50X1-HUM

Next 2 Page(s) In Document Denied

Fire Support of the Landing Operation of an Airborne Division

by

Colonel I. Kotov

In modern warfare airborne troops will have very wide application to the operations of ground troops. Until recently, however, such important problems of the combat use of airborne forces as fire support for their landing operations had still not been worked out to a sufficient degree.

In our opinion the following things relate to tasks of this kind:

1) support of the division's movement to the departure area for the landing operation and its preparations in this area, of the loading of combat equipment, of the boarding of the aircraft by personnel, and of the take-off of the military-transport aircraft; this is achieved by destroying the enemy's means of nuclear attack - "Redstone" guided missiles and "Matador" and "Mace" cruise missiles, the employment of which is possible while the division and the military-transport aircraft are in the departure zone, and also by destroying enemy bomber and fighter-bomber aircraft at airfields and in the air;

2) support of the flight of the military-transport aircraft with the airborne force across the line of the front and over the enemy's territory by destroying and neutralizing PVO weapons in the zone of the flight and on the flanks;

3) support of the drop (landing) of an airborne division by destroying the enemy's fire weapons and troops in the area of the landing operation;

[redacted]

4) support of the combat operations of the airborne division in the enemy rear.

The first three tasks are accomplished by the front missile units and subunits, by bomber aircraft, and by the PVO means of the front (the country). The fourth task is fulfilled by the fire means of the airborne division in coordination with the front missile troops and bomber aircraft, and, in proportion to the approach of the advancing troops, in coordination with their missile units and artillery.

The destruction of "Redstone" guided missile batteries, of cruise missile groups, and of enemy aircraft at airfields is carried out for the entire front offensive operation immediately after the certain discovery of the targets. Consequently, the movement of an airborne division to the departure area for a landing operation and its preparations will be ensured by the fulfilment of the tasks of attaining fire superiority for the entire front offensive operation.

Success in the use of an airborne force depends to a considerable degree on the power of the fire support for the flight of the military-transport aviation group (VTAG) with the airborne force to the area of the landing operation. Fire support for the flight is achieved by destroying the enemy's active PVO means : antiaircraft guided missiles, antiaircraft artillery, fighter aircraft, and PVO radio-technical means. The quantity of these means depends on the strength of the antiair defense of the enemy field army (group of armies), on the distribution of the fire weapons in the zone of defense, on the tactical-technical characteristics of these weapons, on the depth of the landing operation of the airborne division, on the column formation of the military-transport aviation group, and on the route and altitude of its flight.

Taking account of the factors mentioned, Table 1 gives a summary of the data on the number of enemy PVO means which must be destroyed in order to ensure the flight of a VTAG to the landing operation.

[redacted]

It appears from the table that during the support of the flight of a VTAG the largest number of nuclear warheads will be required for the destruction of "Hawk" and "Nike" antiaircraft guided missile (ZURS) batteries (about 85 percent), and this number is little altered by an increase in the number of VTAG flight routes, provided the distance between them does not exceed 10 to 15 km. But if this distance is increased to 70 km, then the number of nuclear warheads required for these same targets must be doubled or even tripled. In our opinion the most advisable flight of a VTAG to a landing operation is one along two routes, separated from each other by a distance of about 15 km. 50X1-HUM

Table 2 shows the quantity of means essential to a front to destroy all enemy PVO means located in a VTAG flight zone in the Western European theater of military operations.

The calculations have been made for conditions where the enemy's PVO means are at full strength and where he has at his disposal additional means corresponding to the existing norms for reinforcement. For this reason, the data shown for the quantity of nuclear warheads, artillery, and aircraft needed to support a VTAG flight should be regarded as one of the maximum versions. In a situation where the VTAG flight route passes over an area lacking a strong antiair defense, the quantity of these means may be reduced approximately two or three times.

In the delivery of nuclear strikes against the enemy's PVO means it is essential to ensure the security of the flight of the aircraft, while striving at the same time toward a minimum time lag between the nuclear strikes and the flight of the VTAG.

The security of a VTAG flight requires that the distance between it and the place of the nuclear bursts be such that damage to the aircraft and personnel of the airborne force which are nearest to the center of the burst is precluded.

[redacted] 50X1-HUM

Without burdening our article with detailed calculations, let us examine the influence of the factors of a nuclear burst on a VTAG flight, and in connection with this let us determine the safety boundaries of its flight.

Shockwave. The safe maximum overpressure of a shockwave front for transport aircraft in the air may be taken as equal to 0.02 to 0.04 kg/cm^2. At such a pressure the velocity of air displacement in the shockwave front is 5 to 10 m/sec.

In accordance with the agreed magnitude of safe overpressure, we may figure that, depending on the yield of the nuclear bursts (from 3 to 100 kt), the distance between transport aircraft and the center of a nuclear burst will vary between 6 and 17 km.

