

# RMS<sup>+</sup>



REVUE MILITAIRE SUISSE INTERNATIONALE : RUSSIAN VDV



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RMSINT+ May 2024



Russian airborne troops riding on top of their BMD-2 in Ukraine, flying the Russian and VDV flags.

## Editorial

### Russian VDV in the Ukraine War

**COL (GS) Dr. Alexandre J. Vautravers**

Editor in Chief, RMS+

The first issues of RMSINT+, launched in the summer of 2023, have been focused on national armed forces and defense or security policies of a number of countries.

But in order to address the ongoing war in Ukraine, it may be necessary to adapt the focus and format. Building mostly on texts originally appearing in RMS+ No. 1 and 2/2024, this international edition will cover the Russian Federation's airborne troops (VDV), as well as their engagement and the broader evolving situation in Ukraine.

After more than two years of war, it is possible to draw a number of conclusions about the capabilities, doctrines and equipment of the Russian paratrooper formations. They have indeed been at the tip of the spear of the 'special military operation' in the very first days of 2022. As such, they can be seen as the units making the greatest tactical and territorial gains in South Ukraine, taking and crossing the Dniepr by force in the Kerson oblast. But they have also been at the center of the failure to achieve the taking of the strategic objective of Kyiv, in the course of the misfortuned landing at Hostomel airport.

We also know that proud VDV have a long history - as they were indeed the precursors of their speciality, having been developed in the 1930s as an instrument of strategic surprise and an elite 'entry force' by air or by land.

The articles in this edition will present the VDV's origins, doctrine, reorganization and equipment. We will also

discuss the evolving situation in the Ukraine war. As we will see, the VDV is more an operational than a strategic instrument. And its specialized and expensive equipment may give way to an increased standardization and integration into the regular land forces.

For more information about the Ukraine war, two thematic issues have been entirely devoted to this coverage, in 2022 and 2023. One of these also concentrated on the air and drone war going on in Ukraine. These issues can be ordered online at [www.revuemilitairesuisse.ch](http://www.revuemilitairesuisse.ch), and it is also possible to subscribe to the French language original RMS+.

A+V

This publication RMSINT+ is supported by the Swiss Officers Society :



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 E-mail: [info@revuemilitairesuisse.ch](mailto:info@revuemilitairesuisse.ch)  
 IBAN: ARMS, 1009 Pully PostFinance CH84 0900 0000 1000 5209 7

Print: PCL Presses Centrales SA, chemin du Chêne 14, 1020 Renens, SWITZERLAND

ISSN 0035-368X

Revue Militaire Suisse (RMS+) is an official publication organ of the Swiss officers society. It belongs to the cantonal sections of Romandie and Berne. It is edited by the Association de la Revue militaire suisse (ARMS). The goal of RMS+ is, among others, to facilitate exchanges on military matters and develop the knowledge and general education of officers. The texts published reflect only the opinions of their authors. RMS+ is open to all contributors or those wishing to work constructively in order to improve Switzerland's security and defence.

MAJOR GENERAL Mathias Tüscher, President, ARMS



Unable to build large vessels, the Russian Navy has developed smaller platforms - like the *Buyan-M* corvette, which weighs just 500 tonnes but was built in 14 units - capable of long-range strikes using cruise missiles. This trend has been dubbed "Kalibrization".

## Strategy

### Return of the 'Strategic Surprise'

**LIEUTENANT GENERAL Laurent Michaud**

Head, Joint Operations Command, Swiss Armed Forces

The year 2023 confirms the downward trend in the global security situation. The return of power politics is compounded by natural disasters and other climatic, migratory and food crises. It is now clear that war has long since settled on Europe's doorstep, that it is only too eager to spread to the Middle East and Africa, and could break out in the Balkans and in Asia-Pacific.

After years of a unipolar world order, the world is now divided into multiple zones of influence that are increasingly emancipating themselves from that of the West. Disagreements can no longer be arbitrated in the discussion circles of international bodies, as they have been in recent decades. In the absence of a truly hegemonic world policeman, latent conflicts, often created by arbitrary border demarcations, are reawakening. Many no longer recognize the authority, if only the moral authority, of international organizations, or accept the authority of the great powers by force.

The bipolar international order inherited from the Second World War, at the time a unipolar order, ensured a certain predictability in international relations. Even the Cold War was governed by the rules of nuclear escalation and the Red Telephone. While not all the rules have disappeared in 2024, today we have to acknowledge that the return of multipolarity and the proliferation of actors, each more heterogeneous than the last, are making it more difficult to predict and manage tensions. As a consequence of this disappearance of predictability, surprise is a notion that must once again be taken into account in the calculations of political and military decision makers.

Much more than a principle in the conduct of *operative* or *tactical* operations, with which we are familiar, surprise is a constant that every player, whatever his size, can exploit at the operational and strategic levels, and which he must guard against. Surprise occurs when an actor's actions cause his victim to suddenly become aware of a discrepancy between his perceptions and reality. Surprise is therefore a psychological shock which generally involves the use of offensive means of action to get ahead of the victim, create a fait accompli and impose one's will. Surprise, through its element of psychological stupefaction, is greater when it is generated by cumulative effects in all areas of operation. This is one of the driving forces behind the shock principle theorized by Soviet thinkers in the

1920s. Unlike uncertainty or friction, surprise is an effect deliberately sought to gain the upper hand. If well executed, it can be decisive for the success of an operation.

### Information as the Preferred Vector for Surprise

The extreme virality of information highlighted in the article on the information space enables actors with few resources to influence the perceptions of their adversaries in depth and in a very short time, and to easily spread their narratives among populations and decision makers. Many actors today see the freedom of speech in democratic societies, the difficulty of moderating social network content, and the distrust of institutional speech as critical vulnerabilities that can be exploited to deceive them about their intentions and weaken the will to fight. Russia makes extensive use of this to influence Western opinion on arms deliveries to Ukraine. Generally speaking, because it plays with perceptions and fear, terrorism also makes use of surprise, previously confined to the battlefield, by moving it into the societal realm.

Threat is the result of the multiplication of capabilities and intention. While capabilities evolve slowly, intentions change very quickly, and the characteristics of the information space make it possible to transmit, or hide, these intentions rapidly in order to generate surprise. Convincing thus becomes an essential capability. Despite a concentration of forces in plain sight, Russia was able to maintain its element of surprise until February 24, 2022, thanks to skilful work on perceptions. The attack on October 7 however showed that a lengthy effort to undermine Israeli perceptions had led to the belief that Hamas had mellowed and that it no longer represented a threat. The result was a notable strategic failure for a state considered to be at the cutting edge of intelligence capabilities.

This undermining can also be seen in international perceptions of the conflict. Despite being attacked by terrorist actions deliberately targeting civilians, Israel is struggling to impose its «just war» narrative on the Palestinian question. Through the information space, legitimizing recourse to a «just war» is becoming increasingly difficult, and this is further reinforced by the decay of international norms and mediation bodies.

At the operational level, the Hamas attack showed that



even small-scale groups are now capable of planning and coordinating complex multi-domain operations in depth, without generating an electronic or digital footprint betraying their intentions. When actors deliberately choose digital sobriety, they can easily slip under the radar of intelligence services. Surprise is therefore a tool of choice for the asymmetrical actor who wants to gain an immediate advantage over a superior adversary. This attack also underlines once again the vital importance of OPSEC, PERSEC and COMSEC, because they enable us to keep our intentions to ourselves, and are fundamental requirements of surprise.

At the tactical level, the multiplication and democratization of sensors and effectors in all areas of operation means that surprise is within the reach of every soldier, even on a battlefield that has become transparent. Despite the omnipresence of technology and sensors, surprise remains an essential element. Generally speaking, the ability to act with fire immediately and everywhere, and the difficulty of attributing actions in cyber, electromagnetic and informational spaces, also contribute to this.

### Surprise Is Inherent in the Duel Warrior

How can we guard against surprise? Perhaps first and foremost, by understanding once again that war is a duel against a thinking and acting adversary, whose aims, intentions and capabilities are only imperfectly known. In this dialectic of wills, the role of perceptions is central. The problem with demilitarized Western societies that no longer accept the balance of power in this violent duel is that they deprive themselves of essential tools to protect themselves from the adversary's surprise and influence on their perceptions.

Understanding this balance of power means first and foremost developing intelligence, whether strategic, operational or tactical. It is the ideal tool for gauging the capabilities and intentions of players, and for factoring all variables into calculations. Nevertheless, as we saw in Gaza, an over-confident approach to technology cannot detect or understand all the adversary's intentions. Humans must remain at the heart of this process, because they are the only ones who can best apprehend them.

Preventing surprise also means ensuring freedom of maneuver through reserves to protect against its consequences, because surprise can never be completely avoided. Israel's mobilization of 360,000 reservists in the space of a few days, and the rapid engagement training that followed, was probably one of the factors that prevented Hamas, and other armed groups in southern Lebanon and the West Bank, from exploiting the surprise effect over the long term. Today, the militia or reservist system is the only one that enables a state and its army to rapidly mobilize the necessary mass.

At tactical level, the soldier must be prepared for the multiplication and accumulation of kinetic and non-kinetic effects and their lethality in all areas of operation. Anticipating these effects is the best way to guard against the surprise they can generate.

### The Return of Defense Capability

Subsidiary security commitments to protect international conferences such as the World Refugee Forum 2023, disaster relief operations such as those recently carried out in Valais and La Chaux-de-Fonds in Switzerland and Greece, evacuation and protection operations for our nationals in conflict zones, as well as permanent missions to promote peace, protect airspace and protect embassies have all been carried out successfully and to the satisfac-



The preparations and mobilization of Russian forces were known and available from open sources (above: the Center for Strategic and International Studies) more than six months before the Russian attack was launched in February 2022. Yet neither the media nor most leaders, including those in Ukraine, believed that such an operation would be launched.

faction of the authorities, not to mention a multitude of support operations for events of national or international importance and off-duty activities. These commitments have shown that the army knows how to respond to the unexpected.

Nevertheless, the unexpected generated by the vagaries of nature or a diffuse threat is not the same as the surprise intended and planned by a conventional adversary. As a country's strategic reserve, the role of an army is precisely to guard against such surprises. Whereas, with the end of the Cold War, the postulate of Army XXI was based on the certainty that we would have 10 years in which to prepare for geostrategic changes and build up our power, today we have to admit that we will never have that time.

Surprise occurs when an actor fails to take the measure of the threat, through arrogance or negligence, or is content to prepare for the most likely threat rather than the most dangerous. The European and global security situation only reinforces the imperative need to implement without delay the foundations that have been laid in recent years

October 7, 2023: Indiscriminate attacks and massacres - here Hamas members infiltrated on motorcycles are shooting at Israeli motorists.



for ground, air, cyber and electromagnetic spaces, and those currently being developed for orbital and information spaces.

The way forward was mapped out at the Armed Forces Command briefing on the future of our armed forces on August 17 in Bülach, and in the document *Strengthening Defence Capability*. The latter places a strong emphasis on anticipation, in particular through optimum coverage of the country by troops, to detect activities early and prevent hostile action.

If being surprised at the tactical level is relatively common in military history, being surprised at the strategic and operational levels is to make a mistake that can be fatal. We therefore need to implement these basics quickly, and ensure force development with an integral, balanced capability profile and no major vulnerabilities, because the adversary will always attack us in our blind spots. That's where he can create surprise.

L. M.

### Security Policy

#### CONNECTED 23

On August 17, 2023, a major event took place at the Kloten-Bühlach. A didactic and interactive exhibition of the Swiss Army's equipment and training, the creation of a new cyber command, from the original 41<sup>st</sup> communications brigade based there.

This was also an opportunity for the Chief of the Swiss Army (CdA), Lieutenant General Thomas Süessli, to present his new defense strategy - epitomized by a new logo and a "Black Book". Below, from top to bottom: Presentation of the new objectives by the CdA; the stages of transformation and finances, by Major Generals Alexander Kohli and René Wellinger.



Above: BMD-2 of a Russian airborne unit. Weak armour requires these formations to advance cautiously and engage fire at maximum range - using guided missiles.

Below: VDV on the offensive.







The Russian President, flanked by the Minister of Defense and the Chief of the General Staff attend a firing exercise. The reforms undertaken since 2008-2010 are now being called into question, and a significant part of Russia's military potential has been dented by the war in Ukraine.

## Ukraine

### Political and Economic Consequences of the War in Ukraine for Russia

**Prof. Olivier Védrine**

Administrator, Association Jean Monnet

There are a few questions to ask when assessing the impact of the war in Ukraine on Russian politics and the economy.

One of these questions is what kind of Russia will tomorrow be with Putin? Without Putin?

- With Putin. If Putin remains in power after 2024, as the constitution amended in 2020 allows until 2036, he could continue to pursue his aggressive, authoritarian policies at home and abroad. He could face further resistance and discontent from the opposition, civil society and the general public, especially if the war in Ukraine is prolonged and the economic and social situation deteriorates. He could also face further isolation and pressure from the international community, particularly from Western countries that oppose his actions and support Ukraine.
- Without Putin. If Putin leaves power, voluntarily or involuntarily, he could be replaced by someone from his entourage or by someone from the opposition. The first scenario might not bring much change to Russia's domestic or foreign policy, unless the new leader decides to distance himself from Putin's legacy or faces challenges from other factions within the regime. The second scenario could bring more hope for democratic reforms and peaceful relations with Ukraine and other countries, but it could also face obstacles from remnants of Putin's system or external actors who might try to influence or destabilize Russia.

The consequences of this war for Russia in terms of international relations are already mostly negative. Some of them are :

- Russia has lost its credibility and confidence as a partner and mediator in various regional and global issues, such as Syria, Iran, North Korea, etc.
- The war in Ukraine poses a major challenge to international order and to the security of Europe and the world. This has implications for Russia's relations with various players, such as Europe, China, the USA and the UN.

The consequences must also be analyzed in relation to these geographical areas and actors:

- Europe: The war in Ukraine has heightened tensions and mistrust between Russia and Europe. It has

also highlighted vulnerabilities and divisions within the European Union and NATO. Some European countries, particularly those close to Russia's borders, sought greater protection and solidarity from NATO and the United States. Others have sought to maintain dialogue and cooperation with Russia on issues such as energy and climate change. The war in Ukraine has also highlighted the need for Europe to diversify its energy sources and reduce its dependence on Russian gas. The war in Ukraine also raises questions about the future of the European security architecture and the role of institutions such as the OSCE and the Council of Europe.

- China: The war in Ukraine has complicated China's relations with Russia and the West. On the one hand, China maintained its strategic partnership with Russia and supported its position on certain issues, such as sanctions and human rights. On the other hand, China has avoided taking sides in the conflict, calling for a peaceful resolution through dialogue. China has also defended its economic interests in Ukraine and Russia, as well as in other countries involved in the Silk Roads initiative. China's position on the war in Ukraine reflects its balance between global ambitions and regional challenges.
- United States: The war in Ukraine has increased confrontation and competition between Russia and the United States. It has also reaffirmed the United States' commitment to the security and sovereignty of Ukraine and its allies in Europe. The United States has provided military, economic and diplomatic support to Ukraine, and has imposed sanctions and other

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Professor (h.c.) Olivier Védrine: Administrator of the Association Jean Monnet <https://ajmonnet.eu/members/olivier-vedrine/> A member of AAE-IHEDN, Olivier Védrine is also a member of the board of the Club Démocratique Russe en France, administrator of the Association Jean Monnet, editor-in-chief of the Russian opposition newspaper Russian Monitor, and Professor Honoris Causa of Kiev International University.

measures against Russia. The US has also sought dialogue with Russia on certain areas of common interest, such as arms control and nuclear non-proliferation. The war in Ukraine has also influenced US relations with other actors, such as China, Turkey and Iran.

