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INTELLIGENCE AGENCY  
WASHINGTON 25, D. C.

25 MAY 1962

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MEMORANDUM FOR: The Director of Central Intelligence

SUBJECT : ARTILLERY COLLECTION: "Artillery Operations  
During a Divisional Offensive with the  
Landing of an Airborne Force in the Tactical  
Depth of the Enemy Defense"

1. Enclosed is a verbatim translation of an article which appeared in a Soviet Ministry of Defense TOP SECRET publication called Information Collection of the Artillery (Informatsionnyy Sbornik Artillerii).

2. For convenience of reference by USIB agencies, the codeword IRONBARK has been assigned to this series of TOP SECRET CSDB reports containing documentary Soviet material. The word IRONBARK is classified CONFIDENTIAL and is to be used only among persons authorized to read and handle this material.

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*Richard Helms*

Richard Helms  
Deputy Director (Plans)

Enclosure

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Original: The Director of Central Intelligence

cc: The Director of Intelligence and Research,  
Department of State

The Director, Defense Intelligence Agency

The Director for Intelligence,  
The Joint Staff

The Assistant Chief of Staff for Intelligence,  
Department of the Army

The Director of Naval Intelligence  
Department of the Navy

The Assistant Chief of Staff, Intelligence  
U. S. Air Force

The Director, National Security Agency

Director, Division of Intelligence  
Atomic Energy Commission

National Indications Center

Chairman, Guided Missiles and Astronautics  
Intelligence Committee

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Assistant Director for Current Intelligence

Assistant Director for Research and Reports

Assistant Director for Scientific Intelligence

Director, National Photographic Interpretation Center

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IPONBARK

COUNTRY : USSR

SUBJECT : ARTILLERY COLLECTION: "Artillery Operations During a Divisional Offensive with the Landing of an Airborne Force in the Tactical Depth of the Enemy Defense"

DATE OF INFO: 1958

APPRAISAL OF CONTENT : Documentary

SOURCE : A reliable source (B).

Following is a verbatim translation of an article entitled "Artillery Operations During a Divisional Offensive with the Landing of an Airborne Force in the Tactical Depth of the Enemy Defense", which appeared in Issue No. 46, 1958 of the Soviet military publication Information Collection of the Artillery (Informatsionnyy Sbornik Artillerii). This publication is classified ~~TOP SECRET~~ by the Soviets and originates with the Artillery Headquarters of the Ministry of Defense. According to its preface, it is designed for generals and officers from commander of artillery of a corps, commanding officer of an artillery division (commanding officer of an engineer brigade), and higher.

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Artillery Operations During a Divisional Offensive  
with the Landing of an Airborne Force in the  
Tactical Depth of the Enemy Defense

A successful and rapid rout of the enemy troops defending themselves in the tactical zone of the defense will largely predetermine the success of the development of the offensive in the operational depth of his defense.

One of the most important conditions for achieving this aim is to bring into effect simultaneously all the means available to the advancing forces in the whole depth of the enemy defense system, with the object of inflicting maximum losses on his personnel and equipment, disorganizing the control of his troops, and thereby creating the conditions for a rapid advance.

Airborne forces, including also the tactical forces landed (dropped) in the enemy rear, also assist in a rapid breakthrough of the enemy defense and the rout of his troops.

Tactical airborne forces landed in the areas of our atomic bursts can prevent enemy reserves from moving toward these areas and make it possible for the divisions of the first echelon to break through the first zone of the enemy defense at a high speed.

In the case of prior landing of tactical airborne forces in the second defense zone, favorable conditions are created for the forward detachments of the divisions to capture sectors in the second defense zone precipitately.

The tactical airborne forces can also be given the task of capturing and holding bridgeheads on water lines and mountain passes, of destroying enemy offensive atomic weapons, etc.

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Depending on the situation and tasks of the tactical airborne forces, they can be landed in the enemy rear both during the artillery preparation as well as during the artillery support for the attack and advance. At the same time, it is essential to endeavor to neutralize the enemy defense by the time the airborne force lands.

It is advisable to land the tactical airborne forces in the areas of our atomic bursts as soon as possible after the atomic strike, because only in this case will they be able to forestall the enemy in his efforts to close the gaps before the arrival of our troops advancing from the front.

This time is determined mainly by the radiation levels and by the state of the dust cloud formed during the atomic explosion. The experience of past exercises shows that it is possible to land tactical airborne forces in the areas of atomic bursts 20 to 30 minutes after a strike has been delivered.

The method of landing tactical airborne troops can be by parachute, by landing, or a combination of both (parashyutno-posadochnyy). The most convenient and advisable method is landing by helicopters in the tactical depth of the enemy defense. In this method no airfields have to be constructed in the departure area and no special landing grounds in the area of the landing. Besides this, landing by helicopters ensures the quickest combat readiness of the airborne troops, because the landing can be carried out accurately in a selected landing area, and the unloading, as the experience of the exercises has shown, takes no more than 3 or 4 minutes. In this case, no special timing will be required to assemble the landing force, which is essential, for example, with a parachute drop.

As a rule, the tactical airborne forces are obtained from the combined-arms large units (units) carrying out the breakthrough of the enemy defense. Most frequently, a motorized rifle battalion will be assigned to the complement of an airborne force of a motorized rifle division operating in the first echelon.

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The depth of the landing of a tactical airborne force will depend in each individual case on the actual situation. The determining conditions will be: the complement and tasks of the landing force, the system of enemy defense and the degree of its neutralization before the landing of the force, and the ability of the troops advancing from the front to bring up weapons for the combat support of the airborne force after its landing. On exercises a landing force composed of a reinforced motorized rifle battalion was landed at the start of the offensive, usually in the first, but in certain instances, in the second zone of the enemy defense.

The flight altitude of the helicopters carrying the airborne force to the area of the landing can be in the order of 300 to 500 m, but in a number of cases, as the experience of the exercises shows, it can be up to 800 m.

