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MEMORANDUM FOR: The Director of Central Intelligence

FROM : William E. Nelson
Deputy Director for Operations

SUBJECT : MILITARY THOUGHT (USSR): Certain Problems in the Technical Support of the Tank Troops in Operations During the Initial Period of 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 examines the problems of increasing the mileage reserves of tanks and armored equipment, improving tracks, the transport of tanks, and the capabilities of mobile workshops among those affecting technical support to tank troops in offensive operations. The author also stresses the requirement for mobile tank repair and assembly repair shops to perform the work previously done at stationary shops. This article appeared in Issue No. 2 (72) for 1964.

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

William E. Nelson

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MILITARY THOUGHT (USSR): Certain Problems in the Technical Support of the Tank Troops in Operations During the Initial Period of War

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Summary:

The following report is a translation from Russian of an article which appeared in Issue No. 2 (72) for 1964 of the SECRET USSR Ministry of Defense publication Collection of Articles of the Journal 'Military Thought". The author of this article is Colonel General of Tank Troops V. Obukhov. This article examines the problems of increasing the mileage reserves of tanks and armored equipment, improving tracks, the transport of tanks, and the capabilities of mobile workshops among those affecting technical support to tank troops in offensive operations. The repair of tanks and equipment may be improved by establishing separate tank repair battalions as well as organic army tank repair battalions to perform medium repairs in the field. The author also stresses the requirement for mobile tank repair and assembly repair shops to perform the work previously done at stationary shops.

End of Summary

[redacted] Comment:

Viktor Timofeyevich Obukhov was identified between 1962 and 1967 as First Deputy Chief of the Tank Troops. 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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Certain Problems in the Technical Support of the Tank Troops in Operations During the Initial Period of War

by

Colonel General of Tank Troops V. Obukhov

During the initial period of a missile/nuclear war the conduct of offensive operations at great depths and with great speed requires the solution of a series of important problems concerning the technical support of the tank troops. One of these is to ensure a tank mileage reserve sufficient for the forward movement of troops to areas of combat employment and subsequent combat actions throughout the depth of the operations being carried out.

In examining this question one must keep in mind that in the event of significant destruction along railroad lines, as is expected at the very beginning of a war, the forward movement of tank and other large units of the ground forces which have armored equipment for the most part will be carried out under their own power. Consequently, those large units which are located in the interior military districts will have to make marches covering distances of 1,200 to 1,500 kilometers with long average daily movements, and after completing them, in fact, from the march, they will have to conduct a swift offensive to a depth of 1,000 kilometers and more.

If one takes into consideration the possible maneuver factor of the tank troops in an operation, which in our opinion will average 1.5 to 1.8, then the total distance covered by the tanks in the operation will be 1,500 to 1,800 kilometers, but if the forward movement of the troops to the areas of combat actions is included, it might reach 3,000 to 4,000 kilometers.

It is completely obvious that the mileage reserve of most of the tanks with the troops by the beginning of the war should correspond to the expected distance of the run.

The experience gained in the operation and the special testing of our new tank means, which form the basis of the combat equipment of the tank troops, shows that their mileage reserve until the next scheduled medium repair (the mileage reserve for engines and power transmission assemblies) approaches 6,000 to 7,000 kilometers. But one must keep in mind that during troop combat training, each tank in a combat group uses 300 kilometers of its mileage reserve, resulting in a gradual reduction of its

mileage till overhaul. It is true that the expenditure of the mileage reserves of the troops' combat vehicles is compensated for in part by the transfer to the combat group of tanks which have undergone major repair, but this ensures the renovation of only some of the vehicles.

A more effective measure in this direction would be to lower the operating norms of tanks in a combat group, for example, from 300 to 200 kilometers per year. This would allow the mileage reserve till overhaul of each tank to be maintained at within 4,000 to 5,000 kilometers for a minimum of 12 to 15 years from the moment they are released from the factory. A similar reduction of the operating norms for tanks of the combat group will not be at all detrimental to the combat training of the troops under peacetime conditions.

However, the reduction of the mileage reserve expenditures of combat vehicles is just one side of the problem of ensuring increased mileage till overhaul for tanks.