- UN: The war in Ukraine has called into question the role and legitimacy of the UN as the guardian of international peace and security. It has also revealed the limits and divisions within the UN Security Council, where Russia holds a veto. The UN has tried to play a constructive role in responding to the humanitarian crisis, monitoring the human rights situation, facilitating dialogue and supporting diplomatic efforts. However, the UN has also encountered obstacles and resistance from Russia and its allies, who have accused it of bias or interference.

We also need to look at different scenarios for the end of a conflict.

In the first scenario, Ukraine wins. Western armor and aircraft arrive in sufficient numbers and on schedule. But what would be the reaction of Russia, a nuclear power in trouble?

A collapse for sure, but also a humiliation that Moscow has already experienced with Afghanistan, and which contributed to the end of the Soviet Union.

One Russian option, then, would be a reaction in the form of an «unconventional» or tactical nuclear warning. The nuclear threat has been brandished regularly since the start of the conflict whenever things go wrong for the Russians. A simple «tactical» strike, launched at a target less vital than Kiev or Ukrainian territory, exploding at sea or in the air. Chinese pressure is strong to prevent Putin from choosing this option, and not only Chinese pressure: the majority of Putin's camp is not in favor of this option. Such a dramatic response from Putin would provoke a reaction from NATO, and lead to a world war, not necessarily a nuclear one. Indeed, the United States and NATO have clearly warned Putin not to do this, but without specifying what the Alliance's reaction would be. Nevertheless, the options are known. The hypothesis of a tactical nuclear strike on the Russian side cannot be ruled out as a means of forcing negotiations.

In a second scenario, the war of attrition works in the Russians' favor, as time works for them and Western public opinion tires. How long do the Russians think they can hold out? Their economic troubles, with the fall in the rouble and the return of inflation, will no doubt make this strategy of attrition difficult to sustain. One thing is certain: it will take the Russian army many months to make progress.

What would be a Russian victory? The conquest of the whole of Ukraine has failed, as was hoped at the start of the invasion. This victory could be part of the Donbass with the annexed territories and Crimea. An advance to the Dnieper, or beyond, to Kiev, or even western Ukraine, would be too long and virtually impossible. If this were the case, we'd have to expect fierce resistance from a mobilized and militarized Ukrainian society. But a Russian victory would be an unprecedented failure for the West in the world, a failure for the values it defends and for international law. With a Russian victory, there will be conflict in Europe for years to come, as Putin and his system continue their dream of restoring the Russian Empire, and other nations taking advantage of the West's weakness will want to settle their territorial problems by force, like China with Taiwan.



The seizure and occupation of nuclear power plants in Ukraine (here: Zaporizhzhia), the use of incendiary weapons and cluster munitions, and the destruction of settlements are all obstacles to calming the conflict and reintegrating Russia into the international community.

Finally, in the third scenario, the Korean scenario, neither side wins, and peace is impossible, even with a negotiated ceasefire. It's a war of attrition, with the balance of power frozen between Ukrainian reconquest efforts and Russian mobilization, with troop numbers dwindling, arsenals emptied and adversaries exhausted to no avail. We're heading for a frozen conflict, ending in a partition agreement like the one between the two Koreas.

If Russia did not lose the war, it could mean either that it had achieved its military and political objectives in Ukraine, or that it had reached a stalemate or compromise with Ukraine and Western countries. In either case, Russia would likely seek to consolidate its influence and control over the eastern and southern regions of Ukraine, as well as Crimea, which it annexed in 2014. Russia would also seek to deter or prevent any further expansion or integration of NATO and the European Union in its neighborhood, including Moldova, Georgia and other countries aspiring to join these organizations.

However, Russia would also face many challenges and costs as a result of its aggression and occupation of Ukrainian territory. It would face more resistance and resentment from the Ukrainian people and government, who would continue to fight for their sovereignty and territorial integrity. It would also face further isolation and pressure from the international community, particularly from Western countries that oppose its actions and support Ukraine. It would also suffer economic sanctions, diplomatic boycotts, military threats, cyberattacks and other measures likely to damage its economy, politics and security. It would also continue to lose credibility and confidence as a partner and mediator in various regional and global issues, such as Syria, Iran and North Korea.

It would also have far-reaching consequences for the entire European continent. It would increase tensions and divisions between Russia and Western countries, as well as within the European Union and NATO. It would also increase the risk of further escalation or confrontation between Russia and NATO, or between Russia and other neighboring countries. It would also undermine regional stability and security, as well as the norms and values of international law and human rights. It would also affect the Continent's economic and social development, as well as its energy supply objectives.





While Russia has been able to mobilize several hundred thousand reservists and conscripts, their equipment, training and supervision pose more of a problem.



This is why some experts suggest that the best outcome for the European continent would be to end the war peacefully and diplomatically, rather than militarily or unilaterally. They propose that both sides seek a solution that respects Ukraine's sovereignty and territorial integrity, as well as the rights and interests of all concerned. They also urge the international community, and in particular Western countries, to play a more active and constructive role in facilitating dialogue and mediation between Russia and Ukraine, and in providing humanitarian aid and assistance to those affected.

There is no clear or definitive answer as to what the geopolitical situation on the European continent would be if Russia did not lose the war in Ukraine. However, it seems that neither side would benefit from a prolonged or unresolved conflict. Consequently, it may be more desirable and beneficial for both sides to seek a peaceful rather than a violent solution to this crisis.

Whatever the outcome of the conflict, Russia has already lost politically and economically.

O. V.

#### Wargames

#### Russian Battalion Tactical Group (BTG)

CPT Nicolas Penseyres

The CHPM conducted a wargame on 01.07.2023 to investigate the doctrine and concept of force generation in the Russian Armed Forces at the beginning of the War in Ukraine. The "Battalion Tactical Group" BTG (or Task Force) allowed for the concentration of all professional and contracted elements in order to allow for the initial attack to happen. During the campaign in Donbass in early summer 2022 it was still used but soon disappeared as the war evolved to become a costly and bloody positional warfare.

We used "A Fistful of TOWs 3: Miniature Wargame Rules – Modern Mechanized Warfare 1915-2015" (2011) as the ruleset to generate a tabletop wargame, allowing to represent battalion level engagements. Each stand represents a platoon, and several stands a company, the latter is the elementary building block of moral and cohesion; several of them for a battalion or battlegroup.

Our research focus followed both the questions of the strengths of the BTG, as well as of its weaknesses. This analytical wargame allowed us to reproduce a plausible action and fed a healthy discussion about doctrine and tactics:

- The RUS BTG, reinforced by an artillery battalion with two fire batteries, was tasked with capturing a village on its axis of progression, along a main road and a secondary road. The Russian commander formed two reinforced front companies, with a mechanized company in reserve. His course of action (COA): As fast as possible on the main road until the first contact, destroy or bypass resistance and encircle the village.
- The UKR motorized infantry battalion had the difficult task to make the best use of the environment and the terrain to get cover and resist the initial blow of the attack. They took a central position between the two roads to make the best use of their formations, while allowing for an easy encirclement opportunity. His course of action (COA): Hold as long as possible and fall back to a subsequent line of defense.

Detailed report available: [www.chpm.ch](http://www.chpm.ch)



The gunners of a Russian 2S19 armored howitzer battery take a break between two fire missions.

The table below is a comparison of budget efficiency between France and Russia (2021).

#### Ukraine

#### The Eastern Front remains the Eastern Front

Philippe Richardot  
Historian

The war in Ukraine has been going on for over a year and a half. In terms of the resources involved, it is the biggest European war since the Second World War. In geopolitical terms, it is reminiscent of the Cold War in terms of its policy of military alliances, the influence of the «superpowers», its arms and technology race, and its indirect lines of operation - the «proxy war» in which the West seeks to isolate and weaken Russia, while Russia seeks to divide Western opinion, sow discord and doubt, and weaken the will to defend and form alliances.

The idea of «war by proxy» was suggested in 1993 by billionaire George Soros, and required a Slavic country to carry it out, which could only be Poland or the Ukraine. This was nothing more than a reworking of Zbinyev Brzezinski's Polish-born doctrine, spelled out in *Le grand échiquier* (1997). American maps predicted the break up of Russia into several states.

In 2022, Russia acted as it did in 2008 with Georgia. After numerous provocations and unclear, then «hybrid» local situations, Moscow gave increasingly direct support to minorities demanding autonomy, and then to armed groups fighting for independence.

These preventive actions are designed to prevent NATO from reinforcing itself directly on its border.

To take action, Moscow put together a large military force of 150,000 to 200,000 soldiers - two thirds of them professionals, and the rest contracted military personnel. More than two thirds of the Russian Army's units pro-

vided troops and resources: one or two *ad hoc* Battalion Battle Groups (BTGs) bringing together the bulk of professional soldiers and operational equipment. The training of these formations, designed for engagement, took place from summer 2021, in the form of maneuvers and troop movements.

After several days of bombardments in the Donbass, Russia launched several ground, air and cyberattacks against Ukraine on the morning of February 22, 2022, with the idea of pushing for rapid negotiations. Negotiations were reportedly successful, but on the intervention of former British Prime Minister Boris Johnson, they were denounced by Ukraine on April 1. The plan for a Russian «special military operation» was thus foiled, and the two countries became bogged down in war.

In reality, it's an indirect war between NATO and Russia. On September 5, 2023, Oleksiy Danilov, head of the Ukrainian National Security Council, told a forum in Kiev: «People who think that the Third World War has not started are making a big mistake.»

#### Do a Little with a Lot or a Lot with Little

The Russian-Otoman-Kievan war pits one country against a bloc of states, and in reality pits two systems against each other. The Russian system is inherited from the Soviet Union, reorganized by Putin in 2008-2010 and «boosted» by dependence and soaring energy prices. By 2021, Russia will be the world's second-largest oil exporter, ahead of the United States. Whereas during the Cold

	France	Russia
Gross National Product (GNP)	2'957,8 md USD	1'778,7 md USD
Military Budget	56,6 md USD	65,9 md USD
Rank	6 <sup>e</sup>	5 <sup>e</sup>
Part of the World's Defense Spending	2,7%	3,1%
Artillery	134	18'266 (136x)
Tanks	406	12'420 (30x)
Naval combat vessels	126	598 (5x)
Airplanes	1'020	4'173 (4x)
Nuclear Warheads	290	6 255 (22x)





The BM-21 *Grad*, in production since 1963, is obviously reminiscent of the "Stalin organs" of the Second World War.

War, the USSR depended on American wheat, today's Russia became the leading exporter of grain and nitrate fertilizers after 2014. Fertilizers mean nitrates, and therefore explosives...

Ammunition and military equipment have a cost, but this is highly relative - particularly in terms of production capacity, wages and purchasing power. It would be a mistake to think that, for comparable sums, military budgets determine the material power of nations. A year before the war, for example, a comparison of French and Russian military budgets shows that, with USD 10 billion more, Russia had 136 times as many artillery pieces and 22 times as many nuclear warheads!

Of course, these figures must be treated with caution. First of all, the vast quantity of equipment in Russian inventories was produced during the Soviet era, not in a modern market economy with a transparent budget. Secondly, we need to consider the respective quality of these items, as well as their material availability. For example, before 2022, the availability of French *Leclerc* tanks was around 60%, while that of Russian tanks was around 21% using the same calculation rules. Russia therefore had «only» 2,685 of the 6,000 to 12,000 armored vehicles in its inventory - bearing in mind that, since 2010, Russian Ministry of Defense administrators have been working hard to reduce inventories, since they are so costly and hamper investment in new-generation equipment.

As in the Vietnam War, American analysts and decision-makers made three mistakes. The first was excessive faith in Western technology. The second was the restructuring of Western arms companies towards *high-tech*, and the abandonment of their ability to mass-produce or sustain production. The third was the belief that Russian production capacities were weak and outdated.

In 2021, following an accident, the United States stopped

producing black powder and imported it from Poland and Germany. Since March 2023, faced with the ammunition crisis created by the war in Ukraine, the United States has returned to black powder production and is seeking to import TNT from Japan.

Western «smart» munitions were sent to Ukraine on a massive scale before the war: 1/4 of the *Stinger* portable anti-aircraft missile stockpile, 1/3 of the *Javelin* anti-tank missile stockpile, equivalent to three years' ordinary production. On August 29, 2022, the *Wall Street Journal* headlined: «*Ukraine War Is Depleting U.S. Ammunition Stockpiles, Sparking Pentagon Concern*». Stockpiles of shells are now being produced in South Korea and Israel for Ukraine.

Eastern European countries have made a major contribution to Ukraine's resilience, by supplying equipment of Soviet origin - enabling it to be put into service and used quickly. Today, these countries are forced to re-equip themselves with modern equipment - often American or German, like the F-16/M-1 pair in Romania or the *Leopard 2/KF-51* in Hungary.

As former Ukrainian Defense Minister Oleksii Reznikov told *Voice of Ukraine* on September 5, 2023, his country had only two to two-and-a-half months' resources to wage war. In other words, since May 2022, the West has been materially feeding the war in Ukraine. According to Reznikov, between February 2022 and September 2023, Kiev received \$100 billion in Western aid, half of it from the United States. According to Reznikov, some 70,000 Ukrainian personnel have been trained in NATO countries. The figures for equipment supplied by the West are impressive: 7 million shells, rockets, mines, 4,500 artillery systems (guns and multiple rocket launchers), 3,500 anti-aircraft systems (from portable *Stinger* missiles to *Patriot* batteries), and 6,500 armored vehicles (from *Humvees* to *Bradley* infantry fighting vehicles).

### Performance and Numbers

Whether it's anti-tank or anti-aircraft guided missiles, or artillery systems, Russia has a reputation for having longer-range weapons than Western armies. The weakness and very limited number of modern combat aircraft led the Soviet Union and then Russia to rely on protection bubbles comprising numerous systems, deployed in a staggered fashion. This explains the development of systems capable of intercepting aircraft at 300 or even 400 km - giving their names to the S-300 and S-400 respectively. On paper, this is twice the range of Western systems: *Patriot* and *Mamba*.

While the technical qualities and performance of Russian ground-to-air missiles command respect, their performance «on paper» must be qualified by the fact that they can only detect stealth fighters or fighters using electronic jamming devices at a fraction of the weapons' maximum range. The situation in the air is even more problematic: Russian air-to-air guided weapons are optimized for long-range strikes and multiple firing, whereas Western missiles are generally more maneuverable and more resistant to countermeasures.

On the ground, the more complex and denser environment tends to «equalize» the performance of equipment, whose engagement range is often limited by obstacles or terrain contours. While the Russians have several guided vehicles capable of reaching a target 4 or even 6 kilometers away, in practice the quality of the optics - especially in difficult conditions (night, fog, smoke, etc.) - considerably reduces their practical range. Added to this is the shooter's vulnerability while illuminating the target - given that it takes

almost a minute of flight before the missile reaches such distances. Guided missiles fired from the 100 to 125 mm guns of Russian battle tanks and BMP-3s can indeed fire beyond the range of NATO tanks (4,000 meters), but the development of these weapons is mainly due to the declining accuracy and perforation capabilities of Russian weaponry beyond 1,500 meters; and such guided weapons carry a very limited explosive shaped charge.

As the operations of summer 2023 demonstrate, the Western weapons supplied to Ukraine reflect the capabilities of 1980s technology. They are not invulnerable to Russian fire, which puts an end to the reputation of the British *Challenger 2* tank in particular, weighing in at over 70 tonnes, none of which had been lost to an enemy until September 2023.

Therefore, it is not just the combatants on the battlefield who are at war. Like the industrial conflicts of the 20th Century, the production and supply war is in full swing. In this confrontation, not only numbers but also availability, efficiency and production costs play an essential role. So, it is no longer just a question of whether an M-1A1 shoots further and faster than a T-72B3: it is now a question of how to equip Ukrainian and Russian forces in 3, 6, 12 or 24 months' time. And in this game, the production of new equipment or weapons is not enough: every month, the war wears down the annual production of both sides.

The real question now is how quickly Russia can bring into service equipment that has been in storage for half a century, and how quickly Western countries can or want to dispose of their second-hand armaments.

The limited military operation imagined by Russia has become an existential war, requiring increasingly total mobilization.

