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CENTRAL INTELLIGENCE AGENCY [redacted]
WASHINGTON, D.C. 20505

3 December 1976

MEMORANDUM FOR: The Director of Central Intelligence

FROM : William W. Wells
Deputy Director for Operations

SUBJECT : USSR GENERAL STAFF ACADEMY LECTURES: Electronic Warfare in Offensive Operations

1. The enclosed Intelligence Information Special Report is part of a series now in preparation based on a collection of seven lectures, classified SECRET, prepared by the General Staff Academy for publication by the First Directorate (Operations) of the General Staff of the Armed Forces of the USSR in October 1969. This lecture is an overview of radioelectronic warfare and countermeasures as applied to army and front offensive operations in the Western Theater, emphasizing the importance of combining jamming with destruction by nuclear and conventional weapons. Detail is provided on organizing and planning radioelectronic warfare, on the units involved and their capabilities. This lecture was prepared in March 1969 for presentation in courses for Warsaw Pact command personnel. The Russian text was disseminated as FIRDB-312/00037-76.

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.

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William W. Wells

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Intelligence Information Special Report

COUNTRY USSR

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DATE OF INFO. 19 March 1969

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SUBJECT

GENERAL STAFF ACADEMY LECTURES: The Organization of Radioelectronic Warfare in an Offensive Operation of an Army and a Front

SOURCE Documentary

Summary:

The following report is a translation from Russian of a lecture, classified SECRET, prepared by General-Mayor of Engineer-Technical Service S. I. Stemasov for presentation by the Radioelectronic Warfare Department of the Academy of the General Staff of the Armed Forces of the USSR. The lecture is an overview of radioelectronic warfare and its application to army and front offensive operations in the Western Theater. The main tasks of this warfare are to reduce the effectiveness of enemy nuclear strikes, disrupt the control of enemy forces and disorganize their cooperation, and also to support and protect Soviet activities. The author emphasizes the importance of combining jamming with destruction by nuclear and conventional weapons, and provides some detail on the organization and planning of radioelectronic warfare and on the units involved and their capabilities, along with examples of the application of countermeasures in operations.

End of Summary

Comment:

The Russian-language version of this lecture was disseminated as FIRDB-312/00037-76.

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Orders of Lenin and Suvorov Military Academy of the
General Staff of the Armed Forces of the USSR

Department of Warfare Against Enemy Radioelectronic Means

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Approved
Chief of the Academy
General of the Army

S. P. Ivanov

19 March 1969

Candidate of Military Sciences
General-Mayor of Engineer-Technical Service
S. I. Stemasov

The Organization of Radioelectronic Warfare in an Offensive Operation of an Army and a Front

Lecture for Courses for Command Personnel of the Armies
of Warsaw Pact Member Countries

Moscow
1969

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During World War II a new form of support of combat actions -- radioelectronic warfare -- came into existence and was quite extensively employed. In the postwar years the forces and means of radioelectronic warfare were developed further.

The experience of various exercises conducted in recent years in our army and in the armies of our probable enemies, the experience of the war in Vietnam, the lessons of Israeli aggression against the Arab countries, and an analysis of the role of radioelectronic equipment in the operations and combat actions of the branches of the armed forces, lead to the conclusion that in a future war, should it be unleashed by the imperialists, both belligerents will implement thoroughly planned and previously prepared radioelectronic warfare measures, on a broad scale.

The ongoing intensive preparation of the armed forces of the NATO participating countries for so-called "radioelectronic warfare" also leads to this conclusion.

The technical basis and the most important part of the systems for controlling strategic nuclear forces, ground forces groupings, aviation, air defense means, naval forces and the combat systems of all branches of the armed forces, are radioelectronic means of various types.

However, these means may be comparatively easily detected via their emissions, neutralized by jamming or destroyed by the means of destruction, and therefore are the most vulnerable element in control systems.

By influencing this vulnerable element by the means of radioelectronic countermeasures, it is possible to disorganize the control of enemy troops and combat systems.

In turn, disorganization of control will lead to disruption and to the breakdown of coordination in the combat actions of the branch arms, large units and units of the enemy in terms of tasks, axes and time, to untimely, delayed employment by the enemy of nuclear weapons and other means of destruction, and to a drastic reduction of their effectiveness.