It is known that after travelling 2,000 to 2,500 kilometers, the tracks on our present tanks should be changed. Consequently, even if all the tanks get new tracks before the troops begin their forward movement, they nevertheless will not be able to support the conduct of a deep offensive operation without changing tracks.

At the present time, as is known, a new type of track is being designed which has rubber and metal joints, enabling a tank to travel approximately 5,000 kilometers. The introduction of these tracks will undoubtedly have a great effect, especially if they are interchangeable with the existing tracks. But in the meantime, in determining ways in which the combat effectiveness of the tank troops could be increased, we should proceed from the fact that all tanks available to the troops are equipped with tracks which must be replaced when the troops move forward over distances of 1,500 to 2,000 kilometers. The question arises, how can the replacement of tank tracks be ensured after or during the movement of troops forward to combat areas and where can the spare tracks be kept?

It is known that in the regiments, divisions and armies there are no spare sets of tracks; it is hardly necessary to have them there since it would require scores of trucks to transport the tracks for a tank regiment, and hundreds for a tank division. Indeed, the set of track links and track pins for just one medium tank weighs about 2.7 tons.

We believe that track reserves should be established in peacetime and stored preassembled in large track sections along the paths of the troop movement on the main operational axes.

Along with this it is necessary to use to the fullest extent all available means for prolonging the life of the existing tracks. Particularly, in preparing the track pins it is desirable to boronize them, that is, to saturate the surface with boron, which prolongs the working life of the tracks by an average of 30 percent.

Of course, during a troop movement every opportunity should be taken to transport tanks by rail, as well as by tractor-trucks on heavy-load trailers.

Shipments on heavy-load truck trailers of tanks for entire tank regiments and battalions, which were carried out in 1961-63 in the Carpathian, Leningrad and Baltic military districts, showed that this form of transportation is very effective in spite of serious deficiencies. One can expect good results regarding the conservation of tank mileage reserves during a troop movement over great distances, if it is stipulated that a necessary minimum of special motor transport battalions equipped with powerful tractor-trucks with heavy-load trailers capable of transporting medium and heavy tanks be established in all border districts.

Among the number of important problems of the technical support of the tank troops should be included the maintenance of armored equipment in a combat-effective state under conditions of intensive operation during a march or combat actions.

Many cases are known from the experience of the past war when, as a result of ill-timed and incomplete technical servicing, a large number of vehicles stopped on the routes of movement. A significant breakdown of vehicles for so-called technical reasons during marches occurred because at that time even the most improved tank, the T-34, had a series of structural and other defects, and its mileage reserve until the next scheduled maintenance was only 800 to 1,000 kilometers.

Modern medium tanks such as the T-54, T-55, and others are somewhat more reliable than the T-34, although they require a systematic inspection of their technical condition, periodic adjustments of control linkages and a series of other tasks, without which it would not be possible to maintain the combat effectiveness of these vehicles. In planning marches, provision must be made for setting up vehicle servicing, and for allotting the

necessary time to the units for this purpose. As the experience of war games has shown, command personnel do not give the necessary attention to this matter.

The maintenance of the tanks in technically sound, combat-effective condition is the first order of business of the crews. But under the conditions of a march in which great average daily distances are travelled, and during intensive combat actions, tank crews will become so fatigued that within the very limited amount of time allotted for rest and servicing of the vehicles, they will not be able to carry out all the necessary tasks by themselves. Therefore, in order to render technical assistance to the tank crews it would be desirable to use the battalion servicing means to the fullest extent and to widely allocate the repair subunits of the regiments, and possibly some of the servicing and repair means of the divisions. It is evident that this could be carried out if an arrangement were established by which the battalion and regimental servicing and repair means were to move on the march immediately behind the combat subunits, and arrive in the troop stopping areas without delay as the day's march was being completed. During operations, toward the end of each day of combat actions the servicing and repair means should advance to the areas in which their own battalions and regiments are located to render as much assistance as possible to these crews in preparing the combat vehicles for the next actions.

In accordance with this, the subunits designated for the servicing and repair of armored equipment should be equipped with mobile workshops, on chassis with a cross-country capability.

