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CENTRAL INTELLIGENCE AGENCY

WASHINGTON, D.C. 20505

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26 September 1973

MEMORANDUM FOR: The Director of Central Intelligence

SUBJECT : MILITARY THOUGHT (USSR): The Status and Prospects for Improvement of Soviet Field Air Defense

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 summarizes previous favorable developments in Soviet field air defense and suggests additional areas and measures for improvement. The SA-2 missile system, FLAT FACE radar, and VOZDUKH semi-automatic data system are cited as positive factors. New coordination problems are attributed to the increase and diversification of field air defense as systems. The author applauds the restoration of the post of divisional air defense chief and recommends the establishment of a front air defense staff headed by a deputy commander. 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.

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William E. Nelson  
Deputy Director for Operations

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# Intelligence Information Special Report

COUNTRY USSR

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DATE OF INFO. Mid-1967

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SUBJECT

MILITARY THOUGHT (USSR): Certain Considerations Regarding Improvements in Field Air Defense Troop Control Systems

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 of Artillery P. Levchenko. This article summarizes previous favorable developments in Soviet field air defense and suggests additional areas and measures for improvement. The SA-2 missile system, FLAT FACE radar, and VOZDUKH semi-automatic data system are cited as positive factors. New coordination problems are attributed to the increase and diversification of field air defense systems. The author applauds the restoration of the post of divisional air defense chief and recommends the establishment of a front air defense staff headed by a deputy commander. He also recommends location of duplicate fighter command posts in the headquarters of armies receiving air support.

End of Summary

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Comment:

Colonel-General P. G. Levchenko was identified as Chief of Air Defense Troops of the Ground Forces in November 1969. Military Thought has been published by the USSR Ministry of Defense in three versions in the past--TOP SECRET, SECRET, and RESTRICTED. There is no information as to whether or not the TOP SECRET version continues to be published. The SECRET version is published three times annually and is distributed down to the level of division commander.

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CERTAIN CONSIDERATIONS REGARDING IMPROVEMENTS  
IN FIELD AIR DEFENSE TROOP CONTROL SYSTEMS

by  
General-Leytenant of Artillery P. Levchenko

In recent years, much has been done to strengthen the air defense of our Ground Forces. Through the efforts of our Soviet designers, mobile SAM and antiaircraft artillery systems have been developed which are capable of moving directly with combat formations of large units and units and of conducting effective combat against enemy aircraft practically throughout the latter's entire range of altitudes of operation. As troops become equipped with these weapons, field air defense will be conducted at a level of highly maneuverable operations and, particularly important, will be able to reliably cover troops and rear area installations from enemy air strikes delivered at low altitudes.

The capabilities of army and front air defense troops to conduct reconnaissance of the air enemy have improved significantly. These troops now have available a considerable number of modern radiotechnical means. The number of radar stations for detecting low-flying targets has increased. Air defense radiotechnical units have begun to be equipped with the "Vozdukh-1P" automated system. All of these factors increase the reliability of radiotechnical reconnaissance in the overall air defense system of the Ground Forces and permit a reduction in the time required to warn troops and rear area installations of enemy air attack threats. There is no doubt that the creation of organic command posts for chiefs of air defense troops in a number of military districts and groups of forces has favorably affected the organization of reconnaissance, warning, and air defense troop control.

Initial steps have also been taken to strengthen air defense control organs at the tactical level. The post of division air defense chief, with a small control nucleus and a radiotechnical and communications platoon, has been reestablished. As a result, it has become possible to plan more purposefully the combat employment of all division air defense means, especially the air defense means of motorized rifle (tank) regiments. By having his own organic radiotechnical reconnaissance means, the division air defense chief can organize timely warning of an air threat to air defense means and division units.

The immediate availability of modern air defense means in motorized rifle (tank) regiments, and also in the division, army,

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and front, permits the successful accomplishment of the task of covering troops at the operational and tactical scale under various types of combat activities.

