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CENTRAL INTELLIGENCE AGENCY  
WASHINGTON, D.C. 20505

6 May 1974

MEMORANDUM FOR: The Director of Central Intelligence  
SUBJECT : MILITARY THOUGHT (USSR): Air Defense of Amphibious Landings

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 proceeds from the premise that the success of an amphibious or helicopter landing operation is dependent on air defense of the landing forces by the coordinated resources of the navy, air defense, and ground forces. Detailed descriptions of an amphibious operation and parallel air defense actions are presented. The TALL KING radar extends warning to a range of 900 kilometers, and a requirement for radar ships with a range of 450 kilometers is proposed. In addition to 130-mm antiaircraft guns, Soviet naval vessels are said to have three types of surface-to-air missiles. This article appeared in Issue No. 1 (80) 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.

David H. Blee  
Acting Deputy Director for Operations

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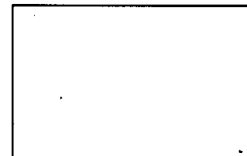
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## Intelligence Information Special Report

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COUNTRY USSR

DATE OF  
INFO. Early 1967

DATE 6 May 1974

SUBJECT

MILITARY THOUGHT (USSR): The Organization of Air  
Defense in Amphibious Landing Operations

SOURCE Documentary

Summary:

The following report is a translation from Russian of an article which appeared in Issue No. 1 (80) for 1967 of the SECRET USSR Ministry of Defense publication Collection of Articles of the Journal 'Military Thought'. The author of this article is Colonel V. Zemlyanushkin. This article proceeds from the premise that the success of an amphibious or helicopter landing operation is dependent on air defense of the landing forces by the coordinated resources of the navy, air defense, and ground forces. Detailed descriptions of an amphibious operation and parallel air defense actions are presented. The TALL KING radar extends warning to a range of 900 kilometers, and a requirement for radar ships with a range of 450 kilometers is proposed. In addition to 130-mm antiaircraft guns, Soviet naval vessels are said to have three types of surface-to-air missiles. A sketch is used to demonstrate the author's concept of the air defense aspect of the operation.

End of Summary

Comment:

Col. Zemlyanushkin co-authored another article in this series, "The Cover of Naval Forces by Air Defense Troops of the Country in Operations on a Maritime Axis, Issue No. 2 (84) for 1968, [redacted] 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.

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The Organization of Air Defense in Amphibious Landing Operations

by  
Colonel V. Zemlyanushkin

In the World War II period, 114 different amphibious landings were made, 92 of them in front offensive operations. Theoretical research of the past years, operational and combat training experience of military districts and fleets, as well as an analysis of the views of the probable enemy on the nature of armed combat in theaters of military operations, obviously indicate that amphibious landings may find wide application even in a nuclear war. However, purely amphibious landings are applicable only in the performance of certain tactical tasks or in special geographic conditions. But in front offensive operations, combined airborne-amphibious landing operations will be conducted as a rule.

In basic content these operations represent the sum total of the integrated actions, combined in an overall concept and plan, of naval forces, of large units and units of ground and airborne troops being landed, of front rocket troops, of Air Defense Forces of the Country and front air defense troops, of front aviation and, sometimes, of Long-Range Aviation, directed toward the defeat of opposing enemy forces and means, the rapid landing of amphibious and airborne forces, and their successful fulfillment of combat tasks on shore.

Our probable enemies intend to combat these landings by various methods and means: at landing points with air strikes, and on sea crossings (in the air) by submarines, torpedo-gun vessels, and aircraft; and, finally, they propose to complete the destruction of the landing force right in the landing (drop) area with the combined efforts of ground forces, aircraft, and the navy. Particular importance is attached to air strikes.

For combat with an operational landing force (the approximate composition of which is shown below), the enemy can assign up to 100 to 200 and more aircraft, including 50 to 120 nuclear weapons carriers; and for a strike against the landing force in the landing area, he may also use a certain number of ballistic missiles. Therefore, air defense of the landing forces has acquired particular importance, since without it the success of the amphibious landing operation cannot be counted upon.