The success of the operations and combat actions of the operational formations of the branches of the armed forces will to a vast extent depend on our ability to disorganize enemy troop and weapons control systems, and at the same time will ensure the reliable employment of our own radioelectronic systems and means under conditions of enemy action against them.

Therefore our regulations and manuals include radioelectronic warfare (warfare against enemy radioelectronic means) among the basic forms of support to the combat actions of all branches of the armed forces.

1. The goals, substance and tasks of radioelectronic warfare

Radioelectronic warfare is organized by the staffs of operational formations with two basic goals: first, to disrupt the radioelectronic systems for controlling enemy troops, forces and weapons and, second, to ensure stable operation of our own radioelectronic systems under conditions of enemy radioelectronic countermeasures.

In accordance with these goals the substance of radioelectronic warfare is:

-- radioelectronic countermeasures;

-- countermeasures against enemy radio and radiotechnical reconnaissance;

-- protection against enemy radioelectronic countermeasures;

-- elimination of mutual interference when a large number of our radioelectronic means are operating simultaneously (ensuring electromagnetic compatibility of radioelectronic equipment).

In their turn, radioelectronic countermeasures have the goal of disrupting or hindering the operation of the radioelectronic systems for controlling the troops, forces and weapons of the enemy.

Radioelectronic countermeasures include neutralizing enemy radioelectronic means by jamming, and deflecting enemy radio-controlled and homing weapons (missiles, aerial bombs, torpedoes) away from ground, air and sea targets.

Radioelectronic countermeasures are carried out in conjunction with destruction of enemy radioelectronic means by missile, air and artillery strikes, and by the actions of airborne and amphibious landing forces and specially-trained reconnaissance groups.

Countermeasures against enemy radio and radiotechnical reconnaissance (or radio and radiotechnical camouflage) has the goal of preventing or hindering the obtaining by enemy reconnaissance of information regarding the grouping, actions and intentions of our troops, their combat capabilities, and the characteristics of our weapons and radioelectronic means.

The necessity of these countermeasures is dictated by the fact that even at the present time in the territories of the Federal Republic of Germany, Great Britain, Italy, Greece and Turkey there is deployed a large number of radio and radiotechnical reconnaissance units and organs, which are conducting reconnaissance of the armed forces of the socialist countries.

Countermeasures against enemy radio and radiotechnical reconnaissance are implemented by taking organizational measures and employing technical means of camouflage. These countermeasures are carried out by the branch arms, special troops and services having radioelectronic means, in accordance with the concept of operational camouflage.

The experience of the war in Vietnam and the lessons of Israeli aggression against the Arab countries have shown that the operation of radioelectronic means under conditions of radioelectronic countermeasures on the part of the enemy will be the rule, not the exception.

In air strikes against the Democratic Republic of Vietnam, American aviation employed jamming extensively, especially with the appearance in Vietnam of surface-to-air missiles.

Whereas in 1965, of the total number of air targets fired upon by surface-to-air missiles, only 50 percent were covered by jamming, in 1966 about 70 percent already were thus covered, in 1967 more than 80 percent, and in 1968 almost all air targets were covered by jamming.

The employment of jamming in conjunction with evasive action led to a fourfold to fivefold increase in the expenditure of missiles per aircraft shot down. The expenditure of antiaircraft artillery shells increased by approximately the same factor as a result of neutralization by jamming of the fire control radars.

Along with jamming in Vietnam, American aviation employed homing missiles, which, under the cover of jamming, were used to deliver strikes against air defense radars.

The aggression of Israel against the Arab countries was begun by neutralizing by jamming the previously reconnoitered radio communications of the organs of the government and military leadership of the Arab countries.

As a result of the employment of jamming, the most important radio communications between Cairo, Amman, Baghdad and Damascus were disrupted, which considerably complicated the organization of combined actions against the aggressor. All three main cable communications lines, going from the eastern borders of Egypt to its center, were disrupted by sabotage groups landed by helicopters.

