Next 2 Page(s) In Document Denied

Problems in the Development of Antiair Defense of the Ground Troops and Ways to Resolve Them*

by

Colonel V. Zemskov

Under modern conditions, the role of antiair defense has grown so much that the course and outcome of ground troop operations depend to a large extent on its effectiveness. This is conditioned by the fact that our probable enemies consider a nuclear offensive, in which the leading role is assigned to missiles and aircraft, to be the main substance of the first strategic operation of the united Armed Forces of NATO in the initial period of a war. The goal of such an offensive is to achieve, in a short period of time, nuclear superiority, supremacy in the air and seizure of the strategic initiative from the very start of the war. Its scope can be judged from the experience of the "FALLEX-60" NATO maneuvers where, during three calendar days of the nuclear offensive, 1660 nuclear strikes were conditionally delivered, and up to 5000 aircraft, and also a large number of cruise missiles, "Thor" ballistic missile launchers, URS (upravlyayemyy reaktivnyy snaryad - guided missiles) and NURS (neupravlyayemyy reaktivnyy snaryad - free rockets) of the ground troops participated. Effective combat with this large number of carriers of nuclear charges represents one of the most important tasks of the ground troops in conducting operations during the entire war.

In the light of this, it should be noted that the work being reviewed has great theoretical and practical significance. Its authors, examining the most important problems of ground troop PVO, took a basically new tenet as the basis of

their investigation, which consists of the fact that antiair defense has now outgrown the framework of support and is one of the main component parts of the substance of troop combat operations, directed toward the destruction in the air of the enemy's basic carriers of nuclear weapons--his aircraft and missiles.

50X1-HUM

Proceeding from this concept, in the first chapter the influence of modern troop combat operations on the organization of antiair defense is correctly brought to light, and the basic requirements for it, resulting from the peculiarities of the operations of the air enemy under the conditions of a nuclear/missile war and the employment of new attack weapons by him, are validly formulated. It is stressed that the antiair defense weapons of the ground troops, by their active operations to destroy enemy aircraft and missiles, actually participate in the struggle for nuclear superiority over the enemy.

The process of changing weapons of air attack has unavoidably required a sound determination of the line of further development of the antiair defense weapons of the ground troops. This most important question is examined in the second chapter.

For combatting operational-tactical ballistic missiles, it is proposed to have special weapons--antimissile missiles, and for destroying high-speed piloted aircraft and cruise missiles at all altitudes, antiaircraft guided missiles of three types: --long-range (ZUR-D) (zenitnaya upravlyayemaya raketa-dalnyaya), --intermediate and short range (ZUR-S) (zenitnaya upravlyayemaya raketa - srednyaya) and (ZUR-M) (zenitnaya upravlyayemaya raketa - malaya). These types of missiles must comprise the basis of the antiair defense of ground troops. Close action antiaircraft guided missiles (ZUR-B) (zenitnaya upravlyavemaya raketa - blizhnyaya) manual and mounted (ruchnaya i stankovaya) are recommended as the basic means of combat with low-flying,

50X1-HUM

mainly low-speed, aerial targets.

Concerning small-caliber antiaircraft artillery and fighter aviation, in the work it is pointed out that so far they have not yet lost their significance, but they will be ousted by antiaircraft guided missiles, as the weapons having the greatest future promise. It is possible to agree with this only in regard to antiaircraft artillery. Nevertheless, the authors persistently adhere to the idea that there is a need to improve antiaircraft artillery, even to create new models of multiple small-caliber antiaircraft artillery with autonomous radar sights. The question arises, is there any sense in expending considerable scientific-technical and productive efforts to create new models of these weapons? Isn't it better to work out more quickly, and introduce into the troops, the most effective antiaircraft guided missiles of all types? 50X1-HUM

The conclusions of the authors concerning fighter aircraft, in our opinion, are premature and not quite correct. Modern fighter aircraft, armed with "air-to-air" class missiles, are, at the present time, one of the basic means of antiair defense. In the future their significance and proportion in the overall system of antiair defense will undoubtedly decrease. However, it is impossible to fully replace them with antiaircraft missiles, and is hardly advisable, because both fighter aircraft and antiaircraft missiles have their merits and deficiencies, which can be compensated, and, consequently, continuous reliable antiair defense may be achieved only by joint use of all the forces and weapons of the PVO.