Thermal radiation. In our view, 15 to 24 cal/cm^2 is the minimum thermal radiation which will ignite highly flammable materials in aircraft. The safe maximum radiation intensity is equal to approximately 8 cal/cm^2. Correspondingly, the safe distance for transport aircraft, calculated for the thermal radiation of various yields of nuclear bursts, will vary within the limits of 2 and 8 km.

Penetrating radiation. Practically speaking, the effects of penetrating radiation cease about 2.5 km from the center of a burst and about 10 seconds after the burst. Consequently, an airborne force in aircraft which are from 3.5 to 4 km away at the moment of a nuclear burst and flying at a speed of 500 km/hr will be safe by the time it approaches the area of the burst.

The radioactive cloud. Thirty minutes after a burst, with a wind velocity of about 50 km/hr, the average radiation levels in the cloud do not exceed 50 to 100 r/hr for low-yield nuclear bursts, and 250 to 500 r/hr for medium and high-yield bursts.

Although the external irradiation of the airborne force personnel and the aircraft crew, when passing through

[redacted] 50X1-HUM

a cloud at a speed of 500 km/hr 30 minutes after the burst of low, medium, or high-yield nuclear warheads, does not exceed the permissible one-time dose, everything possible must be done to avoid passing through a radioactive cloud because the airborne force still has to conduct combat operations during which it may be subjected to additional irradiation.

Considering the maximum height of rise of the lower edge of a radioactive cloud, one may figure that the flight of a VTAG with an airborne force over ground zero of a nuclear burst is possible at an altitude of 5000m 10 minutes after the burst of a weapon with a yield of 5kt or more, and at an altitude of 4500m after a burst with a yield of 3kt.

So that VTAG aircraft in flight will not be damaged by shells of our own artillery, a flight altitude is chosen which exceeds the maximum altitude of the shell trajectories.

Calculations show that the enemy's antiair defense means must be destroyed by the simultaneous strike of nuclear/missile means and artillery of the front, armies, and divisions 15 to 20 minutes before the lead aircraft of a military-transport aviation group approach the forward line of resistance. Ten to fifteen minutes after the nuclear/missile strikes, bomber and fighter-bomber aircraft may deliver strikes against targets assigned to them, as a rule on the flanks of the flight zone of the military-transport aircraft.

To deliver nuclear strikes against the enemy's PVO means, the requirements may be about 5 launchers for operational-tactical missiles with a range of 300 to 500 km, about 10 launchers for missiles with a range of 160 km, and about 15 launchers for tactical missiles.

The neutralization of newly detected PVO means and the escort of military-transport aircraft in flight are best accomplished by squadrons of fighter-bombers.

Prior to the drop (landing) of the airborne force, the

[redacted] 50X1-HUM

destruction of the enemy troops and fire weapons located in the area of the landing operation and the areas adjacent to it can be ensured by the front (army) missile troops and by aircraft assigned to support the airborne force. It is best to draw on the former to deliver nuclear strikes against the most important objectives (the means of nuclear attack, reserves in concentration areas, and tank troops); and on the front supporting aviation to neutralize fire means in the area of the landing operation and to destroy approaching enemy reserves.

* * *

In view of the participation in the fire support of the landing operation of an airborne division by various fire means of a front, armies, and divisions, it is essential to centralize the organization of the combat use of all these means, mainly in front headquarters and then in army headquarters, in the zone of the offensive where the airborne division is being dropped.

The basis of organizing the combat use of all fire means to support a landing operation is the front commander's decision to use the airborne division. In this decision, he defines: the tasks of missile troops, artillery, and aviation for the fire support of the flight of the military-transport aviation group and the drop (landing) of the airborne division; the time to deliver nuclear strikes against targets in the zone of the flight and in the area of the landing operation; the time to deliver a strike with chemical ammunition; the start and duration of artillery concentration; the number of nuclear warheads for missile troops and aviation and the quantity of missiles with chemical filler and of ammunition with conventional filler allotted for the fire support of the flight of the military-transport aviation group and the drop (landing) of the airborne force; and the large units (units) of fighter and fighter-bomber aircraft assigned to escort the column of the military-transport aviation group and to destroy the enemy's antiair defense means during the flight to the landing area.

[redacted]

In planning the fire support of a landing operation, the staff of missile troops and artillery of a front must determine which missile large units and units of a front, armies, and divisions, what quantity of artillery, and which and how many divisions it is advisable to draw on to fulfil the tasks levied by the front commander, and also how to divide these tasks among them.

