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CENTRAL INTELLIGENCE AGENCY
WASHINGTON, D.C. 20505

3 July 1974

MEMORANDUM FOR: The Director of Central Intelligence

SUBJECT : MILITARY THOUGHT (USSR): The Radar Component of National 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 discusses the importance of the radar system in air defense of the country, asserting that the formation and development of a radar system must be based on the principle of obtaining maximum effectiveness with permissible expenditures, or minimum expenditures for a specified level of effectiveness. Since this condition can be fulfilled only through an individualized approach to the formation of groupings of radiotechnical troops in various areas of the country, features of each of the different types of radar systems to be deployed in external, internal and peripheral areas are described. 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 [redacted]

[redacted]

William E. Nelson
Deputy Director for Operations

[redacted]

[redacted]

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Intelligence Information Special Report

COUNTRY USSR

DATE OF INFO. Mid-1967

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SUBJECT

MILITARY THOUGHT (USSR): Features of the Formation of Groupings of Air Defense Radiotechnical Troops in Various Areas of the Country

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 Engineer Lieutenant-Colonel Yu. Tokmin. This article discusses the importance of the radar system in air defense of the country, asserting that the formation and development of a radar system must be based on the principle of obtaining maximum effectiveness with permissible expenditures, or minimum expenditures for a specified level of effectiveness. Since this condition can be fulfilled only through an individualized approach to the formation of groupings of radiotechnical troops in various areas of the country, features of each of the different types of radar systems to be deployed in external, internal and peripheral areas are described.

End of Summary

Comment:

There is no information in available reference materials which can be firmly associated with the author. 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.

Features of the Formation of Groupings of Air Defense Radiotechnical Troops in Various Areas of the Country

by

Engineer Lieutenant-Colonel Yu. Tokmin

One of the most important component parts of the air defense of the country is the radar system. Like other elements of air defense, it is deployed in advance, in peacetime, and is subsequently developed and refined on the basis of changes in the means of air attack and air defense and in their groupings, the appearance of new installations and change in the importance of existing ones, and a number of other factors.

The formation and development of a radar system must be based on the principle of obtaining maximum effectiveness with permissible expenditures, or minimum expenditures for a specified level of effectiveness. This condition can be fulfilled only through an individualized approach to the formation of groupings of radiotechnical troops in various areas of the country. There is no point in having a radar system identical in capabilities over an entire territory; on the main axes, for example, it must be stronger than on secondary ones.

The formation of a radar system is naturally affected by the possible nature of the operations of the air enemy, the grouping and composition of the active means of the air defense of the country as well as of the air defense troops of other branches of the armed forces, and a number of other factors. However, as analysis shows, from the standpoint of the features in the formation of a radar system on our territory, the following standard areas may be distinguished: external (forward, border, and coastal), internal, and peripheral.

Forward areas are characterized by the fact that they lie directly adjacent to the territory of probable enemies and near the bases of his tactical aviation and, in individual cases, his strategic aviation. Within these areas there are usually large groupings of ground forces and a large number of important industrial and military installations. This requires the establishment of powerful antiaircraft missile and fighter aviation groupings in these areas and the presence of high-performance, automated systems of control. The need to have strong air defense in forward areas is dictated also by the fact that through them, in a number of cases, pass

those axes which lead the air enemy to the most important industrial and economic areas and installations in the deep rear area of the country. In this respect, the air defense of these areas serves as the first echelon of the air defense system of the state.

Because of this, a radar system in forward areas must be formed on the basis of using high-potential, jamming-resistant radar stations, concentrating their grouping, achieving a high level of automation of acquisition, processing and transmittal of data, and establishing a reserve of mobile means for the buildup and re-establishment of a radar field.

Before the start of military operations, a radar system of the air defense of the ground forces is also partially deployed in the forward areas. The placing of two radar systems in one territory is advantageous and, when coordination is established between them and they are operating right from the beginning of combat operations, it ensures an increase in the viability, resistance to jamming, and performance of the systems. It also ensures concealment from enemy reconnaissance of the formation of a radar grouping of the air defense of the ground forces (before the start of operations), as well as the accomplishment of maneuver and movement of the air defense means of a front under the cover of the radar system of the air defense of the country.

Radar support of all air defense means in a forward area in peacetime is, as a rule, the responsibility of the radar system of a formation (large unit) of the air defense of the country, inasmuch as it is more developed, thoroughly trained, and conducts round-the-clock observation of the air space. When an immediate danger of war arises, radar reconnaissance of the forward area must be intensified to the maximum, so that both systems are ready to work together.

