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CENTRAL INTELLIGENCE AGENCY
WASHINGTON, D.C. 20505

10 August 1978

MEMORANDUM FOR: The Director of Central Intelligence
FROM : John N. McMahon
Deputy Director for Operations
SUBJECT : MILITARY THOUGHT (USSR): Transportation
in the Great Patriotic War

1. The enclosed Intelligence Information Special Report is part of a series now in preparation based on the SECRET USSR Ministry of Defense publication Collection of Articles of the Journal "Military Thought". This article factually discusses the World War II deficiencies, problems, rebuilding, and achievements of Soviet railroad, motor vehicle, water, pipeline, and air transportation in operations against Germany and Japan. The substantial US aid in this field is never directly identified or mentioned. Although rail transport was of overwhelming importance, air transport was important despite the low tonnages it lifted in the cases of the Leningrad siege, support for partisans, and airborne actions. In the war's last phase motor transport grew in importance. The article concludes with recommendations on the development and integration of all Warsaw Pact transportation for modern warfare needs. This article appeared in Issue No. 1 (68) for 1963.

2. Because the source of this report is extremely sensitive, this document should be handled on a strict need-to-know basis within recipient agencies. For ease of reference, reports from this publication have been assigned

for John N. McMahon

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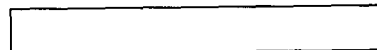
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Intelligence Information Special Report

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COUNTRY USSR



DATE OF INFO. Early 1963

DATE 10 August 1978

SUBJECT

MILITARY THOUGHT (USSR): Transportation in the Great Patriotic War

SOURCE Documentary

Summary:

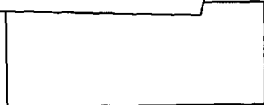
The following report is a translation from Russian of an article which appeared in Issue No. 1 (68) for 1963 of the SECRET USSR Ministry of Defense publication Collection of Articles of the Journal "Military Thought". The authors of this article are Colonel A. Bratus, Colonel M. Vilinov and Colonel K. Terekhin. This article factually discusses the deficiencies, problems, rebuilding, and achievements of Soviet railroad, motor vehicle, water, pipeline, and air transportation in operations against Germany and Japan in the Great Patriotic War. The substantial US aid in this field is never directly identified or mentioned. Although rail transport was of overwhelming importance, air transport was important despite the low tonnages it lifted in the cases of the Leningrad siege, support for partisans, and airborne actions. In the war's last phase motor transport grew in importance. The article concludes with recommendations on the development and integration of all Warsaw Pact transportation for modern warfare needs. End of Summary

Comment:

The SECRET version of Military Thought was published three times annually and was distributed down to the level of division commander. It reportedly ceased publication at the end of 1970.



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Transportation in the Great Patriotic War

by

Colonel A. BRATUS
Colonel M. VILINOV
Colonel K. TEREKHIN

In the prewar period, Soviet military theory, resting on the latest material technical base and the experience of wars, approached a future war as a predominantly mobile one in which the main type of military action would be the strategic offensive enabling us to deliver decisive destruction against the enemy on his territory and in this way achieve the aim of the war. These propositions found their greatest expression in the theory of the deep offensive operation, the essence of which consisted in hitting the enemy simultaneously to the entire depth of his operational disposition by using the superior combat capabilities of tank and mechanized troops, aviation, and airborne troops.

It is fully understandable that the execution of operations of this nature was conceivable only with the extensive use of all types of transportation; therefore, the Party, in its decisions in the prewar years, repeatedly pointed out the necessity of the planned harmonious development of all types of transportation as the most important precondition for carrying out industrialization and strengthening the defense power of the country.

In the years of the prewar five-year plans in the USSR, a large number of rail and motor vehicle roads, as well as waterways, were built and reconstructed, the domestic automotive industry and civil aviation were created, and pipeline transport began to develop.

The backbone of the transportation network of the USSR was railroads, which carried more than 85 percent of the total freight turnover.

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By 1940, the traffic capacity of axial railroad lines leading from the east to the western border of the USSR amounted to 692 pairs of trains, as against 314 pairs in 1914.* However, in the zone between the old and new border, it dropped to 444 pairs of trains, which was less than half the traffic capacity of the railroad lines leading to the border from the side of the possible enemy.**

The motor vehicle inventory of the country on the eve of the war numbered 1,092,000 motor vehicles, of which 272,000 were in the army and 820,000 in the national economy.*** The technical condition of the motor vehicle inventory of the national economy, as a consequence of its great fragmentation****, poor repair base, and lack of spare parts and rubber, was unsatisfactory: 370,000 vehicles, or 45 percent of the inventory, were unserviceable.

The civil aviation inventory on the eve of the war numbered 3,000 planes, three-quarters of which were light type aircraft (PO-2 and its modifications), and as a result of this, the total cargo capacity of the aircraft inventory did not exceed 700 tons.*****

Along with the development of transportation in support of the national economy, the preparation of transportation for military needs got under way in the country, the main trend being the construction and development of rail and motor roads leading to the borders of the USSR.

* Archives of the Central Military Transportation Directorate, inventory list 166, file 188, volume 16, sheet 30.

** Archives of the Ministry of Defense, archive 16, inventory list 165389, file 1, sheet 75.

*** Archives of the Ministry of Defense, archive 41, inventory list 34880, file 3, sheet 2.

**** Of the 223,000 motor vehicle organizations in the country, 85.2 percent were small ones having from one to four vehicles.

***** Archives of the Main Administration of the Civil Air Fleet, archive 4, inventory list 13, file 21, sheets 21-23; inventory list 18, file 139, sheet 194.

