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Mobile Control Posts of Ground Forces Formations and Large Units

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Changed conditions and increased requirements for troop control have given rise to the necessity of seeking ways of improving this control, and particularly the system for organizing and technically equipping control posts.

As shown by the experience of troop and staff exercises, the established system for organizing control posts basically satisfies present-day requirements and ensures troop control in a battle or operation. However, we must emphasize that certain elements of the system require all-round improvement, particularly such factors as mobility and survivability.

It seems to us that the system of control posts would be more flexible, mobile, and versatile if existing regulations on organizing the forward and alternate command posts of formations and combined-arms large units were broadened and supplemented with data pertaining to the changes which occur in their operating procedure and role, depending on the conditions of the combat situation and the tasks they are fulfilling. Thus, for example, during an offensive the forward command post can, in our view, adopt the operating procedure of an alternate command post and fulfil its role. This will occur when the commander (formation commander) is not at the forward command post, and communications between the command post and the troops, and troop control, are reliable. In defense, when preparing and conducting a counterattack (counterthrust), the alternate command post can fulfil the role of a forward command post if its composition and operating procedure are changed.

At present it is assumed that an alternate command post is meant to control troops only if the command post is placed out of action. In our opinion, it can assume control, when, for example, the command post is relocating to a different area. From the alternate command post it is also possible to monitor

the troop groupings conducting combat actions on the axis on which it is located.

The mobility of control posts. Many authors of studies and articles on the problems of troop command take mobility of control posts to mean their capability to relocate right behind advancing troops and their ability to ensure the continuance of work on maps and other documents while moving. The concepts of the mobility of transport means and the mobility of a control post should not be equated.

During the Great Patriotic War it was also the practice to set up mobile control posts by equipping improvised command-staff and staff vehicles and mobile communications centers. Tanks, self-propelled artillery, and also various types of motor transport vehicles were used for this.

Considerable impetus in this direction was provided by the adoption of nuclear warfare means into service and by the changes in the conditions of control associated with this. Ground forces large units and units were equipped with BTR-50PU and R-125 (on a GAZ-69 chassis) command-staff vehicles. New diversified types of staff vehicles have been developed on the basis of the existing inventory and through the efforts of the troops themselves. The communications means intended for the control posts of units, large units, and formations of the various branches of the armed forces have been improved.

With the aim of improving troop control, a number of special exercises, troop and staff exercises, and also various studies have been carried out. However, in the field of providing the control posts of formations and combined-arms large units of the ground forces with technical equipment, very little has changed.

The bulk of combined-arms large units have mobile control posts set up on the basis of mass-produced equipment rooms for communications centers, the above-mentioned types of command-staff vehicles, and also various staff buses. Also, the latter are still being equipped and adapted to the needs of control by troop motor vehicle repair subunits. 50X1-HUM

Communications centers installed in motor vehicles have been developed for formation control posts. Staff vehicles for this

level also are being produced by the troops using transport in the existing inventory of motor vehicles. Mass production of industrial models of command-staff vehicles for the army-front level has not been set up.

In this connection, the transport used for the control posts of ground forces large units and units has substantial shortcomings and does not fully satisfy the operational-tactical and tactical-technical requirements imposed upon it.

First of all, we must note that it does not provide personnel and control means with reliable protection against radioactive, chemical, and bacteriological contamination, or against the effects of enemy fire. The bodies of the vehicles are not airtight nor are they equipped with filter-ventilator units. The BTR-50PU amphibious tracked armored personnel carrier, which in a number of its indices surpasses other vehicles, constitutes an exception.

A common shortcoming of control post vehicles is their lack of thermal protection against detection by enemy infrared reconnaissance devices.

The cross-country capability of most of the vehicles is inadequate, particularly if we take into account that control posts at the tactical level must move up right behind the troops on torn-up roads or cross country.

