

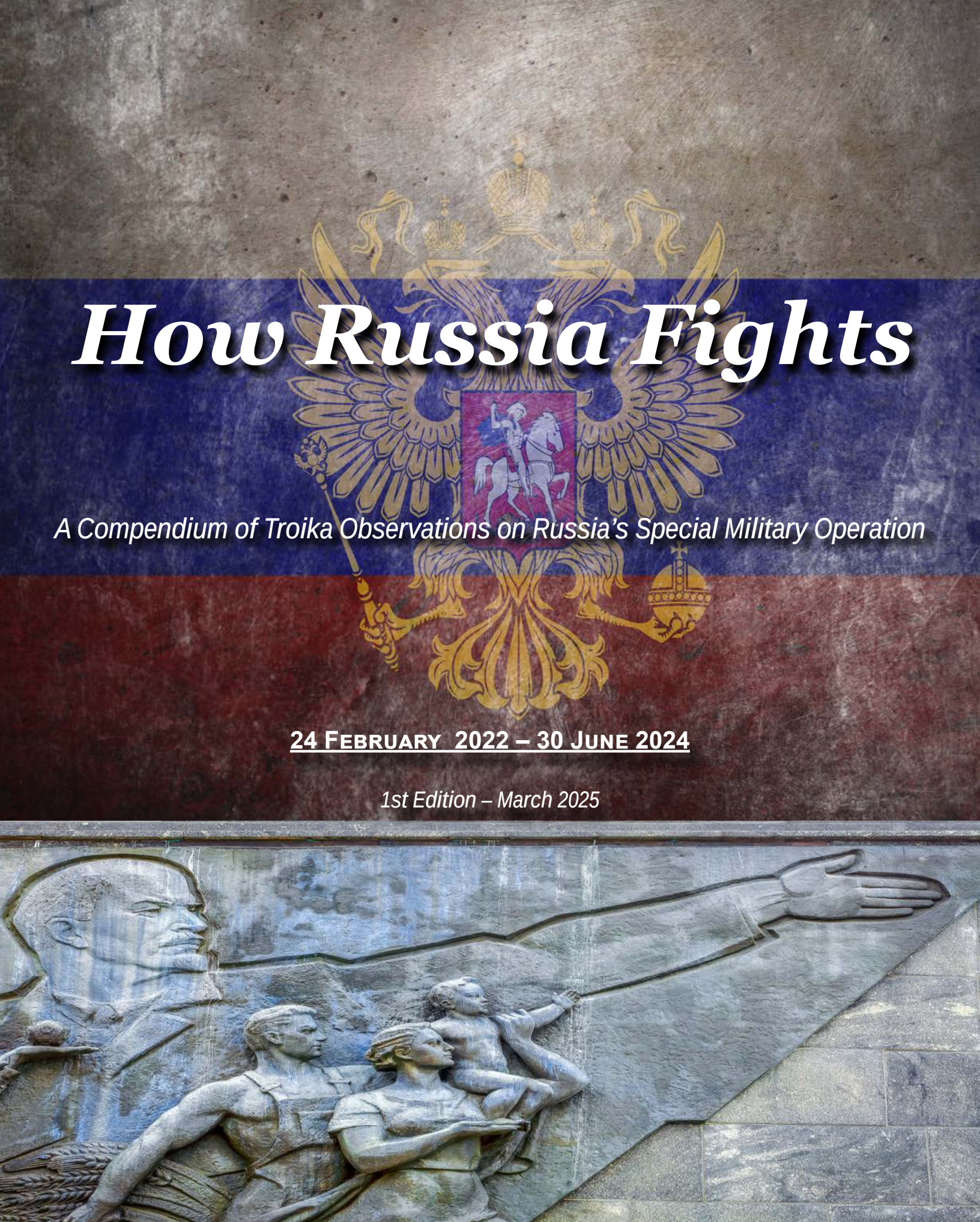


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Acknowledgments

This project began as the vision of General Christopher Cavoli when he was the Commanding General, U.S. Army Europe and Africa (CG, USAREUR-AF). He realized that the U.S. Army Foreign Area Officers (FAOs) assigned to the European theater lacked the detailed understanding of the Russian Federation Armed Forces (RF AF) required to advise him and other senior warfighters. During the period from 1991 to 2014, when the United States considered Russia to be a strategic partner, FAO training had shifted its focus away from Russian military capabilities. To address this training gap, GEN Cavoli convened a team of retired Russian-speaking Army FAOs, with a combined total of more than 200 years' experience working the Russian problem set. We named ourselves "the Troika," a Russian word rich in history and symbolism. GEN Cavoli directed us to create a training course for FAOs focused on the RF AF at the operational and tactical levels. This course became the Russian Way of War (RWOW) Flagship.

After a successful pilot course in January 2021, GEN Cavoli tasked us to develop a one-day version of RWOW for his senior leaders, and a one-week version for staff officers, NCOs, and civilians, which we did. When Russia launched its "Special Military Operation" (SMO) against Ukraine on 24 February 2022, the Troika watched

with rapt attention. We had just completed a flagship course, and our FAO students had planned a notional Russian invasion of Ukraine as part of a course exercise. Our curriculum was based on Russian taktika (doctrine), theory, professional military journals, exercises, and case

studies of recent Russian operations in Chechnya, Ukraine, and Syria.

We were anxious to see how well our curriculum held up in a real Russian large-scale combat operation. In fact, it held up quite well. Many of our assumptions turned out to be correct. But there were some surprises, and some things we had overlooked.

The Troika commenced to update our curriculum in real time. On 25 February 2022, Day 2 of the SMO, we consolidated and organized 24 hours of hasty Troika-internal texts and emails summarizing our observations and sent them to GEN Cavoli via his Special Advisor for Russia. He responded with comments and enough questions to generate another set of "Troika Observations."

He realized the daily Russian Way of War curriculum updates we began sending him in late February 2022 would be of use to his staff, subordinate units, and warfighters throughout the Joint Force. Thus the "Troika Observations," currently distributed to more than 3,500 email addresses three times per week, were born.



In 2024, as Supreme Allied Commander Europe, GEN Cavoli encouraged us to go back through more than 2 years and several thousand pages of raw observations, analyze them, and produce a Compendium organized by U.S. Army Warfighting Functions.

The current CG of USAREUR-AF, General Christopher Donahue, enthusiastically supported the idea and suggested the title. Mr. Brendan McAloon, SES, served as our conduit to the command, as well as our Editor-in-Chief. He has read every Troika Observation for more than 3 years, helping us improve our often hastily written observations and ensure they were relevant to the warfighters. He also reviewed several drafts of this Compendium and helped us improve this final product.

How Russia Fights: A Compendium of Troika Observations on Russia's Special Military Operation, First Edition was written under the auspices of the Emergent Threat, Training, and Readiness Capability (ET2RC) contract. The thrice-weekly Troika Observations and future editions of this Compendium will continue under the Service Solutions for Modernization, Analysis, Readiness Capability, Threat, and Training (SSMARTT) contract. The Troika Observations have always been a dialogue with warfighters in the field.

We benefit from their feedback, and their requests for information often become

research topics for future observations. We see this Compendium in the same vein. We hope to receive feedback from the field, which we will incorporate into future editions.

We will also update future editions with observations and insights from 1 July 2024 and beyond. We encourage readers to provide feedback to this email address: troika.compendium.comments@bah.com.

A project as complex and extensive as this involves many hands, and appreciation is due to many contributors who made it possible. This is a partial acknowledgment of

contributors; we will inevitably have omitted some people.

- **Managing Editor and Co-Author:** COL (Ret) Ted Donnelly
- **Co-Author:** BG (Ret) Kevin Ryan
- **Co-Author:** COL (Ret) Tom Butler
- **Co-Author:** COL (Ret) Jeff Hartman
- **Co-Author:** COL (Ret) Lee Gabel
- **Copy/Technical Editor:** Mary Ann Singlaub
- **Graphic Design and Layout:** MAJ (Ret) Sean Frerking

Mr. Trent Duncan played an integral role in developing the daily procedures for the Troika Observations in early spring 2022 and pushed out the initial versions. Since then, LTC (Ret) Greg Sarafian and COL (Ret) Ken Chance have distributed the reports to the field.





How Russia Fights

A Compendium of Troika Observations on Russia's Special Military Operation

The U.S. Army Operations Field Manual 3-0 chapter on Warfighting begins with a quote by Chinese military strategist Sun Tzu:

"If you know the enemy and know yourself, your victory will not stand in doubt; if you know Heaven and know Earth, you may make your victory complete."

This compendium of observations covers the first 2-plus years of the Russian "Special Military Operation" (SMO) in Ukraine and is intended to help American military leaders better understand our potential enemy—the Russian military.

In 2020, at the direction of the Commanding General (CG), U.S. Army Europe, a group of U.S. specialists on the Russian military created and delivered a month-long course on the Russian Way of War (RWOW).

This course focused on how the Russian military fights at the operational and tactical levels and was intended to fill gaps in U.S. institutional knowledge. After a successful pilot course in January 2021, the course then expanded to a suite of courses for specialists, senior leaders, staff officers, and NCOs.

When Russia launched its SMO against Ukraine in February 2022, this group of specialists, known as "the Troika," took a close interest. The Troika scoured open-source, unclassified Russian and Ukrainian



Vladimir Putin

reporting and social media, attempting to better understand the war, and to confirm or update course curriculum. The Troika shared their observations, first among themselves, but then with the CG as well. The CG directed that the Troika share them with his staff, and thus was born the "Troika Observations."

These observations initially came out as a daily unclassified email newsletter, 7 days a week. In June 2022, the frequency was reduced to three times weekly. By December 2024, the distribution list numbered over 3,300 recipients, including some of the most senior military and civilian leaders in the U.S. Department of Defense.

The Troika was careful to characterize these reports as "observations." The information was often uncorroborated and sometimes, in retrospect, only partially accurate. We were reporting what the Russians and to a lesser extent, the Ukrainians, were saying about the



war. We filtered these raw observations through more than 200 years of collective experience and accumulated wisdom working the Russia problem set.

We often provided additional commentary and context. Nonetheless, they remained observations, as we believed that it was too early to draw definitive "lessons learned" from the SMO. The Troika was recently charged to consolidate and summarize the most important of those observations, viewing them through the U.S. Army's doctrinal prism of "warfighting functions" (Field Manual, FM 3-0). According to paragraph 5-2 of FM 3-0, "commanders apply combat power through the warfighting functions"—Command and Control, Movement and Maneuver, Intelligence, Fires, Sustainment, and Protection.

The compendium that follows summarizes and categorizes Russian military performance in these six elements of combat power, drawing from over 200 observation reports over more than 2 years, from 24 February 2022 through 1 May 2024. The Troika has reported on ground, air, and naval operations, but because of the way in which Russia has waged its SMO, most of the insights concern ground operations. In some of the warfighting functions (e.g., Movement and Maneuver), Russia's military performance deteriorated over time. However, in other functions the Russian Federation Armed Forces (RF AF) eventually improved and, in some areas at key times, it even dominated (e.g., Fires). We have curated and consolidated the most significant observations and vignettes and assembled them according to the U.S. Army warfighting functions.

It is important to note that the Russian Armed Forces do not use "warfighting functions," or any type of similar binning of elements of combat power. However, as this compendium is designed for use by U.S. commanders and their staffs, we have grouped these observations as Americans might, so they will be easier to find. There is some overlap—not every important observation falls neatly into just one warfighting function.

Because this compendium covers more than 2 years of observations, there are also gaps—lengthy periods of time between relevant vignettes, or long periods of time between observable behaviors. The narratives may on occasion appear jumpy because of this. Additionally, because not every observation fits neatly into a single warfighting function, there is some redundancy across chapters. For example, command and control observations are addressed in both the Command and Control Chapter and the Movement and Maneuver Chapter. After more than 2 years of the SMO, it is now possible to identify Russian adaptations. Often, Russian learning proceeds at a slower pace than one might expect. Many adaptations seem counterintuitive or incomprehensible to U.S. observers, because they are Russian solutions, and the Russians are different. Nonetheless, they are adaptations.

Finally, throughout the conduct of the war, there is one aspect of Russian military warfighting to which the Troika directs the reader's attention: a trait which existed before the war and continues to exist now. The Russian military is a thinking, learning organization. It can and will adapt. We should not underestimate its ability to overcome.





Josef Stalin



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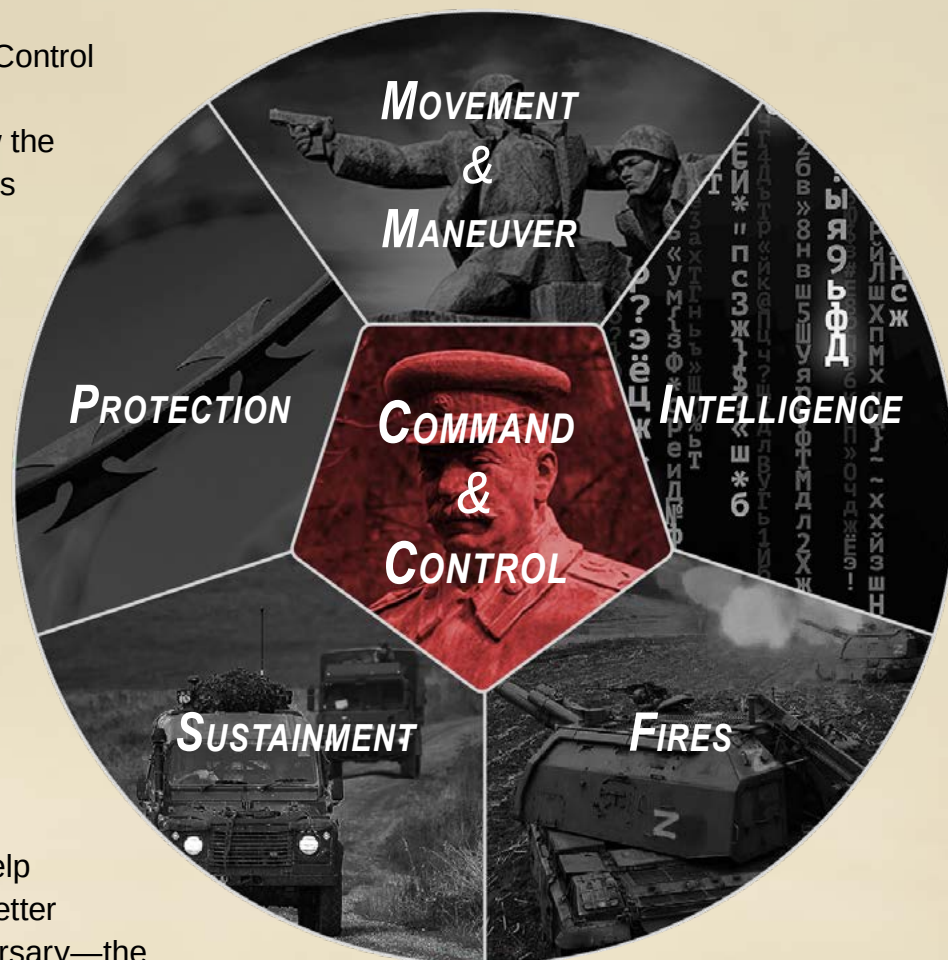


Introduction

The Command and Control (C2) Chapter is an examination of how the Russian military understands the command and control warfighting function and how the Russian military has executed that function in its Special Military Operation (SMO) in Ukraine. This chapter draws from Troika Observations made during the first 27 months of the Russian Special Military Operation in Ukraine as well as U.S. and Russian military literature. The information is intended to help American military leaders better understand a potential adversary—the Russian military.

While the Russian and American militaries generally have a shared understanding of command and control, there are important differences. Russia's military trusts in the science of command and control more than the art. Russian command and control is characterized by highly centralized and rigid organizational control measures which are dictated from higher to lower headquarters. In exercising command, Russian leaders have some flexibility, but less than their American counterparts.

The Special Military Operation is challenging the traditional Russian system of command and control. Units are being forced to operate in much smaller teams, requiring more low-level leader training, better communications, and a more flexible logistical system. The Russian military is attempting to adapt, but chronic issues like poor training and corruption are hindering change. The sections that follow examine these and other aspects of Russian command and control.



U.S. and Russian Definitions of Command and Control

The U.S. Army Operations Field Manual (FM) 3-0 defines “Command and Control” as:

“... the related tasks and a system that enable commanders to synchronize and converge all elements of combat power. The primary purpose of the command and control warfighting function is to assist commanders in integrating the other warfighting functions (movement and maneuver, intelligence, fires, sustainment, and protection) effectively at each echelon, and to apply combat power to achieve objectives and accomplish missions.”

– FM 3-0, paragraphs 2–3

Command and control are each unique functions with dedicated actors responsible for their execution. And those actors must coordinate their actions and function as one in order for the unit to achieve success. Russian officers largely see command and control as Americans do, but there are important differences.

Command and control of forces is translated in Russian as “*upravleniye voiskami*” (управление войсками)—management of forces. American officers, however, should not misinterpret the term “management” as signifying any sort of collegial or business style leadership of units. In the Russian military, as in the American military, there is a basic tenet of unity of command—the commander is in charge of all aspects of his command and is ultimately responsible for his unit’s

performance and the actions of his subordinates. In this chapter, we will use the American term, command and control, when writing about Russian management of forces (*upravleniye voiskami*), because it better reflects the largely common perspective both militaries have on the subject and differentiates it from other types of non-military management.

The Russian Ministry of Defense (MOD) website defines command and control (*upravleniye voiskami*) as:

“The purposeful activity of commanders, staffs and other command and control organs in support of the constant combat readiness of troops (forces), their preparation (training) for operations (combat actions), and leading troops (forces) in the performance of the tasks assigned to them.”

“The basic principles of command and control are: unity of command; centralized management; firmness and perseverance in carrying out the decisions made; operationally reacting to changes in the situation; personal responsibility, high organization, and creativity in the work.”¹

– Russian Federation Ministry of Defense

If required to separate the constituent parts of the term, “command and control,” one can use the Russian phrase “*rukovodstva i kontrol*” (руководство и контроль)—leadership and control. In this sense, “leadership” comprises the role and tasks of the decisionmaker (commander) and “control” comprises the functions and work





of the staff in facilitating the commander's decisions.

Command of a unit means to be the decisionmaker and commander. Former Soviet General Staff Chief, General of the Army GEN Sergey M. Shtemenko, wrote in his 1973 book, *The Soviet General Staff at War Book Two*, that the two main actors in command and control are the commander and the staff. The commander is the decisionmaker who receives a mission and gives up-front guidance to his staff, which then prepares plans to execute the mission. The commander decides his course of action and approves the staff's plans, with any necessary changes. The commander and the staff produce an order which gives tasks to the unit and its subunits and together the team—commander, staff, subordinate commanders, and troops—execute the mission. The commander is responsible for all—both command and control.²

Control of forces means the staff work necessary to support the commander's

intent and mission. According to Shtemenko, in the Russian military there are two types of staff officers: organizational and operational.

Organizational staff officers oversee the preparation, mobilization, training, and logistical support for upcoming operations, while operational staff officers prepare the plans and orders to execute the commander's vision on the battlefield or training grounds. Russian staff officers are not required to serve as only one or the other type of staff, but early in their careers, most officers are channeled into either command or staff tracks.³

Mission Command

It should be noted that according to U.S. Army Doctrine Publication (ADP) 6-0, Command and Control should not be confused with Mission Command. Paragraph 1-14 states

“Mission command is the Army’s approach to command and control that empowers subordinate decision making and decentralized execution appropriate to the situation.”

Mission Command is focused on field commanders issuing mission orders that

“... succinctly state the mission, task organization, commander’s intent and concept of operations, tasks to subordinate units, and minimum essential coordinating instructions. Tasks to subordinate units include all the standard elements (who, what, when, where, and why) with particular emphasis on the purpose (why).”

The function of U.S. Command and Control is a much broader concept than Mission Command and it exists at every level of the military establishment.

Command and Control—Science or Art and Why it Matters

Russian and American military cultures largely agree that both military art and military science play a role in command and control. They further agree that the function of control is more science than art, but they disagree on whether command is more science or art.

U.S. Army FM 3-0 paragraph 1-4 states

“The complex environment in which operations occur demands leaders who understand both the science and art of operations. Understanding the science of operations—such as combat power ratios, weapons

ranges, and movement tables—helps leaders improve synchronization and reduce risk. However, there is no way to eliminate uncertainty, and leaders must exercise operational art to make decisions and assume risk.”

In paragraph 8-4, the FM’s authors write

“Thorough knowledge of military science, a strong ethical sense, and an understanding of enemy and friendly capabilities across domains form the basis of the judgment required of commanders.”

Russian officers would agree with these American sentiments.

ADP 6-0, paragraph 1-86, claims that

“Control is more science than art because it relies on objectivity, empirical methods, and analysis. Control demands commanders and staffs understand those aspects of operations that they can analyze and measure.”

Russian officers agree and are even more categorical. In the collection of lectures given at the Russian Ministry of Defense’s Voroshilov Academy (the precursor to the General Staff Academy), students were taught

“In modern times control has become a science.”⁴

In this regard, the Russian philosophy on control is not dissimilar to the American philosophy, which also sees control as largely, although not exclusively, a science.





But U.S. Army FM 3-0 paragraph 8-5 notes that in contrast to control,

“Command is more art than science because it requires commanders [to] exercise their judgment, leverage their experience, and use their intuition when leading their units.”

The authors of U.S. Army Doctrine Publication 6-0, paragraph 1-3, explain further that American commanders must give more weight to art than science when exercising command because war is a human endeavor and

“not a mechanical process that can be precisely controlled by machines, calculations, or processes. Nor is it conducted in carefully controlled and predictable environments.”

On this point, the Russian philosophy of command and control differs from the American. For the Russian commander, who is focused on the benefits of viewing armed conflict as something that can and should be explained by science, the endeavor of war CAN be assisted and ultimately “controlled by machines, calculations, and processes.”

As evidence of this belief, one notes that the Russian military has an academy of military science dedicated to this proposition, while the United States does not. The result is that American military officers tend to rely more on personal judgment and experience for decisionmaking, while Russian officers rely more on collected data, mathematical algorithms, and scientific correlations of

forces. Both Russian and American officers believe command and control involve military art and military science, but the emphasis differs.

Another way to appreciate the difference between American and Russian thinking on command and control is to consider General George S. Patton’s quote captured on page 2-6 of Army Doctrine Publication 6-0:

“Despite the years of thought and oceans of ink which have been devoted to the elucidation of war, its secrets still remain shrouded in mystery...



General Patton

“War is an art and as such is not susceptible to explanation by fixed formulae. Yet from the earliest time there has been an unending effort to subject its complex and emotional structure to dissection, to enunciate rules for its waging, to make tangible its intangibility.”

– General George S. Patton, Jr.

An American officer would read the first sentence of Patton’s insight and stop after noting that

“... War is an art and as such is not susceptible to explanation by fixed formulae.”

Case closed.



A Russian officer would focus on Patton’s second sentence in which he writes

“Yet from the earliest time there has been an unending effort to subject its complex and emotional structure to dissection, to enunciate rules for its waging, to make tangible its intangibility.”⁴

Challenge accepted.

The advance of technology and artificial intelligence in the current war in Ukraine makes this question—art or science—more than an academic debate. In his 2013 article, “The Value of Science is in the Foresight,” current Chief of Staff of the RF General Staff, GEN Valery Gerasimov, asserted that predicting the future of war is a primary task of the military. This belief goes back to Soviet times. In briefings at the Soviet Union’s Voroshilov (General Staff) Military Academy, students learned that

“Scientific control is the application of foresight (forecasting). This means that control is actually forecasting. ... Forecasting in the control of the Armed Forces is the ability of the commander and staff to foresee and forecast, rationally and elaborately, the possible changes in politico-military and military situations, and to determine accordingly the most appropriate form of action for the Armed Forces.”⁵

War and its components must be predictable and explainable by science for commanders and staff to accurately

forecast its future. If command and control are science, then the side which is working now to embrace that reality will have an advantage. Thus far, Russia’s attempts to find the science in command and control have not delivered victory. But Russian military strategists have not given up on it.

Special Role of a Chief of Staff

The role of Chief of Staff in a Russian formation is different from that in an American unit. A Russian Chief of Staff has the responsibilities for supervising all organizational and operational staff work but is also the second in command of the unit.

The Chief of Staff is subordinate to the commander as his first deputy and direct superior to all other personnel of the unit. He can issue orders to all subordinates in the name of the commander.

According to Russian Federation Presidential Decree No. 1495 (amended 01.03.2024), in peacetime and wartime, the Chief of Staff is responsible for both command functions and control functions in the unit. In an American unit, the organizational and operational staff planning is largely divided between an Executive Officer and an Operations Officer (S3) or an Assistant Division Commander (ADC) for Support and an ADC for Maneuver, each of whom would directly report to the commander.

In the Russian model, the organizational and operational staff officers are direct reports to the Chief of Staff. The Chief of Staff is responsible for combat readiness of the unit, mobilization requirements, training,





education, discipline, and accountability for weapons, ammunition, and supplies. Officers who serve as Chiefs of Staff are almost always in the command career track.



GEN Gerasimov

In the Russian military, the position of Chief of Staff exists from battalion level and up. In a battalion, the Chief of Staff is a major. In a regiment, it is a lieutenant colonel. In a division, the position is authorized as a colonel.⁶

In principle, the Chief of the Russian General Staff, GEN Valery Gerasimov, has similar command and control responsibilities as other Russian Chiefs of Staff. He has command of all armed forces, second only to the commander-in-chief. At the same time, the Chief of the General Staff is in charge of the entire general staff—both organizational and operational sides. His role includes command of all forces, command of all services (Army, Navy, Aerospace Forces, etc.), head of the General Staff, and Deputy Minister of Defense. His counterpart in the United States, the Chairman of the Joint Chiefs of Staff, has none of those duties.

Direction—a Key Element of Control in the Operations Process

According to U.S. Army Doctrine Publication (ADP) 6-0 paragraph, 1-76, “The Army’s framework for organizing and putting command and control into action is the operations process. ... Commanders, supported by their staffs, employ the operations process to drive the conceptual and detailed planning necessary to understand, visualize, and describe their operational environment; make and articulate decisions; and direct, lead, and assess military operations.”

ADP 6-0 paragraph 3-9 identifies direction as “a key element of control.”

“To direct means to communicate information related to a decision that initiates and governs actions of subordinate and supporting units. Commanders, through their command and control system, direct subordinates by establishing objectives, assigning tasks, and providing instruction on how forces will cooperate to accomplish the mission.”

In the early stage of Russia’s Special Military Operation, there were many examples of poor direction by Russian commanders and staffs. Some Russian units famously deployed into Ukraine not knowing their destination or even that a war had started. Senior commanders were afraid of operational leaks. After the first days of fighting, units of the Russian 1st Guards Tank Army, not receiving orders or direction, abandoned their equipment and simply walked home.⁷

According to ADP 6-0 paragraph 3-10,

“The primary means for communicating direction include plans and orders.”

Both American and Russian officers issue plans and orders, but there are differences. For example, Russian commanders and staff do not use the terms tactical control (TACON) or operational control (OPCON) when directing command relationships among units. Generally, whether a unit is assigned or attached for a mission, it is under what Americans would consider tactical control of the receiving headquarters. If the relationship departs from that standard, guidance explaining the exceptions would be written in the orders.

Another example of the differences in American and Russian direction is the use of maps or graphic control measures. In the Russian military, “decision maps” are the standard for commanders to communicate tasks to subordinates.

Decision maps are densely packed graphics with control measures and guidance on movements and missions. To the untrained eye, they are almost indecipherable. But they are the key direction documents for most Russian tactical and operational actions.

As former Chief of the Soviet General Staff, GEN S. M. Shtemenko, noted in his 1973 book on the General Staff,

“Once an operational decision has been made [by the commander], the operations staff puts it into the form of an order or directive.”

In the Russian system, this first document is a “confirmed decision map.” The map would include “the starting positions” of major units, “the directions of main and other thrusts,” “immediate and long-range objectives,” the “timelines of second echelon units,” and operations of neighboring units. From the decision map, subsequent and further written directives can be issued by the operations staff.⁸ This is still the process today.

Organizational vs. Operational Flexibility in Russian Command and Control

According to lectures given at the Voroshilov Academy, one of the main principles of control over the armed forces is “centralized control with unified command.”⁹ In the Russian command and control system, this results in rigid organizational planning but relatively flexible operational planning. GEN Shtemenko wrote in his book that in war, a commander has

“great latitude for initiative in general tactics and in the employment of different arms of the services at his disposal.”

Shtemenko recalled that during WWII, the General Staff would sometimes suggest to Front Commanders the outlines of an operational plan or just the tasks to be done. In those cases, the Front would create an operational plan which would





then be reviewed by the General Staff and finalized.¹⁰

But Shtemenko noted,

“In organizational matters, however, commanding officers were free to do no more than draw conclusions about the merits and drawbacks of the existing organization of forces....”¹¹

Commanders can make suggestions for improvement of the organization plan, and the General Staff considers input from many sources, but in the end, the General Staff is in the best position to make decisions on organizational matters.

This rigidity in organizational control measures can cause operational frustrations on the battlefield. The 58th CAA Commander, GEN-MAJ Ivan Popov, raised serious concerns about the lack of counterbattery fire and artillery reconnaissance systems, which he said led to the deaths of many Russian soldiers. He claimed that Russian losses on the battlefield were not because of the Ukrainian forces but because of the lack of support from Russian leadership. Popov also complained about the lack of troops and resources, prohibiting rotation of forces from the front lines.¹² All of these organizational control measures are decided by the General Staff, based on available resources.

Preparing the Armed Forces for War

According to U.S. Army FM 3-0 page 8-1,

“Commanders have a moral responsibility to ensure their units are prepared for combat. They prepare them through realistic training that reinforces individual and small-unit task and battle drill proficiency, collective proficiency in the execution of mission essential tasks under the most demanding conditions, and the development of staffs able to integrate the warfighting functions and joint capabilities in combined arms approaches against enemy forces. Commanders resource training and protect subordinates’ training time.”

At the Voroshilov Academy (now the General Staff Academy), Russian officers learned a similar principle.

“The most important elements in control of the Armed Forces by the General Staff in peacetime are bringing the Armed Forces to a level of full combat readiness and the organization of all types of support for the control of the Armed Forces. The General Staff also plans the development of armament and military equipment for the Armed Forces. It controls the preparation and operational training of the staffs of the various Services of the Armed Forces, directs strategic reconnaissance, and guides the study of issues related to military science.”¹³



After initial assignments, Russian military leaders are divided into command or staff tracks, where they typically stay for the rest of their career. In its 29 July 2022 Observations, the Troika wrote that prior to Russia’s Special Military Operation in Ukraine, we considered the Russian officer management system to be a strength of their military. Long-tenured commanders would seemingly be more experienced and competent.

Permanent, professional General Staff officers would know the defense enterprise, inside and out. The reality has proven slightly different. In Ukraine, the Russian armed forces do not seem to have gained any benefit from its long-tenured commanders, especially at the senior level. In fact, many of the longest-serving commanders have now been relieved or replaced.¹⁴ The Troika has reported many problems with training Russian enlisted troops and junior officers. Poor training also seems to affect the senior officers. It is not necessarily “incompetence” but, what else could it be?

Notably, incompetence has been the publicly announced reason that some Russian commanders have been relieved. According to a recorded phone call, Russian GEN-LT Mikhail Zusko, Commander of 58th CAA / Southern Military District, was arrested in June 2022 for failures during offensive operations in the Mykolaiv area. GEN-LT Zusko allegedly surrendered RF positions to Ukrainian Armed Forces.¹⁵

In the case of GEN-MAJ Ivan Popov, mentioned above, he was relieved and then arrested for maintaining that it was his

superiors who were incompetent. Popov claimed,

“They have stabbed us in the back.”¹⁶

Perhaps President Vladimir Putin agrees with Popov. In the first 12 months of the Special Military Operation, Putin, as Commander-in-Chief of the military, changed the commander of the SMO no less than four times, finally settling on his Chief of the General Staff, GEN Valery Gerasimov. It took only 7 months for Putin to fire all four commanders of the groups of forces in Ukraine. Some of these officers were “rescued” and put into other commands. But for Putin, whose focus is on Ukraine, their removals can only be explained by failure to succeed.¹⁷

In U.S. Army Operations Manual FM 3-0, the Art of Command (para. 8-2, 8-3) notes that:

“Commanders and their subordinate leaders determine success or failure through the decisions they make, the examples they set, the actions they inspire, and their will to win.”

“Commanders have a moral responsibility to ensure their units are prepared for combat.” (emphasis added)

By their own assessments, Russian units were not well-prepared for combat by military leaders, and the cost for the leaders’ failure has been paid with the lives of thousands of Russian soldiers.





Generating Forces—Military Science Fails to Forecast

When Russia launched its 24 February 2022 invasion of Ukraine, its battlefield goal was to quickly subdue Ukrainian forces, avoiding a long war. But only a month after launching the invasion, the Russian military faced a major problem for which they were not prepared: losing men, equipment, and ammunition faster than they could replace them. Russia was not generating enough forces, and this was a failure in both command and control.

According to U.S. Army FM 3-0,

“All warfighting functions contribute to generating and applying combat power.”

Army Doctrine Publication 3-0 (Operations) states that

“factors that contribute to generating and maintaining combat power include reserves, [and] force rotation....”

The U.S. Army considers the ability to generate forces a critical facet of command and control—especially control. Russian military officers would agree.

Russian Chief of the General Staff, GEN Gerasimov, claims that correctly forecasting threats and what the military needs to prepare for them is a central task of Russian military science. In the case of the Special Military Operation, Russian military science had failed in forecasting.

On 21 March 2022, the Troika reported that Russian ground and airborne (VDV) forces

in Ukraine already lacked reinforcements to replace their deserters, casualties, and prisoners of war. Those units were already fighting without access to a third of their troops, who were conscripts and not deployable to the war zone. (When the SMO began, the ground forces were approximately 35 percent conscripts and the VDV were 30 percent conscripts, who according to Russian law, are prohibited from serving outside of Russia’s borders.) Combat losses were horrific. By 1 April 2022, one Russian Pacific Fleet Naval Infantry Brigade (Military Base 30926) had reportedly lost 50 percent of 1,600 brigade personnel. There were 220 reported KIA and 530 WIA, with an undisclosed number taken prisoner. The rest were waiting for their transfer to Belarus, where they reportedly were planning to request to be discharged.¹⁸

Russia’s reserve system was unprepared to fill the personnel vacancies. The existing system was a paper list of former conscripts and officers who had served their required military service sometime in the past. With a few exceptions, these veterans had none of the organization, periodic training, or equipment normally associated with American or Western military reserve components.

In response to manpower shortages, Russia turned to outside sources of troops early in the conflict. In its 28 March 2022 Observations, the Troika reported that the first foreign fighters recruited by Russia (200 Syrian soldiers and Hezbollah fighters) were expected to arrive at Gomel, Belarus on 29 March 2022 for a short orientation before being sent to fight in

Ukraine.¹⁹ This would be the first of 800 Syrian soldiers and Hezbollah fighters who would arrive to fight in Ukraine for the Russian Federation. Other mercenary forces arrived later, like the private military company (PMC) Wagner, which later had a great effect in the battle for Bakhmut.

In addition to the problem generating troops, the Russian Ministry of Defense faced the problem of generating new equipment. Ukrainian forces, with 6 years of experience fighting Russian-led separatists in the Donbas, were destroying Russian armored vehicles and tanks at an alarming rate. Russian logisticians scrambled to find serviceable replacement vehicles to send to the front.

On 27 March 2022, a month into the war, Ukrainian Defense Intelligence (HUR) reported that the Russian ground forces were already taking old military vehicles from long-term storage.

Throughout the spring and summer of 2022, Russia attempted to manage its personnel and equipment losses with quick-fix solutions and band aid reactions; holding on, perhaps, to the fiction that the SMO could be won using only Russia’s active-duty armed forces. But by August 2022, President Putin agreed to grow the Russian Armed Forces, and in September he authorized the involuntary mobilization of 320,000 veterans (*mobiki*)—the first mobilization since the Second World War.

Regarding generating weapons and equipment, Russia has had mixed results. The Russian Armed Forces ended 2022 with some 8,500 fewer pieces of heavy

equipment than they began the year with. By September 2023, Russia’s Black Sea Fleet had lost its flagship and more ships than the country could replace. All operational Black Sea Fleet submarines had moved from Sevastopol in Crimea to Novorossiysk, a port on Russia’s mainland, hundreds of miles to the east.²⁰

Russia’s military industrial complex has been challenged to replace Russia’s materiel losses, especially under sanctions. In 2022, Russia was challenged to equip its new *mobiki* with even basic soldier gear such as uniforms, boots, and sleeping bags. Russia’s allies (Belarus, Iran, North Korea) have been asked to take up some of the slack.²¹

Of course, Russia’s main source of weapons and munitions continues to be its own military industrial complex, which now operates on a 24/7 work schedule.²²

In May 2024, Putin claimed this great expansion of troops and equipment was costing Russia 8.7 percent of its GDP, more than double Russia’s pre-SMO average 4 percent of GDP annual defense spending allocations.²³

When Russia began its SMO against Ukraine, the military believed it had sufficient forces, reserves, munitions, and weapons to accomplish their mission. They based that assessment on assumptions and supposed facts which turned out to be wrong. They regrouped. They changed their force generation practices to rely on contract soldiers and mobilized troops. They militarized their industry to increase production of munitions, weapons, and





equipment. They reached out to international partners for support. It has been ugly, but Russia has managed to escape a strategic failure in the first months of the war and to work its way back to a force that is now larger than when the war started. The ability to generate forces is the foundation for victory.

A Lack of NCO Leadership Undermines Command & Control

U.S. Army Operations Field Manual 3.0 paragraph 8-7 states that

“Commanders go where they can best influence operations, assess units, and improve unity of effort. Where commanders place themselves on the battlefield is one of the most important decisions they can make. Commanding forward allows commanders to effectively assess and manage the effects of operations on their formations through face-to-face interactions.”

In Russia’s war in Ukraine, Russian commanders have demonstrated bravery by placing themselves up front and with troops engaged in combat. In November 2023, the Ukrainian Information Agency UNIAN reported that at least 3,070 Russian officers were confirmed killed in action since 24 February 2022. That number includes one GEN-LT (two-stars), five GEN-MAJs (one-star), 76 COLs, 181 LTCs,

367 MAJs, 530 CAPTs, 897 Sr LTs, 552 LTs, 67 Jr LTs, and 394 other U/I officer ranks. Each name was confirmed via funeral notices, obituaries, names on the graves, news stories, monuments, or other memorial plaques.²⁴

The reasons, however, that these officers had to place themselves forward reveal problems within Russian ground combat units.

First and foremost, there is a lack of noncommissioned officers (NCOs) or their equivalent. In the Russian ground forces, airborne, or naval infantry, the lowest level professionally trained leader is the platoon commander—a

lieutenant. While the Russian Armed Forces have several ranks of “sergeants,” they are not NCOs in the American sense. They have no specific leadership training, nor do they have any formal leadership authorities or responsibilities. There are no trained NCOs to lead squads or fire teams, no section leaders or platoon

sergeants. As a result, the span of control for that platoon commander is much greater than he can handle on his own in modern combat. He cannot be in every foxhole to encourage and direct his subordinates. Sometimes, when untrained but savvy enlisted men informally step into the role of NCO, platoons and units have a chance to succeed. But where no such “volunteers” exist (or survive), small units



Emblem of the Main Directorate of Intelligence of the Ministry of Defence of Ukraine (HUR)



are at great risk of failure. And many units have failed.

In some cases, even generals have had to move to the front lines to reinforce the lieutenants in their duties. This exposed them to direct fire and increased casualty rates. For example, on 5 June 2022, GEN-MAJ Roman Kutuzov, the Commander of 1st Army Corps, was killed in action at Mykolaivka. Reportedly, Kutuzov went forward in person to lead an assault, intending to rally and inspire his soldiers who were refusing to attack. His remains were recovered by Ukrainian forces when they counterattacked south. In the early days of the war, there were many such cases.²⁵

Minister of Defense Sergey Shoigu told an interviewer before the war that the reason Russia would not create a professional NCO Corps was because it was too expensive. It turned out that not creating an NCO Corps has been expensive too.

A Lack of Training Affects Morale and Readiness

On 16 May 2022, retired Russian COL Mikhail Khodaryonok appeared on a Russian TV program, “60 Minutes,” to discuss the state of Russia’s army. He made a point with which most American and Western military officers would agree—professionalism is determined by a soldier’s level of training, readiness, and morale, not whether he was conscripted or enlisted as a volunteer. Many Russian officers had assumed that recruiting volunteers into the force would lead to more professionalism. But the Russian

military training system was never improved to make that happen.

Most Russian individual and unit training is done at the unit level. There is no Russian equivalent to U.S. Army Training and Doctrine Command (TRADOC), no centralized training enterprise. This system worked well enough in peacetime but was upended when almost all units deployed to the war in Ukraine, leaving the training of any new troops back at home to a hodgepodge of rear area troops. Exacerbating this problem was the September 2022 mobilization of 320,000 extra troops who showed up at unit garrisons, all requiring some level of training. As a result, many mobilized troops were sent directly to the front with little or no training.

The Troika reported in October 2022 that some Russian veterans who had volunteered for the SMO tried to resign after seeing the poor quality of training that mobilized troops were receiving. One unit’s leadership was fired for reporting the true (poor) status of training during a visit by Deputy Defense Minister Yunis-Bek Yevkurov.²⁶

Discipline and Leadership

The effect of poorly trained leaders is not only seen in training but in troop/unit discipline. There have already been several claims of war crimes committed by Russian troops. Discipline within units is a core responsibility of a leader. There are reports that the leaders themselves are sometimes undisciplined.

According to a pro-Ukraine military blogger, enlisted soldiers in Russia’s 4th Guards





Tank Division, one of the “elite” units that marches in the Victory Day parade each year, filmed a disciplinary action and posted the clip to Russian social media. An officer had five soldiers stripped naked and beaten with truncheons, in front of a battalion-sized formation.

The naked soldiers were then forced to pluck the grass by hand in front of what appeared to be a battalion headquarters.²⁷

Russia’s enlisted have served under the threat of beatings and abuse for decades. It is so prevalent that the Russians have a special word for it: “*dedovshchina*,” which means “reign of the grandfathers.” The “grandfathers” in this case are more senior soldiers. In the war, those beatings are often seen as “necessary” disciplinary measures by commanders.

Corruption Undermines Everything

Corruption remains the lubricant that allows the Russian military to run, even during wartime. Every Russian military leader must engage in it to get things done—every leader. At best, officers tolerate it to find solutions to shortages and problems. At worst, they use it to enrich themselves.

In the first weeks of 2024, President Putin acted to reduce the level of corruption in the MOD, firing several senior officers and retiring others. The different punishments undoubtedly were a function of whether the officer could buy a retirement rather than suffer a prison sentence.

The purge began with Timur Ivanov, Russia’s then-Deputy Defense Minister, who was arrested in April 2024 after being

accused of taking bribes “on a particularly large scale.” Then came GEN-LT Yuri Kuznetsov, head of the defense ministry’s personnel directorate. He was arrested after more than 100 million rubles (over \$1 million), gold coins, and other valuables were seized from his residences.

GEN-MAJ Ivan Popov, former Commander of the 58th Combined Arms Army, was arrested for fraud. During this same time, several senior generals were given the chance to retire. GEN Vadim Shamarin, Deputy Chief of the General Staff, was placed in custody by a military court on 22 May 2024. According to Russian agencies, he is accused of “accepting a particularly large bribe,” charges for which he faces up to 15 years in prison.

Corruption is so entrenched that the guilty and the public talk about it as if it were acceptable, as long as it is not too “extravagant.” For example, in the wake of PMC Wagner Chief Yevgeny Prigozhin’s mutiny, Rosgvardiya Director (and former Putin personal bodyguard) GEN Viktor Zolotov said in a televised interview that he gave his wife his “go-bag” of money, documents, and other items in case she needed to flee Moscow and, we presume, Russia. He added that his troops also gave their “stash of money” to their wives, joking that his troops later regretted this. It is difficult to imagine a parallel situation in which a U.S. or Allied four-star commander responsible for the security of the government bragged that he had prepared his wife to flee the country.²⁸

Conclusion

The Special Military Operation is challenging the traditional Russian system



of command and control. Units are being forced to operate in much smaller teams, requiring more low-level leader training, better communications, and a more flexible logistical system. Tremendous losses on the battlefield have tested Russia’s ability to resource units in the field and generate new forces.

Russia’s efforts to adapt are notable for their failure to fundamentally change the training system and introduce an NCO Corps—steps that seem necessary to improve command and control at the small

unit level. While the arrest and removal of senior officers accused of fraud and graft are a good sign, endemic corruption continues to undermine all aspects of command and control.

Despite these and other problems, the Russian military is attempting to learn and change. It remains a military that trusts in the science of command and control. We should not underestimate the Russian military’s ability to adapt and improve.

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Monument to Soviet Soldiers in WWII
– National Museum of the History of Ukraine in the Second World War, Kyiv, Ukraine

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Introduction

The U.S. perspective

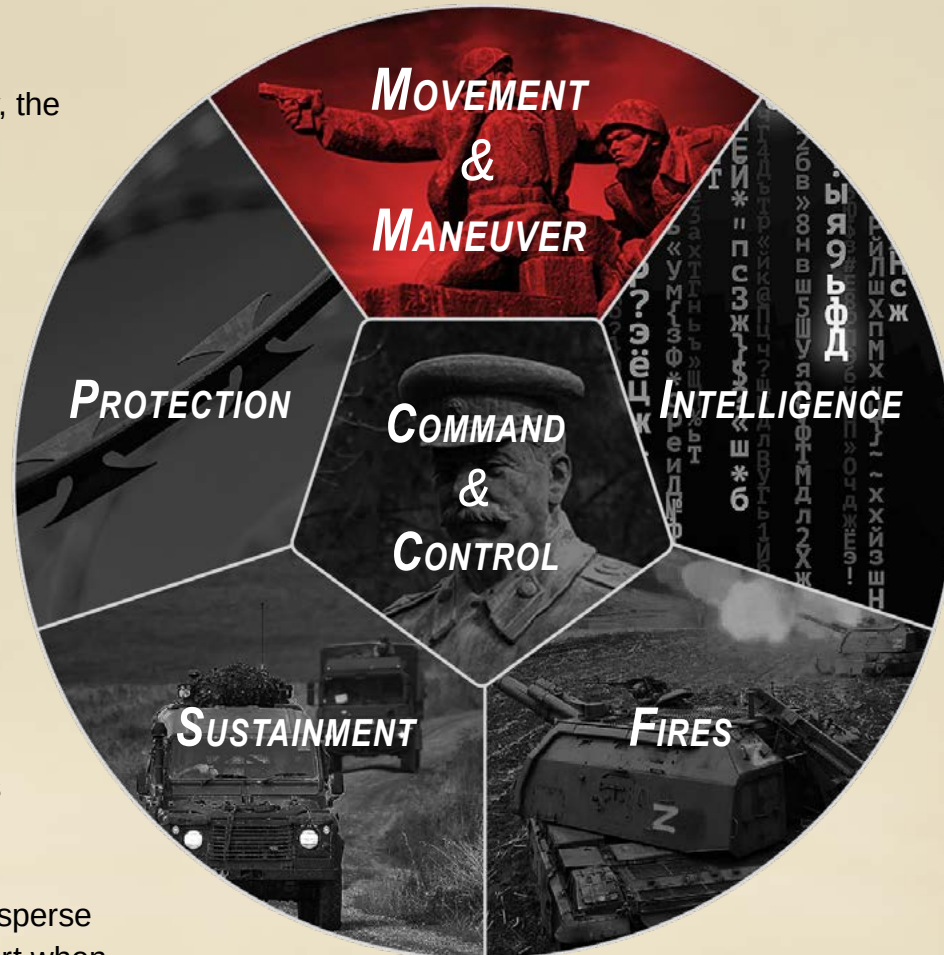
For the U.S. Army, the movement and maneuver warfighting function includes the related tasks and systems that move and employ forces to achieve a position of relative advantage over the enemy and other threats (U.S. Army Doctrine Publication, ADP 3-0). Direct fire and close combat are inherent in maneuver. The movement and maneuver warfighting function includes tasks associated with force projection. Movement is necessary to position and disperse the force as a whole or in part when maneuvering. Maneuver directly gains or exploits positions of relative advantage.

Commanders use maneuver for massing effects to achieve surprise, shock, and momentum. (U.S. Field Manual, FM 3-0, 2022)

The Russian perspective

Russians do not think about movement and maneuver in the same manner as the U.S. Army. Strategic mobility along internal lines of communication is one of the Russians' core strengths. Unlike the U.S. joint force, the Russian Federation Armed Forces (RF AF) do not need to project combat power worldwide to fulfill their missions. The Russian deployment to Syria plays an

important role in projecting Russia's influence in the Middle East but is an outlier. Russia's strategic deployments to project its might are mostly internal to or near its borders as seen in 2008 (Georgia), 2014 (Crimea and Donbas, Ukraine), spring 2021(Ukraine), and February 2022 (Ukraine). In this sense, the RF AF's strategic mobility is their form of force projection. Before and throughout the Special Military Operation (SMO), the RF General Staff exercised the movement of entire military districts' groups of forces as well as Russian Airborne Forces (RF VDV) and Naval Infantry commands to either gain positional advantage over the Ukrainian Armed Forces (UAF) or to



respond to emerging threats. At the onset of any military conflict, this is an inherent Russian advantage. There is very little a neighboring state can do in response to Russian force projection internal to Russia and its allies (such as Belarus) without responding in ways that Russia would construe as “escalatory” or in ways that might spook the neighboring state's own populace. That, of course, was Ukraine's dilemma when Russia massed forces along its border in spring 2021 and again in January–February 2022.

The Russian General Staff designs movement and maneuver into its strategic priorities and uses the RF VDV and RF Naval Infantry to capture key terrain, facilitating the Ground Forces' ability to mass its effects and capacity to defeat an enemy. The RF General Staff has a methodology for operational design, described below, that lays out its priorities for movement and maneuver.

Regarding movement and maneuver, Russians tend to start wars poorly but improve over time. The Winter War in Finland from November 1939 to March 1940 is one such example. The USSR's involvement in World War II between June 1941 and May 1945 is an even better, much bigger, example. Russian movement and maneuver in the SMO is no exception to this rule.

At the launch of Russia's Special Military Operation, only one of the RF AF's four groups of forces showed any propensity for maneuver warfare, and such capability was not demonstrated again by another group of forces on a meaningful scale until the closing months at Avdiivka in January–February 2024. Even then, it was done at great cost in a very Russian manner, building on slow adaptation and lessons learned over the preceding 2 years. The period between attacks on Mariupol in early 2022 and Avdiivka in February 2024 revealed a few Russian movement and



Russian General Staff emblem

maneuver strengths, but mostly weaknesses. The RF AF's unique warfighting nature and strategic context were also on full display. Despite drastic improvements in Russian operational and tactical fires described below and in the Fires Chapter, Russian “Fire and Maneuver” remained uncoordinated—better described as “Fire, then

Maneuver.” It is a recurring characteristic of Russia's way of war.

How the Russians design their movement and maneuver

Strategic directions and military districts' groups of forces

Russian operational art is driven by “a large, flat map on a table” and the Russian military has a proven planning architecture for designing movement and maneuver into its operations. Military districts form groups of forces when directed by the General

Staff, which then weights them based on strategic priorities. A sample, hypothetical equation for composing a Russian military district's group of forces follows:

Military district's group of forces = Military district assigned forces + VDV + RF Naval Infantry + GRU spetsnaz.

The RF General Staff may assign strategic directions to its military districts' groups of forces, or it may delegate this responsibility to its RF Joint Group of Forces (the RF General Staff's non-permanent command for an operation). The RF General Staff then designates which axes are the direction of its main strike (*направление главного удара, НГУ*) and in the direction of the other strike(s) (*направление другого удара НДУ*), somewhat akin to a U.S. main effort (ME) and supporting effort(s). The RF General Staff weights these directions with additional RF VDV, RF Naval Infantry, strategic fires, and other combat power, depending on the correlation of friendly forces versus enemy forces. They consider, for example, whether the direction requires the VDV and/or Naval Infantry to capture key terrain with their unique capabilities. These assessments are repeated lower at the military districts' groups of forces and army level (CAAs, 1st GTA¹ and direct-report army corps) in accordance with higher headquarters' guidance.² All Russian movement and maneuver are predicated on these strategic decisions, taken at the General Staff level.

RF VDV commands are never permanently assigned to the military districts. Since early 2024, RF Naval Infantry brigades

(some of which are slated to become divisions) are also not permanently assigned to the military districts. To weight the General Staff's direction of the main strike and the other strike(s), VDV and RF Naval Infantry commands are attached to military districts' groups of forces. RF VDV are attached either as divisions, brigades, regiments, and/or battalion tactical groups (BTGs). Russian military officers frequently obsess about specific wording, details, and interpretations in their plans and orders. However, they do not obsess about terms for command relationships in training or combat. The Troika has searched Russian combat regulations (*Боевой устав*), tactics (*taktika*) manuals, operations orders, and the RF Ministry of Defense (MOD) very comprehensive on-line encyclopedia but have not found any terms defining command relationships—terms equivalent or similar to U.S. "OPCON" (operational control) and "TACON" (tactical control). We have found nothing in writing. We have asked other experts, including a graduate of the RF General Staff Academy—they are equally unaware of any similar terms used by the Russians to define command relationships.

When assigned to a military district or group of forces for an operation, VDV and RF Naval Infantry commands cannot be reorganized or broken up. Instead, the VDV are typically given their own operational direction(s) or battlespace. The VDV and RF Naval Infantry support a RF group of forces until they are moved by the General Staff, which is done without debate. Throughout the SMO, VDV or Naval Infantry commands were moved abruptly

across the Russians' SMO battlespace, according to the emerging needs of the General Staff or its Joint Group of Forces. For example, in late August 2023, when the UAF penetrated too far into the RF GF 58th Guards Combined Arms Army (GCAA) defenses during the UAF's summer counteroffensive, the RF General Staff or Joint Group of Forces immediately transferred the RF VDV 76th Guards Division to the RF Southern Group of Forces and its defenses west of Robotyne. The 76th had been defending and counterattacking west of Kreminna under the RF Central Group of Forces since the UAF's fall 2022 Kharkiv counteroffensive. Within days, the entire 76th was pulled off the Line of Combat Contact (LCC), the boundary zone between Russian and Ukrainian forces, withdrawn east into Russia, put on trains, and moved along internal lines of communication through Crimea to Zaporizhzhia Province. The first RF VDV 76th Guards paratroopers soon appeared near Robotyne and the division's three regiments were "closed" and defending in Zaporizhzhia Province less than 2 weeks after the initial order.³

Likewise, in summer 2024, the 155th Guards Separate Naval Infantry Brigade (SNIB) captured the last part of Novomykhailivka in the Donbas for the RF Southern Group of Forces and the 810th Guards SNIB reoccupied Krynyi for the RF Dnepr Group of Forces. Soon after, both

were sent immediately back through Russia to relieve the RF Northern Group of Forces in Kharkiv Province (Hlyboke and near Vovchansk). Shortly thereafter they were sent to the RF Northern Group of Forces' next emergency in Kursk Oblast.⁴ Just like the RF VDV, the RF Naval Infantry is the RF General Staff's no-notice first responders.

The RF AF is a railroad-mobile force. This includes the VDV and Naval Infantry, which move less frequently by air or sea in favor of rail. Within Russia, the RF AF is mostly "a European army," usually based in smaller garrisons in or near urban areas, with limited local training facilities. They do not have large bases with ranges and training areas as U.S. forces do in the continental United States. For gunnery and maneuver training at the company level and above, Russian units typically move long distances by rail to the RF AF's larger range complexes and training areas.

During the SMO, RF AF units that had been transferred long distances by the RF General Staff usually withdrew to railheads deeper inside RF-occupied Ukraine or back to Russia, then moved by rail. This is a form of strategic mobility that the RF AF do very quietly, efficiently, and quickly. Several times, RF AF have surprised U.S. senior military leaders with this movement



Great Emblem of Russian Airborne Troops (VDV)



Russian Naval Infantry Emblem



The Russian military, to include the VDV and Naval Infantry, makes extensive use of rail.

capability, a dangerous strategic advantage.

GRU spetsnaz are also never permanently assigned to the military districts' groups of forces. Ultimately, the GRU spetsnaz commands are all controlled or "owned" by the General Staff's Main Intelligence Directorate, the GRU. However, throughout the SMO, the nine RF GF-sourced GRU spetsnaz brigade-sized commands all remained in habitual relationships with the same military districts' groups of forces that they started with. *(Eight of the nine RF GF-sourced GRU spetsnaz commands are brigades. For unknown reasons, the RF GRU 25th Guards Spetsnaz Regiment, which is structured like the RF GF-sourced GRU spetsnaz brigades, remains a regiment.)*

During the SMO, the VDV's 45th Guards GRU Spetsnaz Brigade was the only GRU spetsnaz command that moved among the military districts' groups of forces in accordance with General Staff orders. The RF GRU 45th Guards Spetsnaz Brigade was even split in two by battalions at various points in the SMO and supported

two groups of forces, no doubt in accordance with General Staff instructions.⁵

Contrary to popular misconceptions in the West, GRU spetsnaz are not "special operations forces, SOF." They are specialized infantry whose missions were traditionally limited to long-range reconnaissance and sabotage. Early in the SMO, some GRU spetsnaz units were pulled from their long-range reconnaissance missions and directed instead to defend.

The Troika interpreted this as an indicator sign that operations were not going well for the Russians. This has happened several times during the SMO, such as when spetsnaz commands were given battlespace to defend south of Izyum and in northeastern Kherson Province in summer 2022, and again in summer 2023 during the UAF's counteroffensive in Zaporizhzhia Province.

In 2023 and 2024, however, GRU spetsnaz UAVs have gradually replaced ground-based, long-range patrolling. GRU spetsnaz have their own recon and attack

UAVs and (as discussed in the Fires Chapter) acquired new niche missions such as hunting and killing enemy counter-UAV air defenses, hunting and killing enemy UAV operators, and finding and destroying enemy radars, especially counterbattery and medium-or short-range air defense capabilities.

These latter anti-radar missions may be due to the greater GRU's electronic intelligence (ELINT) capabilities, which cue the GRU spetsnaz to confirm locations and attack UAF radars. GRU spetsnaz have their own Lancet-3 UAVs and other commercial off-the-shelf attack UAVs to destroy targets.

Operational directions and the CAAs, 1st GTA, and direct-report army corps

A group of forces will assign operational directions to their immediate subordinate units, including CAAs, 1st GTA, and direct-report army corps. The Group of Forces (GoF) will further dictate the direction of the main strike and the direction of other strikes, and then weight them appropriately. Within the military districts' groups of forces, this weighting of the direction of the main and other strikes is sometimes accomplished by allocation of VDV and Naval Infantry commands, but more importantly, it is done by distribution of artillery and other combat multipliers.

Military districts have organic long-range rocket artillery brigades (Tornado-S or BM-30 Smerch) as well as heavy artillery brigades that Russians call "high-power artillery" (*артиллерийская бригада большой мощности, абр БМ*, 203-mm

2S7M Malka and 2S7 Pion self-propelled artillery and 2S4 204-mm Tulpan self-propelled mortars). These district-level assets are assigned to the direction of the main strike.

However, despite having so many artillery assets at the military district level, Russian groups of forces do not form artillery groups at that echelon. Instead, the military district's organic artillery is pushed down to army-level commands (CAAs, 1st GTA, and direct-report army corps) as part of prioritizing (weighting) the army commander's operational directions. For instance, a military district could weight the direction of the main strike for its subordinate group of forces by pushing district-level artillery down to the CAA conducting the main strike. The Russians distribute their artillery such that artillery commands are always supporting



BM-30 Smerch



203-mm 2S7M Malka

motorized rifle or tank commands in contact. No artillery is ever held in reserve and not firing in support of frontline units. Similarly, TOS-2 and TOS-1A thermobaric attack systems are organic to the military districts' nuclear, biological, and chemical (NBC) brigades and to the NBC regiments at army level (CAAs and 1st GTA). This is so that they can be pushed down to weight the main directions of attack and other directions of attack at lower echelons.

The Special Military Operation: practical examples

The General Staff initially provided five strategic directions to its four attacking groups of forces. From north to south, the RF Eastern Group of Forces, which deployed to Belarus, had the strategic direction of the main strike toward Hostomel and Kyiv. The RF Central Group of Forces had the strategic direction through Chernihiv to Brovary, just east of Kyiv, on the east side of the Dnipro River.

The RF Western Group of Forces had Sumy and Kharkiv toward Poltava. The RF Southern Group of Forces had a more complicated mission with at least two directions: the General Staff's direction of the other strike toward Mariupol (which it isolated and attacked from both RF-occupied parts of Donetsk Province to the northeast and east, as well as from Crimea in the west), and a direction west from Crimea though Kherson toward Mykolaiv and Odesa.

When the General Staff later abandoned its ground attack toward Kyiv in late March 2022, the attack toward Mariupol became the General Staff's strategic direction of the main strike. This was announced on 8 April 2022, when GEN Aleksandr Dvornikov, the Commander of RF Southern Group of Forces and the Southern Military District (SOMD), was named the overall commander of all RF AF in Ukraine. That news had been leaked in late March but not confirmed until April.

At the start of the SMO, many in the U.S. intelligence community were initially confused about the Russian military districts and their new operational roles in military operations.



1st GTA Emblem

Soviet and early RF AF military districts had "man, train, and equip" functions that included wide-ranging force generation roles including conscription, enlistment of volunteer *kontraktniki*, and mobilization. Warfighting commander roles were delegated by the General Staff to the military districts' operational commands at the army level (CAAs and 1st GTA).

That changed as part of the "New Look reforms," initiated after the 2008 war in Georgia. Each military district was then augmented with General Staff officers and empowered as an OSK, an operational-strategic command (*оперативно-стратегическое командование. ОСК*). This reform gave the military districts, formerly only responsible for force generation, a new

operation warfighting role. This is where the confusion began.

In Russian parlance, an operational-strategic command (OSK) is a level of joint command, similar to the term "Combatant Command" in the U.S. system. It is not a separate unit. Russian military districts are joint strategic commands, meaning they have operational command responsibilities in addition to their traditional force generation mission, similar to U.S. Geographic Combatant Commands (GCCs) like EUCOM or CENTCOM. By design, when ordered to form a group of forces, a military district

commander could appoint himself or one of his subordinate leaders as its commander. In late 2021 or early 2022, all four military district commanders appointed themselves as the commander of their respective group of forces. A military district can also form more than one group of forces. In October 2022, GEN Sergey Surovikin ordered the RF AF in Russian-occupied southern Kherson Province to organize into the RF Dnepr Group of Forces, which was initially commanded by a SOMD deputy commander. Since late October 2023, Dnepr Group has been commanded by the VDV Commander GEN-COL Mikhail Teplinsky, after the original commander was "removed from responsibilities."⁶

At the start of the Special Military Operation, the RF General Staff initially declined to establish an overall Joint Group of Forces. Instead, the RF General Staff tried to run the SMO from the General

Staff's National Defense Management Center (NDMC) in Moscow. This was not without precedent; no Joint Group of Forces headquarters had been established for the 2014 invasions of Crimea or the Donbas. Command and control for those operations was handled directly by the General Staff through the Southern Military District Headquarters. Even after GEN Aleksandr Dvornikov was designated the overall field commander for the SMO in April 2022, and then replaced by GEN-COL Gennady Zhidko in May 2022, the RF General Staff declined to establish a joint group of forces.



GEN Sergey Surovikin

The RF Joint Group of Forces and its separate command post in Rostov-on-Don were not established until 8 October 2022, when GEN Sergey Surovikin was appointed as the first Commander of the Joint Group of Forces. Unlike the U.S. Chairman of the Joint Chiefs of Staff, the RF Chief of the General Staff is a warfighting commander, and his staff is a warfighting staff.

The Commander of the RF Joint Group of Forces is the representative of the Chief of the General Staff for a specific operation. That is why, to Russians, it was easier and less controversial (or perhaps less traumatic) for GEN Gerasimov to replace GEN Surovikin on 11 January 2023 and for GEN Surovikin to immediately become GEN Gerasimov's First Deputy.⁷ In effect, GEN Surovikin had already been GEN Gerasimov's first deputy for the SMO. GEN Gerasimov's appointment as Commander of the RF Joint Group of Forces also made

clear where RF MOD and RF AF's priorities lie.

Another probable reason for the RF General Staff's attempt to run the war from Moscow was their careful study of U.S. and NATO operations in Kosovo and Libya, and U.S. operations in Afghanistan and Iraq in 2003. Each of those U.S. and NATO operations were commanded by strategic headquarters distant from the actual theater. GEN Gerasimov was impressed by what he observed and wrote about such command-and-control capabilities in his February 2013 essay, "The Value of Science is Foresight." In contrast, the General Staff established a Joint Group of Forces in Syria on or about 30 September 2015, soon after the RF AF's arrival for combat operations. Syria may have been too far from Moscow to consider alternative C2 arrangements.

How the RF AF move and maneuver

The RF VDV captures strategic key terrain for the RF groups of forces

The RF VDV is a separate branch of service and its primary mission at the onset of any Russian attack is to capture strategic key terrain for the military districts' groups of forces on the General Staff's direction of the main strike, direction of the other strike(s), or wherever else is directed. On 24 February 2022, the RF VDV conducted two air assaults, one for the RF Eastern Group of Forces' strategic main strike to seize Antonov Airport at Hostomel (northwest of Kyiv), and the second to capture the Antonov Bridge over the Dnipro River (east of Kherson) in support of the



VDV (Belarus Today)

Southern Group of Forces' strategic direction of the other strike. Two days later, the RF VDV conducted a third air assault to seize the Kakhovka Dam and Bridge for the Southern Group of Forces.⁸ As tarnished as the VDV's reputation was at the outset of the Special Military Operation, two of its three air assaults in the SMO's first days were successful. The RF VDV, however, has not attempted another air assault since then.

At the start of the SMO, all RF VDV paratroopers were supposedly parachute-qualified. However, in fact, only the 98th Guards and 106th Guards Airborne Division (GAD) had airborne-capable regiments. Each VDV brigade and regiment is required to have an airborne-qualified battalion, but that is a meager formation unless trained as part of a larger airborne force. (In the RF VDV, divisions and brigades report directly to RF VDV HQ. Regiments report to divisions.) The RF VDV's airborne operations capacity is limited by the RF Aerospace Forces' Il-76 fleet, which has declined in quantity and quality over time. In the years before the SMO, the RF VDV was becoming primarily a helicopter-borne air assault force. The VDV designated the RF VDV 31st Guards Brigade (now part of the RF VDV 104th

Guards Division) from Ulyanovsk as the lead unit for the VDV's air assault experimentation. During the large-scale exercises KAVKAZ-2020 and ZAPAD-2021 prior to the SMO, the 31st had demonstrated its capability to fast-rope entire battalions, sling-load artillery and ammo, and deliver command-and-control elements by large Mi-26 helicopters. These exercises were promoted and publicized by the MOD and the VDV.



Mi-26 Helicopter

Contrary to their previous training, the RF VDV 31st Guards Brigade did not fast-rope any paratroopers onto the airhead and did not bring their artillery. During their air assault into Antonov Airport, the 31st Guards apparently landed only one battalion of their organic three. That battalion was reinforced with some non-MOD SOF which had a separate direct-action mission of its own nearby. Instead of artillery, it appears that the assault force was dependent on RF Aerospace Forces (VKS) Mi-28 attack helicopter support (the VDV has no organic helicopters, and relies on the VKS for support), which seemed effective until the first one was shot down on Day 1. Given the attack helicopters' 100+ km range from

their intermediate staging base (ISB) and forward arming and refueling points (FARPs) in Belarus, the Mi-28s probably had fairly short mission time over Antonov Airport before they needed to rotate back for fuel and ammo. This RF VDV dependence on VKS fires was very contrary to Russian military culture, which stresses self-reliance and trust in a unit's own direct support artillery. The RF VDV 31st Guards' seizure of Antonov Airport was to allow for the airlanding of RF VDV 76th Guards Division, which was alternatively "race-tracking" or waiting on the ramp at Pskov, Russia in 18 or so Il-76s.⁹

According to the plan, once the 31st Guards had secured the flight landing strip and Antonov airhead, the 76th Guards would begin landing by Il-76 and prepare for their assault southeast into Kyiv. There, GRU spetsnaz, RF SSO (RF MOD SOF), private military company (PMC) Redut mercenaries, and Russian Federal Security Service (FSB) were already supposed to be preparing the environment for Kyiv's capture.¹⁰ In the meantime, the 76th Guards' heavy force of airborne armored vehicles (BMDs), T-72, and artillery road marched from Belarus into combat to rendezvous at Antonov Airport and support the assault on Kyiv.

The entire Antonov Airport mission was doomed from the start. The 31st Guards' assault force was too small. Assault objectives at modern airports with just one runway normally require at least four U.S.-sized airborne or air assault battalions. By their modified table of organization and equipment (MTOE), RF VDV battalions are



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only 350 paratroopers strong when fully manned.

Russian culture has a tenet of reasonable sufficiency, “just enough to get the job done.” Their MTOEs are lean and designed with such minimalism in mind. Also, by Russian military culture, commanders take what resources they are given and do not ask for more. By American standards, at Antonov Airport, an undersized Russian VDV battalion attempted to accomplish a reinforced U.S. brigade mission, even though the General Staff had designated this the direction of the main strike for the RF Eastern Group of Forces. Mission failure ultimately doomed Russian efforts to mass and storm Kyiv.

Later, the RF Eastern Military District Commander and the Commander of the VDV were among the first GEN-COLS (three-stars) “removed from responsibilities” during the SMO. (Both were later “recycled” as Commanders of the RF Group of Forces in Syria.)

Through sheer surprise and violence, the 31st Guards had initial success against Ukrainian National Guard soldiers defending the airhead. But after the Ukrainians were reinforced, they counterattacked on the second night (D+1), and temporarily retook Antonov Airport for several days. Meanwhile, the RF 76th Guards and other VDV commands



RF VDV 31st Guards Air Assault Paratroopers at Antonov Airport, 24 February 2022

roadmarched toward Hostomel but were stalled by various factors: traffic control issues, stubborn Ukrainian resistance, and the Ukrainians’ control of almost all off-road areas.

That was when other RF VDV tactical problems came to light. Like the RF Ground Forces, the RF VDV does not have NCOs or anything equivalent. Each platoon has a *praporshchik* and each company has a senior *praporshchik*, a specialist focused on individual training. However, there was not enough junior leadership to lead stalled VDV convoys through continuous ambushes. Worse yet, in recent years, the RF VDV, which had long been mechanized, became overly reliant on its BMDs. In countless Ukrainian UAV videos of RF VDV fighting northwest of Kyiv, Troika members who had served with the RF VDV in the 1990s, were surprised to see how badly the RF VDV had lost its dismounted infantry culture. VDV paratroopers fought beside or from their



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BMDs and completely conceded the wood lines and urban terrain to better-led Ukrainian small units. The consequences were that Russian paratrooper KIAs were regularly videoed or photographed immediately next to their BMDs. (Possibly the VDV’s previous 10 years of fighting in the Donbas and Syria somehow resulted in this recent over-dependence on their BMDs.)

Overall, the three RF VDV air assaults in late February 2022 stood out for one apparent glaring change to RF VDV tactics, techniques, and procedures (TTPs, *makmuka*). Normally, in Russian airborne or air assault operations, the VDV would land near their objective in an uncontested area outside the enemy’s direct fire and air defense ranges, quickly assemble, and then assault their objective. RF VDV artillery would fire from their assembly points on the drop zone or landing zone onto the objective and at targets that supported the VDV’s attack. In all three late February 2022 air assaults, the RF VDV units landed on or very close to their objectives. Ground hazards such as streetlights at the Antonov Bridge near Kherson and at the Kakhovka Dam and Bridge probably prevented the RF VDV 7th Guards Division and the RF VDV 11th Guards Brigade from landing any

closer to the bridges that they were assaulting.¹¹ Contrary to U.S.-style assaults, Russian air assaults are typically shallow, within the 120-km range of RF GF rocket artillery support. As attempted at Antonov Airport, the VDV air assault formations’ BMDs were road-marched to the air assault objective in order to link up with and reinforce the dismounted elements. That linkup was accomplished at both the Antonov Bridge near Kherson and at the



VDV armored vehicles

Kakhovka Dam and Bridge within 24 hours. All three RF VDV air assaults in late February 2022 were within 120 km of their staging bases and FARPs.

Since February 2022, the RF VDV has not attempted another air assault.

There was some airborne and air assault training in Rostov Oblast in late 2023, but the Troika is not aware of any since then. The likely reason for the lack of training is that all RF VDV forces have been committed to the SMO, especially after the Russians’ failed May 2024 attack toward Kharkiv and the August 2024 Ukrainian attack into Kursk Oblast. In 2023, RF VDV Commander GEN-COL Mikhail Teplinsky provided some clues to the future of RF VDV maneuver when he directed that the new airborne regiments in the 98th Guards and 106th Guards Airborne Divisions would not have BMDs or other infantry fighting vehicles (IFVs).



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Captured Russian Map with Operational Graphics showing Southern Military District Order



(The RF VDV 98th Guards and 106th Guards Airborne Divisions each added a third airborne regiment to their original two-airborne regiment MTOEs in 2023.) Those two new regiments have fought dismounted since fall 2023. Also, in July 2023, GEN-COL Teplinsky organized a new general support 152-mm artillery brigade for the VDV, the 52nd Artillery Brigade, which has been firing in support of VDV commands since it was formed.

Forgotten from the fierceness of the SMO's first days: two of the RF VDV's three air assaults accomplished their missions for the General Staff's direction of the other attack. We can expect in the initial stages of future conflicts that RF VDV movement and maneuver will be to seize key terrain by air assault in support of the General Staff's priorities.

The loss of at least 38 RF Aerospace Forces' Mi-8s during the SMO (as of 25 October 2024) will not dissuade future RF VDV air assault operations. The Mi-8 is still being produced in Russia and there are hundreds more Mi-8s in non-MOD RF ministries and agencies as well as in inventories in Belarus and other RF allies for buyback. The RF MOD has done so several times to replace other combat systems lost during the SMO.

In the future, expect a dismounted VDV assault force to land on or close to its objective: a force that is not dependent on BMDs for reinforcement, and that is not solely reliant on attack helicopters for fire support. Distrust of RF Aerospace Forces' air-delivered fires is a long-running RF VDV (and RF GF) bias. Expect RF VDV artillery to support



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future air assaults with its organic 152-mm and 122-mm fires moved by sling-load to firing positions well within range of RF VDV brigade's or regiment's attacks.

In any future conflicts, after initial air assaults or airborne assaults, expect the RF VDV to revert to their traditional wartime role, reinforcing the military districts' groups of forces in a TACON-like relationship in accordance with the General Staff's decisions for as long as the General Staff requires.

The RF Naval Infantry reinforces from the sea and land

RF Naval Infantry do not conduct forced-entry amphibious operations, but rather require a semi-permissive or permissive environment to land from the sea. By Russian doctrine (*taktika*), RF Naval Infantry brigades' organic recon battalions and air assault battalions, along with RF GRU maritime spetsnaz, can establish such a semi-permissive environment. However, the RF Naval Infantry's preferred method for landing from the sea is for other Russian forces to first secure the beach or port, as was done by RF VDV in Georgia in 2008 and by RF GF 58th GCAA at Berdyansk in 2022. On 24 February 2022, RF GF 58th GCAA / RF Southern Group of Forces attacked northeast and east from Crimea through Melitopol and then along the north shore of the Sea of Azov and captured Berdyansk on 28 February.¹² Immediately

afterward, BTG1 / 810th Guards Separate Naval Infantry Brigade and 336th Guards Separate Naval Infantry Brigade (from the Baltic Fleet) landed in succession at Berdyansk Port and nearby beaches. BTG1 / 810th Guards Special Naval Infantry Brigade then attacked east and north to seize key terrain, the railroad junction north of Mariupol at Volnovakha.¹³ The 336th Guards sent one BTG north to Volnovakha and its second BTG east to Mariupol, where it joined the attack east into the city. Once Volnovakha was secured after a bloody fight, the remainder of the 810th Guards and 336th Guards moved south and joined the RF Southern Group of Forces' attack into Mariupol from the west. As a testament to the severity of urban fighting in March 2022, both the 810th SNIB Commander and the 336th Guard's SNIB Chief of Staff (First Deputy Commander) were KIA at Mariupol.

Concerning the RF Naval Infantry's limitations and capabilities discussed above, Odesa is an example of what was beyond the RF marines' scope in 2022, and it certainly remains that way for the foreseeable future, given the UAF's demonstrated anti-ship capabilities and the



The Moskva's sinking marked a critical loss at the beginning of Russia's SMO.



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RF Navy's loss of landing ships throughout the SMO. Although Vladimir Putin clearly wants the RF AF to capture Odesa, and the RF AF no doubt considered it, in early 2022, the General Staff and SOMD were far more concerned, even preoccupied, with Mariupol. Russians had expected to capture Mariupol in 2014, and it had haunted them ever since. The Russians left nothing to chance at Mariupol, as shown by their massing of two CAAs (8th GCAA and 58th GCAA), as well as 1st Army Corps, and two Naval Infantry brigades (as described above). Despite Russian reconnaissance of Odesa and feints toward it in late February and early March 2022, there were not enough RF AF resources. This was especially true once two Naval Infantry brigades were committed to Mariupol and after RF GF 49th CAA failed to capture a river crossing over the Southern Bug River near Mykolaiv or Voznesensk. The UAF's sinking of the *Moskva* with Neptune anti-ship capabilities on 14 April 2022 and the Russian withdrawal from Snake Island (west of Odesa) in June 2022 emphatically ended any near-term Russian aspirations of capturing Odesa.

At the onset of Russian offensive action, the RF Naval Infantry's main contribution to maneuver is closer to what U.S. Marines call "reinforcement from the sea." Like the RF VDV, Russian marines mass at ground disadvantageous to the enemy and seize key terrain. Early in the SMO, it was along the General Staff's direction of the other attack (SE1), toward Mariupol. Afterward, RF marines reinforced the RF military districts' groups of forces in accordance with the General Staff's decisions in

TACON-like relationships under the military districts' groups of forces, exactly like the VDV. RF Naval Infantry commitment is done irrespective of geography or distance from the sea. For example, the RF 155th and 40th Guards Naval Infantry Brigades from the Pacific Fleet started the SMO in Belarus and attacked as part of the RF Eastern Group of Forces toward Kyiv.

RF 61st Guards Naval Infantry Brigade from the Northern Fleet fought as part of the RF Western Group of Forces toward Kharkiv and was later the covering force for the group of forces as it withdrew during the Ukrainians' fall 2022 Kharkiv counteroffensive.¹⁴ These three marine brigades attacked far inland, distant from their fleets and any seas. During the wars in landlocked Chechnya in the 1990s, the RF VDV and Naval Infantry did an overabundance of the fighting for RF MOD.

A key lesson to divining the Russians' future overall intent is the prepositioning of RF Naval Infantry brigades before a possible invasion. For example, the RF 336th Guards Separate Naval Infantry Brigade departed Murmansk on the Barents Sea on assault ships in late December 2021 before passing the British Isles and transiting Gibraltar, the Mediterranean, and Turkish Straits in early January 2022. That was at the same time the last elements of RF 40th Guards Separate Naval Infantry Brigade were headed west on the Trans-Siberia Railway, ultimately to Belarus, after being ferried to mainland Russia from the Kamchatka Peninsula. In the runup to the SMO, five of the RF Naval Infantry's six brigades deployed out of area and the one that did

not (810th Guards SNIB) was stationed on Crimea. Russian marines' dispositions clearly demonstrated the Russians' seriousness and their strategic intent.

In Russia, the term "assault infantry" refers only to the VDV and the RF Naval Infantry. They share similar missions, seizing key terrain at the onset of offensive operations and then reinforcing the military districts' groups of forces at the discretion of the General Staff in TACON-like command relationships for continuing military operations. Vladimir Putin and RF MOD's intent is to grow five of the six RF Naval Infantry brigades into divisions, thus ensuring RF Naval Infantry's capabilities to reinforce from the sea as well as on land to capture key terrain in future conflicts.

The Ground Forces mass effects and capacity

The Russian Ground Forces are overwhelmingly the RF AF's dominant service. Ground Force units are the only permanently assigned land combat power found in a military district's group of forces. In Russian operations, "joint" really means how the RF Aerospace Forces, RF Navy, and the RF VDV support the RF GF's missions. Every Chief of the General Staff in history, back to the Imperial Russian Army, was a former commander in the Ground Forces or its predecessor services.



Russian Ground Forces Emblem

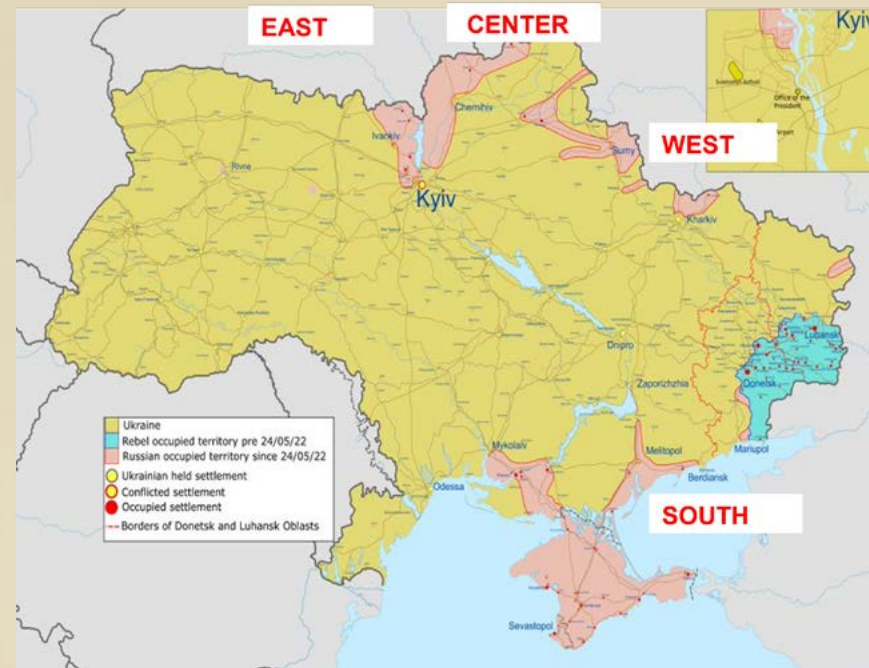
Despite impressive improvements to Russian operational deep fires between fall 2023 and spring 2024, RF GF commands still do not orchestrate fire and maneuver. More appropriately, RF GF performance could better be described as: "fire, then maneuver." Whereas during the SMO, RF AF fires became joint, increasingly sophisticated, and more effective at greater ranges across the RF AF, there were no such broad improvements in maneuver.

2022–2023

At the start of the SMO, most of the military districts' movement and maneuver by groups of forces were disastrous. The RF Southern Group of Forces was the lone exception and demonstrated that the RF GF could conduct maneuver warfare. The other three groups of forces could not seem to get out of their own way. Their lack of internal coordination, speed, and command in 2022 and 2023 generally played to the UAF's advantages of better tactical leadership and better local knowledge of the terrain.

Two years later, it is still difficult to discern the RF Eastern Group of Forces,' RF Central Group of Forces,' and RF Western Group of Forces' initial schemes of maneuver to capture Kyiv, Brovary, and Kharkiv. In several instances, it appeared that these groups of forces believed that each could simply shock and intimidate Ukrainian forces and civilians along their strategic directions into capitulation by a combination of partial encirclement and indirect fire brutality, devoid of maneuver.

There was at least one excuse for some of the Ground Forces' lack of maneuver. Most



warmapper.org map as of 25 February 2022

RF GF brigades and regiments attacking into Ukraine in late February 2022 had only two battalion tactical groups (BTGs) with them or two possibly non-task-organized (“straight”) motorized rifle or tank battalions. \

A BTG is a semi-permanently, task-organized reinforced maneuver battalion which includes some enablers. In the years before the SMO, RF GF brigades and regiments had been directed to segregate all their volunteer enlisted *kontraktniki* into two or more BTGs. These BTGs were kept at a higher state of readiness and were fully deployable, because they did not have conscripts who can only serve outside Russia or certain areas of the North Caucasus with a declaration of war. Conscript maneuver battalions were segregated from the remainder of the brigade or regiment.

There was no declaration of war for the SMO, so “third battalions” were mostly left at home station or elsewhere in Russia. (Fourth battalions, which exist on MTOEs, were apparently exclusively manned with conscripts and not even discussed.) Some RF GF commands, especially from the Western Military District, brought their conscripts anyway and were later reprimanded after it became public and undeniable in Russia. Vladimir Putin was ultimately forced to publicly apologize. Some RF GF commanding generals were later fired and/or arrested for this. In April 2022, many officers and *kontraktniki* from the “third battalions” were called forward to Ukraine mostly to serve as individual replacements. RF VDV and RF Naval Infantry suffered from this problem as well. However, not to the degree of the RF GF maneuver brigades and regiments, most of which fought with just two battalions throughout 2022 and early 2023.

Successful Russian maneuver warfare

The RF Southern Group of Forces, the lone Russian force that initially succeeded in maneuver warfare, was aided by Ukrainian ineptitude or corruption which left Crimea’s two main exits to the northwest and northeast open, without obstacles, and undefended. On 24 February 2022, RF VDV under the Southern Group of Forces conducted their air assault at the Antonov Bridge near Kherson, which quickly projected enough force to match and eventually overcome Ukrainian defenders and counterattacks. Other RF Southern Group of Forces rapidly entered Kyiv-controlled southern Ukraine at both exits

from northern Crimea. 58th GCAA attacked from northeast Crimea and fought 3 days across 100 km northeast to Melitopol, where UAF resisted until outnumbered and outflanked on 1 March 2022. During the fighting at Melitopol, RF GF 19th MRD / 58th GCAA was able to bypass the city to the south and continued through Berdyansk to the west side of Mariupol by 1 March.¹⁵ Altogether, that was a 280-km movement by 58th GCAA subordinate units from northeast Crimea to the west side of Mariupol, where they massed unmatched by Ukrainian forces. After Melitopol was captured, 42nd GMRD / 58th CAA attacked 90 km further northwest of the city and captured the Zaporizhzhia Nuclear Power Plant on 3



Mariupol's fall in May 2022 represented one of the few well-planned operations during the SMO's initial phase.

March 2022 and then pushed northeast along the bank of the Dnipro River.¹⁶

To the northwest of Crimea, once the Antonov Bridge was secured on 26 February 2022, the RF GF 49th CAA, along with the RF VDV 7th Guards Division, attacked 50 km northwest to the east edge of Mykolaiv. The great undoing of RF GF 49th CAA and the RF VDV 7th Guards Division was their failure to capture Mykolaiv or Voznesensk and a crossing point over the Southern Bug River toward Odesa. However, as discussed earlier, due to the Russians’ massing at Mariupol, the RF AF really lacked the RF Navy resources necessary to attack Odesa anyway.

Overall, in less than 1 week, the RF Southern Group of Forces by surprise, shock, and momentum captured more combined territory in southern Ukraine than the RF AF controlled in late 2022 or after. (The RF AF later lost territory in Mykolaiv and northern Kherson Provinces during the Russians’ November 2022 withdrawal to the south bank of the Dnipro River.) More importantly to the Russians, the RF Southern Group of Forces was able to outmaneuver the UAF quickly in the south, enabling it to mass even more of its firepower to reduce Mariupol until the last Ukrainians capitulated there on 20 May 2022. Southern Ukraine was the one area where seemingly well-planned, rapid

Russian maneuver, facilitated by RF VDV air assaults that captured key terrain, consistently overwhelmed and outflanked Ukrainian forces which could not regroup until they reached Mykolaiv or ground well north of Melitopol. In comparison, it is difficult to identify even fewer grand examples of Russian movement or maneuver during the initial phases of the SMO or in subsequent fighting until Sievierodonetsk and Lysychansk in June 2022.

The messy maneuver summer of 2022

Between late March and very early April 2022, the RF Eastern Group of Forces and RF Central Group of Forces withdrew back into Belarus and Russia, regrouped, hastily reconstituted some of their formations, and moved east and south by rail to new areas along the Russian border or RF-occupied parts of Luhansk Province. From there they attacked on new strategic directions deeper into Ukraine.¹⁷ The RF Western Group of Forces did the same, but merely shifted a short distance to the east into easternmost Kharkiv Province, from where it attacked south down the west side of the Oskil River Valley toward Izyum and Sloviansk. The RF Eastern Group of Forces attacked south along the east side of Oskil River Valley through Liman to establish bridge crossings on the Siverskyi Donets River south of Liman and

Kreminna.¹⁸ RF Central Group of Forces reappeared in RF-occupied southern Luhansk Province and Luhansk city and attacked northwest through Sievierodonetsk and Lysychansk, toward Siversk and Sloviansk.

Altogether, this was a mess. Strategically, Russian military leadership apparently believed they could trap the UAF near Sloviansk, so all three groups of forces except the RF Southern Group of Forces converged toward the same area of the north Donbas. Apart from their long-range fires on Ukrainian civilians, all three attacks lacked surprise, shock, or momentum. Conversely, the new Russian plan seemed to help simplify the UAF's defense and logistics by bringing the war to their former 2014–2015 strongpoint and logistics hub. Operationally and tactically, RF Western

Group of Forces and RF Eastern Group of Forces clumsily fought their way south as the UAF units in front of them traded space for time. Every Russian advance there was costly. New UAF 155-mm systems and later HIMARS precision fires helped increase these costs.

The RF Western Group of Forces culminated south of Izyum, 40 km north-northwest of Sloviansk, which they reached in mid-April 2022.¹⁹ As they stalled and waited for replacement manpower and ammunition resupply, they transitioned into costly positional defenses which made them stationary for Ukrainian fires and



98th Guards Airborne Division BMD-2
(18 March 2022 RFE/RL - gur.gov.ua)

counterattacks and led the Russians toward one of their worst tendencies, over aggressiveness in the defense.