The length of the column of helicopters carrying a landing force depends on the complement of the force and the combat formation of the helicopters. For example, according to the experience of exercises, the length of the column of a landing force consisting of a reinforced motorized rifle battalion, with the helicopters flying in combat flight formation, reached 10 to 12 km, and the width of the flight path of this column of helicopters was 1,000 to 25,000 meters. . . The optimum width of flight path for the helicopters, providing the maximum security for the flight and rapid deplaning of the landing force, can be considered to be 1,000 to 1,500 m.

The flying time for a landing force depends on the depth of the landing, the combat formation of the helicopters, and also the distance of the emplaning area. With a distance between the emplaning area and the deplaning area of 40 to 70 km, this represents on the average 20 to 35 minutes, of which 15 to 20 minutes will be over enemy dispositions.

Tactical airborne forces are employed by order of the army commander. The organization and planning, mainly tactical, for the landing of tactical airborne forces and their support is carried out by the army staff.

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The commanding officer of the division from which the landing force is detached organizes and maintains during the battle the coordination between the units of the division and the landing force in carrying out the allotted task, and also assigns the necessary means to cover its landing and operations. He is also fully responsible for the direct training of the subunit which is assigned as an airborne landing force.

\* \* \*

The artillery tasks performed on behalf of the tactical airborne force landed in the zone of a divisional offensive are determined by the actual situation and by the complement and tasks of the landing force.

In most cases the airborne force in the zone of a divisional offensive will be landed in the areas of our atomic strikes delivered against enemy divisional reserves, and will have the task of holding these areas until the arrival of the division units advancing from the front.

Under these conditions, together with the normal tasks performed in an offensive, the artillery must provide the following: security for the flight, for the landing of the airborne force, and for the return of the helicopters, by neutralizing the enemy in the landing area and in the flight path; boxing in by fire and isolating the area of combat operations of the landing force; and combat support for the landing force in capturing the selected lines (objectives) and repulsing enemy attacks. The artillery must also deny the approach of enemy reserves to the area of operations of the airborne force and, in cooperation with fighter aircraft, provide cover for the airborne force from enemy air strikes in the departure area, in the landing area, and along the flight route.

It will be seen that the extent of the artillery tasks during an attack with the landing of a tactical airborne force is somewhat greater than under normal conditions.

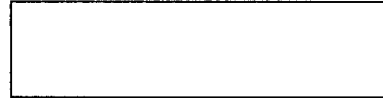
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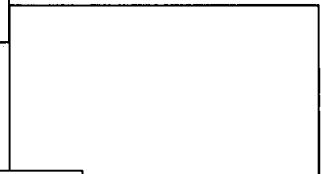
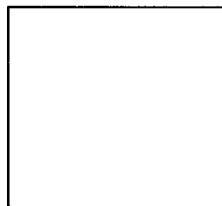
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Depending on the flight altitude of the helicopters, the enemy can engage the landing force while it is in the air by using, with various degrees of effectiveness, fighter aircraft, antiaircraft artillery, antiaircraft machine guns, and heavy and light machine guns, as well as other infantry weapons.

It is well known that fire from infantry weapons is very effective against slow-moving targets at low altitudes. For example, to effect a single hit on a sleeve target, which is about 5 to 6 times smaller than a helicopter will require 300 to 600 rounds at an altitude of 200 m and with a towing speed of 300 kph. As a rule, the speed of a helicopter does not exceed 130 kph. At such a speed the vulnerability of the helicopter increases, and the expenditure of rounds decreases. Therefore, to provide security for the flight of a column of helicopters with the landing force on board to the area of the landing, it is essential beforehand to neutralize effectively the enemy antiaircraft artillery and heavy infantry weapons. To make it more difficult for the enemy to conduct reconnaissance and fire control of antiaircraft artillery, his radar stations must also be neutralized. It is advisable to neutralize the enemy radar stations before the helicopters take off with the landing force aboard.

The neutralization of the above-mentioned enemy means must be carried out not only in the flight path of the landing force but also along the flanks of this path, taking into account the effective fire of the enemy weapons and the flight altitude of the landing force. For example, with an altitude up to 500 m for the flight of the landing force, the enemy weapons can fire from locations in the flight path, from the flanks of this path, as well as at a distance from its edges: small caliber antiaircraft artillery up to 3 km and medium caliber up to 8 km; antiaircraft machine guns up to 1.5 km; and heavy and light machine guns up to 800 to 1,000 m.



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Prevention of enemy antiaircraft fire on the landing force while in flight to the landing area is attained by neutralizing these weapons during the artillery preparation and the artillery support of the assault and offensive. The safety of the helicopters on their return flight after landing the airborne force is ensured by neutralizing the enemy antiaircraft weapons, usually during the artillery support of the assault and offensive.

When landing a tactical airborne force at night or under conditions of poor visibility, the observance of the selected flight route by the helicopters and the accurate approach to the landing sites are made more difficult. At the same time, it is very important for the helicopters to maintain their precise route, because this will permit the shortening of the flight path and the organization of greater security for the landing.

The designation of the path or demarcation of the flight route is done by placing markers with illuminating and smoke shells. At the same time, in order not to blind the helicopter crews with our own shells, the artillery and aircraft must place the light markers mainly along the borders of the flight path of the landing force and also over the landing area. The demarcation of the flight route of the landing force can also be carried out by firing smoke shells along the axis of the route and at the landing sites of the helicopters.

Special artillery subunits are assigned from the regimental, divisional, and army artillery groups to place these light markers. When the landing of the tactical force is at a greater depth than the effective fire of illuminating shells by the artillery, the illumination is carried out by aircraft.

The neutralization of the enemy in the landing area is achieved first of all by the delivery of an atomic strike. To attain higher accuracy, the atomic strikes are delivered by atomic or heavy rocket artillery. After an atomic strike on the landing area, shelling is carried

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out with conventional shells. In order that the artillery fire should not interfere with the operations of the landing force in capturing the landing area, the fire should cease 1 to 2 minutes before the helicopters start to land. With the approach of the helicopters to the landing sites, the artillery fire is transferred to the neutralization of enemy reserves. The nearest reserves to the landing area of the landing force are neutralized first of all to prevent their being used before the unloading of the landing force from the helicopters. The subsequent tasks of the artillery and the sequence in which they are performed are determined by the actual situation developing in the area of operations of the landing force.

