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Managing Shortage: The role of Centre Bases of the NKO in overcoming supply constraints in the Red Army, 1941–1945

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ABSTRACT

In the winter of 1941, the Red Army faced a shell crisis brought on by the loss of its pre-war stocks due to the rapidity of the German advance that summer, the dislocation of industry due to evacuation to the Urals, and the large expansion in the size of the army. Materiel shortages during the battle for Moscow forced reform in both the approach to and administration of handling all manner of supplies. This saw the introduction of strict rationing of munitions supplies at the Front level, and the centralization of munitions distribution and stocks by the Rear in the Centre Bases of the NKO.¹ This use of a centralized supply system allowed the Red Army to use a 'just in time' approach to supplying the Fronts that enabled it to make maximum use of a limited number of supplies and to maintain a high tempo of operations.

KEYWORDS

Red Army; Logistics; the Centre; Supply; Transport; Railways; Second World War

Introduction

In December 1941, at the start of the battle of Moscow, the Supreme Headquarters of the High Command (*Verkhovnoe GlavnoKomandovani*) (*Stavka-VGK*), the highest level of military command in the Soviet hierarchy, was faced with a complex supply situation comprising several competing, inter-related factors. In the first place, the loss of the Western territory of the USSR meant the loss of factories that had either been captured or were now being evacuated on trains. This affected the manufacture of munitions, which was exacerbated by the loss of static depots in the West which had held most of the country's reserve stocks of ammunition. So much so, that munitions had to be sent from the Far Eastern Military District to fight the battle of Moscow.²

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The opinions expressed in this article are those of the authors; they do not necessarily reflect the opinion of The Journal of Slavic Military Studies.

¹NKO refers to both to the department, the People's Commissariat of Defense, and the office of the Commissar of Defense, held for most of the war by Joseph Stalin.

²V.N. Rodin, ed., *Razvitie Tyla Sovetskikh Vooruzhennykh Sil, 1918–1988* [The development of the rear of the Soviet Armed Forces (1918–1988)] (Moskva: Voennoe izdatel'stvo 1989) p. 125.

The problem was exacerbated by a lack of control in distributing supplies, so that some units ended up with shortages, while others had a glut. In addition, the loss of the Ukraine, which provided much of the food for the agriculturally deficient northern oblasts, meant there were widespread shortages. As a result, tighter rationing had to be introduced.³ Nor would fuel remain unaffected, as the German incursion into the Caucasus region in the summer of 1942 destroyed the Baku oilfields, which resulted in shortages in supply for the rest of the war.

These shortages in resources were compounded by, first, the growth in the size of the Red Army⁴ and second, by how Soviet doctrine had evolved to fight the war under the influence of theorists such as Svechin, Triandafilov, and Isserson.⁵ In response to the failures of the First World War, they had developed a doctrine to fight a series of linked and sequenced operations to ultimately win a war. This committed the Red Army to fight in several strategic directions (*Glavnye komandovaniia voisk napravleniia*) simultaneously and on each of these to launch a sequence of Front-level offensives, one after the other.⁶

Each of these factors worked against the others, as resource shortages were made worse by having a large army. However, a large army was needed to carry out the series of high-tempo operations along three different strategic directions, yet a high tempo of operations required large amounts of supplies. Finally, a rapid defeat of the enemy was required to recover the lost territory and most importantly its resources. The Soviet military might have conceived of a successful method of warfare, that the now smaller state, might not be able to sustain, so the available resources needed to be used as efficiently as possible and waste or corruption stamped out. The challenge was to create an efficient system that could respond sufficiently quickly to the strategic and operational level of demands of *Stavka-VGK*. The hurdle was that the Red Army's record in logistics in the period 1937–1940 in the Far East, Poland, and Finland had been poor, and the opening campaign of 1941 was little better.⁷

So, the challenges facing *Stavka-VGK* at the battle of Moscow were both immediate and formidable. Nonetheless, the path of reform already started on 1 August 1941 when responsibility for supply had been transferred from the General Staff Fifth Department to a new unified logistics command in the form of the Main Directorate of the Rear (*Glavnoe upravlenie tyła Krasnoi*

³Wendy Z. Goldman and Donald Filtzer, *Hunger and War: Food Provisioning in the Soviet Union during World War II* (Bloomington, IN: Indiana University Press 2015) p. 47.

⁴N. Andronnikov, V. Gnezdilov, and V. Fesenko, *Velikaia Otechestvennaia voina 1941-1945. Deistvuiushchaia armiia* [The Great Patriotic War - The Operational Army], *Voennaia istoriia Gosudarstva Rossiiskogo v 30 tomakh* (Moskva: Kuchkovo Pole: Animi Fortitudo 2005) p. 534, Appendix 3.

⁵Richard W. Harrison, *Architect of Soviet Victory in World War II: The Life and Theories of G.S. Isserson* (Jefferson, NC: McFarland & Co. 2010) p. 64.

⁶Dmitrii Antonovich Volkogonov, *Stalin: Triumph and Tragedy* (Grove Weidenfeld 1991) pp. 474–475.

⁷David M. Glantz, *Colossus Reborn: The Red Army at War: 1941-1943* (Lawrence, KS: University Press of Kansas 2005) p. 434.

Armii, GUTKA), which in April 1942 was renamed the Chief of the Rear.⁸ This event set in train a process of reform that developed a unique logistics system to solve these resource allocation problems and provided the Red Army with the means to expel the Axis invaders.

While this subject is extensive, this article concentrates on one case study of the problem, i.e., how the flow of munitions from the factories in the interior to the Fronts was directed to keep pace with the sequence of offensives. This flow was controlled by the Staff of the Rear using the Centre Bases of the *NKO* and their associated Centre Regulating Railway Stations. The reason for choosing munitions is that it was an important commodity that had to be transported from factories in the interior and there were no alternate sources of supply.⁹ While Lend-Lease provided substantial amounts of propellant and powder, the finished shell cartridges were all Soviet-made.¹⁰ In contrast, food could be obtained locally and during the war, up to 50% of food was supplied locally.¹¹ Similarly, while most Soviet fuels and lubricants came from the oil fields in the Caucasus, some fuel was provided by Lend-Lease along the Iran route.

To understand why the Centre Bases of the *NKO* were necessary and how they fitted into the overall war effort, this article covers three aspects of the subject, starting with outlining the resource challenges facing *Stavka-VGK* in late 1941. The second part recounts the formation of the office of the Chief of the Rear, how it rationed resources and matched these to the demand from the fronts using the Centre Bases of the *NKO*. The final part examines the evolution of the Centre Bases of the *NKO*, evaluating how they grew from the initial beginnings in August 1941 until they evolved into their final form around the middle of 1943 and their use in the victorious campaigns in Eastern Europe. Finally, the conclusion assesses the importance of both the Chief of the Rear and the Centre Bases of the *NKO* in regulating the flow of material between the Front and the Rear and how this influenced the overall conduct of the war.

In the historiography of the Red Army and the Second World War, the Centre Bases of the *NKO* is not a well-studied subject and there are only two works directly about them, a seminal article by Colonel S. Skryabin in *Voенно-Istoricheskiĭ Zhurnal* (Military History Journal) and a longer discussion by Colonel-General Ivan Golushko in the book *Shtab Tyla Krasnoĭ Armii v gody*

⁸Glantz, p. 440.

⁹N.A. Antipenko, 'Reshenie nekotorykh problem operativnogo tyla v khode Velikoi Otechestvennoi voiny' [The solution of some problems of the operational rear services during WWII], *Voенно-Istoricheskiĭ Zhurnal* [Military History Journal] 5 (1968) p. 24

¹⁰Andrei Nikolaevich Balysh, 'Razvitie proizvodstva vzryvchatykh veshchestv v SSSR v 30-e gg. KhKh v. i postavki po lend-lizu v gody Velikoi Otechestvennoi voiny' [Explosives Production in USSR in 1930s and Its Lend-Lease Supplies During Great Patriotic War], *RUDN Journal of Russian History*, 4 (15 December 2012) p. 13, <https://journals.rudn.ru/russian-history/article/view/3781>.

¹¹Vasilii Kuz'mich Vysotskiĭ and Mikhail Pavlovich Milovskii, *Tyl Sovetskoĭ Armii* [Rear of the Soviet Army] (Moskva: Voenizdat 1968) pp. 268–269.

voïny 1941–1945 (Staff of the Rear of the Red Army in the years 1941–45).¹² There is a difference of opinion between these two sources. During the war, Skryabin was a relatively junior officer on the Staff of the Rear, and in 1979 had penned an account of the foundation of the Main Directorate of the Rear in which he attributed a major role to one Professor Goretsky, as advisor to the Chief Intendant Lieutenant General Andrei Khrulev.¹³ From a Soviet perspective this was problematic since Goretsky was a ‘technical specialist’ and to assign this major, successful reform to a mere technical specialist was unacceptable.¹⁴ In his 1998 book, Golushko, a senior General officer, rubbishes this account, saying that Goretsky’s role was limited to finding a document in the archives.¹⁵ While this conflict between the two authors might seem to devalue Skryabin as a source, nonetheless the unpublished memoirs of General Khrulev, Chief of the Rear, support his account entirely.¹⁶

The methodology adopted in this article was to scour existing, secondary Soviet-era sources for mentions of the Centre Bases of the *NKO*, any published references in *GKO* Resolutions (State Defense Committee) or *NKO* Orders or other official paperwork and to examine current Russian published sources for references. Use was made of the University of Warwick, Department of Economics project, *The Factories, Research and Design Establishments of the Soviet Defense Industry*, which attempts to list all the Soviet defense establishments and includes some mentions of the Centre Bases of the *NKO*.¹⁷ In addition, the recently released diaries of General Khrulev were studied either for direct mentions of the Centre Bases of the *NKO* or administrative changes that might have affected their use.¹⁸ A limited amount of research was conducted in Russian archives in search of previously unpublished documents, one of which appears in [Appendix 1](#).

Challenges facing Stavka-VGK

Within six months of the opening of the Soviet-German War of 1941–1945, the *GKO* and *Stavka-VGK* were facing several serious challenges to continue

¹²Elena Evgenbevna Stepanova, ‘Évolútsiia istorii i istoriografii Tyla Sovetskikh Vooruzhennykh sil’ [Evolution of history and historiography of the Rear of the Soviet Armed Forces], *Vlast [Power]*, 8 (21 September 2015) pp. 177–181; S.N. Skryabin, ‘Sozdanie baz snabzheniia tsentra’ [Establishment of Supply Bases of the Centre], *Voенно-Istoricheskii Zhurnal [Military History Journal]* 10 (1986) pp. 54–60; I. M. Golushko, *Shtab Tyla Krasnoi Armii v gody voïny 1941–1945* [Staff of the Rear of the Red Army 1941–45] (Moskva: Ékonomika i informatika 1998).

