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CENTRAL INTELLIGENCE AGENCY
WASHINGTON, D.C. 20505

28 October 1975

MEMORANDUM FOR: The Director of Central Intelligence

SUBJECT : MILITARY THOUGHT (USSR): Radio Camouflage on the Territory of a Border Military District in Peacetime

1. The enclosed Intelligence Information Special Report is part of a series now in preparation based on the SECRET USSR Ministry of Defense publication Collection of Articles of the Journal "Military Thought". This article proceeds from an examination of the conditions requiring radio camouflage in recommending two specific peacetime operating routines for radioelectronic means: normal operation with peacetime codes and frequencies but concealing technical parameters, and partial ban on the operation of emission-producing means. Implementation of radio camouflage measures requires timely warning of radio reconnaissance and strict recording of the radiotechnical situation, for which the author outlines some of the procedures. The experience of exercises is cited to demonstrate coordination of radio camouflage with an exercise plan and the use of dummy communications centers to deceive enemy reconnaissance. This article appeared in Issue No. 3 (82) for 1967.

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

William E. Nelson
Deputy Director for Operations

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SUBJECT

MILITARY THOUGHT (USSR): Radio Camouflage on the Territory of a Border Military District in Peacetime

SOURCE Documentary

Summary:

The following report is a translation from Russian of an article which appeared in Issue No. 3 (82) for 1967 of the SECRET USSR Ministry of Defense publication Collection of Articles of the Journal "Military Thought". The author of this article is General-Leytenant M. Ivanov. This article proceeds from an examination of the conditions requiring radio camouflage in recommending two specific peacetime operating routines for radioelectronic means: normal operation with peacetime codes and frequencies but concealing technical parameters, and partial ban on the operation of emission-producing means. Implementation of radio camouflage measures requires timely warning of radio reconnaissance and strict recording of the radiotechnical situation, for which the author outlines some of the procedures. The experience of exercises is cited to demonstrate coordination of radio camouflage with an exercise plan and the use of dummy communications centers to deceive enemy reconnaissance.

End of Summary

[redacted] Comment:

General-Leytenant M. T. Ivanov was identified as Chief of Staff of the Baltic Military District from 31 August 1971 to 12 March 1972. The SECRET version of Military Thought was published three times annually and was distributed down to the level of division commander. It reportedly ceased publication at the end of 1970. [redacted]

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[redacted]

Radio Camouflage on the Territory of a Border Military District in Peacetime

by

General-Leytenant M. Ivanov

Camouflage of radioelectronic means -- one of the elements of operational camouflage -- is becoming increasingly important.

In the present article we shall attempt on the basis of experience accumulated among the troops of the Baltic Military District to set forth several of the problems involved in camouflaging the emissions of radioelectronic means in border and coastal military districts under peacetime conditions.

We include under this type of radio camouflage a complex of organizational and technical measures aimed at concealing the functions, tactical-technical characteristics and methods of combat employment of radioelectronic equipment. Like all camouflage measures, it is intended to impede the intelligence efforts of foreign countries to obtain information of different kinds on our Armed Forces. Radio camouflage is a complicated -- and far from being fully mastered -- complex of measures in support of the combat activities of the troops. It requires a careful appraisal of the give-away indications of radioelectronic means and an innovative approach to developing the measures intended to counteract enemy radio reconnaissance.

It is not by chance that the intelligence organizations of the capitalist countries devote a great deal of attention to the collection of information on our troops in border military districts. In these areas the forces are in a state of increased readiness to repel a surprise attack, and the air defense units and large units are continuously on duty to guard the airspace.

The training exercises and drills of the troops in the border military districts maximally approximate combat activities. During troop and operational exercises and training practices and when combat tasks are carried out in the troops, a large quantity of diverse radioelectronic equipment and radio communications means is producing emissions. To maintain this equipment in a state of constant combat readiness requires systematic technical servicing and testing on secret frequencies using wartime operating routines. The work involved in tuning the equipment is

conducted in immediate proximity to the state border, in areas where enemy radio reconnaissance organizations are constantly active.