However, there is a significant gap between air defense troop technical equipment and the troop control system. This is particularly reflected in the fact that the control organs are far from being able to cope with the volume of problems which must be resolved in organizing and accomplishing the air defense of troops. We would like to set forth certain considerations on overcoming this contradiction and also on ways of improving troop air defense control; but, of course, we do not pretend to provide a comprehensive treatment of such a complicated problem.

The existing air defense organizational structure was developed in 1958, when antiaircraft artillery was the principal ground means of cover for troops. Under those conditions, it provided, to a certain degree, control over the combat training and combat readiness of Ground Forces air defense troops, although even then the personnel complement of the air defense control organs was extremely small in numbers.

But since then the proportion of air defense troops in the Ground Forces has risen significantly and continues to increase. In the future each motorized rifle (tank) regiment should have an antiaircraft artillery battalion, each motorized rifle (tank) division an antiaircraft artillery regiment, and each army (front) an antiaircraft artillery brigade. The work load of air defense control organs of the Ground Forces is also increasing in connection with the need to accomplish the tasks of incorporating and mastering new technical equipment, working out combat employment methods for it, training personnel, etc. To accomplish these tasks, the chief of air defense troops of the military district (group of forces), army, and division, must have a stronger organization than the one currently in use.

The basic nucleus of this organization, in our opinion, must be the air defense staff, through which the chief of air defense troops will direct subordinate troops. A highly-trained, well-coordinated, accurate, and constantly-working staff, provided with the necessary reconnaissance and communications means, is precisely what is needed to assure control of air defense troops in the dynamically developing situations which are so typical of modern operations. It will also be able to efficiently resolve problems concerning the coordinated combat efforts of air defense means in formations (large units). In our view, it would

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be expedient for the front (army) air defense staff to have the following:

- an operations department (section);
- an intelligence department (section);
- an automation and communications department (section);
- a combat training department (section);
- a command post with the necessary personnel and control means for two locations;
- a chief engineer service for SAM, with service and supply organs;
- a chief of radiotechnical troops service, with service and supply organs;
- cipher and classified documents sections (units).

Since the entire burden of combatting the air enemy at minimum altitudes is now borne by divisions, air defense control organs at this level must also be strengthened. It seems advisable that a motorized rifle (tank) division have an air defense staff composed of a chief of staff, a senior officer for operational matters, a senior officer for intelligence, an automation and communications officer, a senior engineer for SAM, and a senior engineer for radar equipment. In addition, the staff should include a command post with a combat team and control means, and also a classified documents unit.

In peacetime the air defense staff of a military district (group of forces), army, and division, must be charged with assuring combat readiness, the direction of the combat and political training of air defense units (large units), the organization of the combat duty air defense forces and means, and the resolution of other matters pertaining to the existence and activity of units (large units).

It seems necessary to broaden the authority of the chief of air defense troops. Formerly, the chiefs of air defense troops of a military district (group of forces), army and division, were simultaneously (by regulation) assistants to the formation commanders (commanders) for air defense. As borne out by actual practice, this

was completely justified: the assistant to the formation commander (commander) for air defense could resolve certain problems concerning air defense more efficiently; in particular, he was able to adopt measures to raise the level of combat readiness and to improve the combat training of air defense units incorporated into combined-arms and tank formations (large units, units).

Later, chiefs of air defense troops were deprived of authority as assistants to the formation commanders (commanders) for air defense, their status was markedly lowered, and the number of air defense officer specialists in a military district (army) was reduced to a minimum, even though the number of air defense units in the Ground Forces was increasing at that time because of rearming with S-75 SAM systems.\* All of this led to the weakening of the general level of direction of Ground Forces air defense troops as a whole and to lowering of the quality of combat training of air defense units.

Experience suggests that under modern conditions it would be expedient at all levels to confer on chiefs of air defense troops the authority of a deputy formation commander (commander) for air defense and to charge them with complete responsibility for the protection of front (army, division, regiment) troops against enemy air strikes.