Russians view the defense as a temporary state in which their force conducts a *maneuver defense*, similar to a U.S. Army economy-of-force where they trade space for time, do not get decisively engaged, attrit the enemy, and fall back to advantageous terrain. There they can establish a *positional defense*, rebuild combat power, and ultimately counterattack and return to decisive warfare—the attack. As written in all their manuals, to Russians, “the attack is the main form of combat,” and it is the only way to seize and keep the initiative. In the defense, Russians emphasize stability, but also aggressive counter-reconnaissance and spoiling attacks, usually a form of reinforced recon-by-fire or counter-recon-by-fire, to keep their enemy off balance and incapable of preparing to attack. Throughout the summer of 2022, the RF Western Group of Forces, which defended a three-sided, 90+-km front near Izyum, conducted so many costly spoiling and other attacks that they soon required additional replacements from the RF GF 11th Army Corps and Northern Fleet.²⁰ Through the late summer, their stationary logistics and fires suffered against longer-ranging, better targeted, more precise UAF HIMARS-delivered fires. By September 2022, portions of RF Western Group of Forces’ defenses were



A Russian Ministry of Defence banner with the phrase “special military operation”
(Russian Ministry of Defence)

too weak to fend off the UAF's Kharkiv counteroffensive.

That stressful time for the RF Western Group of Forces and other Russian formations in Ukraine was a period of greater transparency in the RF AF, as complaints from lower echelons made their way into Russian social media. This happened again later in 2022 during the UAF's Kharkiv counteroffensive, as well as during the RF AF's November 2022 withdrawal from northern Kherson Province and the UAF's 2023 summer counteroffensive. From RF GF soldier and tactical officer online frustrations, it became clear that most tactical decisionmaking in the RF GF was actually made at the operational level, at the CAA's, 1st GTA's, and direct-report army corps' headquarters, at the GEN-LT (two-star) level. It has long been suspected that the RF GF operates in an environment of micromanagement to degrees unimaginable for U.S. or other Western soldiers. As an example of what might not be imaginable, throughout the summer of

2023, it was 1st GTA and 20th CAA headquarters which ordered brigades and regiments to commit their battalions and companies (several levels below) into sometimes futile spoiling attacks and counterattacks mentioned earlier.²¹ It was a common complaint near Izyum in summer 2022 that headquarters several levels higher were ordering such attacks with no accurate idea of the situation or the

costs. Later, in September 2022, when the UAF counterattacked at Izyum, Russians pointed their fingers from below and above at RF GF 11th Army Corps for its failures to direct a proper defense. In summer 2023, the defense at Robotyne was commanded by 58th GCAA, which directed division and brigade fights below it as well as the attached RF VDV 76th Guards Division and 7th Guards Division's and the 810th Guards Naval Infantry Brigade's actions. RF GF 58th GCAA's attention was down to the battalions in the fight. Russian brigade and regimental headquarters are small, just 17 personnel, most of whom are officers, plus a company-sized security force. Division headquarters are assigned about 30 personnel, plus security. CAA and 1st



Izyum, Ukraine after Russian shelling and bombardments in late February and early March 2022. (Ukrainian Ministry of Defence)

GTA headquarters meanwhile are 40 personnel, again mostly officers and some enlisted with special skills like cartographers, but that is where most operational and tactical warfighting decisions take place.

In May 2022, the adjacent RF Central and Eastern Groups of Forces seized the north bank of the Siverskyi Donets River from south of Kreminna to south of Lyman. Both groups of forces then attempted one costly assault river crossing

after the next. This happened at least three times, at the cost of no less than three motorized rifle battalions plus combat engineering assets.²² In late July 2022, however, the RF General Staff decided to move the RF Eastern Group of Forces to Kherson and Zaporizhzhia Provinces to reinforce Russian units north and east of the Dnipro River.²³ The move was another feat of impressive strategic mobility, an 1,100-km rail journey from eastern Luhansk Province and southern Belgorod Oblast back through Rostov Oblast, Krasnodar Krai, over the Kerch Straits and across Crimea to their new battlespaces along the Russian LCC. Many Western observers were surprised by the speed and efficiency of such a large strategic command (five

CAAs plus an army corps, artillery, and logistics) moving such a long distance so quickly.

The General Staff's decision to move the forces, however, would be questioned months later when Ukraine's real plans became apparent. Russians have a concept called "*reflexive control*" that they like to exercise in diplomacy, business, and politics. Through this, the targeted opposition is convinced to do something that it otherwise would not, and which instead is in the better interests of those inspiring their opposition's action. In this case, the Ukrainians (who know this concept well), from their President, government, Parliament, press, and military leadership (all amplified by Western allies and world media), began hyping a Ukrainian offensive into RF-occupied northern Kherson Province as early as June 2022. This was at a time when there was no reasonable expectation of potential success for such an operation. However, during the summer of 2022, Russians somehow convinced themselves that such Ukrainian action in northern Kherson Province was imminent and moved the entire RF Eastern Group of Forces in late July. Less than 2 months later, the UAF attacked into the same empty battlespace evacuated by the RF Eastern Group of Forces. By then it was covered by the self-attributed, overstretched RF Western Group of Forces' units that in September 2022 were defending not just its original battle near Izyum, but also the RF Eastern Group of Forces' vacated area of operations (AO).



Russian fire support reach a high in the summer of 2022, nearly 10,000 rounds a day but nearly all of it unplanned.

When Russian logistics don't work, Russian artillery does not work

South of both the RF Western Group of Forces and RF Eastern Group of Forces, RF Central Group of Forces reentered RF-occupied Ukraine near Luhansk city in spring 2022 and began attacking northwest toward Sievierodonetsk and Lysychansk. This is where the RF GF seemed to fight as designed and preferred, behind huge preparation fires bombarding UAF strongpoints to reduce them for eventual shock attacks by RF GF motorized rifle and tank formations. Sievierodonetsk was a geographic and logistic challenge for the UAF to defend because it sat alone east of the Siverskyi Donets River and south of RF Eastern Group of Forces attacking along the river. UAF artillery still supported from the west side of the river and from behind Lysychansk, and Sievierodonetsk was able to hold the city throughout May and June, but logistics were increasingly cut by RF GF fires and eventually the UAF evacuated on 25 June 2022.

Ukrainian forces were confident in their defenses on the west side of the Siverskyi Donets, south of Lysychansk. UAF there had held and frustrated the RF Central Group of Forces attacking from the south

at Toshkivka, 10 km south-southeast of Lysychansk along the main road from Luhansk city and the parallel smaller roads to the north and east between the main road and the river. The UAF held at Toshkivka for all of June 2022, but the RF GF 90th GTD broke through on 3 July 2022. At that point, the Russians were fighting how they knew best: lots of artillery supported by mountains of ammunition stored very far forward. While they were attacking Sievierodonetsk, Toshkivka, and Lysychansk simultaneously, Russian fire support was at its pinnacle rate of fire, almost 10,000 rounds per day, much of it unobserved, templated, and indiscriminate. HIMARS introduction would soon make the RF GF more careful about its artillery expenditures.

On 3 July 2022, once UAF withdrew from Toshkivka, the Ukrainians seemed just as confident in their next defense immediately south of Lysychansk on a small piece of high ground called Bilo Hora (White Hill). Instead of grinding down UAF defenses as they had done at Toshkivka, the RF Central Group of Forces massed its subordinate commands' TOS-1A effects on Bilo Hora and fired Tochka-U ballistic missiles at suspected C2 sites all over Lysychansk. Meanwhile, the UAF learned that RF GF 2nd Guards Army Corps had established a bridging site over the Siverskyi Donets River on the northernmost tip of Lysychansk and were pouring into the city.

Ukrainians needed to immediately evacuate to the west. RF Central Group of Forces and RF GF 2nd Guards Army Corps had surprised the UAF with its speed and ingenuity by establishing a bridge site in



A ruined pontoon crossing with dozens of destroyed or damaged Russian armored vehicles on both banks of the Siverskyi Donets River. (Ukraine Armed Forces)

north Lysychansk, on the opposite end of the city from the Russians' main axis of attack from the south.

On 4 July 2022, the RF Central Group of Forces were just 20 km east of Siversk, the next objective on their strategic direction toward Sloviansk. More than 2 and 1/2 years later, the RF AF still had not reached Siversk. The reason was that as the RF Central Group of Forces captured Sievierodonetsk and Lysychansk, newly introduced UAF HIMARS started attacking RF GF Central Group of Forces' ammunition depots, other logistics, and C2. RF Central Group of Forces could no longer fight the way it wanted and was designed to.

It could no longer mass "mountains of metal" like they had until recently to supply ammunition to its artillery groups for effects on Sievierodonetsk and Lysychansk. Further west, it turned into a fairly equal stalemate. RF GF advanced 10 km west of Lysychansk, but never much further, and they occasionally lost ground in that area. When RF GF logistics do not work, RF GF artillery does not work.

The Russian army reset

In spring 2022, further south of RF Central Group of Forces but north of RF Southern Group of Forces, PMC Wagner had its first, semi-independent axis in Ukraine west of Luhansk city through Popasna to Bakhmut. PMC Wagner forces captured Popasna on or about 7 May 2022, but at a terrific cost to its core experienced mercenary group. In fact, afterwards, PMC Wagner would regroup and turn to using convicts recruited from Russian prisons to conduct recon-by-fire en masse, as well as to storm UAF strongpoints. This was done so that experienced PMC Wagner mercenaries could maneuver on UAF units fixed by PMC Wagner's convict fighters. For the next months, PMC Wagner inched westward toward Bakhmut behind greater and better artillery fire and close air support, coordinated into effects which could be described as fire and maneuver. In the meantime, PMC Wagner's ranks swelled with returning and newly recruited experienced mercenaries, as well as truckloads of convicts.

On or about 8 October 2022, soon after the 21 September 2022 Russian partial mobilization, as Russian groups of forces were still waffling through various degrees of their own ineptitude and the UAF's use of HIMARS, newly appointed Commander of the RF Joint Group of Forces GEN Sergey Surovikin and Wagner Group CEO Yevgeny Prigozhin came up with a novel solution to reset



Prigozhin

the RF AF in Ukraine while advancing Russia's war: Operation Bakhmut Meatgrinder.

By plan, PMC Wagner would fix the UAF at Bakhmut while the RF AF in Ukraine would repair itself. GEN Surovikin would soon put his efforts into conserving RF AF combat power by withdrawing Russian forces south of the Dnipro River in Kherson Province. He built the Surovikin Line against the UAF's fall 2022 Kharkiv counteroffensive's successes, especially between Svatove and Kreminna, which held.

The Russian army increasingly fought **big** (the mobilization more than doubled the Russians' available forces in Ukraine), **dumb** (the RF AF were consistently fighting with less sophisticated weaponry in a less sophisticated manner than the UAF), and **ugly** (the withdrawal from north of the Dnipro, the mobilization itself, and the Russians' desperate defenses west of Svatove and Kreminna were desperate events, but they succeeded). The RF AF held in fall 2022 and by the end of the year, the UAF were effectively overcommitted in Bakhmut until summer 2023.

Russian movement and maneuver were temporarily spent. The Russians' highlight of summer 2023 was their defense in Zaporizhzhia Province, which was made possible by endless man-hours to lay endless supplies of landmines emplaced all spring and early summer of 2023. The RF Joint Group of Forces / General Staff's movement of RF VDV 76th Guards Division in very late August 2023 was the main contribution of RF AF movement and maneuver to the success of 58th GCAA and RF Southern Group of Forces.



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After that, it seemed Russian forces firmly held the initiative in Ukraine, which they did not relinquish again.

2024. Redoing the plan (No such thing as “no-go” terrain to Russians)

The Russians’ greatest triumph of movement and maneuver after the capture of Mariupol in May 2022 was accomplished by an unlikely command. On 17 February, Vladimir Putin sent a public congratulatory note to the Commander of RF Central Group of Forces, GEN-COL Andrei Mordvichev and his subordinate units that seized Avdiivka.

“For excellent military operations, I express gratitude to all the troops led by you who took part in the battles for Avdiivka. Eternal glory to the heroes who fell in battle while solving the problems of a Special Military Operation!”

Putin’s note went on to specifically recognize RF GF 30th Motorized Rifle Brigade / 2nd GCAA; RF GF 35th Motorized Rifle Brigade, 55th Motorized Rifle Brigade (Mountain), 74th Motorized Rifle Brigade of 41st GCAA; RF GF 1st Motorized Rifle Brigade, 9th Motorized Rifle Brigade, 114th Motorized Rifle Brigade, 1454th Motorized Rifle Regiment, and 10th Tank Regiment (TR) of 1st Army Corps (now 51st GCAA).²⁴

This was the Russian Armed Forces’ second-most important victory in the SMO after Mariupol.

However, the attack’s first 2 months were exceptionally costly and floundered until GEN-COL Mordvichev made dramatic changes to his plan.

In November 2023, GEN Valery Gerasimov’s RF Joint Group of Forces unexpectedly had moved RF Central Group of Forces 105 km south from Kreminna to the Avdiivka area in the RF Southern Group of Forces’ AO. The RF Central Group of Forces had been alternately defending and attacking the Kreminna area since fall 2022, during the UAF’s Kharkiv counteroffensive, until this sudden move south. At first, it was unclear whether RF Central Group of Forces’ units were being sent piecemeal to reinforce RF Southern Group of Forces’ efforts at Avdiivka. However, eventually all the group of forces’ combat power moved to the Avdiivka area except for the RF GF 25th CAA (the RF Central Group of Forces’ newest and weakest CAA), which remained northwest of Kreminna, now under the RF Western Group of Forces. Much of the RF Central Group of Forces’ rear area support and its



Tank with anti-drone netting. Ukraine Ministry of Defence)



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main command post (CP) did not move or at least did not move very far. Since spring 2022, the RF Central Group of Forces had been in the Luhansk city area. In winter and spring 2024, when the UAF was trying to destroy the RF Central Group of Forces’ main CP, it was noticeable that much of the targeting was more than 120 km to the rear in the Luhansk city area.

According to GEN-COL Mordvichev’s original plan, from late November 2023 until mid-January 2024, the RF GF 2nd GCAA, then 41st GCAA, and later regiments of the 90th GTD attacked west from the Novoselivka Druha area (6 km north of Avdiivka) toward Stepove, which was an immediate objective and waypoint for the RF Central Group of Forces’ northern axis of a double envelopment of Avdiivka. Organic RF Central Group of Forces (2nd GCAA, 41st GCAA, and 90th GTD regiments) would swing north of Avdiivka and 4 km west of it on this 12-km axis that would meet up with RF GF 1st Army Corps near Orlivka, the RF Central Group of Forces’ subsequent objective.

To the southwest, RF GF 1st Army Corps, which is organic to 8th GCAA / RF Southern Group of Forces, was attached to RF Central Group of Forces for this operation and would attack north from the Vodiane area (5 km southwest of Avdiivka) toward Tonenke and Orlivka. In the meantime, a combination of other RF GF 1st Army Corps units and elements of 90th GTD attacked and fixed UAF fortifications and other defenses southeast and south of Avdiivka. RF GF 1st Army Corps had attacked in all these areas since 2022 and earlier. The city had been under attack

since summer 2014 and for that reason had a series of fortifications and defenses all around its eastern, southeastern, and southern outskirts. UAF were very confident in these defenses and kept them well maintained. Russians kept pressure on them to deny the UAF units’ freedom of maneuver. The areas to the direct north of Avdiivka were less defended, mostly because the ground there, although slightly higher in elevation, was covered by forests and broken up by ponds, streams, and small ravines. There are only two unimproved, dirt roads that meandered through that area into north Avdiivka and the roads and rougher, nonvehicular terrain empty directly into deep neighborhoods of single-family houses that sprawl along the northside of the city.

The first two months of this operation were embarrassingly wasteful for RF Central Group of Forces in terms of both personnel and armored systems. Stepove, although just 7 km west from their original line of departure (LD) in the north, required movement through large open areas, especially the last 700 m after crossing a northwest-to-southeast railroad track enroute to the village. RF GF 2nd GCAA and 41st GCAA occupied much of their axis easily, with moderate losses in late November and December 2023. However, the last kilometers, especially the final 700 m after the railroad track, became especially difficult due to new UAF first person view (FPV) capabilities, mixed with artillery and direct fires. RF GF 2nd GCAA and 41st GCAA tried various methods to gain a foothold in Stepove, from rushing the area with tanks followed by other armored vehicles, to dismounted



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Captured Russian graphics for Naval Infantry attack on Mariupol

infiltrations and attacks that Ukrainians famously termed “meat assaults.” A long supply of videos from those areas showed streams of dismounted RF GF motorized rifle companies caught in the open or, in easternmost Stepove, being pummeled by UAF attack FPVs and other UAVs, mortars, and artillery. These were interspersed with videos of outnumbered or lone T-90Ms or other RF GF armored vehicles breaking into Stepove or nearby areas and tangling with UAF M2A2 Bradley IFVs, Leopard 2s, and M1A1s until they were destroyed.

In mid-January 2024, however, the Commander of RF Central Group of Forces, GEN-COL Andrei Mordvichev drastically modified



GEN-COL Andrei Mordvichev

his plan into a more modest envelopment that took better advantage of the winter METT-T (mission, enemy, terrain and weather, troops, time available) conditions at Avdiivka and incorporated some Russian soldiers’ ingenuity. The Russian soldiers shifted most of their movements and combat engineering work to predawn and early in the day to take advantage of thick seasonal early morning fog. That masked Russian preparations and operations and denied the UAF use of their UAVs for early warning, reconnaissance, artillery observation, and attacking advancing Russian formations with FPVs. In January and February 2024 at Avdiivka, morning fog proved to be the most reliable counter-UAS condition available. But, of course, it was seasonal and reliable only until it dissipated and was no longer helpful. Russians used the morning fog to hide engineering work which gained them

access to a series of large, empty, industrial underground water tunnels southeast of Avdiivka that went underneath UAF defenses.

Early on 18 January 2024, RF GF 87th Rifle Regiment / 1st Army Corps attacked northwest into southeast Avdiivka through the industrial water tunnels and bypassed UAF defenses to the area of the Tsar's Hunting Lodge (Tsarska Okhota), a landmark 1 km behind UAF front lines. UAF were surprised and had no idea what was happening or how RF GF soldiers were appearing in their tactical rear area. In a similar way, this was done south of Avdiivka through another, smaller underground water tunnel that emerged north of an older Soviet / Ukrainian military facility called Zenit, near Spartak. Unknown to UAF defenders to the south, dismounted Russian squads started popping up 1 to 2 km behind their positions. These actions

undermined Ukrainian defenses and fixed two brigades which were now simultaneously fighting both to control their tactical rear areas as well as the defenses further south that were needed to hold off the bulk RF GF 1st Army Corps formations south of their obstacles.²⁵

However, the more important, much larger, decisive Russian movement was directly north of Avdiivka, where throughout the first mornings of February 2024, squads of dismounted motorized riflemen from RF GF 115th Motorized Rifle Brigade / RF GF 1st Army Corps started infiltrating south from the Vesele area (3 km north of Avdiivka). They were concealed under the fog through the summer cottage (dacha) areas and past the constricted off-road terrain and finally then into the single-family residential areas of north Avdiivka. The few UAF UAV videos of these Russian infiltrations showed squads of seven or



Russian depiction of Ukrainian 2023 counteroffensive in their style, i.e., enemy COA. They were pretty close!



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fewer Russian soldiers streaming south under the fog and through the rough terrain into north Avdiivka. This was very unusual. Due to their lack of NCOs, RF GF rarely maneuver tactically in formations smaller than platoons. Presumably, this was done to both better conceal their movements and to minimize losses from Ukrainian FPVs and artillery in case of their discovery. These were probably important lessons learned from recently failed company-sized dismounted attacks toward Stepove.

The Russians accepted risk. They also could not use their UAVs in the fog. Movement through fog, of course, can become a tactical command-and-control nightmare, especially for a highly centralized, officer-dependent, experienced but less-trained force. But in this situation, the advantage was to the attacker because the UAF's positions were known and mostly static. By early 16 February 2024, RF Central Group of Forces had massed three understrength, dismounted motorized rifle brigades in the neighborhoods of north Avdiivka and were attacking southwest into the city through areas where the UAF had not anticipated spending resources to defend. Russian supply lines from Vesele south to north Avdiivka should have been vulnerable to UAF artillery, yet were not challenged probably because they could not be observed in the fog. Meanwhile, Russian troops were able to forage for food and water in north Avdiivka's abandoned neighborhoods, but not for ammunition. It appeared that the Russian soldiers had enough small arms ammo, possibly due to the sheer numbers of dismounted motorized riflemen. Throughout their main attack into north Avdiivka, Russian Ground

Forces leveraged their artillery and mortars well. Plenty of RF GF forward observers (artillery recon soldiers) apparently infiltrated south among the dismounted Russian motorized rifle squads. For a short time, the UAF counterattacked and dispatched infantry to root out the Russians, but that was time-consuming and dangerous for an army that was nearly surrounded.

Meanwhile, RF Aerospace Forces' UMPK-guided glide bombs and RF GF artillery



Screenshot of a video of a "high-explosive bomb" (HEB) equipped with the "UMPK" kit that makes it a guided glide bomb, released by the Russian Ministry of Defense, on its Telegram channel.

hammered UAF logistics and C2 deeper in Avdiivka, especially in a neighborhood known as Khimik, "the Chemist," the 9th micro-district just south of downtown. By the second week of February 2024, the northwest-to-southeast main supply routes (MSRs) across Avdiivka were either cut or endangered and the UAF were forced to evacuate the city which it had defended for nearly 10 years. The final 2 weeks of the Russians' attack on Avdiivka remained a dismounted operation which was remarkable for a Russian army that 2 years earlier was overly motorized, overly mechanized, and seemed to lack any dismounted infantry culture (despite their



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recent experience in Syria and Donbas). Two years before, RF GF motorized riflemen died in their BMPs and BTR-82As and hardly ever dismounted in contact. After the UAF's withdrawal, in the Russians' many self-made videos that documented their advances and victory in Avdiivka, it was difficult to find any RF GF vehicles. All the Russians were on foot. The only noticeable military vehicles were destroyed or abandoned Ukrainian ones. This was true in the southern parts of the city as well. It took weeks for the Russians to clear the minefields and other UAF obstacles and to get Russian vehicles into the city from the east and southeast. Consequently, during their evacuation of Avdiivka, the UAF had an unusual advantage because Ukrainian forces were still motorized and mechanized. The Russians were frustrated by their failure to trap and defeat the UAF's mounted 3rd Assault Brigade, 110th Mech Brigade, and other Ukrainian commands in the city, but the Russians captured and secured Avdiivka for good, their strategic immediate objective.

The RF Central Group of Forces' attack in Avdiivka had been key terrain-driven, something that Russian forces earlier in the SMO regularly seemed to ignore. Among Russian forces until mid-2023, only PMC Wagner seemed to understand the importance of capturing and holding key terrain. (PMC Wagner was hyper-focused on key terrain.) Also, like PMC Wagner, the RF Central Groups of Forces were flexible with their plan, albeit after nearly 2 months of heavy losses, and they assumed risk. In the last phase at Avdiivka, the Russians were also unceasing with their tempo and

maintained pressure on the UAF so as not to lose the initiative.

On the negative side, from an American perspective and with PMC Wagner's way of warfare in mind, the RF Central Group of Forces' success at Avdiivka was still highly centralized and top-driven. Other than gaining access to water tunnels in south and southeast Avdiivka, which derived from RF soldiers' pre-SMO familiarization with the area, RF Central Group of Forces' planning and command at Avdiivka



Logo of the Wagner Group since April 2023

appeared very top-down. There was little, if any, evidence or hints of lower-level leadership or maneuver warfare even at the army level (CAA or direct report army corps such as 1st Army Corps). On the other hand, UAF brigade leadership and maneuver was constantly noticeable, even from Russian social media accounts.

The cost to Russia

Avdiivka was very expensive for the Russian military. All the units that fought on the Russian side were from the Ground Forces, not from a PMC (like at Bakhmut) or any other proxies, not even from the VDV or Naval Infantry. Many of the losses were incurred by Russia's most sparsely populated military district from Siberia, the Central Military District (CEMD), which already had challenges manning units locally. For that reason, CEMD's newest



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operational unit, 25th CAA (created in 2023), was manned mostly from Russia's Far East and its Eastern Military District. Although RF GF 2nd GCAA, 41st GCAA, and 1st Army Corps each initially used Storm-Z and Storm-V convict detachments, those formations were soon exhausted. By January 2024, the resupply of prisoners could not keep up with Russian casualty rates and troop movements. Convicts instead were then used as individual replacements, but even that supply could not keep up with Russian losses.²⁶

On 16 February 2024, someone, probably inside the Russian military medical system at Avdiivka, sounded the alarm through a well-known VKontakte (Russian version of Facebook) site:

“...what is happening in Avdiivka is without limits and beyond understanding. In recent days, the losses were more than 1,300 KIA and thousands of WIA [per day], and many WIAs will not live until the next morning. They simply will not receive timely medical care.”

Equipment losses were also significant. A non-Ukrainian site that verifies combat systems losses only by photographic evidence counted 218 Russian tanks and 359 BMPs destroyed or abandoned near Avdiivka between 1 November 2023 and late February 2024. A very popular Russian milblogger (Andrey “Murz” Morozov), who had close ties to Russian soldiers, wrote (or leaked) on his blog that Russia had approximately 16,000 KIA at Avdiivka, and had lost 300 armored

vehicles. This was likely a conservative estimate, but also one based on information from Russian military sources. Afterward, that same Russian milblogger was chastised by Kremlin officials and official RF MOD sites for “misinformation.” He was repeatedly visited by Russian law enforcement, likely the FSB, and harassed. Harassment continued, but rather than recanting, the milblogger reportedly killed himself in late February 2024.²⁷ Such losses in personnel and equipment were not irreplaceable for Russia, but nonetheless costly and embarrassing.

The end of maneuver (at least for now)

Even more than 9 months after losing Avdiivka, the UAF would not recover. The Ukrainians could not effectively hold back the RF GF Central Group of Forces, which continued attacking deeper and deeper west of Avdiivka, nor could they stop advances further south by the RF Southern and Eastern Groups of Forces. To the Russians, it was very noticeable throughout spring 2024 that the UAF's only response to any Russian penetration west of Avdiivka was the UAF 47th Mechanized Brigade, which RF Central Group of Forces had fought and bloodied at Stepove and later at the Avdiivka Coke Plant from late November 2023 through February 2024.

As of the end of May 2024, the fighting in Avdiivka was the last time the Troika observed Russian maneuver warfare in 2024. Despite maintaining the initiative after Avdiivka, the RF GF Central Group of Forces, did not recover. In many ways, neither did the RF AF in Ukraine and



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Kursk Oblast. Three months of intense combat at Avdiivka took a heavy toll on RF GF personnel, combat equipment, and no doubt tactical leadership. Through the summer and fall of 2024, unceasing RF Central Group of Forces combat losses outpaced Russian replacement rates for both personnel and systems. Oryx, a Dutch open-source analytic website that records Russian combat systems losses only with photo or video evidence, reported increasingly higher Russian equipment losses in late 2024. According to Oryx, Russia's greatest monthly combat system losses in the whole SMO to that point were in October 2024. Russian attacks after Avdiivka, although successful, mostly devolved into undermanned, poorly trained, and poorly equipped formations slogging deeper into Ukraine a few hundred meters at a time, one daylight frontal assault after the next, with little or no tactical sophistication. Typically, these attacks followed relentless, well-placed FPV drone and artillery preparatory fires but also faced equally effective UAF countereffects.²⁸ Overall, the real reason for Russia's continued success and its ability to maintain the initiative was that the UAF were in much worse shape.

After Avdiivka in February 2024, there were brigade-sized RF VDV and Naval Infantry strategic movements to counter emerging dilemmas in northern Kharkiv Province and Kursk Oblast, but not maneuver warfare. Sophisticated Russian tactical and operational fires were sometimes noticeable at the front, when they temporarily interrupted UAF fires, supply, and C2. Russian maneuver at all

levels devolved to unsophisticated daylight, frontal attacks. At their highest complexity, some of these attacks were part of envelopments of small Ukrainian towns. At tactical levels, this was no doubt because of earlier significant losses of Russian junior officer leadership, losses further exacerbated by the Russians' absence of NCOs. (There are sergeant ranks in the Russian military, but these sergeants are not NCOs and have no formal leadership roles, authority, or specialized NCO training.)

In 2023 and 2024, Russian units were able to overcome their lack of NCOs by more than 2 years of indefinite, “stop-loss” service since the September 2022 mobilization. In the absence of training or leadership, the Russian tactical commanders could rely on their familiarity with their soldiers. By late 2023, RF AF tactical commanders knew which enlisted personnel they could trust to get the job done and who could lead their peers, even if only informally. At some point after the SMO, Russian indefinite “stop-loss” service will come to an end, and the Russian lack of adequate junior leadership will reemerge. PMC Wagner's earlier tactical reorganizational successes continue to inspire RF GF attempts to adapt its MTOEs. During the SMO, the RF GF and VDV repeatedly reorganized tactical formation forces into smaller, more numerous assault detachments, with the idea of conducting bounding assault tactics. However, such innovations require additional tactical leadership, something that the RF AF is unable to address until it can reset. In the end, the SMO will also



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likely drain the RF AF of its experienced, informal enlisted leaders described above.

Conclusion: “Fire. Then Maneuver.”

The RF Southern Group of Forces in 2022 and RF Central Group of Forces in 2024 demonstrated that the RF AF could conduct maneuver warfare at the strategic and operational scale, although not uniformly and not without limitations. In the first 3 years of the Special Military Operation, the RF AF in Ukraine were never able to synchronize fire and maneuver. Even at the RF AF’s best warfighting moments it was “Fire. Then maneuver.” PMC Wagner, on the other hand, had demonstrated fire and maneuver at the tactical scale continuously from mid-2022 to mid-2023 in a complex urban environment. So, Russians can conduct fire and maneuver, but not the armed forces.

At the onset of a conflict, RF AF movement and maneuver are enhanced by their strategic mobility. This is sometimes force projection to border areas internal to Russia, as well as the General Staff’s employment of the RF VDV and RF Naval Infantry to seize terrain for its groups of forces on the direction of its main strike and other strike. As described at the start of this chapter, the RF AF have a proven, institutionalized General Staff-led architecture for designing and prioritizing its movement and maneuver, which is then replicated to lesser degrees at operational levels.

Considering the last three years of high-end warfare, that model will no doubt be reviewed and further improved upon as



Russian soldier sitting on a T-80 tank near the frontline. (ZUMA Press / Alamy)

the basis for future Russian combat operations.

Other changes to the RF AF during the SMO and their future effects on movement and maneuver remain to be seen. By late 2024, there were more motorized rifle divisions (MRDs) in the RF GF than there were on 24 February 2022. Both before and during the SMO, at least seven RF GF maneuver brigades were enlarged into new MRDs.

In May 2024, Vladimir Putin repeated that the RF Naval Infantry brigades will become divisions, although no timeline was given. At the start of the SMO, RF GF maneuver brigades and the MRD’s motorized rifle and tank regiments were the RF GF’s key tactical elements. However, by late 2024, RF GF MRDs and tank divisions were fighting more often as parts of divisions. How these and other changes will affect Russian movement and maneuver remains to be seen.

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Movement & Maneuver Chapter Endnotes

- 1 1st Guards Tank Army (1st GTA) is the RF GF’s only tank army.
- 2 COL Pär Blid, lecture “Russian Operational Art” (based on attendance at the RF General Staff Academy, 1999-2001), 5 August 2024, Russian Way of War – 8, Garmisch, Germany.
- 3 Troika Observations: Headlines, 28 August 2023; Zaporizhzhia Operational Direction, 30 August 2023; Headlines, 6 September 2023.
- 4 Troika Observations: Hlyboke, 29 July 2024; Northwest, 12 August 2024; West, 23 August 2024.
- 5 Troika Observation: GRU Spetsnaz in RF AF Defenses, 7 October 2022; This has also been the case in summer and fall 2023 and 2024 in Zaporizhzhia Province where elements of RF GRU 45th Guards Spetsnaz have been northeast of Robotyne and near Kamianske near the Dnipro River.
- 6 Troika Observation: Headlines, 30 October 2023.
- 7 Troika Observation: The Empire Strikes Back, 13 January 2023.
- 8 Troika Observation: Toward Odesa, 22:30 EDT, 27 February 2022.
- 9 Troika Observation: Near Kyiv, 19:00 EDT, 26 February 2022.
- 10 From late February through mid-March 2022, there are dozens of Troika Observations describing the GRU spetsnaz, RF SSO, and FSB capabilities already in Kyiv. Unknown at the time, many were actually PMC Redut mercenaries who were augmenting the VDV’s RF GRU 45th Guards Spetsnaz Brigade in Kyiv. Troika Observations: The Rise of PMC Redut, 21 and 24 July 2023.
- 11 Troika Observation: General Observation, 23 April 2022.
- 12 Troika Observations: Toward Mariupol, 19:00 EDT, 26 February 2022; Near Melitopol, 12:00 EDT, 26 February 2022.
- 13 Troika Observations: Toward Mariupol, 22:30 EDT, 27 February 2022; OSK Zapad, 15 March 2022. In research for a Russian Way of War (RWOW) engagement with HQ, USMC, on 22 November 2022, the Troika obtained the January 2022 operational graphics for the BTG1/810th Guards Naval Infantry Brigade’s landing at Berdyansk and attack toward Volnovakha.
- 14 Troika Observation: Sloviansk Operational Direction, 16 December 2022.
- 15 Troika Observations: Toward Mariupol, 19:00 EDT, 26 February 2022; Near Melitopol, 12:00 EDT, 26 February 2022.
- 16 Troika Observations: Zaporizhzhia, 3 and 4 March 2022.
- 17 Troika Observation: OSK Center, 10 April 2022.
- 18 Troika Observation: To RF AF Commanders and Planners..., 6 July 2022.
- 19 Troika Observation: OSK West, 15 April 2022.
- 20 Troika Observation: General Observations, 5 July 2022.
- 21 Troika Observations: Kharkiv or Izyum area, 10, 22, and 29 August, 2 September 2022.
- 22 Troika Observations: Russian IO Struggles in Ukraine, 22 May 2022; River Crossing, 27 May 2022.
- 23 Troika Observation: Eastern Group of Forces through Crimea, 27 July 2022.
- 24 Troika Observation: Avdiivka, 21 February 2024.
- 25 Troika Observation: Dawn fog at Avdiivka, 7 February 2024.
- 26 Troika Observation: Very popular Russian milblogger dead, 23 February 2024.
- 27 Troika Observation: Very popular Russian milblogger dead, 23 February 2024.
- 28 Troika Observation: No improvements to Russian maneuver, 18 November 2024.



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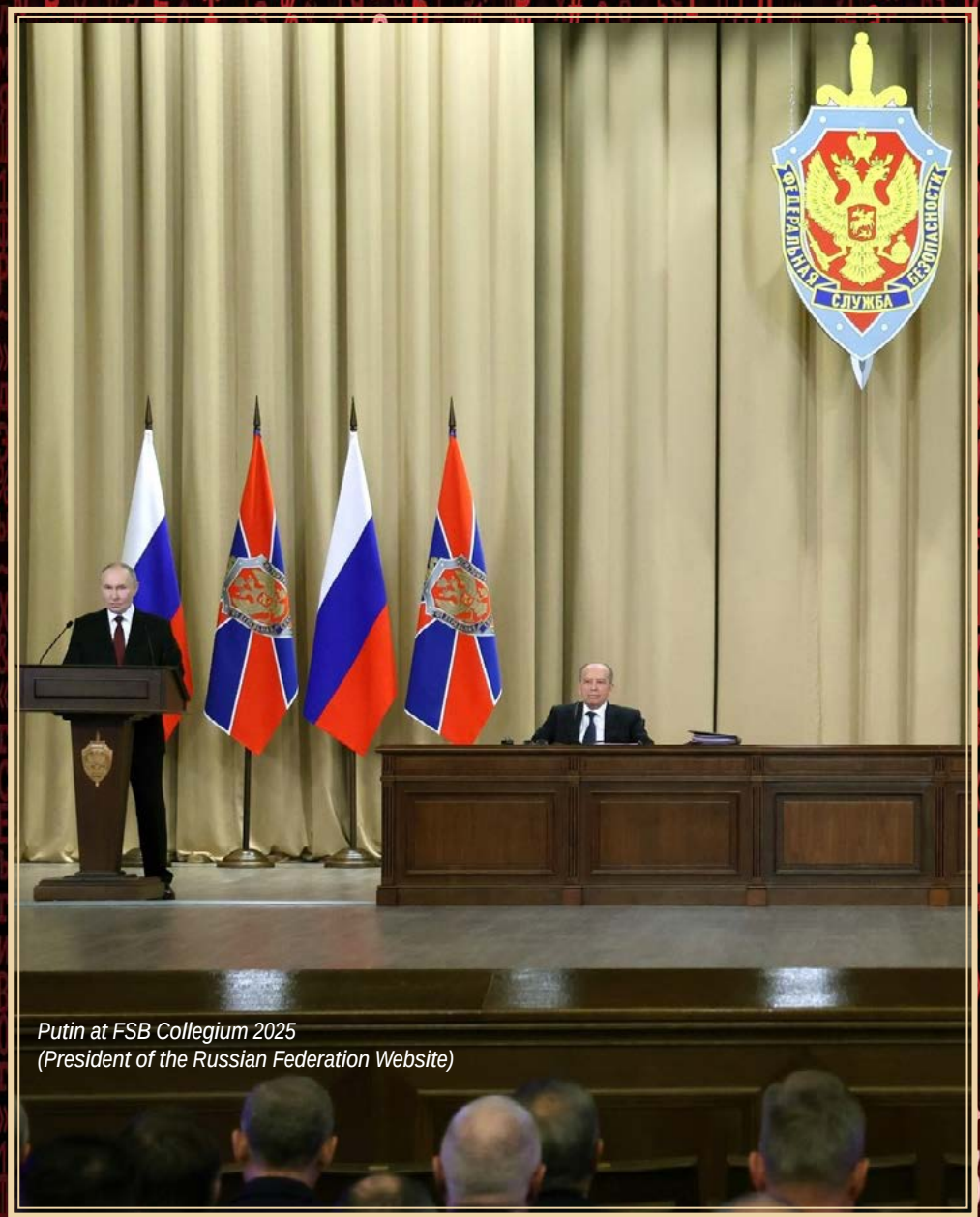
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Warfighting Function



Putin at FSB Collegium 2025
(President of the Russian Federation Website)

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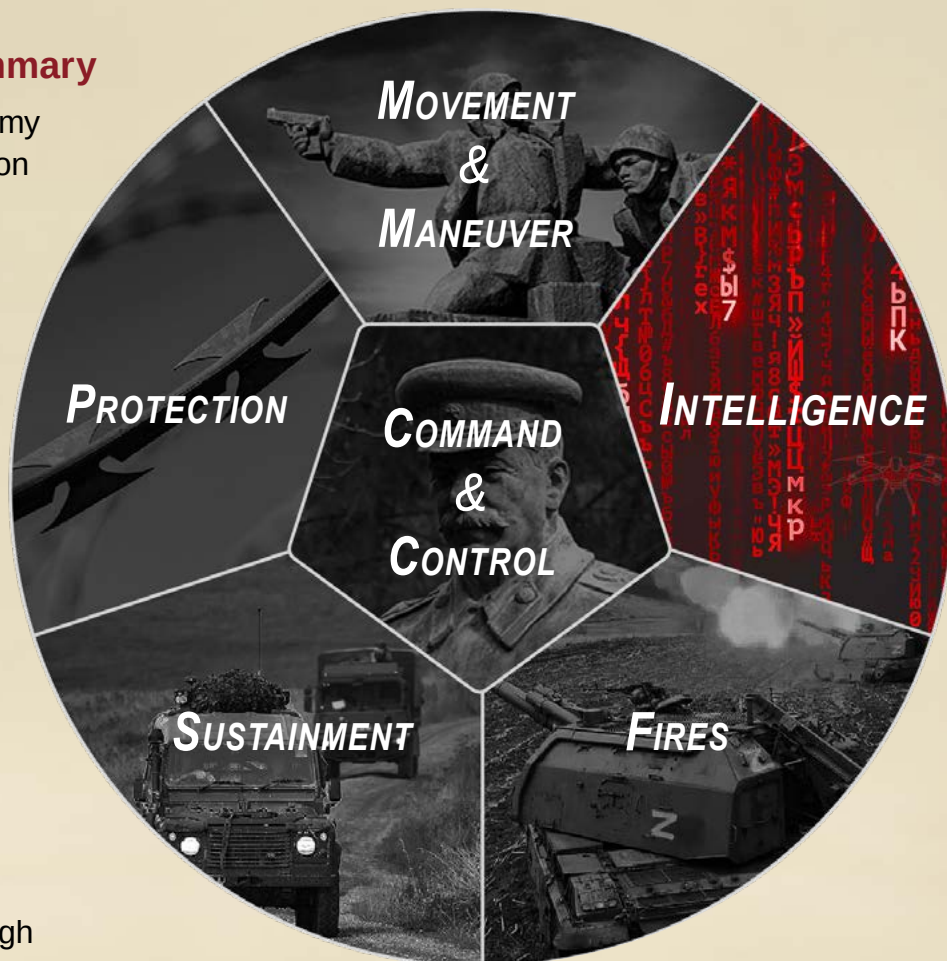




Introduction and Summary

The U.S. Army's Army Doctrine Publication (ADP) 3-0 "Operations" states that the intelligence warfighting function includes the task to "Provide intelligence support to targeting and information capabilities." Russian military thinkers have understood this basic principle and have long envisioned an intelligence-informed synchronized system to decisively engage targets throughout the depth of an adversary's territory. Through adaptations that Russia has managed to make, the Special Military Operation (SMO) has been the setting for significant steps toward realizing this vision.

While open sources offer only a limited view of Russian intelligence operations, it is reasonable to conclude that Russian mastery of the intelligence warfighting function is a mixed bag. Russia started the SMO with an inaccurate intelligence estimate. At the strategic level, this has been corrupted by assumptions that accompany the view of Russia's leadership that Ukraine is an "artificial country"¹ and therefore will not cohere when faced with a full-scale invasion. In the authoritarian environment of Russia, this bias no doubt



affected the strategic intelligence analysis presented to President Vladimir Putin by his security services. It is likely that the corruption caused by this dismissive view of Ukraine as a country was amplified by organizational corruption within the Russian Federal Security Service (FSB) and the General Staff's Main Intelligence Directorate (GRU).

The organizational corruption has been a factor in the low quality of Russian human intelligence (HUMINT) at the operational level. The result was that Russian operational targeting for the first several months of the SMO was poor and did not

have the crippling effect on Ukraine that Russia desired.

The gap created by the inability of Russian HUMINT to deliver targetable intelligence has been filled, in large part, by Russia's adaptations in unmanned aerial vehicle (UAV) technology and UAV tactics, techniques, and procedures (TTP). Russia has made key adaptations particularly at the operational and tactical levels. Russia's newfound UAV capabilities in collection have been a catalyst for advances in operational TTP.

Chapter One of the U.S. Army's ADP 2-0, "Intelligence," emphasizes the interplay between intelligence and operations and how one enables the other. Russia's ever-increasing abilities in UAV collection have stimulated a leap in the functionality of the "Recon/Intelligence-Strike Complex" ("RUK").

The RUK is meant to be the totality of intelligence, command and control, and fires assets functioning in a synchronized way to affect accurate, timely, and decisive fires against Russia's enemies. For decades, Russian military scholars have written about the need for the RUK and how it should work.



Inside the Russian Defense Ministry's National Defense Management Center

The SMO seems to have been the setting for a quantum leap in bringing Russia's dream of the RUK to life. Russia's long discussion about the RUK shows that Russians also appreciate the critical interplay between intelligence and operations.

Russian counterintelligence is a mixed bag as well. Russia started the SMO with uneven operations security (OPSEC) and almost nonexistent communications security (COMSEC). The Russian Armed Forces (RF AF) have made improvements in OPSEC, and to some extent in COMSEC, over the course of the SMO. Meanwhile, the Russian FSB uses, at times, brutal legacy TTP to enforce OPSEC among the civilian population in occupied areas.





Russia Made Significant Errors in Strategic and Operational Intelligence Estimates

Misreading Ukrainian will, capability

One of the most striking things about Russian intelligence during the SMO was its failure to anticipate Ukraine's intent and capability to defend itself. Russian leaders believed that the SMO would be over in days, not years. Russian confidence was evidenced by government-approved, pre-written articles extolling Putin's successful reestablishment of the "Russian World." Some of these articles were accidentally published online.²

This erroneous intelligence estimate can in part be attributed to confirmation bias, or Russian wishful thinking, both about Russia's own intelligence and military capability and the assumed lack of Ukrainian will and military weakness. It is, however, ultimately due to a failure of intelligence at multiple levels.



FSB Emblem

Russia did not try that hard because Russian leaders were overconfident

Retired FSB COL Igor Girkin was very critical of Russia's war efforts, portraying them as unserious. Girkin was a key player in 2014 when Russia established surrogate forces in the form of Ukrainian separatists in the Donbas. Among his criticisms during

the SMO was that Russia wasn't putting forth adequate intelligence effort.³

Russian leadership may not have been ready to hear an honest assessment

Much Russian high-level decisionmaking appears to be fed by dishonest, corrupt input from the intelligence services, military leaders, and other inner circle members who advise Putin and his smaller "inner-inner circle."⁴ The biased expectation that Ukraine wouldn't put up significant resistance probably influenced agencies like the FSB in their intelligence assessments of Ukraine's internal situation.

Organizational corruption on the part of FSB and GRU HUMINT agents, responsible for informant recruitment—coupled with effective Ukrainian counterintelligence—also played roles in Russia's formulation of an inaccurate intelligence picture (see HUMINT section below).⁵

Kursk Oblast Invasion

While Ukraine demonstrated excellent planning and OPSEC for its August 2024 invasion of Kursk Oblast, Russia probably suffered from similar predispositions that caused it to dismiss Ukraine's capabilities and intent at the start of the SMO. Perhaps based on steady Russian gains in the Donbas, Russia likely did not allocate adequate collection assets elsewhere. Russia may have simply believed that it had all of Ukraine's ground forces pinned down. Additionally, the fact that Russia had apparently lost track of a number of Ukrainian brigades probably underscores some fundamental issues with Russian HUMINT and intelligence analysis

(addressed later in this chapter).⁶ Another issue that may have contributed to this is Russia's apparent lack of overhead imagery capability.⁷

HUMINT in the SMO: Informants, Spotters, and Sabotage Reconnaissance Groups (DRGs)

The dismissive attitude toward Ukraine and corruption among Russian leaders created an atmosphere for wrong assumptions and no serious approach to intelligence. In addition, the lack of good Russian HUMINT had a significant effect on Russia's intelligence estimate of Ukraine at the start of the SMO. Key pieces of the Russian HUMINT effort included informants and spotters and DRGs.

Informants and spotters

One of the key HUMINT efforts was the recruitment of informants throughout Ukraine. Russian GRU and FSB agents infiltrate Ukraine with the mission to recruit informants who will report on Ukrainian troop activity and other targets of military value (to Russia, purely civilian targets can have military value). To do this, Russian agents are provided funds to pay Ukrainian informants and spotters. While Russia did manage to recruit some informants and spotters, this effort did not have the dramatic effect that Russia hoped it would. Some of this diminished effect is due to Ukraine's success in rooting out these informants, but most of this is probably due to systemic corrupt behavior of Russian



SBU's Telegram Channel frequently posts arrests of Russian informants

handlers and recruiters, as well as the informants and spotters who were "just in it for the money."

"Sabotage Reconnaissance Groups" (DRGs - диверсионно-разведывательные группы)

DRGs are small standing units of GRU personnel that conduct deep operational reconnaissance and sabotage. Typically, DRGs are organic to GRU Spetsnaz units. In some open-source reporting, the DRG moniker is loosely applied to either small groups of GRU or FSB agents (not





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necessarily Spetsnaz) or even to groups of saboteurs / informants recruited by Russian agents.⁸

RF HUMINT efforts target all regions of Ukraine

The Security Service of Ukraine (SBU) has continually rolled up individual informants, saboteurs, and DRGs throughout Ukraine over the course of the SMO. Early in the SMO, most of this activity was in and around Kyiv, especially west of Kyiv in towns like Irpin.⁹ Ukraine uncovered this activity in Odesa, Kherson, Sumy Oblast, Mykolaiv, Zaporizhzhia Oblast, and even in western Ukraine, among other locations.¹⁰ Some examples are below:

- In March 2022 in Kyiv, Ukrainians captured several GRU Spetsnaz DRGs. One small group of arrested GRU Spetsnaz were captured in a privately owned vehicle (POV) wearing what looked like older Ukrainian uniforms. They had laser rangefinders and a large bag of zip ties for securing prisoners.¹¹
- The Mayor of Irpin,¹ northwest of Kyiv, claimed that several GRU Spetsnaz DRGs were in the city.¹²
- In one incident, the SBU detained an apparent GRU facilitator in Kyiv. In his possession were four RF passports (one might be the detained facilitator's), an AK-47, 450 rounds of ammo, and several communications devices¹³ (perhaps the Strelets-M



SBU Emblem

- “reconnaissance, command and control [C2], and communications complex”).¹⁴
- In the Kharkiv area, according to the SBU, two brothers who were former Hroza (Kharkiv Oblast) residents supported the RF occupation in 2022. After Ukraine liberated a large portion of Kharkiv Oblast in fall 2022, they moved to Russia where they continued to work for Russia, likely for the GRU. Apparently, the brothers “remotely formed their own network of informants in the territory controlled by Ukraine.” In early October 2023, they began collecting information about the reburial of a deceased Ukrainian soldier in Hroza. The SBU claims that the older brother provided the address and time of the funeral in Hroza to the Russian military. The result was an RF ground forces (GF) Iskander-M attack on the funeral that killed at least 59 people, all civilians.¹⁵
- In Odesa, in the summer of 2022, the SBU arrested an individual accused of providing the RF FSB or GRU with the locations of Ukrainian forces near Odesa and of helping adjust long-range fires in the Odesa area. The arrested person's phone had incriminating communications with recipients in Russia and Belarus.¹⁶
- In Sumy, the SBU detained a female Russian informant/spotter from Sumy



GRU Emblem

who was “correcting” a Shahed drone attack on the night of 7 September 2023. The woman was a citizen of the Russian Federation with a residence permit in Ukraine who had been living in Sumy for a long time. After the start of the full-scale invasion, she began to collaborate

- remotely with the GRU. According to the SBU, the woman carried out full-fledged intelligence activities in Sumy. She walked around the city looking for military personnel, elicited information she needed from the locals, sent the locations of the UAF to the GRU, and even tried, at the behest of the GRU, to create her own intelligence network in Sumy.¹⁷
- Early in March 2022, Ukraine captured a female spy who had moved to Ivano-Frankivsk, in western Ukraine, from Kyiv in December of 2021. She tracked helicopters and other operations at a nearby Ukrainian airbase and collected targeting data for Iskander attacks that took place in the early days of the SMO.¹⁸
- In the Kharkiv area, in March 2022, the SBU discovered that a young Ukrainian boy was spotting targets for RF forces. The boy became interested in the offer after seeing an ad on Telegram. After he responded to the advertisement, RF



A firefighter works next to a pile of rubble from a residential building damaged by a Russian military strike in Mykolaiv, Ukraine in this screen grab taken from a video released in July 2022. (State Emergency Services of Ukraine)

forces contacted him and promised money in exchange for information about Ukrainian unit locations. Once the boy provided some data, the communications ceased, and the boy was never paid. The SBU talked to the child and his father and called on parents to carefully monitor their children.¹⁹

- During the first several months of the SMO, the Mykolaiv area of Ukraine was frequently attacked by RF missiles and artillery. To facilitate these attacks, RF forces employed Ukrainian civilians to act as “spotters” to reveal Ukrainian units and other military locations. To recruit spotters, the Russians advertised on Telegram promising potential spotters’ anonymity and payments of about 1,000 to 1,500 Ukrainian hryvnias (\$27 to \$40) for the information. Considering Russia’s then-generally poor intelligence and targeting performance, it appears that RF AF did not seek to verify or corroborate this targeting information.²⁰ This also



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indicates that the spotters were either just in it for the money, or simply not very good at accurately reporting locations.

- In July 2022, the SBU uncovered an organized group of residents in the Mykolaiv area spotting for RF forces. The group had cell phones and laptops to send the collected information to their Russian handler through well-established closed communication channels. In response to this growing problem, the Mykolaiv Governor, Vitaly Kim, began offering \$100 to Ukrainian civilians for each spotter found and identified. Additionally, he announced a curfew from 2300, 5 August until 0500, 8 August to root out possible spotters. In the late afternoon on 5 August, RF forces shelled several residential areas in Mykolaiv with cluster munitions, resulting in several reported dead and wounded. It is very likely that the RF saw the curfew announcement as an opportunity to strike, knowing that the streets would be busy with people preparing for the impending curfew.²¹

Systemic corruption greatly diminished the quality of RF intelligence

Even though Russian agents managed to recruit informants throughout Ukraine, Russia lacked a clear picture about the attitude of the Ukrainian people and their will to resist. This is partly due to corruption among FSB and GRU recruiters and handlers. The Russian practice of providing payoff funding to agents required the handler to report the successful recruitment of an informant and how much the agent



SBU Telegram Channel post of Russian informant arrest

paid to the informant. Despite the reported recruitment of several willing Ukrainian saboteurs, what was happening in many cases, was that the handler filed a false recruitment report and pocketed the payoff money. In other cases, it is likely that the quality of informants was questionable (from a Russian perspective). Some informants probably were not true supporters of Russia (in it “just for the money”). Also, there was likely difficulty recruiting enough informants capable of accurately reporting information.²²

Underscoring this, in Russia’s zero-defects leadership culture, there is huge pressure to report that everything is going “according to plan.” Therefore, even if one lacks



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confidence in intelligence information, or doubts that collection assets are capable of accurate reporting, there is pressure to report what one’s superior wants to hear. If the boss wants the intelligence picture to be of a Ukraine likely to capitulate quickly, that is what is briefed to the boss—whether intelligence indicates it is true or not. The layers of this corrupted leadership culture produce a weak HUMINT capability that relies on a network of less than ideal, or even nonexistent, informants.

Whether or not Russia recognized that there was a problem somewhere in HUMINT operations is an open question. Open-source reporting about the Director of the 5th FSB Service, Sergey Beseda, underscores this ambiguity. Beseda was reportedly responsible for intelligence about the political situation in Ukraine before Russia launched the SMO. Some reporting indicated that Beseda was accused of embezzling funds directed for covert operations in Ukraine and providing inaccurate information regarding political events in Ukraine.²³ This line of reporting further indicated that in early April 2022, Beseda was placed under house arrest and subsequently transferred to pre-trial confinement in Lefortovo Prison. Conversely, reporting weeks and months



Sergey Beseda

later indicated much less or even a lack of concern about failures in HUMINT operations. These reports described public and non-public appearances by Beseda.²⁴ Furthermore, he was not formally replaced as director of the 5th FSB Service until June 2024, when he reached the age of 70.²⁵ This apparent lack of accountability for a failed intelligence operation may be due to a combination of an unwillingness to admit error and a corrupt system.

Poor targeting indicates generally bad HUMINT

Numerous incidences of erroneous targeting are likely, at least in part, attributable to bad HUMINT. This causes RF AF to target based on templating and incorrect assumptions. Often these assumptions betray mirror imaging (assuming the enemy behaves like you). In a typical example of this, in early June 2022, Russia attacked the Darnitsky railcar repair facility in Kyiv with a cruise missile. The RF Ministry of Defense (MOD) claimed that the facility was a warehouse for T-72 tanks supplied by the West. Video later showed no tanks or other military equipment at the ruined facility. RF AF were desperately targeting any railroad warehouse facilities to interdict Western-provided military equipment as it was delivered to Ukraine. Due to mirror imaging, Russians supposed that Ukrainian forces would move military equipment almost exclusively by rail, like the RF AF would. This reliance on templating highlights poor Russian HUMINT collection.²⁶

The case of the UAF rout of the RF AF in the Izyum-Balaklia area in 2022 provided another example of poor HUMINT. The





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VDV 45th Guards GRU Spetsnaz Brigade was assigned with operational reconnaissance for a sector southwest of Izyum sector and lost track of five Ukrainian brigades.²⁷

An exception of good FSB HUMINT

A rare example of successful Russian HUMINT happened in 2022. In April 2023, a story appeared in Ukrainian social media about a 2022 Ukrainian HUMINT attempt to recruit RF Aerospace Forces (VKS) pilots to deliver RF VKS aircraft to Ukraine. The Ukrainians had data on the Russian pilots to blackmail them and arranged for the pilots to deliver the aircraft to Ukraine. The RF FSB learned of the operation, arrested the pilots, and then posed as the RF VKS pilots. In the end, the FSB and RF AF successfully attacked the base where the aircraft were to be delivered with missiles, resulting in UAF KIA and destruction of UAF aircraft, probably including a Bayraktar UAV.²⁸

Getting the most from limited HUMINT through effective UAV use

On 4 November 2023, the RF GF deployed a UAV over Zarichne, Zaporizhzhia Oblast, 35 km north of the Line of Combat Contact (LCC), the boundary zone between the two opposing forces, to confirm earlier HUMINT. The target was a gathering of artillerymen from the UAF 128th Mountain Assault Brigade assembled for an awards formation on Artillery Day. Likely through HUMINT (probably a DRG), RF AF learned of the ceremony. This cued the UAV, which confirmed the target with adequate accuracy. The result was an attack by what was either an Iskander-M ballistic missile or



Ukrainian soldiers recovering downed Russian E95M, MAR 2022.

a Tornado-S guided missile. The UAF suffered at least 28 KIA and 53 WIA. The attack decimated the brigade's artillery leadership. This was not the case with earlier such RF AF attacks, which often demonstrated poor targeting. The Russians appear to have developed a way to leverage unmanned aerial systems (UAS) to make even a limited HUMINT capability profitable.²⁹

While DRG activity continues,³⁰ operational level HUMINT agent activity seems to have decreased. See the UAS section of this chapter to see how Russia has made up much of the difference by developing UAS TTP.

UAS Transformed Intelligence Collection

While Russia has been using UAVs to collect imagery intelligence (IMINT) and sometimes signals intelligence (SIGINT) before the SMO, it seems that the RF AF intended to rely primarily on HUMINT (as

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discussed above) for operational intelligence. Russia had to deal with effective Ukrainian counter-UAV TTP and Ukraine's effective use of UAVs for intelligence, surveillance, and reconnaissance (ISR). Russia eventually understood and embraced the full potential of UAVs. It has further developed the technical capabilities and accompanying TTP to maximize effective and timely collection. The result is a quantum leap in Russia's ability to collect targetable intelligence and pass it to attack assets. This capability primarily applies to Russia's military-grade fixed-wing UAVs with a range of about 30 km or greater.³¹

At the closer tactical ranges, copter drones on both sides have transformed the battlefield into a nearly "you-can't-hide" environment. Some analysts call this the "democratization" of the battlefield, since both sides, down to the smallest of units, can collect actionable intelligence about practically any detail on the battlefield. Many of these smaller UAVs are "kamikaze" drones that serve both to collect IMINT and strike the desired target.

Initially poor UAV reconnaissance at the start of the SMO

At the outset of the SMO, the RF AF was using primarily Orlan-10 UAVs for reconnaissance, with experience gained from their previous use in Donbas and Syria. In Syria in particular, the RF Aerospace Forces (VKS) and possibly the Ground Forces were flying these UAVs at

operational ranges as early as fall 2015. However, this same practice did not bring success initially in the SMO. The UAF downed these UAVs in large numbers in the first several months of the SMO using various methods, including kinetically and by hacking into the UAVs' control systems, causing them to execute emergency landings.³² While most of these Orlan-10s belonged to the RF AF, there are indications that other Russian intelligence agencies like the SVR and FSB had been using Orlan-10s as well.³³

The UAF was reporting two to six Orlan-10s downed per day from March to May 2022. Many of these were shot down over Odesa. As losses mounted, the RF AF even began to commandeer Orlan-10 UAVs from the RF Ministry of Emergency Situations to fill the gaps. The RF AF also attempted to augment the Orlan-10 UAVs with an array of other reconnaissance UAVs such as the "Forpost", "Orion Pacer", "Merlin", "Horizont Air S-100", "Supercam



Orlan-10 of the Russian Federation invasion forces, which was neutralized by EW means, August 2022. (Ukrainian Air Assault Forces)



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APPENDICES





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S450,” and even the “Kartograf” UAV, which has 12 camera lenses designed to create topographic products. The UAF downed many of these other UAVs along with the Orlan-10s.³⁴

Learning from the Ukrainians —improving UAV reconnaissance TTP in cueing target designation

In early November 2022, a RF UAV unit from the “Donetsk People’s Republic” called Kaskad was seen in a video orchestrating laser-assisted fires and adjustments to artillery fires at Pavlivka near Vuhledar. This was in support of RF 155th Guards Naval Infantry and 40th Guards Separate Naval Infantry Brigades attacks. Unlike most earlier Russian UAV feeds, this was taken at a very high altitude directly over the target area (like a U.S. Predator feed). In the video, smaller quadcopter UAVs could be seen at lower altitudes, which may have been doing the actual laser engagements, while the higher altitude UAV was cueing the lower altitude UAVs. The assisted fires had very good effects and destroyed 12 Ukrainian armored and other vehicles during 2 minutes of highlight video. This operation looked much like the Ukrainian nongovernmental organization (NGO) Aerorozvidka (*Аеророзвідка*) TTP. Russian UAV units later admitted to applying Ukrainian TTP to their own operations. They even watched Ukrainian UAV instructional videos on Telegram or YouTube to learn. This example indicates



RF Aerospace Forces (VKS)
Emblem

improving Russian TTP and possibly UAV technical developments.

In another example, Russian social media showed an older Russian Orion UAV observing and helping a RF Navy helicopter adjust direct fire on a Ukrainian unmanned sea vehicle (USV) in the Black Sea near Crimea. The RF Navy is learning that medium-sized

reconnaissance and strike drones are their best tools to monitor their coastal areas near Crimea. This has reportedly been a key factor in the increase of successful Russian interceptions of Ukrainian unmanned boats.³⁵

Russian reconnaissance UAVs begin appearing in larger numbers in summer 2023

RF AF UAV artillery observers vastly improved their TTP south of Bakhmut. In July 2023, UAF soldiers began to complain about the sudden appearance of large numbers of Russian UAVs, especially smaller off-the-shelf observation UAVs. At the same time, Russian UAVs’ observation-to-shooter time was much shorter. This surprised many UAF soldiers accustomed to as much as a half-hour delay in RF AF fire missions after being spotted by RF AF UAVs.³⁶

The RF AF had begun using redundant constellations of high-altitude UAVs, teamed with smaller off-the-shelf scout UAVs. These observation UAVs can cue targets for ZALA Lancet terminal attack UAVs or RF AF artillery.³⁷ This constellation

TTP increases time-over-target, redundancy, and durability of collection capabilities.

Operational range reconnaissance UAVs cue coordinated attacks

Until June 2023, one of the RF AF’s biggest failures of the SMO was their inability to identify and track targets in the UAF’s operational rear areas. Until summer 2023, almost all RF AF attacks on the UAF operational rear were against fixed targets, sometimes just templated targets with no recent observation.³⁸ For example, the RF AF often target schools, agricultural warehouses, and barns, simply because the RF AF themselves often use such sites as command posts and artillery hide sites.³⁹

In mid-August 2023, nearly 18 months into the war, the RF AF apparently had one of its first few targeting successes in the UAF rear area against a time-sensitive target (i.e., not a fixed facility). At 70 km from the frontline, a RF AF missile engaged a Ukrainian train loaded with ammunition at the Mezheva Railway Station in UAF-controlled Dnipropetrovsk Oblast. The video showed a fire in a stationary train car at the station, then an explosion, and secondary

detonations. It also showed that the RF AF was trying to team its deeper operational range UAVs with its missile capabilities, something that the RF GF had done very well at tactical ranges.

In the fall of 2023, RF AF UAVs (usually Orlan-30s) on several occasions penetrated 70 km forward of the LCC, to cue successful attacks on UAF aircraft on the ground. These likely RF GF attacks are remarkable, because they involved

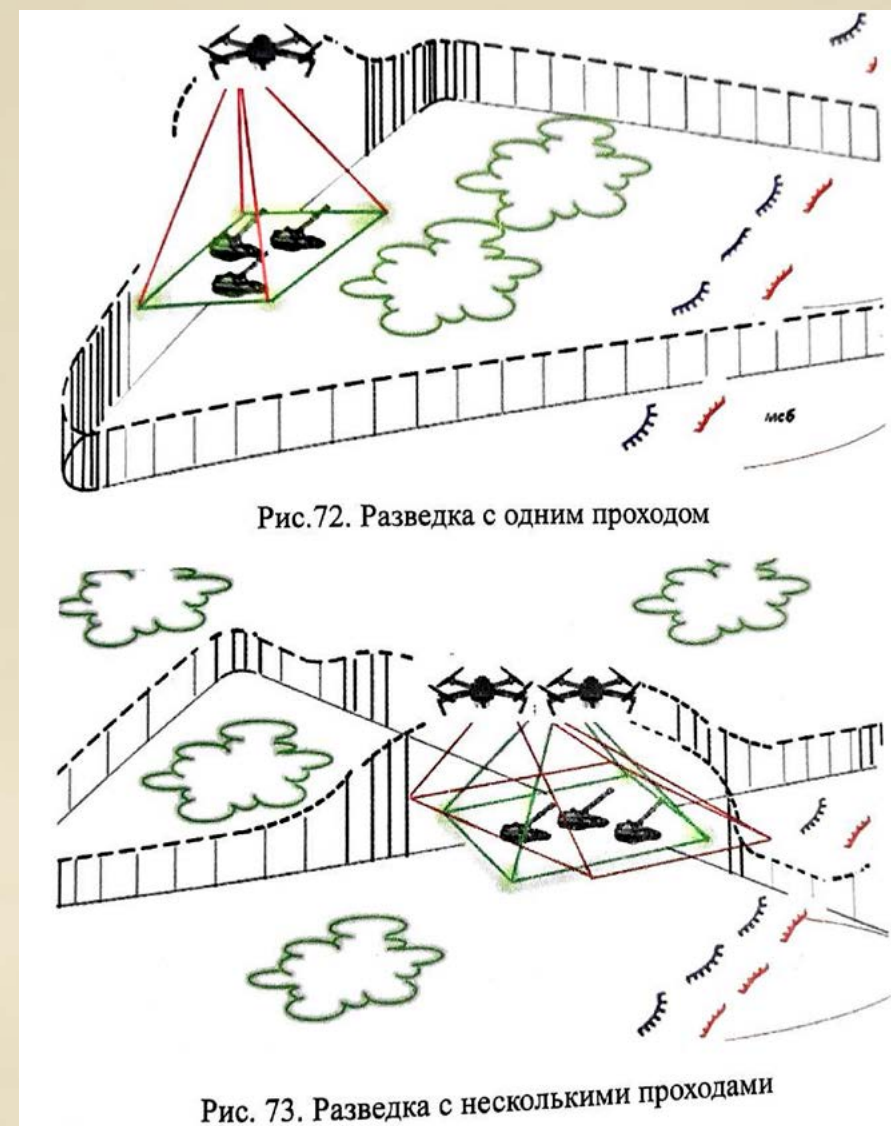


Illustration from 2022 Russian UAV operator textbook showing UAV reconnaissance flight patterns. (*Artillery Course for UAS reconnaissance system operators (St Petersburg, 2022), p 175*)



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observation UAVs at an operational range, which cued attack assets.⁴⁰

These fixed-wing operational range UAVs can observe and collect IMINT from high altitudes, making them harder to detect.

UAS technical improvements

In addition to improved TTP in using UAS for intelligence purposes, Russia works to technically improve UAS, thus increasing their utility as collection assets.

Improvised modifications

RF AF modified UAS, often at the unit level, to increase UAS capability. In the spring of 2022, a Ukrainian showed a nearly intact shot-down RF GF Orlan-10 UAV that employed a civilian-purchased Canon camera as part of its sensors. It also had a common plastic water bottle top to the fuel system apparently replaced at the unit level.⁴¹ In other situations, UAV units often modify commercial UAVs by adjusting their operating frequencies to counter Ukrainian electronic warfare (EW) counter-UAV efforts. This included changing the UAV operating frequency in flight or sending the UAV to the target on one frequency and returning it on another.⁴²



Spetsnaz Emblem



Russian "Orlan-30" reconnaissance drone shot down by the soldiers of the 54th Mechanized Brigade of the Armed Forces of Ukraine. Summer 2022. Ukraine. (AFU StratCom)

The ubiquitous Orlan-30

The Orlan-30 is an improvement over the Orlan-10. Developed in 2020, it began appearing in large numbers in 2023. The primary improvements are the operating range and operational ceiling. The Orlan-30 can reportedly operate at a range of 300 km versus the Orlan-10's 120 km. In addition, the increased operational altitude, reportedly 6 km, is probably a key reason that the UAF shoots down far fewer Orlan-30s than they did Orlan-10s. The Orlan-30 can also carry a larger payload and can laser-designate.⁴³

Attaching thermal imagers to recon UAVs

Some RF GF artillery units have attached thermal imagers to reconnaissance or observation UAVs. The imagers allow UAV operators to clearly observe and collect IMINT even through concealment such as thick spruce foliage or camo nets.⁴⁴

Reinforced Recon (by Fire AND "Maneuver")

Russia's failure to decapitate Ukraine with precision and maneuver in the first days of the SMO caused the RF AF to return to

their comfort zone, reverting to traditional "mass-over-maneuver" operations. Probably within months, the RF AF started applying "reinforced recon" to collect information about Ukrainian defenses. Russian "mass-over-maneuver" doctrine (in Russian, *taktika*) is well documented in Russian military history.

The same way, Russia's force generation model does not focus on good training, but on amassing a massive force (i.e., on quantity over quality). With the mindset that accompanies this, it is no surprise that Russia is willing to take significant casualties while conducting attacks as a way of discovering strong and weak points in Ukrainian defenses. Throughout the Donbas, there are examples of probing or spoiling attacks that appear to be, at least in part, intended to gather information about Ukrainian positions.⁴⁵

A similar development is the creation of "reconnaissance-assault" units in the RF Ground Forces. In September 2023, there were announcements about plans to create recon-assault brigades in all RF GF Combined Arms Armies (CAAs) and army corps. These brigades are designed to

storm enemy fortifications and conduct reconnaissance in the enemy's immediate rear.⁴⁶

The "assault" moniker has been more often associated with the Russian airborne forces (VDV) or naval infantry. However, the "reconnaissance-assault" combination probably came from private military company (PMC) Wagner's use of reconnaissance-assault companies. PMC Wagner began employing these units pre-SMO in Donbas and in Syria.⁴⁷

Possible Weak Satellite Imagery Collection Capability in 2022

Ukrainian media reported Russian intelligence agencies have been purchasing commercial satellite imagery using front companies. This indicates a possible shortfall in Russian overhead imagery collection capability.⁴⁸

Russian Electronic Warfare (EW) and Signals Intelligence (SIGINT) Assets Collect Tactical SIGINT

There is not a lot of information in open sources about Russia's SIGINT



Russian 'meat wave' attack as viewed from a Ukrainian UAV near Terny in April 2024 (<https://t.me/operativnoZSU/142218>)





capabilities. Unlike Ukrainian intelligence agencies that post scores, if not hundreds, of audio intercepts of Russian communications on social media, there is not much, if any, corresponding effort on the part of Russian security agencies. Nonetheless, Russia has the means to collect SIGINT. Russia has assets dedicated to SIGINT collection as well as EW assets that collect SIGINT to support the mission of disrupting Ukrainian C2.



D-30 Howitzer

RF AF SIGINT directional finding (DF)

In the fall of 2022, Ukrainian media reported the deployment of elements from the 67th GRU Separate Special-Purpose (OsNaz) Radio-Technical Regiment to Ukraine. The unit's mission is SIGINT and DF in the combat zone. Ten to 12 groups from the regiment reportedly deployed. Each of these groups can cover an area of approximately 200 sq km with a reported accuracy of locating a signal source within a 200-m radius.

This unimpressive accuracy would require the queuing of other collectors like UAVs. Deployable SIGINT units are apparently controlled by the GRU's 6th Directorate.⁴⁹ Some Russian military bloggers complain that Russian radio reconnaissance capability is somewhat atrophied.⁵⁰

GRU Cyber "DF" know-how: malware to locate Ukrainian artillery units

Before the SMO, in the Donbas, probably in 2014, the GRU devised a way to install

malware on the smartphones of Ukrainian artillerymen. Ukraine had developed a smartphone app to speed up firing data calculations for the Soviet-era D-30 howitzer. Once the GRU learned about this, it developed a malware-infected version of the app.

The malware version provided general location information of the smartphone user to the RF AF. This information could be used to cue assets like UAVs to precisely locate a D-30 unit for targeting. While it is hard to confirm how many Ukrainian smartphones were infected, and how successfully the RF AF leveraged this malware, open sources indicate that Ukraine lost over 80 percent of its D-30 howitzers during 2014 and 2015, the highest percentage of loss among Ukraine's artillery arsenal (as of 2016).⁵¹ While this type of activity does not get as much attention in open sources during the SMO, Ukrainian telegram channels have noted that malevolent Russian cyber players are still very active.⁵²



Many RF electronic warfare systems collect SIGINT to support the EW mission

Since 2008, EW has been a key focus area for development. Russia has built one of the most robust electronic warfare forces in the world with a wide variety of capable systems operated by well-trained personnel. Many Russian EW systems collect and analyze tactical SIGINT to enable targeted and effective jamming. Many RF EW systems, like the Borisoglebsk-2, are designed to collect and analyze electromagnetic reconnaissance information. This is meant to enable the various jammers in the Borisoglebsk-2 to disrupt the proper frequencies for the desired effect.⁵³ Russia has made a concerted effort to automate this function in as many EW systems as possible.

The LEER-3 EW System

During the pre-SMO Donbas war, RF AF made use of the LEER-3 (RB-341V) EW system to collect the cell phone numbers of Ukrainian military personnel to support tactical level information operations (or psyops). The LEER-3 system consists of a



Leer-3 EW system and Orlan-10 UAV. (Ministry of Defense of the Russian Federation)

control station mounted on a KamAZ 5350 truck and up to three Orlan-10 UAVs equipped with a payload capable of collecting large numbers of cellular phone numbers and service provider information. The LEER-3 system can use this information to spoof legitimate cell numbers and providers to send demoralizing text messages to Ukrainian personnel, to jam Ukrainian global system for mobile communications (GSM) cellular communications (up to about 2,000 subscribers), or to locate groups of Ukrainian cell phone users for kinetic targeting. The LEER-3 system is probably organic to RF AF's five separate EW brigades. Four of these brigades are organic to the Moscow (16th EW Brigade), Southern (19th EW Brigade), Central (18th EW Brigade), and Eastern (17th EW Brigade) Military Districts. Prior to the reestablishment of the Moscow and Leningrad Military Districts, the other separate EW brigade (15th EW Brigade) was centrally controlled at the General Staff level. The LEER-3 system has been in use since at least 2015.⁵⁴

The Ivan Khurs SIGINT-collection ship

The RF SIGINT-collection ship, the *Ivan Khurs*, has been an apparent SMO participant from the Black Sea. The UAF attacked it with USVs in May 2023, but did little to no damage. The *Ivan Khurs*, launched in 2017, is one of the RF Navy's most modern intelligence ships, with a crew of 120. The Bridge 18280-23 command system integrates radar detection and navigation and allows for detection and tracking of adversary radars and communications of different power and





The Russian Navy's Ivan Khurs

wavelengths. Her missions are signals intelligence, surveillance of U.S. and Western missile defense systems, radio interception, ELINT (electromagnetic radiation source identification and systemization), compilation of surface ship and submarine electromagnetic and acoustic profiles, maritime communications control, and adversary fleet monitoring during maneuvers and exercises.⁵⁵

Improvements in Intelligence Analysis

The typical Russian targeting approach is formulaic: apply the correct formula to the desired target and attack the target with the formulaically derived amount and type of ammunition and you are done (in theory). However, the RF AF are showing signs of more precise targeting, indicating better collection and more deliberate situational analysis. The RF AF may have been motivated to establish these TTP because of the presence of high-value point targets on the battlefield, like HIMARS and Patriots, a need to better steward ammunition stocks, and the availability of UAVs that can collect the intelligence to be

analyzed. Two areas where this seems to be happening are in the collection and analysis of battlefield damage assessment (BDA) and pattern-of-life information. There are signs that the RF AF may be using OSINT collected from social media to enhance intelligence analysis.

Using UAS to assess BDA

In the past, it was very unusual for the RF AF to even care about battlefield damage assessment. Since the fall of 2023, there have been indications that the RF AF is more regularly performing BDA to collect information about the success (or failure) of their attacks. The evidence of this is primarily posted video feeds from Russian UAVs (like an Orlan-30). Russians tend to post videos showing successful destruction, but there are likely unposted videos showing the collection of BDA for less successful attacks. These apparently newly established TTP to collect BDA information may indicate a serious effort to decrease unnecessary (formulaic) fires on templated targets that have already been destroyed. Some of the posted BDA videos show the destruction of targets such as ammunition storage sites and targeted buildings.⁵⁶

Russia establishes TTP for pattern-of-life collection and analysis

In addition to BDA TTP, the RF AF seem to be developing TTP to conduct pattern-of-activity (pattern-of-life) analysis. This is significant because it represents Russian recognition that targeting based on mirror imaging (presuming UAF will do things the way RF AF do) does not work all that well and also shows Russian willingness to adapt. Previous decisionmaking practices

throughout the SMO's first 2 years often involved the use of old maps, questionable HUMINT, outdated assessments, or unreliable templating. However, by March 2024, as an integral part of their targeting cycle, the Russians were combining BDA (noted above) with newly refined pre-attack studies of their targets. The availability of UAVs that can observe from altitudes that are harder to detect allows RF AF UAV operators to collect valuable information for analysis. They have refined observation TTP to observe targets at different times of day to understand UAF activity. Russian UAV operator teams diligently map out UAF positions in a given area before an attack.

This deliberate patience allows RF AF to better assess which targets are most valuable and to time attacks to do the most damage. In a prime example of this from April 2024, an RF GF UAV (likely from an army artillery group), did a pattern-of-life analysis on a UAF petroleum, oil, and lubricants (POL) depot along a railway spur in eastern Kharkiv Oblast. The Russians

determined which fuel cars were unloaded and which were still full of fuel before attacking a chain of loaded fuel cars with what was most likely a Tornado-S 300-mm missile.⁵⁷

Collecting and analyzing OSINT from social media

While it is hard to determine with concrete examples, it seems probable that RF intelligence agencies and RF AF pay attention to Ukrainian social media postings. In at least one case, Russian military-focused social media featured the photos of a particular UAF Leopard 2A4 unit, to include technical details about the tank and specific UAF soldiers. Given this, it is reasonable to assume that the GRU and other RF intelligence agencies have access to these images. In another situation, the RF GF obtained BDA information from photos that very likely came from Ukrainian social media. These photos came from inside a target area near Barvinkove in Kharkiv Oblast.⁵⁸



Russian social media showed the purported first destruction of a U.S.-supplied M142 HIMARS of the Ukrainian Armed Forces





Intelligence Integration and the Recon/Intelligence Strike Complex

To paraphrase the Great Russian Encyclopedia, the Recon/Intelligence Strike Complex (RUK) is the collective means of intelligence, command and control, and fires organized to effectively (and precisely) destroy the enemy's warfighting capability.⁵⁹ For decades, Russian military scholars have written about how the RUK should work like a well-oiled and synchronized machine. At the beginning of the SMO, the RF AF was far too stovepiped to coordinate and synchronize ISR, C2, and fires. But Russia's embracing of UAS technology and TTP seems to have catalyzed not only vast improvements in synchronizing intelligence and C2 with RF GF strike assets, but also with VKS strike assets. There is also evidence that the RF AF is making use of the Strelets system to assist in this long-dreamed-of transformation.

UAVs enabled the Reconnaissance Strike Complex

Russia's ability to adopt UAV technological developments to copy and further refine UAV TTP to observe and collect at operational depths seems to have been the key catalyst in Russia realizing its dream of the RUK. Once Russia developed several operational-range, high altitude (and therefore more survivable) UAV models, RF AF adopted effective TTP to collect targetable intelligence. These collection TTP went hand-in-hand with TTP to cue—not just indirect fires and kamikaze drones from the RF GF—but also glide bombs delivered by the VKS (Russian aerospace

forces). In other words, the jump in operational depth intelligence collection capability seems to have stimulated a jump in RF AF ability to coordinate timely and more accurate fires from a plethora of assets.

As noted in the Fires Chapter of this compendium, this ability appears to have started to develop in the spring of 2023. In April 2023, RF AF used a higher altitude UAV to collect IMINT to cue ZALA Lancet attack UAVs to precisely locate and attack UAF air defense systems in transit. Further, it is quite possible that the higher altitude UAV collection was cued by other intelligence like HUMINT or possibly SIGINT. Even though these targets were close to the LCC and vulnerable, RF AF hitting a target in transit was a very significant development.⁶⁰

Until June 2023, one of the RF AF's biggest failures in the SMO was their inability to identify and track targets in the UAF's operational rear areas. Later in 2023, however, the RF AF demonstrated their ability to hit time-sensitive targets well beyond the LCC. In August 2023, RF AF applied recently developed RUK TTP for a successful attack on a Ukrainian train loaded with ammunition at the Mezheva Railway Station in Dnipropetrovsk Oblast, 70 km from the frontline.

Similarly, in September 2023, RF AF UAVs penetrated 70 km forward of the LCC to collect IMINT in support of an attack on a UAF airbase, also in Dnipropetrovsk Oblast, to destroy a UAF MiG-29 on the ground. These attacks were remarkable because they employed deep, observation

UAVs (likely belonging to the RF GF) at an operational distance to cue the appropriate munition in a timely way.⁶¹

Perhaps the culminating achievement of these RUK refinements thus far was the UAV-observed Iskander-M destruction of a UAF HIMARS MLRS on 5 March 2024. This successful attack was preceded by a few impressive near-misses in the preceding months.⁶² This was a very time-sensitive target and was confirmation that the Russians could overcome their previous inability to track targets that move constantly.

The Strelets System



Strelets System

The Strelets System is a man-portable system used to report intelligence information gathered by on-the-ground observation and is intended to be a critical link in the RUK. The Russians refer to it as an "intelligence, C2, and communication complex" (KRUS - комплекс разведки, управления и связи).⁶³ A basic Strelets model was initially fielded in 2007. A more recent variant, the Strelets-M, is probably the

model being used in the SMO. It is being used by GRU Spetsnaz.

In March 2022, UAF captured GRU DRG personnel who had a Strelets system among their equipment. According to Russian media, Strelets-M systems communicate with each other and pass both observer and target location information to a "center" to assemble a real-time common picture ultimately for intelligence consumers—to include attack assets.⁶⁴

Russian Counterintelligence Measures

Russian counterintelligence measures in the SMO have been a mix of heavy-handed diligence (somewhat typical for a distrustful authoritarian regime) and apparent puzzling complaisance. On the one hand, Russian security agencies go to great lengths to root out would-be informants among noncombatants—who often just want to get out of the way. They overdo OPSEC to the point where, in some units, very few RF AF personnel actually know what the unit mission is. On the other hand, RF AF seems generally complacent about protecting tactical communications.

Lack of uniform OPSEC in the RF AF

There are cases of successful UAF strikes against RF AF that are most likely attributable to poor OPSEC. One of the more notable examples took place at midnight on New Year's Eve in 2022, when UAF HIMARS attacked a regiment of mobilized soldiers quartered in a technical institute dormitory in Makiivka. The soldiers were apparently gathered in the assembly hall to listen to Putin's New Year greeting.





Satellite view of the Bezimenne filtration camp, east of Mariupol, Ukraine, March 2022. (2022 MAXAR TECHNOLOGIES)

The HIMARS strike probably resulted in at least 139 killed. Russian regimental leaders blamed the mobilized soldiers for supposedly betraying their unit's geolocation by using their cell phones from the targeted site. This is entirely plausible, although at the same time, it probably was not a good idea on the part of the regimental leadership to gather these soldiers in one place, within HIMARS range. Whether it was due to poor cell phone discipline or another reason, Russian OPSEC was bad enough for the Ukrainians to discover such a lucrative target.⁶⁵

FSB-enforced OPSEC

In Russian rear areas, especially Crimea, Russian OPSEC is enforced mostly by the FSB. The FSB has been ruthless about social media posts that might give useful information to the UAF. This has especially been the case with damage to sites struck by Ukrainian missiles. There are, at times, reports of explosions in Crimea, but due to FSB enforcement, people are afraid to upload photos that would provide BDA.⁶⁶ In one high profile case in December 2022, in Bryansk, Russian authorities (probably FSB) detained a female military base

employee in Bryansk who uploaded videos of attacks to social media within minutes of an attack.⁶⁷

Publicizing FSB enforcement against informants

At times, the FSB publicizes their actions to root out pro-Ukrainian informants. This is probably to both frighten other would-be informants and to get positive coverage in the eyes of the Russian public. In October 2023, Russian national media publicized FSB raids and detentions in and near Melitopol in RF-occupied Zaporizhzhia Oblast. This included the detention of administrators for *RIA-Melitopol* (a Russian news service) and the Telegram channel "*Melitopol Tse Ukraina*" (Melitopol is Ukraine). Allegedly, RIA-Melitopol staff were using their work for Russian news as cover for pro-Ukrainian activities. During one arrest, a suspect reportedly offered armed resistance and was killed. According to the FSB, one of the detainees leaked information about Russian military movements and equipment to the Ukrainian MOD's Main Intelligence Directorate (HUR).⁶⁸

Filtration: Rooting out pro-Ukrainian informants

In the first several months of the SMO, Russian forces "filtrated" the civilian population in several of the areas they occupied. The notorious practice of filtration harkens back to the Soviet practice during WWII, by which the People's Commissariat of Internal Affairs (NKVD, predecessor of KGB), "screened and filtered" Soviet citizens and military personnel who had been surrounded or captured by German forces. Filtration in the

SMO is a process by which Russia pacifies occupied cities by removing pro-Ukrainian sentiment among the civilian population in Russian-occupied areas. Most of the news about this practice centers around Mariupol. While the overarching purpose of filtration is to eliminate Ukrainian cultural identity, one of the key goals of this harsh process is to counter Ukrainian intelligence efforts by rooting out would-be pro-Ukrainian informants. The FSB is assumed to be overall in charge of filtration. Ukrainians report waiting hours or even days in a line of POVs to be screened at the filtration sites.



Emblem of the Russian Federal Service of Security (FSB)

While in line, they are not allowed to leave the queue to use the toilet or to get food. Once at the filtration site, Russian officials check personal documents and cell phones looking for any indications of connections or sympathy toward pro-Ukrainian / anti-Russian efforts. This included comparing this information to RF lists of suspicious Ukrainians, such as pro-Ukrainian journalists. Males are forced to undress to their underwear to check for incriminating tattoos, such as Ukrainian symbols or other evidence that they fought against Russian forces since 2014 (prior to the SMO). Some women report being threatened with rape.

Ukrainians whom Russian officials deem to be would-be informants can either be

deported to Russia or to re-education ("denazified"). There are reports of hundreds of thousands of Ukrainians being deported to Russia proper. Re-education probably entailed coercive placement in a filtration camp and being forced to work and constantly read and listen to material about the need to "denazify" Ukraine. Occasionally, RF officials probably successfully recruited informants through filtration to be employed in Russian HUMINT efforts.⁶⁹ Post-2022, there are few reports about ongoing filtration. However, there are some press reports as recently as 2024 of Ukrainian civilians being held in Russia. At least some of these Ukrainians were likely detained during filtration.⁷⁰

Lack of COMSEC

During the early months of the SMO, Ukrainian intelligence services intercepted and posted scores of audio intercepts of RF tactical radio communications, and military-to military and military-to-civilian cell phone conversations on Telegram and other social media. These intercepts have been a productive source of Ukrainian SIGINT. Ukraine has been able to glean information on BDA, Russian troop morale, and unit status and locations, among other things. One of the more famous intercepts was of Russian tactical communications during a March 2022 Ukrainian ambush of 6th GTR's attack near Brovary. These intercepts also have made good material for Ukrainian information operations.⁷¹ Unsecured digital mobile radio (DMR) and DMR-like radios still dominate tactical RF AF communications across the SMO. Russia is still struggling to standardize





tactical radios. It has not been able to field secure frequency hopping radios, like the Azart series, throughout the force. Chinese Baofeng radios still dominate communications, along with other Motorola-type radio clones, leaving RF AF vulnerable to Ukrainian SIGINT and EW.⁷²

Old school COMSEC—wired field telephones

Due to the dearth of secure communications systems, RF AF uses wired field telephones when the phones are available and the tactical situation allows. The need is such that the RF AF are even using old field telephones like the TA-57, which was fielded in 1957. Like deploying old tanks such as the T-55 and T-62, use of old field telephones is another “back to the future” adaptation that works for the Russians.⁷³

Counter-Ukrainian UAV-based collection efforts

Like Russian UAVs, Ukrainian UAVs are an obvious intelligence collection asset. The RF AF work to counter UAF UAVs both kinetically and through EW efforts. Kinetically, both sides work to shoot down UAVs, preferably with small arms and even shotguns to avoid consuming air defense munitions. In some cases, both sides use UAVs to ram other UAVs. The use of EW to jam UAV control frequencies or even intercept UAV video requires constant adjustments to the frequencies used to counter UAVs.⁷⁴

Indications of poor RF AF counterintelligence training

In early August 2023, when UAF SOF crossed the Dnipro River to establish a

bridgehead at Kozachi Laheri, they captured MAJ Yuri Tomov, the 47-year-old Commander of the RF GF 1822nd Motorized Rifle Battalion. In an interrogation, it was clear that MAJ Tomov had never received any type of counterintelligence training in case of capture. During the interrogation, MAJ Tomov gave a candid and somewhat detailed description of his mobilized separate motorized rifle battalion.⁷⁵ Training in general is often an afterthought for the RF AF. Therefore, it is not too surprising that counterintelligence training for line units would also be an afterthought.