When conducting intelligence activities in the border and coastal areas of our country, the capitalist countries resort to diverse methods and employ a large quantity of varied reconnaissance equipment. In addition to employing ground intercept and direction-finding means for reconnaissance in the ultra-shortwave band, they extensively employ reconnaissance aircraft, naval ships, and merchant vessels. By using special reconnaissance equipment, sure interception of the emissions of radioelectronic means is attained within a radius of up to 500 kilometers from aircraft, and within a radius of up to 120 to 150 kilometers from naval ships and merchant vessels.

Because of the expansion of air transportation networks with foreign countries, two to three or more international air routes pass over a number of military districts, and aircraft belonging to foreign airlines daily make scheduled flights along them. It is not to be ruled out that reconnaissance radio equipment that fixes the locations of electronic means operating along their flight path is installed in some of them. As actual research has shown, the width of the zone of reconnaissance from aircraft depends on their flight altitude and on the average amounts to 400 to 600 kilometers.

Foreign intelligence organizations also use clandestine agent methods, employing as intelligence agents diplomats, tourists, and members of the various delegations that come to our country. Persons in this category are equipped with highly sensitive, high resolution, portable photographic, radio, and radiotechnical reconnaissance equipment.

It does not suffice to base an appraisal of radio reconnaissance capabilities on an analysis of the methods of conducting it. The actual capabilities of reconnaissance equipment and several features of radio wave propagation must also be considered. For example, it is known that occurrences of refraction and superrefraction in the propagation of radio waves in the ultra-shortwave frequency range are frequently observed in coastal areas. The capability for interception of radio emissions increases substantially under these conditions and actually amounts to 400 kilometers or more from ships and on the ground.

Analysis shows that the reconnaissance activities of the capitalist countries are based on exploitation of the reconnaissance give-away indications of radioelectronic means, i.e., those special features of their

operation by which radio reconnaissance can detect them and distinguish one system from another.

Give-away indications are conventionally divided into two basic types: operational-tactical and technical. In addition, it is sometimes necessary to take into consideration the individual give-away indications of certain stations and systems if they can be exploited by enemy reconnaissance.

From the operational-tactical give-away indications (the structure of the system of radio communications, the grouping of radiotechnical means, their operating routine, etc.) radio reconnaissance can determine the branch arm, the nature of the level of control, the grouping and combat strength of the troops, and the specific nature of their activities.

Technical give-away indications include the tactical-technical characteristics of the radio and radiotechnical systems employed and those technical characteristics of emissions that are peculiar to a specific type of station or to one station alone.

As the result of many years of systematic work the intelligence organizations of the capitalist countries have succeeded in obtaining a quantity of information on the radioelectronic equipment of our troops which enable them to follow changes in their grouping and to judge the nature of the tasks worked out during exercises and the state of combat readiness.

There are specific routines of employment of radio and radiotechnical means that correspond to the different periods of troop activities during peacetime. Under normal conditions, as a rule, only the following are in operation: inter-garrison radio nets and radio links; those air target detection radar stations of the Air Defense Forces of the Country which are on alert status; the flight support radiotechnical means of aviation; and a small quantity of other means.

During combat training, in training practices and exercises to improve the teamwork of crews, the quantity of radiation-emitting equipment operating substantially increases. The increase in emission efficiency also constitutes one of the principal give-away indications that enable the intelligence organizations of the capitalist countries to keep track of the nature of troop activities during peacetime.

It is known that certain types of radar stations used in the different branch arms have their distinctive, specific technical characteristics and

special features of operation, such as the carrier frequencies, the duration and frequency of pulse repetition, the types of modulation, and the methods of scanning space. The signals of any radar station, when emitted into space and intercepted by radiotechnical reconnaissance, permit the enemy to acquire information on its tactical-technical characteristics. A violation of the rules of operation, and even only a slight change in the signals stemming from this, is recorded by enemy reconnaissance and permits it to deduce to which specific units and large units the stations belong.

