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The Deployment and Forward Movement of a Combined-Arms Army of a Border

Military District in the Initial Period of a War

Lieutenant-General S. Andryushchenko

In the event of the sudden unleashing of a war by the aggressive imperialistic states, and the absence of a threat period, (ugrozhayemyy period) the combined-arms armies of border military districts may find themselves in a difficult situation. The territory on which the troops of an army are dispersed may be subject to enemy nuclear/missile strikes of various yields, to chemical/missile strikes, and also to the use of bacteriological agents.

We have set the goal of studying theoretically insofar as possible, all aspects of the conditions of deployment and forward movement of a combined-arms army in the area of combat operations, and to check out some of the problems in practical troop and command-staff exercises. In addition, we studied the combined-arms army made up of four or five divisions (two or three of them up to strength and the rest in cadre form, or at reduced strength) with a minimum amount of frontal means of reinforcement. The composition of the enemy was taken to correspond with his actual formation, and the probable methods of conducting combat operations in concrete operational directions were taken into consideration.

In the conditions resulting from a sudden attack by the enemy, the nature and scope of the work of field control of an army and of commanding officers and staffs of large units (units) will seem unique. The basic measures of the commander and the staff of an army in this period should be as follows:

- to evaluate thoroughly and in the quickest possible time the apparently serious and complex radiation, chemical, and bacteriological situation evolving in the entire area of army deployment; determine the degree of disruption of control and communications, the condition of the troops, their combat effectiveness, security, and losses, the condition of materiel reserves, and communications routes;
- to clarify, without delay, the decision which was made earlier to move the troops forward from their permanent disposition points into areas of concentration, taking into consideration the possibility that these areas are contaminated; to determine, in compliance with the operational assignment of the army, tentatively, the problems of

constant combat readiness in future operations of large units and units, to utilize all means and methods for the most expeditious method of notifying the troops of the decision;

- to restore the disrupted control of and communications with the large units, units, and senior commander (nachalnik);
- to reestablish disrupted control and communications with the large units, units, and the senior commander;
- to take measures to eliminate the results of an attack by weapons of mass destruction;
- to organize evacuation, dispersal, and replenishment of materiel supplies;
- to determine the order of entrance on duty and processing of those reservists, draftees, and technicians arriving to join large units in cadre form or at decreased strength, taking into consideration the fact that the terrain in the conscription areas and the routes of movement may be strongly contaminated by radioactive or poisonous chemical substances and by bacteriological agents;
- upon receiving the operational directives from the district headquarters, to clarify and execute the plan worked out previously to commit the army troops in the area of combat operations, or, in the case of an abrupt change of circumstances, to work out a plan for regrouping the troops in a new direction; take measures to conclude quickly the preparation of large units and units for a prolonged march, the reconnoitering of the routes of forward movement, reconstruct sections of roads and road structures that were destroyed, organize the commandant's service, combat security, and material-technical support; order full mobilization of the large units and units designated for the formation of secondary echelons in a limited amount of time, or alter the mobilization plans; make a decision regarding the subsequent forward movement of the mobilized large units and units directly behind the troops of the first echelon;
- maintain constant control of the troops.

All the above-listed measures must be carried out simultaneously, within a short period of time, measured in hours, and even in minutes, apparently under circumstances during which considerable losses may have taken place in command complements.

