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CENTRAL INTELLIGENCE AGENCY
WASHINGTON, D.C. 20505

29 December 1975

MEMORANDUM FOR: The Director of Central Intelligence

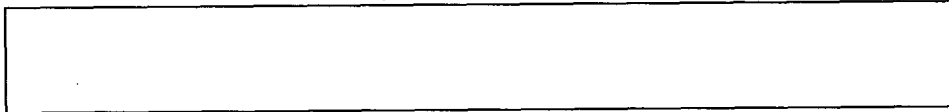
SUBJECT : MILITARY THOUGHT (USSR): Raising Troop Control to the Level of Modern Requirements

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 a comprehensive presentation of Marshal Zakharov's views on the problems of troop control and the extent to which they have been resolved in the Soviet Armed Forces. A major thrust of the article is that the development of more advanced control equipment has not kept pace with new requirements. Integrated, automated control systems based on mobile electronic computers and requiring secure communications are needed and, in turn, require reorganization of the control organs. In a detailed treatment of troop control in a front, the author notes shortcomings in the structures of control organs developed in various military districts. He concludes that the existing system of control posts in a front can ensure overall stability of control, but the system needs to be fully mastered. This article appeared in Issue No. 2 (69) for 1963.

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

for
WILLIAM E. NELSON
Deputy Director for Operations

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Intelligence Information Special Report

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COUNTRY USSR



DATE OF INFO. Mid-1963

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MILITARY THOUGHT (USSR): Raising Troop Control to the Level of Modern Requirements

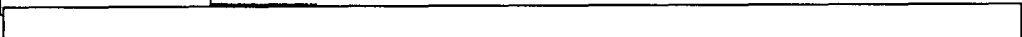
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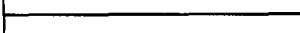
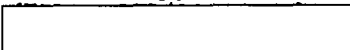
Summary:

The following report is a translation from Russian of an article which appeared in Issue No. 2 (69) for 1963 of the SECRET USSR Ministry of Defense publication Collection of Articles of the Journal 'Military Thought'. The author of this article is Marshal of the Soviet Union Matvey Vasilyevich Zakharov, the late Chief of the General Staff. This article is a comprehensive presentation of Zakharov's views on the problems of troop control and the extent to which they have been resolved in the Soviet Armed Forces. A major thrust of the article is that the development of more advanced control equipment has not kept pace with new requirements. Integrated, automated control systems based on mobile electronic computers and requiring secure communications are needed and, in turn, require reorganization of the control organs. In a detailed treatment of troop control in a front, the author notes shortcomings in the structures of control organs developed in various military districts. He concludes that the existing system of control posts in a front can ensure overall stability of control, but the system needs to be fully mastered.

End of Summary

 Comment:



 A more recent zakharov article concerning the status of computers and their application to troop control appeared in Issue No. 3 (91) for 1970 



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Raising Troop Control to the
Level of Modern Requirements

by

Marshal of the Soviet Union M. Zakharov

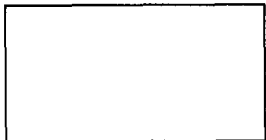
The experience of many centuries of wars conclusively shows that the success of the battle, the operation, and the war is directly dependent on the level, form and methods of troop control. History presents many examples where military large units, formations and even the entire armed forces of a country suffered serious destruction as a result of a low level of troop leadership and unskilled troop control. Therefore, questions of troop control have always been at the center of attention of military leaders, formation commanders, and commanders.

It is impossible to isolate problems of leadership of the armed forces and troop control from the general problems of control in the national economy of the entire country. V. I. Lenin devoted much attention to the question of control. He pointed out that it is possible and necessary to learn to control the national economy, and that a high level of control is a matter of ability and skill. In the Program of the CPSU, adopted by the 22nd Party Congress, the necessity of constantly improving control is emphasized.

Recently the Central Committee of the CPSU has spent much time studying problems of improving control over the national economy. The Central Committee of the CPSU has carried out a truly revolutionary reorganization of control over industry, construction, and agricultural production. The November Plenum of the Central Committee of the CPSU adopted important decisions for the reorganization of party leadership of the national economy, and also for the reorganization of leadership of scientific research and design organizations. All these decisions of the Central Committee of the CPSU provide more defined leadership for the national economy, allow for a fuller use of available reserves, and separate Party and Soviet cadres correctly and organize their work better.

The instructions of the Central Committee of our Party concerning the problems of reorganizing control over the national economy are a specific program for the creative solution of the urgent problems of troop control.

It is necessary to note that in the matter of troop control we have still advanced only slightly compared to that which was achieved during the





final stage of the Great Patriotic War, although in the postwar period the means for armed combat took a giant leap forward in their development. Concerning the problems of control, we have many old habits ingrained in us which today do not satisfy modern requirements for control. New problems of control are solved diffidently and the theoretical foundations of control are not developed.

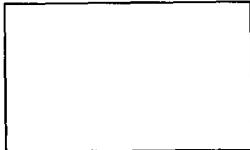
The task, then, is to overcome this lag in control, to decisively improve it, and to raise it to the level of development of combat means. A further increase in the combat readiness of the Armed Forces depends, to a significant degree, on solving the urgent problem of the fundamental improvement of methods and means of troop control.

It is the intention of this article to summarize recent experience gained in working out problems of control in exercises, to draw preliminary conclusions from the discussion of these problems in the press, to try to determine the most important problems of control, and to express the author's opinion about ways of solving them.

I

In our press and at military science conferences, debates often arise about what control is, and about whether or not there is a difference between control and command and between control and leadership. These scholastic debates have no practical significance. To control troops means to command them, to lead them. This is the essence of all work by formation commanders, commanders, and staffs of all levels.

Control is basically the correct distribution and placement of forces and means, the assigning of tasks to them, the organization and support of their combat employment, leadership of them in action, calculation of the results of the actions, and monitoring of the accomplishment of the tasks assigned. The formation commander, commander and staff control all forces and means, units and subunits; they control missiles, aircraft, tanks, warships and other combat means. However, leadership of personnel is the main element of control. Only the proper leadership of personnel can ensure the effective employment of the numerous and complex military equipment in a battle, operation, or a war as a whole. To control personnel means to unite their common interests, views and actions, to coordinate their efforts, and to direct their actions toward the unconditional fulfilment of assigned combat tasks regardless of the complexity of the situation.





Lenin's principles of leadership should form the basis for control: knowledge of the job, firm adherence to principles, concreteness, an uncompromising attitude toward shortcomings, subordination of personal and departmental interests to general interests and to the interests of the job, and concern for people.

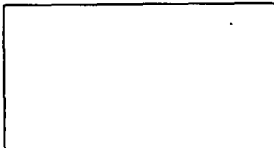
In order to control troops successfully, it is necessary to be completely familiar with military affairs, military equipment, combat capabilities and combat effectiveness of the troops and forces and means, and the methods for their employment in combat. But, this is still insufficient. Troop control is a specific activity of people, and has its own principles, methods, procedures, and equipment. Formation commanders, commanders, staff officers, generals and admirals must know not only the means and methods of armed combat, but also the methods and equipment of control; they must possess the skills for troop leadership. Without firm knowledge of the methods of control, and without knowledge of control equipment and the ability to use it, it is impossible to expect qualified leadership of troops, forces and means.

Methods and equipment do not stand still; they are constantly being developed and improved. During the Great Patriotic War we accumulated extremely valuable experience in troop control. We generalized the experience, reflected it in regulations, manuals and scientific works, and gave it practical application in operational and combat training. In the postwar period this experience underwent significant changes; it was enriched and improved under the influence of a wide variety of factors.

The main factors which decisively influence the development of troop control methods are the development of armament and combat equipment and a change in the nature and methods of conducting combat actions. A factor such as the development of the means of control and equipment of control, and the improvement of the structure of control organs likewise plays an important role.

The main features of the present stage of development of means of armed combat are the development and introduction into the armed forces of qualitatively new types of weapons and military equipment; this sharply increased the combat capabilities of the armed forces and led to a fundamental revision of organizational forms and of methods of conducting military actions on all scales.

The ground forces, which consisted mainly of non-motorized infantry, armored troops and special troops, played the main role in the Great



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Patriotic War. The main means for firing at the enemy at that time were tube and rocket artillery, tanks, and aviation, the depth and power of whose strikes were relatively little. The main events in this war took place in land theaters of military operations, and the results of armed combat in these theaters in the end determined the outcome of the entire war. The means of destruction did not permit the achievement of a rapid change in the balance of forces of the combatant sides, which resulted in the relatively slow development of military actions. On account of the lack of necessary means of destruction, action against the deep rear of the enemy was insignificant and did not substantially influence the outcome of the war.

In the postwar period an unprecedented leap in the development of means of armed combat occurred. The decisive event was the development of nuclear weapons, which possess truly fantastic destructive and casualty-producing properties.

Nuclear weapons became the main means of destruction in a war, and they will exert the principal influence on all aspects of the organization and conduct of combat actions in a future war. This powerful means can almost instantaneously change the situation not only on the tactical and operational scales, but also on the strategic scale.

The means for delivering nuclear weapons to the target were developed at the same time as the nuclear weapons. In view of the exceptionally great destructive force of nuclear weapons, the development of long-range strategic means for delivering them to the target rose to primary importance. At first, long range (strategic) aviation underwent rapid development. However, in connection with the appearance of surface-to-air missiles and fighter-interceptors, aircraft soon ceased to be an effective delivery vehicle for nuclear weapons. In our country measures were taken to develop and produce strategic and operational-tactical missiles, and also missiles of other classes. Missiles became the most effective means of delivering nuclear weapons, and quickly became the main means of warfare.

Missiles possess an unlimited range of action, immense speed and flight altitude, great precision in hitting the target and high maneuverability of fire, and the capability to carry a nuclear warhead of any size and yield. All this ensures the delivery of sudden strikes and the swift and reliable destruction of a great quantity of targets simultaneously in the deep rear and at the front.

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The level of development attained by nuclear weapons, their power, and the availability of such improved means for delivery to the target as missiles of various types, attest to the fact that nuclear weapons are a means of achieving the goals of an operation and of armed combat as a whole in short periods of time. Strategic nuclear weapons make possible not only the destruction of the enemy's means for conducting war, but also the undermining of his military-economic potential, and the disruption of the vital activity of enemy governments to the point of the destruction of entire countries. Operational-tactical nuclear weapons make possible the destruction of the nuclear means of the enemy and his troop groupings.