Israel also neutralized the air defense radar sets by jamming, as a result of which it was impossible for the air defense means of Egypt and Syria to track and intercept air targets in the majority of cases.

Therefore the task of protection of our own radioelectronic means acquired special importance as one of the major factors ensuring stable control of troops and weapons.

Protection of radioelectronic means against enemy radioelectronic countermeasures is achieved by the excellent training of personnel to work under conditions of jamming, implementation of organizational and technical measures to increase the jamming resistance of the control systems, and countermeasures against

the approach of enemy homing means of destruction to radioelectronic installations.

The control of troops and weapons may be seriously hindered as a result of mutual interference, which occurs when a large number of radioelectronic means of various types are operating simultaneously.

At the present time in the zone of operations of one tank army there may operate up to 6,000 radio sets, in the zone of a combined-arms army -- more than 11,000 radio sets, and in the zone of a front -- up to 60,000 radio sets and a large number of other radioelectronic means.

Mutual interference occurs not only when radioelectronic means operate on the same or close frequencies, but also as a result of so-called secondary emissions and secondary reception on different frequencies.

Protection of radioelectronic means against mutual interference or, in other words, ensuring of electromagnetic compatibility of radioelectronic means, is accomplished by implementing organizational-technical measures in the troops. Of these the main measures are:

-- optimum allocation of operating radio frequencies among radioelectronic means;

-- employment of radioelectronic means with consideration of the effect of the terrain on their operation and the conditions of radio wave propagation;

-- limitation of the operation of radioelectronic means in frequency, time, direction and power of emission;

-- monitoring of the emission characteristics of the radioelectronic means.

In the system of radioelectronic warfare measures the most active and complex in organization are radioelectronic countermeasures.

Radioelectronic countermeasures in an army offensive operation are organized and implemented to accomplish the following main tasks:

1) to reduce the effectiveness of enemy nuclear strikes against army troops and installations;

2) to disrupt the control of the main groupings of the enemy ground forces, missile units and aviation on the axis of the main attack of the army;

3) to disorganize the cooperation of ground forces with tactical aviation and with large units of the naval forces of the enemy.

In a front offensive operation the above-listed three tasks of radioelectronic countermeasures remain in force, but as applied to front troops and installations. Besides these, the following two tasks are added:

-- to assist front aviation, long range aviation, and military transport aviation in negotiating the enemy air defense;

-- to make it difficult for enemy aerial and ground reconnaissance to detect the troops and installations of the front rear by using radioelectronic means.

The accomplishment of the above tasks will be most effective when radioelectronic countermeasures are combined with the destruction of the especially important radioelectronic installations of the enemy.

The experience of a number of exercises makes it possible to estimate the expected effectiveness of accomplishing these tasks. For example, neutralizing the enemy air defense radioelectronic system can reduce the losses of our front aviation fourfold or fivefold when delivering strikes against the enemy. Neutralizing the onboard radar sets of enemy tactical fighters by jamming can reduce the probability of destruction of front installations by aviation under conditions of poor visibility fourfold or fivefold.

To disrupt control at the enemy operational level it is necessary to put out of operation his most important control posts, previously prepared wire and radio-relay communications nets, and other especially important radioelectronic installations.

This will force the enemy to resort to extensive use of radio communications. The most important radio and radio-relay communications links have to be neutralized by radio jamming.

The total number of enemy radioelectronic means in an army offensive zone can be 15 to 20 thousand items, and in a front zone up to 60 thousand or more items. An attempt to neutralize this whole mass of means would be unrealistic.

Therefore, it is necessary to single out the most important radioelectronic means, the neutralization of which is achievable by available means and will result in disrupting the control of enemy troops and weapons.

Thus, for example, radio communications at the enemy operational-tactical level of control are provided by nearly 1,400 shortwave and ultra-shortwave radio nets and radio links, but no more than 500 of them may be most important to the enemy during a front offensive operation.

In Table 1 is shown the number of the most important radio and radio-relay communications links in the headquarters of enemy formations and large units in the Western Theater of Military Operations.

