Strategic and Operational Setting

Strategic Situation

The year 1944 was decisive on the Soviet-German front. In mid-January, the Red Army launched a major offensive south of Leningrad that, by early March, had driven German Army Group North westward to the area of the prewar borders of Estonia and Latvia. From late January to late March, four Soviet Fronts (each Front was roughly equal to a U.S. or British army group) attacked west and south of Kiev, clearing vast areas of the Ukraine of German, Rumanian, and Hungarian forces. In April and May, Soviet forces advanced into the Crimean Peninsula and along the Black Sea coast west of Odessa.

On 1 May 1944, Joseph Stalin stated the immediate military-political goals of the Soviet Union. They included clearing all Soviet territory of German occupation and reestablishing the Soviet Union's national borders along the entire line from the Barents Sea to the Black Sea; pursuing and destroying the wounded German Army; and liberating the Poles, Czechs, and other European peoples from German bondage.[1] These strategic goals determined the conduct of Soviet military operations for the remainder of the year.

In June and July, the Red Army destroyed Army Group Center in Belorussia with an offensive conducted by four Fronts. In a series of encirclements and pursuits, the Soviets reached the Vistula River in Poland by the end of August. Soviet troops attacked German forces in the three Baltic states from late June to the end of October, defeating all but a remnant of Army Group North in Kurland. On 31 August, a week after the Allies' liberation of Paris, Red Army soldiers marched through Bucharest, the capital of Rumania. Bulgaria surrendered a week later without a fight.

Significant events also occurred on the northern flank of the Soviet-German front that were a direct result of the changing political-military relationships in that region. In mid-February 1944, the Finnish and Soviet governments began discussing the terms for Finland's withdrawal from the war. These talks led to further bilateral negotiations in Moscow in March and the Finnish rejection of Soviet demands in mid-April. The Soviet General Staff then recommended that the Leningrad and Karelian Fronts launch

an offensive against Finnish forces in the sector from Leningrad to Petrozavodsk.[2] The strategic objective of the offensive was to defeat the Finnish Army and force Finland from the war.

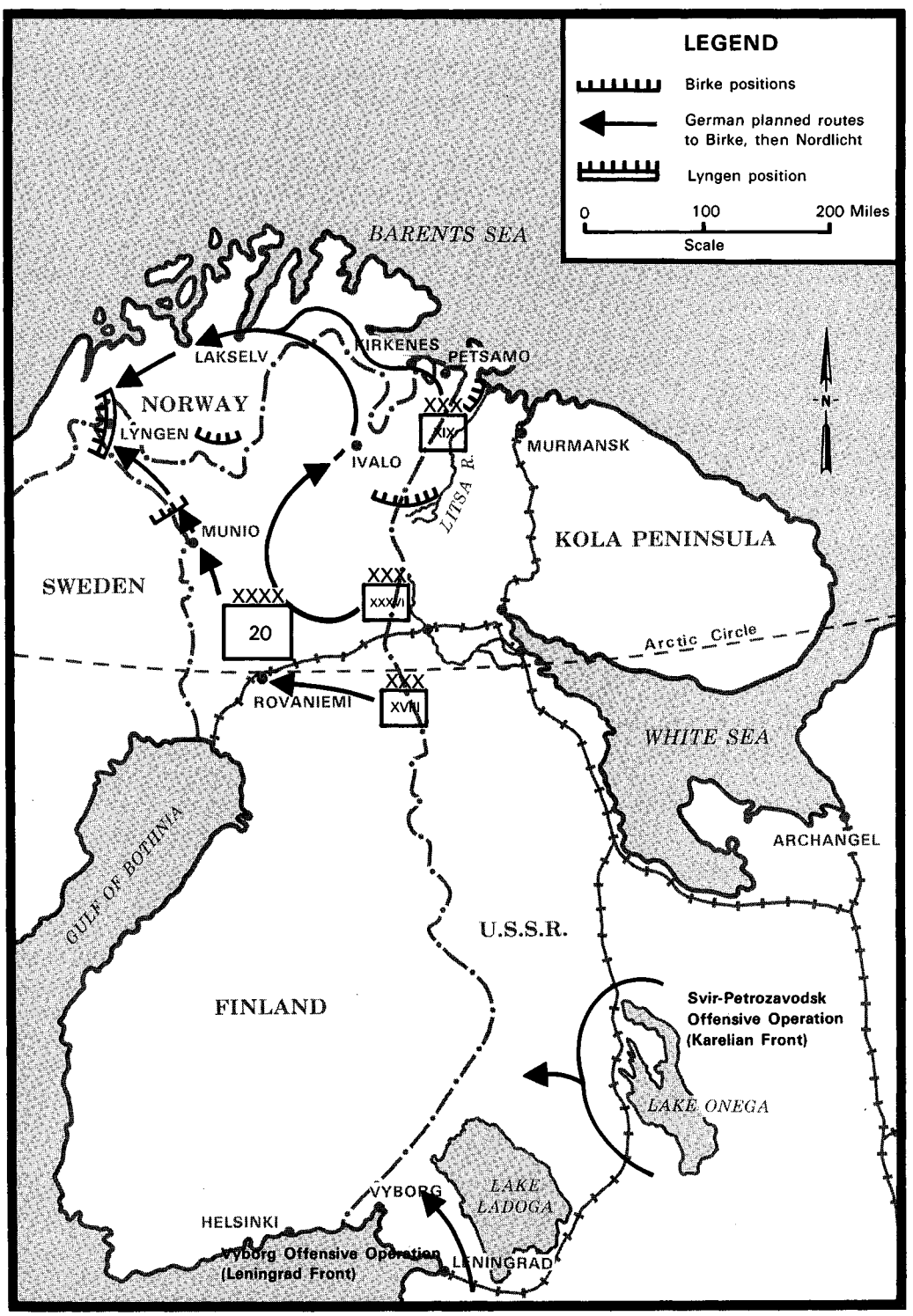
On 10 June 1944, the Red Army began the offensive against Finnish forces north of Leningrad and quickly captured Vyborg, thereby threatening the capital, Helsinki (see map 1). As soon as the Finnish military command transferred forces from southern Karelia to meet this threat, Soviet forces of the Karelian Front, under Army General K. A. Meretskov, attacked northward and westward out of Soviet Karelia and quickly advanced through the area between Lakes Ladoga and Onega. This offensive, known as the Svir-Petrozavodsk Operation, continued until 9 August and was strategically significant in that it led to the reopening of bilateral negotiations between Finland and the U.S.S.R. on 25 August. On 4 September, the two sides signed an armistice that required Finland to expel or disarm all German troops still on its soil by 15 September.[3]

Finland's withdrawal from the war left the German Army units deployed there in a precarious position. These forces belonged to the Twentieth Mountain Army, commanded by Colonel General Lothar Rendulic, and were located both north and south of the Arctic Circle (see map 1). The German military presence in northern Finland began in June 1941, when German units, as part of Operation Barbarossa, attacked from Norway on 29 June into Soviet territory along the Murmansk axis. Their mission was to capture the port of Murmansk and interdict the Murmansk-Leningrad railroad, which connected the ice-free port with the Soviet interior.[4] Stiff Soviet resistance halted this drive in September—October 1941 at the Litsa River, fifty kilometers northwest of Murmansk, where the Germans then dug in and built defensive positions.

From these defensive positions, during the period of October 1941 to October 1944, the German Army in the Murmansk sector accomplished two basic missions. Organization Todt workers extracted nickel ore from mines located southwest of Petsamo and iron ore from a Norwegian mine near Kirkenes. Additionally, the units of the German Twentieth Mountain Army protected the air and naval bases along Norway's arctic coastline from ground attack. From these bases, German air and naval forces mounted attacks against Allied shipping in the Norwegian and Barents Seas. During the three-year stalemate, both sides engaged in local and long-range reconnaissance activities and small-unit actions to achieve local objectives.[5]

When Finland began negotiations with the Soviet Union in late August 1944, Colonel General Rendulic began to withdraw his two southernmost corps northward to form a new defensive line across northern Finland from Lyngen through Ivalo to Petsamo. Operation Birke, as this plan was called, commenced on 6 September 1944, and by mid-September, both the XVIII and XXXVI Mountain Corps had moved back into Finnish territory on their respective axes (see map 1).[6]

During the second half of September, the XVIII and XXXVI Mountain Corps withdrew westward toward Rovaniemi and to the routes of their Birke



Map 1. German withdrawal from Finland

positions. Not satisfied with the slow German withdrawal and under strong political pressure from the Soviets to adhere to the terms of the armistice, Finnish forces engaged the withdrawing German units on 28 September. After some relatively minor exchanges of fire, the German withdrawal continued.

At the end of September, the German Armed Forces High Command (*OKW*) Operations Staff reviewed the strategic importance of occupying northern Scandinavia and determined that it was no longer vital. *OKW* recommended that the Twentieth Mountain Army be withdrawn into Norway to the Lyngen position (see map 1). On 3 October, Adolph Hitler approved this plan, code-named Nordlicht.[7] The XIX Mountain Corps would withdraw along Highway 50 from Kirkenes through Lakselv, the XXXVI Mountain Corps from Ivalo through Lakselv, and the XVIII Mountain Corps through Muonio to Lyngen.