The existing servicing vehicles and mobile workshops do not fully meet the requirements for using them under new conditions: they are mounted on ordinary motor vehicle chassis, their bodies are rather large, they withstand shock waves very poorly, and do not provide the necessary protection of the personnel against radioactive contamination.

In our opinion, it would be desirable to build tank repair workshops for battalions and regiments which would have a greater cross-country capability and be equipped with means for protection against nuclear attack, for example, mounted on the chassis of BTR-60P armored personnel carriers with hermetically sealed hulls and special air filtering devices.

The timely restoration of the damaged armored equipment and its rapid return to operation should be included among the number of very complex problems of technical support for the tank troops during operations in the

initial period of war.

An analysis of the peculiarities and nature of a missile/nuclear war leads to the conclusion that during the first days of the war, conditions might arise in which the replenishment of the troops with new tanks from the rear and the dispatch of tanks for repairs at stationary shops will be impeded or completely cut off for some period of time. Therefore the timely restoration of damaged armored equipment in the theaters of military operations could turn out to be the main, and often the only, means of making up for the losses.

According to existing views, in a modern operation more than ten percent of the tanks available in a front at the start of the war will break down in one day as a result of combat damages or other reasons. When this is the case, not less than 40 percent of them will require running repairs, about 25 percent -- medium repairs, and approximately ten percent -- major repairs.

If the restoration of the damaged armored equipment is not organized, then the troops of the front will lose their combat effectiveness within a few days of the operation. The timely restoration of this equipment in view of such a probable breakdown can only be carried out when powerful and highly mobile repair means are available. Among these, the repair means of the units and large units hold an important place.

However, in evaluating their capabilities, one should be aware of certain factors. First, the reduction of the production capabilities of the unit and large unit repair means caused by the table of organization measures of the past years must be considered. Under conditions in which the regimental repair subunits are allocated to help the crews with the technical servicing and repair of combat vehicles, these repair means at best permit carrying out running repairs of armored equipment during operations.

Secondly, with the high rates of advance foreseen for the operations of the initial period of a war, the use of divisional repair means to carry out medium repairs of armored equipment evidently will not be desirable, as it will lead to a great separation of these means from their large units, and to a significant reduction of the capabilities for restoring vehicles in need of running repairs.

In our opinion, during offensive operations, the divisional repair means should make only running repairs on armored equipment, and medium

repairs should be made by the army and front repair means. During the initial period of a war, separate tank repair battalions, formed in a short time from existing army and district armored repair workshops, can be used primarily for medium repairs on damaged armored equipment.

These separate tank repair battalions are capable of performing medium repairs on approximately 50 percent of the damaged tanks. The restoration of the remainder of the armored equipment in need of medium repairs should be carried out by the newly activated separate tank repair battalions sent to the theater of military operations from the interior military districts as they are mobilized. In connection with this, the deployment time of the newly activated separate tank repair battalions must be taken into consideration. Obviously, their activation must not be allowed to lag behind the deployment of the troops. Otherwise the separate tank repair battalions will not be able to participate in the restoration of the damaged armored equipment during the initial operations of the war.

In order to deploy the separate tank repair battalions within a short time, in our opinion, it is necessary to establish in advance a minimum of mobile repair workshops and technological resources where they are to be activated. First of all, it is advisable to have reserves of means of technical equipping at the district and army armored repair workshops and at armored repair shops under district and central subordination. This will allow repair companies to advance along the main axes of troop actions within a short period of time and before too many separate tank repair battalions are activated. In order to maintain the tank troops at a high level of combat effectiveness during operations of the initial period of war, it is essential to have organic army tank repair means as well as front repair means.

In the past, when they were not set up for the operation as rapidly, army repair means were nevertheless provided for. They were assigned to perform medium repairs on tanks not requiring too much work. Accordingly, it was believed that during an operation the repair means of the divisions would also be able to restore a significant part of the armored equipment in need of medium repair, but we cannot count on this now.

