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Combat with Enemy Radioelectronic Means During an Airborne Landing Operation

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During large-scale offensive operations conducted under conditions of nuclear warfare, airborne landings will be extensively employed. In order to land an airborne force in the rear of the enemy, military-transport aircraft and the fighter units which cover them during the flight will have to overcome the enemy air defense system, the combat capabilities of which have grown.

The effective overcoming of the air defense system depends to a large degree on well-organized and executed combat with enemy radioelectronic means.

The question naturally arises concerning the role of the various means used to combat enemy radioelectronic measures under these conditions and the appropriate criteria for evaluating their effectiveness.

A criterion currently accepted is the relative decrease in the mathematically predicted losses, which shows by what factor the losses of aircraft from active air defense means will be reduced when measures to combat enemy radioelectronic means are employed. However, when an airborne landing operation is under discussion, this criterion, in our opinion, can be of only secondary importance. This is explained by the inherent characteristics in the planning and conduct of an airborne landing operation, which are as follows.

It is known that an airborne landing is able to carry out its assigned tasks only if it is delivered to the landing (drop) area with minimal losses. Accordingly, combat actions are planned for all arms of aviation to ensure that the aircraft of military-transport aviation overcome the air defense system. But it is under precisely these conditions that the relative decrease in mathematically predicted losses which makes it impossible for the commanding officer to determine the true role in the performance of measures to combat enemy radioelectronic means. Let us assume

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that we have determined that as a result of the employment of measures to combat enemy radioelectronic means the losses of military-transport aviation aircraft are decreased by a factor of two. Is this good or bad? If this factor is used to evaluate measures to combat enemy radioelectronic means, then it can be said that they are fulfilling their task. But if at the same time the landing force sustains great losses, the value of all these measures to combat enemy radioelectronic means apparently vanishes. This can lead to the false conclusion that the role of measures to combat enemy radioelectronic means in an airborne landing operation is insignificant. Clearly another criterion for evaluating the effectiveness of measures to combat enemy radioelectronic means is necessary. It is our proposal that the criterion used be the index of decrease in the required amount of supporting forces.

Military-transport aviation aircraft proceeding to the airborne landing area must pass through a zone in which various active enemy air defense means are employed (fighters, SAM), means which possess known combat capabilities.

Taking into account that the airborne landing force must be delivered to the drop area with minimal losses, it is possible to determine what quantity and types of active air defense means in the flight zone of military-transport aviation will cause the smallest losses to transport aircraft. If the quantity of active air defense means proves to be greater than the determined number, they clearly must be destroyed by other branches (arms) of aviation which have been called upon to support military-transport aviation actions. Consequently, just the quantity of active air defense means designated for destruction determines the size of the forces required to destroy them.

When measures to combat enemy radioelectronic means are employed, the combat capabilities of enemy active air defense means are reduced. As a result, the military-transport aviation combat formations "withstand" the countermeasures of a large number of active air defense means. This leads to a decrease in the quantity of active air defense means designated for destruction in the flight zone of the military-transport aircraft, which, in turn, means a decrease in the size of support forces from other branches (arms) of aviation required for the fulfilment of this task. Thus, the employment by military-transport aviation of

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measures to combat enemy radioelectronic means during an airborne landing operation makes it possible to decrease the size of the forces required for the support of military-transport aviation operations.

This criterion can also be used to evaluate the effectiveness of measures to combat enemy radioelectronic means when employed by other branches (arms) of aviation for their own protection, but in an essentially different manner. Let us explain this.

The quantity of means required for the destruction of one air defense target (a fighter aviation airfield, a SAM battery) with a given degree of probability is known. Under combat conditions this quantity must be increased in proportion to expected combat losses. If the aircraft are not equipped with means to combat enemy radioelectronic means and measures to combat these means are not taken, there will be a given increase in the quantity; if the aircraft are equipped with means to combat enemy radioelectronic means, the quantity will be less. As can be seen, here again the amount of the decrease in the size of the support forces required to destroy active air defense means provides a reasonably complete evaluation of the effectiveness of measures employed by the support forces to combat enemy radioelectronic means. If the quantity of active air defense means which are designated for destruction in the flight zone of military-transport aircraft is known, it is possible to determine the extent to which the size of the required support forces for the airborne landing operation can be decreased as a whole.

In our opinion, the above approaches to the evaluation of the effectiveness of measures to combat enemy radioelectronic means makes it possible, when planning an airborne landing operation, to evaluate these measures not merely on a qualitative (better-worse) basis but also on a quantitative basis. The first attempt to make such an appraisal, which was done during the course of one research study, underlines the feasibility of this approach. In our opinion, this approach to the evaluation of the effectiveness of measures to combat enemy radioelectronic means is also apparently practical in other situations, such as in the evaluation of the effectiveness of similar measures taken to protect our installations from enemy air attack weapons.

As is generally known, preliminary calculations enabling the establishment of the number and types of active enemy air defense means to be targeted for destruction (neutralization) are essential to the planning of an airborne landing operation. Of course, if a front has enough forces, it is not obligatory to make such a selection from among the targets. But, unfortunately, for the time being front means are limited.

Totally different conditions arise when military-transport aviation aircraft are equipped with jamming means for individual and group defense. These means influence the planning of an airborne landing operation in the following manner.

It is known that enemy air defense means possess fully defined combat capabilities for battle with aircraft of military-transport aviation. When an operation is being planned, this entitles us to define these capabilities in terms of expected losses of military-transport aviation aircraft from each active air defense means. With this criterion, keeping in mind the necessity of fulfilling military-transport aviation tasks with the fewest possible losses, it is possible to make a simple determination of the number of air defense means which should be destroyed. As is apparent, when jamming is employed the combat capabilities of enemy active air defense means are appreciably reduced, and the capability of military-transport aviation for overcoming the air defense system with minimal losses accordingly increases. As a result, the number of active air defense means to be destroyed in the flight zone of military-transport aviation decreases.

Turning to the evaluation of jamming means, it is our opinion that in this context it is completely justifiable to consider them as important combat means possessing specific capabilities. For example, research conducted in 1967 showed that equipping military-transport aviation aircraft with special jamming systems for individual and group defense when conducting a large-scale airborne landing is equivalent to the destruction (neutralization) of nine "Hawk" SAM batteries, fourteen "Nike-Hercules" SAM batteries, and nine airfields of fighter aircraft.

The use of jamming means also influences the choice of active air defense means to be targeted for destruction. This is because the effect of jamming on the combat capabilities of active air defense means varies; it may appear that the relative strength of

their combat capabilities when jamming is employed is fundamentally different from their relative strength as observed in the absence of jamming. For example, if without the use of jamming the combat capabilities of a "Nike-Hercules" SAM battery and a squadron of air defense fighter aircraft are approximately the same, then when the military-transport aviation aircraft are equipped with the prospective jamming systems for individual and group defense, the combat capabilities of a squadron of air defense fighters are lower by a factor of three than those of a "Nike-Hercules" SAM battery.

From the above analysis it is possible to derive the following conclusion. The equipping of military-transport aviation aircraft with jamming means may have a substantial influence both on the number and on the choice of enemy active air defense means which are targeted for destruction during an airborne landing operation, and for this reason it must be given thorough consideration when planning such an operation.