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CENTRAL INTELLIGENCE AGENCY

WASHINGTON, D.C. 20505

8 February 1978

MEMORANDUM FOR: The Director of Central Intelligence

FROM : John N. McMahon
Deputy Director for Operations

SUBJECT : MILITARY THOUGHT (USSR): The Use of
New Technical Means in Troop Control

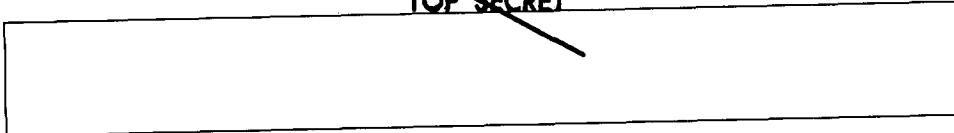
1. The enclosed Intelligence Information Special Report is part of a series now in preparation based on the SECRET USSR Ministry of Defense publication Collection of Articles of the Journal "Military Thought". The authors of this article favor the introduction of new technical means in troop control and more comprehensive exploitation of technical means that already exist in the troops. Some of the equipment discussed in this article is: secure communications devices for telegraph and telephone traffic, recording equipment, cipher and code machines, facsimile equipment, signal coding devices, and computers. The elements of the control process itself are discussed in some detail, and areas in need of improvement are indicated. This article appeared in Issue No. 6 (67) for 1962.

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

John N. McMahon

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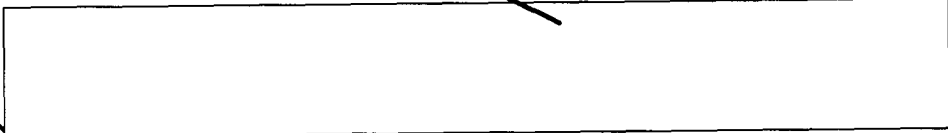
Director of the National Foreign Assessment Center

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Intelligence Information Special Report

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COUNTRY USSR



DATE OF INFO. Late 1962

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SUBJECT

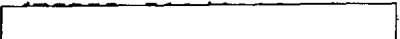
MILITARY THOUGHT (USSR): The Use of New Technical Means in Troop Control

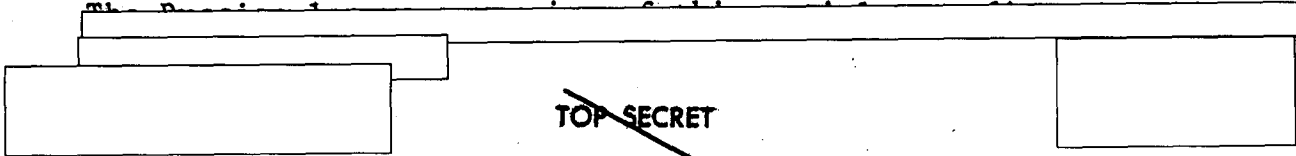
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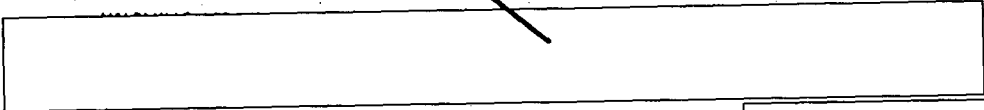
Summary:

The following report is a translation from Russian of an article which appeared in Issue No. 6 (67) for 1962 of the SECRET USSR Ministry of Defense publication Collection of Articles of the Journal "Military Thought". The authors of this article are Colonels I. Bogorodskiy and B. Khabarov. The authors of this article favor the introduction of new technical means in troop control and more comprehensive exploitation of technical means that already exist in the troops. Some of the equipment discussed in this article is: secure communications devices for telegraph and telephone traffic, recording equipment, cipher and code machines, facsimile equipment, signal coding devices, and computers. The elements of the control process itself are discussed in some detail, and areas in need of improvement are indicated. End of Summary

Headquarters Comment:

Colonel B. KHABAROV was also a co-author of "Speeding Up the Automation of Control Processes in Ground Forces Formations" in Issue No. 3 (85) for 1968  After 1962 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.