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We shall examine briefly the organization of air defense in an amphibious landing operation conducted by troops of a maritime front in the main theater of military operations during a strategic operation. The composition of the landing force can vary depending on the targets, the tasks of the operation, and a number of other factors. We shall take as one of the possible variants that an amphibious landing force is composed of a motorized rifle division and a separate naval infantry regiment, and the airborne landing force is composed of an airborne regiment and a helicopter-borne landing up to a battalion in strength.

The extent of the landing zone depends on several factors, the principal of which is the proposed duration of independent actions of the landing troops prior to the approach of the main forces. According to the experience of landing training, this period lasts from two to five days. Consequently, if the troops advance at an average rate of 60 to 80 kilometers per day, the depth of the landing operation can be 300 to 400 kilometers.

It is more convenient to examine the organization of air defense in three periods of an operation: 1) the concentration and embarkation of the landing troops onto transport means; 2) the crossing by sea (flight); 3) the battle for the landing and the development of the offensive into the depth (see diagram).

In the period of concentration and embarkation of troops on transport means the amphibious landing force can occupy a coastal area up to 300 kilometers along the front and up to 30 to 45 kilometers and more into the depth, and within this area there will be 7 to 8 regimental sections of the landing force. This area may be located within the limits of responsibility of either the Air Defense Forces of the Country or the front air defense system, and sometimes within the limits of responsibility of both of these systems. Their forces and means can form the basis of air defense in this area. Of course, some changes in the disposition and organization of air defense in a given area will be unavoidable in a number of cases.

The system of observing the air enemy, created by the forces and means of air defense formations and front air defense troops prior to conducting an amphibious landing operation, basically supports the combat actions of surface-to-air missile troops and fighter aviation covering shore installations. However, the timely commitment to action of fighter aviation and long-range surface-to-air missile units to repel an enemy strike on ships and the coastal area requires expanding the radar coverage over the water

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area by 140 to 150 kilometers at low altitudes and 200 to 400 kilometers at high altitudes.

The best way to deal with this task may be radar patrol ships and aircraft. Their combined use will bring the target detection perimeter at low altitudes to 400 to 450 kilometers, and at medium altitudes to 750 to 900 kilometers from shore. Before the embarkation front it is sufficient to create an observation zone about 300 to 400 kilometers in length, i.e., to simultaneously have 2 or 3 radar patrol aircraft in the air at low altitude and the same number at medium and high altitudes.

Fighter aviation cover of the debarkation ship force and landing troops in the areas of concentration and embarkation can be carried out from the status of duty on the airfield, in Readiness No. 1. In this case, air targets must be spotted by the observation system at medium and high altitudes at a range of 450 to 475 kilometers, and at low altitudes at 400 to 450 kilometers. In the low altitude band this can be achieved by means of radar patrol ships and aircraft, and at high altitudes only by shore-based radar stations. This means that the debarkation ship force can be protected from air strikes in the majority of cases in the overall system of fighter aviation cover of fleet basing or installations in the prefrontal zone (without assigning special fighter aviation forces to duty in the air).

Surface-to-air missile troops of the Air Defense of the Country and of front large units which are deployed on the coast covering naval ship basing areas and other installations, have the capability also of simultaneously covering the landing forces in the concentration areas and at the embarkation points. A certain number of surface-to-air missile units of the Air Defense Forces of the Country or the front obviously have to redeploy to cover the departure zone of the airborne landing force in order that a grouping of surface-to-air missile troops can satisfy the requirements of the amphibious landing operation as well.

It is desirable to include the shipboard fire means of the debarkation ship force in the overall system of antiaircraft and artillery fire in the coastal area; however, it should be kept in mind that using missile systems to repel an attack in the embarkation zone is permitted in exceptional cases and only by decision of the commander of the debarkation ship force, since the limited supply of missiles available to them is intended mainly for repelling attacks during the sea crossing.