### Operational Rhythm, after Stalingrad, Kursk...

The Russians, who attacked a force of 400,000 Ukrainians with 150,000, plus some 60,000 men from the two self-proclaimed republics of Donetsk and Lugansk in the Donbass, initially suffered heavy losses in armor. But on May 16, they took Marioupol, a city with a pre-war population of 430,000 and the second largest port on the Black Sea. They made a major strategic gain in the Zaporozhie and Kherson strips, closing off the Sea of Azov, which once again became a Russian lake, and securing Crimea, the Ukrainians' publicly announced goal of reconquering it by 2021. From May 6 to June 25, in one month and nineteen days, the Russians took Sieverodonetsk, an industrial city of 100,000 inhabitants. From June 25 to July 3, 2022, in eight days, the Russians scored another strategic success by taking Lyssychansk, some ten kilometers from the previous city, with which it forms a conurbation. After this, the Russians took an operational pause. In August, they made the mistake of laying off 30,000 to 50,000 soldiers at the end of their contracts, and at the end of the month launched the VOSTOK 2022 maneuvers in Siberia with 50,000 personnel and various allies, including China.

This overconfidence benefited the Ukrainians, who launched two successful counter-offensives, one in the direction of Izum-Kupiansk, defended by paratroopers and national guards, and the other towards Kherson, which was liberated because the Russians preferred to cross the Dnieper again rather than find themselves trapped in the north after the eventual bursting of the Kakhovka dam, which occurred the following summer. This double Russian defeat led to a new impetus: the enlistment of 80,000 volunteers and the mobilization of 300,000 men, whose training varied from a few weeks to a few months.

The Ukrainians were exhausted by their successes and, at the end of the year, appealed for Western military aid. General Valeri Zaluzni asked for no less than 500 tanks, and was granted 300 at the beginning of the following year. At the beginning of January, the balance of power favored Russia, whose army had reached 1.1 million, over Ukraine, which had mobilized 700,000 personnel by 2022. A new head of operations in Russia, General Sergei Vladimirovich Sourovikine, former Commander of the Aerospace Forces.

He took advantage of the winter and spring break to build a line on the southern front that bears his name, in fact a succession of five lines covering the Crimea and Mariupol. It's a very classic construction in Russian, not to say Soviet, military doctrine. First, a galaxy of fortified villages and breakwater entrenchments preceded by minefields. Then, the first line is preceded 500 meters ahead by concrete dragon's teeth, and 300 meters ahead by an



9M133 *Kornet/Spriggan* (AT-14) deployed by the VDV's of the 2nd assault wave at Hostomel - to repel the Ukrainian counter-attack from the outskirts of Kiev.

### Javelin against Kornet

The confrontation between Western and Russian equipment is reminiscent of certain features of the Second World War. On the one hand, there is the opposition between high-quality, high-value-added equipment and much more rustic equipment designed to be produced and repaired in large quantities. Today, the *Javelin* anti-tank missile, which can also be used against low-altitude aircraft, can engage a land target at 4.5 kilometers and destroy a T-90 tank for \$78,000 (\$203,000 with launcher). The *Kornet* missile, on the other hand, can do the same thing at a longer range (8,000 meters on paper... because the sighting optics and aiming mechanism have exceeded their limits at this range) for the equivalent of just \$26,000. And, for good measure, Russian doctrine calls for two guided missiles to be fired 1-2 seconds apart, to ensure that Western armor is pierced - some of which has been reinforced with Ukrainian reactive armor modules...



anti-tank ditch, followed by zig-zag trenches with antennas and buried posts. A few kilometers further back, artillery and operational depots are scattered among the hedgerows, for unlike in the Second World War, there are no longer any vast bare steppes after 1945.

To have time to build this 60-kilometer-deep and less than 200-kilometer-long complex, Surovikin trapped the Ukrainian army in a symbolic objective, just as the Stavka had set the Wehrmacht at Stalingrad. The battle of Bakhmut lasted 224 days. The Ukrainians massed the elite of their army there, almost 100,000 men. The Russians sent the Wagner private military company, already famous for its efficiency in Africa and Syria, as assault infantry. This militia was supported by the army and the Donetsk People's Militia. The ruined city was finally captured by the Russians, who let the Ukrainians flee but did not have the means for a pincer offensive. Both sides fought a battle of numbers, but their losses were at least double those announced. This battle-siege is reminiscent of Stalingrad in its symbolism and relentlessness. The time gained by the Russians also explains why the Ukrainian spring counter-offensive had to be postponed until the summer.

Russian TOS-1 *Buratino* flame-throwing system. The range of its thermobaric ammunition is 5-10 km, depending on the variant. The bottom unit is a TZM-T ammunition refuelling unit, also on a T-72 chassis.



The same thing had happened during the Battle of Kursk, which was postponed until early July 1943 because Hitler wanted the panzers to be equipped with side-armored skirts and the new menagerie of tanks to be ready: *Tiger*, *Panther* and self-propelled *Ferdinand* tanks. General von Manstein, on the other hand, suggested attacking quickly in the spring, before the Russians could bury themselves. In the Russian-Otavian-Kievan war, between June and early September 2023, it would take three months to reach the Russian front line east of Robotyne on the Robove side. Meanwhile, the Ukrainians impaled themselves on the Russian outposts, like the Germans at Kursk in July 1943. But at Kursk, the Germans had to retreat after five days of fighting, when they learned of the Anglo-American landings in Sicily and had to do without the help of the SS-Panzerkorps, where the heaviest resources had been concentrated.

Lacking this resource, the Russians created a diversion in the northern sector, at Lyman and Kupiansk, forcing the Ukrainians to send five to six mechanized brigades that would have been more useful in the south. Meanwhile, on the central Donetsk front, the Russians launched occasional attacks north and south of Marinka, and the Ukrainians did the same north and south of Bakhmut.

Both sides adapted their tactics. The Ukrainians abandoned frontal attacks with armored raids, which were too costly, in favor of infantry raids. The Russians sometimes succeeded in luring their opponents into a zone of destruction, battered by artillery fire. These attacks are now slow, interspersed with pauses, with limited objectives, minor gains and heavy losses.

In three months, the Ukrainians have reconquered half a dozen villages with 800-900 inhabitants and ruined homes. Anthony Blinken, the US Secretary of State, paid a surprise visit to Kiev on September 7, where he symbolically enjoyed a MacDonal'd's, gave a billion-dollar budget to continue the war and set a November deadline for taking the town of Tokmak, a Russian logistics center south of Robotyne.

Since the autumn, Russian air strikes have sought to destroy the Ukrainian power grid. Around November-December 2022, analysts had estimated Russian air sorties at 100-120 per day, although they may have reached a maximum of 300.

At the front, drone footage clearly shows the emptiness of the battlefield, its vastness and the grey area disputed between the two sides: tree hedges lined with shell holes, fields studded with artillery impacts. *Krasnopol* shells on the Russian side, their *Excalibur* equivalent and HIMARS rockets on the Ukrainian-Western side can, with a direct hit, reduce to smoke an artillery piece or tactical depot several dozen kilometers away. Both sides are sometimes capable of shattering a column of armour one after the other with a single adjustment shot. Drones play the old role of tactical aviation and the *Jabos* of the Second World War, making any movement of vehicles several kilometers from the front line formidable. What is more, they are used to harass and decimate infantrymen seeking the protection of trenches. This is artillery warfare.

### Heavy Losses

Assessing wartime losses means confronting the propaganda of both sides, which exaggerates enemy losses and minimizes their own. In November 2022, Mark Milley, Chief of Staff of the US Army, put the respective losses at 100,000. In an article dated August 21, 2023, American officials anonymously told the *New York Times* that a total of 500,000 soldiers had been killed and wounded

since the start of the conflict. Russian losses estimated by *Ukrainska Pravda* between February 24, 2022 and September 8, 2023 total 267,540 personnel, 4,529 tanks, 8,726 armored vehicles, 5,753 artillery pieces, 754 multiple rocket launchers, 507 anti-aircraft systems, 315 aircraft, 316 helicopters, 4,570 tactical drones, 1,455 cruise missiles, 19 ships, 8,264 vehicles and tankers, 860 other vehicles.

Although these figures are probably exaggerated, the losses are considerable. No Western army could have survived such a shock, not even all the European NATO forces put together...

The overall figures are no less gloomy. The population in 2021 was 43.8 and 143.4 million for Ukraine and Russia respectively. But Ukraine has been bled demographically in one year of war: 5.834 million refugees in Europe, 369,000 beyond, to which must be added 5.088 million internally displaced persons.<sup>1</sup> As for Russia, which lost half a million people a year before the war, the impact of mobilization and on health will also be terrible.

Under these conditions, external support and mercenaries are called upon, as well as the populations of the territories captured by Russian forces and immediately «integrated» into the Federation - each of the four Oblasts being urged to provide a contingent of 60,000 soldiers.

### Conclusion

A few geopolitical considerations are worth recalling in relation to this conflict, which is currently localized. Hungarian Prime Minister Viktor Orbán pointed out that, over more than a year, Russia had invaded only 17% of Ukrainian territory, demonstrating that it did not have the capacity to invade the 31 NATO countries.

So how important is Ukraine in the formation and confrontation of new «blocs»?

While 30-40% of the former Soviet Union's defense industry was based in what is now Ukraine, war production was saved from German conquest and relocated to the Urals in 1941-1944. To resist, Ukraine was heavily dependent on Western military and economic assistance. It thus plays the cruel and involuntary role of a battleground between East and West.

The new East-West conflict is being played out militarily on its territory. For the United States, the conflict in Ukraine is a cheap war. But the real movements, the emerging countries, the new alliances and influences, the decisive actions, the «second fronts» will perhaps take place elsewhere, in Asia or the Pacific.

Ph. R.



Above: 2S19 *Msta* 152 mm armored howitzers. Below: Krasnopol guided projectile: Krasnopol guided projectile. Even if less than 5% of the projectiles used are guided, the precision of tube artillery and its responsiveness to immediate fire support (UF) make it the keystone of land operations.



<sup>1</sup> UNHCR, Ukraine situation Flash Update No. 56, 29.09.2023. <https://data.unhcr.org/en/documents/details/103802>





Operators of the 96<sup>th</sup> Brigade prepare a *Patriot* launcher in early May 2023 (armyinform.ua)

Ukraine

### ***Patriot* in Ukraine**

**Adrien Fontanellaz**

Centre d'Histoire et de prospective Militaire (CHPM)

Since the start of the conflict, Ukraine has faced strikes deep inside its territory; at least 2,348 cruise missiles, 3,940 kamikaze drones and hundreds of ballistic missiles were fired by the Russians between February 24, 2022 and December 31, 2023.

The Ukrainian Air Force (PSU) initially coped with an arsenal of Soviet-designed *Buk* M1 and S-300 systems, before starting to receive Western systems such as the IRIS-T and NASAMS at the end of 2022. On December 21, 2022, the Pentagon announced the transfer of a *Patriot* battery, with Berlin following suit for a second shortly afterwards, and the Netherlands joining the effort by supplying two launchers. Finally, in December 2023, Germany delivered a third battery.

### ***Patriot* in a Nutshell**

*Patriot* was and remains the only system in the Ukrainian arsenal capable of intercepting ballistic missiles. Entering service in 1983, the MIM-104 *Patriot* (*Phased Array Tracking Radar to Intercept on Target*) has undergone constant component upgrades, with current models boasting immeasurable computing power compared with their predecessors. A complete battery is made up of six elements: a detection and fire-control radar, an engagement control unit, an antenna support, a generator and several launchers, each of which can be armed with four PAC-2 missiles or 16 PAC-3 missiles, the latter designed to intercept ballistic missiles. An American instructor compares the system to a human body: “*The control station is the brain, the radar the eyes [...] The power plant is what gives the body its nutrients [...] The launchers are what I call my arms and legs*”.<sup>1</sup>

Each battery is manned by around 90 personnel, although three men may be enough to carry out a firing sequence. It is capable of detecting a target at a distance of over 150 kilometers, tracking around a hundred of them and guiding nine missiles simultaneously. The range of the PAC-2 missile is said to exceed one hundred kilometers, while that of the PAC-3 is shorter.

As soon as the deliveries were announced, two groups of experienced Ukrainian operators were dispatched to Germany and the United States to convert to the new weapon system. The second of these, comprising 65 soldiers from the 96<sup>th</sup> anti-aircraft missile brigade, fielding S-300s, underwent an accelerated ten-week training course, compared with the standard one-year course. The same instructor testified at the end of the course to the commitment of his Ukrainian pupils: “*Our soldiers deploy a *Patriot* battery in 40 to 45 minutes, the Ukrainians do it in 25. They do an excellent job*”.

The two groups then met up in Europe, where they took delivery of the two *Patriot* batteries, before returning to the Ukraine. Both were probably assigned to the defense of Kyiv, as a single battery was insufficient in terms of coverage for a city of this size. Moreover, since units have to move frequently to escape enemy detection, a pair of batteries is needed to ensure operational continuity. At least one of them operates under the aegis of the 96<sup>th</sup> anti-aircraft missile brigade, itself attached to the “Centre” air command, one of the PSU’s four, while the Ukrainians managed to rapidly integrate their *Patriots* into their Integrated Air Defense System (IADS).

### **May Triumphs**

On the night of May 4 to 5, 2023, the Russians launched one of their frequent waves of Shahed 136 suicide drones against the south and center of the country, with anti-aircraft defenses managing to destroy 18 of the 24 devices detected. On this occasion, one of the two *Patriot* batteries engaged and destroyed a single *Kinjal* missile, scoring its first major success. The 9M723 *Iskander* M ground-launched ballistic missile, and above all the Kh-47M2 *Kinjal* (dagger) air-launched ballistic missile, have a reputation for being both extremely difficult to intercept and highly accurate. The former weighs almost four tonnes, follows a quasi-ballistic trajectory that delays detection, and carries six decoys that it drops when it arrives in the firing envelope of the enemy’s anti-missile systems, while the latter is a derivative of the former launched by a MiG-31K, a fighter specially adapted for the task. In addition to the very high speed inherent in ballistic missiles, exceeding Mach 5 on part of their trajectory, both missiles are manoeuvrable, making it

<sup>1</sup> Ostap Yarysh, “Ukrainian *Patriot* Air Defense Crew Finishes Training Ahead of Schedule” in *VOAnews*, March 23, 2023.

more difficult for the systems targeting them to develop firing solutions. According to Colonel Serhiy Yaremenko, commander of the 96<sup>th</sup> Brigade, doubts remained as to the *Patriot*’s ability to counter the *Kinjal*: “*Engagement exercises against the different types of ballistic missiles in service with the aggressor were simulated, but the results did not reach 100 percent.*”<sup>2</sup>

On May 13, 2023, a *Patriot* battery was involved in an ambush in which the PSU succeeded in luring several aircraft close to the border in Bryansk oblast. In quick succession, two Mi-8MTPR-1 electronic jamming helicopters, a Su-35S and a Su-34 were shot down, one of the two Mi-8s being filmed crashing to the ground some 50 km north of the Ukrainian border, suggesting that the 96<sup>th</sup> Brigade had taken the risk of briefly deploying a *Patriot* battery close to the border to carry out the operation.<sup>3</sup>

The Russian reaction was swift. On the night of May 16, 2023, the Russians fired a volley of 24 munitions against Ukraine, 16 of which were aimed specifically at one of the *Patriot* batteries that Russian intelligence had managed to locate. Col. Serhiy Yaremenko testifies to the engagement: “*Almost simultaneously, 16 ballistic missiles were fired from several directions, most of them targeting the *Patriot* system. I’m always proud of my subordinates, but this time I was amazed by their endurance. They understood that the ballistic missiles were heading straight for them. They didn’t panic for a second, acted in a coordinated and organized way, distributed the targets in the sectors, and ensured their destruction at minimum range, high enough to reduce the probability of damage to infrastructure. [...] We discovered that six *Kinjal* were among these targets.*”

On the morning of the May 16, the PSU announced that nine ballistic missiles, including six *Kinjal*, as well as nine Kalibr and six Shahed cruise missiles had been shot down. In the following days, however, the US Pentagon reported that the targeted *Patriot* battery had been damaged in the engagement but remained operational. In fact, 11 *Iskander* K and M cruise and ballistic missiles were claimed to have been shot down by the PSU on the morning of May 29, with the latter necessarily being shot down by the *Patriots*.