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It should be noted that the preparation of railroad transportation from the military standpoint in the prewar years was to a considerable degree impeded by the directing body of the People's Commissariat of Railroads headed by KAGANOVICH, who regarded the proposals and undertakings of the Military Transportation Directorate of the General Staff as attempts to "infringe" upon the interests of rail transport. In 1937 KAGANOVICH signed and issued Order No. 54/Ts of the People's Commissariat of Railroads dealing with mobilization work on railroad transport, which in essence barred the organs of the Military Transportation Service from participating in this work. KAGANOVICH delayed the coordination and approval of regulations defining the wartime rights and functions of the organs of the Military Transportation Service and the railroad troops, as a result of which these regulations were not issued before the start of the war. He also hindered the inclusion in the capital investment plans for 1941 of works to increase the traffic capacity of railroads extending to the border.*

In spite of the opposition of the People's Commissariat of Railroads, the Central Committee of the All-Union Communist Party (Bolsheviks) and the Council of People's Commissars of the USSR adopted on 14 February 1941 the special resolution "The Plan of Railroad Construction for the Southwest, West, and Northwest Roads of the USSR," providing for the construction during 1941-1942 of a number of new railroad lines and the reconstruction of the available lines in the border zone, which was to have completely eliminated the inadequate capabilities of concentrating troops on the western borders as compared to the enemy, but the start of war prevented the accomplishment of these plans.

* The General Staff planned to spend 7,276.1 million rubles in 1941 for developing the railroad network in the Western Theater of Military Operations, but the People's Commissariat of Railroads decided to spend only 799.2 million rubles, Archives of the Ministry of Defense, archive 16, inventory list 165389, file 1, sheet 73.

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It must be pointed out that over the whole system of the mobilization preparation of transportation and military transport services there prevailed obsolete notions based on World War I experience about the feasibility of the unhindered full mobilization of transportation and the unhindered deployment of the special transportation troops (railroad, road, motor transport) and installations during the mobilization period in parallel with the strategic deployment of the main forces of the army before the start of active hostilities on the fronts. The possibility of a surprise attack by the enemy and his deep penetration into the territory of the USSR was thus not taken into consideration, as a result of which a number of serious defects were tolerated in the mobilization preparation of transportation. The following were the main defects.

A common motor transport and road service which would have been able to deploy quickly upon the start of war and provide dependable direction over motor transport and road support had not in fact been established before the war.

The troops of the first strategic echelon had an extremely inadequate number of transportation units and they had to deploy them and bring them to full strength mainly by drawing on the interior district resources that had arrived by railroad in the mobilization period. Of the 19 motor transport regiments, 37 motor transport battalions, and 65 motor transport depots* available in March 1941, nine regiments, six battalions, and eight depots in all were stationed in the western border districts. As a result of this, the freight capacity of motor transport units in the Baltic Military District amounted to 2,500 tons, in the Western and Kiev districts to 6,000 tons each, and in the Odessa Military District to 600 tons in all, which was completely inadequate to provide supply deliveries in the operations of the initial period of war.**

* Motor transport units were set up on the basis of motor transport depots in the mobilization period.

** Archives of the Ministry of Defense, archive 13, inventory list 137146, file 5, sheets 9-19.

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There were no special military transport aviation units in the air forces.

No steps had been taken to set up mobilization reserves of pipeline materials.

The threat of enemy action against transportation routes had not been taken into consideration. No provisions had been made to arm the vessels of the sea and river fleets in border waters, nor the civil aviation aircraft that were to be allocated to special groups and detachments. The air defense and local air defense systems were weak.

The preparation of water transport from a military standpoint had been carried out unsatisfactorily (regulations on the mobilization preparation of water transport were lacking, and there were no plans for military shipments by waterways).

All in all, the transportation of the Soviet Union had not been properly prepared to support large-scale military operations in the initial period of war under the conditions of a surprise enemy attack.

The surprise attack of fascist Germany on our homeland caught the troops of the border districts unprepared to repel the enemy strike. The German fascist army, from the very first days of the war, seized the strategic initiative, inflicted considerable losses on the Soviet troops, and forced them to withdraw into the depth of the country. From 22 June through 9 July 1941 the enemy advanced 300 to 550 kilometers and occupied the territory of Latvia, Lithuania, Belorussia, and a considerable part of Moldavia.

The start of military actions and the resulting unfavorable situation required, along with the fulfilment of shipments for the complete mobilization and strategic concentration of troops that had been initiated back in the premobilization period, the immediate maneuvering of troops on an operational and strategic scale, and changes in the unloading and regrouping areas of troops. Simultaneously there arose the necessity of the massive evacuation of facilities, population, and material assets from the areas abandoned by the Soviet Army.

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All this caused an enormous increase in the demands for shipments, mainly in east-west directions, and put a great strain on the work of all kinds of transportation. This strain increased progressively as our troops withdrew owing to our losses in transport means and the reduced material resources in transportation.

During the summer and fall campaign of 1941, operational shipments for the concentration and regrouping of troops were predominant in the total volume of military shipments. In the accomplishment of these shipments, railroad transportation was of decisive importance, as its high mobilization readiness and objective capabilities permitted it, upon the declaration of mobilization, to go over to a military schedule of train movements and bring military load handling up to 450 to 500 trains per day.*

Before the end of 1941, railroad transportation had hauled 2,400,000 cars, or about 58,000 troop trains, of which about 85 percent were operational trains. Just during the 1941 summer and fall campaign, 291 rifle divisions, 94 rifle brigades, and 2,000,000 draft reinforcements were brought to the fronts from the interior districts.** An enormous burden from the first days of the war was also placed on the motor transport in the hands of the troops.

The shortage of motor transport in the troops of the first strategic echelon limited their maneuverability and placed them at a disadvantage relative to the invading enemy troops that had a higher level of motorization. As a result of this, the available and few in number motor transport units and subunits were often used for the temporary motorization of rifle units and for critical regroupings of troops.