The departure area of the airborne landing force is located deep in the territory of the country, 500 to 700 kilometers from the front line

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and, as a rule, is covered in the overall system of Air Defense of the Country. In individual cases, the low altitude cover of certain Military Transport Aviation airfields is reinforced by detailing one low altitude surface-to-air missile regiment to the airfield.

The departure area of the helicopter-borne landing force is located in the front air defense area, much closer to the line of contact with the enemy. However, the embarkation on helicopters takes comparatively little time (up to one hour), therefore reinforcement of its cover may not be required. But if the departure area must be covered more reliably during the period of landing force embarkation, it is sufficient to assign one or two low altitude surface-to-air missile battalions for this.

During the sea crossing the debarkation ship force with landing troops (of accepted composition) on board may comprise 4 to 7 landing detachments and, having two echelons, follow two routes with a speed of 8 to 16 knots. The main part of each echelon (landing detachments with local protection), positioned in an area of about 50 by 60 kilometers, comprises an isolated grouping requiring close air cover, especially from low altitude strikes. Similar cover is required by groups of long-range guard ships and by groupings of naval forces supporting the landing force and maintaining an operational schedule in a given naval theater in the area of the landing operation. Besides this, it is necessary to protect the entire zone of the landing operation as a whole from medium and high altitude strikes. The duration of coverage of the debarkation ship force will depend on their speed and on the length of the route, and may total 15 to 25 hours and more.

Shipboard air defense means could comprise the basis of air defense in this naval zone. But at the current level of their technical development, and due to the limited number of ships which have the appropriate armament, they cannot yet fulfil all tasks independently.

Observation of the air enemy on the sea crossing must ensure the timely commitment to battle of fighter aviation, the bringing of shipboard fire means to full readiness, the centralized control of them, and the execution of evasive moves. For this purpose a complete field of observation is created around the cruising disposition. As estimates show, its depth in relation to the forces being covered must be: for fighter aviation in actions from duty in the air at low altitudes, 120 to 140 kilometers, and, at high altitudes, 200 to 260 kilometers; for assurance of centralized control of anti-air fire means when they are in readiness for immediate firing, 80 to 180 kilometers, and at Readiness No. 2, up to 250 kilometers. The average depth of observation for the air enemy is 120 to

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140 kilometers at low altitudes and 250 to 260 kilometers at high altitudes.

If the ships of the debarkation ship force have three-dimensional radar sets with an operating range on the order of 300 kilometers, this zone of observation may be created by shipboard means during the sea crossing. If there are none, radar patrol has to be organized.

The majority of radar sets in our armament still cannot assure timely opening of fire by shipboard anti-air means when they are in 2 to 3 minute readiness. They are able to a still lesser degree to assure the timely commitment to battle of fighter aviation. It seems desirable during the sea crossing to create two radar fields: a mobile one, to support the fire means of ships which are at a high degree of readiness (owing to ship radar sets); and another one for the distant approaches, for fighter aviation providing local cover, and for the fire means at a lower degree of readiness (owing to the cruising ship radar patrol). The desirable distance of the latter from the ships being protected is about 100 kilometers or more. But in this case also, the radar patrol ships can ensure fighter interception only of those air targets which attack the landing detachments directly. Of course this is not enough: fighters must have a capability for the timely interception of an air enemy operating against other groups of ships in the area of operations, as well as against antisubmarine aircraft.

This task may be carried out more successfully by radar patrol aircraft. By using them jointly with P-14 radar stations located on shore, the limits of complete radar cover at sea can be extended to 750 to 900 kilometers, which is entirely sufficient for observation of the air situation throughout the area of operations. Even in the zone of battle for the landing (when the depth of the operation is up to 350 to 400 kilometers), the radar range perimeter in relation to the ships of the debarkation ship force will be located at a range of 400 to 500 kilometers. However, such an extension of the field of observation will be possible only when the safety of patrol of the radar patrol aircraft is ensured. Otherwise they will supply warning data within the limits of the technical specifications of their radar sets (100 to 300 kilometers). To best solve the problem of reconnoitering an air enemy and controlling fighter aircraft at sea to the entire depth of the landing operation requires constructing special radar patrol ships equipped with three-dimensional radar sets with a range of operation of 400 to 450 kilometers.