The interrelationship among the technical characteristics of radio signals, the locations of the sources of emissions, and the radio-frequency emission density in specific areas permit conclusions to be drawn not only as to the nature of the activities of the troops, but also as to their combat strength and their grouping. Therefore, it is a mistake to assume that under peacetime conditions radio camouflage is applicable only to those radioelectronic means that have secret characteristics and that there are no restrictions on the use of all other means.

The camouflaging of radioelectronic means can be effective only if its conduct is continuous, coordinated, and centralized. The organizing level, in our opinion, should be the staff of the military district, within which are deployed centrally-subordinated large units and units of a number of branches of the Armed Forces and branch arms.

As has already been pointed out, two clearly distinct routines of intensity of the emissions of radioelectronic means are observed in the military districts. The normal routine is used during the everyday activities of the troops, and the intensified routine while exercises, training practices, and other measures of an operational nature are being conducted. The normal routine to a certain degree is known to the radio reconnaissance organizations of the capitalist countries, which keep track of changes in it. When radio camouflage is organized within a military district, it should be based on precisely that routine. In all other cases it is advisable to implement measures aimed at maintaining this routine or at misleading the radio reconnaissance of the capitalist countries as to the undertakings in progress.

In connection with this, in our opinion it is advisable to introduce two specific routines of peacetime usage of radioelectronic means.

The first routine is the basic and constantly operating routine under which operation with peacetime codes and frequencies is permitted for all types of radar means within the system of combat alert status and combat

training of the troops, except for radar means redeployed to new (primary) positions and having territorial limitations. Of course, under this routine, to conceal the technical parameters during combat training, it is essential to operate several types of radiotechnical means in sector scanning modes with their antennas turned in the opposite direction from the border, to use dummy antennas, and to operate at reduced power outputs.

In our district, we resort to the first routine whenever there is no threat of reconnaissance being conducted either from aircraft, naval ships, or merchant vessels, or by foreign intelligence agents within the district.

The second routine should provide for a partial ban on the operation of radioelectronic means with emissions. It is put into effect when reconnaissance aircraft of capitalist countries or scheduled aircraft of foreign airline companies are detected in our airspace; when submarines, naval surface ships, and merchant vessels appear in neutral waters; and when persons suspected of conducting intelligence activities arrive in the district.

Under this routine, for the purpose of detecting and tracking air targets and supporting aircraft flights and for combat training measures at aviation, missile, and antiaircraft artillery training centers, operation with emission is permitted for only a limited number of the radioelectronic means of the troops of the district and of the Air Defense Forces of the Country. Their operating procedure is determined by the commanders of the large units and units and coordinated with the staff of the district. The remaining radiotechnical means are switched off or are operated with dummy antennas.

Depending on the methods used in conducting radio reconnaissance, the capabilities of the reconnaissance equipment, and the importance of the measures conducted, the imposition or removal of bans (operating routines) is effective throughout the entire military district or only in specific areas. For example, when foreign reconnaissance aircraft flights have been detected, restrictions on the operation of radioelectronic means are put in effect throughout the entire district and affect all large units and units equipped with radiotechnical means.

The capabilities for intercepting emissions are not as great from naval ships, merchant vessels, trains, and motor transport as from the air. Therefore, in order not to disrupt troop combat training, bans on the use of radioelectronic means are imposed only in areas within the zones of enemy radio reconnaissance. For this purpose, areas of the military

district in the vicinity of the seacoast, railroads, highways, and localities where representatives of capitalist countries are authorized to reside are divided into a number of zones (Diagram 1). The boundaries of these zones are fixed with the aid of monitoring radio equipment and large units and units are informed of them. Taking into consideration the deployment of radioelectronic means, the staffs of the large units determine which means are to be switched off and camouflaged when a ban is imposed in any given zone.

The strict conformance to radio camouflage measures to a large extent depends on the timely warning of troops and staffs as to the threat of radio reconnaissance being conducted. Signals as to the danger of reconnaissance should be transmitted prior to its initiation by the enemy since modern high-speed equipment permits the intercepting and locating by direction-finding of a large quantity of emission-producing means in a very short period of time.