The Use of New Technical Means in Troop Control

by

Colonel I. BOGORODSKIY

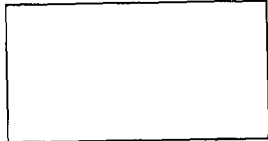
Colonel B. KHABAROV

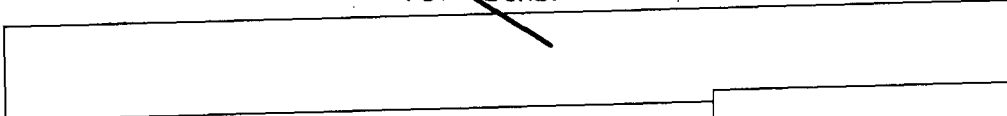
The attainments of socialist industry and the outstanding achievements of Soviet science have enabled us to rearm our troops with qualitatively new combat equipment and to effect a sharp increase in their combat capabilities. In this connection it has become necessary and practicable to make fundamental changes in the equipping of control organs and, on this basis, in the operating methods of commanders and staffs.

In 1961 and 1962 several large-scale experimental exercises were carried out at which the possibilities of using automated and mechanized means for troop control were studied, the functioning of available models was tested under field conditions, and new methods for commanders and staffs were researched. A great deal of work was also done in military districts and groups of forces to study and work out control methods. All of this makes it possible to draw some general conclusions.

Troop control, as is known, includes everything done by the commander, the staff, and the chiefs of the branch arms and services for organization, comprehensive support, and supervision of the troops while military actions are being conducted, in order to direct their efforts toward the most effective accomplishment of the combat tasks.

Under the new conditions, commanders and staffs have an extremely restricted time in which to plan for the use of nuclear weapons and other combat means, effect efficient control of rocket troops and aircraft delivering the nuclear strikes, exploit the effects of the strikes promptly with combined-arms large units and units, organize action against enemy nuclear means, assess the radiation situation, and provide for the negotiation by the troops of vast zones with high radiation levels.





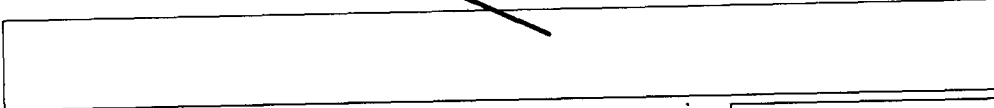
We believe that control consists mainly of uninterrupted firm supervision of the troops when they are in transit and in combat actions, or, in other words, it is the art of troop leadership. Success in carrying out these tasks must be sought, as experience shows, in mechanizing and automating the functions involved in troop control and, on this basis, in sharply increasing the operating efficiency of commanders, staffs, and chiefs of branch arms and services, in increasing staff efficiency in general, and in working out new, more progressive operating methods.

The results of many studies have shown that it is already possible today to make much more extensive use, in the troops, of various mechanized and automated means for controlling troops: secure communications devices for telegraph and telephone traffic, recording equipment, cipher and code machines, facsimile equipment, signal coding devices, equipment for high-speed and loudspeaker communications, keyboard calculators, and several technical means facilitating the accomplishment of tasks involved in using nuclear weapons and forecasting the radiation situation. Universal electronic computers are being used to an ever greater extent in carrying out operational-tactical and other tasks connected with troop control.

Secure communications devices for telegraph, radio-relay, and telephone communications channels significantly accelerate the passage of information. But it must be kept in mind that secure communications devices require careful technical servicing as well as the organizing of countermeasures against enemy radio jamming. In the training exercises there were extended interruptions in communications when shortwave radio sets were in use, caused by damage to the secure communications devices and as the result of enemy radio jamming.