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Fighter aviation cover of the debarkation ship force during the sea crossing may be carried out from "duty on the airfield" and "duty in the air". Long-range fighters also are capable of conducting semiautonomous search and destruction of air targets throughout the area in which the operation is being conducted.

The choice of the method of fighter aviation combat actions depends on the assigned task, the conditions of its fulfilment, and on the availability of forces and means. It is calculated that the limits of fighter cover of ships from "duty on the airfield" extend 80 kilometers from shore at low altitudes and 120 kilometers at medium and high altitudes. Consequently, fighters can provide cover for ships at greater ranges only from "duty in the air".

It is desirable to designate zones of duty in the air in such a way that a fighter reaches the line of commitment to battle just as it begins to accelerate. This requirement is satisfied if the zones of duty are 80 kilometers away from the guard ships at low altitudes and 160 kilometers away at medium and high altitudes. However, even with this distance it does not appear possible for the groups of fighters standing patrol to move from one axis to another to repel an air attack from any axis in time, especially at low altitudes in the course of battle. Therefore, all of the most dangerous air axes must have zones of duty in the air.

Based on the probable nature of the tactical procedures of the air enemy, fighters are echeloned by altitude in the zones. This requires creating a minimum of two echelons (layers): one for low and the other for high altitudes.

According to the experience of NATO exercises and the Vietnam war, the composition of simultaneously attacking groups of carrier aircraft may be from 12 to 18 aircraft in the daytime and 6 to 9 aircraft at night, but groups of tactical aircraft will have from 15 to 50 in the daytime and 12 to 25 at night. Since part of the crossing is made at night, and both deck-landing and tactical aircraft can operate, according to rough calculations, an average of about 15 to 20 aircraft can participate in one strike. If we assume that fighters must destroy but half of them (7 to 10 aircraft), calculations show that three or four regiments of fighters, 50 percent of them low-altitude, are required to participate in the air defense of the debarkation ship force during the crossing period.\* It is

\* The sector of cover by duty in the air is 270 to 280 kilometers (for 10 hours). With an average time of duty for one shift of 30 minutes, 20 shifts are required. Each shift has to have 14 to 20 fighters to destroy 7 to 10 enemy aircraft. Therefore, at 2 to 3 sorties per fighter, a total of 115 to 165 aircraft are required.

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desirable to effect fighter cover of the entire area of the landing operation from medium and high altitude enemy strikes by using long-range aviation systems. ↑

The remaining part of the attacking aircraft obviously must be destroyed by shipboard air defense fire means. What are their capabilities for covering the landing?

In analyzing the special characteristics of modern shipboard anti-air means, it may be noted that: ships armed with self-defense surface-to-air missile systems and anti-aircraft artillery cannot be used to cover the landing detachments; ships equipped with short-range surface-to-air missile systems and 76 to 130mm caliber anti-aircraft artillery are capable of effecting local all-round cover of the debarkation ship force only within the bounds of the landing detachments; ships having medium-range surface-to-air missile systems may be used, in addition, to reinforce the air defense disposition by positioning them in the center of the landing detachments. And, finally, ships armed with long-range surface-to-air missile systems can create a zone covering the entire cruise disposition or echelon of the debarkation ship force. Consequently, the composition of the guard forces must contain ships equipped with all classes of anti-air missile weapons, or at least short and medium-range surface-to-air missile systems.

The basis of organization of fire cover of the landing detachments on the sea crossing is forming the guard ships in an air defense disposition; the main task of the air defense disposition is not to permit the destruction of ships by the air enemy, but to destroy him before he carries out that task. The most valuable from the air defense point of view are all-round dispositions, the basic parameters of which are: the distance between the ships being protected, their distance from the line of protection, and the distance between them on that line.