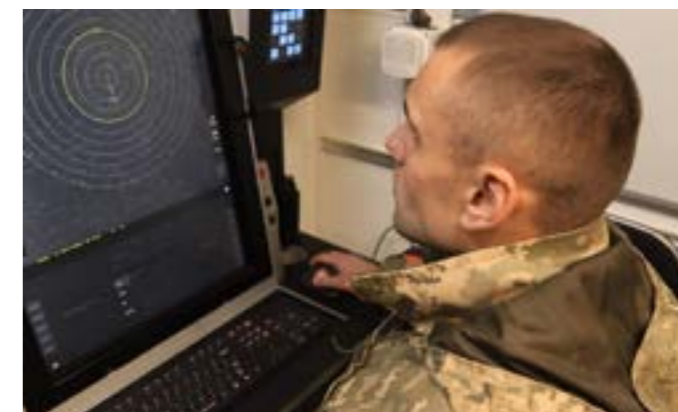
### **The War Goes On**

The two systems subsequently engaged ballistic missiles on the nights of June 1 and 16, August 11, September 6, November 11, December 11 and 13, 2023, and January 2 and 23, 2024. At the end of these battles, they claimed to have intercepted 19 *Iskander* M, 17 *Kinjal* and 19 ballistic missiles of undetermined type (S-400 fired in ground-to-ground mode, *Iskander* M, *Kinjal* or North Korean *Hwasong*-11).

In addition, on December 5, 2023, a Su-24M was claimed shot down near Snake Island. On December 22, three Su-34s were shot down in the south, followed on December 24 by an Su-34 and an Su-30M, the first near Mariupol, while on December 25 another Su-34 was claimed in the Donetsk area. On January 14, 2024, an A-50 airborne surveillance aircraft was shot down over the Sea of Azov,

<sup>2</sup> Anastasia Olekhovich, “Комбриг “Граніт”: Ніхто у світі не був певен, що “Кинджал” можливо знищити, а ми довели це на практиці!” in *Armuyinform*, June 15, 2023.

<sup>3</sup> Steston Payne & Tyler Rogoway, “Four Russian Aircraft Shot Down Within Their Own Borders”, in *The War Zone*, May 13, 2023.



while an Il-22M accompanying it was damaged. Finally, on January 24, an Il-76 was shot down by long-range fire in the Belgorod region. The probability that a *Patriot* battery was involved in these actions seems high, since these aircraft were operating outside or at the limit of the range of the Ukrainian systems usually deployed on the front line, and all the more so as they coincide with the delivery of a third battery in December 2023.

Even if these few elements are far from sufficient to lift the veil on the *Patriot*’s activities in Ukraine, they do testify in favor of the Swiss Army’s choice of equipping itself with the same system.

A. F.





Left: The first wave of Mi-8 transport helicopters north of Kiev. It is approximately 12:00 on 22.04.2024.

Below: The first Ka-52 shot down, south of the Hostomel runway.

*Airborne*

## The Battle of Hostomel

**COL (GS) Alexandre Vautravers**

Editor in Chief RMS+

The outbreak of Russia's «special military operation» took place in the midst of skilfully orchestrated chaos. The confusion made the details of this episode, whose strategic importance had been recognized from the very first hours of the conflict, difficult to understand.

The point here is not to dramatize this episode, or to make it into a symbol or representative example of the struggles since February 24, 2022. The lessons that can be drawn from this episode are perhaps already obsolete. On the other hand, the time that has elapsed has enabled us to gather numerous eyewitness accounts and, above all, a large quantity of film footage, which today provides a detailed, minute-by-minute account of the events that took place in the early days of the Russian invasion.

### Russian Intentions

The idea that this action was merely a «diversion» is absurd. Yet propaganda and pro-Russian circles have been trying to hammer home this idea ever since the Russian withdrawal in March 2022. As we shall see, the use of a large volume of forces, in particular elite VDV units and Ministry of the Interior (Omon) units, to carry out a decisive action and then to manage population movements in the capital, clearly demonstrates that the plans of the Russian General Staff are aimed at decapitating Ukrainian political and military leadership and creating confusion and chaos in the capital.

### Ukrainian Analysis and Availability

On the Ukrainian side, experts and observers today agree that the government led by Volodymyr Zelensky did not believe that Russia would carry out its threats and invasion plans. And within the military command, the decisive opposing possibilities were limited to an attack in the Luhansk region.



As a result, no mobilization of forces was ordered prior to the strikes and attack on February 24 - all the more so as such a decision could have been used as a *casus belli* by Moscow. The capital Kyiv is therefore very weakly defended. The commander of the ground forces, General Oleksandr Stanislavovych Syrikyi, has planned a double defensive belt, the first in the suburbs 20-30 km from the capital; the second is the city belt, backed by rivers and the heavily urbanized outskirts of the city. Fearing that the Russians would use massive artillery fire to seize the city, the first defensive line concentrates most of the resources, while the second is largely virtual.

The main forces available to defend the approaches to the capital - which is only 150 kilometers from the border - are the Ukrainian National Guard's 4<sup>e</sup> rapid reaction brigade and the 1<sup>e</sup> mechanized brigade. The former is a unit that was partly trained by American instructors; but due to the increased threat level, many of its combat units have been moved to the Luhansk region. As for the second, it has been reinforced by a tank battalion and additional support units, but its area of engagement is more than 60 kilometers from the capital.

Date	Author	Title	Notes	Link
14.01.2022	Battle Order	What Russia Faces: Primer to Ukraine's Ground Army	Good presentation of the structures and orders of battle (OB) of the various Ukrainian units.	<a href="https://www.youtube.com/watch?v=U26SNwTH8p0">https://www.youtube.com/watch?v=U26SNwTH8p0</a>
13.04.2022	Chris Brown, CBC News	How Russia lost the battle for a critical airfield near Kyiv	Journalists visit Hostomel site	<a href="https://www.youtube.com/watch?v=2d_U7MvU9w">https://www.youtube.com/watch?v=2d_U7MvU9w</a>

## A Bold Plan

The Russian plan for pre-action on the Hostomel airfield can be divided into five phases. In the first phase, the aim is to paralyze the Ukrainian leadership by means of strategic surprise and precise targeting of critical infrastructure and command posts. This is achieved by firing over 180 cruise missiles, mainly from long-range bombers. Air attacks also follow.

In the Hostomel airfield sector, three *Kalibr* missiles, with a range of 1,500 to 2,500 km, hit the airport complex shortly after 07:00. The first was aimed at and destroyed the landing support system (ILS), while the second struck close to the Hostomel control tower. The last missile destroys the barracks' call-up square, where 23mm anti-aircraft guns were located less than 24 hours ago. According to Ukrainian intelligence, the location of these weapons was passed on to Russian forces by the son of an airport employee recruited by the FSB. The windows of the barracks were blown out, but the effect of the strike was derisory. Worse still, it served as a warning of Russian intentions to come.

The second phase consists of a heliborne assault: a first wave of helicopter gunships must neutralize the defenses to enable subsequent waves, mainly made up of transport helicopters, to land special forces and paratroopers on the objective.

Nearly 140 Mi-8 transport helicopters - some armed with machine guns and rockets - have been preparing since the previous day, from two departure bases: the Bolshoy Bokov airfield, south-west of the town of Mazyr, on the one hand; along the P35 national road, east of Chojniki, on the other. These bases are located in Belarus, some 50 kilometers north of the Ukrainian border. Preparations and loading start at 08:00.

The helicopter action began at 09:00. Within minutes, some twenty Ka-52 and Mi-24 helicopter gunships crossed the border and headed south, flying a few meters above the trees. The attack on the airport began between 10:30 and 11:00. The combat helicopters have a range of no more than ten minutes, due to the intensive rocket fire and the need to constantly launch anti-missile decoys, which are available in very limited quantities. The aircraft then head back north and are relieved. A total of 38 helicopter gunships kept up the pressure on the defenders until 12:30 pm. Two Su-25s also made a quick pass. However, one of them was lost, possibly due to the intervention of Ukrainian fighters; official Russian sources point to a breakdown.

Phase 3: At 11:00, the Mi-8 transport helicopters take off. They follow a different route, along the river and over a retention basin, Kiev's artificial lake, in order to minimize overflights of Ukrainian territory and thus the risk of being detected. But as they turned west over the hydroelectric power station that supplies the capital, the helicopters were violently attacked by several sections of territorial troops from the National Guard, whose mission is to protect the critical infrastructure. Several MANPADS *Igla* are fired and the soldiers fire their personal weapons. Unfortunately, the 23 mm cannons at their disposal have no ammunition. Hit by a missile, a Mi-24 is shot down and crashes into the lake.

By 12:20, the first group of helicopters (A) had covered 230 kilometers and reached the south of Hostomel airport. It lands the equivalent of a section in the middle of the flight line, close to the control tower, which immediately becomes the focus of an intensive battle. Most of these soldiers are from the Guard's 45<sup>e</sup> special exploration

brigade, led personally by Colonel Vadim Pankovo.

The second group of helicopters landed a few minutes later, in the middle of the runway. Soldiers who can, approach and reinforce the first group. Others are pinned down in the middle of the runway by the heavy crossfire. Several helicopter gunships attempt to support the action with rocket and cannon fire. A Ka-52 is shot down and crashes north of the control tower at this point.

A second company (B) is dropped off at this point. This unit's mission was to take and hold open the airstrip. The 200-strong unit is drawn from the 11<sup>e</sup> and 31<sup>e</sup> Guards Airborne Assault Brigade. The sections take up positions to the north and west of the tarmac. One or two 82 mm mortars are brought into action.

The first company succeeded in taking the airport's administrative buildings, as well as the control tower, and then the hangars housing Antonov's transport aircraft. The two companies then pushed rapidly through the military quarter, forcing the Ukrainian defenders to withdraw at 1pm.

Over the next hour, Russian units ensured they were in control of the area, digging manholes and setting up and protecting weapons positions. The aim of this fourth phase was to be ready to repel a Ukrainian counter-attack. The paratroopers have had to fight harder than expected and will soon run out of ammunition. Their only support weapons are grenade launchers and a mortar. Since 12:30, the helicopter gunships have been unable to support the paratroopers due to the high losses.

This meant holding out until the bulk of the VDV units could reach them, either by air or by land. A total of 700 paratroopers from the 76<sup>e</sup> parachute assault division in Pskov are to be dropped by successive waves of helicopters. The aim is to prepare for the arrival of new forces in 18 Il-76 transport aircraft. Each of these aircraft can carry a maximum load of 42 tonnes, i.e. three BMD-2s (8.5 t) or two BMD-3/4s (13.5 t). With this capacity for rapid movement and firepower, the assault units must then move rapidly to the southeast, in order to capture the key points of the capital, some twenty kilometers away, thus bypassing the defensive lines established on the «green line» around Kyiv.

### Limited Defences

The military district, adjacent to Hostomel airport, houses the headquarters of the 4<sup>e</sup> rapid reaction brigade of the Ukrainian National Guard - a reservist unit created in 2015 after the war in the Donbass. But most of its combat units have been deployed in the Donbass - where the Ukrainian command believes the Russian attack will take place. So, at best, only 200 soldiers remain, under the command of Lieutenant-Colonel Vitaly Rudenko. These consist mainly of a section of airfield firefighters, medical troops and psychologists, cooks and logisticians. There are no heavy weapons available, just a few very old 9K38 *Igla* (SA-18) portable surface-to-air missiles and two 23 mm twin-tube cannons, with... only 40 shells.

Due to insufficient manpower and the rising threat, several units were alerted on February 23, 2022 and deployed to the capital's suburbs: the Omega anti-terrorist unit, the 140<sup>e</sup> training center and the 3<sup>e</sup> special forces regiment, the Georgian volunteer legion. Together, these units are capable of assembling several hundred personnel.

### ...but a Stubborn Defense

The bulk of the 4<sup>e</sup> brigade takes up positions in four air-



port buildings. Missiles and flak guns take up camouflaged positions to the south of the airport. One group set up an observation post in the control tower. Two other groups took up positions in the center and at the north end of the airport: these soldiers quickly set up trucks and vehicles across the runway at the very first moment of the attack - to prevent any landing.

When the helicopter gunships made their first pass, two Ka-52s were hit and had to land, the first to the south of the airport and the second to the north. The first was recovered by Ukrainian soldiers; the second was destroyed by Russian soldiers a few days later.

One section of Ukrainian reservists was defending the airport's military quarters, but a second section soon had to be added. Ammunition was in short supply and between 13:00 and 14:00, the bulk of the defenders withdrew in good order through holes in the perimeter wall. Some of the explorers and anti-aircraft gunners, scattered at various points around the airport, had to find ways of escaping - often by commandeering civilian vehicles.

### Ukrainian Counter-attack

Following this withdrawal, the counter-attack began at 14:00. Two 122 mm artillery pieces from the 4<sup>e</sup> brigade opened fire. The ammunition did not damage the runway, but the barrage prevented Russian paratroopers from clearing it of the vehicles that had been massed there. Three air attacks by the Ukrainian air force also took place at this time: two Ukrainian Mi-24s fired rockets from the south; a MiG-29 made several passes over the airport; and two Su-24s bombed the runway. The aim was to hinder the work of reinforcing the terrain and reorganizing the VDVs, and to gain time for a larger counter-attack.

At 12:00, the Commander-in-Chief of the Ukrainian army contacted several unit commanders and ordered them to move quickly to Hostomel, destroy the Russian paratroopers and regain control of the airstrip.

The first unit to lead the counter-attack was an element



Above, from top to bottom: Mi-24 and Mi-8 ready for departure at Bolshoy Bokov. Landing of the second assault wave, in the middle of the Hostomel runways. Below © Maxar.



A Ukrainian Su-24 flies at high speed over the Hostomel airstrip, dropping decoys and bombs, with the aim of prohibiting its use by Russian VDV and transport aircraft.

Below: Generals Oleksandr Syrskiy (left) and Valerii Zaluzhnyi (right) during the defense of Kiev. This article was written on the week of General Syrskiy's appointment as commander in chief.

of the operational reserve: 48 soldiers assembled in the cantonments of the 95<sup>th</sup> airborne brigade, in Zhytomyr, boarded 8 Mi-8 helicopters. They were led by Lieutenant Anatoliy Kharchenko. The first three helicopters landed at 20:00, and the paratroopers approached the perimeter wall on foot, after a race of several kilometers. Six soldiers managed to get over the wall, but three were wounded, and their comrades spent most of the night covering them and trying to evacuate them.

The 72<sup>nd</sup> mechanized brigade, responsible for defending the north-east of the capital, and the 80<sup>e</sup> airborne brigade, which had just effectively delayed the VDV at the Ivankiv motorway junction, 15 kilometers further north, began their attack shortly after 20:00. Supported by the fire of their grenadier tanks, the Ukrainian paratroopers managed to take control of a third of the track, advancing from the north.

### Russian Reinforcement

As the Russian special forces and paratroopers came under attack from the northwest, south and east, and as the shooting raged and some projectiles started fires near the runway, the Russian command decided to interrupt the flight of the Il-76 jumbo jets. The VDV were ordered to reach the objective, but by road... At 05:00 on 25.02, a column of around 120 armored vehicles, mainly BMD-2s, set off in a long column to join and relieve the encircled Russian paratroopers. The soldiers came from the 11<sup>th</sup>, the 31<sup>st</sup> Guards Airborne Brigade, and the «Kadyrovzky» motorized special forces regiment (No. 141), accompanied by Chechen fighters.