Since secure communications devices for direct traffic over radio channels have not as yet been put into sufficiently extensive use, greater use must be made of existing equipment. Cipher machines make it possible to encipher and decipher operational documents five to ten times faster, especially when STA or ATA-57 telegraph machines are installed side by side with the cipher machines. Coding machines hold great promise. They are simple in construction and small in size and can be serviced by operations officers. Military models of facsimile equipment





with secure communications devices have checked out well. Thus, for example, at an exercise in the Kiev Military District in June 1962, the army commander's order on reconnaissance was worked out and transmitted in written form in 95 minutes; but in the form of a diagram with legend, it was transmitted in 20 minutes by facsimile equipment with secure communications devices. This equipment will obviously find wide application in the immediate future for transmitting graphic and other operational documents.

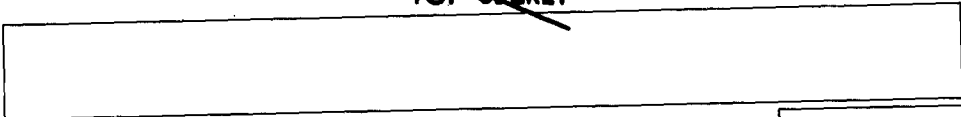
Signal coding devices were used at the exercises for transmitting commands and signals in the aviation and in the rocket troops. The devices provided a seven- to tenfold reduction in the time needed to transmit commands. For example, at an exercise in the Moscow Military District in May 1961, it took 15 to 20 minutes to transmit coded commands to rocket troops by radio using traffic tables but only two minutes using signal code equipment.

At exercises in the Kiev Military District in 1962, some experience was obtained in using signal code equipment for transmitting commands to combined-arms large units. For example, the signal to the large units to begin moving up was transmitted from the army staff in 45 seconds. The best use for signal coding devices in combined-arms staffs is to transmit short commands and signals. If they are used to transmit lengthy documents no time is saved, and in addition it is made easier for enemy intelligence to intercept information being transmitted over them.

Loudspeaker (selective circuit) communications have already today assumed an established place in the system of communications at command posts. They substantially facilitate the commander's job and enable him, when adopting a decision, to obtain the necessary data without calling in the officers in charge and to save time when transmitting orders and instructions. At the same time, loudspeaker communications increase the possibility of violating security requirements in troop control, since the instructions that are broadcast can be heard by everyone in the vicinity of the loudspeakers.

Sound recording equipment (tape recorders and dictaphones) is being used to an ever greater extent during exercises. It has been used for recording decisions and oral instructions of the





commander, the chief of staff, and the chief of the rocket troops and artillery. In numerous instances a tape on which a combat order had been recorded was sent to large units as a combat document. Sound recording equipment can be used to record telephone traffic and also information transmitted orally by staff officers.

Keyboard calculators checked out well in the rear staff, with the chief of missile and artillery armament, and in the POL supply department. Calculations for materiel support of an operation were made five to seven times faster on keyboard calculators than by hand and provided a high degree of accuracy.

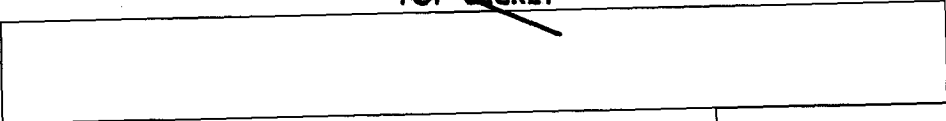
At an exercise in the Kiev Military District in June 1962, keyboard calculators were used in combined-arms staffs as well. The following data indicate what a saving in time these machines provided: a report on the status of front troops was prepared by hand in 10 to 15 hours but on a keyboard calculator in five hours; a calculation of the depth of army troop columns on the march -- in 1.5 to two hours by hand, on a keyboard calculator in 40 minutes.

Of the available means for facilitating the solving of matters connected with using nuclear weapons and forecasting the radiation situation, the RST-2 data display equipment, the LOGARIFM dosimetric units, and the electronic calculator (EV-1) were used during the exercises.