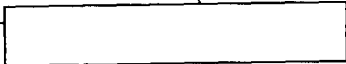
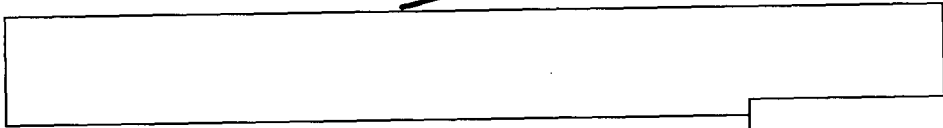
Along with nuclear weapons and missiles, there appeared still another very important military technical factor -- radioelectronics. Electronic computer equipment and means of automation and mechanization are being introduced into the Armed Forces in large quantities. This equipment supports the combat employment of missiles and other means of combat, as well as troop control. It forms the basis for solving the problem of integrated automation of the processes of troop control.

On the basis of the most recent achievements of science and technology great changes have occurred in conventional combat means. The widespread and complete motorization and mechanization of units and large units of various branches of the armed forces immeasurably increased their abilities to maneuver rapidly and to conduct combat actions at high speeds. The introduction of nuclear power plants occupies a special place in the technical equipping of our Armed Forces. At present this applies mainly to the Navy, but in the near future these power plants evidently will find practical use in other branches of the armed forces. Likewise, the development of rocket technology, motor engineering, aviation technology, and armored technology is of great importance.

As a result of all of this, the Armed Forces have acquired completely new combat characteristics in the postwar period. Their fire power has increased, and their structure has changed. A new branch of the armed forces has appeared -- the Strategic Rocket Forces; and the other branches of the armed forces have undergone qualitative changes.

The development of new powerful and long-range means for armed combat led to a fundamental change in military art. The nature of war changed; new methods and forms for conducting war and combat actions of the branches of the armed forces, and a new military art appeared. Along with the defeat of troop groupings, aviation, and naval forces in theaters of military operations, the destruction of strategic nuclear means located deep



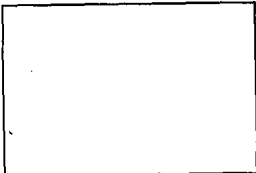


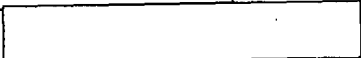
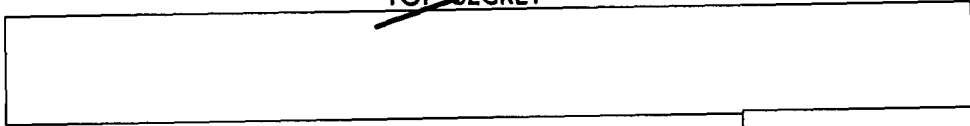
in the enemy's territory, the undermining of his military-economic potential, and the disruption of the vital activity of enemy countries became important in attaining the goals of a war. A future war will involve unprecedented destruction and extermination. Military actions will be distinguished by mobility, short duration, and frequent and abrupt changes in the situation.

The changes which have occurred in the postwar period in means of armed combat, in the technical equipping of the Armed Forces, and in methods of armed combat are placing totally new requirements on control. Today it is already difficult to control troops and forces and means using those methods and that equipment for control which were employed in the last war. There have appeared new weapons, the power of which in combat can in no way be compared with previous weapons. Furthermore, the Armed Forces have acquired qualitatively new combat characteristics. Also new, better educated and more active personnel, for whom the carrying out of an order becomes creative work, have entered the Armed Forces. Control is now acquiring a new content; the means and methods of control are changing. In other words, the same revolution is necessary in the means and methods of control as occurred in the means and methods of armed combat. All generals, admirals and officers must realize this and not cling to the old and the obsolete, but must in every possible way aid the development of the new in matters of control.

Control of the Rocket Forces is a totally new field. What does control of these troops entail? It entails: selecting targets for nuclear strikes; accurately determining their coordinates; making complex calculations for launching missiles; ensuring timely preparation of missiles and nuclear warheads; giving the signals for launching the missiles; ensuring the missile is on target and that it reliably destroys the target; and setting up monitoring and recording of the results of the destruction. It was not necessary in previous wars to accomplish anything similar to this. This is a new phenomenon in control; furthermore, it is an extremely complex phenomenon and requires a high level of scientific training on the part of all personnel, especially command and engineer personnel.

The commanders and staffs of fronts, armies and large units must now solve extremely complex problems of the employment of operational-tactical missile/nuclear weapons. With the skilful employment of these weapons it is possible to achieve exceptional results in armed combat in a short period of time. In combat activity by troops during a nuclear war, troop movements, marches and maneuvers, which have now become a component,





integral part of combat actions, will be of primary significance, and in many instances they will comprise the essence of these actions. Military actions will develop along axes at great speeds, and the maintenance of cooperation among forces and means will become more complicated. Great skill in troop control is now required of commanders and staffs.

The following have acquired great importance in controlling the Air Defense Forces of the Country: timely detection of air targets by technical means; automatic guidance of surface-to-air missiles to the targets and semi-automatic guidance of fighter-interceptors; quick analysis of a complex air situation; timely concentration of air defense forces and means to destroy the majority of attacking enemy missiles and aircraft; and the employment of nuclear warheads for these purposes.

In controlling the Air Forces, the following have become very complex: preparation of aircraft, missiles and nuclear warheads for a combat sortie; control of flights over great distances; organization of navigation, of support for the navigators and of support in negotiating the enemy's air defense and in reliably destroying targets with missiles and bombs; and the conduct of maneuvering by aviation.

Problems of preparing missiles, nuclear warheads, submarines and aircraft for combat employment and for their employment in operations will also be solved in the Navy. Control of nuclear submarines during actions in remote areas presents special difficulty for the Navy.

Even a brief and far from complete listing of the new problems of control which command cadres in all branches of the armed forces must confront shows that it is impossible to deal with these problems using old standards.

It was formerly said that to control meant to foresee. This formula remains valid today, but it already is not enough. Under modern conditions, control of troops, forces, and means is primarily concerned with computing and making all possible calculations. Without precise calculations, all foresight is impossible. Calculations were made in the past, but they were mainly limited to determining the quantity of forces and means necessary for conducting an operation, to calculating the balance of forces and means, to making calculations involved in troop movement, transport of materiel, etc. Such calculations will also be necessary under modern conditions. But, to these are added a significant number of more complex calculations in the area of the employment of the Rocket Forces: navigational and navigator calculations; calculations for the interception

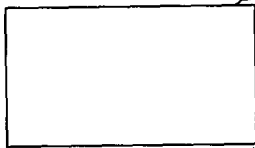


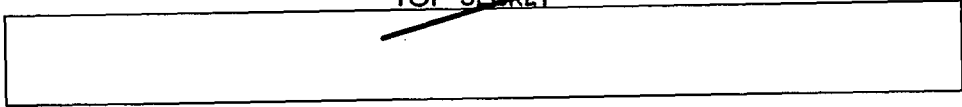


of a moving target by means of destruction (for the air defense forces); calculations connected with determining the radiation situation and with recording radiation doses of personnel; and many other calculations. A significant portion of these calculations have to be made very quickly. This is practically impossible to do without complex computer equipment. A great knowledge of mathematics and computer equipment is now required of command cadres.

Now, as never before, control must be efficient, mobile, and specific. Rapid and frequent abrupt changes in the situation will require that the command and staffs solve problems of the preparation, planning, and support of combat actions and troop leadership in the shortest possible time, as well as accurately in all details. Former prolonged reflection, conferences with subordinates, coordinations and agreements, and the compilation of voluminous orders, directives and planning documents have to be decisively eliminated from the work of commanders and staffs. A repetition of such control methods under modern conditions could cause irreparable damage when the troops are fulfilling their combat tasks. It should be kept in mind that there will also be a heavy flow of all possible types of information (such as orders, instructions, reports, summaries reconnaissance data, etc.) from the top down and from the bottom up under modern conditions. All this information must be quickly transmitted to the appropriate addressees and, in a short time, be processed, summarized, prepared and reviewed by personnel empowered to make a decision. It would be impossible to complete all this work without mechanization and automation.

An important feature of modern control is the sharp growth of the role of centralized leadership of the Armed Forces from the top to the bottom. That level of centralization of control which existed during the Great Patriotic War does not now meet modern requirements. Let us take a problem such as working out the crucial decision for the conduct of an operation. During the Great Patriotic War, the General Headquarters of the Supreme High Command usually briefed front commanders about an impending operation. Front commanders presented their opinions on conducting operations. The General Headquarters reviewed them, made the final decision, and set tasks for the fronts; the fronts planned and prepared the operation. Similar methods were employed in fronts, armies and large units. Here the following method was often used: after a briefing concerning the task received, the staff of the operational formations, and the commanders and chiefs of the branch arms compiled information, prepared their proposals, and reported to the formation commander, after which a decision was reached. On the whole it took a great deal of time to work





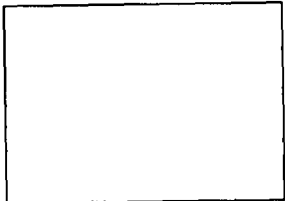
out a decision and to plan and prepare an operation. The circumstances of a future war will hardly allow such slow preparation for an operation. Every formation commander and commander will constantly have to be knowledgeable about the entire situation. Without outside advice, or after a short exchange of opinions with a limited circle of subordinates (primarily with the chief of staff), he will have to personally make the crucial decision, assign tasks to the troops, organize combat actions and monitor their course.

At the same time, the role of initiative and creativity on the part of subordinate formation commanders and commanders will increase significantly. Knowing the general situation and the goal of the combat actions, the formation commander and commander must be ready to make a crucial decision without waiting for instructions from above, especially in those instances where the situation requires immediate action. Any delay or hesitation can often be greatly detrimental to the course of combat actions. Therefore, in a nuclear war it is necessary to judiciously combine the centralization of control with development of the initiative and creativity of formation commanders and commanders at all levels.

These, in our opinion, are the most important requirements made upon control under modern conditions.