Running out of ammunition, the Ukrainian paratroopers of the 95<sup>e</sup> and 80<sup>e</sup> brigades withdrew shortly after 05:00 on the morning of the 25<sup>th</sup>, to be met by the mechanized units of the 72<sup>nd</sup> brigade, south of the airport. The Ukrainians reorganized, infiltrated and prepared to carry out



Above, from top to bottom: A concentration of BMDs, arriving by road, attacked by Ukrainian drones and artillery. A Kord heavy machine gun (25 kg) is brought into action. The BMD remains behind a building, due to its weak armour.

ambushes against the leading Russian units, or to observe and report targets for their artillery.

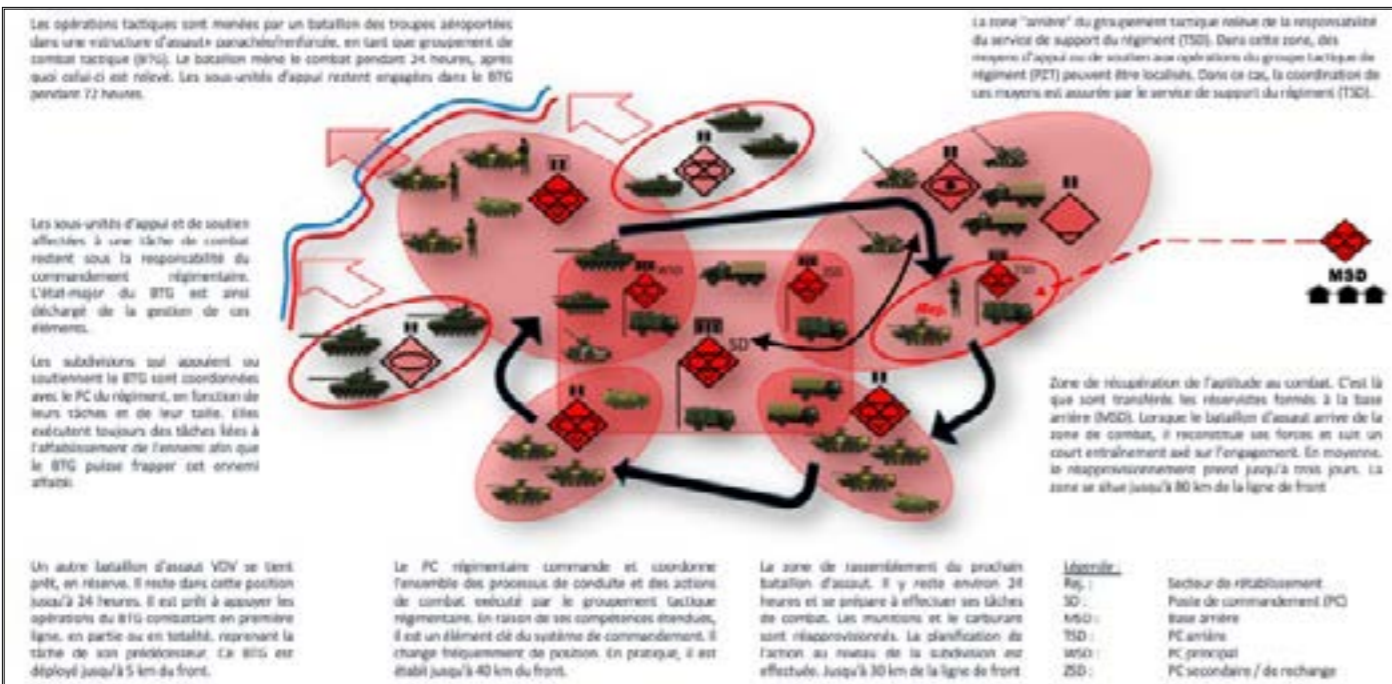
At 11:00 on February 25, eight transport helicopters and eight combat helicopters make a daring round trip to evacuate the wounded from the VDV. One Mi-24 is destroyed in the process. The Russians now had control of the airstrip and used it as a forward base for their helicopter gunships. But the proximity of Ukrainian heavy weapons and the omnipresence of observers capable of directing artillery fire made it impossible to use the airstrip for landing transport aircraft.

Russian armored columns arrived at midday and linked up with the elements that had taken the airport the previous day. After a short reorganization, the VDV pushed eastwards, but were stopped by the 72<sup>nd</sup> Ukrainian brigade, suffering heavy losses. Violent fighting and ambushes continued for two weeks on the outskirts of the capital. During this time, several Russian units lost two-thirds of their fighting equipment. Logistical supplies were paralyzed, in the form of columns of trucks immobilized at the Belarusian border.

Moscow finally ordered the withdrawal on March 29. The VDV reorganized in the Kursk region and headed for Donetsk and Kharkov, where the aim was to push back or surround the bulk of Ukrainian forces in Dombass.

On April 2, the Ukrainians regained control of Hostomel and its airport. Numerous images and testimonies were broadcast on this date, symbolizing the heroic resistance of the first hours, often with improvised units and means. This initial fighting prevented the VDV from taking the Ukrainian capital. In the space of a few hours, this Ukrainian tactical withdrawal was enough to decisively influence the course of the war.





While it's true that the Soviet Union created its first paratroopers in the early 1930s, they were mainly employed as elite infantry, either as vanguard or operational reserve. Russian airborne battalions were therefore entirely mechanized: Organization of the Russian Federation's Airborne Troops (VDV), pre-war, 2022.

*Airborne*

**Changes in the Russian Airborne Troops**

LTC (Res.) Maciej Korowaj

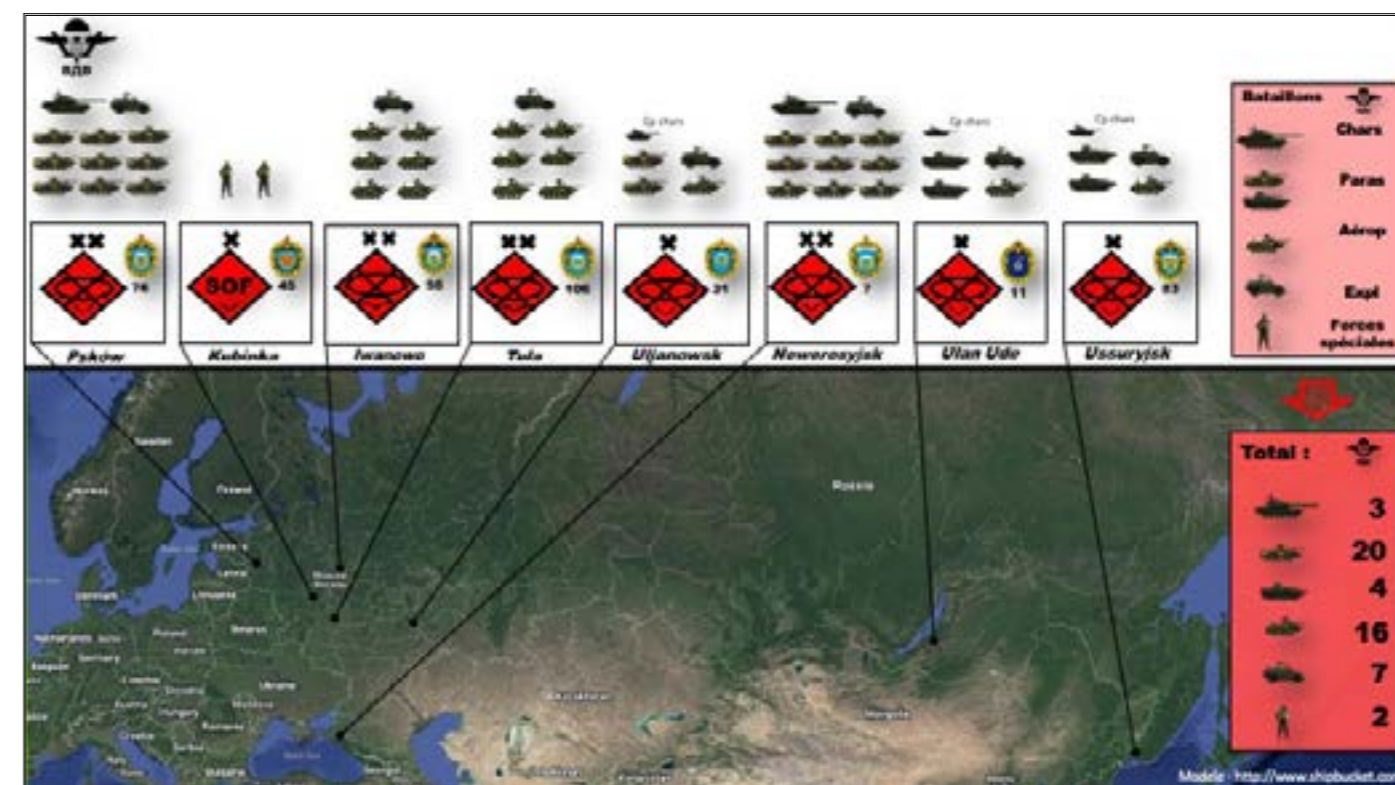
Translation : 1LT Christophe Tymowski

After 19 months of war, it is estimated that only 5,000 of the Russian army's 20,000 paratroopers are still in action. These heavy losses have led to a profound reorganization of the Airborne Troops (VDV). In this article, we present what could contribute to the return of these formations to the ranks of the Russian Federation's most effective forces.

Before the war, the VDV consisted of four divisions, three brigades and a brigade for special missions. Together, this represented a force of 51 battalions. Russian open source material estimated that by the end of 2022, the equivalent of nine VDV regiments were still ready for missions, giving the Russians 27 battalions in the field.

Very heavy losses in the first phase of the war in Ukraine forced the VDV command to rationalize structures and

infrastructure. Russian analysts and combat observers report that, at this stage of the war, no airborne division has actually fought as a compact unit. The headquarters of these airborne divisions currently function as administrative units. Airborne battalions often fought as a component of ground forces, to support offensive operations, or as an operational reserve, thus losing the element of surprise. Airborne troops are employed as light assault units, due to their particular organization and the constraints faced by Russian forces in Ukraine. This explains, at least in part, the very high losses. The reasons put forward by the Russians themselves for the heavy losses of the airborne sub-units at this stage of the war were linked to the inability of commanders to capitalize on the advantages of this specialized and motivated infantry. This led to numerous personal and decision-making conflicts between Russian commanders at the start of the so-called special







operation.

The doctrine of Russian airborne troops provides for three types of military action:

- raid operations,
- helicopter landing operations and
- air operations.

During the first military actions in Ukraine, the Russian airborne sub-units lacked an element of the high-level command system for airborne troops, which led to a series of decision-making complications concerning combat support and coordination at tactical level. At that time, the Russian commanders of the airborne battle groups were deprived of many fundamental elements. And their soldiers mainly played the role of light infantry in combat operations, often engaged in the decisive sectors.

As already mentioned, errors in the use of airborne units were clearly visible from the very first phase of the war in Ukraine. It is worth noting that in the North (Kyiv operational direction), the actions of Russian airborne troops resulted in extremely heavy and spectacular losses. In this direction, the airborne battle groups mainly supported the operations of the ground component of the Russian Armed Forces. In the South (Crimea operational direction), Russian airborne forces achieved great successes, while suffering acceptable losses. These different actions were due to a better understanding of the role of airborne units by the local operations command (mainly by the 58<sup>e</sup> army commander), as well as to the geographical conditions and the way the Russians conducted their offensive operations. In this case, the airborne battle groups acted with a high degree of autonomy from the forces of the Russian ground component, whose task was to support the raiding actions of the tactical elements of the airborne troops. This produced excellent results.

Orders of battle (OB) for VDV units: Opposite, the OB for the airborne assault and parachute divisions, which have only two regiments. Below: In the Russian army, brigades and regiments have similar combat resources. However, brigades receive additional support, as they are designed to operate autonomously. Regiments normally operate within a division.

In addition to excellent basic training and high morale, the VDV are to date, within the Armed Forces of the Russian Federation, the only users of the *Andromeda-D* digital *Battlefield Management System* (BMS). This is the secret of the paratroopers' efficiency compared with other Russian military formations.

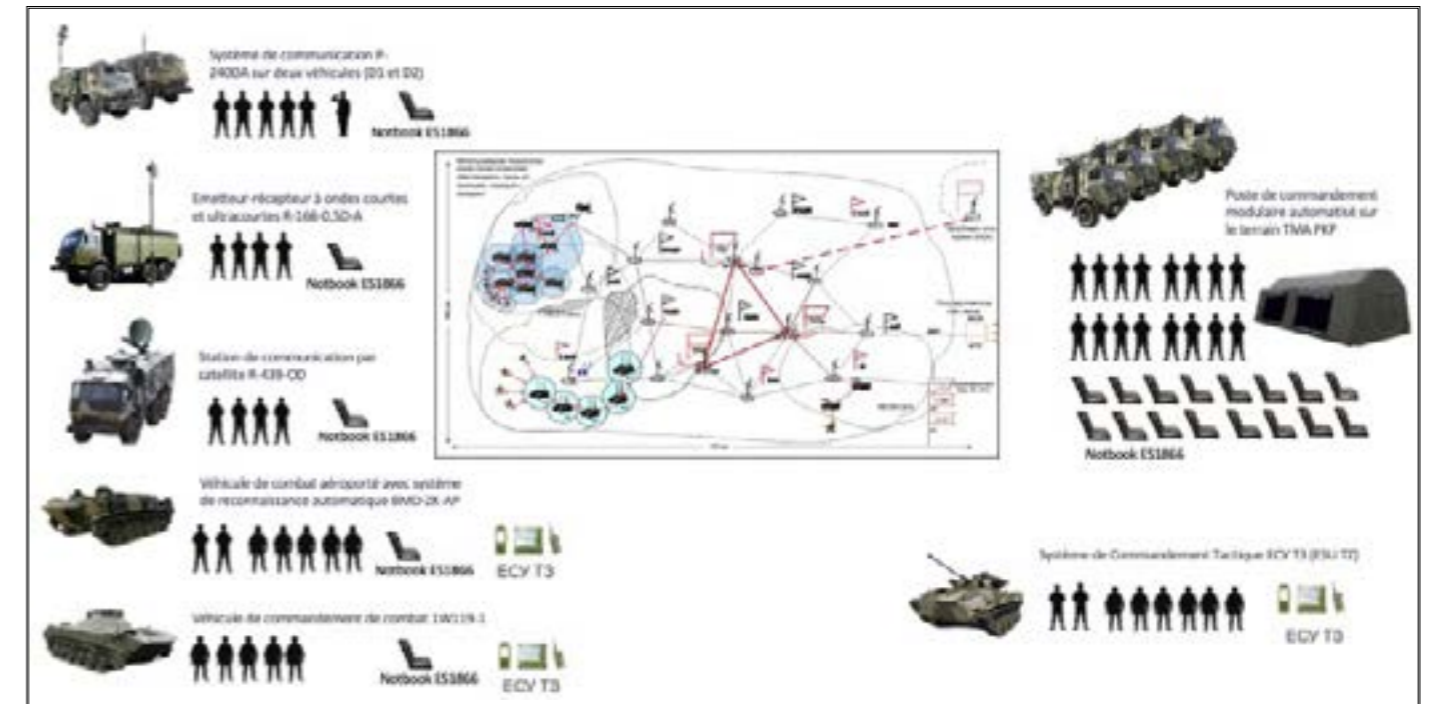
The *Andromeda-D* BMS is the only Russian digital battlefield management system deployed in the field, and is used exclusively within the VDV. The first tests of BMS components took place in 2010. In 2011, airborne troops acquired the first elements of the system. Since 2013, intensive integration with other systems used in the Russian Forces has been carried out.

The VDV have over a decade's experience of using *Andromeda-D*, which has proved to be a highly effective battlefield management system for national requirements. Introducing *Andromeda-D* to parachute units at all levels of command, and integrating it with other systems, was not without its problems. These were resolved by constant practical testing, but above all by adapting some solutions already available within the Russian Armed Forces, such as the ECY T3 and others. The system's weakness was connectivity. The lack of mobility of command posts and the difficulty of quickly establishing and maintaining communication due to the specific tactics of airborne troops.

