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WASHINGTON, D.C. 20505

30 October 1975

MEMORANDUM FOR: The Director of Central Intelligence
SUBJECT : MILITARY THOUGHT (USSR): Materiel Support of Front Troops in an Offensive Operation in the Initial Period of War under Conditions of the Stoppage of Rail Deliveries

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 provides an assessment of the capabilities of pipeline, air and water transport for delivery of materiel in determining front requirements for motor transport when the operation of railroads in a theater has been stopped. The author examines ways of reducing the amount of motor transport required and increasing its capacity, as well as measures taken to improve the front rear and lighten the army rear. This article appeared in Issue No. 2 (78) for 1966.

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 the

William E. Nelson
Deputy Director for Operations

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Intelligence Information Special Report

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SUBJECT

MILITARY THOUGHT (USSR): Materiel Support of Front Troops in an Offensive Operation in the Initial Period of War under Conditions of the Stoppage of Rail Deliveries

SOURCE Documentary

Summary:

The following report is a translation from Russian of an article which appeared in Issue No. 2 (78) for 1966 of the SECRET USSR Ministry of Defense publication Collection of Articles of the Journal 'Military Thought'. The author of this article is General-Major V. Yuryev. This article provides an assessment of the capabilities of pipeline, air and water transport for delivery of materiel in determining front requirements for motor transport when the operation of railroads in a theater has been stopped. The author examines ways of reducing the amount of motor transport required and increasing its capacity, as well as measures taken to improve the front rear and lighten the army rear.

End of Summary

[Redacted] 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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Materiel Support of Front Troops in an Offensive
Operation in the Initial Period of War under Conditions
of the Stoppage of Rail Deliveries

by
General-Mayor V. Yuryev

According to the views of the military leaders of the US and NATO, one of the tasks of a nuclear attack in a theater of military operations is to isolate the areas of combat operations and prevent the arrival in these areas of reserves and materiel from the interior. It is expected that up to 20 percent of the total amount of nuclear warheads will be allocated for the achievement of this aim.

In considering the consequences that may be suffered by a front rear as a result of an exchange of nuclear strikes, we should point out that it is primarily the rail lines of transportation in the operational rear that will be subjected to heavy and massive destruction.

It is known that the rail network is better developed in the Western Theater of Military Operations. But even here, in operations in the initial period of a war, one cannot count on the wide-scale use of rail deliveries in territory that has been captured from the enemy. The NATO Command is adopting serious measures to hinder the operations of troops in captured territory, to slow their rates of advance, to disrupt the operation of transportation facilities, primarily the railroads, and in this way prevent the arrival of reserves and materiel and technical means from the interior to the areas of combat operations.

We should also keep in mind the fact that there will be a very limited number of railroad troops and military railroad operating formations in a front during operations in the initial period of a war. The results of operational command-staff exercises show that in the Western Theater of Military Operations, for example, railroad brigades, separate railroad operating regiments and special formations of the Ministry of Railroads will arrive at the fronts of the first strategic echelon only on the fifth to eighth day of an operation, or even later. Thus, they will hardly be able to perform any substantial rail restoration work before the end of a front operation which lasts 10 to 12 days.

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If we assume that a railroad brigade arrives at the front on D3 and rail restoration work begins on D4 or D5, then by D12 it will have restored no more than 160 to 180 kilometers* of one rail line where the depth of the operation is 1,000 kilometers or more. By deploying another railroad brigade to this same line on D7-D8 it may be possible to restore a total of 320 to 350 kilometers of railroad before D12. The length of the land supply line will have reached 500 kilometers by D4-D5 and will increase to 600 kilometers on subsequent days of the operation.

One also cannot count on the use of local railroad operating organizations in support of the fronts. Even isolated sections of railroads that have withstood nuclear strikes and are suitable for train movements cannot be used immediately without special agencies (military railroad operating directorates, their branches, railroad operating regiments and others).

Thus, any significant amount of operational and supply movement over the railroads can be carried out only in a small section from the state border to the regulating stations of the front, that is, in the rear area assigned to the front at the beginning of the operation. The role of rail transport in the operational rear in territory captured in the course of an offensive by the troops will be very small.