Considering the effective range of various missiles and the yields being employed for nuclear charges, it is advisable to draw on the front missile large units and units to destroy the most remote objectives and targets in the flight zone, in the area of the landing operation, and in the areas adjacent to it: the enemy's surface-to-surface and surface-to-air means of nuclear attack, aircraft on airfields, and tank groupings; and on the army missile large units and units to destroy the enemy's means of antiair defense in the flight zone, as a rule beyond the reach of tactical missiles. Where the depth of the drop of an airborne division is insignificant, army missile troops must also be used to destroy objectives in the area of the landing operation.

The missile units and artillery of the divisions can best be drawn on to destroy antiair defense means in the flight zone from the enemy's forward edge of resistance to the depth of reach of artillery and tactical missiles.

In planning for the fire support of a landing operation, it is essential to pinpoint the siting areas of the missile large units and units and artillery which will be drawn on, especially if the landing operation is carried out during a front offensive operation; to set the time for launching missiles by large units and units so that the nuclear strikes will be delivered right at the designated time and against all targets at once; to determine the expenditure of various types of ammunition, the procedure for transporting it, storing it, and safeguarding it by missile large units and units and the artillery; and to organize communications with all fire means participating in the support of the operations of the airborne division.

[redacted]

The successful accomplishment of the tasks of fire support for the landing operation and for the combat operations of an airborne division largely depends on the proper organization of coordination between all the fire means designated for this purpose and also between the airborne division and the large units of front troops in the area of the combat operations of the airborne force.

In organizing coordination, it is very important in our opinion to specify the flight routes and flight speed; the formation of the columns of military-transport aviation; the tasks of missile troops, aviation, and artillery in combatting the enemy's nuclear means and the means of his antiair defense; the time to deliver nuclear strikes and strikes with chemical ammunition; the beginning and duration of the artillery concentration; and the siting areas of missile troops and artillery. To ensure the safety of the military-transport aviation group and the personnel of the airborne force, the time to deliver nuclear strikes must be determined with regard for the necessary distance between the lead aircraft and the nearest nuclear bursts.

If it is proposed to use an airborne division as an operational airborne force during a front offensive operation, then in organizing the coordination of fire weapons one must consider the possible advance of the front troops; but in this case it is advisable immediately before the start of the landing operation to establish the time to deliver nuclear strikes in the flight zone of the military-transport aviation group.

By the time the lead aircraft of the military-transport aviation group reach the specified line planned during the organization of coordination, missile troops must deliver nuclear strikes and strikes with chemical missiles, and the artillery must carry out its attack against the enemy's antiair defense means in the flight zone.

Immediately after the nuclear strikes of the missile troops, bomber aircraft and cruise missiles must deliver strikes against the objectives and targets assigned to them.

[redacted]

50X1-HUM

Army (front) missile subunits may be designated to destroy such newly detected PVO means as "Hawk" and "Nike" guided missiles located on the flanks of the flight zone, if the safety of the flight of the military-transport aviation can be ensured while firing against these targets.

In the part of the flight zone where the possibility of using missile troops is precluded, the enemy's antiair defense means can be destroyed only by the fighter-bomber and bomber aircraft escorting the column of the military-transport aviation group.

