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# Intelligence Information Special Report

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MILITARY THOUGHT (USSR): Problems of Air Defense in a Front Offensive Operation Conducted to the Entire Depth of a Theater of Military Operations
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# Problems of Air Defense in a Front Offensive Operation Conducted to the Entire Depth of a Theater Of Military Operations

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A front offensive operation to the entire depth of a theater of military operations is a new phenomenon in military art. Naturally there has arisen a need for a thorough treatment of the many questions related to such an operation, including the organization of the air defense of the troops and installations in a front.

The air defense of front troops in an offensive operation conducted to the entire depth of a theater of military operations is organized on the basis of those same principles that apply in ordinary front operations, which are characterized by the concentration of efforts on covering the main groupings of troops, ensuring continuity of cover, the broad-scale maneuvering of forces and means, and close cooperation with the air defense forces of allied countries in the given theaters and of adjacent fronts, and with the Air Defense Forces of the Soviet Union.

At the same time, the organization and conduct of air defense in such offensive operations has certain distinctive features. In the course of an operation it is necessary to provide continuous cover for the advancing troops to a depth almost twice as great as in conventional operations, under conditions in which the distance from the territory of one's own country is great and the rear areas of fronts and lines of transportation have been extended. For example, if the depth of a front offensive operation in the European Theater of Military Operations is 2,000 to 2,500 kilometers, the lines of transportation will be extended to 1,000 to 1,500 kilometers or more. Due to these circumstances, it will be considerably more difficult to provide reliable cover for the main groupings of troops and installations, as well as to control the air defense forces and means and to ensure cooperation of the front air defense system with the air defense of the country (allied countries) and adjacent fronts.

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Without pretending to cover all aspects of this important problem, we will try to examine only some of the questions which, in our opinion, are

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the most urgent ones -- ensuring the continuity of air defense, organizing cooperation between the front air defense system and the air defense system of the country (allied countries) and adjacent fronts, and supplying surface-to-air missiles to the air defense troops of a front.

Continuity of the air defense of a front. The chief means of action by an air enemy against the troops and installations of a front in a theater of military operations in coming years obviously will be tactical aviation and, in part, carrier-based and strategic aviation.

We should assume that a certain part of the air forces will be destroyed in the basing areas by strikes conducted by our missiles and aviation. However, because of dispersed basing and the advance take-off of aircraft, a significant number of them may survive and be able to take part in subsequent combat actions. Thus, the troops of a front will require continuous cover throughout the duration of the entire offensive operation.

Calculations show that at least three to five long-range surface-to-air missile brigades (regiments), nine to 14 medium-range surface-to-air missile regiments and up to 15 to 20 short-range surface-to-air regiments (battalions) are required to provide continuous cover for the troops of an advancing front consisting of three to five armies. These forces and means operating jointly with the front's fighter aviation can reliably cover the advancing troops of a front and their rear facilities and units (subunits) to a depth of 500 to 600 kilometers from the line of contact with the enemy.

If the offensive develops successfully, there may be exposed installations in the rear of the front and along its lines of transportation that are extremely important both to the front and to the interior of the country. In other words, a significant gap may be formed in the course of the operation between the system of air defense of the troops and the air defense system of the country. It is possible that this gap may extend a distance of 1,000 to 1,200 kilometers toward the end of the operation, while in ordinary operations it would be much less. Neither the Air Defense Forces of the Country nor the air defense troops of the front are capable of protecting the lines of transportation and installations located in this territory without the appropriate reinforcement. For this purpose the Supreme High Command obviously must have, on a given strategic or operational axis, sufficiently strong reserves of air defense troops in the form of mobile air defense large units. Such reserves may be created in peacetime as well as during the course of combat actions. In addition, the continuity of air defense may

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be maintained by expanding the boundaries of a front-area air defense formation and by using forces and means taken from installations that are no longer important. In the process of setting up air defense in occupied territory it may be possible to place some of the air defense units of the front under the command of the air defense forces of the country, and, on the other hand, a certain part of the forces and means of the formation of the air defense of the country under the command of the front.

An indispensable condition for the continuity of cover for the troops of a front is the presence of a continuously operating radar reconnaissance system.