¹³S.N. Skryabin, ‘Iz Istorii Sozdaniia Organov Upravleniia Tylom Sovetskoï Armii’ [From the History of the Control Organs of the Rear of the Soviet Army], *Voенно-Istoricheskii Zhurnal [Military History Journal]* 7 (1979) p. 54.

¹⁴Technical specialist is the Bolshevik term for a former, Tsarist-era, military officer.

¹⁵I.M. Golushko, *Shtab Tyla Krasnoi Armii v gody voïny 1941–1945*, p. 26.

¹⁶‘Rukopis’ Memuarov: Andrey Vasil’yevicha Khrulev’ [Manuscript Memoirs: Andrei Vasilievich Khrulev], *Velikiy Intendant: Andrey Vasil’yevich Khrulev 30.09.1892–09.06.1962* (blog), 2017, <https://general-khrulev.com/notes-intendant/>.

¹⁷Keith Dexter and Ivan Rodionov, *The Factories, Research and Design Establishments of the Soviet Defence Industry: A Guide: Ver. 21*. (Warwick: University of Warwick, Department of Economics 2020), <https://warwick.ac.uk/fac/soc/economics/staff/mharrison/vpk>.

¹⁸‘Rukopis’ Memuarov: Andrey Vasil’yevicha Khrulev’.

the war. Some were structural, some were the result of military action, and others were organizational and economic.¹⁹ The Germans conquered about 40% of the territory of the Western USSR, with the loss of 65 million people, 63% of coal mining, 58% of steel smelting, 38% of grain production, 84% of sugar production, and 41% of the railway lines.²⁰ Although key industries were evacuated to the Urals, overall production would fall and not recover during the war years. For instance, steel production was 18.3 million tonnes in 1940, 8.1 million tonnes in 1942, and 12.3 million tonnes in 1945. To counteract these losses, the Soviet Union had to mobilize its population and economy to an extraordinary degree and even though it received additional aid from the Western Allies, this was not sufficient to bridge the gap and it faced shortages in all categories.²¹ Harrison has explained how a higher GDP per capita is more advantageous to a country than a large size.²² This meant that Germany, which after June 1941 had a larger economy than the Soviet Union's, would find it easier to devote 50% or more of its GDP to military output so that the only advantage left to the Soviet Union was a larger population.

The Soviet Union's munitions industry was relatively small and even though it expanded greatly during the war, it struggled to keep pace with both the expansion in the size of the Red Army and the scope of its operations. This is illustrated in comparison with the United Kingdom as shown in Table 1.²³ Mark Harrison produced an adjusted figure for munitions output in artillery shells (*snariady*) and mortar bombs (*miny*) but excluding aerial bombs (*bomby*) compared with the official Soviet history which has been added to this table for comparison.²⁴

From this, it can be seen that the Soviet Union had a smaller production of munitions than the UK, around 88%, even though their armed forces numbered 11.9 million men by 1943 and the UK armed forces numbered just 4.4 million with operational armies of 6.6 and 2.7 million personnel, respectively.²⁵ In effect, the Soviet Union deployed 270% more manpower but fought the war with 12% fewer munitions, although it must be recognized that these were very different types of war.²⁶

¹⁹Mark Harrison, ed., *The Economics of World War II: Six Great Powers in International Comparison* (Cambridge: Cambridge University Press 1997) p. 268.

²⁰Viktor Tikhonovich Aniskov, *Sovetskij tyl v pervyy period Velikoy Otechestvennoy voyny* [Soviet Rear In the First Period of Great Patriotic War], ed. G.A. Kumanev, 1 (Nauka 1988), p. 161, Table 4.

²¹Harrison, *The Economics of World War II*, p. 272.

²²*Ibid.*, pp. 269–270.

²³Mark Harrison, *Accounting for War: Soviet Production, Employment, and the Defence Burden, 1940-1945* (Cambridge: Cambridge University Press 1996) p. 180 Table B.1; A. A. Grechko, G.A. Arbatov, and V.A. Vinogradov, *Istoriia Vtoroi Mirovoi Voyny 1939-1945* [History of the Second World War 1939-1945] (Moskva: Voenizdat, 1973–1976), 5: tables 4 & 7; 6: table 24 & 26; 7: table 5; 8: table 9; 9: table 15.

²⁴Mark Harrison, 'The Volume of Soviet Munitions Output, 1937–1945: A Reevaluation', *Journal of Economic History*, Cambridge University Press, 50(3) (1990) pp. 569–589, <https://www.jstor.org/stable/2122818?sid=primo&seq=1>.

²⁵Peter Howlett, Great Britain, and Central Statistical Office, *Fighting with Figures* (London: H.M.S.O. 1995), p. 39, Table 3.4; Andronnikov, Gnezdilov, and Fesenko, *Velikaia Otechestvennaia voina 1941–1945. Deistvuiushchaa armia*, p. 556, Appendix, 3 July 1943.

²⁶David Edgerton, *Britain's War Machine: Weapons, Resources and Experts in the Second World War* (London: Penguin 2012), p. 123.

Table 1. UK/USSR munitions production 1941–1945.

Shells/bombs (millions)	1941	1942	1943	1944	1945	Total
UK (1973)	47,713	97,358	240,600	280,600	84,700	750,971
USSR (Harrison)	83,200	133,300	175,000	184,000	87,800	663,300
USSR (1973)	67,100	127,400	161,500	218,900	100,800	675,700

This lack of a suitable volume of munitions production was compounded by the rapid growth of the Red Army in the period just before the war and during the period 1941–1943. In 1938, the Red Army had numbered 1,513,000 personnel, in September 1939 (with the occupation of Poland) 1,520,000, in December 1940 (the Soviet-Finnish War) 4,207,000, and by June 1941 it had expanded to 5,373,000 personnel with 2,780,000 personnel in the operational army based on the border in the recently occupied territories of the western Ukraine and Belorussia, and the Baltic States.²⁷

By October 1941, this pre-war army had largely been encircled and destroyed. However, the Red Army had raised new units and at the time of the battle of Moscow in December 1941, it numbered 8,923,541 personnel (4,562,684 in the operational army and Reserve of *Stavka-VGK (RVGK)*). By May 1942, it numbered 10,936,631 personnel (5,896,191 operational/*RVGK*) and with the addition of new tank armies and *RVGK* units it rose in July 1943 to 11,936,767 personnel (7,762,716 operational/*RVGK*). It would remain at this level of an operational army of 6 million, 1 million in *RVGK*, and 5 million being mobilized and trained.²⁸

This situation was not helped by decisions made before the war, when in 1940 the People's Commissar (*Narkom*) of State Control (*Goskontrolya*) Lev Mekhlis, convinced Stalin to move the strategic stocks right up to the border.²⁹ Up to that point, strategic 'inviolable' reserves had been held at the depots of military districts behind the Volga, which contained the set of winter uniforms and the bulk of reserve ammunition stocks. However, the General Staff supported Mekhlis in his proposal because, upon mobilization, they were expecting a million or so men to arrive at their units with no uniforms or equipment. They needed the stocks to provide uniforms, personal equipment, and weapons directly to the units. The Chief Intendant of the Red Army, Khrulev, argued that the mobilized men should be equipped at the military districts and then sent to their units. This had the added advantage that if these contingents needed to be diverted en route to another unit, they arrived combat-ready at their new destination. Mekhlis called this proposal 'wrecking'. So, Stalin as *NKO*, was persuaded and in the events of June 1941, the Germans overran the 'inviolable' stocks and a large proportion of them were lost.³⁰

²⁷David M. Glantz, *Stumbling Colossus*, p.107, 292–295.

²⁸Andronnikov, Gnezdilov, and Fesenko, *Velikaia Otechestvennaia voina 1941-1945. Deistvuiushchaia armia*, pp. 537, 541, 546, 556 Appendix №3.

²⁹Rukopis' Memuarov: Andrey Vasil'yevicha Khrulev', sec. 2. Predvoennyi period.

³⁰Rukopis' Memuarov: Andrey Vasil'yevicha Khrulev', sec. 2. Predvoennyi period.

For instance, in 1941 the network of depots in armies, fronts, and western military districts held the bulk of supply of munitions, with 12 million shells held in the Centre out of national stock of 62 million and 2 million out of 24 million mortar bombs.³¹ This forward deployment of the national stock of munitions left it dangerously exposed and in Lvov, of the 700 railway wagons of ammunition, 260 were destroyed and 340 were used or evacuated, while the South-western Front destroyed a total of 1,933 wagons of ammunition (around 31,000 tonnes) and 38,000 tonnes of fuel. By the end of 1941, 25,000 wagons of ammunition (around 400,000 tonnes) had been lost, and 70% of the mobilization stocks of food and fodder.³² The static nature of the supply system of both the combat armies and fronts and the Main Directorates behind them, made all vulnerable to the deep German encirclements, so within the first week of the war (29 June 1941), 10 artillery depots, 25 fuel depots and 14 food depots had been captured with the loss of 25,000 wagons of ammunition (30% of all stocks), 50,000 tonnes of fuel (50% of all stocks), 50,000 tonnes of food/fodder (50% of all stocks) and about 400,000 uniforms (90% of all stocks) Added to which were losses of armored, engineering, housing, medical and sanitary supplies reached 85–90% of stocks.³³

Overall, there was a mismatch between the consumption of munitions by the expanded Red Army and the delivery from industry. In 1938, *NKO* had estimated annual wartime ammunition demand to be 219 million shells and had aimed to hold reserves of 75% of this amount. Yet at the time, the Soviet factories only produced 12.3 million shells a year and the army was only 1.5 million strong.³⁴ Moreover, this estimate of annual demand exceeded the annual production of any wartime year. At first, when the shortage of resources began to be felt in the autumn of 1941, the Red Army introduced new norms of food supply.³⁵ Then in late October 1941 by *NKO* Order, it introduced rationing of munitions by fixing

³¹T. V. Sorkina, *Istoriia sozdaniia i razvitiia oboronno-promyshlennogo kompleksa Rossii i SSSR. 1900-1963: Dok. i materialy. T. 3. Stanovlenie oboronno-promyshlennogo kompleksa SSSR. (1927–1937)*. Ch. 1 (1927–1932) [The history of the creation and development of the military-industrial complex of Russia and the USSR. 1900–1963: Doc. and materials. T. 3. Formation of the military-industrial complex of the USSR (1927–1937). Ch. 1 (1927–1932)], vol. T.3 (Moskva: Knizhnyi Klub Knigovok), pp. 52–57, map p. 58, table 34 pp. 266–267, accessed 7 December 2021, <http://docs.historyrussia.org/ru/nodes/278538-istoriya-sozdaniya-i-razvitiya-oboronno-promyshlennogo-kompleksa-rossii-i-sssr-1900-1963-dok-i-materialy-t-3- stanovlenie-oboronno-promyshlennogo-kompleksa-sssr-1927-1937-ch-1-1927-1932>.