The LOGARIFM dosimetric unit made it possible to obtain data on radiation levels over an area of several hundred square kilometers in four to five minutes. The radiation situation is estimated three to four times faster using the electronic calculator than with existing methods. However, the accuracy of the calculations still requires further testing.

By using electronic computers it is possible to substantially reduce time and increase accuracy when performing the most complicated calculations in staff directorates and departments. But since there are still no specialized military models of these machines at the present time, general-purpose electronic computers are used during the conduct of command-staff operational exercises and war games. These machines have a number of features which place certain restrictions on the nature





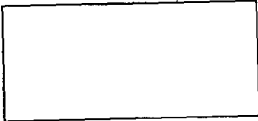
of the tasks they can be used to handle. First of all, they are virtually untransportable and have a limited memory capacity, which allows them to solve only calculation problems. In addition, they are not equipped for automatic data input or displaying of results. At present computer results are issued in a form to which operations workers are not accustomed, namely in the form of tapes (or perforated tapes) with columns of numbers, which require additional deciphering before they can be reported to the appropriate person in the field headquarters.

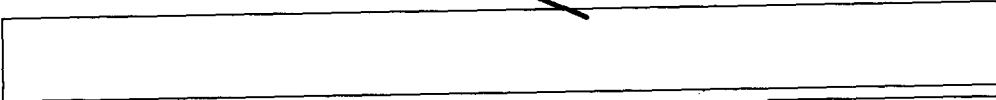
At exercises conducted in the Moscow and Kiev Military Districts and in military academies, electronic computers were used to handle tasks involved in using nuclear weapons and other means of mass destruction, determining the effectiveness of these means, regrouping troops and providing them with materiel and technical support, determining the balance of forces and means of the two sides, and planning the fire and relocation of missile, antiaircraft, and field artillery.

Tasks to be handled by the modeling method may be set apart as a special group. Among them should be included evaluation of the effectiveness of a grouping of surface-to-air missile systems of a single type.

At the present time all of the conditions exist for organizing the use of electronic computers to handle operational tasks at exercises in almost all military districts. But this requires stable and reliable communications, lack of which will lead to delaying calculations obtained from the electronic computer. It has already been remarked in the military press that it would be expedient to produce computers capable of being relocated together with staffs. Experience of the recent exercises confirms this. But in our opinion, we should not wait for small computers to be developed and produced but should immediately mount smaller computers on motor vehicles and bulkier computers on railroad cars.

The special mobile computer center formed in this way could be relocated together with a control post. Analysis of the railroad network shows that the maximum distance of the nearest railroad branch or station, with its branching network of tracks, from any possible control post location area will not exceed 50 to 80 kilometers; and over such a distance, communications can be





provided with an almost complete guarantee of stability and reliability.

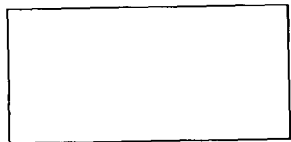
With certain revisions, the automated and mechanized means enumerated above will unquestionably provide a further increase in the operating efficiency of commanders and staffs and stable control of large units and units during highly mobile combat actions.

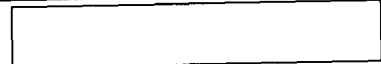
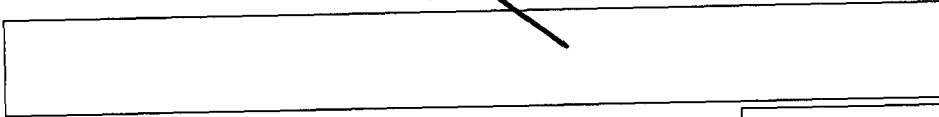
In addition, effective use of these means depends to a great extent on the quality of communications channels, the stability of the electric power supply, and technical servicing, and it is closely tied to improving operating efficiency and staff skill. Much depends on the ability to work with these means, to arrange their work load uniformly and purposefully, and, most important -- to ensure conciseness, accuracy, and clarity in working out combat documents and in voice traffic over communications means.

