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CENTRAL INTELLIGENCE AGENCY

WASHINGTON, D.C. 20505

4 December 1973

MEMORANDUM FOR: The Director of Central Intelligence

SUBJECT : MILITARY THOUGHT (USSR): The Control of Military Vehicle Support

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 is concerned with the measures involved in keeping armor and other vehicles operational under combat conditions. Routine training and maintenance procedures are discussed, and the author asserts that unit commanders must be directly involved in vehicle support matters. This article appeared in issue No. 3 (91) for 1970.

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.

William E. Nelson  
Deputy Director for Operations

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## Intelligence Information Special Report

COUNTRY USSR

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DATE 4 Dec 1973

SUBJECT

MILITARY THOUGHT (USSR): Some Questions Concerning  
the Control of Technical Support

SOURCE Documentary

Summary:

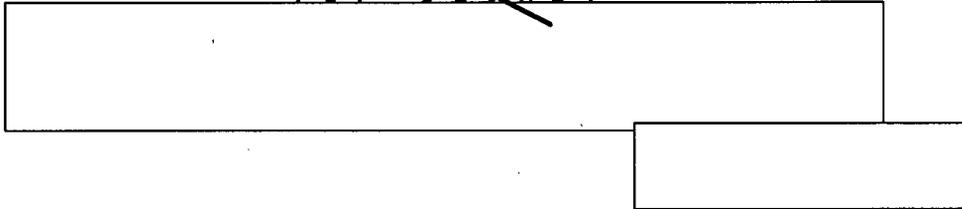
The following report is a translation from Russian of an article which appeared in Issue No. 3 (91) for 1970 of the SECRET USSR Ministry of Defense publication Collection of Articles of the Journal "Military Thought". The author of this article is General-Major of the Engineer-Technical Service S. Marasanov. This article is concerned with the measures involved in keeping armor and other vehicles operational under combat conditions. Routine training and maintenance procedures are discussed, and the author asserts that unit commanders must be directly involved in vehicle support matters. Some figures on tank endurance are cited.

End of Summary

[Redacted] Comment:

General-Major Marasanov was identified as a docent at the Frunze Military Academy from 1963 and as recently as 1968. He was a member of the Military Collegium of the USSR Supreme Court which presided over the trial of Colonel Oleg V. Penkovskiy. Military Thought has been published by the USSR Ministry of Defense. In three versions in the past -- TOP SECRET, SECRET, and RESTRICTED. There is no information as to whether or not the TOP SECRET version continues to be published. The SECRET version is published three times annually and is distributed down to the level of division commander.

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Some Questions Concerning the  
Control of Technical Support

by

General-Major of the Engineer-Technical Service  
S. Marasanov

With the increase in the mechanization and motorization of troops, their technical support in operations becomes one of the most critical conditions for achieving success. This is convincingly demonstrated by the experience of World War II. As is well known, serious shortcomings in the organization of technical support at the beginning of the war led to significant losses of combat equipment. This had an extremely negative effect on the course of combat actions. The shortcomings in the control of technical support can be judged, for example, from the following report from the deputy commander of troops of the Southwest Front to the Deputy People's Commissar of Defense: "The control of mechanized corps by combined-arms commanders was poorly set up...The staffs of the armies completely forgot that technical equipment has a prescribed operating time, that it requires inspection, minor repairs, and replenishment of fuel and munitions; and the technical personnel and chiefs of the automotive-armored departments of the armies did not remind them of this; and, instead of withdrawing mechanized corps after the fulfilment of their mission to allow the necessary time for maintenance, combined-arms commanders only demanded 'Let's go' and nothing more."\*

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\* Collection of Combat Documents of World War II, Issue 33, 1957, page 136.

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This problem has become especially crucial under presentday conditions of the widespread mechanization and full motorization of ground forces.

A motorized rifle division today has more armored and automotive-tractor equipment than a mechanized corps had in World War II, but with the appearance of the combat infantry vehicle, the dividing line between tank forces and motorized rifle forces virtually disappears (as regards the importance of technical support and its control). Because of this, technical training requirements are becoming the same for officers of tank forces and motorized rifle forces. Nevertheless, the technical training of officers of motorized rifle forces still lags considerably behind that of tank officers.