Upon completion of the first of the indicated measures - evaluation of the radioactive, chemical, and bacteriological situation - we immediately come up against a series of difficulties; it is impossible to overcome these difficulties with the forces and equipment at the disposal of the army, and even of the front. In case the opponent uses weapons of mass destruction first, it is of primary importance to evaluate the situation not only in the areas subjected to the strikes, but to foresee with sufficient clarity the possible contamination of the entire disposition area of the army troops, due to the spread of radioactive and poisonous substances in the direction of the wind. In order to arrive at a practical decision regarding the regrouping and subsequent troop operations, the army commander must quickly receive precise data regarding the number of enemy nuclear strikes, the coordinates of their centers (ground zero), the type and yield of the explosion, and the direction and velocity of the wind at various altitudes in the area of army troop disposition, and in the adjacent areas. Without this data it is impossible to evaluate the radiation situation, even by the analytical-computer method (raschetno-analiticheskiy metod). The instruments for detection of radiation and chemical contamination which are available to the troops are not capable of forecasting radioactive fallout by tracking the various radioactive clouds, and do not permit the determination of a drop in the level of radiation in the contaminated areas. This is a very important problem, as well as one that is very difficult to solve under present conditions.

As we see it, its solution must be realized on a nation-wide scale if we consider that the above-mentioned data will be essential not only for the ground troops, and the armed forces as a whole, but also for enterprises of the national economy and the civilian population.

Apparently it is necessary to set up automatic intersection points (avtomaticheskiye punkty zasechki) for locating nuclear bursts, capable of determining the parameter of the burst, and determine all, or most of the above-mentioned data. These points should be united by analytical-computer centers, where the incoming data are processed, collated, and relayed to the analytical-computer groups of formations, large units, and the command points of PVO of the Country and of civil defense.

In our opinion it is necessary to create analytical-computer groups in the army and in the military district in peacetime, primarily to process and transmit to the troops the data coming in from the

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analytical-computer centers, and also to determine drops in the levels of radiation after certain periods of time, and transmitting them to the troops. In addition, during forward movement and front and army troop operations in enemy territory, they will naturally need their own organic analytical-computer groups, capable of quick and accurate forecasting, and determination of, the radiation situation, at least within the boundaries of the offensive zone of the front and the army, and the nearest adjacent territory. These very groups, in the event that they are relieved, or leave the specific area, have to transmit in written form (dokumentalno) the latest data about all sectors contaminated by radioactivity to the other large units (units), in the same way as all information on mine-fields was transmitted on a form (formulyar) during the last war. The make-up and equipment of the analytical-computer groups still require some thought. However, it is already quite clear that they must have the most modern detection instruments (pribory razvedki) and special machines for reproducing radiation situation maps for the troops. In our opinion, these groups, which consist of operations officers (ofitser operator), chemists, intelligence officers (razvedchik), and topographers, should be headed by the chief of the chemical troops of the front and the army.

The creation of automatic intersection points for locating nuclear bursts and the analytic-computer centers will apparently fall, of necessity, to the system of PVO of the Country, inasmuch as it embraces the entire territory of the country, and the additional introduction of the indicated points and centers will require only a partial improvement on its part. Corresponding analytic-computer groups should be formed under the operational formations. We are convinced that carelessness in the setting of these posts and centers can lead to excessive human losses.

In addition to evaluating the situation in terms of radiation and chemical contamination, it is also necessary to evaluate the bacteriological aspect. The army has no such capability. It is known that almost all bacterial agents have an incubation period from a few hours to tens of days. In this light the great danger that the troops will be subjected to becomes quite evident if the contaminated areas are not identified immediately and excluded from occupation by large units and units. This problem, in our opinion, should also be resolved on a nation wide scale, by creating special antiepidemic detachments under hospitals, clinics, and medical establishments, by bringing in civilian medical cadres and the local population. The personnel must (4 or 5 words missing) training, and the detachments should be supplied with instruments, equipment,

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and transportation.

It is equally important to secure from destruction, primarily by radiation and poisonous substances, the personnel and equipment which is being mobilized and is arriving from the national economy, especially from industrial centers which have been subjected to strikes. It would seem that the ideal situation would be one where the personnel and equipment are directed to the reception centers of the fully mobilizing large units and units along routes which were ascertained by prior reconnaissance to be uncontaminated. However, the terrain will often be so contaminated that it will be difficult to establish such routes. In these circumstances the personnel and equipment will have to proceed, without the means of radiation reconnaissance and antichemical protection, from areas with very high levels of radiation (concentration of poisonous substances-OV) or cross these sectors en route. Naturally the personnel will join the units unfit for combat, or will have received large doses of radiation (contamination). In addition, the lack of recording devices might result in the inability to determine the degree of radiation received.