The cargo capacity and dimensions of a number of the types of vehicles used do not provide for the convenient placement of an efficient array of equipment and working positions for personnel. From this aspect, it is not advantageous to use vehicles with limited cargo capacity and small body area, particularly at the operational level of control, since this causes an unwarranted increase in the number of transport means and personnel.

Even the vehicles for tactical level control posts are not all air-transportable. As a rule, they cannot be fitted within the dimensions of the aircraft, and they exceed the lift capabilities of helicopters and the basic types of aircraft of military transport aviation.

The variety of types of vehicles used has led to a profusion of give-away signs by which enemy reconnaissance can easily differentiate combat and transport vehicles from control post vehicles and, by their design and external appearance, also determine that a control post is affiliated with a specific control level.

The BTR-50PU amphibious tracked armored personnel carrier, which has communications means and navigational equipment (course plotter), has displayed good cross-country capability. However, a number of shortcomings -- the so-called "track effect", loud noise inside the vehicle while it is moving, small body area, inconvenience entering and leaving the vehicle -- sharply reduce the feasibility of using it in large unit and formation control posts.

The R-125 command-staff vehicle is widely used when commanders go out to the field and when control posts are relocated. But as a control vehicle it is not suitable: it is overloaded with communications means; it completely lacks protection against enemy fire means and weapons of mass destruction; it does not afford even minimum conveniences for work with maps and other documents; and its body is covered by a canopy and does not retain heat.

Taking into account the conditions under which command-staff vehicles operate, the technical requirements imposed on them, and also the availability and status of armored and motor transport equipment, it can be assumed that in the near future, for the needs of control at the tactical level, we may use specially equipped infantry combat vehicles and the new BTR-60P wheeled amphibious armored personnel carrier; and at the operational level -- the URAL-375 truck with a body of increased strength and also one of the types of artillery prime movers with an armor-protected airtight body. Using ordinary mass-produced tanks, without substantially altering them, will obviously not produce the necessary effect as their capacity and usable area for the placement of personnel and control means is very limited.

As concerns the vehicles with AVS, KUNG-1, and KUNG-2 type heated bodies with shelving intended for the installation of communications means, their principal shortcoming is their lack of protection against fire means and the casualty-producing

elements of nuclear bursts, as well as their lack of airtightness and of filter-ventilator units.

The most promising staff and specialized vehicles for formation control posts may be the ZIL-131 truck with the K-66 general-purpose, reinforced cellular plastic body and the URAL-375 truck with the K-375 body, both with filter-ventilator units, control means, and other equipment installed in them. We also must not exclude the use of the GAZ-66 truck with the K-66 body.

Specially equipped high-speed amphibious armored personnel carriers also may come into use at the army-front level in the future -- these are shelters on tracks, which should afford better protection and more usable area for the placement of personnel and control means.

However, we must emphasize that preference should be given to vehicles having not only increased cross-country capability, but also a body with considerable usable area. The introduction of such vehicles, and also the "merging" of communications means with the working positions of the officers will make it possible to reduce the number of transport means for formation control posts by approximately 20 to 25 percent.

When developing and improving bodies for staff vehicles, it is advisable to also take into consideration the possibility of connecting and joining them together to increase the usable area needed for the work of departments and services.

At the control posts of units and large units we should use staff and special vehicles which are more resistant to enemy nuclear strikes, protected, and have high cross-country capability, and which are equipped with self-entrenching and self-winching out means. Combining in the same vehicles the capabilities of transporting personnel and control means and of protecting them will considerably reduce the volume of engineer work needed to prepare sites for control posts. The entire set of measures for the engineer support of a system of control posts could be reduced basically to preparing roads and placing a cushioning layer over these armored vehicle-shelters. These activities will, of course, be completed in a shorter time than when various portable shelters of the prefabricated sectional

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type are used.

We should standardize the command-staff, staff, and special vehicles intended for the control posts of large units and formations. In doing this, the vehicles for each purpose should undergo several modifications. In our view, this will have a favorable effect on the training of driver personnel, and on the operation and repair of the vehicles.

