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CENTRAL INTELLIGENCE AGENCY
WASHINGTON, D.C. 20505

29 May 1975

MEMORANDUM FOR: The Director of Central Intelligence

SUBJECT : WARSAW PACT JOURNAL: Certain Problems
in the Conduct of Tactical-Special Exercises by
Communications Troops

1. The enclosed Intelligence Information Special Report is part of a series now in preparation based on articles from a ~~SECRET~~ Soviet publication called Information Collection of the Headquarters and the Technical Committee of the Combined Armed Forces. This article summarizes the results of recent combined tactical exercises involving communications troops. The author reviews typical problems, such as the setting up of lines, distribution of frequencies, training requirements, radio camouflage and protective measures, proper installation and operation, jamming, and countermeasures. This journal is published by Warsaw Pact Headquarters in Moscow, and it consists of articles by Warsaw Pact officers. This article appeared in Issue No. 6, which was published in 1974.

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 the [redacted] Codeword [redacted].

[redacted]
William E. Nelson
Deputy Director for Operations

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Intelligence Information Special Report

Page 3 of 13 Pages

COUNTRY USSR/WARSAW PACT

DATE OF
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DATE 29 May 1975

SUBJECT

WARSAW PACT JOURNAL: Certain Problems in the Conduct of Tactical-Special Exercises by Communications Troops

SOURCE Documentary

Summary:

The following report is a translation from Russian of an article from a SECRET Soviet publication called Information Collection of the Headquarters and the Technical Committee of the Combined Armed Forces. This journal is published by Warsaw Pact Headquarters in Moscow, and it consists of articles by Warsaw Pact officers. This article was written by General-Major G. Enchu. This article summarizes the results of recent combined tactical exercises involving communications troops. The author reviews typical problems, such as the setting up of lines, distribution of frequencies, training requirements, radio camouflage and protective measures, proper installation and operation, jamming, and countermeasures. This article appeared in Issue No. 6, which was published in 1974.

End of Summary

Comment:

The names of authors are given in Russian transliteration. Ranks of one-star (general-mayor) and two-star (general-leytenant) general officers are given in Russian for nationals of countries following the Soviet system.

TS #207057
Copy # 2

~~TOP SECRET~~

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Page 4 of 13 Pages

Certain Problems in the Conduct of Tactical-Special
Exercises by Communications Troops

by

General-Mayor G. Enchu
Commander of Communications Troops of the
Army of the Socialist Republic of Romania

The continuous modernization of communications means brought about by the current scientific-technical revolution plays a tremendous role in the organization of the work of communications systems, and poses new problems in the area of tactical-special training of communications personnel.

Of great importance for testing new communications means and developing methods of maintaining them, are tactical-special exercises held under adverse conditions close to those of actual combat. They create conditions for better teamwork among units and subunits, maximum use of equipment under field conditions, and the use of the most effective methods of providing high-quality and continuous communications at the right time.

Tactical-special exercises also make it possible to develop and improve the most desirable methods of organizing (or establishing) cooperation communications between various arms of troops and levels when combined combat operations are conducted by armies of member states of the Warsaw Pact. Only by such comprehensive training, carried out with all the requirements in mind, will communications troops be able to fulfil their basic tasks -- ensuring stability, continuity, and flexibility of control. This is confirmed by the positive results achieved at similar combined exercises held in recent years, in which communications units of the Army of the Socialist Republic of Romania took part.

It should be noted that during the tactical-special exercises, at which the problems of establishing and maintaining cooperation communications by communications units of various nationalities were worked out, certain organizational and practical requirements were discovered, on whose fulfilment the successful accomplishment of this task depends.