* Railroad Transportation in the Great Patriotic War, TSVMU [Central Military Mobilization Directorate] of the Ministry of Railroads, 1947, volume 11, sheets 233-234.

** Military Science Directorate of the General Staff, Strategic Outline of World War II, 1941-1945, pages 254, 269.

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The mobilization plans for taking over motor transport from the national economy to equip the troops in the border military districts were disrupted owing to the enemy's quick advance.* The complete mobilization of motor transport and the deployment of motor transport units also proceeded very unsatisfactorily in the interior districts because of the unserviceable condition of motor transport. A large number of the mobilized motor vehicles were sent to the border districts in an unserviceable condition, without drivers, rubber, spare parts, and equipment. A considerable part of these motor vehicles did not get to their destination and were captured by the enemy in the areas of the unloading stations, or they were unloaded in interior districts, where, being unserviceable, they stood for a long time at collection points.**

A feature of the 1941 summer and fall campaign that caused heavy losses in motor transport was the interception by enemy tank columns of the withdrawal routes of our troops, as well as the unsatisfactory organization of the repair, technical servicing, and evacuation of unserviceable vehicles in line units.

In spite of the takeover during the first two months of the war of over 200,000 motor vehicles from the national economy for the army, by 22 August 1941 the army's motor vehicle inventory not only had not increased, but had been reduced by 1,200 vehicles.***

* Thus, for instance, in the Western Special Military District, the plan to take over motor vehicles was 30 percent fulfilled and only 25 percent fulfilled in the Baltic Military District.

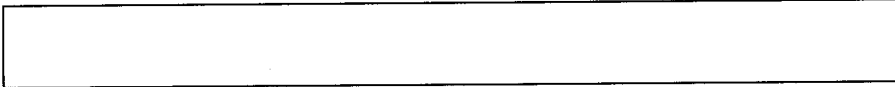
** Thus, for example, at collection points of the Moscow Military District, 3,370 unserviceable vehicles had piled up by 21 June 1941, and by 21 August 1941 their number had increased to 7,339. Archives of the Ministry of Defense, archive 41, inventory list 34764, file 7, sheets 2, 83.

*** Archives of the Ministry of Defense, archive 41, inventory list 34764, file 22, sheet 100.

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Enormous losses were also sustained in the first period in the motor transport inventory of the national economy, whose numbers had, by 1 May 1942, dropped to a third, down to 275,000 vehicles, of which 105,000 in all were serviceable, i.e., less than a half.*

An extremely difficult situation also developed on the railroads. Enemy aviation acted aggressively against the entire frontline network of railroads. Elimination of aftereffects of air raids proceeded very slowly because of the weakness of the local air defense systems. As a result of the withdrawal and continuing relocation of troop unloading areas and the rerouting of cargoes going to the front, as well as the emergence of massive flows of cargoes being evacuated, there came about a large accumulation of rolling stock on the frontline roads. As early as July, many front railroads and the lines leading to them were clogged up. Control of military shipments was disrupted on a number of lines. The necessary maneuvering of troops and timely delivery of materiel to them could not be carried out in a number of cases.

The obstructing of border railroads was most inadequate owing to the lack of railroad troops on a number of lines as well as to the unpreparedness of the material resources needed for this, as a result of which obstructions did not, during the summer and fall campaign, become an important strategic factor capable of slowing down the enemy advance.

The start of military actions caught our border area steamship lines, especially the Baltic ones, by surprise. A large number of vessels were captured by the enemy, sunk by aviation, or blown up by mines. As a result of the lack of any prior preparation for evacuation, the entire fleet of western river steamship lines from the Neman to the mouth of the Dneper was left to the enemy, a considerable part of it afloat in practically undamaged condition.

* Archives of the Ministry of Defense, archive 41, inventory list 34763, file 29, sheet 213.

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During the summer and fall campaign, water transport was used for military shipments only spasmodically, mainly for evacuation purposes (Odessa, Tallin, etc.).

From the very first days of the war, air transport showed to the fullest extent its characteristic feature of being able to save time in delivering cargoes and in making shipments when ground transportation lines were broken.

To support military shipments, the Main Administration of the Civil Air Fleet activated special groups and detachments which during the summer and fall campaign served as the most important means of carrying out the most urgent shipments to fronts, of removing the wounded from threatened areas, and of making deliveries to troops that had been isolated.

In spite of the indicated difficulties and shortcomings, it must be emphasized that transportation did an enormous amount of work in 1941 to support the strategic deployment of the armed forces, as well as to evacuate enterprises and people into the interior of the country.

From October 1941, the main volume of military shipments was concentrated in the central areas of the country, where the outcome of the great battle waged on the approaches to Moscow was decided.

The total volume of military shipments to support the fronts participating in the battle for Moscow came to 333,500 carloads, which equalled half of the entire (all-network) military offloadings for this period.* Operational shipments amounted to 80 percent of this volume.

Six armies and a number of large units were transported to the vicinity of Moscow, and large intra-front regroupings were also carried out. This flow was concentrated on an extremely limited number of lines leading to Moscow from the east, which required the execution of a number of extraordinary measures, such as organizing the passage of trains using a "human interlocking system," letting stand secondary cargoes and empty cars, going over in places to one-way traffic, etc. This made it

* V.F. DIKUSHIN and A.M. KISELEV, Military Transportation of the Soviet Army in the Battle for Moscow, Military Publishing House, 1960, p. 79.

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possible to get the trains there at the times required by the General Headquarters of the Supreme High Command, but led to an enormous accumulation of cars on the frontline roads and on the lines leading to them and, in the final analysis, it made the work of the entire rail network extremely difficult.

In the operation of rail transport in the winter of 1941-1942, traffic control measures and other measures could not prevent the substantial interruptions caused by the clogging of the front railroads and the lines leading to them, by the shortage of fuel, as well as by the transport damage and losses sustained.