Consequently, during operations in the initial period of a war, in the absence of army repair means, all the armored equipment in need of medium repair, including that requiring a small amount of work, will have to await the arrival of the front repair means. As a result, we will be unable to put a great deal of the armored equipment back into service during the operation, and this will sharply reduce the combat effectiveness of the

troops. In our opinion, under present conditions, the need for army tank repair means has become even more acute than before.

For a more complete understanding of the importance of medium repairs of the armored equipment of troops in action, it is sufficient to say that the number of tanks sent for medium repairs in one front might reach 200 per day. In addition, the timely repair of the basic vehicles for missile launchers and the armored personnel carriers must be ensured.

Accordingly, it must be considered that under the conditions of a missile/nuclear war the breakdown of armored equipment in units and large units can sharply increase, while at the same time, significant losses in the repair means of the large units are possible. The large units will have to be rapidly reinforced by the repair means in order to restore vehicles requiring running repairs, which would not be possible in the absence of army repair means.

Thus, it would be very important to provide for the establishment of an organic tank repair battalion under each tank and combined-arms army which would be used in companies by the large units of an army with the mission of quickly restoring and returning to service any damaged armored equipment in need of limited repair.

During the initial period of a war, during both the forward movement of troops to areas of combat actions and in the course of operations, wide application should be found for a method of performing repairs on damaged tanks and other combat vehicles, which could be dispersed over various times and locations. The essence of this method consists of the fact that when it is not possible to perform the given repairs on a vehicle in one location within a short time limit, then initially only a partial repair is performed enabling the vehicle to move farther under its own power, and then when it reaches a certain area, for example, the area of a day's (night's) rest, all the remaining repairs necessary for the complete restoration of the combat effectiveness of the vehicle are performed.

In our opinion, the use of such a repair method, in carrying out marches and when the rates of advance of the troops are high, will enable a maximum number of damaged vehicles to be returned to service and will prevent repair subunits from lagging behind.

If, as a result of enemy missile/nuclear strikes against the troops advancing to areas of combat actions, damage is inflicted upon a large amount of the armored equipment which exceeds the capabilities of the troop

repair means, then the organization of the evacuation and repair of some of these vehicles should be made the responsibility of those military districts upon whose territory the troops are advancing, and the further use of this equipment should be decided by the higher level of command. In our opinion, when our troops are moving through the territory of the Warsaw Pact countries it is essential that restoration of armored equipment be carried out with the use of the repair means of these countries.

While conducting offensive operations at high speeds and to a great depth, a significant amount of damaged armored equipment in need of repair can turn up at a great distance from the troops in action. In order to restore this equipment, surviving local workshops, bases and shops should be used to the greatest extent possible. In order to ensure the necessary supervision over the restoration of such equipment which is dispersed over great expanses, evidently it will be required that local repair installations located in the vicinity of the equipment, as well as mobile repair and evacuation means, be combined into repair-evacuation groups (centers) with control organs and subordinated to the fronts and, in some instances, to the Main Armored Directorate.

In addition to the setting up of running and medium repairs for armored equipment, the deciding of questions concerning the major repairs being performed in the theaters of military operations can be significant for the maintenance of the combat effectiveness of the troops.

In deciding this question, which evokes the most varied opinions, it is essential to proceed from the tasks of supporting not only the operations of the initial period, but the war as a whole. Of course, if we assume that the war will end, for example, in one month, then there are simply no grounds for posing such a question. But we also must be prepared for a more prolonged war taking it into account that at its very beginning the replenishment of the troops with new tanks from the rear might become a very complex matter.

What is the expected volume of major repairs of armored equipment? In a ten-day operation 500 to 600 tanks could be sent for major repairs from one front alone.

We believe that during a war major repairs of armored equipment should be performed chiefly by the forces of the mobile repair shops, and also that the repair resources of the Warsaw Pact countries should be used to the fullest extent possible for this purpose.

During the past war, when there was comparatively little destruction of the shipping routes, the transport of tanks from the fronts to stationary repair shops took several months. Therefore it was no accident that at the end of 1943 special mobile tank repair and tank assembly repair shops were established as front armored equipment repair means. This made it unnecessary to ship tanks over great distances for repairs and ensured their rapid restoration and return to service.