We cannot fail to mention that questions of technical support are sometimes handled superficially in the operational training of troops, especially in war games and exercises. For example, during one of the exercises, several tank large units showed high average rates of speed: 25 to 30 kilometers per hour. During the march, however, eleven percent of the vehicles had to stop for technical reasons. This is impermissible! There would have been fewer stops if the commanders and staffs had rigorously carried out technical maintenance. Unfortunately, no time was allotted for maintenance, whereas it should have been provided for in the planning of the operation, since technical maintenance must be considered an absolute, a law. In the "Dvina" exercise, questions of technical support at the operational level were actually not worked out at all. Formation commanders formulated plans essentially without the participation of the chiefs of the technical services (who were located at the rear services control posts and only occasionally went out to the command posts).

A similar situation can be observed in the training of students at certain academies. At the Academy i/n M.V. Frunze, the courses on technical support (Chair of Armored and Vehicle-Tractor Equipment) deal in detail with questions of estimating the situation from the viewpoint of technical support, and they include the working out of commander's (formation commander's) orders for organizing technical support in battle (operations). But these questions are not studied within the context of overall problems. At best, estimates of total forces will indicate what percentage of

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the full strength is represented by equipment. Anything concerning the orders of a commander (formation commander) in regard to organizing technical support is for some reason completely forgotten. In the General Staff Academy, problems of technical support are included only in considering the plans for rear area support. This is of course inadequate to allow for any knowledgeable participation in the organization of technical support within the concept and plan of an operation.

Many years of operational and combat troop training confirm that technical support and its control have become one of the main problems which formation commanders (commanders) have to resolve. The present article attempts to examine several aspects of controlling technical support which fall within the responsibility of formation commanders (commanders) and their staffs, particularly the role of these various aspects in the estimate of the situation, the instructions that may follow for organizing technical support, etc.

There can scarcely be much issue taken with the opinion that a combined-arms commanding officer must resolve these problems to a greater or lesser extent: this is his responsibility, as specified in a number of official documents. But there may be, and are, various points of view concerning what these problems actually include. For example, the opinion is sometimes expressed that in estimating the situation, a formation commander only needs to know about technical support needs in "general terms". And the same applies to orders regarding technical support: the chiefs of services, it is claimed, should themselves know what to do, since they are appropriately trained and are supposed to be informed on all developments.

In principle, there is some logic in this: we grant that there may be situations in which a formation commander is hampered along this line by very laconic orders and may simply approve the suggestions of the chiefs of the services, estimating the situation without looking at it from all sides. There is not the slightest doubt, however, that the problem of organizing technical support must be studied thoroughly in our operational (combat) training, command-staff exercises, and war games.

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In our opinion, it is advisable to examine the following basic factors of technical support when estimating a situation:

- full strength in armored and vehicle-tractor equipment, their technical condition (the need for repair and the performance of maintenance); the anticipated operating range for vehicles in the impending operation (battle);

- full strength, status, and capabilities of repair and recovery means;

- procedures for the restoration and replacement of vehicles, prior to the beginning of combat actions (or of the march);

- number of vehicles expected to be put out of action and the probable periods of greatest losses;

- availability of automotive-armored materiel;

- conditions for protecting, preserving, and defending repair and recovery units and subunits.

Let us attempt to discover the essence of these factors from the angle of exactly what is important for a formation commander (commander) to know. He must of course know the amount and status of armored (vehicle-tractor) equipment; and not only the level of strength of large units (units) but also the capability of reliable operation of the vehicles in the whole depth of the operation (task). He needs such information as the number of vehicles in active service and their actual march reserve, including tracked vehicles; the number of vehicles requiring repair and recovery (and which repairs can be done at a subordinate level, taking into account available reinforcements); and the amount of equipment in the possession of reserve subunits and the amount of equipment which has been restored at a higher level. Such information is also required by the staff for calculating the relative strength of forces and for planning the operation. (Incidentally, since calculations are often based on major assumptions, the resulting totals often fail to reflect the actual situation and the amount of equipment available.)