In our opinion, it is necessary to grant the deputy formation commander (commander) for air defense the right to plan (based, of course, on the overall plan of the formation commander or commander) the organization of front (army, division, regiment) air defense. This plan, after it has been approved by the formation commander (commander), is put into effect through the air defense staff and its subordinate echelons. Naturally, in organizing and implementing the air defense plan, the deputy commander for air defense will coordinate his work with the combined-arms staff and the commander of the air army. When repulsing enemy air raids, the deputy formation commander (commander) for air defense should direct all air defense forces and means, including, also, those fighter aircraft detailed to provide the troops with air defense.

The introduction of an antiaircraft artillery battalion into the complement of the motorized rifle (tank) regiment and, in

\*[The S-75 is the SA-2 missile system.]

the future, the introduction of even newer air defense means into the motorized rifle (tank) battalion as well, obviously requires that each regiment have a chief of air defense with one or two officers.

The organization of communications. The successful control of air defense units (large units) will depend greatly on the availability of reliable communications which will permit very efficient transmission of warning data about the air enemy and the conveyance of orders to active air defense means. However, the communications means now available to air defense units (large units) do not fully assure reliable and stable control during combat with the air enemy. Thus, the "Vozdukh-1P" automated system with which air defense troops of the Ground Forces are being equipped is fundamentally based on the R-118 radio set. Troop experience in operating the "Vozdukh-1P" shows that it is impossible to transmit the necessary volume of information about the air situation with these sets. That is why the more powerful R-820 or R-122 radio sets are being used instead of these sets.

At present, radar posts transmit the air situation by radio to air defense command posts. All warnings to the troops about the threat of enemy air raids are also sent by radio. The transmission capabilities of radio sets in the telegraph mode are extremely limited. That is why it is necessary to establish up to four radio warning nets in a front (army). This requires a large number of personnel and communications means, but, most important, it results in a two to four minute delay in transmitting data about the air situation. Considering the speed of modern air targets, such a delay is intolerable. When using the plotting board method of control, teletype, radio-telephony and other means of limited automation are used by troops to reduce time delays and to increase transmission capabilities.

There are difficulties in transmitting to air defense units (large units) orders to open fire (allocation of targets), particularly from the army (front) air defense command post. The transmission of this order by radio in the telegraph mode requires much time. Consequently, as new and efficient air defense technical equipment is introduced into the Ground Forces, it is necessary to take urgent measures to increase the dependability and stability of communications with air defense units (large units). The newest types of radio sets--tropospheric and radio-relay communications means--should be widely introduced into the troop air defense control system. In our opinion, the time has come to

introduce secure communications means as authorized equipment for control organs of the front and army chiefs of air defense.

Selection of expedient degrees of readiness for SAM means. The timely commitment to battle of active air defense means depends primarily on the range at which attacking aircraft are detected by radiotechnical reconnaissance means. These ranges are extremely limited when air targets fly at low altitudes. Thus, P-15 radar stations,\* which are specially designated for reconnaissance of low-flying targets, can, according to their tactical and technical specifications, detect aircraft flying at altitudes of 100, 300, and 500 meters at ranges on the order of 25, 40, and 70 kilometers respectively.

As shown by computations, new SAM systems will be able, at these detection ranges, to destroy air targets at altitudes of 100 to 300 meters only from duty status, that is, from Readiness No. 1. But SAM systems are able to operate uninterruptedly (while at Readiness No. 1) only for an average of eight to twelve hours. Consequently, the choice of an expedient degree of combat readiness is of the greatest importance for successful combat with low-flying targets.

This problem might, of course, be solved by developing and adopting improved radar stations for field air defense equipment, and also by fully automating all of the control processes for air defense forces and means. And definite steps are being taken in this direction.

At the same time--and this is now the principal way of solving the problem--it is necessary to find further ways of shortening the time required to bring the new SAM systems to combat readiness. Because of the extremely limited capabilities of radiotechnical reconnaissance in detecting low-flying targets, it seems expedient, for the purpose of repulsing the initial raids of the air enemy, to designate the combat readiness level for air defense forces and means in each instance according to the situation that has developed. Judging by the experience of exercises, the following recommendation can be adopted as one of the possible alternatives. When a state of increased readiness is announced to the troops, all air defense means should be deployed with up to a third of the fire means kept at duty status; when full combat readiness is announced, the number of duty air defense means is increased up to two-thirds of the entire complement;

\*[FLAT FACE]

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and when troops start moving towards the national borders, all air defense fire means will be at duty status (at Readiness No. 1). Combat duty time schedules for air defense forces and means should be formulated by the appropriate chiefs of air defense troops, then set forth in the air defense plan and, finally, approved by the combined-arms commanders.