During the course of military operations, starting from the moment of the territorial separation of the air defense means of a front and the air defense forces of the country, their radar support is based for the most part on their own systems, with close cooperation between them. The gap that develops during the course of an offensive between the radar coverage of a front and the radar coverage of the air defense forces of the country is filled by a buildup of the radar system of a forward air defense formation. For this purpose the forces of this air defense formation may be used, as well as reserves of the Supreme High Command.

Border areas by and large are similar to forward areas, but the conduct of broad offensive operations is not planned in them, and no radar

system of the air defense of the ground forces is deployed. As a result the radar system of the air defense of the country in these areas must on its own support the combat operations of the overall air defense grouping. The technical basis and structure of the formation of the radar system here must be approximately the same as in the forward areas. Border areas may include areas outside the main air axes (i.e., areas where operations by large air and space attack forces are unlikely). In these areas, the groupings of the means of antiaircraft missile troops are, as a rule, of a point defense nature and the quantity of fighter aviation is relatively small. Therefore the radar system can be formed on the basis of using less powerful means with a lesser degree of automation.

Coastal areas are also similar to forward areas, but within their boundaries carrier-based ground-attack aircraft may also operate along with other means of air and space attack. Because of the presence of large water areas, the air defense complement of coastal areas may include long-range interceptor aircraft.

The radar system of these areas is formed using high-potential, jamming-resistant means with a high level of automation, thus ensuring adequate performance. As an additional means of detection over broad sea expanses, radar patrol aircraft may be used. In addition it may be possible (provided there is cooperation with the navy) to use information from the detection means of antisubmarine defense ships and special radar patrol and guidance ships.

It is advisable to enlist the use of radar patrol aircraft for the establishment of a warning zone for air defense means, especially for long-range interceptor aircraft, which will make it possible to maintain them at less intense levels of combat readiness. The line of standing patrol of these radar patrol aircraft is chosen in such a way as to be able to support combat operations of long-range interceptors over the entire tactical radius. Radar patrol and guidance ships are used primarily for the buildup of the radar coverage, in such a way as to provide fighter-interceptors on an essential line with precise information during their operation over the full tactical radius.

The complex structure of the radar system in a coastal area and the diversity of means require efficient organization of control. For the control of all of the air defense means it is advisable to use the command post of a corps (division) of the air defense forces of the country.

On the whole a radar system for external areas is typically formed along lines.

Internal areas are best divided into two types. In internal areas of the first type, an air enemy operates weakened but still capable of developing a rather dense attack. Tactical aviation and carrier-based aviation do not penetrate these areas. The main task of the air defense system of such areas is to guard against an air and space attack against the most important administrative-political and economic centers of the country. To accomplish this, dense line defense and line and point defense groupings of the means of the antiaircraft missile troops are established, and air defense fighter aviation is used, as well as units for combat against enemy radio-electronic means. For the support of combat operations of active air defense means, a high-performance, automated, and jamming-resistant radar system is established.

In internal areas of the second type, operations are expected by small individual groups that have broken through, and by single aircraft. The most important installations in these areas are covered by antiaircraft missile troops, and the entire territory by units of fighter aviation. The poorly defined axis of attack by enemy air and space attack means, the point defense nature of the groupings of the antiaircraft missile troops, and the dispersal of the airfields of fighter aviation, predetermine the territorial nature of the radar system, which is established on the basis of less powerful means and lower performance automated systems.

Peripheral areas are within range only of heavy strategic bombers, operating mainly against installations outside these areas. The bulk of the aviation will, obviously, cross these areas at the optimum altitude. Air defense here is accomplished by long-range interceptor aircraft and a small number of antiaircraft missile units (large units), covering individual installations. For the support of the combat operations of the long-range interceptors in peripheral areas, it is necessary to establish a radar system consisting of a warning zone, a warning line against low-flying targets, and a zone of direct support of guidance and interception.

It is advisable to establish the warning zone on the basis of radar means of long-range detection, able to produce only rough information; these means can be spaced at extended intervals (in a thinned out manner). For the warning line, low-altitude automatic stations should be used, producing information only on the fact of the passage of targets. The zone of direct support of the combat operations of the long-range fighter-interceptors should be analogous to the radar system of the interval areas

of the second type, but with more thinned out combat formations. With this, there is less performance, and less precise information can be obtained.

The combat activity of active air defense means covering individual installations is supported by local radar groupings.