Indirect actions as counterintelligence

It has been no surprise that Russian security agencies are willing to use indirect actions to remove senior Ukrainian intelligence officials from the scene. According to the Intelligence Agency of the Ministry of Defense of Ukraine (HUR), the wife of the HUR Chief Kyrylo Budanov, Marianna Budanova, was poisoned (using arsenic and mercury), along with several high-ranking HUR employees. Kyrylo Budanov has survived 10 assassination attempts carried out by the FSB.⁷⁶ Russian intelligence services have a history of using poison against perceived enemies, to include Ukrainians. This is reminiscent of the 2004 dioxin poisoning of then-Ukrainian presidential candidate, Viktor Yushchenko. It is widely believed that Russia was behind his poisoning, due to Yushchenko's popularity and his strident pro-Western stance.



Other Russian Intelligence Assets Encountered in the SMO

RF GF Fara-VR ground reconnaissance radar

In November 2023, the UAF captured a portable RF GF Fara-VR ground surveillance radar (GSR). The Fara-VR is a small transceiver on a tripod. The battery control panel is connected via a long cable so the radar can be controlled remotely from a protected location. The station scans the area and automatically identifies moving targets and determines their coordinates. The detection range of a dismount is up to 4 km; a tank is up to 8 km. The Fara-VR will then track the target. The system weighs 12 kg, and its continuous battery operation time is up to 12 hours.⁷⁷

Criminals

In June 2022, the Ukrainian SBU arrested several members of criminal organizations who were reportedly helping Russian forces by storing RF military equipment to support an attack against Chernihiv. It is typical for FSB and GRU HUMINT to recruit and build relations with criminal organizations.⁷⁸

Russia Adapts to Compensate for its Intelligence Weaknesses.

Despite the weaknesses in Russian strategic and operational intelligence caused by bias and corruption, Russia is managing to adapt. Russia's wrong initial assessment about Ukraine's staying power and its internal cohesion was likely due to a combination of Russian wishful thinking and an expectation that intelligence estimates from the FSB and other agencies would sycophantically fall in line. This, in turn, may





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Intelligence Chapter Endnotes

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Introduction to Fires Chapter

“Fires will be the center of gravity [for the next fight]”

–GEN Gary M. Brito,
Foreword to U.S.
Army Training and
Doctrine Command
(TRADOC)
Operational
Environment
2024–2034

Dr. Lester
Grau of the
Foreign
Military Studies Office
(FMSO) once described the
Russian Federation Armed Forces
(RF AF) as “an artillery army with
tanks.” Traditionally, the RF AF have relied
heavily on artillery systems. This was the
case at the beginning of the Special
Military Operation (SMO).

By the summer of 2022, the RF AF was firing as many as 60,000 artillery rounds per day, reducing Ukrainian cities and their defenders to rubble. At that point, the emphasis was clearly on quantity over quality. Russian artillery relied on sheer volume to defeat Ukrainian defenses. Meanwhile, despite having multiple delivery means at their disposal—tube artillery, rocket artillery, missiles, guided and unguided bombs, and unmanned aerial systems (UAS)—the RF AF struggled to synchronize these systems and had diminished effects as a result. Their

targeting was poor and focused solely on delivering an overwhelming mass of artillery. Until March 2024, the Troika had never used the term “fires” when referring to the RF AF, and instead labeled them artillery or other means of indirect attack in the manner of the Russians’ unchanged, stove-piped targeting and delivery.

However, beginning in late 2023, the RF AF began to demonstrate significant adaptations in the ways they employed these systems. By May 2024, the RF AF had increased the ranges of their recon unmanned aerial vehicles (UAVs). They had dramatically improved their timeliness of delivery, expanded their ready munition

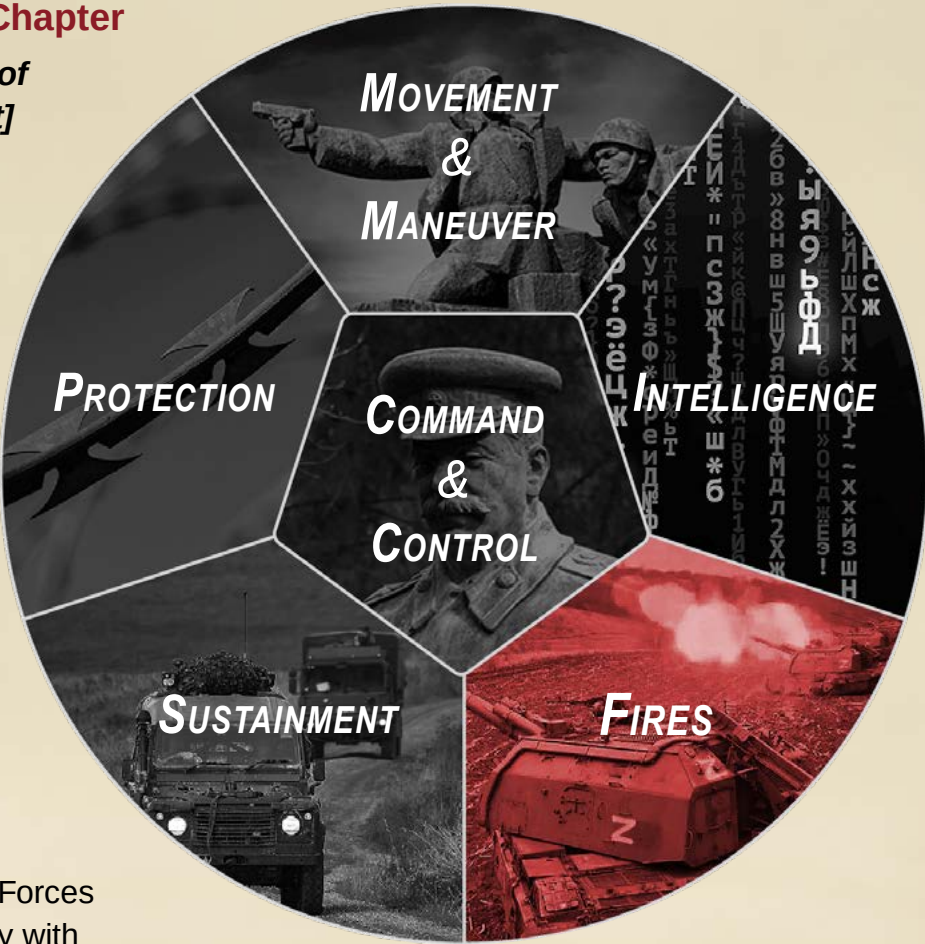


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options, and become more sophisticated in targeting. They developed the ability to synchronize fires from the Russian Federation Aerospace Forces (VKS) and Navy (VMF), as well as the Iskander-M ballistic missiles that are organic to the RF Ground Forces (GF).

This synchronization was executed at the combined arms army (CAA) level. The RF AF had clearly adapted and improved, and the results were impressive and worthy of being labeled “fires.”

Fires are incredibly important to the Russian Way of War, and improvements in that warfighting function are perhaps more significant than in any other warfighting function. Russian commanders would agree with the TRADOC Commander that Fires are the center of gravity.

This chapter begins with the significant adaptations that the RF AF have implemented as of May 2024. It will then discuss UAS and artillery as components of Fires. Logistics are covered next, as Russian fires are only effective when adequately supported. From there, we will cover the impact of Air Defense and Electronic Warfare. This chapter is arranged by topic, not chronologically. It is intended to highlight key and relevant observations and vignettes related to Fires, but not to provide a history of the use of fires during the SMO.

Fires Warfighting Function

“The fires warfighting function is the related tasks and systems that create and converge effects in all domains against the adversary or enemy to enable operations across the range of military operations.”

– Army Doctrine Publication, ADP 3-0

“These tasks and systems create lethal and nonlethal effects delivered from both Army and joint forces and other unified action partners. The fires warfighting function does not entirely encompass, nor is it wholly encompassed by any particular branch or function. Many of the capabilities that contribute to fires also contribute to other warfighting functions, often simultaneously.”

– U.S. Army Field Manual, FM 3-0 2022, para. 2–11

Troika Summary on Fires

RF AF Tactical and Operational Fires

By May 2024, five dramatic improvements to Russian tactical and operational fires

In March and April 2024, the Ukrainian Armed Forces (UAF) suffered terrible setbacks, especially during operations near Avdiivka. The RF AF once again demonstrated its ability to learn and adapt, and the RF Ground Forces (RF GF) especially showed they had overcome their obvious targeting and delivery



Downed Russian ZALA 421-16E2 drone. May 2022. (UAF)

shortcomings demonstrated throughout 2022 and 2023.

Until March 2024, the Troika had never used the term “fires” when referring to the RF AF, and instead labeled them artillery or by other means of indirect attack in the manner of the Russians’ unchanged stovepiped targeting and delivery. By May 2024, lethal advances in the ranges of Russian recon UAVs, the Russians’ timeliness of delivery, ready munition options, targeting sophistication, and their networking into “joint” and Iskander-M fires had overcome the RF AF’s earlier ham-handed, stove-piped approach. In other words, minimum targeting focused solely on delivering an overwhelming mass of artillery that characterized the Russians’ approach throughout much of the first 2 years of the Special Military Operation.

The keys to all these Russian fires successes included: (1) the RF AF’s recon

UAVs (the Orlan-30 and other newer, improved ZALA 421-16E recon variants [“16-series” or “Z-16” UAVs and Supercam S350 UAVs]); (2) the constellations of repeaters that support the forward-most recon UAVs; (3) the Russians’ ability to suppress threats to their own recon UAVs; and (4) their ability to destroy UAF recon UAVs and establish operational and tactical UAV dominance. *NOTE: The Troika considers recon and observation UAVs as interchangeable platforms. Russians refer to these as recon UAVs (разведывательные БПЛА).*

RF GF army artillery groups reached targets at ranges of 120+ km of operational depth

After several months of operational and tactical trial and error, in March 2024, RF GF fires managed to hit two long-sought-after weapon systems, a HIMARS launcher and a set of Patriot launchers. While striking these two systems was, by definition, a significant fires achievement, these individual engagements were quickly eclipsed by what appear to be more deliberate attempts to institutionalize the lethal tactics, techniques, and procedures (TTPs) associated with the successful strikes.

Russia’s earlier targeting and delivery difficulties were overcome when the army artillery groups (AAGs) at certain CAAs (and possibly 1st GTA) themselves became networks of fires. These AAGs are now able to dial up not only their own organic artillery and attack UAVs—including those direct support assets pushed down from the military districts’ groups of forces—but also a network of Iskander-Ms and



on-station RF Aerospace Forces (VKS) Su-34s and other aircraft loaded with UMPK-guided and other guided gliding bombs. These networks of delivery systems provide not only an expanded menu of possible munitions, but the ability to maximize the effectiveness of these munitions by enhancing the timing and coordination of the attacks under the AAGs, improved targeting, and C2 capabilities.

As an earlier example, in January 2024, a RF GF AAG accurately tracked two HIMARS launchers to their launch points, but the only available Tornado-S ammunition was dual-purpose improved conventional munitions (DPICM) rather than high explosive (HE). Ultimately, the attack damaged but did not destroy the launchers.¹ That deficiency was overcome within 2 months by making a network of Iskander-Ms available as part of the AAGs' delivery options. This solution went against the RF GF longstanding practice of reserving Iskander-Ms for targets outside the AAGs' remit, even though the Iskander-M, surface-to-surface missile brigades are organic to RF GF armies (CAAs and 1st GTA). Previously, Iskander-M command authorities were retained at higher command levels, such as RF Joint Group of Forces or the General Staff. After January 2024, those permissions were delegated down to the RF GF CAAs, 1st GTA, and their AAGs. The 500-km range of the Iskander-M vastly



Iskander-M missile launch

improved the availability of the right ammunition at the right time to hit a target at operational depth, even laterally from another command outside the AAG's CAA's or 1st GTA's assigned area of operations (AO). This is a revolutionary change for RF AF fires and RF GF artillery.

In April 2024, the operational range of the AAGs' deep attacks was extended to at least 120 km beyond the Russian Line of Combat Contact (LCC), which is how the RF AF refers to the boundary zone between the opposing armed forces. On 18 April 2024, two deep operational-range attack videos appeared on Russian social media. The first showed the observation and destruction of two UAF MiG-29s at UAF Aviatorske Airbase, west of the Dnipro River, 7 km south of the city of Dnipro in Dnepropetrovsk Province. Although Russians suspected these may have been "hangar queens," Russian pattern-of-life analysis determined that mechanics were maintaining the aircraft. The two MiG-29s were engaged with a DPICM, most likely from an Iskander-M ballistic missile or possibly a Tornado-S 300-mm rocket. The exact munition was not mentioned. A



second UAV video in the same area showed two Russian long-range fires attacks (likely one Tornado-S HE or Iskander-M ballistic HE missile) on a deployed UAF S-300PS air defense system. Secondary explosions confirmed that the target was active and loaded. Both targets were 100 km north of the Russian LCC.

On 20 April 2024, RF GF observation UAV videos showed two additional long-range attacks at operational depth using an Iskander-M ballistic missile for one attack and a Kh-35 air-dropped cruise missile for the other. The Iskander-M attacked another UAF Mi-29 at the Aviatorske Airbase in Dnipropetrovsk Province. The second target was a UAF S-300PT air defense missile launcher in the Mykolaivka area of Dnipropetrovsk Province, 25 km west-southwest of Dnipro city, 105 km north of the LCC. At least one UAF 79K6 Pelican radar was destroyed at that second site.

None of these four attacks, 90 to 105 km beyond the LCC, appeared to be observed by Orlan-30s, the most common RF GF observation UAV found at ranges up to 70 km. The Troika is very familiar with the operator optics for the Orlan-30. Most likely, these deep attacks were observed, adjusted, and assessed by RF AF ZALA 421-16E2 UAVs. The operator control monitor optics look very much like the ones installed on the ZALA Lancet-3. The other possibility is that it was a Supercam S350 UAV. The most important element of the AAGs' operational fires improvements was the Russians' employment of constellations of tactical and operational recon UAVs.

Until late summer 2023, the Russians had never built such constellations, unlike private military company (PMC) Wagner and the UAF had done earlier.

The Orlan-30, which became Russia's most effective tactical recon/observation platform, first appeared in June 2023 and quickly became the reliable backbone of Russian fires. The Orlan-30's one main limitation, however, was its 70-km range. In mid-April 2024, Russia introduced a newer, more reliable observation UAV: the ZALA 421-16E2 ("16-series UAVs" or "Z-16"), which immediately extended the range of certain RF GF AAGs' targeting capabilities out to at least 120 km.

In the second half of April 2024, a RF GF AAG engaged at least five targets at ranges between 95 km and 120 km, all in the vicinity of Dnipro city. This was likely coordinated by the 58th Guards Combined Arms Army (GCAA's) AAG. Targets were serviced by a mix of Iskander-M and Tornado-S munitions. Aside from the examples near Dnipro, the Troika later saw 5th GCAA and 8th GCAA operating ZALA 421-16E2 UAVs out to approximately 120 km as well.



Orlan-30





Cluster munitions for Tornado-S MLRS. March 2022. (UAF)

However, more than likely, the April 2024 operational observation UAV limit to 120 km was both technical and temporary (probably due to UAV repeater string technical characteristics and/or UHF redundancy).

An example of this extended range “work around” occurred at the same time that 58th GCAA was able to push its observation UAV constellations out to at least 120 km. That is, a RF AF ground station on Crimea managed to successfully maintain observation UAVs (including Orlan-10s) over Odesa, 200 km away, to recon and adjust Shahed UAV, cruise missile, and Iskander-M attacks on the city.

RF GF pattern-of-activity (pattern-of-life) analysis

Russian pattern-of-activity targeting analysis TTPs were validated over 2 years of failed RF AF targeting practices, marked by countless Russian attacks against erroneous UAF targets (ironically, at a time when UAF’s use of decoys and other deception tactics regularly proved effective). To put this improvement into perspective, until November 2023, the RF AF seldom made any effort to conduct

battlefield damage assessment (BDA) of the targets they attacked.

An example of this was the rare practice of conducting BDA of UMPK-guided bomb attacks, often attributed to operational/ technical limitations of observation means 60 km beyond the LCC (UMPK-equipped bombs glide to that range). If observed, the RF AF might hastily dispatch a UAV to capture any footage of immediate bomb impact on the target. But then they would have their UAVs depart station immediately thereafter, without ever inspecting the target.

But by March 2024, the Russians were conducting BDA as an integral part of their targeting cycle, combined with newly refined pre-attack studies of their targets. Previous decisionmaking practices throughout the SMO’s first 2 years often involved the use of old maps, questionable HUMINT, outdated assessments, or even unreliable “templating” (i.e., being influenced by mirror-imaging or confirmation bias) based on current Russian *taktika* (e.g., transporting/ displacing all their units, equipment, and ammo by trains).

Evidence of this refined, more deliberate approach to tactical pre-attack analysis of targets was later visible through the Russians’ deployment of several recon UAV patrols at different times of day, sometimes on different days. They captured footage at different angles and combined it with older imagery to determine the disposition—and veracity—of a potential target. An example of this methodology was posted to Russian social media in April 2024, which originated at the

RF GF 6th CAA’s AAG. Following analysis of a UAF fuel depot along a railway spur in eastern Kharkiv Province, the AAG was able to determine, which pipelines were active, which train tanker cars were unloaded and which were still full of fuel, where UAF fuel trucks were hidden, where UAF soldiers worked and garrisoned, and when the site was most active. The Russians then attacked a chain of loaded fuel cars with what was most likely a Tornado-S 300-mm missile. The exact munition was not discussed. In another example in April 2024, North of Soledar, in the RF GF 2nd Guards Army Corps AO, RF GF UAV footage showed the use of a first person view (FPV) drone with thermobaric ammunition against a UAF bunker.

The RF GF UAV team first established a pattern-of-life for a UAF bunker, both that it was in use and how many UAF soldiers were using it. After the first bunker was attacked, two surviving UAF soldiers escaped. A RF GF observation UAV then followed the two UAF survivors going to a second bunker, which the RF GF UAV then attacked with a thermobaric FPV munition. As late as December 2023, this level of analytical acumen, along with Russian painstaking effort, would have been an anomaly.

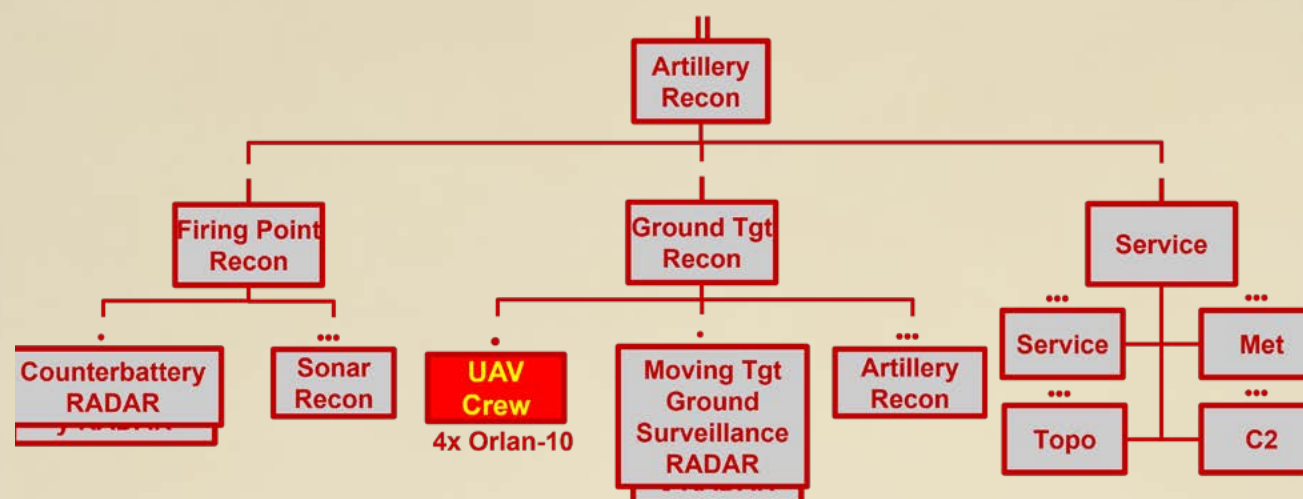


Screenshot of RF GF 6th CAA's AAG targeting a Ukrainian fuel depot in April 2024

Historically, in the SMO’s first 2 years, Russian long-range fires operations were not about effects on targets but about the quantity of rounds expended and targets hit, even if the targets were of low or no value (quantity over quality). Russians would typically brag about the number of rounds and missiles fired, not about targets destroyed. This was likely either due to, or the reason for, the absence of institutionalized BDA practices. Now, however, we see RF GF and RF VDV attack UAV operator teams diligently mapping out all the UAF bunkers in a given area before an attack, assessing with high confidence that survivors will evacuate to the neighboring positions, and perhaps to even more lucrative targets (e.g., command posts).

By May 2024, the Troika often observed RF AF UAV operators holding fire and not engaging survivors. Rather, they were monitoring and following vehicles and individual soldiers in anticipation of the UAF unwittingly leading the RF UAV operators to deeper, disguised, and

Russian Artillery Recon Battalion of an Artillery Brigade



From a 2022 manual "Artillery Course for aerial reconnaissance operators with UAS"

potentially more valuable logistical and C2 sites.

Examples of this RF AF adaptation, documented especially in March and April 2024, often involved the use of UMPKs, long-range missile or artillery attacks, or the creative use of attack UAVs. Russians still occasionally attacked UAF HIMARS decoys, as they did at least once in April 2024, but such UAF successes probably reflected a combination of Ukrainian deception skill and some luck.

For example, windy conditions on one site left Russians believing that static personnel decoys were, in fact, dynamic. The Russians also fine-tuned their ever-improving pre-attack target analysis. Russians in fact used the HIMARS decoy incident described above as a "lessons learned" event and posted footage and an explanation of the failed attack online to warn others. Earlier in the SMO, RF AF

instead would have very likely deleted all mentions and videos of the decoy event and just moved on to the next target.

By early May 2024, Russian pattern-of-activity analysis was so advanced that they finally had the right TTPs, recon UAVs, and fires options to consistently succeed in scouring Ukrainian industrial sites deep in UAF rear areas for their C2 and logistics.

For the first 2 years of the SMO, UAF had regularly fooled the Russians by hiding key assets in the myriad of warehouses and other shelters around abandoned Ukrainian factories and plants. In early May 2024, UAF C2 and logistics in southern Kharkiv Province were made vulnerable by Russian pattern-of-activity analysis and responsive RF GF Iskander-M and other long-range fires then made available to the AAGs.

RF GF Strela-10 SEAD campaign

Throughout March and April 2024, the RF AF (Ground Forces, RF VDV, and GRU spetsnaz) prioritized the destruction of UAF SA-13 Strela-10 air defense systems as high-value targets (HVTs). They adhered to a form of "SEAD" (Suppression of Enemy Air Defenses) to protect their own RF AF recon UAVs—the most important tools in their targeting and delivery improvements.

Simultaneously, the Russians put greater effort into safeguarding their own Strela-10s as their best counter-UAF recon UAV air defense system. The Russians identified this as a key to their tactical UAV dominance, which they achieved and exploited in several frontline areas throughout spring 2024.

RF GF electronic intelligence (ELINT) capability performed a "tipping and cueing" function by locating and subsequently transmitting Ukrainian Strela-10 locations to the CAAs and 1st GTA, as well as GRU spetsnaz brigades' command posts (CPs), and VDV and naval infantry CPs. Their respective AAGs and other targeting teams were then tasked to hunt for UAF Strela-10s with their tactical recon UAVs, usually Orlan-30s or Orlan-10s, to confirm and track the targets. Because Strela-10s are prone to relocate frequently, the Russian recon UAV efforts were typically teamed with either Lancet-3 attack UAVs or Krasnopol laser-guided artillery for the kill, all controlled by the same CP. This new method of SEAD became and remains a RF GRU spetsnaz brigade niche mission. Previously, GRU spetsnaz had also hunted UAF UAV operators by remote UAV means and deception.



Strela-10 Russian Short-Range Surface-to-Air Missile System. (ODIN)

From March through May 2024, RF VDV east of Chasiv Yar also concentrated on hunting and destroying UAF SA-13 Strela-10s before advancing further west to the Siverskyi Donetsk-Donbas Canal. For example, on 13 April 2024, Russian social media showed the destruction of a UAF SA-13 Strela-10 short-range air defense system, which was attacked with a RF AF UAV-assisted laser-guided 152-mm Krasnopol round west of Bakhmut near Chasiv Yar.

SEAD is not a Russian concept and therefore has not normally been central to their operations. In contrast to the West, the Russian Aerospace Forces (VKS) were designed for long-range, standoff, air-launched cruise missile fires without integrating, let alone coordinating, counter-air defense fires between the Services. When Russians discuss SEAD, they are typically referencing it in terms of its application by the United States and our Allies at strategic levels and, in turn, how to defeat it. The omission of SEAD in Russia *taktika* aside, this proactive, coordinated approach to hunting SA-13 Strela-10s is

noteworthy, especially at tactical-operational echelons. By May 2024, Russian successes resulted in RF AF tactical UAV dominance in many frontline areas along the 1,200-km LCC.

RF AF employ UMPK-guided bombs as close air support (CAS)

By May 2024, in at least two select areas of the frontline, RF GF and RF VDV were coordinating UMPK (Russian version of JDAM) strikes as CAS. In the Soviet and RF Air Forces' performance in Afghanistan and Chechnya, the Soviet and Russian Air Forces were considered unreliable (due to fratricide and/or undependable availability from enemy effects and weather). Thus, RF GF and RF VDV officers were trained by their mentors to be skeptical and never to depend on air power. Russian officers were trained instead to depend exclusively on their artillery. Until 2024, PMC Wagner was the only Russian force to efficiently employ tactical air-ground operations in Ukraine.

RF Aerospace Forces' UMPK capability was first employed in March 2023. RF GF and VDV officers were initially terrified because of the fratricide danger of these unguided bomb drops. RF GF and VDV officers' concerns were certainly warranted in this case, as early UMPK attacks were clumsily executed and grossly inaccurate, sometimes landing kilometers from their targets. As UMPK precision and availability improved over the next 14 months, some senior RF GF and RF VDV officers gained confidence in air-ground operations.

In at least two select areas, by April 2024, Russian forces were increasingly using



RF AF Su-34

UMPK-guided aerial bombs for close tactical effects. RF AF observation UAVs probably helped increase this newfound confidence by accurately pinpointing attack coordinates for GLONASS and GPS guidance of UMPK attacks. (UMPK guidance systems alternate among satellite navigation modes.) By spring 2024, the RF Eastern Group of Forces near Prylutne (5th GCAA) and south of Urozhaine (36th CAA) were using UMPK strikes extensively to support their tactical maneuver and gradually employed UMPK-guided bombs closer to their own forces. RF VDV 98th Guards Airborne Division, operating east of Chasiv Yar, likewise was observed using UMPK strikes to support their tactical maneuver. Although less frequently used and nowhere near as close to their own personnel, as observed in RF Eastern Group of Forces units much further to the south.

Over the period of 3 days, 20–22 April 2024, the RF VKS employed UAV-assisted UMPK strikes to support maneuver with deadly accuracy. On Saturday 20 April 2024, RF GF UAV videos from several angles showed a very accurate RF VKS

RBK-500 (1,100 lbs.) cluster bomb attack guided by UMPK. The Russian DPICM landed directly inside at least 200 m of targeted woodland, where UAF were supposedly defending in easternmost Zaporizhzhia Province near Urozhaine.

On 21 April 2024, a RF AF UAV videoed the precise impact of a 1,500 kg (3,300 lb.) aerial bomb (FAB-1500) with UMPK guidance on a building that Russians suspected the UAF was using as a forward operating base (FOB). The UMPK-guided bomb was on target and completely destroyed the FOB. Finally, on 22 April 2024, video taken by RF GF soldiers in eastern Zaporizhzhia Province showed the simultaneous impacts of two UMPK-guided aerial bombs on UAF positions less than 400 m in front of the RF GF soldiers.

The RF GF soldiers were on the radio, standing in a trench, and were awaiting the inbound bombs. By the Russian soldiers' reactions, it was very clear that it was not the first time they had been supported by RF VKS UMPK-guided CAS at a "danger-close" distance from the target. (The RF soldiers laughed and joked, and no one flinched during the bombs' impacts.) The two UMPK-guided bombs were right on target.

Tactically, the UMPK strikes were some of the most significant videos that the Troika observed in more than 2 years of the SMO because Russia has a nearly endless



Screenshot of UAV-assisted UMPK strike

supply of unguided aerial bombs that can be converted into UMPK-guided bombs. The supply of such munitions is so great because these bombs were rarely used in Russian conflicts since the early 1980s, yet remained in production at Cold War rates.

The UMPK-guided bombs pose such a threat to the UAF that in late April 2024, the UAF decided to launch a massive and successful UAV strike on the RF VKS airfield at Kushchevskaya, Russia, where RF VKS SU-34 and SU-35 aircraft were based—and where UMPKs were stored. Post-attack video showed heaps of unattached UMPK glide kits damaged or destroyed in the strike. The UAF has no effective defense or counter to UMPK attacks, other than to either prevent their employment, or to deploy Patriots or other such high-end air defense systems very close to the LCC, at great risk to these much-needed systems. Later in this chapter, we will discuss in detail the

evolution of UMPK attacks and the associated UAV support to those attacks.

RF AF's "joint" RF Aerospace Forces (VKS)-RF GF anti-radar campaign

On 5 March 2024, the combination of a VKS Kh-35U cruise missile, launched from a Su-34 fighter-bomber, and a RF GF Iskander-M ballistic missile attacked and destroyed a UAF S-300PS launcher and its 5N63S illumination and guidance radar site near Sloviansk. The target was most likely discovered and cued by RF GF ground ELINT or RF VKS ELINT, and then confirmed and videoed by a RF GF Orlan-30 recon UAV. The Iskander-M missed its target but was close enough that the concussion and blast destroyed the S-300 launcher and other associated equipment. Fires ignited all over the UAF S-300 complex. This was the first time the Troika had noted in the SMO that the RF GF used a UAV to observe and adjust an Iskander-M mission.

This was a new level of Russian targeting sophistication—a RF AF observation UAV searching for a target based on ELINT, then confirming the location and observing RF Aerospace Forces-delivered cruise missile fires. This attack also showed a remarkable level of RF GF and VKS "joint" cooperation and integration, both in targeting and delivery. As early as 2016, RF GF used UAVs to observe Iskander-M targets and missions in Syria, but it had not yet been noted in



RF Aerospace Forces (VKS) Emblem

Ukraine. RF GF targeting efforts had been improving and getting closer in the SMO since at least November 2023 and by month 25 of the SMO, the RF AF had clearly adapted their targeting and strike capabilities.

Throughout the SMO's first 2 years, the RF GF and VKS independently conducted their own "stovepiped" ELINT counter-radar missions, but the campaigns were not integrated and did not inform one another. The RF VKS would attack radar signatures but get no BDA because the VKS assets lacked the Orlan-30 recon UAV capability that the RF GF had gradually acquired since June 2023.

In April 2024, the RF GF also added additional, longer-range recon UAV capabilities. RF VKS and the General Staff more than likely were reliant on their national overhead imagery and commercial solutions. As a result, and in the absence of the ability to conduct immediate post-mission BDA, the RF VKS was at a disadvantage vis-a-vis UAF electronic and decoy deception.

Throughout 2022 and 2023, the Troika would read and hear Russian complaints about this. The RF VKS' recent use of the Kh-35U air-launched cruise missile, an export model of the Kh-35 air-launched, anti-ship cruise missile, has complemented the RF GF's recon UAV assets and their Iskander-M and Tornado-S attack assets.

This was adapted to attack land targets, especially radars, even though it is not an anti-radiation (radar-homing) missile. Instead, the Kh-35 is highly regarded by the Russians for its 1-m accuracy. The

Troika also assumed that it is quick to program, given the Kh-35Us' frequent use against mobile targets of opportunity.

"Joint" RF VKS—RF GF missions, like the ones described above, started slightly earlier than February 2024. In March and April 2024, they became commonplace—and extremely productive for the Russians. Many or most of these UAF radars have been along or near frequent RF Aerospace Forces' Shahed UAV and cruise missile ingress routes.

On 25 March 2024, a RF GF Orlan-30 recon UAV confirmed the exact location of a UAF P-18 early warning radar (Russian name: "Terek," Ukrainian: "Malachite," NATO: "Spoon Rest"), which a VKS Kh-35U cruise missile then attacked and destroyed. The use of a Kh-35U was confirmed by Russian sources. By 12 April 2024, Russian social media videos showed what the RF AF claimed was the eighth UAF P-18 Malachite radar destroyed by a Kh-35U cruise missile since early February 2024. That is when Russian sources first started highlighting the use of Kh-35Us for such missions.

The 12 April 2024 mission was interesting because the radar was attacked by a Kh-35U, but nearby S-300 launchers were attacked by a RF GF ballistic missile. While the exact munition used against the launchers was not discussed, it was likely a 300-mm Tornado-S missile, or possibly an



Kh-35U air-launched cruise missile

Iskander-M. Two days later, on 14 April 2024, the RF MOD published UAV footage of a Kh-35U air-launched cruise missile destroying a UAF IRIS-T's TRML-4D radar, while a RF GF Iskander-M attacked the IRIS-T's launchers.²

After some debate about whether these UAF targets were decoys, the attack on the radar was ultimately assessed to be a direct hit on an actual system, because it burned in a manner that would be uncharacteristic for a decoy. The launcher, which did not receive a direct hit, did not detonate, and Russians assessed that the

IRIS-T missiles themselves were shielded by their cannisters.

As referenced above, before November 2023, the Russians seldom attempted to gather BDA on a UMPK or other VKS attack. However, by April 2024, parts of Russian post-

attack BDA conversations were appearing in social media where lessons learned to improve future attacks on specific targets, like IRIS-T launchers, were discussed.

(NOTE: In spring 2024, there was a sort of contest among Russian units to post their best operational highlights on social media. Sometimes the attached narratives would provide operational details. A year earlier, in 2023, that would have been unfathomable, although a year earlier, PMC Wagner and the UAF published such operational details.)



The Troika has always described the Russian concept of “joint” as “what the RF VKS and the RF Navy can do to support the RF GF missions.” The RF GF are the Russian military’s most dominant service by far in size, culture, tradition, and power. Every Chief of the General Staff in Soviet and Russian times has been a Ground Forces officer, and it will likely always be that way.

The Russian “joint” integration and targeting accomplishments over the past 3 months also served to facilitate additional VKS missions by clearing lanes for improved RF VKS Shahed-136/Geran-2 UAV and air-launched cruise missile attacks deeper into Ukraine. As described in five parts, the recent “joint” RF AF fires accomplishments no longer reflect the Russians’ stovepiped targeting and delivery issues that were witnessed throughout the first 2 years of the SMO. Such continued Russian military adaptations bode poorly for Ukraine.



UAF P-18 early warning radar (Russian name: “Terek,” Ukrainian: “Malachite,” NATO: “Spoon Rest”) (ODIN)

Addendum to five drastic improvements to RF AF tactical and operational fires

The initial stage of RF Northern Group of Forces’ Operation North Wind further validated the Troika’s observations and the drastic improvements to RF AF fires described above. In May 2024, the RF GF 6th CAA’s Army Artillery Group was observed several times using pattern-of-activity analysis to carefully examine Ukrainian industrial areas in southern Kharkiv Province as part of the AAG’s hunt for UAF CPs and logistics sites in Ukrainian rear areas. The Russians used different recon UAV missions at different angles, at different times of day, to search and contrast activity. The Russians then provided UAV videos of Iskander-M attacks on those sites which proved their proficiency against high-value targets in the UAF rear area. The Russians even posted some of their analysis, while bragging about their newly refined capabilities.



6th CAA Emblem

In RF GF tactical UAV videos from 17 May 2024, the Russians destroyed at least six UAF artillery assets in northern Kharkiv Oblast, all from RF GF Lancet-3 attacks. Those losses included two M777s (in two separate attacks), one BM-21 Grad MRL (multiple rocket launcher), one 155-mm Bogdan wheeled howitzer, and one 155-mm Krab self-propelled howitzer.

One of the M777s was initially discovered on a road in transit but, instead of attacking it at that time, as the RF GF likely would



Lancet-3 (ODIN)

have done a year before in 2023, the RF GF recon UAV followed the M777 to its firing position, which led to the discovery of other UAF positions. RF GF Lancet-3s then destroyed this newly arrived M777, its prime mover, and possibly other nearby UAF assets. The Krab howitzer (listed above) was well-concealed and camouflaged but was detected by Russian daytime use of an Orlan-30’s infrared lens, which detected the heated end of the 155-mm barrel (heated through use).

This tally of destroyed UAF artillery in northern Kharkiv Province did not include three additional UAF howitzers lost elsewhere in Ukraine on the same day. From 10 to 16 May 2024, as verified in RF AF UAV videos, the UAF on average lost a combination of at least five howitzers and MRLs per day, just under one mixed battery of howitzers and MRLs every day. Most were lost to Russian Lancet-3s, but the Russians also destroyed UAF artillery with Krasnopol laser-guided artillery rounds, unguided artillery, and at least one S-300—which represented a new development (as far as the Troika knew).

Although RF GF S-300s had been used extensively against strategic- and

operational-range targets throughout the SMO, Russian S-300s had not previously been known to attack tactical targets.

Of the five improvements to Russian fires described above, the only one of these improvements that the Troika did not observe in northern Kharkiv Province in early May 2024 was the fourth, “RF AF employ UMPK-guided bombs as CAS.” Russians used UMPK-guided bombs liberally in northern Kharkiv Province, especially in Vovchansk.

However, as far as the Troika knows, during Operation North Wind, UMPK-guided bombs were not used as CAS in close proximity to Russian troops. All other improvements were observed repeatedly.

Unmanned Aerial Systems (UAS) Impact on Fires Element of Combat Power

UAS recon and targeting summary from Troika Observations 2022 and 2023

Poor reconnaissance from the outset—UAS use

At the outset of the SMO, the RF AF was using primarily Orlan-10 UAVs for reconnaissance, with experience gained from their previous use in Donbas and Syria. In Syria in particular, the RF VKS and possibly the Ground Forces were flying these UAVs at operational ranges as early as fall 2015. However, the RF AF did not have that success initially in the SMO. The UAF downed these UAVs in large numbers in the first several months of the SMO using various methods, including kinetic and hacking into the UAVs to get them to



execute the emergency landing protocol.

The UAF was reporting two to six Orlan-10s downed per day from March to May 2022.

Among those, the RF AF lost a considerable amount of Orlan-10s over Odesa in April 2022. Social media accounts reported increased sightings of Orlan-10s and other UAVs such as the “Forpost” over the city. As losses mounted, the RF AF even began to commandeer Orlan-10 UAVs from the RF Ministry of Emergency Situations to fill the gaps.

The RF AF also attempted to augment the Orlan-10 UAVs with an array of other reconnaissance UAVs such as the “Forpost,” “Orion Pacer” “Merlin” “Horizont Air S-100,” “Supercam S450,” and even the “Kartograf” UAV (which has 12 camera lenses designed to create topographic terrain products.) Many of these UAVs were also downed along with the Orlan-10s.

Some success with UAS-assisted artillery strikes after 1 month in the SMO

Unlike Russia’s seemingly endless boasting of effective UAV-assisted fire missions in Donbas and Syria, the Russians only started advertising such success in Ukraine approximately 1 month after launching the SMO. Before their withdrawal from the Kyiv



Forpost-RU

region, RF GF units were finally having some success with UAV-assisted artillery strikes, although at the time it was unclear which RF GF UAV was being used; an Orlan-10, a Forpost, or

something else. The RF GF UAV presumably used a laser rangefinder to geolocate the target and adjust fire as needed.

The 2K25 Krasnopol laser-guided 152-mm artillery munition also appeared in Ukraine and was featured in use in Mariupol, north of Kyiv, and near Chernihiv. Despite these limited successes, the UAF continued to down Orlan-10 UAVs and even some Orlan-30 UAVs throughout spring and into the summer of 2022. Instead of UAV-assisted targeting and fires correction, the RF AF continued to fire unobserved at templated targets.

Reconnaissance for adjusting fires begins to improve—learning from the Ukrainians.

In early November 2022, a RF UAV unit from the “Donetsk People’s Republic” called Kaskad was seen in a video orchestrating laser-assisted fires and adjustments to artillery fires at Pavlivka near Vuhledar, in support of RF 155th Guards Naval Infantry and 40th Guards

Separate Naval Infantry Brigades attacks. The assisted fires had very good effects and destroyed 12 Ukrainian armored and other vehicles during 2 minutes of highlight video from attacks on the same Ukrainian formation.

Unlike most Russian UAV feeds, this was taken at a very high altitude directly over the target area, similar to a U.S. Predator feed. Most RF GF UAV laser-assisted fires are taken from lower altitudes at oblique angles. In the video, smaller quadcopter UAVs could be seen at lower altitudes, which may have been doing the actual laser engagements while the higher altitude UAV was cueing lower altitude UAVs and providing command and control. This operation looked very similar to the Ukrainian nongovernmental organization (NGO) Aerorozvidka (Аеророзвідка) effort. Over time, Russian UAV units admitted to taking Ukrainian TTPs and applying them to their own operations, often even watching Ukrainian UAV instructional videos on Telegram or YouTube in the process.

RF AF military grade and commercial UAS use for targeting increases and becomes more effective.

In 2023, the RF AF began to incorporate more military grade and commercial grade UAS for attacks and coordinating artillery



DJI Mavic 3T

and other fires. Commercial DJI Mavic quadcopters were used in early January to adjust artillery fire and in support of infantry, which resulted in the successful destruction of a Ukrainian platoon patrol base. The RF AF also continued to experiment with arming some of their military grade reconnaissance UAVs to attack UAVs. In January 2023, a Forpost-R UAV armed with a KAB-20S adjustable bomb (unintentionally) crashed into power lines in Belgorod Oblast in the RF. It was the second such crash of the UAV, with the earlier one occurring in July 2022. In April 2023, the RF MOD published a combat video of a modified Forpost UAV dropping KAB-20 GLONASS-corrected aerial bombs. At the start of the SMO, the RF AF had only 30 Forpost-R UAVs.

The early failures of the Orlan series of UAVs (Orlan-10 and Orlan-30) were replaced with growing success in teaming them with the ZALA Lancet to successfully engage targets in transit.

This adaptation is very significant: It took 14 months, but the RF AF finally hit a moving target over the horizon, beyond the LCC.

This adaptation also implied that the RF AF had improved its operational targeting. In April 2023, this combination successfully destroyed two S-300 launchers, one SA-15 Tor, and one Gepard air defense system. (Had the RF GF launched additional Lancets, they could have destroyed two additional S-300s that were travelling with the targeted S-300s. Subsequent pro-Ukrainian social media reported that the Gepard was not destroyed, because

the Lancet could not penetrate its armor, but no conclusive evidence was provided either way.)

It is also likely that a UAF SA-11 Buk was also attacked under similar circumstances. All the targets were in transit, which was when they were uniquely vulnerable. All these UAF air defense systems were very close to the LCC, with the S-300s unusually close to the LCC. From the terrain and weather, all three engagements appeared to be in Zaporizhziya Province. For the Orlan-10s or other RF AF observation UAVs to find these high-value targets (HVTs) and cue the Lancets, they needed to know that they were coming, which means that the RF AF likely had intel on the UAF systems' routes and march times.

Over the course of a year, from summer 2022 to summer 2023, the RF GF slowly improved their UAV operations and were then using redundant constellations of UAVs that mixed higher-altitude Orlan-10 or other observation UAVs with multiple quadcopter UAVs, and ZALA Lancets when ready to attack. Some of these improvements were no doubt from studying PMC Wagner and the UAF.

This adaptation translated into two of the Russians' early successes against the UAF counteroffensive, which were:

1. Orchestrating RF GF UAV constellations for deep attacks further north from the LCC for observing and correcting artillery and C2, as well as

2. The RF GF's large-scale use of the ZALA Lancet loitering terminal attack UAV as part of these UAV constellations.

North of the LCC, near Mala Tokmachka, UAF companies were choked by lanes

through their own UAF minefields, which were too narrow. Once one vehicle was hit by artillery or a ZALA Lancet, the other vehicles were unable to maneuver around and instead hit mines as well, all while under UAV observation and artillery attacks.

The UAF companies did not help themselves in at least two incidents by bunching their vehicles at dangerously close intervals. The vehicles were so close to one another that secondary explosions from one vehicle damaged other nearby UAF vehicles. It was the higher-altitude RF GF observation UAVs that observed and corrected artillery fire and coordinated ZALA Lancet loitering-munition UAV and quadcopter attacks. The Russians also built in some redundancy in case some key UAVs were hit kinetically or jammed by electronic warfare (EW). This redundancy included quadcopter-type UAVs.

The lesson for all brigade and battalion commanders is that effective, up-to-date



UAF SA-11 Buk

counter-UAS support is now as important as fire support and air defense. The not-so-new battalion-level and company-grade lesson is that combat starts once you are in the enemy's artillery range. That means good intervals between vehicles on alternating sides of the roads.

Russian reconnaissance UAVs begin appearing in larger numbers in late summer 2023



A "Gadfly" - example of one of the smaller UAVs used by RF.

In July 2023, as Russian forces grew in strength south of Bakhmut, UAF soldiers began to complain about the sudden appearance of large numbers of Russian UAVs, especially smaller off-the-shelf observation UAVs. At the same time, the Russian UAVs' observation-to-shooter time was greatly reduced, which surprised the UAF, many of whom were accustomed to as much as a half-hour delay in RF AF fire missions after being spotted by RF AF UAVs. RF AF in the Klishchiivka area, as seen elsewhere, were now using redundant constellations of high-altitude UAVs teamed with smaller off-the-shelf scout UAVs, all

cueing targets for ZALA Lancet terminal attack UAVs or RF AF artillery.

RF AF UAV artillery observers vastly improved their TTP and effects south of Bakhmut. Simultaneously, however, there was a huge dropoff in UAF deep UAV reconnaissance. The Troika suspected then that the RF AF south of Bakhmut had concentrated their counter-UAS efforts on their own rear areas to protect their artillery, supply, and C2. Earlier, RF AF counter-UAS regularly interfered with their own frontline RF AF UAV efforts. Complaints by Russian soldiers and mocking UAF comments had stopped. Earlier highlights of UAF UAV-facilitated deep attacks on Russian artillery, supply, and C2 east of Klishchiivka stopped in mid-July 2023.³

Deeper UAV coordinated attacks and combining operational range UAVs with ZALA Lancet, and missile capabilities, as well UAV-HUMINT targeting

In mid-August 2023, a RF AF missile engaged a Ukrainian train loaded with ammunition at the Mezheva Railway Station in UAF-controlled Dnipropetrovsk Province, 70 km from the frontline. The video showed a fire in a stationary train car at the station, then an explosion, and secondary detonations. Nearly 18 months into the war, this appeared to be one of the RF AF's few targeting successes in the UAF rear area against a time-sensitive target, not a depot or fixed facility.

It also showed that the RF AF was trying to team its deeper operational range UAVs with its missile capabilities, something that

the RF GF had done very well at tactical ranges.⁴

In mid- to late-September 2023, RF AF UAVs penetrated 70 km beyond the LCC, attacked a UAF airbase in Dnipropetrovsk Province, and destroyed a UAF MiG-29 on the ground. This RF GF attack was remarkable not for the damage, but because it involved a deep, likely RF GF observation UAV at an operational range, which cued a ZALA Lancet terminal attack (loitering munition) UAV. The ZALA Lancet has a 40-km range. This attack was at least 70 km north of the LCC. This attack was followed by a RF GF ZALA Lancet destroying a UAF MiG-29 at the Kulbakino Airfield near Mykolaiv, about 50 km from the front line.⁵

Until June 2023, one of the RF AF's biggest failures of the SMO was their inability to identify and track targets in the UAF's operational rear areas. RF GF had many successes in UAF tactical rear areas, but not deeper. Until summer 2023, almost all RF AF attacks on the UAF operational rear were against fixed targets, sometimes



Close-up screen shot of the moment of impact on a UAF MiG-29 from a RF Orlan-30–ZALA Lancet-3 70 km beyond FLOT

just templated (mirror-imaged) targets with no recent observation. Increasingly, Russian social media began showing RF AF observation UAVs deep in UAF rear areas either adjusting RF GF long-range, Tornado-S precision fires, or cueing a ZALA Lancet UAV.

The use of Orlan UAVs, Tornado-S MRLs, and a ZALA Lancet UAV at operational ranges seemed to indicate that this was an improved RF GF capability. The Troika had never observed any joint warfighting at such a low RF AF echelon. Most likely, this capability is internal to the RF GF. The RF GF had previously fought at operational ranges and demonstrated such capability in Syria, but not in Ukraine.

In September 2023, as shown on RF AF UAV video, the RF Air Forces (VVS) attacked a Ukrainian train loaded with about a battalion of UAF combat vehicles in the UAF operational rear area, somewhere in southern Ukraine (Zaporizhzhia or Donetsk Province). The munition for the attack missed the front of the train but was large enough to damage the locomotive and several vehicles loaded on flat cars. Some UAF vehicles on the train appeared to suffer secondary explosions. The train was stopped on a spur line and was possibly about to unload.

UAF soldiers throughout the length of the train could be seen running from the train after the strike. This appeared to be a RF Air Forces UMPK (Russian version of JDAM) and appeared to be fairly large, at least 500 kg (FAB-500M62, more than 1,000 lbs.). It was unknown whether the RF AF UAV which took the video was from the RF Air Forces or the RF Ground Forces. If



FAB-500

it was a RF GF UAV, it would have been an unprecedented Russian “joint” targeting success so far in the SMO. If it was a RF Air Forces UAV, it would present a new RF AF targeting capability operating in the UAF operational rear area.⁶

In November 2023, artillerymen from the UAF 128th Mountain Assault Brigade gathered for an awards formation on Artillery Day in Zarichne, Zaporizhzhia Province, 35 km north of the LCC. RF AF learned of the ceremony and observed from an observation RF GF UAV, which confirmed the target for an attack by what was either a RF GF Iskander-M ballistic missile or a Tornado-S guided missile.

The UAF 128th Mountain Assault Brigade artillery suffered at least 28 KIA and 53 WIA from this attack, which decimated the brigade's artillery leadership. The remarkable part of this RF AF operation is that the RF GF had a UAV over the target area to confirm earlier HUMINT. This was not the case on earlier such RF AF attacks, which resulted in poor, wasteful targeting. After more than a year and a half, the Russians had finally reached a point from

which they are rapidly improving their targeting.⁷

Orlan-30 increasingly used to coordinate missile attacks and acts as a repeater

In late fall 2023, RF GF missile attacks became increasingly common in UAF rear areas and often combined the Orlan-30 reconnaissance UAV with either the ZALA Lancet, the 300-mm Tornado-S MRL, or 152-mm laser precision-guided Krasnopol munitions. This was especially true in RF GF operations all over southern Zaporizhzhia and Kherson Provinces, and deep behind UAF lines to the north.

The RF GF conducted an Orlan-30 observed missile attack on a stationary UAF convoy of combat vehicles northeast of Zaporizhzhia city, again with Krasnopol munitions onto a UAF Leopard-2A6 near Robotyne. This was also conducted in a separate operation, onto a suspected UAF equipment warehouse in Chervony Mayak, northern Kherson Province. A RF GF Orlan-30 observation UAV loitering over a UAF airbase near Kryvyi Rih guided a RF GF ZALA Lancet onto a parked UAF Su-25. As shown on the Orlan-30 video, the ZALA Lancet crashed close enough to the Su-25 to set it on fire and destroy it.



UAF S-300PS air defense system



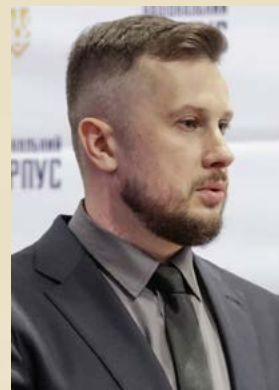
The aircraft was no doubt active, because it was obviously fueled.⁸ This target, like at another airbase, was 70 km from the RF AF LCC. Another RF GF Tornado-S attack destroyed a UAF S-300PS air defense system near Sokolivka, Mykolaiv Province, 70 km behind Dnipro River, which is the LCC in that area. In all attacks on UAF aircraft, the aircraft were fueled and active.

The RF GF Orlan-30 videos were not at oblique angles, but rather mostly from directly over the flight aprons, demonstrating a new reality that UAF rear areas as deep as 70 km were no longer uncontested, and that the RF GF had more than one tool to successfully engage at that range.⁹

The Orlan-30 UAV was ubiquitous to RF AF operations everywhere on the SMO battlefield at tactical and operational depths. Almost every other week, the Troika observed new and more dangerous Orlan-30 capabilities. These UAVs have a loiter time of 5 hours and feature a variety of photo, video, and thermal camera packages. Orlan-30s are often operated in constellations of three or more, which has proven to be extremely effective for observing and adjusting fires. A big advantage of the Orlan-30 is its repeater, which it uses to maintain connections with other Orlan-30s and other UAVs (FPVS, FPV-likes, and ZALA Lancets) even when they are facing ground-based EW.

One example was using the Orlan-30 as a repeater for a pair of FPV UAVs that loitered over roads together waiting for suitable targets. If no high-payoff UAF combat system or other UAF vehicle appeared before their battery levels drop

too low, the RF AF FPVs targeted any nearby UAF trenches. It is very difficult to shoot down smaller drones with small arms. UAF soldiers' only hope is that either the drone will miss or that counter-UAS will jam (out transmit) the Orlan repeater and override its controller instructions before the FPV UAV terminal dives into the trench. Most ominously, however, the Russian-made Orlan-30 was built and mass produced during post-February 2022



COL Biletskyi, Commander of the UAF 3rd Assault Brigade

SMO sanction restrictions and international technology export controls.

In late October 2023, COL Andrei Biletskyi, Commander of the UAF 3rd Assault Brigade, provided an interview which was featured in both Ukrainian and

Russian social media (even though it was in Ukrainian). COL Biletskyi described how Orlans operated day and night. Sometimes up to 11 of these UAVs “hover” in constellations within range of his brigade. Orlans cause significant problems for UAF artillery and armored vehicle attacks, and it is almost impossible to transport ammunition or carry out combat engineering work while under Orlan observation because of its ability to observe and adjust artillery fires. COL Biletskyi added that the UAF is unable to effectively jam the Orlan.

Redundancy in quantity of Orlans and in its satellite navigation systems (GLONASS,

GPS, Chinese BeiDou) make it unusually hard to jam.

(NOTE: Over-transmitting UHF satellite navigation signals is not difficult unless you do not have a specific frequency to jam or if it will also cause EW fratricide by jamming your own side's operations. This is an advantage of Russian systems that also use GPS.)

He said that you might be able to jam one or a few of the Orlans in a constellation, but there will always be more that you cannot jam. The Orlans can be shot down, but COL noted the UAF's significant shortage of air defense missiles and the impracticality of using MANPADs and SAMs on the thousands of RF AF UAVs. COL stated that his brigade had successfully shot down Orlans with SA-13 Strela-10s and SA-15 Tor, but the latter required skilled calculations.

(NOTE: COL did not specifically talk about the Orlan-30, but rather “Orlans.” However, his brigade would likely only know the

Orlan-30, which started appearing all over the battlefield in June 2023, especially near Klishchiivka, where his new brigade first entered combat in late May 2023. The UAF has had capabilities against the much older Orlan-10 since before the SMO.)

The significance of the multi-role Orlan-30 grows to include designating for a RF VKS cruise missile.

The examples below highlight the expanded use and capabilities of the Orlan-30

On 22 October 2023, a Russian social media video showed a RF AF Orlan-30 UAV observing and possibly lasing for a RF Air Forces (VVS) Mi-28NM Night Hunter attack helicopter firing LMUR (Izdeliye-305) guided missiles most likely near Avdiivka. The LMUR (Izdeliye-305) supposedly has a 14-km range. However, the optics in the Mi-28NM have been criticized by Russian attack helicopter crews throughout the SMO as not having the ability to identify targets at longer ranges.



Avdiivka during the battle for the city that began in October 2023. (National Police of Ukraine)



RF VVS attack helicopter crews prefer to observe and fire from behind the Russian LCC at higher-than-normal altitudes for attack helicopters. Fires assisted by the Orlan-30 from forward of the LCC give the Mi-28NM far more dangerous capabilities out to the LMUR's full range. This is especially true when the attack helicopter is at a higher altitude behind the Russian LCC, where it is more difficult for UAF air defenses to respond.

Also on 22 October 2023, Russian social media showed a RF AF Orlan-30 UAV observation of two RF VVS FAB-500M62 aerial bomb attacks on two high-rise buildings in north Avdiivka, near the coke plant and "the Terikon" (the large, manmade mine-spoil hill). Most likely, the RF AF attacked and dropped the two high-rise apartment buildings because they provided possible UAF observation of RF GF 1st Army Corps attacks north-northwest of the city toward the Terikon. The Orlan-30 remained in the area and collected BDA. The strikes were on target and the 1,000-lb bombs demolished both buildings.

On 25 October 2023, Russian social media showed Orlan-30 recon video of a UAF logistics depot in a civilian industrial warehouse area near Lyman, at least 15 km west of the LCC in northernmost Donetsk Province (west of Kreminna, northeast of Sloviansk). Just before a Russian missile (NFI) attack, the Orlan-30 UAV recorded the arrival of a UAF SA-8 Osa-AK air defense system to the location. A UAF EW station located next to the warehouse was also videoed. However, it

apparently did not interfere with the Orlan-30 UAV.

Also on 25 October 2023, a Russian social media video showed an Orlan-30 coordinating a combined 300-mm Tornado-S MRLS guided missile and 122-mm Tornado-G unguided MRLS section (at least two Tornado-G MRLs) attack on UAF locations at dusk along the west bank of the Dnipro River in northern Kherson Province.

This was the first time the Troika had witnessed the use of an Orlan-30 UAV to observe and coordinate an attack with two munitions.¹⁰

Finally, in November 2023, a video appeared showing a RF AF Orlan-30 UAV lasing a building that was reportedly housing UAF personnel for a successful RF Aerospace Forces Kh-38ML air-launched cruise missile attack. Due to the Orlan-30's laser designator, the precision-guided munition (PGM) could be aimed at the target with minimal deviation. It was unclear if the Orlan-30 was owned by the RF Aerospace Forces or Ground Forces.

However, this was the first time the Troika had seen an Orlan-30 "lase" for a RF Aerospace Forces air-launched cruise missile (ALCM).

This would have been unbelievable just a few months earlier. The RF AF had been incapable of such coordination.¹¹

Troika October 2023 assessment of UAV role in the evolution of Russian artillery TTPs since the start of the SMO

Many RF GF artillery units have mastered UAV-observed and adjusted fires, to include laser-guided Krasnopol fires, and can also integrate loitering munition (ZALA Lancet, FPV, and FPV like) UAVs. RF GF artillery reconnaissance units have ZALA Lancets (which they call "barrage munitions") as well as other unit-made or unit-modified terminal-attack FPV or FPV-like UAVs which they employ for counterbattery in coordination with counterbattery fires. The RF GF's inventory of Zoopark counterbattery radars has suffered high losses.

For the Russians, loitering munitions have proven an effective way to protect their counterbattery sections from exposure to Ukrainian counterfire radars, or at least until key moments in the counterbattery fight. RF GF batteries fire Krasnopol laser-guided munitions, but such precision-guided munitions are low in quantity and are delivered through specialized transport to the firing batteries, many times singularly in non-tactical vehicles.

One additional tactical artillery improvement is BDA. Unlike earlier in the SMO, RF GF artillery UAVs now monitor and revisit targets to assure effects and will re-attack missed targets, something that was almost unheard of in the SMO's first year. Now it is normal Russian practice.



Krasnopol laser-guided munition

Improving at operational ranges

As late as June 2023, Russian targeting beyond tactical ranges was mostly against fixed, sometimes templated, targets. Target templating was heavily influenced by mirror imaging. For example, Russian artillery units frequently attacked schools because that was where Soviet and Russian forces would normally put their CPs (buildings with big, open rooms, in the middle of a village where CPs could easily disperse antennas and vehicles). Since June 2023, Russian UAV-observed targeting at operational levels steadily improved at operational ranges, although not uniformly.

The RF GF now uses deep UAV observation out to at least 70 km. UAF rear areas that previously had not been threatened, except by indiscriminate or templated fire missions, or based on information from HUMINT sources, are now contested. Until as late as June 2023, the RF GF had not hit any moving targets at operational ranges in Ukraine (such as HIMARS launchers and ammunition, or CPs).



Now RF GF regularly fly their Orlan-30 UAVs to 70 km behind the LCC to locate and track targets until they can be serviced by RF AF or RF GF long-range fires or ZALA Lancet terminal-attack munitions.

Also, Russian artillery now makes a more serious effort to conduct BDA at operational ranges and to monitor or revisit attacked targets to confirm or assess damage with their Orlan-30 UAVs.

Overall, Russian long-range fires beyond operational ranges, such as Iskander-M ballistic missiles, are highly accurate, but unobserved targeting remains very wasteful.¹²

Troika overall review of the UAV situation in Ukraine by December 2023

Due to the proliferation of UAV technologies and the sheer UAV volume in Ukraine, it is no longer just a matter of getting more UAF UAVs over RF AF formations, but it is also imperative to remove the RF AF's UAVs loitering over UAF formations. Because of UAV



A Ukrainian electronic-warfare system. (Ukrainian Defense Ministry)

technologies, both sides can now see each other mass, both day and night, and then disrupt and attack. Poor visibility weather seems the only limitation on UAVs' all-seeing capability. This was not always the case.

Early in the SMO, Russian mass was negated or undermined by UAF UAV reconnaissance, which guided UAF indirect fire and provided early warning to UAF special operations forces (SOF) and maneuver. Due to both Russian civil society NGO support and Russian defense industry innovation and production, the Russians caught up and, in some areas, passed the UAF, both in quality and quantity of UAVs. This has manifested itself in Ukraine in terms of the range and time-over-target of UAV reconnaissance, as well as the increasing lethality of UAV attacks.

Counter-UAS EW is never a permanent solution. Due to countermeasures and radio frequency fratricide, EW is always temporary. RF Dnipro Group of Forces learned this lesson the hard way at UAF beachheads in southern Kherson Province. Like landmines and chemical weapons, EW is indiscriminate and affects friendlies as well as the enemy. To use EW against such a wide variety of enemy UAV threats often requires forfeiting friendly use of many commercial off-the-shelf (COTS) UAVs, navigation systems, and communications, most of which use the same parts of the UHF spectrum. There are also other EW workarounds such as airborne repeaters, target acquisition technologies, and encrypted signals that provide temporary solutions. Sometimes these are very local answers, specific to a particular situation.



A critical component of counter-UAV TTP is kinetic. To contend with the high quantity and wide range of Russian UAV threats, UAVs which can kill other UAVs are needed. Counter-UAV UAV operators must decipher and discriminate "whose UAVs are whose," and need access to search systems which can rapidly target the next enemy UAV nearby. The skies over Ukrainian battlefields are crowded. As the UAF 3rd Assault Brigade Commander explained, there are sometimes constellations of up to 20 UAVs operating in different roles at different altitudes over both opposing sides. He described what sounds like swarms of bees that can be heard on videos from the front lines. UAV-on-UAV dogfights are already happening very crudely over battlefields in Ukraine. FPV and FPV-like UAVs from both sides sometimes hunt and ram one another. These dangerous endeavors frequently end in fratricide and losses of key systems. In the future, whichever side can use its purpose-built counter-UAV UAVs to clear out the enemy's higher altitude observation and communications UAVs, lower altitude FPV-like UAVs, and loitering munitions, will have the advantage. UAV supremacy is already a key to tactical success.¹³

UAS recon and targeting summary 1 January to 30 April 2024

Fires—Russia improves in military grade and FPV UAV-supported targeting and strikes against Ukrainian systems and units.

Since summer 2023, the RF AF gradually increased its proficiency in UAV-assisted targeting and delivery TTPs, increasingly

teaming up military-grade reconnaissance UAVs with artillery delivery systems, Iskander-M ballistic missiles and other cruise missiles, ZALA lancet attack UAVs, and VKS aircraft carrying UMPK-guided bombs. The RF AF also improved its proficiency in using FPV UAVs teamed with other commercial quadcopter UAVs to strike Ukrainian equipment and personnel. Prior to March 2024, the Troika never referred to Russian "fires" but rather artillery or rocket artillery attacks. All the Russians' early targeting efforts were very stovepiped, separating intel, ops, and fire support at all the different levels of Russian command. We know this from Russian complaints and criticism of their own untimely targeting systems.

Since fall 2023, however, it has been clear that some AAGs at the CAAs and 1st GTA were refining their TTPs and networking with not just the AAGs' cannon and rocket artillery, but also RF GF Iskander-M fires and RF Aerospace Forces UMPK attacks. These improvements were speeding up the Russian targeting processes and added sophistication such as pattern-of-life (pattern-of-activity) analysis of targets and BDA (which the Russians seldom did for the first 18 months of the SMO). On 5 March 2024, RF GF UAV-observed Iskander-M ballistic missile mission reportedly destroyed a U.S.-made and -provided M142 HIMARS in Donetsk Province. Russian social media sites claimed that this video was the first 100 percent visual confirmation of destruction of a target that they had unsuccessfully tracked for 18 months.



This was only the second time that the Troika had noted RF GF in the SMO using a UAV to observe and adjust an Iskander-M mission. On 18 March 2024, UAV footage showed a RF GF 2A65 towed 152-mm battery / RF GF 238th Artillery Brigade / 8th GCAA firing at a UAF target near Krasnohorivka, west of Donetsk. A 238th Artillery Brigade Orlan-10 UAV detected the target, an Orlan-30 UAV with a laser designator, then illuminated the target, which was then attacked with a Krasnopol laser-guided precision-guided munition (similar to U.S.-made Copperhead or Excalibur) fired from a 2A65 howitzer. Another example occurred on 7 April 2024, when RF GF UAV videos showed the destruction of a UAF ammunition depot near Udachnoye (15 km west-southwest of Pokrovsk), probably with a Tornado-S 300-mm MRL, while UAF logistics vehicles were present to unload or load. (The Russian attack ammunition used was not mentioned.)

Videos also showed how RF GF observation UAVs had tracked UAV vehicle supply and UAF soldier unloading activity at the ammo depot, which confirmed the target. The UAF depot and the trucks around it were completely destroyed. The Russians, however, had a hard limit of just 70 km beyond the LCC for these attacks. The Troika was uncertain why, but suspected that this was a technical limitation on their RF GF Orlan-30 and other observation UAV repeater strings, or that it was a limitation on their redundant over-the-horizon mast antennas for UHF backup. The Troika expected (and wrote) that this 70-km Russian deep fires limitation was probably temporary, and that



2A65 howitzer

proved to be true as the range of the attacks increased past 70 km, over time, to 100 km. The attack range reached further into the UAF's rear area and attacked Western-supplied systems such as HIMARs, S-300, and Patriot, which had appeared to be untouchable previously.

The return of the Orlan-10 reconnaissance UAV in larger numbers to complement the Orlan-30 UAVs operating in the battlespace was one of the contributing factors to the Russian success, along with extensive effective use of two other reconnaissance UAVs, the ZALA 421-16E2 and the Supercam S350. The RF AF also embraced UAV constellations, including repeater UAVs for improved connectivity and redundancy.¹⁴

By April 2024, Russian reconnaissance UAVs were flying regularly over Odesa. At least one, which was later shot down by UAF aircraft, was an Orlan-10, flying 200 km from a ground control station in RF-occupied Crimea. Other adaptations included:

1. Using reconnaissance UAVs to search for targets based on ELINT and, after confirmation, cueing RF VKS-delivered cruise missile fires (a level of sophistication that the Troika had not previously seen)

2. Operating all types of UAVs increasingly at night, using thermal imaging devices.

Advanced targeting and multiple delivery munitions example—attack on a UAF forward arming and refueling point (FARP) on 13 March 2024

A RF GF observation UAV located three UAF Mi-17V-5 helicopters with their engines running on the ground near Novopavlovka (42 km north of the LCC near Urozhaine, 30 km southwest of Pokrovsk), in easternmost Dnepropetrovsk Province. Russians attacked the FARP first with **cluster munition most likely**

delivered by a Tornado-S 300-mm MRL, which damaged at least two of three helicopters. A third UAF Mi-17V-5 at the FARP quickly took off and escaped. **The two remaining Ukrainian**

helicopters were then finished off by rocket artillery and what appeared to be a Lancet-3 attack UAV. The UAF 12th Army Aviation Brigade later published a message about the deaths of two of its pilots.

After the Mi-17V-5s were destroyed, the RF GF observation UAV followed an escaping UAF refueling truck to a hangar in neighboring Novopavlovka. The RF GF observation UAV remained on station until an **Su-34 delivered an unidentified UMPK-guided bomb** which hit the building. BDA at the hangar was unclear.

The UMPK target was approximately 46 km beyond the Russian LCC. This second attack may have solved a mystery and the answer is not good for Ukraine.

To the Troika, it was remarkable that a RF GF UAV, which initially called in what appeared to be RF GF Tornado-S delivered cluster-bomb fires, and then a RF GF probable Lancet-3, could also then coordinate a UMPK-guided bomb strike. The debate within the Troika for months was just how “joint” Russian observation UAVs and their targeting had become. Typically, Russian targeting systems are very stovepiped and most operational-

range RF GF observation UAVs are in the service of RF GF artillery units.

RF GF artillery observation UAV operators talk to RF GF artillery CPs which have access to artillery fires, mortars,

and Lancet-3s, as well as other attack UAVs. But RF GF artillery targeting systems do not even talk regularly to maneuver units (to Russians: “combined arms” units), let alone RF Aerospace Forces targeting CPs. Over the past year, the Troika has read and heard plenty of Russian complaints about their slow, stovepiped artillery targeting systems.¹⁵

However, now it appears confirmed that RF GF artillery CPs now have quick, on-call access to available RF Aerospace Forces fires. Recent Russian targeting successes such as attacking UAF artillery units with



MI-17V

UMPK-guided bombs seemed to indicate this.

(NOTE: The Russian concept of “joint” is not like ours. The RF Armed Forces are a Ground Forces-dominated military and their application of “joint” is more about what the RF Aerospace Forces and RF Navy can do to support the RF Ground Forces’ commands’ missions.)

In the first 2 weeks of March 2024, Russian fires destroyed a HIMARS, a NASAMS launcher, two Patriot launchers, and now two Mi-17V-5s at a FARP. These were not lucky targets of opportunity. The Russians had

been improving their deep targeting capability to operational range since at least September 2023. At that time, the Troika first noticed the RF GF

successfully teaming their Orlan-30s, which typically intrude to 70 km beyond the Russian LCC, with Tornado-S rocket artillery and Lancet-3 attack UAVs. Later, as now seemingly confirmed, they were teamed with RF Aerospace Forces’ UMPK attacks. Most recently, the RF GF observation UAVs have also been able to call in Iskander-M ballistic missiles as well. Such accomplishments are oddly not unprecedented. The RF AF experimented



NASAMS launcher

with and conducted some operational deep attacks in Syria as part of what they called their recon-strike complex (разведывательно-ударный комплекс, РУК), something they were supposedly perfecting before 2022.

It took 2 years, but the RF AF finally integrated their “joint” targeting and are effectively conducting deep battle out to about 70 km beyond their LCC, the apparent maximum range of most of their observation UAVs. The key to this, and even the Russians’ single-point-of-failure, is their continued ability to confidently infiltrate their observation UAVs deep behind Ukrainian lines and operate there, out to 70 km in the UAF rear.

Killing their observation UAVs is not as simple as it might seem because the Russians build constellations of UAVs to support their missions. This includes redundancy of functions and extra observation UAVs with repeaters both for dependable communications and security, as well as for the ability to immediately replace key systems when they are low on power or lost. For now, it does not appear that the UAF or its partners have an answer to these recent RF GF targeting improvements and this rapidly changing operational environment.¹⁶

UMPK Attacks: an in-depth look

On 1 March 2023, a UAV-observed UMPK was used to destroy a UAF pontoon bridge across the Oskil River between Osinovo and Kupyansk-Vuzlovyi (7 km south of downtown Kupyansk). (The pontoon bridge was next to a destroyed railway bridge



AS-90 self-propelled howitzer

which was likely taken out by Ukrainians early in the SMO in 2022.) On 8 March 2023, a RF AF UAV detected and observed a UAF British-made 155-mm AS-90 self-propelled howitzer gun and its shelter (hide site) near Novoukrainka, 11 km northwest of Vuhledar, in southern Donetsk Province. The RF AF later attacked and destroyed the AS-90 with a UMPK bomb.

The Troika had not previously seen the RF AF service such a tactical target (in this case a UAF self-propelled howitzer) with a UMPK. This confirms better RF AF “joint” capability of clearing fires, faster targeting, and the Russians’ greater confidence in UMPK accuracy and timeliness. Later that same day, closer to the LCC southwest of the earlier UMPK attack, RF AF UAV video showed a near simultaneous arrival and detonation of four UMPK-guided FAB-250s (520 lbs. HE) into a series of UAF trench lines and defenses. All four bombs landed precisely in the trenches, something that would not have happened a year before. Over the course of the SMO, RF Aerospace Forces gradually improved the efficiency and accuracy of their UMPK attacks, especially once teamed with RF AF observation UAVs, which the Troika first

noted in October 2023. The RF AF are now using these bombs to attack targets that previously were typically engaged with artillery or attack drones such as the Lancet-3.

Adaptation—winged guidance kits

To improve the accuracy of Soviet era “dumb” bombs, winged guidance kits were added to provide more stabilized flight, and later GLONASS modules were incorporated and improved for increased accuracy. Other improvements included a new type of controlled reception pattern antenna (CRPA) Kometa-M satellite receiver to protect the system against attempts to interfere with its satellite navigation.

The receiver is equipped with a new 8-beam antenna system, capable of simultaneously neutralizing seven sources of interference. This provides the UMPK with an even higher level of protection against EW suppression attempts than previous versions of Kometa-M satellite receivers seen on the glide kits. Russian analysts also pointed out that these new receivers could also be installed in Russian-assembled, Russian-made Shahed-136s (Geran-2s) and other Russian-made UAVs. These reconfigured bombs are lofted at high speeds and high altitudes from Su-34 and Su-35 aircraft at release points as far away as 60 km behind the LCC.

UAV observation

From fall 2023 until early 2024, almost all RF AF observation of UMPK or Russian long-range fires was always from higher

altitudes, and they were almost always observed by Orlan-30 UAVs. Additional UAV models were then introduced to observe UMPK attacks, many times loitering at lower altitudes and offset from the target (not flying almost directly over it). This may be for the Russian observation UAVs' survivability as well as sometimes for better oblique imagery.

Due to the necessary communication range back to the ground control stations, the lower altitudes probably indicate the Russians' use of UAV-borne repeaters between the observation UAVs and their ground control. (Observation UAVs deep over enemy territory are often at higher

altitudes to maintain direct line-of-sight with their controllers.) Repeaters also assist in maintaining a more stable signal in a saturated EW environment. This may be yet another Russian adaptation to improving their UMPK TTPs, a development not even imaginable a year before (fall 2022). Furthermore, a variety of redundant UAVs for the same capability is important to overall success. This is because certain technologies in key UAVs can become temporarily compromised by enemy adaptation, as the Russians suffered at various times with the Orlan-10 and other UAS technologies in 2022 and 2023. Overdependence on one system builds a single point of failure. According to

Ukrainian EW experts, the two most common observation UAV models now seen are the ZALA 421-16 and Supercam S350 UAVs. Both UAVs are quiet, utilize electric motors—in contrast to the Orlan-30's gasoline-powered engine—and they have an average loiter time of 4 hours. Both have high definition (HD) gyro-stabilized photo and video camera

packages, and thermal-imaging cameras. The ZALA 421-16 has a video transmission range of 25 km, which doubles to 50 km on the Supercam S350.

A new take on the guided aerial bomb

The first photos of the new Russian Universal Interspecific Glide Ammunition (UMPB)

also appeared on social media. The full name is UMPB D-30SN (*УМПС Д-30СН расшифровывается как Универсальный Межвидовой Планирующий Боеприпас*). The ammunition combines a FAB-250 with a Kometa-M satellite receiver and better flight stability and is capable of being launched both by aviation (like a UMPK, Russian version of JDAM) or by the Tornado-S 300-mm MRLS, in which case the bomb is equipped with a rocket-assisted projectile. Russian analysts compared the UMPB D-30SN to the U.S.-made GBU-39/B SDB bomb, which the Russians noted can be air



delivered or fired by a HIMARS MLRS with rocket assistance.

Countering the UMPK attacks

The UAF continued to struggle with finding a response to the Russians' UMPK capability. The volume of Russian UMPK attacks (30 to 50 bombs per day in key areas) has been staggering and Russia has plenty of Soviet-era dumb bombs in their inventories. The long-range release point (up to 60 km behind the LCC), the bombs' size (from 500 lbs. to 3,000+ lbs.) and the system's improved accuracy have forced the UAF to take risks in trying to counter these attacks, including moving air defense artillery (ADA) systems such as some of their few Patriot launchers very close to the LCC. The RF Aerospace Forces added to their UMPK threat and began dropping UMPK cluster bombs; UAV BDA videos showed good apparent bomb effects. Reporting of 17 RF VKS Su-34 aircraft downed over the period of 2 weeks and at longer ranges is a clear indicator of the emphasis the UAF has placed on negating these improved, deadly UMPK attacks.

UAS ZALA Lancet munitions summary 2022 and 2023

The ZALA Lancet loitering munition

The Troika saw little of the ZALA Lancet loitering munitions early in the SMO. This weapon made its debut during tests in



Patriot missile launcher

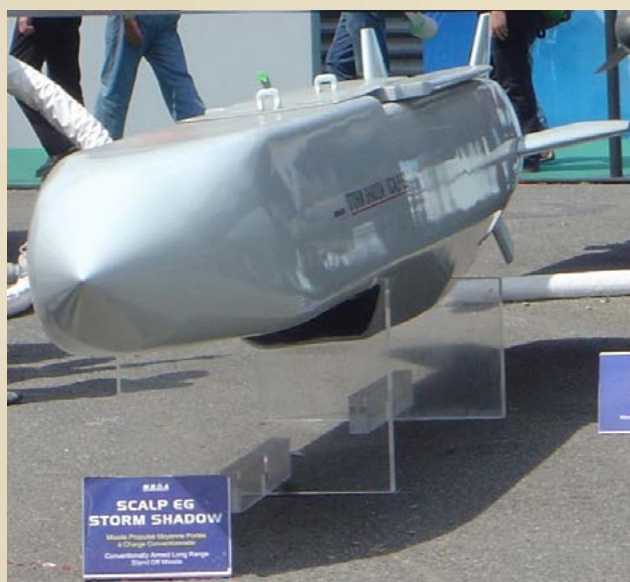
Syria in 2019–2020. However, it wasn't until late spring 2022 that it appeared in Ukraine, and had few relevant effects until summer 2022. By that time, some RF GF units had received the ZALA Lancet launchers that they left back at home station and requested be sent forward months earlier. Ironically, the RF GF had ZALA Lancets in their inventory for years but never trained on them. By fall 2022, however, the ZALA Lancet was regarded by UAF artillerymen as the Russians' best counterbattery weapon. The Russians' limited supplies of 152-mm ammo was most likely a big reason for the RF MOD's and AF's renewed emphasis on improvements to the ZALA Lancet and its increased production.

To RF MOD and RF AF, the ZALA Lancet partially replaced the 152-mm shells that Russia could not produce, refurbish, or buy enough of abroad in 2022 and 2023. Furthermore, the UAF's Storm Shadow/SCALP was able to resume attacks on RF AF Russian logistics. After HIMARS arrived in summer 2022, Russia pulled their ammo depots back out of HIMARS range. After

Storm Shadow arrived, Ukraine began hitting multiple, previously unreachable, ammo depots, which further strained RF AF logistics and accounted for additional shortages of 152-mm shells, which were already low. In early August 2022, for example, Ukrainian forces destroyed two Russian Lancet kamikaze drones that were used to attack Ukrainian positions in Mykolaiv Oblast.

Improved ZALA Lancet

The new version of the ZALA Lancet first appeared in Ukraine in early June 2023.



The earlier version of the ZALA Lancet was underpowered and, because of that, underarmed. The Troika had seen at least a dozen photos of ZALA Lancets stuck in camouflage nets, or in chain-link or wire fencing placed over UAF artillery and other systems. The earlier version was also susceptible to tree branches that would knock them off course in their terminal descent. The earlier understrength

warhead also had little to no effect on most armored systems. Sometimes it had poor effects even in direct hits on towed howitzers. If camouflage nets or fencing was several meters above the systems, the earlier ZALA Lancet's detonation sometimes had a minimal effect, if it detonated at all. The initial main improvement to the ZALA Lancet was a new, more powerful engine. Also, by summer 2023, online think tank analysts believed that a new, improved ZALA Lancet loitering munition UAV warhead was introduced in Ukraine. Earlier versions of the warhead could not penetrate the armor of a Gepard air defense system or most modern tanks. An improved (better powered, better armed) ZALA Lancet destroyed a UAF Leopard-2A6 by properly targeting the ammunition compartment to the rear of the turret. The UAF tank crew (thankfully) survived.

Other ZALA Lancet attacks videoed and shared on Russian social media in July 2023 were not as successful. An improved ZALA Lancet foolishly attacked the front of a moving Leopard-2A6 from the side and merely damaged it, although the extent of damage was unknown. The crew was unhurt. Another ZALA Lancet attacked a moving M2 Bradley and hit the right, rear corner of the infantry fighting vehicle (IFV) and damaged it, but not to the point of being non-mission capable. The M2 Bradley's turret was unharmed. The two damaged targets (the Leo-2 and M2) were probably operator errors, despite higher-altitude observation UAVs and perfect weather and terrain conditions. Both ZALA Lancets attacked the combat vehicles'

sides and were not aimed at vulnerable points on either UAF vehicle. Like the first ZALA Lancet described above, UAF terminal-attack UAVs almost always attack moving vehicles from the rear or the front.

Despite better terminal-attack UAVs, it appears that the RF AF are still slow to share better TTPs and lessons learned across their force, whether from other Russians, the UAF, or others' (such as PMC Wagner's) successes. Institutional training remains an overall RF GF and VDV weakness. Another Russian weakness noticed by Ukrainian analysts was that in Russian engagements with Leopard-2s and M2 Bradleys in Zaporizhzhia Province, the RF AF units' sole means of defeat were ZALA Lancet UAVs. In several reported and videoed engagements, RF AF were never witnessed calling in artillery and adjusting fire on UAF targets, despite the



M2 Bradleys

availability of higher altitude observation UAVs and excellent weather conditions. This was likely another indicator of deficient unit training and combined arms integration.

Improved ZALA Lancet target acquisition system

Videos in late October 2023 showed at least two successful, improved ZALA Lancet UAV attacks using the loitering munition's new target acquisition system. In the videos, one successful attack was on a UAF Czech-made 152-mm wheeled self-propelled DANA. The other was on a UAF T64BV. In each video, "target acquired" and a green target acquisition mark illuminated on the ZALA Lancet operators' screen just before the ZALA Lancets' terminal dive. This appears to be a means to thwart last-second counter-UAS EW by locking the ZALA Lancet on its terminal dive via video / photo recognition. Previously, ZALA Lancet attacks were sometimes interfered with in the final seconds which resulted in near misses, especially if the target was moving.

Troika assessment of ZALA Lancet since June 2023

Earlier versions of the ZALA Lancet were underpowered, and for that reason were too slow and susceptible to ground fire, tree branches, and even camo nets. Warheads on earlier versions were too small and had a limited 40-km range. Since June 2023, the improved ZALA Lancet is faster, more lethal, and has destroyed targets at a 70-km range. In September 2023, cued by a RF AF observation UAV, a ZALA Lancet hit a target at 70+ km from the LCC. This was the first time the Troika had seen a Lancet strike at that range, since the ZALA Lancet previous range was 40 km. This was followed by another long-range ZALA Lancet strike in October 2023,



in which a RF GF Orlan-30 observation UAV loitering over a UAF airbase near Kryvyi Rih guided a RF GF ZALA Lancet terminal-attack UAV onto a parked UAF Su-25. As shown on the Orlan-30 video, the ZALA Lancet crashed close enough to the Su-25 to set it on fire and destroy it. The aircraft was no doubt active because it was obviously fueled. This target, like at another airbase, was 70 km from the RF AF LCC. In March 2024, RF GF UAV videos showed Lancet-3 UAVs attacking and destroying a UAF M109 155-mm self-propelled howitzer and a UAF 2S1 122-mm Gvozdika self-propelled howitzer on the north bank of the Dnipro in UAF-controlled Kherson Province.



ST-68U target detection and tracking radar

The key to Russian Lancet-3 counter-battery successes is the RF GF's ability to get their observation UAVs over UAF-controlled northern Kherson Province to identify and confirm targets. Also in March 2024, Lancet strikes reportedly destroyed a ST-68U target detection and tracking radar near the village of Vovna in the Sumy region and an AN/MPQ-64 Sentinel radar of the NASAMS system in the Kherson region. Three P-18 Malachite radars were also reportedly destroyed in different areas, as well as S-300PS air defense missile launchers and their radars. On 21 April 2024, RF VDV 104th Guards Division UAV footage showed its ZALA

Lancet-3s attacking and destroying three UAF self-propelled howitzers on the north side of the Dnipro River. Nine km deep behind the LCC appears to be normal hunting range area for RF AF observation UAV Lancet-3 counterbattery efforts. When teamed with high altitude observation UAVs, it has been effective and provided another threat to UAF operational rear areas.

Fires = Commercial grade UAV and FPV UAV Examples

Successful RF AF UAV operations at Krynki

RF AF UAV operators' abilities and their accuracy hunting and attacking UAF marines' small boats on the Dnipro River and its tributaries near

Krynki continued to improve in 2024. RF AF UAVs dropping grenades repeatedly came close to hitting small UAF inflatable rubber boats carrying marines or supplies. In one, a Russian quadcopter damaged a UAF marine boat and forced it to a nearby shore. After damaging the boat and pinning down the UAF marines on the shore, the Russian UAV was able to reload and returned to destroy the boat which still carried the UAF marines' gear and ammunition. A later video showed a similar situation.¹⁷ There was regular Russian UAV footage near Krynki of RF AF grenade-dropping UAVs successfully attacking UAF naval infantry resupply boats. They inflicted constant damage on UAF logistics,



Kherson the day after the destruction of the Kakhovka Dam (State Emergency Services Ukraine)

especially on the tributaries between the southside of the Dnipro River and the UAF marines' beachheads closest to Krynki. This included video of RF AF UAV nighttime attacks on UAF marine small boats near Krynki. In the videos, at least three boats were destroyed and one boat possibly damaged. None of the UAF marines' boats were manned during the attacks, and all appeared to be tied up, close to shore in the tributaries parallel to the Dnipro River's south bank. For months, the UAF marines at Krynki benefited from the fact that Russian UAV units kept rotating and thus never developed familiarity with the area. Maps are not particularly helpful because after the Kakhovka Dam was destroyed in June 2023, the deluge of water and flooding changed some of the patterns and contours of the Dnipro River and its tributaries.

However, since December 2023, the RF AF UAV teams have consistently improved, given up on attacking UAF boats in the actual Dnipro, or on the north bank, and instead concentrated on the tributaries and UAF landings where the UAF boats are

more vulnerable and where RF AF UAV teams have done some real damage.

The RF AF UAV operations at Krynki were so successful that the UAF conducted a high precision strike on a building that a Russian UAV operator and milblogger "Moisey" was using for his operations in Krynki, Kherson Province. Videos of the strike were posted extensively on Russian and Ukrainian social media. According to Russian social media, "Moisey" was one of the most experienced UAV operators in Ukraine and allegedly responsible for the destruction of 31 UAF small transport boats and 498 UAF troops KIA in Krynki. According to a Ukrainian EW military analyst, like counterbattery warfare in artillery, there is ongoing warfare against UAV pilots. Each side is attempting to track down the most experienced UAV pilots and eliminate them. There are many types of commercial UAVs being flown by both sides. However, the more sophisticated FPV UAVs require extensive operator training to become proficient. This training can range from several weeks to several months, depending on the FPV UAV type and the experience of the operator. The UAF and RF AF both complain of shortages of these experienced UAV operators.



155th Naval Infantry Brigade attack— FPV UAVs teamed with artillery

On 7 February 2024, Russian UAV videos showed the RF GF 155th Naval Infantry Brigade's initially successful attack from south of Novomykhailivka into the south part of the town. RF 155th Guards marines initially advanced 2.5 km and seemingly stunned the UAF defenders.



155th Naval Infantry Brigade
Emblem

The RF 155th Naval Infantry Brigade's assault followed furious preparatory artillery fire. Russian FPV and other drones then entered and attacked UAF trenches under the cover of smoke screens and fire from RF marine BMP-3s, which pushed the UAF defenders back north, deeper into the village. Russian military social media claimed that the RF marines' ground advance was coordinated from the air by Russian UAV feed. Russians were very proud of how the attack was organized and competently commanded.¹⁸

RF AF FPV UAV attacks — against M1A1 tanks

On 26 February 2024, according to posted video and reporting from various Russian milbloggers, the Air Reconnaissance Platoon of the RF GF 15th Separate MRB, 2nd Guards Combined Arms Army (GCAA), successfully attacked the M1A1 tank belonging to the UAF's 47th Separate Mech Brigade in the vicinity of Avdiivka. The tank was previously tracked by a RF AF Zala reconnaissance UAV in the vicinity

of Berychi, 2 km west of Stepove. One RF milblogger claimed that the attack was conducted using a "Ghoul" FPV UAV. It was the first M1A1 to be successfully attacked.¹⁹ This was followed on 3 March 2024 by the disabling of a second UAF 47th Mech Brigade M1A1SA Abrams, most likely by an antitank mine near Berdychi (2 km west of Stepove). The tank's left track was broken. A UAF M1150 Assault Breacher combat engineering vehicle was sent to help recover the M1A1SA, but it was disabled by Russian UAV attacks. Both the M1A1SA and the M1150 were abandoned and then attacked by RF GF Ghoul grenade-dropping UAVs and FPV attack drones. The UAF M1A1SA and M1150 were both reportedly destroyed. The hatches on both vehicles were left open when they were abandoned. Both vehicles were later filmed by UAVs and shown on fire.