The way out of such a situation, as we see it, is that a certain part of the antichemical protection equipment should not remain in the warehouses of the large units and units, but should be handed over to institutions, enterprises, and kolkhozes, so that the latter could then issue the equipment to the reservists subject to call at the time of a threat situation or in case of necessity. The reasoning behind the advance transfer of these means is also justified by the principle of deconcentration of materiel supplies.

From our point of view it is necessary to deconcentrate not only the antichemical protection resources and part of the radiation and chemical detection equipment, but also clothing, by having the institutions, enterprises, and kolkhozes issue the latter directly to those subject to military call-up, with the stipulation that the uniforms be kept in special bags at the place of residence.

There need be no apprehension regarding loss or premature use of part of the clothing. Experience shows that storing such supplies in warehouses (bases), which in turn require the maintenance of a large staff and expenditures for upkeep of the building, costs the government sizeable amounts, even if we rule out the possibility of spoilage. Issuing this equipment to persons subject to call-up, and holding them responsible for it, will cost a great deal less. The management personnel of the enterprises (institutions) and the military

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commissariats will periodically check the issued equipment.

The system of hospitalizing irradiated military personnel also warrants attention. It is known that the army does not have adequate hospital facilities for accepting and taking care of irradiated personnel, as will be required for elimination of the consequences of a sudden enemy attack. Apparently it will be necessary to send the casualties to civilian medical establishments. However, the mass of the civilian population that received combined injuries will also be going there, and there might not be any vacancies. This question must be carefully thought out by specialists, and the necessary decision should be made.

In our opinion, it is essential to examine such matters as the maintenance, even in peacetime, of fully staffed chemical protection sub-units in large units of reduced strength. As is known, during full mobilization a division must set up six or seven reception centers for personnel and equipment, and in each one of these, posts for medical and special treatment. Besides, the division, as it is presently staffed, does not have at its disposal the appropriate sub-units, nor are there any under the subordination of the army commander. Practically speaking, a division is not capable of conducting radiation, chemical, and bacteriological reconnaissance of its own concentration area, and the army commander cannot carry out these measures in the interests of the field command, army units, and in the interests of the army as a whole. There are no means for setting up dosimetric examination of the arriving personnel and equipment that was mobilized from the national economy. We consider it expedient to propose the following:

- besides a chemical protection company, the divisions at constant readiness should have a special treatment company that would be equipped with all the necessary materiel and equipment as one of the motorized rifle companies; the combat readiness of the division will not be decreased by this and thus, even in peacetime, the cadres will be ready that will subsequently be the backbone in the formation of special antichemical protection sub-units;
- in divisions of decreased strength a chemical protection company should be maintained, composed of a platoon of radiation and chemical reconnaissance and two special treatment platoons, each of the latter setting up a special treatment post; regiments should maintain radiation and chemical reconnaissance platoons comparable in composition to similar platoons in regiments at full strength;

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- in peacetime the army should have a full-strength separate radiation and chemical reconnaissance company and an army chemical-protection battalion, composed of three special treatment companies.

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The combined-arms army of a border military district, deployed at a distance of 900-1000 km from the probable area of military operations during the initial period of war, can make up the second echelon of the front, since the main blow of the enemy ground forces will be absorbed by the troops located in the zone near the front. Consequently the army will receive simultaneously the tasks of fully mobilizing the large units at decreased strength, and at the same time, have the large units at constant readiness execute a forced march to the area of combat operations, with subsequent immediate engagement from the move (from the march).