It is clear that at this stage in equipping and improving mobile control posts, those command-staff, staff, and special vehicles earmarked primarily for a specific level of control can also be used at another level by making the necessary changes in the equipment and by replacing the control means.

Control means. Recently some changes have occurred in the technical equipping of the mobile communications centers of all levels of control. Complex equipment rooms with secure communications equipment have been incorporated into these centers. Command-staff vehicles, radio sets, and all equipment rooms of communications centers have means for internal communications along the column during movement, and radio sets and separate receiver vehicles are equipped with remote control means. All of this as a whole has allowed us to improve troop control somewhat in a modern battle or operation.

At the same time, the experience of exercises indicates that existing mobile communications centers do not yet fully satisfy control requirements. Their principal shortcomings are: poor mobility, inadequate communications reliability and security, poor protection against the effects of weapons of mass destruction; and the special vehicles for communications centers and command-staff vehicles have different speeds and cross-country capability.

The radio sets of command-staff vehicles provide communications while on the move only to a certain range: at the tactical level, up to 20 kilometers; at the operational level, up to 30 kilometers. Furthermore, they do not have automatic secure communications equipment for use with messages and telephone conversations, thus sharply reducing the efficiency of troop control.

It is true that from any mobile control post having radio-relay sets of the R-405 (401-M, 403-M) type, it is possible in some cases to provide communications up to a range of 120 kilometers from brief halts, by going through supporting radio-relay sets operating from a site. These sets might be the intermediate radio-relay sets of the communications main artery, or radio-relay sets of auxiliary communications centers or control posts. In such cases, communications are possible if the mobile control post is within 20 kilometers of the supporting set.

However, in present-day operations the basis for a communications system must be direct communications between control posts (command levels). This most fully satisfies the requirements for control under the complex conditions of mobile warfare, when combat actions are rapid in nature and the situation changes drastically in short periods of time.

The introduction of more powerful ultra-shortwave radio sets with a wide frequency band, and also an automatic retuning device, will be very important to mobile control posts. This will greatly increase their capabilities for providing communications to ranges of up to 150 kilometers when working from a site, and up to 70 kilometers from short halts under conditions of jamming.

By further improving single sideband shortwave radios we can considerably increase the reliability, resistance to jamming, and quality of communications channels (particularly telephone channels). Also very promising is the introduction of tropospheric communications from the division level and higher.

But how can we accomplish the task of providing secure communications for mobile control posts?

At the present time, automatic secure communications equipment is installed primarily in special equipment rooms which can be connected by cable lines with all of the channeling means of a communications center. This procedure makes it possible, first of all, to use each and every equipment set to work on any communications channel in operation at a given time (radio, radio-relay, tropospheric, wire), which reduces overall requirements for these sets, and secondly, creates conditions

which are more conducive to ensuring the security of the secure communications.

However, when adopting this variant for placing equipment, it is necessary in the control post to set up channeling means (radio, radio-relay, and tropospheric sets) and equipment rooms for secure communications, to extend the internal junction circuits in the communications center, to check them, and then to tie the automatic secure communications equipment into the communications channels. This requires considerable time, since what actually must be done is to set up a communications center for operation from a site. The time required to set up the communications center of a division command post is 40 to 60 minutes, and that of an army command post -- 1.5 to two hours. This same amount of time also will be expended to close down communications centers when preparing to change locations.

Taking this into consideration, and also the requirements pertaining to the mobility of communications centers, we may conclude that the mobile control posts of the division and lower, where commanders and staffs are on the move approximately 50 percent of the time during combat actions, it is advisable to place the secure communications equipment directly in the command-staff vehicles, and in the radio and tropospheric sets.

In the communications centers of operational formations, particularly front formations, the variant of locating secure communications equipment in specialized equipment rooms may be used more extensively.