In several cases a tactical airborne force can be landed in the depth of the enemy defense during the development of a breakthrough.

Under these conditions of accomplishing the tasks of supporting the operations of the landing force, the artillery preparation is executed during the attack, as a rule, in a limited time. For this purpose, the artillery tasks are continually clarified in accordance with the incoming information on the enemy and the operations of our own troops.

The success of a tactical airborne landing depends in many ways on reliable air cover.

Air cover for a landing force is carried out by the antiaircraft artillery in cooperation with fighter aircraft.

The subunits (units) of an airborne force are very vulnerable from the air when they are in their waiting and concentration areas, as well as while boarding the helicopters. During the landing operation, particularly when the force is in the air, its vulnerability increases still more.

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But because the landing operation of a tactical airborne force is carried out in a comparatively short period of time, the enemy can employ against them in the main only those aircraft which at that given moment are in the air (patrolling in the area of the landing). As a rule, these will be fighter cover for the ground troops..

On landing, the tactical airborne force will be either on the defensive or carry out offensive combat operations. Both in the first and in the second case, the area of operations of the landing force cannot have sufficient work done on it from the engineer point of view and cannot be camouflaged from enemy air reconnaissance, owing to the short time the force is in the area. Therefore, the landing force is also vulnerable in the landing area to enemy air strikes.

When a landing force is detected, whether at the departure area for boarding the helicopters or in the area of combat operations, air strikes can be carried out against it, as is obvious, by small groups of fighter-bombers from low altitudes and diving. Besides this, the enemy can also employ pilotless weapons of air attack and bomber aircraft, mainly light bombers.

Taking all this into consideration and remembering the limited capabilities of our fighter aircraft in coping with low-flying targets, it is essential to organize antiaircraft artillery cover for tactical airborne forces, principally small-caliber antiaircraft artillery.

Antiaircraft artillery cover for an airborne force is organized on a general basis according to the periods of operations of the landing force in the preparation, the landing operation, and the execution of combat operations in the enemy rear.

As a rule, the tactical airborne force will be covered only by its own organic antiaircraft artillery (machine guns) in the concentration area. With the move of the landing

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force to the waiting area, it is necessary to detail anti-aircraft artillery for cover of the force, and this subsequently also provides cover during the loading of equipment and emplaning of the personnel in the helicopters at the take-off sites.

The antiaircraft weapons of the airborne force which will be landed in the enemy rear should be included in the general system of antiaircraft artillery cover only during the time the landing force is in the concentration and waiting areas.

Taking into account the size of a battalion (batalon) waiting area (about 4 km<sup>2</sup>) and the relatively low probability of hitting aircraft during firing by independent subunits, it is advisable to detail not less than 2 to 3 batteries of small-caliber antiaircraft artillery to cover an independently located battalion and the helicopter base.

At the departure position the antiaircraft artillery cover for the landing force can be provided by deploying antiaircraft artillery from the complement of the army antiaircraft artillery group.

The antiaircraft artillery cover for the helicopter units and the landing force in the departure area for emplaning is organized in advance, i.e., before the arrival of the helicopters at the take-off sites. The total duration of the antiaircraft artillery cover for the landing force will be determined by the time the landing force remains in the area of emplaning and the time taken by the flight over our own territory; and the duration of cover for the helicopters is also determined by the time taken on the return flight after fulfilling the mission.

From the moment of take-off, it is advisable to place the responsibility for the cover of the airborne force on the antiaircraft artillery located along the flight route and belonging to the antiaircraft artillery groups which are giving cover to the advancing troops. The cover for the

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landing force after flying over the front line is provided by fighter aircraft, and after landing also by the anti-aircraft machine guns landed as part of the battalion.

The artillery support for a tactical airborne force landed in the zone of offensive of a first echelon division and performing tasks in support of the general task of the division is provided by the artillery of this division with the participation of army artillery. The fire planning for the artillery support of the landing and the operations of the landing force is done by the commander and staff of the divisional artillery. The army artillery commander and his staff carry out only the tactical planning, as a result of which the complement and tasks of the army artillery in the support of the landing force of a certain division are determined; the time and procedure for delivering atomic strikes against the landing areas are fixed; and the tasks of the army artillery reconnaissance units (subunits) are determined, including also the artillery reconnaissance aircraft for reconnoitering the enemy and adjusting the artillery fire assigned to support the landing forces.

Besides this, the army artillery staff checks and provides the needed assistance to the artillery staffs of divisions in organizing and planning artillery support for the landing and the operations of the landing forces.

In certain cases, for example, when the airborne forces of two divisions are landed at the junction of their zones of attack or when a single flight path is selected for landing forces of several divisions, the fire planning can be also carried out by the army artillery staff.

The planning of artillery fire by the divisional artillery staff is carried out on a general basis, first of all, to assist the operations of the troops advancing from the front, taking into account the tasks assigned to the artillery in support of the landing force.

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Before planning, the artillery staff will know from the decision of the divisional commanding officer the following: the complement of the tactical airborne force and its tasks; the time of landing the force and the flight path; the battle formation of the helicopters on the flight route; and also the artillery tasks for covering the flight, the landing, and supporting the operations of the landing force. Besides this, the divisional artillery staff will know from army artillery staff instructions which of the army artillery is being detailed for the support of the landing force and its tasks; the yield, at what height, and when the atomic strikes will be delivered; as well as the tasks for the army artillery reconnaissance means in reconnoitering the enemy.

Having obtained such information, first of all the divisional artillery staff must plan correctly the artillery fire for the artillery preparation and artillery support of the attack and the advance in accordance with the time of the landing of the force and the chart of the artillery preparation.

If the airborne force lands after the artillery preparation, then the artillery fire planning for this period will not present any real peculiarities. It will only require more detailed examination of the neutralization of enemy antiaircraft weapons in the selected flight path of the landing force. It is not excluded, however, that the landing of the airborne force will be done even during the artillery preparation. Under these conditions the artillery fire must be planned in accordance with the organization of the artillery preparation in such a way that the enemy fire system is neutralized before the take-off of the helicopters. With this aim in view, it will be necessary to plan an atomic strike and fire concentrations with chemical shells and shells with conventional fillings against company defense areas, against fire positions of the antiaircraft artillery, and against the main enemy radar stations.