All of this leads to the conclusion that under present conditions rail transport, which earlier had played the main role in the rear of a front, has become an auxiliary form of transport. Motor transport and pipeline transport have become the main forms of transport at the operational level of supply. *

*The rate of rail restoration is assumed to be 20 to 25 kilometers per day for one railroad brigade, or an average of 22 kilometers per day, and 45 to 50 kilometers per day for two railroad brigades, or an average of 47 kilometers per day. See the article by Hero of Socialist Labor General-Leytenant of Technical Troops P. Bakarev and Colonel K. Pavlovich, "Some Questions of Ensuring the Survivability of Railroad Lines of Transportation in Modern Operations", Collection of Articles of the Journal "Ty1 i Snabzheniye Sovetskikh Vooruzhennykh Sil" (Rear and Supply of the Soviet Armed Forces), No. 54, 1964.

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In our opinion it is precisely this situation which must be considered in organizing the integrated use of all types of transport in the interests of the timely delivery of materiel and technical means at the operational levels of supply. This requires that an entire series of steps be taken for improving the forms of organization and operation and for further technical equipping of front and army rear control organs as well as many large units, units and facilities of the rear.

* * *

The need of front troops for transport means for bringing up supplies in the course of an operation is determined first of all by the expected expenditure of materiel, which in turn depends on the fighting strength of the front, the planned rates of advance, the depth and duration of the operation, and the terrain.

According to the results of operational command-staff exercises, for a front consisting of three combined-arms armies, a tank army, an air army and means of reinforcement (a total of up to 20 motorized rifle and tank divisions), the average daily expenditure of materiel at high rates of advance* may reach 20 thousand tons, including 11 to 12 thousand tons of fuel. On the whole, for an operation with a depth of 1,000 kilometers and a duration of 12 days the amount of materiel required to cover expenditures may be 300 thousand tons, including up to 80 thousand tons of ammunition, up to 180 thousand tons of fuel, up to 8,000 tons of rations and up to 30 thousand tons of other types of materiel (within limits of 15 percent by weight of the main types of materiel).

This maximum expenditure of materiel is taken without consideration for losses of armament, combat and motor transport equipment, and personnel. Obviously calculations of transport requirements should be determined on the basis of maximum expenditure since in the course of an operation a front will be reinforced with motorized rifle and tank divisions and, in a number of cases, armies.

*Of course, at other rates of advance all of the author's calculations reflecting the troops' needs for transport and repair and restoration means will be different.

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What about the needs of a front for means of transport of materiel when the operation of the railroads has been stopped? Naturally the needs for motor transport can be determined correctly only if an accurate evaluation is made of the capabilities of other types of transport used in an operation, in particular pipeline, air, and water transport.

Pipeline transport is the form which is the most promising, relatively less vulnerable and rather economical. It should become the chief means of supplying fuel from the rear bases of fronts (from branches) deployed at the railheads to mobile front bases and their branches. In our opinion a front in the main theaters of military operations must have enough pipeline brigades to lay pipelines in the zone of advance of each combined-arms and tank army and one pipeline for the air army.

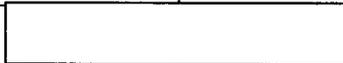
It is very important that the rate at which main pipelines are laid be increased sharply. In fact, the new principle for joining pipes invented by the fuel supply service of the Carpathian Military District makes it possible to lay pipeline at a rate of up to five kilometers per hour. This will significantly increase the efficiency of main field pipelines.

In our opinion the readiness times of pipeline units and large units should be reexamined with the aim of reducing these periods as much as possible. But this is only one side of the matter. We must attempt to reach the position in which the materiel for pipeline large units and units will be located in the theaters of military operations and their manning can be accomplished in not more than one to two days.

If we consider that one brigade will begin laying pipe on the second day, two on the third day and one on the fourth day of an operation, then before the end of the operation they will be able to supply up to 50 thousand tons of fuel (with 150-mm pipeline) where the fuel needs are 180 thousand tons. On the basis of days of the operation (at the indicated pipe-laying rates), fuel delivery may reach 1,000 tons by the end of D2, 3,000 tons by the end of D3, 4,000 tons per day for D4-D9, 5,000 tons for D10 and 7,000 to 8,000 tons per day for D11-D12. (In these calculations it is assumed that only 50 percent of the fuel capacity of the pipeline is actually delivered to the troops while the remaining fuel is used to fill the pipelines.)