In order to ensure steady, continuous, and efficient control of troops, forces and means in a future war, it is necessary to provide formation commanders and staffs with appropriate new control equipment to revise the structure of control organs, and to work out new methods of leadership in the Armed Forces.

Recently a large amount of work was carried out on the development and introduction into the Armed Forces of new control equipment. Radar equipment and radio-relay communications means have been extensively developed. New radios and automatic secure communications equipment for telegraph transmissions and conversations have entered into service; the first models of automatic secure communications equipment for telephone and radio have appeared. Facsimile equipment and loudspeaker communications and equipment have been introduced as an integral part of combat weapons (at missile launch sites, in deployment areas of surface-to-air missiles, on aircraft, submarines, etc.). High-speed communications equipment has been developed. In the work of staffs several models of keyboard calculators and punchcard calculators have begun to be used. Higher-level staffs have begun to use electronic computers such as the M-20, STRELA-6, URAL-2, TRANZISTOR, and FAKEL.



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All this, however, is only the beginning. The control equipment already in service is far from perfected, and there is still extremely little of it. Automatic secure communications equipment for telephone and radio conversations is unstable in operation, and much time is needed to adjust it. The range of operation of many radios is no longer satisfactory. Radio communications means have low transmission capacity and low resistance to interference, and their operation can be disrupted as a result of nuclear bursts. (This is especially true of shortwave radios.) Radio-relay means are still bulky and vulnerable, and it takes a great amount of time to adjust them. Computers are so cumbersome, and so dependent on stationary operating conditions, that their use in the Armed Forces is made extremely difficult.

As a whole, existing control equipment does not ensure the timely transmission and processing of the flow of information or the making of necessary calculations. It is bulky, operates slowly, is not mobile enough, has poor security, and is vulnerable to interference (including that from the flux of radiation during nuclear bursts). It does not ensure reliable control of troops, forces and means during mobile actions and under rapidly changing conditions. One must note such a shortcoming as the diversity of equipment and extremely insufficient standardization, which impedes the manufacture and introduction of equipment into the Armed Forces. This situation requires the carrying out of a firm and unified technical policy. We have been slow to develop technical means which facilitate the work of the commander and staff worker. In essence, we have no such equipment. As a result of this, the productivity of the work of generals, admirals and officers in troop control is very low, which results in inflated tables of organization.

All this is becoming a serious hindrance to the further development of military affairs, and is beginning to adversely affect the combat readiness and combat effectiveness of the troops.

Existing control equipment can and must be improved. But this does not provide a comprehensive solution to the problem of control. The fundamental reorganization of the entire technical system of control and the extensive mechanization and automation of all control processes, including the work of the commander and staff officer, with a gradual transition to integrated automation of the entire control system, are necessary. Mobile electronic computers, the communications means corresponding to them, and other technical means of control, should be the foundation of an integrated automated control system. But, the establishment of such control systems is a complex and long process. It

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is, therefore, necessary to establish it gradually, stage by stage.

First, new means of minor automation and mechanization must be introduced into the system of control. The introduction of automatic secure communications equipment for telephone and telegraph transmissions and conversations over shortwave and ultra-shortwave radios, and over radio-relay and wire communications links will be of the greatest importance in improving the effectiveness of control. Attaining automatic secure communications for all communications would greatly speed up the assignment of tasks to the troops and the collection of information, would increase the effectiveness of troop leadership and would strengthen the personal influence of the commander on the course of combat actions. At the same time, it is necessary to introduce cipher and coding equipment, signal-coding devices, ultra-high speed communications means, and sound recording and loudspeaker communications equipment at control posts. To mechanize the computational and other work of the staffs, it is necessary to introduce keyboard calculators and punchcard calculators, means for duplicating maps and graphic and textual documents, means for mechanizing drawing and clerical work, and others. Finally, it is necessary to be persistent in mastering the use of electronic computers and the working out of algorithms, and, at the same time, to prepare staffs for the transition to integrated automation.

As the equipment mentioned is introduced and mastered, experience is gained, and more complex equipment -- primarily mobile electronic computers -- is developed, it will be possible to switch to the integrated automation of all control processes. The automation of interconnected control systems for all the Armed Forces is the next task.

An automated control system will consist of a complex of various technical means. The nucleus of this system will be electronic computers and new communications means -- telecode communications means with automatic secure communications equipment. An integral part of this system will be various devices to facilitate the work of the commander and staff worker: devices for representing the situation, high-speed printing, and the automatic input and output of information; means for technical reconnaissance and navigation; and other equipment.

This system must provide for: automatically collecting, processing, recording and outputting information about the situation; making computations concerned with planning and controlling military actions; relaying directives, instructions, and other documents to those who are to execute them; and monitoring the fulfilment of combat tasks.

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The use of electronic computers in combination with other means of automation must ultimately cause a fundamental change in control methods, sharply increase the effectiveness of control and, most importantly, increase the speed with which various control levels react to the combat situation. The method of gathering and processing information will be changed. Primary data will be immediately coded and input into the computer, which will collate the data and automatically find the optimal variant for the decision. All stages of planning, including the evaluation of the situation and collation of different variants, can be executed by the computer.

The introduction of new control equipment and the automation of control are closely connected with improvement of the structure of control organs. It is impossible to imagine a situation where new control equipment would enter into service with the currently existing control organs. Views were expressed in our press to the effect that each higher-level staff and its primary directorates should be provided with the whole range of technical means, including computers. If we were to follow such a path, then the whole idea of automation would be discredited. A serious reorganization of the entire structure of control organs is needed. It is necessary to sharply reduce their size, simplify them, and decrease the multiplicity of steps in procedure. It is necessary to attain a situation in which control organs with a small number of personnel and a minimum amount of computers, equipment and devices operating at full capacity could ensure steady and continuous troop control. This task also cannot be accomplished immediately; rather, it must be done gradually, as experience is gained. We must begin, clearly, with the establishment of experimental sectors and centers.

When speaking of the existing structure of control organs, one must note that it is far from meeting those requirements which are made upon it under modern conditions. It is complex, has many steps in procedure, too many personnel and, as a whole, is too expensive and insufficiently efficient.

The existing structure of control organs at the strategic and operational levels has developed gradually as the Armed Forces developed and as new branches of the armed forces, branch arms, and operational formations were formed. The organization of the headquarters of fronts and armies during the last part of the Great Patriotic War formed the basis for the structure of control organs. When a new branch of the armed forces and its control organs were established (main staffs, staffs of the operational formations) they were organized in the same way as the headquarters of a

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front or an army. If we compare the headquarters of a front with the headquarters of the branches of the Armed Forces, it appears that their organization is approximately the same -- the same overall staffs, staffs of the branch arms, and directorates of the rear -- although their functions in troop control and their methods of control differ. Even in such a distinctive branch of the armed forces as the Strategic Rocket Forces, the structure of control organs was initially based, to a significant degree, on that of the ground forces; it was later necessary to rectify this.

The primary task in improving the structure of control organs is to establish as constantly combat ready -- that is, with a small number of personnel and not requiring the carrying out of full mobilization -- all central organs directly connected with troop control, and headquarters of air defense districts, fleets, and formations and large units of all branches of the Armed Forces. It is necessary to decisively eliminate all excesses in the control apparatus, reduce the table of organization, and seek a way to decrease the multiplicity of steps in procedure. Of course, this work must be accomplished gradually, as experience is gained and means of mechanization and automation are introduced into service; however, it should also be done without any special delay.

Such are the general problems of control which concern all branches of the armed forces. We will now examine control of the troops of a front in more detail.

II

Recently, problems of improving troop control in the front and army have been given considerable attention.

The theoretical and practical solution of this important problem was carried out in the following main directions: finding new tables of organization for the field headquarters of fronts and armies, as well as of large units and units; and developing and introducing into the staffs new methods of working and ways of controlling troops which meet the demands of modern technology and the nature of war.

In order to more deeply study and resolve all these problems, a significant amount of research work has been conducted, and a large number of different conferences and meetings have been held among the troops and at academies. Working out problems of troop control was one of the main ✓ training goals in all war games and command-staff and troop exercises. A



number of exhibitions displaying both civilian and military models and serial-production and experimental models of control means, have been organized to study means of minor automation and mechanization of the processes of troop control and to select the best models of these means.

In order to achieve more effective results, the Minister of Defense decided to conduct a series of special research command-staff exercises, at which primary attention would be devoted to the in-depth study of problems of the tables of organization of staffs and the use of new technical means of control and new methods of carrying out staff work. These exercises were conducted in the complex operational-strategic setting of the initial period of a war, which promoted the proper study of the assigned problems in a complex situation.

The most important research command-staff exercises were conducted in 1962 in the Kiev, Leningrad, and Belorussian Military Districts. Formation commanders, generals, and officers of the staffs and of the research and umpire organizations did much work at these exercises; this made it possible to gain valuable experience, which laid the foundation for solving a number of specific problems aimed at increasing the efficiency of troop control.

First of all we will examine the organizational structure of the field headquarters of the front and armies. The structure of these headquarters, which has existed until recently, was worked out and put into effect in 1957. It was based on experience gained over a long period in the organizational development of our Armed Forces. In essence, the basis of the organization of field headquarters of the front and armies in 1957 was the organization of these headquarters as it existed during the last year of the Great Patriotic War with allowance made for those changes in equipping troops with new combat equipment which took place during the postwar period. At that time, this was a good organization for field headquarters, fully ensuring control over the troops of the front and armies in the event of war. However, at the present time, this organization has already become considerably obsolete and needs improvement.

When the organization of field headquarters of the front and armies was adopted, the Strategic Rocket Forces did not yet exist in the Armed Forces; the quantity and yield of nuclear warheads that we have available today did not exist. Individual models of operational-tactical missiles had only begun to be put in service with the fronts. Now, fronts have tactical and operational-tactical missiles in large quantities. Missiles





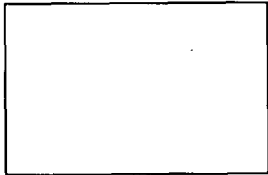
with a range of fire of 500 to 700 kilometers have begun to appear. New tanks, antitank guided missiles, surface-to-air missiles, new fighter-bombers, bombers and fighters, new means of control, etc., are entering into service. Naturally, it was impossible to foresee all this in 1957. Therefore, the existing organization of field headquarters does not fully ensure control of the troops, in particular control of rocket troops and other new combat means existing in the front and army.

