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CENTRAL INTELLIGENCE AGENCY
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MEMORANDUM FOR: The Director of Central Intelligence

SUBJECT : MILITARY THOUGHT (USSR): The Struggle for Air Supremacy

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 describes characteristics of the struggle for air supremacy in both conventional and nuclear warfare. The authors state that the concept of air supremacy has not been worked out in Soviet doctrine, and that even the concept is not fully accepted as appropriate to nuclear warfare. Some of the tactical, chronological and air defense aspects of achieving air supremacy are discussed in general terms. This article appeared in Issue No. 1 (89) for 1970.

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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Deputy Director for Operations

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SUBJECT

MILITARY THOUGHT (USSR): The Struggle for Air Supremacy in Modern Offensive Operations

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Summary:

The following report is a translation from Russian of an article which appeared in Issue No. 1 (89) for 1970 of the SECRET USSR Ministry of Defense publication Collection of Articles of the Journal "Military Thought". The authors of this article are General-Mayor G. Pshenyanik, Doctor of Military Sciences, Professor; Colonel B. Andreyev, Candidate of Military Sciences, Assistant Professor, and Colonel V. Kuznetsov, Candidate of Military Sciences, Assistant Professor. This article describes characteristics of the struggle for air supremacy in both conventional and nuclear warfare. The authors state that the concept of air supremacy has not been worked out in Soviet doctrine, and that even the concept is not fully accepted as appropriate to nuclear warfare. Some of the tactical, chronological and air defense aspects of achieving air supremacy are discussed in general terms. End of Summary

Comment:

Gen.-Mayor G. Pshenyanik has held this rank since 1958 and was identified in 1972 as a professor at the Military Air Academy i/n Yu. Gagarin. In June 1968, he had an article about World War II in Aviation and Cosmonautics and wrote on air supremacy for Red Star, 22 October 1958. Colonels V. Kuznetsov and B. Andreyev co-authored "Cooperation Between Aircraft and Tanks", Military Thought, No. (8), 1966. 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.

The Struggle for Air Supremacy in Modern Offensive Operations

by

General-Mayor G. Pshenyanik, Doctor of Military Sciences, Professor; Colonel B. Andreyev, Candidate of Military Sciences, Assistant Professor, and Colonel V. Kuznetsov, Candidate of Military Sciences, Assistant Professor

At the present time, strongly held views have evolved within Soviet military theory on the necessity for waging a decisive struggle for air supremacy during the non-nuclear period of a war. In essence, they now constitute a foundation for the scientific development of modern, fundamental recommendations for gaining operational and strategic air supremacy in theaters of military operations.

In particular, it has already been determined that, when only conventional weapons are used to gain operational air supremacy, it is necessary that the principal enemy aviation groupings which had been concentrated in the theater during peacetime be destroyed no later than 36 to 48 hours after the beginning of the war. The next priority in strategic operations is to destroy enemy aircraft arriving in the areas of combat operations from other theaters or continents. Moreover, it has been determined that an air operation is the most effective way of operationally employing air forces to destroy enemy aircraft groupings during the non-nuclear period of a war.

It should be noted, however, that a number of principles relating to the struggle for air supremacy during the non-nuclear period of a war have not yet been thoroughly worked out and require further in-depth research. This applies, above all, to the definition of the very concept of air supremacy during the non-nuclear period of a war, to the clarification of the role of fighter aviation in the battle

for air supremacy, to the determination of the method of achieving surprise in the delivery of strikes, and to the precise determination of the combat capabilities of front and long-range aviation which is operating in support of front troops during an air operation aimed at the destruction of enemy aviation groupings.

Some are of the opinion that the term air supremacy should be understood as a specific air situation over combat areas in which our ground, naval and air forces are able to carry out their assigned tasks without much air opposition, while enemy forces and aviation are under a continual threat of air attack. This definition, in our opinion, does not reflect the distinctive features in the struggle for air supremacy during the non-nuclear period: the necessity of effectively destroying the forces and means of enemy air defense, and the importance of the role in this struggle of the air defense troops of the ground forces and of the country. Under modern conditions, even after achieving a favorable balance of aviation forces, there can be no discussion about air supremacy and the successful conduct of military actions by our air forces unless the enemy air defense capability has been substantially disrupted and effectively weakened.