The average daily loading of the railroads by December 1941 had dropped to one-third in comparison with that before the war, the movement speed of the trains had fallen to half, and some railroad lines were, in fact, paralyzed.

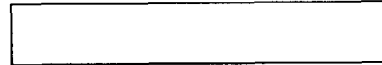
To correct the situation in rail transport, the State Defense Committee replaced the leader of the People's Commissariat of Railroads. In place of KAGANOVICH, the Chief of the Rear of the Soviet Army, A.V. KHRULEV, was appointed People's Commissar of Railroads. A number of roads were converted to wood firing. The population and military units were enlisted to procure wood.

Our troops' going over to the counteroffensive in the Moscow vicinity brought up the task of restoring the network of transportation routes destroyed by the enemy. Successful accomplishment of this task could only be done by concentrating under single direction the efforts of all forces and means having this function; to this end all restoration and construction organizations of the People's Commissariat of Railroads and the People's Commissariat of Defense were amalgamated by decree of the State Defense Committee within the People's Commissariat of Railroads, where a Chief Directorate of Military Restoration Works was established. To direct these works in the fronts, front directorates of military restoration works were established.

The interruptions of the operation of railroads in the winter of 1941-1942 caused great difficulties in providing deliveries to the troops during the counteroffensive begun near

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Moscow and in other offensive operations over the duration of the entire 1941-1942 winter campaign. During this campaign, in view of the slow rates of railroad restoration, the role of motor and animal-drawn transport increased sharply in providing for the delivery of materiel as well as for the intra-front regroupings of troops.

The very strained transportation conditions that had developed required the organization on the separate axes of the combined movement of troops and military cargoes by the different types of transport with repeated transshipments, the organization of cooperation, and the coordinated work of all the types of transport and rear services that were being used under single direction, i.e., the integrated use of transportation. In March 1942, for the purposes of coordinating the work of the different kinds of transport, a transportation committee attached to the State Defense Committee was set up.

A vivid example of the organization of the integrated use of transportation on the scale of a front was the organization of shipments to the Leningrad Front and to the population of Leningrad using rail, water, motor vehicle, air, and, from the summer of 1942, pipeline transport* under the direction of a single organ, the specially created Transportation Directorate of the Leningrad Front.

Serving as an example of the special organs of the center that were set up to direct the integrated use of the different kinds of transport is the Soviet Transportation Directorate (STU) formed in the summer of 1942 in Iran, which accomplished much work in preparing transportation routes in northern Iran and in delivering imported cargoes across it to the USSR using rail, sea, and motor transport.

Air transport acquired great importance during the Rzhev-Vyazma offensive operation, when a large operational airborne landing force (Fourth Airborne Corps) was landed in the rear of the enemy and the need also arose to supply other large units and formations (33rd Army, First Guards Cavalry Corps) by air.

* In the spring of 1942, a welded pipeline with a total length of 30 kilometers was laid across Lake Ladoga.

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The limited capabilities of the transport aviation of the Civil Air Fleet and of the bomber aviation allocated to fulfil its functions did not allow the delivery of more than 15 to 18 tons of cargo per day to the troops being supplied by air, whereas the requirement was 86 tons.* Nevertheless, air delivery of materiel made it possible for the units of the Fourth Airborne Corps and the First Guards Corps to maintain their combat effectiveness for four months and conduct independent combat actions in the rear of the enemy.

In 1942, a quite stable air transportation service with partisans was established; aircraft of the Civil Air Fleet delivered 627 tons of cargo and 2,400 men to them by air and evacuated over 2,000 wounded from the areas of guerrilla actions.**

The transportation difficulties that arose in the winter of 1941-1942 owing to the interruptions in the operation of railroads and the lack of motor transport stimulated preparation of the more extended use of water transport with the start of navigation in 1942.

Whereas in 1941 a total of 445,000 tons of military supply cargo was transported by water, for 1942 it totalled 5,261,000 tons.***

On 19 November 1942, with our troops going over to a counteroffensive on the Volga, the second period of the Great Patriotic War began, during which the Soviet Army, launching extensive offensive operations, seized the strategic initiative.

* Archives of the Ministry of Defense, archive 67, inventory list 20086, file 122, sheets 24-249.

** Archives of the Main Administration of the Civil Air Fleet, archive 4, inventory list 17, file 361, sheets 10-101.

*** Archives of the Central Military Transportation Directorate, inventory list 76, file 188, sheet 329.

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The offensive operations launched during this period on a front of approximately 2,000 kilometers and reaching a depth of 500 kilometers required the intense work of all types of transportation.

It is necessary to mention that, by the start of the second period of the war, a difficult situation had developed in transportation. On the railroads that had been providing shipments to the Stalingrad area a large quantity of rolling stock had accumulated, which caused the tie-up of the lines leading to them and led to considerable difficulties in the operation of the whole network of railroads, on which by January 1943 the average daily load had again dropped to 35,400 cars, as against 51,000 (June 1942). Navigation on the river routes had closed down with the onset of winter. As before, there was not enough motor transport and its use, as a result of poor road conditions and winter snows, deteriorated considerably.

The counteroffensive begun at Stalingrad and the offensive actions following it on the other fronts required the increase of all types of military shipments, while the capabilities of all the main types of transport to accomplish the shipments had become considerably limited.

As a consequence of the great destruction, difficult winter conditions, and the lack of restoration materials and of equipment and experience on the part of the railroad troops, the speeds with which railroads were restored were extremely low, two to four kilometers per day. Therefore, the entire burden of providing transportation during the offensive was placed on motor transport.

The road and motor transport troops of the Southwestern and Stalingrad fronts, for the first time since the start of the war, had to restore roads and deliver shipments under the conditions of a rapid -- for that time -- advance of troops to a great depth.