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The formation commander (commander) and staff are interested in how the most important types of equipment may alter the process of determining full troop strength (taking into account the missions and perhaps also the duration of the operation). The chiefs of services usually determine the full strength in armored and vehicle-tractor equipment. However, neither they nor the deputy commanders of large units (units) can be so well acquainted with the operational situation as the formation commander (commander) or the staff. Officers of the operations department are able to make a more accurate estimate of the probable number of vehicles that will be put out of action, to determine the areas in which the greatest losses will probably occur, and the locations for the deployment of damaged vehicle collection points, etc.

Knowing the capabilities of repair and recovery means, we can project the changes in the quantity and condition of equipment. Let us demonstrate this with an example.

Based on the experience of the last war and on postwar research, the number of tanks that will be out of action is usually estimated as follows, according to the type of damage: routine maintenance, 40 percent (if nuclear weapons are used, up to 60 to 70 percent, and more); medium maintenance, 25 percent; major overhaul, 10 percent; irretrievable losses (to be written off), 25 percent. Since there is no time to carry out major overhaul during an operation, vehicles which require it can be regarded as "losses". Tanks requiring routine maintenance are usually restored in one day; medium repair takes two to three days (when there are front repair units attached to the army). Under these conditions, about 50 percent of the tanks of an army will be lost by the end of the operation.

If an army is not provided with adequate repair means (and this may obviously be the case at the outbreak of war), damaged vehicles will accumulate during operations, especially if nuclear weapons are being used. From this it follows, by the way, that combined-arms and tank armies need organic repair means strong enough to assure the restoration of at least part of their equipment during an operation.

In regard to automotive-armor materiel, the formation commander uses the following key indicators to determine the support needs of troops and repair means: engines,

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transmission systems, armament, communications means, and tracks. Emphasis on the latter is fully justified: the main motor pool for combat vehicles provides tracks with open articulation whose service life under summer conditions usually does not exceed 2000 to 2500 kilometers, although T-55 tanks have a mileage interval of 7000 kilometers before medium maintenance is needed. This means that three sets of tracks are needed to ensure the operation of a tank between repairs. Moreover, wholesale replacement of tracks may become necessary during combat, since tanks may have to cover as much as 2000 to 2500 kilometers during a front offensive operation which is 800 to 900 kilometers deep, assuming a maneuver factor of 2 to 2.5. This makes it necessary for units to stockpile a reserve of tracks in the theater of military operations (the replacement of tracks takes up to five to six hours of work by the whole crew).

In planning the initial operation at the beginning of a war, the question will arise as to the possibilities for using training-combat vehicles, which comprise about twenty percent of the total number of tanks. The difficulty lies in the fact that these vehicles differ in their march reserves.

Obviously, part of them can be put into service successfully if time and conditions allow, which will strengthen the combat capabilities of large units. If this is done, it will be necessary to have replacement tracks for those vehicles whose transmission systems assure an adequate march reserve but whose tracks are inadequate (less than 400 to 500 kilometers) in this regard. (This is vitally necessary in border districts.) A certain number of tanks with a small march reserve will have to be left at their permanent locations or at their alert areas and their repair and recovery means turned over to a higher authority.

Such purely technical questions can hardly be resolved by the chiefs of the appropriate services without the approval of the combined-arms commander. In other words, a formation commander (commander) does not simply approve this or that proposal of his subordinates but must get to the heart of the matter himself. This is singularly demonstrated by the extensive experience of controlling technical support during World War II.

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It is well known that the basis of troop control is the plan of the formation commander (commander). Today the substance and methodology of formulating a plan, as well as the forms and methods in which it is reflected, have undergone a change. In particular, the chiefs of technical services may receive their respective preliminary instructions from the formation commander or chief of staff, and their orders either during or after the formulation of the plan. The main point here is that orders and instructions be given in time and that they also include replies to those few questions which the chiefs of services cannot decide without the approval of the formation commander. This is all the more necessary since the procedure for giving orders is not rigidly stipulated in any of the pertinent documents. The formation commander (commander) determines the volume and content of orders in each individual instance, at his own discretion. We offer the following list of points on which orders may have to be given regarding technical support.