Air transport should be used primarily for the delivery of missiles and missile propellant and to deliver conventional types of materiel in support of the tank army.

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The delivery of missiles and missile propellant by land (using special vehicles) becomes particularly difficult by D4-D5, when the reserves of previously prepared missiles have been expended and the supply lines for motor transport reach 500 kilometers. Under such conditions the movement of missiles or missile propellant by land becomes an extremely complex if not hopeless operation. Therefore it is important to use air transport to supply the rocket troops with nuclear warheads, missiles and missile propellant.

Calculations show that approximately one regiment of MI-6 (MI-10) helicopters and one regiment of AN-8 (AN-12) aircraft must be used to supply a front with "surface-to-surface" and "surface-to-air" missiles and missile propellant.

The air transport delivery of fuel and ammunition for a tank army in an amount equal to the average daily expenditure would require at least one military air transport division by D4-D5. If we consider that a military air transport division can make one and a half trips per day, it could deliver 12 to 14 thousand tons of fuel in seven to eight days.

Water transport, in our opinion, can be used only on coastal axes and for use on a broad scale (to support the needs of one to two armies), cannot be used earlier than D4-D5. These time periods result from the geographic position of the Warsaw Pact countries. At the same time, straits zones must be captured to facilitate ship movements. In addition, before transports can put to sea with materiel it will be necessary to carry out decisive strikes against enemy ship groupings, sweep for mines in channels, clear moorages, etc. All of these are difficult tasks requiring personnel, equipment and time.

If we assume that from D5 maritime transport can meet the daily needs of one army, this would amount to the delivery of 30 to 32 thousand tons of materiel by D12.

Thus, up to 100 thousand tons out of a total requirement of 300 thousand tons can be supplied to an operation by pipeline, air and maritime transport. Obviously the remaining materiel (up to 200 thousand tons) must be delivered by motor transport.

According to calculations, the unit means and army means of transport bring up materiel (40 thousand tons) during the first two days of an operation. If we estimate that the army transport of three combined-arms armies can complete one more trip in the course of the next ten days of the



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operation and deliver up to nine to ten thousand tons of supplies, then on the whole the army means and unit means of transport can deliver up to 50 thousand tons of materiel during an operation.

An air army using its unit means and army means of motor transport is capable of fully supporting the delivery of approximately 32 to 35 thousand tons of supplies (not taking into account the delivery of fuel by pipeline) in the course of an entire operation. In addition, 10 to 15 thousand tons of materiel may be brought up by railroad for the bomber aviation. (This is made possible by the fact that bomber aviation is based deep in the rear area of a front in the first four to six days of an operation.)

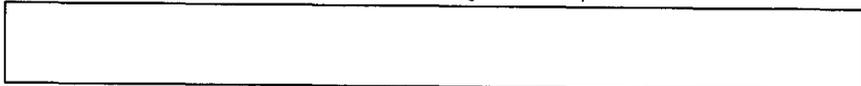
Front large units and units, and rear large units, units and facilities located deep in the rear area of a front, as well as large units and units passing through this area can deliver up to 15 thousand tons with their own means of motor transport during the period of an operation.

On the whole, 110 to 115 thousand tons may be delivered by the motor transport of armies, large units, units and facilities during the period of a front offensive operation. A front's motor transport system can deliver approximately 85 to 90 thousand tons of supplies beginning at D3, or eight to nine thousand tons daily. At least nine motor transport battalions (1.5 motor transport brigades) equipped with five-ton trucks are required for this delivery.

However, because the length of the supply line increases daily by 80 to 100 kilometers, the turn-around rate of the motor transport will be reduced. Thus, the one and a half motor transport brigades that arrived at the separate forward front base on D3 (a distance of 200 to 250 kilometers), will return on D4 from the rear front base (its branch deployed on the state border line) and will bring materiel to the new separate forward front base (or mobile army base) only on D7. Subsequently these one and a half motor transport brigades will make a complete round trip (separate forward front base - separate rear front base - separate forward front base), where the average daily run is 300 kilometers, only by the end of D12.