TS #207057
Copy # 2

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We believe that the basic requirement for obtaining maximum effectiveness of communications troops in combined tactical-special exercises is to establish the necessary conformity between training tasks in communications and the operational concept of the exercise. The communications concept must ensure effective training throughout the exercise of all categories of specialists in the setting up and operation of those communications channels necessary for cooperation between various levels. For example, should cooperating operational large units be located in concentration areas or conduct a march over a great distance, the work of radiotelegraph operators using radio sets of medium power naturally is limited, and the result is a sharp drop in their training time. Therefore, in our view, in a tactical-special communications exercise it is advisable to work out the kind of concept which would reduce the amount of time lost by communications means and make it possible for communications means to operate over the longest possible period. This would permit more intensive work on the part of all specialists responsible for establishing and maintaining communications: radiotelegraph operators, operators of radio-relay sets, multiplex equipment technicians, telegraph and telephone operators, and personnel setting up cable lines.

Thus, during the exercise the basic training objectives are fulfilled for all the above-mentioned specialists: the establishment and maintenance of cooperation communications over a great distance, integrated use of various communications means, and the combining of communications channels of cooperation established by radio, radio-relay sets, and wire communications lines set up by communications troops or incorporated from a territorial communications system.

It should be noted that the holding of similar tactical-special exercises by communications troops from two adjacent cooperating fronts (armies) at the same time, and the creation, in a general operational setting, of a situation marked by a temporary disabling of the command posts of certain operational formations, also will further the training of communications personnel in the maintenance of continuous cooperation communications, especially when the combined method of operating communications means is used.

Experience has shown, however, that when the communications of a disabled command post are taken over by another (of the same, higher, or subordinate level) a whole series of difficulties arise which must be considered in advance so that preventive measures may be taken. We, for example, believe that while a communications plan still is being drawn up, several possible methods of transferring communications from one control

TS #207057
Copy # 8

~~TOP SECRET~~

Page 6 of 13 Pages

post to another should be foreseen, and specific measures contemplated to solve these problems. It is essential in such cases to have a mobile reserve of communications forces and means, in order to strengthen those command posts that have assumed control of the troops.

For the fullest possible training of communications units taking part in combined tactical-special exercises, their training objectives must be coordinated with other problems being worked out by communications troops of each national army depending on the tasks confronting them. These may include using radio, radio-relay and wire means of communication for remote control of radio sets of communications centers; maintaining continuous communications during the relocation of control posts; protecting communications forces and means, as well as the entire communications system, from enemy attack, etc. This requires planning the creation of the appropriate operational situation during the exercise.

It should be noted that in the tactical-special exercises a situation was created which required planning the setting up over great distances of radio-relay lines using R-404 and R-400 sets. This made it possible to train operators of radio-relay sets under adverse conditions, when a great number of intermediate sets were used, and where several sectors serviced by subunits of various nationalities were joined on a radio-relay main line. The planning of frequent changes in the use of the channels of radio-relay main lines to ensure cooperation communications also provided good training for the operators.

From the organizational standpoint, the planning of radio communications over long distances, and the setting up during combined exercises of radio-relay main lines on the territory of several states, raises a number of problems in the distribution of working frequencies in order to ensure cooperation. In our view, when setting up cooperation radio nets which include subscribers located at distances of more than 500 kilometers or less than 100 kilometers, frequencies should be allocated in such a way as to provide timely communications both by reflected wave and by ground wave. And at the same time, if the assigned frequencies, and also the electromagnetic wave propagation forecast, do not permit the maintenance of stable communications, then communications must be halted in a certain radio net between such subscribers. It is preferable in this case to group in separate radio nets those subscribers that operate only by reflected wave and those which operate only by ground wave.

Radio-relay main line frequencies should be distributed in such a way as to avoid mutual interference when radio-relay sets are operating on the

TS #207057
Copy # 2

~~TOP SECRET~~

~~TOP SECRET~~

Page 7 of 13 Pages

main line, as well as during the operation of other radioelectronic means not participating in the exercise. It seems to us that for this purpose it is essential for those radio-relay set frequencies that are expected to provide cooperation communications to be distributed in a decentralized manner among the communications troops of each allied state taking part in the exercise. Coordination between parties concerned should involve only those frequencies required to link two participants of a radio-relay line belonging to different national armies.