'Ghoul' FPV UAV

Artillery Impact on Fires Element of Combat Power

Russian indirect fires work if Russian logistics work

Russian artillery commands began Russia's third invasion of Ukraine in a 10-year period overconfident and arrogantly clinging to Soviet TTPs, most likely due to their earlier 2014–2015 experience in Donbas and their recent experience in Syria. However, in

2014–2015, most Russian artillery supporting RF AF operations in Donbas was fired from political sanctuary back in Russia, where Ukrainians were reluctant to strike or return fire due to political reasons and possible consequences. The disorganized 2014–2015 Ukrainian forces also lacked the TTPs and capacity to fight back effectively, at range or at scale. For the most part, Russian artillerymen who invaded Ukraine in 2022 were well prepared to fight the same Ukrainians that they fought in 2014–2015 and did not consider the possible, remarkable UAF improvements over the previous 8 years, let alone the Ukrainians' greater resolve and readiness to immediately resist.

In a counter-insurgency role in Syria, from 2015 to 2022, RF AF artillery fired on an enemy which, for the most part, could not fight back and which lacked conventional artillery or any sort of reliable counterbattery capabilities. When Russian artillery left their FOBs in Syria, they were provided overwhelming protection by the Syrian Armed Forces and the Russian military which secured main supply routes (MSRs), artillery supply points, and firing positions in deserts that offered the insurgency little cover or concealment to conduct attacks on RF AF artillery. In Syria, there was no need to disperse howitzers, ammo, and C2, and no need for hide sites out of contact or convoy escorts. In February 2022, in some ways, the



T-64

Russians even seemed to reconsider their need for artillery support. On 24 February 2022, the RF VDV 31st Guards Brigade, which for more than 2 years had repeatedly demonstrated its artillery sling-load techniques at howitzer-battalion scale, failed to even bring their D-30 howitzers on their strategically critical air assault into Antonov Airport at Hostomel.

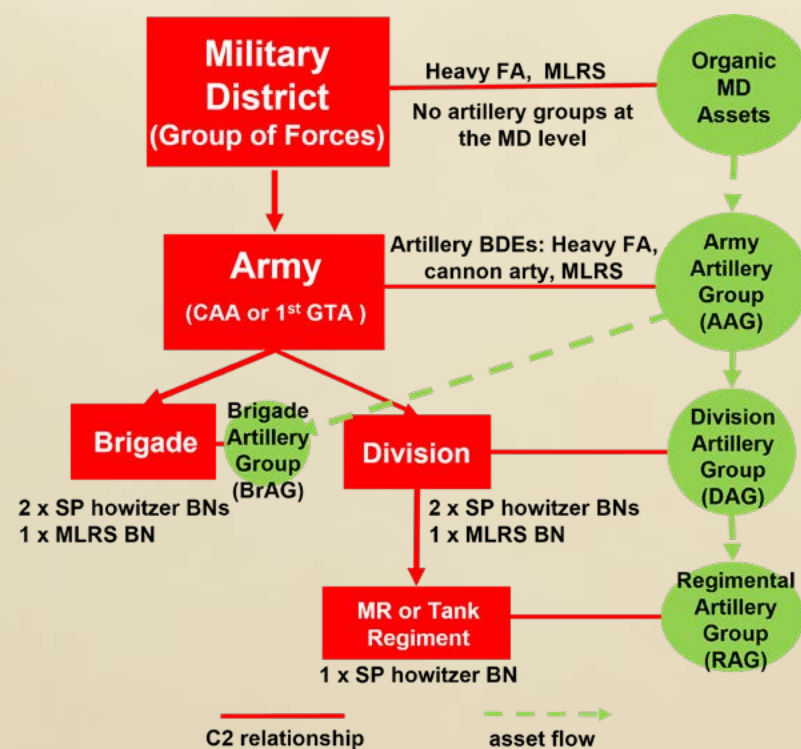
For most of the SMO's first year, RF AF artillery repeatedly suffered badly from a Troika adage that: "Russian artillery only works when Russian logistics work." That truth did not start in June 2022 with HIMARS/GMLRS attacks but rather in late February and March 2022, northwest and north of Kyiv, when clogged and vulnerable RF AF supply lines from Belarus toward Kyiv left RF GF and RF

VDV artillery disconnected from ammo and trapped way behind their maneuver elements. RF GF and RF VDV unquestionably prefer mass fires at pre-planned area targets over precision. In the Kyiv phase, February and March 2022, Russian artillery failed because their logistics failed, and the Ukrainians played a key role. RF AF howitzer and rocket battalions sometimes wound up in direct fire contact with UAF SOF and other Ukrainian forces just trying to get closer to Kyiv. One early video featured UAF dismounts taking on a mounted BM-21 MRL battalion that wound up decimated. Due to these challenges, it was not until

around 20 March 2022 (1 month into the SMO) that RF AF artillery was finally able to get its cannons, MRLs, and logistics out of traffic and out of ambushes and into fire support from west of Kyiv. RF AF even had some late March 2022 successes and used their Orlan-10 and Forpost UAVs to observe, call for, and adjust artillery including in counterbattery fires. RF AF artillery had some initial counterbattery successes defeating UAF 203-mm 2S7 gun-howitzers west of Kyiv on 27 March 2022. They also conducted some successful laser-guided shots against UAF T-64s, but within a week, RF Eastern Group of Forces and RF VDV withdrew north from the Kyiv area back toward Belarus and redeployed through Russia toward new objectives in and around the Donbas.

Forming the artillery groups

According to their *taktika* (RF version of “doctrine”), RF AF commands form artillery groups at the army, division, brigade, and regimental levels (AAGs, DAGs, BRAGs, and RAGs) for decisive combat events. Except for the RAG, pronunciation of the Russians’ acronyms for these artillery groups sounds very similar to most of their English-translated equivalents. Russians have used artillery groups to employ their artillery since tsarist times. While military districts have artillery commands under them, military districts do not form artillery groups according to their *taktika*. Instead, military district-level cannon and rocket artillery units are meant to be “pushed down” to subordinate armies, their CAAs, and to the 1st GTA (Russia’s only tank army).



Artillery Group Concept

At lower echelons, RF GF cannon and sometimes rocket artillery assets at army level are then “pushed down” to divisions, separate brigades, or maneuver regiments for their commands’ artillery groups. All this is done to weight the Russians’ first echelon (main effort) and to ensure that Russian firing units are always in the fight and firing—not sitting behind a supported unit that is not in contact. Iskander-M surface-to-surface missile (SSM) commands are not normally included in AAGs.

Russian artillery groups are led by the Deputy Commander for Artillery from the supported command, better known as “the Chief of Artillery” (*Начальник артиллерии*), not by a subordinate firing brigade or other unit commander. The Chief of Artillery coordinates fire missions between the supported commands’ organic firing units and the attached artillery and rocket batteries that were pushed down from above. Of note, Russian firing artillery units are not manned or equipped with a robust fire direction center (FDC, *пункт управления огнем*) although they have been augmented during the SMO and are gaining capability. In the Russian equivalent of modified tables of organization and equipment (MTOEs), their more capable Russian FDCs are separate from firing units and directly under the Chief of Artillery and his artillery group when one is formed. That is where reconnaissance, targeting, and fires are integrated. Russian air defense operates in a similar fashion: The FDC is separate from the firing units and instead is put under the Deputy Commander for Artillery, “the Chief of Artillery,” in training and combat. This is

likely a reflection of ADA’s artillery roots. EW is also handled in this manner and controlled by the Deputy Commander for Artillery / the Chief of Artillery. It was designed this way to protect the artillery group with defensive electronic fires for reasons explained below.

Adaptation: Dispersing the artillery

In the first 2 months of the SMO, Russians still physically grouped their artillery firing battalions and batteries in close proximity, at semaphore- and even hand-and-arm-signal distances, as was done by the Red Army during World War II.



Great Emblem of Russian Airborne Troops (VDV)

Doctrinally, such close physical grouping was done purposely to provide better area air defense against U.S. and NATO aviation threats, and to facilitate electronic warfare support to counter certain U.S. and NATO fuses and munitions. Russians have long been convinced that they can jam U.S. proximity fuses as well as some guided munitions, including GMLRS. In some cases, this has proven correct. This physical grouping also simplified Russian logistics and made it easier for Russian air defenses to protect truckborne ammo deliveries. However, in early 2022, this close physical grouping of artillery quickly proved dangerous and problematic due to UAF recon UAVs and other UAF

counterbattery improvements. The eventual introduction of UAF HIMARS in mid-June 2022 completely upended the Russians' physical grouping of cannons and rocket launchers: the UAF of 2022 were not the same Ukrainians that Russian artillery fought in 2014–2015.

On 24 February 2022, the RF VDV air assault into Antonov Airport at Hostemel was not going to plan. At the same time, much further south, just east of Kherson, the RF VDV 7th Guards Division (Mountain) conducted a successful air assault and quickly seized the Antonov Bridge intact and pushed into Kherson and northwest toward its subsequent objective. The 7th Guards was to seize Mykolaiv and the main bridge in that area over the Southern (Yuzhni) Bug River. Within just 7 days, by 2 March 2022, Russian reinforcements secured Kherson, and the RF VDV 7th Guards had all three of its air assault regiments and some attached RF GF combat power cordoning off and raiding Mykolaiv from the south and east. The 7th Guards' RF VDV 247 Guards Regiment advanced north across the smaller Ingul River into north Mykolaiv and, in accordance with their *taktika*, assembled their regimental assault group (RAG) of D-30 howitzers just east of the airport to support the airfield seizure, cut off the city, and support the main attack into the city from the north.

This was when and where early Russian artillery arrogance discussed above was at its worst. The 7th Guards Division was about to quickly learn that despite their earlier successful air assault and advance toward Mykolaiv, they were not fighting the



122mm towed D-30 (Russian MoD)

Ukrainian forces of 2014 and 2015. The UAF had built some impressive, although mostly untested, counterbattery skills. Throughout the engagement, the UAF's 152-mm howitzers and 300-mm BM-30 Smerch MRLs had complete overmatch on the 247th Guards' Regimental Artillery Group and its 122-mm towed D-30s that could only range 15 km or 21 km with rocket-assisted projectiles (RAP), if they had them. UAF 152-mm howitzers could reach at least 17 km but were dispersed on the west side of the Southern Bug River, rather than grouped together. In contrast, the RF VDV 247th Guards' D-30s were grouped very closely together. At least 10 howitzers were all within about 150 meters and their ammunition and trucks were immediately behind or next to the howitzers. UAF 152-mm and rocket artillery ripped the 247th Guards' RAG to pieces, literally. 247th Guards headquarters even

sent a patrol to their RAG's former firing points to find out what happened to them. In their video from the site, Mykolaiv Airport is visible in the background, so close yet so far away.

The Troika saw several other such videos from elsewhere in Ukraine of Russian artillery battalions' former positions, all torn to shreds by UAF rounds mixed with Russian shrapnel from their own exploded ammo that was often stored with their cannons. The UAF defeated several other self-propelled battalions and batteries, as well as some rocket batteries. In late February and March 2022, RF GF artillery and MRL units usually moved and set up firing positions as battalions with batteries always near one another, usually within 400 meters. The Russians' tight proximity between their howitzers and MRLs, as well as their "very dirty" positions with rounds, charges, and other propellants laying all over positions, were vulnerabilities that forced the Russians to immediately ungroup their artillery groups, which put added stress on Russian C2 and logistics.

By April 2022, Russian artillery had made some changes. Russian howitzers and MRLs were dispersed and fought exclusively as batteries arrayed in 200-m semicircle horseshoes of evenly spaced howitzers or MRLs. The RF GF artillery battery's FDC was at the end of the battery line, not behind it. Sometimes, beyond the FDC, two TOS-1As were attached to the firing battery at the end of the battery line past the FDC within 50 m of each other's firing position. Ammunition was moved away from the howitzers and placed back at the center of the 200 m arc.



ATACMS launched from a HIMARS (U.S. Army Acquisition Support Center)

These ammo supply points quickly became UAF high payoff targets (HPTs) and once the Russians' artillery ammo was hit, crewmen tended to scatter. Many times, MRLs were lagged as batteries for security and logistical support but sent two MRL sections forward to fire a mission before scooting back to a hide or reload site. Due to UAF UAV-guided counterbattery fire, in May 2022, Russian artillery tactics adapted again. RF GF artillery batteries no longer shot for hours from one position and instead fired five or six volleys, and then quickly displaced. The next fire missions were fired from a new position. One battery would fire, one would move, and one would hide. New positions were generally 1 or 2 km from the previous one.

The dispersal of artillery assets necessarily created additional logistic and

communications challenges. It appears that just as the RF AF started to solve such problems, HIMARS/GMLRS created bigger ones. In early June 2022, Russian artillery was firing more than 6,000 rounds per day at four different battles (Paseki, Severodonetsk, Tshkivka, and Lysychansk), at least 60,000 rounds per day across Ukraine. Very soon, that was no longer supportable. The Russians had built large ammunition depots along railways as far forward as possible, just outside UAF artillery range. Those became early UAF HPTs for the new long-range fire capabilities of the U.S.-supplied HIMARS/GMLRS.

Russian logistics were so disrupted by July 2022 attacks on ammunition depots that RF GF started what they called “working from the wheels” which meant that they delivered ammunition directly to the guns and launchers at the front instead of stockpiling it in ammunition depots (like what the UAF was doing). Meanwhile, RF GF artillery fire missions dropped to their absolute lowest levels since late March 2022. Late July 2022 fire mission totals were so low that they were near parity, with Ukrainian artillery firing slightly more.

The Russians could not foresee the full effect of HIMARS/GMLRS and the later introductions of Storm Shadow, SCALP, and ATACMS. Initially, UAF long-range fires gravely affected RF AF artillery logistics, and then C2. Once enough of those targets had either been attacked or moved back out of range, the UAF started targeting RF AF artillery batteries. After 2022, in Russian social and mass media, as well as Ukrainian UAV footage, the

Troika never again saw more than two Russian firing systems near each other. Usually, it was just a lone individual firing asset networked by radio and later digital systems back to their FDC and other C2.

Changes to RF GF Army Artillery Groups (AAGs)

“Networks of Fires”



Orlan-30 (UAF)

After early summer 2023, Russian operational targeting and fires gradually improved to the point that they had effects on moving (dynamic) Ukrainian targets up to 70 km beyond the LCC. On 5 March 2024, RF GF Iskander-M ballistic missile fires destroyed a loaded UAF HIMARS launcher. On 9 March 2024, they destroyed at least two UAF Patriot launchers. Each of these targets was at least 40 km behind the LCC, near Pokrovsk (northwest of Avdiivka) and had been observed by an RF GF Orlan-30 UAV. However, an even greater dynamic targeting achievement happened on 13 March 2024, when the RF GF engaged a UAF FARP near Novopavlivka, easternmost Dnipropetrovsk Province. A RF GF Orlan-30 observation UAV spotted three UAF Mi-17s rearming in a field. The RF GF UAV operators’ CP called in a Tornado-S attack which

delivered cluster munitions (rather than HE), which likely damaged two Mi-17s. (One UAF pilot hurried to the third aircraft and managed to safely fly away.) The RF GF observation UAV’s CP then followed up the earlier Tornado-S attack and deployed two Lancet-3 attack UAVs to attack the remaining UAF Mi-17s. Meanwhile, a Russian Orlan-30 remained on station and observed UAF soldiers recovering some of the unguided rockets that they had been loading onto the Mi-17s. The Orlan-30 filmed the Ukrainian soldiers loading the ordnance into a UAF truck and then followed the vehicle to a nearby storage area in Novopavlovka, where the Russian UAV watched the truck back up to a hangar and unload the unused rockets. Russian targeting officers then called in a RF Aerospace Forces’ UMPK attack (Russian version of JDAM), which obliterated the hangar. This video sequence proved that the same RF GF CP that controlled the Orlan-30 and had access to Tornado-S and Lancet-3 fires also had access to “joint” effects, in this case manifested by a RF Aerospace Forces’ UMPK attack. This was all likely coordinated by the 5th GCAA’s artillery group CP, the AAG’s headquarters. After 2 years of futility in deep targeting, these were remarkable accomplishments and signify very dangerous Russian improvements.

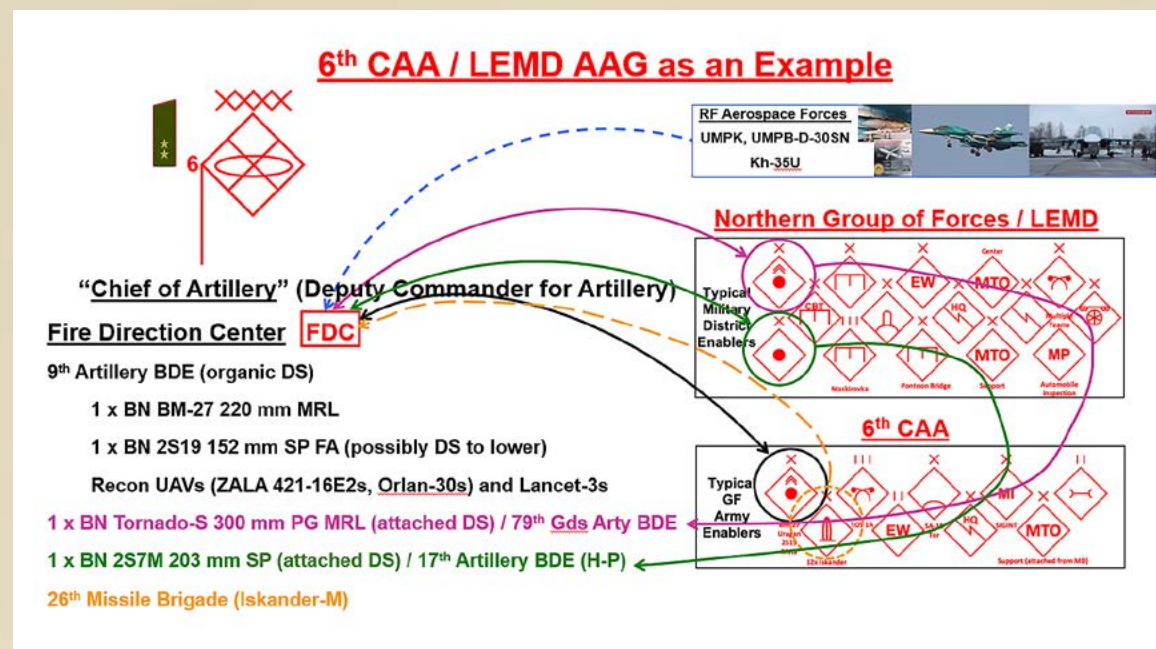
The CAAs’ and 1st GTA’s AAG role in dynamic targeting

For Russian operational fires, what they call their “recon-strike complex,” “RUK” (*разведывательно-ударный комплекс, РУК*), the Chiefs of Artillery at the Army Artillery Groups are most likely responsible



Iskander-M

for recent RF GF dynamic targeting successes at operational depths out initially to 70 km and now 120 km beyond the LCC. Most RF GF Orlan-30s and other operational range UAVs, such as the Supercam S350 and ZALA 421-16E2, are in the artillery brigades’ recon companies. Orlan-30s and comparable observation UAVs are also found in GRU spetsnaz brigades and other RF GF recon units. The majority of Lancet-3 attack UAVs are in the artillery brigades at the CAAs and 1st GTA. Since June 2023, the coordination of Orlan-30 reconnaissance, tactical artillery, Lancet-3, and Tornado-S fires by units “pushed down” from military district-level artillery steadily improved, which resulted in greater responsiveness and accuracy. However, the vignettes described above demonstrate an even higher degree of Russian improvements. Iskander-M SSM fires, which were traditionally kept outside the AAG, became accessible to the AAG’s FDC and its Chief of Artillery. (Iskander-M SSMs are organic CAA and 1st GTA-level assets.) That Russian adaptation (i.e., a Chief of Artillery gaining ready access to Iskander-Ms) also helped overcome a logistical problem.



Example of Army Artillery Group

During the winter of early 2024, in some key engagements, Russians did not have the right access to the right munition, in a timely manner, to overmatch the targets' requirements. In early February 2024, for example, a RF GF observation UAV spotted a UAF HIMARS. However, the available Tornado-S ordnance that was employed was cluster munition, which damaged the HIMARS but did not destroy it. As Iskander-Ms have a far greater range (500 km), it is much more likely that, if need be, an Iskander-M fitted with HE, rather than cluster munitions, might be available to a requesting Chief of Artillery to employ against a high-value target (HVT) like a HIMARS or Patriot. Or, as in the example above of the targeted FARP, to employ RF Aerospace Forces' UMPK bombs. The overall trend: two years into the SMO, Chiefs of Artillery gained a greater range of options with which to engage targets in a timely and accurate fashion.

Russian “Fires” and their limitations

For more than 2 years, the Troika never used the term “fires” to describe Russian indirect fire operations. However, recent, rapid RF GF AAG access to Iskander-M ballistic missiles and RF Aerospace Forces' air interdiction has changed the Troika's understanding of the Russians' normally stovepiped artillery support. These recent accomplishments also dispelled earlier Russian soldiers' complaints about slow, uncoordinated targeting and delivery processes that the Troika listened to and read on Russian social media as recently as December 2023.

Throughout the SMO, most meaningful RF GF operational decisionmaking has been at that CAA / 1st GTA, GEN-LT (two-star) level, so it makes sense that these improvements have occurred at that army level (i.e., at the AAG). Even tactical decisions are made at army level and then pushed down to regiments and battalions

through divisions and separate brigades. Additionally, reconnaissance and attack platforms like Orlan-30s, ZALA 421-16 series, and Lancet-3s are resourced at the army-level artillery brigades. It is possible that the Russians established ad hoc targeting elements at their groups of forces—military district levels—but that would be very unusual and counter to their culture of fixing or reforming what they have, rather than building new tactical structures.

Instead, the Troika believes that although the Russian Ground Forces' AAGs are no longer physically grouped, they are instead dispersed in networks of sensors, an AAG FDC, organic and “pushed down” heavy (long-range) cannon artillery and MRLs, Iskander-Ms, and RF “joint” Aerospace Forces UMPK missions—altogether forming “Networks of Fires.”

The Troika doubts that all RF GF army commands are fully proficient at this, and there is likely a great disparity of capability, experience, and effectiveness among different CAAs and 1st GTA, even within the same groups of forces. Also, as of May 2024, the RF AAGs' limit of effectiveness was about 120 km beyond the LCC. This was likely a technical limitation based on UAV repeater strings or is due to the limits of terrestrial backup UHF antennas. However, the Troika is confident that the Russians' 120-km horizon is only temporary, because other Russian forces have reportedly already learned how to maintain Russian strategic-range UAVs over Odesa, 200 km from the nearest Russian CPs on Crimea. While the aforementioned Russian improvements are

momentous and threatening, Russians continue to demonstrate other improvements to their fires as well.

Logistics Impact on Fires Element of Combat Power

Logistics situation at the outset—Russian indirect fires work if Russian logistics work

At the outset of the SMO, Russians built large logistics hubs, including for artillery systems themselves across all four axes of advance. Overall, Russia struggled with logistically supporting its forces, and this was exacerbated by effective Ukrainian attacks on Russian rear areas and MSRs. In the Kyiv phase in February and March 2022, the Russians needed complete control over their rear areas as well as efficient, well-run resupply operations, neither of which they could effectively accomplish. The logistics situation improved for the RF AF after Russian military operations to take Kyiv and Odesa failed and forces in the north were withdrawn through Belarus and repositioned in eastern Ukraine.

Logistics determine the success of Russian artillery, which is why they had had so



Russian military vehicles at a rail platform



much success in the east where the Russians applied World War II-style push-down logistics. Those logistics relied on rail delivery to relatively safe operational battlespace and then tactical push-down delivery from large ammunition and fuel depots in secure rear areas. Russia relied heavily on the rail system for logistics support—and built-up logistics hubs staged near Belgorod to support those ammunition supply operations. Russia built up those hubs in earnest through spring 2022, repairing infrastructure such as railway bridges to facilitate supply lines in the east. As a result, RF AF artillery operations again benefited from shorter, safer supply lines unhindered by ambushes, spoiling attacks, or Ukrainian indirect fire. In June 2022, at Paseki, Severodonetsk, Toshkivka, and Lysychansk, Russian artillery was firing more than 6,000 rounds per day in each of those fights. This also explained Ukrainians' constant complaints early on in the sectors of Severodonetsk-Lysychansk, south of Izyum, and in northeast Kherson Province, where Russia was able to conduct continuous harassing fires and mass their artillery for key events.²⁰

Initial UAF targeting of RF AF ammunition

As Russia built up its logistics hubs in the east, by the end of May 2022, the UAF was regularly attacking Russia's artillery, ammunition storage points, and logistics depots with indirect fire. RF GF unquestionably prefer mass fires at pre-planned area targets over precision. As such, they store large supplies of ammo all over the place, including forward. However, the largest concentrations of Russian



HIMARS launch

ammunition are in the rear areas. The RF GF likely factor in losing some ammunition to enemy actions.

The Russians do not practice “just in time logistics.” When it came to artillery positions, the RF GF artillery units typically placed their guns and missile systems close together and kept large supplies of artillery ammunition near the delivery systems. This facilitated UAF successes early on in targeting these “mountains of steel” with indirect fire systems.²¹

The introduction of HIMARS is a game changer—targeting RF AF ammunition.

On 23 June 2022, Ukrainian Minister of Defense Oleksii Reznikov announced that the first U.S.-provided HIMARS had arrived in Ukraine. A day later, video showing two HIMARS launchers firing at night were making the rounds on Ukrainian social media.²² The first was against a Russian logistics depot in Svatove, deep in Russian-occupied Luhansk at a range of 70 km from the nearest Ukrainian positions and at the limit of the HIMARS ammunition provided to Ukraine at the time. The strain on the Russian logistics system was felt immediately, as accurate HIMARS strikes disrupted Russian logistics operations from

Kharkiv to Kherson. This caused RF GF to move logistics further back. The UAF targeted 11 Russian ammunition depots and FOBs in 9 days during June and July 2022. The targets were anywhere between 5 to 75 km from the frontline. One of the biggest strikes was an attack on an ammunition depot in Snizhne (Snezhnyy), 75 km east of Donetsk. This ammo depot reportedly stored ballistic missiles and S-300 systems in addition to regular ammunition.²³ By late July 2022, UAF strikes were disruptive enough to slow Russian offensives. After success at Lysychansk and their capture of the remainder of Luhansk Province, Russian forces needed an operational pause to rest, rearm, resupply, and reorganize before their next campaign to capture Slavyansk and Kramatorsk. This next campaign would likely have already commenced, had HIMARS not forced the RF AF to redesign and reorganize their logistics. Both RF army groups required reliable, sustained “push-down” supply of tactical munitions at the rate of 20,000 rounds per day, as were fired during the seizures of Severodonetsk and Lysychansk. After the successful Ukrainian counteroffensive in the east in the fall of 2022, more Russian logistics came within range of Ukrainian tactical artillery, including Starobilsk and Urazovo, both crucial logistics/railway hubs important for RF AF forces and PMC Wagner.

Ammunition challenges in the south

By early August 2022, the operational deployment of the RF Eastern Group of Forces to Kherson and Zaporizhzhya Provinces was nearly complete to support offensive operations. As with operations in

the east, these operations were delayed while the RF AF resolved logistic lines challenges, such as a heavier reliance on trucks, as well as the challenges of bridge crossings and pontoon ferries. Convoy operations, especially over long distances, is not something that the RF AF trains on regularly. RF AF logistics are normally designed for railroad resupply closer to their operational and tactical formations. For example, the RF Eastern Group of Forces' four reduced CAAs north of the Dnipro (*Dnieper*) River in Kherson Province remained completely dependent on truck-borne resupply on one MSR over the Nova Kakhovka Dam and two pontoon-section ferries near Kherson.²⁴ This also explained the unusually low number of fire missions from RF Eastern Group of Forces artillery units during this time, as harassing HIMARS and other long-range attacks continued to disrupt Russian ammunition supplies.²⁵

As the RF AF redeployed forces from Kharkiv Province back into Ukraine, they needed to build, expand, or improve logistical facilities further south in Russia to better support RF AF operations just over the border in Luhansk and Donetsk Provinces.²⁶ Rostov-on Don and Millerovo became increasingly important for logistics



Convoy of Russian military cargo trucks



operations toward the south, similar to the way that the Russian city Belgorod was the main location for logistical and long-range fire support to RF AF further north. RF AF logistical sites, including ammunition depots, are very manpower intensive. Most Russian supplies, including ammunition, are not palletized. There are very few front-end loader and forklift operations. Most work unloading trains, loading trucks, and stockpiling material is all done by hand. After initial RF AF logistical problems in February and March 2022, the RF AF started efforts to better man logistical sites inside Russia using conscripts who, by law, cannot serve in Ukraine without a declaration of war or general mobilization.

Impact of the Kerch Strait Bridge attack

The partial loss of the Kerch Straits Bridge between Crimea and mainland Russia, which were reduced to just one railroad track and no trucks by the early October 2022 attack, disrupted the RF AF's ability to logistically support any resumption of RF AF attacks northward in Zaporizhzhia Province, or into north Kherson Province.

In the meantime, RF AF Railroad Forces (*РФ ВС ЖДВ*) frantically tried to reestablish a rail line from Russia through Donetsk city, south to Mariupol as well as southwest to Volnovakha, a key rail hub



October 2022 attack on Kerch Straits Bridge

that connects with rail lines west to Tokmak, Melitopol, and Crimea. Volnovakha was an initial RF Southern Group of Forces objective seized in March 2022, but RF AF were never able to exploit that success.

This was because the same rail lines from Donetsk city to Volnovakha and points west were always within range of Ukrainian tactical artillery. In some cases, near Donetsk city, the main rail line southwest was only 10 km from Ukrainian positions between Vulhedar and Marinka. As a backup, the RF AF logistical commands established a sealine of communication from ports on Taman Bay just east of the Kerch Straits by large landing craft and ferries to Mariupol. Trucks were ferried to Crimea from Russia and back, but these ferries were also used as the supply route for the entire civilian population on Crimea.

As such, the bridges and ferries to Crimea were quickly overwhelmed on both ends. This also increased the number of RF AF ground convoys subjected to attacks,

including one RF AF ground convoy near Chonhar, just north of the northeast exit and entry point to Crimea. Chonhar is 35 km north of Dzhankoi, a main hub for RF AF logistics and all movement in and out of Crimea to and from Melitopol, Zaporizhzhia Province.

Challenges to providing logistic support to indirect fires continued in 2023. However, PMC Wagner has some success

The RF AF continued to struggle with supplying their artillery and rocket systems under harassing UAV long-range fires and the impact of the October 2022 Kerch Straits strike. In



Variation of the PMC Wagner logo

mid-January 2023, thousands of RF AF conscripts from Chuvashia, Udmurtia, Volgograd, Kirov, Voronezh, Samara, and Smolensk Oblasts arrived in Belgorod Oblast, Russia in the border areas north of Kharkiv, Kupyansk, and RF-occupied Svatove, Ukraine. They were most likely additional manpower to support the very unmechanized and manpower-intensive logistics system described earlier.²⁷ In the south, the RF AF used rail from Crimea and road convoys from Rostov Oblast, Russia, to supply the entire RF Southern Group of Forces near Melitopol and Berdyansk. Weight restrictions on the Kerch Strait Bridges continued to impact

RF AF logistics as Russia tried to repair the rail bridge which was damaged in October 2022. Much RF AF cargo still needed to be ferried across the Straits or to Berdyansk and other ports on the northside of the Sea of Azov. The UAF continued to use long-range artillery to attack Russian logistics hubs and rail. In January 2023, they struck a railway depot and destroyed rail tracks at Illovaisk, a significant RF AF logistics hub. They continued strikes into the spring of 2023.²⁸

Despite the Troika's suspicion that logistics would be PMC Wagner's undoing south and north of Bakhmut, unlike the RF AF artillery which seemed to always outrun their logistics, PMC Wagner was able to keep themselves supplied with artillery ammunition. PMC Wagner seemed to have a more realistic operational design and seemed to work out their logistical challenges before the fight. For example, logistics for PMC Wagner were not a limit to a mostly dismounted brigade-sized operation near Klishchiivka, which was dependent on a poor, unpaved road network bent around UAF-held south Bakhmut.²⁹

Attacks against Russian resupply continue into summer 2023—attack at Chonhar.

The UAF continued to strike RF AF logistics hubs across the battlespace well into the summer of 2023, at locations such as Melitopol, Berdyansk, and Tokmak in the south, as well as other locations in the east. In response, Russia began to create alternate logistics hubs that they felt the UAF was less likely to attack, including at Enerhodar, the town closest to the



Chonhar Bridge in occupied Crimea (Telegram)

Zaporizhzhia Nuclear Power Plant. In addition to a military equipment repair base, the Russians situated an ammunition depot there.

On 22 June 2023, the Chonhar Bridge in occupied Crimea was struck overnight by a French SCALP (Storm Shadow) missile. According to Russian-appointed authorities in the occupied regions, several bridges were also attacked on the border between Kherson Province and Crimea, including an allegedly non-operational railway bridge over the Sivash Lake. Chonhar is one of the two main bridges that connect northern Crimea with the Ukrainian mainland, and just south of it is the RF AF airbase and logistics depot at Dzhankoi, the logistics base mentioned earlier that supports RF AF in south Ukraine. There was one major crater in the bridge, rendering at least one lane of the road bridge unusable. The other lane could probably be used by lighter wheeled vehicles. With the Chonhar Bridge damaged, wheeled traffic (other than very light vehicles) traveling north to Russian-occupied Ukraine had to divert to the west, to the bridge at Armanyansk. This route added 120–140 km to the trip to Melitopol. A long line of trucks and cars began forming at the checkpoint in Perekop

because of the strike on the Chonhar Bridge. According to Russian military correspondents, approximately 70 percent of all military and commercial traffic going north from Crimea travels through Chonhar. Although the UAF continued to strike the Chonhar Bridge, the Russian railway forces were successful at repairing the rail connection each time.³⁰

Fall rail construction in the south

Continued issues with normal rail traffic across the Kerch Straits Bridge after the October 2022 attack continued to affect resupply efforts in the south, despite satellite images in the fall of 2023 that showed the rail and vehicle spans had been replaced. Most RF AF reinforcements sent from the Kreminna and other areas to Robotyne (to include the 76th Guards Division) and the many BARS (operational reserve) battalion-sized formations that were moved in late August and September 2023, were sent via rail over the Kerch Straits bridges through Crimea and north into southern Ukraine. However, continuous heavier loads on the bridge remained a concern and prompted renewed efforts to build a direct railway connection among Mariupol, Volnovakha, and Donetsk. The construction of a new railway bridge began across the Kalmius River near Hranitne, 45 km north-northeast of Mariupol. It was intended to connect the existing Mariupol-Aslanovo-Kalchyk-Volnovakha rail line to a direct connection with Taganrog and Rostov-on-Don, Russia.

Adaptation—RF AF ammunition and armored vehicle dispersal

Throughout 2023, RF motorized riflemen frequently complained that they had little or no fire support later in the fight. Russian artillerymen similarly complained that they were not adequately resupplied during the fight. Ukrainians echoed these observations concerning Russian artillery, the devastation of the Russians’ preparatory fires, but also the UAF artillery’s advantage later in the same Russian attack. This was, in part, because of the introduction of HIMARS and Storm Shadow, which forced Russian ammunition depots to be placed further from the batteries and dispersed in smaller depots. For the most part, Russian units had enough serviceable or semi-serviceable artillery ammo. However, since the arrival of HIMARS and Storm Shadow, it became harder for Russian logistics units (MTO) to supply the Russian firing batteries in response.³¹

The Troika observed that without ammunition supplies for subsequent fire missions, Russian artillery adapted by conducting very precise preparatory fires and far more accurate unguided attacks on UAF armored vehicles and artillery. Ukrainians similarly commented on improved Russian artillery precision.

The RF AF then began implementing changes in the approach regarding the location of ammunition and armored vehicle depots for parts and end items. As a rule, RF AF ammunition and armored vehicles were brought by rail to a final unloading point either in Crimea, (i.e., Dzhankoi in northeast RF-occupied

Crimea), or in areas of RF-occupied Donetsk Province. Unloading began to be carried out at night when it was harder for UAF and the SBU (Security Service of Ukraine) to track RF AF movements by reconnaissance UAVs or commercial and Ukrainian partners’ satellite imagery. After that, equipment and ammunition were transported to many smaller warehouses near the front line.

It appeared that the new RF AF logistics structures of smaller supply centers dispersed across their operational rear areas was working and causing difficult UAF targeting decisions: whether to use scarce munitions on small logistics targets with limited payoff. Although the UAF received new long-range weapons, the use of scarce missiles on these small targets raised questions of military practicality and economy. The Ukrainians tried to solve the problem through recon and more UAVs or ATACMs cluster munitions, which could be effective against large logistics hubs such as in Crimea, where the supplies for various RF AF echelons were being unloaded.³²

Air Defense Impact on Fires Element of Combat Power

Air Defense

The air defense battle in Russia’s war against Ukraine may be one of the biggest surprises in the Fires Warfighting Function. And it definitely has



Vladimir Putin

lessons for U.S. and Western military leaders.

As President Putin announced at the beginning of Russia's 2022 invasion in a televised speech, the Russian military launched a massive missile attack that struck Ukrainian cities from Lviv in the west to Odesa in the south and throughout the country. Observers expected that Russian air forces would quickly dominate the sky over Ukraine, destroying Ukrainian aviation and suppressing Ukrainian air defenses. Russia, however, failed in those two tasks. As a result, the war has taken unexpected turns in the air, on the sea, and on the ground. One of the unexpected outcomes is an historic first: battles directly between air defense units—Ukrainian S-300 anti-missile units shooting down Russian S-300/S-400 missiles launched against them in the ground mode. Ukraine is also firing S-300 and S-200 missiles at Russian ground targets.

Russia's initial attack was done primarily with its best missiles: sea- and land-fired Kalibr cruise and ballistic missiles, as well as air-launched Kalibr and older missiles fired from Russian aircraft. But as the war progressed, Russia struggled to find enough "first line" missiles to sustain the tempo. Production of missiles could not keep up with demand. By the summer of 2022, Russia was regularly launching air defense missiles ballistically to attack cities and infrastructure—a capability that is inherent in the air defense systems but never battle-tested. Russia also began launching Bastion anti-ship missiles against Ukrainian towns.

Air defense systems in offense and defense

Troika observations reported Russian air defense S-300/S-400 units in ground attack mode as early as 13 July 2022. In July 2022, the Conflict Intelligence Team blogsite reported, "Russian military analysts have concluded that S-300 and S-400 systems near Novaya Nelidovka, Belgorod Oblast, Russia are possibly being used to strike Kharkiv using the missiles' ground-attack mode. The Governor of Mykolaiv claimed that Mykolaiv city had been attacked in this manner."

A Russian milblogger suggested the reasons for using S-300 missiles was that there were so many in storage. And those older versions needed refueling before they could be used as air defense missiles—a dangerous and time-consuming process.³³ Another factor which grew in importance over the course of the first 2 years of war was Ukrainian success in limiting the operation of Russia's Black Sea Fleet. This forced the fleet to relocate from Crimea and restricted its missile launches from ships.

Russia's missile campaign grew as its ground campaign faltered in the first year of the war. And S-300/S-400 missiles became a frequent threat to cities like Kharkiv, Kyiv, Dnipro, and Mykolaiv. Russia fires small numbers of S-300/S-400 missiles almost weekly against Ukrainian cities, spiking sometimes as high as 35 launches.³⁴ On 30 September 2022, Russia attacked Zaporizhzhia with 16 S-300 missiles, killing 25 residents and injuring 64 others.³⁵

Russia and Ukraine both recognize the importance of defense against missile attacks and attempt to destroy the adversary's missile defense systems. For example, on 17 May 2023, Russia launched three Iskandr-M ballistic missiles and three S-400 missiles in ground attack mode against a Patriot air defense site in Kyiv. The Russian Aerospace Forces simultaneously attacked with six Shahed-136/-131 UAVs to divert Ukrainian air defenses, as well as another three Orlan-10 Supercam UAVs for reconnaissance operations. The S-400's 40N6E missile has a range of at least 380 km. Ukraine uses its own S-300s and donated Western air defense weapons like the U.S. Patriot system to intercept and destroy Russia's ballistic and cruise missiles.

On 2 June 2023, Ukraine successfully located and destroyed a Russian S-400 command-and-control post using U.S.-supplied HIMARS.³⁶ In July, Russian Air Force Chief GEN-COL Afzalov claimed that two Ukrainian S-200 air defense missiles (in ground mode) were destroyed by Russian air defenses and that another two S-200s were neutralized by electronic warfare systems.³⁷ Air defense systems have become a high-value target for both countries.

Russia is walking a fine line by using valuable (and apparently scarce) strategic / operational air defense missile systems like the S-300 and S-400 in the ground attack

mode. Despite having started the war with perhaps the most robust ground-based air defenses in the world, Russia today finds itself needing more. Ukraine's ability to attack airbases deep inside Russia has drawn attention to the Russians' insufficient low-altitude air defense at strategic facilities. Available air defense systems are reportedly scarce, and the military has already redeployed systems from other parts of Russia and Syria to protect assets in western Russia.³⁸

Modernization of air defense continues

Russia is in fact working to not only replace battlefield losses in air defense, but also to proceed with production of new systems. In late December 2023, Russian ground forces deployed and activated their newest Buk air defense system, the 9K317M Buk-M3 (SA-27) in the Zaporizhzhia Province.³⁹ In January 2024, Russia's arms conglomerate, Rostec, announced the successful test completion of the newest version of the Pantsir-SM-SV air defense missile system on a tracked chassis. According to the website *Military Informant*, the new Pantsir is designed to provide air defense coverage to Russian tactical ground forces.

In March 2024, then-Minister of Defense Shoigu and Military Industrial Coordinator Dmitri Medvedev visited the enterprises of the Almaz-Antey Air and Space Defense Concern—that included the PJSC NPO Almaz



RF Air Force Chief
GEN-COL Afzalov



Russian Military
Industrial Coordinator
Dmitri Medvedev

and the JSC Moscow Machine-Building Plant Avangard—to assess the progress of the air defense-related state defense orders. In a follow-on meeting with plant leadership, Shoigu emphasized the importance of finding modern air defense solutions to counter an increasing spectrum of powerful attacks dominated by attack drones and HIMARS.⁴⁰

UAV fight

Another contribution of air defenses to the Fires Warfighting Function is its ability (or inability) to counter a new kind of air threat—the many small-to-medium-size UAVs. In January/February 2024, former head of Ukrainian Armed Forces GEN Zaluzhny and former Chief of Russia’s General Staff GEN Baluyevsky wrote separate but complementary articles on the revolutionary role of UAVs on the battlefield. GEN Zaluzhny claimed that the side that can solve this problem first will win the war.

Russia’s military is leaving no stone unturned to address the threat, which the Ukrainians have used so successfully. Defenses against these UAVs consist of 21st century electronic systems, 20th century aerial dogfights, and 19th century trenches and battlements. According to Russian military blogger “Two Majors,” Russia is experimenting with shotguns to counter low-altitude UAS threats at the same time they field modern hand-held electronic warfare systems for jamming and defeating drones. In December 2023, the Troika reported that opposing UAS systems hunt and ram one another in aerial dog fights. Meanwhile, electronic warfare systems disrupt communications between

UAS sensors and their operators and weapons systems. All the while, troops hide in 19th century trenches, shelters, and battlements because of the UAVs.

In August 2023, an independent Russian analyst site, Conflict Intelligence Team Svodka, reported that an early warning system that harkens to pre-radar days of WWI is being set up in Russia to counter drones. UAV observation booths have appeared in the Krasnogorsk and Moscow regions. Small observation booths have started to appear on the roofs of large residential apartment buildings in Krasnogorsk and across various districts of the Moscow region, with construction of some starting in late 2022. These booths are designed for personnel to provide advance warning of UAVs headed for Moscow. The personnel in the booths would track incoming drones by sight and sound, with some booths containing cameras to assist with tracking the flight paths of drones.⁴¹

The mission to counter and destroy reconnaissance and offensive UAVs has made air defenses a critical part of Fires in this war. In a 2023 Russian *RT* news report, a 9K35 Strela-10M (SA-13) crew from the 1st Guards Tank Army described the TTPs that they use in employing their air defense system. According to the crew, their system Strela-10 is a high-value target for Ukrainian forces because of its effectiveness against tactical reconnaissance UAVs. The time between UAV target acquisition and launching a missile from the Strela-10M is less than a minute, enabling the crew to shoot and move quickly.

The Russian armed forces likewise consider Ukraine’s Strela-10s as high-value targets and hunts them. The Russians consider their ability to destroy UAF Strela-10s, while safeguarding their own, a key to tactical UAV dominance.

The newest version, Strela-10M3, was designed to improve the system’s capability against UAVs. In December 2020, Russia began serial production of an improved 9M333 missile that operates on the “fire and forget” principle. In October 2024, the production company reported completing the delivery of the 2023 RF MOD order for the 9M333 missiles ahead of schedule.⁴²

The role of UAV-related thermal imagers in support of fires

The Troika is seeing an increasing number of videos of UAVs from both sides operating at night over Ukraine. With the saturation of military and commercial-grade UAVs over the battlespace by day, both sides are now increasing their nighttime use of UAVs for reconnaissance, remote minelaying, and attacks, with the goal of disrupting their enemy units’ reorganization, relocation, rotation, and resupply. Each side is affecting the other’s infiltration operations, as well as the replacement or repair of equipment, including communication and jamming antennas destroyed during the day. The sophistication and accuracy of Russian UAV night attacks are improving. While the night was previously dominated by military grade UAVs with more sophisticated thermal imaging capabilities, that is changing with an increase in COTS FPV UAV nighttime operations. As a result, both sides are also looking for ways to counter

the UAVs at night, and this has driven the increased use of and demand for commercial thermal imaging devices.

Commercial off-the-shelf (COTS) UAV night use



U.S. Army M1/A1 Abrams tank seen through the thermal imaging.

As the Troika noted in late November 2023, videos were starting to appear on the “Sudoplatov” Telegram channel showing RF AF nighttime FPV UAV attacks against unsuspecting UAF units. At that time, the RF AF had reportedly purchased “budget” light-sensitive cameras, “capable of seeing in the dark with minimal lighting,” and attached them to their kamikaze FPV UAVs. They then experimented with conducting harassing strikes against static and moving Ukrainian soldiers, equipment, and vehicles. ,

Later, more expensive and better resolution thermal cameras were added, a move that increased the attacks’ effectiveness. Although the resolution quality of these cameras was not as good as traditional UAV video cameras, the resolution seemed to be “good enough” for experienced RF AF UAV operators to acquire and engage targets, effectively disrupting Ukrainian night operations. Over time, FPV UAV

operators have become more efficient at flying their UAVs at night and at greater distances. UAF soldiers operating near Vuhledar in southwest Donetsk Province noted the Russians' ever more effective use of FPV UAVs at night and at longer ranges. Additionally, the commander of UAF 206th Territorial Defense Battalion recently commented that RF GF soldiers were able to storm their positions near Mariinka because his unit lacked adequate numbers of night-capable UAVs with thermal imagers to detect approaching Russian forces in time to deliver an artillery response against the attacking Russians.

Demand for commercial thermal imaging devices

Russian civil society volunteer organizations that specialize in acquiring some of the more technically sophisticated equipment for Russian units recently increased their requests for both COTS FPV UAVs with integrated thermal imaging capability and stand-alone thermal imaging devices, including clip-on thermal rifle scopes and cameras. These requests now appear to be higher in priority than EW equipment, such as UAV detectors, spectrum analyzers, and anti-UAV guns.

Of course, some of the requests are optics to support other night operations, such as ground reconnaissance and sniping. However, a growing number of the requests are related to UAV night operations, either to support them or to assist in countering them. The prices listed for the requested equipment typically range from 800,000 to 1 million Russian rubles (RR) (~\$8,600 to ~\$11,000+) for night-capable FPV UAV models like "Autel EvoV2" and "Mavic 3T."

Prices are 400,000 to 600,000 RR (~\$4,300 to \$6,400) for thermal imaging cameras and scopes from companies that produce thermal imaging devices (e.g., "Legat," "iRayMate," "Fortuna General," and "GUIDE").

Countering UAVs at night



Ukrainian Baba Yaga

Smaller quadcopter FPV UAVs have proven difficult enough to engage kinetically during the day, a problem that only worsens during the night. The engagement technique most commonly observed at night has been machine gun or small arms fire coupled with thermal scopes or cameras. One less frequently used technique has been "ramming" using other UAVs.

One particularly effective UAF UAV is the larger hexacopter / agricultural drone nicknamed "Baba Yaga" (a name from Slavic folklore of an ogress who steals, cooks, and eats children). This UAV can carry larger weapons payloads and serve as a UAV repeater for other FPV UAVs. The "Baba Yaga," however, is also susceptible to ground fire because of its heavier weight and lower speed, a

vulnerability the UAF tries to offset by operating the UAV more at night. Numerous videos posted on social media show Russian soldiers using machine guns, assault rifles, and even shotguns coupled with enhanced optics (e.g., thermal imaging scopes, spectrum analyzers, UAV detectors and cameras) to engage the "Baba Yaga" UAVs, with some success. In other rare cases, RF AF FPV UAV operators have resorted to "ramming" the "Baba Yaga" UAVs at night by hovering high above the slower UAV and then dropping quickly into the hexacopter's rotors. While effective, most of these successful "ramming" attacks have been ad hoc, target-of-opportunity missions by a Russian FPV UAV encountering the "Baba Yaga" by chance, enroute to or from another objective. Moreover, effectiveness notwithstanding, the use of this specialized FPV UAV in a counter-UAV role is usually seen as a cost-prohibitive TTP, due to the high probability of losing the attacking drone.

Conclusion of Air Defense Impact

Air defense weapon systems are exemplary of the adaptations being made in the Fires Warfighting Function by both sides in the war. What was largely a defensive system against aircraft and missile strikes has also become a much-used offensive weapon. And air defenses are changing to grapple with the new threat of UAVs. Russia's air defenses will keep adapting and changing as requirements change. For example, in May 2024, for the first time, Russian S-300 missiles reportedly were networked into indirect fires, attacking Ukrainian military units in

their field locations. This transition from attacking fixed sites to engaging maneuver units is a troubling development.⁴³

Electronic Warfare Impact on Fires Element of Combat Power

Electronic Warfare (EW) Systems

Russia today has perhaps the most robust EW force in the world—certainly in Ukraine. Since 2008, EW is one area that Russia has focused its Armed Forces reform efforts. Russian EW is overseen by its own General Staff directorate and is practically a separate branch of service. EW is an area where Russia has spent years cultivating well-trained personnel and an impressive variety of systems.

In his November 2023 essay, "Modern Positional Warfare and How to Win It," former Chief of Ukrainian Armed Forces, General Valerii Zaluzhnyi claimed that

"today Russia continues to maintain a significant electronic warfare superiority."

Zaluzhnyi sees EW capabilities as essential to countering drones, which in turn will free units from their positional type of operations and enable maneuver. Getting out of the positional warfare is also seen as key to winning the war by former Russian General Staff Chief, Yuri Baluyevsky (quoted in Army Standard article, 31 January 2024).

Electronic Warfare assets are necessary to neutralize enemy fires, surveillance, and acquisition capabilities, as well as communications. They facilitate friendly fires by identifying targets and protecting



fires platforms by disrupting counterbattery responses. Troika Observations over the span of the SMO have identified important Russian EW capabilities and revealed the back-and-forth growth of EW capabilities on both sides of the war. Russia has a lead, but it is not an insurmountable one.

Reported Russian EW capabilities

Russia has developed and dispersed EW assets throughout the force and in all echelons of the battlefield in an effort to cover the entire electromagnetic spectrum at geographical ranges.

For example, in November 2022, Russia deployed 10–12 groups from the 67th GRU Separate Special-Purpose (OsNaz) Radio-Technical Regiment to Ukraine. The mission of these groups is signals intelligence and direction-finding across the entire frontline. The coverage area of each group is approximately 200 km, or a combined total of about 2,400 km.⁴⁴

Russia has also deployed the Palantin EW system used to “suppress enemy radio communication and electronic intelligence systems in a 1,000-km wide swathe.” “The capabilities of the equipment make it possible to blind the enemy in the short-wave and ultra-short-wave ranges, as well as to deprive it of cellular communications.”

The Russian MOD said on its website on 12 March 2019 that the system can be used to discretely target radio frequency

objects, conduct bandwidth and specific frequency jamming, and detect opposing forms of EW.⁴⁵

Russia is developing ways to use its EW systems with the help of civil society connections. In December 2022, pro-Russian media reported that the Commander of the Russian 238th Artillery Brigade/8th GCAA ordered the creation of a special “drone hunter” unit, to protect Russian positions from Ukrainian UAVs.



Russian Palantin EW system (UAF)

The mobile unit is operating at the frontline in locations where Ukrainian UAVs are often observed. The unit uses an LPD-801 anti-drone gun with the capability to jam UAV communications up to 1 km—procured with non-MOD funds from the Krasnodar Region.⁴⁶

In July 2023, Russian Chief of Air Forces, GEN-COL Afzalov, claimed that Russian EW systems even knocked out two S-200 missiles fired ballistically by Ukraine.⁴⁷



Advantages are not permanent.

But success with EW systems is not always guaranteed. Each side responds to new EW capabilities by changing its own system. In February 2023, Ukrainian artillery from the 128th Mountain Assault Brigade in Zaporizhzhia Province destroyed one of the Palantin systems mentioned above with a precise strike (most likely Excalibur), assisted by the Ukrainian-made Leleka UAV.⁴⁸

Advantages gained by an EW system can be erased by technological improvements and adjustments on the other side. In February 2023, Russian social media were reporting on Ukrainian effectiveness with GPS-guided Excalibur rounds in Kherson Province.

Several Arctic-variant Russian SA-15s were destroyed.⁴⁹ By July 2023, Ukrainian Minister of Defense Olexseii Reznikov complained that the Russians were using EW to jam GMLRs and other high-precision ammunitions that use GPS, such as Excalibur.⁵⁰ But by October 2023, Russian analysts were starting to note once again that Russian EW systems were failing to prevent Ukrainian observation UAVs from operating in Russian tactical rear areas.⁵¹

To keep up with the rapid changes in capabilities, Russia’s MOD partners with Russian civil society. One initiative provides secure digital communications to RF AF units in the SMO. In May 2023, Vladimir Orlov and Russian milblogger Boris Rozhin (Telegram Channel Colonel Cassad) started an initiative to provide better secure

digital communications to Russian units in the Special Military Operation.

This initiative demonstrates the extent to which Russian civil society is contributing to the introduction of newer capabilities and to fill logistics gaps left by Russia’s MOD.⁵²

Going forward, Russia continues to adapt its EW capabilities, providing them to a wider group of units.

In January 2024, independent Russian military analyst site Conflict Intelligence Team reported that Russia started installing Volnoroz counter-UAS EW systems on all their military vehicles—armored and non-tactical. The system is now ubiquitous on Russian military vehicles. This is a major improvement, but Ukrainian sources claim their UAVs are already adjusting to these Russian countermeasures by either ballistically diving or just falling onto their target in an uncontrolled descent from directly above.⁵³

The openness to “off-the-shelf” equipment has even led to both Ukraine and Russia buying the same Chinese-made Electronic Warfare backpack. Photos recently appeared on Russian social media showing a Chinese-produced EW backpack, which is reportedly sold in both Russia and Ukraine. The backpack contains six antennas and boasts eight modules inside to suppress eight frequencies in the UHF range from 700–1,000 MHz of the purchaser’s choosing, with a 50-MHz bandwidth in the selected frequencies and a power of 50 watts.⁵⁴

Former Chief of Ukrainian Armed Forces General Zaluzhny recognized that Russia





has a lead in EW capabilities. However, he also noted that on the battlefield

“At this time, we have practically achieved a parity in the EW tasks performance, which significantly complicates the possibility of achieving superiority by both the armed forces of the Russian Federation and Ukraine, when employing weapons and troops in general.”

Electronic Warfare is a great enabler of fires, but its advantages can be fleeting in the face of a rapidly adapting adversary.

Overall Conclusion

As these observations demonstrate, the RF AF are a thinking, learning, and adaptive army. This is not always immediately obvious to American or NATO observers—Russians think, learn, and adapt in their own, uniquely Russian ways. They draw lessons that we might not. They adapt in ways that we may not even consider.

The Fires adaptations described above came after nearly two years of failure in the SMO. However, by spring 2024, RF combined arms armies (CAAs) were capable of employing their army artillery groups (AAG) to provide effective Fires at the operational and tactical level. Even more impressive, the CAAs became able to combine RF AF joint effects and deep attacks over UAF rear areas to a depth of 120 km beyond the LCC.

The key to all these improvements in Russian fires and their ability to maximize

new means of attack has been their use of recon UAVs.

Russia has done this well by improving, producing, and employing multiple, redundant types of UAVs with extended ranges. They are building UAVs at mass scale, with constant upgrades to encryption, sensors, and cameras. In this instance, the Russian cultural tenet of “reasonable sufficiency” has been advantageous. Russia has avoided building more capable but also more expensive UAVs that are not survivable for long.

Russians aim for mass production of semi-expendable and expendable systems updated by commercial off-the-shelf solutions, something very suitable to the current operational environment for high-end, mechanized warfare.

The SMO has proven that modern warfare demands not only constant improvements to systems’ capabilities but also a large quantity of high-quality systems. All Russian improvements to their fires depend on the success and survivability of their recon UAVs, which are the keys to bringing to bear Russian long-range fires, joint capabilities, artillery, operational-range attack UAVs (like Lancet-3), and their tactical recon and attack UAS.

Due to their years of large-scale combat experience in Ukraine, the RF AF are now the pacing threat for operational and tactical fires in the rapidly evolving, technologically enhanced operational environment.



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Russian military vehicle storage (Image source: © X, @poderiomilitar)

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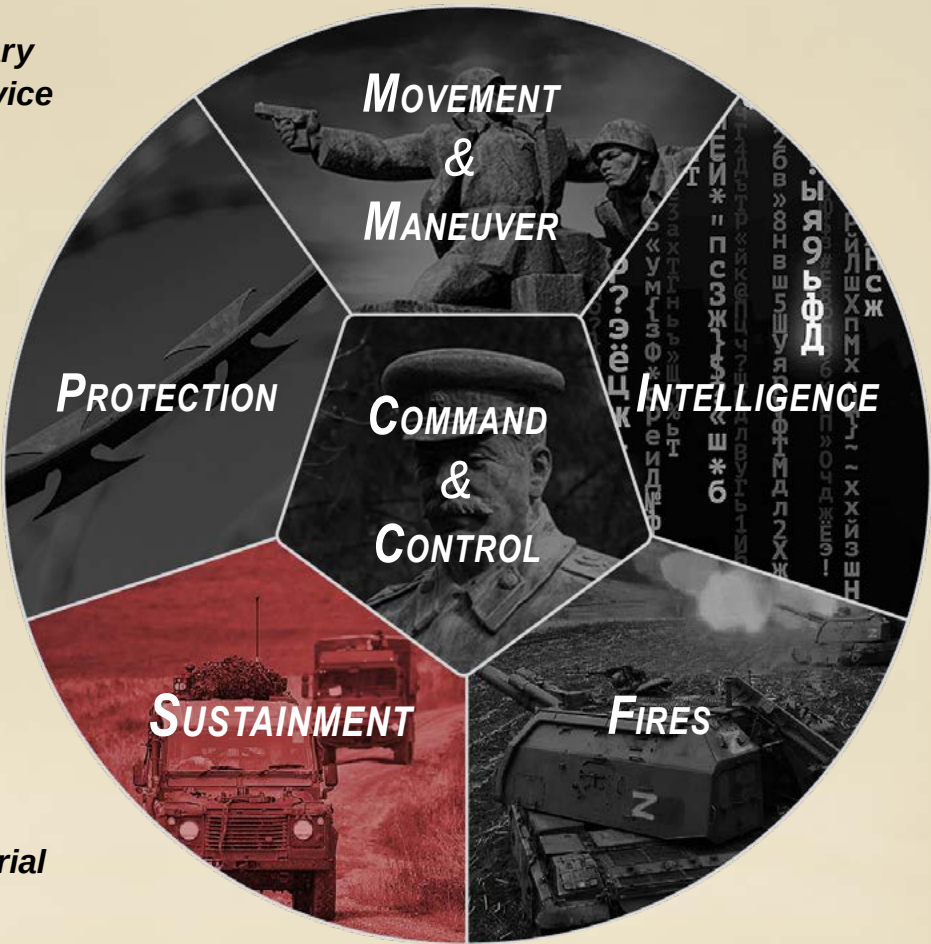
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Introduction

Russia inherited its military logistics and combat service support system from the Soviets. The Soviet logistic system was based on several “Rear Services,” material support organizations, and a separate armaments branch to sustain the force in war and peace. In order to streamline or right-size some of the massive logistics capabilities, the “New Look” reforms merged these various organizations in the Material Technical Support (MTO) structure.



– Grau and Bartles, *The Russian Way of War*, 2016, p. 324

For the U.S. Army, sustainment is the provision of logistics, financial management, personnel services, and health service support necessary to maintain operations until successful mission completion (Army Doctrine Publication, ADP 4-0). This is accomplished through the synchronization and integration of national and global resources and ensures Army forces are physically available and properly equipped, at the right place and time, to support the Combatant Commander (CCDR).

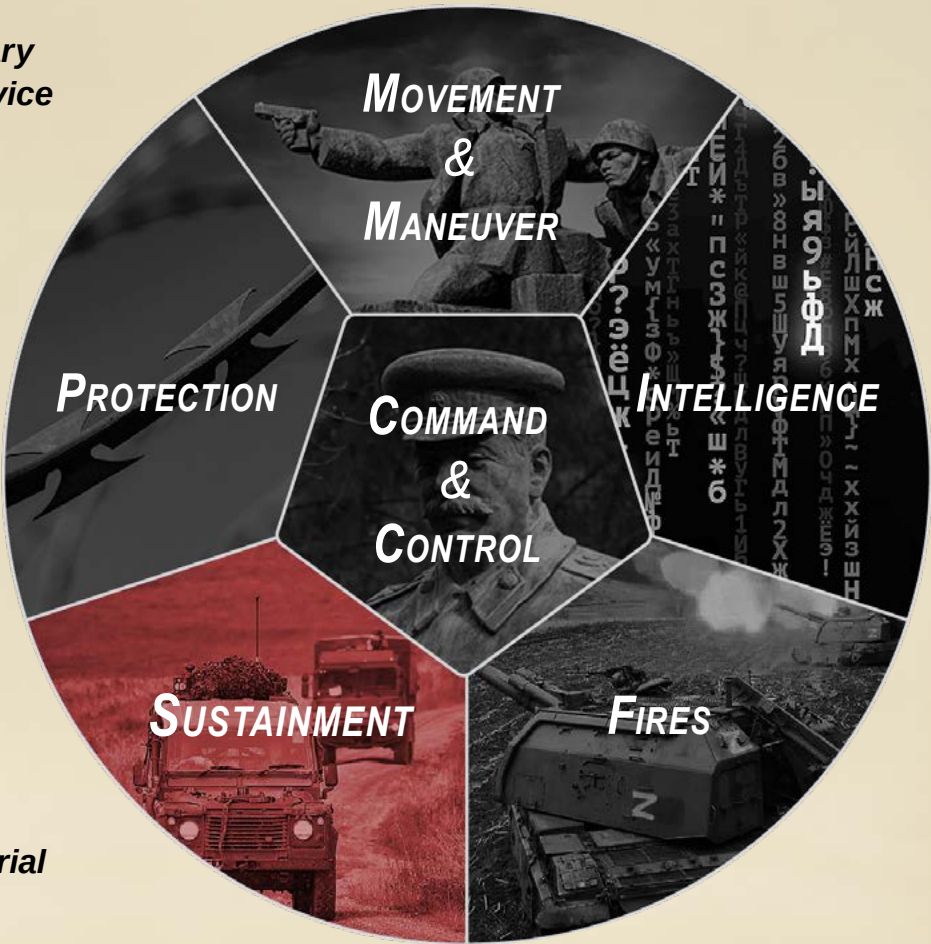
The sustainment warfighting function leverages joint, interagency, multinational, and other available capabilities to provide sustainment support to the force. The elements of logistics include maintenance, transportation, supply, field services, distribution, operational contract support (OCS), and general engineering. (U.S. Army Field Manual, FM 4-0, 2019)

The Russian approach to military sustainment is very direct and broadly reflected in the term used to describe the system and structure. The Material Technical Support (материально-техническое обеспечение or “MTO”) structure supplies and maintains the



Introduction

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Russian forces to sustain them in war and peace. The Russian MTO structure that emerged from the “New Look” reforms described by Grau and Bartles above is centralized with responsibility for the system and its structure at the Deputy Minister of Defense level. Organizationally, the MTO structure parallels the echelons of the command structure.



Russian MTO Emblem

In the system, most logistics assets are maintained at higher unit levels. It is also a “pushdown” system of sustainment, where the higher unit determines the priority of supplies and services and its delivery to the lower unit. There is no “requisition and receive” in Russian logistics, but rather algorithms are used to determine requirements, and logistics support packages are pushed down based on the outcome of those calculations. The system emphasizes repair and resupply as far forward as possible and like other Russian military structures, it is not very robust, operating on the principle of “just enough to get the job done.” The emphasis on “shooters over sustainers” results in much smaller logistics support elements than one would typically see in a Western military and an increased responsibility on the maneuver unit commander to “be creative” in supply and maintenance operations.

The MTO structure is also a system that is not designed to be expeditionary, but rather emphasizes using rail, pipeline, and local supply points as primary sustainment means. This non-expeditionary nature of the MTO structure also increases the importance of being able to control local lines of communication when the Russian Federation Armed Forces (RF AF) are operating outside of Russia’s borders. To support that structure, the RF AF have specialized military units in the form of railway brigades at the Military District level and pipeline battalions in the MTO brigades.

The Russian Armed Forces is also a “European Army” in the sense that unit garrisons are small, with typically only small arms ranges and a driver training course and no large maneuver or range areas. Unit garrisons are located near railheads, and Russian soldiers and their equipment are loaded onto trains and travel to larger training areas to conduct gunnery and other larger maneuver training and exercises. Because of this heavy reliance on rail, convoy operations—especially over large distances—are rarely practiced or used as a primary means of resupply. The structure is also woefully lacking in Heavy Equipment Transport Trucks (HETs) to transport tanks and other heavy equipment.

Logistic support to fires is of particular importance, and ammunition overall, in particular artillery ammunition, is almost always priority one in resupply, followed closely by fuel as the number two priority. Because of this emphasis, the logistics impact of the fires element of combat



Russian URAL 63078 HET. (Russian Ministry of Defense)

power information contained in this chapter also appears in the Fires Chapter.

Finally, like other Russian military structures and Russian society in general, corruption is prevalent throughout the Russian logistics system and affects Russia’s ability to effectively sustain its forces. Fuel is considered the number one pilfered supply. Other significant areas of logistics corruption include the provisioning of food, uniforms, and equipment for Russian soldiers, major end items. This also includes the outsourcing of many maintenance functions to private companies in the years after the “New Look” reforms were implemented.

What the Special Military Operation has shown, however, is that despite this scale of corruption and other challenges, Russian units in Ukraine that were, according to many Western experts and think tanks “three days from running out of food, fuel and ammunition” early on, now—over 2 years later—continue to be supplied sufficiently to fight and take ground.

The information that follows is not a running history of sustainment-related actions in Ukraine since 24 February 2022, but rather a collection of relevant vignettes that help illustrate the Russian way of sustainment as it has unfolded in the Special Military Operation in Ukraine. As in many of the warfighting functions described in this compendium, the Russian military has been learning and adapting in sustainment in a very Russian way throughout the process.

Sustainment Warfighting Function

The sustainment warfighting function is the related tasks and system that provide support and services to ensure freedom of action, extended operational reach, and prolong endurance. Sustainment employs capabilities from all domains and enables operations through each domain. Sustainment determines the limits of depth and endurance during operations. Sustainment demands joint and strategic integration, and it should be meticulously coordinated across echelons to ensure continuity of operations and that resources reach the point of employment.

Army Doctrine Publication, 3-0, para 2-12





Sustainment employs an integrated network of information systems linking sustainment to operations. As a result, commanders at all levels see an operational environment, anticipate requirements in time and space, understand what is needed, track and deliver what is requested, and make timely decisions to ensure responsive sustainment. Because the situation is always changing, sustainment requires leaders capable of improvisation. Because sustainment operations are often vulnerable to enemy attacks, sustainment survivability depends on active and passive measures and maneuver forces for protection.

U.S. Army FM 3.0, 2022 para. 2-13

Troika Summary on Sustainment

The post-“New Look” reforms MTO structure has been tested significantly during the Special Military Operation (SMO) because of the sheer numbers of Russian units requiring sustainment. The structure struggled particularly in the initial phases of the SMO, often unable to adequately keep up with supplying and maintaining a highly mechanized force that was operating on four different axes of advance. The inability to use the pipeline battalions to move fuel forward, as well as the inability to access local supply points in Ukraine on a consistent basis, further complicated the situation.

Despite these shortfalls and challenges, the system continued to function well enough to support combat operations. Western media and think tanks talked early

on about the “imminent collapse” of Russian forces in the Special Military Operation that were “3 days from running out of food, fuel, and ammunition.” Two years later, RF AF units continue to be resupplied and maintained well enough to fight on.¹

One of the first painful lessons the RF AF learned early on about operating with forward-based logistics occurred at the Kherson Airport in Chornobaivka, where the RF AF established a forward logistics hub from Crimea. The Ukrainian Armed Forces (UAF) repeatedly struck the logistics hub, destroying equipment and supplies to the point that the RF AF had to abandon the location. After the shift to operations to the south and east in April 2022, Russian sustainment improved by geography, with shorter logistics and repair lines mostly unimpeded back to Russia.

With the arrival of HIMARs in the summer of 2022 and subsequent other long-range fires, that situation changed again. The preferred Russian procedures of large stocks of ammunition next to the artillery and fuel storage close to the units had to be modified and longer supply lines established.

The Russian rail system continues to be the primary strategic and operational lift means for Russia in the SMO and has been essential to relocating and supplying the RF AF. In addition to providing necessary ammunition, equipment, and other supplies, the Russians have demonstrated their ability to use the rail network to quickly relocate large groups of forces in a short period of time. Building, maintaining, and safeguarding those rail

lines continue to be priorities for the RF AF across the battlespace. This is particularly true in the south, where resupply from key logistics hubs in Crimea and Rostov-on-Don remains a challenge, based on the vulnerabilities of the Kerch Strait Bridge and other key logistics hubs enroute to

Russian forces. The Russian railway troops continue to play a critical role in keeping the railways functioning to bring replacement Russian soldiers and equipment from Russia to the SMO, to evacuate damaged and broken equipment to Russia for repair, and to maintain and safeguard those parts of the rail network that Russia controls in Ukraine. This includes using their own armored trains to protect the rail network and the various Russian trains operating in the SMO.

Despite the Special Military Operation moniker, Russia is a nation at war and the defense-industrial complex has been fully mobilized and under constant stress since June 2022. It has worked around the clock to ramp up production and refurbishment of military equipment, supplies, and ammunition to replace tremendous losses in the field. Despite numerous sanctions imposed on Western technology, battlefield equipment continues to roll off Russian production lines, either using sanction workarounds, or using technology that is of



Russian equipment at the airport near Kherson. March 2022. (Ukraine Ministry of Defence)

adequate quality to get the job done on the battlefield.

These efforts, of course, have been aided by obtaining help from home and abroad. Russians have a saying that,

“when you go to war with Russia, you go to war with all of us.”

In that regard, Russian civil society, in particular, has been instrumental in collecting and distributing military equipment and supplies to RF AF units in Ukraine through well-organized and well-coordinated networks across Russia. Assistance from countries such as Iran and North Korea has also been a key factor.

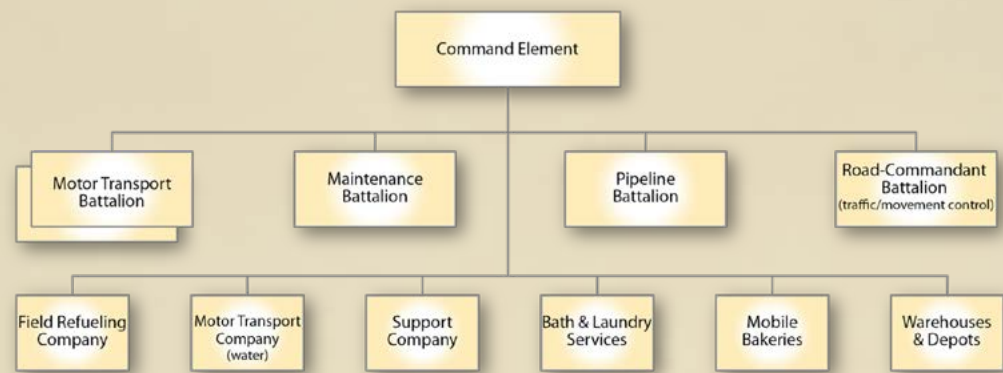
All of these efforts have helped buy much-needed time for Russian domestic military production to “catch up” to requirements. As an example, the Ukrainian Ministry of Defense (MOD) used to publish charts showing when Russia was going to run out of ballistic and other types of missiles. Those charts last appeared in January



2023, and there are no indications that the Russians are running out of missiles any time soon.

Corruption is prevalent throughout Russian society and in the military, and it has most clearly affected Russia military operations in the area of sustainment. The stealing of fuel and other supplies has been a longstanding tradition in the RF AF. What really came to light, however, as a result of the Special Military Operation, was the billions and billions of rubles of graft that occurred in the production and supply of everything from military uniforms to field meals, to tactical radios, to T-90M tanks. Items that were paid for by the Russian MOD in the years leading up to the Special Military Operation simply disappeared, i.e., they were never produced in the first place. After Putin's reelection in April 2024, there has been a systematic dismantling of the MOD senior personnel structure, all based on charges of corruption in the area of sustainment.

Finally, of the many adaptations that the Russians have implemented based on experience in the Special Military Operation thus far, the RF MOD and AF embracing commercial off-the-shelf (COTS) solutions has been one of the most crucial for supplying the Russian units in Ukraine with weapons and equipment that



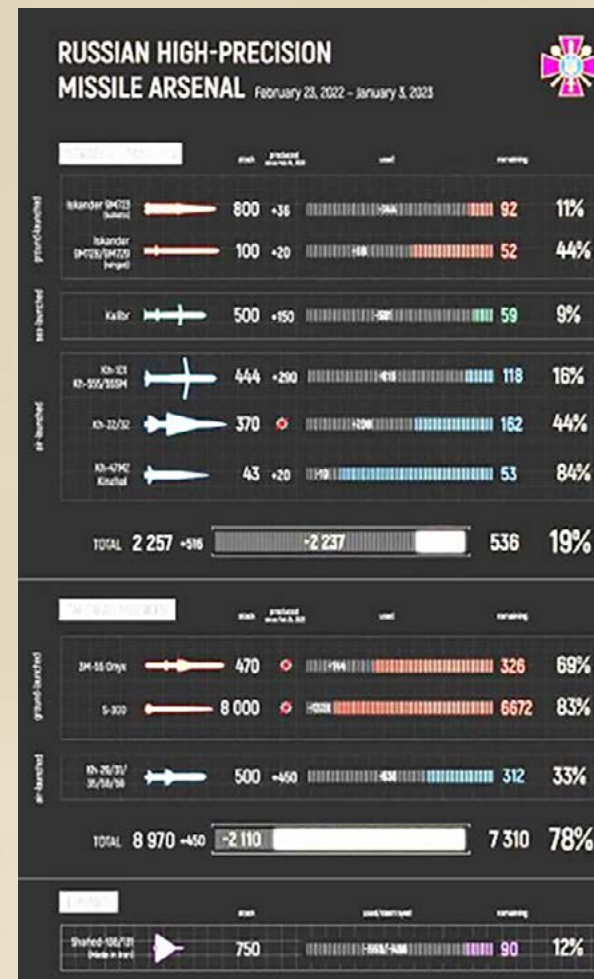
MTO Brigade Structure (Ideal Standardized Structure) - No standard MTO Brigade organization, depends on location and resourcing, with goal of having a "standardized structure" with approximately 2,000 personnel. (The Russian Way of War, Bartles and Grau, p.332)

match the dynamic nature of the operational environment. Russia has leveraged its society's intellectual power through civil-military partnerships in areas such as unmanned aerial vehicle (UAV) technologies, artificial intelligence (AI), medical, uniforms, equipment, and other areas. It has brought solutions to production at scale, while bypassing normal military acquisition bureaucracy. This is often done through "Startup" companies, which develop and test new ideas and concepts, which are later verified by the Russian MOD and produced at scale using the Russian military industrial complex. ²

Maintenance Challenges

Lack of regular maintenance

Russian maintenance procedures have always been done in a very Russian way, that has often seemed inefficient and illogical to Western observers. Because of the smaller personnel footprint of logistics units, Russian platoon leaders and company commanders are expected to be proficient at maintaining the vehicles and



UAF report on status of Russian missile, UAV arsenal JAN 2023 (Ukrainian Ministry of Defence)

equipment in their units and spend a considerable amount of time as cadets learning that skillset. The lack of noncommissioned officers (NCOs) in Russian units adds to the maintenance challenges at the unit level.

Russian units struggled throughout the early phases of the Special Military Operation to keep vehicles maintained and properly fueled. Vehicles in areas of Russia and Belarus near the Ukrainian northern border remained stationary in field locations and assembly areas for months prior to the February 2022 full-scale invasion, with no visible movement or

maintenance being done, based on views from overhead imagery.

There were also reports of fuel being taken from vehicles and equipment and sold. It was not surprising then, that RF AF vehicles and equipment broke down in some cases less than 50 km into Ukraine due to a variety of maintenance issues, including throwing track while traveling on straight roads, battery or other power issues, or dry rotted tires. Some vehicles simply ran out of fuel because they did not start the operation with a full tank.

These issues continued well into the second year of the Special Military Operation. Poor tank maintenance was an unstated decisive factor in the Kharkiv counteroffensive. Many poorly maintained Russian tanks either could not move or could not shoot. Throughout the Special Military Operation, the Troika observed many Russian tanks running out of fuel. The combination of maintenance and fuel was likely why so many of 1st GTA's tanks were abandoned in eastern Kharkiv Province. One battalion tactical group (BTG) from 4th GTD abandoned all their T-80Us in a tank park. (The soldiers presumably escaped in their BMP-2s [Russian infantry fighting vehicles] and trucks.) Captured Russian tankers cited lack of parts and lack of maintainers, especially at the unit level. The significant losses of Russian tanks also forced the removal of large numbers of older tanks from long-term storage areas, in some cases with tanks being shipped to Ukraine directly, without being fully mission-capable.



Since fall 2022, the Russians have tried to expedite repair and improve overall tank maintenance by moving depot-level repair facilities closer to the front lines. In some cases, they even deployed Russian tank factory civilian workers forward to assist Russian field maintenance units. More complex maintenance procedures ideally conducted in a maintenance facility or factory setting in the rear were increasingly being carried out in the field, often in the dirt or mud to get tanks back to some semblance of fighting condition as quickly as possible. That the RF AF has been conducting operations in Ukraine closer to Russia has probably (ironically) helped the maintenance of their tanks. Overall, poor Russian maintenance and their failure to regularly top off were further consequences of the RF GF's lack of an NCO corps and their overly lean modified tables of organization and equipment (MTOEs).

Forward-Based Logistics and Maintenance

Forward-based logistics challenges—the Chornobaivka example

In addition to struggling with maintenance, the RF AF struggled early on with operating forward-basing logistics in Ukraine. Because of the inability to fully control the local lines of communication in Ukraine, the RF AF was limited to the extent of rail operations it could use to resupply. The inability to get fuel, petroleum, oil, and lubricants (POL), and other supplies to the vehicles on a large scale left units stationary for several days and vulnerable to UAF attacks. Additionally,



Whenever possible, repair points use modular repair by replacing faulty units with serviceable ones on hand or from captured Ukrainian equipment. (Russian Ministry of Defense)

RF VKS rotary wing assets operating out of Crimea had no forward arming and refueling points (FARPs).

In the south, in Kherson Province, the RF AF came up with the solution for challenges in that operational direction by establishing a forward-based logistics hub at the Kherson Airport in the village of Chornobaivka. After capturing the Kherson Airport on 27 February 2022, the RF AF emplaced a large forward-based logistics hub, several command posts (CPs), and a helicopter forward staging area there, all moved forward from Crimea. The logistics hub was regularly shelled by Ukrainian artillery in March 2022, with a total of 22 attacks reported on the location.

These strikes destroyed a significant number of RF AF helicopters, fuel stores, ground equipment, and supplies, and yet Russia kept using the location until the end of March 2022. The RF AF finally abandoned its operations there and relocated its remaining helicopters and equipment from Chornobaivka, with some helicopters seen in videos being towed away. Chornobaivka became the subject of many jokes and memes and an early

lesson in sustainment operations for Russian military logisticians.³

Russia deploys maintainers forward early

The RF AF operates on the principle of repair and resupply as far as possible and is comfortable with field expedient repair that is “good enough” to get the equipment back into the fight. As mentioned above, in the Special Military Operation, this means repair has often been conducted outside, in the dirt or mud or in mobile tent structures / available buildings.

Whenever possible, these repair operations emphasize modular repair, by replacing faulty units with serviceable ones on hand or from captured UAF equipment. Repair is primarily done with hand tools, with few power tools or other more automated procedures. If the equipment cannot be repaired onsite, it is sent further to the rear to be fixed at the next higher level, or back to a capital repair facility in Russia. Russian military maintainers struggled at the outset to keep up with the backlog of damaged or otherwise broken equipment in Ukraine, and those struggles continue.

In one of the early adaptations in the Special Military Operation, Uralvagonzavod—which boasts the largest tank production and maintenance facility in the world—deployed technicians from its facilities in Russia to assist the RF AF maintainers in Ukraine. The goals of these deployments included:

- Assisting military maintenance personnel in maintaining and repairing

equipment as quickly and as far forward as possible to return it to the fight.

- Reducing the number of vehicles and equipment required to be evacuated further to the rear in Russia to either a mobilization deployment support center, an armored vehicle repair facility or other facility, or even back to factories such as Uralvagonzavod.
- Providing deployed factory workers with first-hand knowledge/experience with vehicle and equipment issues stemming from their use in combat, that can be taken back to the factories for future adjustments/modifications.
- Providing an expedited training platform to develop much-needed skilled factory workers.

This effort was also designed to highlight how Russian military industry companies were supporting efforts in Ukraine not only from their facilities in Russia, but also side-by-side with RF military maintenance personnel near the front lines. In other words, demonstrating to Putin the commitment of the Russian military industrial complex to the SMO.

Companies like Uralvagonzavod and OmskTransMash have been under



Some factory workers deployed forward from companies such as Uralvagonzavod and OmskTransMash. (RT - Russian News Source)





tremendous pressure from the Russian government to produce and restore vehicles and equipment at an expedited pace to replace staggering losses in Ukraine. They have been working three-shift, 7-days-a-week schedules since the fall of 2022 to attempt to meet RF MOD demands. In addition to producing new tanks and other combat vehicles and fixing equipment damaged in Ukraine, the factories have also been tasked with restoring and modifying even older vehicles such as T-62 tanks, BRDMs, and even BTR-50 APCs which have been sitting in long-term storage areas for years. This further complicates the work on the factory floors and presents its own challenges in finding both replacement parts and workers able to restore this equipment.

Recruiting and deploying factory workers forward to support the fight in Ukraine is one way these companies are attempting to meet these challenges by more rapidly generating a skilled labor force. For those deployed workers, turning wrenches in an unheated maintenance facility in RF-occupied Luhansk Province is still preferable to occupying a trench in Bakhmut.⁴

Replacing Vehicles & Equipment in the Special Military Operation

Replacement vehicles - long-term storage

As Russian vehicle and equipment losses climbed dramatically early in the Special Military Operation, the RF AF began reaching back to long-term storage bases

in Russia for replacements. On 27 March 2022, Ukrainian Defense Intelligence (HUR) reported that the Russian ground forces were taking military vehicles from long-term storage.

At Klimovo Air Base in Bryansk Province (35 km from the Ukraine border), the Russian ground forces were deploying a “repair and restoration base”

to bring the stored vehicles up to serviceable condition. HUR commented that these vehicles were in such bad shape that it would be difficult for the ground forces to make them serviceable. HUR attributed this largely to the tendency to pilfer optics, electrical components, and precious metals from RF GF vehicles in long-term storage. HUR noted that only one of 10 mothballed tanks belonging to the 4th GTD were “more or less” operational. Some of these tanks did not even have engines.⁵

This removal of equipment from long-term storage has continued over the past 2 and



Russian T-62M inscribed with the Z symbol on display at the National Defence University of Ukraine, April 2024

a half years of the Special Military Operation. Many of these larger storage areas are located in eastern Russia, and the equipment is stored outside without regular maintenance.

In addition, the equipment is often cannibalized for spare parts to fix other equipment or to sell. As stocks of newer model replacement equipment dwindled, Russian logisticians reached back in time to older models, especially tanks, where T-90s, T-80s, and T-72s were replaced with older models. Additional issues with pulling from older models of equipment in storage include finding spare parts for them, with spare parts production lines no longer functioning. One of the adaptations that Russia has implemented to offset some of these issues is to use 3D fabricators to produce hoses, gaskets, and other simpler replacement parts, although the process is time-consuming and limited to more simple repair parts.

Armored combat vehicles in RF MOD open storage

In late October 2023, two open-source imagery researchers studied satellite images of 31 RF MOD storage bases and counted the number of armored combat vehicles in open storage. In total, there were 9,427 armored vehicles (3,677 BMPs and 5,750 other armored vehicles such as BTRs, BRDM-2s, and MT-LBs).

NOTE (1): The numbers of armored combat vehicles of various types stored inside warehouses or other structures across Russia is unknown. In October 2023, over 9,000 armored combat vehicles in open storage were still a significant number,

especially considering the high rate of RF armored combat vehicle losses. Also considering how many armored vehicles have already been pulled from storage sites in Russia since the start of the Special Military Operation. Some of these remaining armored combat vehicles were earlier models (BMP-1s or BTR-60s) and likely have not moved in over 10 years. Many of the vehicles will need significant repairs and, in some cases, they are only useful for spare parts. Despite these issues, RF AF and defense industry personnel continue to find ways to get armored vehicles of various types and ages working “well enough” to send to the fight, while the defense industrial complex continues round-the-clock efforts to produce new armored vehicles.

NOTE (2): A big issue that this study could not account for is cannibalism. Russian storage sites are notoriously used by nearby units (and sometimes not so nearby units) for parts, including engines. BMP-2 engines are long known as primary targets for cannibalization, and the RF GF had troubles as early as July 2022 finding enough BMP-2 engines, which in turn RF MOD sought from Kazakhstan and other Collective Security Treaty Organization (CSTO) allies. Cannibalization is why you do not see many T-64s drawn from storage and sent to units, even though it was the most numerous tank model in storage. T-64s were dispensed to the “DPR” and LPR” (Donetsk People’s Republic and Luhansk People’s Republic) militias starting in 2014, but a bigger problem was that the T-64 has many common parts which were later put on the T-72 and T-80.⁶ For decades, RF GF tankers raided storage sites for these common parts.



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Enter the T-54/T-55?

As the Russian tank inventories continued to be depleted through losses on the battlefield, Russian logisticians continued to reach back further to older models from long-term storage facilities. Apparently, the T-62 tank was not the bottom of the barrel. Vintage Soviet T-54 and T-55 tanks were also pulled from the 111th Central Tank Storage Facility in Khabarovsk Krai, in Russia's Far East. This is one of the largest armored vehicle storage facilities in Russia, including for T-62M and T-54/55 tanks.

Published "before and after" satellite images showed dozens of missing tanks, previously seen in the open space storage grounds. The Soviet T-54 tank was first produced in 1947, with the T-55 coming a decade later. They were very formidable tanks in the Korean War era, with up to 100,000 being produced by the USSR and its allies. The T-55 uses yet another caliber of ammunition. Its armor can be penetrated by any antitank system that Ukraine has—Javelins or Next generation Light Anti-tank Weapons (NLAWs) are not required. It requires a four-man crew (no autoloader) at a time when the RF AF appears hard-pressed to find enough manpower.

Trouble with T-62s?

In the summer of 2022, Russia started deploying the T-62 tank (itself an ancient relic, but newer than the T-55) to combat in Ukraine. There were reports of Russian plans to refurbish and upgrade 800–1,000 T-62s. In early 2023, UK intelligence reported on Russian plans to reconstitute the 1st Guards Tank Army (previously Russia's premier armor force) with



T-55 – in Ukraine (Zvezdanews-Russian news source)

refurbished T-62s (most of their T-80s have long since been destroyed or captured in combat in Ukraine). If Russia is already dipping into T-54/55 stocks, then the T-62 refurbishment must not be going well.