To ensure the protection of personnel and communications means against the effects of enemy fire, the communications centers of mobile control posts should be set up in the following manner: at the tactical level entirely within armored personnel carriers; but at the operational level, only the means providing commanders with communications when they go out to the field and to forward command posts are to be in armored installations.

When developing new command-staff vehicles we must not be carried away by the idea of installing a large number of varied communications means in them, since this impedes using these means simultaneously due to mutual interference. An example of this might be the BTR-50PU command-staff vehicle in which four 50X1-HUM

radios, one radio-relay terminal set, and a radio receiver are installed. Experience in operating it shows that, as a rule, communications are carried out via only two or three radio sets at any one time. The radio-relay terminal set installed in this vehicle is hardly ever used. It is true that installing a large number of radio means in the BTR-50PU has been warranted by the fact that we did not have wideband radio sets; therefore, a commander could be assured of communications with senior commanders, and subordinate and cooperating units (subunits) when there were several radio sets operating on various frequency bands.

New radio sets are more versatile. Therefore, when they are used in a commander's (formation commander's) command-staff vehicle it is advisable to have two radios with two sets of secure communications equipment in order to ensure communications with the senior chief and subordinates, as well as to have one low-power radio for internal communications along the column by the control post.

Internal communications are provided for existing mobile control posts via a radio using R-105 radios (while on the move), or else via wire cable lines (when located at a site). These communications are conducted on a single common frequency. The transmission capacity of such a net is extremely limited. Practically speaking, when there are 10 to 20 correspondents in the net, it is possible to transmit primarily radio signals, and in rare cases, short messages. We must also take it into consideration that these communications require the use of secure troop control documents.

The internal communications of mobile control posts should be improved by way of increasing their transmission capacity and providing for the automatic security of conversations. This task can be accomplished by using duplex ultra-shortwave radio sets.

The interdependence and future development of means for equipping these posts, means which have highly diverse characteristics and capabilities, pose very important tasks in coordinating their further improvement and ensuring the survivability of the control posts of large units and formations. Survivability is of particular importance because these posts are the places where personnel and control means are concentrated --

they are the centers of troop control and, consequently, the most important targets to the enemy for the delivery of nuclear and other strikes.

An analysis of the statistical data of the experience of recent exercises shows that the control posts of an army included the following numbers of various types of vehicles: a forward command post -- 30 to 40, a command post -- 100 to 150, and a rear control post -- 50 to 70. And, the communications centers of the respective control posts accounted for 30 to 50 percent of the vehicles. In one of the exercises, there were approximately 200 different vehicles assigned to the front command post, and its deployment required up to eight hours. At the same time, 130 vehicles were located at the rear control post.

The survivability of control posts is closely tied to the mobility of their transport means and the degree to which these means are protected. In ensuring survivability, the correct choice of areas to locate them in also plays an important part; the areas should provide convenience in setting up communications, concealed and sheltered positions for personnel and equipment, and camouflage for the access routes and approaches.

In connection with the problem of increasing the survivability of control posts we must mention the article by General-Leytenant of Engineer Troops G. Samoylovich.* His proposals, in our opinion, are acceptable for the most part only when the theaters of military operations are given engineer preparation in peacetime, and also during defensive actions and actions involving little movement, but not under conditions of an offensive at high rates of speed where weapons of mass destruction are used.

The enemy indeed does have varied effective reconnaissance means and devotes a great deal of attention to detecting and destroying the control posts of our troops. The more time, forces, and means are spent on the engineer preparation of these posts, the more difficult it will be to conceal the engineer measures, and the more effective nuclear strikes will prove to be. In a number of cases, the enemy can find out about the selection and engineer preparation of the new location site for a

control post even before the principal communications means are set up in it. The operation of these communications means will merely corroborate that a control post has been deployed in this area.

From what has been said we can see how difficult it is now in an offensive operation to count upon preparing control posts according to the previously used "classical" variant recommended by the author: to select a location site from a map, reconnoiter it, give it engineer preparation in advance, set up communications means, and so forth.