Because of the possibility that large railroad centers may be put out of commission, and also because of the difficulty in effecting transport, caused by the difference in the gauge of Soviet and West European railroads, it is impossible to depend on railroads alone for the transport of the troops at constant readiness. The execution of a combined march can be accomplished only under more favorable conditions. There is also a possibility of shifting separate large units, especially from the second echelon, after they are brought to full strength, by air, using military air transport. It is most probable that, as a rule, the army will have to carry out a march of 1000 km on its own.

In our opinion, it would be expedient to assign to the army a zone no less than 100-150 km wide for executing the march. In such a zone it would be possible to use up to six to eight routes (two for each division) for troop movement, and two routes for the field command of the army and large units and units, and also to carry out a maneuver during an abrupt change in the direction of movement or in case of destruction of communications bridges and roads.

The march formation of the first echelon of the army may vary according to the number of divisions and routes in the zone of movement. In the beginning of the march (during the first march periods) it is expedient to have columns made up of similar vehicles. Tanks and artillery drawn by tracked vehicles must travel by independent routes. At the end of the march, possibly during the last day's march, depending upon circumstances, the march columns should be formed in such a way that the troops would be ready for instant deployment and commitment to battle. In our opinion, the missile

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units should follow the forward regiments; they should be moved to the front during the last day's march with suitable protection, and should then follow the advance guard of the forward regiments.

As a result of experience gained from training, we have concluded that a series of prescribed norms is subject to review appropriate to the demands of the initial phase of the war. Thus, a march of 900-1000 km, using our existing vehicles, equipped with additional fuel capacity, can be executed in four march periods: the first of 300-350 km, the second of 200-250 km, the third up to 250 km, the fourth up to 150 km. It would be expedient to execute the last march period at night.

In the situation under review, we feel that it would be expedient to call halts as follows: short (up to one hour long) - after every 4 to 5 hours of movement, long (not over 3 hours long) - after 8 to 10 hours of movement. During the last march period (at night) there should be a short halt only - of 1 to 2 hours' duration. Personnel should have a rest period after each march period of 8 to 10 hours.

In order to maintain minimum vulnerability to destruction by nuclear weapons, to insure maximum speed of movement and execution of maneuvers when bypassing contaminated sectors and various obstacles, it is expedient to maintain a distance of 50 m. between vehicles, 3 to 4 km. between battalions, and 5 to 7 km between regiments. Distances between companies (batteries) should be the same as between vehicles, because the prescribed distance of 100 m. only increases the total depth of the column, and as a rule is not maintained in actual troop movements.

Traffic control lines should be set up after 4 to 5 hours of movement, i.e., to have no more than two in each day's march. Setting up a greater number of control lines is not advantageous, because this limits, up to a point, the initiative of the commanders of large units and units, and eliminates the possibility of moving the column at increased rates of speed in sectors where the roads are of better quality, even if the routes of march are made available to the army for definite periods of time.

The commandant's service has the leading role in ensuring organized and timely transfer of troops. Careful study shows that during long marches the organization of the commandant's service presents certain difficulties, and the recommendations contained in the Manual of Commandant's Service, published back in 1953, does not completely fulfil modern requirements. The situation is made worse

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by the fact that the army actually has no personnel or equipment in the table of organization for setting up a commandant's service, and the district commandant's service will not be deployed yet by the beginning of a march. In our opinion the tasks that the commandant's service is responsible for during a march by the troops in the initial stages of war, far exceed those in the above-mentioned Manual.

We fully share the viewpoint of Marshal of the Soviet Union M.S. Zakharov, expressed by him in the article "The Traffic Control Support of Modern Operations"¹ (O dorozhnom obespechenii sovremennykh operatsiy) for the organization of traffic control areas, their problems, and the forces and equipment that can be brought in.

However, we consider that it is possible to examine this matter in greater detail, under conditions of the execution of a long march by the army immediately after a sudden attack by the enemy. In our opinion, the commandant's service is confronted by the following problems in these circumstances: to maintain the established order during the movement of troops, to protect them from enemy air attack, to prepare bypasses and alternate routes for carrying out the maneuver, to assist in the elimination of the effects of an enemy nuclear or chemical attack (evacuation and deactivation of equipment and weapons; special treatment of personnel; repair damaged sections of roads and road structures) and to ensure troop control.