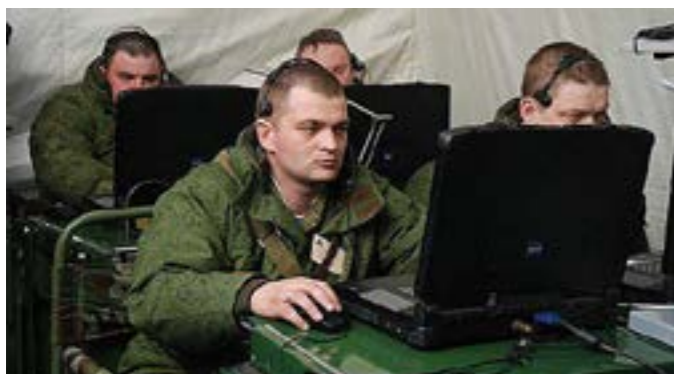
Finally, the Russians have built their entire system on a MESH architecture, guaranteeing the system's flexibility and resilience in the face of jamming and destruction of command posts. It should be noted in passing that civilian telecommunications infrastructure solutions can also be used.

The *Andromeda-D* digital battlefield management system has transformed Russian airborne troops into effective formations at the forefront of offensive operations in southern Ukraine. Wherever Russian commanders on the ground were able to exploit the great operational and tactical understanding of Russian paratroopers, success was achieved.

Information gathering and management, as well as integration with reconnaissance, artillery, air support and







electronic warfare, are advantages of today's Russian airborne troops over other Russian ground formations. This enables them to operate effectively in *Battalion Task Groups* (BTGs), and to adapt flexibly to changing situations on the battlefield. According to Russian doctrine, airborne troops carry out «raids» up to 40 kilometers behind enemy lines, always within the range of their own artillery. The main mission of Russian paratroopers is to seize advantageous positions, reconnoiter the enemy and guide supporting fire to positions that have been detected and observed.

Airborne raid groups are not tasked with prolonged combat in contact with a powerful enemy. In this tactic, the Russians favor short fire attacks, including with supporting weapons - artillery and aviation - in order to create favorable conditions for the thrust of heavier main forces, dedicated to prolonged combat.

The *Andromeda-D* tactical and combat management system has been extensively tested by the VDV. Plans are underway to introduce an improved version of the airborne system under the name *Cassiopee-D*. However, for this tool to work properly, trained personnel and staffs are needed. The war has considerably reduced these capabilities within the Russian forces.

Looking at the latest combat reports from Russian airborne units, we can see that in addition to battalion tactical battle groups (BTGs), intermediate staffs are appearing, to enable effective use of the capabilities of airborne sub-units, particularly in actions to support other Russian Land Forces units.

Over time, these forward command posts became the main command bodies for Russian airborne troop units, as directed by operations in Ukraine. Structural changes also began in Russian airborne brigades, where intermediate (regimental) headquarters were also created. The brigade itself underwent a reorganization.

However, it is not clear whether the structure of the VDV airborne division has also changed. Yet, there are plans to introduce a third regiment into the divisions that currently have two. Russian analysts are of the opinion that the VDV will move completely to a divisional structure. Operations in the field have demonstrated the effectiveness of the Russian regimental battle groups (PZT), which have the support elements transferred from the division. These reinforcements are similar to those received by an independent airborne brigade, which has a smaller number of assault battalions, enabling it to be used more rapidly in prolonged combat. It seems to us that Russia will maintain the two parallel structures within the airborne troops, because although each has its shortcomings, the advantages of both structures are necessary for combat operations by Russian paratroopers.

Another notable change was the «lightening» of the Battalion Battle Groups (BTGs). They no longer operate autonomously, but are now part of the regimental battle groups (PZT). The «assault battalions» thus created rotate after a day's fighting, enabling the Russians to maintain a cycle of intense activity for at least three days.

The experiences of the war in Ukraine have also changed the structure of sections in airborne companies, making them more suited to assault actions. A VDV assault pla-

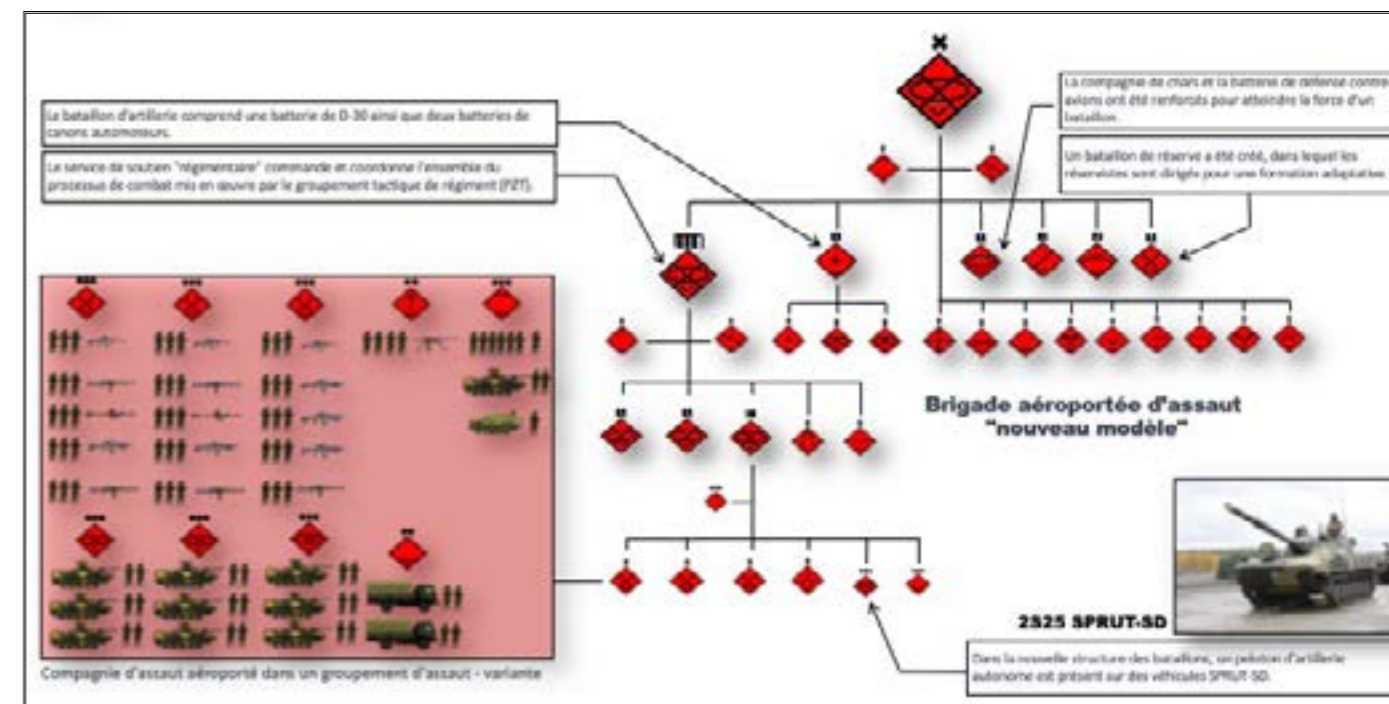
Previous page: UHF link system and *Andromeda-D* BMS. Left: BMS installation and operation in a mobile Command Post. Next page: Operation of the system inside armored vehicles.

toon now comprises 15 soldiers, or five «trinomials». On the other hand, BMD light armored vehicle crews have been organized into separate sections; and artillery observer teams are temporarily assigned to assault sections and teams.

The only element of the BTG that remains committed over the long term is the grouping of support and security units. The other units rotate after three days of combat. Russian airborne troops have thus adapted to the specificities of the war in Ukraine.

In 2019, the then commander of the airborne troops, General Sierdukow, intended to have five airborne divisions, four brigades as well as an artillery brigade and a helicopter brigade by 2025. At the same time, he sought to introduce a new type of airborne brigade with a new organizational and staff structure. General Sierdukow's main objective was to improve the quality of command and implement a new form of combat action through raid tactics in the zone of cover, similar to that used by US cavalry reconnaissance units. Time will tell whether these changes will be implemented.

M. K.







The Youtube channel 'Battle Order' offers two excellent analyses on the origins of VDV's (5.03.2021) and their order of battle (10.05.2022) - a problematic compromise between light and mechanized infantry. Not to be missed. Dossiers and orders of battle from the dedicated 'Battle Order' website.



Left to right: Comparison of BMD-4M, BMD-3 and BMD-2.

Next page, top to bottom: ASU-57, ASU-85 and BMD-1.

*Airborne*

**Tanks for Paratroopers?**

**COL (GS) Alexandre Vautravers**  
Editor in Chief, RMS+

Many units are «paratroopers» in name only. Often, these units enjoy elite status, are engaged to carry out essential missions or as a prelude to decisive action, and frequently have specialized materials or equipment. Most NATO parachute units are employed as airborne, i.e. heliborne, formations. They have little or no heavy equipment. The development of a light tank to support American paratroopers has been a saga lasting over half a century, finally culminating in the designation of a machine in June 2022.<sup>1</sup> The Soviets, on the other hand, have had tanks for their paratroopers for almost a century...

Since the 1960s, Soviet and then Russian (VDV) paratroopers have had a platform used as a troop carrier, infantry support vehicle, mobile command post, heavy weapons tractor and now also as a light tank: the BMD. As we shall see, modern versions differ greatly from the first models - the price of experience and a number of failures.

**The Weight of History**

The Russian Federation's airborne units have their roots in the Soviet experience of the Second World War. Despite the fact that the Soviet Union was the first country to set up parachute units, entrusting them with operational tasks, the reality of war had two essential consequences:

- With no means of transport, paratroopers' «strategic mobility» is reduced to walking on foot once in the area of engagement; it is therefore essential for exploration and airborne assault formations to retain a certain degree of mobility in order to approach designated objectives or evade an enemy counter-attack.
- Without heavy weapons and support, parachute formations are highly vulnerable to mechanized counter-attacks; their logistical autonomy is very limited; and they need anti-tank defenses and/or organic tank fighters.
- Airborne formations can be decisive at the start of a conflict, thanks to their effect of surprise and concentration/projection of forces; or at the end

of a conflict, in order to cut off the withdrawal of an already weakened adversary. In between, parachute units are used as elite ground force units.

During the 1930s, the Red Army attempted to develop «flying tanks», some prototypes of which were functional. Once landed, the wings, empennages and engines were to be removed, providing parachute units with self-propelled guns or light tanks to support their assault. Some of these machines could be hooked up to a Tupolev TB-3 bomber and then removed. In practice, only conventional light tanks were developed, such as the T-40 to T-80. These weighed between 6 and 9.5 tons and were armed with machine guns, followed by 20mm (T-60) and 45mm (T-70 and -80) cannons.

The aim was to reduce weight while increasing firepower, which led to the production of assault guns for airborne troops from 1950 onwards. The ASU-57, derived from a wartime ZIS-2 artillery tractor, can be dropped from an Antonov An-12 transport aircraft. Each airborne division had 54 units. From 1960 onwards, however, it was gradually replaced, as its cannon was unable to pierce contemporary armor and, above all, its too thin armor would not stop even a machine-gun projectile; moreover, it had no roof and would therefore quickly be put out of action by mortar or howitzer fire alone.

An improved machine was developed by the same engineer, Nikolaj Aleksandrovich Astrov, and built by the Mytishchi Tool Factory (MMZ). The ASU-85 is significantly heavier; it is based on the universal MT-LB chassis, which is also available in several specialized versions, such as the PT-76 or the ZSU-23/4. Capable of carrying an anti-tank gun equivalent to the T-34/85, it offers a sufficient level of protection against shrapnel and grapeshot. It equips a battalion of 31 vehicles in each VDV division. Its use has also been enhanced by the development of heavy transport helicopters, the Mi-6 and Mi-10. The ASU-85 can also be parachuted from aircraft: it is then mounted on a platform fitted with retrorockets to cushion the impact of landing.

<sup>1</sup> On the development of light tanks and the designation of General Dynamics' M10 *Booker*, winner of the Mobile Protected Firepower (MPF) program, see : Alexandre Vautravers, «Le char à roues : Une idée simple à priori», RMS No. 5/2022, p. 42-47.

The ASU-85 assault cannon has a number of real assets, the most unusual of which is probably the fact that its flat roof allows it to carry paratroopers - making it a kind of improvised troop transport. But there are major limita-



tions in terms of firepower and, above all, protection, as the side armour is unable to withstand 12.7 mm machine-gun fire. Other limitations relate to the drop design of the machine, which requires paratroopers to push their tanks into the transport aircraft - which do not have suitable ramps: they are equipped with cranes. In this way, the assault cannon concept reached its limits.

### BMD-1

The *Bojevaya Mashina Desanta* (BMD) was designed in 1965 by engineer Viktor Gavalov's team and produced by the Volgograd Tractor Plant. Troop trials took place in 1967, and the first machines entered service with the VDV in April 1969.

The same team of engineers had already developed the BMP-1 infantry fighting vehicle (Object 914), which entered service in 1966. But this was intended for mass production, and weighed 13.3 tons. At the time, the maximum capacity of An-12 transport aircraft was 7 tons. Object 915, the future BMD-1, takes up the original concept, but significantly reduces its dimensions and, above all, its weight. To achieve this, more complex and costly metals and manufacturing techniques had to be used - which was acceptable, given that only a limited number of these specialized machines were needed.

The BMD-1 can be transported by An-12, An-22, Il-76 and An-124 aircraft, as well as by Mi-6 and Mi-26 helicopters. From 1976 onwards, tests were carried out to enable two-man crews to be dropped into their vehicles - to avoid crews landing too far away from their vehicles, which would then be unusable during the initial phases of the airborne assault. From 1975 onwards, parachutes were fitted with retrorockets to slow their descent a few dozen meters before impact.

Soviet airborne divisions received 220 BMD-1s to equip two regiments each. The adoption of the new vehicle led to a profound reorganization of the VDV: the new vehicle's firepower enabled the elimination of assault cannons and certain other support weapons. Series production began in 1968, and the last ASU-57s were withdrawn in 1973. On the other hand, the machine's extremely compact dimensions - not to mention its comfort - meant that airborne battalions had to be reduced from 610 to 316 men.

The BMD-1 has impressive firepower for its small size, and between 1970 and 1973, when the machine was first presented, NATO intelligence attachés and specialists categorized it as a light tank.

Soviet doctrine at the time called for a gun to support landed paratroopers: the 73mm *Grom*, also used on the BMP-1 series, employs ammunition identical to that of the RPG-7 rocket launcher. It has a direct-fire range of 1,300 meters, and can reach 4,500 meters at maximum elevation - but the shot is then unobserved.

The BMD-1 also carries two machine guns mounted in the body, enabling forward firing; two skylights allow paratroopers to fire their personal weapons from the flanks. In addition to these qualities, the BMD is amphibious, and two jets enable it to reach speeds of around 10 km/h in



Table 1 : Characteristics of VDV assault guns.

Type	Weight	Arming	Crew	Protection	Production	Number
ASU-57	3,4 - 4,0 t	1x 57 mm L73 Ch-51 (30 rounds)	3 + 6	6 mm	1950-1962	500 of which 245 for VDV
ASU-85	15,5 t	1x 85 mm D70 L55 (45 rounds) 1 x 7,62 mm PKT	4	40-45 mm	1959-1966	800



Five machines prepared for parachute drop: ASU-57 from the VDV Museum; ASU-85 on a towed platform; BMD-2; and below BMD-4M.

The Russians, like the Americans and French, suffer from the technical limitations imposed by "aeromobility" (17-20 tons), which limits the weight and therefore the performance of the machines - for a very marginal use.



calm waters.