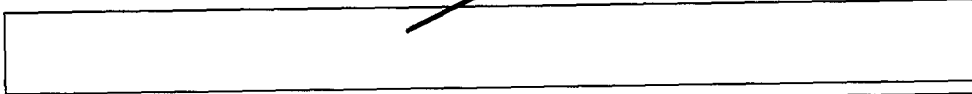
A substantial shortcoming in the structure of the field headquarters of 1957 is that it differs significantly from the headquarters of military districts, groups of forces and armies which we have now. In order to make the transition to a wartime table of organization, the reorganization of control organs, and even the carrying out of their full mobilization, are necessary. In connection with this, the constant readiness of control organs to control the troops in the event of the sudden outbreak of a war is not ensured.

Finally, the structure of organs of the field headquarters of the front and armies which was adopted in 1957 is too unwieldy and awkward. It suffices to say that in a front field headquarters there are 1,300 personnel and in an army field headquarters -- 500. The field headquarters of a front amounts to almost a regiment, and the field headquarters of an army -- a battalion. In the same way as the front and armies, the tables of organization of corps, divisions, regiments, etc. are inflated. This does not help to increase the combat effectiveness of the troops; rather, it lowers it. Popular wisdom says that large staffs are a sign of the army's weakness, not its strength.

Extremely diverse proposals have been made concerning the question of the organization of the field headquarters of the front and army. Some comrades consider the 1957 structure of control organs to be completely suitable for present-day conditions, and that no basic changes should be introduced into it. This, to be sure, is an unacceptable point of view. Those shortcomings which were discussed above indicate that the time has come to make substantial corrections in the organization of the field headquarters of the front and armies.

Other comrades, on the other hand, believe that this organization for the field headquarters of the front and army has become completely outdated, does not meet modern requirements and needs a drastic and fundamental change; in conjunction with this, they have introduced extremely varied recommendations for its reorganization.





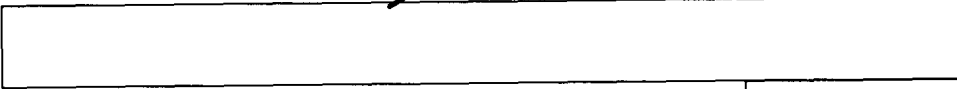
The staff of the Belorussian Military District has worked out a fundamentally new structure for the field headquarters of the front and army. Minister of Defense, Marshal of the Soviet Union R. Ya Malinovskiy permitted the commander of the troops of the Belorussian Military District to test this structure in a command-staff exercise. Such a test was made in 1962.

The proposal of the staff of the Belorussian Military District amounted to the following. The directorates and departments of the branch arms and services (rocket troops and artillery, air defense troops, engineer and chemical troops, and others) should be removed from the field headquarters. Based on the directorates and departments of the branch arms and services, headquarters should be established for the missile corps and the corps of air defense troops in a front and, correspondingly, for the divisions or brigades in an army, as well as for the groups of engineer and chemical troops. Then, all large units and units of the corresponding branch arms should be subordinated to the headquarters of these corps, divisions, and groups.

The functions of the abolished staffs and directorates of the branch arms and services were transferred: matters of combat employment -- to the operations directorate or department; matters of supply, maintenance and repair -- to the deputy commander of the troops for armament and combat equipment. Under the deputy commander of the troops for armament and combat equipment, a staff was established. All directorates and departments concerned with matters of the maintenance, repair and supply of missile and artillery equipment, armored equipment, motor vehicle and tractor equipment, engineer equipment, chemical equipment, and communications equipment were subordinated to it. In the operations directorate were established: a planning department; a department for the protection of troops against means of mass destruction, with a radiological center; a department of the operational rear; a department of information; and other departments and sections.

According to the view of the staff of the Belorussian Military District, such an organization of field headquarters provided a reduction in the number of control organs directly subordinate to the commander, a closer contact with the troops in the matter of control by chiefs of the branch arms and services, an easing of the work load of control posts, and, ultimately, an increase in the efficiency of control. However, the exercise did not confirm such prognoses.



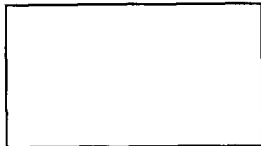


In spite of the fact that representatives of the branch arms and services were included in the operations directorate, the directorate, in essence, could not cope with all the problems involved in the combat employment of formations, large units, and units of all the branch arms. The commanders of the troops of the front and army obviously missed the qualified assistants in the person of the commanders of the branch arms and their directorates for solving a wide variety of problems concerning the combat employment of the branch arms which neither the operations directorate nor the operations department was able to solve. A significant increase in the volume of work and numerical strength of the operations directorate made it unwieldly and awkward, and able to cope with its direct responsibilities only with difficulty.

The establishment of a missile corps, a corps of air defense troops, and groups of engineer and chemical troops did not prove to be justified. In fact, these organs became intermediate levels of transmission of control between the front staff and the troops. They did not simplify troop control; rather, they complicated it and made the front staff more remote from the troops. Besides this, they required the expenditure of additional means of communications. Also, the number of personnel in the control organs increased, since the headquarters of the corps, divisions and groups were larger than the directorates of the chiefs of the branch arms and services in the front and army.

It could be said that it is not possible on the basis of one exercise to arrive at a final conclusion of the unsuitability of the structure of control organs which was proposed by the Belorussian Military District. This view, of course, is valid to a certain degree. The author does not intend to completely dismiss the proposal of the Belorussian Military District; in it is raised an idea of simplifying control organs, which deserves attention. However, a drastic and fundamental change in the structure of the field headquarters of the front and army is premature. Staffs and formation commanders are not yet ready for this, and control organs are still poorly supplied with control equipment.

There are many discussions about the necessity of increasing the role of the staff, and about freeing the formation commander from solving problems of supposedly secondary importance. Basically all these suggestions are intended to provide staffs with greater authority: to plan, organize, and control everything, leaving overall control and the signing of documents prepared by the staff to the formation commander. Therefore, they say, the chief of staff must be a competent, trained general or officer, while the commander only has to possess strength of will. This is





clearly a mistaken point of view. The formation commander or the commander is the central figure in troop control. He must be capable of solving all problems concerning preparation for combat actions and troop control independently. For this, it is not enough to possess the quality of strong will; it is also necessary to have the very highest military training. Of course, the chief of staff must also be trained and strong-willed, but, all the same, he is not the central figure in troop control.

We have worked out a model for a new organization for field headquarters which was specially tested in experimental exercises in the Kiev and Leningrad Military Districts in 1962, as well as in other exercises. This model provided for the reinforcement of combined-arms staffs and the establishment of organs which would be qualified to solve problems of the combat employment of missile/nuclear weapons and other new combat means. The field headquarters of a front was reduced by 342 people, and the field headquarters of an army by 206.

The basic changes in the organization of the field headquarters amounted to the following.

Apart from the command, there are three staffs in a field headquarters: the combined-arms staff, the rocket troops and artillery staff, and the rear staff. The remaining staffs were abolished, and in place of them directorates and departments were established within the field headquarters. In the operations directorate, a combat operations planning department was set up; the operations department of the directorate was charged with the task of troop control (in this department elements -- one for each axis -- were established in accordance with the number of armies and separate large units); and the information department of the directorate was reinforced with specialists on radiation conditions. In the intelligence directorate, a reconnaissance planning department, a department for air reconnaissance, and a reconnaissance center was established. In the combined-arms staff, an independent department for radioelectronic countermeasures was established. All communications (except air defense communications and rear communications) were concentrated in the hands of the chief of communications, who was subordinated to the chief of staff. The surface-to-air missile department was removed from the directorate of the chief of rocket troops and artillery and transferred to the directorate of the chief of air defense. The directorate of tank armament and the directorate of the motor vehicle and tractor service were combined. In the directorate of the rear, the post of quartermaster was abolished, and the military transportation service and the road service were subordinated to the chief of the rear. Analogous





changes occurred in the field headquarters of the army.

The exercises in the Kiev and Leningrad Military Districts demonstrated that the structure for the field headquarters of a front and army envisaged by this model, basically meets modern requirements. It is less unwieldy, improves the planning of operations, increases the role of the combined-arms staff, ensures great efficiency in troop control, and establishes better conditions for the use of new control means. Also, several shortcomings of this structure were exposed. Primarily, the experience of the exercises showed the impracticality of the operations planning department (and, in the army, the operations planning section) in the operations directorate. This is fully understandable. It is impossible to separate the functions of planning, transmitting tasks, and monitoring troop actions. These are obvious tasks of the operations department and it must accomplish them. It is impossible to consider as correct the assignment of permanent axis officers in the operations department. Such a measure leads to the narrow specialization of operations officers and to their poor knowledge of the overall situation. Axis officers are a contribution which belongs to the past. The operations directorate is the brain of the staff. It must be completely manned with highly trained officers and generals qualified to resolve all questions of planning and controlling troop combat actions. There is no need to establish an air reconnaissance department within the intelligence directorate of the staff of the front. It is sufficient to have several specialists in air reconnaissance in the directorate. It is advisable to leave the control of air reconnaissance to the air army. Other shortcomings of the model were also detected.

On the whole, the structure for the field headquarters of a front and army, which was tested in exercises last year, became the basis for the preparation of new tables of organization for these headquarters.

We will speak next about the new organizational structure for the field headquarters of a front and armies which recently was approved by the Minister of Defense.

In the first place, the differences between peacetime and wartime tables of organization were, in the main, eliminated. We should not have to carry out the full mobilization of the field headquarters of fronts (in peacetime, military districts and groups of forces) and armies; they must be basically the same in peacetime and wartime. Only in this way can we provide constant high combat readiness of control organs; under modern conditions, this is of decisive significance in ensuring the successful





conduct of military actions in the event of the sudden outbreak of war.

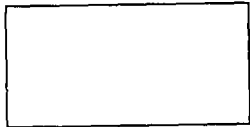
In the new tables of organization, the number of personnel in control organs has been reduced significantly, particularly at the expense of all types of excesses, an inflated servicing organization, etc. Overall, the front headquarters has been reduced by 45 percent, the headquarters of the combined-arms army -- by 50 percent, and the headquarters of the tank army -- by 34 percent. The quantity of transport means and technical means of control has been correspondingly reduced.