The tactical-technical requirements for all the weapons of ground troop antiair defense are, in our opinion, basically determined correctly in the book. But the proposed combat altitude of long-range and medium-range antiaircraft guided missiles is the same - from 2 to 4 to 25 to 30 km. It seems to us that these

50X1-HUM

figures are only applicable for medium-range missiles. For long-range antiaircraft guided missiles it is necessary to increase them to 35 to 40 km. The ceiling of enemy aircraft operations now has already reached 25 to 30 km, and for automatic balloons of strategic designation--30 to 35 km. And, undoubtedly, in the near future the flight altitude of these weapons will increase. 50X1-HUM

In order to conduct modern operations, the average tempo of which reaches 100 km per calendar day, it is necessary to have highly maneuverable PVO weapons. The existing (S-75) missile complexes are not maneuverable enough because of the low mobility, not only of the launching mounts, but mainly of the missile guidance stations. However, the authors have not examined this question and have not formulated the scientifically based tactical-technical requirements for the missile guidance and target allocating stations which must be included in future antiaircraft missile complexes.

In examining the fundamentals of the operational-tactical employment of troop antiair defense weapons and the most acceptable ways to resolve the problems of firing against aerial targets (Chapter Three), in the beginning the authors give brief recommendations for employing antimissile weapons that are not yet available in the armament of the troops. Despite the fact that these recommendations are presented in a theoretical way, they may be examined as the basis for the practical combat employment of those antimissile missiles that will enter the armament.

In the book being reviewed, the bases for employing antiaircraft missile weapons are presented in a fairly detailed manner, based on theoretical research and a collation of accumulated experience. It is stressed 50X1-HUM that the employment of long-range and intermediate-range antiaircraft guided missiles, because they are a means of zonal cover, must have a clearly expressed operational nature. Short-range antiaircraft guided

missiles may be used for both zonal and direct covering of troops and objectives. Therefore their grouping must have an operational-tactical or only a tactical nature. Recommendations on the grouping of missile units are also argued with adequate conviction and may be incorporated into the basis of practical activity; in creating them it is necessary to observe the principle of deep echelonment, including the larger part of them in the first, most powerful, echelon of the PVO. 50X1-HUM

In modern operations, observance of the principle of continuity in covering troops and objectives attains exceptionally great significance. In investigating this question special attention should be given to the organization of coordination of antiaircraft guided missiles with fighter aviation in order to insure true continuity of troop PVO in an offensive and the organization of the employment of antiaircraft missile units during combat operations conducted at a tempo of more than 4 km per hour.

However, the possibility of further increasing the tempo of an offensive is not sufficiently considered in the work. Only one version of displacement is given and it is stressed that continuity of troop cover will be disrupted with an average offensive tempo of more than 4 km per hour. Consequently, during pursuit, when troops will be moving at higher tempos, this task cannot be performed at all. However, the organization of coordination of antiaircraft guided missiles with fighter aviation, with the goal of insuring continuity of troop cover during an offensive operation, has not been examined at all.

Under modern conditions, in view of the fact that the most varied, including high-speed, weapons of aerial attack exist, the problem of organizing coordination between antiaircraft guided missiles and fighter aviation has become considerably more complicated. On the whole, in the work the basic propositions are correctly formulated on these three types of coordination: --distributing 50X1-HUM

efforts by zones; in one zone, and by time. The most complex, and at the same time the most effective in practice, is the organization of coordination by means of distributing efforts in one zone. It should be expected that this very question will be given the greatest attention. Unfortunately, very few specific practical recommendations on it are given. 50X1-HUM

The problem of organizing radio countermeasures against the air enemy in ground troop operations is fairly new. Nevertheless the authors were able to formulate the basic tasks of radio countermeasures fairly accurately and correctly and point out the general scheme for the utilization and the principles for organizing the combat operations of these means. However, the recommendations made require comprehensive practical checking. On the whole it is essential to continue constantly and persistently to work on this problem.

Questions of methods for determining the required quantity of the basic active weapons of antiair defense are thoroughly brought to light in the work. However, the collective authorship proceeded from the potential scale and nature of the operations of the enemy's weapons of aerial attack according to data for only up to the beginning of 1960. In a problematical work the nature of possible changes in the development of these weapons should have been pointed out in general terms. The reader who will use the data on the quantitative and qualitative composition of the aviation-missile grouping of the probable enemy must keep in mind that even now it has already undergone substantial changes. This is especially applicable as far as the missile weapons are concerned. Besides, it should be taken into consideration that since 1960 the NATO Command has begun widescale adoption of carrier-borne aircraft, which was not so in the past, and also "Thor" and "Polaris" missiles. to participate in a nuclear offensive and to support 50X1-HUM combat operations of the ground troops.