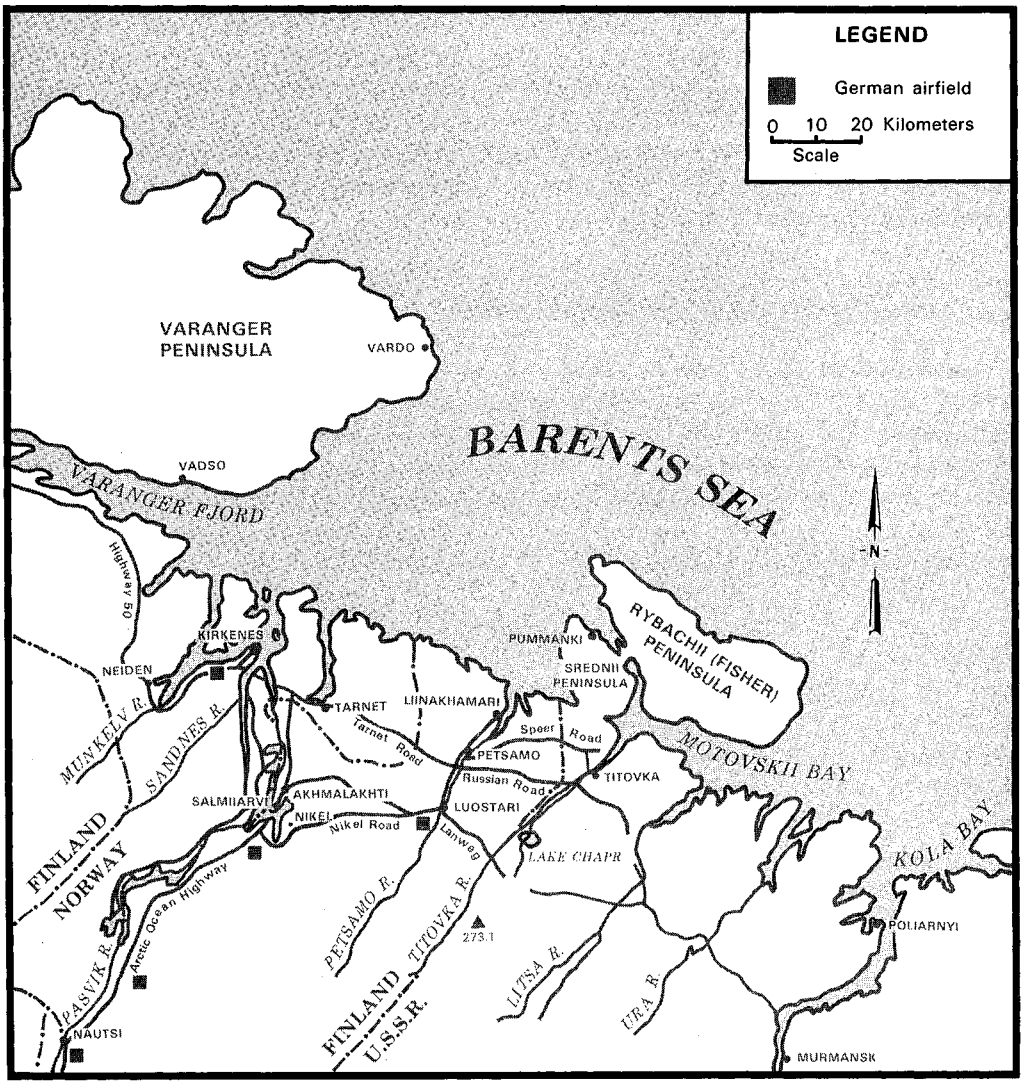
During the preparation phase of Operation Nordlicht, Soviet forces of Meretskov's Karelian Front launched the Petsamo-Kirkenes offensive by attacking the XIX Mountain Corps on 7 October 1944.

Weather and Terrain

The area of operations of the Petsamo-Kirkenes offensive lies between 69 and 70 degrees north latitude, between Murmansk, U.S.S.R., and Kirkenes, Norway, about 200 miles north of the Arctic Circle (see map 2). Strong moist winds blow inland from the cold but unfrozen Barents Sea. In October, temperatures normally range from -5° to +5° Centigrade (23° to 41° Fahrenheit). Precipitation in the form of snow or a mixture of rain and snow falls often, and heavy fog frequently forms when gulf stream air meets colder arctic air. Daylight decreases from 13.5 hours on 1 October to 10 hours on 30 October. At this time of the year, the sun traverses a low arc across the southern sky.

Along the coast, the terrain is primarily tundra interspersed with hills of barren rock covered by moss and lichen.[8] Farther inland, steep rock-strewn hills rise to elevations of up to 1,900 feet above sea level. Hundreds of streams flow into scores of swamps and lakes that are drained by northeastward-flowing rivers. Vegetation consists of scrub trees and heavy low bushes, permitting clear fields of view from surrounding elevations. Numerous ravines and gullies cut between elevations, allowing unobserved dismounted movement only during periods of limited visibility. The ground is not frozen in October and is water-logged and broken. Therefore, only the roads can support any kind of vehicular traffic.

The existing road network was thus of great significance to the Germans and the Soviets for conducting and supporting military operations. Two main supply routes (MSRs) serviced the German XIX Mountain Corps. Highway 50, an all-weather road, followed the Norwegian coastline from the south all the way north and east to Kirkenes, the major Norwegian city and port facility in the area. A secondary road continued east as far



Map 2. Petsamo-Kirkenes area of operations

as Tarnet, and in 1943—44, using prisoner-of-war labor, the Germans extended this road to Petsamo. The other German MSR, Arctic Ocean Highway, originated in Rovaniemi, Finland, and led northward to Ivalo, then northeastward to Nautsi, Salmiiarvi, Akhmalakhti, Luostari, Petsamo, and Liinakhamari. Lateral routes connected this MSR with Kirkenes along both sides of the Pasvik River. A road also joined Salmiiarvi, Nikel, and Luostari. East of Petsamo and Luostari were three trunk roads that supported the three division-size groupings of the XIX Mountain Corps. Speer Road connected Petsamo and the village of Titovka, Russian Road linked Petsamo with the 6th Mountain Division units in their Litsa front positions, and Lanweg joined Arctic Ocean Highway at Luostari with the 2d Mountain Division positions along the Titovka River.

On the Soviet side, a single MSR led from Murmansk northwestward to the rear of the Soviet positions, although the Soviets, in preparation for the offensive, made concerted efforts to construct additional lateral routes in the summer of 1944. No roads connected the Soviet and German defensive sectors. The entire three-week offensive thus hinged on both sides attempting to exploit the roadnet for their own operations while, at the same time, denying its use to the enemy.

German Defensive Dispositions

In October 1944, the maneuver forces of the German XIX Mountain Corps consisted of four divisional groupings (see figure 1 and map 3). The five fortress battalions of the 210th Infantry Division were widely scattered along the Norwegian coast at Tana (off the map), Vardo, Vadso, Kirkenes, and Tarnet in relatively immobile coastal defensive positions. Division Group Van der Hoop held positions from the Petsamo Fjord east across the isthmus of Srednii Peninsula (hereafter called the Srednii isthmus) to the mouth of the Titovka River. The 6th Mountain Division, with the 388th Grenadier Regiment attached, guarded the strongly fortified Litsa front from the Titovka River mouth south and west to Lake Chapr, and the 2d Mountain Division defended in strongpoints in front of the Titovka River south from Lake Chapr to Hill 237.1. Because of the unavailability of forces and the untrafficability of the terrain, the commander of the XIX Mountain Corps did not establish defensive positions south of Hill 237.1, leaving his right flank unguarded.[9]

On the surface, the XIX Mountain Corps appeared to be a formidable fighting force. Its units were at or near full strength in regular personnel but lacked the usual complement of auxiliaries.[10] On 1 September 1944, the maneuver divisions of the corps were at an average of 90.2 percent of their

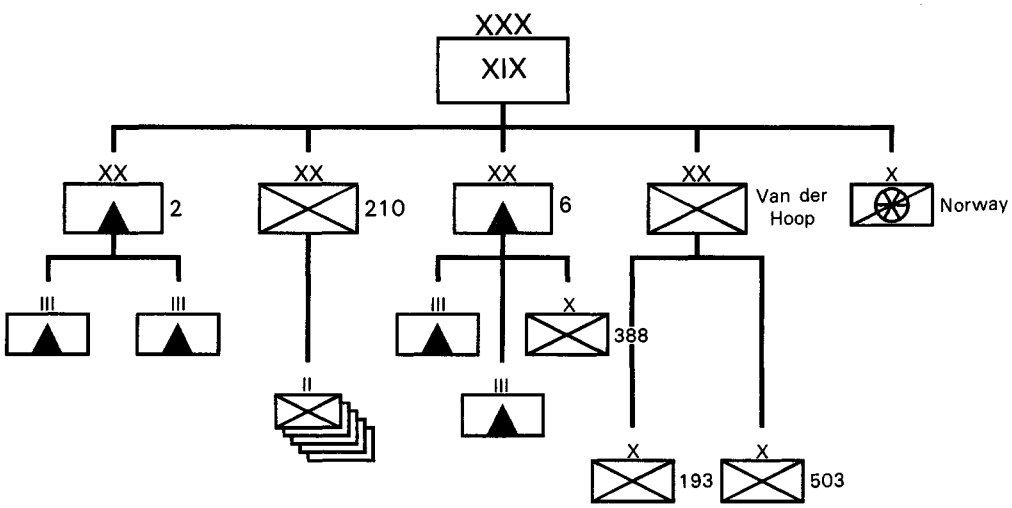
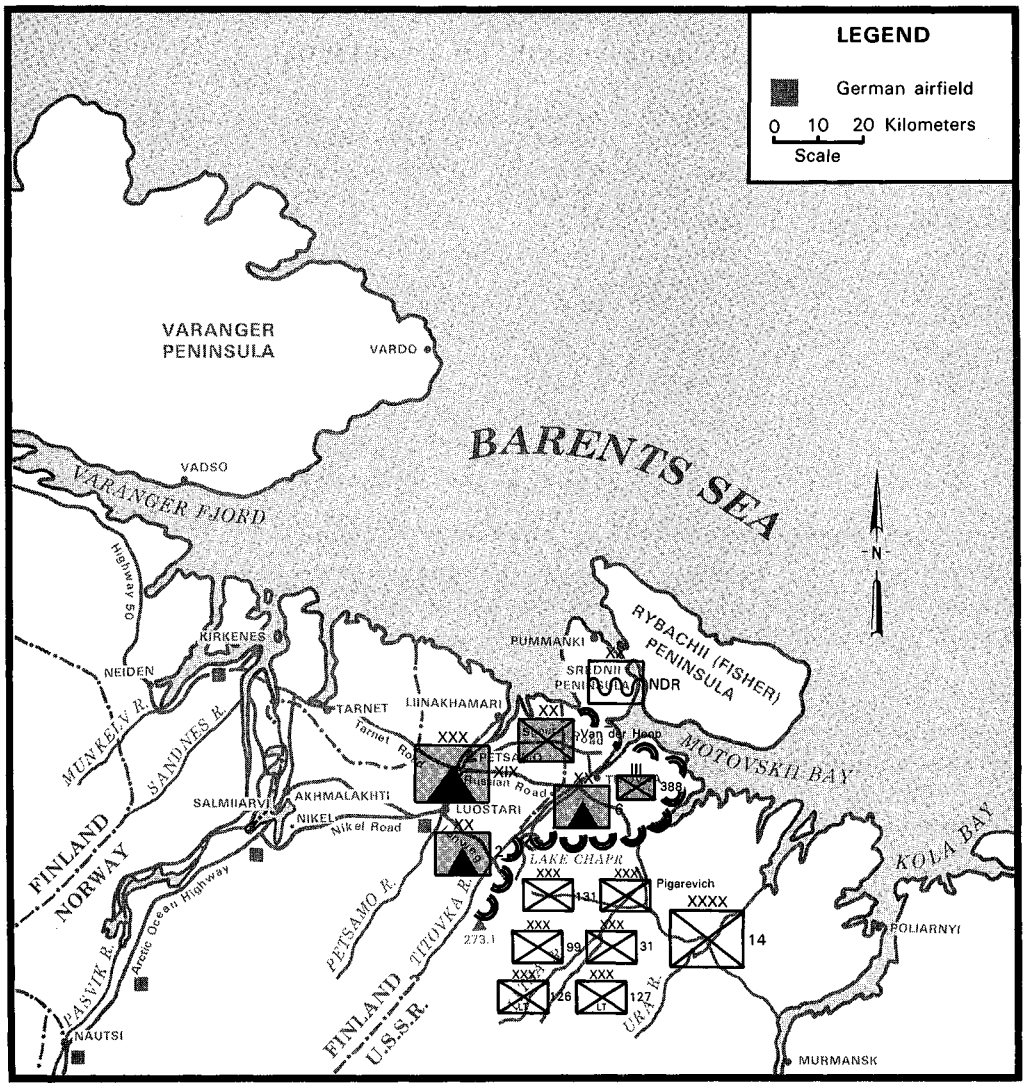


Figure 1. Organization of the German XIX Mountain Corps, October 1944



Map 3. Deployment of Soviet and German forces

authorized strength and were well stocked with ammunition and provisions (see table 1).[11] But they were generally deficient in transport and thus could not move all their required tonnage with organic means. Additionally, having been stationed in the Arctic for three years, with relatively little large-scale or intense combat activity, corps units were inexperienced.