* * *

It is completely obvious that equipping control organs with automated and mechanized means must be combined with the development and application of new methods of troop control.

As is known, all troop control activity of generals and officers is based on efficient, creative organizational work directed toward the supervision of troop combat activity. This is attained through constant awareness of the situation, prompt adoption of decisions, their formulation and transmittal to the executors within extremely short time periods, the organizing of cooperation and comprehensive support, the provision of continuous assistance to subordinate commanders and staffs, and the monitoring of their activity. During modern operations, commanders and staffs do not have time to carry out all sorts of lengthy conferences or to listen to reports from subordinates, to work out lengthy orders or other combat documents. The situation demands rapid carrying out of the tasks which arise, by means of direct talks of the commander and other officials with their subordinates, primarily over technical communications means with recording of the talks on recorders.





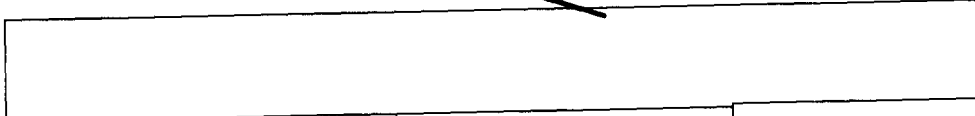
At the same time, experience from exercises shows that there is still insufficient emphasis on mobile methods of creative well-organized work in the troops. As in the past, generals and staff officers are spending the greater part of their time on working out decisions, setting up tasks for the troops, and working out illustrative maps, lengthy information requests, reports, and other documents.

The methods for working out a decision may vary depending on the conditions of the situation. The best of them are those which provide for the working out of the decision and the carrying out by the commander and higher staff of other measures for preparing operations within minimum time limits and which make it possible to let the troops have the larger share of time for the implementation of practical measures in the organizing and comprehensive support of combat actions.

At an exercise in the Kiev Military District in June 1962, the commander of the 16th Tank Army spent three hours listening to background information and reports from the chief of staff and the chiefs of the branch arms and services. Some commanders adopted their decisions in the presence of the chief of staff, the chiefs of the operations and intelligence directorates (departments), and the chiefs of the branch arms and services, keeping them away from their work and the supervision of their subordinate officers for an extended time. In a formal sense, reports and background information were not heard, but the working method remained in essence as before. With the work organized in this way, troop commanders spend from five to 10 hours adopting their decision.

In several districts, another method of adopting a decision has become firmly established, the essence of which is as follows. The commander of a front (army), having received a task, studies it together with the chief of staff and the chief and two or three officers of the operations directorate (department), after which he issues preliminary instructions to the troops. At this time the chief of staff via selective circuit communications acquaints the chiefs of the branch arms and services with the received task. The commander then evaluates the situation and, after a brief exchange of opinions with the chief of staff, adopts a decision based on a map; the decision is immediately plotted on two or three maps by officers of the operations





directorates (departments). While the decision is being worked out by the commander, axis officers prepare combat orders for the large units, in written form, on maps, or on standard forms.

At the same time, the deputies of the front (army) commander and the chiefs of the branch arms and services study the task, evaluate the situation, prepare data needed for the commander to adopt a decision, and plan for the use of the branch arms and services subordinate to them.

While the decision is being worked out, the commander is not briefed on background information by the chiefs of the branch arms and services except in case of necessity, in which case it is done using selective circuit communications. Sometimes the chief of staff receives this background information, summarizes it, and reports it to the commander.

With such a method, the maximum number of generals and staff officers are immediately brought into the work of planning and preparing an operation. The chiefs of directorates, departments, and branch arms and services are directly in charge of the work of their subordinate officers and organize it more purposefully. The time needed to work out a decision is substantially decreased. At an exercise conducted in the Ural and Siberian Military Districts in 1961, the commander of the 6th Army, working by such a method, adopted a decision in one to 1.5 hours.