When the enemy reconnaissance aviation is based a considerable distance away (as under the conditions of the coastal military districts), as a rule the troops are warned in time. Under the same circumstances, when the reconnaissance aviation is based at a brief distance from our state border, arranging for the timely warning of our troops entails great difficulties. In our opinion, under these conditions special surveillance of basing areas of reconnaissance aviation should be established employing the means of OSNAZ units and air defense units. On the basis of the information acquired by these units, warning the troops about the necessity for instituting a routine of restricted operation of radioelectronic means can be accomplished the moment the aircraft take off from their base airfields.

An analysis of the accumulated experience of our military district indicates that the system of warning the troops and staffs should be centralized and should stipulate the procedure for obtaining information as to the threat of radio reconnaissance being conducted and for transmitting signals relating to the imposition and removal of restrictions on the operation of radioelectronic means. It is very important that the district staff receive in advance and transmit to the troops information on the appearance in the district of persons suspected of conducting intelligence activities, on the arrival of ships in open commercial ports, and on the flight of scheduled aircraft of foreign airline companies.

As a rule, the military district staff now receives reports and information on reconnaissance aircraft flights and on the activities of

ships in neutral waters only after they have been detected by radiotechnical units or OSNAZ units. Consequently, in order to speed up the warning of the troops and staffs, it is essential to have a special radio net or that there be priority transmission of signals over telephone channels. The order of priority for warning the large units and units should be determined in accordance with the importance of the radio and radiotechnical means employed by the troops. Consequently, it is advisable to first warn: the staffs of those large units in which units are conducting checks on the functioning of means on reserve frequencies; classified installations; and command posts of the air defense troops; and, when equipment is being tested -- training centers and test ranges.

The complexity of the radiotechnical situation requires that the staffs of the large units and units systematically and strictly keep a record of it. This recording must be done in special journals. An illuminated indicator board may be set up to furnish a visual presentation of information; it would use light signals to show the operating routines of radioelectronic means by zones and large units and the order of priority for warning subordinate staffs about the imposition of restrictions on the operation of radioelectronic means.

In our opinion, the measures discussed will ensure radio camouflage, but only during the everyday activities of the troops when restrictions on the operation of radioelectronic means do not disrupt the working out of combat training tasks. A total ban on the operation of radioelectronic means during exercises and training practices might substantially impede the working out of training problems and adversely affect the quality of the exercises. It is therefore essential that radio camouflage measures be coordinated with the overall exercise plan during each exercise and during training practices.

Great attention is devoted by this problem by the district troops. The camouflage experience gained during a front command-staff exercise conducted in the district on the theme of "The Conduct of a Front Offensive Operation on a Coastal Axis" is illustrative of this. The camouflage concept (as shown on Diagram 2) provided for concealing the offensive nature of the operation and indicating an antilanding defense of the seacoast by operating dummy communications centers. Troop staffs and radio communications means of units not participating in the exercise were assigned to set up dummy control posts and communications centers. An operations group made up of operations officers, communications personnel, and cipher organ personnel was attached to the staff of the directing body to supervise the operation of dummy control posts and radio nets.

The alerting of the troops and staffs on the basis of a combat alert, their movement to the exercise area, and the planning of operations were accomplished under conditions of complete radio silence. The previous routine of operation of radio means was maintained at the permanent deployment points. The activities of the dummy communications centers were initiated at the same time the radio nets of the actual control posts began functioning. All orders given to the troops assigned to the exercise were also transmitted to the dummy command posts. Standardized documents for secure troop control were used to encode orders. This procedure for transmitting correspondence ensured that the actual and the dummy radio nets and radio links had the same operational load. The measures conducted made it possible to conceal the concept and the nature of the exercise and the combat strength of the participating troops. This conclusion was corroborated by the fact that the intensity of US reconnaissance aircraft flights in the zone of the Baltic Sea did not change during the exercise.

The use of monotonous, stereotyped practices in radio camouflage cannot be permitted, for it would allow enemy reconnaissance to distinguish actual troop activities from simulated ones. It is therefore essential to employ in addition such camouflage methods as conducting radio exercises for communications troops, simulating two-sided exercises in one-sided exercises, switching troop control from radio to wire means during the course of the exercise, etc.