Considering the characteristics of enemy air weapons and the methods of using them in combat, it can be estimated that the optimum distances between protected ships must be: 10 to 12 cable lengths when the enemy uses conventional weapons and a minimum of 25 to 30 cable lengths when he uses nuclear weapons.

The desirable distances of the guard line from the protected ships, based on air defense requirements are: 25 to 40 cable lengths for ships with artillery armament; 25 to 35 cable lengths for ships armed with surface-to-air missile systems of 15 kilometer range of fire; and from 25

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to 55 cable lengths for ships with 25 kilometer range surface-to-air missile systems.

The fire coordination of ships on the guard line is more fully ensured if the distances between them are as follows: for Project 56 destroyers, up to 35 to 45 cable lengths; ships armed with surface-to-air missile systems with a 15 kilometer range of fire, up to 40 to 50 cable lengths; and ships with surface-to-air missile systems having a 25 kilometer range of fire, up to 45 to 55 cable lengths. Organizing the cover of one landing detachment with these parameters requires 7 to 12 ships armed with short and medium-range surface-to-air missile systems. Ships with long-range surface-to-air missile systems may be placed in the center of the landing detachment or may create a zone over the whole echelon. The expenditure of ships in that case will be 3 to 4 times smaller.

Antiaircraft artillery cover of the landing detachments during the sea crossing may be reinforced from the antiaircraft means of the landing troops (primarily small caliber systems), which should be positioned and secured on the decks of the landing ships. The use of ground fire control devices on the decks of the ships, in our opinion, is impossible, since they are not stabilized and require considerable space in which to set them up. An exception may be the self-propelled ZSU-23-4 (Shilka) antiaircraft mount; its radio-instrumentation system is stabilized by line of sight, which provides a choice of angles up to 10 degrees. Self-defense missile systems also may be used successfully. As the sea crossing is concluded troop antiair systems must be ready to fulfil their main task--providing cover for the landing troops after disembarkation.

Air defense during the battle for the landing. This primarily requires that guard ships occupy positions ensuring reliable cover for the landing of the force. Guard ships with antiaircraft artillery must move to the immediate proximity of the landing ships. Ships with surface-to-air missile systems may be placed in the center of the landing ship waves. The overall system of coverage must also include the ships belonging to the fire support detachment; therefore, the choice of maneuver areas of the fire groups should be approached with consideration for air defense requirements.

During the battle for the landing the significance of covered objectives changes, which requires certain changes in the air defense. During the deployment of the landing detachments and the breakthrough of the enemy protection on the water, it is necessary to more reliably cover the landing craft, amphibious tanks, and armored personnel carriers with landing troops in them; and as the landing force lands on the shore and

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seizes the beachhead, to cover the combat dispositions of troops on shore and the landing means of subsequent echelons. The surface-to-air missile and antiaircraft systems of the landing force will not yet have been able to deploy on shore at this time, so the fire means of the ships will protect it from air attack. Particular attention should be paid to covering the landing troops meeting with success on shore: it is desirable to move ships with surface-to-air missiles up to this sector. It is necessary also to reinforce fighter aviation cover since the fire means have limited range, while ships, prevented from maneuvering by shoreline features and sometimes by the shallow depth at the coastline, cannot approach the shore at all.

Air defense of airborne and helicopter-borne landings in flight.

Cover for units and large units of Military Transport Aviation in the airborne landing force departure area and while flying within the limits of responsibility of the Air Defense Forces of the Country can be provided by the latter; to cover them on a more distant flight route requires assigning fighter aviation forces from the front air army or from the Air Defense Forces of the Country.

Cover for a Military Transport Aviation division carrying an airborne landing force can be provided by fighters using the following methods: by flying to intercept the air enemy from "duty on the airfield"; actions from "duty in the air (in zones)"; by patrol escort; and by clearing the air space of enemy fighters.

Actions from "duty on the airfield" may be used in those cases when the radar detection and control system and the technical specifications of our fighters ensure intercepting enemy fighters before they approach the start line of our transport aircraft. These conditions can occur only within the limits of the combat actions zone of the Air Defense Forces of the Country and partially of the air defense troops of the front. At the moment the head of the Military Transport Aviation division column approaches the shoreline (front line), fighter cover by the "duty in the air" method must begin.