In order to conduct continuous radar reconnaissance in the zone of the offensive and throughout the depth of the operational disposition of the front troops, there must be at least 65 to 70 radar companies, that is, at least two separate radiotechnical regiments (with nine to 11 companies in each) in the complement of the front air defense troops and up to two radiotechnical battalions (with four to five companies per battalion) in the air defense troops of each army. This means that a front, in addition to its organic means, must be reinforced with a minimum of one radiotechnical regiment, and each army -- with no less than one radiotechnical battalion.

The radar field that is established must be solid and capable of detecting an air enemy throughout the entire range of his possible operational altitudes. A front zone 500 kilometers in width should have at least 15 to 16 radar companies placed in the first line of radar posts for the detection of air targets at low altitudes within 70 to 100 kilometers of the forward edge. The second and subsequent lines of radar posts must be arranged 50 to 70 kilometers from the first line and in such a way as to create a solid radar detection field above altitudes of 1,000 meters.

The relocation of surface-to-air missile units for the purpose of providing continuous cover to the troops is carried out in accordance with the rates of advance. If the rate of advance is 80 to 100 kilometers per day, long- and medium-range surface-to-air missile units should be moved two to three times per day, and by entire units, not by subunits. At the same time, they will be located in their positions for the major part of the time and will be providing cover for the troops. For the above number of surface-to-air missile units, more frequent moves may lead to a weakening of the air defense of the troops.

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In the case where an army has one brigade or two self-propelled surface-to-air regiments, it is possible to provide continuous cover for the main grouping of the army to the entire depth of its operational disposition against enemy strikes from medium and high altitudes, at the same time making no more than two moves per day and spending no more than three hours on the moves. This is corroborated by the following observations. If the radius of the kill zone of a self-propelled system is 35 to 40 kilometers, then two regiments armed with such a system can provide continuous cover, against the strikes of an air enemy from medium altitudes, of the troops and installations of the army operating in an area of about 60 kilometers along a front and up to 100 to 120 kilometers in depth.

In addition to the above units (large units), the air defense troops of a front and armies should have enough low-altitude surface-to-air missile systems to ensure the destruction of targets at maximally low altitudes throughout the zone of operations of the army and of each independently operating large unit. The needs for such systems may be calculated on the basis of the fact that a surface-to-air missile unit armed with low-altitude systems is capable of providing continuous cover to divisional units operating in an area with a front of 25 kilometers and a depth of up to 50 kilometers.

Such front installations as new airfields of front aviation, command post areas, missile technical bases, etc., must be covered in the course of an offensive operation. Furthermore, some front installations (such as front missile technical units, nuclear warhead storage and assembly bases, airfields for nuclear weapons-carrying bombers and the positions of separate missile battalions of front subordination) must have continuous direct cover from surface-to-air missile units in addition to the cover provided by the overall zonal air defense system.

Therefore, the number of air defense forces and means of a front proposed by us for operations throughout the entire depth of a theater of military operations may be considered the minimum. If we consider that the irrecoverable losses of air defense troops during an operation may reach 25 to 30 percent, the requirement will correspondingly increase.

The continuity of cover of front troops provided by fighter aviation is predetermined to a considerable extent by the timeliness with which it is rebased immediately behind the advancing troops. However, it is extremely difficult to build a large number of bases in a short period of time if the rates of advance are high and to great depths. For example,

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while six to ten airfields would be required for the basing of two fighter aviation divisions in a conventional offensive operation by a front, this number would double for an offensive to the entire depth of a theater. An air army would not be capable of building this number of airfields using its own engineer battalions. This suggests the conclusion that the fighter aviation units of a front should be supplied with longer-range fighters (on the order of 1,500 to 2,000 kilometers) capable of providing cover for the troops of a front to the entire depth of a theater of military operations with the minimum number of rebasings (one or two at most). Another solution would be the development of fighter aircraft not requiring airfields and having the ability to operate from small dirt strips and to relocate rapidly behind the advancing troops.

The mobility and mileage reserve, with respect to fuel consumption and track (wheel) life, of modern air defense systems differ little from those of the modern tanks and armored personnel carriers (motor vehicles) of motorized rifle and tank large units. Modern surface-to-air missile and antiaircraft artillery units and subunits are mobile, self-propelled air defense systems with a considerable mileage reserve and speeds equal to those of modern tanks and armored vehicles, and the time required to bring them from travelling status to a state of combat readiness enables them to be deployed to repulse enemy air strikes within limited time periods not exceeding five to 15 minutes. Therefore, the mobility and mileage reserve of air defense systems are not an obstacle and do not limit the capabilities of air defense systems to provide cover for front troops conducting an offensive to the entire depth of a theater of military operations.