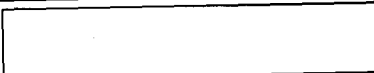
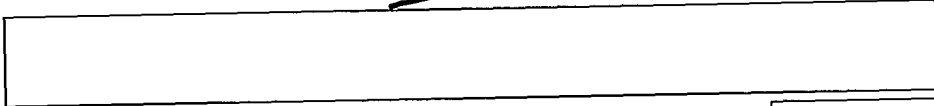
As a result of these changes the new organizational structure of field headquarters became more efficient, and better adapted for troop control in a nuclear war, than the former structure. Now, it is important to completely man the headquarters with well-trained generals and officers capable of creatively resolving the questions of troop control. In the final analysis, people, and their level of training and practical experience in controlling troops, decide everything.

However, we must not stop here, but must seriously look into the future. The structure of control organs will also change as new equipment and means of automation and mechanization are introduced into the headquarters and as the transition to an integrated automated control system progresses. Sooner or later, we will arrive at that structure for control organs about which Marshal of the Soviet Union R. Ya. Malinovskiy wrote in an article published in the Special Collection of Articles of the Journal 'Military Thought', in the sixth issue of 1962. Subordinate to the commander of the front and the army will be: one staff, consisting of a group of generals, operations officers and specialists on all the branch arms; and a directorate directing rear support for the troops. The control organs will be small in personnel strength, mobile, efficient, and equipped with control equipment; the multiplicity of steps in the procedure of control will be reduced. However, this is as yet a task of the future.

One of the main trends in resolving the problem of improving troop control is the widespread introduction into staffs of various means of automation and mechanization. The importance and necessity of equipping staffs with these means is now understood by the overwhelming majority of our generals and officers, but the practical solution of this problem is a very complex matter.

The introduction of automated and mechanized means should ensure the accomplishment of such important tasks as increasing the productivity of the work of control organs, ensuring a quicker response to the situation





and, on this basis, sharply reducing the number of personnel of the staffs. However, no type of automation or mechanization can replace the mental capabilities of the commander and staff officer. It will only promote more effective work in troop control.

Means of automation and mechanization of the processes of troop control include a significant amount of extremely diverse equipment, from the simplest devices for facilitating work with a map to the integrated automated systems of the future based on the use of computers and automated means of communications.

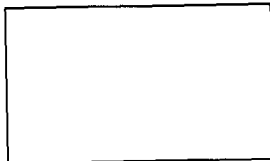
As a result of a series of research and development works carried out over the past three to four years, the conclusion was reached -- which was correct in principle -- that fundamental changes in the troop control system can be achieved only after the introduction of integrated automated systems into service with the troops. Work on the development of technical means for an automated system of control of front troops is already being conducted by our industry. However, a great amount of time will be needed for their introduction into service with the troops.

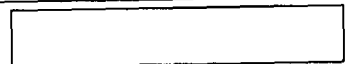
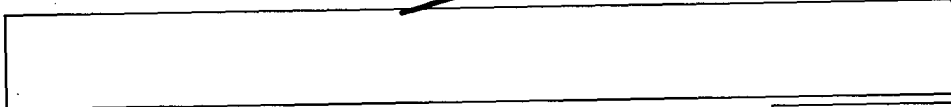
As we have already mentioned above, we consider the very rapid development and introduction into the staffs of means of minor automation and mechanization, and new means of communications, to be the immediate technical task in solving the problem of increasing the efficiency of troop control. This task must be accomplished in a feasible manner in a relatively short time; the introduction of this equipment will quickly show results in the improvement of troop control.

In exercises conducted in the staffs several tens of models of various means of automation and mechanization were used. The experience of the exercises definitely confirmed that the use of means of automation and mechanization by the staffs makes it possible to significantly increase the efficiency and security of troop control. With these means the staffs worked successfully at reduced strength.

Let us look more closely at how the control equipment performed during the exercises, and what conclusions can be drawn from it.

Automatic secure communications means, used in the exercises in significant numbers, made it possible to make the main front and army communications, including radio, completely secure, and for the first time to establish a unified field system of secure telephone communications from the front to the division and missile brigade. This reduced to a minimum





labor-consuming manual coding in the staffs, and thus sharply increased the efficiency of troop control. Moreover, it significantly decreased the extent to which the reliability of control depended on the operation of wire communications and government high-frequency communications.

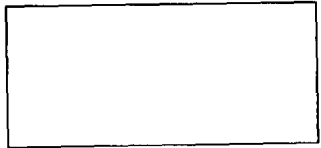
The equipment for security of telegraph transmissions (T-204) operated stably, on the whole. It is now the main type of equipment having guaranteed stability of security. The T-204 is included in small quantities in the tables of equipment of the communications units of military districts and armies.

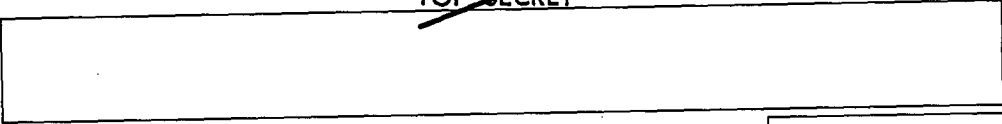
The T-205 equipment is included in the tables of equipment to provide secure telegraph communications of the front and army with the staffs of large units, but it still does not have sufficient reliability of operation. Therefore, it is necessary to take measures for improving the quality of this equipment and also for mastering as quickly as possible the new model of equipment for secure telegraph transmissions (T-206), which has entered into service and which in the near future should replace T-204 and T-205 equipment.

The new equipment for secure telephone conversations on radio-relay and wire lines, the T-216 (LIANA), was especially readily used by staffs for troop control; however, it requires good communications channels.

Models of the new ELBRUS automatic secure communications equipment performed quite favorably when telephone conversations were transmitted via shortwave and ultra-shortwave radio links. The equipment provided stable secure telephone communications via radio between the staffs of the front and army to a range of up to 60 kilometers when moving and up to 100 kilometers when stationary. The ELBRUS secure communications equipment is the best means for the future; we should devote special attention to its introduction. It is advisable to have ELBRUS at the control posts of the front and army, as well as at the control posts of large units and units.

For the first time under field conditions staffs used experimental models of the VYMPER military facsimile equipment with START secure communications equipment. They were tested on the front-army link for transmitting situation diagrams, charts, and textual documents. The transmission of a standard-size sheet took no more than five minutes. The great effectiveness of using graphic documents must be emphasized. Thus, for example, transmitting combat instructions in the form of a diagram is five times faster than transmitting textual documents. This saves time also in preparing the document.





After some modification, VYMPEL with START will go into serial production and begin to enter service with staffs.

A subsequent task consists of completing the development of large-format facsimile equipment (with secure communications equipment).

The use of cipher and coding machines, according to the experience of exercises, speeds up the enciphering and encoding processes fivefold to sevenfold. Cipher machines should be introduced into all cipher organs of the staffs of fronts and armies for enciphering especially important documents. It is advisable to develop a more portable cipher machine for the cipher organs of the staffs of large units.

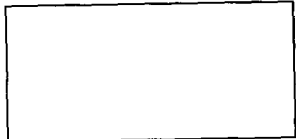
The new FIALKA coding machine, which can be used not only by cipher clerks, but also directly by operations officers, performed very favorably in the exercises. This machine may be most widely used in the absence of secure communications equipment.

Along with the introduction of already available coding machines, it is necessary to speed up the development and equipping of the troops with a new type of equipment which provides for both preliminary encoding and immediate on-line operation; and this will significantly increase the speed of passage of information among staffs.

In the air armies of a number of military districts, signal-coding devices of the LEPESTOK type with and without VETKA secure communications equipment, and another device of this type which has been developed, were used most successfully for transmitting signals, commands, short instructions and reports. They ensure rapid transmission and immediate reverification. In transmitting short instructions, this device has a noticeable advantage over other means. With this, the VETKA secure communications equipment provides guaranteed security of transmissions.

The necessity of having high-speed signal-coding devices was once again confirmed in an exercise of the Leningrad Military District by the experience of transmitting signals for alerting staffs, signals for putting the Rocket Forces in a state of increased combat readiness, and signals for their delivery of nuclear strikes. Transmitting signals by conventional means is intolerably slow, whereas only seconds are required with signal-coding devices.

In spite of certain shortcomings in the signal-coding devices available, they must be introduced into the staffs of the Rocket Forces, of



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the air defense troops of the front (military district) and armies, of the air armies, and of aviation large units.

At the same time scientific research organizations must be seriously concerned with the development of a common standardized signal-coding system for all branches of the armed forces which would ensure the rapid and reliable transmission of signals, commands and short instructions, and the receiving of reports.

The experience of the exercises fully confirms the advisability of using field-type sound recording equipment in the staffs, making it possible to record conversations -- including those via communications means -- and instructions from the command and reports, and to subsequently process the magnetic recording or listen to it again. The sending of tapes with recorded instructions to subordinate staffs also was employed.

The P-180 dictaphone which has entered service needs to have several technical defects eliminated. However, it must be introduced into the tables of equipment of the primary directorates and departments in the field headquarters of the front and armies and be more widely used in their work.

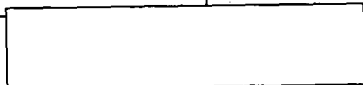
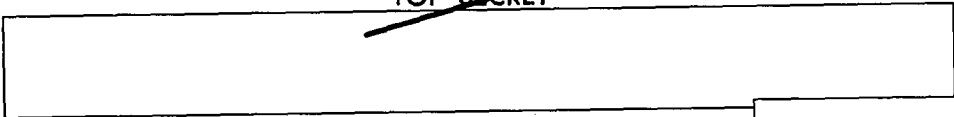
The imported STENOMATIC dictaphone, which records onto a recording disc (instead of a tape), is used in staffs and is suitable for recording short conversations, instructions and reports, and, when necessary, for sending or filing them. It would be advisable to have a similar dictaphone under production in our own industry.