General Samoylovich's proposal to position groups in a dispersed manner at the control posts, and also to use the aforementioned standard structures, will require the allocation of a considerable number of personnel and transport. But when there are heavy losses and there is not enough time to put up the structures, a variety of simplifications are possible, which will entail the violation of technical regulations on the performance of engineer work.

It is very difficult to base the mutual separation of control post groups or components and the areas these posts occupy only on yields -- even if they are those of the most standard enemy nuclear warheads -- as was done in the article. When necessary, several nuclear strikes using warheads of the required yield can be delivered against the very same target.

Increasing the degree of dispersal and the area occupied by each control post will require the allocation of a large number of personnel and technical means (cable and transport) to set up internal communications. At present we use primarily heavy cable (TTVK and PTRK) for this. A GAZ-63 truck is needed to transport three kilometers of the first cable or approximately two kilometers of the second cable. We can appreciate the increased volume of work and time needed for this work by communications subunits, as well as the increased expenditure of cable, when the distance between the groups at control posts is increased according to the proposals made in the article.

We are convinced it is more expedient to expand not the network of the groups or components of each control post, which General Samoylovich discussed, but rather the network of the

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control posts of each formation, including auxiliary and reserve posts in the network when necessary.

In order to ensure the survivability of mobile control posts in a present-day offensive operation, in our opinion, emphasis should be placed primarily on using protected armored command-staff and staff vehicles capable of digging themselves in and out of the ground, as well as on achieving mobility for each control post, exploiting favorable terrain conditions, and transferring control from one post to another depending on the conditions of the situation.

Radio camouflage of a system of control posts has acquired great importance. When setting up this camouflage we must keep in mind that greatest accuracy of detection is achieved when direction finding is used against shortwave radio sets operating on a surface wave. For example, bearings can be taken on the medium-power shortwave radio transmitters of an army command post with a linear error of two to four kilometers. At the same time, it is extremely difficult for ground direction-finding sets to get bearings on radio and radio-relay sets operating in ultra-shortwave bands, and particularly in the decimeter and centimeter wavebands. And direction finding from airborne means produces linear errors of several dozen kilometers.

Hence, a practical radio camouflage measure for control posts at the operational level is to move groups of medium-power and high-power shortwave transmitters beyond the boundaries of the posts. But as concerns tactical level control posts, shortwave radio communications are used to a limited degree here and control posts change locations often; therefore, individual shortwave radio transmitters can be positioned near the control posts or directly within them.

Furthermore, in ensuring the camouflaging of control posts, growing importance is attached to the thermal protection of vehicles and other installations radiating thermal energy against detection by the enemy's infrared reconnaissance devices.

We must ensure that control posts have high survivability, not only when they are located at a site but also when they are moving to new areas. To attain this, all changes in location must be carried out rapidly, not wasting any unnecessary time

closing down or setting up control posts. The driver of each vehicle must know the prescribed signals and his place in relation to other vehicles of the control post, both while located at a site and also while on the move as part of the column. This is achieved by drawing up standard diagrams for the disposition of every control post, by calculating the composition of the columns, and also by training the personnel of the control organs, especially the drivers.

In conclusion, it should be pointed out that mobile control posts open up new opportunities for improving troop control and raising the combat readiness of large units and formations.

In order to solve, in a more purposeful manner, the problems of developing means for equipping control posts, it is necessary:

-- to study continuously the experience of troops and staffs, and also the results of military science work and scientific research work in the field of troop control;

-- to coordinate the efforts of troops, military educational institutions and scientific research institutions in developing, testing, and improving transportation equipment and various control means;

-- to expand the capabilities and the range of problems being solved by one of the scientific research institutes for communications in developing means for equipping control posts, taking into consideration the latest achievements of science and technology;

-- to organize the production of industrial models of command-staff, staff, and special vehicles, and also of control means intended for the equipping of unit, large unit, and formation control posts.

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