In principle, the method for determining the required number of active PVO weapons for front troops, proposed by the authors, is acceptable. But a slightly overestimated version of the composition of the front troops was used as the basis of the calculation. Experience from operational-strategic exercises of the last few years shows that the composition of the front troops usually includes only 17 to 20 up to 25 to 26 combined-arms divisions, and not 26 to 35, as indicated on page 89. And in the future, in our opinion, the composition of the front, as the number of nuclear weapons allocated for an operation increases, can only decrease somewhat, but not increase. Besides, in the given version of the calculation, it is not pointed out which operation is being carried out by the front, defensive or offensive. Consequently, some abstract version of the amount of active PVO weapons required by the front troops is proposed. This would be justified only if the authors considered that such a factor as the nature of the operations of the troops being covered does not influence this. But, on page 80, they themselves point out that "the nature of the use of the troops being covered in an operation and a battle" should be taken into consideration. Moreover, on pages 208 and 213 (tables 17 and 18), two more versions of the composition of the active PVO weapons of the front are given, but here separately for offensive and defensive operations.

50X1-HUM

On the whole, despite the fact that this question is given a great deal of attention, it is still stated in a contradictory manner and without adequate bases. In our opinion, when determining the required quantity of active PVO weapons, it is most correct first of all to take into consideration the nature and the proposed scope of the front operation, and in all cases to be guided by this, together with consideration of other factors.

Up until recently, many varying opinions and views existed on questions of the control of PVO troops and their coordination, both in theory and in practice.

50X1-HUM

In our opinion, the authors, on the basis of a thorough analysis of theoretical research and accumulated experience in the troops, were able, on the whole, to make completely correct conclusions and practical recommendations (Chapter Four). 50X1-HUM

It is stressed completely fairly that under modern conditions the front must carry out only operational control of all the PVO weapons of the front. The functions of tactical control should be given to the army level. In connection with this, in the front and army, it is proposed to have a PVO troop staff or a control organ that would be capable of insuring firm and continuous direction of all PVO weapons during an operation. But having, on the whole, made a correct conclusion concerning the inadvisability of carrying out tactical functions at the front level, the authors for some reason recommend that the chief of the PVO troops of the front should have part of the PVO weapons under his direct control, while failing to point out the purpose for which these means are necessary, as well as specifically how and by whom their fire will be controlled.

Reliable cover from nuclear strikes of the main rear area objectives, especially missile-technical units, and also of transportation centers, has great significance. The authors correctly stress that with the modern spatial scope of operations it is impossible successfully to perform this task without creating control organs for PVO weapons within the front rear area headquarters.

For effective control of modern PVO weapons, the authors of the reviewed book propose the creation of a special autonomous system of communications. In addition, the need to use the channels of the combined-arms communications system for the control of PVO troops of the front (army) is pointed out. At the given stage of the development of communications equipment, this, for the time being, is the most correct resolution of the above problem. 50X1-HUM

In the work a great deal of attention is given to an examination of the problem of comprehensive automation of the processes for controlling active PVO weapons. It is stressed that when solving this problem the required speed for transmitting data and commands, maximum centralization of the control of the basic active PVO means, and correct organization of coordination among them must be insured. The rapid development of aerial attack and PVO weapons already requires an immediate practical solution of this problem. But having resolved it in the shortest possible time, it will be difficult to count on the successful fulfilment of the tasks that face the PVO troops. The recommendations developed by the authors on this question, taking into consideration projected tendencies in the development of communications and control equipment and prospects of domestic science and technology, can, in our opinion, also be incorporated into the basis for resolving the problem of the comprehensive automation of the processes of controlling PVO weapons. 50X1-HUM

Support of the combat operations of the PVO troops of the ground troops is examined in a special fifth chapter. In this, special stress is laid on radar support.

In modern operations, success in the antiair defense of troops depends, to a great degree, on the timely and complete receipt of necessary intelligence and target designation data by all the active PVO weapons simultaneously. Having analyzed the capabilities of the existing system of radar support for PVO weapons of the front and army, the authors have come to the correct conclusion — that it is not only not capable of providing all the active PVO weapons with data simultaneously, but is not even capable of providing each of them singly (page 148). 50X1-HUM

The proposals of the authors on radar support are basically fully acceptable. However, for some reason,

the work does not take into consideration those means of reconnaissance and target designation that the antiaircraft missile large units and units have at their disposal. At the present time, and in the near future, they should be examined as a very substantial reserve of radar equipment in the hands of the chief of the PVO troops of the front (army). The indicated equipment can play a very important part in case operating radar posts, in those areas where combat formations of antiaircraft missile units and large units are deployed, are put out of commission. It seems to us that this question deserves investigation and practical verification in the troops. 50X1-HUM