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For dependable neutralization of the enemy fire means presenting a danger to the landing force, it may be advantageous to employ a greater amount of artillery for the first fire concentration in the flight path of the landing force than in the remaining zone of the divisional offensive.

It should be stressed that during a divisional offensive with a landing of a tactical airborne force, as a rule, atomic strikes would be delivered before the take-off of the helicopters. The delivery of atomic strikes when the helicopters are in the air over enemy dispositions is not permitted because this may lead to the destruction of the landing force.

The following examples show how the neutralization of the enemy in the flight path of the landing forces was ensured on exercises with actual landings.

In the zone of advance of a motorized rifle division, a tactical airborne force was landed in the area of the atomic strike delivered against the third position of the first enemy defense zone.

During the artillery preparation just before the flight of the landing force, the artillery fire plan of this division provided for the neutralization of enemy personnel and fire weapons at the first position by a 13-minute fire concentration and against targets at the second position by a 5-minute fire concentration. The enemy artillery, including the antiaircraft batteries, were neutralized by a subgroup of the army artillery group with two fire concentrations.

In the zone of advance of another motorized rifle division, the tactical landing force was landed in the area between the first and second enemy defense zones.

It was planned to secure the flight of the landing force during the artillery support for the attack and advance. The main attention was concentrated on the neutralization of enemy antiaircraft weapons and his artillery.

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The fire concentration was intended to end on the approach of the landing force to the area of our own artillery fire positions. The duration of the fire concentration depended on the neutralization of these objectives during the artillery preparation. At the end of the fire concentration it was planned to fire smoke shells for one minute in order to blind the enemy fire weapons during the flight of the landing force.

It is worth noting that even with the most dependable neutralization of the enemy during the artillery preparation, there is no complete guarantee that part of his fire weapons will not be able to deliver fire at the landing force during the flight. This makes it necessary to neutralize the enemy not only before the take-off of the landing force but also directly during the flight, when it is most vulnerable.

It is advisable to plan in advance the artillery fire for neutralizing the enemy fire weapons located in the path of the landing force during the transit of the helicopter column. At the same time, the flight of the landing force must in all cases be made safe from destruction by our own fire. This can be achieved when the height of trajectories of the artillery shells used in shelling the enemy in the flight path of the landing force is lower than the average altitude established for the flight of the helicopters. The capabilities for delivering fire are shown in Table 15.

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Table 15

Caliber	Altitude of flight of the landing force*												
	300 meters						500 meters						
	Full charge	Height of trajectory	1st charge	Height of trajectory	2nd charge	Height of trajectory	Full charge	Height of trajectory	1st charge	Height of trajectory	2nd charge	Height of trajectory	
				Maximum range in meters**									
85 mm Gun	7000	260	-	-	-	-	8150	426	-	-	-	-	
100 mm Gun	8200	256	-	-	-	-	9600	427	-	-	-	-	
130 mm Gun	9800	263	8650	264	7650	267	11700	437	10300	433	9100	436	
152 mm Gun	7900	259	6650	265	5500	267	9400	431	8000	436	6700	448	
122 mm How.	5150	259	4800	261	4400	250	6300	441	5900	434	5500	433	
152 mm Gun/ How.	6900	265	6450	265	6250	263	8400	438	7800	434	7600	437	

\*By the flight altitude of the helicopters is understood altitude in relation to the highest point of the terrain (local features) along the route.

\*\*The maximum range of the firing is given taking into consideration the dispersion ( $4 V_{dp}$ ) (adjusted range probable error). The height of the target over the firing position was not taken into account in the calculations.

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The above table shows, firstly, that artillery whose plane of fire passes through the flight path of the landing force can neutralize the enemy, taking into account that the firing positions are 5 to 8 km away in the rear; secondly, the fire from guns and howitzers must be delivered primarily with full or first (second) charges.

When delivering fire with mortars and rocket and howitzer artillery, it is advisable when possible to locate the firing positions of this artillery along the flanks of the flight path of the landing force. Besides this, to annihilate fire weapons in the immediate depth of the enemy defense, it is necessary to make considerable use of the fire of the guns assigned for firing by direct laying.

During the flight of the landing force, it is advisable to deliver fire not only with chemical and fragmentation shells but also with smoke shells. The employment of smoke shells by the artillery and smoke bombs by aircraft makes it more difficult for the enemy to use his fire weapons.

When planning fire in the landing area of the airborne force, the special features of helicopter landing must be considered. It is known, for example, that with a flight altitude of 300 to 500 m, the helicopters begin to lose altitude 4,500 to 5,500 m away from the landing places.

To prevent hitting the landing force while the helicopters are coming down, it is advisable for the artillery located in the flight path to cease firing on the landing zone.

At the same time it is necessary to remember that even a short pause in the cessation of fire on the landing area of the airborne force will be used by the enemy to bring up his reserves into this area. A way out in this case, we think, may be found, first, by bringing the fire of the artillery located on the flanks of the landing force's flight path against the landing area when the helicopters are coming down; and secondly, by delivering artillery fire

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over the head of the landing force after the tail of the helicopter column has passed over the firing positions. To deliver fire over the head of the landing force, the long range and heavy rocket artillery could be brought in, whose trajectory would be above the flight altitude of the helicopters. The above method of support for a landing force has not been practiced in the exercises that have been conducted. It therefore requires thorough investigation in exercises with actual landing of troops.

The time for the artillery to stop firing on the landing area of an airborne force is determined separately in each specific case. At the same time, the landing force must not be hit by shell splinters from our own artillery.

A particularly dependable neutralization of the nearest enemy reserves must be planned at the time of the landing of the airborne force and until it takes up battle formation.

The primary artillery targets during the artillery preparation are the enemy radar stations and antiaircraft weapons. Their destruction (neutralization) will facilitate the flight and landing of the airborne force. In this respect, it is advisable to neutralize the radar stations before the take-off of the helicopters. With this aim in view, the beginning of the artillery preparation can coincide with the emplaning of the landing force in the helicopters.