70 BMD-1s were first engaged by Cuba in support of Ethiopia against Somalia during the Ogaden War (1978). But it was in 1979 that the BMD-1 was committed in large numbers during the initial phase of the war in Afghanistan: the 103<sup>rd</sup> Guards Airborne Division and the 345<sup>th</sup> Independent Parachute Regiment were then flown by Il-76 aircraft to Kabul and Bagram airports. The 56<sup>th</sup> airborne brigade simultaneously captured the city of Kunduz.

### BMD-2 and 3

In Afghanistan, in an environment and engagement far removed from what had been envisaged by engineers and those responsible for VDV doctrine, the BMD-1's weaknesses were quickly exposed: the narrow tracks proved to be ineffective and, above all, extremely fragile in the mountains and on rocky roads. The machine's low-profile design prevents it from being debated and aimed at high ground, which would enable it to combat an adversary at height or in urban areas. The use of onboard weapons from inside the vehicle has proved illusory. The accuracy and effectiveness of the *Grom* cannon are disappointing. Finally, protection - particularly on the sides and rear - is inadequate and vulnerable even to rifle cartridges.

It is hardly surprising, then, that Soviet paratroopers in Afghanistan sought out other troop transport vehicles - including trucks, in case their BMDs were lost or proved ineffective. We know that the VDV increasingly resorted to heli-lifting small groups of soldiers to mountain top or pass outposts. This growing reliance on helicopters was behind the supply, by the American and British services, of several thousand MANPADS *Stingers* and *Javelins*, which undermined one of the key elements of the Soviet occupation.

Many of these criticisms are not specific to BMD-1. Its older brother, the BMP-1, was also under pressure from the critics. A series of modifications were proposed to reinforce lateral protection and improve the system's power and fire control, leading to the development of the BMP-2, featuring a single-seat turret now armed with a 30 mm cannon, accurate and effective up to 1,500 meters; a new wire-guided anti-tank missile (efa) system, equipped with a SACLOS homing device.<sup>2</sup> AT-5 *Spandrel/Konkurs*, significantly improves the ability to combat long-range targets up to 4,000 meters. While the first production BMP-2s were handed over to units in 1980, the machine made its debut in Afghanistan in the summer of 1982.

<sup>2</sup> Semi-Active Command to the Line-Of-Sight (SACLOS): 2<sup>nd</sup> generation wire-guided anti-tank missile, enabling the gunner to keep the target in sight, with a computer transmitting guidance signals to the missile to bring it closer to the line of sight.





All these improvements are obviously desirable to enhance the equipment of elite troops, i.e. the VDV. But adapting the new turret and its larger-diameter 30mm 2A42 cannon is proving problematic. A compromise solution had to be found:

- Most BMD-1s are converted, with a turret specifically designed to integrate the 2A42 cannon into the small turret ring. To save weight and space, a body machine-gun is removed. Turret armor is reduced to 15 mm, as is the front of the chassis, while the sides are no thicker than 10 mm - the same thickness as that of the first British tanks in 1916... The engine struggles to power a significantly heavier machine, and the range declines from 600 to 450 kilometers - even if these two values are highly theoretical. This modified machine was given the name BMD-2.
- Adaptation of the BMP-2's wider standard turret necessitated the development of an entirely new machine, designated *Objet 950* and then BMD-3. Six prototypes were built between 1985 and 1986. Series production began in 1990, but the break-up of the Soviet Union meant that production slowed considerably, and then came to a halt in 1997. In the end, only 137 BMD-3s were built. Most of these have since been retired or converted. The BMD-3 is characterized by its much larger size, increased carrying capacity and the addition of an automatic grenade launcher at the front of the body.

#### BMD-4 and Derivatives

The BMD-3 has a larger body, but during its development it was decided not to install the armament of the BMP-3 for land forces - i.e. a 100 mm cannon and a 30 mm coaxial gun - for weight reasons. The prototype could have weighed in excess of 17 tons.

The development of upgrades for the BMD-3M (modernized), however, opens up the debate once again. The Volgograd plant and the KBP engineering office in Tula - which specializes in tank design - set up a joint venture under the name of Kurganmashzavod (KMZ). The new vehicle, designed to carry the *Bakhcha-U* turret from the BMP-3 and its twin cannons, is all the more impressive for weighing just 13.6 tonnes instead of the 18.7 of the original vehicle. With such firepower, the VDV finally had a platform capable of fulfilling all the roles required for force projection. The new company received its first order for 60 BMD-4s in 2004, and a second order in 2008 for a modernized version: the BMD-4M.

Early versions of the machine were unsatisfactory and criticized for their lack of reliability. Perhaps the bankruptcy of the Volgograd tractor factory in 2005 had an impact on quality. Production was reorganized and relocated several times. In 2017, the remnants of the military construction workshops were integrated into the state holding company Rostec.

In parallel with the development of the BMD-4, KMZ pushed hard for the VDV to acquire a «tank hunter» version of their machine. In addition to the 100 mm rifled cannon, and even though it is capable of firing guided missiles (AT-10 *Stabber* with a range of 5,500 meters), the challenge now is to adapt the powerful 125 mm cannon of the T-72 and T-90 to a machine weighing a third of that of a battle tank. The 2S25 *Sprut* SD is a lightweight tank with a frontal arch designed to withstand 30 mm projectiles, and with armament equivalent to that of the main battle tanks used by mechanized units: a 125 mm long tube with an equivalent ammunition reserve of around 40 rounds, and the ability to fire the AT-11 *Sniper/Svir/Reflex* missile with a range of 4 to 5,000 meters, depending on the model.



Due to the cramped conditions of the BMD-1 (top photos) and -2 (bottom photos), the disembarked fighters prefer to climb onto the roof of their machine rather than inside - such is the weakness of the armor and the difficulty of extracting themselves should one of them be wounded. It should also be remembered that the entire turret is decorated with ammunition and incendiary materials.



Above: Two views of the BTR-D, the troop/equipment transport version of the BMD family. This machine can also be used as a command post or as a platform for certain support weapons - like the BTR-ZD *Shrezhet*, on which a ZU-23/2 anti-aircraft gun is mounted.



#### Armament

#### And more...

This article is dedicated to airborne combat vehicles, which might lead us to believe that the VDV's airborne formations have just one all-purpose vehicle: an infantry combat vehicle (ICV) that has replaced the old assault guns.

From the early 1970s onwards, the VDV realized that the rear compartment of the BMD, designed to hold four paratroopers, was not viable. It should be remembered that, at the time, armored vehicles were designed to enable units to continue their tasks and fight even in an NBC-contaminated environment. To this end, doctrine dictated that infantry should be able to observe and fight from inside the vehicles - which explains the development of machine guns and loopholes for infantry weapons in early ICVs.

In theory, each BMD-1/2 should be able to carry a disembarked group of six paratroopers. In practice, however, it is often impossible to carry more than three men in the rear. Even considering the much greater volume and carrying capacity of the BMD-3/4 generation, an entire company of 12 machines is only capable of landing 48 fighters. By way of comparison, a company of 10 BMP-2s is capable of landing up to 66 fighters, i.e. a third more bayonets...

The VDV's weaknesses in terms of landed combat, surveillance or protection can therefore be explained in part by their numerical weakness and their focus on their infantry fighting vehicles - which can give a false impression of security, whereas their level of protection is roughly equivalent to that of protected Hummers.

The narrowness of BMD ICVs led to the development, from the early 1970s onwards, of true ATVs capable of carrying a larger group (10 soldiers) or several teams of specialists equipped with anti-tank or support weapons. For many years, the BTR-D fulfilled this task, and was particularly well-suited to being transformed into specialized versions - such as the BTR-ZD *Skrezhet*, which was fitted with a double 23 mm anti-aircraft mount. It should be noted in passing that this machine has half the firepower of the ZSU-23/4 regular forces version, which is equipped with radar and a turret that is both motorized and protected.

The BTR-MDM performs similar tasks within the new generation of vehicles. In principle, each company should have two vehicles: one serving as a command post and the second carrying a support group, consisting of a sniper team and two pairs equipped with anti-tank rocket launchers. This platform forms the basis for a number of specialized versions currently under development - such as the *Kornet-D1* tank hunter, which carries up to eight fire-ready guided missiles.







Type	Weight	Arming	Crew	Protection	Production	Numbers
BMD-1	7,5 t	1x 73 mm 2A28 <i>Grom</i> (40 rounds) 1x AT-3 later AT-5 (3x ATGM) 1x 7,62 mm PKT 2x 7,62 mm PKT (chassis)	2+6	10-23 mm	1968-1987	3'800 of which more than 2'500 for the VDV.
BTR-D	8,0 t	2x 7,62 mm PKT (chassis)	3+10	7-15 mm	1970-1974	
BMD-2	11,5 t	1x 30 mm 2A42 (300 rounds) 1x AT-5 1x 7,62 mm PKT	2+6	7-15 mm	1985-1991	2'300, 849 of which were in active service in the VDV in 2022.
2S9 <i>Nona-S</i>	8,7 t	1x mortar 120 mm 2A60	4	7-15 mm	1981	>1'000
BMD-3	12,9 t	1 x 30 mm 2A42 (500 rounds) 1x AT-4 ou AT-5 1x 7,62 mm PKT 1x 5,45 mm RPK 1x AGS-17 <i>Plamya</i> 30 mm	3+7 3+4 (air-drop configuration)		1990-1997	137
BRD-4M	13,6 t	1x 2A70 100 mm 1x 30 mm 2A72 1x AT-5 1x 7,62mm PKT 1x 5,45 mm RPK	3+5		2004-	Approximately 160 produced or on order.
BTR-MDM <i>Rakushka</i>	13,2 t	2x 7,62mm PKT	3+12		2014-	
2S25 <i>Sprut</i> SD	18,0 t	1 x 125 mm 2A75 L (40 rounds total, 22 in the autoloader) 1x 7,62mm PKT	3		2001-2010 ; 2018-	24 vehicles produced in 2009. Large orders were passed in 2023.
2S42 <i>Lotus</i>	18,0 t	1x mortar 120 mm (40 rounds) 1x 7,62mm PKT	4			
<i>Kornet</i> -D1					2019-2020	Undergoing trials.



Table 2: BMD family of machines Top photo, left to right: BMD-1, BMD-2, BMD-3, BMD-4 and BMD-4M.

Left: A side-by-side comparison of the size of the BMD-2 and BMD-4 leaves no doubt as to their identification. Next page: BMD-4M and MTR-MDM.



**Political Debates**

On paper, the BMD-3/4 and 4M, not to mention the *Sprut* tank, are excessively powerful, mobile machines featuring day/night cameras for each crew member, not to mention an NBC protection system - as is the case for the entire previous BMD series. In the early 2010s, several countries, including South Korea and India, showed interest in these machines. But three problems derailed KMZ's ambitions.

Firstly, the cost of these vehicles is much higher than that of conventional armored vehicles, since light alloys have



to be developed and aluminum used, which is much more expensive than steel. So it's no exaggeration to say that the cost of a BMD-4M exceeds the production cost of a new battle tank.

Secondly, as performance increases, so does weight and size. Yet the airlift capacity of VDV's remains limited: an Il-76 can carry three BMD-3/4s, but without personnel and equipment, which have to be transported in an additional aircraft. It therefore takes five wide-bodied aircraft to carry a complete company. Let us not forget that the additional armor modules have to be transported separately and then fitted, to guarantee adequate protection on the battlefield. According to Michael Kofman,<sup>3</sup> the entire Russian transport fleet would be capable of simultaneously transporting two battalions or battle groups - a maximum of 64 vehicles. Within the VDV's, there are those who point out the difficulties not only of deploying these increasingly heavy resources, but also of supplying them and keeping them ammunitioned and in working order, several tens of kilometers away from their own logistical echelons.

Last but not least, the economic situation, corruption in Russia, the bankruptcy of several arms producers, and the lack of interest shown by customer countries following the repeated failures of Soviet-designed equipment in the field (Iraq 1991, Balkans 1995-1999, etc.), represent a real obstacle course for Russian defense industry projects.

So much so that the future of the BMD-4M is becoming the subject of heated political and institutional debate in Russia. In February 2012, General Nikolay Makarov, head of the Russian General Staff, criticized the BMD-4M, saying it was «just a version of the BMD-3» with no protection and costing even more than a battle tank.<sup>4</sup> In August 2012, Deputy Defense Minister Alexander Sukhorukov announced that the BMD-4M did not meet the army's technical requirements and would not be ordered.<sup>5</sup> A few days later, the head of the VDV, General Vladimir Shamanov, replied that the new machine was more important to him than the technical requirements of the Ministry of Defense and, as a last resort, that it was up to the Commander-in-Chief of the Armed Forces - President Vladimir Putin - to decide.<sup>6</sup>

The first production batch of 60 BMD-4s was handed over to the 106<sup>th</sup> Guards Airborne Division in August 2005, but production was discontinued. Eight -4M prototypes are then employed for trials within the same unit, in summer 2014. In 2015, the positive reports of these evaluations are released, and the new generation of machines, BMD-4M and BTR-MDM, are officially introduced in April 2016.

The industry is also proposing an over-armored version of the BMD-4M called *Sadovnitsa*, with an improved engine and turret and... six fewer shells for the main armament, to keep within the limits imposed by air transport. According to the manufacturer, 132 of these machines have

<sup>3</sup> Michael Kofman, «Rethinking the Structure and Role of Russia's Airborne Forces,» *Russia Military Analysis*, 01.30.2019. <https://russianmilitaryanalysis.wordpress.com/2019/01/30/rethinking-the-structure-and-role-of-russias-airborne-forces/>

<sup>4</sup> «Armored litigation», *Lenta-RU*, 15.02.2023. The article can be found at the following link: <https://lenta.ru/articles/2012/02/15/uncertain/>

<sup>5</sup> «The adoption of the VDV armament BMD-4 resolved», *RIA Novosti*, 8.12.2012. [http://ria.ru/arms\\_news/20121208/913934512.html](http://ria.ru/arms_news/20121208/913934512.html)

<sup>6</sup> «Shamanov: The Fate of the Vehicle to Solve Airborne Supreme - Interview,» *Military Parity*, [http://militaryparitet.com/tp/data/ic\\_ttp/2581/](http://militaryparitet.com/tp/data/ic_ttp/2581/)



been produced or converted.

### Balance Sheet

Although Russian TV and social network reports claim that the BMD-4M will replace all of its predecessors, the cost and complexity of the machine suggest that the VDV will have to make do for a few more decades with their 1960s «combat cabs». The exact number of BMD-4Ms produced can only be estimated. However, of all the BMD-4Ms engaged in Ukraine since February 2022, according to the Dutch Oryx website as of 7.09.2023,<sup>7</sup> 88 have been lost, including 72 destroyed, 3 damaged, one abandoned and 12 captured.

By way of comparison, during the same 19-month war period, 229 BMD-2s were lost, including 161 destroyed, 7 damaged and 54 captured. 78 BTR-Ds were lost, including 51 destroyed, 6 abandoned and 21 captured. A further 23 BTR-MDMs were lost, including 13 destroyed, 2 damaged and 8 captured. For the VDV, this means the loss of at least 418 machines - equivalent to the loss of just over nine to ten battalion groups.

As we have seen, today's VDV are prisoners of their traditions and paradoxical injunctions: light and available to be airborne-capable, but engaged in the manner of conventional motorized or mechanized infantry, in the most decisive, and therefore toughest, sectors and battles. The BMD series tries to tick as many boxes as possible. It does so by sacrificing a great deal of protection and ergonomics.

In this way, the VDV are reinforced in their role as elite units, able to be deployed by surprise in the initial or critical phases of an engagement. The question of equipping only some of the VDV formations with airmobile equipment, with the remainder receiving more conventional, and therefore less costly and better protected, equipment, will arise when re-equipping and reorganizing the units engaged in Ukraine.