The T-62s were likely in worse shape than anticipated, picked over and cannibalized for parts over the past 60+ years. It is hard to imagine how the T-54/55s could be in better shape after up to 75 years of usage and storage. For comparison, Vladimir Putin is only 70 years old. Russia is not the first to use T-55 models in Ukraine. It is worth noting that in late 2022, Slovenia donated all of its M-55S tanks to Ukraine.

The M-55S is a Slovenian modernized version of the T-55. The M-55S was portrayed by Western media as "super-upgraded," but it is still ultimately a T-55 with some bells and whistles. So Ukraine actually deployed T-55 models first. It is possible that we could see a T-55 on M-55 engagement at some point.

Russian logic

Prior to the Special Military Operation, Ukraine's tank force consisted mostly of T-64s, and many of these have been lost. Since then, they have upgraded their force with T-72s donated by several European

nations, and T-72s, T-80s, and even a few T-90s captured from Russian forces. Still, Russia views the tank threat as primarily T-64s. Against T-64s, T-62s are not so much of a mismatch. T-55s are not ideal, but Russia sees them as primarily fighting against T-64s, BMP-1s, M113s, and other armored vehicles that are not that much newer than the T-55.

Ammo as another motivation?

The T-54/55 tank has a 100-mm cannon. It uses the same ammo as the MT-12 antitank gun, which has been deployed in Ukraine. Russian sources have unofficially acknowledged a "hunger" (a deficit) for 122-mm and 152-mm artillery ammunition over the course of the Special Military Operation. Additionally, 125-mm tank ammunition for T-72 and above tanks is also reportedly in short supply. It is possible that Russia still has large supplies of 100-mm ammunition, and they intend to use the old tanks for indirect fire. This (tanks providing indirect fire) is much more common in the RF AF than it is in Western militaries. However, given the likely age of the rounds, and the poor storage and handling procedures observed with other calibers of ammunition, the Troika wonders about serviceability of the 100-mm rounds.

Static Defense

Initially, Russia seemed to be using the T-55s in the defense of occupied territories. A T-55 dug-in to turret defilade could provide a stationary armored gun emplacement that would be hard to destroy. These would effectively be a steel bunker. In theory, it could be manned by only one crewman, loading and shooting.

Performance would be degraded, but it would still be a position that Ukraine would have to reduce or bypass. Later, T-55s were seen in some cases operating in the attack. We should also note that the BTR-50 armored personnel carrier (APC), another armored vehicle of similar vintage, has been observed on trains and in repair facilities, but has not yet appeared in large quantities on the battlefield in Ukraine (as far as the Troika knows). **Next up: T-34s?**

Fueling and Refueling Operations Adaptations to fueling and refueling ops

RF logistics units operating in the Special Military Operation have changed refueling operations procedures to improve security against attacks by Ukrainian forces. Since RF ground forces rely heavily on refuel from the rail, refueling operations are particularly vulnerable. Under ideal conditions, RF pipeline battalions in the MTO Brigades are capable of moving fuel



Russian Pipeline Battalion in action (Russian Ministry of Defense)

forward as the ground units move forward, reducing the need for large fuel convoys





over long distances to support offensive operations.

RF forces were not able to effectively use these pipeline units on a large scale early in the SMO to facilitate refueling. This resulted in the need for large refuel columns over considerable distances that were easily targeted by Ukrainian forces and thus suffered tremendous losses. Additionally, the UAF's increasing ability to target RF rear areas with accurate long-range fires, starting in summer 2022, caused additional problems for RF MTO refueling units. Some of the adjustments that RF MTO units within the various RF Groups of Forces have made over time to decrease the vulnerabilities of fueling / refueling operations include the following:

- Prepositioning heavily camouflaged fuel tanker trailers in various locations with perimeter security and reportedly moving them every 24 hours, along with varying the routes and times of the refueling trucks from the fuel tanker trailers to the various vehicle positions.
- Improving fuel convoy security, including reportedly varying routes and times, better camouflaging the trucks, using UAVs for reconnaissance, and improving convoy security escort procedures, including using truck-mounted ZSU-23-2 anti-aircraft guns or other short-range air defense systems to



Truck-mounted ZSU-23-2 anti-aircraft gun. (Russian MoD)

better protect the convoys against UAV targeting and attacks.

- Emplacing rear area pipelines with multiple fueling points, where possible, to increase the distance between rail-mounted and other fuel sources and the fueling convoys, along with improving fueling speed and efficiency. In one recent RF MOD video, a fueling pipeline with multiple fuel points somewhere in the Western Group of Forces' area of operations was set up along the empty tracks of a railhead, with no rail tanker cars in sight. The fuel convoy drives up alongside the railhead and is fueled using the pipeline's multiple fuel points simultaneously.
- Replacing older refuelers with newer ones whenever possible, to reduce the time needed to refuel combat vehicles and other equipment. For example, using the newer ATZ-12-10-63501 automated refueler, on a Kamaz chassis, which can hold 12,000 liters of fuel and refuel 10 vehicles simultaneously. This is used in place of other older truck and trailer-mounted refueling systems, which can only refuel one vehicle at a time and whose manual operations are slower and more manpower-intensive.
- With the growing threat from various types of unmanned aerial systems (UAS), refueling is often conducted using even smaller refueler vehicles, such as smaller pickup type refueling



ATZ-12-10-63501 automated refueler
(Russian Ministry of Defense)

vehicles, as well as using all-terrain vehicle (ATV)-like vehicles towing fueling trailers.⁸

Ukraine's campaign against Russia's strategic logistics—going after the fuel sources

In April 2024, the UAF launched a large-scale UAV attack simultaneously over Belgorod, Bryansk, Kursk, Tula, Smolensk, Ryazan, Kaluga, and Moscow Oblasts in Russia. Electrical substations were attacked in Bryansk Oblast, and oil depots in Smolensk Oblast were also hit. Electricity was shut off in areas of some Russian cities and towns and petroleum fires were videoed and posted from at least two targeted sites. Russian media claimed that the RF AF had shot down at least 50 Ukrainian UAVs. These attacks continued throughout the spring and summer of 2024, with one of the largest UAV strikes occurring against the Proletarsk diesel fuel depot in Rostov Oblast in August 2024. The resulting fire continued to burn and spread across the large fuel tank farm for 16 days.

Impact

Western observers estimated that since the UAF began its campaign earlier in 2024, Russian production of oil products

decreased by about 15 percent. Meanwhile, there are several indicators that this UAF campaign is affecting Russian strategic logistics:

- (1) Russia banned the export of refined petroleum in March 2024;
- (2) Russia has begun importing refined petroleum products from Belarus and is negotiating to do the same with Kazakhstan;
- (3) Russia is reportedly considering lowering the legal standard for commercial gasoline, i.e., what Russians buy at gas stations.

Since 2011, Russia has required gasoline to meet "Euro-5" requirements. This is a higher-quality product that burns much cleaner but requires more sophisticated refineries. Lowering fuel standards would allow Russia to use some of its older refineries that are incapable of producing Euro-5.

Civil vs. Military?

The debate over Euro-5 gasoline highlights another potential issue—the prioritization of military requirements over the civilian economy. While Russians have historically and culturally been willing to suffer great hardships in time of war, Vladimir Putin has also attempted to limit the impact of the SMO on Russian daily life. Soviet civilian autos such as the Lada run just fine on low-quality, high-sulfur gasoline. Modern Russian cars do not, nor do the Western imported cars favored by Russian elites. Low-grade fuel will decrease their performance and shorten engine life. The RF AF's military vehicle fleet, which is





Ukrainian drone attack hits oil storage depot in southern Russia (ANSA)

steadily getting older, will likely not have problems.

Refineries turn oil into diesel, gasoline, aviation fuel, and other products used by the RF AF

In spite of its substantial losses of tanks and other armored vehicles during the SMO, the RF AF remains a highly mechanized force. Any future RF offensives will require large amounts of refined fuel. Russia has plenty of oil, above and below the ground—they are still exporting. However, refinery capacity is limited, and refineries themselves use complex machinery, much of it made in the West.

Many of Russia's refineries were built by Western oil companies. As they have done with other Western products, Russians will find ways to circumvent sanctions and rebuild their refineries. However, this will take time and effort. Furthermore, most of Russia's petroleum refinery capacity is in western Russia, within the range of some of the Ukrainian indigenous-produced,

long-range attack UAVs and missiles. Protecting all these soft targets is overextending Russian air defense coverage.

Former Russian Defense Minister Sergey Shoigu showed his frustration multiple times with the RF military industrial complex, that they cannot provide more and better air defense systems to deal with the Ukrainians' low and slow attack UAVs. (Russia's air defense system, like ours in the United States, is built to contend mostly with high-altitude, high-speed threats.)

It's hard to cover up a burning oil refinery

Ordinary Russians may treat official reports from the SMO with some quiet skepticism, but it is easier to believe official narratives about Russian military successes from a distance. Russian state media claimed that the RF AF had shot down all UAF attacking UAVs, yet Russians see nearby refineries such as the Proletarsk fuel depot or other fuel depots in flames and see that the



electricity is knocked out in sections of their cities. Russians on social media continuously demonstrate their surprise at such Ukrainian successes and ultimately, their surprise that Russia is actually at war, despite Russian government portrayal otherwise. There is likely a psychological effect on Russian citizens as they try to reconcile official narratives with the reality around them.⁹

Reliance on Rail-Based Logistics Russian strategic design

Russians frequently design their operations plans around rail connections (key terrain to them) and eventual resupply by rail. To be successful in Ukraine, local lines of communication needed to be seized and controlled to fully facilitate rail traffic. Railroad gauges in Russia, Belarus, and Ukraine are the same and the gauge does not change until the Polish border.

The RF AF was successful in the south and east initially with securing those lines of communication and the important rail lines that go with them. For example, because of the rail lines' importance, the small village of Volnovakha in southeast Ukraine was a Russian subsequent objective for the initial attack in February 2022, because of its location at the crossroads of key road and rail lines. It was seized in March 2022 by BTG1 / RF 810th Guards Naval Infantry Brigade after it came ashore at Berdyansk. The RF AF were never able to exploit that success because the same rail lines from Donetsk city to

Volnovakha and points west were always within range of Ukrainian tactical artillery.¹⁰

In some cases near Donetsk city, the main rail line southwest was only 10 km from Ukrainian positions between Validar and Marinka. After the RF General Staff and RF Joint Group of Forces failed in fall 2022 and spring 2023 campaigns to take Vuhledar, they realized that they could not push the UAF further north and northwest and out of artillery range from Volnovakha, so they started work on a new railway connector 20 km to the south. Newer UAF long-range fires capabilities with greater ranges have not stopped this Russian military planning focus nor the construction, even after some portions were targeted in 2023.



Top – BMP-2 firing from a Russian Military Train
Bottom – Yenisei Russian Train
(RIA Novosti)





Support from the Russian railway troops

The Russian railway forces are the oldest such force in the world, operating since 1851 with a strength of around 26,000 soldiers. They consist of 10 separate brigades and two separate pontoon-rail bridge battalions tasked with rail preparation, construction, and protection.¹¹



Russian Railway Troops Emblem

Elements of the railway forces have been operating in Ukraine since February 2022, and some were rolled up by the UAF early on. For example: elements of the 43rd Separate Railroad Brigade from Ekaterinburg, Russia were captured early and included a significant number of conscripts. Later, elements of other railroad brigades were deployed in eastern Ukraine. Soldiers from a Russian pontoon-rail bridge battalion constructed a railroad pontoon bridge over the Oskol River in 2022 to transport units and equipment to Kupiansk and Izyum.¹² The UAF destroyed the bridge in fall of 2022. The 38th Separate Railroad Brigade from the Western Military District was used to repair and restore lines around Kharkiv. Elements of railroad brigades are employed extensively in the south, especially along the Crimea-Melitopol-Donetsk lines of communication.

To assist in operations, the railway forces have armored trains. These trains are equipped with anti-aircraft and other

machine guns, mortars, anti-tank missiles, and two BMP-2s onboard that can be deployed or can also fire from the train. There is also a UAV section, a minesweeper/sapper section and rail reconstruction assets onboard. These trains are currently operating primarily along the eastern Ukrainian border, from Bryansk in the north to Rostov-on-Don in the south, to facilitate resupply operations.

Impact of the Kerch Strait Bridge attack

The partial loss of the Kerch Straits Bridges, which were reduced to just one railroad track and no trucks by the early October 2022 attack, disrupted the RF AF's ability to logistically support any resumption of RF AF attacks northward in Zaporizhzhia Province, or into north Kherson Province. In the meantime, RF AF Railroad Forces (*РФ ВС ЖДВ*) frantically tried to reestablish a rail line from Russia through Donetsk city, southwest to Volnovakha, a key rail hub that connects with rail lines west to Tokmak, Melitopol, and Crimea, as well as south to Mariupol.

Volnovakha was an initial RF Southern Group of Forces objective seized in March 2022, but RF AF were never able to exploit that success. This was because the same rail lines from Donetsk city to Volnovakha and points west were always within range of Ukrainian tactical artillery. In some cases near Donetsk city, the main rail line southwest was only 10 km from Ukrainian positions between Vulhedar and Marinka. As a backup, the RF AF logistical commands established a sea line of communication from ports on Taman Bay



Repairs on Kerch Strait Bridges

just east of the Kerch Straits by large landing craft and ferries to Mariupol.

Trucks were ferried to Crimea from Russia and back, but these ferries were also used as the supply route for the entire civilian population on Crimea. As such, the bridges and ferries to Crimea were quickly overwhelmed on both ends. This also increased the number of RF AF ground convoys subject to attacks, including one RF AF ground convoy near Chonhar, just north of the northeast exit and entry point to Crimea. Chonhar is 35 km north of Dzhankoi, a main hub for RF AF logistics and all movement in and out of Crimea to and from Melitopol, Zaporizhzhia Province.

The Kerch Strait Bridges, especially their railways, remain the RF AF's most important main supply route (MSR) to RF-occupied southern Ukraine. The Russians lack a rail link from Rostov Oblast or RF-occupied Luhansk Province to RF-occupied southern Zaporizhzhia Province. Roads west from Rostov-on-Don are also congested with logistics and frequently targeted by UAF long-range fires. Satellite images confirmed that the Kerch Straits Bridges' truck and auto span, damaged during the 17 July 2023 UAF unmanned surface vessel (USV) attack, has been replaced. In addition, images

showed that cables are now strung between barges beside the bridge, likely as a barrier against future USV attacks.¹³

Attacks against Russian resupply continue into summer 2023—attack at Chonhar

The UAF continued to strike RF AF logistics hubs across the battlespace well into summer 2023, at locations such as Melitopol, Berdyansk, and Tokmak in the south, as well as other locations in the east. In response, Russia began to create alternate logistics hubs that they felt the UAF was less likely to attack, including at Enerhodar, the town closest to the Zaporizhzhia Nuclear Power Plant. In addition to a military equipment repair base, the Russians situated an ammunition depot there.

In June 2023, the Chonhar Bridge in occupied Crimea was struck overnight by a French SCALP (Storm Shadow) missile. According to Russian-appointed authorities in the occupied regions, several bridges were also attacked on the border between Kherson Province and Crimea, including an allegedly non-operational railway bridge over the Sivash Lake.

Chonhar Bridge is one of the two main bridges that connect northern Crimea with the Ukrainian mainland and just south of it is the RF AF airbase and logistics depot at Dzhankoi, the logistics base mentioned earlier that supports RF AF in south Ukraine. There was one major crater in the bridge, rendering at least one lane of the road bridge unusable. The other lane could probably





be used by lighter wheeled vehicles.

With the Chonhar Bridge damaged, wheeled traffic (other than very light vehicles) traveling north to Russian-occupied Ukraine had to divert to the west, to the bridge at Armanyansk. This route added 120–140 km to the trip to Melitopol. A long line of trucks and cars began forming at the checkpoint *Perekop* as a result of the strike on the Chonhar Bridge. According to Russian military correspondents, approximately 70 percent of all military and commercial traffic going north from Crimea traveled through Chonhar. Although the UAF continued to strike the Chonhar Bridge, the Russian railway forces were successful at repairing the rail connection each time.¹⁴

Fall 2023 rail construction in the south

Continued issues with normal rail traffic across the Kerch Straits Bridge from the October 2022 attack continued to affect resupply efforts in the south, despite satellite images in the fall of 2023 that showed the rail and vehicle spans had been replaced. Most RF AF reinforcements sent from the Kremmina and other areas to Robotyne—to include the 76th Guards Division and the many BARS (operational reserve) battalion-sized formations that were moved in late August and September 2023, were sent via rail over the Kerch



Chonhar Bridge

Straits Bridges through Crimea and north into southern Ukraine.

However, continuous heavier loads on the bridge continued to be a concern and prompted renewed efforts to build a direct railway connection between Mariupol, Volnovakha, and

Donetsk. The construction of a new railway bridge began across the Kalmius River near Hranitne, 45 km north-northeast of Mariupol. It was intended to connect the existing Mariupol-Aslanovo-Kalchyk-Volnovakha rail line to a direct connection with Taganrog and Rostov-on-Don, Russia.

The Russians are also building a second new rail line along the Sea of Azov coastline from Taganrog to Mariupol, which will be further from UAF long-range capabilities. Eventually, the rail line to Mariupol will also connect with a third new rail line which will be both parallel and closer to the Sea of Azov coast from Mariupol to Melitopol. That line is just being started and will complete a series of Russian rail connections from Rostov Oblast through RF-occupied Donetsk, Zaporizhzhia, and Kherson Provinces to Crimea.

The eventual Mariupol to Melitopol railway will replace a rail line further north that is too close to front lines and has been unusable for that reason throughout the Special Military Operation. That line will be a relatively easier engineering problem due

to the flat, dirt, and sand geology with few rock formations and few bridging requirements. However, it is also a much longer distance at 160 km. This would complete a rail connection from Rostov Oblast by rail to Crimea, which should reduce the Russians' dependence on the Kerch Strait Bridges, as well as seaborne resupply to Crimea. Ukrainians are, of course, paying close attention to all three ongoing Russian rail construction projects in RF-occupied areas of Ukraine.¹⁵

New railway segment from Mariupol to Rostov-on-Don in use

As of August 2024, rail fuel tankers are already using the new railway line and have been seen traveling from Mariupol to Rostov-on-Don. In terms of resupplying Russian forces in the SMO, one train of fuel tankers from Mariupol replaces the equivalent of 10 days of resupplying the same quantity of fuel needs using the road network.

This also comes at a time when UAF attacks on Russian rail ferries have crippled seaborne fuel supplies to Crimea.

Three railway ferries “Avangard,” “Slavyanin,” and “Conro Trader,” with the capacity of 40–50 fuel tanker rail cars each, were delivering fuel to Crimea via the Kerch ferry crossing after the Kerch Strait Bridge was damaged in 2022. The UAF hit “Avangard” in May 2024, seriously damaging it. “Avangard” is undergoing



Russian ferry “Slavyanin” before UAF attack

repairs, and it is unknown when it will return to service.

The UAF damaged “Slavyanin” in July 2024, and the ferry is currently in the Sea Azov awaiting repairs. The final rail ferry “Conro Trader” sank after a UAF attack on 22 August 2024 in the port of Kavkaz, paralyzing the Kerch ferry crossing for an indefinite period. Fuel is not delivered to Crimea via the Kerch Strait Bridge by rail, even after the bridge was repaired, because of the weakened rail structure.

Adaptation—new Russian rail cars to transport military personnel and equipment

Russian soldiers and equipment are primarily transported to and from Ukraine using commercial railroad cars. As the Special Military Operation has progressed, the RF MOD has seen the need for

military-specific railroad cars. The Russian facility Uralvagonzavod, which makes railroad cars as well as tanks and other equipment, has begun producing universal covered railroad cars specifically for the RF

MOD to transport personnel and equipment. These cars have the ability to have berths installed inside and include ventilation and hookups for heating equipment. They also have larger door openings and a load capacity of 68 tons.



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The Russian Military-Industrial Complex Support to Sustainment

Building on 24 months of around-the-clock operations in Russian defense factories

The RF defense industry has been fully mobilized and is under constant stress since July 2022 to ramp up production across the board in military equipment, supplies, and ammunition. *Russia is a nation at war.* Numerous sanctions have been imposed on microchips and other Western technologies that Russia traditionally uses in its military hardware, and much-needed technical expertise has been drained by mobilization.

Despite this, tanks, BMPs, artillery and ADA systems, UAVs, aircraft, and ships will continue to roll off Russian production lines in even greater numbers, while additional production facilities are being constructed. In some cases, Russia has found workarounds to obtain sanctioned technologies; in others, they simply use technology that is of “adequate quality” to get the job done on the battlefield. These efforts are aided by the RF MOD doubling down on efforts to quickly repair damaged equipment and refurbish older weapon platforms closer to or in the SMO zone (Ukraine) while continuing new production.

According to the previous RF Defense Minister Sergei Shoigu, since the start of the SMO, 270 field repair shops have been created at key military-industrial complex enterprises, specifically for this purpose. Russian defense companies have also found innovative workarounds to meet their defense production obligations. In one



Product 54 (Russian state media)

case, the RF Aeroscan company (producer of the ZALA Lancet-3) was able to ramp up the pace of development and production of its Product 54, a Shahed-like loitering munition, by quickly converting already suitable space at the Italmas shopping mall in Izhevsk (1,100 km east of Moscow) left vacant by the lease terminations of Western companies such as IKEA and McDonalds.

Finally, the lack of budgetary restrictions and the pressure (or terror) from the Russian Military Industrial Commission working group to enforce state quotas are more than sufficient motivation to drive the Russian defense production machine.

Setting the arming and equipping conditions for continued operations

Increased and sustained defense production efforts, coupled with ongoing repair and refurbishment efforts of both older weapons and equipment, means enough kit to reconstitute existing RF AF units, as well as to arm and equip new units in 2024 and beyond. Not all RF AF units will be equipped with the latest and greatest, but they will be equipped with weapons and equipment of “adequate

quality” and in sufficient quantities by Russian standards.

New and refurbished ammunition production, especially artillery ammunition, will also increase to augment and build stockpiles replenished by North Korean and Iranian donations. Russia will “double-down” on UAV production in 2024 with the commencement of the “Unmanned Aircraft Systems” national project and plans to allocate 64 billion rubles (~\$715 million) to the project from 2024 to 2026, for a total of 900 billion rubles (~\$9.9 billion) investment until 2030.

A significant portion of the funds will be “redirected” from previously allocated funds for environmental improvement projects, in particular, funds designated to eliminate landfills in Russian cities. The RF AF will continue to conduct attrition warfare to wear down Ukrainian combat power and resolve. The Russians believe this arms production surge, in combination with refitted and newly equipped RF AF units supported by ample supplies of ammunition, will facilitate Russia’s continued operations in 2024 and beyond.¹⁶

The Russian military industrial complex remains under pressure to ramp up production

The Russian military industrial complex continues to be under significant pressure from the government to increase their production pace of key weapons and equipment for the Special Military Operation. Factories continue to work in three shifts, 7 days a week, to try and meet production demands. In addition to supply challenges related to enforcement of



Top - North Korean Supplied Artillery Ammunition
Bottom - North Korean Supplied MLRS Ammunition
(Russian Ministry of Defense)



Western sanctions, in many cases, there is a shortage of technically skilled plant workers. Some of these workers, who by Russian law should be exempt from mobilization, have been mobilized anyway either to fight in Ukraine or to support RF AF equipment repair operations near the front.

Most of Russia’s military industrial complex consists of state-owned enterprises. Rostec and Almaz-Antey are among the largest Russian state-owned enterprises, along with Roscosmos, Tactical Missiles Corporation, United Shipbuilding Corporation, and Rosatom’s nuclear weapons division (all together about 2 million employees). This gives the state, i.e., the RF government, the ability to ramp up defense production and increase quotas, and they have done so. The threat of mobilization provides additional negative incentives for recalcitrant managers and/or





workers, although as noted above, the exemption from mobilization for defense industry workers is sometimes violated.¹⁷

In September 2022, Putin ordered two additional armor repair facilities to be constructed in Ramenskoye, southeast of Moscow and in Kamensk-Shakhtinsky, near the Ukrainian border, to assist in getting damaged tanks and other armored equipment back into the fight. Additionally, during a visit in February 2023 to the OmskTransMash factory, former President Dmitry Medvedev, Putin's deputy for overseeing military industry, relayed the task from Putin to a very nervous-looking factory leadership for Russian defense industry to produce or modernize 1,000 tanks in response to additional tanks being provided to Ukraine by the West. Military uniform-producing facilities and companies have also ramped up production with shift work, 7 days a week, especially since fall 2022, to meet the uniform demands generated by the partial mobilization. There were several reports from the fall 2022 mobilization that mobiki were only being issued one uniform before being sent to Ukraine, and it was often the summer uniform variant.¹⁸

On 3 March 2023, Vladimir Putin took an additional step in mobilizing the Russian defense industry by signing a decree that enables the state to suspend directors and shareholders of companies that fail to meet state defense contracts under the conditions of martial law. The decree would allow the Russian Ministry of Industry to name replacement administrators for the suspended company leadership.



Top - Medvedev meets with OmskTransMash leadership
Middle - OmskTransMash factory floor during Medvedev visit
Bottom - OmskTransMash factory floor during Medvedev visit
(Russian Ministry of Defense)

In October 2022, Putin introduced martial law in the four regions of Ukraine that Russia illegally annexed in September 2022. This latest Putin decree builds on previous measures taken related to the Russian defense industry that were introduced in July 2022, which included:

- (1) Setting the conditions for overtime and round-the-clock work at Russian production and other facilities;

- (2) Making it illegal for companies “regardless of their organization or ownership” to refuse government contracts for supplying goods and services; and

- (3) Giving the state “carte blanche” in adjusting the quantities and prices of the contracts as needed, without any reclama by the companies involved.¹⁹

Why this decree?

The Russian Federation may be an autocracy, but Russians are also very legalistic, and Putin almost always makes certain that he has the proper authorities in place for his actions, even if he grants himself authority by his own decree. This new decree makes Russian defense policy consistent with the previous measures put in place that essentially fully mobilized the defense industry without formally declaring a full mobilization. While not a perfect analogy, this is somewhat akin to the Defense Production Act in the United States, which was used frequently during the COVID pandemic. Even prior to this order, much of Russian defense industry remained in state-owned enterprises.

So what?

This decree is significant because it represents another step in the full mobilization of Russian defense industry in support of the war effort. Many in the West like to compare the Russian defense budget with that of the United States and its NATO allies—actually, it is a small fraction thereof. That is not necessarily relevant due to purchasing power parity (PPP); Russia pays far less for its far less expensive weapons, ammunition, and other

costs. Or they compare Russian industrial output and/or potential to that of the United States and Europe—again, Russia's numbers are not even close to Western numbers.

However, neither of these comparisons is particularly relevant to the war in Ukraine. The more important statistic is defense industrial output, and here Russia seems to have the advantage. “The Arsenal of Democracy” is not what it used to be, at least as it pertains to support for Ukraine, with Western government and industry leaders warning of long delays, low volume, and closed production lines. Meanwhile, “the Arsenal of Autocracy” has mobilized its entire defense industrial base in support of Russia's war in Ukraine. Russian factories have been given quotas for all manner of defense equipment and supplies, and factory managers face severe penalties if they do not meet them. The Iranian defense industry has also supported Russia's war effort with Shahed and other UAVs, which have been used extensively, as well as individual soldier kits such as body armor. North Korean industry has supplied significant quantities of ammunition and in particular, artillery ammunition. For now, at least, Russia clearly has the advantage in defense production.²⁰

Innovation at scale—the role of “startups” in supporting the Russian military industrial complex

The Troika has previously reported on Russia's ability to achieve battlefield parity with the UAF in military and COTS UAV solutions, not just with technology, but especially with overwhelming volume. In





the case of UAVs, the Russian defense industry has proven that it is quite capable and even innovative in obtaining solutions and adapting them as battlefield conditions rapidly change. In this regard, Russian society in general, and startup companies in particular, have been an economical and efficient means to kickstart the process that has led to development, production, and deployment on a massive scale.

There are a multitude of types of First Person View (FPV) UAVs being flown by both sides over the battlespace in Ukraine, and most of them are adaptations of COTS technology. Individual Russian volunteers and volunteer organizations have been at the forefront of organizing and funding these various UAV projects. One of the most notable on the Russian side is the “VT-40” of the Sudoplatov “Judgment Day” project described above, but there are additional less well-known ones with names such as “Gadfly,” the “Hortensia Series,” and “Ghoul.”

The “Ghoul” FPV UAV, in particular, serves as a good example of how a new generation of Russian entrepreneurs is taking the initiative using startups not to develop better smartphones, product delivery services, or ride share apps, but instead to develop and implement

innovative solutions to the battlefield quickly, that are later adopted at scale by the RF MOD and its military industrial complex.

Social media platforms such as VKontakte (Russian Facebook) and Telegram provide the startup base. Russian social media platforms have been crucial in coordinating

Russian civil society’s overall efforts to support the SMO with various equipment and other donations. They have also been key for startups to get their footing in development and production. The “Ghoul” FPV UAV was created by an engineer from Yekaterinburg. Ideas for the UAV project started on VKontakte as early as 2017, migrating over time to

the increasingly popular Telegram platform. According to the founder, initial investments for the project were through donations totaling 9 million rubles (~\$97,000) and were collected via multiple Telegram channels. These donations from friends, family, and personal funds ultimately formed “crowdsourcing” funds that were then used to prepare the prototype versions of the UAV, which gave the UAV a second title of “the people’s UAV.”



Iranian-made Shahed-136 Kamikaze drone



Top - “Ghoul” FPV UAV (top)
Left Bottom - Initial Set of Ghoul FPV UAVs
Right Bottom - Ghoul FPV Modified Munition
(Telegram - Various)

Battlefield testing and refinements

Mobility and readiness to rebuild “on the fly” are critical to success in a technology like UAVs, in which both sides are adapting so quickly. In this regard, Russian military startups can better manage this process because they are small enough to be flexible and are not bound by endless volumes of regulations associated with the Russian military industrial complex. According to the design team, in the case of the “Ghoul,” the UAV’s design changed approximately 80 percent from the original prototype, thanks to multiple combat tests in Ukraine.

Project team members in essence became “ambassadors” for the UAV by testing it on the line of contact during multiple trips for instant feedback and modifications. Some team members even remained embedded in the units using the UAV to further

validate the program. The final prototype was then beta-tested at training areas operated by the RF MOD’s Main Directorate of Innovative Developments.

Ural “kids”—young people lead innovation

Young people from all over the Urals were recruited for the “Ghoul” project and the average employee age in the enterprise is just 25 years. Those responsible for development are even younger, at an average age of 22 years. The developers work primarily on modernization efforts, including better antennas, modules to assist in defense against electronic warfare (EW) systems, and incorporating new technologies such as “supervised learning” and automatic target acquisition.

One of the enterprise’s significant challenges is personnel turnover, as those young people recruited to the project from the student population of university military training centers in the end must sign a contract to serve with the RF MOD, and new people must be recruited to replace them. Salary is 60,000 rubles a month (~\$640) and higher for assemblers, and 120,000 rubles a month (~\$1,300) and higher for developers.

Scaling the business

By the end of 2023, the “Ghoul” had proven itself repeatedly, especially in deadly attacks against the UAF on the Dnipro River near Krynyky. The UAV, however, was still being produced in the same 30-square meter facility where it started, and production needed to expand. The project then received support from the RF



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government, which not only provided for a newer, larger facility, but also provided 60 percent of the financial support through UAV orders, with the remaining portion of the business still funded primarily through donations. Production rates increased and production times decreased; production that previously took a month now required only a week.²¹

The Role of Civil Society in Supporting Logistics

Mobilizing civil society

Along with the military-industrial complex, Russia has also mobilized its civil society (including milbloggers), which over time has played an integral role in equipping RF AF forces in the SMO through official and unofficial channels. Russia has used this mechanism to buy much-needed time for its domestic defense production to “catch up” to requirements by obtaining help from home. Russia’s civil society has stepped up its efforts in collecting and distributing military equipment and supplies to RF AF units operating in Ukraine through well-organized and well-coordinated networks across Russia; we expect no abatement of those efforts moving forward.

As early as summer 2022, volunteer organizations across Russia began stepping up to fill basic supply and technology needs for Russian units and individual soldiers, in many cases overcoming significant shortfalls in RF AF official supply channels. These efforts increased after the partial mobilization in fall 2022 with the span of contributions ranging from individual equipment, optics and field medical kits to UAVs, radio

systems, and even vehicles in some cases. As recently as spring 2023, the RF MOD, General Staff, and RF AF commands not only showed little appreciation, but in many cases outright refused to acknowledge private and civil society efforts to fill these logistics gaps. Russian commanders typically prefer control over all matters, large and small, even when they cannot get necessary supplies or capabilities through normal channels. There were many cases, early on, when donated items were “hung up” in RF government bureaucratic procedures or were pilfered along the way before they reached the intended units or soldiers.

Starting in the summer and fall of 2023, however, supply and equipping efforts began to formalize between MOD and civil society, with COTS solutions to address changing conditions on the battlefield gaining more prominence. Efforts to systematically provide large numbers of both attack UAVs and trained UAV operators is an example of this coordination.

Other UAV supply efforts, medical equipment drives, tactical radio procurement programs, optics purchases, and a range of other assistance have become officially celebrated, welcomed, and facilitated by the RF MOD and the RF AF. Overall, this has greatly accelerated the RF AF’s ability to rapidly modernize at tactical levels without the burden of completely overhauling Russian acquisition systems, a move which also would have been an invitation to new forms of corruption. These equipping efforts have continued through 2024 and

overall, the Troika is seeing better equipped Russian soldiers operating in Ukraine. For example, regarding individual equipment, the Troika continues to see that the quality of individual equipment varies from soldier to soldier but is much improved from equipping efforts conducted during the partial mobilization. This approach has been particularly effective in providing large quantities of various types of commercial FPV UAVs to the RF AF, showcased by the very lethal (maybe decisive) “Judgment Day” (Судный день) project.



VT-40 UAV (Russian Ministry of Defense)

Russian civil society UAV support

Russian volunteer organizations and private businesses took the initiative early in the Special Military Operation to speed up the pace in fabricating and modifying off-the-shelf attack UAVs for Russian forces in Ukraine. These organizations used posts on Telegram channels, such as the Reverse Side of the Medal (RSOTM) and Russian UAV (Русский беспилотник), to coordinate activities with promises of delivering as many of these attack UAVs as possible in advance of the 2022 summer

operations in Ukraine. These Russian volunteer organizations also began providing UAV operator training that continues. In addition to the UAVs and the training, volunteer organizations began assisting with incorporating a variety of munitions to be dropped from commercially acquired UAVs.

The munitions shown in one Russian volunteer workshop ranged from captured Norwegian and Polish mortar shells to VOG-17 30-mm grenades, to ordinary fragmentation hand grenades, to homemade munitions housed in casings with tail fins produced on a 3D fabricator. The 3D fabricator also produced casings and tail fins for the VOG-17 grenades. Separate rudimentary plastic tail fins were shown attached to the hand grenades. In addition to fabricating and modifying the munitions, civilian groups also modify various commercial UAVs to deploy the munitions. The emphasis is primarily on quadcopter UAVs of different sizes, such as Chinese-produced DJI FPV UAVs, but they were also working on some winged (airplane-type) UAVs as well.

Sudoplatov “Judgment Day” or “Doomsday” (Судный день) project, the showcase civil society project

This UAV project has its origins with Maksim Fomin (aka Vladlen Tatarsky), who was killed in an improvised explosive device (IED)



Fomin





attack in a St. Petersburg café in April 2023. Fomin was a popular Russian milblogger and former soldier who had been an advocate of a more aggressive military approach in Ukraine, which included increasing the use of attack UAVs. The Telegram channel “Russian UAV” (*Русский беспилотник*) was created in February 2023 and served as the primary communications platform for supporting and coordinating the project. The RF GF 9th Motorized Rifle Brigade / 1st Army Corps was the primary testing unit for the UAVs. However, UAVs were provided to other RF units, including artillery, engineer, and VDV formations. The name “Sudoplatov” most likely refers to Pavel Sudoplatov, who was born in Melitopol, Ukraine, served as an intelligence officer in the Soviet Union, and reached the rank of GEN-LT. He was involved in several major Soviet intelligence operations, including the assassination of Leon Trotsky.

The “Judgment Day” project included workshops for modifying commercial quadcopter UAVs and fabricating tail fins and other pieces for the ammunition, along with training centers for training UAV pilots. (A UAV workshop in Moscow was renamed after Vladlen Tatarsky.) The project initially, reportedly, both purchased the UAVs and received them as donations from Russians inside Russia, as well as from abroad. In

one Telegram post, a donated UAV was shown as gifted by the Russian Cultural Center in Cyprus. Later, the quadcopters were mass-produced and standardized and carry the name VT-40 (*Vladlen Tatarsky*). These are quadcopters, typically with a base frame of either 7 or 9 inches, with motors of various capacities and propellers of different diameters, along with controllers, digital or analog cameras, FPV headsets, antennae, and GPS receivers.



Judgment Day «Судный День» Project (Telegram)

The most popular model is the FPV PVX-1 (*ПВХ-1*), which can carry a 3-kg payload and has a flight range of 8 km. The quadcopters can be fitted with a variety of munitions, with some munitions capable of being

remotely detonated for greater effect. The larger PVX-1 can carry a Lancet warhead or a MON-50 anti-personnel mine (a Soviet knockoff of the M18A1 Claymore mine). The smaller quadcopters are limited to lighter loads, such as the VOG-17 or RKG-3 grenades or IEDs of various types. The VOG-17 and RKG-3 grenades are often fitted with a casing and tail fin for greater flight stability.

There are various UAV pilot training centers associated with the project in Russia. In one video, a training center boasted a capacity of 40 students per training class. In another video, a training center shown consisted of benches of students using UAV controllers connected to laptop-based



simulators. In the video, a masked UAV instructor standing in front of a VDV flag thanked the Sudoplatov “Judgment Day” project for providing the training center and stated that four units of VDV UAV operators have already completed their training. The Sudoplatov “Judgment Day” project was likely supported at one point, in part, by private military company (PMC) Wagner, which had connections to Maksim Fomin and posthumously named him to the ranks of PMC Wagner’s mercenaries. The base of that support was likely coordinated from the PMC Wagner Center, which opened in November 2022 in St. Petersburg and was later closed. The UAV operator training centers were also excellent recruiting platforms to lure personnel into the ranks of PMC Wagner.²²

Another lesser-known example—Russian civil society initiative provided some secure digital comms to RF AF units in the SMO

In May 2023, Vladimir Orlov, Chairman of the Board of the Russian interregional public organization “Veche” (MOO Veche), together with RF milblogger Boris Rozhin (Telegram Channel Colonelcassad), started an initiative to provide better secure digital



*RF milblogger Boris Rozhin
(Telegram Channel Colonelcassad)*

communications to RF AF units in the Special Military Operation.

NOTE: MOO Veche was added to the U.S. sanctions list in November 2023 and continues to provide large quantities of equipment to RF AF forces in Ukraine. MOO Veche-raised funds were initially to purchase test radios from a Chinese supplier to equip one company-sized unit (two base stations and three individual terminals) at the cost of 2.2 million rubles (~\$25,000.) The radios then underwent testing in a RF AF training area. The purchase order later expanded to outfit an artillery battalion (NFI) in the RF GF 1st Army Corps (eight base stations and 10 individual terminals) at the price of approximately 7.5 million rubles (~\$83,000). In late October 2023, in a video posted from a RF GF 10th Separate Tank Battalion command post (military unit 08810) / 1st Army Corps, a RF GF officer (NFI) thanked MOO Veche for the radios and demonstrated their capabilities both in communications and UAV-corrected artillery fire via the digital screens in the CP. The radio brand, model number, and other identifying information were blurred in the video. According to Orlov, previously, the transfer of data from a UAV to an RF AF artillery crew could take up to an hour; however, the Chinese system reduced it to less than a minute. Orlov added that digitalization of one RF GF motorized rifle or tank brigade’s communications using this system would cost approximately 85 million rubles (~\$944,000). To raise such funds, volunteers would require much more active business participation and additional support from government agencies.





Chinese radio system capabilities

According to Orlov, the radio system that they purchased can deploy a self-organizing broadband MESH data transmission network up to 200 megabits per second. That speed allows video from UAV operators to be transmitted directly to higher headquarters and artillery units so that artillery fires can be adjusted in real time, which significantly improves accuracy. The data is encrypted at the Advanced Encryption Standard (AES) 256 level and the system supports installation of other encryption algorithms, including GOST.



Azart R-187-P1 handheld radios

NOTE: The GOST block cipher is the former Soviet encryption standard GOST 28147-89, which was the Russian encryption standard in 1989. The system can also connect repeaters to the Digital Mobile Radio (DMR) network and create a single circuit for brigade-level network administration. The system uses a stable network topology capable of operating in electronic warfare conditions. Access to any terminals lost or captured by the enemy can be terminated with the click of a mouse.

What about a Russian-made radio system instead?

According to Orlov, MOO Veche searched extensively for possible secure digital radio solutions from Russian vendors. However, there were no private suppliers with a system proven to be analogous to U.S. Harris Falcon-3/4 radio system capabilities in a hardened battlefield design. The Chinese radio system purchased was “the little brother” export model of a Chinese digital radio system produced by the Chinese military industrial complex. Orlov also highlighted that issues remain with the current Azart family of Russian digital radios being used in RF AF units (NFI).

NOTE: According to a UAF source, in addition to interoperability challenges between the Azart family of radios and older RF AF radios, as of September 2023, the RF AF had lost almost half of the Azart R-187-P1 handheld radios brought to the Special Military Operation. The bulk of losses occurred during the withdrawal from Kyiv and the Kharkiv counteroffensive.

Plethora of DMR and DMR-like radios in RF AF units

Unsecured DMR and DMR-like radios still dominate RF AF communications across the SMO. By some estimates, there are well over 60 different types of commercial radio platforms being used by RF AF units, which were often acquired through purchase or donations. According to Orlov, Chinese Baofeng radios still lead the way. However, there are also Lira, Kirisun, and other Motorola radio clones used extensively in RF AF units. Orlov admits that his current initiative is considerably

more expensive than giving every RF AF soldier a Baofeng or other DMR-like radio. However, for the money, the Chinese radio system will help bring RF AF units closer to the U.S. level in terms of communication levels and speed of decision-making.

NOTE: Russians frequently hold up the U.S. military capabilities as the standard for certain warfighting capabilities that they are trying to incorporate, such as Harris’ Falcon-3/4 mentioned above.

Conclusion

This initiative to improve secure digital communications in RF AF units in the SMO demonstrates the extent to which Russian civil society contributes by introducing newer capabilities and filling logistics gaps left by the RF MOD. This project and the “Judgment Day” civil society UAV project are a considerable step up in sophistication to the more ubiquitous Russian volunteer efforts to supply uniforms, body armor, medicine, heaters, and other equipment and supplies that the Troika has observed over the past 24 months.²³

Foreign Assistance Impact on Logistics

Getting by with a little help from your friends: Belarus, North Korea, and Iran

The RF AF has benefited from logistical help from various countries. Belarus has provided Russia with virtually every type of support possible, other than providing soldiers to fight in Ukraine. In terms of sustainment support, this has included initial staging and supply/resupply areas and serving as a damaged equipment/

casualty evacuation point early in the Special Military Operation. Belarus also served as a transit location for the lift and shift of RF Central and Eastern Groups of Forces and VDV by rail to the Donbas in April 2022.

Belarus also opened the doors of its ammunition and weapons storage areas in 2022 to be picked through by

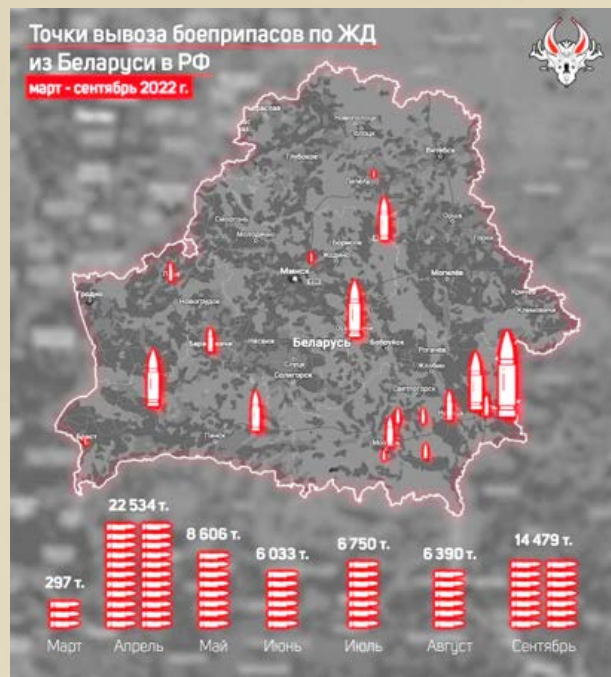


Belarus

the RF AF. In terms of ammunition, over 65,000 tons of ammunition of various caliber were transferred by rail from Belarusian storage facilities to Russia between March and September 2022. Russia was also able to replace much-needed artillery systems from Belarusian stocks, including 2S3 and 2S9 self-propelled howitzers and D-20, D-30, and 2A65 towed howitzers.

Supplies of Iranian and North Korean artillery ammunition help ensure continuous fire missions in Ukraine, while providing breathing space for Russian domestic ammunition production facilities to replenish artillery ammunition stocks with both new production and refurbishment of existing stocks. In October 2023, the Troika reported on the first photos of North Korean 122- and 152-mm artillery ammunition appearing from locations in Russia and Ukraine.²⁴ Ukrainian MOD’s Main Intelligence Directorate (HUR) reported that in 2023, Russia produced about 2 million 152-mm and 122-mm





65,089 tons of ammunition transferred from Belarus to Russia by rail March-September 2022 (Telegram channel: Belarusian Hajun Project)

artillery rounds, and also imported 1 million 152-mm and 122-mm artillery rounds from North Korea. In January 2024, Russian military analysts and milbloggers agreed that a North Korean-made KN-23 (Hwasong-11Ga) ballistic missile was most likely used for a 2 January 2024 attack on Kharkiv.

Obtaining a seemingly endless supply of Shahed 136/131 UAVs from Iran has not only depleted Western-supplied air defense systems but has also bought time to improve and increase Russian domestic production of ballistic missiles and military-grade UAVs. This includes domestic production of the Shahed 136, named the Geran-2, as well as a newer, more rudimentary version of the Geran-2 called the Gerbera. The Gerbera is launched along with the Geran-2 UAV and is designed to distract Western air defense systems. Russia has reportedly spent over

\$1.8 billion buying Iranian-produced UAVs.²⁵

Medical Logistics-Related Adaptations

Improving Russian soldiers' Individual First Aid Kits (IFAKs)

Individual First Aid Kits (IFAKs) provided to Russian soldiers in February 2022 consisted of only one bandage in a sealed packet, a basic rubber tourniquet and an empty syringe used to inject a pain reliever. Since then, the IFAKs have undergone numerous improvements, based on experience in the Special Military Operation.

The latest variation is the АППИ-8 variant (*аптечка первой помощи индивидуальная [АППИ]*). This kit is an upgrade to the АППИ-7 variant that began appearing in the RF AF in April–May 2023. The new IFAK maintains the two-tourniquet system of the previous variant, but with an improved hemostatic silicone second tourniquet to complement the primary tourniquet, similar in design to the U.S. Combat Application Tourniquet (CAT). The CAT-like tourniquet is in a separate pouch, detachable from the IFAK kit. Other upgrades include a chem light, tactical scissors located on the outside of the kit, a rescue blanket, an improved compression bandage, Meloxicam anti-inflammatory NSAID medicine, nasopharyngeal and retropharyngeal airway devices, and a medical sealant sticker with valve.

Russian medical bloggers who advise RF AF soldiers on tactical medicine procedures are satisfied with the new IFAK, but as with the previous variant, are



Russian IFAK version АППИ-8 (Newest Version) (HEALER Telegram channel)

skeptical that the kits will be distributed to the front-line soldiers in a timely manner and in the quantities needed. This skepticism exists because of production backlogs and because it is believed that the kits will be issued to units as accountable items rather than consumable items. Because of this issuing limitation, they will likely be held back by medical officers and unit commanders.

It is also likely, as with previous IFAK variants, that they will quickly appear for resale on Russian online sites like “Avito” (Russia’s version of eBay), with the option to buy individual IFAK items or the entire IFAK. The Troika has seen photos and video of RF AF soldiers equipped with the АППИ-7 variant, but not in large quantities, nor uniformly across the groups of forces. Overall, RF AF soldiers also continue to rely on donated medical items and other sources to create their own IFAKs.²⁶

Russian medical trains in the Special Military Operation zone

Russian military medical trains began operating in combat zone areas of the Special Military Operation in September 2023. These trains are equipped with patient berths, intensive care wards, and operating rooms. They are also reportedly equipped with upgraded communications systems and equipment for the deployment of helipads. These trains evacuate Russian WIAs to military and civilian hospitals back in Russia.

Russian field ambulances in the Special Military Operation zone

Evacuating WIAs in the Special Military Operation continues to be problematic for both sides. The saturation of UAVs over the battlespace and the targeting of evacuation teams have forced changes in evacuation tactics, techniques, and procedures (TTPs). Most often, both sides resort to independently carrying the wounded out for several kilometers to get to ambulances or other equipment for further evacuation. In some cases, carrying the wounded is facilitated by light equipment such as the RF AF using the Chinese-made Desertcross-100 ATVs or even hand carts. In many cases, the WIA is simply left in the trenches to await further evacuation and dies of the wounds, or the death is expedited by UAV-dropped munitions, or evacuation is attempted at night to avoid being targeted.

There is also a shortage of field ambulances to support evacuation efforts. Russian volunteer organizations continuously “pass the hat” to acquire





1960s vintage four-wheel drive vans from the UAZ-452 family commonly known as “Loaf” (*буханка*) because their shape resembles a loaf of bread. These mass-produced vans are also sometimes referred to by the Troika as “Scooby-Doo” vans. The volunteer organizations collect donations for the vans, which cost about 400,000 rubles (~\$4,350) per van. The vans are fitted with basic counter-UAS grates/racks along with some rudimentary EW equipment and are sent to the front as field ambulances. These vans, along with the ATVs, are treated by RF AF medical units as consumables, with the understanding that they may only get one or two evacuation missions in before they are damaged or destroyed.

Other Logistics-Related Adaptations

Relocating some logistics operations underground

Published photos in early 2024 on Russian social media showed an entire RF AF field hospital operating (literally) underground somewhere in a Russian rear area. The hospital contained multiple rooms and the walls were reinforced with thick timbers. The hospital had a waiting area with stretchers, with an assortment of crutches, which were separated from the examination and surgery areas by plastic stretched over the doorway. The photos also showed medical personnel conducting surgery in one of the rooms that was well lit and wired for powering various medical devices being used during the surgery. Overall, the surgery and treatment areas appeared



Russian Underground Hospital (Telegram)

adequately stocked with medical equipment and supplies.

The Troika has seen other underground RF AF facilities develop over time during the Special Military Operation, including multiple unit mess halls operating underground. These contained separate eating areas for soldiers and officers, a preparation area, several storage areas for food, and even a full bakery vented to the surface.

PMC Wagner’s former training facility near Rostov-on-Don also contained significant underground construction including barracks, meeting rooms, maintenance areas, and even a sauna. The saturation of UAVs across the battlespace in Ukraine has forced both sides to move more and more logistic-based operations farther to



the rear and sometimes below the surface.²⁷

New multicam uniforms

This new “All-Season Field Uniform Kit (VKPO) 3.0 model 2023” in its new 7-color multicam digital pattern replaces the RF MOD’s much-vaunted, pre-SMO version of the VKPO component of the *Ratnik* (Warrior) Individual Equipment System. Not surprisingly, the procurement program of the previous uniform version was riddled with corruption and quality-control deficiencies, including having flammable components and other materials that did not wick moisture away, or insulate to the manufacturer-specified temperatures.

The Kalashnikov Concern delivered 250,000 sets of the new uniform version in summer 2024. This added to a previous delivery by Triada-TKO LLC, which supplied over 150,000 sets of the VKPO 3.0 model in the first half of 2024. These sets include underwear, fleece thermal underwear (t-shirt and underpants), fleece jacket, dual-season suit (jacket and trousers), windproof suit (jacket and trousers), insulated suit (jacket and trousers), summer suit (jacket, trousers, and combat shirt), summer baseball cap (*бейсболка*, “baseballka”), dual-season insulated hat, and winter scarf. The

first sets of the VKPO 3.0 were delivered to the RF MOD in May 2023 for testing; subsequent improvements were made based on SMO field testing. At a distance—or from a UAV—the VKPO 3.0 looks remarkably like the UAF’s multicam (as well as the U.S. and Belgian versions), a similarity which reportedly led to fratricide incidents on both sides in spring 2024. In the Russian case, RF GF initially attacked other Russians outfitted in their new multicam, northwest of Avdiivka, thinking they were UAF. In the Ukrainian case, UAF units north of Kreminna accidentally ambushed other UAF, mistaking them for Russians in the new RF AF multicam.

Despite this ongoing surge of deliveries of the new multicam uniform sets, there is still no systematic procedure to equip RF AF soldiers in the SMO. Even today, RF AF continue to use a wide variety of field uniforms and individual equipment sets, ranging from Soviet-era to modern day, all of varying qualities and patterns (from



VKPO 3.0 is the latest uniform set developed for the Russian Ministry of Defense (Kalashnikov)





Soviet-era to digital multicam camouflage). Volunteer units continue to rely heavily on donated uniforms and equipment. For those who can afford the expense, several Russian companies offer field uniforms and other equipment items for sale online (including body armor and helmets). Russian milbloggers often advise soldiers to buy their own equipment if they want to fight “comfortably.” In a June 2024 speech, the State Duma Defense Committee member and former commander of the Russian Airborne Forces (VDV), GEN-COL (Ret) Vladimir Shamanov, openly criticized the MOD and General Staff for their lackluster equipping efforts for soldiers in the SMO. He compared the Russian army to a “partisan detachment” with soldiers and their families having to purchase uniforms at their own expense, often contributing to the low quality of those issued to soldiers before deploying. He added that the generals responsible for this program have turned the fighting force into “a different army,” one which is “dressed up and embroidered.”

Russian Deputy Defense Minister Yunus-Bek Yevkurov announced in the summer of 2024 that the scheduled wear-out dates for field uniforms were cancelled in the SMO zone (Ukraine). According to the order, when a uniform becomes unusable, the soldier will be given a new set.

NOTE: One of the few Deputy Defense Ministers under former Minister of Defense Shoigu to survive the recent “chistka” (purge) of corrupt senior defense officials is Deputy Defense Minister Alexei Krivoruchko, whose portfolio is the arming

and equipping of the Russian Armed Forces. Notably, before he joined the ranks of the RF MOD, he was the CEO/Director General of the Kalashnikov Concern. Krivoruchko’s direct boss, First Deputy Prime Minister (and former Minister of Industry and Trade) Denis Manturov understands the value of Krivoruchko’s connections and is likely the one who has shielded him, as his “krysha” (“political cover” or “godfather”), from external (i.e., Russian Federal Security Service [FSB]) probes.²⁸

Logistics Impact on Fires Element of Combat Power

Logistics situation at the outset—Russian indirect fires work if Russian logistics work

At the outset of the SMO, Russians built large logistics hubs, including for artillery systems, often very close to the weapon systems themselves, across all four axes of advance. Overall, Russia struggled with logistically supporting its forces, and this was exacerbated by effective Ukrainian attacks on Russian rear areas and MSRs. The logistics situation improved for the RF AF after Russian military operations to take Kyiv and Odesa failed, and forces in the north were withdrawn through Belarus and repositioned in eastern Ukraine.

In the Kyiv phase in February and March of 2022, the Russians required complete control over their rear areas as well as efficient, well-run resupply operations, neither of which they could effectively accomplish. Logistics determine the success of Russian artillery, which is why they had had so much success in the east



Rail: Resupply Adaptation - Ongoing construction of a new line that started in Sep-Oct 2023 to connect Crimea to Rostov Oblast (in Russia) (Telegram)

where the Russians applied World War II-style pushdown logistics that relied on rail delivery to relatively safe operational battlespace and then tactical pushdown delivery from large ammunition and fuel depots in secure rear areas.

Russia relied heavily on the rail system for logistics support—and built-up logistics hubs staged near Belgorod to support those ammunition supply operations. Those hubs built up in earnest through spring 2022, with Russia also repairing infrastructure such as railway bridges to facilitate supply lines in the east. The result was that in late spring 2022, RF AF artillery operations again benefited from shorter, safer supply lines unhindered by ambushes, spoiling attacks, or Ukrainian indirect fire. In June 2022, at Paseki, Severodonetsk, Toshkivka, and Lysychansk, Russian artillery was firing more than 6,000 rounds per day in each of those fights. This also explained Ukrainians’ constant complaints early on in the sectors of Severodonetsk-Lysychansk, south of Izyum, and in northeast Kherson Province, where Russia was able to conduct continuous harassing fires and

their unbelievable artillery massing for key events.²⁹

Initial UAF targeting of RF AF ammunition

As Russia built up its logistics hubs in the east, by the end of May 2022, the UAF was regularly attacking Russia’s artillery, ammunition storage points, and logistics depots with indirect fire. Russian Ground Forces unquestionably prefer mass fires at pre-planned area targets over precision. As such, they store large supplies of ammo all over the place, including forward. However, the largest concentrations of Russian ammunition are in the rear areas, The RF GF likely factor in losing some ammunition to enemy actions. The Russians do not practice “just in time logistics.” When it came to artillery positions, the RF GF artillery units typically placed their guns and missile systems close together and kept large supplies of artillery ammunition in close proximity to the delivery systems. This facilitated UAF successes early on in targeting these “mountains of steel” with indirect fire systems.³⁰

The introduction of HIMARS is a game changer—targeting RF AF ammunition

On 23 June 2022, Ukrainian Minister of Defense Oleksei Reznikov announced that the first U.S.-provided HIMARS had arrived in Ukraine. A day later, video showing two HIMARS launchers firing at night were making the rounds on Ukrainian social media.³¹ The first was against a Russian logistics depot in Svatove, deep in Russian-occupied Luhansk, at a range of 70 km from the nearest Ukrainian positions and at





HIMARS

the limit of the HIMARS ammunition provided to Ukraine at the time. The strain on the Russian logistics systems was felt immediately, as accurate HIMARS strikes disrupted Russian logistics operations from Kharkiv to Kherson. This caused RF GF to move logistics further back. Once RF GF MTO (service support units) made what they thought were adequate supply line adjustments, key bridges in Kherson Province and ammunition storage points outside HIMARS range came under attack. Some of these stores were thought to be previously safe in northern Crimea and the Valyuki area of Belgorod Oblast, Russia. The UAF targeted 11 Russian ammunition depots and FOBs in 9 days during June and July 2022. The targets were anywhere between 5 and 75 km from the frontline. One of the biggest strikes was an attack on an ammunition depot in Snizhne (Snezhnyy), 75 km east of Donetsk. This particular ammo depot reportedly stored ballistic missiles and S-300 systems, in addition to regular ammunition.³²

By late July 2022, UAF strikes were disruptive enough to slow Russian offensives. After success at Lysychansk and their capture of the remainder of Luhansk Province, Russian forces needed an operational pause to rest, rearm,

resupply, and reorganize before their next campaign to capture Slavyansk and Kramatorsk. This next campaign would likely have already commenced, had HIMARS not forced the RF AF to redesign and reorganize their logistics. Both RF army groups required reliable, sustained “pushdown” supply of tactical munitions to the rate of 20,000 rounds per day, as were fired during the seizures of Severodonetsk and Lysychansk. After the successful Ukrainian counteroffensive in the east in the fall of 2022, by November 2022, more Russian logistics came in range of Ukrainian tactical artillery, including Starobilsk and Urazovo, both crucial logistics/railway hubs important for RF AF forces and PMC Wagner.

Ammunition challenges in the south

By early August, the operational deployment of the RF Eastern Group of Forces to Kherson and Zaporizhzhya Provinces was nearly complete to support offensive operations. As with operations in the east, these operations were delayed while the RF AF resolved logistic lines challenges, such as a heavier reliance on trucks, as well as the challenges of bridge crossings and pontoon ferries. Convoy operations, especially over long distances, is not something that the RF AF trains on regularly. RF AF logistics are normally designed for railroad resupply closer to their operational and tactical formations. For example, the RF Eastern Group of Forces’ four reduced CAAs north of the Dnipro (Dnieper) River in Kherson Province remained completely dependent on truck-borne resupply on one MSR over the Nova Kakhovka Dam and two pontoon-section

ferries near Kherson.³³ This also explained the unusually low number of fire missions from RF Eastern Group of Forces artillery units during this time, as harassing HIMARS and other long-range attacks continued to disrupt Russian ammunition supplies.³⁴

As RF AF shifted south to defend their gains in Luhansk and Donetsk Provinces, Rostov-on-Don and Millerovo, Russia became increasingly important for logistics operations. They essentially became “another Belgorod” similar to the way that Belgorod, Russia was the main location for logistical and long-range fire support to RF AF further north.



RF AF's poor maintenance and disorganized ammunition storage hampered operations. (Telegram)

After initial RF AF logistical problems in February and March 2022, the RF AF started efforts to better man logistical sites with conscripts who, by law, cannot serve in Ukraine without a declaration of war or general mobilization. Conscripts were used for this manpower. RF AF logistical sites, including ammunition depots, are very manpower-intensive. Most Russian supplies, including ammunition, are not palletized. There are very few front-end

loader and forklift operations. Most work unloading trains, loading trucks, and stockpiling material is all done by hand. The RF AF needed to build, expand, or improve logistical facilities further south near Rostov-on-Don and Millerovo in Russia to better support RF AF operations just over the border in Luhansk and Donetsk Provinces, as the RF AF redeployed forces from Kharkiv Province back into Ukraine further south.³⁵

Challenges to providing logistic support to indirect fires continued in 2023. However, PMC Wagner had some success

The RF AF continued to struggle with supplying their artillery and rocket systems under harassing UAV long-range fires and the impact of the October 2022 Kerch Straits strike. In mid-January 2023, thousands of RF AF conscripts from Chuvashia, Udmurtia, Volgograd, Kirov, Voronezh, Samara, and Smolensk Oblasts arrived in Belgorod Oblast, Russia in the border areas north of Kharkiv, Kupyansk, and RF-occupied Svatove, Ukraine. They were most likely additional manpower to support the very unmechanized and manpower-intensive logistics system described earlier.³⁶

In the south, supply of the entire RF Southern Group of Forces near Melitopol and Berdyansk. In the south, the RF AF used rail from Crimea and road convoys from Rostov Oblast, Russia, to supply the entire RF Southern Group of Forces near Melitopol and Berdyansk. Weight restrictions on the Kerch Strait Bridges continued to impact RF AF logistics as Russia tried to repair the rail bridge which





was damaged in October 2022. Much RF AF cargo still required to be ferried across the Straits or to Berdyansk and other ports on the northside of the Sea of Azov. The UAF continued to use long-range artillery to attack Russian logistics hubs and rail. In January 2023, they struck a railway depot and destroyed rail tracks at Illovaysk, a significant RF AF logistics hub. They continued strikes into the spring of 2023.³⁷

Despite the Troika's suspicion that logistics would be PMC Wagner's undoing south and north of Bakhmut, unlike the RF AF artillery which seemed to always outrun their logistics, PMC Wagner was able to keep themselves supplied with artillery ammunition. PMC Wagner seemed to have a more realistic operational design and seemed to work out their logistical challenges before the fight. For example, logistics for PMC Wagner were not a limit to a mostly dismounted brigade(-) sized operation near Klishchiivka, which was dependent on a poor, unpaved road network bent around UAF- held south Bakhmut.³⁸

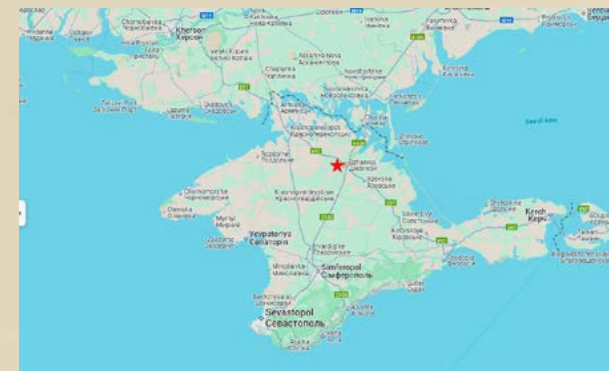
Adaptation—RF AF ammunition and armored vehicle dispersal

Throughout 2023, RF motorized riflemen frequently complained that they had little or no fire support later in the fight. Russian artillerymen similarly complained that they were not adequately resupplied during the fight. Ukrainians echoed these observations concerning Russian artillery, the devastation of the Russians' preparatory fires, but also about the UAF artillery's advantage later in the same Russian attack. This was, in part, because of the introduction of HIMARS and Storm

Shadow, which forced Russian ammunition depots to be placed further from the batteries and dispersed in smaller depots. For the most part, Russian units had enough serviceable or semi-serviceable artillery ammo. However, since the arrival of HIMARS and Storm Shadow, it became harder for Russian logistics units (MTO) to responsively supply the Russian firing batteries.³⁹ The Troika began observing that without ammunition supplies for subsequent fire missions, Russian artillery adapted by conducting very precise preparatory fires and far more accurate unguided attacks on UAF armored vehicles and artillery. Ukrainians similarly commented on improved Russian artillery precision.

The RF AF then began implementing changes in the approach regarding the location of ammunition and armored vehicle depots for parts and end items. As a rule, RF AF ammunition and armored vehicles were brought by rail to a final unloading point either in Crimea, (i.e., Dzhankoi in northeast RF-occupied Crimea), or in areas of RF-occupied Donetsk Province. Unloading began to be carried out at night when it was harder for UAF and the SBU to track RF AF movements by reconnaissance UAVs or commercial and Ukrainian partners' satellite imagery. After that, equipment and ammunition were transported to many smaller warehouses near the front line.

It appeared that the new RF AF logistics structures of smaller supply centers, dispersed across their operational rear areas, were working and causing difficult UAF targeting decisions of whether to use



Dzhankoi in Crimea (red star) is a main hub for RF AF logistics and all movement in and out of Crimea to and from Melitopol, Zaporizhzhia Province.

such scarce munitions on small logistics targets with limited payoff. Although the UAF received new long-range weapons, the question of spending scarce missiles on these small targets raised questions of military practicality and economy. The Ukrainians looked at solving the problem through recon and more UAVs or possibly through ATACM cluster munitions, which could be effective against large logistics hubs such as in Crimea, where the supplies for various RF AF echelons were being unloaded.⁴⁰

Force Generation Impact on Sustainment Element of Combat Power

When Russia launched its 24 February 2022 invasion of Ukraine, its intent was to quickly capture Kyiv and take control of the government, avoiding a long war. Six years of "New Look" military reforms and successful deployments to Crimea and Syria had convinced Russia's leaders that their military was up to the task. The military believed it had sufficient forces,

reserves, and munitions and weapons to accomplish their mission.

They based that assessment on assumptions and supposed facts which turned out to be wrong. But a month after the attack, it was already clear that the Russian military faced a major problem for which, it turned out, they were wholly unprepared—force generation. Since then, Russia has redesigned its recruiting, training, and equipping in an effort to fix its force generation problem. Whether it has been enough is still to be determined.

According to U.S. Army FM 3-0, "All warfighting functions contribute to generating and applying combat power." Army Doctrine Publication 3-0 (Operations) states that

"factors that contribute to generating and maintaining combat power include reserves, [and] force rotation...."

The U.S. Army considers the ability to generate forces a critical component of creating and applying combat power. Russian military officers would agree.

Replacing losses

Perhaps because Russia took Crimea in 2014 in a bloodless operation, Russian leaders assumed that Ukrainians would not oppose the 2022 invasion. But Ukraine fought back ferociously and very soon, Russia began losing troops and officers faster than they could replace them. By the end of just the first 2 months of the Special Military Operation, Russia had lost over 300 officers as KIAs with a third (1/3) of



them being field grade officers (majors though colonels). These numbers had increased to over 800 KIA officers by July 2022. These are confirmed losses, verified by obituaries, funeral notices, and/or official reports. The actual number is likely higher. Many more such situations existed across the force.

Many of those officers and soldiers lost were from logistics units. Whole fuel and ammunition columns were systematically destroyed as Russia struggled to move logistics forward as fast as possible. Added to this challenge was that the logistics units are manned with an even higher percentage of conscripts than the ground forces of the VDV. (The ground forces are approximately 35 percent conscript and the VDV are 30 percent conscript, who according to Russian law, are largely exempt from service in Russia's "Special Military Operation.") There was a plan in 2018 to man the Russian MTO units with 90 percent contract soldiers. However, that plan was never realized. Russia recruited heavily to replace logistics personnel, especially truck drivers, who were KIA so frequently that the truck driver position was sarcastically labeled as "suicide."

Russia's reserve system was completely unprepared to fill the personnel vacancies. The existing system was essentially a paper list of former conscripts and officers who had served their required duty within the past couple decades. With only a few exceptions, these veterans had none of the regular training or equipment normally associated with U.S. or other Western military reserves.

When the Russians refocused operations from the Kyiv direction to the Donbas in April 2022, this assisted with the challenge of logistics support because of shorter logistics lines back to Russia. In addition, although conscripts are largely exempt from serving in the Special Military Operation zone, they are not restricted from operating close to the border with Ukraine at key logistical hubs in Belgorod, Rostov-on-Don, and others. Conscripts were sent to these locations in large numbers to support logistics operations, and many of them were killed in cross-border attacks and long-range artillery and missile strikes.

In addition to the problem generating troops, the Russian Ministry of Defense faced the problem of generating new equipment. Ukrainian forces, with 6 years of experience fighting Russian-led separatists in the Donbas, were destroying Russian armored vehicles and tanks at an alarming rate. Russian logisticians scrambled to find serviceable replacement vehicles to send to the front.

Russia takes major steps to generate replacement forces

On 25 August 2022, Putin signed a decree to expand the Russian Armed Forces to 1,150,628 military personnel and 889,130 MOD civilians. Later, in December 2022, Putin set an ultimate vision of 1.5 million uniformed troops. By December 2023, Putin authorized the military to grow to 1.320 million—working toward the 1.5 million goal.⁴¹

In September 2022, Putin authorized an involuntary partial mobilization to generate 300,000 new troops, the first Russian

mobilization since the Second World War. Presumably, some of those 300,000 new troops filled the 137,000 new billets Putin authorized in August. But certainly, many of them backfilled casualties and losses in the war.

The purpose of the mobilized troops (*mobiki*) was to solve Russia's manpower problem, and despite very public missteps and complications, the mobilization must be seen as a success for Russia. It raised up to 300,000 *mobiki* with some level of military experience (although in many cases said experience was many years old and/or irrelevant to current missions). They served their purpose, backfilling depleted units and stabilizing the lines. They are not volunteers but serve as contract soldiers "for the duration of the Special Military Operation." According to Russian government sources, any new manpower requirements are now being met by volunteers. But, if the number of volunteers turns out to be insufficient, we should anticipate a new mobilization.

With regard to generating weapons and equipment, as mentioned previously, Russia has had mixed results. The Russian Armed Forces ended 2022 with some 8,500 fewer pieces of heavy equipment than they began the year with. Those losses include at least 1,600 tanks, 1,860 infantry fighting vehicles, 600 artillery pieces and multiple rocket launchers (MRLs), and 74 helicopters. By September 2023, Russia's Black Sea Fleet had lost its flagship and more ships than the country could replace. All operational RF Black Sea Fleet submarines had moved from Sevastopol to Novorossiysk. The latter port is on the eastern side of the Black Sea, distant from Crimea and the SMO, and is far



New conscripts from Irkutsk Oblast, Russia in 2024(Russian Ministry of Defense)

less developed than Sevastopol, lacking many sustainment capabilities.⁴²

Growing the force

If 2022 had been focused on generating troops and equipment to replace losses in the Russian force, 2023 and 2024 would be about trying to grow the force. The mobilization had been ugly but largely successful. The effort to grow the force would be tougher.

On 21 December 2022, President Putin and his Minister of Defense Shoigu addressed the Collegium of the Defense Ministry. They revealed an ambitious, even grandiose, plan to expand Russia's armed forces with new commands, new units, and new equipment. These new formations will be manned by both *kontraktniki* (volunteer enlisted) and conscripts. This plan will be extremely expensive, if it is feasible at all, but Putin said in his remarks, "I want to direct the attention of the Minister of Defense, the Chief of the General Staff, and all commanders who are represented here. We have no limits in financing [these steps]."

Minister Shoigu revealed the details of the plan to beef up the military. At the highest



level, the Western Military District will be divided into two new districts—Moscow and Leningrad. These two districts were abolished as part of the 2008 “New Look” Reforms, but in light of the entry of Finland and Sweden into NATO, they are being reestablished to provide more command control over the western region.⁴³ The ambitious plan described below will have to incorporate a significantly bigger logistics footprint. The plan currently calls for the creation of three new maintenance centers. However, this seems to be too few to support the rest of the structure.

And new types of units are being introduced into the force, eating up more of Russia’s larger manpower. UAV units are being added to units across the force with thousands of small and medium-sized UAVs being deployed. According to Russian state media articles, new “recon-assault brigades” (*разведывательно-штурмовые бригады*) are being created in combined arms armies and newly formed army corps. These recon-assault brigades are designed to accomplish a mission which has exemplified new Russian tactics—storming enemy fortifications and conducting reconnaissance in the enemy’s immediate rear.⁴⁴

Generating the materiel

As the quantity of personnel and equipment has grown, so too have the number of weapons and munitions needed. On 17 January 2024, the Troika reported on Ukrainian Defense Intelligence’s (HUR) assessment of Russian munitions. In 2023, Russia produced about 2 million 152-mm and 122-mm artillery rounds, and also imported 1 million 152-mm and 122-mm

artillery rounds from North Korea. According to HUR estimates, per month, the Russian military industrial complex can produce 115–130 strategic cruise missiles (Kh-101, Kalibr, etc.), 100–115 operational-tactical cruise missiles (Kh-31, Kh-59, etc.), and about 350 Geran-2 Russian-produced Shahed-136 kamikaze UAVs. HUR assessed that Russia’s long-range missile strike campaign in winter 2023 focused not just on Ukraine’s energy sector (as many expected), but also on Ukraine’s defense industry and C2 infrastructure. Putin pointed out on 15 May 2024 that this great expansion is currently costing Russia 8.7 percent of its GDP, more than double Russia’s average 4 percent of GDP annual defense spending allocations.⁴⁵

Leadership Impact on Sustainment Element of Combat Power

Leadership

According to U.S. Army doctrine,

“Commanders apply combat power through the [six] warfighting functions using leadership and information.”
“Leadership is a multiplying and unifying element of combat power. The Army defines leadership as the activity of influencing people by providing purpose, direction, and motivation to accomplish the mission and improve the organization.”

– *Army Doctrine Publication 3-0, paras. 5-2, 5-4*

Troika members all agree that, in principle, Russian officers learn and try to practice

this same philosophy. We have witnessed both good and bad leadership among Russian officers as some achieve and some fail to achieve these standards. While these standards are universally understood, under the stress of combat or even everyday operations, leaders can face immense pressure to act otherwise. Obtaining adequate funding, equipment, training opportunities, repair parts, munitions, etc. are difficult tasks in any army. But, in an environment where almost every solution involves some level of corruption, leadership suffers. And as a result, soldiers suffer.

Logistics senior leadership

In the 29 July 2022 Observations, the Troika wrote that prior to Russia’s Special Military Operation in Ukraine, we considered the Russian officer management system to be a strength of their military. Long-tenured commanders would seemingly be more experienced and



Example of unusable ammunition symptomatic of poor Russian logistics (Vchk-OGPU Telegram channel)

competent. Permanent, professional General Staff officers would know the defense enterprise inside and out. The reality has proven slightly different. In Ukraine, the Russian armed forces do not seem to have gained any benefit from its long-tenured commanders, especially at the senior level. In fact, many of the longest- serving commanders have now been relieved or replaced. The Troika has detailed problems with training enlisted troops. This situation seems to also be a problem training the senior officers. It is not necessarily “incompetence,” but what else could it be?

Four officers have been in the Deputy Minister of Defense for Logistics position to date since the start of the Special Military Operation. The first was GEN Dmitri Bulgakov, who had held the position since 2010. It was under his tenure that many end items purchased by the Russian MOD over the years from 2010 to 2022 simply “disappeared.” He was relieved in September 2022, a move widely seen as punishment for logistics failures in the early stages of the Special Military Operation, but more specifically related to the September 2022 partial mobilization. At that time, it was discovered that billions of rubles worth of equipment intended to be stockpiled for a future mobilization had never been procured, even though funds had been appropriated.

For example, at least 1.5 million sets of uniforms which had been supposedly purchased and stored in case of a mobilization could not be found, and never were. On 26 July 2024, GEN Bulgakov was criminally charged with corruption relating





to this non-procurement. It could have been the “perfect crime”—Russia had only conducted two mobilizations prior to 2022, in 1914 and 1941. Bulgakov likely assumed there would never be another mobilization, so he would never be caught. Bulgakov’s arrest was part of a large-scale purge of MOD officials.

GEN Bulgakov was replaced in the position by GEN-COL Michael Mizintsev, who had previously served as the head of the National Defense Management Center in Moscow and commanded forces as part of the siege of Mariupol in 2022. His brutal actions in Mariupol, which included numerous attacks on civilians, earned him the nickname “Butcher of Mariupol” and likely his new position as the head of logistics.

GEN-COL Mizintsev had no particular logistics background. He lasted 7 months, until April 2023, and was replaced by GEN-COL Alexei Kuzmenkov. Mizintsev was reportedly relieved because of his relationship with PMC Wagner. He was briefly seen in videos after his dismissal visiting a training camp and touring Russian positions in Bakhmut, allegedly as a PMC Wagner deputy commander. Mizintsev’s subsequent whereabouts remain unknown.

GEN-COL Alexei Kuzmenkov took over the position in April 2023 and lasted 1 year, until March 2024. Kuzmenkov was previously the deputy director of *Rosgvardia*. Kuzmenkov was a career logistics officer and his appointment to the position at the Ministry of Defense was reportedly to be only temporary, in order to build clear logistics lines, something the

two previous officers had failed to do. Kuzmenkov then returned to his previous position as deputy director of *Rosgvardia*. In March 2024, GEN-COL Kuzmenkov was replaced by GEN-LT Andrei Bulyiga, who was also a career logistics officer with multiple logistics assignments at the military district level and at the MOD. He previously served as deputy commander of the Western Military District for logistics, since 2018.

Corruption

Corruption remains the lubricant that allows the Russian military to run, even during wartime. Every Russian military leader must engage in it to get things done. At best, officers tolerate it to find solutions to problems. At worst, they use it to enrich themselves. Nowhere is that more prevalent than in Russian logistics units and organizations.

Example—the case of two Russian Majors and stolen fuel

As mentioned previously, one of the most pilfered items in the RF AF is fuel, and opportunities abound in the Special Military Operation to make money from selling military fuel. The following case is but one example which illustrates the extent of corruptive practices that occurs, not only in garrison during peacetime, but with a critical military resource for keeping Russia’s mechanized force operating in combat conditions in Ukraine. RF AF MAJ Alexander Sungurov, whose position was Head of Fuel and Lubricants Service, was included in the “Heroes Z” column on the Russian Ministry of Defense website. In his hero description, it indicated that he ensured

vehicles and equipment were fueled during the Special Military Operation, including personally leading columns delivering fuel to units, often under heavy artillery fire. One writeup read “One day, a column under the command of MAJ Alexander Sungurov was carrying out a combat mission to deliver fuel, lubricants, and supplies to units of Russian troops defending one of the liberated settlements. The enemy tried to prevent this by attacking the column. Having assessed the situation, realizing the full danger of enemy ammunition getting into the vehicles with fuel, the officer took advantage of the terrain conditions and organized a repulse of the attack with the withdrawal of fuel trucks to a safe shelter. The courage, tactical literacy and determination of Major Alexander Sungurov allowed to save the lives and health of personnel, prevent the destruction of equipment and complete the assigned task.”

MAJ Sungurov, along with another Head of Fuel and Lubricants Service, MAJ Oleg Kulikov, were arrested in Crimea as part of a criminal investigation that began in July 2023. They were accused of large-scale embezzlement of diesel fuel involving 17 soldiers from different military units. According to the investigation, the fuel embezzlement scheme began as early as July 2022. Many of the 17 soldiers involved in the scheme later pleaded guilty. MAJ Kulikov spent 5 months in custody and was later released. MAJ Sungurov was arrested in December 2023 as part of the criminal investigation. The fate of MAJ Sungurov remains unclear, but information about his merits were removed from the writeup about him in the “Heroes Z” column when he became a defendant in the case.

Larger scale sustainment-related corruption purges in the MOD

The purge began with Timur Ivanov, Russia’s then-Deputy Defense Minister, who was arrested in April 2024 after being accused of taking bribes “on a particularly large scale.” Then came GEN-LT Yuri Kuznetsov, head of the defense ministry’s personnel directorate. He was arrested after more than 100 million rubles (over \$1 million), gold coins, and other valuables were seized from his residences. GEN Ivan Popov, former commander of the 58th Combined Arms Army was also arrested for fraud.⁴⁶

During this same time, several senior generals were given the chance to retire. GEN Vadim Shamarin, Deputy Chief of the General Staff, was placed in custody by a military court on 22 May 2024. According to Russian agencies, he is accused of “accepting a particularly large bribe,” charges for which he faces up to 15 years in prison. The previously mentioned GEN Dmitry Bulgakov was arrested in July 2024, officially on charges of large-scale embezzlement related to the supply of poor-quality food at an inflated cost to Russian soldiers. That was followed by the arrest of the Leningrad Military District (LEMD) Deputy Commander GEN-MAJ Valery Mindanao in September 2024, on corruption charges related to the supply of military uniforms while he was the Resource Provision Head in the MOD under Belyakov.

Corruption is so entrenched that the guilty and the public talk about it as if it were acceptable, as long as it is not too “extravagant.” For example, in the wake of Yevgeni Prigozhin’s mutiny, *Rosgvardia*





Director (and former Putin personal bodyguard) GEN Viktor Zolotov said in a televised interview that he gave his wife his “go-bag” of money, documents, and other items in case she needed to flee Moscow and presumably Russia. He added that his troops also gave their “stashs of money” to their wives, which he joked they later regretted. Try to imagine a parallel situation in which a U.S. or Allied four-star commander responsible for the security of the government bragged that he had prepared his wife to flee the country.⁴⁷

Logistics Reporting Up the Chain of Command

Example—GEN Dvornikov and readiness

Russian commanders, like their U.S. counterparts, are required to submit various reports up the chain of command, for readiness and other purposes. Russian commanders, at all levels, are inundated with this reporting requirement. Some Russian company commanders in Ukraine report that they did not have time to do much other than submit reports, because of reporting requirements that sometimes reached 15 reports daily. Despite this arduous reporting requirement, Russian commanders, at multiple levels, lie in their reporting up the chain. This is especially the case in reporting logistics readiness, including equipment readiness and supply status. This is well-known in the system and considered acceptable.

GEN Alexander Dvornikov, who led the Southern Military District and Southern Group of Forces at the outset of the Special Military Operation, was widely regarded as



Research and Production Corporation Uralvagonzavod

the most competent and forward-thinking of the Russian senior commanders. Ukrainian military intelligence intercepted a mobile phone conversation from an officer likely from the 150th MRD, 8th GCAA, operating early on in Ukraine, who was complaining to his spouse about the readiness of his division prior to participating in the February 2022 full-scale invasion.

He said that the division had a lot of non-operational equipment and was significantly lacking in resources and that the leadership in Moscow knew that prior to a combat readiness inspection of the unit conducted in December 2021, less than 2 months prior to the start of the Special Military Operation. GEN Dvornikov participated in the inspection, which according to the officer, was short, and division personnel were told that everything was fine. The inspection team then went to the hotel and sauna. One officer of the division told GEN Dvornikov as part of his report that the percentage of personnel in the battalions and BTGs was not sufficient. In the end, nothing was done about the personnel and equipment shortfalls, with GEN Dvornikov reporting back to Moscow that “everything was normal.”⁴⁸

Conclusion

The sustainment topics described above illustrate the challenges of the Russian military sustainment system and its functionality, or lack thereof, during operations in Ukraine over the last 2 and a half years. Early on, the Russian MTO sustainment system failed time and again in Ukraine, unable to keep up with the pace and volume of the logistics needs to support the number of Russian units operating in Ukraine. The RF AF paid dearly several times for logistics-related mistakes, including early on with forward-based logistics at Chornobaivka and later on with HIMARS strikes on their “mountains of steel” unprotected ammunition storage areas.

Attempting to replace staggering losses of tanks, BMPs, artillery systems, and other equipment became a daunting task. It was clear early on that Russian replacement equipment pulled from long-term storage was, for the most part, far from operationally ready without significant repairs and overhauls. The Russian MOD continues to raid long-term storage facilities as equipment production cannot keep up with equipment losses, and the stocks to choose from are getting fewer and fewer. The same applies to resupplying artillery ammunition. It has been one of the biggest logistical challenges the Russian Armed Forces has faced in the Special Military Operation.

The Russians have fired tremendous amounts of artillery ammunition of all calibers, and despite improvements in high-precision munitions, massing fires with large artillery salvos remains Russia's preferred way to fight. The Russians have also lost

large quantities of ammunition from UAF long-range strikes on Russian ammunition supply points (ASPs). The Special Military Operation has shown the supply needs of artillery ammunition on both sides is at a level that cannot be sustained with the current production rates. While Russian manufacturing lines are currently unable to resupply artillery ammunition at a pace to keep up with consumption and losses, given time, the arsenal of autocracy will continue to improve its ability to resupply Russian artillery systems quicker, with new and refurbished ammunition.

Overall, as in other warfighting functions, the RF AF learned and adapted in its own Russian way, a way to improve sustainment operations. They continue to rely on and invest in their rail network and have improved sustainment operations conducted by rail. Russian commanders adapt to work with fewer resources and older equipment in various states of disrepair to offset shortages. The Russians also moved several logistics-based operations underground to protect against long-range strikes and attacks from UAS systems.

The Russian government mobilized the military industrial complex for round-the-clock operations, supported by equally robust support from the mobilization of civil society and help from foreign friends along the way. Finally, the RF MOD and AF have embraced COTS solutions for supplying the Russian units in Ukraine with weapons and equipment that match the dynamic nature of the operational environment.



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Warfighting Function

Protection

Top – anti-tank mine,
Middle left – Lancet-1 attack munition,
Middle right UAV,
Bottom-concertina wire and concrete
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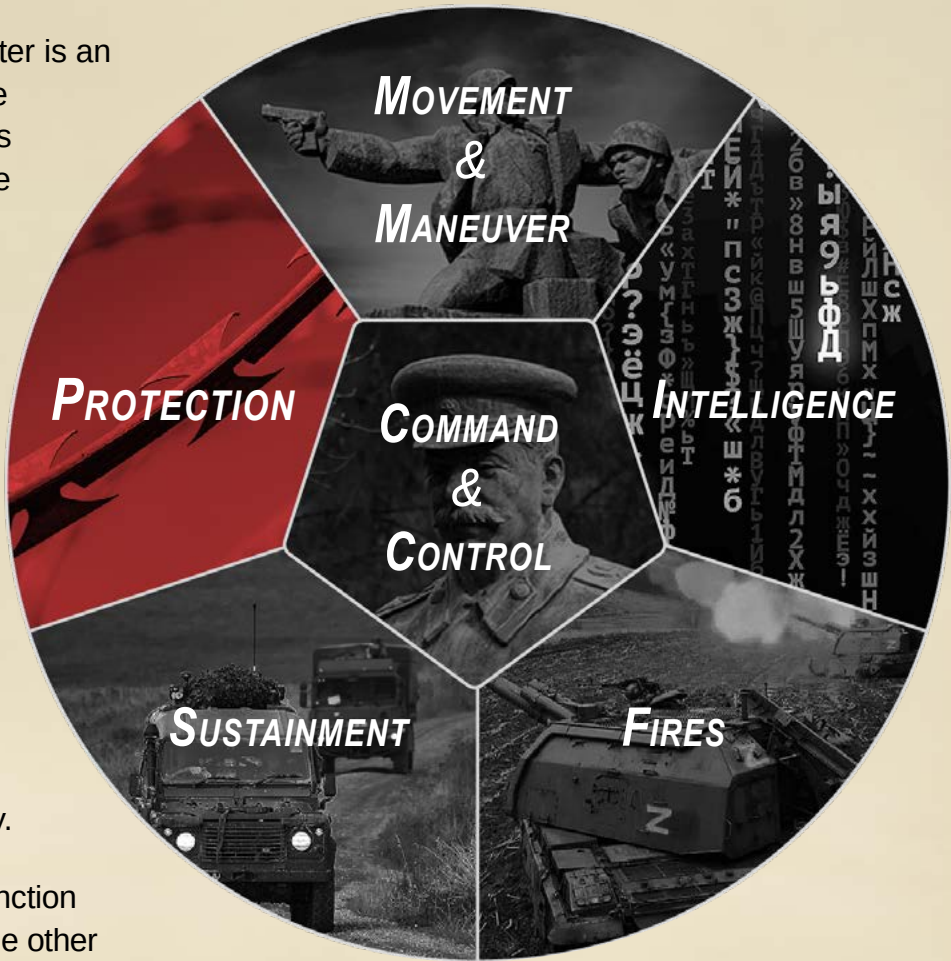


Introduction

The Protection Chapter is an overview of how the Russian military has understood and executed the protection warfighting function in its Special Military Operation (SMO) in Ukraine. The chapter draws from Troika Observations made during the first 27 months of the Russian Special Military Operation in Ukraine. The information is intended to help U.S. military leaders better understand their potential enemy—the Russian military.

The protection warfighting function has risen in priority among the other warfighting functions, due to the ferocity and precision of fires and the emergence of vastly improved surveillance and robust transmission of intelligence. Contributing to the precision of fires and speed of targeting and surveillance are the myriad unmanned systems which have transformed the battlefield.