The XIX Mountain Corps' mission was to defend its position while thousands of tons of stockpiled supplies were evacuated through the ports at Petsamo and Kirkenes.[12] To conduct a defense, the corps relied on the strongpoint system (*stutzpunktlinie*), constructed during their three-year occupation of the Litsa front. The first belt of the system was occupied, and the second and third belts were prepared for use as needed. Within

TABLE 1
Status of German Units on 1 September 1944

	XIX Mountain Corps, All Units	2d Mountain Division	6th Mountain Division[2]	Division Group Van der Hoop	210th Infantry Division	Bicycle Brigade Norway[3]
Assigned strength	56,000[1]	16,026 92.8%	18,020 90.6%	3,992 90.0%	5,914 82.7%	2,130
Rifles and submachine guns	51,888	13,873	12,621	NA	5,700	
Machine guns	1,979	514	774	331	391	
Tanks	0	—	—	—	—	
Field guns	135	45	36	0	77	
Antitank guns[4]	261	6	9	0	20	
Mortars[5] (8.0 cm)	245	NA	NA	NA	NA	
Horses	—	3,672 69%	5,074 80%	657 64.5%	305 92%	

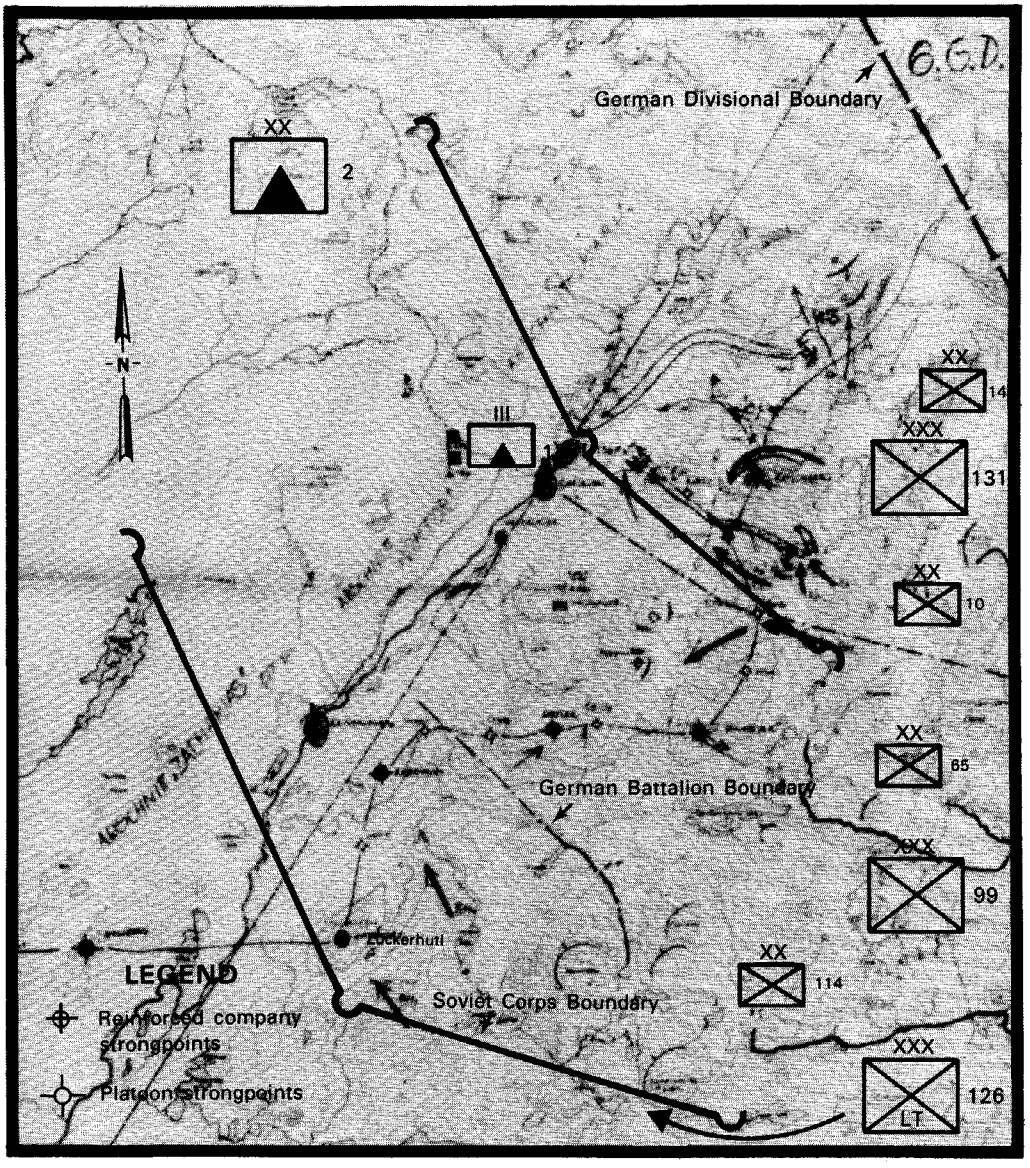
1. Corps strength figure is as of 1 July 1944; all subunit strength figures are as of 1 September 1944.
2. This figure includes the attached 388th Grenadier Brigade.
3. Authorized strength of this unit is shown; no data is available on the actual personnel or materiel status.
4. Corps total includes 120 3.7-cm Paks and 109 8.8-cm rockets. Subunit figures are only for 7.5-cm Pak 40s.
5. Figures do not include six 21.0-cm mortars. German records show no 120-mm mortars.

Source: This data was compiled from several German documents. See note 11.

their assigned sectors, German units selected dominating hilltops on which they built covered concrete and steel-reinforced bunkers, firing points, trench systems, ammunition and supply caches, and command posts. Each strongpoint allowed for all-around observation and fire and was surrounded by barbed-wire obstacles and minefields, as needed.

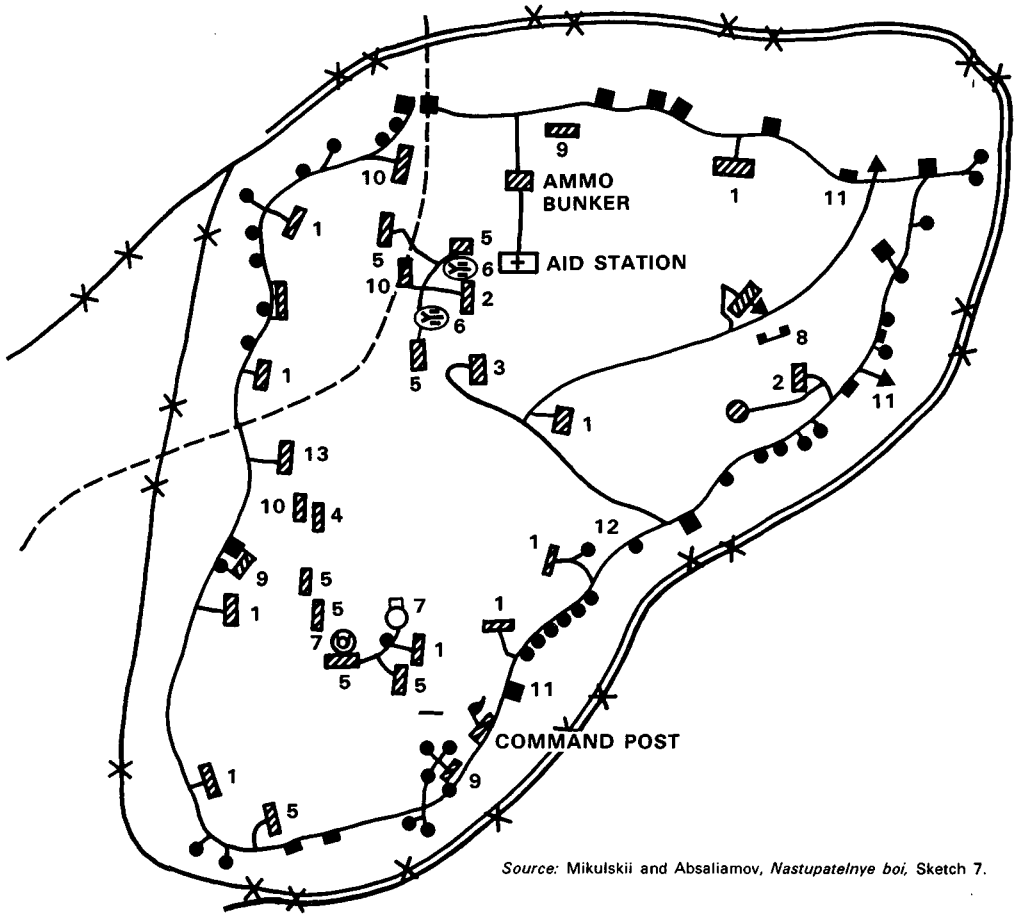
The size of each strongpoint varied in relation to the terrain and troops available (see map 4). In the 2d Mountain Division sector, for example, Strongpoint Zuckerhutl was manned by a company of mountain infantry, a reinforced engineer platoon, and an artillery observation section. This force was armed with thirteen light machine guns (145,000 rounds), four heavy machine guns, two 80-mm mortars (2,100 rounds), two light infantry guns (1,600 rounds), and two 37-mm antitank guns (770 rounds) (see figure 2).[13] In the entire division sector, there were ten reinforced company-size strongpoints and several smaller positions occupied by a platoon or less. The commander of the 137th Mountain Infantry Regiment and three battalion headquarters controlled these strongpoints. The 111th Mountain Artillery Regiment provided indirect-fire support with a battalion in direct support of each infantry battalion and an additional artillery battalion designated for crisis situations.

Direct and indirect fires, engineer obstacles, minefields, and patrols covered the low ground between strongpoints, which varied in width to as much as two to four kilometers. Realizing that these gaps constituted a major weakness in the defensive system, the 2d Mountain Division units constructed or improved additional intermediate positions in the week before the Soviet offensive began.



Map 4. Disposition of 2d Mountain Division units and Soviet units on the main axis

The second defensive belt ran along the west bank of the Titovka River, ten to twelve kilometers behind the first belt. It consisted of individual strongpoints covering approaches to the river, primarily where there were roads or paths. The rear defensive belt lay twenty to twenty-five kilometers farther west, behind the Petsamo River. Its strongest positions guarded the approaches to Petsamo and Luostari. Additional defensive positions protected the mines at Nikel, the port at Liinakhamari north of Petsamo, and Kirkenes with its airfield and port.[14]



Source: Mikulskii and Absaliamov, *Nastupatelnye boi,* Sketch 7.