Patrol escort actually is a variation of duty in the air. However, these methods are not equivalent from the tactical point of view. From zones of duty in the air it is convenient to intercept the air enemy operating from a definite axis, regardless of the target he has chosen for his attack. But fighters standing patrol cannot always render timely assistance to an adjacent group repelling an attack from another axis. Fighters on patrol escort can attack targets breaking through to the covered objective from any direction, but they lack depth of engagement and

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therefore can destroy in good time only those enemy aircraft which are attacking the group being covered by the fighters.

Groups of fighters fulfilling the task of clearing the air space of enemy fighter aircraft operate in support of air defense of the whole Military Transport Aviation division by destroying enemy aircraft before the air transport column approaches the battle zone or by the method of forcing the enemy out of the flight path.

It is most desirable to use all three of the latter methods simultaneously.

The timely commitment of covering fighters to battle requires means for the detection of the air enemy and for controlling fighter aircraft. Radar patrol aircraft can be used in these capacities. Following in the combat disposition of the Military Transport Aviation division, they can conduct radar surveillance and control their own fighters, i.e., fulfil the role of flying fighter aviation command posts. It is necessary to include in the Military Transport Aviation column no less than two radar patrol aircraft: one at the head of the first two regiments, and the second at the head of the two following regiments.

It is desirable to keep groups of patrol escort fighters somewhat above and behind the radar patrol aircraft to ensure, first, their direct cover and, secondly, the successful destruction of enemy aircraft breaking through the fighter duty zone on the approaches.

The duty zones on the approaches should be located on the most probable attack axis of the enemy fighters at a distance of 70 to 80 kilometers from the covered aircraft. In this case the fighters on duty in the zones, based on radar patrol aircraft data, can intercept the air enemy before he reaches the line of attack on the transport aircraft.

Groups to clear the air space must proceed ahead of the Military Transport Aviation column, and be echeloned by altitude and moving along a course within the limits of the flight path of the covered aviation large unit (30 to 40 kilometers).

The number of fighters required to cover a landing force on its flight over the sea will depend on the anticipated enemy forces, the duration of cover, and on the tactical-technical capabilities of our fighters. Based on the prediction time, on an estimate of enemy forces, and on the composition of his fighter aviation, and considering that by the morning of the second day of the strategic operation he will have extremely difficult

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conditions for air combat, it should be expected that up to 30 or 40 fighters (from 3 or 4 airfields) can participate in a simultaneous strike on a transport column. To oppose them in a one-to-one ratio, the composition of the covering forces must have no less than a regiment of fighters.

Fighter aviation cover of a helicopter-borne landing force in principle may be carried out by the same methods as for an airborne landing force; however, the possibility of fighter patrol escort of helicopter columns is ruled out, since the difference in their flight speeds is very great (550 to 650 kilometers per hour). In the area of concentration and embarkation, as well as in the initial segment of the route to the shoreline, fighter aviation cover of helicopters may be carried out from "duty on the airfield"; on the flight over the sea--from "duty in the zone", constantly exchanging air space with the combat disposition of helicopters. Covering fighters thus fly in a closed line encircling the helicopter combat disposition at a distance which permits repelling the attacks of enemy aircraft and constantly having the helicopter group in visual contact.

To destroy a helicopter-borne landing force the enemy can detail one fighter for 3 or 4 helicopters. Consequently, up to 10 to 17 enemy fighters can operate simultaneously against a column of 40 to 50 helicopters. To repel their attack will require no less than a squadron of fighters. This number of fighters is required, in addition, to build up the forces and clear the air space. The total direct cover time does not exceed 1.5 hours, therefore a repeated flight is out of the question. Consequently, to cover a helicopter-borne landing force, it is necessary to detail from a front air army a minimum of a fighter aviation regiment (with a resource of 1 to 1.5 regiment-sorties). ↑

Air defense of landing troops pressing the offensive into the depth. When a motorized rifle division operates in the landing troops composition, the following tasks are, as a rule, designated for it: the immediate task consists of seizing the beaches and destroying the opposing enemy, and it extends to a depth of 25 to 30 kilometers; the task of the day as a rule consists of seizing a line at a depth of 50 to 60 kilometers; and the final task usually is the goal of the landing operation.