Regarding commercial tape recorders, it is desirable to have them in the communications centers of command posts to monitor conversations. The future task of our communications specialists is the development of a portable dictaphone, that is, a "pocket" dictaphone for the troops.

Loudspeaker communications equipment is being used successfully by staffs in exercises and in everyday work. However, the commercial models DGU-20 and DGU-10 are poorly suited to field conditions. During an exercise in the Leningrad Military District equipment manufactured by their own personnel was used. It was considerably better and more economical than commercial models.

Keeping this experience in mind we should expedite the development and acquisition from industry of field loudspeaker equipment.

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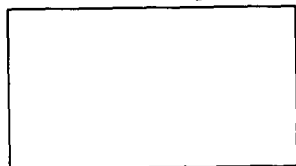


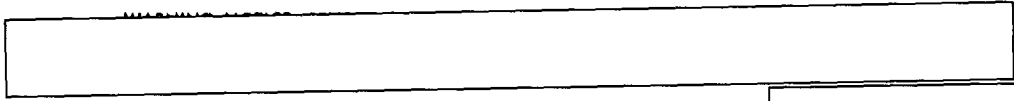
Keyboard calculators were used to great effect during exercises. They were used in the air army -- within the nonorganic computation-computer post, and in the combined-arms staffs and rear organs -- in a decentralized manner. They were used with the greatest success in the directorates and departments of the rear, missile and artillery armament, engineer troops, and air defense troops, and in the organization and mobilization directorate. The time it takes to make calculations with keyboard calculators is, at the minimum, two to three times less than the time required for calculations done manually. This enables officers to be freed for other important duties, and, where there are calculating personnel, to reduce their number.

Punchcard calculators. In a Leningrad Military District exercise, a reduced set of punchcard calculators, set up in a vehicle, was used for the first time in exercises by personnel of the intelligence directorate of the Leningrad Military District staff. The equipment was used for storing actual intelligence data arriving from OSNAZ units and for automatically collating information about US strategic aviation, earth reconnaissance satellites and other targets. The time needed to automatically collate various information about the enemy was 10 to 15 minutes, which was a gain of many hours. In the future, the Leningrad Military District intends to use this set for other types of front reconnaissance, in particular combat reconnaissance. This interesting and important experience must be thoroughly studied and, after being generalized, relayed to the staffs of all branches of the armed forces.

Experience shows that, for mechanized calculating and planning and for carrying out the more labor-consuming computational tasks under stationary conditions in groups of forces and military districts, it is advisable to set up machine calculation stations equipped with one or two sets of punchcard calculators and several keyboard calculators. Such a machine calculation station has already been set up and is operating in the Moscow Military District. In 1963 machine calculation stations will be set up in the Leningrad and Kiev Military Districts and in the Group of Soviet Forces, Germany. Experience gained in operating similar stations in civilian organizations shows that their introduction significantly increases work efficiency and leads to reduction in the number of recording and calculating personnel.

In the exercises, an experimental model of a staff printing device for printing a situation on a map in three colors was tested in the staff of the front. The productivity of this device is twice that of the means provided by the table of equipment. Clearly, it would be advisable to adopt





this device into service.

The TPA-1 topographic printing device, a table-of-equipment means of division staffs, was fairly widely used for reproducing graphic and textual documents in front and army staffs. It was concluded from the exercises that this device should be given to the staffs of the front (military district) and armies.

The imported THERMOFAX copy machine, intended for rapid reproduction of textual and graphic documents (20 x 30 centimeters) in one color, was used successfully in a Leningrad Military District exercise. When our own industry masters the production of an analogous device, THERMOCOPIER, it will be advisable to use it in the primary directorates and departments of the staffs of the front (military district) and armies.

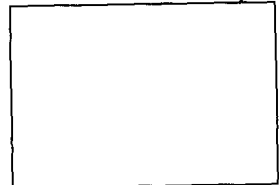
During the exercises several devices for obtaining data and making calculations about the radiation situation were tested. The LOGARIFM remote-controlled radiation monitoring installation, consisting of 15 to 20 automatic sensors and one central control panel, provided automatic observation of the levels of radiation on terrain covering an area of up to 150 square kilometers and automatic transmission of the results of these measurements to the central control panel. The use of this installation makes it possible to decrease the number of personnel assigned for conducting radiation observation, and also to sharply reduce the time needed for conducting reconnaissance (down to five to ten minutes).

The EV-1 electronic computer allowed the staffs to quickly solve problems connected with evaluating the radiation situation. This is a small, uncomplicated, desk-size device.

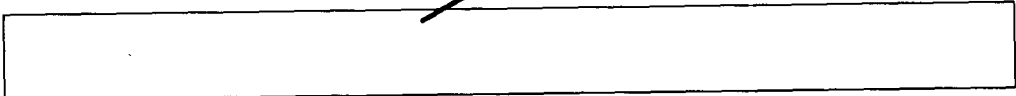
Both the LOGARIFM and EV-1 devices still require some modification, after which measures should be taken for the serial production of them.

The communications center installed in MI-4 helicopters, which was tested in various exercises, ensured troop control in flight and on the ground. It can be used as a mobile means for relocating the operations group of a staff. This means will be of special importance in providing troop control on the march and during an offensive at high speeds.

In general, it is considered that the use of means of minor automation and mechanization by staffs substantially increases the efficiency of troop control and makes it possible to have smaller staffs while not significantly increasing the number of specialists in communications



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centers. Therefore, introducing these means into staffs must be regarded as an immediate task.

However, we must not stop here, but must solve the problem of the automation of control, the most reliable basis for the fundamental improvement of troop control.

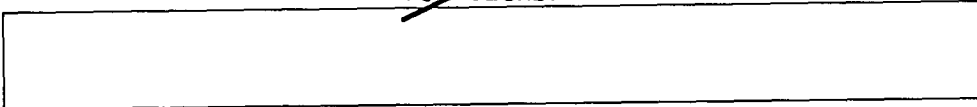
The most important means of ensuring automated control in the future control system for front troops will be mobile, small, multipurpose electronic computers being specially developed in accordance with a decree of the Central Committee of the CPSU and Council of Ministers of the USSR. They will be capable of storing a great amount of data (information) in their memory about our own troops, the enemy and the terrain. They will be able to solve information-logic and computational problems, and ensure the rapid selection, processing and output of information, and the immediate transmission of tasks to the troops.

It must be emphasized that these electronic computers are intended for serving staffs and solving problems of troop control not only during the preparation for an operation, but also in the course of the operation. Therefore, these computers, installed in vehicles and trailers, will always be moved along with the staff. The use of stationary multipurpose computers to automate the processes of control of the troops of the front and, moreover, of the army and the large unit, as has been suggested by some comrades, is clearly unacceptable. It is another matter to use stationary electronic computers during command-staff exercises and war games. They find the most extensive use in these instances. More than 30 such exercises and games were conducted in all branches of the armed forces during 1961-1962. In a number of exercises, each staff used eight or nine multipurpose stationary electronic computers, with communications set up over hundreds of kilometers.

Conducting exercises and games with the use of stationary electronic computers is extremely important. It allows us to determine and clarify which troop control processes can be assigned to mobile electronic computers in the future and which should remain with the staff and commander. It also allows us to study possible organizational changes in the staffs and their working methods as a result of the introduction of electronic computers. During these exercises we familiarized our command personnel with the capabilities of electronic computers, checked the usefulness of the problems which were worked out in making operational-tactical, engineer-technical and rear services calculations and ways for improving them, and studied a variety of other problems.

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In some exercises the number of tasks which staffs accomplished using electronic computers reached 50 and more. These tasks are grouped according to the following basic problems: calculations on planning the employment of nuclear weapons and determining the effectiveness of nuclear strikes; evaluating and forecasting the dose of radiation received by the troops; evaluating the effectiveness of means and groupings of air defense; calculations for planning the regrouping of troops; calculations connected with planning and supporting combat actions of the air army; and calculations concerning various rear services.

From the experience gathered by the staffs in solving problems on electronic computers during exercises, these main conclusions can be drawn. First, the use of electronic computers to make complex, labor-consuming operational and other calculations frees officers for creative work in troop control. Second, the staffs of military districts and groups of forces must gradually make the transition to solving problems with the help of electronic computers in direct support of their practical work, in particular for verifying basic operational calculations, including those on the concepts for exercises and war games. Third, the number of problems worked out by academies and institutes still is insufficient and their quality does not always satisfy the requirements of the staffs; therefore, further extending the range of problems to be solved with computers and improving their quality must be considered one of our primary tasks.

Let us dwell briefly on communications. In recent years radio, radio-relay and wire communications means have been developed significantly.

Radio communications have become especially important in ensuring reliable troop control in modern, highly mobile operations. Ever since telegraph and telephone transmissions over radio have been made secure by means of secure communications equipment, the radio has become a basic and indispensable means of troop control.

Radio communications, however, have substantial shortcomings. In the first place, they have a low-capacity multichannel capability and cannot fully satisfy the requirements for communications channels. In the second place, unless special protective and radio camouflage measures are taken, radio communications can be easily blocked and disrupted by jamming by the enemy at the most critical moment of an operation. We have encountered a new, previously unforeseen difficulty: nuclear bursts at great altitudes in the ionosphere disrupt shortwave radio communications for a period of from several minutes to several hours.



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In spite of existing shortcomings, radio communications should be used extensively, and staffs should be taught to use them for troop control in any type of operation and under any conditions, while employing effective radio camouflage measures. Staffs should also be taught not to limit their use of radio communications out of fear that the enemy will locate the control posts by direction finding. Ultra-shortwave radio communications, which are considerably less susceptible to the effect of nuclear bursts, should be used particularly extensively.

Modern multichannel radio-relay communications means have great speed in establishing communications and high mobility. They can be used successfully for augmenting wire communications which lag behind the troops; for setting up lateral communications lines, which increase the reliability of communications and ensure the cooperation of troops along the front and with adjacent troops; and also for establishing communications with rocket troops, aviation and other branch arms.

An analysis of the capabilities of the means and forces of communications leads to the only correct conclusion: that it is necessary to concentrate communications forces and means and centralize their control under a single authority, that is, that it is necessary to set up a unified communications system common to all branch arms participating in the operations. Setting up autonomous communications systems for the rocket troops, the air defense troops of a front (army) and other branch arms leads to a dissipation of communications forces and means, to a considerable decrease in the effectiveness of their employment and to an excessive, unwarranted increase in communications troops.