The complement of the artillery assigned for direct support of a landing force is determined by the depth of the landing of the force, its tasks, by the quality of the available divisional artillery, and also by taking into account the artillery of the subunit to be landed.

For direct support of an airborne force, the experience of exercises has shown that it is necessary to assign 2 to 4 artillery battalions (division), mainly long range ones. These battalions can be assigned from the complement of the divisional artillery group as well as from the complement of

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the army artillery group. Besides this, the destruction of the reserves which the enemy can employ against the landing force can be carried out by an army special artillery group.

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In a case when the airborne force is landed during an offensive, it is necessary to plan particularly thoroughly the movement of artillery assigned to support the landing force. It will often be necessary to begin moving the artillery somewhat earlier than in offensive without landing an airborne force, so that it will be ready in time to perform tasks on behalf of the landing force from new firing positions.

Fire planning for the artillery detailed for the direct support of the landing force consists of the assignment of sectors for a concentrated standing barrage in order to box in the area held by the landing force, concentrated (massed) fire on areas where enemy reserves are located, and fire along the routes of their possible movement. Besides planned fire, the artillery must be in constant readiness to neutralize new targets that appear during the battle, for which purpose continuous reconnaissance of the enemy is made in the operational area of the airborne force. A particularly efficient method of reconnaissance is the use of spotter-reconnaissance aircraft and helicopters. It is therefore advisable to attach them directly to the divisional artillery commander.

Owing to the deviations of the ground zeros of the atomic bursts from the selected objectives, changes in the direction of movement of the radioactive cloud, the meteorological conditions, and for other reasons, the planned flight path of the landing force and the landing area can be altered during the battle. In connection with this, during the planning an alteration in the tasks of the artillery assigned to support the airborne force must also be envisaged. It is also advisable to have an alternative plan for the artillery in case of late arrival of the helicopters with the landing force at the forward defended localities and their return to the take-off airfields after

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landing the airborne force. All alterations in the tasks must be passed to the artillery as quickly as possible after the decision has been reached by the combined-arms commanding officer.

When planning artillery fire to secure the return of the helicopters after landing the airborne force, the requirements to be observed are the same as those for the flight of the airborne force to the landing area. Only it is worth noting that the take-off of the helicopters after landing the airborne force is carried out at low horizontal speed. This allows the delivery of fire on the enemy located near the landing area of the airborne force.

When landing a tactical airborne force in the zone of a divisional attack, the artillery staff, as a rule, does not work out any special planning documents. Artillery tasks on behalf of the landing force are shown in the divisional artillery fire plan.

An exemplary layout for divisional artillery fire during an advance with the landing of a tactical airborne force is given in Appendix 3.

The coordination of the artillery with the landing force is organized by the divisional commanding officer, based on the instructions of the army commander and the decision reached for the advance. During the organization of coordination the following are defined more accurately: the tasks of the landing force, the time and procedure of the landing operation, the flight path and altitude of the landing force, and the tasks of the artillery in securing the landing and supporting the operations of the landing force. Besides this, the divisional commanding officer establishes the marking procedure for the flight route of the landing force and control signals and also determines on the ground the base point for calculating the altitude laid down for the helicopters and accordingly the heights of the artillery trajectories.

[Redacted]

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The following participate in organizing the coordination: the commanding officer of the landing force, the commanding officer of the helicopter group, the divisional artillery commander, and representatives of aviation and of the army artillery group.

In accordance with the divisional commanding officer's instructions on coordination, the artillery commander first of all informs the commanding officers of the artillery groups of the tasks of the landing force and the procedure of the landing operation, clarifies on the ground the flight path of the landing force and gives the flight altitude for the helicopters, and informs them of the tasks to be performed for the landing force by the army artillery and of the time and procedure for delivering atomic strikes.

Besides this, the artillery commander defines more precisely the complement and tasks of the artillery detailed for direct support of the landing force, informs the artillery of the coordination and artillery fire control signals, and shows on the ground the point from which the height of the trajectories of the shells must be calculated.

To ensure the safety of the flight of the force and its landing, lines are established; and when the landing force reaches these the artillery, on receipt of an agreed signal, must cease firing. These lines can be: the rear border of the area of the artillery firing positions, forward edge of the battle area, and others.

At the same time, to ensure the safety of the returning helicopters after landing the airborne force, similar lines are established; and with the approach of the helicopters to them, the artillery ceases firing.

As in the first instance, these lines can be: border of the destruction zone of an atomic burst; lines in the enemy's disposition, and the forward edge and rear border of the firing position area.

One of the possible ways of organizing artillery fire control in the flight path of the helicopters is given below.

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Table

Signals for artillery fire control in the flight path of the helicopters (an example)

The position of the helicopters and the signals	Operations of the artillery	
	Artillery outside the flight path	Artillery in the flight path
Reached the area of firing positions. Radio: "Fire 101" ("ognevyve 101")	Delivers unrestricted fire	Delivers fire at trajectory height not higher than the flight altitude
Reached the forward edge of battle area. Radio: "Forward edge 202"	Delivers fire when the descending part of the trajectory is below the flight altitude of the helicopters	Ditto
The tail reached line No.1. Radio: "Tail over line No. 1 303"	Delivers fire up to line No. 1 without any restrictions.	
	On targets located beyond line No.1 when the descending part of the trajectory is below the flight altitude of the helicopters	Does not fire on targets located deeper.
The landing of the last flight. Radio: "Landing 404"	Fire delivered without any restrictions	
Take-off after unloading. Radio: "Take-off 505"	Fire delivered up to line No. 1 without any restrictions.	
	On targets located deeper than line No.1 when descending part of the trajectory is below the flight altitude of the helicopter	Does not fire on targets located deeper than the battle position.
The head has reached line No.1. Radio: "Return line No.1 606"	Delivers fire when the height of the descending part of the trajectory is below the flight altitude of the helicopters	Delivers fire when the height of the trajectory is below the flight altitude. Mortars do not fire.
The tail has passed the forward edge. Radio: "Return forward edge 707"	Delivers fire without any restrictions	
The tail has passed the rear border of the firing position area. Radio: "Return firing position area 808"	Fire delivered without any restrictions	

Note: Line No. 1 - rear boundary of the combat position

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The example given is made up for a situation when there is little gun artillery in the flight path or this artillery is located outside the flight path of the helicopters.