Table 1

Affiliation of radio (radio-relay) communications links with headquarters	Number of most important communications links		
	Short-wave	Ultra-shortwave	Radio-relay
Army group	15-20	-	5-10
Allied tactical air force	10-12	-	5-6
Field army	15-17	-	6-8
Tactical air army	10-12	-	6-8
National tactical air command	8-10	-	3-4
Army corps	10-12	20-30	10-12
Division	8-10	8-10	6-8

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Research and calculations show that disruption of the control of enemy troops and combat means in an offensive operation of a front in the Western Theater of Military Operations tentatively will require:

-- putting 20 to 25 enemy communications centers out of operation and neutralizing about 150 shortwave, 250 ultra-shortwave and 150 radio-relay communications links by jamming;

-- disrupting the operation of 30 to 35 tactical aviation and air defense control and warning centers and posts, and posts for guiding aviation to ground targets;

-- covering 50 to 60 small-size front installations against radar reconnaissance from the air and against precision bombing, and hindering the use of onboard radar sets by the aircraft of enemy tactical aviation.

Especially important stationary radioelectronic installations in the systems for controlling enemy troops and combat means in the theater of military operations will be destroyed by strategic nuclear forces.

The most important radioelectronic installations in the front offensive zone must be destroyed by the means of the front and armies.

2. The forces and means of radioelectronic countermeasures of a front (army) and their capabilities

To implement radioelectronic countermeasures in an offensive operation a front may have:

-- one or two SPETSNAZ-F radio battalions and one SPETSNAZ radio battalion of the Reserve of the Supreme High Command (RVGK) which are to neutralize the operational, and some of the strategic, shortwave radio communications of the enemy;

-- two or three SPETSNAZ-A radio battalions to neutralize the enemy shortwave, ultra-shortwave and radio-relay communications at the tactical level of control; these battalions are attached to the combined-arms armies and tank armies operating on the main axes;

-- one SPETSNAZ helicopter radio squadron, which is to neutralize the enemy radio-relay communications links at the operational-tactical level of his control;

-- one or two SPETSNAZ-S radiotechnical battalions and one SPETSNAZ radiotechnical battalion of the air army. These battalions are to cover the troops and small-size installations of the front against reconnaissance and the aiming of weapons at them by means of airborne radar, and to neutralize the radio links for guiding enemy aircraft to ground and air targets.

An army operating on the axis of main attack of a front may receive for the offensive operation one SPETSNAZ-A radio battalion, and in some cases -- a SPETSNAZ-S radiotechnical battalion or part of one.

The capabilities of the forces and means of radioelectronic countermeasures of a front are shown in Tables 2 and 3.

Table 2

Capabilities of SPETSNAZ radio units of the front (for jamming radio and radio-relay communications)

Designation and number of units	Number of jamming sets per unit	Number of radio nets (links) to be neutralized simultaneously by all units			Range of neutralization, kilometers
		shortwave	ultrashortwave	radio-relay	
SPETSNAZ-F radio battalion -1	shortwave-3	3-6	-	-	1,000
	shortwave-12	12-24	-	-	700
SPETSNAZ radio battalion of the RVGK -1	shortwave-3	3-6	-	-	3,000
	shortwave-12	12-24	-	-	700-1,000
SPETSNAZ helicopter squadron -1	radio-relay - 9	-	-	36	200 (at altitude 2,500-3,000 meters)
SPETSNAZ-A radio battalion -3	shortwave-9	27-54	-	-	40-50 (reflected wave 700)
	ultrashortwave -10	-	30-60 (in barrage mode 150-450)	-	25 (in barrage mode 12-15)
	radio-relay - 8	-	-	48	40
Total		57-114	30-60 (in barrage mode 150-450)	84	

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As is evident from Table 2, when a front has available one SPETSNAZ-F radio battalion, one SPETSNAZ radio battalion of the RVGK, three SPETSNAZ-A radio battalions and one SPETSNAZ helicopter radio squadron, it is possible to neutralize by their means up to 57-114 shortwave radio nets and radio links, up to 60 radio nets or up to 150-450 ultra-shortwave communications channels of the enemy ground forces and up to 84 radio-relay communications links.

