds reportedly engaged Georgian Mi-24 Hind helicopters which had just shot up a Russian truck convoy, and damaged one of the gunships. Meanwhile, the 2S9 self-propelled mortars served as the only forward artillery support available to Russian ground forces at that stage of the campaign.

In one engagement, a company of Georgian engineers mounted on a dozen trucks bumped into two BMD-1s — one of them broken down — and a dozen paratroopers who had been left behind in the town of Shindisi. The blaze of cannon shells and rocket-propelled grenades from the desantniki caused the Georgian unit to scatter and take cover in nearby buildings.

The BMDs engaged in a half-hour-long firefight before Russian armored and infantry companies intervened and destroyed the Georgian unit. By the end of the same day, a Russian recon company mounted on BMDs entered the important city of Poti.

The Russian mechanized airborne units had succeeded in securing key objectives in Georgia while suffering only modest losses — with only a single BMD-2 confirmed destroyed near Shindisi.

The BMD-4 gets a large gun

In 2014, Ukrainian and Russian-backed separatist forces both made extensive use of BMD-1 and 2s and BTR-Ds — and lost 40 to 60 of the vehicles between them, highlighting the vehicle's age and vulnerability to virtually any type of heavy weapon.

Despite being intended to provide a defense against tanks, there are no accounts of BMDs destroying tanks in any conflict. The vehicles have proven handy in reconnaissance and fire support missions, but it is hard to envision large-scale parachute operations on a 21st century battlefield featuring modern anti-aircraft weapons.

Nonetheless, in 2005 Russia produced a small run of new 15-ton BMD-4 vehicles evolved from the BMD-3. This version incorporates the heavily-armed turret of the earlier BMP-3, including a 100-millimeter cannon equipped with high explosive and shaped charge anti-tank shells, and a 30 millimeter co-axial auto cannon.

The BMD-4 not only retains the Konkurs anti-tank missile launcher post on top, but can shoot long-range AT-10 Arkan missiles through the cannon.

A recent modernized variant, the BMD-4M, features increased parts commonality with the BMP-3, including an improved engine, as well a new version with a thermal imager.

Supposedly the BDM-4M's front armor has been reinforced to survive hits from 30-millimeter cannon shells, but chances are it's vulnerable like its predecessors, and its airborne and amphibious roles remain a specialized niche compared to the larger BMP-3.

This led to a rare spate of internal criticism of the vehicle, with one Russian general ridiculing [9] the production of a light vehicle "with no protection, that costs as much as a tank."

Nonetheless, the Russian military approved a new order in 2014, and the Volgograd tank factory is currently churning out dozens of BMD-4Ms and their BTR-MDM trooper carrier models each year to fulfill an order of 250. The new model will enter service with Russian naval infantry — and possibly the Indonesian navy as well — due to its amphibious capabilities.

Though the era of mass airborne drops behind enemy lines may have passed, air-deployable vehicles still have great utility, even if they're not especially tough. The U.S. Army once operated its own parachute-tank, the M-551 Sheridan [10], which saw action in Vietnam, Panama and the Gulf War. The Sheridan's only air-dropped combat mission was in Panama.

Like the BMD, the Sheridan was made of aluminum armor that left it vulnerable to mines and heavy weapons, and many were lost in action. However, the light tanks brought heavy firepower to the battlefield, especially as they were sometimes the only armor available to support infantry in the field. The Sheridan's retirement in 1996 left a gap in the airborne force structure that has yet to be replaced.

By contrast, even though Russia's airborne force has been reduced to just four divisions, the desantniki seem intent on retaining their lightly armored, air-droppable steeds just in case.

Like the United States, Russia has called up its airborne units time and time again to fight in conventional military operations — and possessing fast and heavily-armed fighting vehicles for those situations is handy, even if their armor leaves something to be desired.