We would particularly like to focus attention on the working out of preliminary instructions. Experience from exercises shows that they significantly facilitate the work of the commander and staffs of subordinate large units in preparing for combat. On the basis of a well thought out preliminary instruction an experienced division commander can not only carry out many preparatory measures but can also resolve a number of questions for planning combat actions. It is therefore necessary each time to attempt to issue such orders to the troops as soon as possible.

Under modern conditions, when the situation changes rapidly and frequently, we believe that it is necessary to combine centralized control with the granting of wide initiative to subordinate commanders within the framework of the formation commander's overall concept. Excessive centralization of control



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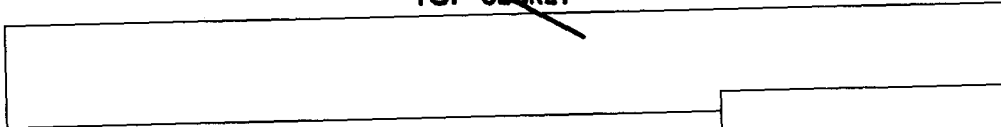
on the part of the front (army) commander usually leads only to wasting time and to failing to exploit favorable conditions which have developed in one or another sector of the front for successful development of an operation. Commanders of large units must act boldly and decisively without waiting for special instructions.

The principle of mandatory approval of the decision which formation commanders (commanders of large units) make no longer conforms to the nature of combat actions, in our opinion. Such a procedure leads only to a loss of time. The formation commander (commander), without waiting until his decision is approved, is bound to immediately organize preparation for combat actions and to direct his troops in line with the decision he has adopted.

The operating efficiency of control organs is determined also by their ability to transmit the decision to the troops within a short time and immediately after it has been adopted. In 1960 and 1961, three to ten hours were spent on this in the front and army. Nor did the situation improve in 1962. For example, at an exercise in the Kiev Military District, the front staff spent as much as four hours transmitting directives on commitment to an engagement. Combat instructions on night actions were not transmitted for six to eight hours after they had been signed. About the same amount of time was spent in the armies as well in transmitting the tasks to the troops. Such sluggishness is caused by the lengthiness of the combat instructions themselves, poor organization, lack of sequence and priority in the transmittal of instructions (because of which urgent documents are buried in the flood of traffic), lack of accountability for the transmittal of important instructions, and inept use of communications means.

Thus, for example, a combat order for the commitment of the 3rd Army to an engagement (exercise of the Ural and Siberian Military Districts in 1961) was worked out on ten typewritten pages. Within the same army, the majority of the commanders's orders on the first day of the operation were not formally drawn up by anyone and were not recorded. Many documents did not even carry the time of signing. Combat instructions were often transmitted by only one means of communication.

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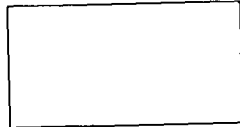
Obviously there should also be a change in the way combat tasks are assigned. During the Great Patriotic War, large units were usually told their tasks and the methods for carrying them out. This principle is also maintained at the present time, although under modern conditions, the assignment of tasks in this manner paralyzes the initiative of large unit and unit commanders. Today it is best to inform large units only of their task and the commander's concept for the operation, in order that the large unit commanders themselves can determine the methods of carrying out the tasks in conformity with the commander's concept.