Another requirement of combined exercises by communications troops is the advance training of troops, which directly affects the providing of cooperation communications. As is known, at any troop or command-staff exercise held at various levels, the quality of the communications systems is appraised by the ability of the communications channels to provide timely transmission and reception of combat reports, orders, and instructions. In our opinion, the basic criterion in appraising the communications systems in an exercise can be the traffic itself, by which is meant the total number of all radio messages, telegraphic messages, and telephone messages transmitted or received in an hour over each operating communications channel. An analysis of the number of messages transmitted and received on cooperation communications channels reflects, in the final analysis, the quality of operation and the load carried by the channels.

A thorough analysis of the message traffic over a period of several tactical-special exercises revealed that intensive training of various types of specialists is achieved during maximum use of all equipment.

In this connection it is advisable, in our view, to organize and implement the training of telegraph and radiotelegraph operators in each national army by means of simultaneous traffic on both channels of shortwave radio sets of medium power, according to the technical capabilities of these means. To improve the skills of operators of radio-relay sets in tuning equipment, it is desirable to plan the traffic simultaneously on the greatest possible number of telephone and telegraph channels, which naturally will affect the volume of messages transmitted. In order to ensure intensive and high-quality message traffic over various distances and using all means, it of course is necessary to take a number of organizational measures for the preparation and execution of this traffic.

The combined exercises by communications troops that were held included, as we know, a training exchange between various communications specialists, as well as an exchange of operational information between

TS #207057
Copy # 2

~~TOP SECRET~~

~~TOP SECRET~~

Page 8 of 13 Pages

groups of officers who were deciding questions of cooperation. Considering the instructional nature of the objectives of the exercises, we may, in our opinion, rule out an operational exchange and allow more time and opportunity for a training exchange during which communications may be tested. On this basis it would be possible to determine the quality of the channels and the work of communications personnel.

With the modern development of means of radio intercept and direction finding, as well as the use of radio sets of great range, the organization of radio camouflage becomes very important. As a component part of operational camouflage, it can be accomplished either by organizing new links within the existing system of radio communications, by including new subscribers, or by a combination of these two methods.

In the first case several nets (radio links) must be created for camouflage, in which radio communications would be conducted with an intensity that greatly exceeds the amount of work performed in actual radio nets and links. In the second, message traffic must be planned to be identical in volume, intensity, and content, both for radio means in operation and for means of radio camouflage. This makes it possible to maintain the secrecy of the actual subordination of the various staffs, and the intentions of the troops and the nature of their operations. In addition, an effective method of organizing radio camouflage in tactical-special exercises by communications troops under conditions where the units do not cross national frontiers, and the actual disposition of communications centers does not correspond to the situation anticipated by the operational situation, is the setting up of nets and radio links from means of communications centers specially designated for radio camouflage, as well as radio nets and links consisting of subscribers of actual communications centers.

The success of radio camouflage will depend on the method of carrying out the radio traffic over communications channels designated for radio camouflage.

The providing of high-quality and continuous cooperation communications depends on the technical level of operation and integrated operation of communications means, and the observance of measures to protect them against enemy countermeasures.

A high technical level of operation depends not only on the preparation of all means to ensure cooperation communications and maintaining them in constant readiness, but also on the correct technical

TS #207057
Copy # 2

~~TOP SECRET~~

~~TOP SECRET~~

Page 9 of 13 Pages

operation of the equipment.

When we speak of the need to deploy and operate communications means in accordance with technical requirements, we mean the need to deploy radio sets with antennas corresponding to the distance covered by operating frequencies; the use of a collection of antennas for the radio-relay sets that will ensure communications with the necessary subscriber; skilful laying of telephone lines or the setting up of a radio-relay line to connect with the national system of communications within the parameters indicated; the taking of monitoring measurements of the communications lines; the tuning of high-frequency equipment strictly according to the procedure for its proper operation, as well as the organization of a system for timely elimination of defects in the equipment of the center, etc.

It is worth noting, for example, the fact that communications often are interrupted for an extended period because of faulty installation of antennas or incorrect tuning of the transmitter, and not because of a technical malfunctioning of the set.