1. Dugout for two squads
2. Communications center and generator
3. Officer barracks
4. Administration point
5. Ammunition dump
6. Artillery position number 2
7. Mortar position
8. Artillery position number 1
9. Underground ammunition dump
10. Barracks and repair shop
11. Observation post
12. Air observation and early warning post
13. Kitchen

Figure 2. Strongpoint Zuckerhutl

The German XIX Mountain Corps units were aware of the Soviet buildup and knew that a major offensive was imminent. Lieutenant General Hans Degen, commander of the 2d Mountain Division, told his soldiers as much in a proclamation issued on 12 September (see appendix D).[15] A ten-page divisional order issued on 28 September contained more detailed information concerning the impending Soviet offensive.[16] This order correctly identified Lanweg as the main axis of the Soviet attack and prescribed a number of measures to be taken by divisional units to strengthen their strongpoints. However, there was nothing in the order that suggested a German plan to

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Marshal K. A. Meretskov, commander, Karelian Front, who was promoted to that rank after the successful conclusion of the Petsamo-Kirkenes Operation

withdraw from their long-held defensive positions; rather, it presumed that the strongpoint line would hold. Hitler had not yet agreed to Operation Nordlicht, which required the corps to withdraw into Norway.

Soviet Planning and Preparation

Soviet planning for an operation to clear the Germans from the Murmansk sector began in February 1944, when Meretskov replaced Colonel General V. A. Frolov as Karelian Front commander.[17]

At the age of forty-seven, Meretskov was an experienced Soviet commander. He joined the Red Army in 1918, was a veteran of the Russian Civil War, and during the interwar period had served in progressively higher command and staff positions. In 1936, Meretskov was an adviser in Spain; in 1937, he became deputy chief of the Soviet General Staff; and in 1938, he took command of the Leningrad Military District. Meretskov commanded Soviet forces in the initial, less successful phase of the 1939—40 war with Finland, then briefly served as chief of staff of the Red Army. In 1941 and from 1942 to 1944, he commanded the Volkhov Front, which was adjacent to the Leningrad Front on its southern flank. Meretskov was chosen for this new position in part because he was available. His Volkhov Front forces had been absorbed into other commands when the lines were shortened.

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Lieutenant General V. I. Shcherbakov, commander, 14th Army

But more important, he was familiar with the terrain of Soviet Karelia, having fought there in 1939—40. Stalin reminded him of this when the two met in Moscow on 13 February:

> You know the Northern Direction well. You have acquired the experience of the conduct of offensive operations in the difficult conditions of forested and swampy terrain. You have the maps, and more importantly, you commanded the army on the Vyborg Direction in 1939—40, during the Soviet-Finnish War, and broke through the Mannerheim Line. To name another person, who knows nothing at all about the peculiarities of this theater of military operations, and who does not have experience in the conduct of battles in the conditions of Karelia and the polar region, to the Karelian Front at this time would be inexpedient. This would prolong the organization of the defeat of the enemy. Any other commander would have to be retrained, which would take much time. And this is something we do not have.[18]

In April and May 1944, with guidance from Stalin and the Headquarters of the Supreme High Command (*STAVKA*) in hand, Meretskov and his subordinate army commanders conducted operational-tactical war games that were oriented on subsequent offensive operations. Similar exercises occurred at divisional and regimental headquarters.[19]

The 14th Army, which had defended the approaches to Murmansk since the beginning of the war, was commanded by Lieutenant General V. I. Shcherbakov, a 43-year-old civil war veteran who had commanded a division in Meretskov's 7th Army during the Soviet-Finnish War in 1939—40. Shcherbakov took command of the 14th Army in March 1942 and was

promoted to lieutenant general in 1943. As an old acquaintance of Meretskov from his service in the Leningrad Military District, he enjoyed the new Front commander's confidence.[20] During June and July of 1944, while the Karelian Front's major effort focused on the Svir-Petrozavodsk Operation in southern Karelia, Shcherbakov used his limited forces of two rifle divisions and two light rifle brigades to close the gap between his army and the XIX Mountain Corps units, pushing the Soviet positions forward another ten to twelve kilometers. In the 14th Army rear, Soviet infantry and engineer units improved the approaches to the battlefield by building and improving roads and bridges.[21]

In August, Soviet reinforcements necessary for the planned offensive began arriving on the Murmansk-Leningrad railroad from the recently completed operations in the Svir-Petrozavodsk area of southern Karelia and from the Kandalaksha area just north of the Arctic Circle. Between 9 August and 7 October, six rifle divisions, two rifle corps headquarters, and a light rifle corps headquarters with three brigades detrained at Kola Station south of Murmansk and moved forward along dirt roads to new staging areas. Tank and heavy artillery units detrained farther north and crossed the bay on barges before driving to the staging areas. By early October, regrouping was completed, and Meretskov's force was assembled (see figure 3).[22]

On the eve of the offensive, the 14th Army infantry units were of various origins and levels and types of combat experience. The 126th and 127th Light Rifle Corps (LRCs) were composite units formed in March 1944 from naval rifle brigades and separate army ski units under a ground force corps headquarters. The 126th LRC was commanded by Colonel V. N. Solovev,

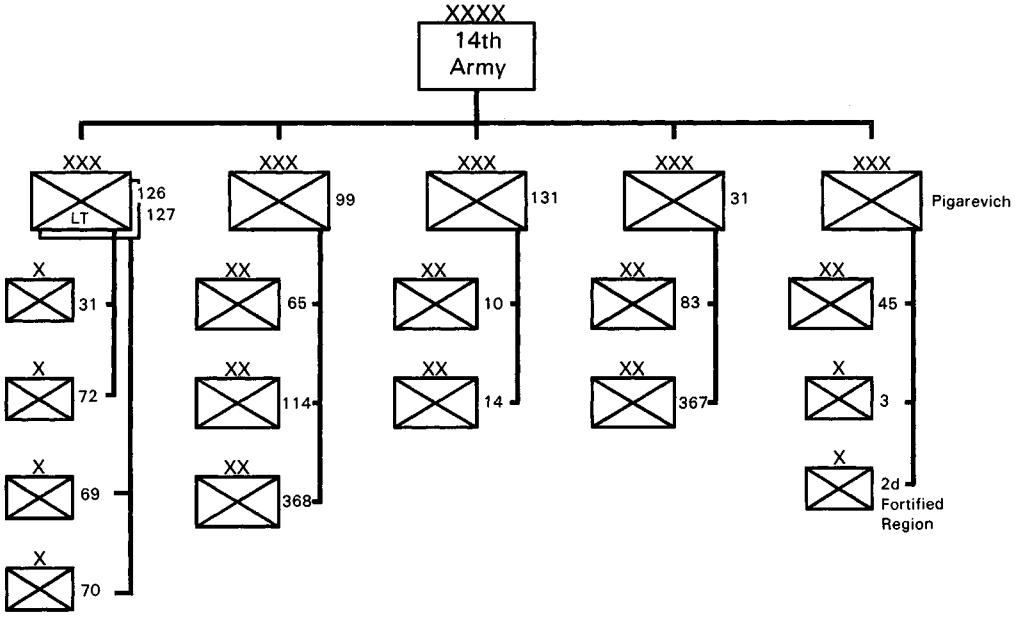


Figure 3. Organization of the Soviet 14th Army, October 1944

who was intimately familiar with the terrain, having previously commanded a regiment in the 10th Guards Rifle Division.[23] The 126th consisted of the 31st Light Rifle Brigade, probably an army unit, and the 72d Naval Rifle Brigade.[24] Major General G. A. Zhukov, who had previous experience as a rifle division commander in the Karelian Front,[25] commanded the 127th LRC, which also was composed of two brigades, the 69th and 70th Naval Rifle Brigades.[26]

All four brigades in these two corps were structured similarly. They had three rifle battalions with 715 men each, an artillery battalion with eight 76-mm guns, an antitank artillery battalion with twelve guns, a mortar battalion with a mix of sixteen 82-mm and eight 120-mm mortars, a company of submachine gunners, a reconnaissance company, a company of antitank rifles, an antiaircraft platoon, a signal battalion, an engineer company, a transportation company, and a medical company. The authorized strength of a brigade was 4,334 people, 178 vehicles, and 818 horses.[27] In personnel, a full-strength, two-brigade light rifle corps was thus slightly smaller than a full-strength, standard Soviet rifle division.

As is often the case, however, neither corps was configured exactly according to the standard tables of organization and equipment at the time of this offensive. Since none of the brigades had vehicles or even carts, they used pack animals to transport all their heavy infantry weapons, artillery, mortars, communications equipment, and ammunition.[28] According to one Soviet source, the 126th LRC had five batteries of 76-mm pack howitzers and three batteries of heavy mortars.[29] Another source indicates that each light rifle corps contained an artillery battalion of twelve 76-mm mountain guns and a mortar battalion of twelve 120-mm mortars.[30] Pack horses transported the guns, reindeer the ammunition. Of the two corps, the 127th had the most combat experience, having just participated in the Svir-Petrozavodsk offensive in southern Karelia. However, this experience apparently came at the cost of casualties and may explain the 14th Army commander's decision to place the 127th LRC in the army second echelon.[31] Each corps probably had about the same personnel strength as the average rifle division in the 99th and 31st Rifle Corps.[32]

The 14th Army also had three standard rifle corps—the 99th, the 131st, and the 31st. Lieutenant General S. P. Mikulskii, who had earlier commanded a rifle corps under Meretskov in the Volkhov Front, took command of the 99th Rifle Corps in June 1944 and led it through the Svir-Petrozavodsk Operation. Two of his three rifle divisions (the 114th and the 368th) also participated in that operation; the 65th Rifle Division had been part of Mikulskii's corps in the Volkhov Front. When the offensive began, the 99th was at about 65 percent of its authorized strength (see appendix E).