³²Rodin, *Razvitie Tyla Sovetskikh Vooruzhennykh Sil, 1918–1988*, p. 117.

³³V.M. Melnikov, *Tylovoe obespechenie voisk v Moskovskoi bitve* [Rear supply of troops in the Battle of Moscow] (Moskva: Izdatel'stvo Patriot, 2008); Col. I. Boiko, *Tyl Zapadnogo fronta v pervye dni Otechestvennoi voiny* [Rear of the Western Front in the opening days of the GPW], *Voenna-Istoricheskii Zhurnal* 8 (1966) pp. 15–26.

³⁴N. D. Yakovlev, *Ob Artillerii I Nemnogo O Sebe* [On the Artillery and a Wee Bit About Myself], 1st ed. (Moskva: Vysshaya shkola 1984), pp. 82–83 total does not include mortar bombs, <http://militera.lib.ru/memo/russian/yakovlev-nd/index.html>.

³⁵A.I. Mirenkov, *Voyenno-ekonomicheskii faktor v Stalingradskom srazhenii i Kurskoy bitve* [Military-economic factors in the Stalingrad and Kursk battles] (Moskva: RIĀ MO RF, 2005), fig. 25; *'Prikaz Narodnogo Komissara Oborony Soiūza SSR № 312 22 Sentiabria 1941 Goda.: O Vvedenii Novykh Norm Prodovol'stvennogo Snabzheniia Krasnoi Armii* [Order of the People's Commissar of Defense of the USSR Union No. 312 of 22 September 1941: On the Introduction of New Norms for the Food Supply of the Red Army], 22 September 1941, record 94 2 pages onward, Fond: 558, Opus. 11, Delo. 463, Line. 039, Rossiiskii gosudarstvennyi arkhiv sotsial'no-politicheskoi istorii (RGASPI), <http://sovdoc.rusarchives.ru/sections/personality//cards/11990/images/>; *'Prikaz Narodnogo Komissara Oborony Soiūza SSR № 312 22 Sentiabria 1941 Goda.: O Vvedenii Novykh Norm Prodovol'stvennogo Snabzheniia Krasnoi Armii*, Record 61 32 pages.

norms of ammunition consumption and only permitting the release of additional stocks by personal order of the NKO, i.e., Stalin himself.³⁶ Khrulev noted that:

At first, many took up arms against the limits, but when they figured it out, it turned out that the limitation system forced the troops to count their resources, eradicate wastefulness, and economically and wisely use everything that the country gave to the front. It made it possible to significantly reduce the consumption of ammunition and other means of supply and build up stocks for subsequent operations.³⁷

Although this measure did begin to yield results, it took time for army commanders to learn to stick to the norms and to use their ammunition efficiently. Another aspect was the management of stocks within the Main Artillery Directorate (GAU). In March 1942, a survey revealed a shocking level of mismanagement, waste, and corruption, so reforms were put in place to improve this and to root this out.³⁸ While production of shells increased four-fold between 1940 and 1941, GAU calculated that it needed a 20-fold increase in shells and a 16-fold increase in mortar bombs to meet current demand.³⁹ So during the Moscow Counteroffensive in January 1942, the Western Front did not have enough ammunition to meet all its requirements.⁴⁰ GAU built up stocks over the summer of 1942. However, the Stalingrad Defensive Operation rapidly depleted these, as described by Moiseev:

The *Stavka/VGK* reserve was gradually consumed and by October 1942 was running out. According to the plans of the General Staff, the ammunition requirement for October exceeded stocks for 76-mm shells 3 times, 122-mm shells 13 times, and mortar bombs 4 times. The General Staff, on the instructions of the Supreme Command, during the preparation of the campaign, established a strict limit on the consumption of ammunition, which was strictly carried out by GAU. The increase in the production of artillery rounds, the wide maneuver of ammunition stocks, and their strictly limited consumption ensured the creation of the necessary reserve of shells and mines at the Central Artillery Bases.⁴¹

Similar problems continued throughout the war, as at the battle of Berlin in 1945, the offensive was launched with only 2.5 *boekomplekt* (an aggregate

³⁶S.K. Kurkotkin, *Tyl sovetskikh vooruzhennykh sil v Velikoi Otechestvennoi voine* [Rear of the Soviet Armed Forces in the Great Patriotic War] (Moscow: Voenizdat 1977) p. 19.

³⁷A.V. Khrulev, 'Stanovlenie Strategicheskogo Tyla v Velikoi Otechestvennoi Voine' [Formation of the Strategic Rear in the Great Patriotic War], *Voenna-Istoricheskii Zhurnal* [Military History Journal] 06 (1961) p. 75

³⁸S.M. Budenny, 'Prikaz Narodnogo Komissara Oborony Soiūza SCP № 0221. 28 Marta 1942 G.. Prikaz O Rezul'tatakh Obsledovaniia Narkomatom Gosudarstvennogo Kontrolia Snabzheniia Voisk Boeprispasami I Artilleriiskim Vooruzheniem' [Order People's Commissar of Defence USSR № 0221 28 March 1942. Order on the Results of the People's Commissariat's Survey of the State Control Over the Supply of Troops with Ammunition and Artillery Weapons], in *Russkii arkhiv: Velikaia Otechestvennaia, vol. Vol. 13 (2—2) Prikazy narodnogo komissara oborony SSSR. 22 iūniia 1941 g. — 1942 g.* [Orders of the People's Commissar of Defense of the USSR. 22 June 1941-1942] (Moskva: Terra, 1997), №.155, http://militera.lib.ru/docs/da/nko_1941-1942/09.html.

³⁹N.D. Yakovlev, *Ob Artillerii I Nemnogo O Sebe*, chap. 3, last four paragraphs.

⁴⁰A.I. Mirenkov, 'Voenna-ekonomicheskii faktor v bitve pod Moskvoi' [Military and economic factor in the Battle of Moscow], *Voenna-Istoricheskii Zhurnal* [Military History Journal] 5 (2006) p.10; Marshala artillerii P. N. Kulishova, *Artilleriiskoe Snabzhenie V Velikoi Otechestvennoi Voine 1941-45 gg. Kniga pervaya* [Artillery Supply in the Great Patriotic War 1941–1945. Book One], vol. 1 (Moskva - Tula: Glavnoe Raketno-Artilleriiskoe Upravlenie 1977), sec. 3.2.

⁴¹Moiseev, Sergey Ivanovich, 'Organizatsiya tyloвого obespecheniya voysk Krasnoy Armii v Stalingskoy bitve' [The organization of rear support of the Red Army troops in the Battle of Stalingrad] (Candidate of Historical Sciences, Cheboksary 2016) p. 175, Russian State Electronic Library.

measure of munitions,) available and a further 1.0 had to be provided from the Centre while the operation was in progress.⁴² Compare this with the Vistula-Oder Operation, where the First Belorussian Front started with 3-4 *boekomplekt*. ‘Maneuvering the rear’ increasingly meant juggling limited reserves to meet the most important operations and storing up stocks during quieter periods; in this, Central Bases were crucial.

The struggle to increase munitions production was closely tied to the evacuation of arms factories and industrial equipment from the West of the country. On 24 June 1941, just three days after the start of Operation *Barbarossa*, the Council for Evacuation was formed and managed to save a portion of the military productive capacity of the state by moving 1,523 industrial enterprises which included 1,360 military plants on 30,000 trains.⁴³ The production of ammunition was to be carried out by existing armament factories and joined by other enterprises including a shoe factory, a fur-making plant, and a confectionery and pasta-making factory, as detailed in GKO Resolution №4 (Top Secret) of 3 July 1941, “On the program for issuing artillery and small arms, the plan for the evacuation of plants of the People’s Commissariat of Armaments and the creation of new bases”.⁴⁴ Nonetheless, these evacuated plants would be out of production for many months, stuck on railway wagons.

This general state of affairs was made worse by the methods of decentralized control employed by the GKO and Red Army as defined by GKO Resolution №113 on 15 March 1941.⁴⁵ The Rear of the Red Army was divided into three with Deputy *Narkom* Marshal Semyon Budenny taking the intendant, medical and veterinary departments, Deputy *Narkom* General Georgy Zhukov taking rear services, military communications, fuel supply, and the rest under the *Narkom* for Defence Marshal Semyon Timoshenko.⁴⁶ In addition, there was a lack of

⁴²N.A Antipenko, *Na Glavnom Napravlenii* [In the Main Direction] (Moskva: Nauka 1967) p. 255, http://militera.lib.ru/memo/russian/antipenko_na/index.html.

⁴³Petr Nikolayevich Pospelov et al., eds., *Istoriya Velikoi Otechestvennoi voiny Sovetskogo Soyuz 1941-1945. Tom. 6* [History of the Great Patriotic War 1941–1945] (Moskva: Voenizdat 1960) p. 143, <https://prussia.online/books/istoriya-velikoy-otechestvennoy-voyni-sovetskogo-souza-1941-1945-1-6?ysclid=ljg6zpqbg2892936976>; Rodin, *Razvitie Tyla Sovetskikh Vooruzhennykh Sil, 1918–1988*, p. 119.

⁴⁴T. V. Sorokina, ‘Postanovlenie GKO SSSR № 4ss «O Programme Vypuska Artilleriiskogo I Strelkovogo Vooruzheniia, Plane Evakuatsii Zavodov Narkomata Vooruzheniia I Sozdaniia Novykh Baz». Sovershenno Sekretno. 3 iulii 1941 G.’ [Resolution of the State Defence Committee of the USSR No. 4ss ‘on the Program for the Production of Artillery and Small Arms, the Plan for the Evacuation of the Factories of the People’s Commissariat of Armaments and the Creation of New Bases’. Top Secret. 3 July 1941], in *Oboronno-promyshlennyi kompleks SSSR v gody Velikoi Otechestvennoi voiny (iun’ 1941-1945)*, vol. T. 5., Istoriiã sozdaniã i razvitiã oboronno-promyshlennogo kompleksa Rossii i SSSR. 1900-1963: Dok. i materialy., Ch. 1. (Knizhnyi Klub Knigovek 2020) pp. 93–95, <http://docs.historyrussia.org/ru/nodes/264309-postanovlenie-gko-sssr-locale-nil-4ss-locale-nil-o-programme-vypuska-artilleriiskogo-i-strelkovogo-vooruzheniya-plane-evakuatsii-zavodov-narkomata-vooruzheniya-i-sozdaniia-novykh-baz-locale-nil-sovershenno-sekretno-3-iyulya-1941-g#mode/inspect/page/1/zoom/4>.

⁴⁵Melnikov, *Tylovoe obespechenie voisk v Moskovskoi bitve*, n. 20.