Obviously, it is more accurate to consider air supremacy as a consequence of the destruction of enemy air groupings and his air defense means. Only when this destruction has been accomplished can our air forces carry out their combat missions without serious losses from air defense forces and means. Moreover, front and long-range aviation will be less restricted in their choice of altitudes, flight routes, types of combat actions and tactical methods.

Taking the foregoing into consideration, let us define this concept in the following manner: air supremacy is that specific condition of the air situation above areas of troop combat actions by both sides, in which our ground, naval, and air forces are able to systematically carry out their assigned missions without serious enemy interference from the air; in which the strike forces of our air forces enjoy freedom of action and are able successfully to penetrate the enemy air defenses and deliver powerful strikes against his principal air, ground, and sea groupings; in which our fighter aviation, in coordination with the air defense

troops, is able to repel effectively the attacks of the remaining forces of enemy aviation; and in which the enemy armed forces are deprived of all these capabilities.

Thus, the struggle for air supremacy during the non-nuclear period is inexorably linked with the need to destroy not only the enemy air groupings but also his air defense forces and means in areas of combat operations. In order to destroy and neutralize the air defense means, it is necessary to allocate a considerable number of front aircraft and also to draw upon the forces and means of the ground forces (diversionary groups, tactical landing forces, long-range artillery, equipment for radio-electronic countermeasures). For example, calculations made during war games at the Military Air Academy i/n Yu. A. Gagarin in 1969 demonstrate that, when delivering an initial massive strike in an air operation to destroy (neutralize) surface-to-air missile batteries and the control posts in the air defense system, and to provide cover for the actions of the strike forces of the air army, it is necessary to assign up to 40 to 50 percent of all the forces participating in the strike. The neutralization (destruction) of air defense system targets precedes the incursion into enemy air space by our aviation forces sent out to destroy enemy aircraft on their airfields. The principal efforts are concentrated on the destruction of air defense fighter aircraft and Hawk surface-to-air missile batteries. In the Western Theater of Military Operations where the border areas of the Federal Republic of Germany are protected by heavy Hawk battery covering fire, it is advisable to plan, first of all, to destroy those batteries which lie on those axes along which the main forces of our aviation will fly.

It is quite obvious that, if only conventional strike weapons are employed, it will be impossible to deliver strikes on the majority of the known enemy airfields, as would be the case during a nuclear period of operations when the rocket troops are extensively used in the strikes. In addition, the damage inflicted on enemy aircraft on the ground by conventional strike weapons is considerably less than when nuclear weapons are employed. Estimates show that when one air regiment is used against one enemy airfield, it can be expected that conventional weapons will destroy up to 30 to 40 percent of the aircraft on the ground. For these reasons, enemy aircraft, especially when they are based in depth, will have enough freedom of action to make a large

number of sorties. In addition, the broad capabilities of radio-electronic means for detecting air targets, plus the high degree of combat readiness of enemy aviation, greatly complicate one of the basic problems--how to catch a large number of enemy aircraft on their airfields.

On the basis of calculations it has been determined that, when the first massive strike is delivered, up to 60 percent of the NATO tactical aircraft which are on "Scarlet" combat alert will be able to take off from their airfields to deliver a strike against our forces. Under these conditions, fighter aircraft will play the most important role in the destruction of the opposing enemy air grouping. Research shows that they will be responsible for up to 45 to 50 percent of the enemy aircraft destroyed during an air operation of our air forces. In this regard, it should be noted that, depending on the developing situation, the magnitude of the losses inflicted upon the enemy by our fighter aircraft will vary. Thus, during the period of the delivery of the first massive strike, enemy aircraft losses in air battles may reach 30 percent of the total number of aircraft destroyed both on the ground and in the air. Later, when the enemy aviation groupings are based further to the rear and the possibilities of delivering strikes against airfields become limited, the role of fighter aviation will be even greater.

In addition, it should be kept in mind that air crews are lost in air battles, and it is extremely difficult to replace them. From this point of view the enemy aircraft losses in the air during the non-nuclear period may have a decisive influence on subsequent actions to achieve operational and strategic air supremacy. Thus, by destroying enemy aircraft during air battles, the fighter aircraft make an important contribution toward attaining the goal of an air forces air operation.