The 131st Rifle Corps headquarters was created in late August 1944 and, in early October, was commanded by Major General Z. N. Alekseev, who had commanded the 127th LRC in combat during the Svir-Petrozavodsk Operation.[33] His two rifle divisions, the 10th Guards and the 14th, had spent

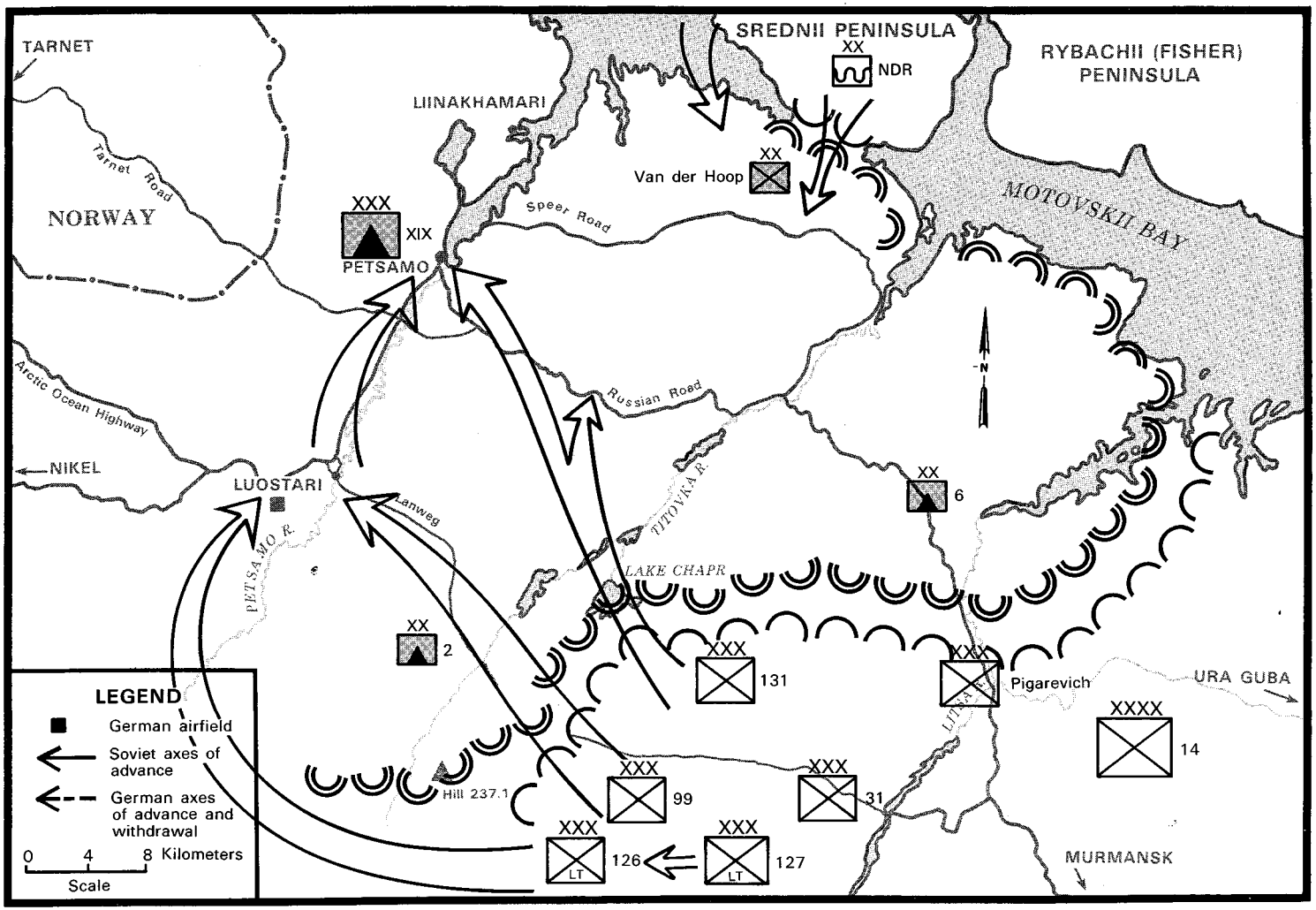
the entire war in the Murmansk sector and were experienced in arctic warfare. The actual strength figures of the 131st are not available. Major General M. A. Absaliamov, who earlier had commanded a rifle division in Meretskov's Volkhov Front and then in the Svir-Petrozavodsk Operation, commanded the 31st Rifle Corps.[34] Absaliamov's 83d and 367th Rifle Divisions were veteran units of the Karelian Front but had limited combat experience. When the 31st was committed to battle, the corps was at about 60 percent of its authorized strength (see appendix F).

The remaining infantry formation of the 14th Army was Group Pigarevich, a composite corps-size unit named after its commander, Lieutenant General B. A. Pigarevich. A World War I veteran of the Imperial Army who joined the Red Army in 1918, commanded a battalion in the civil war, and served mostly in staff positions during the interwar period, Pigarevich had been chief of staff of the 14th Army during the Soviet-Finnish War of 1939—40. After two years of staff service in the West Front, he returned to the Karelian Front as its chief of staff in 1943.[35] In August 1944, Meretskov replaced Pigarevich with a younger, more energetic and experienced officer after the Svir-Petrozavodsk Operation.[36] Group Pigarevich comprised the 45th Rifle Division, from the Karelian Front's 26th Army; the 3d Naval Rifle Brigade, recently in combat in southern Karelia; and the 2d Fortified Region, which had come from Meretskov's Volkhov Front.[37]

On 8 September, General Meretskov discussed his plan for the offensive with the commander of the Northern Fleet, Admiral A. G. Golovko, whose air, sea, and land forces would support the coastal flank of the 14th Army.[38] In late September, Meretskov sent his draft plan to Moscow for *STAVKA*'s approval. *STAVKA* accepted the draft with minor adjustments, and on 29 September, Meretskov published the order to his subordinate units (see appendix A).[39]

The plan was straightforward and uncomplicated (see map 5). The 14th Army was to attack with the main effort on the left, in the sector from Lake Chapr south to Hill 237.1, to defeat the 2d Mountain Division and seize the Petsamo-Luostari area by frontal attack. On its left, the 126th and 127th Light Rifle Corps, deployed in two echelons, would envelop the German right flank to block the Arctic Ocean Highway west of Luostari and the Tarnet Road west of Petsamo to prevent German retreat and reinforcement. On the 14th Army right flank, from Lake Chapr to the east and north, Soviet forces would conduct an economy-of-force operation against the German 6th Mountain Division. On the far right flank, naval infantry forces would attack across the Srednii isthmus and along the coastline west of it, against Division Group Van der Hoop, to cut that unit's path of retreat and reinforcement.

On the main axis, Meretskov formed the first echelon with the 99th and 131st Rifle Corps (five divisions), the 126th LRC (two brigades); and tank and artillery units. His second echelon consisted of the 31st Rifle Corps (two rifle divisions) and the 127th LRC (two brigades). Group Pigarevich would execute the economy-of-force mission on the Soviet right flank.



Map 5. Karelian Front offensive plan

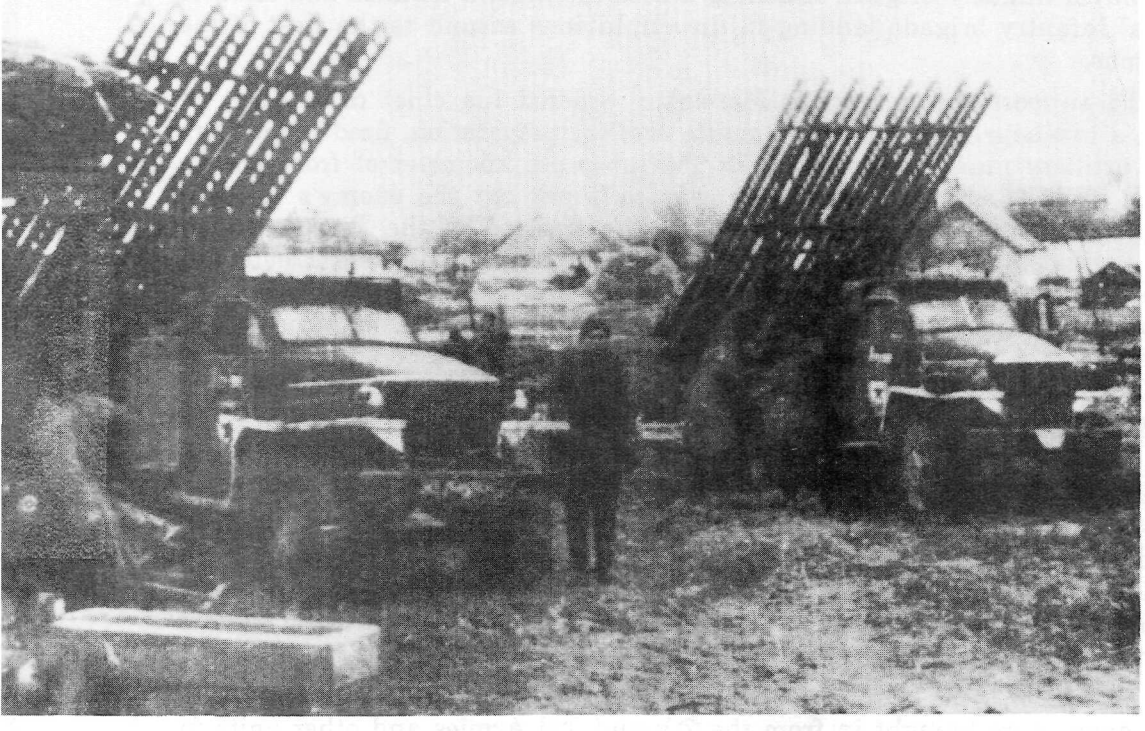
Admiral Golovko would employ the Northern Defensive Region (NDR) with one naval infantry brigade attacking across the Srednii isthmus and another naval infantry brigade landing in an amphibious assault to the west of the isthmus.

To support the operation, Meretskov ordered his chief of artillery to plan a two-hour and thirty-five minute artillery preparation, fired by mortars and artillery numbering more than 150 tubes per kilometer of front on the main axis. Their primary mission was to knock out the enemy's artillery and then to support the breakthrough, the crossing of the Titovka River, and the infantry's attack into the intermediate German positions. Lieutenant General Mikulskii, the 99th Rifle Corps commander, ordered his artillery to silence enemy indirect-fire assets, suppress or destroy enemy troops and weapons systems, create openings in enemy obstacles large enough for two to three companies to attack through, support the crossing of the Titovka River, and deny the enemy the opportunity to counterattack or withdraw.[40]

The artillery forces amassed to support this operation were formidable. Each rifle regiment had from twelve to eighteen 82-mm and four to six 120-mm mortars and three to four 76-mm guns. Each rifle division had an artillery regiment equipped with a mix of twenty-eight to thirty-two 76-mm and 122-mm howitzers. The total organic indirect-fire assets varied slightly from division to division but averaged fifty 82-mm mortars, sixteen 120-mm mortars, thirty 76-mm guns, and twelve 122-mm howitzers.[41]

To reinforce the 14th Army, at least seven mortar and seventeen artillery regiments were brought in from the 7th and 32d Armies and other units in the Karelian Front.[42] These included regiments of 120-mm mortars, 76-mm guns, and 122-mm howitzers; one regiment of captured German 150-mm guns; and regiments of 152-mm towed guns. In addition, Meretskov gave Shcherbakov three regiments and two brigades of multiple rocket launchers (MRLs). The total artillery and mortar tube count was 2,100, to which can be added 120 MRL systems.[43] Two Soviet sources report a density of 156 and 168 tubes per kilometer of front in the main attack sector of two divisions. But one of these divisions belonged to the 99th Rifle Corps, and its commander, Lieutenant General Mikulskii, plainly states that, in that division sector, the density was ninety-five guns and mortars and twenty-three MRL systems per kilometer of front.[44] One indisputable fact emerges from all the accounts: over half of the tube density on the main axis came from mortar systems. The number of 76-mm and 122-mm artillery pieces employed in a direct-fire mode to supplement the 45-mm antitank guns was relatively small. In the 65th Rifle Division, for example, twenty-one 76-mm guns and six 122-mm howitzers were set aside for direct fire.[45]

In accordance with standard Soviet practice, indirect-fire support systems were organized into army, corps, divisional, and regimental groups. An army artillery group was made up of long-range artillery and MRLs. The long-range artillery was to suppress enemy artillery, his reserves, and his command and control nodes. MRLs were targeted on the two German strongpoints believed to be the strongest—a 24-system regiment on each.