Apparently, it is also necessary under the conditions of a missile/nuclear war to restore a certain part of the damaged tanks in need of complex work at the surviving stationary shops and industrial plants, especially in the people's democracies, but independent of this, one should be oriented more toward mobile repair shops which will be capable of moving behind the troops.

There are opinions that since, as a result of insufficient production during a front operation, mobile tank repair shops will not be able to compensate for tank losses, they are not needed by the front, and that these shops are better in a central subordination under the jurisdiction of the Main Armored Directorate.

In touching on these questions, it must be noted that one mobile tank repair shop in one month of round-the-clock work can repair about 120 to 250 tanks. Such work capacity might seem a bit overstated, but indeed it must be kept in mind that under wartime conditions it is not necessary in the major repair of tanks to perform much of the work which is normally performed in peacetime: the full disassembling of vehicles, the removal of old paint from the bodies and turrets before painting them, the application of an anticorrosive coating, and certain other tasks. In other words, the major repair of damaged vehicles in wartime is carried out using somewhat more simplified techniques, but without harming the combat efficiency of the tanks.

If one considers that each front may have four to five mobile tank repair shops, then it becomes clear what role they will play in compensating for losses in armored equipment: they will restore an average of 600 to 700 tanks in a month of work.

It is also necessary to provide for using the mobile shops of the surviving fixed industrial installations and equipment in the theaters of military operations and for enlisting the local populace to repair the tanks. In order to direct the work at these industrial enterprises, some of the engineer-technical personnel and qualified industrialists from the

mobile repair means might be left behind, and the mobile shops themselves would be relocated in new areas closer to the troops. This would make it possible during combat actions to expand the network of enterprises concerned with the major repair of armored equipment.

Considering all this, we believe it is essential to have mobile tank repair shops, to establish them in peacetime, maintain them at cadre strength and prepared within a very short time to be expanded and set about the major repair of armored equipment during the first operations of the initial period of war.

In so doing, one should keep in mind that if necessary mobile tank repair shops can also be used for medium repair of tanks in the initial period of war.

The requirement for mobile tank assembly repair shops designated for the major repair of tank engines and other assemblies does not give rise to any objection from anyone, since the work of all the other tank repair units and subunits will depend on the availability of these shops.

It is known that in the course of one front operation, the front may require about 700 to 800 engines just for the restoration of tanks in need of medium repairs. It is impossible to supply each front with this number of engines from the center.

The present-day mobile tank assembly repair shop is capable of restoring up to 12 to 15 tank engines daily. If there are four to five such shops in each front, then they will be able to provide engines for the restoration of 60 to 70 of the tanks, and in a ten-day period, about 600 to 700 tanks.

Under the complex conditions in which modern operations are conducted, the organization of reliable control over the technical support for the tank troops is an important problem.

During combat actions the control organs of the tank-technical service of the troops should know at all times the availability and technical condition of the armored equipment in the units and large units, and efficiently decide questions concerning its operation, repair and evacuation. In order to do this, it is necessary to know at all times where, when and what equipment has broken down, what measures have already been taken, and what must be done in addition for a more rapid restoration of the damaged vehicles.

All this requires the presence of reliable means of communications and control in the control organs of the tank-technical service. The main and most important of these will be radio communications which, in our opinion, for tank-technical support should be independent from the communications of the levels regiment through front.

In addition, in the armies and in the front it would be desirable for the assistants to the commanders for armored and motor transport equipment to be provided with such mobile means of communications as helicopters and aircraft.

The experience of exercises carried out in the past years has shown that the use of the radio net of the rear for the control of tank-technical support is practically impossible.

In order to bring about the necessary command of the technical support of the troops during combat actions, in our opinion, the assistants to the commanders of the front and armies for armored and motor transport equipment with a limited control apparatus should be located at the command posts, not at the rear control posts as is sometimes practiced during exercises.

The combat effectiveness of the troops during the very first operations of the war will depend to a great extent on the timely and correct resolution of just such problem questions concerning the technical support of the tank troops. Considering that the modern tank troops are the main striking force of the ground forces, it is necessary to devote the most serious attention to the problems of their technical support.