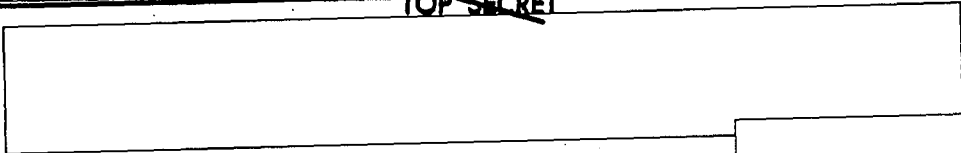
The assignment of combat tasks during highly mobile combat actions can most often be handled with short combat orders or signals, making wide use of signal coding equipment and standard documents and also by means of personal talks by the commander and other generals and officers. Experience from exercises indicates the need for wide introduction of previously worked out signals into the practice of troop control. Signals can be used to transmit not only commands for aviation, air defense troops, and rocket troops, but also for combined-arms large units and units. Thus, using signals, commands were transmitted at several exercises to begin to move up or attack and to bypass sectors with high radiation levels; and the crossing of starting lines and control lines and other information were reported. Such signals were worked out beforehand.

Much time is still being spent on the collection and collation of situation data. According to experience from exercises, an average of three to six hours or more were spent on information collection for a front, from 2.5 to five hours for an army. Such an amount of time for information collection under modern conditions can lead to loss of troop control.

The basic reason for such long time periods for collecting and collating situation data lies in the lack of an efficiently worked out system for submitting reports, the lack of strict responsibility for submitting information, and the lack of accountability for and the lengthiness of reports.

An important role in the timely collection of situation data and the transmittal of tasks to the troops is played by axis officers. Wherever these positions are occupied by highly





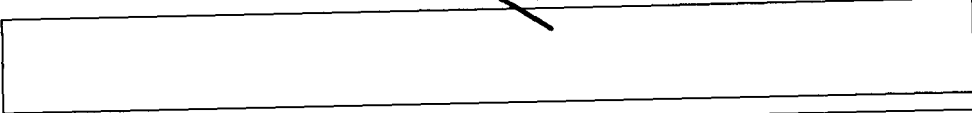
trained, experienced, and capable officers, only the necessary data are given in combat reports and orders, and they are received on time.

In some staffs, when exercises are being carried out, a strict system for oral and written information is set up, both for information from subordinates and for information within the directorates. The chiefs of the operations directorates (departments) keep a close watch to make sure that this system is followed exactly, which also promotes good working organization. In addition, information should be capably processed, transmitting first of all those data which the commander needs in order to adopt a decision. Maximum conciseness of reports is one of the basic guarantees that they will be transmitted in time. The most important of them, particularly those regarding nuclear means, the crossing of the established lines by the troops, and the accomplishment of combat tasks, must be transmitted over high-speed communications means and by signals.

A very complicated and crucial measure is the timely obtaining of data on the radiation situation. Unfortunately they are still being collected very slowly. For example, the staff of the 16th Army (exercise in Kiev Military District) spent 10 hours on the collection of these data following an enemy massed nuclear strike. This task must obviously be carried out through the joint efforts of the entire field headquarters of the front (army), with wide use of available mechanized and automated means. It is better to collect the basic data on the radiation situation in the operations directorate (department), where there must be forecasting officers for this purpose.

The nature of operations and combat actions today, and also the introduction of automated and mechanized troop control means, make new demands on combat documents. First and foremost, there must be a sharp reduction in the length and quantity of documents worked out, which has already been noted in our press. The basic troop control document is the working map. On it is plotted the true position of the troops as of a certain time. Unfortunately the problems of maintaining a working map are still not being adequately worked out in our military. Some generals and officers show the position of our own and the enemy's troops on the map in the form of a solid front, lines, and circles, which does not correspond to the true situation. The representation of





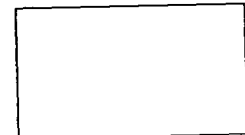
the radiation situation sometimes overshadows the overall situation. And it is from this map that the commander and the other generals and officers must assign combat tasks, report decisions and provide information on the situation, including information on technical communications means as well. At exercises in the Kiev Military District, Marshal of the Soviet Union Comrade M. V. ZAKHAROV, noting the shortcomings in the maintenance of working maps, required of all generals and officers that they personally learn to post their own map, representing on it the actual status of the troops. He also stated the intolerability of the practice, in many staffs when preparing exercises, of spending a great deal of time working out demonstration maps and display maps, although they are certainly not needed for troop control.