The composition of the army commandant's areas and the division commandant sectors should include motorized-rifle units and sub-units, antiaircraft defense, engineering, chemical, communications, special treatment and medical sub-units, and means for evacuating equipment.

The establishing of army commandant's areas and sectors eliminates the dispersal of forces and equipment along the entire route, and permits their concentration in sectors of special importance, depending on the presence of natural barriers. It would be expedient to set up individual, radio-equipped commandant's posts along the remaining sectors of the routes.

It is best to set up army commandant's areas in the more dangerous and difficult sections of the routes, where natural barriers block the entire forward movement zone of the army. The area commandant must be given a wide range of authority. All the commanders,

1. Collection of Articles of the Journal "Military Thought"... [remainder of footnote missing]. Headquarters Comment: This journal is not identical with the Special Collection of Articles of the Journal "Military Thought".

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staffs, and troops passing through the commandant's area must execute the commandant's orders implicitly, and he, in turn, has full responsibility for the successful passage of the troops through a given sector of the route. In connection with this, one of the army deputy commanders should be appointed commandant of the army area, and the commandant of the division sectors should be one of the deputy division commanders.

The organization of a service in a commandant's sector of a division requires varying amounts of forces and equipment in each case. Generally speaking, for the movement route of a division, a total of up to three motorized-rifle battalions can be activated; these will be reinforced by the necessary engineering, chemical, and other sub-units, which are relieved of commandant's service duties when the division approaches the area of combat operations, or when they are replaced by forces and equipment of the front.

Briefly, on the organization of control and communications during the march. In our opinion, in order to ensure troop control during a combat alert, it is necessary to set up, in the army, a forward command post (PKP), a command post (KP), and a reserve command post (ZKP) - the second echelon of the field command. It is not advisable to set up a rear area control point (TPU) before the field command and communications units are set up according to the wartime T/O. The officers of the rear services are located at the command post and the reserve command post. In the divisions at constant readiness, forward command posts, command posts, and rear area control points are set up; only command posts and rear area control points are set up in divisions that need further mobilization.

The forward command post, with the chief of the operations department in charge, must begin an immediate forward movement to the army departure line (into the area where the division at constant readiness is deployed), where he will control troop commitment. The command post and the reserve command post remain in the concentration areas where they were at the time of the alert. During the period when the forward command post moves forward, communications with the troops and the district staff are carried on from the command post. The army commander, with a group of generals and officers from the forward command post staff (four or five persons), remains at the command post in order to make decisions and assign tasks to the troops, but by the time that the troops of the first echelon begin to march he must be at the forward command post. The command post begins the forward movement from the concentration area during an alert only after the troops have been assigned their tasks. The reserve command post supervises mobilization and formation of new units from its

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concentration area at the alert.

En route the forward command post moves along with the main forces of the division, deploys and sets up communications with the troops, the command post, and the headquarters of the front during halts and in rest areas. The command post of the army moves by bounds and deploys in spots that ensure the use of permanent lines of communications with the headquarters of the front, the forward command post, and the troops. The duration of the halts will be determined in each case by the time necessary to receive a situation report from the troops, transmitting orders to the latter, and reporting to the higher headquarters. Shifting the command post of the army in this manner may result in its lagging as much as 100 km behind the troops and the forward command post. In order to avoid this during a march made in separate sectors, the command post and the forward command post must be on the move simultaneously, but for periods not to exceed 2 hours, due to the necessity of maintaining constant communications with the higher headquarters and the troops. After each march period the control points are placed in the area of disposition of the troops.

It is also expedient to have a forward command post and a command post within divisions on the march. They must move along separate routes and at a distance which ensures stable communications with each other.