Experience derived from combat and operational training in the formations and large units of the air forces, carried out under conditions approximating those in the Western Theater of Military Operations, testifies to the fact that, when our fighter aircraft have numerical superiority over the enemy air defense aircraft, it is imperative continually to seek more aggressive and effective methods of destroying enemy aircraft in the air; and this is the main function of front fighter aviation. In connection with this, evidently

the time has come to examine the existing views on the accomplishment by fighter aviation of the task of providing cover for troops and installations in the rear area of the front. The saturation of the ground forces with highly effective antiaircraft and surface-to-air missile systems, plus the difficulty of achieving coordination between them and fighter aviation when they are all simultaneously engaged in combat operations in the same area, justify the raising of this question: under modern conditions, is not the providing of cover for troops a somewhat passive assignment, in view of the fact that, with its basic forces "tied" to the ground forces it is covering, fighter aviation is not making full use of its effective and aggressive combat capabilities? In our opinion, even with the presentday fighters, the methods normally used to provide cover for troops are not fully responsive to the principle of decisively destroying enemy aircraft in the air. This discrepancy will become even more apparent as the antiaircraft means of the ground forces air defense troops improve both in quality and in quantity and as new, highly maneuverable fighters furnished with improved weapons and radio-electronic equipment are added to front aviation.

Clearly, one of the ways of increasing the usefulness of fighter aviation is to shift its combat operations to enemy territory, planning such operations in accordance with the anticipated patterns of enemy air actions. It can be assumed that, if our aerial and radio-electronic reconnaissance can make a timely determination of the time of a mass takeoff and of the axes and altitudes of the flight, our fighter aircraft will inflict greater losses on the enemy by waging air battles over enemy territory and also by occasionally delivering strikes against his airfields than would be obtained by merely providing troop cover.

In a number of cases, part of the forces of the fighter aviation of the air armies can be called upon to destroy Hawk surface-to-air missile batteries, as well as control posts of aviation and air defense means.

In order to decisively defeat enemy air groupings in an air operation, it is essential that air operations achieve surprise, especially in the delivery of the first massive strike. Surprise in delivering the first and succeeding strikes against enemy aviation may be considered the most

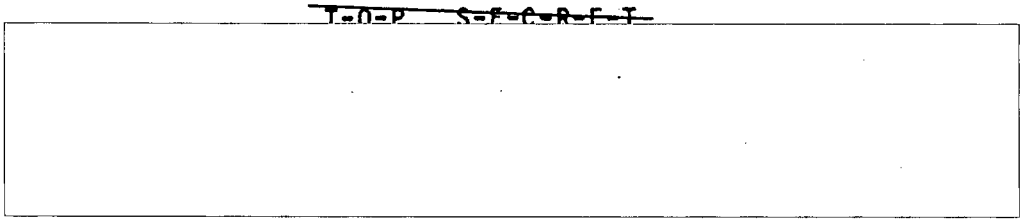
important principle in the preparation and conduct of an air operation. Let us examine the ways surprise can be achieved in actions to destroy enemy air groupings.

Based on the experience of war games conducted in the Military Air Academy i/n Yu. A. Gagarin, it appears that the following may be appropriate ways to achieve surprise under the conditions of the non-nuclear period of a war: correctly selecting the time for delivering strikes against an enemy air grouping and his air defense means; decreasing the depth of the operational disposition of our aviation forces, and using the shortest flight routes at maximum speeds to the targets; shortening the time needed to prepare aviation subunits and units for repeated flights; and sealing off enemy airfields in advance with our fighter aviation forces.

It is obvious that the correct choice of the time for delivering the strike is of great importance in accomplishing this mission. Possible choices of the time for delivering the first strike are after dawn, before nightfall, and at night, using part of the forces at night and the main forces at dawn. Each of these choices has its positive and negative aspects. Therefore, the choice of the time for delivering a strike must be based on a careful estimate of the situation and due consideration to these aspects.

If a strike is delivered after dawn in the Western Theater of Military Operations, it is possible to make maximum use of front and long-range aviation. The enemy aircraft will be forced to take off in the dark, which makes it difficult for his aviation to escape the strike. On the other hand, the early morning darkness will interfere with the efforts of our crews in searching and detecting enemy targets to be destroyed.