At the same time, the motor road services of the Southwestern and Stalingrad fronts had not been prepared in good time to accomplish these tasks. A long-term plan for using the road and motor transport units of these fronts during the operation had not been worked out. Nor had the necessary

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reserves been established to reinforce the forces and means on the axis of the main attack.

The failure of the rates of the restoration of railroads to keep up with the rates of advance of the troops during the 1942-1943 winter campaign, the unsatisfactory condition of the unimproved roads, the inefficient coping with the snowdrifts on them, and the lack of motor transport, caused interruptions in the shipment of materiel and failed to ensure the timely arrival of reinforcements, thereby slowing down the offensive actions of the troops. In a number of cases, for these reasons, our troops were unable to consolidate on the lines reached and were forced to withdraw.

Difficulties with shipments were one of the main reasons for the incomplete fulfilment by the Southwestern Front of the tasks confronting it during the offensive in the Donbas.

As a consequence of the inadequate preparedness of the road service means there were also substantial difficulties in road support and shipments on the Stalingrad (after 1 January 1943, the Southern) Front both during the counteroffensive near Stalingrad and in the subsequent offensive toward Rostov.

In the final stage of the winter campaign of 1943 (February-March 1943), a very strained situation in the supplying of troops developed in the Central and Voronezh fronts and their troops were forced to abandon Kharkov and Belgorod and to withdraw within the Bryansk area.

To eliminate the interruptions occurring in the supplying of troops, the shipment of materiel along the Moscow-Yelets route using motor transport of the General Headquarters of the Supreme High Command was organized,* and so was the delivery of materiel by transport aviation. In the period from 10 through 30 March 1943, 1,525 tons of materiel were delivered by aircraft from the Yelets area to Kursk.**

* Archives of the General Staff, archive 10, inventory list 140, file 106, sheet 50.

** Archives of the Main Administration of the Civil Air Fleet, archive 4, inventory list 16, file 331, sheet 73.

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The increase in the scope and momentum of the offensive operations of the Soviet Army urgently required an increase in the composition, numbers, and technical equipping of the railroad, road and motor transport troops and of the Military Transportation Service organs.

In the second period of the war the numerical strength of the Soviet Army's motor vehicle inventory grew considerably on account of new vehicles, thereby greatly increasing the role and relative importance of motor transport in providing transportation. In all, 23,000,000 tons of cargo were hauled by the motor transport of the Soviet Army in 1943, i.e., nearly twice as much as in 1942.

In the beginning of the second period of the war, special front groups and detachments of the Civil Air Fleet were reorganized into military transport aviation divisions and regiments, with their numbers increasing by 12 percent and their carrying capacity by 39 percent.

Along with the delivery of shipments in support of fronts, in 1943 the flights of military transport aviation to the partisans more than tripled by comparison with 1942; 2,500 tons of cargo and over 7,000 men were delivered to them that year.* With good reason it can be asserted that the conduct, in the second period of the war, of such important operations by partisan large units as the "rail war" and the raids on the right-bank Ukraine became possible thanks to the successful work of military transport aviation, which supplied the partisans with weapons, ammunition, explosives, etc.

On the whole, during the second period of the war front and army commands, rear services organs, and military transport services learned to plan the transportation support of operations, to concentrate forces and means in good time on the axes of the attacks to be delivered, to restore transportation lines considerably faster, and to use forces and transport means more flexibly during offensive operations.

* Archives of the Main Administration of the Civil Air Fleet, archive 4, inventory list 17, file 361, sheets 6-7.

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The third period of the Great Patriotic War was characterized by a wide variety of very large-scale operations conducted in succession by the Soviet Armed Forces over the entire extent of the Soviet-German front from the Barents Sea to the Black Sea. In the course of the year, the Soviet Army won decisive victories, advancing from 550 to 1,100 kilometers on its way west. As a result of the operations carried out in 1944, the enemy was driven out beyond the boundaries of the Soviet Union. Only a small grouping of his troops, pressed to sea, continued to offer resistance in the territory of Latvia. Germany's allies -- Romania, Bulgaria, Finland, and Hungary -- were forced out of the war and declared war on her.

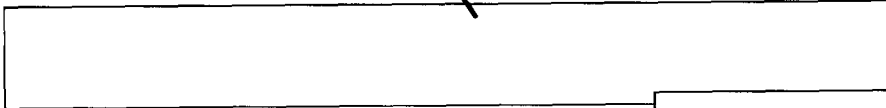
In January 1945 the Soviet Army initiated its grand offensive over the vast 1,200-kilometer front with the participation of the troops of the Third, Second, and First Belorussian and First and Fourth Ukrainian fronts, and in March of the same year the troops of the Second and Third Ukrainian fronts joined the offensive. Military actions against Hitler's Germany ended in April 1945 with the Berlin Operation, carried out by the troops of the Second and First Belorussian and First Ukrainian fronts, and with the defeat in early May of the large grouping of German fascist troops in Czechoslovakia. In these operations the armed forces of Germany were conclusively beaten and she capitulated.

The execution in 1944 of the series of successive operations and, in 1945, of large-scale, simultaneously conducted offensive operations demanded extremely intense work on the part of transportation.

The liberation in 1944 of the territory of the USSR from the German fascist invaders made it possible to organize the restoration and use of almost all the prewar network of transportation lines, which contributed to the further climb in the output of transportation and the fulfilment of the necessary military shipments.

However, the traffic capacity of the restored railroads, as a consequence of the employment during restoration work of relaxed technical standards and temporary structures, was

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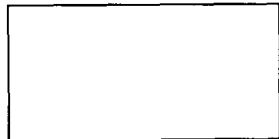
considerably lower than before the war.* The liberated waterways had, for the most part, been mined, and the water crossing equipment on them had been sunk. The transportation material resources had, on the whole, been considerably reduced by comparison with the prewar period. The work of all kinds of transportation in 1944 had also been substantially slowed down by the lack of mineral fuel in the country.