Certain difficulties are encountered in ensuring communications during long marches. In order to conceal the troop movements, the radio nets of the marching troops cannot be used, and the permanent communications lines, even those on the territory of the Socialist Camp countries, may not be entirely familiar to the communication units of the army. These circumstances compel the use of commandant's service radiocommunications and mobile means, above all, helicopters. Radio stations of the commandant's service network are set up along specific lines. These stations operate by means of rebroadcast or relay of radio signals. As each unit passes a line, a pre-arranged signal is transmitted over the radio, which is duplicated by all the other stations and is received simultaneously by the control points of the division and army. The signals must be of a one-way type, without call letters or coded service phrases. During the first 24-hour march, radio communications of the commandant's service are organized using shortwave stations, during the second and third, ultra-short wave is used, and for the last day's march, communications are carried on with the assistance of radio-relay stations.

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In carrying out a long march it must also be taken into consideration that the troops may suffer losses from the enemy weapons of mass destruction, and in some cases entire sub-units and even units may be put out of action. This is particularly pertinent in cases when the personnel receive large doses of radiation. In these conditions a new problem arises - replacement of personnel losses right during the march. The equipment not affected by the shockwave which belongs to the radiation-contaminated sub-units and units, can be used after decontamination. It would seem that in peacetime plans, provisions should be made to provide for the formation of sub-units and units (of the march company and battalion type) at the district level that could be shifted by air to the formations carrying out the march, and which could be used later as replacements for losses sustained during combat conditions.

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The conditions under which a combined-arms army of a border military district that is moving forward from the depth is committed to combat, will always be determined by the nature of the combat operations carried out by the first-echelon troops of the front during the first days of the war, and it is rather difficult to predetermine them in advance. It is most probable that the army will be committed to combat directly from the march, and this is always attended by great difficulties and a series of peculiarities which require detailed study.

First of all, about the work of commanders and staffs in these conditions. It is apparent that the commander and the staff of the army will get the order from the front to commit the army to combat while moving (marching) at a distance of 250 km, or more, from the front line. Therefore the clarification of the mission, evaluation of the situation, making of the decision, planning, and informing the large units of the tasks will all be done in a very limited period of time, en route, without halting. Otherwise the commanders and the staffs may straggle behind the troops and lose control.

The situation is aggravated by the fact that at the present time the staff field equipment does not ensure operation on the march. Even the T/O of the commander of an army does not have an equipped mobile control point capable of ensuring operation and control of troops in a movement over a long distance. The creation from the forces and equipment of the troops of improvised mobile command posts, and the equipping of buses and GAZ-69 vehicles for operating in field conditions has indeed helped considerably in cutting down the amount

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of cumbersome equipment at the control points, and has made them more mobile, but it involves great expenditures, and does not basically solve the problem. The means of radio communication remain the same, and the cross-country ability of the automobile chassis does not conform to modern requirements.

While planning the commitment of the army to combat, and the carrying out of offensive operations in the entire depth, commanders and staffs must simultaneously define in detail the remaining segment of the march, taking into consideration the commitment of large units into combat and the conduct by them of an offensive, to inform the troops of the change in the plan of march, to control the troops continuously, to organize and maintain constantly coordination with the large units operating ahead, ensure replenishment of materiel supplies and fuel expended in the march, and to carry out reconnaissance of the enemy.

According to experience gained from the war games carried out in our army, it would be expedient to organize the work of the commanders and staffs in similar situations in the following manner:

Beforehand, when the army commander receives the district operational directive to march, he sends out an operational group to one of the headquarters operating ahead of the troops in the direction that the army is moving forward; their mission is to constantly provide information about the situation in the area of combat operations. The group should consist of five or six persons (officer-operator, intelligence officer, artilleryman, communications officer, chemical officer) and also a squad of radiation and chemical reconnaissance. It follows [one line missing] of operations and methods of transmitting information must be planned beforehand, in peacetime.