The lines for stopping (resumption) of fire and the control signals must be known to the commanding officers of those artillery subunits which have been detailed to support the landing force.

To bring about coordination with the helicopters it is advisable to have a representative from the helicopter group at the observation post of the divisional artillery commander with a radio set for contact with the commanding officer of this group.

When organizing the coordination, the commanding officers of the artillery groups (subunits) detailed to support the landing force must understand all the details of the tasks of the landing force and the sequence of their execution, the artillery tasks in supporting the combat operations of the landing force, and the limits for the safe delivery of fire.

To facilitate control of the fire of the artillery detailed to support the landing force, it is advisable to show on the control map of the divisional artillery commander the following: flight path of the landing force, the chart of the flight of the landing force, and the estimated time taken for the landing operation; the artillery tasks, including the antiaircraft artillery, in support of the landing force, depending on the situation of the force; the permitted trajectory heights for the artillery located in the flight path of the landing force; and coordination signals of the artillery with the commanding officer of the helicopter group and with the commander of the landing force, as well as how the light markers (svetovoy orientir) are to be placed when marking out the flight path and the route of the landing force.

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Fire control of the artillery assigned to support the landing force is usually exercised by the divisional artillery commander from his command observation post through the commanding officers of the appropriate artillery groups. Adjustment of fire is carried out by spotter-reconnaissance aircraft or with the assistance of radar stations. In several cases, for conducting reconnaissance and adjustment of fire, artillery spotter-reconnaissance groups can be landed as part of the airborne force, with means of control. As a rule, these groups are assigned from the units supporting the landing force. As experience in exercises has shown, such a group can consist of 3 or 4 men, of whom 1 or 2 are officers and 2 or 3 are scouts (razvedchik) and radio operators.

The commanding officer of the spotter-reconnaissance group spells out in detail the procedure on how to maintain communications with the divisional artillery commander, with the commanding officer of the army artillery group, and, if necessary, with the army special artillery group, and gives out signals to start and stop fire.

When landing an airborne force during an advance, the coordination is organized basically in the same way. In this, particular attention is given to the problems of making more specific the artillery tasks and checking its preparation to carry out the assigned tasks, and to the movement of the artillery to new firing positions and its readiness to open fire.

The complement of the artillery of a tactical airborne force and, consequently, the requirement of helicopters for it depend on the actual situation.

In those cases where the force is landed within the limits of the enemy first defense zone and a considerable amount of artillery can be brought in for its support from the troops advancing from the front, the motorized rifle battalion may have only its organic artillery or get small reinforcements, mainly of antitank weapons.

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When the landing of a tactical airborne force is in the depth of the enemy second defense zone, a greater reinforcement of it by artillery may be required. Usually this would be antitank artillery, primarily recoilless guns, as well as mortars. These weapons are the most transportable and can be employed effectively in performing fire tasks to support the combat of the landing force.

Artillery is landed mainly by MI-4 helicopters, which have a load capacity of up to 1600 kg. The alternative loads of the helicopter can be the following: a 57 mm auxiliary-propelled gun, gun crew (2 men), and 20 rounds; a 107 mm B-11 recoilless gun, gun crew (5 men), and 60 rounds; two 82 mm B-10 recoilless guns, gun crews (8 men), and 60 rounds; one 82 mm mortar with a crew, 10 boxes and 6 shell trays with mortar shells; or a GAZ-69 motor vehicle with a driver.

When landing an airborne force in the tactical depth of the enemy defense, it is very difficult and sometimes impossible to replenish the artillery of the landing force with ammunition. It is necessary, therefore, to supply air-landed artillery with such quantities of munitions as will be necessary for it to perform the tasks for the airborne force before the arrival of the troops advancing from the front.

The experience of past exercises and preliminary calculations show that for a landing force to carry on operations for 2 to 4 hours it is necessary to have the following quantity of ammunition:

- rounds for 57-mm guns - 0.4 to 0.5 unit of fire;
- rounds for 82-mm and 107-mm recoilless guns - 0.4 to 0.6 unit of fire;
- rounds for 82-mm and 120-mm mortars - 0.5 to 0.6 unit of fire.

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When there is a shortage of helicopters, the number of transport vehicles for the artillery in the landing force can be limited to a few GAZ-69 vehicles for the purpose of transporting ammunition from the unloading places to the firing positions.

When military-transport aviation is equipped with helicopters with greater load and volume capacities, this limitation may not be required.

When reinforcing the battalion with a platoon of recoilless guns, a platoon of 57-mm guns, and a platoon of 120-mm mortars, 20 to 25 MI-4 helicopters will be required on the average to transport this artillery, including the ammunition.

The commanding officers of the subunits must know the plan for loading the armament and equipment and explaining the personnel in the helicopters.

When planning the loading, the tactical integrity of the subunits is preserved, i.e., a battery is loaded into the helicopters of the same squadron; the crew, gun, and prime mover are loaded into helicopters of the same flight. This facilitates the preparation of the guns and the batteries as a whole for operations in the enemy rear immediately after unloading them from the helicopters.

Because the subunits of the landing force will be required to conduct combat operations on ground contaminated with radioactive substances, during the preparation of the landing force, attention is paid to supplying artillery personnel with the means of personal antichemical protection and decontamination.

The main task of the artillery subunits of the landing force during the fighting in the enemy rear is engaging enemy tanks, because they are extremely dangerous to the airborne force. The neutralization of enemy fire weapons and personnel in the operational area of the landing force is carried out by the artillery of the troops advancing from the front as well as by aircraft.

[REDACTED]

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The preparation of the artillery for combat operations in the enemy rear is made in a limited period of time, and therefore, while still in the departure area, arrangements are made to accelerate the readiness of the subunits to deliver fire after unloading from the helicopters.

The assignment of tasks to the artillery subunits, the organization of their coordination with the infantry and the commanding officers of the helicopter subunits, and the informing of personnel of the tasks are done in the departure area several hours before emplaning (loading) into the helicopters.