All of this has resulted in a positional type of warfare, where protection for the force comes from a combination of 19th, 20th, and 21st century weapons and tactics. As daunting as today's battlefield is though, none of these conditions is permanent and the side that is most successful will be the one that can learn and change fastest as conditions change. As the 2024 U.S. Army Training and Doctrine Command (TRADOC)



report on Large-Scale Combat Operations (LSCO) notes,

“The ability of the Army to protect itself on this transparent battlefield will be paramount to its survival and success.”

Background

“Modern LSCO [large-scale combat operations] will be a competition between the hidiers and the finders, with only fleeting exploitation opportunities for both. If a target can be seen, it can be killed. The ability of the Army to protect itself on this transparent battlefield will be

paramount to its survival and success.”

– U.S. Army TRADOC “Operational Environment [OE] 2024–2034,” p. 14

The 2024 U.S. Army TRADOC report on large-scale combat operations (LSCO) asserts

“The increased lethality and transparency of the battlefield coupled with the increasingly all-domain character of war may require a reassessment of the Army’s approach to warfighting functions like maneuver, fires, and protection.”

As TRADOC Commander General Gary Brito wrote in the foreword to the report,

“Fires will be the center of gravity, making protection a priority and maneuver difficult.” (emphasis added)

U.S. Army Operations Field Manual (FM) 3-0 defines the protection warfighting function as the

“related tasks, systems, and methods that prevent or mitigate detection, threat effects, and hazards to preserve combat power and enable freedom of action. Protection encompasses everything that makes Army forces hard to detect and destroy.”

– FM 3-0, para 2-14

Ukrainian and Russian military leaders would agree. In separate articles that came out about the same time in January/

February of 2024, former Chiefs of the Russian and Ukrainian militaries touched on the vulnerability of troops and equipment in the current conflict, as well as efforts to protect them.

A Russian interviewer wrote that Russian GEN Yuri Baluevsky claimed,

“... the vulnerability of groups of forces has significantly increased ... on the battlefield.”

Baluevsky told the reporter that two innovations were primarily responsible for this increased vulnerability: constant surveillance and targeting by unmanned and satellite systems, together with,

“... a quantum leap in the volume and speed of intelligence data received and transmitted through these means.”

Baluevsky told the interviewer that today the “fog of war” has given way to a transparent battlefield.¹

Former Ukrainian Chief of the Military, GEN Valeriy Zaluzhny, wrote in his own article that those same unmanned systems afford the way to cope with these new threats to forces.

“Therefore, unmanned systems, along with other new types of weapons, are almost the only tool for getting out of positional military operations....” Zaluzhny claimed that “... unmanned and other modern technological systems are able to solve a number of key problems.” They can reduce the level of losses of key equipment or personnel.²



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Baluevsky points out other tasks that require new solutions on this more vulnerable battlefield, such as the preservation of direct fire weapons and overcoming/deploying minefields.

Throughout the first 2-plus years of the “Special Military Operation” the Troika recorded numerous examples of Russian leaders’ efforts to protect their forces—sometimes failing and sometimes succeeding. Recently published photos on Russian social media showed an entire Russian field hospital operating underground. In another case, an artillery unit hid its mess hall underground.³

Russian field commanders, of course, understand the need to protect their forces, but the casualty numbers indicate that they often choose not to. GEN Sergey Surovikin, who led the Special Military Operation in the fall of 2023, exemplifies the complicated relationship that Russian military leaders have with the protection warfighting function. On the one hand, Surovikin is credited with creating the so-called “Surovikin defensive line” in Ukraine’s Zaporozhye and Kherson regions. It is perhaps the war’s most successful example of using trenches and battlements to protect Russian troops against drones, missiles, and artillery. But Surovikin is also the general who oversaw the deadly “meat grinder” operation to take Bakhmut in 2023: a brutal battle that wasted the lives of more Russian troops than any other single operation so far.⁴

Training and Protection

The initial days of the 2022 Russian invasion provided the first examples of failure to protect personnel and equipment. Company-level Russian leaders and soldiers were often left behind if they became separated from their unit. They in turn abandoned their equipment and deserted or surrendered. Russia’s 1st Guards Tank Army suffered higher than normal desertion rates because their zone in Sumy and Kharkiv provinces in Ukraine’s northeast bordered Russia. After the first days of fighting, not receiving orders and watching the vehicles in front of them burn, many Russian soldiers abandoned their equipment and simply walked home.⁵

As early as 3 months into the Special Military Operation, Russia was unable to generate new, trained replacements for casualties and losses, which in turn left units struggling to protect themselves in combat. In May 2022, Russian analyst blogsite Conflict Intelligence Team (CIT *Svodka*) reported on a Russian volunteer who had been promised 2 weeks of training before he would be sent to the front. Even that short amount of training was not delivered.

When he arrived at his motorized rifle unit, he had to ask his platoon mates how to use a grenade and fire the BMP-2 armored personnel carrier he was assigned to. Despite the lack of training for him and his fellow replacement troops, his unit was thrown into battle near Izyum and suffered serious casualties. He claimed that his unit had no trust in their leadership.⁶



According to the 2024 TRADOC report on LSCO,

“Over [the first year of the war], the Russian Armed Forces suffered an estimated 40,000–55,000 killed and 78,000 permanently wounded troops, averaging 400 casualties per day.”

“As of July 2024, Russia has lost 3,197 main battle tanks—more than its entire active-duty inventory at the outset of conflict—and 6,160 armored fighting vehicles, forcing them to pull increasingly obsolescent systems from storage.” (page 27)

Besides the tens of thousands of regular soldiers killed, Troika Observations included numerous reports about Russian officer casualties during the war. A year plus into the war, military bloggers and analysts were reporting that over 2,000 Russian officers had been killed, about a quarter of which were field grade and general officers.⁷



Russian military funeral

This was a serious loss of command expertise, but the loss of over 1,700 junior officers had an even greater impact on combat operations and training of new recruits. With no noncommissioned officer (NCO) corps to fall back on, units in the field responded by either bringing more senior officers down to serve as small unit leaders or promoting enlisted soldiers up into the junior officer ranks—often before they were ready for such responsibility.

Russia’s poor record protecting the lives of soldiers and leaders led to undermanned units and a lack of discipline across the force. Against a vigorous September 2022 Ukrainian counteroffensive in Kharkiv Province, poorly-led Russian units broke and fled in a disorderly withdrawal, abandoning equipment and sometimes soldiers.⁸

Russian leaders were soon forced to mobilize additional troops and put their military industrial complex on a wartime footing. Despite very public problems in executing its mobilization, Russia

successfully brought 300,000 troops into the force between September and December 2022. This initially backfilled their combat losses and fixed their personnel shortages. These troops, however, arrived with varying degrees of familiarity with their equipment and weapons.

Some individuals were immediately dispatched to the front. Others received training ranging from a few days to a few weeks. The fact that most of





the personnel who were qualified to train new recruits were deployed and fighting in the war, exacerbated the poor training back home, which led to many new losses in combat that could have otherwise been avoided.⁹

In one case reported by pro-Ukraine military blogger

Denys Davydov, a contingent of veterans who had volunteered to fight against Ukraine tried to resign before they were deployed when they saw the poor level of training being provided. In another case, ill-prepared Russian forces abandoned many combat systems and most of their ammunition during a battle for the town of Lyman. Many soldiers were killed in action there and the rest were captured by Ukrainian forces.

Back at a training center near Moscow, a significant portion of 3rd Army Corps' leadership was fired for truthfully reporting the poor status of mobilization training during a visit by Deputy Defense Minister, GEN Yunis-Bek Yevkurov. Russian military analysts assessed that 3rd Army Corps had turned into a crowd of untrained military personnel, given the latest military equipment which they could not operate.¹⁰

Along with other training challenges, Russian forces were woefully unprepared in the area of tactical field medicine and self-aid early in the SMO. At the most



Russian Army reservists (TASS)

basic level, tactical medical training focuses on helping Russian soldiers save their own lives, primarily by properly using quickly accessible tourniquets to stop bleeding. The report of a Russian military doctor, LT Yuri Evich, reveals much about the general state of training and its impact on troop protection.

Evich, who had been serving with the Donetsk Peoples' Republic colonial militia since 2014, traveled throughout Russia the year prior to the start of the SMO to conduct tactical medical training with Russia's Rosgvardia, Airborne, Naval Infantry, and GRU Spetsnaz units, all considered elite fighting units. He found that the lack of interest and participation in medical training was consistent with the units' attitude toward other training: marksmanship, tactics, map reading, etc. Motorized rifle and tank units received little to no tactical medicine training prior to commencing operations in Ukraine. But Russia is slowly adapting and improving tactical medicine TTPs in the SMO.



It took the Russian MOD well over a year after the start of the SMO to begin issuing a new, more robust field individual first aid kit (IFAK) to Russian units. Meanwhile, tactical field medicine courses sponsored by local patriotic volunteer organizations popped up in Russia. Volunteer groups such as "Helping Servicemen 31" provided Russian soldiers with IFAKs and other medical equipment, along with medical training using social media platforms such as Telegram and V Kontakte (Russian Facebook) to coordinate their activities. The result is an improved capacity to protect soldiers' lives.¹¹

In addition to inadequate training, another example of Russian leaders failing to protect soldiers is the tradition of hazing. Hazing most often takes the form of abuse of junior recruits where it is called "dedovshchina" (playing off the Russian word for grandfather). But hazing also occurs in the field, when older troops arrive at new units or when commanders (usually drunk) administer discipline. The Troika has reported on several hazing incidents, including the beating of 10 Russian troops who were being punished for having ingested bath salts in an attempt to get high and avoid combat. Hazing undermines morale and causes fathers and mothers to



Belarusian IFAKs provided to RF AF in Dec 2022

try to shield their sons from military service.¹²

Unmanned Aerial Systems and Protection

After the initial invasion force seized much territory in the regions of Kharkiv, Luhansk, Donetsk, Zaporozhye, and Kherson, Russian units were pushed back in Kharkiv and Kherson areas. Since then, the conflict has become far less maneuver-oriented and much more positional: more like WWI than WWII and characterized by intense fires rather than dynamic maneuver. Under these conditions, the appearance and proliferation of a new type weapon, unmanned aerial systems (UAS) and drones, dramatically affected the ability to protect forces from destruction.

The increased vulnerability of forces identified by Generals Zaluzhny and Baluyevsky in their 2024 articles kindled a drone arms race: deploying UASs to threaten enemy troops and other UASs to protect friendly troops by countering those threats.¹³

As early as 2015, Russia already had experience using UAS to target artillery fire against Islamic insurgents in Syria, but the 2022 invasion of Ukraine accelerated the





"Product 53" – Supposedly a new Lancet variation for swarm attacks launched by an individual or from a containerized launch system.

use of drones: so much so that by June 2022, Russia's military was already running out of drones. The Troika reported that some Russian UAS shot down in Ukraine had been revealed to be repurposed drones from Russia's Emergency Situations Ministry.¹⁴

Russia and Ukraine both recognized the impact of significant numbers of drones and sought to rapidly acquire them while modifying their tactics.

As TRADOC's OE 2024–2034 Report noted,

"Mounting combat losses from UAS-directed artillery fires and precision strikes by First Person View (FPV) unmanned systems forced select Russian units to adapt their infantry TTPs from mounted armored assaults to dismounted Storm-Z "human wave" assaults against entrenched Ukrainian defenses." (Page 29)

This shift to dismounted action may have resulted in success seizing Ukrainian positions, but it arguably did not better

protect Russian forces from staggering casualties. Many of these casualties were the result of Ukrainian precision artillery fire guided and observed by their Ukrainian unmanned aerial systems.

Eventually, Russia was able to increase its stable of drones by buying them from foreign suppliers like Iran (the various versions of the Shahed) and by ramping up state production (of the Orlan and Lancet). Russia also partnered with its own private sector to produce and sell drones to the military. The Sudoplatov Project's "Judgment Day" is a well-known case of Russian civil society-state partnership to creatively increase production of high-quality UAS capabilities. In one case, a bread factory in Tambov is churning out FPV drones alongside its daily loaves.¹⁵ Today, Russia seems to be gaining the advantage in leveraging military-civil partnerships, bypassing acquisition bureaucracy and providing Russia an edge in the Special Military Operation.¹⁶

Protection from drones in Russia's war today can be described as provided by 21st century electronic systems, 19th century battlements, and 20th century aerial dogfights. According to Russian military blogger "Two Majors," Russia is experimenting with shotguns to counter low-altitude UAS threats at the same time they field modern hand-held electronic warfare systems for jamming and defeating drones.¹⁷ In its 6 December 2023 observations, the Troika reported that opposing UAS systems hunt and ram one another in aerial dogfights. Meanwhile, electronic warfare systems disrupt communications between UAS sensors



and their operators and weapons systems. And troops hide in 19th century trenches, shelters, and battlements as a consequence of the positional type of warfare.

Networking of Fires and Protection



As late as spring 2022, in the first months of the Special Military Operation, Russians still physically grouped their artillery battalions and batteries in close proximity, even hand-and-arm-signal distances, as was done by the Red Army during World War II. This close physical grouping of artillery proved dangerous in today's environment due to Ukrainian recon drones and counterbattery fires. The introduction of longer-range HIMARS artillery in Ukrainian units completely ended the Russians' physical grouping artillery.

They were subsequently dispersed into sections, and eventually to individual guns or launchers—something that Russian artillery was not trained for. This dispersal of guns and ammunition created logistic and communication challenges, but it improved the survivability of the units.

Over the next year, Russian artillery adapted to its dispersed environment and



by summer 2023, Russian operational targeting and fires improved to the point that they could hit moving Ukrainian targets up to 70 km in the enemy's rear, with the aid of targeting UAS. The adjustment in tactics protected Russian firing units and improved their survivability.¹⁸

Air Defenses and Protection

The mission to counter reconnaissance and offensive air threats has made air defenses a critical part of protection in this war. On the first day of its invasion, Russia launched a massive missile attack against Ukraine that struck cities from Lviv in the west to Odesa in the south and throughout the country. Observers expected that Russian air forces would establish air supremacy over Ukraine, but they failed in that task primarily because of the air defense capabilities that Ukraine had ready.

Over the next 2 years, Russia increased its bombing campaign against Ukrainian military and civilian targets. In an 18 October 2022 interview reported by Russian newspaper *Kommersant*, then-commander of the Joint Group of Forces in the Special Military Operation, GEN Surovikin, stated that Russian attacks on military and civilian infrastructure decrease the military capabilities of the Ukrainian Armed Forces. Ukrainian military air defenses spend a good deal of their time defending civilian assets.¹⁹

Meanwhile, Ukraine built its own capability to bring the threat of air attack to cities throughout western Russia; one based on unmanned aerial systems. Ukrainian drone strikes against Russian targets have



challenged air defenses from St. Petersburg to Moscow to Engels, a strategic bomber base 480 km from Ukraine.

The lesson from the war is that air defenses need to be capable against the whole spectrum of threats from medium-range missiles, to aircraft, to small hand-held drones. And the area of responsibility is not limited to where troops are located but throughout the homeland: a daunting task that no country is adequately equipped to do today.



UKR MoD Reznikov

Electronic Warfare and Protection

Electronic warfare (EW) assets play an important role in the protection warfighting function. Enemy EW systems can disrupt friendly operations and communications, posing a major threat to the force. Friendly EW systems can neutralize enemy fires, surveillance and acquisition capabilities, as well as communications. They protect friendly fires platforms by disrupting counterbattery responses. Troika Observations over the span of the SMO have identified important Russian EW capabilities and revealed the back-and-forth growth of EW capabilities on both sides of the war. Russia has a lead, but it is not an insurmountable one.

Advantages gained by an EW system can be erased by technology improvements and adjustments on the other side. In February 2023, Russian social media were reporting on Ukrainian effectiveness with GPS-guided Excalibur rounds in Kherson

Province. Several Arctic-variant Russian SA-15s were destroyed.²⁰ By July 2023, Ukrainian Minister of Defense Oleksii Reznikov complained that the Russians were using EW to jam GMLRs and other high-precision ammunitions like Excalibur that use GPS.²¹ But by October 2023, Russian analysts were noting once again that Russian EW systems were failing to prevent Ukrainian observation UAS from operating in Russian tactical rear areas.²²

Going forward, Russia continues to adapt its EW capabilities, providing them to a broader group of units. In January 2024, independent Russian military analyst site Conflict Intelligence Team reported that Russia started installing Volnoroz counter-UAS EW systems on all their military vehicles—armored and non-tactical. The system is now ubiquitous on Russian military vehicles. This is a major improvement, but Ukrainian sources claim their UAS are already adjusting to these Russian countermeasures by either ballistically diving or just falling onto their target in an uncontrolled descent from directly above.²³

The Black Sea Fleet & Protection

The case of Russia's Black Sea Fleet is perhaps the most instructive example of the importance of the protection warfighting function and what happens if it is not addressed. It is clear by now that one of the most important, if not the most important, strategic goals of Russia's Special Military Operation is control of the Black Sea region. And yet, because of an inability to protect its forces from Ukrainian attacks, Russia's control of the region is not

strengthened but in jeopardy.

Crimea is the key to dominating the Black Sea region, a strategic imperative for Russia since the 18th century. In 2014, in reaction to the ouster of Ukraine's pro-Russian president, Viktor Yanukovich, Russia's first step was to seize the Crimean Peninsula. When Russia invaded

Ukraine in 2022, its forces advanced toward the capital Kyiv in the north and Crimea in the south, but became bogged down. Russia revealed its true priorities when it abandoned the operation in the north and focused on the south. Russian forces moved quickly along the coast of the Black Sea to establish a land bridge from mainland Russia to Crimea, bolstering its control of the region. The 2022 land seizure, coupled with the earlier illegal annexation of Crimea, gave Russia the largest Black Sea coastline of any country in the region. But ever since, Ukraine has successfully and progressively attacked Russian forces in Crimea and the Black Sea, forcing Russia to relocate its navy from its historic bases in Crimea to the Russian mainland port of Novorossiysk, hundreds of kilometers to the east. Singlehandedly, and with no traditional navy, Ukraine put Russia's strategic control of the Black Sea at risk.

Ukraine's use of unmanned naval and aerial systems to strike Russian ships



A screenshot from a video published by Ukraine's military intelligence agency (GUR) claiming it showed naval drones assaulting the Russian missile-armed corvette Ivanovets in February 2024. (Russian Military Press Service)

afloat and bases on land has resulted in spectacular losses for the Russian force. In the first year of the war, Ukraine successfully attacked the main transportation bridge from southern Russia to Crimea and sank the Russian Black Sea Fleet's flagship, the *Moskva*.²⁴ Sinking the flagship was more than a public relations victory. The *Moskva* possessed most of the sea-based air defenses for the fleet, as well as unique command-and-control facilities. It had the firepower of a reinforced brigade. Without *Moskva*'s sea-based defenses, Russian ships could not venture as far from land-based protective fires. When Ukraine began to successfully attack ships in Crimean ports, Russia moved them to its mainland naval base at Novorossiysk. Sea lanes in the western Black Sea for the transport of Ukrainian grain became less at risk. Ukraine also attacked Russian airbases on the Crimean Peninsula, reducing their ability to patrol sea lanes and airspace in the Black Sea region.²⁵

Shortly after the seizure of Crimea in 2014, retired Russian generals told their U.S. counterparts in a dialogue called “The Elbe Group” that to be secure, Russia demanded a return to the arrangement made at Yalta at the end of WWII: a Western recognition of Russia’s control and influence over Eastern Europe, from the Black Sea to the Baltic. Almost everything Russia has done in the intervening years can be seen as supporting that goal. But Russia’s inability to protect its main instrument of power in the south—the Black Sea Fleet—puts its plans at risk even before the shooting has stopped.

Conclusion

The protection warfighting function has risen in priority among the other warfighting functions, due to the ferocity and precision of fires and the emergence of vastly improved surveillance and robust transmission of intelligence. Contributing to the precision of fires and speed of targeting and surveillance are the myriad unmanned systems (satellite, aerial, ground, and sea) which have transformed the battlefield. All of this has resulted in a positional type of warfare, where protection for the force comes from a combination of 19th century battlements, 20th century fires, and 21st century electronics and technology. As daunting as today’s battlefield is though, none of these conditions is permanent and the side that ultimately wins will be the one that can learn and change fastest as conditions change.



Emblem of the Russian Black Sea fleet

Protection Chapter Endnotes

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Selected Troika Insights

Authors' Note:

As noted in the Preface, at the beginning of the SMO, we published the Troika Observations 7 days a week. We were trying to capture the latest battlefield updates, and there was something new or unique nearly every day. There was not much time for reflection, and most individual observations were short. When the publishing frequency was reduced to three times a week, we began to write longer pieces, with more detail and often background. We also started looking at trends.

At first, we called these longer pieces “Strategic Observations,” but that term was not completely accurate—many were not “strategic.” We eventually settled on “Troika Insights.” As the name suggests, these longer articles contain not just observations, but background, context, and our insights as longtime Russia watchers. Many of these insights covered multiple Warfighting Functions, or in some cases, were outside of the U.S. Army Warfighting Functions entirely.

However, they still cover information vital to understanding the Russian Way of War. We have compiled the most important ones from 24 February 2022 to 1 July 2024 below, with original dates of publication in the Troika Observations noted. These selections are organized largely by theme, noting the dates they were written. In some cases, subsequent information caused the Troika to make minor edits, but the originals are presented largely unchanged so the reader and analyst can note the evolution over time in “ground truth.”



Russian Federation Coat of Arms

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Selected Troika Insights from Russia's Special Military Operation

Overview

On the 1-year anniversary of Russia's Special Military Operation, the Troika took stock of the operation and attempted to explain Russian thinking about the conflict, noting that for Russia and Ukraine the war did not start in 2022.

Reflecting on 9 years of war in Ukraine (24 February 2023)

Don't believe the Western press or the DC-based think tanks. Today does not mark the 1-year anniversary of the war in Ukraine, or the 1-year anniversary of Russia's invasion of Ukraine. Russia first invaded Ukraine in February 2014 and has occupied Ukrainian sovereign territory, as recognized by the United States and the United Nations, ever since. The two countries have been at war for 9 full years. 27 February 2023 will begin the 10th year of Russia's war against Ukraine, not the second. That is the anniversary of overt Russian Armed Forces action in Crimea in 2014. In the days prior, Russia began preparing the environment with covert action—what the Russians refer to as "Indirect Actions."

This is not just semantics—to fully understand the war, one must understand it in its entirety. Ignoring the period from February 2014 to February 2022 led to some ill-considered assumptions by the press and think tanks, as well as by some military analysts. Those who predicted

Ukraine's hasty collapse in 2022 were ignoring 8 years of stoic Ukrainian resistance to Russian aggression, much of it under far worse conditions than they face today (i.e., without Javelins, NLAWs, HIMARS, 155-mm howitzers, radars, secure comms, 7 years of Western training, etc.). Those who were surprised by Russia's poor performance in the winter and spring of 2022 were ignoring the fact that after Russia's illegal annexation of Crimea in March 2014, Russian indirect actions in the Donbas largely failed. This was most notably in Odesa in May 2014, but also across Vladimir Putin's "Novorossiya" ("New Russia"). They ignored the fact that Ukraine largely blunted repeated Russian conventional offensives from 2014 to 2022. They were oblivious to Ukraine building Europe's most powerful ground force (not an exaggeration), numbering 28 maneuver brigades, manned and led by combat veterans, trained by our Western allies, and partially equipped with modern Western equipment. Acknowledging that this war has lasted nearly a decade provides some insight into the staying power and resilience of both the warring parties. The notion that Ukraine will soon tire of independence and voluntarily trade land for peace is fanciful. The notion that Russia will soon tire of war and voluntarily go home is equally ludicrous.

Russians are fighting for Russia

Conceptually, this war is far bigger than Ukraine—at least for Russia. Russia sees



itself in a global conflict with the West, of which Ukraine is but one theater (the major theater, to be sure). Neither success nor failure in Ukraine will alter Russia's global calculus. Meanwhile, on 30 September 2022, Russia "annexed" four Ukrainian provinces and pronounced them part of Russia "now and forever." These four provinces (oblasts) joined Crimea, which was illegally "annexed" by Russia in March 2014. From the Russian perspective, almost all blood now being spilled by Russians is for defending Russian territory. The sole exception is a tiny sliver of Kharkiv Oblast, still occupied, but not yet annexed by Russia. Russia cannot easily walk away from these territories that it has claimed and "annexed."

After 9 years, this is a war of attrition, and Russia is winning

Russia has correctly identified Ukraine's center of gravity as Western support. Russia's strategy is to continue to hold and even expand its territory in Ukraine, while wearing down Ukrainian political will through attacks on civilian infrastructure throughout the country, attriting the Ukrainian armed forces through repeated attacks, and waiting for Western political will to falter, and/or Western warehouses to be emptied. It is not a bad strategy, and it has a decent chance of success.

A war of attrition suits Russia well—Russia has nearly 3.5 times the population of Ukraine and has not had trouble raising additional forces. The mobilization process has been ugly to American eyes, but it worked. Russia's non-democratic governance, of course, helps make this possible. Any possible opposition leaders

to the 9-year war, including the Special Military Operation, have either been terrorized, jailed, murdered, or left Russia. Russia has lost significant equipment in the past year, but Russia also maintains large reserve stocks and has a defense industry that is hampered by sanctions, producing lesser quantities of lesser quality. But the sector remains active and continues to build kit. And Russia will fight with it.

Russia has the initiative

(February 2023) From November 2022 up until February 2023, Russia has been on the offense and has determined the time and place of recent military engagements. Russia is currently attacking on a broad front from Svatove in the north to Vuhledar in the south. Although to American eyes repeated human-wave frontal attacks look senseless, even criminal, they have been effective.

At least for the time being, Russia appears to have given up on maneuver and Chief of the General Staff GEN Valery Gerasimov's beloved operational art, favoring instead artillery and mass. These attacks are often uncoordinated, poorly supported, poorly led, and executed by poorly trained *mobiki* and conscripts. As a result, Russian casualties have been horrific, while gains have been incremental and minimal. It is quite possible that Russia sacrificed 10,000 troops killed, wounded, or missing in action (KIA, WIA, or MIA) to seize the small town of Soledar, which had a pre-2022 population of 10,000. Yet many of the casualties of the past several months have been convicts from Russia's prisons. As a

practical matter, their deaths are not "counted" by the Ministry of Defense.

Ukraine has suffered many casualties and equipment losses as well. The northern Ukrainian counterattack against Svatove has been blunted, and Ukrainian forces might have even been pushed back a few hundred meters. A southern counterattack may yet materialize in Zaporizhzhia Province but will likely be weaker and less effective due to Ukrainian losses defending Bakhmut. The Troika does not know just how costly the defense of Bakhmut and surrounding areas has been for Ukraine, but we suspect the costs and losses have been high, both in personnel and equipment.

What to expect in year 10

The war of attrition is likely to continue throughout 2023. As Western equipment and supplies dwindle and Western political will wanes, there will be calls, many orchestrated by Moscow, for Ukraine to trade land for peace, and submit to Russia's good graces. The Troika expects Ukraine to resist these calls as long as they are able. But we are forced to acknowledge that Ukraine cannot effectively resist absent Western support. And Western warehouses, motor pools, and boneyards are nearly empty.

Russia is comfortable with messy, incomplete outcomes—see Transnistria, Abkhazia, and South Ossetia. A ceasefire along the current line-of-contact would serve Russian interests well (think "Minsk III," although probably not called that), allowing them to refit, rearm, and rebuild their forces for another attack, much as

they did between Minsk II in February 2015 and February 2022's Special Military Operation.

Personnel and Organization: Conscription, Mobilization, Reform

The failure of Russia to achieve a quick victory in its Special Military Operation against Ukraine led to a drawn-out conflict for which, in hindsight, Russia was not prepared. Following are Troika Observations identifying the ways Russian leadership attempted to solve manpower and structural deficiencies.

Misjudging the necessary manning for the SMO. (30 October 2023)

Since shortly after the start of the "Special Military Operation" (SMO), Russian military manning has been one stopgap (sometimes hairbrained) scheme followed by another. The lack of a declaration of war for the SMO meant that the Russian Federation (RF) Ground Forces (GF) and airborne forces (VDV) could not bring their conscripts (35 percent and 20 percent of their manning) to Ukraine. There was no immediate alarm because the SMO was supposed to last only 3 to 10 days.

By April 2022, when the war did not conclude, most or all non-conscript forces left back at garrisons in the lower-tiered



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readiness “3rd battalions” were hastily summoned to Ukraine to fight. Around that same time, RF Ministry of Defense (MOD) reached out to Yevgeny Prigozhin and his Private Military Company (PMC) Wagner (who were originally kept away from all aspects of the SMO) to see if they could provide short-notice, emergency fighting manpower, which PMC Wagner did almost immediately. As early as April 2022, there was already growing pressure from Minister of Defense Sergey Shoigu and Chief of the General Staff GEN Gerasimov, through their representatives in the RF State Duma (including several retired general officers), to mobilize “the People’s Reserve.” These include former enlisted, former conscripts, and officer veterans from as far back as the Chechen wars in the 1990s, Russia’s version of the Individual Ready Reserve (IRR) (*Людской резерв*). However, despite the growing need for personnel replacements, for whatever reasons, Vladimir Putin resisted until September 2022.

The Partial Mobilization of 2022. In the end, they grumbled and complained, but they got on the trains.

Historical context: Mobilization vs. Readiness. (1 November 2023)

Russia has traditionally had two primary advantages over its opponents: geography and population. As the largest country in the world, spanning 11 time zones, Russia has always had the strategic depth to “trade space for time,” withdrawing slowly while mobilizing its large population, usually much larger than its enemies’. Thus, Russia could

rely on a large, although partially trained, conscript force that could be brought up in times of war through mobilization. This model worked for centuries in the Russian Empire and the USSR but did not serve the Russian Federation well in the Chechen Wars of the 1990s and 2000s, or during its invasion of Georgia in 2008.

As a result of its early post-Cold War experience, Russia shifted resources from its reserve structures to its active-duty forces and attempted to transition to a military relying on a smaller high-readiness force manned primarily with *kontraktniki*, volunteer professional enlisted soldiers. However, this transition was never fully realized and consequently, Russia launched the SMO with an active-duty force that proved to be too small and a reserve force unable to mobilize and rescue it. This mixed force proved woefully unsuitable for the SMO as it morphed from a short war to a long one.

At the same time the RF MOD was scrambling to find new troops, regional governors and their commissariats were unable to entice many Russian males to sign contracts, even with short terms and high payoffs. Within a span of 3 months, Russia was in serious danger of running out of military personnel. To fill this gap, they turned first to PMC Wagner, and then to prisoners, many of whom were recruited by PMC Wagner. This still was not enough, and in September 2022, Putin was forced to order a partial mobilization. That the number of *mobiki* was 300,000 revealed just how serious the personnel problem had gotten.



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Analyzing partial mobilization after 1 month

(28 October 2022) It has been just over a month since Putin ordered a partial military mobilization of 300,000 personnel. The process has been chaotic and often comedic.

Why did they mobilize in the first place?

We must evaluate the success or failure of the partial mobilization against its objectives. So, why did Putin order the mobilization? Obviously, he needed more personnel, due to combat losses and stiff Ukrainian resistance. From May through summer 2022, the RF MOD offered 90-day contracts and organized new short-term soldiers into volunteer battalions, regional battalions, and the newly created RF GF 3rd Army Corps as an overarching force generation command and control mechanism for some of the new battalions. *Kontraktniki* from the RF Navy and RF Strategic Rocket Forces were magically turned into “naval infantrymen” or “motorized riflemen” and deployed to the SMO. Master gunners and other training cadre from the military districts were also deployed. Many were killed, which later left few remaining trainers for the mobilization.

This mix of stop-gap semi-successes and failures helped man the RF GF, VDV, and Naval Infantry through summer 2022, but not enough to stabilize the situation.

The 21 September 2022 partial mobilization both (1) delivered emergency augmentation for Russian units desperately defending near Svatove, Kreminna, and in northern Kherson Province, and (2) provided a vast pool of over 300,000 former Russian

soldiers which is now the foundation for Russian Federation Armed Forces (RF AF) manning in Ukraine. A rolling, “covert” mobilization after fall 2022 replaced continuing losses and made up for those of the summoned 300,000 that were no longer alive, no longer lived in Russia, were somehow exempt, or were hiding somewhere.

The 21 September partial mobilization order also extended all the 90-day and other *kontraktniki* and operational reserves (BARS) fighters (Combat Army Reserves: *Боевой армейский резерв страны – БАРС*) indefinitely until the SMO’s completion. Concurrently, PMC Wagner grew to become an entire mercenary operational command, from leadership to fighters and technicians, which further helped mask the RF MOD’s personnel failures until later in 2023 when the mobilization gradually improved and fleshed out Russia’s army at war.

Looks successful

In the context of Putin’s objectives, we feel that the partial mobilization must be considered at least a partial success. Consider: On 21 September 2022 when Putin issued his order, Ukraine was in the midst of a highly successful counteroffensive in Kharkiv Province. Ukrainian forces had crossed the Oskil River, had momentum, and were threatening all of northern Luhansk Province. In the south, the Ukrainians were taking ground more slowly in Kherson Province but still progressing. A month later, both Ukrainian counteroffensives have slowed considerably, and the lines have stabilized. Not all of this





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can be attributed to the arrival of *mobiki*—there are other factors such as weather and Ukrainian lack of armor—but some of it can. Even if they are poorly equipped and untrained, 300,000 new arrivals on the front lines present force ratio problems for the Ukrainians, who must still clear specific areas before they move forward, by either killing the new *mobiki* or taking them prisoner, or even worse, wounding them and then taking them prisoner. The prisoner scenario requires even more Ukrainian personnel assets to secure and safeguard as well as to treat wounded. A senior Ukrainian official admitted that the arrival of new troops in right bank Kherson had slowed Ukrainian advances there.

One problem which cannot be considered a success has been the high rate of deaths/ casualties among the mobilized troops. (25 September 2023) One fifth (1/5) of mobilized soldiers did not survive their first 2 months after receiving their mobilization summons. At the 1-year anniversary of the 21 September 2022 partial mobilization, credible Russian investigative journalists and Russian military analysts (all of whom are now outside Russia) teamed to compile and analyze a list of more than 1,000 mobilized troops killed in action (*mobik* KIA). RF MOD or other RF authorities have never reported on the total number of *mobik* KIAs in the Special Military Operation. The investigative journalists and military analysts compiled their list from obituaries published all over Russia, from Moscow to Chukotka (extreme northeast Siberia).

On average, most *mobiki* who died after deployment to the SMO died after 4.5 months in the SMO. At least 130 *mobiki*

were KIA in their first month after mobilization.

Conduct of the partial mobilization
(28 October 2022) Below, the Troika discusses some of the institutional challenges that have complicated the mobilization. We also posit that while it may look ugly, it is actually serving its intended purpose.

Commissariats
In 2008, the RF MOD personnel systems were reformed as part of former Russian Minister of Defense Anatoli Serdyukov's larger New Look Reforms. Many personnel functions previously run by the RF military were consolidated, with military billets being converted to civilian positions and/or outsourced to civilian contractors. In June 2021, RF Defense Minister Shoigu made a surprise visit to one of these offices near Moscow. Shoigu expressed his dissatisfaction with the organization and work of the office. He noted that while they had a microwave oven and a refrigerator, they had no computers to track personnel or to contact other military registration and enlistment offices by email.

When Putin ordered a "partial mobilization" on 21 September 2022, the sad state of these military registration and enlistment offices across Russia came to a head, as they were quickly overwhelmed with the challenges of executing a military mobilization during wartime. They lacked qualified personnel, processing systems, and record-keeping required to effectively conduct a mobilization.



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Lack of personal equipment
The Troika has watched and reported on the comedy of errors that has been the RF AF's partial military mobilization. We have seen numerous social media videos made by elderly or infirm *mobiki*. Even more common have been *mobiki* bemoaning their temporary living conditions—filthy, dilapidated barracks, leaky tents. In at least one case, *mobiki* were told to build their own shelters in a forest. Another *mobik* inventoried his gear—a paintball vest and mask, child's gloves, and uninsulated rubber boots. A theater full of *mobiki* mouth off and jeer an officer trying to brief them. A rare female Russian officer tells *mobiki*,

"We will give you a uniform and a weapon, everything else you need to get yourselves. Scavenge cars for first aid kits and ask your wives or mothers to give you sanitary pads. They are effective at stopping blood flow from gunshot wounds."

Families lament that their sons and husbands are being sent to war with very little training, sometimes none at all. Lots and lots of vodka is being consumed by departing *mobiki*, and lots of fights happen as well (these two might just be related).

However, as always, social media can give a distorted picture. The videos showing chaos and pathetic conditions tend to go viral. "Normal" videos, not so much. The Troika has seen videos of orderly mobilizations, the uniform issue (where it appears all have at least received a full set), and pre-deployment training. These scenes are much less publicized than the comedic scenes mentioned above, but that could

also be a function of social media and what gets circulated.

They got on the trains
In the end, they grumbled and complained, but they got on the trains. In the days leading up to and immediately following Putin's partial mobilization order on 21 September 2022, Western media reported heavily on Russian draft dodgers fleeing the country. What was less widely reported was that most mobilization-eligible men did not flee. They reported to their local military registration and enlistment offices, completed required processing, and got on the trains (or buses or even planes in some cases). Officially, the mobilization quota was 300,000, but DEFMIN Shoigu mentioned "1 million" at one point. It is hard to tell at this point just how many Russians have been mobilized under the 21 September order, but it is at least plausible that the number approaches the original 300,000 desired.

Many are already in Ukraine
By the end of September 2022, barely a week after the mobilization order, *mobiki* had already been confirmed KIA or captured in Ukraine. The social media videos of *mobiki* complaining about accommodations, food, lack of training, and disorganization at mobilization stations in Russia have largely been replaced by videos and posts of *mobiki* complaining about the same things in Ukraine. There are also many accounts of regular forces stealing *mobiki* gear, using them as cannon fodder, etc.

It is quite possible that Ukraine takes more territory prior to winter, but Putin's partial mobilization has created challenges for



Ukraine, possibly prevented Russian collapse in northern Luhansk and western Kherson provinces and bought Russia time. Strategically, sending thousands of Russians to their slaughter may prove to have been a bad decision, but operationally and tactically, it must be considered at least a partial success.

The differences between conscripts, contract soldiers, and mobilized troops are significant in terms of how they are recruited, paid, and used during the Special Military Operation. Following is a short explanation of each kind of military service.

Conscript vs. Kontraktnik vs. Mobik. What's the difference?

There are essentially three ways to be credited with having served in the Russian military: as a conscript (draftee), a *kontraktnik* (volunteer), or a *mobik* (involuntarily mobilized veteran). All three types sign oaths/contracts with the Russian MOD. Each of these is a different category of enlisted soldier in the RF AF. Western observers frequently confuse the types, or use the terms interchangeably, but the differences are important.

NOTE: A fourth category of fighter is a mercenary, such as those in private military companies like Wagner or Redut. That category of fighter signs a contract with the company and with the RF MOD and may not get the same benefits as other veterans.

Conscript

A conscript (*призывник* or *срочник*) is an 18- to 30-year-old male Russian citizen inducted into the uniformed military. He must complete a mandatory service obligation (see NOTE 1 below) in the Armed Forces or another part of the military organization (e.g., Rosgvardia, Interior Ministry, Federal Security Service (FSB) Border Troops, Ministry of Emergency Situations, etc.). In Russian culture, a major dividing line exists between foreign wars and wars to defend the homeland. For this reason, Russian law prohibits conscripts from serving outside of Russia absent a declaration of war without having at least 4 months training (see NOTE 2 below).

Some RF Ground Forces units took their conscripts into combat in the early days of the SMO in violation of Russian law. Many were captured and used by Ukraine for information operations (IO) purposes—they were allowed to call their parents in Russia, many of whom were unaware that their conscript sons had been deployed to combat in Ukraine and had been captured. The calls were filmed and publicized.

The participation of conscripts early in the SMO was a major Russian PR failure, and significant enough that Putin felt compelled to address the nation on 8 March 2022 (International Women's Day) to admit that "mistakes were made." The good Tsar then fired some generals (bad Boyars that they were), and the Troika has not seen conscripts from Russia (as internationally recognized, i.e., 1991 borders) fighting in Ukraine since then. The UAF has also not noted their presence, which they would

certainly publicize if it was still happening. Conscripts from the occupied Ukrainian territories are, however, forced to fight, especially from the Luhansk People's Republic (LPR) and Donetsk People's Republic (DPR). Conscripts from RF-occupied Zaporizhzhia and Kherson Provinces are mostly pressed into unarmed military labor that supports the RF AF.

The day after their military obligation is completed, however, all conscripts become veterans and are eligible for mobilization (i.e., involuntary callup).

- *NOTE 1: In 2022 and 2023, the RF MOD lobbied to have the period of conscription extended to 2 years, as it had been in the Soviet Union. Presumably, this was to increase the training level of enlisted soldiers. After months of unusually public, political drama, in July 2023, the RF Parliament passed a law restoring 2-year conscription. In the last days of August 2023, however, the MOD arbitrarily restored the 1-year period, despite having lobbied for 2-year conscription for almost a year. RF MOD claimed that under such short notice, they were "not ready" to extend the conscription cycle for the fall 2023 draft. More on this below.*
- *NOTE 2: The Troika are not lawyers, much less Russian conscription lawyers. (There is such a legal specialty in Russia.) However, our understanding is that, according to Russian law, conscripts are prohibited from combat abroad until they have had a minimum of 4 months training. In addition, President Putin has said, since the war*

began, that no conscripts would be sent to fight in the SMO—only those who volunteered and signed contracts would be sent. With some notable exceptions, Putin's command has largely been followed. The annexation of Ukrainian territories in 2014 and 2022 made those regions legally and formally part of Russia (the United States does not recognize these illegal annexations). By Russian law, we believe that conscripts could legally serve in the SMO, at least in these illegally annexed territories. However, Russia has shown a great reluctance to do this.

Kontraktnik

A *kontraktnik* is an 18- to 70-year-old male who voluntarily signs a contract directly with the RF MOD. He does not have to be a citizen—contracted service is open to legal and illegal residents, foreigners—anyone who will sign up. In fact, since the SMO began, Russia has offered many incentives, including "fast tracking" citizenship requests for foreign volunteers. Terms of service vary and have changed frequently throughout the SMO. A *kontraktnik* is different from a mercenary who contracts directly with a PMC such as Wagner. *Kontraktniki* can serve anywhere.

- *NOTE: "Voluntarily" is a relative term. Many kontraktniki signed their contracts under duress. Early in the SMO, the UAF captured Russian personnel documents that showed an entire company of conscripts who had signed enlistment contracts on 22 February 2022, less than 48 hours before the SMO. Many migrant workers in Russia*



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were rounded up by police and forced to sign enlistment contracts. There are other reports of police and judges offering “go to war or go to jail” choices. There are also often positive incentives promised, such as high pay, bonuses, veteran status, and other benefits.

Mobik

A *mobik* is a 19- to 70-year-old male Russian citizen who has completed mandatory military service (conscript or *kontraktnik*) and has been recalled to active duty (mobilized). Russian veterans are all considered “reserves” and are subject to mobilization (recall) at any time. However, the 2022 partial mobilization of 300,000+ was only the third mobilization in Russian and Soviet history (1917 and 1941 were the other two). *Mobiki* are often referred to by Westerners as “reservists.”

While this is technically correct, *mobiki* are not “reservists” in the U.S. sense of the word. They have had no formal contact with RF AF since their discharge from service (“demobilization” in Russian terms). In Russian culture, use of *mobiki* in combat abroad is considered morally acceptable, even if mobilization occurs the day after the conscription period ends.

The partial mobilization overwhelmed the Russian training system. Training centers, which already existed to instruct small numbers of specialized troops, helped fill the void.

Russian use of training centers. (20 January 2023)

In the early 2000’s, Stanislav Vorodnyuk wrote a book about his time as a soldier in the Russian military. In November 2003, he was drafted into the RF AF to serve for 2 years. After about 3 days processing and travel, he arrived at his unit and began a 30-day training period called “Course for Junior Soldiers” (*курс молодого бойца, КМБ*) where he was taught the basics of marching, shooting, and soldiership. After that 30-day initial training, he and his fellow draftees took an oath to the Russian Federation and joined squads in their unit, where they served until their commitment was finished. This was, and remains 20 years later, the normal training process for the majority of new recruits in the Russian military.

The war in Ukraine, however, has demonstrated that Russian units and troops are lacking in training compared to their Ukrainian adversary. The recent mobilization of 300,000 new troops further strained the traditional training system and revealed its weaknesses. As a result, Russian military leaders have turned to using training centers as a way to improve training and relieve the strain on line units. The Russian military has had training centers for many years, some existed during Soviet times. But the relatively small number of recruits and officers who



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attended these training centers were generally destined for specialized duties as commanders or technicians. As such their training courses were usually 3 to 6 months long, compared to the 1-month course for most troops. During the RF AF’s drive to rid itself of hazing of junior troops, known as *dedovshchina* (literally, “reign of the grandfathers”), some new recruits were assigned to do their initial training period in training centers rather than line units. The thinking was that if young soldiers were all the same rank and seniority when they trained, there would be no opportunity for older troops to haze them. This arguably helped reduce the incidence of hazing in the mid 2000’s. Military leaders also recognized that, because the courses in training centers were 3 to 6 months long, soldiers who went through a training center were much better prepared when they arrived at their units.

With these advantages to “centralized initial training,” why didn’t the Russian military adopt this practice across the entire fore? The answer was a lack of funding, training areas, and resources. As one Russian official put it: “It is impossible to train all soldiers [in these units], because the army would face the need for a huge number of training units, as well as the difficulties of staffing combat units. In some specialties there simply is no need, or they can be trained quickly enough. The necessary minimum—that’s the goal of training units and the army as a whole.”

The lack of resources was exacerbated this past fall by the influx of 300,000 mobilized personnel needing at least some refresher training before being deployed to the war.

Some *mobiki* were sent to existing training centers. The Central Military District’s Joint Training Center reported that the influx doubled the normal load of about 10,000 troops. In one case in the Far East, the local political leaders raised money to buy personal gear and equipment for soldiers, because the training centers did not have enough.

According to Vladimir Putin, by late December 2022, 150,000 of the *mobiki* were already in their units in Ukraine, while another 150,000 were being sent to the war zone for continued training in the rear area as a “strategic reserve.” Meanwhile, in the separate but regular conscription process, about 120,000 draftees were inducted into the military between November and December 2022 and began their training as well. All this turmoil suggests that relying on line units for training is unsustainable.

Each military district has its own regional training center as well as training centers for specialized duties. In both the Western and Central Military Districts, the regional and specialty centers are combined under a “joint headquarters.” Each of the regional centers currently graduates between 5,000 and 10,000 soldiers a year, most entering motorized rifle and tank units. The several “specialty” centers graduate soldiers for artillery, air defense, airborne, rocket, military police, engineer, and other specialties. Russia’s experience in the war argues for better training, the kind they already do in existing training centers.

During his speeches in December 2022 and January 2023, RF Minister of Defense Sergey Shoigu announced that among the





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priorities for the near future are more contract troops (*kontraktniki*) with better training and more training ranges. He has also called for expanded military preparation training of young men while in high school, before they are recruited or conscripted. In December, Vladimir Putin specifically told the MOD that they should not consider funding constraints in their efforts to fix problems. If the RF AF is funded to shift its training base from line units to centers, it could help resolve a major problem for Russia's military.

Assessing the success of involuntary mobilization and volunteer contract recruiting in easing Russia's manning problems.

Manning status a year plus after mobilization. (1 November 2023)

Today, the RF AF in Ukraine is mostly manned by tired and bloodied, but committed, *mobik* soldiers and officers, many of whom have been fighting without a break or any return home since the start of 2023 or earlier. Unit manning by mobilized soldiers is geographically based and indiscriminate.

Mobik manning (which is involuntary) is supplemented by various older and newer volunteer formations of unknown personnel strengths, reportedly grouped under the operational reserves (BARS) system. Numerous mercenary units have also formed under PMC Redut. (While Redut operates tightly under RF MOD control, the troops in Redut do not sign contracts with the Russian state but with Redut and

therefore are not technically government soldiers.)

RF AF *kontraktnik* personnel – not a problem

(8 April 2024) After well-publicized failures in 2022 and 2023, the RF AF now appears to be making its recruitment quotas for *kontraktniki*. A combination of patriotism buoyed by recent Russian successes and high enlistment bonuses seems to be driving the improvement.

Combined, these efforts managed to replace Russian losses, stiffen Russian defenses, and create new units. The RF AF used this time to improve its recruiting procedures, and since then seems to have had greater success in recruiting *kontraktniki*.

***Kontraktnik* enlistment competition success in Russia**

RF government quotas for *kontraktnik* volunteer enlisted soldiers are given to the regional governments (Russia's 89 "subjects") and their military commissariats (*военкоматы*). Regions offer different incentives based on their resources and progress toward their quota. For example, Krasnodar Krai recently increased its one-time signing bonus to 1 million rubles, about \$10,800. This is a huge sum for most residents of this southern Russian region. Krasnodar increased its bonus to be more competitive with neighboring Rostov Oblast. Other regions advertise nationwide and offer free travel to their region for potential *kontraktniki* in search of higher bonuses.



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Although conscripts generally are conscripted and serve locally, *kontraktniki* can and do volunteer anywhere. Prospective recruits can and do search for the best possible contract terms throughout Russia. Meanwhile, regional authorities and their military commissariats are not above using trickery to lure people into their offices.

Numerous newly adopted amendments to Russian law require men to regularly present themselves at their local commissariats. Potential recruits or *kontraktniki* have to update their commissariats with personal information in order to receive any public services or when they apply for jobs. Prospective employers are under great pressure to ensure that their male employees' military registration and records are up to date. Pressure on men who have recently been granted citizenship (e.g., migrant workers from Central Asia) continues to increase. As of 1 April 2024, new citizens are required to get Russian drivers licenses. In Yekaterinburg, a long line of new citizens formed outside the relevant office. Local commissariat employees then handed out military registration summons to the men in line, with next day reporting requirements. Upon arrival at the commissariats, they will most likely be persuaded or pressured to sign RF MOD enlistment contracts.

Overall, however, Russia's *kontraktnik* enlistment campaign for 2024 is much more successful than last year. Throughout 2023, many Russian sources mercilessly mocked the RF MOD and their *kontraktnik* enlistment failures, as well as Russian leaders (including Vladimir Putin and

Minister of Defense Sergey Shoigu) for their continued lies about their *kontraktnik* enlistment successes. Now, these same sources concede that Russian *kontraktnik* enlistments rates are much higher for the first 3 months of 2024. Most cite two reasons: (1) the Russian perception that they are winning the SMO; and (2) the sizeable enlistment bonuses. Many in the West do not understand that support for the SMO is high in Russia, and it is not just Putin who believes in Russia's goals. We have a Russia problem, not a Putin problem.

Russia not only increased its access to more troops for replacements, but also began the process of building larger armed forces.

RF AF growth in permanent end strength. (29 and 31 May 2024)

A month before the 2022 mobilization, a 25 August RF Presidential Decree increased the targeted RF Armed Forces end strength to 1.5 million, but this would be done in increments. A subsequent decree raised the interim RF AF end strength to 1.32 million on 1 December 2023.

Soon after the 21 September 2022 mobilization, the RF GF started adding new units. Initially, there were some 4-digit RF GF *mobik* formations of recently mobilized soldiers who trained briefly near their mustering sites all over Russia, or in border areas near Ukraine, and then deployed into RF-occupied Ukraine. There, many were jammed into already existing, combat-depleted RF GF units as part of large-scale, ad hoc individual replacements.





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Sometimes these *mobik* units replaced whole battalions or companies, or brigade or regimental staffs.

The individual replacements themselves were many times untrained in their specific duties. In late 2022 and throughout 2023, it was not unusual for newly arrived *mobik* tankers or artillerymen in RF-occupied Ukraine to be told that they were now “motorized riflemen” and to be immediately dispatched to desperately undermanned formations. That was due to the immediate need for replacement riflemen as well as because of the RF AF’s acute late 2022 to early 2023 shortages of tanks and artillery pieces. The Russian defense industry could not refurbish end items from storage or battlefield damage fast enough.

Some intact 4-digit *mobik* units were renumbered with new 3- or 2-digit designations and either incorporated into newly created divisions such as RF GF 6th Motorized Rifle Division (MRD) / 3rd Army Corps or RF VDV 44th Division, added to already existing RF VDV or RF GF divisions as described below, or became what might be classified as “at large Motorized Rifle Regiments (MRRs),” in general support to Combined Arms Armies (CAAs) and 1st Guards Tank Army (GTA) all over the Russian rear areas and front lines.

After about 9 months, the Russian MOD gained control over their chaotic SMO manpower situation, and increasingly more of the new RF AF end strength billets went into enlarging the size of the RF GF and RF VDV. This was both in the form of brand-new commands as well as adding to

already existing RF GF and RF VDV divisions.

RF VDV growth during the SMO

Very shrewdly, the VDV Chief, GEN-COL Mikhail Teplinsky, quickly seized the mobilization’s opportunity. By the end of 2023, the VDV had added one brand new division (the 44th Division) and expanded an existing brigade (31st Guards Brigade) into another new division (104th Guards Division). The VDV also added additional airborne regiments to both of the RF VDV’s two parachute divisions (98th Guards and 106th Guards Airborne Divisions, both of which previously had only had two paratrooper regiments each), and added a long-desired general support artillery brigade to the VDV (52nd Artillery Brigade).

In total, the VDV added five new maneuver regiments, two new division headquarters plus their enablers, and an additional artillery brigade, all in 2023. More than likely this was done to preempt the Ground Forces gobbling up more than their share of the 350,000 new personnel billets provided by the 1 December 2023 decree.

Overall, by late 2022, the RF VDV grew by 50 percent and went from 10 maneuver regiments plus 3 separate brigades in 2022, to 15 maneuver regiments plus 2 separate brigades and an artillery brigade. This was approximately 150 percent of the combat power that the RF VDV started with at the beginning of the SMO. Many of these new RF VDV “paratroopers” were really non-VDV *mobiki* who had never even been in a helicopter let alone fast-roped or jumped from an aircraft. (Before the SMO,



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RF VDV units trained to fast-rope entire battalions at a time.)

The September 2022 mobilization was regional and, as mentioned above, prior service experience was not a primary consideration. Therefore, if you served previously in the Ground Forces, FSB Border Guards, Rosgvardiya, or Ministry of Emergency Situations, but lived near a RF VDV home station, you might be mobilized and pressed into Russia’s airborne forces (the VDV). Similarly, it worked the other way if you lived close to Naval Infantry or Ground Forces units in need. The RF VDV’s vision seems to be that they will sort this out later but, in the meantime, they will turn the new units and *mobiki* into permanent RF VDV end strength.

RF GF growth during the SMO

(31 May 2024) While the growth of the RF VDV has been precipitous, the RF Ground Forces had its own growth spurt. RF GF 3rd Army Corps and its subordinate 6th MRD and 72nd Motorized Rifle Brigade (MRB) were created in summer 2022 before the 25 August decree and 21 September mobilization, but their end strength likely became permanent thereafter.

In 2023, the RF GF added two new CAAs (18th and 25th CAAs) and two new army corps (40th and 44th Army Corps), all with new headquarters, maneuver forces, and enablers. The RF GF also added five new divisions: 47th MRD and 70th MRD both from 40th Army Corps / 18th CAA; 67th MRD / 25th CAA; 72nd MRD / 44th Army Corps; and most recently, 27th MRD / 2nd GCAA which was formed during 2nd

GCAA’s Avdiivka campaign from its 21st MR Brigade.

Soon after 1 January 2023, the former “LPR” and “DPR militias”—2nd Guards Army Corps and 1st Army Corps respectively—were formally integrated into the RF Ground Forces. (NOTE: Since 2014, they had always been commanded and partially manned by RF GF and RF VDV officers. In January 2023, that relationship became open and official). After re-flagging some of the MR brigades, 8th GCAA officially added 2nd Guards Army Corps and its five MR brigades and artillery brigade, as well as the 1st Army Corps with its five MR brigades 10th Guards Separate Tank Battalion, and artillery brigade.

Although the former “LPR” and “DPR” formations were previously treated and equipped as colonial militia, since officially joining the RF GF they have been far better equipped and manned (including with some T-90Ms and BMP-3s). There have also been especially noticeable improvements to 1st Army Corps’ leadership, most likely due to commanders from outside the original “DPR militia.”

These combined 10 new motorized rifle brigades—in 2nd Guards Army Corps and 1st Army Corps—were in addition to other new MR brigades formed elsewhere in the RF GF. For example, 128th MR Brigade / 44th Army Corps; 164th MR Brigade / 25th CAA; and 144th MR Brigade / 40th Army Corps, the latter which appears about to enter combat for the first time under RF Northern Group of Forces.





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All told, in 2022 and 2023, the RF GF added two new CAAs, five army corps (including former “LPR” and “DPR” formations), five new divisions (one of which was formed from an existing MR brigade), and, after subtracting one MR brigade (which became part of a new MRD), the RF GF altogether added a whopping 12 MR brigades, all in 2023. Every new brigade but one has already fought in the SMO. RF GF units at all echelons are much smaller than their U.S. counterparts (an MRD is 8,500 soldiers, and a MR brigade is 4,500 soldiers), but this remains a significant increase in Russian combat power.

More RF GF growth

But that is not all of the RF GF’s 2023 growth. Since the 25 August 2022 decree and the 21 September 2022 mobilization that followed, at least three previously existing RF GF divisions added maneuver regiments.

Before the SMO, several RF GF divisions had less than the typical “Soviet-style” four-maneuver regiment structure and were referred to by Russians as “light divisions,” but certainly not in the U.S. Army meaning of the term.

In 2023, both former 20th CAA “light divisions” added fourth maneuver regiments: 283rd MRR was added to 144th Guards Motorized Rifle Division (GMRD) and 362nd MRR joined 3rd MRD. (NOTE: From 1992 to 2009, 283rd MRR was subordinate to 2nd GMRD. The new 283rd MRR is in 144th GMRD.) RF GF 47th TD / 1st GTA, which started the SMO with just one maneuver regiment (26th TR), added three more maneuver regiments in 2023:

272nd MRR which captured Kyslivka (20 km east-southeast of Kupyansk) in early May 2024; 153rd TR which captured Krokhmalne (25 km southeast of Kupyansk) in January 2024; and 245th GMRR which includes conscripts and remains in Russia but briefly fought pro-Ukrainian militias in Russian border towns in summer 2023. By mid-May 2024, all five of these new RF GF motorized rifle or tank regiments were already experienced in combat.

These RF GF additions do not account for the creation of 34th Guards Artillery Division / Moscow Military District, and 49th Air Assault Brigade / 58th GCAA, as well as several new heavy artillery brigades, all of which were added to the RF GF in 2023. In 2024, the RF GF will likely convert 14th Army Corps / Leningrad Military District at Murmansk into 14th CAA, a change that will add more enablers to the RF Ground Forces’ arctic warfighting capabilities.

What is next?

The Troika expects Vladimir Putin’s and Sergey Shoigu’s grand 21 December 2022 plan to vastly increase the size and capabilities of the RF Armed Forces to remain in effect. The one part of the land force expansion that was not discussed above is the RF Naval Infantry, whose five older naval infantry brigades are supposed to transition into five naval infantry divisions.

The sixth and newest Russian marine brigade was formed in summer 2023 when 177th Naval Infantry Regiment became 77th Guards Naval Infantry Brigade. The other five brigades’ transition into divisions



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has not started yet, but at a 7 May 2024 forum with SMO commanders, Putin clearly hinted that it will begin soon.

As has been mentioned by Putin himself, it appears that new Minister of Defense Andrey Belousov [2024] was brought on to make this long-term increase in Russian end strength and combat power more affordable and less disruptive to the greater Russian economy. As Putin himself pointed out on 15 May 2024, this great expansion is currently costing Russia 8.7 percent of its GDP, more than nearly double Russia’s average 4 percent of GDP annual defense spending allocations. However, to the Russian leadership, this is a worthwhile investment rather than a sunk cost. As discussed by Putin and Shoigu, these tremendous increases to the RF GF, VDV, and RF Navy, and other improved capabilities for the RF Aerospace Forces and RF Strategic Rocket Forces are less about Ukraine and the SMO than about Russia’s overall rebalancing of relations with the West.

Whether we like it or not, Russia intends to remain an enduring global threat, and rapidly increasing the size of the RF GF, VDV, and RF Naval Infantry are important steps toward that goal.

Shoigu and Putin announce an ambitious plan to increase the size of what is already Europe’s largest armed forces. This is a force to battle more than just Ukraine.

Putin and Shoigu’s ambitious plan to build up Russia’s Armed Forces. (23 December 2022)

Vladimir Putin and his Minister of Defense addressed the Collegium of the Defense Ministry on 21 December 2022. They revealed an ambitious, even grandiose, plan to expand Russia’s armed forces with new commands, new units, and new equipment. These new formations will be manned by both *kontraktniki* (volunteer enlisted) and conscripts, but the rules governing both categories of enlisted soldiers will change. This plan represents a return to the past for the Russian Armed Forces and can be considered the final “nail in the coffin” of the 2008 New Look Reforms which have been steadily dismantled since 2012 under Minister Shoigu. While effusively praising the performance of the Armed Forces in Ukraine, the Shoigu plan addresses some shortcomings revealed in the Special Military Operation, implying some criticism of Russia’s military organization and its military industrial complex.

This plan will be extremely expensive, if it is feasible at all. However, Putin said in his remarks, “I want to direct the attention of the Minister of Defense, the Chief of the General Staff, and all commanders who are represented here. We have no limits in financing [these steps].” Putin’s Russia, and the Soviet Union previously, always



prioritized defense spending even in difficult economic times, so there is good precedent for taking Putin at his word.

Summary of speeches

Both Putin and Shoigu begin their speeches by making clear that Russia is fighting the United States, the West, and NATO. This is consistent with previous statements by both leaders. Putin also evoked historic themes of defense of the motherland against invaders, and heroic, patriotic sacrifice saying, “[Russian fighters] are fighting—you know, I’m not afraid to make this comparison, it’s not an exaggeration —exactly like the heroes of the War of 1812, the First World War, or the Great Patriotic War [World War II].”

Putin’s six main points

Putin gave strategic-level direction.

1. Russia has acquired tremendous combat experience in the Special Military Operation (and Syria and Nagorno-Karabakh); MOD must incorporate that experience into training and weapons development.
2. The Presidential Administration, Ministry of Defense leadership, and leadership of other agencies must work in close contact with one another within the framework of the specially created “Coordination Council.” This will include the regional authorities and heads of military industrial entities.
3. Support the development and combat readiness of the nuclear triad.

4. Raise the capabilities of the Aerospace Forces, including fighters and bombers, as well as unmanned aerial vehicles.

5. Improve the system of command and control to make operational control more resilient. Increase the use of artificial intelligence.

6. Correct the system of mobilization to eliminate the problems experienced and modernize the system of recruiting and training conscripts and mobilized troops.

Shoigu’s main points. Shoigu spoke to operational and tactical details.

1. Command and Control (C2) / New Headquarters

Reestablish the Moscow and Leningrad Military Districts. These two districts were abolished as part of the 2008 New Look Reforms with their units and missions absorbed by the newly created Western Military District (WEMD). Recall that Russian military districts have responsibilities for force generation AND warfighting. The old Moscow Military District bordered Belarus and Ukraine. The old Leningrad Military District bordered Lithuania, Latvia, Estonia, Finland, and Norway. It also included northern territories that are now part of the Northern Fleet (which is officially a military district since 1 January 2021 and includes joint forces beside the Navy). Presumably, the WEMD will be abolished if or when this new change takes place, but it is not clear what will happen to the Northern (Fleet) Military District, i.e., will the Leningrad Military District take over its units and missions, or will there be a split?

NOTE: In 1991, the city of Leningrad returned to its historical name of St. Petersburg. However, the surrounding oblast retained the name of Leningrad, as did the military district.

Create a new army corps in Karelia. The region of Karelia straddles the border between Finland and Russia. The Soviet Union annexed part of Finnish Karelia in 1940 after the Winter War. Russia has threatened to deploy forces to the Finnish border should Finland join NATO; this is clearly related. Minister Shoigu did not specify if he was referring to a corps headquarters that would command and control existing units, or if an entire corps structure would be created, perhaps using some of the new maneuver units below.

2. New Maneuver Units. Add 17 new maneuver divisions (10 GF MRD, 2 VDV, 5 Naval Infantry):

Transform seven separate motorized rifle brigades into seven motorized rifle divisions. The 2008 New Look Reforms abolished most divisions, which were often understrength or hollow, and replaced them with separate maneuver (“combat arms”) brigades which were intended to be fully manned and maintained at a higher state of readiness.

In 2012, soon after Minister Shoigu and GEN Gerasimov were appointed, they immediately began to reverse the reforms and recreate divisions. However, many of these new divisions were divisions in name only. For example, the 6th Separate Tank Brigade was converted into the 47th Guards Tank Division in early 2022 and participated in the Special Military

Operation, but it only has one maneuver regiment, the same as the brigade from which it was formed. The 19th MRD also has only one maneuver regiment, while the 20th GMRD has two MRRs, one of which was hastily put together just before the Special Military Operation, which performed as you might expect. Most divisions also began the Special Military Operation at 80 percent or less strength, and their modified tables of organization and equipment (MTOEs) were already very lean.

Form three motorized rifle divisions (MRDs) in Kherson and Zaporizhzhia “oblasts.”

These Ukrainian provinces were annexed by Russia on 30 September 2022 and are partially occupied by RF AF. As most RF AF units are manned by local conscripts and volunteers, presumably the bulk of the soldiers for these new divisions would come from the illegally annexed territories.

Form two new VDV divisions. There are currently four VDV (Airborne Forces) divisions and three separate VDV brigades. Minister Shoigu did not specify if the new divisions would be based on the existing brigades or would be entirely new units. Either way, this would bring the VDV up to its Soviet level of six divisions. All VDV units have taken substantial losses in personnel and equipment in Ukraine, and no VDV unit has conducted any air assault operations since February 2022.

Form five naval infantry divisions.

Transform the five naval infantry brigades into divisions. All five naval infantry brigades have taken substantial losses in personnel and equipment in Ukraine. Most

are fighting inland, and no amphibious operations have been conducted since the first week of March 2022.

3. Aviation, Artillery, and Maintenance

Add five new artillery divisions, three aviation divisions; three new maintenance (MTO) centers.

More aviation units. Form three aviation divisions, eight bomber regiments, one fighter regiment, and six brigades of army aviation (helicopters). It is unclear if the new regiments are subordinate to the new divisions, or separate.

Add combat aviation to combined arms and tank armies. For every Army-level command (11 combined arms armies and 1 tank army), add a combined aviation division and a brigade of army aviation with 80–100 combat helicopters. This would be a significant organizational change. Currently, all aviation, including rotary-wing, is in the Aerospace Forces (VKS) or the RF Navy. There are no aircraft in the Ground Forces. Minister Shoigu did not specify whether the armies (and therefore the Ground Forces) would actually own the aircraft, or whether these would be Aerospace Force units attached or under their operational control (OPCON). Either way, if CAA/1st GTA (Guards Tank Army) commanders have aviation assets in their formations, this is a big change, and it has implied tasks for training.

More artillery (of course!). Form five new artillery divisions and five enhanced (heavy) artillery brigades, one for each of the five military districts. These new artillery units would serve as a strategic

reserve and allow military districts to weight strategic directions (“axes of advance”). Currently there are no artillery divisions in the RF AF. This would be a significant increase in indirect fire power and would fit with the way they fight (or want to fight) in Ukraine, employing mass over precision. This would increase the quality of their quantity. Here Shoigu specifies “five military districts,” which is the current number. This could indicate no net gain in military districts (Moscow Military District replaces WEMD, Leningrad Military District replaces Northern Fleet), or it could be a speechwriter error.

More maintenance. Reverse the “outsourcing” of maintenance that took place from 2008 to 2012 by creating three new military repair factories and strengthening military repair units. Here Shoigu calls out the 2008 Reforms, which did in fact “outsource” many maintenance tasks to civilian contractors, although it was later largely reversed. He noted that these reforms had a “negative effect on readiness” which became evident during the Special Military Operation. Note also that Russia is forming dozens of new combat units, but only three new maintenance facilities, reflecting Russia’s traditional prioritization of shooters over sustainers.

4. More personnel

Increase uniformed end strength to 1.5 million, up from 1.15 million currently. (On 28 August 2022, Putin signed a decree increasing end strength from 1,013,628 to 1,150,628, effective 1 January 2023). The Troika does not know the actual strength of

the RF AF, given understrength units prior to 24 February 2022, heavy casualties since then, and the mobilization of up to 300,000 *mobiki*. Even with the 300,000 new *mobiki*, actual end strength is likely well short of authorized strength.

Conscripts will be older and serve longer. The conscription age changed, in phases, from 18–27 to 21–30. Separately, Russia announced plans to increase the length of conscription from a 1-year term to a 2-year term by the end of 2023. The spring 2023 conscript class would serve 18 months; the fall 2023 class will serve 24 months. Assuming Russia continues to conscript about 270,000 soldiers per year, doubling the term of service would effectively add 270,000 personnel to end strength, accounting for some of the increase to 1.5 million. A 2-year conscription term also means more experienced, and in principle, better trained soldiers.

NOTE 1: This is also a return to the past. Conscription in the USSR was 3 years for the Navy, 2 years for other services. In 1993 the RF lowered it to 18 months, before raising it to 2 years in 1996 due to the Chechen War. In 2008, it was reduced to 1 year. Now, it will return to the Soviet duration. The term of service for conscripts in fact was not changed and remains at 1 year as of July 2024.

NOTE 2: The increase in length of conscription makes good sense. The Special Military Operation has proven that 1 year is simply not enough to time to train conscripts, even at a rudimentary level, especially without centralized initial entry training. The increase in conscription age is

more curious. Older conscripts in theory are more mature and have more skills. This is important in a military without initial entry training, and without an NCO corps to maintain standards and discipline. The conscription of 21-year-olds might also be considered more palatable to Russian mothers than 18-year-olds. Still, this strikes the Troika as odd.

More *kontraktniki* (volunteers). Increase the number of *kontraktniki* to 695,000. Allow recruits who wish to join as *kontraktniki* to do so on the first day of service rather than having to first serve a 3-month “probationary” period.

Modernize military commissariats (draft boards/recruiting centers). In 2021, Minister Shoigu was filmed inspecting a military commissariat (*военкомат*) outside of Moscow. He noted that they were still entirely paper-based, using paper files and ledgers to do their business. In this speech, he called for the digital transformation of these commissariats.

5. Feasibility? Is this plan possible? Is it even serious?

Consider that Russia began the Special Military Operation with 16 divisions: 12 GF and 4 VDV (which does not include “LPR” and “DPR” colonial militia in 1st Army Corps and 2nd Army Corps, or PMC Wagner). This plan proposes to more than double that number by adding 17 maneuver divisions, for a total of 33. That does not include proposed five new artillery and eight aviation divisions. Russia does have some existing force structure that could be used to create these new units, e.g., 31 separate maneuver brigades: 23 GF, 3



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VDV, 5 Naval Infantry. However, all of these brigades have fought in the Special Military Operation. Many of them have been badly battered. Some of them are probably effectively destroyed—many brigades may be reduced to battalion-strength or less or reconstituted with untrained *mobiki*. Meanwhile, Russia's existing divisions also need to be reconstituted with personnel and equipment.

- **Personnel.** Feasibility: medium to high. Russia has shown the ability to raise soldiers through conscription, mobilization, generous contracts, and recruiting of prisoners. Therefore, it is possible that they could come up with enough personnel to reconstitute existing units and build out the new ones. The extended conscription term will help in this regard.
- **Leadership and training.** Feasibility: very low. However, new and old units will need leaders. Russia's officer corps has suffered very high casualties during the Special Military Operation, especially in the company grade ranks (as one would expect). Russia has no NCOs. Expanding the force so dramatically while trying to rebuild the depleted officer ranks will be a serious challenge. Additionally, RF AF officers are responsible for individual training, so this adds to the challenge.
- **Equipment.** Feasibility: low. Russia has lost a LOT of military hardware in Ukraine—at least 1,500 tanks, more than 2,000 infantry fighting vehicles (IFVs) and APCs, 500+ artillery pieces and multiple launch rocket systems (MLRS), and all manner of associated

kit. These losses will need to be replaced. Russia is refurbishing T-62 tanks to send into combat. Russia's defense industry will have great difficulty replacing these losses, much less equipping new units. Meanwhile, sanctions make it difficult to acquire key components. Russian allies (Belarus, Iran, North Korea) can assist to some degree, as they do already, but this assistance is not likely to be enough. Equipping the new force is likely to be the biggest challenge for Minister Shoigu.

Conclusion

Vladimir Putin said that there would be no financial or budgetary constraints on this plan. The Troika believes him. However, even with a robust defense budget, Russia will have trouble producing enough equipment for even a few of these new units when combined with the task of reconstituting existing units. They can likely find enough privates to man these units, but they will not have enough experienced officers to train and lead them. This is not a realistic plan, at all.

So why did they announce it? Do Putin and Shoigu really believe that this expansion is feasible? Remember that the first audience for any Russian leader is the Russian population. Russia sees itself in a global struggle with the West, of which Ukraine is only one theater. These speeches assure the Russian people that their leaders are taking steps to address the NATO, Western, and U.S. threat. The historical and patriotic themes will help to rally and focus the population. Significantly, there are no timelines associated with these



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plans, so this could be an aspirational goal that is always on the horizon, although we do expect Russia to try to implement it. But progress will be very incremental.

From a Russian military perspective, Minister Shoigu's speech represents the triumph of Russian and Soviet military culture over reform, specifically the very ambitious 2008 New Look Reforms. The Shoigu Plan, whether it is implemented or not, is a return to a more comfortable place for Russian military leaders. The term of conscription is returned to its Soviet length.* They are returning to the larger units (i.e., divisions) of the USSR and the Great Patriotic War. Ground Forces artillery divisions have not existed in the force structure since the Soviet period, yet Shoigu plans to bring them back.

The Russians have already reverted to Soviet form on the battlefield, favoring mass over maneuver, quantity over quality, capacity over capability, brutality over precision, and mobilization over readiness.

The Troika looks forward to watching Russia stretch increasingly thinner personnel, leadership, talent, training, equipment and maintenance across more and more hollow units.



More on the reforming of the Moscow and Leningrad Military Districts: what is happening and what it means.

New Moscow and Leningrad Military Districts (10 January 2024)

Emerging details of the Moscow Military District's reintroduction

As recently reported, the RF AF is forming or reorganizing new commands and units to facilitate the reestablishment of the Moscow and Leningrad Military Districts. These Soviet-era military districts will be formed from the soon-to-be former Western Military District (WEMD), and the Northern Fleet, which will soon lose its status as a military district-level command (a joint strategic command, "OSK" in Russian). The Northern Fleet's non-RF Navy commands will reorganize under the new Leningrad Military District. The Northern Fleet will remain Russia's most important naval command (due to its nuclear force) but will likely report through Naval Command to the RF General Staff, not through a military district.

Presidential decree on military district reorganization. (28 February 2024)

On 26 February 2024, Vladimir Putin signed decree No. 141 "On the Military-Administrative Division of the Russian Federation." According to the decree (указ), the former Western Military District ceased to exist, and the Northern Fleet lost its status as a military district-level command. Instead, the Soviet-era Moscow and Leningrad Military Districts have been reestablished, resulting in five military districts in total (Moscow, Leningrad,



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Southern, Central, and Eastern). Kaliningrad Oblast has been included in the Leningrad Military District and the “Donetsk” and “Luhansk” Republics. The Zaporizhzhia and Kherson regions have been included in the Southern Military District.

The decree goes into effect 1 March 2024 and the Russian government has 3 months to complete appropriate actions necessary to be in compliance with the decree. As discussed at length earlier, in December 2022, Minister of Defense Shoigu addressed the RF MOD Defense Collegium, outlining an ambitious reform plan that essentially recreates the Soviet Armed Forces in the present-day Russian Federation.

Among other things, it called for reestablishing these two military districts. Vladimir Putin has frequently mentioned the Leningrad Military District as a direct response to Finland’s NATO membership. The Troika has been anticipating this decree for some time now and it may not be a coincidence that the decree was signed just as Sweden received final approvals to join NATO.

Moscow Military District projected units. (10 January 2024)

The Troika expects that the 1st GTA and 20th CAA will be in the new Moscow Military District (MOMD). The MOMD will also reportedly include the newly re-established 34th Guards Artillery Division which will consist of the re-activated 273rd and 303rd Guards Artillery Brigades, the 62nd Separate Command and Control Battalion, and the 1249th Separate Logistics (MTO) Battalion. This makes sense because the resurrection of artillery divisions was one of

Minister of Defense Sergey Shoigu’s reform priorities announced at the December 2022 MOD Collegium. It also makes sense because after 1945, the 34th Guards Artillery Division was the artillery command for the Soviet Group of Forces in Germany and later the RF GF’s last artillery division until it deactivated in Russia in 2009 under the earlier version of the Moscow Military District. Like the newly re-established 273rd and 303rd Guards Artillery Brigades, the RF GF usually reactivates unit designations with notable Soviet heraldry. The deadline for the 34th Guards Artillery Division units to be operational is reportedly 29 February 2024, although that is unlikely to be met because the timeframe for drawing weapon systems and other military end items from long-term storage is delayed. In addition, 20th CAA / Moscow Military District will supposedly gain a separate reserve regiment which the Troika suspects is actually a MRR already deployed near Kreminna with 20th CAA.

The MOMD will also reportedly include the 42nd Command and Control Brigade and the 119th Signal Brigade. The 42nd C2 Brigade and the 119th Signal Brigades do not yet have the bulk of their *kontraktniki* yet, and, for now, will be supplemented with mobilized and/or conscripted soldiers. These brigades are facing similar delays to drawing weapons and equipment as 34th Guards Artillery Division. In the RF GF, command and control units (C2 units) are responsible for providing redundant, secure communications to their headquarters and to their subordinate units. “Redundant” usually means secure VHF, UHF satellite communications (SATCOM), HF, and physical access to RF MOD’s fiber optic cable network that is strung all over



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Russia and to, and probably now beyond, its borders. At more senior levels, C2 units provide secure VTC capability. C2 units provide actual comms vehicles for commanders and headquarters to plug into. Signal units, meanwhile, are “territorial” and provide VHF and other signals’ access for a given area, whether in garrison, on an exercise, or deployed. C2 units are focused more on hardware and encryption, while signal units concentrate more on the networks and architecture of a given space. Signal units existed during Soviet times, whereas C2 units came about after the RF AF’s disastrous communication debacle when Russia invaded Georgia in 2008. Then, the RF AF had no encrypted architecture for 58th CAA or other operational commands to talk securely across the battlespace, to higher headquarters, or to other services.

- NOTE 1: At the time of its deactivation in 2009, 34th Guards Artillery Division had four separate firing brigades and one separate firing battalion of 2S4 mortars.
- NOTE 2: “MTO” at any level in the RF AF always means logistical support, literally “material-technical support”(материально-техническое обеспечение, “MTO”).
- NOTE 3: RF MOD and the RF AF always seem to make a distinction between weapon systems and other major end items as though they were tracked, stored, and issued through separate supply systems.
- NOTE 4: In Russian, a C2 unit is a *chast’ upravleniya* (часть управления). A C2

brigade is a brigade upravleniya (бригада управления or “бру”).

Emerging details of the Leningrad Military District’s reintroduction. (12 January 2024)

The RF AF is forming or reorganizing new commands and units for the reactivated Leningrad Military District (LEMD). However, without a presidential decree (an “*ukaz*”), it is not completely clear what the new LEMD will look like. Some details emerged and others may be surmised. The Leningrad Military District will very likely be headquartered on Palace Square in St. Petersburg, where the Western Military District (WEMD) HQ is today and where the previous version of LEMD HQ was. The Troika expects that the 6th CAA, currently headquartered in St. Petersburg in the WEMD, and the Northern Fleet’s 14th Army Corps, located in Murmansk above the Arctic Circle, will be the two Ground Forces maneuver commands under the new LEMD. On 31 March 2024, the Northern Fleet will reportedly lose its status as a joint strategic command (“OSK”) and its associated territory. The Troika believes that the 14th Army Corps—the Northern Fleet’s current Ground Forces command—will eventually become an operational command under the new LEMD. Russian social media sources believe this as well although, as late as January 2025, it still had not happened. But, as with all deadlines associated with the new LEMD and Moscow Military District, they are subject to change until a





presidential decree is issued. Even then, units will declare their establishment and operational capability long before they reach a readiness state that we would call “FOC” (full operational capability).

14th Army Corps includes two separate motorized rifle brigades (200th Guards and 80th), both of which are fighting in Ukraine but garrisoned above the Arctic Circle close to Kirkenes, Norway and northeast Finland. At the RF Ministry of Defense Collegium in December 2022, Minister of Defense Shoigu announced that an army corps would be placed in Karelia, the Russian republic along most of Russia’s border with Finland. The Russians’ stated reason for doing this is Finland’s accession to NATO. Currently, none of 14th Army Corps is stationed in Karelia, but rather just to the north. 80th Motorized Rifle Brigade is at Alakurtti, about 30 km above the Republic of Karelia. For at least the short term, 14th Army Corps’ current disposition will likely be the response to Shoigu’s remarks until a later time when units might be moved there. To the south of Karelia, 6th CAA’s 138th Guards Motorized Rifle Brigade is stationed in Kamenka, about 120 km south of Karelia, between St. Petersburg and the Finnish border. It is also possible that Russia will create new maneuver units subordinate to 14th Army Corps, and station them in Karelia.

RF Aerospace Forces (VKS) commands to support the two new military districts.

In summer 2023, the Western Military District was actively dividing up its RF Aerospace Forces (VKS) commands to support the two new military districts. For whatever reason, Russian state media and social media reporting on that action

stopped in late summer 2023 and has not resumed. Although 6th Air Forces and Air Defense Army is currently collocated inside the Western Military District HQ in St. Petersburg, there was reporting (or speculation) that the 6th would be the new air forces and air defense army of the Moscow Military District. It was also said that the LEMD would get a newly designated air force and air defense army as its RF Aerospace Forces contingent. It was never clear why.

During Minister Shoigu’s December 2022 MOD Collegium remarks, he also stated that the RF AF would establish aviation brigades in the CAAs and 1st GTA (the RF GF’s only tank army). Those are to be composed of both fixed-wing and rotary-wing attack aviation. As far as the Troika knows, there has been no recent discussion of this. However, in fall 2023, the official RF MOD website removed the air forces and air defense armies from underneath each of the military districts’ order of battle lists. The Troika is uncertain why, but earlier than expected integration of attack aviation brigades into the CAAs and 1st GTA could be a possible reason. Of course, integrating such fixed- and rotary-wing attack aviation combat aviation brigades into the Ground Forces’ CAAs and 1st GTA would be a huge military cultural challenge. Russian officers do not understand “joint” in the same sense that the U.S. military does, and GF officers are not trained to command and control aviation units. Placing attack aviation under army group commanders is unprecedented in the modern Russian Armed Forces and would be difficult to implement. Except for some RF Naval Aviation, all other RF AF fixed-wing and rotary-wing attack aviation is



in the RF Aerospace Forces. None are in the Ground Forces.

Artillery and divisions

Also in the summer of 2023, the RF GF established the 17th High-Powered Artillery Brigade (17-я артиллерийская бригада большой мощности, 17 абр БМ), a general support brigade directly subordinate to the future LEMD, and equipped with 203-mm 2S7 howitzers and 240-mm 2S4 mortars. For now, only two military districts will have such heavy artillery commands: LEMD and MOMD (45th High-Powered Artillery Brigade). There are reports and rumors of new motorized rifle divisions which might later be in 14th Army Corps, and which might subsume the 200th Guards and 80th Motorized Rifle Brigades, but for now, these reports are unconfirmed.

Recruiting in the north

A big problem for manning larger 14th Army Corps units and other LEMD units north of St. Petersburg will be the Arctic region’s sparse population. The RF AF conscript and enlist *kontraktniki* locally, i.e., most soldiers serve in units near home. LEMD GF units will also be in direct competition with the RF Navy’s Northern Fleet for the limited number of military-age males. The Russian Arctic is traditionally “Navy Country”—the RF Navy has longer traditions in the Arctic, and service as a sailor in the Northern Fleet is considered more prestigious and safer. However, many Northern Fleet sailors were reassigned to the 80th and 200th Guards Motorized Rifle Brigade early in the SMO to make up for RF GF manpower shortages.

NOTE 1: Some Ukrainian sources claimed that the Ground Forces command in the Arctic



would be the “44th Army Corps.” However, 44th Army Corps wound up being the designation of the new army corps established for eventual service in Karelia. *NOTE 2: What we would call “maneuver” units Russians term “combined arms,” and there are only two types: motorized rifle and tank.*

Putin selects a new Minister of Defense to shepherd the changes planned for Russia’s military.

New RF Minister of Defense. (13 May 2024)

Sunday evening (Moscow time) on 12 May 2024, it was announced that Vladimir Putin had nominated First Deputy Prime Minister Andrey Belousov as the new RF Minister of Defense to replace Sergey Shoigu, who was subsequently nominated to become the new Secretary of the RF National Security Council. Shoigu will replace Nikolai Patrushev, who had been the Secretary of the NSC since 2008. Nikolai Patrushev previously was the FSB Director from 1999 to 2008. Nikolai Patrushev is a member of Putin’s innermost circle and will reportedly move to a new position to be announced soon. Andrei Belousov, an economist, had been First Deputy Prime Minister since January 2020. Sergey Shoigu had been Minister of Defense since November 2012. Kremlin Spokesman Dmitri Peskov later announced that GEN Valery Gerasimov would remain the Chief of the General Staff of the RF Armed Forces and continue all his other MOD and RF AF responsibilities.

Concerning this change, a knowledgeable Russian analyst said: “To be honest and straightforward, Shoigu is Putin’s friend, but a thief. It was ugly to kick him out



completely, and there is nothing to steal from the Security Council. Belousov is a competent, systematic organizer and enjoys trust. Moreover, he has personal initiative and is good as an anti-crisis manager.”

One name not mentioned the evening of 12 May 2024 was Deputy Secretary of the RF NSC (former President and former Prime Minister) Dmitri Medvedev. The Deputy Secretary of the NSC was not listed as a nominative position, so this omission might have been irrelevant except that Dmitri Peskov also mentioned that Sergey Shoigu, in his new position as Secretary of the RF NSC, “will simultaneously be Putin’s deputy in the Military-Industrial Commission,” a role currently delegated from Nikolai Patrushev to Dmitri Medvedev.

Kremlin Spokesman Peskov claimed that Putin decided the Ministry of Defense of the Russian Federation should be headed by a civilian and emphasized that MOD should be open to innovation and advanced ideas. That, of course, is ironic since Sergey Shoigu never served a day in the RF AF but donned a general’s rank while minister of defense. In addition, Putin has appointed four Ministers of Defense—all of them civilians.

Peskov ended his comments by stating that it is very important for MOD’s economy (including defense industry) to fit into the national economy, “so that it corresponds to the dynamics.” This should not be misconstrued as a step toward reducing the MOD budget, but rather that, while recognizing the Russian military-industrial complex’s oversized role in the Russian economy, it must be done more efficiently relative to the national economy.

This following observation was written in the first summer of the SMO and the names of potential successors to GEN Gerasimov are out-of-date. But the factors affecting future changes to Russia’s military remain relevant.

Russian Armed Forces Reform Timeline (8, 15, and 17 June 2022)

Part 1 of 3: How Russia’s military will attempt to reform in the wake of early actions in the Special Military Operation. (8 June 2022)

Despite their performance in the early days (February and March 2022) of their Ukraine offensive, the RF AF are a thinking, learning, and adaptive organization. They have demonstrated the ability to recognize mistakes, learn from them, and adapt. We have seen that in this unofficial “Donbas Phase” of their offensive, ever since they abandoned their initial plans to take Kyiv in late March and refocused on the east. They are now fighting more according to their *taktika (макмука)*, what we would call “doctrine.” However, they suffered horrible leadership losses in their initial campaign that are still impacting current operations. Unit leader losses at every level from generals to lieutenants have affected their ability to fix themselves while in contact. Reforms will need to wait for a longer-term “ceasefire,” similar to the one they enjoyed from February 2015 until February 2022. There was small-scale combat along the line-of-contact for 7 years following the Minsk II accords, but broadly, Russia was able to take advantage of the relative quiet



in Ukraine during this period and tried to hone key warfighting skills in Syria.

The Russian Armed Forces will reset and reform after this offensive, but first they need to get out of contact.

It is doubtful that they can reform during this offensive. Most of their combat units are in contact or otherwise deployed, making reform challenging. The absence of an institutional training base (most RF AF training is done at unit level) is a further constraint. Based on previous reforms, their timeline to reconstitute, reform, and be a major conventional threat again outside of Ukraine is probably about 4 years. This timeline is based on the previous “New Look” reforms, initiated shortly after their poor but ultimately victorious performance in Georgia in 2008. The New Look Reforms involved significant strategic and operational reorganization—the role of military districts (MDs) was redefined and strengthened, and four powerful new MDs with operational responsibilities were created from the previous nine districts that generated the force and did support, but did not formerly lead combat operations. (A fifth MD, the Northern Fleet, was carved out of the Western MD in 2020.) By early 2010, less than 2 years after the Georgian war, the RF AF were implementing the New Look reforms at full speed. By late February 2014, the RF AF had invaded Crimea in an operation that was objectively successful. Many of the issues from the 2008 Georgia war appeared to have been properly addressed.

The scope and direction of future reforms will likely be heavily dependent on the next Chief of the General Staff.