Thus, the first position of the air defense means must ensure air defense of troops at a depth of up to 30 kilometers from the landing zones, particularly direct protection of each regiment from low altitude air strikes; and the whole front of the landing from enemy medium and high altitude strikes. The length of the front, then, is 30 to 35 kilometers.

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The second position of air defense means, with the advance of the landing troops to a depth of up to 50 to 60 kilometers and with the forming of a single front, must permit creating a unified air defense zone, within which all objectives would be reliably covered from enemy strikes from all altitudes. However, the air defense forces and means organic to a motorized rifle division and regiments are not able to cope fully with these tasks.

What minimum necessary air defense means must the landing troops have available?

[REDACTED] In order to ensure direct cover of the first drops of the first-echelon regiments, it is necessary for the motorized rifle battalions and the battalions of naval infantry to have self-defense surface-to-air missile weapons with a range of operation of about 3 kilometers and an altitude of 1.5 to 2 kilometers. These means also can be in the composition of the airborne landing force. The ZSU-23-4 subunits will have to be landed right after them. By locating one battery of six ZSU-23-4 by platoons at intervals of 1.5 kilometers it is possible to cover the whole first echelon of the regiment. Therefore, each motorized rifle regiment must have no less than one ZSU-23-4 battery. [REDACTED]

In the coastal zone surface-to-air missile cover at medium altitudes may be reinforced by the air defense means of the ships of the debarkation ship force and throughout the area as a whole by fighter aviation.

[REDACTED] After capturing the beachhead, the unloading of division air defense means may be begun to create a unified zone of anti-aircraft cover over the whole beachhead. Our 57mm systems, due to the limited zone of fire, cannot perform this task. Surface-to-air missile systems are required. It would be desirable, for example, for a separate naval infantry regiment to have a battalion of missile systems with a range of operation of up to 10 to 12 kilometers and a destruction altitude of up to 5 kilometers, and for a motorized rifle division to have a surface-to-air missile regiment with systems having a range of operation of 25 to 30 kilometers and a destruction altitude of up to 10 kilometers. By locating these surface-to-air missile systems (batteries) at intervals of 5 to 8 kilometers it is possible to cover the entire offensive zone of the division and the separate naval infantry regiment. Until these systems are introduced into the T/E of divisions and separate naval infantry regiments, landing troops will have to be reinforced by front means. Fighter aviation also must provide cover from high altitudes in this case. [REDACTED]

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Reconnaissance of an air enemy requires skilfully using the means of reconnaissance and target designation available in surface-to-air missile and antiaircraft artillery units and subunits, and the control of fighter aviation requires assigning special means to the landing force.

As concerns other forces assigned to support the landing operation--units (large units) of long-range aviation, front rocket troops, etc.--they are covered in the system of Air Defense of the Country or the front.

Thus, the reliable fulfilment of air defense tasks in an amphibious landing operation requires assigning a whole complex of forces and means belonging to the large units of the various branches of the armed forces: the Air Defense Forces of the Country, the navy, and the front. Part of these forces, especially the Air Defense Forces of the Country and front, along with carrying out a mission in support of the amphibious landing operation, will continue completing previously assigned tasks. Therefore, the air defense system in an amphibious landing operation must not only satisfy the specific requirements of this operation, but it must also be a component part of the unified air defense system in the theater of military operations, created to support the strategic operation as a whole. From here, quite naturally, comes the need to precisely define the limits of air defense responsibility of each branch of the armed forces during the period when an amphibious landing operation is being conducted.

It seems to us that air defense in an amphibious landing operation must be organized by zones, in each of which the responsibility for protecting the landing from air strikes is carried by that branch of the armed forces which has the greatest capabilities for carrying out air defense tasks and controlling the forces in battle.