A strike before the onset of darkness also makes it possible to enlist the maximum complement of forces and to achieve a high attack density. The principal advantage of this alternative is that the conditions will be unfavorable to the enemy and he will be compelled to deliver his retaliatory strike at night with a limited amount of forces. However, our aircraft will have to overcome strong daylight air defense action, and the ground troops will have to make all their preparations for the offensive during the day and



then begin and wage it during the hours of darkness.

A nighttime strike against airfields may catch up to 60 percent of the enemy aircraft on their airfields. However, only front and long-range bombers can be used in a nighttime strike, i.e., only limited forces; and, in addition, during a nighttime strike it becomes more difficult to take measures to counteract enemy air defense means.

After examining the advantages and disadvantages of the above alternatives, the most favorable choice may prove to be a strike by the front bombers and by long-range aviation at night (close to dawn) and by the remaining forces of the air armies after dawn.

In order to achieve surprise in the first strike, regardless of the time of its delivery, it is necessary to take into account, as has been shown above, the high degree of preparedness by enemy aviation to escape the attack: a slight delay in the delivery of the strike will mean a sharp increase in the number of aircraft which will succeed in taking off. Calculations show that in the Western Theater of Military Operations, when there is a "Scarlet" alert, 40 to 45 aircraft may take off each minute from all airfields.

In the non-nuclear period, the best way of achieving surprise and accomplishing the basic goal of the first massive strike--to catch and destroy the maximum number of enemy aircraft on their airfields--is a preemptive strike using the operational disposition of front and long-range aviation of the minimum depth and the shortest routes at maximum speeds to reach the targets. The above operational disposition and flight axes are feasible in the Western Theater of Military Operations only by operating on a broad front and by refusing to fly along previously selected narrow zones (so-called corridors).

Calculations show that by taking the shortest route to the target it is possible to reduce the flight time by three to five minutes and to surprise 150 to 200 more aircraft on their airfields than would be the case if the flights were made along several different axes using the narrow corridors. Operations on a broad front which do not contemplate the prior creation of corridors in the enemy air defense system but which deliver strikes against the principal surface-to-air missile batteries along the entire

flight path lead to a certain increase in losses by front and long-range aircraft. However, the increase in the losses inflicted by air defense means will be insignificant if the known measures for overcoming air defense means are taken (the destruction of surface-to-air missile batteries, flights at low and extremely low altitudes, the use of radio-electronic countermeasures, etc.). Given the more substantial losses inflicted upon enemy aircraft, clearly the increase in the losses of our aircraft must be accepted, since it is justified by the overall result achieved by delivering the first massive strike. For example, a determination has been made, based on calculations, that the ratio of the increase in the number of our aircraft lost to air defense means to the increase in the number of enemy aircraft destroyed on their airfields is 1:3, when the operation is conducted on a broad front with the targets reached by the shortest routes rather than when a strike is used to breach the enemy air defenses along two or three corridors and, consequently, necessitating the use of a deeper operational disposition.

Surprise by our aircraft in delivering the succeeding strikes also is of great importance to the successful realization of the goals of an air operation. The underlying principle in the execution of these strikes must always reflect the same basic purpose--to forestall the enemy, i.e., to deliver a strike on his airfields before he has had time to prepare for a repeat flight. In connection with this, there is a need to study the possibilities of carrying out subsequent actions against enemy air groupings not by a repeated massive strike delivered by the air armies within a minimum interval of time after the first (on the average, within 3 to 4 hours), but by successive or simultaneous strikes delivered by air units (subunits), depending on the degree of their readiness, against those airfields which are located in areas within safe range of aircraft flying at low altitudes. Calculations indicate that the delivery of successive strikes by air units instead of a second massive strike may, under certain circumstances, lead to an increase in enemy aircraft losses on their airfields. This is especially true when our first strike is preemptive and the enemy, after delivering a retaliatory strike, will be compelled to land at a limited number of airfields which have not been put out of action. At times, the enemy aircraft will land later than our aircraft, thus

creating the prerequisites for forestalling his delivery of repeated strikes.