1. Procedure and time limits for preparing personnel, armored and vehicle-tractor equipment, and repair and recovery means; for transferring unfinished repair backlogs to higher elements; and for replacing automotive-armored equipment in preparing for combat actions (or a march).
2. Procedure, areas, and time limits for carrying out technical maintenance of vehicles during combat actions (or a march).
3. Position of repair and recovery means for bringing up the rear while on the march.
4. Proposed locations of disabled vehicle collection points, and evacuation routes for tracked vehicles.
5. Means for eliminating the aftereffects of a nuclear strike, providing for negotiating difficult sectors, water obstacles, etc.
6. Organization of protection, preservation, and defense of repair and recovery units (subunits).

These requirements may arise in many different ways, and some of them will not arise at all. Nevertheless, it is certainly worth our while to discuss them at least briefly.



In regard to the first point, for example, the volume and time limits of the required activities can be determined on the basis of impending combat actions, the nature of the local terrain, the time of year, etc.: e. g., what to do to perfect the driving skill of tank personnel under the given circumstances (methods of driving under water), how to conduct radioactive decontamination of subunits, etc. A formation commander (commander) may, for example, order that some of the tanks be equipped with means for night and underwater driving, self-recovery, and decontamination; may set a time for the completion of technical maintenance and repair work; may decide which vehicles to transfer to higher elements; may issue instructions regarding their repair means; etc.

Situations may arise in which a commander, and even the formation commander, in preparing an operation, will not only determine the fundamental questions of replenishing supplies of automotive-armored materiel but will also personally take an active part in this process, entering in contact with the local authorities and industrial enterprises. This side of the matter is reflected in the orders from the formation commander to the appropriate services.

Experience shows that equipment will work reliably between repairs only if there is timely and high-quality maintenance. (Maintenance is carried out in accord with a system of preventive maintenance and is performed after a prescribed period regardless of the condition of the equipment.) Unfortunately, the existing volume and frequency of maintenance do not fully meet the requirements of combat actions, even with regard to mass-produced vehicles. As a result (particularly in a front offensive operation in which 2000 to 2500 kilometers may be covered, allowing for the maneuver factor), it will be necessary to carry out labor-consuming maintenance No. 1 and No. 2, which take ten to twelve hours, not counting the time for the repair of any defects which may be discovered or for the replacement of tracks. But there may not be this much time available, as a result of which labor-consuming ("numbered") maintenance will sometimes be done piecemeal--in several stages. In this case, the duration of daily maintenance will increase considerably since it will also be necessary to do part of the regular (T0-1 or T0-2) maintenance.

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It follows from the foregoing that the formation commander will give orders on these activities as well, in case of necessity.

The position of repair and recovery means in the line of advance will usually be determined by the staff, with the participation of the chiefs of the rear, of the arms of troops, and of the services. In some cases, the orders for this will include only the most necessary actions: how to reinforce this or that column (route) with repair and recovery means, how to allot means for bringing up the rear, how to send a special recovery group to support an advance through valleys, defiles, etc.

In accord with the Manual on Tank-Technical Support, the location of damaged vehicle collection points will be determined by the deputy commander for technical matters in coordination with the staff and the chief of the rear. In a number of cases, however, these questions may also be decided by the commander on the basis of projected equipment losses in a given area and on the needs of other services and arms of troops.

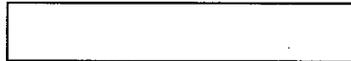
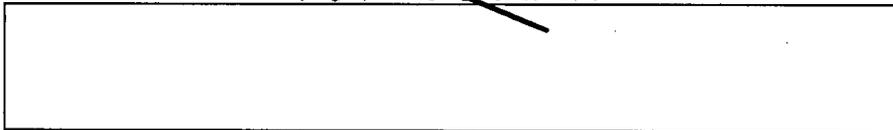
Since inoperable tracked equipment cannot be withdrawn via the same routes along which materiel is being brought up, the commander and staff will determine routes for its removal or will approve those proposed by the chief of the armored service (or the deputy commander for technical matters), taking the foregoing into account.