⁴⁶V. A. Zolotarev et al., *Tyl Krasnoj Armii v Velikoj Otechestvennoj vojny 1941–1945 gg.* [Rear of the Red Army in Great Patriotic War 1941–1945], vol. Tom. 25 (14) *Russkij archiv. Velikaja Otechestvennaja, Russkij archiv. Velikaja Otechestvennaja* [Russian Archive: Great Patriotic War] (Moskva: Terra 1998) p. 714 note 10; S. N. Skryabin, ‘Logistical Reorganisation at the Start of World War II Reviewed’, *Voenna-Istoricheskii Zhurnal* [Military History Journal] 4 (1984) pp. 32–38.

coordination between the center and the field army. Main Directorates such as GAU managed the supply of ammunition from industrial concerns right through to field depots in the armies and military districts. However, the Military Communications Service (VOSO) handled the transport of the matériel utilizing the People's Commissariat for Communications (NKPS responsible for railways and waterways) and the army supply services handled its distribution around the army units. Unless there was a high level of co-ordination by the General Staff department between these organizations, to resolve their different viewpoints, focus, and timescales, chaos would ensue, which is exactly what happened. Given that the Main Directorates covered artillery, engineering, chemical warfare, signals, intendant supplies, fuel, lubricants, and pay, this had a serious effect on the operations of the Red Army in the field. The lack of information about the state of supplies in the field began to affect distribution as shown in the GAU plan of 6 July 1941:

4. The General Staff does not give any guidance on the preferability of supplying one front over another, and the Rear and Supply Directorate does not find it possible to set the tasks of the GAU in this sense. Therefore, the distribution of ammunition along the fronts is relatively even.⁴⁷

It was around the same time that the Chief of GAU, General Nikolai Yakolev, and the Chief Intendant, Khrulev, sought out the Chief of the General Staff, Zhukov, with the following result:

He sat in the office tired, with eyes inflamed from sleepless nights. When I asked about the situation with the supply of troops, Zhukov waved his hand and said: *'I can't tell you anything. I can't figure out a lot of things myself, and I don't know what the troops need now.'* This conversation once again convinced me that the General Staff, completely absorbed in the operational leadership of the troops, was not able to successfully organize the supply of the front.⁴⁸

This situation could simply not continue, the supply of the army needed to be based on a tight, centralized control of the flow of supplies from the interior to the troops on the frontline. A proposal along these lines appeared on 28 July 1941 from Khrulev and Stalin, as NKO, accepted his proposals on 1 August.⁴⁹ From this point onwards, things would start to improve with the creation of the Chief of the Rear of the Red Army and his staff.

⁴⁷P. N. Kulishova, *Artilleriiskoe Snabzhenie V Velikoi Otechestvennoi Voine 1941–45 Gg. Kniga vtoraiâ* [Artillery Supply in the Great Patriotic War 1941–1945. Book Two], vol. 2 (Moskva - Tula: Glavnoe Raketno-Artilleriiskoe Upravlenie 1978) pp. 418–419.

⁴⁸Khrulev, *'Stanovlenie Strategicheskogo Tyla v Velikoi Otechestvennoi Voine'*, p. 67.

⁴⁹Khrulev, p.68; Skryabin, 'Logistical Reorganisation at the Start of World War II Reviewed'; 'Rukopis' Memuarov: Andrey Vasil'yevicha Khrulev'.

Central control of the rear

Unlike Western nations which tend to have a loose definition of the term 'logistics',⁵⁰ the Soviet Union developed a precise one based on the writings of Frederick Engels and Vladimir Lenin.⁵¹ Lenin proposed two joined concepts of logistics which he called by the Russian word 'Tyl' or 'Rear', namely the 'Rear of the Nation' and the 'Rear of the Armed Forces'.⁵² Lenin saw these as:

... a prerequisite for the success of this war is the unified command of all units of the Red Army and the strictest centralization at the disposal of all the forces and resources of the socialist republics, in particular, the entire military supply apparatus, as well as railway transport, as the most important material factor of war, which is paramount importance not only for the implementation of military operations but also the supply of the Red Army with combat and clothing equipment and food.⁵³

Similarly, Stalin's concept of the Rear was based on Lenin's teachings and informed by his experience during the Civil War at Vyatka in the Urals in 1918. He later codified this as one of his 'permanent operating factors', calling it the 'stability of the rear'.⁵⁴ This was best defined by Marshal Kliment Voroshilov in 1949 as:

The idea of the 'stability of the rear' includes all that constitutes the life and activity of the whole state's social system, politics, economy, apparatus of production, organization of the working people, ideology, science, art, the morale of the people, and other things.⁵⁵

This concept of a centralised logistics system where the army was inextricably linked with the wider economy and industry at all levels of society, was a key military concept of Stalin. It also fitted in with Stalin's concept of leadership and his understanding of the relationship between the military and civil society. These concepts were supported by Chief of the General Staff General Boris Shaposhnikov's ideas around 'total leadership', which resulted in the wartime *GKO/Stavka-VGK* whose role was command, supported by a general staff whose main role was planning and control.⁵⁶ Shaposhnikov stated that:

⁵⁰Jeremy Black, *Logistics: The Key to Victory* (Pen and Sword Military 2021) p. xii

⁵¹Iu. Korablev, 'Deiatel'nost' V. I. Lenina po sozdaniiu tyla Krasnoi Armii (1918 god)' [Activities of Lenin on the creation of the rear of the Red Army (1918 year)], *Voенно-Istoricheskiĭ Zhurnal* [Military History Journal] 12 (1967) pp. 3–4.

⁵²Iu. Korablev, 'V. I. Lenin i problemy sovetskogo tyla (1918-1920 gg.)' [V. I. Lenin and the problems of the Soviet rear (1918-1920)], *Voенно-Istoricheskiĭ Zhurnal* [Military History Journal] 4 (1973) pp. 11–12.

⁵³Quoted in: I.M. Golushko, 'Razvitie sistemy upravleniia tylom' [Development of the Rear Control System], *Tyl i Snabzhenie Sovetskikh Vooruzhennykh sil* [Rear and Supply of the Soviet Armed Forces] May (1981) p. 15.

⁵⁴James J Schneider, *The Structure of Strategic Revolution.: Total War and the Roots of the Soviet Warfare State* (Novato, CA: Presidio Press 1994) p. 238; Josif Vissarionovič Stalin, 'Stalin Order of the Day, No. 55 February 23, 1942', Stalin Archive, accessed 2 December 2017, <https://www.marxists.org/reference/archive/stalin/biographies/1947/stalin/11.htm>.

⁵⁵Earl F. Ziemke, *The Red Army 1918–1941: From Vanguard of World Revolution to US Ally* (London: Frank Cass Publishers 2004) pp.165 & 315 Ziemke considers 'stability of the rear' to refer more narrowly to repression.

⁵⁶John Erickson, *The Soviet High Command: A Military-Political History, 1918–1941* (London; New York: Macmillan Press 1962) p. 282; Schneider, *The Structure of Strategic Revolution*, pp. 249–250 & 251–256.

War is prepared for and conducted, and the responsibility for success or failure is borne not by the general staff but by the state government which cements together the preparation along different 'lines' by itself or by way of a special organ (a defense council).⁵⁷

Ironically, this 'functional' split led to a less than centralized Rear and a poor performance in logistics for the Red Army in the occupation of Poland in 1939, the Winter War of 1940, and the opening months of 1941, as illustrated earlier.

Nonetheless, it is quite extraordinary that on 1 August 1941, Stalin handed control of a new, centralized Rear organization to a relatively junior military bureaucrat, at the time Lt General Khrulev. After all, up to that date Khrulev's career had been largely in military administration.⁵⁸ He had known Voroshilov during the Revolution in St. Petersburg and had served as a political commissar in the 1st Cavalry Army (KavKor) during the Polish-Soviet War of 1919–1921. Thereafter, he served in the Finance Department of the Red Army until 1938, when Voroshilov sent him to the Kiev Military District Construction Directorate to get him away from Melkhis, who was trying to have him arrested during the Great Purges.⁵⁹ On his return in 1939, he was appointed Corps Commissar as Chief of Supply of the Red Army and then in June 1940 with the military rank of Lieutenant General of the Intendant Service as Chief Intendant, where his main responsibility was for uniforms, blankets, and soldier's equipment.⁶⁰

Stalin's decision to make Khrulev solely responsible for Red Army supply and transport seems unusual, especially as it meant stripping the General Staff 5th Department of their existing role. However, in 1979, Retired Colonel S. Skryabin penned an article in *Voенно-Исторический Журнал* (Military History Journal) which may give a clue to Stalin's confidence.⁶¹ In November 1938, the then Captain Skryabin had been tasked with seeking out a Red Professor, K.E. Goretsky and this academic had acted as Khrulev's advisor from 1939 until he died in 1947. Goretsky had been the Assistant Chief of Supply of the Red Army during the Civil War and 1920s and before that had been a Major General in the Tsarist Army, as Assistant Chief Intendant of the Ministry of War.⁶² Stalin would have known exactly who he was and his presence in Khrulev's team might have been a major factor in Stalin's decision.

⁵⁷Schneider, *The Structure of Strategic Revolution*, p. 256.

⁵⁸'Zapiski intendanta | General armii Khrulev' [Personal file of General of the Army A.V. Khrulev], *Velikiy Intendant: Andrey Vasil'yevich Khrulev 30.09.1892-09.06.1962* (blog), 2017, <https://general-khrulev.com/documents/private-matter/>.

⁵⁹'Rukopis' Memuarov: Andrey Vasil'yevicha Khrulev', 3. Nachal'nik Tyla [3. Chief of the Rear]

⁶⁰E. N. Kulkov, O. A. Rzheshesvskii, and Harold Shukman, *Stalin and the Soviet-Finnish War, 1939–1940*, Cass Series on the Soviet (Russian) Study of War (London: Frank Cass 2001) p. 160.

⁶¹Skryabin, 'Iz Istorii Sozdaniia Organov Upravleniia Tylom Sovetskoï Armii'.

⁶²'Goretsky Konstantin Efimovich', *Russkiy Imperatorskay Armii, 2004–2022*, <http://www.regiment.ru/bio/G/84.htm>.