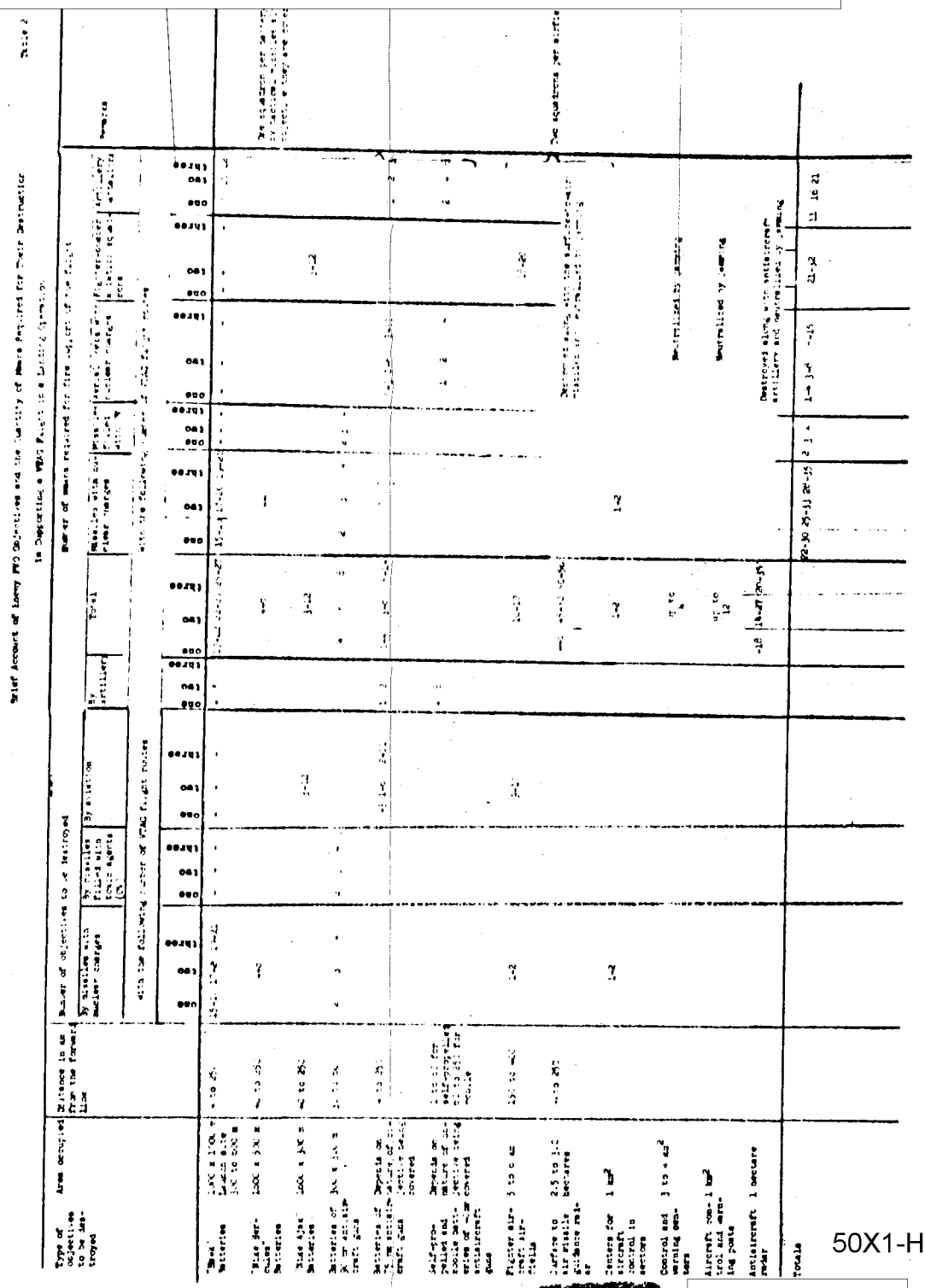
By the time the military-transport aviation group approaches the area of the landing operation, missile troops must have delivered nuclear strikes and strikes with chemical missiles against objectives and targets in the area of the landing operation and also against the enemy reserves which are closest to this zone.

Where the depth of the landing operation is insignificant, the nuclear/missile strikes in the flight zone and against objectives and targets in the area of the landing operation may be delivered simultaneously.

In our view, these are the most essential aspects of the organization of fire support for the landing operation of an airborne division, further research into which will ensure the successful use of operational and tactical airborne forces in front offensive operations.

[redacted]

50X1-HUM



50X1-HUM

Table 1

Quantity of Enemy (US Army) PVO Means to be Destroyed in Supporting a VTAG Flight in a Landing Operation

50X1-HUM

Type of PVO Means	Width in km of the zone in which PVO means must be destroyed and which the VTAG is to follow:			Quantity of Enemy PVO Means Requiring Destruction with a Landing Operation Depth of:														
				100 Km			200 Km			300 Km			400 Km			500 Km		
				and with the VTAG following:														
	one flight route	two flight route	three flight route	one flight route	two flight route	three flight route	one	two	three	one	two	three	one	two	three	one	two	three
"Hawk" Batteries	73	82-86	91-99	19	22	25	22	25	27	22	25	27	22	25	27	22	25	27
"Nike Hercules" Batteries	(320 - 330)			3-4	3-4	3-4	4-5	4-5	4-5	5-6	5-6	5-6	6-7	6-7	6-7	8	8	8
"Nike Ajax" Batteries	83	92-96	100-109	3-5	3-5	4-6	4-6	6	6	6	8	8	8	10	10	10	12	12
Batteries of 90 mm antiaircraft guns	27	36-40	45-53	4-5	6-7	7-8	4-5	6-7	7-8	4-5	6-7	7-8	4-5	6-7	7-8	4-5	6-7	7-8
Batteries of 75 mm antiaircraft guns	13	22-26	31-39	1-2	3-4	5-6	3-4	6-7	8-10	4-5	6-7	8-10	4-5	8-10	12-14	4-6	8-10	12-14
Batteries of 40 mm antiaircraft guns	11	20	29	4	7	10	4	7	10	4	7	10	4	7	10	4	7	10
Batteries of mobile 40 mm antiaircraft guns	11	20	29	1-2	3-4	5-6	1-2	3-4	5-6	1-2	3-4	5-6	1-2	3-4	5-6	2	3-4	5-6
Fighter aircraft airfields	up to 10 to 12 aircraft (up to 4 percent of tactical aviation airfields)																	
ZURS guidance radar	85	95	110	40	45	50	40	50	60	48	52	56	48	52	56	48	52	56
Centers for aircraft control in sectors	1 or 2 centers																	
Aircraft control and warning centers	up to 4 centers																	
Aircraft control and warning posts	up to 12 posts																	
Antiaircraft target-acquisition radar	11-27	20-40	29-53	8-16	16-24	24-32	up to 16	up to 24	up to 32	up to 16	up to 24	up to 32	up to 16	up to 24	up to 32	up to 16	up to 24	up to 32