An average of about eight hours is spent in armies on working out a regrouping plan, and 10 hours on a plan for an offensive operation. These documents could be worked out two to three times faster if this work were done not by draftsmen under the supervision of a few operations officers but by the operations officers themselves.

Other combat documents worked out during exercises are very lengthy and sometimes duplicate one another or are not needed at all. It takes two to four hours to work out a combat order in armies, sometimes even longer. At an exercise in the Kiev Military District, regrouping plans and road support plans were worked out in the armies both expressing the same data. And why, for example, give the commander of the front the instructions on supporting night combat actions? Can't these questions be handled by the commanders of large units themselves?

Experience from recent exercises shows that combat documentation can be shortened and simplified to the maximum extent primarily by cutting the list of combat documents as much as possible, excluding everything unnecessary from them, and using standard combat documents.

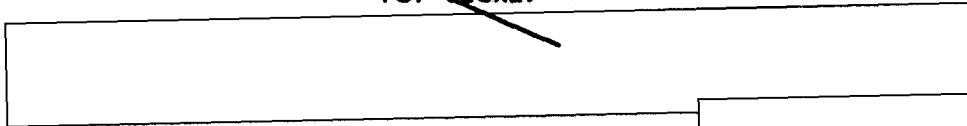
According to experience from the exercises, the following combat documents must be worked out in front and army field headquarters:



- plan for the operation;
- plan for regrouping and for road support;
- combat order or combat instructions;
- operational and intelligence reports;
- plans for combat employment of branch arms and services (including a plan for protection against weapons of mass destruction);
- working and reporting maps; map of the radiation and chemical situation;
- log of combat actions.

Matters of cooperation are most often expressed on the graphic plan for the operation and, when necessary, on the commander's working map. In combat orders and instructions, it is obviously necessary to state only the combat tasks, without superfluous details. To speed up the formulation of the combat order, it is expedient to prepare combat order forms in advance which can be filled out and processed in line with the specific decisions. For the transmittal of combat instructions by means of secure communications devices, extensive use can be made of standard (formalized) documents.

An important trend in increasing the operating efficiency of commanders and staffs is simplification of the troop control system, i.e. the creation of control posts which have fewer personnel and are highly mobile. Based on the experience of a series of exercises, it may be assumed that if three control posts are set up in the army and the front, namely the command post, the forward command post, and the rear control post, control is completely ensured. However, in their personnel strength, control posts are still very unwieldy. For example, at an exercise in the Kiev Military District, there were 2,186 people (counting servicing subunits) and 293 motor vehicles at the front command post, whereas excluding servicing subunits, there were 270 people and 108 motor vehicles; at the forward command post there were 137 people and 35 vehicles, but not counting servicing subunits -- 33 people and 14 motor vehicles; and at the rear control post 327 people and 89 motor vehicles. At the command post of the 11th Army there were 185 people and 60 motor vehicles; at the forward command post -- 17 people and 11 motor vehicles. In addition, there were 185 people and 91 motor vehicles in the support group of the command post, 17 people and 11 motor vehicles in the support group of the forward command



post, and 41 people and seven motor vehicles in the support group of the rear control post. At the forward command post of the 16th Tank Army there was an operations group of 17 generals and officers with 26 motor vehicles.

The unwieldiness of control posts is caused not so much by the number of personnel as by the number of vehicles in which the communications means are installed. Reducing the personnel of control posts can thus be achieved primarily by improving the communications system.

In conclusion it should be noted that the most important condition for continuity and stability of control is the ability of officers and generals to exercise creative and direct troop leadership, to show flexibility in selecting methods of operation, depending on the specific conditions of the situation, and to show a high level of staff efficiency.

So that command personnel may obtain skills in troop control, the greatest possible attention must be devoted to these questions within the system of command training, they must be worked out by going through different kinds of short operational problems, and special courses must be conducted for the purpose of further improving control methods.