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American lend-lease trucks mounted with Katyusha multiple rocket launchers

The corps artillery group consisted of up to two regiments of long-range artillery (150-mm or 152-mm) and a regiment of MRLs (twenty-four systems). This group was to execute counterbattery fire in the breakthrough sector.

The division artillery group varied in size depending on the division's mission. The 65th Rifle Division's artillery group in the main attack was a regiment of twenty-four 122-mm howitzers. Regimental artillery groups also varied in size and were a combination of mortar and field artillery units. The regimental artillery group of the 65th Rifle Division had two battalions of 120-mm mortars and five battalions of field artillery. In contrast, the 114th Rifle Division's regimental artillery group consisted of one mortar battalion and two field artillery battalions. As a result of these groupings, in the 99th Rifle Corps first-echelon regiments, each rifle battalion was supported by one or two artillery battalions and one or two mortar batteries. On the main axis, the support ratio was even greater: one mortar and two artillery battalions per rifle battalion. This resulted in each attacking rifle company enjoying the support of two or three artillery and mortar batteries.[46]

Counterbattery fires were planned on the basis of "instrumental reconnaissance" conducted during the preparatory period.[47] Forty-three Soviet batteries were targeted on the twenty-one German batteries that were plotted in this manner, a ratio of 2 to 1. A counterbattery mission would be 3 to 5

minutes of fire, achieving a density of 25 to 30 rounds per hectare (an area 100 meters square) or 2,500 to 3,000 rounds per square kilometer. Counter-battery fires—a combination of mortar and artillery units firing 200 rounds per German battery—were to suppress German mortar batteries in the zone of the main attack.[48]

To mask their location from German observation, the mortar and artillery batteries of all Soviet units, including those of the second-echelon corps, were brought into firing positions at night. Most of the artillery units were positioned by 24 September, and late-arriving units sent quartering parties ahead to select and prepare firing postions.[49]

The Front order specified the details of the artillery preparation as follows (see appendix A):

5 minutes—Barrage by all indirect-fire weapons, except MRLs, on strongpoints and centers of communication and command and control.

30 minutes—Registration.

60 minutes—Destruction of known targets; creation of passage lanes in barbed-wire obstacles.

30 minutes—Aerial bombing while artillery continues to suppress important targets.

20 minutes—Artillery plus two brigades of MRLs suppress newly acquired targets.

10 minutes—Maximum density of fire by all systems directed at initial defensive positions, immediate depth, and enemy artillery and mortar batteries.

Just for the preparation, the Soviets allocated a total of 140,000 rounds—84,000 mortar and 56,000 artillery. They also planned to fire 8,200 to 8,500 rounds of MRL projectiles per square kilometer on selected strongpoints, a total of 97 tons of MRL ordnance.

When the infantry attacked following the artillery preparation, the artillery was to use the standard "successive concentration of fire" to a depth of 2.5 kilometers.[50] Under this system, the direct support indirect-fire assets were to concentrate their fires on successive lines immediately in front of the attacking troops, shifting their fires forward as the attack advanced. The 82-mm and 120-mm mortars were to fire successive volleys, each 150 meters beyond the previous volley. This method of employment, by exploiting the high angle-of-fire capability of mortars, aided in reaching targets on reverse slopes, which artillery fires often missed, and also reflected the relatively greater amount of mortar tubes and ammunition on hand.

After the infantry broke through the enemy's initial positions, mortar and artillery units would continue to support the attacking troops. MRL support would be available only on those axes of advance that were capable of supporting wheeled-vehicle traffic. Tank units would control their

supporting artillery fire through a forward observer riding in a radio-equipped combat vehicle.[51]

The 14th Army did not have an organic tank or self-propelled artillery unit.[52] All armored forces belonged to the Karelian Front, and for the Petsamo-Kirkenes Operation, Meretskov brought in three tank and two self-propelled artillery units. Four of these formations that had recently participated in the Svir-Petrozavodsk Operation in southern Karelia were the 7th Guards Tank Brigade (7th GTB) with thirty-seven T-34 tanks, the 89th Separate Tank Regiment (89th STR) with eighteen T-34s, the 339th Guards Heavy Self-Propelled Artillery Regiment (339th GHSPAR) with seventeen JSU-152s, and the 378th Guards Heavy Self-Propelled Artillery Regiment (378th GHSPAR) with seventeen JSU-152s.

General Meretskov personally asked *STAVKA* for the fifth armored unit. Having considered the nature of the German antitank defenses and their lack of tanks, Meretskov believed that his forces should include a regiment of the heavy KV tanks. After some deliberation, *STAVKA* approved Meretskov's request, and he obtained the 73d Separate Guards Heavy Tank Regiment (73d SGHTR) with twenty-one KV tanks.[53]

From 1 to 5 October, all the armored units arrived by rail at Murmansk, were transported by barge across the bay, and then were driven on dirt roads to their unit assembly areas eight to twelve kilometers from the Germans' initial positions. From these units' time of arrival in the assembly area until 7 October, they performed maintenance duties, trained drivers, and coordinated with supported units.[54]

The 73d SGHTR was paired with the 378th GHSPAR and attached to the 131st Rifle Corps. From the beginning of the operation, Major General Alekseev had planned to use his tanks and guns for direct support of infantry and, therefore, attached them to his left-flank 10th Guards Rifle

KV-85 heavy tank, specifically requested by Meretskov for this operation

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Division. The 7th GTB was paired with the 339th GHSPAR and attached to the 99th Rifle Corps. Lieutenant General Mikulskii, influenced probably by his recent combat experience in southern Karelia, formed a mobile group by combining his armor, an engineer battalion, and infantry from his second-echelon rifle division. After the breakthrough, it was to develop the offensive in depth. Since the 89th STR did not arrive in the area until after 7 October, it was placed in army reserve.[55] General Shcherbakov's 14th Army had a total of 110 tanks and self-propelled artillery pieces. As far as can be determined, the Germans had none.

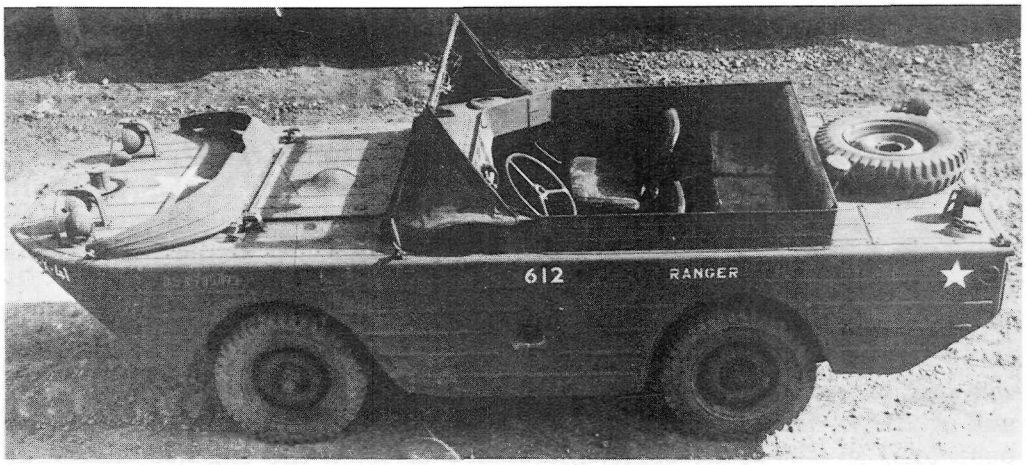
Soviet planning for engineer support of the offensive was comprehensive, taking into account the underdeveloped road network; the geological composition of the terrain, that is, its swamps and bogs, solid rock, boulders, and mixtures thereof; and the extensive hardening of the German defensive positions. In his Front order, Meretskov directed the engineer troops to prepare assembly areas for the army, support the rapid forcing of water obstacles on the main axis of attack, and support the maneuver of the attacking forces after the breakthrough. In addition, they were expected to support the surprise breakthrough of the enemy's forward defensive positions in the initial attack.[56]

To accomplish these missions, the Soviets employed approximately thirty engineer battalions. Each of the eight rifle divisions had its own divisional engineer battalion. The 20th Svirsk Motorized Assault Combat Engineer Brigade and the 13th Assault Combat Engineer Brigade had six battalions each. The 1st Motorized Engineer Brigade had three battalions. Five separate engineer battalions included two pontoon bridge units, a road exploitation battalion, a road construction battalion, and a battalion of demolition specialists.[57]

Although not engineer units in name, the 275th and 284th Separate Special-Purpose Motorized Battalions were certainly engineer equipped. Each had ninety-four American-made amphibians.[58] The 284th Battalion was attached to the 99th Rifle Corps before 7 October and remained with it for the duration of the operation.[59] The other battalion supported the 131st Rifle Corps.

The Soviets' river-crossing equipment included both heavy and light pontoon sets, a captured German bridge set, 50 meters of class 60 bridging, 300 assault boats, and 1,200 sets of waders. The 14th Army commander controlled the heavy pontoon and bridge units, while the light pontoon and all the remaining crossing materials were distributed among the first-echelon divisions.[60]

Another element of the operations plan was the building of roads and bridges. Special road-bridge detachments at division and corps level were to build roads on the axes of advance for each of the four rifle divisions in the first echelon. A division detachment consisted of engineer troops of company to battalion size, plus a battalion of infantry. A corps detachment was two to three combat engineer and road construction battalions combined with an infantry regiment. These specially created organizations were also



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A Ford ¼-ton amphibian, given to the U.S.S.R. in lend-lease and employed by the 14th Army to cross water obstacles

to rebuild fallen or destroyed bridges while moving behind the combat formations of the first echelon.[61] To help tank units maintain mobility during the offensive, each platoon had a squad of engineer troops equipped with explosives to remove concrete or rock obstacles and with logs to negotiate swampy terrain.[62]

During the initial assault on German defensive positions, engineer troops were organized to conduct reconnaissance, remove German obstacles, and destroy reinforced positions. Divisional and army engineer units conducted reconnaissance during the concentration and deployment phases by determining the nature of German positions, approach routes, suitable terrain for the future construction of cross-country vehicular roads and footpaths, and possible crossing sites on the Titovka River.

To remove German obstacles and destroy reinforced positions, the Soviets created assault groups and obstacle detachments within first-echelon infantry units. An assault group usually consisted of a specially trained rifle platoon reinforced with a heavy machine gun or 45-mm antitank gun, one or two flamethrower teams, and one or two engineer squads. A rifle battalion would have one such composite platoon. Engineer troops for these composite detachments came from regimental or divisional engineer units.[63] Table 2 shows Lieutenant General Mikulskii's allocation of engineer units and how he planned to use them.