As was mentioned above, surprise in operations against airfields and air defense means is achieved by having our front fighter forces seal off the airfields and attack the surface-to-air missile batteries and control posts of the enemy. This is essential in order to ensure the effectiveness of our bomber aviation against enemy airfields.

As is known, front aviation, which participates in an air operation of the air forces with its principal forces, is not completely relieved from furnishing air support to front forces. When planning an air operation, one should not forget the needs of the ground forces for aviation, which, together with artillery, constitute the main firepower for defeating the enemy during the non-nuclear period of an offensive operation. Air support is especially necessary when breaching the enemy forward defense line, i.e., approximately during the second half of the first day of a front operation. Therefore, right after the first massive strike has been delivered against the enemy air grouping, it is advisable to allocate part of the fighter-bomber forces of the air armies to provide air support to the front strike groupings, first of all, to the tank armies if they are operating in the first echelon. Calculations indicate that during the period of an air operation conducted by the air forces to destroy enemy air groupings (1-1/2 to 2 days), no more than 25 to 30 percent of the fighter-bomber aviation resources can be allocated to provide air support for the front forces. In an air army composed of two divisions, this constitutes up to 10 regimental flights. However, the calculation of the forces and means needed for preparatory fire on a breakthrough sector of one combined-arms army, and for the support of its forces in breaking through the enemy defenses, show that these aviation strike forces of an air army are not enough. But the allocation of a larger number of aviation forces to support the front forces would lead to a lowering of the combat capabilities of an air army in accomplishing the principal mission of an air operation--to destroy enemy aviation on its airfields, and also his air defense forces and means in support of front and long-range aviation operations. Therefore, only the most judicious use of these

forces can assure the realization of air support for a strike grouping of front forces operating on the main axis.

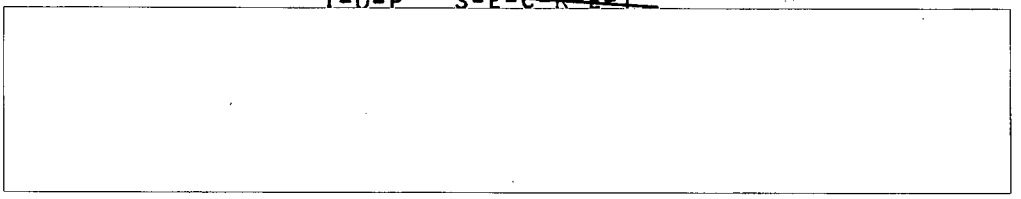
These, in our opinion, are the principal propositions relating to the struggle for air supremacy during the non-nuclear period of a war.

As regards the question of air supremacy during a nuclear war, no unity of opinion exists on this subject at present. There have even been doubts expressed regarding the necessity and possibility of conducting a battle for air supremacy under such conditions.

If a war begins with the unrestricted use of nuclear weapons and the decisive role in accomplishing its goals is played by a strike of the strategic nuclear forces, then there will be no need for a battle for air supremacy at the beginning of a strategic operation in a theater of military operations. The destruction of air groupings will have been accomplished during the first strike by the strategic nuclear forces, since one of their primary targets is enemy airfields. Surprise nuclear attacks on enemy airfields result in irreparable losses to enemy aviation, thus denying it the capability of conducting active operations. Under such circumstances our aircraft have only to complete the destruction by strikes against surviving airfields and by destroying in the air those aircraft which had time to take off before the delivery of the missile strike. Long-range aviation, in coordination with naval forces, will destroy enemy strike aircraft carriers in the battle areas, thereby depriving him of his last air combat capability. The main forces of front aviation must be sent to destroy enemy missile/nuclear means, as well as those ground forces groupings which were not subjected to missile/nuclear strikes.

However, as is known, a nuclear war is not limited to the period of nuclear operations. There will also be a concluding period. We therefore cannot agree with that point of view which categorically rejects the necessity of a battle for air supremacy during a nuclear war.

During the concluding period of operations the problem of obtaining air supremacy may once again arise to some degree. By that time the intensive exchange of nuclear strikes by the two sides will have come to an end (the



nuclear weapons will have, in effect, been expended). Both sides will still have some air strength remaining. Our probable enemy will reinforce his aircraft groupings from his reserves of tactical aircraft on other continents. As a result, we may be faced with a complex air situation which compels us to wage a battle for air supremacy in order to bring the strategic operation to a successful conclusion.