When camouflaging emissions, it is extremely important to conceal from radio reconnaissance the existence and nature of radar station frequency retuning. Research conducted in the district has demonstrated that it is very effective to conduct checking and tuning work inside shielded buildings and shielded vans. Their preparation is not difficult and can be accomplished using the resources of the large units and units. During the checking period, the tracking of reconnaissance aircraft flights and of scheduled aircraft of foreign airline companies should be conducted by the radar stations on alert status. When it appears that there is a threat of radio reconnaissance being conducted by the enemy, the units conducting the checking of radar stations should be the first to be warned.

It is known that US Army radio reconnaissance is showing increased interest in the guidance systems of surface-to-air missile sites located near the state border in land or maritime sectors. In order to detect them, reconnaissance aircraft simulate violations of the state border, provoking the operation of the guidance systems of the surface-to-air missile sites. After obtaining information of interest to them, the aircraft abruptly change the course of their flight and do not enter the

fire zone of the surface-to-air missile troops.

In order to preserve strict secrecy as to the locations of the positions and the parameters of the guidance systems of surface-to-air missile sites, the sequence of combat employment of the surface-to-air missile troops in a border zone must be revised. In our opinion, it is advisable to first employ fighter aviation against intruder aircraft and to employ the means of the surface-to-air missile troops to destroy aircraft that have penetrated the interior of the territory.

Serious attention should be given to monitoring conformance to the established routines for the operation of emission-producing radioelectronic means. In the process of operation, the technical condition of all radioelectronic equipment should be periodically checked to detect and eliminate in time every possible feature of its operation that would facilitate interception. Emission monitoring should be conducted by monitoring groups that have radio monitoring means, by overflight of the territory by aircraft equipped with radiotechnical reconnaissance means, and, where necessary, with the use of ships. All cases of failure to conform to routines of operation or of violation of radio camouflage measures should immediately be eliminated. In connection with this, we should note that the existing tables of organization of military district radio monitoring posts still provide for a small number of personnel, and their equipment is not sufficiently sensitive. The military districts are forced to draw upon the means of OSNAZ and SPETSNAZ units and the means of the troops for radio monitoring, especially during exercises and training practices, even though it is known that their personnel are not adequately trained to carry out tasks of this nature.

In conclusion, it should be said that to a considerable degree the effectiveness of radio camouflage depends on the degree of training of officer personnel. Officers of all categories should know the fundamentals of combating the peacetime intelligence activities of the capitalist countries. Therefore, the study of such matters as methods of conducting radio reconnaissance, the capabilities of enemy reconnaissance radio equipment, the methods employed in radio camouflage of emissions, and the organization of radio monitoring should be included in the training programs of officer personnel and staffs. This would make it possible in the end to increase the responsibility of commanders and chiefs for the strict conformance to the rules for operating radioelectronic equipment and conducting radio camouflage.

[redacted]

The few observations we have made regarding the organization of radio camouflage in border and coastal military districts in peacetime unquestionably require further study and research. It would therefore be desirable to know the opinions and learn of the experience of other military districts relative to the subject discussed.

[redacted]

[redacted]