As applied to the organization of enemy communications in the Western Theater of Military Operations, it is possible to neutralize the following with the above means:

-- the most important radio nets of the headquarters of one army group, one field army and two army corps (or of the headquarters of one army group, one allied tactical air force and two army corps);

-- the tactical radio nets of four to six divisions of the first echelon of enemy ground forces.

Table 3

Capabilities of SPETSNAZ radiotechnical units of the front (for jamming enemy airborne radioelectronic means)

Designation and number of units	Number of jamming sets per unit	Operating radius, kilometers	Capabilities for coverage (neutralization) by the means of one unit
SPETSNAZ-S radiotechnical battalion -2	SPB-7 -- 9	120	Sector 20-40 kilometers in frontage and 40 kilometers in depth.
	SPO-8 -- 3	130-150	Sector 30 kilometers in frontage and 30 kilometers in depth.
	SPO-10 -- 4	130-150	Two small-size installations.
	Ultra-shortwave -- 6	80-120	6-12 radio nets for guiding aircraft of tactical aviation to ground targets.
SPETSNAZ radiotechnical battalion of the air army -1	SPB-7 -- 6	120	Two sectors with radius of 10-20 kilometers.
	Ultra-shortwave -- 24	80-120	24-48 radio nets for guiding fighter aviation to air targets.

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With the means of three SPETSNAZ (SPETSNAZ-S and air army SPETSNAZ) radiotechnical battalions it is possible to cover troops against precision bombing in an area 100 by (30-40) kilometers in an enemy air attack at low altitudes, and in an area 140 by (30-40) kilometers in an air attack at altitudes of 10 to 12 kilometers and more, and also up to six small-size installations.

In addition, with the means of these battalions for jamming aviation ultra-shortwave radio communications it is possible to neutralize simultaneously from 36 to 72 ultra-shortwave radio nets for controlling enemy aviation in the air.

3. Organization of radioelectronic warfare

Radioelectronic warfare in a front offensive operation is organized in accordance with the front commander's decision on the operation, and on the basis of his orders regarding radioelectronic warfare. In these orders he specifies the main tasks of radioelectronic warfare and the most important enemy radioelectronic installations and control posts subject to destruction by the means of the front and armies.

The organization of radioelectronic warfare includes:

-- planning radioelectronic countermeasures and measures to destroy especially important enemy radioelectronic installations, and assigning radioelectronic warfare tasks to the armies and jamming units of the front;

-- developing and implementing measures for deception of the enemy by the use of radioelectronic means and for countermeasures against his radio and radiotechnical reconnaissance prior to and during the operation;

-- developing and implementing measures to protect our own radioelectronic means from enemy radioelectronic countermeasures and from mutual interference;

-- establishing the grouping of SPETSNAZ radio and radiotechnical units needed to support the actions

of the front troops in the initial nuclear strike of the front, in repulsing the enemy nuclear strike and at the beginning of the offensive of the front troops;

-- organizing the cooperation of all forces and means participating in the neutralization of enemy radioelectronic means;

-- organizing and conducting reconnaissance of the enemy radioelectronic systems and means in order to support warfare against them.

In an army offensive operation radioelectronic warfare measures are organized on the basis of the army commander's decision on the operation and on the front instructions on radioelectronic warfare. The form of these instructions is cited in the Collection of Forms of Combat Documents of Operational Formations, on pages 67 to 69.

Radioelectronic warfare in a front offensive operation and an army offensive operation is organized by their respective staffs in conjunction with the chiefs of the branch arms, special troops and services.

The main planning organ in the staff for radioelectronic warfare is the radioelectronic countermeasures service.

Radioelectronic warfare measures are reflected in the following documents:

-- in the radioelectronic countermeasures plan;

-- in the operational camouflage plan (in the section on matters of countermeasures against enemy radio and radiotechnical reconnaissance and deception of the enemy by the use of radioelectronic means);

-- in the front (army) instructions on radioelectronic warfare to the army commanders (large unit commanders);

-- in the combat instructions to the commanders of the SPETSNAZ radio and radiotechnical units.