For these reasons, the freight turnover of the main types of transportation (except for air transport) had far from reached the prewar level, and as a result, the transportation situation in the country remained extremely strained till the end of the war.

Along with this, in the third period of the war, the growth in the scope of offensive operations, which required the use of large-scale forces and the great expenditure of materiel, caused an increase in the volume of the military shipments connected with the preparation of the operations and made it difficult to fulfil the requirements for these shipments (the great scope, time limitations, camouflage, etc.)

The preparation times for offensive operations in this period were, as a rule, determined and restricted by the limited capabilities in transportation, primarily in rail transport. One of the main reasons for the successive concentration of forces and delivery of main strikes against the enemy in the campaigns of 1944 was the impossibility of hauling the necessary large volumes of military shipments simultaneously on a number of axes.

* Thus, for instance, the total traffic capacity of axial railroad lines leading to the front line over this line's full extent from Murmansk to Novorossisk amounted to 271 pairs of trains in all, which was a little less than than half the prewar capacity. Archives of the Ministry of Defense, archive 16, inventory list 30182, folder 1, sheets 23, 24. (Result of our analysis.)



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During the retreat, the German fascist command endeavored in every way to delay the advance of Soviet troops by erecting massive obstacles on the railroads, using a track destroyer, the "Hook," to break the ties while simultaneously blowing up the rails.

On individual lines where front commands did not carry out special counter-obstacle measures and the rates of advance of our troops were relatively low, the enemy managed to destroy all the bridges and blow up 50 to 80 percent of the rails and 40 to 50 percent of the ties, which delayed the restoration of the lines for a long time and substantially held up the preparation times for subsequent offensive operations.

Along with this, the experience in conducting a number of operations in the second half of 1944, especially the Belorussian operation, showed that the high rates of advance of the Soviet troops as well as the conduct of counter-obstacle measures deprived the enemy of the opportunity of carrying out the continuous destruction of railroads and made for the capture of a number of sectors undestroyed.

Where the front commands (First and Third Belorussian, First Baltic) allocated forces and means in good time to knock out the track destroyers and capture key railroad structures, the restoration of railroads proceeded faster, which in turn favored the development of the offensive and shortened the preparation times for subsequent operations.

Altogether, in the third period of the war over 45,000 kilometers of railroad were restored, as against 17,500 kilometers restored in the second period.

With the transfer of combat actions beyond the boundaries of the Soviet Union, the organization of the restoration and use of railroads for shipments to fronts became substantially more complex owing to the difference in the width of the West European and Soviet rail gauges, the disparities in the clearances of structures and rolling stock, and the differences in a number of other facilities.

It is also necessary to point out that in this period, especially in the 1945 campaign in Europe, along with the

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increase of military shipments to fronts, there was also a considerable rise in the flow of cargoes in the opposite direction (prisoners of war, repatriates, captured material, factory equipment).

The task of using the foreign railroad network for the needs of the Soviet Army was successfully accomplished by altering to Soviet gauge a strictly limited number of roads that served as Soviet-gauge deep feeder lines into the foreign railway network, and also by organizing the reloading of troops and cargoes onto West European-gauge rolling stock in the transshipping areas and stations specially organized for this purpose.

Using the main network of foreign railroads without altering them to Soviet gauge facilitated the speedy reactivation of their operation, made it possible to make the fullest use for these purposes of local railroad forces, means, and personnel as well as captured rolling stock of West European gauge; promoted the very fast reactivation of the normal economic life of the countries liberated from the German invaders, and also considerably lightened the work of the railroads of the USSR, which were experiencing a great shortage of rolling stock.

In all, in the foreign railroad network, 30,000 kilometers of railroads were restored and used for the needs of the Soviet Army,* of which approximately 4,000 kilometers in all, or 13 percent, were altered to Soviet gauge.

Besides organizing transshipping areas at the junctions of Soviet gauge with West European gauge, during the third period of the war temporary transshipping areas were organized at major waterways where the restoration of bridges was delayed (Vistula, Danube) and railroad sectors that were isolated from the remaining network of railroads were also used. In organizing the use of the foreign network, the field organs of the Military Transportation Service and mobile contingents of the People's Commissariat of Railroads played an important role.

* Military Transportation Lines in the Light of the Further Development of Military Art, Military Publishing House, 1960, p. 36.

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The high density of railroads and highways in the territory of the East European countries liberated by the Soviet Army in 1944, as well as the shortened Soviet-German front in 1945 as compared to 1944, made it possible to deliver materiel by rail and motor transport for the simultaneous conduct of the large-scale offensive operations of 1945.

In carrying out the large-scale regroupings of troops, it became necessary in a number of cases to resort to combined shipments in which different kinds of transport were used in parallel or successively. For instance, in April 1945, during the regrouping of the three armies of the Second Belorussian front from the area of Gdynia and Gdansk to the Szczecin axis over a distance of approximately 600 kilometers, in addition to railroads, motor transport units of the General Headquarters of the Supreme High Command were used in conjunction with the march of troops. In September 1944 there took place the combined shipment of a tank corps which, after coming by rail to Izmail, was then shipped on the Danube River.*

The increase in the momentum and scope of the operations of the Soviet Army in the third period of the war caused the volume of work of motor transport to more than double in comparison with the second period of the war. This was achieved on the basis of the considerable expansion of the motor vehicle inventory,** replenished mainly with new vehicles, and based on the improved repairing, servicing, and use of motor vehicles.