Practice has shown that achieving stable communications over channels of a territorial system, or by combining them with troop channels, depends on the quality of their linking. This makes it necessary to organize channeling in such a way as to make the channels correspond to the parameters of the communications systems of the country.

The maintenance of stable cooperation communications is determined by the quality of each sector of the line of the communications system and presupposes that on the entire radio-relay main line, where several sets are operating, the quality of communications depends not only on the connecting lines to the communications centers, but also on the quality of communications between any two adjacent radio-relay sets and the carrying out of the rules for linking channels.

If cooperation communications are carried out by wire means, then in order to maintain the main lines in working order we should not neglect the rules for tuning the equipment that provides the multiplexing of the lines. It is essential to observe the technical rules when extending the lines over wide water barriers.

An important factor in providing uninterrupted cooperation communications is for personnel to acquire, during technical and special training, the necessary skills for proper operation of available means and with the observance of the technical requirements. It should be noted that

TS #207057
Copy # 2

~~TOP SECRET~~

~~TOP SECRET~~

Page 10 of 13 Pages

although the difficulty in acquiring these skills constantly increases as communications means improve, this problem can be resolved successfully by holding tactical-special exercises.

The combined tactical-special exercises demonstrated the advantage of integrated use of communications means to provide cooperation communications; simultaneous operation on several radio and radio-relay channels on one link; switching from a radio net to a radio link with a return to the main net; setting up combined communications lines by using various means (radio, radio-relay, and wire); increasing the capabilities of radio-relay sets by installing additional equipment, etc.

For this reason we believe that an important factor in combined exercises by communications troops, as previously stated, must be that of technical problems relating to the operation of communications forces and means. For those setting up cable lines, technical problems do not constitute a difficulty. For technicians handling multiplexing equipment and radio-relay sets they become more real, since a territorial communications system permits the use of standard channels only. Telegraph and radiotelegraph operators, as well as operators of radio-relay sets, often find themselves in a situation where they are required to use their full range of means in order to provide cooperation communications. The telegraph operators must know how to switch quickly from work on a tape (or sheet) to work on a punched tape and to use alternately channels of wire communications means or of radio and radio-relay lines. Operators of radio-relay sets are required to change the operating mode of their sets frequently, while radiotelegraph operators must find various ways of operating (morse or teleprinter over one or several channels, relays, etc.).

The conditions under which cooperation communications are carried out raises the additional necessity of having one transmitter operate in several radio nets and radio links. This presents yet another technical complication which must be overcome during combined tactical-special exercises by communications troops.

The experience of recent exercises suggests that problems arising out of the integrated use of communications means should be included in the plan for the exercise. In particular, the method of solving them must be planned, as must the signals needed for switching over to the fulfillment of specific hypothetical situations. By following such a plan it is possible to keep track of the working out of one and the same problem by the greatest number of crews and subunits of that specialty for which the given

TS #207057
Copy # 2

~~TOP SECRET~~

~~TOP SECRET~~

Page 11 of 13 Pages

situation has been created.

In order to maintain continuous and high-quality cooperation communications, measures must be taken to ensure protection from enemy actions. It is advisable to create in the exercises a situation which would force communications troops to operate under conditions as close as possible to those of combat. Such measures may include: radio and radio-relay jamming, deception in our own radio nets and radio links, suspension of communications on certain links in order to use bypasses, etc.

The conditions for the propagation of electromagnetic waves in exercise areas require jamming in radio nets and radio links of cooperation of each national army. It also is advisable to use jamming in the training of operators of radio-relay sets.

The practice of jamming radio means of our own communications troops indicates that it is possible to produce both "planned" and "unplanned" jamming. "Planned" jamming not only provides good training for the taking of measures to protect radio means, but also creates conditions whereby all radiotelegraph operators or operators of radio-relay sets are forced to take protective measures, even when the radio jamming subunits lack sufficient means of radio reconnaissance. "Unplanned" jamming provides a simultaneous surprise check in communications units of their readiness to take protective measures.