Measures to protect our own radioelectronic systems against enemy radioelectronic countermeasures, measures to ensure electromagnetic compatibility when establishing the groupings of radioelectronic means (within their own branch arm), measures for radio and radiotechnical camouflage, and also the organization of monitoring of their operating routine, are developed by the branch arms, special troops and services employing the appropriate radioelectronic means. These measures are reflected in the plans for the employment of the branch arms and in the communications plan.

The matters of destroying especially important enemy radioelectronic installations and control posts are reflected in the operations plan and in the plans for the combat employment of the branch arms.

Successful accomplishment of the tasks of radioelectronic countermeasures in a front offensive operation and an army offensive operation requires careful planning of those countermeasures. The planning must ensure that the actions of the SPETSNAZ radio and radiotechnical units are coordinated by tasks, location and time and that the radioelectronic countermeasures correspond to the tasks of the troops in the operation.

The substance of radioelectronic countermeasures planning is the selection of the radioelectronic installations and targets to be neutralized, determination of the most desirable methods, time and order of priority of this neutralization in accordance with the tasks of the troops in the operation, the allocation of radioelectronic countermeasures tasks among the jamming units, and the organization of cooperation and control.

The following matters must be reflected in the radioelectronic countermeasures plan:

-- the goals of the radioelectronic countermeasures;

-- the most important enemy radioelectronic installations and control posts in the zone of the offensive;

-- basic data on the operational disposition of the front (army) troops;

-- the tasks of the SPETSNAZ radio units;

-- the tasks of the SPETSNAZ radiotechnical units;

-- the tasks of the air army SPETSNAZ units to support the negotiation of the enemy air defense system by aviation -- which are accomplished in conjunction with the front SPETSNAZ radio units -- and the tasks to cover ground installations;

-- the areas of the main and alternate positions of the SPETSNAZ and OSNAZ radio and radiotechnical units; the procedure for maneuvering them during an operation; and the reserve of jamming forces and means;

-- the organization of the cooperation of the forces and means participating in the neutralization of the enemy radioelectronic means, including cooperation with adjacent units and the operational formations of the other branches of the Armed Forces;

-- the measures aimed at preventing the neutralization of the radioelectronic means of our own troops when jamming the enemy and at ensuring security of operation when using jamming forces and means;

-- the organization of control of the jamming and communications units.

In addition, in the plan are reflected:

-- the destruction of enemy radioelectronic installations and control posts by the means of destruction of the Supreme High Command and the front, including by the reconnaissance groups of special-purpose units and by airborne landing forces;

-- the neutralization of radioelectronic installations in the zone of the offensive by the jamming means

of a higher command level;

-- the radar camouflage measures to be implemented by the engineer troops and large units;

-- the tasks of reconnaissance to obtain the data on enemy radioelectronic means required for neutralizing them by jamming.

The army radioelectronic countermeasures plan is worked out on a 1:200,000 scale map, and the front plan on a 1:200,000 or 1:500,000 scale map. When necessary the plan is supplemented by an explanatory note. It must be flexible and ensure rapid transition from the conditions of non-nuclear combat actions to the conditions of nuclear war. This requirement is met to the fullest extent by a unified plan for radioelectronic countermeasures in an offensive operation without and with the employment of nuclear weapons.

To ensure the combat readiness of the SPETSNAZ radio and radiotechnical units of the groups of forces and border military districts, the grouping of these units necessary to ensure that they are moved quickly from permanent deployment points to positions must be established in advance.

For this purpose in peacetime SPETSNAZ-A radio battalions must be located in the permanent deployment areas of the large units of the first echelon of the armies to which companies of these battalions will be attached in accordance with the operational plans.

The permanent deployment areas of the SPETSNAZ-F radio battalions and SPETSNAZ radio battalions of the RVGK must be selected within 150 to 200 kilometers from the national border and 15 to 20 kilometers from the positions designated for the combat operation of these battalions.

Such a disposition of the SPETSNAZ-F radio battalions and SPETSNAZ radio battalions of the RVGK ensures the most effective neutralization of enemy shortwave operational-tactical radio communications and a lessening of the jamming of front radio communications during the neutralizing of the enemy radio communications.

The SPETSNAZ-S and air army SPETSNAZ radiotechnical battalions should in peacetime be positioned 15 to 20 kilometers from the main installations they have to cover when the troops begin moving forward and deploying.