50X1-HUM

50X1-HUM

Next 2 Page(s) In Document Denied

Fire Support of the Landing Operation of an Airborne Division

by

Colonel I. Kotov

In modern warfare airborne troops will have very wide application to the operations of ground troops. Until recently, however, such important problems of the combat use of airborne forces as fire support for their landing operations had still not been worked out to a sufficient degree.

In our opinion the following things relate to tasks of this kind:

1) support of the division's movement to the departure area for the landing operation and its preparations in this area, of the loading of combat equipment, of the boarding of the aircraft by personnel, and of the take-off of the military-transport aircraft; this is achieved by destroying the enemy's means of nuclear attack - "Redstone" guided missiles and "Matador" and "Mace" cruise missiles, the employment of which is possible while the division and the military-transport aircraft are in the departure zone, and also by destroying enemy bomber and fighter-bomber aircraft at airfields and in the air;

2) support of the flight of the military-transport aircraft with the airborne force across the line of the front and over the enemy's territory by destroying and neutralizing PVO weapons in the zone of the flight and on the flanks;

3) support of the drop (landing) of an airborne division by destroying the enemy's fire weapons and troops in the area of the landing operation;

[redacted]

4) support of the combat operations of the airborne division in the enemy rear.

The first three tasks are accomplished by the front missile units and subunits, by bomber aircraft, and by the PVO means of the front (the country). The fourth task is fulfilled by the fire means of the airborne division in coordination with the front missile troops and bomber aircraft, and, in proportion to the approach of the advancing troops, in coordination with their missile units and artillery.

The destruction of "Redstone" guided missile batteries, of cruise missile groups, and of enemy aircraft at airfields is carried out for the entire front offensive operation immediately after the certain discovery of the targets. Consequently, the movement of an airborne division to the departure area for a landing operation and its preparations will be ensured by the fulfilment of the tasks of attaining fire superiority for the entire front offensive operation.

Success in the use of an airborne force depends to a considerable degree on the power of the fire support for the flight of the military-transport aviation group (VTAG) with the airborne force to the area of the landing operation. Fire support for the flight is achieved by destroying the enemy's active PVO means : antiaircraft guided missiles, antiaircraft artillery, fighter aircraft, and PVO radio-technical means. The quantity of these means depends on the strength of the antiair defense of the enemy field army (group of armies), on the distribution of the fire weapons in the zone of defense, on the tactical-technical characteristics of these weapons, on the depth of the landing operation of the airborne division, on the column formation of the military-transport aviation group, and on the route and altitude of its flight.

Taking account of the factors mentioned, Table 1 gives a summary of the data on the number of enemy PVO means which must be destroyed in order to ensure the flight of a VTAG to the landing operation.

[redacted]

It appears from the table that during the support of the flight of a VTAG the largest number of nuclear warheads will be required for the destruction of "Hawk" and "Nike" antiaircraft guided missile (ZURS) batteries (about 85 percent), and this number is little altered by an increase in the number of VTAG flight routes, provided the distance between them does not exceed 10 to 15 km. But if this distance is increased to 70 km, then the number of nuclear warheads required for these same targets must be doubled or even tripled. In our opinion the most advisable flight of a VTAG to a landing operation is one along two routes, separated from each other by a distance of about 15 km.

Table 2 shows the quantity of means essential to a front to destroy all enemy PVO means located in a VTAG flight zone in the Western European theater of military operations.

The calculations have been made for conditions where the enemy's PVO means are at full strength and where he has at his disposal additional means corresponding to the existing norms for reinforcement. For this reason, the data shown for the quantity of nuclear warheads, artillery, and aircraft needed to support a VTAG flight should be regarded as one of the maximum versions. In a situation where the VTAG flight route passes over an area lacking a strong antiair defense, the quantity of these means may be reduced approximately two or three times.

In the delivery of nuclear strikes against the enemy's PVO means it is essential to ensure the security of the flight of the aircraft, while striving at the same time toward a minimum time lag between the nuclear strikes and the flight of the VTAG.

The security of a VTAG flight requires that the distance between it and the place of the nuclear bursts be such that damage to the aircraft and personnel of the airborne force which are nearest to the center of the burst is precluded.