Soviet Army air forces had a significant role in supporting the offensive.[64] Meretskov's 29 September Front order specified the standard missions of close air support (CAS), interdiction, and air superiority. CAS tasks included assisting Soviet artillery during the preparatory fires to break through the German defenses, disrupting enemy command and control, suppressing artillery and mortar batteries, and accompanying tanks and infantry during the battle to support their attacks. Interdiction tasks were to locate and engage enemy operational and tactical reserves and to prevent

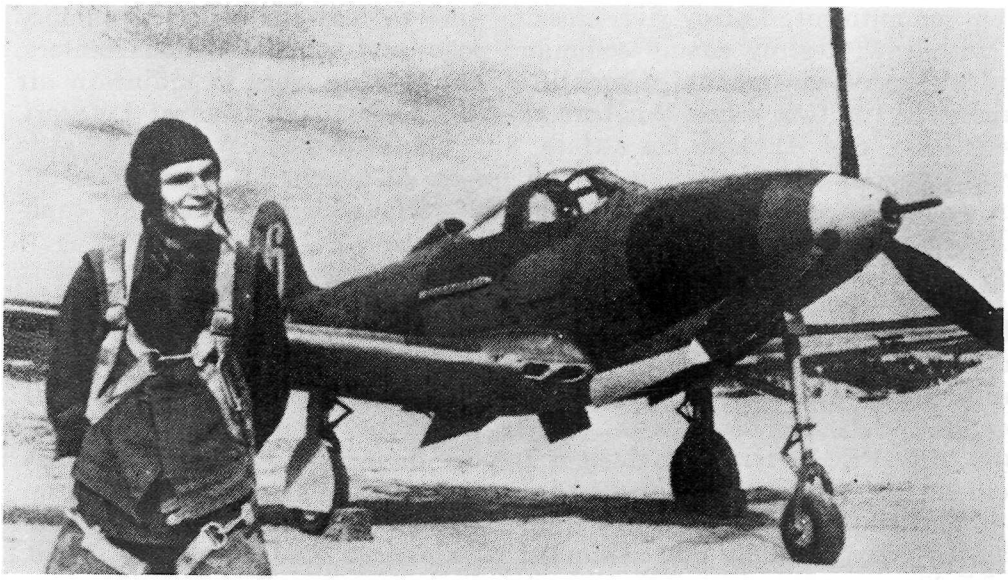
their commitment, destroy river-crossing sites to deny the enemy the ability to withdraw, destroy enemy command posts and communications centers, and strike at his means of mobility. The Soviets were to maintain air superiority in two ways. Bombers targeted German airfields at Luostari, Salmiiarvi, and Kirkenes for strikes, and fighter planes covered the battle area, protecting both air and ground forces. Although the Front order did not specify a reconnaissance mission, the various air units had this capability and continuously exercised it.

General Meretskov's air forces came from various commands. His own 7th Air Army provided four mixed air divisions, an interceptor division, and the command and control apparatus. From the national air defense forces, he acquired an additional interceptor division that, throughout the operation, defended Murmansk and the Murmansk-Leningrad railroad. Finally, *STAVKA* reserve provided a bomber division. Soviet aircraft types included the Il-2 ground attack aircraft; Pe-2 dive-bomber; Il-4 medium bomber; Lag-5, Yak-3, and Yak-9 fighters; and Po-2 utility aircraft. In addition, the 7th Air Army had a number of American lend-lease P-40s, P-39s, and P-63s.

TABLE 2
Engineer Plan, 99th Rifle Corps

Engineer Units	Number of Battalions	Number of Companies	Engineer Equipment (Special)	Missions or Attachments
Engr bns of the 65th, 114th, and 368th Rifle Divs	3	6	—	Per decision of division commander
20th Motorized Cbt Engr Bde (2d, 109th, 135th, 222d, and 447th Cbt Engr Bns, 28th Flamethrower Bn)	6	18	Light crossing park with 50% transport	2d Cbt Engr Bn attached to the 7th Gds Tk Bde 109th and 135th Cbt Engr Bn with pontoon assets attached to the 65th Rifle Div for Titovka crossings and participation in assault groups 222d Cbt Engr Bn attached to the 114th Rifle Div for participation in assault groups 447th Cbt Engr Bn for rebuilding class 60 wood bridge across Titovka 28th Flamethrower Bn for participation in assault groups along corps front
50th Sep Rd Exploitation Bn	1	2	—	Build road in zone of the 65th Rifle Div
218th Sep Rd Const Bn	1	2	—	Build road in zone of the 114th Rifle Div
168th Brg Const Bn	1	2	—	Erect class 60 bridge across Titovka
Total	12	30		

Source: Mikulskii and Absaliamov, *Nastupatel'nye boi*, 34—35.



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A Bell P-39 Aircobra, given to the U.S.S.R. in lend-lease and flown by naval and army air forces. Note that the 37-mm nose cannon has been replaced with a machine gun.

The total air strength in the Karelian Front was 132 bombers; 52 Po-2 utility aircraft; 189 ground attack aircraft; 308 fighter-interceptors; and 66 assorted reconnaissance, forward observer, and liaison aircraft—a total of 747 aircraft.[65] Although the air arm of the Northern Fleet contained an additional 275 aircraft, they were not used to support army ground forces. (Naval air operations are discussed in detail in chapter 5.)

By 6 October, the commander of the 7th Air Army, Lieutenant General of Aviation I. M. Sokolov, assumed operational command of all army air units.[66] He, in turn, allocated a mixed air division each to the 99th and 131st Rifle Corps, which were attacking on the main axis. The commanders of these two air units were located at their supported rifle corps command posts. A liaison officer with communications equipment was attached to the command post of each rifle division in the main attack to aid in directing CAS strikes. Also, an additional liaison officer was attached to the tank forces of each corps.[67] Lieutenant General Sokolov controlled the remaining two mixed air divisions, the fighter divisions, and the bomber division from his command post collocated with Lieutenant General Shcherbakov's 14th Army command post.

Two plans were developed for air operations, one for good flying weather and the other for bad. In the event of good weather, all assets were to be used. During bad weather, bombers would not fly, but fighters and CAS aircraft would. Specific air operations were planned only for the breakthrough phase of the offensive, but this still amounted to over 4,000 sorties.[68]

The Soviets estimated German air strength in the immediate area to be 160 aircraft, half of which were fighters.[69] The most common German air-

craft were the Arado 66 night bombers, Ju-87 Stukas, Bf-109 fighters, and FW-190 fighter-bombers. The Soviets thus enjoyed a 6-to-1 superiority in air strength.

Logistic support, essential to all military operations, was especially significant in the far north. Soviet logistic planners for the Petsamo-Kirkenes Operation were given several imperatives.[70] Logistic units were to stockpile the necessary supplies prior to the operation, provide medical evacuation and treatment to the wounded and sick, accomplish timely repair of combat equipment, build and maintain the lines of communication, provide the troops with everything they needed for combat and survival, and provide rear area protection against enemy attacks.[71]

The hub of logistic support of the operation was Murmansk, the northern terminus of the rail link to Leningrad, and its outlying rail and water transport facilities. Materiel delivered by rail was either stored on the ground in the Murmansk area or shipped forward by truck or barge to supply bases in the 14th Army rear. At the beginning of the operation, these bases were forty to fifty road kilometers northwest of Murmansk.

From the rear supply bases, cargo was pushed forward on dirt roads, most of which were either built or improved by engineers in support of the operation. By the first week in October, each corps of the first echelon had at least one road and one cross-country track in its sector for logistic support.[72]

The first priority of supply was ammunition, and in early September, artillery units began to stockpile ammunition in all calibers. By the time the operation began, artillery ammunition supplies averaged nearly 2.2 units of fire,[73] and the total accumulation of all types of ammunition came to 17,000 metric tons. Petroleum, oils, and lubricants (POL) were also stockpiled at the user level, at refueling points on roads, and at army dumps—a total of slightly over 3,000 metric tons.[74]

Food for troops and draft animals was critical. By the beginning of the operation, units had a six-day supply of food and forage, of which two days' worth was in the hands of the troops. At army level was another seven days' supply of food and fourteen days' supply of forage, with an additional ten days' supply of food and more forage stored in the Murmansk area. The ration supply plan called for the preparation of 50,000 dry rations, many of which were later air-dropped to units.

In view of the weather conditions in the area of operations, clothing issue was critical to the forces' survivability. In addition to sheepskin coats, caps, underwear, mittens, blankets, and sleeping bags, thousands of white camouflage smocks were issued. Medical kits were restocked, thousands of tack items were repaired or replaced for pack animals, and boots and shoes were repaired. Direct-exchange stockage was established in units. To provide heating fuel for medical treatment and maintenance facilities, the army stockpiled 64,500 cubic meters of firewood. Additional firewood was to be gathered by the troops when and where needed.[75]

Daily, approximately 800 metric tons of supplies were required to keep the army fed, fueled, and firing. Various types of naval vessels and army trucks moved the supplies forward from Murmansk. While discrepancies exist between Soviet sources as to the exact number, the 14th Army and Karelian Front together had seven truck battalions capable of moving 1,761 metric tons in one lift. In early September, however, the Front withdrew three of the truck battalions from the 14th Army and placed them under Front control. To keep the truck fleet moving, the 14th Fixed Automotive Repair Shop provided a depot-level repair capability in Murmansk, while the 224th Separate Repair-Renewal Battalion operated a shop in Murmansk and a forward collection and repair point in the army rear. Three army repair shops, aided by Front assets, took care of the problems with artillery and infantry weapons.

In the absence of suitable roads, especially in the battalion and regimental areas, most of the supplies were moved by pack animals. The 14th Army had an animal-drawn transport company of 141 horses and 2 army reindeer companies totaling over 500 reindeer (a horse could carry 250 pounds, a reindeer 75 to 80 pounds).[76] In the case of the 10th Guards Rifle Division, 99th Rifle Corps, five rifle battalions employed teams of soldiers to carry ammunition and supplies into their positions on fourteen consecutive nights in late September.[77] Since the animals were so important for tactical and logistic transport operations, Soviet planners established rear area and forward veterinary services for the hundreds of horses, reindeer, and dogs in the force.[78]

Medical support was handled by several hospitals in the Murmansk area. Surgical field hospitals and a medical transport unit were deployed to the rear of the combat zone and handled up to 6,000 to 7,500 patients. As the area of operations shifted westward, so too were the field hospitals.