In the zone of responsibility of the Air Defense Forces of the Country it is desirable to include the departure areas of the amphibious and airborne landing forces. The basis of air defense in this zone may be made up of large units of the Air Defense Forces of the Country (air defense divisions and corps); and these large units provide cover for the amphibious and airborne landing troops and for the embarkation ship force in the period of concentration and embarkation; they also provide fighter aviation cover for the airborne landing troops in flight. In addition, air defense large units allocate part of their fighter aviation forces to reinforce the cover of the amphibious landing forces during the sea crossing in the naval air defense zone of responsibility.

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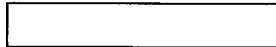
In the zone of responsibility of the front air defense forces and means should include the departure area of the helicopter-borne landing force, and the landing area (area for conducting combat actions) of the landing troops. If the amphibious landing force (or parts of it) will embark in the prefrontal area, the front air defense forces and means are responsible also for covering the departure area of the amphibious landing force. The main air defense force in this zone will be front air defense units and front air army fighter aircraft covering the helicopter (and sometimes the amphibious) landing in the period of concentration and embarkation, and the landing troops while they are pressing the offensive into the depth. The front air army in addition is responsible for covering the airborne and helicopter-borne landing forces in flight (beyond the limits of responsibility of the Air Defense Forces of the Country) and in the landing area.

In the zone of responsibility of the naval air defense forces and means it is necessary to include the water area which the landing forces cross and within which groupings of supporting naval forces operate. The basis of air defense in this zone may be made up of the air defense means of large units (groups, detachments) of ships and of long-range fighters which belong to naval aviation or which are detailed from the Air Defense Forces of the Country. Landing detachments with security forces on the sea crossing and in the battle for the landing form the basic and most important grouping of forces within the zone of responsibility of naval air defense; and the navy is responsible for protecting this grouping from the air.

The sum total of tasks performed by various groupings of forces in an amphibious landing operation, and the coordination of their actions by place and time, also predetermine the unity of the air defense system in the operation; therefore, the allocation of tasks is only an element of regulating control for the purpose of clear-cut continuity in adjoining boundaries of responsibility, established on the basis of the combat capabilities of the air defense forces and means of each branch of the armed forces. In other words, the allocation of tasks is not equivalent to division or delimitation. The distribution of efforts determines only the amount of work of each element involved in fulfilling the unified mission.

For overall planning and operational control of the air defense forces and means, it is desirable to have an air defense command in an amphibious landing operation. In the conditions being examined, the front air defense chief can perform this function. In other conditions, for example, when the operation will be conducted in support of the navy, the command of air defense may be charged to the chief of naval air defense, and, in

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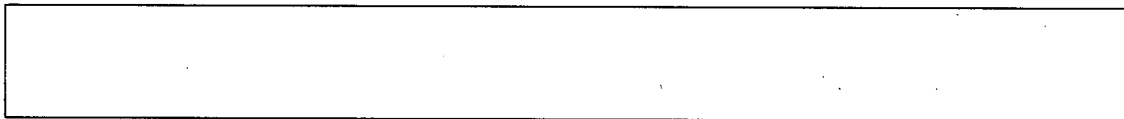
individual cases, also to the commander of the air defense corps (division) which may be attached to the fleet for the period of the operation.

In conclusion, we would like to note that the successful fulfilment of air defense tasks in amphibious landing operations depends on how much requirements of air defense will be taken into account in the organizational structure and in the system of arming the air defense forces and means of the branches of the armed forces, especially in the navy.

Legend for Diagram on Page 19

	Landing detachment
	Antisubmarine defense search-destroy group
	Ship strike group
	Detachment of fire support ships

NOTE:



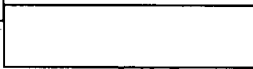
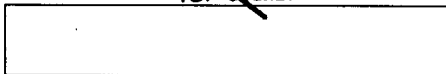


Diagram. Organization of air defense in an amphibious landing operation