It should also be noted that, although the motor vehicle inventory was intensively replenished with imported vehicles during the second and third periods of the war, domestic makes of vehicles continued to be its foundation till the end of the war; on 1 May 1945, the relative proportion of these in respect to the total available was 58.1 percent, while the relative proportion of imported ones was placed at 32.8 percent and that of captured ones was 9.1 percent.***

* Archives of the Ministry of Defense, archive 16, inventory list 257659, file 157, sheet 45.

** On 1 May 1945, the listed strength of the motor vehicle inventory of the Soviet Army amounted to 664,500, i.e., it had grown by 34 percent in comparison with those available on 1 January 1944.

*** Archives of the Ministry of Defense, archive 41, inventory list 34880, file 2, sheets 2-89.

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In spite of the considerable growth of the motor vehicle inventory of the army, the stock available in the third period of the war did not exceed 72 to 80 percent of the authorized requirement, and it had to work, even with the increased rates at which the railroads were restored, in most cases under extreme stress owing to the increased volume of shipments and the length of the lateral supply routes, which ran from 400 to 500 kilometers in some operations (the Belorussian, Vistula-Oder, and other operations).

In the third period there was an enormous increase in the role of motor transport units and large units of the General Headquarters of the Supreme High Command, these being used in the operations as a powerful means of strengthening the fronts on the decisive axes, as well as for delivering especially urgent cargoes to fronts directly from the depots and bases of the Center.

Thanks to the fact that domestic industry was producing an ever increasing number of transport aircraft and, furthermore, that the importation of them had increased, the number of aircraft in the civil air fleet had grown. Its freight turnover in 1944 had increased by a factor of 1.4 over the prewar level, and in 1945, by a factor of 2.7.

During rapid offensive operations of the Soviet Army, military transport aviation was repeatedly called on to deliver materiel to forward units, especially to mobile groups.

Units of military transport aviation were used to render assistance to the People's Liberation Army of Yugoslavia (to do this, a special aviation group was formed) and to partisans in Slovakia and other countries. Using civil air fleet forces, a number of new international air lines were organized in the territory of the East European countries, with units of military transport aviation making various especially urgent shipments over these countries at the requests of their governments.

In the third period, the use of pipeline transport for the needs of the Soviet Army was expanded considerably. In 1944 the fixed mainline pipelines Ploesti-Constanta and Ploesti-Giurgiu were put into service and were successfully used to provide fuel to the troops of the Second and Third Ukrainian fronts and to the

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Black Sea Fleet in the operations at the end of 1944 and in 1945. With the receipt of imported sectional field pipeline materials, four separate pipeline battalions were formed.

The wider simultaneous use, in comparison with the preceding periods, of different kinds of transportation to carry out military shipments made it necessary to strengthen the cooperation of the different military transport services and improve the coordination of their efforts, i.e., to organize in a number of cases the integrated use of the different kinds of transportation.

Transportation, especially by rail, played an extremely important role in the preparations to defeat imperialist Japan. To conduct the war in the Far East, the Soviet command had to quickly transfer a considerable number of troops and materiel from Eastern Europe.

In short periods of time, shipments as never witnessed before in history were carried out. Just according to Center plans only, from May through 9 August 1945, 127,100 railroad cars, including 45,600 cars of supply cargoes, were sent to the Far East. Three combined-arms armies and one tank army, three separate corps, thirteen tank and artillery brigades, and other units and large units were shipped over a distance of up to 10,000 kilometers from the west to the east.

In this same time large shipments were made by water transport and motor transport.

It is necessary to take note of the complexity of supporting the troops of the 16th Army, which operated on the coast of the Tatar Strait and on Sakhalin Island. In the preparation and course of the operation, the army used the water sector of the Amur River from Khabarovsk to Nikolayevsk, the sea lanes on the Sea of Okhotsk and the Tatar Strait, and a wide-gauge railroad section and a military field railroad on Sakhalin.

A characteristic feature of the military shipments carried out during the campaign in the Far East, where the transportation network was extremely underdeveloped, was the great variety of transportation means. Dirt roads, railroads, and river, sea, and air transport were used; to supply mobile troops, especially with

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fuel, air transport was widely used. During the campaign, 16,500 men and 4,800 tons of cargo were airlifted.

Under conditions of the rapid pursuit of the enemy, front motor transport was frequently used for the temporary motorization of rifle units.

The command of the Second Far Eastern Front, under roadless conditions, made extensive use of transportation on the Sungari River. Sea transport also played a large role. On the whole, the experience of the military actions to defeat imperialist Japan shows that, in similar theaters of military operations, operations can be supported only by the integrated use of all types of transportation.

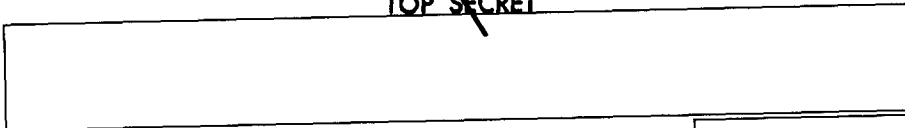
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The experience of the Great Patriotic War shows that of all the types of transportation, railroads were the main means for the strategic and operational regroupings and movements of troops, the delivery of materiel to them, and for evacuation. In the years of the war, the railroads hauled 19,700,000 cars, of which 9,800,000 were cars with troops, and 9,900,000 with military cargoes. In spite of all the attempts of the enemy to disrupt rail transport (destruction of railroads during retreat, bombings), nowhere was there a prolonged interruption of traffic on the railroads. However, this required the performance of an enormous amount of restoration work. Thus, in the years of the war, over 90,000 kilometers of railroads were restored or altered, including 30,000 kilometers outside the boundaries of our country. The rate of restoration on the average at the beginning of the war was not more than three to four kilometers per day, but at the end it had reached eight to 12 kilometers; whereas regauging of the tracks was done at a rate of up to 20 to 25 kilometers per day, which still lagged considerably behind the rates of advance of the troops.