A Soviet supply column of horses transporting boxed ammunition

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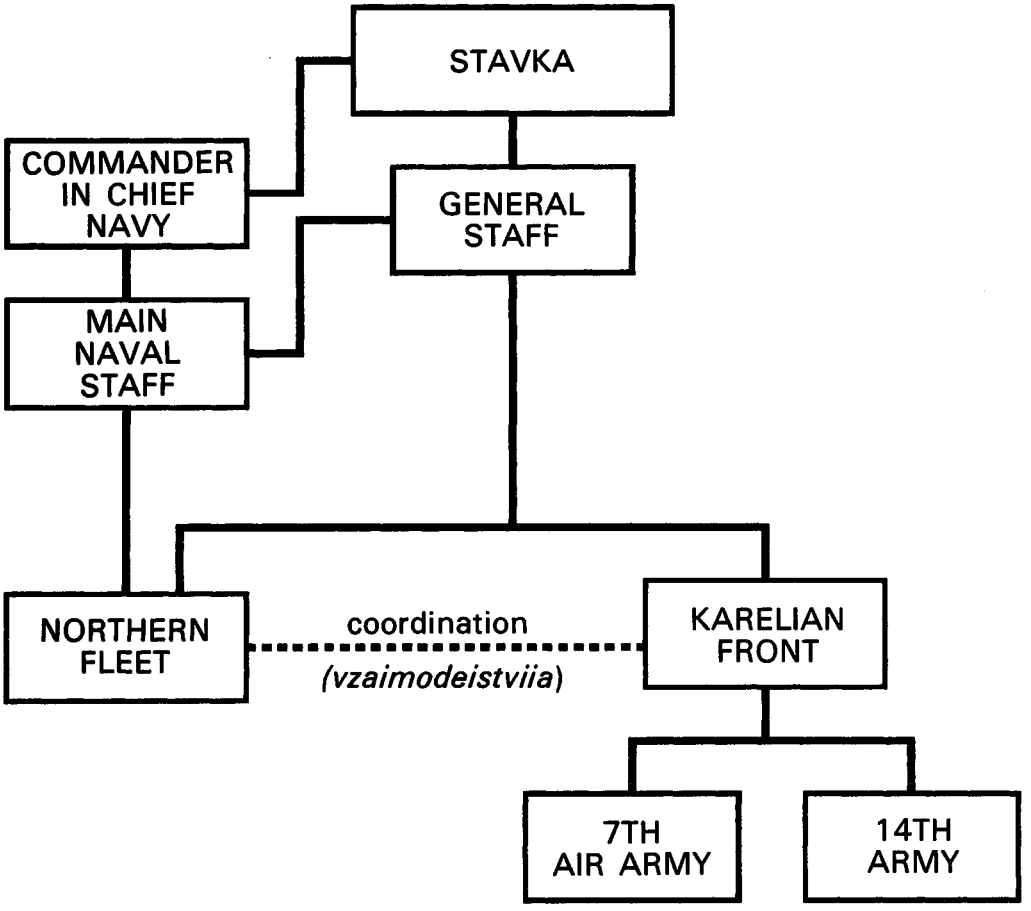

Figure 4. *STAVKA*-Karelian Front-Northern Fleet command relationship

Dogs would detect wounded soldiers left on the battlefield. These casualties would then be removed on sleds, on litters, in flat-bottomed boats, or by horses or reindeer. Once treated at the field station, casualties were to be evacuated to the rear either in ambulances or in cargo trucks returning to the supply base area. A limited number of patients would be transported by air.[79]

The chiefs of rear service at the Front and army levels, both general officer positions, supervised logistic support operations. The Front and army military councils paid close attention to logistic planning and, at army level, conducted at least two formal inspections of logistic units during the operation's preparatory phase.[80]

Command and control of the Petsamo-Kirkenes Operation was exercised through a system that had evolved through three years of combat experience. At the top of the command hierarchy was *STAVKA* (see figure 4). Through its action agency, the General Staff, *STAVKA* exercised national command authority over all Front and fleet commanders concerning the planning and conduct of military operations. General Meretskov reported to

and received orders from *STAVKA* through the General Staff. As a former chief of the General Staff, however, Meretskov enjoyed a special relationship with *STAVKA*. He personally talked with Stalin in February, when he took command of the Karelian Front, and again in May concerning the preparations for the June offensive.[81] This personal relationship with Stalin and also with several officers of the General Staff gave Meretskov ready access to *STAVKA*.

At the Karelian Front level, Meretskov exercised command and control of his ground and air forces through the Front staff and commanders of branches and chiefs of service (see figure 5).[82] Operational command and control was accomplished by direct personal contact between commanders. Directorates of branches and services at the Front level coordinated with and supervised analogous sections at the army level, and staffs coordinated with staffs. Above it all at the Front level sat the Front Military Council, made up of the commander, the deputy commander for political affairs, and the chief of staff. An analogous triumvirate existed at all levels down to division. The 7th Air Army was also subordinate to the the Main Staff of Air Forces in Moscow for administrative, supply, basing, and other nonoperational issues.

Meretskov had a long-standing professional relationship with at least two important members of his Front staff. His chief of engineer troops, Lieutenant General A. F. Khrenov, had served in the same capacity with Meretskov in the Leningrad Military District in 1938—40 and then followed

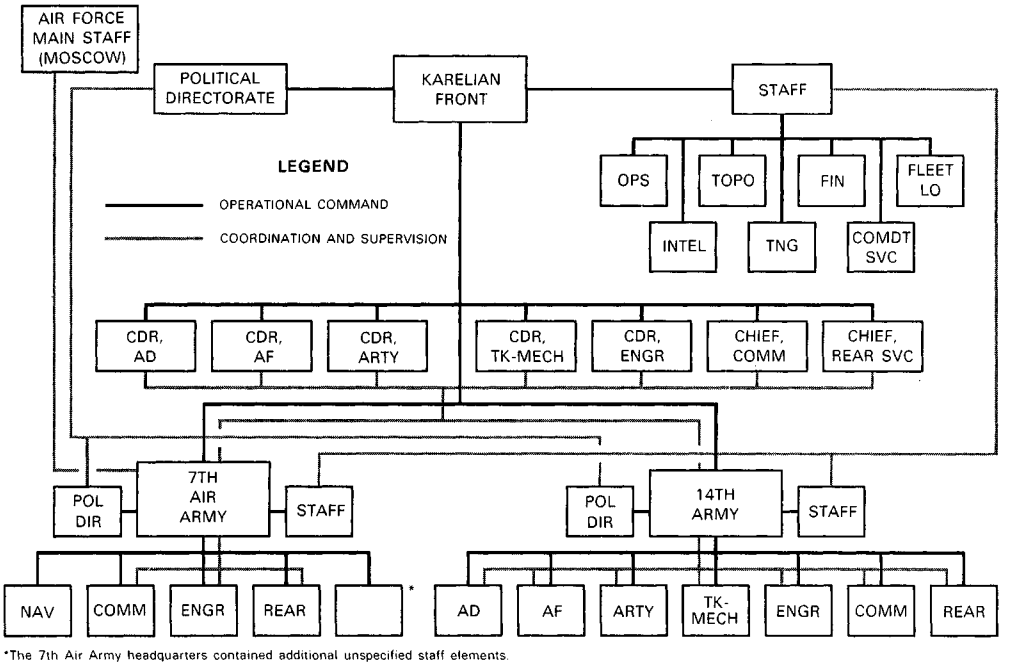

Figure 5. Karelian Front command and control relationships

TABLE 3
Soviet Planning Estimate of Force Ratios

	A On the Entire Frontage of 14th Army			B On the Axis of the Main Attack of 14th Army			C On the Sector of the NDR of Northern Fleet		
	Soviet Forces	German Forces	Ratio	Soviet Forces	German Forces	Ratio	Soviet Forces	German Forces	Ratio
Men	96,806	45,529	2.1:1	69,652	21,655	3.2:1	11,390	5,100	2.2:1
Rifles and Submachine guns	76,911	37,264	2.0:1	54,837	18,394	3.0:1	5,028	4,106	1.2:1
Machine guns	3,319	1,513	2.2:1	2,446	735	3.3:1	439	233	1.8:1
Tanks	98	27	3.6:1	90	0	—	11	0	—
Guns (field and antitank)	1,032	371	2.7:1	792	226	3.5:1	167	62	2.7:1
Mortars of all calibers	1,090	383	2.8:1	882	205	4.3:1	182	72	2.5:1

Source: Rumiantsev, *Razgrom vraga*, 172. The data in this table is from the Archives of the Soviet Ministry of Defense.

Meretskov to the General Staff. The two went separate ways in March 1941 but met again in June 1942, when Khrenov became chief of engineer troops in Meretskov's Volkhov Front.[83] Lieutenant General T. F. Shtykov, Meretskov's deputy commander for political affairs, had served on the military council of Meretskov's 7th Army in the Leningrad Front in 1939—40 and in the same capacity in the Volkhov Front since April 1943.[84] Both Khrenov and Shtykov joined the Karelian Front with Meretskov in February 1944. On 1 September 1944, General Meretskov selected Lieutenant General A. N. Krutikov as his new Front chief of staff. Krutikov had commanded the 7th Army since April 1943 and had apparently impressed Meretskov during the Svir-Petrozavodsk Operation.[85] These few documented examples illustrate another aspect of the Soviet command and control system: the infusion of personal relationships into the chain of command. By surrounding himself with trusted, hand-picked subordinates, in both staff and command positions, Meretskov overlaid a system of personal fealty on the already rigidly hierarchical chain of command, thus strengthening his role as commander.

When all the preparations for the operations were completed, Soviet planners calculated a relative Soviet strength advantage of just over 2 to 1 on the 14th Army front (see table 3, column A) and even higher in the main attack sector opposite the German 2d Mountain Division (see table 3, column B). Actually, the Soviet planners had underestimated the size of the XIX Mountain Corps by approximately 10,000 men (45,529 versus 56,000), while overestimating the strength of the 2d Mountain Division (21,655 versus 16,026). Thus, Soviet superiority in the sector of the main attack was significantly more favorable than the Soviets had expected (see table 4, column B).

TABLE 4
Actual Soviet-German Force Ratios

	A On the Entire Frontage of 14th Army			B On the Axis of the Main Attack of 14th Army			C On the Sector of the NDR of Northern Fleet		
	Soviet Forces	German Forces	Ratio	Soviet Forces	German Forces	Ratio	Soviet Forces	German Forces	Ratio
Men	96,806	56,000	1.7:1	69,652	16,026	4.3:1	11,390	3,992	2.8:1
Rifles and Submachine guns	76,911	51,888	1.5:1	54,837	13,873	4.0:1	5,028	NA	—
Machine guns	3,319	20,953	1.6:1	2,446	514	4.8:1	439	331	1.3:1
Tanks	98	0	—	98	0	—	11	0	—
Guns (field and antitank)	1,032	396	2.6:1	792	NA	—	167	NA	—
Mortars of all calibers	1,090	245	4.4:1	882	NA	—	182	NA	—

Source: The author compiled this table from data in tables 1 and 3.

On 2 October, Lieutenant General Shcherbakov, the 14th Army commander, spent four hours discussing the operation with Major General Mikulskii, the commander of 99th Rifle Corps. That same day, Mikulskii reconnoitered the terrain with his three division commanders for six hours. On the morning of 3 October, the division commanders walked the terrain with their regimental commanders and, in the afternoon, regimental commanders with battalion commanders. On 4 October, the battalion commanders spent the entire day in reconnaissance with staff and company commanders.[86] On 6 October 1944, the 14th Army commander ordered the artillery preparation to begin at 0800 on 7 October, and the attack two and one-half hours later.[87]