It is also possible that in the concluding stage of a strategic operation, when neither side has a significant quantity of nuclear munitions, a battle for the control of strategic areas will ensue. It is possible that the battle for these areas will entail an airborne landing operation. In our opinion, our ground forces, especially our airborne landing forces, under such conditions will be compelled to wage an all-out battle with enemy aviation. The goal of this battle will be to gain operational air supremacy long enough to ensure the seizure of the most important areas and to bring to a conclusion the strategic operation in the theater of military operations.

However, strikes against airfields must not be limited to those airfields located in an area which must be occupied or to the vicinity of that area, since the radius of action of aircraft and their ability to execute swift maneuvers over great distances permit the enemy to operate throughout the entire theater of military operations. Moreover, our aviation may not have sufficient forces on the axis leading to that area, making it necessary to call upon aircraft remaining on other axes. Under these circumstances, clearly, we cannot rule out an air operation to destroy the existing enemy aircraft in the theater of military operations. The remaining forces of front and long-range aviation should be brought into this operation, and they will primarily use conventional means of destruction, as well as the remaining nuclear munitions. The scope of such an air operation should include the use of several air formations and large units acting under a single command along the most important axis of the theater. During the operation, particular attention must be paid to ensuring the delivery of nuclear strikes. Targets selected for such strikes must include the most important enemy airfields and control posts.

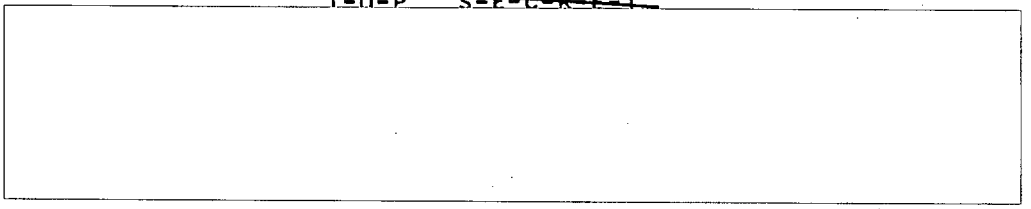
The problem of gaining air supremacy during a nuclear war remains the order of the day even when military actions

employing nuclear weapons are not being conducted in all theaters of military operations. Apparently we cannot completely rule out a situation in which nuclear weapons will be employed in a strategic operation in the main (Western, Southwestern) Theaters of Military Operations, while in one of the secondary theaters conventional means of destruction will be used. In the latter case, airborne landings may play a large role in seizing the areas of greatest operational and strategic importance. Their use makes it necessary to gain operational air supremacy for a certain period of time.

In the concluding period of a strategic operation, rail and automotive lines of communication will have been destroyed to a large extent by nuclear strikes inflicted by both sides. On several axes, particularly in mountainous areas where it is not possible to set up detours for the main routes that have been destroyed, it will be necessary to use the remaining military-transport aviation to move the troops and to keep them supplied to the greatest extent possible. In order to ensure freedom of action for military-transport aviation, it will be necessary to wage a battle for air supremacy, particularly during the period when military-transport aviation is making intensive flights in the FEBA and is not protected against opposition from enemy fighter aircraft.

At the same time, it will become necessary to conduct combat with enemy airlifts with which he will strive to reinforce his troop groupings by drawing upon his reserves on the continent. To cut off the flow of these reserves to the theater of military operations, it will be necessary to destroy the aircraft of the military-transport aviation command in the air and on the airfields (runways).

Thus, the need to battle for air supremacy in a nuclear war will arise only during military actions which take place after both sides have completed their exchange of powerful nuclear strikes and no longer have a sufficient quantity of either nuclear munitions or the means for their delivery. Under these conditions, a situation may develop in which a decisive battle will have to be fought to bring opposition from enemy aviation to a minimum during the period when we are carrying out our most crucial tasks. This battle will be to gain that degree of air supremacy within a defined airspace which will provide our forces with the maximum



measure of safety from enemy air strikes while they are engaged in combat operations on the most important axes and which will enable our air forces to support these forces effectively and to employ military-transport aircraft extensively to supply the troops with material resources.