A unified communications system of a front (army and corps) having a multichannel net of radio, radio-relay and wire communications lines with auxiliary communications centers on them, makes it possible, with fewer forces and means, to provide direct channels for any branch arm participating in the operation. If necessary, these forces and means can be used to establish separate special communications links to a large unit or unit of any branch arm or branch of the armed forces, should the situation require it.

In the near future new multichannel radio-relay stations and radios with a greater range of operation will enter service with the troops. Field tropospheric radios, which provide reliable multichannel communications to significantly greater distances than radio-relay stations, are being developed. All this will make possible more reliable communications in a front and army.

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Problems involved in setting up control posts and determining a system for them deserve serious attention.

The basic requirement made of these control posts is that they be capable of fully ensuring stable, continuous troop control in any situation, however complex it may be. This requirement can be satisfied by means of the achievement of maximum survivability for control posts, the proper organization for them and the appropriate technical equipment.

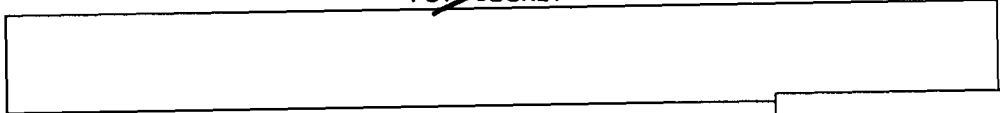
In the past the survivability of control posts was ensured by the secrecy of their movement, location and operation -- especially the operation of radio communications means -- and by the organization of the appropriate guarding and defense, by advance preparation of alternate areas for their location, etc. Of course, all these measures have fully retained their importance even under modern conditions, but now they are no longer sufficient to achieve continuous and stable troop control. If earlier there was the fear that the enemy would put individual elements of a control post out of action, now there is the constant threat of complete and instantaneous destruction.

Some comrades propose establishing several fully equipped control posts ready at any moment to assume troop control; that is, along with the basic command posts and rear control posts, establishing alternate or reserve command posts and rear control posts. It is thought that all these posts should be established during peacetime and be allotted for in the corresponding table of organization of field headquarters and staffs.

At first glance such a system of control posts seems attractive. However, if we examine it more closely, we must inevitably conclude that it is unacceptable. Primarily, it is unwieldy and uneconomical, and requires a great outlay of communications means, personnel and transport. A considerable number of people and numerous communications means do not actively participate in providing control; they are, in fact, placed in reserve, and it is not known whether they will be put into operation at all.

It seems to us that the system of control posts adopted by us -- command post, forward command post, and rear control post -- meets modern requirements and is able to provide troop control to the fullest degree. Such a system is economical. The work at these posts can be provided for by the available complement of staffs and communications means of our existing organization.

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The command post is the main post from which the formation commander (commander) controls the troops. The post must be small in its number of personnel. It contains the main complement of operations officers of the combined-arms staff and the staffs (departments) of the branch arms and special troops, a small operations group of the rear, and also the main portion of the communications means. All the rest, which are not involved in providing direct control over troop combat actions, should be located at the rear control post. Otherwise, the command post would be unwieldy and sluggish, and its vulnerability would be increased.

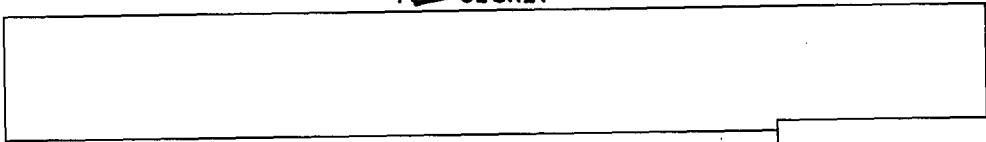
Recently in the military press there have been proposals to organize the work at command posts according to the principle of so-called control centers: to establish an operations-reconnaissance information center, a missile/nuclear center, an air defense center, etc.; and to include them in the table of organization of staffs. The essence of these proposals amounts to concentrating work which is similar in nature in separate elements, which, in the opinion of their authors, supposedly will increase the efficiency and skill of control.

However, study, as well as practical testing of a system of control centers in command-staff exercises, demonstrated their ineffectiveness. This is fully understandable since an attempt is being made here to artificially divide the unified process of control into isolated elements. A splitting up into centers can in no way increase the efficiency of control. It will more likely bring about the opposite result inasmuch as the very idea of centers predetermines their isolation, requires additional coordination and the organization of cooperation among the centers, and, in the final analysis, leads to the loss of valuable time.

There must be only one control center. This center is the command group, at the head of which is the formation commander himself who has been given the authority to personally make decisions, assign combat tasks to the troops, and direct their efforts for achieving the assigned goals. The task of the combined-arms staff and the staffs and departments of the chiefs of the branch arms and special troops is to ensure the precise fulfillment of decisions of the formation commander.

The forward command post is established when it is necessary, because of the situation, for the formation commander to be closer to the troops, and also when the main command post is being moved to a new location. In all cases, the formation commander moves to the forward command post only after a decision has been made and all basic instructions have been transmitted to the troops.





The forward command post is also used as a reserve or alternate post to which troop control can be transferred at any moment in the event the main command post is put out of operation.

By virtue of its purpose, the forward command post must be in constant readiness for operation and must be capable of providing steady troop control. Consequently, it must contain the same elements as the command post, but be considerably smaller in the number of personnel; that is, it must be a command post in miniature.

We are striving to free the command post and forward command post as much as possible from those organs which are not directly concerned with providing control over the combat actions of troops, and to locate these organs at the rear control post. This naturally entails an increase in the complement of the rear control post. Very likely, it will have the most personnel and be the most diversified in composition. To ensure secrecy of operation and increase the survivability of this post a considerable dispersal of its elements will be necessary.

The presence of three deployed control posts fully ensures the survivability of the entire control system. In the event that the enemy puts the command post out of action, troop control will be exercised from the forward command post by the deputy formation commander, who usually heads this post. It is true that the group of operations officers at the forward command post is not as large as that at the main command post, but it will subsequently acquire competent officers taken from lower-level staffs and other staffs. In the final analysis, it is not a matter of the quantity of personnel but rather of their capabilities and skill in accomplishing the tasks confronting them.

Under certain circumstances control over the combat actions of the troops can also be transferred to the rear control post. This, of course, does not mean that the chief of the rear must command the formation or large unit, although even such a variant is not excluded. We do not lack chiefs of the rear who are capable and well-trained in operations and can successfully cope with the new role. We are talking primarily about the use of the rear control post simultaneously to control not only the rear but also combat actions of the troops.

The survivability of the control system can also be increased by designating in advance in an order one or two lower-level commanders as deputies. The experience of the last war regarding this is sometimes forgotten, and we must fully reinstate it. We must learn to control troops





from a lower-level staff in the event that control from the main command post is disrupted; for example, we must learn to control the troops of a front from the command post of one of the armies, the army from the command post of a division, and the division from the command post of a regiment. In order to do this it is necessary to prepare staffs in advance and to provide them with the appropriate documentation and communications. As the experience of exercises has demonstrated, it is impossible to control troops from the command post of a subordinate level without such advance preparation. For example, in an exercise in the Kiev Military District the front commander, who was at the command post of an army, in accordance with the situation which was created, was supposed to assume control of the troops of the front. However, this was impossible since the corresponding preparation had not been carried out in advance.

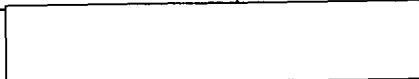
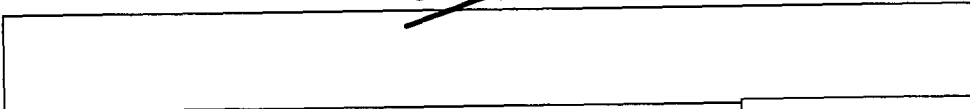
Thus, the existing system of control posts at its present stage of development can ensure stability of control as a whole. The task consists of fully mastering this system, and most important, achieving effective activity by control posts under the most difficult situational conditions, and achieving their complete interchangeability.

Another important problem is increasing the mobility of control posts in every possible way, which can be achieved by equipping them with command-staff vehicles having a cross-country capability and means of communications which ensure control while on the march. Such a command post will be mobile in the full sense of the word, and will not require additional time for setting it up or dismantling it.

Improving control of the rear continues to be a big problem. There are now several types of supply and repair of combat equipment concentrated in the hands of the chiefs of the branch arms and special troops, as though control of rear units and facilities were decentralized. In connection with this, opinions are being expressed about the necessity of concentrating control of all rear organs in the hands of the chief of the rear.

The idea of the centralization of control of the rear is correct on the whole, but at the present stage of development it is difficult to implement in practice. Centralization would make control of the rear cumbersome and laborious, exceeding the physical capabilities of the chief of the rear. It is not ruled out that in the future we will come to such centralization, but it will be possible only on the basis of widespread employment of means of mechanization and automation in the processes of control of rear organs.





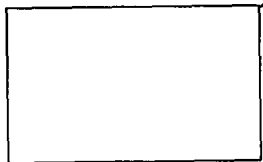
The improvement of working methods of formation commanders and staffs in troop control has the greatest importance in decisively increasing the efficiency of control. The basic requirement for their work -- to react quickly to the situation and to immediately influence the course of events -- stems entirely from the nature of modern operations. The time factor, which had great importance in the past, has now become decisive in gaining victory over the enemy.

Do the working methods which we have adopted for formation commanders and staffs meet these requirements? We can answer this question in the affirmative. They have been worked out over the years and, on the whole, are acceptable. It is another matter that they have as yet been insufficiently mastered, or that they require further improvement.

Let us take as an example the making of a decision by the formation commander. One could say that the main shortcoming, our scourge, in this matter is the extravagant expenditure of time in making a decision. Very often this time amounts to eight to ten hours and more at one command level. For example, in the exercise of the Kiev Military District, the commander of troops of the front needed about nine hours to make the decision to move the troops forward. Of course, making a decision is an exceptionally complex and most crucial matter, and here the personal qualities of the formation commander play a very great role. But, much depends not only on the personal qualities of the formation commander. The method which a formation commander uses in making a decision is likewise important.