[redacted]

Without burdening our article with detailed calculations, let us examine the influence of the factors of a nuclear burst on a VTAG flight, and in connection with this let us determine the safety boundaries of its flight.

Shockwave. The safe maximum overpressure of a shockwave front for transport aircraft in the air may be taken as equal to 0.02 to 0.04 kg/cm^2. At such a pressure the velocity of air displacement in the shockwave front is 5 to 10 m/sec.

In accordance with the agreed magnitude of safe overpressure, we may figure that, depending on the yield of the nuclear bursts (from 3 to 100 kt), the distance between transport aircraft and the center of a nuclear burst will vary between 6 and 17 km.

Thermal radiation. In our view, 15 to 24 cal/cm^2 is the minimum thermal radiation which will ignite highly flammable materials in aircraft. The safe maximum radiation intensity is equal to approximately 8 cal/cm^2. Correspondingly, the safe distance for transport aircraft, calculated for the thermal radiation of various yields of nuclear bursts, will vary within the limits of 2 and 8 km.

Penetrating radiation. Practically speaking, the effects of penetrating radiation cease about 2.5 km from the center of a burst and about 10 seconds after the burst. Consequently, an airborne force in aircraft which are from 3.5 to 4 km away at the moment of a nuclear burst and flying at a speed of 500 km/hr will be safe by the time it approaches the area of the burst.

The radioactive cloud. Thirty minutes after a burst, with a wind velocity of about 50 km/hr, the average radiation levels in the cloud do not exceed 50 to 100 r/hr for low-yield nuclear bursts, and 250 to 500 r/hr for medium and high-yield bursts.

Although the external irradiation of the airborne force personnel and the aircraft crew, when passing through

[redacted]

a cloud at a speed of 500 km/hr 30 minutes after the burst of low, medium, or high-yield nuclear warheads, does not exceed the permissible one-time dose, everything possible must be done to avoid passing through a radioactive cloud because the airborne force still has to conduct combat operations during which it may be subjected to additional irradiation.

Considering the maximum height of rise of the lower edge of a radioactive cloud, one may figure that the flight of a VTAG with an airborne force over ground zero of a nuclear burst is possible at an altitude of 5000m 10 minutes after the burst of a weapon with a yield of 5kt or more, and at an altitude of 4500m after a burst with a yield of 3kt.

So that VTAG aircraft in flight will not be damaged by shells of our own artillery, a flight altitude is chosen which exceeds the maximum altitude of the shell trajectories.

Calculations show that the enemy's antiair defense means must be destroyed by the simultaneous strike of nuclear/missile means and artillery of the front, armies, and divisions 15 to 20 minutes before the lead aircraft of a military-transport aviation group approach the forward line of resistance. Ten to fifteen minutes after the nuclear/missile strikes, bomber and fighter-bomber aircraft may deliver strikes against targets assigned to them, as a rule on the flanks of the flight zone of the military-transport aircraft.

To deliver nuclear strikes against the enemy's PVO means, the requirements may be about 5 launchers for operational-tactical missiles with a range of 300 to 500 km, about 10 launchers for missiles with a range of 160 km, and about 15 launchers for tactical missiles.

The neutralization of newly detected PVO means and the escort of military-transport aircraft in flight are best accomplished by squadrons of fighter-bombers.

Prior to the drop (landing) of the airborne force, the

[redacted]

destruction of the enemy troops and fire weapons located in the area of the landing operation and the areas adjacent to it can be ensured by the front (army) missile troops and by aircraft assigned to support the airborne force. It is best to draw on the former to deliver nuclear strikes against the most important objectives (the means of nuclear attack, reserves in concentration areas, and tank troops); and on the front supporting aviation to neutralize fire means in the area of the landing operation and to destroy approaching enemy reserves.

* * *

In view of the participation in the fire support of the landing operation of an airborne division by various fire means of a front, armies, and divisions, it is essential to centralize the organization of the combat use of all these means, mainly in front headquarters and then in army headquarters, in the zone of the offensive where the airborne division is being dropped.

The basis of organizing the combat use of all fire means to support a landing operation is the front commander's decision to use the airborne division. In this decision, he defines: the tasks of missile troops, artillery, and aviation for the fire support of the flight of the military-transport aviation group and the drop (landing) of the airborne division; the time to deliver nuclear strikes against targets in the zone of the flight and in the area of the landing operation; the time to deliver a strike with chemical ammunition; the start and duration of artillery concentration; the number of nuclear warheads for missile troops and aviation and the quantity of missiles with chemical filler and of ammunition with conventional filler allotted for the fire support of the flight of the military-transport aviation group and the drop (landing) of the airborne force; and the large units (units) of fighter and fighter-bomber aircraft assigned to escort the column of the military-transport aviation group and to destroy the enemy's antiair defense means during the flight to the landing area.