(GEN Gerasimov has been CGS since November 2012, which is unprecedented in modern times.) The Troika considered GEN Aleksandr Dvornikov to be a leading candidate to replace GEN Gerasimov. GEN Dvornikov is a prolific writer on competitive force-on-force Combat Training Center ()-like maneuver training, close air support (CAS) integration into tactical organizations, and junior officer (lieutenant) development. He was also the first RF AF commander in Syria in 2015. That experience deeply affected his views on training and warfighting. From a U.S. perspective, GEN Dvornikov is probably the worst case future CGS because he has already articulated a vision across the RF AF and could thus begin reforms quickly. However, GEN Dvornikov’s stock may have dropped in Ukraine. Despite allegedly being given command of all operations in Ukraine in mid-March 2022, (Russia has never officially confirmed this or announced a new title for him), GEN Dvornikov has been largely silent and out of sight since then. Recently, multiple sources reported that he had been removed from overall command of operations in Ukraine in favor of GEN-COL Gennady Zhidko. Russia has also not officially confirmed this alleged move, but if true, it could indicate that GEN Dvornikov is out of favor, perhaps due to slow progress in Donbas.



RF AF military culture will play a large role in military reforms.

The management consultant Peter Drucker famously said, “culture eats strategy for breakfast.” In the Russian context, their officer-dominated GF and VDV military culture may well eat many proposed and necessary military reforms for breakfast, lunch, and dinner. Conscription is likely to remain a primary source of manpower for the GF and VDV, even though it limits their ability to train at higher-end collective tasks up to the battalion level. The RF officer corps will likely resist any reforms that empower “enlisted professionals” to anything approaching the authority and stature of U.S. NCOs. A professional, well-trained, and empowered Russian NCO corps would infringe on Russian officers’ traditional domains, and offend historical sensibilities—“Our grandfathers defeated the Germans without NCOs, why would we need them now?” Meanwhile, GEN Dvornikov has written and spoken frequently about the development of lieutenants. He also experimented with the roles of the senior enlisted. Under his potential leadership, we could expect more, better-educated, and better-trained lieutenants. RF academies are 5 years long and aim to prepare future platoon leaders through battalion commanders. Expect training to become more about combined arms to prepare better battalion tactical group (BTG) component commanders and better future BTG commanders. RF will also work to “professionalize” their conscript army and embrace other possible solutions to extend

their training cycles beyond 6 months. (There have been several local proposals on how they might do this.) No matter what, their answers to fixing the deficiencies that Ukraine exposed will be very Russian.

Intellectually, Russia’s Armed Forces are a thinking, learning, adaptive military

They publish professional military journals which host high-quality discussions, but they will first need a longer-term ceasefire to reset and then address lessons learned from this current operation and implement necessary changes. It will be a challenge for the RF GF and VDV to get over their own “exceptionalism” to actually implement some of the lessons that they so prolifically write about in their professional journals. They are a thinking, learning, adaptive military. But they are also a different, very Russian military: they will think about their mistakes, learn from them, and adapt, but their solutions will be Russian.

Part 2 of 3: Russia attempts to deal with equipment and personnel issues.

(15 June 2022)

In Part 1, we noted that the RF AF are a thinking, learning, and adaptive organization, that they will likely reset and reform once they can get out of contact, and that their timeline to become a major conventional threat again beyond Ukraine is probably about 4 years. Their future reforms will be very Russian in nature, not necessarily the way that the United States might address its military’s problems. In

addition to addressing many shortcomings revealed by their offensive in Ukraine, the RF AF will need to replace thousands of combat vehicles. Continued Western sanctions, if maintained and enforced, will hamper their ability to do so. Under current domestic conditions, the Russian land forces cannot quickly replace their extensive equipment losses. Furthermore, several of their combat vehicles have major deficiencies, and this Ukraine offensive has revealed them as unsuitable for modern combat. Building more of the same to replace their losses will not be sufficient—they will require complete system replacement. Before this 2022 offensive, the RF GF combined inventory of infantry fighting vehicles (IFVs) and armored personnel carriers (APCs) was about 40 percent BMP-2, 40 percent BTR-82A, more than 15 percent BMP-3, and less than 5 percent MT-LB.

BMP-2 IFV

The biggest RF combat vehicle challenge will be the BMP-2. This infantry fighting vehicle is simply not survivable in modern combat (under any definition). It can be destroyed by light anti-tank weapons, anti-armor artillery munitions, and even 12.7-mm rounds.

The BMP-3 has proven to be a vastly more survivable system

The BMP3 incorporates composite armor, an unmanned- turret, active protection system (APS) and other advantages, but it is also more expensive and the RF GF possess few of them. The RF GF has resisted buying

the BMP-3 while waiting for the Kurganets-25 and the T-14 Armata IFVs to begin production. Russia will probably build the Kurganets or incorporate its advantages into future BMP-3s, but the T-14 did not even appear in this year’s Victory Day Parade, a very bad sign for that program.

There are now far fewer BMP-2s than in February 2022. The website Oryx, which tracks Russian combat losses in Ukraine using photographic evidence, has identified 287 RF AF BMP-2 destroyed, abandoned, or captured since the offensive began in February. The BMP-2 was built to swim—hence lots of aluminum in its hull—but not to survive.

The BMP-2M incorporates some protection borrowed from the Kurganets but is still likely to be unsurvivable. The BMP-2M design improved lethality but did not address the underlying problems of too much aluminum in the hull, and the lack of ammo compartmentalization.

BTR-82A APC

RF GF fight the BTR-82A as an APC, similar to the way we fight the Stryker—they intend to dismount before contact.

T-72 tank

Representing about 50 percent of the RF AF active-duty tank force in February, the T-72 has not fared well during this offensive. The RF GF made many improvements and upgrades to T-72 survivability and lethality, but ultimately it is



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a rolled homogeneous armor (RHA) second-generation tank on a 1970s chassis. Its mechanical reliability challenges have become too great and were likely the main reasons for so many abandoned various upgrades of T-72s all over Ukraine in February and March 2022.

T-90 Tank, BMP-3 IFV, and “Potemkin Purchases”

The RF AF made many “Potemkin purchases” of new tanks and IFVs over the last several years. They held ceremonies for initial deliveries and even had acquisition contracts, but ultimately few T-90Ms or BMP3s were built or fielded. Equipment that was supposedly ordered in late 2020 appears to be neither fielded nor in production.- For example, as part of the 2008 New Look Reforms, the RF AF extended their modernization goals until the end of 2020. In December 2020, a nationally televised news story showed T-90Ms (the latest model) being delivered at one of the 2nd GMRD’s motor pools. The report announced that the 2nd GMRD’s 165 T-72s would all be replaced. In reality, 2nd GMRD only received five T-90Ms. Between December 2020 and the February 2022 invasion, only 36 T-90Ms were delivered to the entire RF GF: the five already mentioned and a BN set of 31 T-90Ms to the 27th Guards Separate Motorized Rifle Brigade.

In May 2022, in another nationally televised new story, Uralvagonzavod delivered another 10 T-90Ms to the RF GF. They are still short at least 119 T-90Ms from the December 2020 order. This may have been due to corruption or something less nefarious. However, Western sanctions are

now impacting production. Uralvagonzavod’s T-90M plant has been reported as closed. At a minimum, its production is severely impaired. Lack of high tech parts and lack of finance are among several new problems. Russia does not make computer chips. They buy them abroad. Much of their best hardware—to include the RF GF’s and VDV’s VHF tactical frequency-hopping radio, the Kalibr, Iskander-K cruise missile, and other high-end capabilities have U.S., Western European, Japanese, and/or South Korean circuitry (mostly U.S.). Much of those high-end electronics were dual-use purchases through shadow companies in Germany and the Netherlands. Those lanes are now shut down and will be hard to replace. This problem affects tank and IFV production as well. China is a potential source, but Russia seems hesitant to buy chips from China.

BMP-3 deliveries and production were also “Potemkin” and face many of the same problems as the T90-M. Development of the 2S35 Koalitsiya, the RF GF’s next self-propelled (SP) howitzer, is also impacted. Production problems are likely much greater for replacement precision munitions.

Western sanctions

No matter the successes (or failures) of future RF GF reforms, 2022 Western sanctions have severely hindered the Russians’ ability to replace destroyed and abandoned equipment, and many munitions. If they remain in place and are strictly enforced, Russia will have a difficult time recapitalizing its Armed Forces and



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any successful reforms will become less meaningful.

3rd battalions

RF GF began sending its 3rd battalions to the Ukrainian border. Video showed a train from Birobidzhan (far eastern Russia) traveling to Belgorod. Other photos from the Leningrad oblast area showed volunteers who signed a contract with the RF MOD being sent to Ukraine to participate in the “Special Military Operation.” MT-LBs and GAZ-66 vehicles were in the photos. These soldiers were also sent by train to the Belgorod area. It was unclear whether this is a part of troop rotations, casualty replacements, or additional reinforcements to Russian units at the front.

NOTE: During the New Look Reforms, GEN Gerasimov created BTGs, battalion tactical groups. However, the inability to fully man all BTGs with kontraktnik volunteers meant that for every two BTGs there was a 3rd battalion which was manned by conscripts and considered substandard.

In a video call conducted by a Russian civilian journalist-blogger, a Russian POW from the 205th Guards Separate Motorized Rifle Brigade, based in Budyonnovsk, Russia, called his mother. The soldier’s mother replied that she planned to talk to her son’s leadership at their garrison in order to resolve her son’s detention in Ukraine. The soldier replied that only three soldiers and two officers, total, remain at the 205th Guards Separate Motorized Rifle Brigade’s home station. This illustrated the current situation in many 3rd BNs (the so-called “reserve battalions”). The 3rd

BNs were manned, equipped, and trained for a little over a month, according to General Staff orders discussed in the Troika Observations weeks ago. RF AF officers are being transferred out of these 3rd battalions with a lower level of military preparation and recently recruited, short-term reservists are being added to man these 3rd battalions.

NOTE: The Troika believes that RF AF units’ remaining officers and kontraktnik soldiers were raided as individual replacements in late March and April 2022. Some RF GF and VDV units summoned some of their remaining officers and soldiers from home station and incorporated them into units during hasty reconstitutions in Russia before units returned to Ukraine further east.

Part 3 of 3: The VDV (Airborne Forces) (17 June 2022)

In Part 1 we discussed Russia’s need for broad organizational and conceptual reform. In Part 2, we discussed the performance of the RF AF combat vehicles, and the need for system upgrades and replacements, which will be difficult to accomplish due to 2022 sanctions. The Russian Airborne Forces (VDV) faces both of these challenges in the coming years. However, the VDV’s challenges are not limited to combat vehicle vulnerabilities. The VDV has a much bigger philosophical dilemma to address.

Background

Russia’s Airborne Forces are a separate military service, not part of the RF Ground Forces. With a modified table of





organization and equipment (MTOE) paper strength of about 45,000 (actual strength on 24 February 2022 was likely below 40,000), the VDV reports directly to the General Staff and serves as a national-level rapid reaction force for both national security opportunities and emergencies. They can be put under the tactical control of military districts' joint strategic commands (OSKs), and this has been the case in Ukraine, but they are not organic to the military districts or their OSKs.

Prior to February 2022, the Troika might have told you that the VDV was an “elite” force, especially units like the 76th Guards Division and the 31st Guards Brigade. The entire VDV, consisting of four divisions and three separate brigades, participated in the initial February 2022 offensive against Ukraine. Their overall performance was not particularly elite, nor did they stand out from other GF and Naval Infantry units.

Russian airborne culture

In the U.S. context, the term “airborne” conjures images of physically fit, highly trained light infantry who land on the military objective, delivered by parachute or helicopter. We also associate “airborne” soldiers with long-range patrols, raids, and ambushes. U.S. airborne units have a relatively small number of vehicles and heavier equipment. The Russian context is different. (Russians are different!)

As the Troika has previously written, the RF AF lacks a dismounted infantry culture. This is true even in the VDV. The RF VDV is a completely mechanized force. “*Desantniki*” (airborne troopers) may arrive on the battlefield via parachute or

helicopter, but once on the ground, they prefer to quickly mount their armored vehicles and tanks to assault their objectives. They typically land near the objective, mount up, and then attack.

The 31st Guards Brigade was given the door-kicking task of seizing Hostomel (Antonov) Airport northwest of Kyiv on the morning of 24 February. They initially succeeded, but then lost it to a Ukrainian counterattack that evening which deprived the 76th Guards Division of an airstrip to land their tanks and BMD armored vehicles. The IL-76s carrying the 76th were forced to turn around in the air, and the 76th eventually deployed by ground and fought a losing, mounted battle with Ukrainian defenders northwest of Kyiv. The 7th Guards Division and the 11th Guards had success seizing bridgeheads over the Dnipro at Kherson and Nova Khakovka via operations, but they then attempted to exploit their own breaches, and were battered in mounted combat with Ukrainian forces.

VDV combat vehicles

The primary VDV combat vehicle is the BMD. The entire series (BMD-2, -3, and -4) were constructed to similar specifications as the BMP-2 with the added requirement that they be air-droppable. Hence, they have lots of aluminum in the hulls. Their survivability in Ukraine has proven even worse than the BMP-2. The VDV has many vehicles to replace, a higher percentage than the Ground Forces, and they are a much smaller force. However, it is doubtful that more BMDs, even the more modern

BMD-4, are the solution to the VDV challenges.

What should the VDV become? A bigger problem is that the VDV has become too BMD-centric (reliant on infantry fighting vehicles). It is no longer the assault force that it was designed to be and has in fact become a sort of “second Ground Forces.” VDV “*taktika*” or tactics techniques and procedures (TTPs) seem little different from that of the Ground Forces in Ukraine in 2022. We do not expect the RF GF to have a dismounted infantry culture—they call themselves “motorized rifle troops,” not “infantry.” For the VDV, however, the lack of a dismounted culture is stunning, at least given the VDV’s proud history and the hype surrounding them. The VDV has strayed far from its airborne and air assault roots. As the analyst Michael Kofmann recently wrote, manning the BMD-series of vehicles became a distraction.

Before this invasion, the new future of the VDV was supposed to be air assault. The 31st Guards Brigade was the VDV’s experimental force and showcased air assault operations, fast-roping, sling-loading and air-deliverable vehicle capabilities in recent strategic exercises such as ZAPAD-2021, KAVKAZ-2020, and TSENTR-2019.

Before this offensive, the VDV Commander GEN-COL Andrey Serdyukov and his predecessor GEN-COL (Ret) Vladimir Shamanov (now Head of the Duma’s Defense Committee) had both been lobbying MOD and the Duma to buy the VDV its own organic helicopter fleet. However, despite the air assault contingencies before several failed assault

river crossings in May 2022, the VDV has not conducted an air assault since the first week of this offensive. As mentioned above, the 31st Brigade’s combat debut air assault was a disaster. The two air assaults in the south (7th AASLT DIV and 11th ABN BDE) were initially successful, but quickly stalled when the VDV attempted to exploit its own breaches with their mechanized forces.

At this point, consolidated and reconstituted VDV units appear to be operating as mini-Ground Forces, but with less capable equipment grinding out a few kilometers a day, trying to push north from Popasna. There were even (unconfirmed) reports 2 months ago that VDV soldiers were being asked to reconstitute the depleted 810th Guards Separate Naval Infantry Brigade.

Following this stage of the war, the RF MOD, the General Staff, and the VDV will need to do some thinking and reflecting on the future roles and missions of the VDV. From a Western perspective, the desire for the VDV to be both an immediate assault force and a mini-Ground Forces has not gone well.





Russian Warfighting

“How we think Russia fights” and its associated sections deal with Troika Observations of Russian tactics and operations during the SMO. They are a baseline for understanding how the SMO has changed the Russian Way of War.

How we think Russia fights (29 June; 5, 6, 8, and 11 July 2022) Part 1 of 5: Organization. (29 June 2022)

Russia divides its Armed Forces across five “military districts.” These regional commands combine “administrative-military” and “operational-strategic” functions. These five military districts are all located within Russia, and Russians will argue that they do not have areas of operation or responsibilities beyond Russia’s borders, but this is not true.

The RF AF military bases in Georgia and Armenia, their separatist headquarters in Donetsk and Luhansk, and RF AF HQ in Syria all report to the Southern Military District in Rostov-on-Don. Russian Forces HQ in Moldova reports to the Western Military District in St. Petersburg (Note, this statement predates the 2023 change of military districts). The RF AF’s 201st Military Base in Tajikistan reports to the Central Military District in Ekaterinburg, and so on. Regardless, you will never see an RF AF version of U.S. Unified Command Plan (UCP) maps. Russians criticize these maps as imperialistic—“look how the Americans have divided the world

for their military conquest”—and are sensitive to realistic comparisons.

A military district is both the headquarters for the generating force and the operational force. Force generation includes everything from draft boards (*военкоматы*) to training support, garrison support, and logistics support for all the “types of forces” (Ground Forces, Aerospace Forces, and Navy) within the geographic military district.

The operational and strategic functions (Russian term) of the command are likely under each military district’s “joint strategic command” (OSK in Russian) which integrates joint capabilities of the permanently assigned commands and any attached “types of forces” (Ground Forces, Aerospace Forces, and Navy) and any attached commands or units from the Airborne Forces (VDV, which is an independent branch of forces), Railway Forces, military police (MPs), and any others (sometimes to include Main Intelligence Directorate [GRU] forces).

The commander of the military district (usually a three-star GEN-COL or ADM, but sometimes a four-star GEN or FLT ADM) is dual-hatted over the administrative-military and operational-strategic responsibilities of the military district command. The OSK (the district’s joint strategic command, or *объединенное стратегическое командование*) works for the military district. Within this command is the military district’s defense management center which operates as a regional version of the National Defense Management Center (NDMC) at the Ministry of Defense in Moscow. The



military district’s defense management center is in constant contact with NDMC.

In wartime, the military district forms a provisional “group of forces” (*группировка войск [сил]*, *ГВ[С]*) for the duration of the activity, such as the current Western Group of Forces (*ЗГВ[С]*), Group of Forces, Southern Group of Forces (*ЮГ(В)С*), Central Group of Forces (*ЦГВ[С]*) and Eastern Group of Forces (*ВГВ[С]*). These organizations were created from their available headquarters and their permanently assigned and attached forces.

VDV (Airborne) forces are not permanently assigned to the military districts. VDV commands are always attached in a manner similar to what we would call “TACON” (tactical control) and can be TACON as divisions, separate brigades, regiments, or BTGs (battalion tactical groups). Likewise, GRU (Intelligence/ Spetsnaz) units similarly can be TACON.

The RF AF are a Ground Forces-dominated military and their understanding of “jointness” is that the Aerospace Forces and Navy, and attachments, support the Ground Forces mission.

Since the 2008 New Look Reforms, longtime Russian military analysts were unsure how a military district would create a “group of forces” HQ. In the Soviet and pre-2008 Russian system, they built an ad hoc headquarters (HQ) or designated an army HQ to run their part of the war. Sometimes, as in Afghanistan, that was called a “contingent” (*контингент*), and sometimes, this “temporary” HQ could last a long time, such as 9 years in the case of Afghanistan. RF AF operations in Syria

have been run in this manner since 2015. For Syria, the Southern Military District initially built an ad hoc headquarters which the General Staff has manned with RF AF officers “out of hide” from across their forces. But of course, Russian operations in Syria were always at a much smaller scale (6,000 soldiers max) than what is happening in Ukraine.

The Special Military Operation in Ukraine appears to have revealed that military districts no longer create separate HQ or designate a subordinate HQ to become the group of forces HQ. In Ukraine, for the Special Military Operation, four of the RF AF’s five military districts built groups of forces (army groups) and used their new post-2008 reform capabilities and operational responsibilities to command them.

How we think Russia fights. Part 2 of 5: Operational formations fighting at tactical levels. (5 July 2022)

The Russian military is different and they do not fight like us: not necessarily worse, or better, just differently. Although their 11 Combined Arms Armies (CAAs) and 1 Tank Army (1st Guards Tank Army) are supposed to be their premier operational-level headquarters (quasi-equivalent to U.S. Army Corps), they are comparatively more focused on the tactical. That is in part because all Russian Ground Forces and VDV formations are smaller.

A Russian motorized rifle division (MRD) is supposed to have 8,500 soldiers. Tank divisions and VDV divisions are supposed to have 5,500 to 6,500 soldiers, depending on whether their primary mission is



airborne or air assault. In reality, none are manned at 100 percent, not even the VDV commands, and all these units are smaller. For example, two of Russia's Ground Forces divisions have only one maneuver regiment (19th GMRD and 47th GTD). 20th GMRD has only two MRRs and no tank regiment. Due to tiered readiness within their maneuver brigade and regiment commands, they might also initially deploy with fewer battalions. For the "special military operation," RF GF motorized rifle and tank brigades and regiments deployed to Ukraine with only two BTGs each (leaving a third BTG back at home station). On the other hand, the enabler units of the armies are quite robust, especially in artillery, to include an Iskander brigade with 12 launchers, a mixed rocket and tube artillery brigade, plus reinforcing artillery from higher, and six TOS-1A multiple rocket launchers in their nuclear, biological, and chemical (NBC) regiments. On the downside, RF GF armies lack organic aviation, all of which is at military district-level commands.

While Russian army-level headquarters are much smaller than their U.S. counterparts (around 40 officers plus security), they put more army-level headquarters in the field, each with forward, main, and rear command posts (CPs). It came as a surprise to some that RF GF army corps (GF HQs assigned under the four fleets) are also warfighting army-level headquarters, even though they bring few motorized rifle brigades to the fight.

From exploited maps, we know that 22nd Army Corps' HQ from the Black Sea Fleet invaded southern Ukraine from Crimea as

a command-level equal to 49th CAA and other CAAs in the Southern Military District (SOMD). The 68th Army Corps from the Pacific Fleet deployed its meager maneuver contribution, plus enablers and attachments from north of Izyum. The 14th Army Corps from the Northern Fleet deployed the 200th Separate MR BDE and its enablers from north and east of Kharkiv.

Surprisingly, army-level HQs (CAA, 1st GTA, or army corps) sometimes command BTGs directly, with no brigade, regiment, or division HQ in between. We saw this in 2014–2015 in Donbas when rotating BTGs from all over Russia "plugged" directly into 20th CAA's permanent HQ near the border in Russia. As revealed on a captured commander's map during the SMO, the Southern Group of Forces' 49th CAA and the 7th Guards Division (its VDV Group) both dispensed with their brigade and regimental headquarters for their attack axis northwest through Kherson to Mykolaiv. Six BTGs and their organic enablers reported directly to the 49th CAA. The BTGs came from three separate motorized rifle brigades. Likewise, the VDV Group dispensed with the 7th Guards Division's regimental HQ. Its four BTGs plus enablers reported directly to the VDV Group's HQ (7th Guards Division HQ).

In such instances, we believe that the brigade or regimental commander commands one BTG, while his chief of staff (his first deputy) and remainder of the brigade staff command the other BTG. Not all regiments and brigades operated in this manner. There were also many brigade and regimental CPs in the field, especially from the Central

and Eastern Groups of Forces. We are uncertain of the advantages of BTGs reporting directly to an army headquarters or why they do this.

How we think Russia fights. Part 3 of 5: Axes of advance over objectives. (6 July 2022)

For the Russian land forces, conceptually, axes of advance (or "directions," *направления*) seem more important than objectives. In captured documents and intercepted communications, units' axes of advance are frequently given as a series of towns. For example, in early April 2022, the Eastern Group of Forces' axis attacking south from Valuyki, Russia, probably looked something like "Kupyansk - Borovaya - Izyum." The Central Group of Forces' recent axis of advance might have listed "Toshkovka - Mirnaya Dolyna - Bila Hora - Lysychansk." In that case, on their graphics, a dashed line across the unit's axis would be its "immediate objective" (maybe Mirnaya Dolyna), a dotted line its "subsequent objective" (maybe Bila Hora), and a double-dotted line with an arrow pointing forward would designate "the direction for continuing the attack" (also referred to as "the mission of the day").

This leads to another key difference: RF AF attack frontages can be very narrow, even narrower than in their *taktika*. In mid-June, the frontage for the Central Group of Forces' lead element, 90th GTD, at Zolote and Toshkovka north to Bila Hora and the southern edge of Lysychansk was about 10 km wide. It was wedged between the Siverskyi Donets River and 2nd Army Corps (LPR and Wagner troops) on their right, and 1st Army Corps (DPR and PMC

Wagner troops) on their left. Likewise, we saw this early in June when the Eastern Group of Forces resumed their attack through Sosnove to and through Sviatohirsk. Their lead CAA's attack was on an even narrower frontage. The amount of massed artillery followed by combined arms combat power in such a concentrated space overwhelmed the Ukrainian defenders.

We must be careful not to draw the wrong lessons: These are depleted army groups 4 months into near continuous fighting, after heavy losses. However, this is no doubt much closer to how the RF GF would like to fight and how we can expect them to fight, rather than how they started this special military operation in late February 2022.

How we think Russia fights. Part 4 of 5: Russian indirect fires work when Russian logistics work. (8 July 2022)

Ukrainians' constant complaint for the past month in all "hot" sectors (Severodonetsk - Lysychansk, south of Izyum, and in northeast Kherson Province) is about the Russians' continuous harassing fires and their unbelievable artillery massing for key events. Despite their writings from Syria, the Russian Ground Forces unquestionably prefer mass fires at preplanned area targets over precision. In the Kyiv phase in February and March 2022, Russian artillery failed because their logistics failed. The Ukrainians played a key role. The Russians require complete control over their rear areas as well as efficient, well-run resupply operations. Logistics determine the success of Russian artillery, which is why they have had so much recent success.



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The Russian military is an artillery army with tanks. New Ukrainian capabilities to strike RF GF ammo depots in their rear areas are finally starting to counter this recent Russian advantage (as might our aviation if we were fighting Russians).

Russian Ground Forces' army groups (CAAs, 1st GTA, and army corps) look more like U.S. Army divisions with ballistic and cruise missiles. CAAs,' 1st GTA's, and army corps' howitzer and rocket artillery are pushed down to directly support their first echelon (the main effort). All CAAs, 1st GTA, and 11th Army Corps in Kaliningrad have Iskander BDEs. The RF Ground Forces intend to add Iskander brigades to their other three army corps. The Russians' breakthrough 2 weeks ago, in June 2022, through Zolote and Toshkovka, provided an example of how the RF Ground Forces' armies might like to use them. As the forward elements of the 90th GTD continued past Mirnaya Dolyna and attacked Bila Hora, six older Tochka-U ballistic missiles slammed into Lysychansk, probably targeting Ukrainian tactical C2. (Ukrainian artillery was dispersed behind Lysychansk). After 4 months of continuous fighting, Iskander stocks are low, so in the next war, those missiles will no doubt be more accurate Iskander-Ms. Rather than just early "shock and awe," we should expect ballistic missiles at decisive moments on the future Russian battlefield. That is how their army commanders expect to tip the balance for their tactical subordinates. RF GF army groups and their associated logistics will be the high-value targets on future battlefields.

How we think Russia fights. Part 5 of 5: Thermobaric effects are employed in decisive moments. (11 July 2022)

On 25 June, Russian forces continued their attack north from Toshkivka through Myrnaya Dolyna, firing Tochka-U missiles at Ukrainian tactical C2 sites in Lysychansk. Meanwhile, another army-level asset was employed against Ukrainian defenses at Bila Hora, the TOS-1A. This thermobaric delivery system, organic to armies' NBC regiments and some military district NBC brigades, has been used more liberally and a little differently than some analysts anticipated. In 2014–2015 in Donbas, and later in Syria, the TOS-1A was used almost exclusively to deal with well-entrenched infantry as part of a section or battery. In the "special military operation," the TOS-1A has been used more often as a lone system rather than as a part of a section or battery. This may be in part due to the unreliable T-72 chassis which has deadlined many TOS-1As, but, no matter, TOS-1As are regularly dispersed as no more than 2-system sections, never as a battery of six launchers. The target is normally the same: entrenched infantry or infantry defenses in single-story buildings.

At Bila Hora, the TOS-1A was used at close range to open or stun Ukrainian defenses. Its minimum safe range is just 500 m. Similarly, we saw TOS-1As used decisively in the defense to stop Ukrainian attacks south of their bridgehead in northeast Kherson (near Davyd Dryd) in what looked like a final protective fire (FPF). That video was shown in Russia nationally on the evening TV news.



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In the future, this capability will be mounted on a wheeled platform, the TOS-2, which was already tested in battle at an earlier FPF against a Ukrainian attack north of Kharkiv during the May counteroffensive. The TOS-2 should enable army HQs to provide quicker, more reliable, decisive effects to their subordinate tactical formations, something that the existing older T-72 chassis can no longer support. The apparent main role of RF GF army-level commanders is to provide decisive effects, employing Iskanders, TOS-1As or other such decisive capabilities to tip the advantage for their subordinates' more tactical fight.

In October 2022, 8 months into the SMO, the Troika began summarizing the major adaptations undertaken by the Russian military to correct its errors and counter its losses. Following is the list of 23 adaptations as of 1 July 2024. The Troika has long recognized the Russian military is a learning organization, and these adaptations are evidence of that fact. The Russian military still has many problems, and these adaptations may not "win the war" for Russia, but they make clear that the Russian military can and will change as circumstances change. The adaptations are captured in three parts.

RF MOD and RF AF adaptations during the Special Military Operation.

Part 1. (2 October 2023)

The RF MOD, General Staff, and RF AF learn, think, and adapt, although not at a pace acceptable in the U.S. military, or that might be expected of a NATO ally. The Russians also pursue solutions for their problems that Americans might never seriously consider as possible options. These include mobilizing veterans to man combat formations or relying on private military company mercenaries for manpower solutions and even to accomplish operational objectives. The Troika realizes that these are not all-inclusive. These are presented to instigate thought and discussion on the Russian Way of War.

1. RF MOD and RF government refocused IO toward their domestic audience. (March 2022).

At the start of the SMO, the RF government tried to compete worldwide in information operations but was losing both internationally and domestically. The RF government abruptly shifted almost exclusively to its more important domestic audience and initiated its "Z" campaign to build Russian public support for the SMO. The RF government has used its continuing IO campaign to deliver the Russian narrative on "fascists," "nazis," and Russia's supposed defensive war "against NATO attacks on Russia" to justify Russians'





sacrifices and to rationalize the Russia way of war's brutal excesses to its own people.

2. RF government embraced homegrown Telegram app channels. (March 2022).

This allowed the RF government to compete domestically against international Russian-language media and to better deliver its own narrative. Prior to March 2022, the FSB was hunting and arresting Telegram channel producers as well as their subscribers. Soon after this change, RF MOD and other parts of the RF government such as Rosgvardiya had their official channels in addition to many officially sponsored "Z" channels.

3. RF government abandoned its initial SMO plan and shifted to the Donbas. (March 2022)

Given the initial grand ambitions of Putin's Kremlin, and Russia's high early losses, this was a rather remarkable and swift shift in war strategy.

4. RF FSB and Rosgvardiya refined "filtration" operations. (April 2022)

Primacy and roles were not worked out prior to the SMO. Once the FSB was put in charge, effectiveness improved dramatically and budding Ukrainian insurgencies in RF-occupied areas were dulled or even defeated by Rosgvardiya brawn and FSB operations. Some Ukrainian insurgent groups went deeper underground or ultimately ceased operations.

5. PMC Wagner became the RF AF operational reserve. (April 2022)

This masked the RF MOD's and General Staff's overall terrible management of its reserves. PMC Wagner initially provided small units of mercenaries and then later entire tactical commands of them. This ended when PMC Wagner took the operational lead in Bakhmut. (See # 11.) Other PMCs later tried to fill or augment PMC Wagner's role but with only middling success. As part of the uniqueness of the Russian way of war, Yevgeny Prigozhin and PMC Wagner went back into Russian and Soviet military tradition and in summer 2022, started recruiting convicts from the RF Ministry of Corrections' penal colonies to augment their own mass. Prigozhin recruited convicts for human wave assaults that preserved Russian munitions, identified UAF positions for Russian artillery, and sometimes overwhelmed UAF positions. As unacceptable as this might be in the West, it worked. Soon enough, RF MOD copied PMC Wagner and started its strong-arm recruitment of Russian convicts. RF MOD later had PMC Wagner's access to the prisons revoked, so that RF MOD could have exclusive rights to prison recruiting and build its current Storm-Z assault force. That partially addresses (in a very Russian way) the RF AF's original failures to build a proper operational reserve.

6. RF AF dispersed CPs further from the Line of Combat Contact (LCC) and added redundant C2 to counter UAF long-range fires. (July 2022)

RF AF units did this in summer 2022 due to HIMARS, and again in spring 2023 when

Storm Shadow and SCALP arrived. This initially did not go well. Early on, in June and July 2022, some RF AF commands did not even attempt to move their C2 or change their logistics structures even after HIMARS and GMLRS were clearly having decisive effects and the RF AF had no proven means to engage HIMARS launchers or incoming GMLRS munitions. RF AF later found some ways to mitigate the GMLRS, but C2 and RF AF logistics still require dispersal at ranges that strained their operations and were not the way Russians intended to fight and support. There is recent evidence that the new RF AF logistics structure of smaller supply centers dispersed across their operational rear areas is working. It is causing difficult UAF targeting decisions of whether to use such scarce munitions on small logistics targets with limited payoff. (This Russian conversation continues. See General Observations below.)

7. RF AF refined ZALA Orlan - ZALA Lancet counterbattery techniques. (September 2022)

Prior to the SMO, most RF GF units never trained with their ZALA Lancet loitering munition Unmanned Aerial Vehicles (UAVs). Some units had them for years but left them at home station when they departed for the SMO. Once ZALA Lancets were employed, and operators gained enough on-the-job experience, ZALA Lancet UAVs teamed with higher altitude observation UAVs to become a new and effective RF GF means of counterbattery. This also allowed Russian artillery to avoid counterartillery duels that unnecessarily increased their vulnerability to UAF

counterbattery radars and counterbattery fire. The combination of observation UAVs and terminal-attack loitering munitions is a crossover technology used by the UAF, PMC Wagner (when they were in the fight), and the RF GF and RF VDV. This will likely be emulated widely in other conflicts elsewhere.

8. Russia enlarged RF AF end strength to 1.5 million (from 1.15 million). (22 August 2022)

This would incorporate an additional 320,000 soldiers mobilized a month later on 21 September 2022 (see #9), replace early losses, and enlarge the RF AF in terms of personnel and forces fielded well beyond its original size on 24 February 2022. Putin authorized the military to expand 48 percent to 1.5 million uniformed personnel. The partial mobilization jump started creating this new force structure. Since the start of the SMO, Russia managed to increase the number of brigades and regiment-sized ground maneuver units by more than 8 percent, and this continues to grow. From the start of this growth, the Russians have messaged that such increases were for Russia to counter Finland's and Sweden's accession to NATO membership.

9. RF MOD mobilized 320,000 soldiers. (21 September 2022)

The sudden mass of *mobiki* stopped UAF advances in the Svatove and Kreminna areas, and steadied Russia's frontline throughout the winter of 2022–2023. This kick-started a RF AF force structure increase to 1.5 million (#8). The 21 September 2022 partial mobilization order





also extended all officers and enlisted indefinitely until the end of the SMO. The order itself is open-ended. RF MOD has continued a rolling, quiet, mobilization to summon and mobilize replacement soldiers and officers. Overall, the partial mobilization was the emphatic end to the 2008 “New Look Reform” debate of readiness vs. mobilization. Mobilization won.

10. RF Aerospace Forces employed Shahed UAVs to overwhelm UAF air defenses. (October 2022)

With varying degrees of success, this allowed the RF General Staff targeting planners, the RF Aerospace Forces, RF Navy, and RF Ground Forces to better identify and avoid UAF air defenses for their cruise missiles and Iskander-M ballistic missiles. This has also allowed the RF Aerospace Forces to use the less expensive and more plentiful Shahed-136s and -131s to attack targets beyond UAF air defense coverage and encourage the UAF to overextend its air defenses. The Russians’ Shahed purchases were the payoff of Russia’s long mil-to-mil relationship with Iran. The Shahed-136 is a munition that the Russians could neither produce nor buy from elsewhere. Without the Shahed purchases, the RF AF would have expended far more cruise missiles and ballistic missiles, most likely with less strategic effects. RF MOD’s partnership with Iran has since spread to other areas such as Iranian 152-mm artillery refurbishment and artillery production for Russia.

11. PMC Wagner became a quasi-military, district-level group of forces. (October 2022)

Russia has traditionally liked to fight through proxies (i.e., “DPR” and “LPR” militias in the Donbas; pro-Assad forces and Iranian Hezbollah in Syria; PMCs in Ukraine and Syria; Cossacks earlier in history, etc.). The Special Military Operation and PMC Wagner’s campaign to take Bakhmut as an operational equal among RF groups of forces, despite being an army of mercenaries, was probably the Russian Federation’s biggest experiment with a proxy force, and probably the highpoint of any proxy’s influence on the Russian way of war. This of course ended in early June 2023 when PMC Wagner turned over control of Bakhmut to RF AF. By the end of June 2023, PMC Wagner ceased to serve any role in the SMO.

Part 2. (4 October 2023)

Russia typically starts wars slowly, even poorly, and finishes them better. Overall, unfortunately, the RF AF is improving as a wartime military. The RF AF used the manpower solutions described in the first 11 adaptations, such as the partial mobilization and increased end strength, and since then mobilized their military-industrial complex, to try to outmass the Ukrainians, as best exhibited by their ongoing defense of Zaporizhzhia Province. Another earlier adaptation, their use of PMC Wagner, bought them time and fixed the UAF while the RF AF was making the internal changes necessary to make it into this second year of the SMO. Now, as pointed out below, they are slowly improving in some key areas such as

operational targeting, especially since June 2023. UAF rear areas are now no longer uncontested, and this will no doubt affect the next months of warfighting.

12. RF Presidential Administration established its Coordination Council. (October 2022)

This ultimately forced the RF defense industry to become more responsive to RF AF units’ requirements and slowly helped fix the partial mobilization’s equipment deficits and helped replace RF AF equipment losses at a faster rate.

13. The RF VDV became the RF General Staff’s strategic reserve. (December 2022)

The VDV reverted to its more traditional role, helped advance PMC Wagner’s campaign at Bakhmut, and later helped steady Russian defensive lines at Kreminna, Bakhmut (after PMC Wagner’s withdrawal), and near Robotyne. In the fall, after the Kharkiv and Kherson counteroffensives, the RF VDV had mostly withdrawn from contact and reconstituted. In December 2022, there was a debate about the future of the RF VDV and its role in the SMO. RF VDV Commander GEN-COL Mikhail Teplinsky allegedly argued that, for whatever reason, the RF VDV should no longer be expended as the RF AF’s “assault infantry.” Typically, in Russian military thought, the RF VDV and Naval Infantry are considered assault infantry. More than likely, this was related to the RF VDV’s extremely high losses at the start of the SMO. At the end of this debate, GEN-COL Teplinsky was reportedly on the wrong side of Chief of the General Staff

GEN Gerasimov and headed toward an early retirement. But the RF VDV, in the meantime, reverted to its traditional role as the RF General Staff’s strategic reserve and fought as regiments in Bakhmut in support of PMC Wagner’s campaign to capture Bakhmut. GEN-COL Teplinsky remained on the “outs” until at least February 2023, when he was finally called forward to the RF Joint Group of Forces in Ukraine.

14. RF MOD and General Staff established its “A Team” field headquarters. (January 2023)

Chief of the General Staff GEN Gerasimov became dual-hatted as the Commander of the RF Joint Group of Forces and his service deputies (Ground Forces and Aerospace Forces Chiefs) became the RF Joint Group of Forces’ deputy commanders. This sped up decisionmaking and ended the RF Joint Group of Forces’ constant need to consult with the RF General Staff on issues such as VDV unit transfers between RF groups of forces, logistical priorities, and at least temporarily moved more command decisionmaking to Rostov-on-Don.

15. RF AF reinstituted refresher individual training for mobiki. (January 2023)

After initial waves of mobilized soldiers went without proper training (and many died), refresher training was started in Belarus, western Russia, and back in the regions where the mobiki were mobilized. This improved mobiki survivability and skills, not to a U.S. or Western standard, but at least to a level where public and





mobik outcry subsided. Mobik losses slowed, and fewer mobilized soldiers were needed to replace mobik KIAs and WIAs. Individual training for personnel heading to combat had not been organized at this scale since the Soviet war in Afghanistan. Neither the RF Ground Forces nor the RF VDV have training enterprises like a U.S. Army Training and Doctrine Command (TRADOC). In the Russian GF and VDV, there is no basic training or advanced individual training (AIT). Individual training is done at the units and by the units.

16. RF military industrial complex mobilized and deployed. (January 2023)

The Russian military industrial complex is now replacing key munitions at rates closer to expenditure. It is also recovering and repairing major end items closer to the frontlines in order to get them back into the fight more quickly.

17. RF Air Forces (VVS) improved UMPK attacks lobbed from behind the RF AF Line of Combat Contact (LCC). (March 2023)

The Troika initially did not include this as an adaptation because it looked like an ineffective failure, but TTPs were improved for glide bomb attacks (the Russian version of JDAM [УМПМК], UMPK), and eventually so were accuracy and responsiveness. Despite the RF Air Forces' lack of air superiority, the RF Air Forces now contribute to the fight and provide more accurate air support. This is not U.S.-style air-ground CAS operations, but instead large ordnance delivery that is difficult for the UAF to counter or protect against.

18. RF GF employed the improved ZALA Lancet UAV with added power and lethality. (June 2023)

Earlier versions of the ZALA Lancet were underpowered and for that reason were too slow and susceptible to ground fire, tree branches, and even camo nets. Earlier versions also had small warheads and a limited 40-km range. Since June 2023, the improved ZALA Lancet is faster, more lethal, and has destroyed targets at a 70-km range. When teamed with high altitude observation UAVs, it has been effective and provided another threat to UAF operational rear areas.

19. RF GF improved Orlan-30 – Tornado-S - ZALA Lancet TTPs to attack moving targets at operational ranges. (June 2023)

Until June 2023, RF AF targeting at operational ranges was normally against unobserved, fixed, sometimes even templated targets. The RF AF lacked the ability to hit anything in transit such as supplies, reinforcements, or newly deploying air defenses. This changed around June 2023, and UAF operational rear areas are increasingly no longer uncontested.

20. RF GF embraced UAV constellations for UAV management, observation, and redundancy. (August 2023)

In summer 2023, the RF GF started adding redundancy of its higher-altitude observation UAVs and began to better manage its UAV operations for calls-for-fire and cueing terminal-attack munitions. RF GF UAV operations now perform more like



PMC Wagner's more effective UAV operations did in late winter and spring 2023.

21. RF MOD retained 12-month conscription. (September 2023)

This increased the pool of Russian males subject to mobilization for 2024 to more than 9 million. For an army based on mobilization, this adaptation is very important in a war of attrition. Previously, RF MOD had announced that conscription in spring 2023 would be extended to 18 months and that fall 2023 conscripts would serve 2 years, the old Soviet length of conscription. Likely due to RF MOD's failure to attract and enlist enough *kontraktniki* (volunteers), RF MOD retained the 1-year conscription. This also means that enlisted could be subject to mobilization immediately after their mandatory 1 year of service, instead of 2 years. This helps address another cultural issue, that Russians are wary of 18-year-olds being killed or wounded in combat. They have far less reluctance seeing Russian 20-year-olds fighting in Russia's wars.

Part 3. (14 February 2024)

22. The RF MOD and RF AF embrace commercial off-the-shelf solutions. (September 2023)

Russians have a saying that "When you go to war with Russia, you go to war with all of us." That adage is increasingly important, maybe even decisive, when one examines how civil society's participation in material support contributions has grown both in quantity and technical sophistication.

As we reported last year (January 2023), Russia mobilized and deployed its military industrial complex early in the SMO (Adaptation #16). Much of Russia's defense industry is made up of state-owned enterprises, so mobilization was relatively fast once the decision was made. More gradually, Russia has also mobilized its civil society (including milbloggers), which over time has played an integral role in equipping RF AF forces in the SMO through official and unofficial channels. As early as summer 2022, volunteer organizations across Russia began stepping up to fill basic supply and technology needs for Russian units and individual soldiers. In many cases, they overcame significant shortfalls in RF AF official supply channels. These efforts increased after the partial mobilization in fall 2022, with the span of contributions ranging from individual equipment, optics, and field medical kits to UAVs, radio systems, and even vehicles in some cases. More often now, they provide commercial off-the-shelf (COTS) solutions that antiquated RF MOD acquisition systems could never satisfy in a timely manner.

As late as spring 2023, the RF MOD, General Staff, and RF AF commands not only showed little appreciation, but in many cases outright refused to acknowledge private and civil society efforts to fill these gaps. Russian commanders typically prefer control over all matters, large and small, even when they cannot get necessary supplies or capabilities through normal channels. There were many cases, early on, when donated items were "hung up" in RF government bureaucratic procedures or were pilfered along the way before they



reached the intended units or soldiers. Starting this past summer and into the fall, however, supply and equipping efforts began to formalize between the RF MOD and civil society, with COTS solutions to address changing conditions on the battlefield gaining more prominence. Efforts to systematically provide large numbers of both attack UAVs and trained UAV operators are examples of this coordination. Other UAV supply efforts, medical equipment drives, tactical radio procurement programs, optics purchases, and a range of other assistance have become officially celebrated, welcomed, and facilitated by the RF MOD and the RF AF. Overall, this has greatly accelerated the RF AF's ability to rapidly modernize at tactical levels without the burden of completely overhauling Russian acquisition systems, a move which also would have been an invitation to new forms of corruption.

The Sudoplatov Project's "Judgment Day" is a well-known case of civil society-state partnership. Sudoplatov's example has served to energize both public participation and voluntary intellectual contributions to build a wide variety of higher-quality UAV capabilities for RF AF units. Collaboration in this effort has focused on operator training, as well as technical training for 3D printer technicians who adapt new COTS UAV technologies to applications for the battlefield. "Judgment Day" is just one of several (maybe many) such growing civil-military partnerships in UAV technologies, combat medical care, artificial intelligence (AI) integration, or other areas, to procure and apply new COTS technologies to the battlefield. Most notable, though, is that the

current operational environment in Ukraine is so dynamic that normal military acquisition procedures would likely not be able to keep pace with emerging technologies being adapted to the battlefield. There is an ongoing race to inject new, modern, non-standard military technologies into combat capabilities before the enemy can. Russia seems to be gaining the overall advantage in leveraging its society's intellectual power by using military-civil society partnerships to bypass normal military acquisition bureaucracy—an advantage that is providing Russia an overall edge over Ukraine in the SMO.

23. Network of Fires. (3 April 2024)

Russian Ground Forces' army artillery groups (AAGs) are no longer physically grouped, they are instead dispersed in a "Network of Fires" consisting of: an AAG fire direction center (FDC), networked sensors, organic and "pushed-down" heavy (long-range) cannon artillery and MRLs, Iskander-Ms, and RF "joint" Aerospace Forces UMPK (glide bomb) missions. Since early summer 2023, Russian operational targeting and fires have gradually improved to the point that they can now have effects on moving (dynamic) Ukrainian targets up to 70 km beyond the LCC. For Russian operational fires, what they call their "recon-strike complex" (*разведывательно-ударный комплекс, РУК*), the CAAs' and 1st GTA's AAGs and their Chiefs of Artillery are most likely responsible for recent RF GF dynamic targeting successes at operational depths out to 70 km beyond the LCC. The Troika doubts that all RF GF army commands are fully proficient at this, and there is likely a great disparity of capability, experience, and effectiveness between different CAAs and 1st GTA even within the same groups of forces.

Russia's ability to achieve battlefield parity with the UAF in military and commercial off-the-shelf (COTS) solutions has been a function of industrial ingenuity, creative financing, and use of social media. The Russian defense industry has proven to be quite capable and innovative in obtaining solutions and adapting them as battlefield conditions rapidly change. In this regard, Russian society in general, and startup companies in particular, have been an economical and efficient means to kickstart the process that has led to development, production, and deployment on a massive scale.

Innovation at scale—the role of startups in supporting the Russian military industrial complex. (1 March 2024)

There are a multitude of types of First Person View (FPV) UAVs being flown by both sides over the battlespace in Ukraine, and most of them are adaptations of COTS technology. Individual Russian volunteers and volunteer organizations have been at the forefront of organizing and funding these various UAV projects. One of the most notable on the Russian side is the "VT-40" of the Sudoplatov "Judgment Day" project, but there are additional ones with names such as "Gadfly," the "Hortensia Series," and "Ghoul." The Ghoul FPV UAV, in particular, is causing headaches for the UAF across the battlespace and serves as a good example of how a new generation of

Russian entrepreneurs is taking the initiative using startups not only to develop better smartphones, product delivery services, or ride share apps. Instead, they are developing and implementing innovative solutions to the battlefield quickly that are later adopted at scale by the RF MOD and its military industrial complex. (NOTE: Russians use the colloquial English cognate term for startup companies, "стартапы.")

Social media platforms such as VKontakte (Russian Facebook) and Telegram provide the "startup" base

Russian social media platforms have been crucial in coordinating Russian civil society's overall efforts to support the SMO with various equipment and other donations. They have also been key for "startups" to get their footing in development and production. The Ghoul FPV UAV was created by an engineer from Yekaterinburg. Ideas for the drone project started on VKontakte as early as 2017, migrating over time to the increasingly popular Telegram platform. According to the founder, initial investments for the project were through donations totaling 9 million rubles (~\$97,000) and were collected via multiple Telegram channels. These donations from "friends," family, and personal funds ultimately formed "crowdsourcing" funds that were then used to prepare the prototype versions of the UAV, which gave the drone a second title of "the people's drone."



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Battlefield testing and refinements

Mobility and readiness to rebuild “on the fly” are critical to success in a technology like UAVs in which both sides are adapting so quickly. In this regard, Russian military startups can better manage this process because they are small enough to be flexible and are not bound by endless volumes of regulations associated with the Russian military industrial complex. According to the design team, in the case of the Ghoul, the drone’s design changed approximately 80 percent from the original prototype, thanks to multiple combat tests in Ukraine. Project team members in essence became “ambassadors” for the drone by testing it on the line of combat contact during multiple trips for instant feedback and modifications. Some team members even remained embedded in the units using the UAV to further validate the program. The final prototype was then beta tested at training areas operated by the RF MOD’s Main Directorate of Innovative Developments (*Главное управление инновационных разработок (ГУИР) Министерства обороны*).

Ural “kids”—young people lead innovation.

Young people from all over the Urals were recruited for the Ghoul project and the average employee in the enterprise is just 25 years old. Those responsible for development are even younger, an average age of 22 years. The developers work primarily on modernization efforts, including better

antennas, modules to assist in defense against electronic warfare (EW) systems and incorporating new technologies such as “supervised learning” and automatic target acquisition. One of the enterprise’s significant challenges is personnel turnover, as those young people recruited to the project from the student population of university military training centers in the end must sign a contract to serve with the RF MOD, and new people must be recruited to replace them. Salary is 60,000 rubles a month (~\$640) and higher for assemblers, and 120,000 rubles a month (~\$1,300) and higher for developers.

Scaling the business

By the end of 2023, the Ghoul had proven itself repeatedly, especially in deadly attacks against the UAF on the Dnipro River near Krynyky. The drone, however, was still being produced in the same 30 square meter facility where it started, and production needed to expand. The project then received support from the RF government, which not only provided for a newer, larger facility, but also provided 60 percent of the financial support through drone orders, with the remaining portion of the business still funded primarily through donations. Production rates increased and production times decreased; production that previously took a month now required only a week.

Future plans

Some Russian startups like Zala Aero transformed from a handicraft workshop into a large-scale modern company



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producing a wide variety of military-grade UAVs including the “Lancet” series. However, for the time being, the Ghoul’s founder is not interested in growing the private part of the business, and instead settled for a partnership in which the larger enterprises of the RF military industrial complex will conduct the assembly, and his enterprise will retain development and quality control. This type of partnership formula allows for a good mixture of innovation at scale.

Russia’s military operations rely heavily on artillery power. In the span of the SMO, Russian artillery units have reorganized, changed their tactics and operations, and improved their targeting skills dramatically. The section below identifies some of the more important developments in this domain.

The evolution of Russian artillery TTPs since the start of the SMO. (23 October 2023)

Tactically, very proficient and responsive

RF GF artillery has proven tactically proficient and responsive. Many RF GF artillery units have mastered UAV-observed and adjusted fires, to include laser-guided Krasnopol fires, and can also integrate loitering munition (ZALA Lancet, FPV and FPV-like) UAVs. RF GF artillery reconnaissance units have ZALA Lancets (which they call “barrage munitions”) as well as other unit-made or unit-modified terminal-attack FPV or FPV-like UAVs which they employ for counterbattery in coordination with counterbattery fires.

The RF GF’s inventory of Zoopark counterbattery radars has suffered high losses. For the Russians, loitering munitions have proven an effective way to protect their counter-battery sections from exposure to Ukrainian counterfire radars, or at least until key moments in the counterbattery fight. RF GF batteries fire Krasnopol laser-guided munitions, but such precision-guided munitions are low in quantity and are delivered through specialized transport to the firing batteries, many times singularly in non-tactical vehicles. One additional tactical artillery improvement is battle damage assessment (BDA). Unlike earlier in the SMO, RF GF artillery UAVs now monitor and revisit targets to assure effects and will reattack missed targets, something that was almost unheard of in the SMO’s first year. Now it is normal Russian practice.

Improved tactical precision

RF GF artillery improved their tactical precision over the course of the SMO. However, the predominance of Russian artillery fire is in the preparation, and not in counterbattery or continuous fire support. This is a growing recent complaint among RF motorized riflemen and artillerymen. RF motorized riflemen frequently complain that they have little or no fire support later in the fight. Russian artillerymen similarly complain that they are not adequately resupplied during the fight.

Most recently, such Russian complaints were repeated by Russians attacking toward Avdiivka. Ukrainians echoed these observations concerning Russian artillery, the devastation of the Russians’ prep, but also about the UAF artillery’s advantage later





in the same Russian attack. This is, in part, because of the introduction of HIMARS and Storm Shadow, which forced Russian ammunition depots to be placed further from the batteries and dispersed in smaller depots. For the most part, Russian units have enough serviceable or semi-serviceable artillery ammo, but, since HIMARS' and Storm Shadow's arrival, it has been harder for Russian logistics units (MTO) to responsively supply the Russian firing batteries. Early in the Special Military Operation, Russian artillery was normally not very accurate. Much of it was quite inaccurate. Now, on videos, the Troika observes very precise Russian preparatory fires and far more accurate unguided attacks on UAF armored vehicles and artillery. Ukrainians have similarly commented on improved Russian artillery precision.

Investing in high-powered artillery

Russians continue to invest in heavy, or what they call "high-powered," artillery, specifically 203-mm 2S7 howitzers and 240-mm 2S4 mortars. The RF GF added high-powered artillery battalions to its fire support during the Special Military Operation and have not run low on 203-mm artillery and 240-mm mortar ammunition, which might be an additional reason for adding 2S7 and 2S4 batteries. Russian investment in and reliance on high-powered (heavy) artillery started 2014–2015 in Donbas and continued through RF presence in Syria. 2S7 and 2S4 systems are found in high-powered artillery brigades in the military districts and deployed in the military districts' groups of forces. The 45th High-Powered Artillery Brigade (45-я артиллерийская бригада большой мощности, 45 абр БМ) is in the Western

Military District and in the future will be subordinate to the Moscow Military District. The 17th High-Powered Artillery Brigade was already formed and will be subordinate to the Leningrad Military District, once the Western Military District is split on or about 1 January 2024. The Troika suspects that the Central Military District also has a high-powered artillery brigade because there have been videos and photos of 2S7s and 2S4s, as well as their ammunitions, with Central Group of Forces units since at least June 2022. However, it is possible that 2S7s and 2S4s were temporarily sent from the Western Group of Forces to help their adjacent command.

Concerned about maintenance

152-mm artillery maintenance remains an issue, especially due to the Russians' lack of spare barrels. 152-mm barrels are a priority for Russian defense manufacturing as well as for RF MOD's purchases from abroad. Besides 152-mm ammo, the RF MOD's other pressing request to North Korea's MOD was for spare 152-mm howitzer barrels. That was mentioned numerous times in Russian social media.

Improving at operational ranges

As late as June 2023, Russian targeting beyond tactical ranges was mostly against fixed, sometimes templated, targets heavily influenced by mirror imaging. For example, Russian artillery units frequently attacked schools because that was where Soviet and Russian forces would normally put their CPs (buildings with big, open rooms, in the middle of a village where CPs could easily disperse antennas and vehicles). Since June 2023, Russian UAV-observed targeting at

operational levels steadily improved at operational ranges, although not uniformly. The RF GF now uses deep UAV observation out to at least 70 km. UAF rear areas are now contested that previously had not been threatened except by indiscriminate or templated fire missions, or based on information from human intelligence (HUMINT) sources. Until as late as June 2023, the RF GF had not hit any moving targets at operational ranges in Ukraine such as new end items (like HIMARS or their ammunition, or CPs). Now RF GF regularly fly their Orlan-30 UAVs to 70 km behind the Line of Combat Contact (LCC) to locate and track targets until they can be serviced by RF AF RF GF long-range fires or ZALA Lancet terminal-attack munitions. Also, Russian artillery now makes a more serious effort to conduct BDA at operational ranges and to monitor or revisit attacked targets to confirm or assess damage with their Orlan-30 UAVs. Overall, Russian long-range fires beyond operational ranges, such as Iskander-Ms ballistic missiles, are highly accurate, but unobserved targeting remains very wasteful.

Adding RF VDV force structure

In summer 2023, amid the Special Military Operation's immediate demands near Bakhmut, the RF VDV added a general support artillery brigade, RF GF 52nd Artillery Brigade. The 52nd Artillery Brigade includes 152-mm 2A36 Giatsint-B howitzers. As noted above, the RF AF continues to grow artillery forces structure across its land forces' formations even during the SMO.

Russian "fires" and their limitations. (9 April 2024)

For more than 2 years, the Troika never used the term "fires" to describe Russian operations. Recently, however, rapid RF GF AAG access to Iskander-M ballistic missiles and RF Aerospace Forces' air interdiction has changed the Troika's understanding of the Russians' normally stovepiped artillery support. These recent accomplishments also dispelled earlier Russian soldiers' complaints about slow, uncoordinated targeting and delivery processes that the Troika listened to and read on Russian social media as late as December 2023.

Throughout the SMO, most meaningful RF GF operational decisionmaking has been at that CAA / 1st GTA, GEN-LT (two-star) level, so it makes sense that these improvements have occurred at that army level (i.e., at the AAG). Even tactical decisions are made at army level and then pushed down to regiments and battalions through divisions and separate brigades. Additionally, reconnaissance and attack platforms like Orlan-30s and Lancet-3s are resourced at the army-level artillery brigades. The Troika could be wrong, and perhaps the Russians established ad hoc targeting elements at their groups of forces/military district levels. But that would be very unusual and counter to their culture of fixing or reforming what they have and not building new tactical structures. Instead, the Troika believes that although the Russian Ground Forces' AAGs are no longer physically grouped, they are instead dispersed in a "Network of Fires" consisting of: an AAG FDC, networked sensors, organic and "pushed down" heavy (long-range) cannon artillery and MRLs, Iskander-Ms, and RF "joint" Aerospace Forces UMPK



missions. The Troika doubts that all RF GF army commands are fully proficient at this, and there is likely a great disparity of capability, experience, and effectiveness among different CAAs and 1st GTA, even within the same groups of forces.

Also for now, the RF AAGs have a limit of effectiveness at about 70 km beyond the LCC. The Troika is uncertain why 70 km is their limit. Perhaps this is a technical limitation based on UAV repeater strings, or it is due to the limits of terrestrial backup UHF antennas. However, the Troika is confident that the Russians' 70-km horizon is just temporary, because other Russian forces have reportedly already learned how to maintain Russian strategic-range UAVs over Odesa, 200 km from the nearest Russian CPs on Crimea. These Russian improvements are momentous.

In the following sections, the Troika describes how the Russian Armed Forces conduct the defense and how they have adapted their conduct of "fires" based on their experience in the SMO.

How the RF AF defends. Maneuver vs. positional defenses. (12 May 2023)

In Russian military thought, academy education, and training, the "defense" receives much less emphasis than the "attack." Russian *taktika* manuals always stress the sentence: "The attack is the main form of combat!" ("*Наступление – основной вид боевых действий!*") Russian theorists such as Aleksandr Svechin always recognized the defense as

the stronger form of combat, but for them, the defense is looked at as a temporary condition with the goal of counterattacking, regaining the initiative, and returning to the attack.

The RF GF has two forms of defense: (1) maneuver defense; and (2) positional defense. Maneuver defense is more comparable to how we view an economy of force or covering force action and is conducted when you have insufficient forces and means to conduct a positional defense. The first goal of a maneuver defense is to attrit the enemy while not becoming decisively engaged. The second goal of a maneuver defense is usually associated with a security zone fight in which the Russians have artillery forward. Motorized rifle units fighting in the security zone normally fight with subunits abreast and a small reserve. The purpose is to cover a broad front and force the enemy to deploy several times "on line" under artillery fire. As the artillery is doing its job, the security zone units fall back to another similar line and repeat the process. The security zone fight is expected to slow the enemy rate of advance and attrit the enemy with continued artillery fire, so that the enemy arrives at the positional defense at reduced strength and missing critical components.

Frequently, Russians talk about their forms of the defense sequentially. The primary form of defense is a maneuver defense leading to a positional defense. The purpose of the positional defense is to retain defensive belts or areas, but the ultimate goal is always to counterattack, restore lines, and return to decisive

maneuver. Positional defenses are developed on a wide front at great depth. They are supposed to be well-equipped in engineer assets commensurate to belts and positions. At the company and platoon level they are constructed for all-round 360-degree defense. Positional defense seems to be based on the best lessons learned between 22 June 1940 and summer 1943. A key difference from U.S. defense: Russian positional defense forces and assets are concentrated as part of the first echelon, although a successful Russian defense requires timely maneuvering of forces and assets from areas not under attack.

There are some strong tenets of a Russian defense, such as activeness, which urges well-resourced, unforgiving counter-reconnaissance, spoiling attacks to disrupt UAF preparations (as well as being a form of reinforced reconnaissance), early counterattacks, and their use of combat reconnaissance patrols (CRPs) to help disguise defenses and force the enemy to deploy early. Given the size of those RF GF trenches, more than likely, they were directed by the 58th CAA Commander. It is likely that the priority of their combat engineering work was combat construction of their company and platoon strongpoints with those best direct fire shots, and secondarily, local obstacles.

In the defense, Russian battalion, regimental, and brigade commanders are far more focused on direct fire aspects of their defense than American commanders, who more likely would delegate that responsibility down to company commanders and platoon leaders. RF GF

commanders prioritize their combat engineer man-hours in strongpoints with dug-in alternate positions before obstacles. One of the reasons is that RF GF companies and platoons are likely to evacuate their primary defensive positions before the UAF's artillery preparation, and then reoccupy their strongpoints for the defense.

Russians at separate brigade and regimental levels defend in brigade and regimental defensive belts as wide as 20 km and as deep as 15 km. Inside those belts are battalion defensive areas, which, terrain dependent, can be as wide as 5 km and as deep as 3 km. Battalion defensive areas are made up of 1.5-km wide company strong points as deep as 1 km composed of 400 m x 300 m platoon strong points designed with alternate squad positions that provide 360-degree defenses. This is where RF GF commanders prioritize their combat engineer man-hours. Russians typically do not plan obstacles in U.S.-style detail for their equivalents of what we call engagement areas. However, RF AF in Zaporizhzhia Province and elsewhere have had several extra months to build their defenses. When Russians do build obstacles, they generally design maneuver lanes through or around the obstacles to facilitate a future counterattack. Those corridors are frequently carefully disguised and will be closed with mines if the defense does not go according to plan. Russian *taktika* and RF GF commanders emphasize laying mines and building other obstacles at the last minute in order to not lose maneuver corridors for their counterattack, and, ultimately, their transition back to the attack. Of course, in combat. there might not be "a



last minute,” or at the very least that “last minute” might be under indirect or direct fire.

How the RF AF defends. Part 2 of 2. Command and Control. (15 May 2023)

Throughout the Special Military Operation, most RF GF tactical operations have been run from the army level (the CAA, 1st GTA, or army corps) or higher. That two-star GEN-LT commander seems normally to be the lowest command level for key warfighting decisions. Other times, as we have seen near Kreminna (at times) and Vuhledar (always), the three-star GEN-COL RF Group of Forces commanders have actually been the lowest level of actual combat decisionmaking. After 14 months of combat in Ukraine, do not expect a change to Russian command centralization. Due to battlefield losses and battlefield promotions, no one is commanding with their “A Team” any longer. Culturally, any type of Russian “mission command” is out of the question.

2022

We have observed that GEN-LT commanders or higher normally reserve two key assets for their own positioning: (1) The TOS-1A, which, in the defense, the army-level commands frequently use as a key mobile final protective fire (FPF) asset, and (2) ballistic missiles. The TOS-1A needs to be mobile due to its short effective range of just 7 km. (After 7 km, the dispersal of the fuel air explosive makes the thermobaric attack less effective, especially in unfavorable weather conditions.) We saw a TOS-2 (the TOS-1A’s successor) used in a FPF by 1st GTA early

last June 2022 near the Russian border north of Kharkiv. Last summer, 49th CAA twice employed TOS-1As against UAF breakout attempts from their Inhulets River bridgehead. One of those TOS 1A FPFs, which Russian state media showed on its evening news, was probably at a range of just 700 m. In September, October, and November 2022, during the Kharkiv counteroffensive, 1st GTA, 20th CAA, and possibly other RF commands fired at least 18 TOS-1A FPFs to stop suspected or actual UAF breakthroughs.

The RF GF expended too many of its Iskander-Ms early in the SMO, but some surface-to-surface rocket artillery brigades have since been reequipped with Tochka-U, the older, less accurate, less capable system that Iskander-M replaced. When used against operational and tactical targets, RF GF two- or three-star commanders tend to prioritize their surface-to-surface missiles (SSMs) against suspected enemy C2. Good targeting is their problem, seldom delivery.

At more tactical levels, Russian activeness in the defense is often one of their strengths, as demonstrated near Izyum last summer 2022, and around near Svatove and Kreminna this winter 2022–2023. However, Russian tactical commanders tend to get overly aggressive in the defense and order too many spoiling attacks, to the point of attriting their own forces, even to the degree where their units can no longer defend. Orders for those spoiling attacks come from higher; they are not initiated at battalions or lower. (The Troika listened to many intercepted telephonic Russian complaints of that last summer.) Around



Izyum, that ultimately resulted in disaster for the Russians in the fall. Near Svatove and Kreminna, defenses which were established after the 21 September 2022 mobilization, the RF AF just replaced expended companies and battalions with their endless supply of *mobiki*.

Russians are supremely confident in their post-mobilization military mass and their ability to quickly throw *mobik* reinforcements into UAF breaches of their defensive lines. Expect 1st GTA’s and 20th CAA’s defenses at Svatove and Kreminna this past winter to be the model for 58th CAA’s / RF Southern Group of Forces’ defense of southern Zaporizhzhia Province. Russian faith in their military mass, combined with their cultural fatalism, is why Russians are willing to fight “dumb” and continue their operations with increasingly less advanced systems and less trained units, while also accepting commensurately higher casualty rates.

However, in the 58th CAA’s defensive sector in RF-occupied southern Zaporizhzhia Province, there are some significant differences from what we have seen near Svatove and Kreminna. 58th CAA has a much broader defensive area and the 58th CAA’s span of control is much more cumbersome. In comparison, 1st GTA has mostly its own organic commands, with an added BARS reserve brigade and an added LPR brigade, defending a 50-km front. 41st CAA and 20th CAA split a 46-km defensive front north of and around Kreminna with their organic units, plus a VDV command each, and a BARS or LPR brigade. Meanwhile, 58th CAA in Melitopol is defending a

100-km front from the Dnipro River to Donetsk Province with its organic 19th MRD(-) (which only has one MRR); plus 42nd MRD, 127th MRD, and two maneuver brigades from RF Eastern Military District. There are also at least three *mobik*-manned DPR and RF GF brigades or regiments; a naval infantry regiment; a naval infantry brigade in reserve; a large contingent of PMC Wagner on the most direct avenue of approach; and additional forces at the Zaporizhzhia Nuclear Power Plant. It is unclear whether the RF GF GEN-LT commanding 58th CAA received additional TOS-1A units or ballistic missiles to augment his organic assets for such an unusually large area to defend. Such capabilities only come from CAA-level or higher.

58th CAA, back near Melitopol, appears to be the only RF GF two-star command over all those tactical units spread across their 100-km defense, which appears to be a possible single point of failure in their very centralized command structure. 58th CAA’s CP was attacked with HIMARS in January 2023, and its HQ garrison was attacked by HIMARS in late April 2023. With Storm Shadow now apparently in use, 58th CAA will likely need to move its CP even further to the rear, which will put additional strain on their already over-extended command and control.



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Five Recent Improvements to RF AF Fires. (3, 8, & 13 May 2024)

(Part 1) RF GF AAGs attacked targets to at least 120 km of operational depth.

In March 2024, RF GF operational fires finally hit both a HIMARS and two Patriot launchers, all of which were on the move. But those accomplishments have already been eclipsed. Russian successes hitting HIMARS and Patriot launchers overcame several months of trial and error caused by poor delivery timeliness, incorrect available ammunitions, and poor target studies. As described recently, these were overcome when the army artillery groups (AAGs) at certain CAAs, and possibly 1st GTA, became “networked fires” able to dial up not just their own organic artillery and attack UAVs, but also direct support attached fires pushed down from the military districts’ groups of forces. There was also a network of Iskander-Ms and on-station RF Aerospace Forces (VKS) UMPK glide bomb attacks, which together provided a better chance of the right ammunition being available at the right time.

For instance, in January 2024, a RF GF AAG correctly tracked two HIMARS launchers to their launch points, but the available Tornado-S ammunition was dual-purpose improved conventional munition (DPICM) rather than HE. The attack damaged but did not destroy the launchers.

That issue was overcome within 2 months by making a network of Iskander-Ms available as part of the AAGs’ delivery options. Even though Iskander-M surface-to-surface missile brigades are at the army level (CAAs and 1st GTA), they had traditionally been kept outside AAGs’ targeting options. More than likely, Iskander-M command authorities had previously been retained at higher command levels, and the big change now is that those permissions have since been delegated down. The 500-km range of the Iskander-M vastly improves the availability of the right ammunition at the right time to hit a target at operational depth even laterally from another command outside the assigned AO to the AAG’s CAA or 1st GTA.

The operational range of the AAGs’ deep attacks was recently extended to at least 120 km beyond the Russian LCC. The most important piece to the AAG’s operational fires improvements has been their constellations of tactical and operational recon / observation UAVs. The Orlan-30 first appeared in June 2023 and quickly became the reliable backbone of Russian fires. However, its operational limitation remains 70 km, for what are likely technical reasons. In mid-April 2024, a new, reliable observation UAV, probably the ZALA 421-16E2 (or similar version), or possibly a new Supercam UAV, extended the range of RF GF AAGs’ targeting out to at least 120 km. In the second half of April 2024, a RF GF AAG engaged at least five targets at ranges between 95 km and 120 km south of, west of, and north of Dnipro city. This was likely coordinated by the 58th GCAA’s AAG. Targets were serviced by a



mix of Iskander-M and Tornado-S munitions.

The Troika has not seen such deep operational fires capability to 120 km yet from other CAAs’ or 1st GTA’s AAGs—only in the Dnipro Valley near Dnipro city. More than likely, the current operational observation UAV limit of 120 km is both technical (probably pertaining to the UAVs’ repeater strings and/or UHF redundancy) and temporary. The 58th GCAA was reliably able to push its observation UAV constellations out to at least 120 km. At the same time, a RF AF ground station on Crimea was successfully maintaining observation UAVs (including Orlan-10s) over Odesa, 200 km away, to recon and adjust Shahed UAV, cruise missile, and Iskander-M attacks on the city.

Five Recent Improvements to RF AF Fires. Parts 2 and 3 of 5. (8 May 2024)

Drastic improvements to RF AF tactical and operational fires

In March and April 2024, concurrent with several UAF tactical setbacks (especially near Avdiivka), the RF AF demonstrated several remarkable improvements to their operational and tactical fires in various areas of Ukraine, both in targeting and delivery. These further demonstrated the Russian Armed Forces’ ability to learn and adapt. Below are parts 2 and 3 to a list and summary of five recent improvements to RF AF’s fires. Parts 4 and 5 below were posted on 10 May 2024.

(Part 2) RF GF pattern-of-life (pattern-of-activity) analysis.

Russian pattern-of-life (pattern-of-activity) TTPs likely grew out of 2 years of Russian failures erroneously attacking UAF decoys and other false targets. To put this improvement into perspective, until November 2023, the RF AF very seldom made any efforts to conduct battle damage assessments (BDA) of the targets they attacked. Until November 2023, they seldom (if ever) observed UMPK-guided bomb attack targets afterwards and, for technical reasons, those targets were limited to 60 km beyond the Line of Combat Contact (LCC). Until November 2023, Russians might use a UAV to film the UMPK impact, but then that UAV would immediately depart the location. Now the Russians revisit the targets and conduct post-attack BDA as a regular part of their targeting cycle. Until recently, Russians’ pre-attack studies of their targets were even worse, many times based off old maps, questionable HUMINT, other old information, and templates based on Russian tactics, techniques, and procedures (TTPs, Russian *taktika*).

Now, however, even at lower tactical levels, we see careful pre-attack analysis of targets based off several UAV patrols at different times of day, at different angles, combined with older imagery to determine whether a specific target is an active UAF site. Analysis is done to determine how best to attack the target, as well as when best to attack it; for example, noting when ammunition or fuel trucks visit the site or when shift changes take place. Recent likely RF GF 6th CAA AAG analysis of a





UAF fuel depot was able to determine which fuel cars on the site were full, which pipelines were active, where UAF fuel trucks were hidden, where UAF soldiers worked and garrisoned, and when the site was most active.

Earlier Russian long-range fire operations were not about effects on targets but about the quantity of targets hit, even if the targets were of low value or no value (quantity over quality). Now, however, we see RF GF and RF VDV attack UAV operator teams diligently mapping out all the UAF bunkers in a given area before an attack, with the expectation that survivors will evacuate to the next hole and perhaps to even more lucrative targets. Many times recently, we see RF AF UAV operators holding fire and not engaging survivors, but rather monitoring them and following them with the expectation that they will eventually reveal other targets. In March and April 2024, we witnessed several such examples for everything from UMPK glide bomb and long-range missile attacks at operational ranges, to artillery and attack UAV targeting at tactical ranges. Russians still occasionally attack a UAF HIMARS decoy, as they did at least once in April 2024, but such UAF successes are more a matter of Ukrainian deception skill and some luck (wind on one site made personnel decoys look active), rather than Russian inattention to pre-attack target analysis.

(Part 3) RF GF Strela-10 SEAD campaign.

As discussed in the 1 May 2024 Troika Insight (“Hunting Strela-10Ms”), over the past 2 months, the RF AF (Ground Forces, RF VDV, and GRU spetsnaz)

prioritized the destruction of UAF SA-13 Strela-10s as high-value targets (HVTs). This was akin to a form of “SEAD” (suppression of enemy air defenses) to protect their own RF AF observation/recon UAVs, the most important tools in all their targeting and delivery improvements. Simultaneously, the Russians put great efforts into safeguarding their own Strela-10s as their best counter-UAF observation/recon UAV air defense system. The Russians appear to have identified this as a key to their recent tactical UAV dominance.

RF GF electronic intelligence (ELINT) capability is likely finding and cueing general Ukrainian Strela-10 locations to the CAAs and 1st GTA. Then the RF GF’s AAGs hunt for UAF Strela-10s with their tactical observation/recon UAVs, usually Orlan-30s, to confirm and track the targets. Both sides’ Strela-10s are known to relocate frequently.

This Russian observation/recon effort is typically teamed with either Lancet-3 attack UAVs or Krasnopol laser-guided artillery for the kill, all controlled by the same CP, probably an AAG at a CAA or 1st GTA. Although this new method of SEAD has most often been conducted by RF GF, it also has become a RF GRU spetsnaz brigade niche mission as well. (GRU spetsnaz have also been hunting UAF UAV operators by remote UAV means and deception.) RF VDV east of Chasiv Yar also recently hunted and destroyed UAF SA-13 Strela-10s.

SEAD is not a Russian concept and not normally central to their operations. This is partially because their air force was



designed for long-range standoff air-launched cruise missile fires, as well as due to the Russians’ lack of integration among services. When Russians discuss SEAD, they are ordinarily speaking or writing about it in terms of U.S. and our allies’ operations at strategic levels, and how to defeat it, not about their own *taktika*. This proactive hunting for SA-13 Strela-10s is unique, especially at operational-tactical echelons.

Drastic improvements to RF AF tactical and operational fires. Parts 4 and 5 of 5. (13 May 2024)

(Part 4) RF AF employ UMPK-guided bombs as close air support.

In at least two areas of the frontline, RF GF and RF VDV are now coordinating UMPK glide bomb strikes as close air support (CAS). During the Russian conflicts in Afghanistan and Chechnya, the Soviet and Russian Air Forces were seen as unreliable because they too frequently dropped bombs on Russian soldiers or aborted missions due to air defense threats or weather. As a result, RF GF and RF VDV officers were trained by their mentors to be very skeptical of air power and to not rely on it. Russian officers, instead, were trained to depend exclusively on their artillery for fire support.

Until 2024, PMC Wagner was the only Russian force to efficiently employ tactical

air-ground operations in Ukraine. However, as UMPK precision and availability improved over the past 14 months, some RF GF and RF VDV officers gained confidence in it and, in at least two frontline areas, Russian forces are increasingly using UMPK-guided aerial bombs (Russian version of JDAM) for close tactical effects.

RF AF observation UAVs probably helped build this newfound confidence by accurately pinpointing attack coordinates for UMPK-GLONASS or GPS guidance. The RF Eastern Group of Forces near Pryiutne (5th GCAA) and south of Urozhaine (36th CAA) have been using UMPK strikes extensively to support their tactical maneuver and gradually bringing UMPK-guided bombs closer to their own forces. RF VDV 98th Guards Airborne Division attacking from east of Chasiv Yar likewise have been observed doing the same, although less frequently and not as close to Russian troops as those further south.

On 22 April 2024, video taken by RF GF soldiers in eastern Zaporizhzhia Province showed the simultaneous impacts of two UMPK-guided aerial bombs on UAF positions only about 200 m from the RF GF soldiers. The RF GF soldiers were on the radio in a trench and were aware of the inbound bombs. By the Russian soldiers’ reactions, it was also clear that it was not the first time they had been supported by RF VKS UMPK-guided CAS at a “danger close” distance from the target. The two UMPK-guided bombs were right on target. Tactically, this was one of the most significant videos that the Troika observed in more than 2 years of the SMO. This is





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because Russia has a near endless supply of dumb aerial bombs dating back to Soviet and continued Russian production, that can be converted into UMPK-guided bombs. The supply is so great because they were used so rarely in Russian conflicts since the early 1980s, yet remained in production at Cold War rates. The UMPK-guided bombs pose such a threat to the UAF that in late April 2024, the UAF launched a massive and successful UAV strike on the RF VKS airfield at Kushchevskaya, Russia, where RF VKS SU-34 and SU-35 aircraft were based, along with UMPK storage. Post-attack video showed heaps of unattached UMPK glide kits that were damaged or destroyed in the strike. Nonetheless, the UAF has no effective defense or counter to UMPK attacks.

(Part 5) RF AF's "joint" RF VKS-RF GF anti-radar campaign.

On 5 March 2024, a combination of a RF Aerospace Forces (VKS) Kh-35U air-launched cruise missile launched from a Su-34 fighter bomber and a RF GF Iskander-M ballistic missile attacked and destroyed a UAF S-300PS launcher and its 5N63S illumination and guidance radar site near Sloviansk. The target was most likely discovered and cued by RF GF ground ELINT or RF VKS aircraft-collected ELINT, or both, and then confirmed and videoed most likely by a RF GF Orlan-30 recon UAV. Altogether, for Russians, it showed a remarkable level of RF Ground Forces and RF Aerospace Forces "joint" cooperation and integration, in both targeting and delivery.

Throughout the first 2 years, both the RF GF and RF VKS conducted their own

"stovepiped" ELINT counter-radar missions, but the campaigns were not integrated and did not inform one another. The RF VKS would attack radar signatures but get no BDA feedback or even attempt it because they lacked the tactical-operational recon/ observation capability that the RF GF had gradually built and improved, based on the Orlan-30, since June 2023. The RF GF has since added longer-range recon/ observation capabilities.

RF VKS and the General Staff more than likely were reliant on their national overhead imagery and commercial solutions. But, without control of their own means to conduct immediate post-mission BDA, UAF electronic and decoy deception no doubt got the better of the RF VKS. Throughout 2022 and 2023, the Troika saw Russian complaints about this.

The RF VKS' main recent radar attack contribution has been the Kh-35U air-launched cruise missile, an export model of the Kh-35 air-launched anti-ship cruise missile adapted to attack land targets. This complements the RF GF's recon/observation assets and their Iskander-M and Tornado-S kill assets. Oddly though, it is not an anti-radiation (radar-homing) missile (ARM). Instead, it is highly regarded by the Russians for its 1-m accuracy.

"Joint" RF VKS-RF GF missions, like the one described above, probably started in early February 2024, but in March and April they became common and extremely productive for the Russians. On 25 March 2024, a RF GF Orlan-30 recon UAV confirmed the exact location of a UAF P-18 early warning radar (Russian name:



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"Terek;" Ukrainian: "Malachite;" NATO: "Spoon Rest"), which a RF VKS Kh-35U cruise missile then attacked and destroyed. The use of a Kh-35U was confirmed by Russian sources. By 12 April 2024, Russian social media videos showed what the RF AF claimed was the eighth UAF P-18 Malachite radar destroyed by a Kh-35U cruise missile since early February 2024, when the RF VKS reportedly first started using the Kh-35U for anti-radar missions. (The most recent such attack on a UAF P-18 that the Troika is aware of happened on 5 May 2024, when a Kh-35U destroyed another radar near Fedorovka, northeast of Kharkiv.) The 12 April mission was interesting because the radar was attacked by a Kh-35U, but the launchers were attacked by a RF GF ballistic missile. While the exact munition used against the launchers was not discussed, it was likely a 300-mm Tornado-S missile or possibly an Iskander-M. Two days later, on 14 April 2024, the RF MOD published UAV footage of a Kh-35U air-launched cruise missile destroying a UAF IRIS-T's TRML-4D radar, while a RF GF Iskander-M attacked the IRIS-T's launchers.

After some strangely open Russian debate about whether these UAF targets were decoys, the attack on the radar was assessed as a direct hit because it burned in a manner uncharacteristic for a mock-up. The launcher, which did not receive a direct hit, did not detonate, and Russians assessed that the IRIS-T missiles themselves were shielded by their cannisters. As referenced above, before November 2023, the Russians seldom even attempted BDA on a UMPK or other RF Aerospace Forces attack. However, by

April 2024, parts of Russian post-attack BDA conversations were appearing in social media and discussed lessons learned to improve future attacks on specific targets, like IRIS-T launchers. *(NOTE: There is somewhat of a contest among Russian units to post their best operational highlights on social media. Sometimes the attached narratives include operational details. A year before, that would have been unfathomable, although previously, PMC Wagner and the UAF provided such operational details.)*

The Troika has always described the Russian concept of "joint" as "what the RF Aerospace Forces and the RF Navy can do to support the RF Ground Forces' missions." The RF GF are the Russian military's most dominant service by far in size, culture, tradition, and power. Every Chief of the General Staff in Soviet and Russian times has been a Ground Forces officer, and it will likely always be that way. More proof to that point: until recently, even the Commander-in-Chief of the RF Aerospace Forces was a Ground Forces officer (e.g., GEN Sergey Surovikin). But the Russian "joint" integration and targeting accomplishments over the past 3 months described above instead served the RF Aerospace Forces' missions by clearing lanes for improved RF VKS Shahed-136/ Geran-2 UAV and air-launched cruise missile attacks deeper into Ukraine.

As described in five parts over the past 10 days, the recent "joint" RF AF fires accomplishments no longer reflect the Russians' stovepiped targeting and delivery bumbling during the first 2 years of the SMO. Such continuing Russian military





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adaptations bode poorly for Ukraine and its partners.

The Russian Navy has played an important role in the Special Military Operation on both land and sea. Russian naval infantry units have been key to several ground operations in Ukraine but have suffered horrendous losses. And Russia's Black Sea Fleet, which was supposed to secure the southern flank and protect Crimea, has been attritted by an unmanned Ukrainian navy.

Russia's depleted naval infantry. (23 November 2022)

By early November 2022, once the RF 810th Guards Naval Infantry Brigade / Black Sea Fleet fled from northeast Kherson Province back south across the Dnipro River, the RF AF were left, at least temporarily, with just two naval infantry brigades still fighting. The Russian Navy started the special military operation with all five brigades and one regiment fighting in Ukraine. The 810th Guards will now likely either defend their Crimean home (the 810th was always based in Sevastopol, even before 2014), reinforce in Zaporizhzhia Province, or more likely, eventually go to support the 155th Guards and 40th Guards Naval Infantry Brigades south of Vuhledar in Donetsk Province. Russian naval infantry, like the VDV, has strong service traditions, including mutual support among commands. Over the last 9 months of fighting, the 810th Guards already incorporated the surviving remnants of the 336th Guards Naval

Infantry Brigade from the Baltic Fleet (Kaliningrad) and the 177th Naval Infantry Regiment from the Caspian Flotilla into its formation.

Since last summer (2022), the RF 155th Guards and 40th Guards Naval Infantry Brigades, Russia's two Pacific Fleet marine brigades, have fought integrated, probably as the equivalent of one understrength naval infantry brigade. They currently fight under the 155th Guards' leadership and flag but still maintain separate camps, 9 km apart, 11 km south of Pavlivka. Together as the 155th Guards, along with "the Donetsk People's Republic" Kaskad special operations detachment, they have attacked north and captured the southern half of Pavlivka after taking well more than 300 losses (KIA and evacuated WIA) in the first week of November 2022. The northern half of Pavlivka is still contested. The combat-hardened Ukrainian 72nd Mech Brigade stands between the RF 155th Guards and their subsequent objective, Vuhledar, just northeast of Pavlivka. Vuhledar, for whatever reason, has been the objective of Russia's naval infantry brigades since June 2022, first for the 810th and now for the 155th.

The RF 155th Guards and 40th Guards Naval Infantry Brigade are both equipped with the BMP-3F (the new swimmable naval infantry version of the BMP-3 armored personnel carrier) and T-80BV tanks. The 155th from Vladivostok deployed to Belarus more than a year ago (or) early last fall. The 155th Guards deployed first because they had already fielded their BMP-3Fs. The Kamchatka Peninsula-based 40th Naval Infantry



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received their BMP-3Fs last fall and then put them on landing ships to the mainland of Far Eastern Russia before the brigade was put on the Trans-Siberian Railroad (as the 155th had done months earlier) and moved seven time zones further west to Belarus. There they joined the RF Eastern Group of Forces for their initially doomed attack from southeastern Belarus. Both brigades attacked through the Hostomel-Bucha-Irpin gauntlet. Both brigades suffered so many casualties that they were among the very first RF AF units to receive the honorific "Guards" title by Presidential Decree in March 2022, something rarely awarded since World War II ("the Great Patriotic War").

Russian naval infantry brigades have two tables of organization, one for Pacific Fleet marine brigades (155th Guards and 40th Guards), which have a top-end strength of about 1,700 personnel, and another for the western naval infantry brigades (the 810th Guards, the 336th Guards, and the 61st Separate Naval Infantry Brigade from the Northern Fleet in the Arctic), each of which have an authorized strength of 2,000 marines. Western brigades have more naval infantrymen because they have BTR-82A-equipped naval infantry assault battalions. BTR-82As lack organic antitank systems and need to dismount them, which is also why they also have more squads. The BMP-3F's turret fires the Bastion (AT-10) antitank guided missile (ATGM) and the Russians apparently believe that the BMP-3F's much greater firepower allows them to reduce the number of assault battalions to just one per Pacific Fleet brigade.

155th Guards and 40th Guards Naval Infantry Brigades:

The 155th Guards Separate Naval Infantry Brigade's approximate, original "MTOE" (pre-SMO) follows. The 40th Guards' is very similar.

- HQ (about 17 officers) plus a commandant's company (CP security)
- 1 naval infantry battalion (BMP-3F)
- 1 air assault-capable battalion (unknown vehicle system, RF units always have transportation)
- 1 recon battalion (BMP-3F)
- 1 T-80 BV tank battalion
- 1 SP 2S1 122-mm howitzer battalion
- 1 ADA battalion
- 1 support battalion ("MTO")
- 1 BM-21 MRL battery
- 1 120-mm mortar battery
- 1 air assault combat engineer company
- 1 AT company
- 1 flamethrower company (RPO-A Shmel shoulder-fired thermobaric-delivery systems)
- 1 signal company
- 1 EW company
- 1 maintenance company
- 1 NBC platoon
- 1 FDC platoon (always separate from the artillery battalions and MRL and mortar batteries)

The 155th Guards Naval Infantry Brigade seems to have turned in all, or most, of their BTR82As. In many recent videos of the 155th Guards and 40th Guards at Pavlivka, no BTR-82As ever appeared. The 155th Guards received their T80BVs in 2019. Like most RF AF units, they were likely at least 10 percent understrength on 24 February 2022 with about 1,500





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marines. RF naval infantry has no organic air assets.

By late May 2022, both depleted brigades were replenished with replacement marines and volunteer sailors from the Pacific Fleet and rejoined the fight near Popasna. The 155th Guards and 40th Guards made the RF AF's first assaults toward Bakhmut in June. By late July 2022, both brigades had probably been reduced to about 60 percent strength and only fought alongside one another likely at the scale of a battalion. Initial losses in February and March of 2022 had been disproportionately combat arms (naval infantry, recon, combat engineers, forward observers [FOs], and tankers). That loss of experience and expertise likely resulted in even higher losses through the summer. In July, the 155th Guards Naval Infantry Brigade moved south of Vuhledar and was reinforced by the Tiger Battalion, approximately 350 mostly older veteran reservists. This helped offset the brigade's depleted strength. In the summer, they also added an unknown number of Pacific Fleet *kontraktnik* sailors who were impressed into the 155th Guards Naval Infantry. From July until September, they lost another 52 enlisted marines (KIA and permanently evacuated WIA) as well as eight officers, all south of Vuhledar.