To reduce the time of readiness of artillery to open fire, the landing places are selected, as far as possible, in the areas of probable firing positions. With this aim in view, the officers must study the terrain thoroughly in the area of the landing and around it; and this will facilitate orientation on the ground after landing from the helicopters. The study of the terrain is done with relief maps, aerial photos, and models of the terrain. Particular attention is paid to memorizing the relative positions of distinctive landmarks, the landing places, and the areas selected for firing positions.

The guns, munitions, and instruments, including night vision equipment, are prepared with special thoroughness, because time will not be available to prepare them for use after one is in the enemy rear.

When time is available, the training of the artillery of a tactical landing force for combat operations in the enemy rear can be carried out by means of practical exercises on the ground.

Before the start of the drills, personnel are allotted to helicopters (mock-ups of helicopters) on which the problems of emplaning and deplaning of personnel and loading and unloading of equipment from the helicopters are worked out. Training is conducted at the same time with personnel in individual means of protection in case of the breaking loose, and in the unloading, of combat equipment and other cargo.

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The methods of orientation in the landing area are also worked out with all personnel, having in mind that the relief of the ground is considerably changed after an atomic explosion.

All personnel must know for certain the signals for warning, mutual recognition, and target designation, the safety measures when conducting combat on contaminated terrain, and the procedure for partial and complete medical treatment and decontamination.

\* \* \*

The problems reviewed in this article on artillery support for the landing and operations of a tactical airborne force landed in the zone of a divisional offensive show that under these conditions a number of additional tasks are given to the artillery. The planning of artillery operations and the organization of its coordination with the landing force must be done so as to take into account the artillery tasks on behalf of the landing force and the time and methods of its landing. Together with reinforcing the landing force with artillery, it is also necessary to plan to support it with artillery, primarily long-range gun artillery and heavy rocket artillery, drawn from the complement of troops advancing from the front.

The problems raised in this article are fairly new, and therefore the recommendations made are not final. During the forthcoming exercises with an actual landing of troops, it will be necessary to make further investigations of the operations of the artillery in supporting tactical airborne forces, and make the separate propositions suggested in this article more exact.

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**IRONBARK**

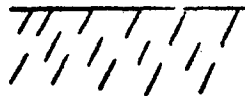


**CONVENTIONAL SIGNS AND ABBREVIATIONS USED IN INSERT 3**

**(SIGNS EXPLAINED ON MAP)**



Border of the flight path.



Border of the zone for neutralizing of infantry weapons.



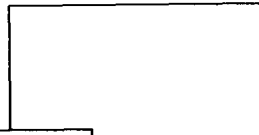
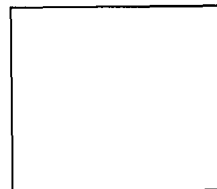
Border of zone for neutralization of small-caliber antiaircraft artillery.



Artillery fire before and during the flight of the landing force (helicopters).



Artillery fire during the battle of the landing force.





**IRONBARK**



Artillery atomic strikes.



Heavy rocket artillery atomic strikes.



Missile atomic strikes.



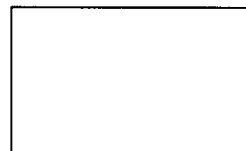
Operations area of th airborne force.



Heavy rocket fire.

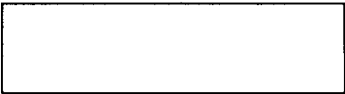


Artillery smoke screen.





**IRONBARK**



Artillery atomic strikes.



Heavy rocket artillery atomic strikes.



Missile atomic strikes.



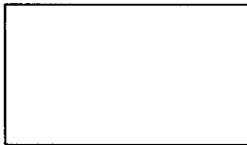
Operations area of th airborne force.



Heavy rocket fire.



Artillery smoke screen.





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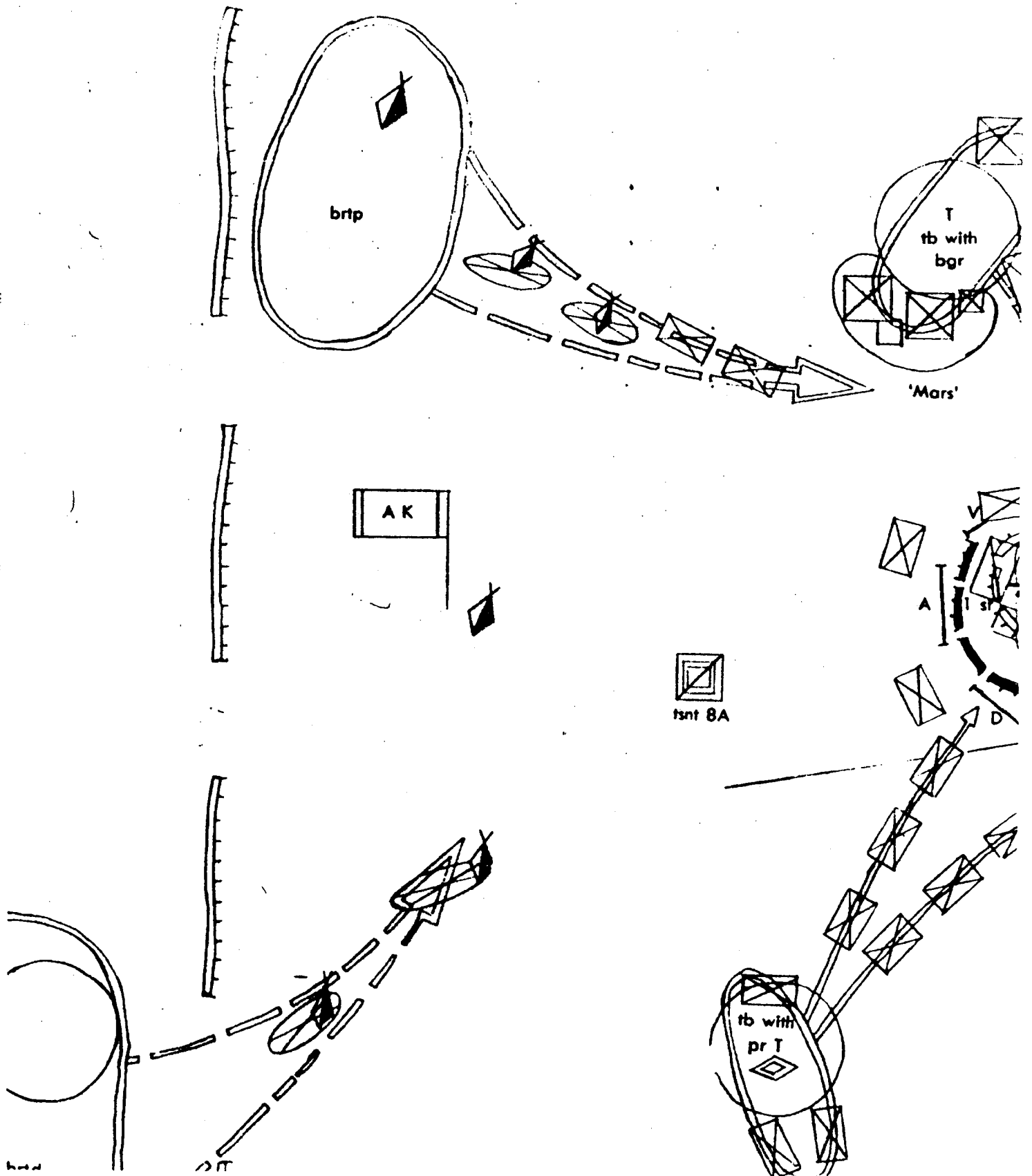
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ABBREVIATIONS (NOT GIVEN IN FULL ON MAP)