[redacted]

In planning the fire support of a landing operation, the staff of missile troops and artillery of a front must determine which missile large units and units of a front, armies, and divisions, what quantity of artillery, and which and how many divisions it is advisable to draw on to fulfil the tasks levied by the front commander, and also how to divide these tasks among them.

Considering the effective range of various missiles and the yields being employed for nuclear charges, it is advisable to draw on the front missile large units and units to destroy the most remote objectives and targets in the flight zone, in the area of the landing operation, and in the areas adjacent to it: the enemy's surface-to-surface and surface-to-air means of nuclear attack, aircraft on airfields, and tank groupings; and on the army missile large units and units to destroy the enemy's means of antiair defense in the flight zone, as a rule beyond the reach of tactical missiles. Where the depth of the drop of an airborne division is insignificant, army missile troops must also be used to destroy objectives in the area of the landing operation.

The missile units and artillery of the divisions can best be drawn on to destroy antiair defense means in the flight zone from the enemy's forward edge of resistance to the depth of reach of artillery and tactical missiles.

In planning for the fire support of a landing operation, it is essential to pinpoint the siting areas of the missile large units and units and artillery which will be drawn on, especially if the landing operation is carried out during a front offensive operation; to set the time for launching missiles by large units and units so that the nuclear strikes will be delivered right at the designated time and against all targets at once; to determine the expenditure of various types of ammunition, the procedure for transporting it, storing it, and safeguarding it by missile large units and units and the artillery; and to organize communications with all fire means participating in the support of the operations of the airborne division.

[redacted]

The successful accomplishment of the tasks of fire support for the landing operation and for the combat operations of an airborne division largely depends on the proper organization of coordination between all the fire means designated for this purpose and also between the airborne division and the large units of front troops in the area of the combat operations of the airborne force.

In organizing coordination, it is very important in our opinion to specify the flight routes and flight speed; the formation of the columns of military-transport aviation; the tasks of missile troops, aviation, and artillery in combatting the enemy's nuclear means and the means of his antiair defense; the time to deliver nuclear strikes and strikes with chemical ammunition; the beginning and duration of the artillery concentration; and the siting areas of missile troops and artillery. To ensure the safety of the military-transport aviation group and the personnel of the airborne force, the time to deliver nuclear strikes must be determined with regard for the necessary distance between the lead aircraft and the nearest nuclear bursts.

If it is proposed to use an airborne division as an operational airborne force during a front offensive operation, then in organizing the coordination of fire weapons one must consider the possible advance of the front troops; but in this case it is advisable immediately before the start of the landing operation to establish the time to deliver nuclear strikes in the flight zone of the military-transport aviation group.

By the time the lead aircraft of the military-transport aviation group reach the specified line planned during the organization of coordination, missile troops must deliver nuclear strikes and strikes with chemical missiles, and the artillery must carry out its attack against the enemy's antiair defense means in the flight zone.

Immediately after the nuclear strikes of the missile troops, bomber aircraft and cruise missiles must deliver strikes against the objectives and targets assigned to them.

[redacted]

Army (front) missile subunits may be designated to destroy such newly detected PVO means as "Hawk" and "Nike" guided missiles located on the flanks of the flight zone, if the safety of the flight of the military-transport aviation can be ensured while firing against these targets.

In the part of the flight zone where the possibility of using missile troops is precluded, the enemy's antiair defense means can be destroyed only by the fighter-bomber and bomber aircraft escorting the column of the military-transport aviation group.

By the time the military-transport aviation group approaches the area of the landing operation, missile troops must have delivered nuclear strikes and strikes with chemical missiles against objectives and targets in the area of the landing operation and also against the enemy reserves which are closest to this zone.

Where the depth of the landing operation is insignificant, the nuclear/missile strikes in the flight zone and against objectives and targets in the area of the landing operation may be delivered simultaneously.

In our view, these are the most essential aspects of the organization of fire support for the landing operation of an airborne division, further research into which will ensure the successful use of operational and tactical airborne forces in front offensive operations.