Among the basic measures that should be taken at tactical-special exercises by communications troops for protection against radio jamming are: switching to an alternate frequency; the use of all possible methods of rapid transmission of messages by available technical means (teleprinter, traffic without the use of call signs and not requiring acknowledgement, etc.); and frequent shifts to printer and morse telegraphy. To protect radio-relay cooperation communications, other measures also are necessary, such as switching to alternate frequencies, reducing the height of antennas, etc.

There is no question that, depending on the possibilities, other measures are being planned to protect radio and radio-relay communications, use of which depends to a lesser extent on the training of radiotelegraph operators or operators of radio-relay sets for work under jamming conditions. For example, an operator working at one of the intermediate sets of a radio-relay main line, in the event of radio jamming of the set,

TS #207057
Copy # 2

~~TOP SECRET~~



cannot provide communications on bypass channels. But this could be done by the chief of the main line sector or another ranking person in the communications system at the request of the set chief.

In taking measures to protect communications from enemy actions, radiotelegraph operators and operators of radio-relay sets must know how to surmount any difficulties that may arise as a result of jamming. Thus at recent tactical-special exercises, when communications in the radio nets or radio links of cooperation were halted because of jamming, the radiotelegraph operators had to seek the help of the chiefs of the communications centers in order to use other channels to restore contact.

Still another difficulty to be dealt with in tactical-special exercises by communications troops is that of protecting radio and radio-relay communications from deception. For this purpose the directing staff must institute deception measures in radio nets and radio links. Like jamming, these measures can be planned in each army whose troops are participating in the exercises. We believe that deception must be organized in such a way that any radiotelegraph operator or operator of a radio-relay set will be forced to take necessary protective measures.

Along this line, the use of passwords for identification deserves attention. The practice of recent exercises shows that passwords must be easy and convenient for radiotelegraph and other operators, but at the same time they must be the kind that make it difficult for the enemy to discover the principle of identifying subscribers.

An important measure among the group of measures for the protection of communications from possible enemy deception in nets or links is that of frequent replacement of keys designed for the use of various tables and codes. We therefore believe that when training radiotelegraph operators and operators of radio-relay sets this circumstance should be taken into account, since occasionally they are inclined to be late in replacing these keys, fearing the possible disruption of contact or the establishment of contact at the wrong time. This is not only wrong, in our view, but also dangerous.

As has already been noted, the organization of tactical-special exercises by communications troops at the operational level makes it possible to make extensive use of bypasses established by one and the same communications means. We have in mind the use by a front of teleprinter channels for control of subordinate formations, with the use of radio channels of cooperation between adjacent armies of other national armed

TS #207057
Copy # 2

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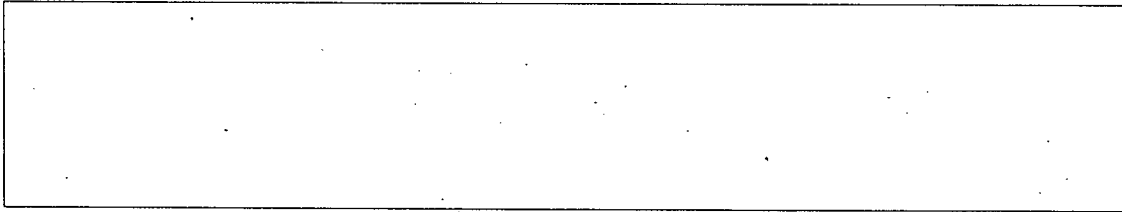


Page 13 of 13 Pages

forces. This will make it possible to establish cooperation communications between adjacent fronts of various allied armies.

Another aspect of this problem is the use at the same operational levels of bypass channels on radio-relay lines or channels of a national communications system, when the situation (terrain, availability of the necessary channels and communications means, location of the communications centers in the area, etc.) permits this.

These, in our view, are some of the most typical problems stemming from the experience of the combined tactical-special exercises by communications troops of the armies of member states of the Warsaw Pact.



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