Cooperation of the forces and means of a front air defense system with the Air Defense Forces of the Country (allied countries) and adjacent fronts. This organization requires first of all that an initial period of the operation be specified in which the air defense forces of the front are deployed in the same area as the Air Defense Forces of the Country. During this period the forces and means of the air defense of the country play the main role in covering the deploying front forces. The air defense troops of the front and the air defense forces of the country maintain tactical cooperation which involves the coordination with respect to time and place of the combat efforts of air defense units (subunits) and the fighter aviation subordinate to various chiefs. Such cooperation is organized and worked out in advance, before the start of combat actions. 50X1-HUM

A decisive condition for the successful cooperation of all air defense forces and means in a front zone at the beginning of an operation is the

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colocation of control over the different air defense means at a single command post and the establishment of stable, reliable and high-speed communications between the cooperating means. The decisions of the commanders for the destruction of enemy air attack means and control of the cooperating air defense means must be based on the same radar reconnaissance data in order to avoid confusing the situation and missing individual targets.

At the beginning of an operation, when the forces and means of air defense of the front and army troops, which are covering the movement of the large units and units to their departure areas for the offensive or directly to the state border, are acting within the areas of responsibility of the air defense of the country, the organization and support of cooperation between them must be the duty of the commanders of formations (commanders of large units) of the air defense forces of the country, since the control procedure in the air defense system of the country has been worked out beforehand and is distinguished by a higher level of stability than the control over the deploying air defense troops of a front. The existence of a stable multichannel communications system and automated control systems, as well as the large number of alternative communications channels, create the most favorable conditions for controlling the cooperating air defense means. For this reason, the full responsibility for providing cover to the troops and installations of a front in its own territory (within the area of responsibility of the air defense forces of the country) lies with the commanders of the formations (commanders of the large units) of the air defense of the country. In addition to covering installations in the country, they also provide cover for all installations and troops of a front located in the given territory. The plan for the cooperation of all air defense forces and means during this period is prepared in advance in peacetime and is worked out in practice in exercises and training sessions conducted long before the start of combat actions.

With the announcement of an increased level of combat readiness, the chief of the air defense troops of the front or his deputy with a group of officers should be located at the command posts of the formations (large units) of the air defense of the country in order to ensure coordination of the actions of the air defense means of the different components. 50X1-HUM

In the course of an offensive operation the troops of a front, and with them the air defense means, will begin to move gradually out of the area of responsibility of the air defense forces of the country, and the air defense of the front will begin to take shape as an independent system. On the third or fourth day of the operation there obviously will occur a

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division of responsibility between the two air defense systems in the cover provided to the troops and installations. In this connection, the cooperation between the air defense of the troops and the air defense of the country will become more complex: in addition to destroying the air enemy jointly in one area, it will be necessary to destroy them in different areas without tactical liaison.

Operations groups play an important role in ensuring cooperation. Where the air defense forces of the country and the air defense troops of the front are operating in one area or in immediate proximity, experience gained in exercises has shown that their cooperation can best be ensured by sending operations groups from the staffs of formations (large units) of the air defense forces of the country and the staff of the air army to the command post of the air defense of the front.

Where a gap forms between the air defense forces of the country and the air defense system of a front, their cooperation will be maintained in the same way as between formations carrying out a common task on one or several operational axes. Cooperation between the air defense forces and means of adjacent fronts is maintained in an analogous manner. The bases for such cooperation are defined in the orders of the Supreme High Command during preparation for the operation. In particular, these orders establish the tasks and areas of responsibility of the air defense forces of the country during an operation, as well as the number of forces and means that will be used by them and the front to cover installations in the gap that has formed.

Questions of the cooperation of the air defense troops of a front with the air defense forces of allied countries are resolved under the direction of the Combined Command on the basis of the same principles as cooperation with the air defense forces of the Soviet Union.