The cooperation of SPETSNAZ and OSNAZ radio and radiotechnical units is ensured by joint surveillance of enemy radioelectronic means prior to and during an operation, coordination of a list of enemy radio communications to be neutralized, and the assignment to OSNAZ units of officers from SPETSNAZ radio units, with their own communications means, to transmit information obtained on the enemy radioelectronic means to their own units.

Cooperation between front and army SPETSNAZ radio units is ensured by the allocation of tasks and the specifying for each unit of the targets to be neutralized by jamming.

The cooperation of SPETSNAZ-S radiotechnical battalions with surface-to-air missile units and with fighter aviation is ensured by the allocation of the installations to be covered, and the specifying of the limits of neutralization by jamming, and of the signals to cease jamming. In addition, the allocation of installations to be covered in the front zone among the SPETSNAZ-S and air army SPETSNAZ radiotechnical battalions and the SPETSNAZ radiotechnical battalions of formations of the Air Defense Forces of the Country, should be provided for.

To control the SPETSNAZ radio and radiotechnical units during the operation, the control post of the chief of the radioelectronic countermeasures service is set up at the front command post. This post should be set up together with or near the radio and radiotechnical reconnaissance department of the intelligence directorate of the front staff to ensure the closest cooperation between them.

Radio, radio-relay and wire communications are set up between the control post of the chief of the radioelectronic countermeasures service and the jamming units. In so doing radio communications are set up by radio links, and radio-relay and wire communications are set up by channels in the overall front communications system via backup communications centers, the communications centers of the front control posts, and the

special-purpose communications centers.

In the SPETSNAZ radio and radiotechnical units, direct control of the forces and means is exercised from the command post of each unit in accordance with the tasks received from the chief of the radioelectronic countermeasures service.

4. The implementation of radioelectronic countermeasures in an operation

In an offensive operation without the employment of nuclear weapons, a front will not have the means necessary for destroying the especially important radioelectronic installations being used at the enemy operational level of control. Therefore, under these conditions it is possible to disrupt control only at the tactical level, where the main means is radio, that is, in divisions and corps of the first echelon of the enemy, and also in aviation and in his air defense warning system.

At the same time, in an operation with the employment of only conventional means of destruction, the effectiveness of neutralizing the airborne radar means of tactical and carrier-based aviation by jamming increases, since more precise aiming is required to hit targets with conventional weapons; in aviation actions at low altitudes, the flying of the aircraft and aimed hits on previously unreconnoitered targets really are not feasible without the use of onboard radar means. The experience of exercises shows that bombing by means of radar sights under conditions of heavy jamming usually results in missing the target by several kilometers.

When the initial nuclear strike of the front is delivered, the control posts and communications centers of the large staffs, and especially important radioelectronic installations in the front offensive zone, must be destroyed. The total number of these reaches 45 to 55.

Some of these installations will be destroyed by strategic nuclear forces, and others -- incidentally during the delivery of strikes against the enemy troops and installations which these radioelectronic installations are deployed near to. The remaining especially important radioelectronic installations must be destroyed by the means of the front and armies.

The destruction of especially important enemy radioelectronic means will create favorable conditions for subsequent neutralization by jamming of the surviving and newly deployed means.

Simultaneously with the initiation of the front nuclear strike, the SPETSNAZ radio and radiotechnical units must immediately begin neutralizing, by radio jamming, the radio and radio-relay communications for controlling the missile units, tactical aviation and large units of the first echelon of the enemy troops and for their cooperation, and the radio communications for warning.

A variant of the schedule for neutralizing enemy shortwave radio communications in the initial strike of the front is shown in the table.*

The disruption of the system for guiding enemy tactical aviation to front troops and installations is assigned to SPETSNAZ-S and air army SPETSNAZ radiotechnical battalions. These battalions are used to cover the main troop grouping, the positions of the front missile brigade, command posts, crossings, and airfields. The battalions accomplish their tasks by neutralizing airborne radars and the ultra-shortwave radio communications for guiding aviation to ground targets.