The Rear was created by GKO Resolution №. 300 28 July 1941 and NKO Order № 257 1 August 1941 and a similar organization was created for the Rear of Fronts and Armies with NKO Order № 258 1 August 1941.⁶³ It was very cleverly designed, as the Chief of the Rear only directly controlled a small number of units: the Staff of the Rear, VOSO, the Road Administration, and the Inspectorate. It was directly responsible for another small group of departments: fuel supply, intendant, medical, and veterinary. The large bulk of the day-to-day administration remained directly in the hands of the Main Directorates; however, these were subordinated to the Chief of the Rear, whose authority was increased by making him a Deputy Commissar for Defense, in addition to which he had sole control of all means of transport. This structure left Khrulev free to concentrate on organizing and delivering supplies with a small organization, which in 1943 would number just 2,096 officers and 4,090 officials.⁶⁴

Central to the scheme was the Staff of the Rear, which in 1943 numbered 98 officers and 51 administrators. An idea of its functions can be gained from its structure. It had 7 departments: first: operational-organizational; second: supply of fronts and separate armies; third: supply of reserve armies and formations, military districts, spare units, marching reinforcements, and military echelons en route; fourth: railway and water transport; fifth: motor vehicle and air transport; sixth: orders and staff; seventh: military training and a cipher office, typing pool (*Mashbūuro*) and administrative and economic office. Its focus was on supply and transport to the front level of the operational army and all kinds of forming units in the military districts. To carry out this task the Rear Staff had to monitor the level of stocks at the fronts, in the national rear, and in transit. The main documents were:

...operational and general Rear situation maps; railway traffic diagrams, documents on railway junctions and station rebuilding; scheme of recovery of railway; military road maps; a book for recording the movement of hospital trains and relocating sanitary echelons; journals and maps recording the deployment of Rear units and formations of the Center, fronts, armies and military districts.

⁶³'Postanovlenie GKO-300s. Ob Uluchshenii Raboty General'nogo Shtaba Krasnoĭ Armii i Ėentral'nykh Upravlenii Narkomata Oborony.' [Resolution GKO-300c. On improving the work of the General Staff of the Red Army and the central directorates of the People's Commissariat of Defense.], 28 July 1941, F. 644. Op. 1.D. 4.L. 243–244, Rossiiskii gosudarstvennyi arkhiv sotsial'no-politicheskoi istorii (RGASPI), <http://sovdoc.rusarchives.ru/sections/war//cards/368567>; 'Prikaz Nko № 0257c 1 Avgusta 1941 G. Ob Organizatsii Glavnogo Upravleniia Tyla Krasnoĭ Armii i Upravlenii Tyla Frontov i Armii' [NKO Order No.257s 1 August 1941 on the Organization of the Main Directorate of the Rear of the Red Army and the Directorates of the Rear of the Fronts and Armies], 1 August 1941, f.558 op.11 d.462 l.013, Rossiiskii gosudarstvennyi arkhiv sotsial'no-politicheskoi istorii (RGASPI), <http://sovdoc.rusarchives.ru/sections/personality//cards/11989/images>; 'Prikaz NKO № 0258c 1 Avgusta 1941 G. O Naznachenii Nachal'nikov Tyla Frontov' [NKO Order No.258s 1 August 1941 on the Appointment of Chiefs of the Rear of the Fronts], 1 August 1941, f.558 op.11 d.462 l.015, Rossiiskii gosudarstvennyi arkhiv sotsial'no-politicheskoi istorii (RGASPI), <http://sovdoc.rusarchives.ru/sections/personality//cards/11989/images>; Zolotarev et al., *Tyl Krasnoj Armii v Velikoj Oteĉestvennoj vojny 1941–1945 gg.*, Tom. 25 (14) Russkij archiv. Velikaja Oteĉestvennaja: Document No. 37.

⁶⁴Golushko, *Shtab Tyla Krasnoĭ Armii v gody voĭny 1941–1945*, p. 226 Scheme 2 & 227 Scheme 3.

It had a control function and as such had to constantly monitor the implementation of orders and directives.⁶⁵ The Rear Staff was guided by the instructions of the General Staff and connected the industrial People's Commissariats and Main Directorates of the Red Army, with the front commands through the Headquarters of the Deputy Commander of the Front (Rear). During the period it was often referred to as the 'Second Echelon'. It issued directives for the rear of the front defining front bases, rear front boundaries, front regulating stations and railway lines, military roads, deployment of front-rear units, and interactions between neighboring fronts.⁶⁶

Key to the work of the Rear was the concept of 'maneuvering the rear'. In 1941, the rear of fronts and armies was based on static warehouses, depots, and bases and one of the key reforms instituted by Khrulev was to reduce these in number and to make them 'field' or mobile. The number of rear units, the amount of personnel, and the 'norm' of stocks held by front and armies was drastically reduced. For instance, in June 1941 an army warehouse would hold 1-2 *boekomplekt* (ammunition sets), 3 *zapravka* (fuel refills), and 5-8 *sutodacha* (days of food) and this was reduced to 0.75 *boekomplekt*, 1 *zapravka*, and 5 *sutodacha*, or less than half the weight, with corresponding cuts at the front level too.⁶⁷ Army Bases were introduced which consisted of 7-8 field depots instead of the 24-25 static depots used previously.⁶⁸

Maneuvering the rear was not just about making the supply system of the field armies and fronts more mobile, it was also about moving supplies around the system of static bases and depots in the interior. This allowed a rational use of the existing resources, overcoming local shortages and keeping matériel under central control until the last minute before it was needed because it might be needed to fulfill a higher priority task somewhere else. This is shown in a couple of examples. For example, Major-General Pavel Karpukhin of the Vologda Centre Base *NKO* received the award For the Defense of Stalingrad even though his command was 1,500 km away because his base helped supply the city during the battle.⁶⁹ Likewise, in the commemorative album of Central Artillery Base №. 34 at Rybinsk, there is a diagram showing that it supplied

⁶⁵Ibid., p. 225.

⁶⁶Ibid., pp. 89 & 158.

⁶⁷I.M. Golushko, *Tyl Sovetskikh Vooruzhennykh Sil v pervom periode Velikoi Otechestvennoi voiny* [Rear of the Soviet Armed Forces in the first period of the Great Patriotic War], *Voенно-Istoricheskii Zhurnal* [Military History Journal] 10 (1973) pp. 31-38; Melnikov, *Tylovoe obespechenie voisk v Moskovskoi bitve*, sec. Materiel'noe Obespechenie Voisk [Material support of the troops]; *Ves odnogo boevogo komplekta boepripasov na kazhdyi vid vooruzheniia* [The weight of one combat set of ammunition for each type of weapon], 24 June 1943, Fond: 299, Opus: 3070, Delo: 228, List nachala dokumenta v del: 7, Central Archive of the Ministry of Defense (TsAMO), <https://pamyat-naroda.ru/documents/view/?id=134493091>; *Normy vseh vidov boekomplektov v shtukakh* [Norms of all types of ammunition in pieces], 24 June 1943, Fond: 299, Opus: 3070, Delo: 228, List nachala dokumenta v del: 8, TsAMO, <https://pamyat-naroda.ru/documents/view/?id=134493092>.

⁶⁸Kurkotkin, *Tyl sovetskikh vooruzhennykh sil v Velikoi Otechestvennoi voine*, p. 18.

⁶⁹G.A. Akinkhov, *Vblizi Frontov: Vologodskaiia Oblast' v Osushchestvlenii Planov Sovetskogo Voennogo Komandovaniia v Gody Velikoi Otechestvennoi Voiny* [Near Fronts: Vologoda Region in the Implementation of the Plans of the Soviet Military Command During the Great Patriotic War] (Vologda: Izdatel'stvo Vologodskogo instituta povysheniia kvalifikatsii i perepodgotovki pedagogicheskikh kadrov 1994) p. 107, <https://www.booksite.ru/fulltext/vblizi/text.pdf?ysclid=l6hi99yg1w649912984>.

Vologda just 200 km away, but also Murmansk, Moscow, Rzhev, Orel, Odessa, Sevastopol, and as far away as Baku 2,500 km away.⁷⁰

It has to be recognized that Soviet logistics were different from that of contemporary Western armies, who defined standards of supply in terms of set amounts of munitions (units of fire), fuel, and food, linked to ‘assumed’ levels of consumption (days of supply,) and then attempted to maintain the units to those levels.⁷¹ The terms *boekomplekt* (munitions) and *zapravka* (fuel) represent a fixed amount of supplies, perhaps related to storage capacity in a vehicle or a certain number of packing cases, yet there was no relation to consumption, nor was there a requirement to maintain any particular level in a unit (For instance, a 122 mm howitzer had a *boekomplekt* of 80 rounds weighing 2160 kg). By contrast, *sutodacha* represented a level of consumption (1 day’s food for 1 man); yet, was not an actual amount of supplies, since it was related to the Red Army scale of rations (So, a unit in the front line would have had a *sutodacha* of 3,457 calories per man and the same unit in the rear would have one of 3,038 calories per man).

In essence, the management of supplies by the Rear was similar to modern systems related to ‘Fordism’, such as ‘just-in-time’ or ‘lean manufacturing’ which stress low inventories, reduction in waste, and reduction in transport.⁷² The Rear expected armies to live off a trickle of supplies supplied by the Fronts in quiet periods and delivered the mass of replacements, munitions, and other stores, directly from the Centre just before the start of an operation. As with all ‘just-in-time’ systems, it required a secure transportation route with a source of supply acting as a warehouse, bringing together a broad range of resources from a wide variety of sources. So, the Fronts were linked by railways to the Centre Base *NKO* of their strategic direction and this acted as a gathering point for a wide range of matériel gathered from numerous Red Army Main Directorates and the civilian People’s Commissariats in the interior of the country. It was sufficiently large to support several fronts over a considerable period, close enough to deliver to them within a few days, yet far enough from the front line to avoid direct enemy attack.

Alongside the bases, there were Regulating Stations of the Centre. There were major railway junctions under the control of the Staff of the Rear which could control and divert entire trains of supplies *en route* from the interior to the fronts. They were particularly relevant to munitions supplies, which were shipped in bulk and to fuel supplies which were more difficult to trans-ship between trains. These Regulating Stations of the Centre connected the Central

⁷⁰ *‘tsentral’naia voennaia artilleriiskaia baza № 34’* [Central Military Artillery Base No. 34] (Rybinsk 1943), p.41, <https://www.yar-archives.ru/action/photoalbums/tsentralnaya-voennaya-artillerijskaya-baza-34.html?ysclid=19jyf7ea7a584539491>.

⁷¹ Roland G Ruppenthal, *Logistical Support of the Armies Volume I: May 1941–September 1944*, United States Army in World War II (Washington DC: Office of the Chief of Military History Department of the Army, 1953) p. 306 note 77.

⁷² John F. Krafcik, ‘Triumph of the Lean Production System’, *Sloan Management Review* 41 (1988): sec. ‘A way to think about production systems’.

Artillery Bases of GAU and the resources of the Fuel Supply Service with the fronts and directed the flow of matériel to them.

So, the solution adopted by GKO to the resource allocation problem was to create a central administration for logistics. The resultant 'Chief of the Rear' and the 'Rear Staff' controlled the flow of matériel and support from the interior to the front line. In addition, it reduced consumption by the fronts through the imposition of norms, central control of all operations, and a strict policy of only supporting *Stavka-VGK* operations. To an extent, food supply, sanitary, and veterinary support were supplied on a wider basis, however with 50% of food supply drawn from local sources through the Party machinery. Inactive fronts could to a large extent be left to their own devices and those of the Front, receiving little in terms of central supply. Central to this scheme were the Centre Bases of the *NKO*, which concentrated operational stocks close to the fronts, but remained under the control of the Rear Staff. Similarly, the Regulating Stations of the Centre played an analogous role in directing entire trainloads of munitions and fuel from the Main Directorates in the interior to the fronts, under the instruction of the Rear Staff. These bases and stations allowed the Rear Staff to rapidly switch the flow of matériel between the fronts of a strategic direction to ensure a rapid sequence of operations, as required under Soviet doctrine. Also, by retaining operational supplies under central control, it allowed the Rear Staff to 'maneuver the Rear' and switch supplies to other strategic directions that might be under enemy attack or to overcome local shortages.