The motor transport of the front assigned to deliver materiel beginning on D4-D5 can make two trips before D12, while that assigned on D6 or later can make only one trip. The nine motor transport battalions which deliver materiel to the separate forward front base on D4 can make the second trip on D9, while those that deliver materiel on D5 can make their second trip only at the end of D11.

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Thus, if we proceed on the basis that a front must deliver eight to nine thousand tons of cargo to its troops daily to replenish expended supplies, it will be necessary for a front to have five or six motor transport brigades. As far as materiel reserves required at the end of an operation are concerned, with this number of vehicles available for supply the reserves could be built up only by D15-D16 (on the second trip of the brigades that delivered materiel on D6-D8).

The need for motor transport in a front may increase or decrease depending upon the availability and time of employment of other types of transport (pipeline, air and water). All other conditions being equal, if a front were allotted two military air transport divisions rather than one, the need for motor transport would be reduced to eight to nine motor transport battalions (1.5 brigades). If we increased the scope of the water (maritime) transport supply system so that it can support two armies rather than one, the need for motor transport would also be reduced somewhat.

We believe, however, that one must be careful in approaching the question of reducing motor transport supply. In calculating the need for motor transport we must consider the most favorable conditions under which other forms of transport will be used: for pipelines -- a pipeline brigade can deliver fuel beginning on D2-D5; for air transport -- one military air transport division can make one complete trip per day beginning on D3; for water transport -- a supply capacity of 30 to 32 thousand tons beginning on D5. The times and distances required to bypass zones of radioactive contamination are also not taken into consideration.

If the number of pipeline brigades is reduced by one, the need for motor transport increases by seven to eight motor transport battalions (considering the turn-around rate of the motor transport). A delay in laying pipelines will lead to an increase in the length of the motor transport supply line (meaning an increase in the amount of motor transport required) since its turn-around rate will be reduced.

At the present level of industrial development there are real ways of reducing the amount of motor transport in a front. The first way is to increase the carrying capacity of the vehicles; improved mechanization of loading and unloading operations can increase the turn-around rate of supply vehicles; the introduction of containerized shipments; increasing the technical reliability of motor vehicles entering the service of the army. In addition, the presence of two drivers per vehicle in front and army motor transport supply units (this is already being put into practice)



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makes it possible to increase the distance traveled in one day from 250-300 to 500 kilometers, which also reduces the overall need for motor transport vehicles.

The question of motor vehicles used for the transport of fuel also deserves the most serious attention. It is known that the total expenditure (and therefore the amount that must be supplied) of fuel is more than 60 percent by weight of all materiel required by the troops in an operation. In fact, the ratio of tanker trucks to general-purpose trucks (by cargo capacity) in large units and formations is 1:3 and 1:4. But this, if we may say so, is a purely formal calculation. What is alarming is the fact that there are so few special-purpose tanker trucks in the national economy. Instead of tanker trucks, the troops are receiving general-purpose trucks with drums which unquestionably will not replace special-purpose tanker trucks with respect to carrying capacity, turn-around rate, or speed in loading or unloading the fuel.

Moreover, the pumping facilities and fueling equipment of the fuel supply service at the present time are not suitably adapted to supplying the troops with fuel from drums. Powerful and highly efficient refueling stations and loading facilities (conveyer-type drum hoists and drum loading equipment) are needed in the tactical, army, and front rear to load and unload fuel (we are talking about tens of thousands of drums). This work cannot be performed without mechanization of loading operations and a certain increase in the number of personnel at the fuel depots. In addition, the tactical, army, and front depots must obviously have a turn-around system so that full drums can be exchanged for empty ones during the resupply process.

These proposals are suggested because of the present unfavorable conditions under which the troops are being supplied with special tanker trucks. But this is only a half-measure in our opinion. We must gradually build up the special-purpose tanker trucks as an "emergency reserve" of the troops, primarily in tank and motorized rifle large units.

The army and front rear. Measures taken in recent years to improve the front rear and lighten the army rear have significantly increased their capability to provide rear support to modern offensive operations. The army rear has become more mobile and capable of operating when separated from the railroads. This is very important. The organizational structure and equipment of the front rear have improved and their capabilities have increased. The very system of the front rear has become more streamlined, stable and reliable.

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But in our opinion all the problems have not been solved. A further improvement of the organizational structure and technical equipment of the army and front rear is necessary.