Table 2

Brief Account of Enemy PVO Objectives and the Quantity of Means Required for Their Destruction in Supporting a VTAG Flight in a Landing Operation

Type of objectives to be destroyed	Area occupied	Distance in km from the forward line	Number of objectives to be destroyed: By missiles with nuclear charges			By missiles filled with toxic agents (OV)			By aviation			By artillery			Total			Number of means required for fire support of the flight: Missiles with nuclear charges			Missiles filled with OV			Aerial bombs with nuclear charges			Fighter-bomber aviation squadrons			Artillery battalions			Remarks
			With the following number of VTAG flight routes															With the following number of VTAG flight routes															
			one	two	three	one	two	three	one	two	three	one	two	three	one	two	three	one	two	three	one	two	three	one	two	three	one	two	three	one	two	three	
"Hawk" Batteries	1000 x 1000 m Launch site 300 to 600 m	4 to 250	15-18	17-20	19-21	-	-	-	-	-	-	4	5		19-22	22-25	25-27	15-18	17-20	19-21	-	-	-	-	-	-	-	-	-	8	10	12	
"Nike Hercules" Batteries	1500 x 500 m	40 to 250		4-6												4-6			4-6														One squadron per battery. by tactical missiles alon objective they are coveri
"Nike Ajax" Batteries	1600 x 300 m	40 to 250								3-12						3-12												3-12					
Batteries of 90 mm antiaircraft guns	300 x 300 m	30 to 50	2	3	4	2	3	4							4	4	6	2	3	4	2	3	4										
Batteries of 75 mm antiaircraft guns	Depends on nature of objective being covered	4 to 250							0-3	1-6	2-11	1	2		1-4	3-8	5-14							0-3	1-6	2-11				1	2	3	
Self-propelled and mobile batteries of 40mm antiaircraft guns	Depends on nature of objective being covered	1 to 60 for self-propelled 60 to 250 for mobile										4	6											1	2	-				2	4	6	
Fighter aircraft airfields	5 to 6 km	150 to 400		1-2						9-10						10-12												18-20					Two squadrons per airfiel
Surface to air missile guidance radar	2.5 to 3.0 hectares	4 to 250													-40	45-52	50-56							Destroyed along with the surface-to-air missiles and neutralized by jamming									
Centers for aircraft control in sectors	1 km^2			1-2												1-2			1-2														
Control and warning centers	3 to 4 km^2															up to 4									Neutralized by jamming								
Aircraft control and warning posts	1 km^2															up to 12									Neutralized by jamming								
Antiaircraft radar	1 hectare														-18	14-27	20-35							Destroyed along with antiaircraft artillery and neutralized by jamming									
Totals																		22-30	25-33	28-35	2	3	4	1-4	3-8	6-15		21-32		11	16	21	

 [redacted]

50X1-HUM

Table 1

Quantity of Enemy (US Army) PVO Means to be Destroyed in Supporting a VTAG Flight in a Landing Operation

Type of PVO Means	Width in km of the zone in which PVO means must be destroyed and which the VTAG is to follow:			Quantity of Enemy PVO Means Requiring Destruction with a Landing Operation Depth of:														
				100 Km			200 Km			300 Km			400 Km			500 Km		
				and with the VTAG following:														
	one flight route	two flight route	three flight route	one flight route	two flight route	three flight route	one	two	three	one	two	three	one	two	three	one	two	three
"Hawk" Batteries	73	82-86	91-99	19	22	25	22	25	27	22	25	27	22	25	27	22	25	27
"Nike Hercules" Batteries	(320 - 330)			3-4	3-4	3-4	4-5	4-5	4-5	5-6	5-6	5-6	6-7	6-7	6-7	8	8	8
"Nike Ajax" Batteries	83	92-96	100-109	3-5	3-5	4-6	4-6	6	6	6	8	8	8	10	10	10	12	12
Batteries of 90 mm antiaircraft guns	27	36-40	45-53	4-5	6-7	7-8	4-5	6-7	7-8	4-5	6-7	7-8	4-5	6-7	7-8	4-5	6-7	7-8
Batteries of 75 mm antiaircraft guns	13	22-26	31-39	1-2	3-4	5-6	3-4	6-7	8-10	4-5	6-8	8-10	4-5	8-10	12-14	4-6	8-10	12-14
Batteries of 40 mm antiaircraft guns	11	20	29	4	7	10	4	7	10	4	7	10	4	7	10	4	7	10
Batteries of mobile 40 mm antiaircraft guns	11	20	29	1-2	3-4	5-6	1-2	3-4	5-6	1-2	3-4	5-6	1-2	3-4	5-6	2	3-4	5-6
Fighter aircraft airfields	up to 10 to 12 airfields (up to 5 percent of tactical aviation airfields)																	
ZURS guidance radar	85	95	110	40	45	50	48	52	56	48	52	56	48	52	56	48	52	56
Centers for aircraft control in sectors	1 or 2 centers																	
Aircraft control and warning centers	up to 4 centers																	
Aircraft control and warning posts	up to 12 posts																	
Antiaircraft target-acquisition radar	11-27	20-40	29-53	8-16	14-22	22-28	up to 35	up to 23	up to 26	up to 30	up to 27	up to 35	up to 18	up to 27	up to 35	up to 18	up to 27	up to 35

50X1-HUM