Evolution of centre bases of the *NKO*

The Centre Bases of the *NKO* were not planned, rather they evolved in response to the crisis of the winter of 1941 and they continued to evolve throughout the war to meet the challenges thrown up by events. What they represented was the nexus between the operational field army on the one hand and the military-industrial complex of the state represented by the Main Directorates and People's Commissariats on the other. Also, this nexus represented a shift of change in timing between the daily churn of military operations at the front line and the monthly and quarterly plans of the national economy. In terms of spatial arrangement, the Centre Bases of the *NKO* represented the connection between the military and the industrial interior and also with the local area, such as the regional Party administration, which could provide matériel from agriculture and light industry to meet shortages and reduce transport demand.

The idea of setting up Centre Bases of the *NKO* first appeared during a meeting on 9 August 1941 chaired by Deputy Chief of the Rear, Major General Matvei Zakharov (second in command to Khrulev) and involving members of the Rear Staff, *VOSO*, and representatives of the Main

Directorates to discuss reordering the supply of front-line units.⁷³ The meeting identified several problems with the current supply arrangements. Firstly, that the Centre was attempting to deliver to each soldier; second, that the changing situation at the front meant that transports were taking a long time to arrive at their destinations by which time the situation had changed again. Finally, cargos were taking up to 10 days to reach units, with constant redirections. This tied up a lot of transport, more than 40,000 wagons, and the turnover rate of rolling stock was very low. To address these problems, it was suggested that front depots should be created and that specific warehouses or bases of the Centre should be attached to certain fronts or strategic directions. These should be on the line Zaporozhye, Kharkov, Kursk, Ovinishche, and Vologda.⁷⁴

Interestingly, Zakharov quotes Vologda, since the next mention of a Centre Base of the NKO was at that town and railway junction in October 1941. The Siege of Leningrad had begun and Vologda station lay on the only remaining railway line leading to Lake Ladoga. It was home to №. 875 Artillery Warehouse, it had been used to form reserves, it was the headquarters of the 59 Army, a major medical Centre with №. 1184 Evacuation Hospital, REP-95 Distribution Evacuation Point, and later on it would act as a supply base for the Baltic Fleet.⁷⁵ It was a civilian center for clothing manufacture and the local collective farms provided food. It was a short railway journey from Central Artillery Base № 34 which was one of the main GAU distribution centers for munitions and refurbishment and refilling of shell casings.

Yet in October 1941, Khrulev obtained unofficial permission from *Stavka-VGK* to create a Centre Base of the NKO in Vologda, together with the post of Assistant Chief of the Rear for the North-western Direction, who was made commander of the base.⁷⁶ This busy town and railway junction was now a Centre Base of the NKO supporting the North-western Direction, Leningrad Front, Karelian Front, Volkhov Front, North-western Front, the reserve units of the Arkhangelsk Military District, and as the main transport route into the besieged city:

‘The Vologda base became the deep rear of the Leningrad Front. It was responsible for the delivery of goods to the residents of Leningrad both by rail and road. All the population and property exported from Leningrad went to Vologda.’⁷⁷

⁷³Golushko, *Shtab Tyla Krasnoĭ Armii v gody voĭny 1941–1945*, p. 45.

⁷⁴Zolotarev et al., *Tyl Krasnoj Armii v Velikoj Oteĉestvennoj vojny 1941-1945 gg.*, Tom. 25 (14) Russkij archiv. Velikaja Oteĉestvennaja: Item No. 47.

⁷⁵*Vologda vo vremya Velikoy Oteĉestvennoj vojny* [Vologda during WWII], Pensionery Vologodskoj oblasti Pensionery Vologodskoj oblasti, ob’ediniâites’!, June 2022, https://vk.com/retired_vologda; Akinkhov, *Vblizi Frontov: Vologodskaiâ Oblast’* v *Oushchestvlenii Planov Sovetskogo Voennogo Komandovaniâ v Gody Velikoi Oteĉestvennoj Voiny*, pp. 107, 111.

⁷⁶Golushko, *Shtab Tyla Krasnoĭ Armii v gody voĭny 1941-1945*, pp. 103–106.

⁷⁷E.I. Kondratev et al., *Dorogi voĭny* [The Roads of War] (Moskva: Voenizdat 1968) p. 129, http://militera.lib.ru/memo/russian/kondratev_zi/index.html.

The base was large: ‘For example, the Fuel Depot of the Centre was formed from two warehouses — №. 633 and №. 754. The Intendant Depot was formed from three warehouses’ and held substantial reserves such as 2,000 tonnes of flour, 500 tonnes of cereals, 1,500 tonnes of oats, 2,000 tonnes of hay, and 500 tonnes of meat, and could supply all types of matériel directly to the fronts from its stores or №. 50 Centre Regulating Station could redirect entire train-loads toward Leningrad from the interior.⁷⁸ Also, it contained workshops and repaired all manner of military goods. The base was described in June 1942 in an order arranging anti-aircraft defenses:

On the south-eastern outskirts of the city, on the bank of the river, on an area of 2 km² there are: 1) an oil depot - with a large amount of fuel that does not fit into storage and is contained in barrels, laid on the ground within the base; 2) food warehouse - with food stacked outside the storage facilities, due to the lack of covered storage; 3) wagon and clothing warehouses ...⁷⁹

It had outstations such as Food Depot №. 1275, which was moved to Chebsera station on the Northern Railway 75 km away, presumably to aid in the collection of food from a wider area.⁸⁰ The base was formed with ‘a separate service battalion, separate service company, separate motor transport company, separate tractor platoon equipped with two motor transport battalions and three horse-drawn battalions for working inside the base and three motor transport battalions for delivering cargo along the dirt roads to Lake Ladoga and the Volkhov Front, a distance of over 500 km. In addition, it had an airfield at Priluky, with aircraft delivering supplies to Leningrad departing from there.⁸¹

The commander was Major General Pavel Karpukhin, an experienced officer of the Intendant Service.⁸² The base headquarters contained the following departments: organization (12 people), planning (14), supply (20), transport (7), road management (7), cipher office (13), administration (10), signals center (5), and the names of some of the officers are known:

The first item of order is on the headquarters of the Centre Base: Deputy Chief of the Central Bank - Colonel N.P. Gryaznov; Assistant Chief of the Central Ammunition Supply Department - Major LA. Borisyuk; the same for fuel supply - Intendant third-class Z.Z. Chemin; for the supply of military-technical equipment - Lieutenant Colonel P.S. Kozlenko; for military supply - Military Technician first-class V.S. Annunciation; food supply - Military Engineer second-class Spiridonov. By the same order on

⁷⁸Golushko, *Shtab Tyla Krasnoï Armii v gody voïny 1941-1945*, pp. 103–106.

⁷⁹Akinkhov, *Vblizi Frontov: Vologodskaïa Oblast’ v Osushchestvlenii Planov Sovetskogo Voennogo Komandovaniia v Gody Velikoi Otechestvennoi Voïny*, p. 107.

⁸⁰General-leïtenant Gerasimenko, ‘*Prikaz po tylu SZN KA’* [Order on the rear of the North-Western Direction (SZN) of Red Army], 23.10.1941, Fond: 459, Opis’: 0004634, Delo: 0004, List nachala dokumenta v dele: 110, TsAMO, <https://pamyat-naroda.ru/documents/view/?id=455001206>.

⁸¹Golushko, *Shtab Tyla Krasnoï Armii v gody voïny 1941-1945*, p.103-106; Akinkhov, *Vblizi Frontov: Vologodskaïa Oblast’ v Osushchestvlenii Planov Sovetskogo Voennogo Komandovaniia v Gody Velikoi Otechestvennoi Voïny*, p. 107.

⁸²P.V. Karpukhin’ [Service Record: Major General Pavel Vasilyevich Karpukhin.], Government website, Pamyat Naroda, June 2022, <https://pamyat-naroda.ru/heroes/pamyat-commander261/?ysclid=la26irlqk5325163807>.

10 October 1941, Lieutenant Colonel A.N. Lysov [Acting Base Commander] reorganizes the headquarters of the Military Commandant of №.50 Regulating Station (Vologda) into a Centre Regulating Station commanded by Major VI. Ivanova.⁸³

While the Vologda base was proving its worth, the battle of Moscow was raging to the south. In addition to the supply shortage, *Stavka-VGK* faced a transport shortage brought on by the dislocation of the railways, caused by the evacuation of industry and shortages in coal for the steam engines. Divisional Commissar *GUTKA*, B.A. Bayukov reported to *GKO* Member Georgy Malenkov, Deputy *Narkom* State Control Lev Mekhlis, and Deputy Chief of the General Staff, Lieutenant General Aleksandr Vasilevsky that in January 1942 of a planned delivery of 5,422 munitions wagons, only 4,281 wagons were loaded (79%) and 1,886 wagons delivered (35%), with the remainder stuck in traffic.⁸⁴ Yet transport was only one element that could impede munitions distribution; planning was another.

In planning munitions supply, *GAU* started 15 days before the start of the month. The main issue was estimating availability on the first day of the month, which was done by examining flow rates to the front.⁸⁵ The munitions plan had to be approved by Stalin and linked production at the factories (set by *GKO* Resolution), with operations at the front and taking into account existing stocks.⁸⁶ This required coordination between *GAU*, General Staff and *GKO*.⁸⁷ So for instance, the January 1942 plan, the General Staff Directive №.5377, allowed for a stricter limitation on expenditure with 2-2.5 *boekomplekt* for North-western Direction and 3 *boekomplekt* for the Western and South-western Directions. Yet these amounts were not large, with a 122mm howitzer on the Leningrad Front receiving 160 rounds, equivalent to only 5 rounds per day. These munitions were distributed to the fronts from the newly forming Centre Bases *NKO* either from their own stocks or through the Centre Regulating Station from the Central Artillery Bases.⁸⁸

The Red Army had a large network of warehouses, workshops, and bases belonging to the *GAU*, to receive, inspect, pack, store, and assemble military goods received from the People's Commissariats for Armaments (*NKV*) (small arms ammunition) and Ammunition (*NKB*) (artillery ammunition). In 1941, *GAU* and its Directorate of Ammunition Supply (*USB*) had 15 Central Artillery Bases and 15 First-Class Warehouses, including several of them west of the Moscow meridian, a Central Powder Base, and more than ten ammunition depots.⁸⁹ These

⁸³Golushko, *Shtab Tyla Krasnoï Armii v gody voïny 1941-1945*, pp. 103–106.