Inasmuch as the army does not have an air transport capability for distances of 900-1000 km, the operational group must move in motor vehicles, and the latter must move at a speed of up to 60 km per hour. Moving twice as fast as the army troops, the operational group will transmit the first information about the situation from the area of combat operations, at the time when the troops moving forward will be halfway to the concentration area, or the line of deployment. Moving along one of the basic routes, the operational group will be able to determine the condition of the route, and after arriving at the destination - can fully reconnoiter the area of command post disposition, and determine the presence of radioactive and poisonous substances and bacteriological agents. The

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organization of communications with the operational group must be thought out in detail, utilizing intermediate radio stations, communications of the front, of the commandant's service, and, with the approach of the troops, mobile equipment.

When he receives directives to commit the army to combat, the army commander will make his decision by consulting the map. The army command post, headed by the chief of staff, must transmit the missions to the large units and control the forward movement of the troops, and with the forward command post the commander and the commanders of the large units move forward to the line of commitment to battle, in order to clarify the situation, organize coordination with the troops operating ahead, resolve the questions of support of commitment to battle, and possibly to change the original decision. The forward command post of the army must plan the operation quickly, resolve the questions of coordination and supply, and together with the forward command posts of the large units, assume control of the arriving troops. In connection with this, the forward command post must be very efficient, small in number, highly mobile, and must have adequate numbers of means of communications with the troops, the headquarters of the front, and of adjacent units.

The scope of work of the commanders and staffs under similar conditions requires detailed study, and a unified method of supervision and control must be worked out. Many are of the opinion that all these problematical questions should be formalized by the General Staff in official instructions or in a manual. We are of a different opinion. It is impossible to foresee all cases and possible variants under which the army may be committed to combat from the second echelon of a front, and to incorporate operating procedures in one official manual. It would be more beneficial to study similar problems constantly, check them out as much as possible during training exercises, and publish them as discussions. This method develops deep thinking and increases the general military outlook of the commanders and staffs.

It is another matter to resolve in a centralized manner questions regarding establishing a materiel base for command, communications, and technical support of commanders, staffs, and troops, with modern means of control. For instance, the critical need arises for the commanders of armies and large units to have mobile control points equipped with the newest, small, long-range radio stations, ensuring secure conversations without resorting to numerous conversation and signal codes. In the operations department of the army there should be a computer capable of quickly producing the data needed for the

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evaluation of the situation (above all the radiation situation) and arrive at a decision. A squadron of helicopters should be made a part of the army field command T/O, to implement troop control, for conducting radiation, chemical, and engineer reconnaissance, and for fulfilling other important tasks.

Another problem which needs to be solved is the method of recording the degree of radioactive contamination of the personnel. The commanding officer of a sub-unit cannot keep a written record for each soldier, especially during the frequent transfer of personnel from one sub-unit to another, and especially after hospitalization. It is apparently necessary to issue to personnel, individual, miniaturized devices of the "pencil" type, with coded indicators; this will exclude the possibility of independent reading of the radiation dosage received by the personnel themselves, but will permit the commanding officers to determine the true meaning of these doses with the aid of a corresponding decoding device (one to a company).

It is known that modern conditions for conducting a battle and an operation demand exceptional speed and maneuverability by commanders and staffs. Therefore it is necessary, even now, to change radically their style of work. Up to this time the staffs are producing many combat documents. Even though in the past few years they have eliminated some of the written documents, these same documents are now being worked out on maps, and often duplicate each other; this takes even more of the staff officers' time than before. Frequently the work of a staff is judged by the number of documents produced. This explains the fact that in all exercises a large number of additional officers is taken from the troops for work in the staff. As yet the troops do not have staff field service instructions which fulfil modern requirements. This also appears to be one of the reasons for a series of shortcomings in staff work.

The questions that we have raised call for thorough study during command-staff exercises, war games, and during the buildup of large units to wartime strength.

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