The full impact on the RF Naval Infantry

By October 2022, the 40th Guards Naval infantry Brigade was fully incorporated into the 155th Guards Naval Infantry Brigade's operations like a subordinate unit. Within a month, the 155th Guards had at most about 850 marines, including a battalion of

40th Guards. In the first days of the attack at Pavlivka (29–31 October 2022), as reported by Russian sources, they immediately lost 63 marines. In the next first 4 days of November, Russian media accompanying the 155th Guards at Pavlivka reported that the brigade lost 300 more marines (KIA and permanently evacuated WIA) and that the 155th Guards Naval Infantry Brigade had sunk to 50 percent strength in equipment as well as personnel. Part of that loss was a fratricide event when a naval infantry element withdrew south of Pavlivka and was accidentally engaged by other elements of the brigade. When naval infantrymen wrote a letter of protest to the governor of their home region of Primorye in Russian Far East, the fratricide event was one of their main complaints they wanted investigated.

Recent videos showed a potentially even bigger problem for Russian naval infantry. South of Pavlivka, a Ukrainian National Guard Stugna-P (anti-tank missile) unit got on the west flank of a Russian marine company team attacking north. In the video, the Stugna-P destroyed at least five BMP-3Fs, of which at least three engagements were catastrophic kills. The BMP-3Fs' Shtora-1 APS (if employed properly), explosive reactive armor (ERA), and spaced armor did not apparently provide the expected improved survivability associated with regular BMP-3s. It is unknown whether the BMP-3F's amphibious technical specifications may have compromised some of the IFV's protection, a higher priority now in a much-depleted force. The larger, possibly insurmountable, problem for the RF Naval Infantry is its personnel losses across an



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organization that had only 12,500 marines when the SMO started. In 9 months, the Russian Naval Infantry has likely lost two generations of marine leadership. The 810th Guards alone lost three brigade commanders in the first 6 months. (One was an interim commander before a permanent commander could be appointed.) The 810th Guards also lost at least two battalion commanders. Imagine how many company and platoon commanders were lost across the RF Naval Infantry, and the overall impact on the Russian marine force's future.

RF Navy Warships destroyed. (6 March 2024)

During the Special Military Operation, the Black Sea Fleet lost:

1. *Moskva*, cruiser, sunk on Black Sea west of Crimea by UAF Neptune antiship missile, 14 April 2022
2. *Rostov-on-Don*, Kilo-class submarine (Kalibr-launcher), destroyed in a Sevastopol dry dock by UAF cruise missiles, 12 September 2023
3. *Askold*, corvette (capable of eight Kalibr-launchers; one set x eight vertical launching systems [VLS]), destroyed at a Kerch pier by one UAF cruise missile, 4 November 2023
4. *Ivanovets*, corvette (no Kalibr-launch capability), sunk just west of Crimea by Ukrainian unmanned surface vehicles (USVs), 31 January 2024
5. *Sergey Kotov*, patrol ship (capable of eight Kalibr-launchers; two sets x four



VLS), sunk by Ukrainian USVs, 5 March 2024

RF Navy landing ships destroyed during the SMO

1. *Saratov*, amphibious ship, sunk by UAF Tochka-U ballistic missile at a Berdyansk pier, 24 March 2022
2. *Novocherkassk*, amphibious ship, destroyed by UAF cruise missile at a Feodosiya pier, 26 December 2023
3. *Minsk*, amphibious ship, heavily damaged, most likely destroyed, by UAF cruise missiles in a Sevastopol dry dock, 12 September 2023
4. *Cesar Kunikov*, amphibious ship, sunk by Ukrainian USVs, south of Crimea, 14 February 2024

Crimea, the RF Black Sea Fleet, and the Law of Unintended Consequences. (8 March 2024)

Russia had many motives for invading Ukraine in 2014, but a major one was to secure access to Crimea's extensive warm water ports. Coveted by Peter the Great (and later conquered by Catherine the Great and her lover GEN Grigory Potemkin), the Russian and Soviet Black Sea Fleet has been headquartered in Sevastopol, Crimea since 1783. After Ukraine gained its independence in 1991, the RF Black Sea Fleet remained in Sevastopol and many other Crimean facilities under a long-term lease agreement. Fear that a post-Euromaidan Ukrainian government might not renew the lease was a major factor in Russia's 2014 invasion that continues today. The



Russians’ immediate attempts to destabilize and politically conquer Donbas and other parts of Ukraine by its “indirect actions” (which included the use of RF AF BTGs and other combat forces) showed in fact that Russia’s appetite—as early as 2014—was much more than just Crimea. Instead, it included Luhansk and Donetsk Provinces and possibly Kharkiv and Odesa, where RF government-assisted groups were attempting to stir opposition to the Kyiv government.

Two years into the Special Military Operation, however, the RF Black Sea Fleet’s position in Crimea is precarious. In response to previous Ukrainian attacks, much of the Black Sea Fleet has already relocated to the port of Novorossiysk in the eastern Black Sea. Novorossiysk may now be out of range of most Ukrainian antiship weapons, but it is also further from targets in Ukraine. The port and its infrastructure are also far inferior to Sevastopol and other Crimean ports. In the wake of the sinking of the *Sergey Kotov*, some prominent Russian milbloggers have called for the Black Sea Fleet to vacate the Black Sea entirely. Russia still controls Crimea, but its utility as a naval base is quite diminished. The Russian word for “irony” is a cognate – ironiya (ирония).

Are adaptations slower in the RF Navy?

As the Troika frequently notes, the RF AF is a thinking, learning, adaptive organization, just at a different pace and in a uniquely Russian manner. Throughout the SMO, the RF AF have made many successful adaptations, particularly in the RF General Staff, Ground Forces, the

Airborne Forces (VDV), and the Aerospace Forces (VKS). In contrast, the RF Navy (VMF) seems to have been much slower to adapt, much less successful, and visibly paying a very high cost. The RF Navy currently operates as though it still “owns” the Black Sea, seemingly surprised every time its ships or facilities are attacked. The RF Navy’s only real response to Ukraine’s resurgent antiship and long-range fires capabilities has been to withdraw its ships further from their home ports. Meanwhile, with increased experimentation with USVs, Ukraine continues to improve its systems, hone its TTPs, and push itself to the forefront of USV warfare. Using a unique combination of multivariant cruise missile technologies (including antiship) and targeting procedures, Ukraine has managed to destroy nine RF Black Sea Fleet ships without a single warship. Meanwhile, the RF Navy does not seem to have any seaworthy answers for Ukraine’s USVs. This could reflect Russia’s Ground Forces-centric military—a very much one-sided priority toward ground over air and sea efforts. Alternatively, it could be an indicator of just how challenging USVs and long-range cruise missiles are to modern navies. And the ensuing operational paralysis is only worsening in the RF Navy as the operational environment evolves.

Special Topics

The mutiny executed by Yevgeny Prigozhin and members of his private military company, Wagner, was a stunning insurrection, the details of which will only fully come to light with time. Following is the Troika’s “hot wash” summary of the event and attempt to understand what happened and what it means. These observations were made prior to the death of Prigozhin in an airplane crash on 23 August 2023.

PMC Wagner’s “March for Justice.” (26 June 2023)

Summary.

In roughly 36 hours from Friday morning to Saturday afternoon, 23–24 June 2023, Wagner CEO Yevgeny Prigozhin systemically rebutted every single justification for the Special Military Operation, declared war on the RF Defense Minister and Chief of the General Staff, led his forces on a self-proclaimed “March to Justice,” captured several co-located RF AF Headquarters, downed up to seven RF Aerospace forces aircraft (killing several pilots and crew members), and came within 200 km of Moscow, before standing down and agreeing to exile in Belarus.

The enemy of my enemy is...still a bad guy

Yevgeny Prigozhin is a career criminal (he served 9 years in a Soviet prison on multiple charges). He leads an international crime syndicate, which includes a private

military company that has committed war crimes on three continents. He proudly metes out non-judicial punishment with a sledgehammer. However, in the past year, he has rebranded himself as a competent, caring, patriotic military leader, visiting his troops at frontline positions, attending military funerals, personally delivering “coffin money” (military death benefits) to surviving families, and condemning corruption and incompetence in the RF AF. This new public persona has made him very popular inside of Russia. He may well be sincere in his patriotism and concern for his mercenaries, but it is important to remember that first and foremost, Prigozhin is a criminal who leads a criminal organization. He is primarily about Yevgeny Prigozhin.

Background: Prigozhin vs. Shoigu

Prigozhin’s feud with RF Defense Minister Sergei Shoigu dates to at least 2016, when the Wagner company won very lucrative oilfield security contracts in Syria that Shoigu reportedly wanted for himself. Shoigu, who has been Minister of Defense since 2012, was also at odds with Prigozhin about his management of several extremely lucrative contracts his companies had won with the RF MOD for everything from military meals to heating of RF MOD and Armed Forces facilities.

In 2018 in Syria, Shoigu retaliated by pulling previously supplied modern weapons and equipment from PMC Wagner forces in Syria and replacing them with outdated kit. On 7 February 2018, hundreds of Wagner troops were killed by U.S. military and Syrian Democratic Forces at the Battle of Kasham. MOD leaders in



Syria famously refused to acknowledge that the Wagner troops were there under Russian supervision. Wagner leaders blamed the MOD for abandoning them.

In the early spring of 2022, shortly after arriving on the battlefield in Ukraine, Prigozhin and his allies began to publicly disparage RF MOD leadership (primarily Shoigu and RF Chief of the General Staff GEN Valery Gerasimov). He accused them of incompetence, corruption, and failure to adequately support PMC Wagner, particularly with artillery ammunition. As time went on, Prigozhin's complaints became increasingly vitriolic and profane. In the spring of 2023, during the battle of Bakhmut, he was posting as many as three speeches per day on his Telegram channel, extremely critical of RF military leadership, but never directly mentioning the supreme commander, Vladimir Putin. In some ways, Prigozhin resembled a 1980s American radio "shock jock." At first, people tune in to hear what incredibly offensive thing he will say next. But after a time, it becomes mundane and no longer shocks. This was roughly the state of play by spring 2023. On 8 June, Shoigu issued an order requiring all troops in private military companies to sign contracts directly with the MOD. PMC Wagner is only one of many private military companies, but the order was clearly an attempt to rein in Prigozhin.

Prigozhin's epic rant on 23 June 2023

On the morning of 23 June, Prigozhin issued another epic rant. In this 30-minute speech, he systematically dismantled every justification that Putin gave for going to war

in February 2022: Ukraine had not been bombing the Donbas for 8 years, NATO was not about to attack Russia via Ukraine, there was no need for demilitarization or denazification, and the RF AF military leaders—particularly Shoigu and Gerasimov—have been lying to Putin all along. Casualties in the SMO in Ukraine are much higher than reported. Russia is not advancing in Ukraine, it is retreating.

The RF AF have not destroyed vast numbers of Western equipment as reported to Putin. Shoigu, Gerasimov, and Russian oligarchs deceived Putin into starting the war for personal gain—Shoigu, to get a Marshal's star (five-star military rank), and the oligarchs, to enrich themselves. Prigozhin did not mention Putin at all in his rant, and carefully placed blame for failure in Ukraine on Shoigu and Gerasimov. However, he rebutted all the points that Putin has made for the past 18 months regarding the war and left the impression that Putin must be incredibly gullible to be deceived by so many, about so much, for so long.

Attack on the PMC Wagner camp and the "March for Justice"

Several hours after his morning rant on 23 June, Prigozhin accused the RF MOD of artillery and helicopter-launched missile attacks on a PMC Wagner camp in Ukraine. RF MOD denied the claim. A video released on Wagner-affiliated Telegram channels purporting to show the aftermath of the attack was inconclusive, although it did show damage to trees from artillery of some sort. Following the alleged attack, Prigozhin filed an application with the Investigative Committee of Russia, in



which he accused Shoigu and Gerasimov of incompetent leadership of the RF AF. He also convened his council of commanders, who decided to initiate a "March for Justice" to remove Shoigu and Gerasimov from power and then return to the battlefield in Ukraine. Prigozhin stressed that PMC Wagner would not interfere with the operations of any other ministries in Russia. He announced PMC Wagner's intention to seize Rostov, a Russian city of 1.2 million and home to the HQ of the RF AF Southern Military District (SOMD), the HQ of the Joint Group of Forces (JGF) overseeing the SMO, and a major logistics hub for the war in Ukraine.

Attempted intervention

While the Wagner force was enroute to Rostov late Friday night and early Saturday morning, two Russian MOD generals with ties to Wagner made speeches urging them to stop. GEN Sergei Surovikin, the former commander and current 1st Deputy of JGF, implored Wagner "Don't play into the hands of the enemy. Stop the convoys! Turn around and go back! Let's resolve our problems through peaceful means." Prigozhin had spoken positively of Surovikin on several occasions, who was considered to be sympathetic to Wagner, and more responsive than others to their support requirements. Next came Deputy Director of the GRU GEN-LT Vladimir Alekseev, who noted that he had worked closely with PMC Wagner, accomplishing many military missions from 2014 to 2016. He warned that, however noble their intentions might be, PMC Wagner was attempting a coup, and "stabbing the country in the back." He urged them to

"come to their senses" and stand down. Neither speech had any effect. Meanwhile, the RF FSB opened a criminal case against Prigozhin and called for his detainment. This was followed on the morning of 24 June with RF Interior Ministry police special tactics personnel (OMON) and Rosgvardia security forces raiding the PMC Wagner Center in St. Petersburg.

Karma is a "цыка"—a "polite people" redux

By daybreak on Saturday, 24 June 2023, tanks, BMPs, and other military vehicles, along with many armed soldiers appeared on the streets of Rostov, particularly around the HQ SOMD building. In scenes reminiscent of Crimea in February 2014, it was hard to tell who was who, and whether the soldiers and equipment were PMC Wagner forces there to seize government buildings or regime forces there to defend them. Photos and videos showed PMC Wagner vehicles on one side of the street and RF Military Police vehicles on the opposite side. Ultimately, Wagner forces prevailed with no observed violence, and Prigozhin conducted an impromptu sit down with GEN Alekseev and RF Deputy Minister of Defense GEN Yunusbek Yevkurov. (General Surovikin, who had filmed his video appeal hours earlier, was nowhere to be seen, nor was GEN Gerasimov, whose operational HQ is Rostov but is thought to still spend much of his time in Moscow).

Prigozhin mocked and berated both defense leaders, and said he was there for Gerasimov. The regime generals protested that Gerasimov was not there in Rostov.





Prigozhin said in response that he would go to Moscow to get him, but in the meantime, PMC Wagner would occupy Rostov. Both generals tried to talk Prigozhin down, with Alekseev claiming that, “in Kyiv, they’re popping champagne and having a party now,” meaning that Wagner’s actions were pleasing to the enemy. Prigozhin retorted that Shoigu and Gerasimov were responsible for the military failures in Ukraine, and that was why he was taking action to remove the military leadership so that the war could be prosecuted properly. Prigozhin later announced that all Rostov’s military facilities, including the military airfield, were controlled by PMC Wagner. He said there were no issues, and everything was functioning normally. The RF MOD issued an appeal directly to the PMC Wagner fighters to surrender, claiming that they had been criminally dragged into an armed rebellion. However, several hours later, Wagner forces, reportedly led by founder and military deputy Dmitri Utkin, began a road march north to Moscow.

Putin’s speech

At 1000 on Saturday, 24 June 2023, Putin broke his silence and addressed the mutiny in a televised national address to “citizens of the RF, personnel from the armed forces, law enforcement, and special services.” He also addressed “those who have been misled through deception or threats...into an armed mutiny,” clearly appealing to rebelling Wagnerites. Putin reminded his audience that Russia is currently engaged in an existential battle against “neo-Nazis and their masters” (here he is referring to Ukraine and U.S./

NATO, not Prigozhin and PMC Wagner). Putin reiterated that Russia is in a global conflict with “the West,” which is collectively deploying all instruments of power against Russia and is trying to literally erase Russia’s 1,000-year-old civilization from the face of the earth. All of Russia’s resources are required to defeat Western aggression, and any internal dissension will be used by Russia’s enemies to undermine and weaken Russia. He characterized the mutiny as apostasy, and a “stab in the back” of the Russian people (coincidentally, GEN Surovikin had used the same idiom in his speech some 8 hours earlier). He compared the current situation to 1917, when internal dissension during war “caused the collapse of the state and the loss of vast territories,” and resulted in a tragic civil war, during which “foreign powers took advantage of a weakened Russia.”

He then turned the conversation to PMC Wagner, stating the country was facing betrayal by personal ambitions and interests leading to treason. He said the name and glory of units such as PMC Wagner, which liberated Soledar and Artyomovsk and gave their lives for Novorossiia and the unity of the Russian world, were also betrayed. Putin declared that he would take any and all steps necessary to defend the Russian state. Those responsible for the mutiny will suffer harsh punishment. Orders had been issued and “antiterrorist measures” implemented in and around Moscow. Those responsible for the rebellion will be punished, but those who were coerced or tricked into joining still have time to quit and escape punishment.



Later, Putin’s plane left Moscow for St. Petersburg, Putin’s old power base. Presidential spokesman Dmitri Peskov vehemently denied that Putin had fled to St. Petersburg, which to some Russia watchers indicated that he probably had.

Chechens to the rescue

Having been betrayed by one of his bannermen, Putin called on another—head of the Chechen Republic GEN-COL Ramzan Kadyrov. Kadyrov announced that his Akhmat battalion would leave Ukraine and liberate Rostov from the Wagner forces. Russian social media showed scenes of a packed Rostov train station, as civilians attempted to flee a possible Wagner-Akhmat showdown in the city. The Akhmat battalion made it to Rostov quickly, but their column waited outside the city, citing traffic jams and roadblocks. The battalion later filmed its dramatic arrival; however, their actual location was geolocated to empty roads and abandoned roadblocks at Kolomna in the Moscow region.

Lukashenko deal and standdown

Then, just like that, it was over. Prigozhin announced via audio message on his official Telegram channel that he had made his point and wanted to avoid bloodshed (the multiple aircraft shootdowns apparently do not count), so Wagner was standing down. Russian state media announced a deal brokered by Belarusian President Aleksandr Lukashenko, in which Prigozhin would cease his mutiny, return his forces to Ukraine, and then accept exile in Belarus. Charges against him and his men would be dropped. The Troika has yet to see text of

said deal (and this probably will not ever be released). There are many conflicting reports about who agreed to what (e.g., some reports have Shoigu and Gerasimov being replaced, which was Prigozhin’s original demand, other reports directly contradict this). However, just as quickly as it started, the Wagner mutiny ended. The PMC Wagner convoy approaching Moscow turned around, and Prigozhin and his Rostov group left that city under police escort, to cheering, pro-Wagner crowds. When the Rostov police returned from their escort mission, they were mocked and booed by an angry mob. Prigozhin, who previously could not keep his mouth shut and posted near daily video rants for months, has been very quiet since leaving Rostov.

Initial observations

The Troika admits to being a little baffled by the way this event played out, specifically, why Prigozhin agreed to stand down when he did. We suspect that this strange interlude might not yet be over, and that we are missing some key information. We will offer some thoughts and deeper insights later, but for now, here are some initial observations.

- PMC Wagner demonstrated again that it is, or was, the most competent Russian military unit. Although Wagner met little resistance beyond some air attacks, its units executed complex military operations quickly and competently, road marching to Rostov and seizing multiple RF AF HQs and garrisons, and then moving nearly 800 km toward Moscow, bypassing





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obstacles and capturing military facilities enroute.

- As noted above, PMC Wagner faced very little resistance. The colocated SOMD and JGF HQs appeared to surrender without a fight. These were rear areas and headquarters, not tactical units, but the RF AF had advance notice of Wagner's approach and had plenty of time to interdict and/or mount a defense of their facilities. The march to Moscow was, similarly, largely unopposed. RF regime forces erected barriers (dump trucks full of sand) and dug antitank ditches across highways, but these obstacles were not defended and were easily bypassed by the Wagner columns.
- Most security forces encountered by Wagner (these would be primarily FSB, Rosgvardia, and Interior Ministry units) appeared to stand aside as Wagner moved north.
- The RF Aerospace Forces (VKS) performed terribly, losing multiple aircraft to Wagner, including an IL-22 airborne command post with its crew of eight, and two specialized EW Mi-8 helicopters. For their losses, the VKS seemed unable to inflict any meaningful damage to Wagner forces, including being unable to effectively strike large vehicle columns traveling on major paved roads in daylight with clear skies and good weather. (They were, however, successful in hitting a civilian bus and causing other cars to overturn on the road as a result of the impact.)
- GEN Surovikin appeared to have fled the SOMD HQ. If Gerasimov was there, he must have fled as well. Deputy

Minister of Defense GEN-COL Yunis-bek Yevkurov and GRU Deputy Director GEN-LT Vladimir Alekseev did not appear to organize any kind of defense of the compound and instead greeted and met with Prigozhin outside, where the meeting could be filmed. In their parley with Prigozhin on that Saturday morning, they did not quite appear to be prisoners, but they did not appear to be free either.

- There were a lot of military-aged civilian Russian males on the streets of Rostov during the Wagner occupation. They seem to have avoided conscription and/or mobilization thus far.

What does it all mean? Impacts and outcomes. (28 June 2023)

This story is too crazy to believe—except it actually happened. There are often many Russian truths—much like a traditional Russian stacking doll (matryoshka). Just when you think you have discovered the final truth, there is another one hidden inside it, smaller, but just as detailed as the others.

Two coups in Russia—a historical perspective.

1991 Coup vs. Gorbachev

In August 1991, during what turned out to be the final months of the USSR, a group of hardcore Communists led by the Vice President, Gennady Yanayev, and supported by much of the USSR's top leadership (including Defense Minister Yazov), sought to overthrow Mikhail Gorbachev, reverse his reforms, and save the collapsing Soviet empire. The conspirators were initially successful in



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seizing control of the state apparatus, and the KGB arrested Soviet President Gorbachev at his vacation home in Crimea. However, they failed to arrest Russian Soviet Federated Socialist Republic (RSFSR) President Boris Yeltsin, who organized resistance from the Russian Parliament and was supported by tens of thousands of demonstrators. Ultimately, the bulk of the armed forces refused to intervene on behalf of the coup leaders, and the attempted coup was defeated. The coup leaders were arrested and imprisoned. Gorbachev was released from house arrest and resumed his duties as President, but he was mortally wounded (figuratively). Post-coup, he lacked any real authority.

Yeltsin was the real winner of the coup, as he emerged a national and international hero. In September 1991, the USSR recognized the independence of Lithuania, Latvia, and Estonia (all had declared it the year prior). On 1 December 1991, 91 percent of Ukrainians voted for independence, with the referendum passing by majority vote in every oblast, including Crimea, Luhansk, and Donetsk. The leaders of the three Slavic republics (Russia, Belarus, and Ukraine) seceded from the USSR on 8 December 1991, effectively ending it. On 25 December 1991, 4 months after the coup, the Soviet flag was lowered from the Kremlin, and the USSR was no more.

Two interesting bits of trivia related to the current situation: (1) Gorbachev was on vacation at the time, in Crimea. He was arrested by the KGB and held there until the coup ended. (2) A motor rifle company

from the 2nd GMRD was one of many military units dispatched to block key intersections in Moscow. They were involved in an altercation with anti-coup demonstrators in a tunnel on the Garden ring in Moscow, and three of the demonstrators were killed. The commander was arrested, charged, and detained for several months before being pardoned by Boris Yeltsin himself, after which he was promoted to major. He continued his military service, rising to the rank of General. His name is Sergei Surovikin, and on Friday night he recorded a video appeal to Wagner mutineers, urging them to standdown.

1993 Coup vs. Yeltsin

Two years later, Yeltsin found the tables turned. As President of the newly independent Russian Federation, he was having problems with his legislature (the Duma), so he dissolved it. He intended to rewrite the RF constitution, which was a carryover from the USSR, and elect a new legislature. The parliament refused to go and responded by impeaching Yeltsin and barricading itself in the parliament building, known as the "White House" in Russia. After 10 days of street fighting, the Russian Armed Forces shelled the White House, and Airborne Forces (VDV) assaulted and cleared it. Yeltsin was again the winner. This time, he used his victory to rewrite the constitution, giving more powers to the executive branch at the expense of the legislature.

Lessons of 1991 and 1993

While it is safe to say that Vladimir Putin would prefer no coups or rebellions, given



the choice, Putin would prefer to be Yeltsin in 1993 than Gorbachev in 1991. Historical comparisons are always dangerous, but in both cases, the side that controlled the means of violence won. In both instances, the bulk of the armed forces supported the status quo power over the coup plotters. To survive, Putin needs the loyalty of the armed forces. This is why he selected Sergei Shoigu as his Defense Minister more than 10 years ago (!). It is why he likely keeps Shoigu and GEN Valery Gerasimov (also appointed in November 2012) around, despite their poor performance in Ukraine. For Putin, loyalty is more valuable than competence. If he does fire Shoigu, whether because of Prigozhin's protests or Shoigu's incompetence, the first selection criteria for a replacement will be loyalty to Putin. Many reports are stating that the governor of Tula Oblast, Aleksei Dyumin, is a leading candidate to replace Shoigu. As a former director of security for Putin, he would seem to meet the loyalty criteria.

Impact: Tactical and operational

Short answer—there will be no immediate tactical or operational impact resulting from PMC Wagner's rebellion. No RF AF military units appear to have moved from their previous defensive positions prior to Saturday, 24 June 2023 (other than the Chechens, who are of dubious utility anyway and moved from Chechnya, not Ukraine). The SOMD and Joint Group of Forces HQs may have lost some focus after they were captured, but Prigozhin was quick to reassure that Wagner was in no way interfering with RF AF operations in Ukraine. Indeed, Russia launched major

missile and drone attacks on Ukrainian cities on Friday, Saturday, and Sunday nights, 23–25 June (probably already planned), indicating that the war effort was proceeding apace. Russian soldiers in Zaporizhzhia Province and on both sides of Bakhmut, and near Svatove and Kreminna continue to resist and even sometimes attack. There were no interruptions to RF AF military operations in Ukraine.

The RF AF will have lost a powerful tool. However, we should not overestimate PMC Wagner's impact on the battlefield. Superior culture, tactics, and leadership notwithstanding, PMC Wagner still took nearly 10 months to seize a small, strategically insignificant city (Bakhmut), taking thousands of casualties in the process, including an unknown number of experienced "M-Class" mercenaries. PMC Wagner had already lost its prisoner pipeline, and its real strength is probably well below Prigozhin's claimed 25,000. Measured against the overall task of defending Russian positions in Ukraine, the loss of PMC Wagner will not have an immediate impact. The RF AF will likely proceed with their defense as planned, reacting to the Ukrainian counteroffensive as it develops.

The embarrassing claim that the senior military leadership of the war (GEN Gerasimov, GEN Surovikin, and GEN Salyukov) fled their headquarters in Rostov, whether true or just rumor, will also spread among the troops, further affecting morale. And the fact that Belarusian President Lukashenko had to broker a deal to stop Prigozhin and his PMC Wagner

forces underscores the weakness of Putin and his military.

The nuclear threats and saber rattling by Russian leaders have reached historic levels. The possibility of tactical nuclear weapons use in Europe has never been greater.

Rearranging the nuclear geopolitical environment. (5 July 2023)

Vladimir Putin's most recent rhetoric on the use of nuclear weapons has been consistent and more restrained than members of his innermost circle (especially Dmitri Medvedev). However, Putin is simultaneously being urged by well-known Russian intellectual advisors to recreate a geopolitical atmosphere wherein the United States and the West believe that Russia is actually crazy enough to use nuclear weapons against NATO and the United States.

Sergey Karaganov (Chief of the Council on Foreign and Defense Policy and Dean of the World Economy and International Affairs Faculty at Moscow's Higher School of Economics) and Dmitri Trenin (former Director of the Carnegie Moscow Center and a member of the Council on Foreign and Defense Policy) both recently bemoaned that the West is no longer "scared" by Russia's nuclear threats. They concluded that the West will continue to attack Russia until the West once again fears Russia's nuclear arsenal. (NOTE: In Russian culture, it is a common understanding that fear equals respect;

your adversaries and enemies must fear you. This relationship between "fear" and "respect" is not unique to Russians and is sometimes found in Western thought as well.) Karaganov and Trenin, like other leading Russian intellectuals around the Kremlin, are echoing Putin's claim that Russia is now in "an existential fight" with the West in Ukraine. There, "defeat" will lead to the destruction of the Russian state, and they are taking the next logical step—advocating the use of nuclear weapons. Karaganov calls nuclear weapons "God's weapon" and has urged their use. Trenin has been more specific and said that only a threatened strike against U.S. territory will move the United States toward restraining Ukraine and the West's support for Ukraine. Recent quotes follow from both Russian intellectual leaders. Karaganov believes that nuclear weapons are the only way Russia can win and eliminate the current threat on its borders:

"Break the West's will to support Kyiv, (and) force the U.S.-led West/NATO into a strategic retreat."

"The fear of atomic escalation must be restored. Otherwise, humanity is doomed."

"The credibility of nuclear deterrence must be restored by lowering the unacceptably high threshold for the use of atomic weapons and by moving cautiously but quickly up the ladder of deterrence-escalation. The first steps have already been taken through statements to this effect by the President and other leaders, by



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beginning to deploy nuclear weapons and their delivery vehicles in Belarus, and by increasing the combat effectiveness of the strategic deterrent forces.”

Trenin believes that,

“A nuclear strike on the territory of Ukraine will not stop anyone, a strike on the territory of Europe will not be considered critical, but a strike on the territory of the United States is another matter. Which is why it is important to return a sense of fear to geopolitics.”

Trenin believes only a strike that hits U.S. territory will get the West’s attention.

This, of course, is a worrisome trajectory coming from two intellectuals whom many in the West have considered to be more “sober” thinkers (especially in the case of Trenin). The policy and geopolitical environment which Karaganov and Trenin are encouraging could, of course, lead to some sort of Cuban Missile Crisis scenario.

Meanwhile, Putin’s most recent comments on nuclear weapons in June 2023 remained calmer:

**“The use of nuclear weapons is certainly theoretically possible. For Russia, this is possible if a threat is created to our territorial integrity, independence, and sovereignty, the existence of the Russian state.” **

However, Putin and his national security team listen to Karaganov and Trenin. Karaganov is considered the originator of Putin’s modern Russian foreign policy that focuses on “the

near abroad” (modern Russia’s desired sphere of privileged interests), and Russia’s advocacy and protection of “Russians” abroad as a main tenet of its national security policy and pretext to Russian actions in “the near abroad.”

Russian Special Forces are not the same as U.S. Special Forces. Below is a brief primer on Russian Special Operations Forces.

Special Operations Forces: The Russians are different. (19 April 2023)

Western media has published articles about Russian special forces and spetsnaz units in the SMO. However, RF AF spetsnaz are not special operations forces, but rather RF Armed Forces recon soldiers who serve under the Russian military’s Main Intelligence Directorate (GRU) on the General Staff. The Russian Ministry of Defense has a separate command called SSO (Forces of Special Operations), which is discussed below. Russia’s most capable SOF units, and the closest analogue to U.S. SOF, are not even in the armed forces, but rather in the Federal Security Service (FSB).

Spetsnaz

Spetsnaz, which means “special purpose forces,” have nowhere near the training of a U.S. Army special operator (Green Beret) or a U.S. Navy SEAL. There is no spetsnaz assessment course and there is no “Q course” or Basic Underwater Demolition/ SEAL (BUD/S) training. Assessment for enlisted spetsnaz is done at their local conscription and enlistment board.



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Conscripts or recruits who do exceptionally well on their entry physical fitness assessment and their version of the ASVAB / Wonderlic are considered qualified to serve in elite units like GRU Spetsnaz, VDV (airborne), or naval infantry units. Officer candidates for the GRU spetsnaz compete as 16- and 17-year-olds to attend the VDV Academy in Ryazan and its semi-separate GRU curriculum. As in regular ground force units and elite airborne units, almost all individual spetsnaz qualification training is done at the units and most of it is on-the-job training. Unlike in the United States, the most qualified, most competitive, and most challenge-seeking new recruits, do not aim for the special forces (spetsnaz) but rather the VDV. In Russia, the VDV has the more idealized reputation as the toughest and most gung-ho of the Russian Armed Forces. Service in the GRU spetsnaz would be secondary in stature after the VDV and naval infantry, the two “assault infantry” forces.

Spetsnaz soldiers and units are sourced by the RF Ground Forces, the RF Navy, and the RF Airborne Forces (VDV). However, all spetsnaz soldiers and units work for the RF General Staff’s Main (Intelligence) Directorate (the GRU) and are permanently under operational command (OPCON) to the GRU and its 8th Directorate (the Spetsnaz Directorate). (Yes, the GRU is a General Staff directorate organized into its own internal directorates.) The GRU works for the General Staff in coordination with the military districts and, in wartime, with their groups of forces.



Although spetsnaz units are not assigned to military districts, throughout the Special Military Operation (SMO), habitual relationships between GRU spetsnaz units and the military districts’ groups of forces have endured. As far as the Troika is aware, none of the nine Ground Forces-sourced spetsnaz commands (eight brigades and one regiment) have transferred among the military districts’ groups of forces during the SMO. All nine commands are supporting the GRU through the same group of forces they were supporting on 24 February 2022.

GRU spetsnaz units have two missions: long-range reconnaissance and sabotage. This is why their dismounted patrolling and tactics are superior to most other Russian units. Whenever GRU spetsnaz are pressed into conventional roles in the SMO, it is almost always because a RF group of forces has suffered too many losses to their conventional forces and no one is conducting operational recon (as happened at Izyum). RF GF spetsnaz brigades do not have subordinate HUMINT or signals intelligence (SIGINT) capabilities. However, they could be supported by GRU HUMINT or SIGINT units from elsewhere in the GRU’s very stovepiped system. The VDV’s lone spetsnaz unit, 45th Guards Spetsnaz Brigade, might have some organic HUMINT capability or additional training.

SSO (Forces of Special Operations)

The RF MOD’s special operations capability, which is a closer counterpart to U.S. Army Special Forces or U.S. Navy SEALs, is called SSO. SSO (CCO in Russian) translates literally as “Forces of Special Operations” (*Силы специальных*





операций). Sometimes the force is referred to as KSSO or “Command Forces of Special Operations.”

SSO is a relatively new organization, founded in 2009 as a separate branch of forces, which means they report directly through the General Staff to the Minister of Defense. It is small, around 14,700 personnel total, and that number likely includes its SOF operators, as well as its support soldiers and civilians. SSO recruits potential operators from the RF AF and has been gradually growing over the past 14 years. The Troika has found no official description of the SSO's accession process. More than likely, it is done as a pass-or-fail tryout that includes a battery of physical fitness tests, soldier skills testing, and aptitude testing.

Certainly, the SMO has disrupted recruitment and resulted in SSO losses, so calculating their current strength is difficult. On the unclassified side, little is known about SSO's operations and losses since the start of the Special Military Operation. The rare reporting on SSO has sometimes confused them as spetsnaz or some other capability. However, photos on Russian social media have revealed that SSO operators were already in Kyiv and Kherson on or about 24 February 2022 and that they fought in both areas through March 2022. SSO troops previously served in Syria and in the Donbas from the start of both operations, August 2015 and March 2014, respectively. SSO played a very significant role capturing Crimea in late February to early March 2014.

Most Russian SOF capability (direct action and counterterrorism), is not under the RF

MOD. The better-known Alpha Group (officially known as Directorate “A” of the FSB Special Purpose Center, or Spetsgruppa “A”) and Vypel (officially Detachment “V”) units are both in the FSB, Russia's premier domestic security service. The fact that most RF SOF, including its most capable units, are resident in a domestic/internal security force, and not under the RF MOD, says something about Russian leaders' perception of internal versus external threats. The FSB's responsibilities include the entire former Soviet Union, and Alpha Group and Vypel units have likely operated in Ukraine during the SMO as well.

In the spring of 2024, President Putin made several changes among senior MOD leaders. He sacked several officers for corruption and poor performance and swapped out his Minister of Defense. But he also held meetings with field commanders, listening to their ideas and input while making clear he expected results on the battlefield.

Putin's meetings with brigade and army commanders. (17 May 2024)

After Vladimir Putin's inauguration ceremony on 7 May 2024, he met with 12 field commanders leading Russian troops in the SMO. These commanders of various brigades, divisions, and armies were reportedly chosen by then-Minister of Defense Shoigu for having distinguished themselves during the SMO. During his comments, Putin spoke on a theme that he repeated in a 15 May meeting with senior MOD and Armed Forces leadership. Putin

talked briefly about Russia achieving its greater potential standard of living as a great nation with stronger families and better healthcare and education, and then he pointedly reminded commanders sitting around him about their important role: “We have every opportunity, absolutely every opportunity for all these tasks to be fully realized... but only under one condition: under the condition of your successful work on the battlefield. This is the key vein today, we all understand this. The whole country understands this. And therefore, you see the whole country supports you here today...” With this comment, Putin made it clear that Russia's future prosperity is dependent on victory in the SMO. He also made it clear to these operational and tactical level commanders that they must fight, win, and die with what they have. In other words, if your predecessors did it, then so can you.

After Putin's speech, he opened it up for questions. Three brigade commanders' questions and Putin's answers were reported on the Kremlin.ru website and in Russian media. Usually, such Kremlin meetings are at least partially scripted. Putin most certainly had the questions beforehand and, as designed, he showed uncanny, detailed mastery of the military topics that he was asked about. Beyond the three discussed below, the Troika is unaware of who the commanders were or how or why they were selected to attend.

(1) GEN-MAJ Oleg Vlasov, Commander, RF 810th Guards Naval Infantry Brigade

Described to Putin that at the beginning of the SMO, his Brigade's strength was 2,441

RF marines. Several reorganizations had been carried out and now his brigade has 19 new combat units and the current strength of the 810th Guards Naval Infantry Brigade is 11,365 RF marines. However, GEN-MAJ Vlasov noted, the 810th Guards' organizational command structure had not been changed and the brigade is simultaneously performing combat missions in three groups of forces.

Putin

Replied that he had discussed this issue with Minister Shoigu and the General Staff the day prior (6 May 2024). Putin reiterated that the brigade had become too large and added that the 810th Guards Naval Infantry was in reality a division. He stated that it was necessary to reorganize the brigade into a division structure and arrange all command and control requirements accordingly.

Troika Comments

That the 810th Guards Naval infantry Brigade now has over 11,000 marines fighting under three RF groups of forces was news to the Troika. Long ago, in 2022, the 810th Guards had at least two BTGs fighting separately in Donetsk and Mykolaiv Provinces. On 21 December 2022, as part of an announcement increasing the size of the RF AF, Minister Shoigu announced that all five naval infantry brigades would become naval infantry divisions. That was repeated in fall 2023 and the RF 155th Guards Naval Infantry Brigade was supposed to be the first to become a division. That has not happened, yet some naval infantry commands already reorganized.





In Summer 2023, the RF 177th Naval Infantry Regiment / RF Caspian Flotilla became the RF 77th Guards Naval Infantry Brigade. Nevertheless, GEN-MAJ Vlasov's claims about his naval infantry brigade's strength make little sense and seem high. By MTOE, a BTR-82A naval infantry brigade is 1,750 RF marines, so even a division would be approximately 7,000 RF marines. For comparison, by MTOE, the two BMP-3F naval infantry brigades in the Pacific are both 2,000 RF marines. A RF GF MRD is 8,500 RF GF soldiers. A RF VDV air assault division is 6,500 paratroopers. It is possible that the 810th Guards Naval Infantry Brigade was intended to also serve as some sort of RF Naval Infantry replacement training unit, since it is the closest RF naval infantry unit to the fight. Thus, it could best distribute marines to 77th Guards, 336th Guards, 40th Guards, and 155th Guards Naval Infantry Brigades in the south. This may also be the long-term result of mobilization and recruitment mismanagement. As a reminder, the recruiting advertisement in Monday's Troika Observations listed billet requirements for the 810th Guards twice, as a high demand unit. (NOTE: The RF 61st Guards Naval infantry Brigade is either deployed to the rear in the RF Western Group of Forces' AO or reconstituting back at home station in Murmansk. A 61st Guards Naval Infantry Brigade formation marched in Murmansk's 9 May 2024 Victory Day parade.

However, everyone, including Putin, should be very wary of anything that GEN-MAJ Oleg Vlasov claims. In early March 2024, then-COL Vlasov claimed that his brigade had captured Krynki and expelled the

remaining UAF marines from their beachhead. That lie was then passed by Minister Shoigu to Vladimir Putin on national TV. COL Vlasov was summarily promoted to general officer. That story is well-known on Russian social media, including the true location of the 810th Guards' video announcement back in early March 2024. UAF marines still control their beachhead at Krynki and never lost it. It is interesting that GEN-MAJ Vlasov was invited to participate in this small commanders' forum with Putin, and his selection says something about the Russian military and its culture.

(2) COL D. Malakhov, Commander RF GRU 24th Spetsnaz Brigade

His question was about the next steps in FPV UAV development on the battlefield, which is to produce aircraft-type mother ship UAVs that will carry FPV drones. The term recently in use by Russians is "*matka*," or, in this case, COL Malakhov mentioned "*avia-matka*" (*«авиа-матка»*), literally "a flying womb" that will deliver attack drones deeper into the enemy rear areas. COL Malakhov cited the advantages of increased range and that it could be used as a means of recon, destruction, and "objective control" (BDA): three component missions-in-one to increase units' fires capabilities.

Putin

Deflected, instead giving a long, winding answer that harkened back to the resilience and ingenuity of the soldiers in the Great Patriotic War (WWII) who fought valiantly with so little. He concluded his response by saying, "We're working on it" and that



details could be discussed after the press had departed the meeting.

(3) COL R. Khalikov, Commander, RF GF 74th Guards Motorized Rifle Brigade

Told Putin that the Courier unmanned ground vehicle (UGV) was tested and used successfully at Berdychi (northwest of Avdiivka). The Couriers were used in two groups, each armed with AGS-17 automatic grenade launchers. According to COL Khalikov, the use of such equipment specifically in assault operations will save soldiers' lives. It is also possible to install various light weapons on this UGV, specifically for assault operations. He added that it can be used to evacuate WIAs and to transport resupply such as food and ammunition. The Courier can carry eight antitank mines, which means it can remotely mine key areas of the terrain. It could possibly be used as a "suicide" weapon (it is unmanned) by driving it up to a bunker that is impossible to approach and detonating its payload. COL Khalikov wanted to know whether it was possible to mass produce this platform and equip assault units with it.

Putin

Responded: "perhaps, of course" and then, gesturing back to COL Malakhov (and his long-winded story), reiterated the importance of always thinking one step ahead of the enemy, especially in terms of technological advancements, citing UMPK-guided aerial bombs and EW as examples.

Putin meeting with new MinDef, Army, and District Commanders.

On 15 May 2024, Vladimir Putin met with new Minister of Defense Andrey Belousov and new Secretary of the RF Security Council / former MinDef Sergey Shoigu. Also present were the five military district commanders, plus the Commander of the RF Airborne Forces (VDV) / Commander of RF Dnipro Group of Forces. The list of participants and their titles follows.

Recent Russian military leadership changes

- Sergei Shoigu – Secretary of the Security Council of the Russian Federation
- Andrey Belousov – Minister of Defense of the Russian Federation
- GEN Valery Gerasimov – Chief of the General Staff of the Armed Forces of the Russian Federation / First Deputy Minister of Defense of the Russian Federation / Commander of the RF Joint Group of Forces
- GEN-COL Aleksander Lapin – Commander of the Leningrad Military District and RF Northern Group of Forces
- GEN-COL Sergey Kuzovlev – Commander of the Moscow Military District (MOMD). This confirmed earlier Ukrainian social media reporting that GEN-COL Kuzovlev would move from command of the Southern Military District to command of the newly recreated Moscow Military District. What remains unclear is whether GEN-COL Yevgeny Nikoiforov, the former Commander of the Western Military District, is still the Commander





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of RF Western Group of Forces. There has been no mention of GEN-COL Nikoforov since March 2024.

- GEN-COL Gennady Anashkin – Acting Commander of the Southern Military District (SOMD). GEN-COL Anashkin was previously the Chief of Staff and First Deputy Commander of SOMD. He is the former Commander of 8th GCAA. GEN-COL Anashkin was a VDV officer and commanded both RF VDV 104th Guards Division and RF VDV Guards 31st Brigade.
- GEN-COL Andrey Mordvichev – Commander of the Central Military District (CEMD) and RF Central Group of Forces
- GEN-LT Aleksander Sanchik – Acting Commander of the Eastern Military District (EAMD). Former Commander of the EAMD and the RF Eastern Group of Forces, GEN-COL Andrey Kuzmenko reportedly returned to his former position as Deputy Director of Rosgavrdiya in March 2024.
- GEN-COL Mikhail Teplinsky – Commander of the Airborne Forces (VDV) and RF Dnipro Group of Forces

Key Putin statements:

- Russian forces in Ukraine are improving the battlefield situation every day, in all directions.
- There is still a lot to be done, but a quick, timely reaction to changes inspires confidence that the tasks will be completed.
- The appointment of Andrey Belousov as Minister of Defense is associated with an increase in spending on the military

- sphere: “We are obliged to manage resources wisely and efficiently.”
- The relationship between “guns and butter” should be organically integrated into the overall development strategy. According to Putin, Minister of Defense Belousov understands how to fit the economy of the power ministry (MOD) into the overall economy of the country.
 - Russia’s total 2024 spending on defense and security will be approximately 8.7 percent of GDP. (NOTE: The Russian average defense over the 10 years before the SMO was 4 percent of GDP.)

Separately, Vladimir Putin added that there are no planned changes to the General Staff. Obviously, this was to suppress rumors of GEN Gerasimov’s resignation. Putin also expressly thanked Sergei Shoigu for his work building the Armed Forces, and the military district commanders for their combat leadership. At this meeting, it became officially known that GEN-COL Aleksander Lapin is in command of the newly created Leningrad Military District and that GEN-COL Sergei Kuzovlov is commanding the Moscow Military District.



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Several U.S. analysts have held the belief that the Russian Federation has raised and used so-called “Territorial Defense Forces” in its Special Military Operation. As of 1 July 2024, Russia does not have territorial defense forces deployed internally or in the SMO. The following Troika Observation explains that despite provisions in Russian law to raise and deploy such forces, none have been formed to date.

There are no Russian Federation “territorial defense forces.” (10 July 2023)

Recently, the Troika was surprised by observers’ references to Russian “territorial defense forces” or “territorial defense units” fighting in Ukraine. Since 2013, Russian law (Article 22) has allowed for the establishment of territorial defense forces if a “military situation” (*voyennoye polozheniye*) has been declared within the Russian Federation. However, as of 10 July 2023, there is no national entity, agency, type, branch of service, or unit in the Russian Federation known as “territorial defense forces.” (NOTE: Until their annexation and absorption into the Russian military, local units of the Donetsk Peoples Republic and Luhansk Peoples Republic were called “territorial defense forces.”)

On 5 July 2023, the governor of Belgorod Oblast confirmed that his provincial government was finally building such a capability in his oblast, but that provincial formation is still being organized and waiting for a legal way to be armed under RF law. Kursk Oblast is attempting this as

well. If you search the Russian-language internet for “RF territorial defense forces” or “RF territorial defense” (“РФ территориальные силы обороны,” “РФ территориальная оборона”), you will find some well-written articles on concepts (which the Troika will discuss in a moment), including on the RF MOD website. There is even a Russian-language Wikipedia page on Russian territorial defense concepts. But as of 10 July 2023, you won’t find any active units.

Appearance of regional units adds to confusion

In the summer of 2023, RF AF volunteer regional battalions were mustered within the RF subjects (*субъекты РФ*); oblasts, separate republics, krais, regions, and other RF political entities. However, they were only formed and equipped there by RF MOD for traditional RF AF “combined arms” (motorized rifle, tank, assault infantry, artillery and other) missions and shipped to training elsewhere or immediately to combat in Ukraine. Similarly, after the 21 September 2022 partial mobilization, *mobik* formations (brigades, regiments, and separate battalions) were mustered and equipped by the oblasts, separate republics, krais, regions, and other RF political entities near home before some refresher individual training in Belarus or western Russia, and then combat. Mobilized individuals were also sent as immediate reinforcements early in the mobilization. But the regional volunteer battalions and *mobik* commands never had any territorial defense responsibilities or duties. Similarly, the BARS operational reserve



units, which were organized and trained in the regions since fall 2021, never had any type of territorial defense responsibilities or duties. BARS units, which were recruited regionally, were established to augment the RF GF, which they have done as separate battalions since the RF AF invaded in February 2022. Since the first months of the Special Military Operation, BARS separate battalions have been integrated into RF AF defenses and operations, especially in the RF Western Group of Forces' and RF Central Group of Forces' areas of operation.

False start and new interior threats add more confusion

In the 2014 Russian equivalent of their National Defense Strategy, which Russians call "the Military Doctrine" (*Военная доктрина РФ*), the Russian government directed the construction and development of territorial defense as missions of the RF AF. This was followed by several well-written articles published widely in 2016 and 2018 that fleshed out some of the Russians' concepts for territorial defense. KAVKAZ-2016 (the SOMD's premier strategic exercise) featured a 47th Territorial Defense Division, which, as far as the Troika knows, was never seen again.

Despite all the guidance, writings, exercises, and even temporary formation of a division, "RF territorial defense forces" were never permanently created. That failure has been on full display since fall 2022 when the UAF's Kharkiv counteroffensive caused alarm all over Russia's border areas with Ukraine, as well as in the areas of Luhansk Oblast that

Russia had occupied since early 2015. If you recall, Yevgeny Prigozhin and PMC Wagner forcefully offered to organize territorial defense units in Belgorod Oblast and RF-occupied areas of Luhansk Province. Prigozhin openly campaigned for such a RF government contract. PMC Wagner built thousands of its poor-quality rebar and concrete pyramids which were emplaced all over the frontiers with advancing UAF and along the RF national and provincial borders. But, in the end, no such territorial defense units were ever created.

When the two Ukrainian government-supported Russian insurgent militias (the Free Russian Legion and Russian Volunteer Corps) invaded Belgorod Oblast in June 2023, there were no such Russian territorial defense force units to respond. Ultimately, RF MOD sent "platoon sergeant-extraordinaire" GEN-COL Aleksandr Lapin to lead a nationally televised response. After that failed, 245th GMRR / 47th GTD finally reoccupied formerly "free Russian" insurgent-held areas. (The insurgents had withdrawn back to the border area but the 47th GTD's motorized riflemen still looted the Belgorod Oblast villages that they "liberated," which infuriated the local government.)

Conclusion

Although Russia is an authoritarian state, it is not uncommon for directed action, such as the 2014 Military Doctrine's tasks to create territorial defenses, to be slowly defeated by vacillation, bureaucratic resistance, and competition with other MOD priorities.

Russian "territorial defense forces" are not fighting in Ukraine and the creation of RF territorial defense units is still an emerging development, being conducted provincially in Belgorod and Kursk Oblasts. RF AF volunteer regional units and mobilized RF AF units were mustered within Russia's oblasts, separate republics, krais, regions, and other RF political entities, but they never had territorial defense responsibilities or duties. Likewise, BARS operational reserve units augment the RF GF, but were not designed or used for Russia's territorial defense needs.

The development and command of territorial defense is a responsibility of regional executive branch leaders (governors, etc.) but only after a formal declaration of a "military situation" (*voyennoye polozheniye*). The 2014 Military Doctrine directed the MOD to assist in creating these forces. Concepts and proposals were published in military journals and a division was even temporarily created, but internal resistance likely resulted in no such RF territorial defense units being formed. Only since the Free Russian Legion's and Russian Volunteer Corps' June 2023 invasions of Belgorod Oblast, have Russian leaders begun to seriously consider creating territorial defense units, and those units are still waiting for arms and a legal basis for operations.

Rosgvardiya forces are playing an important role in occupying Ukrainian territory. They also continue to provide security for many strategic business and military sites inside Russia.

Rosgvardiya in RF-occupied Ukraine. (19 January 2024)

In late December 2023, Rosgvardiya's overall presence in RF-occupied Ukraine increased to a total of 34,300 personnel. That was when Rosgvardiya completed the deployment of an additional 6,000-person brigade, 116th Separate Operational Purpose Brigade (*116-й отдельной бригады оперативного назначения, обр ОН*), headquartered in Torez (*Чистяково*), 55 km east of Donetsk city in RF-occupied Donetsk Province. Rosgvardiya brigades are further divided into "operational purpose regiments" (*полки оперативного назначения, ПОН*) each of which has more than 1,900 personnel. In RF-occupied Donetsk Province, the 900th Operational Purpose Regiment has 1,953 personnel and is headquartered in Melekine (*Мелекино*, 17 km southwest of Mariupol). The 901st Operational Purpose Regiment has 1,919 personnel headquartered in Snizhne (*Снежное*, 65 km east of Donetsk). 902nd Operational Purpose Regiment has 2,014 personnel headquartered in Torez, along with the 116th Separate Operational Purpose Brigade's HQ. 116th Separate Operational Purpose Brigade headquarters is manned by 126 personnel. The stated mission of Rosgvardiya in Ukraine is "stability functions" (*"стабилизационные функции"*) in the occupied areas.



NOTE: While the FSB has the lead for security in the RF-occupied areas, Rosgvardiya is the brawn. Whereas Rosgvardiya positioning in Torez and Snizhne makes sense with regard to securing RF AF logistics areas, it is not immediately clear why the 900th Operational Purpose Regiment was put in Melekine, 17 km southwest of Mariupol. Most likely, the 900th is protecting an important RF AF C2, logistics, or aviation center.

The Russian view of the war in Ukraine is expressed vividly in President Putin's many speeches, one of which is discussed below. The observation below delves into the narratives and myths surrounding the Great Patriotic War (WWII) and their impact on Russian thinking today.

Understanding Putin and Russian Historical Narratives. (23 June 2023)

22 June 2023 is the 82nd anniversary of the start of Operation BARBAROSSA, when Nazi Germany turned on its loyal Soviet allies and invaded the USSR.

This is a date that every Russian child learns at an early age. It is 7 December 1941, 11 September 2001, and 4 July 1776 all wrapped together and tied up nicely with the Russian national symbol, a ribbon of St. George. On 22 June 2023, Putin, along with members of the RF MOD and veterans, commemorated this event by laying wreaths at the tomb of the unknown soldier just outside the Kremlin walls, and by observing a moment of silence. A

ceremony called the "Candle of Memory" was conducted throughout Russia, where Russians lit candles at dawn in memory of those who died. As part of that ceremony in the main church of the RF Armed Forces, part of the eternal flame was used to light 1,418 commemorative candles, signifying the number of days of the Great Patriotic War. The RF MOD's Telegram channel commemorated the event by posting several historical documents highlighting the first hours/days of the invasion and the "courage, fearlessness, and heroism" of the Red Army soldiers and commanders. These documents discussed a failed attack by German aircraft attempting to block the Black Sea Fleet (BSF) in the Sevastopol Bay by dropping mines in the inlet to the Black Sea, along with the successful retaliatory strike by BSF aircraft against the naval base of Constanta in Romania.

Two years before June 2023, Putin commemorated the 80th anniversary of this event by publishing an OpEd article entitled "Being Open, Despite the Past" in the German newspaper *Die Zeit*. It was the first of his "unholy trinity" of strategic documents published in a 20-day period in the summer of 2021, as Russia was secretly preparing for a renewed, intensified attack against Ukraine in 2022. It was followed in rapid succession by a new Russian Federation National Security Strategy (NSS), and an academic paper on European history written by Putin. All these documents were also promptly posted on the RF government's official website. Clearly the timing, content, and sequencing of the unholy trinity documents were not by coincidence.



The Russian national myth of the Great Patriotic War (GPW)

Begins on 22 June 1941. Russians conveniently leave out the 21 months from 1 September 1939 to 21 June 1941, when the Soviet Union was allied with Nazi Germany, and invaded Poland (including parts of what is now western Ukraine), Lithuania, Latvia, Estonia, Finland, and Romania, annexing all or part of each country. The more things change.... Russia has appropriated Soviet victory and sacrifice, frequently referencing the number of 32 million GPW casualties, implying, if not always openly stating, that said casualties were all ethnic Russians (when in fact, millions were other nationalities, including Ukrainian).

This national myth is central to understanding contemporary Russia, and the nearly 10-year-old war in Ukraine. Indeed, as one might suspect, the 20th century roots of the war against Ukraine go all the way back to this date 82 years ago (in Putin's narrative, anyway). Putin's straightforward newspaper article lays the ideological groundwork for the SMO against Ukraine. Putin has since sought to portray Russia's invasion of Ukraine and subsequent SMO as the Great Patriotic War for the current generation of Russians. The Troika encourages you to read Putin's 12 July 2021 OpEd). It is short and readily available in English. We teach it in our staff courses and students in our flagship course read it, along with the rest of the "trinity" of documents. A summary of the article follows.

Summary of article, as written by Putin

Eighty years ago, the Nazis attacked us, killing millions of our people and destroying our lands and cities. Thanks to the heroes of the Red Army, we were able to liberate Europe from the scourge of Nazism. Despite the depredations that the German Nazis visited upon us, we did not seek revenge, only peaceful relations. We only wanted to cooperate to help build "a Greater Europe united by common values and interests." But a Cold War settled over Europe, preventing that integration. Sadly, the end of the Cold War also did not bring about this cooperation. Rather, confrontation, as a "relic of the Cold War," quickly expanded eastward to Russia's borders, ignoring promises made to the contrary. European countries were given the "artificial choice of being either with the collective West or with Russia." This ultimatum and the aggressive policy associated with it led to the "Ukrainian tragedy of 2014," in which "Europe actively supported the unconstitutional armed coup... organized by the USA." Despite this perfidy and aggression by Europe, Russia seeks only peaceful integration—Russia is, after all, a European nation, and in fact, the largest one. It is not too late for Russia and Europe to "restore a comprehensive partnership," which would include cooperation on issues of mutual interest, including "security and strategic stability, healthcare and education, digitalization, energy, culture, science and technology, and resolution of climate and environmental issues."





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Putin's intent

Putin's OpEd is well-structured and targeted to Western Europe, especially Germany (he is writing in a German newspaper, of course). Putin was clearly trying to drive a wedge between Europe and the United States, in advance of the SMO. He reminded Europe of its historic debt to Russia—Germany, for the damage the Nazis did to Russia; the rest of Europe, for its liberation from said Nazis by the heroic Red Army. The logical European integration and cooperation that should have followed naturally was thwarted by an outside power (the United States). But there is still time to right the ship, and Europe and Russia have so many issues of mutual interest on which they should cooperate. Putin foreshadowed his forthcoming NSS document, which would be released 10 days later. He borrowed several themes from the yet-unpublished NSS, including the national interests of “strategic stability,” “equitable multinational cooperation,” and the threats of “dividing lines” on the continent.

Russians are remarkably open and transparent about their worldviews and intentions. Russians tell us who they are, what they believe, why they believe it, and what they plan to do about it. We would be well-served to listen (and read, in this case).

The Russian Great Patriotic War Narrative as understood by Russians (10 May 2024)

Victory Day celebrates Russia's dominant narrative and national myth, in which the Great Patriotic War (their name for WWII)

is central. In the current version of this narrative, Russia was attacked by Nazi Germany, valiantly fought back, and defeated the Germans at immense national cost. Russia freed Europe from the scourge of Nazism only to be rejected, shunned, contained, and later surrounded by the very people that they saved. This continues a Russian historical narrative of repeatedly defending and saving an ungrateful West—against Mongols, Turks, the French, and other interlopers. Putin reiterated this narrative, as described above, on the 80th anniversary of the start of Operation BARBAROSSA, in an OpEd for the German newspaper *Die Zeit*, in June 2021. A large mural at the entrance to the HQ of the Russian Peacekeeping Brigade in Bosnia in the 1990s simply and (not so) humbly said, “We saved the world.” The words were printed above a painting of WWII Soviet soldiers and contemporary paratroopers. Indeed, Russia suffered a great cost in order to save the world. When the Troika was young, the quoted number was 20 million Soviet casualties in WWII. By the time we were field grades, it was up to 27 million, and now the Russians are hawking the figure of 32 million casualties. We do not dispute that it was a very high number; but it is unclear how it continues to grow.

NOTE: For a detailed, well-sourced discussion of Soviet and European casualties between 1939 and 1945, the Troika recommends the appendices in Timothy Snyder's Bloodlands.



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The Russian Great Patriotic War Narrative as interpreted by its neighbors

Many of Russia's closest neighbors do not share Russia's version of events between 1941 and 1945. First, they will point out that for them (and indeed, for most of Europe), WWII started in 1939, not 1941. They point out that the Soviet Union and Nazi Germany began the war as allies, having previously agreed to divide Eastern Europe among themselves. They remind us that the rest of Europe fought alone against Germany from 1939 to 1941, while the USSR was consolidating its territorial gains in what Russia now calls its “privileged sphere of influence in the near abroad.” For the Baltic states, 1939 marked the end of their independence, and the start of 50 years of oppression, deportations, murder of national elites, and ethnic cleansing at the hands of the USSR. For Poland, 1939 marked its most recent partition between Germany and Russia, and the death of millions of its citizens. 1945 formalized the loss of nearly half of Poland's territory. For western Ukraine, 1939 marked its incorporation into the Soviet/Russian empire for the first time in its history. (Prior to 1939, western Ukraine had been part of the Hapsburg Austro-Hungarian Empire, then briefly independent, then part of Poland—it was never part of the Russian Empire or the USSR prior to WWII).

Countries that were part of the USSR from 1941 to 1945 will point out that the Russian Soviet Federated Socialist Republic (RSFSR) accounted for about half of the population of the USSR at the time. Whether the real number of Soviet

casualties is 20, 27, or 32 million, they were Soviet. Not all casualties were ethnic Russians, nor were they all from the RSFSR. Since 1991, Russia has claimed the Soviet narrative in its entirety and given it an ethnonational Russian component that is not entirely accurate.

NOTE: Many Western diplomats and DC-based think tanks argue that the 1939 Molotov-Ribbentrop Pact was only that—a pact—not an alliance. In this view, the arrangement between Nazi Germany and the Soviet Union was no more binding than 1994's Budapest Memorandum. In recent years, Russia and its defenders have sought to portray the pact as a brilliant, multidimensional chess move designed to defeat Germany.

The Russian Great Patriotic War narrative for Americans

After teaching the Russian Way of War course to U.S. military audiences for over 3.5 years, the Troika has observed that many, perhaps even most, of our U.S. military students are familiar with the Russian Great Patriotic War narrative. Many have internalized it, either deliberately or subconsciously, and some even defend current Russian actions based on it. It is important that U.S. military personnel, especially those working in the European Theater, be aware that Russia's narrative is one of many competing narratives and apply a measure of critical thinking and analysis to Russia's story. We would also do well to listen more to the WWII narratives presented by our NATO allies, many of whom have intimate knowledge of Russia and Russians.





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To understand a country and its culture, one should read its literature (31 March 2023)

Observers of Russia are lucky in this regard—Russia has a great literary tradition, with many of its major works readily available in English, with high-quality translations. Russian literature is known for exploring fatalistic themes, with writers like Fyodor Dostoevsky, Leo Tolstoy, and Anton Chekhov reflecting a philosophy that events are predetermined and inevitable. This fatalism has shaped broader Russian culture, contributing to a sense of resignation in the face of adversity and a belief in fate.

“Security over Freedom” and “Historical Determinism”

Dostoevsky’s protagonist Ivan Karamazov in *The Brothers Karamazov* struggles with a sense of doomed inevitability and explores the idea that individuals are powerless against their predetermined fate. Karamazov argues that humans crave security over freedom, surrendering free will to authority. Although the book was published in the 19th century, Karamazov’s ideas depict contemporary Russia perfectly—Russians will gladly trade the “so-called freedoms” cherished in the West in favor of security. Tolstoy’s *War and Peace* also reflects a sense of historical determinism, with characters feeling powerless to change the course of events as they are stuck between the pages of history during the Napoleonic wars.

This fatalism is in turn reflected in Russian culture, society, and politics

Western observers must be mindful of Russian fatalism when predicting outcomes for the war in Ukraine. The notion that hardships will soon cause Russians to turn against this war and their leaders is not congruent with Russian history or culture, as revealed by Russia’s rich literary library. Many Russians accept difficulties with stoic inevitability, often exhibiting dark humor about suffering and death. Many Russians see their tragic history—replete with war, revolution, and corruption—as beyond their control. This mindset enables authoritarianism to provide stability in an uncertain world, which parallels Dostoevsky’s theme of security over freedom. Russian leaders sacrificing soldiers during military conflict demonstrate a belief that events are predetermined and beyond control, just as they were in Tolstoy’s *War and Peace*. The Ukraine war is a prime example of how Russian views of fatalism have come to a head with devastating consequences for soldiers and civilians alike. These views help explain Russian willingness to sacrifice lives, to support seemingly incompetent or uncaring leadership, to be indifferent, to eschew protest, to mobilize, and to fight. Fatalism will continue to shape Russia’s future.

If you are interested in learning more about Russian culture, specifically fatalism, the Troika recommends:

- *A Hero of our Time*. Mikhail Lermontov’s novel, referenced above, is arguably the best short fictional work (about 175 pages) on the topic of Russian fatalism. Written in the early 19th century, this



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classic is far ahead of its time in both style and substance. It includes a short story appropriately entitled “The Fatalist” which can be read separately from the rest of the novel.

- *Hadji Murad*. Leo Tolstoy’s last novel depicts the clash between two fatalistic cultures, Orthodoxy and Islam, and highlights the dark aspects of Russian imperialism. This early 20th century work captures much of the magic of *War and Peace* in compressed form (120 vs. 1,200+ pages), and, like *A Hero of our Time*, addresses a topic of current interest—Russia’s continuing ambitions in the Caucasus.

There have been many strange stories to come out of the war in Ukraine, but perhaps none so unique as the story of Russian LTC Andrei Demurenko, a graduate of the U.S. Army’s Command and General Staff College. His career path from respected commander to pariah to volunteer in Russia’s SMO, illuminates the depth of many Russians’ commitment to the war and the failure of U.S. “soft power” when it comes to hard power audiences.

LTC Demurenko: from USSR to CGSC to SMO. (6 May 2024)

In 1992, Andrei Demurenko, a motor rifle lieutenant colonel in the RF Ground Forces, became the first officer from the Russian Federation to attend the U.S. Army Command and General Staff College (CGSC) in Ft. Leavenworth, Kansas under the International Military Education and

Training program (IMET). Within 4 years, his association with the American institution had undermined his Russian superiors’ trust in him and he was forced to retire in 1996.

In February 2023, Demurenko returned to military service and was deployed to Ukraine with Russia’s 1st Volunteer Recon-Sabotage Assault Brigade—the “Wolves.” He was wounded by mortar fire in May 2023 near Bakhmut and evacuated. While recovering in Moscow, he gave an interview to the Russian military journal Arms Export (*Экспорт Вооружений*), during which he described his “nonstandard” journey from rising military star to disgraced collaborator to civilian banker to railroad ops center manager to volunteer soldier to wounded warrior.

Demurenko explained that his military career had been fairly typical for a Russian officer until 1991. He had attended the elite Moscow Higher Combined Arms Command School (*Московское Высшее Общевойсковое Командное Училище* or *МВОКУ*—the famous “Kremlin Cadets”) and was commissioned in the Motor Rifle Troops. He served in typical command track positions—recon platoon commander, company commander, deputy chief of division reconnaissance, all in the 20th Guards Motor Rifle Division under the Soviet Group of Forces Germany. He was then selected to attend the 2-year Frunze Academy (equivalent to CGSC), after which he was assigned to Amur in the Eastern Military District, where he commanded a motor rifle battalion and then a regiment.



U.S. Army Command and General Staff College

In 1991, “with the warming of relations with the United States” (*потеплением советско-американских отношений*), Demurenko was selected to attend the U.S. Army CGSC at Ft. Leavenworth, Kansas for academic year 1992–1993, after first attending English language training. His sponsor was a Russian-speaking U.S. Army Foreign Area Officer (FAO). The IMET program only paid for the international officer himself, and he could only afford to bring his wife Dina and not his children. Upon learning this, Demurenko’s American classmates “passed the hat” to raise enough money for their young children, Kirill and Katya, who had been staying with their grandparent in Russia, to join them in Kansas. His sponsor and another U.S. Army FAO traveled to Russia to assist with visas and customs, and to escort the family back, even receiving support from a U.S. Senator from Kansas. Andrei’s family stayed with his sponsor briefly until they could arrange housing.

U.S. officers who knew him at that time described Demurenko to the Troika as a “first-rate soldier” and a “take charge guy,” who “seemed destined for general stars.” One of his American classmates at CGSC noted that as a former regimental and battalion commander, Demurenko “stood out like a man among boys and girls”—most of his American classmates had yet to serve as battalion S-3s or XO’s. While he was there, he co-authored an article for *Military Review* (May 1993) comparing and contrasting officer education at the Frunze

Academy, which he had previously attended, and CGSC, which he was currently attending. One of the biggest differences he noted immediately was the plethora of books assigned for the 9-month long CGSC, in contrast to the single volume used in the 2-year Frunze course. (There is an old Russian proverb, «Это только много чтения, если ты это сделаешь»: “it’s only a lot of reading if you do it.” Or maybe that one is American).

In May of 1993, during a visit to the National Training Center (NTC) at Ft. Irwin (California), Demurenko assisted the Opposing Forces (OPFOR) Regiment in planning an attack against the U.S. unit in training there. He then rode in the lead OPFOR vehicle during the actual attack, which the OPFOR won. The Commander of Russian Ground Forces also visited Ft. Leavenworth while Demurenko was attending CGSC (probably not a coincidence).

He was promoted to Colonel at the completion of CGSC. By then, the war in former Yugoslavia had begun. Because of his status as an English-speaking officer educated in U.S. operations and tactics, he was sent to Bosnia, where he served as the Deputy Commander of the Sarajevo Sector and the senior officer of the Russian peacekeeping contingent.

“In the enemy camp”

In 1996, Demurenko returned to Russia, only to find that “the situation had changed.” Demurenko explained in his 2023 interview that he was involuntarily retired for being perceived as too close to the Americans. His time at CGSC and

working with the United Nations and Implementation Force (IFOR) in Bosnia was held against him. As he puts it, “they explained to me that I was ‘in the enemy camp’” («во вражеском стане»). Keep in mind that all of this happened even before Putin became President and the regime “turned to the right.” He landed on his feet, going to work for the “negotiations unit” of a bank. The bank bought a shipyard in St. Petersburg, and he soon found himself running the shipyard. Later he became the director of the operations center for the Russian Railroad, responsible for monitoring 380 rail stations countrywide.

Into the SMO

According to Demurenko, when the SMO began in February 2022, he tried to volunteer immediately but was denied due to his age (66). It took him nearly 1 year to work through the military commissariat bureaucracy and be accepted as a volunteer, in February 2023. In March 2023, he deployed to the SMO and was assigned as Chief of Staff and 1st Deputy Commander of 1st Volunteer Recon-Sabotage Storm Brigade.

Service with the Wolves Brigade during the battle of Bakhmut

Because of his experience, Demurenko was assigned as Chief of Staff and 1st Deputy Commander to “the Wolf,” a Serbian national who commanded the brigade. The Wolf had previously served with PMC Wagner in Syria, according to Demurenko. The new Chief of Staff quickly took charge, attempting to establish standards and discipline. He asked about standard operating procedures, only to be

told “we have none.” They also did not have maps, although they did have a tablet computer with satellite images, which Demurenko found inadequate (remember, he was 66 and first separated in 1996!). He was upset there were no operational graphics on tablet images. Despite their lack of standards, maps, or graphics, he said that the Wolves fought very bravely. He described fighting in a small village called Zaliznyanskoye (*Зализнянское*) west of Soledar, defending a 2-km wide section of PMC Wagner’s northern flank during the battle of Bakhmut (he used the Russian name of Artyomovsk).

WIA

His brigade initially consisted of two battalions of volunteers but was later augmented with 600 *mobiki* from Novosibirsk (in Siberia) and Pskov (near the Latvian and Estonian borders), which brought their total strength to about 1,800. They were equipped with three T-62 tanks from long-term storage, but these were so hard to keep running, the brigade wound up using them in fixed positions as fire support. Mortars and artillery were also old, two D-20 and two D-30 towed howitzers, four 82-mm mortars and four 120-mm mortars. He described them as accurate, but too few in number. He was impressed by the Ukrainians’ 60-mm mortars “from abroad,” which he described as numerous and effective. Ukrainian observation and FPV drones were also very effective, as there was no concealment in the denuded landscape. Ultimately, a “Polish” 60-mm mortar was his undoing. In May 2023, after less than 2 months in combat, an airburst mortar round



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exploded over him, smashing his head against a tree trunk. He received a concussion and intracranial hematoma. He was evacuated to Moscow and gave this interview during his recovery. Additionally, he has been a prolific writer, writing in support of the Special Military Operation.

So What?

Demurenko's tale reveals much about the RF AF in the SMO. The time from his induction to combat was less than 1 month, and he received no substantial training before deploying to combat (at one point in the interview, he states that 1 week of training is sufficient for assault troops, provided training distractors are eliminated). However, because of his prior rank, he was assigned to a position of great authority, deputy brigade commander. This provides some insights into RF AF force generation—while Russia does not have an organized reserve component, they do appear to take prior service into account. The *kontraktniki* brigade went into combat undermanned, but was soon plussed up with a third battalion of *mobiki*. The brigade was woefully underequipped, basically light infantry with very limited fire support from a hodgepodge of available systems, most taken from long-term storage. This RF AF brigade (volunteer/*mobik* though it was) was actually a supporting effort for a private military company, i.e., PMC Wagner. Like so many other RF AF soldiers, Demurenko's tenure in combat was very short: 1.5 months.

Maybe the 1990s were not the Golden Age after all?

Demurenko's tale reveals even more about Russian strategic thinking in the 1990s. In 1996, the United States still formally considered Russia to be a strategic partner, as a matter of U.S. policy. Many U.S. military members of a certain age still fondly remember the 1990s as a sort of "golden age" of U.S.-Russian military cooperation, replete with joint patrols, peacekeeping exercises, vodka shots, back-slapping, hugging, and the singing of songs. Indeed, as a matter of formal U.S. policy, the Russian Federation was a strategic partner. The United States and Russia were cooperating and working together as peacekeepers in the Balkans. Some of the Troika got their start as liaison officers (LNOs) embedded with the Russian airborne brigade in Bosnia, or on the staff of the Russian Deputy Supreme Allied Commander Europe (SACEUR) at Supreme headquarters Allied Powers Europe (SHAPE). Yes, the Russian Federation had a GEN-LT/two-star with full staff serving as Deputy SACEUR, and the position included a U.S. Army FAO as military assistant. The PEACEKEEPER series of exercises brought Russian units to Ft. Campbell (Kentucky) and Ft. Riley (Kansas) under the auspices of NATO's Partnership for Peace (PfP), of which Russia was (and still is) a member. In addition, a U.S. 3rd Infantry Division unit traveled to Russia for an exercise.

Many DC-based think tanks and other pundits blame the United States for spoiling this spirit of cooperation with misguided policies like NATO expansion. However, in



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1996, in the middle of this "golden age of cooperation," the Russian Federation was already purging its ranks of officers they considered to be "in the enemy camp," i.e., in the American camp. In 1996, before a single former Soviet state had appealed to NATO for protection, being too close to the Americans was enough to get a promising young Russian colonel fired, even though he was only executing missions his leaders had sent him on.

The limits of information operations

During his time at CGSC, Demurenko participated in the international students' acculturation program. He traveled around the United States, meeting with all type of Americans, including local, state, tribal, and federal officials, and military and civic

leaders. He had classes on U.S. history and government. Informally, he likely attended dozens of barbecues, dinners, and happy hours hosted by his classmates and sponsors. He might have even caught a Kansas City Chiefs game. Americans would do well to heed his tale. Many U.S. military students attending RWOW courses advocate for information campaigns against Russia, believing that if Russians only knew "the truth," they would stop fighting and...well, it's never clear what they are supposed to do at that point, but at least they'll stop fighting. Andrei Demurenko was exposed to more of America, Americans, and "the truth" than 99 percent of his countrymen. Yet in the end he remained convinced of his country's narrative, willing to fight and die for it, even though his leaders treated him badly.

Selected Insights Chapter Endnotes

1 Commissariats run by civilian contractors <https://iz.ru/1083231/roman-kretcul-anton-lavrov/pogonnye-metry-rukovodstvu-voenkomatov-vernut-zvaniia>

2 Shoigu criticizes commissariats. <https://iz.ru/1175765/2021-06-08/shoigu-otchital-sotrudnikov-voenkoma-ta-v-moskve>

3 Troika Observation (Zvizdets Mangustu Telegram, 07:01) 7 January 2024

4 <https://iz.ru/1641702/roman-kretcul-aleksei-mikhailov-iuliia-leonova/otmesti-ugrozu-sankt-peterburg-zashchiti-at-novymi-diviziiami>; 30 января 2024, 00:01

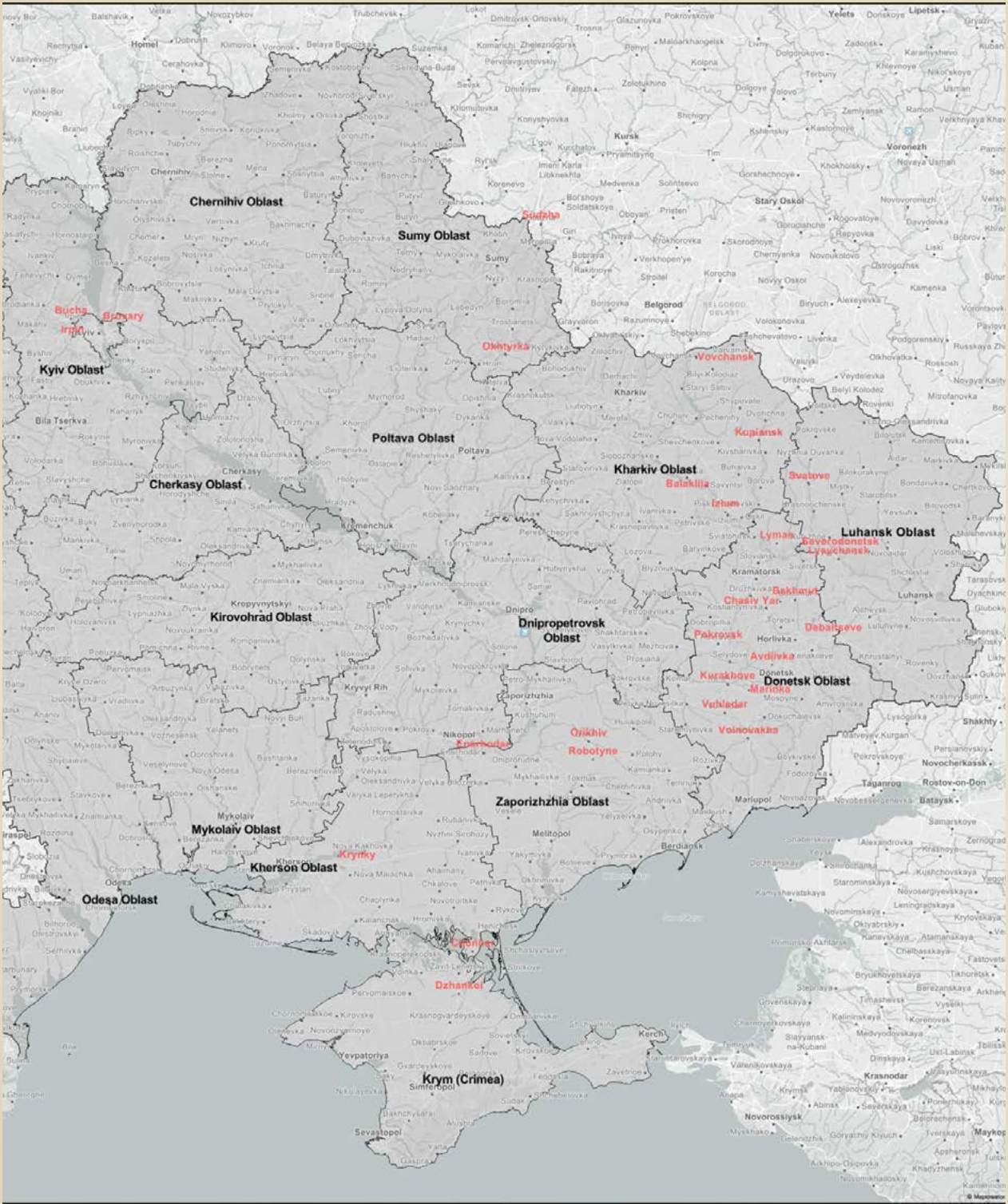
5 Troika Observation (CIT Сводка, 16:50) 14 June 2022

6 Sources on Territorial Forces: CIT Svodka, 7 July 2023; <https://t.me/agentstvonews/3663>; <https://19rusinfo.ru/politika/20195-do-50-tysyach-ukrainskikhsoldat-cherez-polgoda-kiev-sobiraetsya-brosit-v-ataku-na-krym> Russian Law, Article 22. <https://base.garant.ru/135907/94f5bf092e8d98af576ee351987de4f0/> Background on Territorial Defense Forces. <https://rtvi.com/stories/chto-takoe-teroborona-kak-ona-budet-rabotat-v-novyh-regionah-rossii> Territorial Defenses. Kardash, IL, Colonel/Dr Military Sciences. "Military Thought," 2018. <https://cyberleninka.ru/article/n/novyy-podhod-k-organizatsii-territorialnoy-oborony-na-regionalnom-urovne>





Appendix A - Overview Map



Appendix B - Acronyms and Definitions

Acronym	Definition
AAG	army artillery group
ACRV	artillery command and reconnaissance vehicle
ADA	air defense artillery
ADC	Assistant Division Commander
ADP	U.S. Army Doctrine Publication
AES	advanced encryption standard
AF	armed forces
AGS	automatic grenade launcher system
AI	artificial intelligence
AIT	advanced individual training
ALCM	air-launched cruise missile
AO	area of operations
APC	armored personnel carrier
APS	active protection system
ARM	antiradiation (radar-homing) missile
ASP	ammunition supply point
ATACM	U.S. Army Tactical Missile System
ATGM	antitank guided missile
ATV	all-terrain vehicle
AVN	Russian Academy of Military Sciences
BARS	operational reserves (Russian)
BDA	battle damage assessment
BDE	brigade
BMD	airborne armored vehicle
BMP	Russian infantry fighting vehicle
BN	battalion
BSF	Baltic Sea Fleet
BTG	battalion tactical group
BTR	Armored personnel carrier
BUD/S	Basic Underwater Demolition/SEAL
C2	command and control
CAA	Combined Arms Army
CAS	close air support
CAT	combat application tourniquet
CCDR	Combatant Commander
CGS	Chief of the General Staff (Russian)
CEMD	Central Military District (Russian)
CGSC	U.S. Army Command and General Staff College (Ft. Leavenworth, KS)
CHOD	Chief of Defense
CinC	Commander in Chief
COCOM	Combatant Command (authority)
COMSEC	communications security
CoS	Chief of Staff
COTS	commercial off-the-shelf
CP	command post





Acronym	Definition
CRP	combat reconnaissance patrol
CRPA	controlled reception pattern antenna
CSTO	Collective Security Treaty Organization
CTC	Combat Training Center (Ft. Irwin, CA)
DCO	deputy commanding officer
DF	directional finding
DMR	digital mobile radio
DPICM	dual-purpose improved conventional munitions
DPR	Donetsk People's Republic
DRG	sabotage reconnaissance group
DSMAC	Digital Scene Matching Area Correlator (missile guidance system)
DSRV	deep sea rescue vessel
EAMD	Eastern Military District (Russian)
EEU	Eurasian Economic Union
ELINT	electronic intelligence
EPW	enemy prisoner of war
ERA	explosive reactive armor
EW	electronic warfare
FAO	Foreign Area Officer
FARP	forward arming and refueling point
FDC	fire direction center
FM	Field Manual (as in, U.S. Army)
FMSO	Foreign Military Studies Office
FO	forward observer
FOB	forward operating base
FOC	full operational capability
FPF	final protective fire
FPV	first person view (UAV type)
FSB	Russian Federal Security Service
GAD	Guards Airborne Division]
GCAA	Guards Combined Arms Army (Russian)
GCC	Geographic Combatant Command (U.S.)
GF	ground forces
GMLRS	guided multiple launch rocket (system)
GoF	Group of Forces
GPW	Great Patriotic War (World War II in Soviet/Russian parlance)
GRU	Russian General Staff's Main Intelligence Directorate
GSM	global system for mobile communications
GSR	ground surveillance radar
GTA	Guards Tank Army
GTD	Guards Tank Division
GUGI	Russia's Submarine Intelligence Service
HD	high definition
HE	high explosive
HET	heavy equipment transport (trucks)
HIMARS	High Mobility Artillery Rocket System (U.S. Army)
HPT	high payoff target
HUMINT	human intelligence
HUR	Ukrainian MOD Main Intelligence Agency



Acronym	Definition
HVT	high-value target
IAEA	International Atomic Energy Agency
IED	improvised explosive device
IFAK	individual first aid kit
IFOR	Implementation Force (Bosnia, 1995–1996)
IFV	infantry fighting vehicle
IMET	International Military Education and Training
IMINT	imagery intelligence
IO	information operations
ISB	intermediate staging base
ISR	intelligence, surveillance, and reconnaissance
IVO	in the vicinity of
JDAM	U.S.-made guidance kit for bombs
JGF	Joint Group of Forces
JOF	Joint Operational Forces
KIA	killed in action
KRUS	intelligence, C2, and communication complex (Russian)
LCC	line of combat contact, boundary zone between opposing armed forces
LD	line of departure
LEMD	Leningrad Military District
LMUR	Russian helicopter-launched air-to-surface missile
LNO	liaison officer
LOC	line of contact (Russia-Ukraine) or line of communication
LPR	Luhansk People's Republic
LSCO	large-scale combat operations
MB	military base
MChS	Russian Ministry of Emergency Situations
ME	main effort/strike
METT-T	mission, enemy, terrain and weather, troops, time available
MLRS	multiple launch rocket system
MOD	Ministry of Defense
MOMD	Moscow Military District
MP	military police
MR	motor rifle (unit)
MRD	motorized rifle division
MRL	multiple rocket launcher
MRR	motor rifle regiment
MSR	main supply route
MTO	logistics (literally, "material technical support" in Russian)
MTOE	modified table of organization and equipment
MVD	Russian Ministry of Internal Affairs
NBC	nuclear, biological, and chemical
NCO	noncommissioned officer
NDMC	National Defense Management Center (Russian)
NGO	nongovernmental organization
NKVD	People's Commissariat of Internal Affairs (predecessor of KGB)
NLAW	Next-Generation Light Antitank Weapon
NSDC	National Security and Defense Council (Ukraine)
NSS	National Security Strategy (Russian)





Acronym	Definition
NTC	National Training Center (Ft. Irwin, CA)
OCS	operational contract support
OCU	Orthodox Church of Ukraine
OGRF	Operational Group of Russian Forces
OE	operational environment (TRADOC)
OMA	Oblast Military Administration
OMON	MoIA police special tactics personnel
OPCON	operational control
OPFOR	opposing forces
OPSEC	operations security
OSK	Russian operational-strategic (joint) command
OVA	Regional State Administration
PfP	Partnership for Peace
PGM	precision-guided munition
PMA	province military administration
PMC	private military company
POL	petroleum, oil, and lubricants
POV	privately owned vehicle
POW	prisoner of war
PPP	purchasing power parity
RAG	regimental assault group
RAP	rocket-assisted projectiles
REGT	regiment
RF	Russian Federation
RF MOD	Russian Federation Ministry of Defense
RHA	rolled homogenous armor
ROC	Russian Orthodox Church
RSFSR	Russian Soviet Federated Socialist Republic
RSOTM	Reverse Side of the Medal (Russian Telegram channel)
RUK	Recon/Intelligence-Strike Complex
SACEUR	Supreme Allied Commander Europe
SATCOM	satellite communications
SBU	Security Service of Ukraine
SCC	submarine communication cables
SE	supporting effort/other strike
SEAD	suppression of enemy air defenses
SHAPE	Supreme Headquarters Allied Powers Europe
SIGINT	signals intelligence
SMO	Special Military Operation
SNIB	Separate Naval Infantry Brigade
SOBR	Special Rapid Response Unit of Rosgvardia
SOF	Special Operations Forces
SOMD	Southern Military District (Russian)
SOSUS	Sound Surveillance System
SP	self-propelled
SSM	surface-to-surface missile
SSO	Russian Forces of Special Operations (in MOD)
SVR	Russian Foreign Intelligence Service
TACON	tactical control

Acronym	Definition
TASS	Russian state-owned news agency
TC	truck commander
TD	tank division
TR	tank regiment
TRADOC	U.S. Army Training and Doctrine Command
TTP	tactics, techniques, and procedures
UAF	Ukrainian armed forces
UAS	unmanned aerial system
UAV	unmanned aerial vehicle
UCP	Unified Command Plan
UGV	unmanned ground vehicle
UMPB	Universal Interspecific Glide Ammunition (Russian)
UMPK	Russian-made guidance kit for bombs
UNIAN	Ukrainian Information Agency
UOC-MP	Ukrainian Orthodox Church-Moscow Patriarchate
USSR	Union of Soviet Socialist Republics (dissolved in December 1991)
USV	unmanned surface vessel
VDV	Russian airborne forces
VKS	Russian aerospace forces (Air Force and Space Force combined)
VLS	vertical launching system
VMF	Russian military maritime fleet (Navy)
VPKO	all-season field uniform kit (Russian) aka “multicam”
VVS	Russian Air Force (branch of Russian aerospace forces)
WEMD	Western Military District (Russian)
WIA	wounded in action