⁸⁴Ibidem, p. 84.

⁸⁵Kulishova, *Artilleriiskoe Snabzhenie V Velikoï Otechestvennoï Voïne 1941-45 Gg. Kniga vtoraiâ*, 2 p. 362.

⁸⁶Yakovlev, *Ob Artillerii I Nemnogo O Sebe*, p.70-73; 'Dokument 972ss. O plane proizvodstva (sdachi) boeprapasov na dekabr' 1941 g.' [Document 972cc. On the plan for the production (delivery) of ammunition for December 1941], 29 November 1941, RGASPI. F. 644. Op. 1. D. 15. L. 34–102, Rossiiskii gosudarstvennyi arkhiv sotsial'no-politicheskoi istorii (RGASPI), <http://sovdoc.rusarchives.ru/sections/war//cards/368006>.

⁸⁷Kulishova, *Artilleriiskoe Snabzhenie V Velikoï Otechestvennoï Voïne 1941-45 gg. Kniga pervaya*, 1 p. 425.

⁸⁸Khrulev, 'Stanovlenie Strategicheskogo Tyla v Velikoï Otechestvennoï Voïne', p. 75.

⁸⁹Kurkotkin, *Tyl sovetskikh vooruzhennykh sil v Velikoï Otechestvennoï voïne*, p. 13.

First-Class Warehouses and Central Artillery Bases were typically around 3,000 railway wagons or 50,000 tonnes in size (a wagon was considered equivalent to 16.5 tonnes of munitions). Central Artillery Base №. 22 (Syzran) was the mainstay and was supported by №. 53 (Gorky) and №. 34 (Rybinsk) both of which also refilled shells and to a lesser extent by №. 55, №. 39, №. 66, and №. 28.⁹⁰

The Central Artillery Bases around Moscow were now close enough to deliver munitions straight to the divisions bypassing the depots of front and armies.⁹¹ *Stavka-VGK* formed 12 motor-transport battalions (500 vehicles each) in Sokol'niki Park which could deliver munitions right to the front line.⁹² The flexibility and speed of response achieved by central control reinforced the belief in the concept of Centre Bases of the *NKO*.

The success of the Centre Bases *NKO* at Vologda and Moscow encouraged the *NKO* to put them on an official footing. There is some confusion as to when this happened, as Golushko claims: 'In December 1941, under a decision of the *GKO*, *NKO* distributing depots were established for all types of material, as well as Central Regulating Stations (*TsRS*)'.⁹³ However, there is no matching *GKO* Resolution in the official list.⁹⁴ The first documentary evidence of the official status of the bases came in *NKO* Order №. 12 'Regulations on the Administration of the Centre Base of the *NKO* in Wartime' was ready for signature by 25 March 1942, although this was delayed until 12 April because Khrulev had been appointed Narkom of the People's Commissariat of Railways (*NKPS*) (see Appendix 1).⁹⁵

In this document, the importance attached to these bases can be seen, first, in that they are linked to strategic directions and groups of fronts. Second, the base commander was made an Assistant Chief of the Rear. Third, the base commander was working with the 'main and central departments of the *NKO*' so right at the heart of the military-industrial complex. Fourth, the commander had the right of control of supplies over fronts and armies and finally, the base commander was the Chief of Front Military Communications (*VOSO*) with full control over transport resources.⁹⁶ So the commander of the Centre Base of the *NKO* had direct control of the flow of supplies from the Centre to

⁹⁰Kulishova, *Artilleriiskoe Snabzhenie V Velikoi Otechestvennoi Voine 1941–45 Gg. Kniga vtoraiā*, 2:pp.359.

⁹¹I.M. Golushko, *Tyl Sovetskikh Vooruzhennykh Sil v Velikoi Otechestvennoi voine* [Rear of the Soviet Armed Forces in the Great Patriotic War], *Tyl i Snabzhenie Sovetskikh Vooruzhennykh sil* [Rear and Supply of the Soviet Armed Forces] 6 (1975): p. 20

⁹²Mirenkov, *Voенно-экономический фактор в битве под Москвой*, p. 10.

⁹³I. M Golushko, 'From the Experience of the Soviet Army Rear Staff in World War II', *Voенно-Iсторический Журнал* [Military History Journal] 10 (1985): pp. 23–24.

⁹⁴Vasily Tashkevich, 'Perechen' Prikazov Narodnogo Komissara Oborony Sssr Za Dovoennyye Gody I V Gody Velikoi Otechestvennoi Voiny 1941-1945 G.g.' [List of orders of the People's Commissar of Defense of the USSR for the pre-war years and during the Great Patriotic War of 1941-1945], *Nekotorye Statisticheskie Materialy Po Istorii Vtoroi Mirovoi Voiny*, June 2022, <http://www.teatrskazka.com/Raznoe/PrikazyNKO/NKO.html>.

⁹⁵S.N. Skryabin, 'Establishment of Supply Bases of the Centre', *Voенно-Iсторический Журнал* [Military History Journal] 10 (1986) p. 49.

⁹⁶A. V. Khrulev, 'Prikaz Narodnogo Komissara Oborony Soiūza SSR № 112 S Ob'iazaniem «Polozheniā Ob Upravlenii Bazy ĩgenera *NKO* v Voенnoe Vremiā».' [Order of the People's Commissar of Defense of the USSR Union No. 112 "Regulations on the Administration of the Centre Base of the *NKO* in Wartime"], 12 April 1942, copy in authors collection, Fond. 2 Opus. 920266 Delo. 4 Listi. 282, 282ob, TsAMO.

his section of the front-line and also could ‘maneuver the rear’ by switching that flow to another Centre Base *NKO*.

In the summer of 1942, the German advance towards Stalingrad and the Caucasus had produced a difficult supply problem related to the available railway lines. The main supply for the city ran from the Urals along the *Ryazan-Urals* Railway, with just a single-track spur from Saratov to Urbakh available to supply the eastern bank of the Volga by a dirt road and ferry into the city.⁹⁷ To support the fronts of the Southwestern Direction operating around the city, the *NKO* deployed a Centre Base *NKO* at the important railway junction of Saratov in September 1942 and another in Volsk for the Bryansk Front.⁹⁸ To help with fuel supply, 41,000 tonnes of fuel was brought up to Saratov and Batraki in barges from the Lower Volga which could still be supplied from Baku.⁹⁹ In addition, the base supplied 24,000 quilted jackets and other warm clothes for the counter-offensive.¹⁰⁰ However, the poor transport links hindered the support of armies for Operation Uranus and they were ‘separated from their supply bases by 350 km’.¹⁰¹ Also, in June 1943, when Saratov was supporting the build-up for the *Kursk Strategic Operation*, it was attacked by German bombers flying over 500 km and 31,000 tonnes of fuel and lubricants were destroyed.

Similarly, poor communications left the Transcaucasian Front reliant on the *Ashkhabadskaia* Railway across Central Asia, which arrived at the eastern shore of the Caspian Sea with a sea route to Baku. During an inspection tour of the new Saratov, Volsk, and Syzran bases by Major General Mikhail Milovsky, Chief of Staff of the Rear in July 1942, it was decided to set up a Centre Base *NKO* to support the Transcaucasian Front.¹⁰² On 1 August, *NKO* Order ‘for the rear support of the North Caucasus and Transcaucasian Fronts, the Centre Base *NKO* is to be organized in Baku headed by Deputy Chief of the Rear, Major General Andrei Zelentsov.’¹⁰³ However, the significance of this base was not in its support of the armies of the region, but rather in relieving the strain on road and rail links delivering Lend-Lease matériel across Iran. The new route utilized the Iranian port of Pahlavi on the southern shore of the Caspian Sea and carried the material on ships across the sea. It was landed at the Centre Base *NKO* at Baku before onward shipment into the interior of the country.¹⁰⁴

⁹⁷Skryabin, ‘Establishment of Supply Bases of the Centre’, p. 49; Golushko, *Shtab Tyla Krasnoi Armii v gody voiny 1941-1945*, p. 141.

⁹⁸Rodin, *Razvitie Tyla Sovetskikh Vooruzhennykh Sil, 1918-1988*, chap. 8.

⁹⁹Kurkotkin, *Tyl sovetskikh vooruzhennykh sil v Velikoi Otechestvennoi voine*, p. 25.

¹⁰⁰Golushko, *Shtab Tyla Krasnoi Armii v gody voiny 1941-1945*, p. 144.

¹⁰¹Mirenkov, *Voyenno-ekonomicheskiy faktor v Stalingradskom srazhenii i Kurskoy bitvei*.

¹⁰²Skryabin, ‘Establishment of Supply Bases of the Centre’, pp. 50–51.

¹⁰³Tashkevich, ‘Perechen’ *Prikazov Narodnogo Komissara Oborony Sssr Za Dovoennye Gody I V Gody Velikoi Otechestvennoi Voiny 1941-1945 G.g.*; V.A. Zolotarev, ed., *T. 13 (2-2) Prikazy narodnogo komissara oborony SSSR. 22 iūniā 1941 g. — 1942 g.* [Vol. 13 2-2 Orders of the People’s Commissar of Defense of the USSR. 22 June 1941 - 1942], *Russkij archiv: Velikaja Otečestvennaja* [Russian archive. The Great Patriotic War.], 13 2-2 (Moskva: TEPPA, 1997). Again this *NKO* Order does not appear on the numbered lists of *NKO* Orders.

¹⁰⁴Skryabin, ‘Establishment of Supply Bases of the Centre’, p. 52.

The Soviet counter-offensive in August 1943 meant that the Saratov base had to be more forward, first to Stalingrad and then in October 1943 to Kharkov.¹⁰⁵ What is curious is that there is no other mention of Centre Bases *NKO* moving forward to follow the armies after this date. Evidence as to their continued existence and use in the late war period is fragmentary, yet compelling. In the first place, a listing of senior officers at the end of the war recorded two Assistant Chiefs of the Rear who were commanders of Centre Bases *NKO* for the Western and Southern Directions.¹⁰⁶ Second, in June 1943, the Rear was made responsible for the delivery of supplies right down to the divisional level using the principle of ‘pushing supplies’ from the Centre.¹⁰⁷ Finally, the account by the Deputy Commander of the Front (Rear) for the 1 Belorussian Front, Major General Nikolai Antipenko during *Operation Bagration*¹⁰⁸ and the *Berlin Operation* records that:

It was a troubling time! Railway and road bridges in the 1st Ukrainian Front had already been completely or partially demolished by ice; the entire armada of ice-bound debris moved downstream, threatening the bridges of the 1st Belorussian Front. These bridges were restored on temporary supports, which, of course, could not withstand such an onslaught of ice. It was necessary to save the bridges, **otherwise the entire front would have been cut off for 10-15 days from the central supply bases.** The Military Council took into account the gravity of the situation.¹⁰⁹

It is clear that Centre Bases *NKO* remained a key nexus in the system until the end of the war. However, a new element started to appear in August 1944 with the deployment of the first Trans-shipment Base (Junctions) of the *NKO* in Romania.¹¹⁰ These railway junctions joined the Soviet Union gauge to the European Standard gauge and included shunting yards where cargo from one type of train could be moved onto the other type of train and that included fuel.