As is well-known, after the Great Patriotic War, we adopted a method by which the formation commander listened to detailed information reports of the chief of staff and chiefs of the branch arms and services, before making a decision. This was done exclusively for training purposes; it helped to bring operational thinking into a defined system, and at one time played a positive role in training formation commanders and staffs. But later on this method was improperly interpreted, here and there legitimized in practice, and in a number of instances used deliberately when the formation commander did not have a decision of his own and sought one in the proposals of his closest assistants. That is why this method was decisively condemned in orders, directives and statements of the Minister of Defense as not conforming to modern requirements and causing great harm to the training of command cadres.

Decision-making is, in the highest degree, a creative process. The formation commander arrives at a decision on the basis of the entire course





of preceding events; if he knows the situation well, constantly analyzes it, and foresees all changes, then it is unnecessary for him to again listen to lengthy information reports and waste time on this. It will be sufficient for the formation commander to clarify certain details with the chief of staff and the chiefs of the branch arms and services in order to finally formulate his decision.

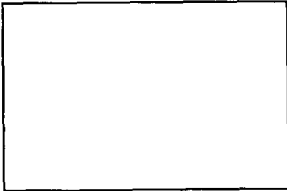
In content the decision should be as concise and clear as possible, not allowing any other kind of interpretation of the concept, and especially of the combat tasks of the troops.

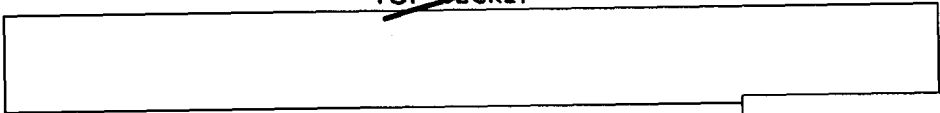
The next necessary condition for achieving high efficiency in control is the rapid formulation of the decision and transmission of it to those who are to execute it. We must accept as a principle that making the decision, its formulation, and the transmission of the tasks to the troops is a single inseparable process, which will not allow any delays.

The tasks can be assigned to the troops verbally, by technical means of communications using cipher telegrams and secure communications equipment, or via messenger means of communications. The selection of these methods in each specific case will depend on the situation and mainly on the availability of the means of communications.

Recently a view has emerged that today combat tasks do not have to be presented in the form of a written combat order, that a verbal order or an order drawn on a map will be sufficient, and that a written order will be drawn up only when time is available, etc. This is an incorrect view. A written combat order or operational directive is the basic document which records in writing the combat tasks of the troops. It is intended for confirming a combat task assigned verbally or by technical means and for the correct understanding of that task. Besides this, the combat order instills discipline in those who are to execute it and compels them to carry out the assigned task precisely.

To be sure, additional time is needed to prepare the combat order (operational directive) and to transmit it to those who are to execute it, but this circumstance cannot greatly reduce the efficiency of control. Some delay in delivering the written combat order should not be the basis for inactivity and temporizing on the part of the executor, inasmuch as the task has already been formulated for him verbally or in the form of a corresponding telegram.





Combat tasks which are assigned in order to develop a previously made decision can be transmitted to the troops in the form of combat instructions. However, in cases where the situation demands a fundamental change in the previous decision, it is advisable to assign the new tasks for the troops again in the form of a combat order or operational directive.

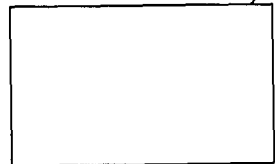
As for the compilation of the plan of the operation or combat actions, we ought to strive to complete it primarily on maps, and then to formulate certain calculation data in text form.

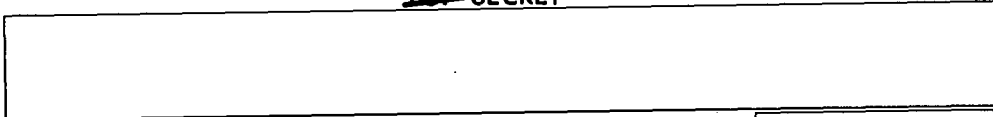
We should deal separately with work with a map. The experience of exercises shows that many generals and officers have a poor knowledge of the method of working with a map, and do not know how to represent the true operational situation on a map. Under conditions of highly mobile actions, as a rule, the troops are moved in vehicles, mainly in columns; using the old method, their position on maps is shown by solid frontlines and lines, and consequently the true position of the battle formations of the regiments and divisions is distorted. Frequently, the maps do not reflect the results of nuclear strikes and especially the radiation situation, which, as is well known, is now the most important element of the operational situation. Of course, on the basis of such a map, it is impossible to make a correct decision.

In spite of the requirement of the Minister of Defense that commanders should learn to do their working maps personally, many generals and officers do not like to, and often do not know how to, do it; so draftsmen or operations officers do the work for them. It is not surprising, therefore, that these commanders often know the situation only superficially and are not capable of making a precise report.

In many staffs there is noted a passion for ostentatious maps and poster maps, on which much time is spent in preparation and which are needed only for showing to the superior commander. Such maps are not suitable for troop control; it is necessary to refrain from making them and thus free the staff from unnecessary work. Under modern conditions a map is a means of troop control; it should be a basic working and planning document, and requirements for doing it and formulating it must be resolutely raised.

The greatest in volume and most poorly worked out aspect of the work of the staffs continues to be the process of collecting and processing data about the operational situation. A major shortcoming is lateness in the





passage of information. It is no secret that in some exercises the situation which was being dealt with in the staff of the front was three to four hours behind the actual situation. Consequently, the formation commander is late in making his decision by the same length of time, if not longer. During this time, the troops can advance or withdraw 25 to 30 kilometers and, on the march, move 100 to 130 kilometers, and the decision will no longer correspond to the new situation. In such a situation the formation commander will lag behind events and not influence them, which is intolerable under modern conditions.

There are many reasons for the slow passage of operational information. One such reason is often the loss of communications and the inability to quickly switch from one type of communications to another. Often discipline is violated and prescribed deadlines are not met in sending in reports, as a result of which higher level staffs are forced to "wring out" situational data from subordinate levels. A strict order of procedure in passage of information is not always established, as a result of which important data about the operational situation, which is urgently needed for making a decision, is lost in the flow of other information which is not of top priority. Finally, much time still is spent on compiling, editing and reviewing at various staff levels, and then on enciphering, transmitting over means of communications and deciphering a mass of information, in which the essence of the matter is buried among minor details.

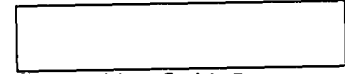
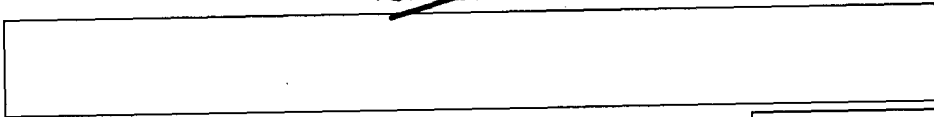
While not disputing the decisive role of accurate and continuous operation of the means of communications in carrying out the timely passage of information, we must also seek other ways to speed up the process of collecting and processing data on the operational situation to the greatest possible extent.

First, it is necessary to introduce proper order in the passage of information. For this purpose, it is advisable to divide the entire information flow into categories of precedence, according to its importance, and hence, its urgency. These categories could be:

- an above-precedence category -- combat orders and combat instructions which must be sent to the executors immediately, without the slightest delay;
- information of first precedence -- combat reports, operations summaries, reconnaissance information on the enemy's nuclear means of attack and on the radiation situation;
- information of second precedence -- reports and summaries on



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the combat activities of the branch arms and the special troops, and also reports and summaries of the rear;
-- information of third precedence -- all additional information.

In order to graphically show to which precedence a document belongs, it is necessary to establish a common and strict system of letter designations, or to draw up documents on paper of the appropriate color. For example, all combat orders and combat instructions would be drawn up on pink paper, documents of first precedence -- on blue, of second precedence -- on yellow, and all the rest -- on white. Then, each telegrapher and each cipher clerk will separate out without difficulty the information which must be transmitted first from among the large amount of information entering the cipher organ and communications center, and it will be easier for the chief of the communications center to determine the appropriate means of communications for each precedence. In our view, this should shorten the time for passage of combat orders and operations reports.

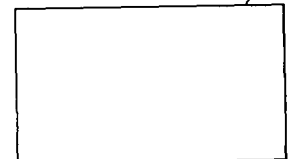
There is a great potential time saving to be had by shortening the time for working out operations documents. It is necessary to foster among generals and officers skills in composing concise, and at the same time sufficiently clear, documents, deleting from them everything that is minor and unnecessary. So-called standard documents, or document forms, which are blank forms prepared in advance and which are to be filled in with a specific content, should be widely introduced.

Time can be saved by moving the cipher organs close to the operations departments of the staffs, where operations officers and cipher clerks will work together in one working area.

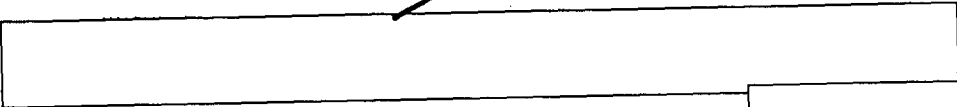
Thus, the possibilities for sharply increasing the efficiency of control even with the existing technical resources are still significant, and our task consists of searching for them every day and improving in every possible way the working style and methods of formation commanders and staffs in control of troops.

* * *

In this article the most important, from our point of view, problems of troop control under modern conditions have been examined. Increasing the combat readiness of the Armed Forces depends to a considerable degree on the successful resolution of these problems. At the same time these very complex problems must be solved on a scientific basis, be discussed actively in the press and at military science conferences and meetings, and



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be thought over carefully in everyday work.

The main task in the matter of improving troop control is the development, introduction into the Armed Forces and mastering of control equipment, means of minor automation and mechanization, and means of communications. At the same time, it is necessary to work on solving the problem of the integrated automation of control.

Also an important and pressing task is improving the organizational structure of control organs and the methods of troop control, and increasing the combat readiness of control organs.

Scientific military cadres, scientists, designers and all the generals, admirals and officers who actually control troops must take the most active part in accomplishing all these tasks.