The organization of coordination between front fighter aviation and SAM units (large units). The ever-increasing saturation of troops with SAM which cover the entire flight altitude range of enemy aircraft greatly hampers the organization and maintenance of coordination of air defense forces and means, especially of SAM and fighter aviation units which have to conduct joint combat actions.

Of course, it would be considerably easier to organize the coordination of these air defense means if they were combined under a single command. However, under the existing organization of Ground Forces air defense, to combine them in such a manner seems impossible to us and, perhaps, not even expedient. Consequently, it is necessary to find new forms of coordination between SAM units (large units) and front fighter aviation.

Two basic methods of coordinating SAM units (large units) and front fighter aviation are set forth in existing official documents: by zones of combat actions; and in a single zone (SAM zone of operations). For coordination in a single zone, the efforts of SAM large units (units) and of fighter aviation, as is known, may be allocated by targets, sectors (axes), times and altitudes.

Coordination by zones is much simpler. When it is employed, SAM units (large units) and fighter aviation can realize their combat capabilities without interfering with each other. Particularly favorable conditions for the air defense of troops are created if fighter aircraft destroy air targets on the approaches to the zones of combat actions of SAM units (large units). This will obviously be the basic method of coordination under the new organizational structure of Ground Forces air defense units.

The second method, coordination in a single zone, will, with the introduction of new SAM systems into Ground Forces air defense, perhaps occur very rarely, because the allocation of the efforts of SAM and fighters in a single zone by altitudes, targets, and sectors or axes, while repulsing enemy air raids, is practically impossible, given modern means of control. To

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accomplish this, it is necessary that all control processes for air defense forces and means be fully automated and that all missile guidance stations be provided with an IFF radar recognition system.

However, irrespective of which of these two methods of coordination is employed, one of the basic tasks for air defense command posts remains that of providing security for the operations of our fighters.

Special experimental exercises conducted in 1966 by the Group of Soviet Forces in Germany, to test the coordination of SAM units and fighter aviation, indicate that efficient control of their combat actions and the protection of their flights from SAM hits can be assured only if the air defense command posts of combined-arms (tank) formations and the control posts of fighter aviation large units are collocated.

As a result of the experience of this exercise, it was recognized that the most expedient variation was one where the forward command post of the fighter aviation division was collocated with the command post of the army chief of air defense troops. If a fighter aviation division is covering several combined-arms (tank) armies, it seems expedient for it to have a guidance post at the air defense command post of each army of the first echelon. It is also desirable to collocate guidance posts with the command posts of SAM units (large units) covering the first echelon divisions of an army. However, such a collocation will depend on the availability of guidance posts in a fighter aviation division.

In individual cases, command posts of fighter aviation regiments may be collocated with command posts of SAM units (large units) covering rear area installations of the front. If such a collocation is not possible, then direct communications are established between them and liaison personnel are exchanged.

To set up collocated control posts it is necessary that command posts for the chiefs of air defense troops of armies and for the commanders of air defense units (large units) established centrally, with enough organic personnel and control means to permit operations at two locations. Fighter aviation divisions must also have organic forward command posts with no less than two or three guidance posts, each with combat teams, radiotechnical means, and communications means. Without this, the collocation of command posts is impossible.

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In all cases, the command post of the front chief of air defense troops must have a deputy commander of the air army with a combat team and means for control of fighter aircraft.

To coordinate the combat teams of collocated air defense and front fighter aviation command posts, it is necessary in peacetime to conduct joint exercises regularly and, during these exercises, to work out in specific detail coordination problems associated with repulsing enemy air raids.

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