Railways undoubtedly had a major influence on the decision not to move the Centre Bases *NKO* further forward. The Kharkov base would have sat on the very edge of unoccupied Soviet territory. Behind it in 1944, was a railway network undamaged by war, with good connections to Artillery Central Base №. 22, the factories of the Urals and the collective farms of the Volga. In front of it stretched a desolate landscape of destroyed rails, destroyed factories, and dispersed population of the Ukraine which had suffered millions killed in German anti-partisan operations and starvation. The base acted as before, as

¹⁰⁵I.M. Golushko, ‘Razvitie sistemy upravleniia tylom’ [Development of the Rear Control System part 2], *Tyl i Snabzhenie Sovetskikh Vooruzhennykh sil* [Rear and Supply of the Soviet Armed Forces] 1981, no. June (1981) p. 13.

¹⁰⁶Golushko, *Shtab Tyla Krasnoi Armii v gody voïny 1941-1945*, p. 296 with Zelentsov (Western) and Lopukhov (Southern).

¹⁰⁷Rodin, *Razvitie Tyla Sovetskikh Vooruzhennykh Sil, 1918-1988*, pp.163–4; Glantz, *Colossus Reborn*, p. 440.

¹⁰⁸Antipenko, *Na Glavnom Napravlenii*, p. 180.

¹⁰⁹Ibidem, p. 248.

¹¹⁰Rodin, *Razvitie Tyla Sovetskikh Vooruzhennykh Sil, 1918-1988*, pp. 184–5.

a collecting point to gather the nation's output before sorting and sending it onto the fronts at Kiev 400 km away.

Conclusion

Soviet leaders had several stock solutions to any problem, one of which was to centralize, and another was to appoint a 'strong' leader or committee to oversee the management of the solution. So, the creation of Centre Bases of the *NKO* was a classic Soviet response to a problem, in this case, resource management during a crisis. However, this type of solution tended to fail in the same way, because the Centre was unable to exert enough control over the periphery to make the solution work correctly.¹¹¹

This is illustrated by Khrulev's tour of inspection to the Volkhov and Kalinin Fronts in the spring of 1942 to deal with the problem of food supply. Moscow was receiving reports that the soldiers at the front line were not being fed properly. Khrulev found that the problem was that the food was being dispatched from front warehouses, yet a lack of proper administration at army depots, shortages of transport, indifference of officers, untrained soldiers being used as chefs, and a lack of thermos containers to carry the hot food over the last mile of its journey to the front-line soldiers, meant that they often received nothing at all. Khrulev issued instructions, training of chefs was carried out and emergency production of containers was authorized. However, the food service remained a perennial problem and would continue to be reorganized throughout the war.

Yet the Centre Bases of the *NKO* were remarkably successful in their role of acting as collecting points for the output of the national economy and passing these into the military logistics system of the Rear. Their success was undoubtedly because they evolved, starting with the Vologda experiment supporting the siege of Leningrad, through the re-purposing of existing depots and bases during the battle of Moscow, to their formal organization in April 1942. They continued to evolve with the rising influence of the attached Centre Regulating Station and finally, the Trans-shipment Bases of the Centre used outside the borders of the Soviet Union in support of the final battles for Berlin, Budapest, and Vienna.

Moreover, the Centre Bases of the *NKO* were crucial to the Red Army's prosecution of the war. The Soviet Union may have produced a large amount of military equipment and matériel, yet she had a huge army that fought at a brisk tempo across an enormous length of front line.¹¹² All the while, the Red

¹¹¹Holland Hunter and Janusz M. Szyrmer, *Faulty Foundations: Soviet Economic Policies, 1928-1940* (Princeton University Press 2014) p. 16 on Lenin's last article 'Better Fewer, but Better' of 1923 when he is complaining about the caliber of cadres.

¹¹²H. G. W. Davie, 'Patterns of War: A Re-Interpretation of the Chronology of the German-Soviet War 1941-1945', *The Journal of Slavic Military Studies* 36(2) (2023) pp. 139-163, <https://doi.org/10.1080/13518046.2023.2251305>.

Army was launching continuous offensives along three or even four strategic directions at once. Individual fronts may only have averaged an operational rate of 55% during the course of the war. However, as has been shown, strategic directions were always actively utilizing one or more of their four fronts in sequential operations. This level of activity had strategic consequences as it gave *Stavka-VGK* the freedom to launch operations for political ends to knock members of the Axis out of the alliance, simultaneous with defeating Germany.

The supply situation in all categories was extremely tight in the period 1941–1943, with munitions rationed, fuel shortages from 1942 after the destruction of the Caucasus oilfields, and the civilian population literally starving, to give the soldiers at the front line sufficient calories. While this desperate situation may have eased a little in 1944–1945 by a combination of increased production and Lend-Lease supplies, shortages remained in all categories throughout the war and produced a real limit on *Stavka-VGK* strategic ambition. Nor was the situation any better on the equipment and personnel side as the Red Army continued with heavy losses for every year of the war.

So, the Rear Staff faced a substantial challenge to match this flow of matériel resources with the operational tempo and churn and overcome the geographic factors of distance, climate, terrain, and human geography, utilizing only railways, a small motor transport fleet, and a large number of horses.¹¹³ Also, the staff had to respond to and work alongside the rest of the command cycle of the Front Commander, General Staff, and *Stavka-VGK*. Solving this complex, multifactorial, and spatial problem required constant detailed monitoring and fine control daily.

This is what the centre bases of the *NKO* gave to the Rear Staff both by utilizing their own stocks of matériel and by the control over railway echelons *en route*. The bases and regulating stations allowed them to direct the flow of supplies to the right front(s), to deliver the correct quantity of supplies to meet the requirements of the agreed plan and then switch it instantly to another front for the next operation or even to adjust to a crisis. They could respond to emergency requests for small volumes within a matter of hours by aircraft or days by lorry and could meet specific requests for individual items from specific calibers of anti-tank shells to padded winter jackets. Moreover, the bases were sufficiently far behind the lines, to escape observation and attack by enemy aircraft under most circumstances.

Essential to this activity was the concept of ‘maneuvering the rear’; to retain the limited stock of matériel under central control at the bases, so that it could be moved about the railway network and only deployed at the last moment to the fronts. This ‘just in time’ approach overcame the resource limitations of

¹¹³Mark Harrison, *Guns and Rubles: The Defense Industry in the Stalinist State* (Yale University Press 2008) p. 143.

a less-wealthy country with limited transport capacity and produced a logistics capability similar to that of Western nations, who expended a far higher level of effort and had a much larger stock of war matériel to achieve their logistics capability.

Disclosure statement

No potential conflict of interest was reported by the author(s).

Notes on contributor

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1. Appendix ¹¹⁴

People's Commissar of Defense of the Union of Soviet Socialist Republics

№ 112

Moscow

CONTENTS: Announcement of the "Regulations on the Administration of the Centre Base of the *NKO* in Wartime"

To put into effect the announced "Regulation on the Management of the Centre Bases of the *NKO* in Wartime"

Deputy People's Commissar of Defense: Lieutenant General of the Intendant Service Khrulev

"I AFFIRM"

Deputy People's Commissar of Defense

Lieutenant General of the Intendant Service Khrulev.

12 April 1942

POSITION

ON THE MANAGEMENT OF THE CENTRE BASES OF THE *NKO* IN WARTIME

1. The management of the Centre Base of the *NKO* shall be the body of the Main Directorate of the Rear of Red Army for the material-technical supply (*material'no-tekhnicheskomu obespecheniū*) of a group of fronts (separate armies) operating in one of the directions of the theatre of war (*napravlenii teatra voīny*).

2. At the head of the Department of the Centre Base of the *NKO* is the Assistant Chief of the Rear of the Red Army (also known as the Head of the Department of Centre Bases), subordinate in all respects to the Chief of The Rear of the Red Army.

3. The head of the Department of Centre Base of the *NKO* shall be entrusted with:

- (a) Maintenance of stocks of ammunition, food, fuel and other military equipment according to the Main and Central departments *NKO*.
- (b) Organization and provision of delivery by rail and roads to satisfy the fronts ([separate] armies) supplying cargos in accordance with the plans of the Main and Central departments *NKO*.
- (c) Assistance to the fronts (armies) in the evacuation to the rear of the country: trophy and unsuitable military equipment, wounded and sick servicemen.
- (d) Organization and carrying out of repair of military property by base facilities and in local civilian production and technical workshops (factories).
- (e) Accounting for cash and transferring military equipment to the fronts (armies) and organization of its storage at the base.
- (f) Improvement and operation of supply and evacuation routes (unpaved, highway) in the areas of operation of the base.

4. The head of the Department of the Centre Base of the *NKO* shall have the right to control the applications of fronts (armies) for military property in accordance with the norms of stocks established for them.

5. The Department (Management) of the Centre Base of the *NKO* consists of:

- (1) Offices (*otdelov*)
 - (a) organizational and planning,

¹¹⁴Khrulev, 'Prikaz Narodnogo Komissara Oborony Soiūza SSR № 112 S Ob'iazleniem «Polozheniā Ob Upravlenii Bazy tšenera *NKO* v Voennoe Vremiā»'

- (b) supply,
- (c) transportation,
- (d) roads.
- (2) Branches:
 - (a) ciphers
 - (b) secret
 - (c) administrative and economic
- (3) Communications centre

6. Under the Department of the Centre Base *NKO* are the following by special order of *NKO*: the regulating (control) railway station, warehouses, repair workshops, security units, transport services, attached to the base, depending on the situation and the amount of work.

7. All cargo received by the Centre Base Department shall be sent to the field warehouses of the respective fronts (armies) or stored in the warehouses belonging to the Department of the Centre Base *NKO*.

8. The Head of the Department of the Centre Base *NKO* is obliged daily by 22.00 hours to inform the Chief of Staff of the Main Directorate of the Rear of the Red Army and the corresponding chiefs of the Main (Central) fulfilment departments of the *NKO* about the movement of transports.

9. The Department of the Centre Base *NKO* in the area of its operation shall be provided [with this information] by the chief of the movement of troops and military commanders of railway junctions and stations, in respect of which the Chief of the Department of the Centre Base enjoys the rights of Chief of Front Military Communications. [ie. Local Chief of *VOSO*]

signed

Chief of the Staff of the Rear, Red Army, Major General Milovskii

Military Commissar of the Staff of the Rear, Red Army, Brigadier Commissar
“Leonov”