For example, it is very important to increase the mobility of the army base of a tank army. According to norms and calculations, the mobile army base depots of an army must have up to 3,000 tons of various types of supplies, including up to 1,800 tons of fuel. But the load-carrying capacity of the tanker trucks is 2,700 to 2,800 tons. Obviously it would not be advantageous to solve the problem of increasing the mobility of an army base by reducing the amount of supplies that they must carry; such supplies are limited and can support the replenishment of expenditures for an average operation of one to two days. An increase in the number of army motor transport battalions would make the army rear unwieldy and overloaded. Also, this would not be reasonable for economic considerations.

The more correct approach is to increase the cargo-carrying capacity of the motor transport system. If the motor transport battalions of an army were supplied with three- and five-ton vehicles, three separate motor transport battalions could transport 2,100 to 3,100 tons of supplies. The cargo-carrying capacity of the motor transport should also be increased in the combined-arms armies.

The front rear represents the connecting link between the rear of the country and the rear of an operating army. This leads to a differentiation of its functions: on the one hand, the task of receiving materiel, armament and reserves from the deep rear ties the front rear to the railroads as the primary means of the General Headquarters delivering everything required by the fronts in land theaters of military operations; on the other hand, the high rates of advance, the fast flow of operations, the great expenditures of materiel, the broad-scale destruction of rail lines and the slow rates of their restoration require that the front rear and its supply reserves not lag behind the troops under such conditions and that they be capable of providing close support to the combat operations of troops that are separated from the rail lines.

Experience gained in operational command-staff exercises shows that, beginning on the third or fourth day and until the end of an operation, the troops of a front receive materiel as a rule every two or three days from forward front base branches deployed on the ground. This requires an increase in the mobility of the forward front bases so that they can be moved with the least possible expenditure of forces, means, and time. This



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can be done by lightening as much as possible the equipment of the base depots, replacing the RG-16 and RG-25 containers for fuel with rubberized containers, replacing slow-running tractors, cumbersome engineer terrain-preparation equipment, heavy loading and unloading mechanisms, etc. A forward front base should have two branches. A front should have three or four bases, one for each combined-arms and tank army.

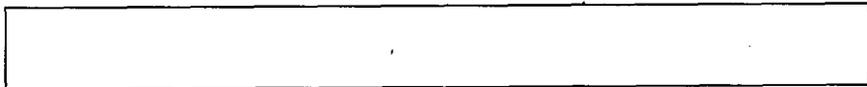
The best results are achieved if the operation of the bases is organized as follows: in the initial position the troops should be supplied from the rear front bases and their branches during the first two to three days of an operation to a depth of 200 to 250 kilometers. Subsequently, forward front bases (their branches) should be deployed after each 200 to 250 kilometers (every two to three days of the operation). In this way any forward front base could support the combat operations of one army as well as front large units and units operating in the army area to depths up to 800 kilometers.

In conclusion we would like to say several words about control. During the first days of an operation the commanders of the VOSO (military transportation service) of the armies (primarily of the border military districts and the groups of forces) are called upon to organize rail shipments to a much lesser degree now than previously. Their main task in the course of an operation will be to organize motor transport shipments. They are still not adequately prepared to carry out this function; they do not have special training or operating experience. Almost the same situation can be observed in the military districts (fronts). If the road service in the VOSO of a military district is represented by a group of officers in peacetime, the motor transport supply service is the responsibility of only one man on whose shoulders lies the entire weight of control of motor transport large units and units charged with the delivery of materiel. It would be best if the training of VOSO specialists were organized in such a way that they could control not only rail (water) shipments but motor transport and air shipments as well.

In addition, in peacetime the VOSO organizations of the districts (groups of forces) should have, without changing their numerical strength, three or four officer-specialists responsible for motor transport and air shipments.

These are our proposals for further improving the rear of the front and the motorization and mechanization of certain rear large units, units and facilities.

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Certainly one can either agree or disagree with the author's opinions on the quantity and composition of the motor transport, pipeline and air transport of a front. More detailed calculations and special exercises are needed in order to clarify this question. The important thing is to note the correct ways of preparing the operational rear for war on the basis of an analysis of the possible conditions under which it will function in operations during the initial period of a war.