Eliminating the aftereffects of a nuclear attack (as it pertains to technical support) has acquired particular importance. Unfortunately, this question has still not been thoroughly resolved: training exercises (games) usually use for this purpose non-organic detachments with armored recovery vehicles and other means which belong to the technical services. And there have been suggestions that special units and subunits be created. However, it is more likely that the final decision in this matter will probably remain the prerogative of the formation commander (commander) the more so since there is never an excess of recovery means. And there are not likely to be any situations in which the means for overcoming difficult-access sectors and water obstacles will be allotted without the approval of the commander. In preparing for the fording of water obstacles by tanks, close

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coordination is required among the staff, the technical unit, and the chief of engineer troops. Indeed, it is difficult to think of another instance in which a formation commander (commander) would have such frequent contact with the chief of the armored service (the deputy commander for technical matters), consult with him, and give orders and instructions.

The procedure for preserving, defending, and protecting repair and recovery units and subunits is set up within the overall system for preservation, defense, and protection of the rear. Bearing in mind that these units and subunits act separately, or in groups, their protection always involves great difficulties. The capabilities of the units and subunits farthest to the rear are very limited in this regard. Therefore, this question will sometimes have to be decided by the formation commander.

During combat actions (on the march) it will be necessary to determine the location of the chief of the armored service (the deputy commander for technical matters) and the technical unit and the place for allotting means to set up a communications network for technical support, etc.

The Manual on Tank-Technical Support states that the deputy commander for technical matters of a large unit (unit) moves with the staff on the march, while the technical unit will move with the rear control post; during combat the deputy commander will be located at the command post or at the rear control post, while the technical unit will be at the rear control post. These positions are not always adhered to, however, either in theory or in practice. Thus, the textbook General Tactics\* states that the deputy commander for technical matters should be located not at the command post but at the rear control post. Put in that case, the commander and the deputy commander for technical matters will be separated and in many instances will be unable to take rapid measures for technical support. In our opinion, it is advisable to place the chief of the armored

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\*General Tactics 36, Military Publishing House, 1967, pp 47-49.



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service with one or two department officers (as with the deputy commander for technical matters) at the command post and to issue him communications means.

We would like to say a special word about communications for technical support. Let us recall, to begin with, that for some time now this has been discussed at length in the press and at various meetings and conferences. Some action has been taken in the form of several scientific research projects, but the situation has remained almost unchanged. Even our warning communications now in use are unable to transmit a message to small subunits within acceptable time limits.

The necessary clarity is also lacking in a number of other fundamentally important questions regarding the control of technical support. And one of the reasons for this is, in our opinion, the absence of a single manual or set of regulations which would provide a single interpretation of the basic questions of both tank-technical and vehicle-tractor support. At present we must follow the Manual of Tank-Technical Support and the Manual of the Vehicle-Tractor Service. But these manuals are not even uniform in their terminology, and sometimes the same concepts and propositions which were formerly applied to all types of equipment are differentiated (for example, the classification of damage to vehicles, their division into categories, etc.). Such lack of agreement may continue to exist in the future as well, since problems of tank-technical and vehicle-tractor support are being worked out in different scientific organizations. However, the needed plan for the technical support of combat is drawn up in the field, and it is the responsibility of the deputy commander for technical matters.

After the war, differentiation took place between the armored and the vehicle-tractor services. Taking into account the changed organizational structure at the operations level (abolishment of the position of the commander of armored and mechanized troops and, subsequently, also that of the second in command to the commander of the army and the front for technical matters regarding armored and vehicle-tractor equipment), the functions of the formation commander in deciding questions of technical support have expanded considerably, and, as actual practice shows, it has become more difficult for him

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to supervise technical support. We believe that the formation commander must have a deputy (second in command) for these matters.

And thus we see that the control of technical support must be organized within the overall system of controlling troops and the rear and that it represents an important element in the activity of the formation commander (commander) and his staff. In noting the difficulty of controlling technical support, we shall emphasize that success here is possible only if the formation commander (commander), the staff, and the chiefs of the technical services (deputy commanders for technical matters) carry out their duties efficiently.

In our view, the questions we have set forth must be appropriately interpreted and reflected in the training plans of academies which train combined-arms officers, including the General Staff Academy. Realistically speaking, problems concerning technical support must be worked out fully during operational (combat) training through exercises and games. We also believe that the regulations and instructions which are being developed must clearly and precisely delineate the functions of the formation commander (commander) regarding technical support.

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