The missile technical support of the air defense troops of a front in the course of an offensive is a problem that is extremely complex and has no easy solution. This is explained by the fact that the speed of relocation of surface-to-air missile units has increased while the time required to check and prepare the missiles for launch is still, as before, too long. This contradiction may be eliminated drastically by the development of technically new principles and methods of missile preparation: they should be sent to the missile technical bases of the front (armies) in an assembled form, armed and tested. In this case the missile technical base need only perform mating operations (if necessary) and the obligatory test procedures based on the "go-no go" or "ready-not

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ready" principle. A maximum of three to five minutes should be spent on testing the missiles, which will enable a missile technical base to check a large number of surface-to-air missiles in one day (up to 192 to 288 missiles).

With the existing methods of missile preparation, the productivity of surface-to-air missile technical bases may be further increased by improving their technological (technical) equipment and their table of organization. Practice has shown that the possibilities for this are great.

For example, in the last three years as a result of an improvement in the technical process, improvement in rigging equipment, assembly tools and the quality of manufacture of the missiles themselves, as well as an accumulation of experience in the assembly and testing of missiles, it has been possible to reduce almost twofold the time required for the preparation of missiles for S-75 systems.

How many surface-to-air missiles will be required by a front during an operation and how can their delivery to the troops be organized?

Judging by the experience of exercises, the average expenditure of surface-to-air missiles in an operation is 10 to 12 units of fire per launcher or 60 to 66 missiles per system.

Consequently, a total of 6,500 to 9,000 surface-to-air missiles of all types would be required to support an offensive operation by a front having nine to 15 long-range battalions (systems), 54 to 84 medium-range batteries and 45 to 75 short-range batteries.

If we proceed from the fact that at the start of an operation each surface-to-air missile unit will have an average of up to 2.5 units of fire, which is approximately 25 percent of the total number of missiles needed for the entire operation, the remaining number (5,000 to 7,000) must be brought to the front before the start or in the course of the operation by various forms of transport (air, motor and rail).

In our opinion, the basic means of delivering missiles to the front and within a front will be motor transport and air. If we assume that one-fourth of the required number of missiles will have been delivered before the start of the operation, then it will be necessary to deliver about 270 long-range missiles, 1,700 medium-range missiles and up to 2,750 short-range missiles in the course of the operation. This would be about

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500 missiles per day (27 long-range, 170 medium-range and up to 300 short-range). To carry and deliver these missiles simultaneously would require approximately 190 aircraft or two to 2.5 trips of one military air transport division.

Shipment of the missiles by motor transport would require a much greater number of units of transport (about twice as many) and would also require more than one day for delivery.

The delivery of missiles by motor transport to the launch positions of the surface-to-air missile units within a front will be impeded by the great distances, and by partial destruction and contamination of the roads. Therefore, in this case it would be most advisable to use MI-4-type helicopters to supply short-range missiles and larger-capacity helicopters for medium-range missiles.

Calculations show that, in some cases, particularly when an operation develops at a high speed, a front will require at least one helicopter regiment for the supply of missiles alone.

Such an organization of the missile supply process will permit the uninterrupted delivery of missiles to the launch positions of surface-to-air missile units and the reliable cover of the advancing troops of a front to the entire depth of a front offensive operation.

Under the existing technology of missile preparation and testing, surface-to-air missiles arrive at the front in factory crates. Their unpacking, assembly, mating and testing take a great deal of time. Front and army missile technical bases have the responsibility for preparing and testing such missiles. The number and composition of these bases must be such as to ensure the preparation and delivery to surface-to-air missile units (subunits) of missiles that will arrive at the front within one day's time. If the productivity of a surface-to-air missile technical base is approximately 64 short-range and 24 medium-range missiles per day, then there should be two to three front missile technical bases and one base for each army in order to assemble and test missiles which will be supplied to the surface-to-air missile units (large units) in the course of an operation. 50X1-HUM

In addition, each surface-to-air missile unit should have technical subunits to perform prelaunch testing. Under these conditions, all surface-to-air missiles reaching the front from the arsenals and bases of the Chief Missile and Artillery Directorate, as well as from the country's

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missile plants, will be assembled and tested in advance and delivered to surface-to-air missile units in the required number.

On the whole, concerning the question of air defense in a front offensive operation conducted to the entire depth of a theater of military operations, we may say that the study of this problem has just begun. It is extremely desirable that a wide range of military specialists take an active part in working out this problem.

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