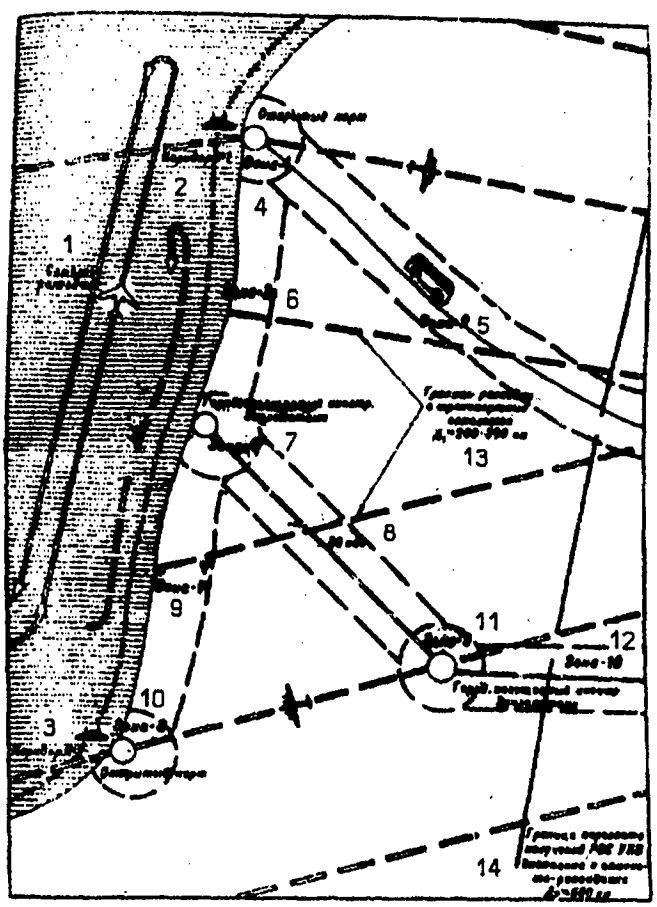

Diagram 1. Zones of Possible Radio Reconnaissance

Key

1. Reconnaissance aircraft
2. Corridor No. 1
3. Corridor No. 2
4. Zone 1, Open port
5. Zone 2
6. Zone 3
7. Zone 4, City visited by foreign diplomats
8. Zone 6 [misprint in original]
9. Zone 7
10. Zone 8, Open port
11. Zone 9, City visited by foreign diplomats
12. Zone 10
13. Range limits of reconnaissance from transport aircraft: 200-300 kilometers
14. Range limit of interception from a reconnaissance aircraft of emissions of ultra-shortwave radioelectronic means: 500 kilometers

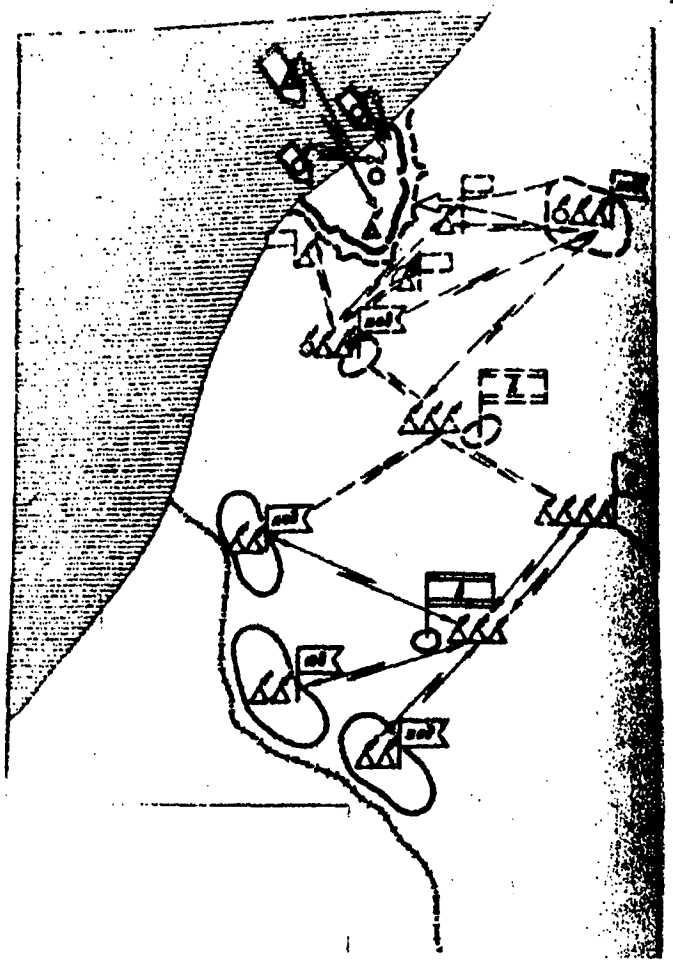

Diagram 2. The Camouflage Concept of a Command-Staff Exercise

Key

——— Actual activities during the exercise

- - - - Simulated activities to camouflage the exercise

═══ Simulated enemy activities

Φ Front

A Army

mrd Motorized rifle division

md Tank division