Water transport, in the years of the war, carried 22,000,000 tons of various supply cargoes and moved a considerable volume of operational shipments. Motor transport, in the years of the war, carried over 100,000,000 tons of cargo and the total distance travelled by the vehicles amounted to approximately 2,564,000,000 kilometers. Air transport, in the years of the war, carried over

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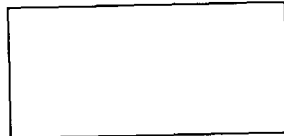
1,500,000 men and more than 120,000 tons of military cargo.

In the Great Patriotic War, the relative proportions of the total volume of military shipments were as follows: 70.5 percent by rail transport, 19.8 percent by motor transport, 9.5 percent by water transport, and 0.2 percent by air transport.*

As compared to the Great Patriotic War, a modern war will impose many new and heavier demands on the wartime preparation of transportation and its work. However, the experience of the past war does have great significance for the future. Even during its course, as the scope and momentum of offensive operations increased, there was a clearly marked tendency to replace rail transport at the army level of shipments, and partially at the front level, with more mobile types of transport, primarily motor transport. In a number of operations, air, as well as pipeline transport, was used ever more extensively.

The completion of the motorization of the Soviet Army in the postwar period and the highly dynamic nature of future operations have further enhanced the role of mobile types of transportation as concerns the support of troop maneuvering and the delivery of materiel to them in the operational rear. This will also be expedited by the vigorous growth of motor, pipeline, and air transport, which are overtaking the rates of development of rail transport. The frequent destruction in modern operations of both railroads and the structures on them, the difficulties in restoring them, the conduct of combat actions by axes by the troops, their deep operational disposition, as well as the dispersed positioning of rear services large units, units, and facilities over a considerable area, have drastically increased the role of motor transport in the delivery of materiel and in evacuation and require a developed network of motor roads, an increase in their traffic capacity, and dependable road support for them.

* Military Transportation in the Light of the Further Development of Military Art, p. 35.



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The contemplated long-range plans for the reconstruction of the internal waterways of the USSR and other countries of the socialist camp, the joining of these into a single deepwater transportation system encompassing the waters of the Volga, Dneper, Vistula, Oder, and Danube rivers, and the construction of a new and faster sea and river transport fleet, are enhancing the role of water transport as a means of military transportation.

The extensive construction of fixed pipelines in the USSR and adjacent countries of the socialist camp has established the necessary preconditions for their use in wartime as the main means of fuel delivery from the interior areas of the country to the theaters of military operations.

The Great Patriotic War provided several examples of the successful organization of the integrated use of different kinds of transportation within the confines of individual strategic or operational axes.

Under the conditions of a future war, where interruptions of movement on the separate types of transportation are possible, the integrated use of different types will have even greater importance. Hence, not only the separate types of transportation lines, but also the entire system of technical facilities should be prepared beforehand. It is necessary to ensure that the different types of transportation have interconnections for the rapid switching of shipments from one type of transportation to another.

As shown by the experience of the Great Patriotic War, it is very complicated to use for military shipments the West European-gauge railroads in the territory of the individual countries. Therefore, it is necessary, along with preparing the technical and material base for the international transportation lines, to work out beforehand the methods and forms of cooperation of the transportation organs of the socialist countries for the wartime control of combined shipments.

It is advisable to prepare right now the conditions for setting up in wartime, within the framework of the international Railroad Cooperation Organization (OSZhD) that is functioning and the military organization of the Warsaw Pact countries, international control organs that are capable of providing

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direction over restoration works, technical coverage, and shipments, and of implementing other measures for the purpose of completing inter-Pact shipments.

Even during the Great Patriotic War it had become clear that the survivability and continuity of the work of transportation greatly depends on the entire array of technical, organizational, and operational measures to be conducted both before the start of war and also during its course. Among such measures must be classed the construction of bypasses around bottlenecks, the duplication of man-made structures, the training of highly mobile restoration organizations, the stockpiling of the necessary reserves of transportation means, the organization of the integrated use of transportation, and the implementation of counter-obstacle measures during the conduct of offensive operations. This in turn requires that much attention be devoted to transportation matters in the general plans for operations, campaigns, and the war in its totality.

At the same time it must be noted that in the Great Patriotic War transportation coped with its tasks successfully because the Party, organizing nationwide assistance of the front, enlisted the population for participation in transportation works. In the repair of transportation means, the restoration of transportation lines, the clearing of roads, the procurement of fuel, the performance of loading and unloading tasks, and the construction of new roads, the transport services received direct help from the local inhabitants. The enlistment of the local population to support the work of transportation must also find wide application in the future.

The experience of the war shows that as the tasks of transportation and the conditions of its work increase in complexity in wartime, there is a need to considerably increase the number of transportation troops. Their role increases and their functions become more complex. Along with the increase of the total number of transportation troops during the war, a trend towards their narrower specialization became apparent (troops to restore bridges only, transportation means to carry fuel only, etc.).

There is no doubt that under the incomparably more complex modern working conditions for transportation in wartime, the role

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of special transportation troops will increase even more. In addition to this, it is necessary to note that if in the last war, restoration and transport operating units were earmarked mainly to ensure the work of transportation lines in theaters of military operations, at the present time they are needed also in the interior regions of the country, which requires that measures be taken to increase them further.

The experience of the Great Patriotic War and the postwar development of the armed forces shows vividly the great importance all types of transportation have acquired for the successful conduct of military actions.

The implementation of the resolutions of the Twenty-Second Congress of the Communist Party of the Soviet Union on the matter of the further development of our homeland's transportation and the measures to be carried out to organize its integrated use within the country are raising still higher the combat readiness of our armed forces and the capability of all types of transportation to support the conduct of operations in a future war.

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