In the reviewed work the authors devote a great deal of attention to providing PVO troops with missiles and, in our opinion, came to the correct conclusion, that it is impossible precisely to plan the expenditure of missiles by days of an operation, because it depends on the intensity of the air enemy's operations. And this factor, as is known, cannot be predicted accurately in advance. However, when presenting practical recommendations, the authors depart from this conclusion and still propose planning the expenditure of missiles released for the front by days of the operation, and even hold to the tentatively planned expenditure of missiles by days of the operation for the front. It seems to us that the authors are acting incorrectly in artificially limiting the expenditure of antiaircraft missiles and antimissile missiles. Obviously, it will be limited mainly by technical capabilities. If there is still a need to plan the expenditure of missiles by days of the operation, then it is more advisable to take the technical capabilities for assembling, equipping and delivering the missiles to fire subunits and units as the basis of the plan, taking into consideration the extremely tentative nature of the air enemy's operations.

Effectiveness in the operations of PVO weapons, to a large extent, depends on their rapid and high

50X1-HUM

quality engineer support. And we fully support the authors, who write about the urgent need to have organic engineer subunits, equipped with modern highly efficient and portable equipment, in the PVO troops of the ground troops. 50X1-HUM

In the sixth chapter the future organizational structure of the PVO troops of the ground troops is examined. Several versions of how large units, units and subunits should be organized are proposed. On the whole, the recommendations have many positive features, but they require checking in practice. Thus, according to the opinion of the authors, in the tank and motorized-rifle division it is more advisable to have a regiment of close action antiaircraft guided missiles than a regiment of ZUR-M. According to our deep conviction, both divisions must have antiaircraft missile regiments with short-range missiles composed of 3 to 4 fire units, and in the motorized-rifle and tank regiment there must be a battery of mounted close action antiaircraft guided missiles composed of 3 to 4 mounts. We base this on the fact that in modern operations, the operations of large units and units on separate axes and in broader zones will be most characteristic. This will require the large units to have great independence in reliably covering troops from strikes by the air enemy. In addition, it is also necessary to take into consideration the fact that motorized-rifle and tank large units and units, having ground missiles, tanks, and artillery in their composition, have great fire and striking power, and will be the most important objectives for a strike by the air enemy. For this reason, they must be reliably and continuously covered during the entire operation, not only at low, but also at medium, altitudes, which can be accomplished more simply and reliably when there are both close action antiaircraft missiles and ZUR-M in the composition of the division.

50X1-HUM

On the whole, the proposed organization of a brigade of medium- and short-range antiaircraft guided missiles corresponds to modern requirements, but even the brigade, in our opinion, must have no less than three regiments or battalions (with three fire units in each) in its composition. By having brigades composed of three regiments (battalions), it will be possible to achieve continuity in covering troops during an offensive conducted at an average tempo of 6 km per hour.

50X1-HUM

In the last chapter the fundamentals of the antiair defense of troops in offensive and in defensive front (army) operations of the initial period of a war are set forth. Under these conditions, the PVO of the troops and rear area objectives of deploying fronts will be carried out only with those weapons that are at the disposal of the troops of the first strategic echelon, i.e., formations and large units of the border military districts and groups of forces. In the reviewed work, the requirement that the antiaircraft missile units, fighter aviation and radio countermeasure means existing in groups of forces and in border military districts, must be at full strength, deployed, and be in constant combat readiness to conduct active combat with enemy weapons of aerial attack, is correctly formulated. It should be stressed that this requirement has an extremely important significance when the aggressor is preparing for a surprise nuclear attack. Experience from the past war conclusively showed that the success of the attacking side was usually explained not only by the factor of surprise, but also by the incomplete combat readiness of the armed forces.

In conclusion, it is essential to stress that all the deficiencies noted by us are of a specific nature, and cannot lower, as a whole, a highly positive evaluation of the work. The reviewed book is the first one on the given subject in the postwar period. The authors deserve great credit for being able to create

50X1-HUM

50X1-HUM

a really problematical and perceptive work. It does not reiterate principles that are common knowledge, but creatively, on the basis of an analysis of the modern requirements of operational art and scientific-technical capabilities, trends, probable paths of development, and solutions to the vitally important problems of the PVO of the ground troops, are brought to light, and practical, acceptable recommendations are given. The work examined by us may be adopted as the basis for a practical resolution of the basic problems of PVO of the ground troops, not only for the present time but also for the near future.

50X1-HUM