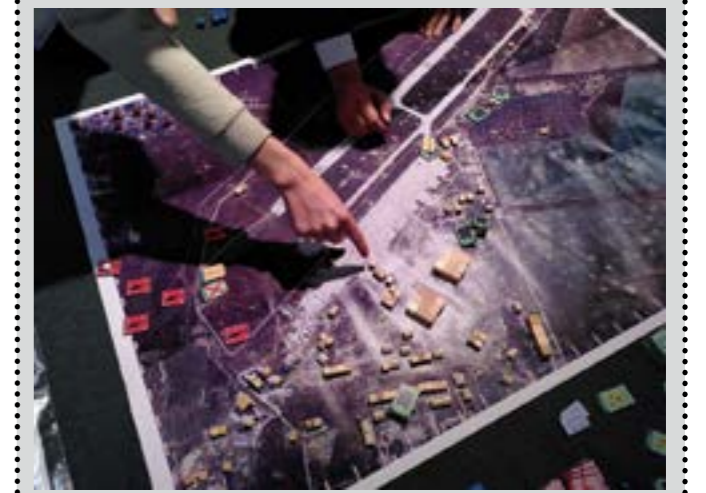
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<sup>7</sup> <https://www.oryxspioenkop.com/2022/02/attack-on-europe-documenting-equipment.html>



VDVs are regularly trained to maintain a very high level of availability. Once a year, units are alarmed and must be ready to board aircraft or move to designated training areas.



### Wargames

#### Russian Air Assault on Hostomel Airport

CPT Nicolas Penseyres  
Infowargame - CHPM

The CHPM hosted another wargame on 10.02.2024 dealing with the Russian air assault on Hostomel Airport on February 24, 2022. Analytic in essence, this wargame was based on the latest analysis of Russian airborne troops (VDV) published in the *Revue Militaire Suisse* (RMS+) and a modified tabletop rule-set named "Ukraine 2022".<sup>1</sup> The aim was to explore the nature of this operation, especially regarding the limited ammunition, heavy weapons and protection and the notions of "battle" and "operation".

A detailed report of both these wargames and many others are available on the website of the Centre for Military History and Foresight (CHPM), [www.chpm.ch](http://www.chpm.ch).

<sup>1</sup> Jensen, Tom, Ukraine 2022, Tabletop Wargame, Online, 2022, <https://www.wargamevault.com/product/394058/Ukraine-2022--Printable-Wargame> (11.03.2024).





#### Armament

#### Rediscovering the Wheel?

Among the criticisms and dissonances of the 2000s, the track-and-wheel debate adds a further dimension to the doctrinal and political issues. A breach was recently opened with the acquisition of the *Typhoon-VDV* family of 4x4 vehicles, equipped with a remotely-operated 30 mm turret and a 7.62 mm coaxial machine gun. This family of vehicles based on the MRAP concept was developed in 2015 by Remdiesel, a subsidiary of KamAZ. The first went into service in 2020 in the VDV's exploration sections, as well as with the Ministry of the Interior, which as we know oversees the Russian Federation's reserve formations.

Despite its modern appearance and powerful armament, the Russian armed forces chose to downgrade the engine and suspension, in order to acquire a simpler and therefore less expensive machine. It should be noted in passing that, although it was originally designed to be parachuted, the «austere» versions acquired do not allow this machine to be dropped by transport aircraft.

But let us not be too quick to rejoice at the prospect of such wheeled armored vehicles replacing their tracked predecessors - for these are 6 meters long and 2.85 meters high, weighing 15 tons in combat order. In principle, they are faster and more durable (100 km/h and 800 km) than tracked vehicles, but they will be neither cheaper (USD 2 million), more discreet nor safer than their tracked counterparts. A Ukrainian source claims that only around fifty of these machines have been built in two years.<sup>1</sup> And Oryx reports that 8 of them were lost in battle in Ukraine - 7 were destroyed and 1 captured. The absence of «damaged» vehicles speaks volumes about the extreme vulnerability of these wheeled vehicles.

<sup>1</sup> «Russia Applies the New K-4386 Typhoon-VDV Armored Vehicle in Ukraine.» Defense Express, 1.10.2022. [https://en.defence-ua.com/weapon\\_and\\_tech/russia\\_applies\\_the\\_new\\_k\\_4386\\_typhoon\\_vdv\\_armored\\_vehicles\\_in\\_ukraine-4393.html](https://en.defence-ua.com/weapon_and_tech/russia_applies_the_new_k_4386_typhoon_vdv_armored_vehicles_in_ukraine-4393.html)



Above: The 2S9 *Nona-S* self-propelled mortar is the VDV's main support weapon at battalion level. The system allows direct or indirect fire up to a range of 8,800 meters (12,900 with long-range ammunition). The system is based on the extended BMD-1/2 body.

Below: 2S25 *Sprut* light tank armed with a 125 mm cannon.

Center: The 2S42 *Lotus* is a self-propelled mortar system based on the BMD-3/4 chassis.

Bottom: The BMD-4-based *Kornet-D1* is a guided missile tank hunter.



#### Review

#### Raids

**COL (GS) Alexandre Vautravers**

Editor in Chief, RMS+

The French monthly publication has undergone yet another facelift, expanding its "armaments" section and reaping the benefits of increased advertising revenues. New news items are now distributed at the front and back of the issue. Subscribers can now access additional content via codes.

#### Ukraine

A *Raids* dossier (No. 3 May-June 2023) is devoted to the Ukrainian army at war. A little dated today, this publication, which looks very much like a "showcase" or "brochure", nevertheless gives a good idea of pre-war structures.

In *Raids* No. 444 (July 2023, pp. 44-51), Cédric Haas offers an interesting article on participatory funding for Ukrainian and Russian forces. Marc Chassillan presents the full range of anti-tank weapons used by Ukrainian forces in *Raids* No. 432, July 2022, pp. 42-48. It shows an impressive move upmarket, with 63-73-84-90mm rockets being replaced by 110-125mm warheads such as the Panzerfaust, NLAW or *Javelin* and *Kornet* guided missiles. On pages 50-64, the same author presents an overview of deliveries of war materiel to Ukraine.

Jean-Pascal Héroult writes a two-part article on Ukrainian artillery engagement, confirming the return to a war of positions and attrition. (*Raids* No. 441, April 2023, p. 44-55) In the previous issue, the article is devoted to the strengths and successes of Russian artillery (No. 440, March 2023, p. 69)

Ukrainian naval drones are the subject of a presentation by Alain Rodier in *Raids* No. 440, March 2023, p. 70-74.

#### Moldova

On the periphery of the conflict, the situation and organization of Moldavia's forces is the subject of an article by Jean-Pierre Husson (*Raids* No. 439, February 2023, p. 66-74). The situation in Transnistria is the subject of an article by Jean-Pascal Héroult in *Raids* No. 437, December 2022, p. 44-51).

#### Russia

Thierry Charlier has written an article on the "Jack in the Box effect", i.e. the reason why so many Soviet-designed tanks explode when their turrets are thrown into the distance. The article deserves to be supplemented by a number of fundamental facts, and should remind us that in the 1960s-1970s, placing ammunition as low as possible in the tank was a very rational technical choice. It was in fact the development of top-attack projectiles in the 1990s that rendered this solution obsolete. (*Raids* No. 444, July 2023, p. 52-54) "Did Russian tanks fail on the Ukrainian plains?" is the question posed by Gaston Erlom in *Raids* No. 432, July 2022, pp. 28-40. The author describes a series of reasons for the destruction or abandonment of a very large number of tanks.

The state of the Russian Army at the end of 2022 is the subject of an article in *Raids* No. 440, March 2023, pp. 52-56. Jean Le Cudennec describes a disparate army, with some units capable of the best, others of the worst. He also describes the failure and questioning of planning and organization. Doctrine and equipment however are not called into question. Gaston Erlom devotes an article to the "breakdowns and limits of Russian intelligence in Ukraine". (*Raids* No. 439, February 2023, p. 32-43) The same author wonders whether we are heading "towards a winter war", i.e. a war that will last? He reminds us that, during the Great Patriotic War, the USSR received considerable military and material assistance to resist between 1942 and 1943 (*Raids* No. 438, January 2023, p. 48-59).

In June 2022, Belarus obtained Russian approval for the modernization of its Sukhoi Su-25 aircraft. A new, more precise navigation and attack system is planned, along with the possibility of carrying guided weapons. Belarus currently has over 60 Su-25s, plus 34 MiG29s and 4 Su-30SMs out of the 12 ordered in November 2017. (*Raids* No. 433, August 2022, p. 89)

#### Paratroopers

The Ecole des troupes aéroportées is the subject of a presentation by Pascal Podlazier in *Raids* No. 440, March 2023, p. 18-29. A presentation of the 11th Parachute Command and Signal Company (11<sup>e</sup> CCTP) and the 11th Parachute Brigade is featured in *Raids* No. 439, Fe-





bruary 2023, p. 18-25. The 2<sup>nd</sup> REP's involvement in the MANTICORE exercise is the subject of an article in Raids No. 437, December 2022, p. 25. The 1<sup>er</sup> RCP is featured in Raids No. 433, August 2022, p. 18-26, with particular emphasis on support weapons.

### Special Forces

The 2023 edition of SOFINS took place in Souge over three days. Eric Micheletti and Cédric Haas report on the personal equipment, protected vehicles and specific weaponry on display. One noticeable trend is the increase in the power of weapons installed on very light vehicles - 20 to 40 mm cannons and 81 or even 120 mm mortars. (Raids No. 444, July 2023, p. 26-31) Over 1,150 medium-range anti-tank missiles (MMP) and 350 MBDA firing posts have been delivered to the forces - including the COS. Raids No. 433, August 2022, p. 8.

Eric Micheletti presents the exhibition dedicated to the 30<sup>th</sup> anniversary of the creation of the Commandement des opérations spéciales (COS) at the Musée de l'armée, at Les Invalides in Paris. (Raids No. 437, December 2022, p. 32-43) The history of British commandos is the subject of a dedicated special issue: No. 85, December 2022.

French special forces have a "paradise" in Djibouti, presented by Jean-Marc Tanguy, in Raids No. 434, September 2022, p. 18-26. Foreign forces - particularly American - present on this territory are the subject of an article by the same author in Raids No. 433, p. 28-34.

The 27<sup>th</sup> Mountain Infantry Brigade (27<sup>e</sup> BIM) was trained in a major exercise at Canjuers, involving the combat firing of two inter-army tactical sub-groups (SGTIA) or reinforced companies. (Raids No. 432, July 2022, p. 18-27)

"Snipers in combat" is the subject of a special issue (No. 87, June 2023), which focuses on the history and development of snipers. Equipment is presented in a very cursory manner. And we regret that questions of training and doctrine have not been addressed.

### United States

Those interested in the future of equipment, doctrines and operations should not miss Marc Chassillan's Raids Special Issue No. 86 (March 2023) on the US Army. The book is very comprehensive, and is not limited to in-service equipment. In particular, it deals with multi-domain operations and tactically integrated Task Forces capable of conducting their own information or electronic warfare operations. It deals with the new types of divisions to come. And finally, it presents the state of the art in weapons programs: in particular, long-range artillery projectiles and remotely piloted or operated systems.

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Above: Interior of BMD-2, showing the preparation of 30 mm ammunition. The window in the front armor was originally used to reload wire-guided anti-tank devices (ATGW)

Below: BMD-4 combat preparation and rearming with 100 mm ammunition.



Airborne

### Ukrainian Paratroopers

COL (GS) Alexandre Vautraviers

Editor in Chief, RMS+

Ukraine, which became independent on August 24, 1991, inherited a third of the armed forces of the former USSR, and the same is obviously true of its elite paratroopers and navy troops - several of whose units are based on Ukrainian soil, as a «second echelon» of action towards the West, and in an ideal environment for training soldiers in a highly varied environment: mountains, swamps, coasts, significant temperature differences. Not to mention the ability to be rapidly deployed in the «satellite» countries of Eastern Europe and Central Asia.

There is no need to review the history and development of the Soviet VDV's here. Ukraine inherited the 25<sup>th</sup> (Hvardiyske) airborne brigade, 45<sup>e</sup> (Bolhrad) airborne assault brigade, 27<sup>th</sup> mechanized brigade (Bilhorod-Dnistrovskiy) and 91<sup>e</sup> artillery regiment - which formed the former 1<sup>e</sup> Soviet airborne division (headquartered in Bolhrad), as well as several independent formations: 95<sup>e</sup> airborne brigade (Zhytomyr), 79<sup>e</sup> and 80<sup>e</sup> airborne regiments (Mykolaiv and Lviv, respectively).

By 2016, it was clear that the high cost and complexity of maintaining specialized vehicles like BMDs required reform. As a result, only the 25<sup>th</sup> airborne brigade (Hvardiske) retains these vehicles, which can be dropped or helicoptered. The other units were re-equipped with standard equipment and became elite units under the direct command of the Army.

In 2017, Ukraine is reorganizing its forces according to Western labels and a common pattern. The flag and beret color also change. Each airborne assault brigade thus comprises: a staff company, three airborne battalions, an artillery regiment comprising three groups/battalions equipped respectively with self-propelled 2S1 howitzers, towed D-30s and BM-21s, an anti-aircraft battalion, a tank company, an exploration company, an engineer company, a CBRN company, an airfield support company, a maintenance company, a logistics support company and a medical company. A brigade comprises between 1,200 and 2,000 soldiers.

By virtue of their status and missions, these units receive the best equipment available in Ukraine, including: T-80BV battle tanks (13 per company) and locally manufactured BTR-3 and BTR-4 personnel carriers. These same vehicles are also used by the two marine infantry



Below: A BMD-1 of the 25<sup>th</sup> brigade blocks a road near the border.

Bottom : BTR-4 armored personnel carrier (APC). These locally designed vehicles have greatly suffered from antitank weapons on the front.



brigades, which also have the status of elite units under centralized command.

Paratrooper training has been supported by Western armies for many years, involving exercises in Central Europe and re-equipment with several Western machines: Hummers, Saxons and Spartans, as well as VABs.

The war in 2024 led to new reorganizations, which are impossible to list in full. But in the space of two years, Ukrainian airborne forces have built up their ranks to over 20,000 personnel. Several units have been created or incorporated, in particular the 78<sup>th</sup> «Herts» special forces regiment, the 71<sup>st</sup> Jaeger (Kremenchuk) brigade and several specialized intelligence and fire support units.

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Top of the page: Former Ukrainian President Poroschenko reviews the main armaments of Ukrainian airborne troops. From left to right: T-80BV, 2S9 Nona, BTR-4, BTR-3.

Above: The few T-80BV tanks in Ukrainian inventory were pressed as independent tank companies in Naval Infantry or Paratrooper elite brigades.

Right: images of mobile anti-tank and anti-aircraft units at the front.

Table 1: Order of battle for Ukrainian airborne units (status: July 2023).

Badge	Unit	HQ	Notes
	Airborne Forces Command - 135 <sup>th</sup> staff battalion - 132 <sup>nd</sup> intelligence battalion - 102 <sup>nd</sup> equipment battalion - 124 <sup>th</sup> topographic unit - 170 <sup>th</sup> logistics battalion - 199 <sup>th</sup> Training center - 232 <sup>nd</sup> combined support unit - 374 <sup>th</sup> transmission unit	Zhytomyr	
	25 <sup>th</sup> airborne brigade	Hvardiiske	Only unit still equipped with BMD-1 and -2.
	46 <sup>th</sup> airborne assault brigade	Poltava	
	71 <sup>st</sup> Jaeger brigade (airmobile)	Kremenchuk	
	77 <sup>th</sup> airmobile brigade	Zhytomyr	
	78 <sup>th</sup> «Herts» special forces regiment		
	79 <sup>th</sup> airborne assault brigade	Mykolaiv	
	80 <sup>th</sup> airborne assault brigade	Lviv	
	81 <sup>st</sup> airborne assault brigade	Druzhkivka	
	82 <sup>nd</sup> airborne assault brigade	Chernivtsi	
	95 <sup>th</sup> airborne assault brigade	Zhytomyr	
	148 <sup>th</sup> field artillery brigade	Zhytomyr	