During an operation radioelectronic countermeasures are implemented to support the accomplishment of such tasks as the repulse of enemy counterattacks, the assault crossing of water obstacles, the landing of amphibious or airborne landing forces, and the commitment of the second echelon of a front (army) to an engagement.

When repulsing enemy counterattacks, the radioelectronic means controlling the nuclear weapons units, the radio communications controlling the enemy counterattack grouping, and the radio communications for its cooperation with tactical aviation, must be neutralized.

[redacted] comment. The table is not available.

When carrying out an assault crossing of a water obstacle radioelectronic countermeasures are aimed at: disrupting the radio communications controlling enemy troops taking up the defense on the opposite bank, and the radio communications guiding tactical aviation to ground targets; covering troops in the assault crossing sectors, and the main bridges and crossings, by jamming means.

When carrying out an assault crossing of a water obstacle from the march, special attention must be devoted to disrupting the radio communications of the retreating enemy troops and of the reserves advancing from the depth which are to take up a defense along the water line or deliver counterattacks.

When landing an amphibious landing force, the task to disrupt the control of the forces and means of the antilanding defense has to be accomplished by the combined efforts of the different branch arms. In doing this, the front SPETSNAZ radio units must neutralize the radio communications controlling the aircraft and ships of the enemy antilanding defense forces. The landing forces are covered at embarkation points by the jamming means of the ships and of the SPETSNAZ radio units of the Air Defense Forces of the Country, and during the sea transit by the jamming means of the ships.

When landing an airborne landing force, SPETSNAZ radio units will neutralize the radio communications for warning and controlling the enemy large units and units combating the landing force.

The tasks of neutralizing the enemy air defense radar means in the flight path of military transport aviation and in the areas in which the landing force is landed or dropped, will be accomplished by the means of the air army.

When committing the second echelon to an engagement, radioelectronic countermeasures must be implemented with the task of covering the troops of the second echelon against reconnaissance and air strikes, and of disrupting the system for controlling enemy missile units, tactical aviation, troops and air defense means on the axis on which the second echelon is to be committed to the engagement.

One of the important matters for ensuring effective radioelectronic countermeasures during an operation is that of relocating the SPETSNAZ radio and radiotechnical units as the troops advance.

Considering that the jamming of shortwave radio communications being carried out by space waves is most effective in a zone 300 to 700 kilometers from the jamming set, during an operation it is desirable to relocate the SPETSNAZ-F radio battalions and the SPETSNAZ radio battalions of the RVGK alternately, in 300 to 400-kilometer moves.

According to the experience of the military districts, a SPETSNAZ-F radio battalion requires from 40 minutes to one hour to close down, and from one hour and 20 minutes to one hour and 40 minutes to set up in a new area. The march of the battalion a distance of 300 to 400 kilometers at an average speed of 20 kilometers per hour, will require 15 to 20 hours.

Thus, the total time for one relocation of a SPETSNAZ-F radio battalion is about 24 hours. This will require correct specifying of the starting time and the procedure for relocating the battalions during the operation, and the transfer of some of the important tasks of neutralization by jamming to the battalion remaining in position.

SPETSNAZ-S and air army SPETSNAZ radiotechnical battalions usually will be relocated either at the same time the installations they are covering are relocated, or when these battalions are assigned new tasks.

The SPETSNAZ-A radio battalions attached to the armies must be relocated by echelons behind the divisions of the first echelon, setting up 10 to 15 kilometers from the line of troop contact with the enemy. A battalion may be relocated two or three times in one day of an operation. The companies of these battalions which jam ultra-shortwave radio communications must be moved in the battle formations of the divisions of the first echelon.

CONCLUSION

Successful accomplishment of the tasks of radioelectronic warfare in precise coordination with the tasks of the troops in an operation will create favorable conditions for achieving the goals of the operation in a shorter period of time and with fewer losses.

In order to attain these results it is necessary to have advance training of staffs and troops for radioelectronic warfare, continuous improvement of its methods and means, systematic study of the radioelectronic system of the probable enemy in the theater of military operations, a high level of training of the personnel and constant high combat readiness of the SPETSNAZ radio and radiotechnical units, and skilful and flexible command over the implementation of all measures in the sphere of radioelectronic warfare during an operation.