- AK - Army corps.
- ASAG - Army special artillery group.
- DAG - Divisional artillery group.
- PAG - Regimental artillery group.
- brtd - Armored division.
- brtp - Armored regiment.
- msd - Motorized rifle division.
- bgr - Battle group.
- tb with bgr - Tank battalion with battle group.
- tr - Tank company.
- pr - Infantry company.
- sr - Rifle company.
- tb with pr - Tank battalion with infantry company.

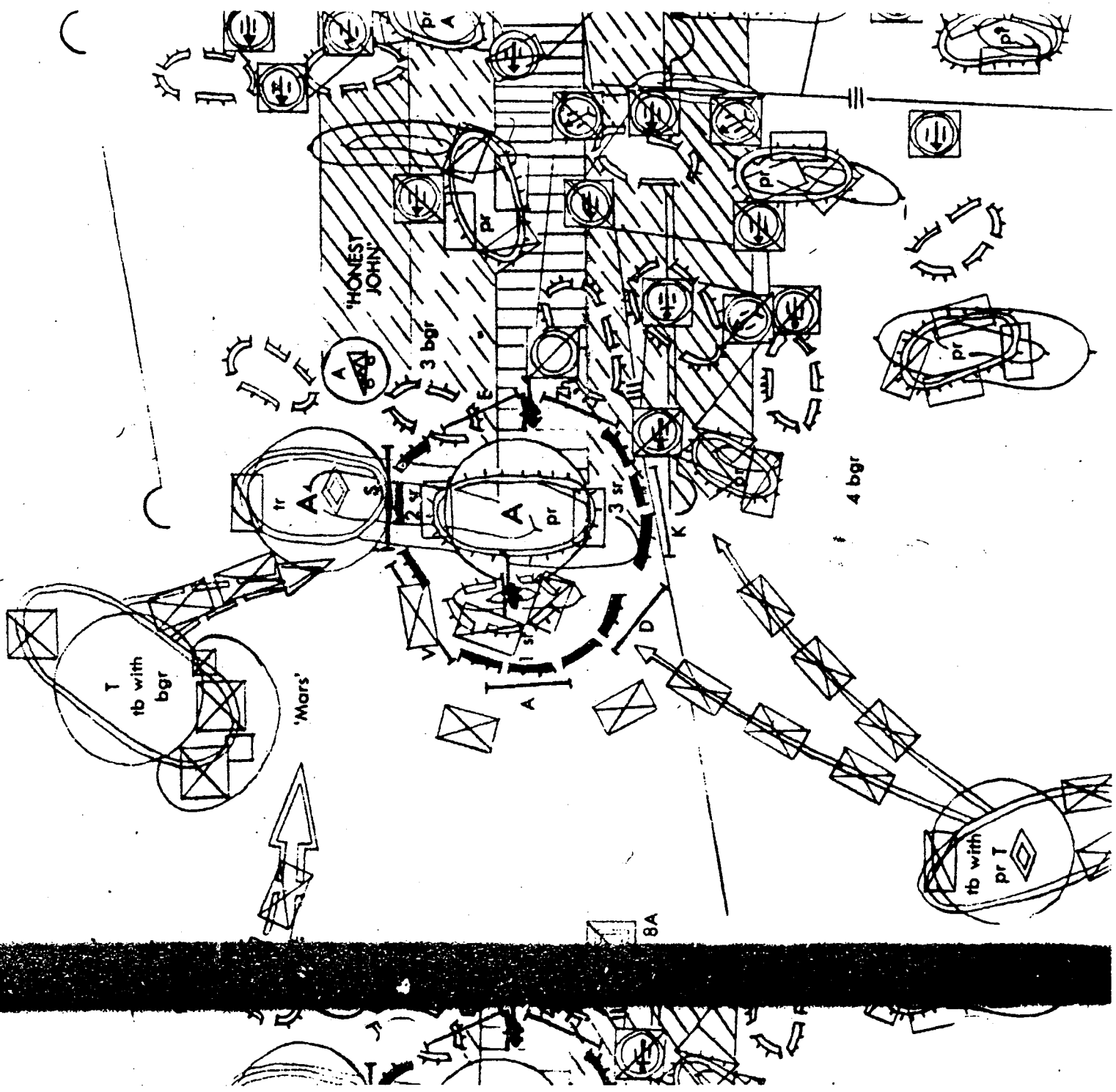
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LAY-OUT FOR DIVISIONAL ARTILLERY FI



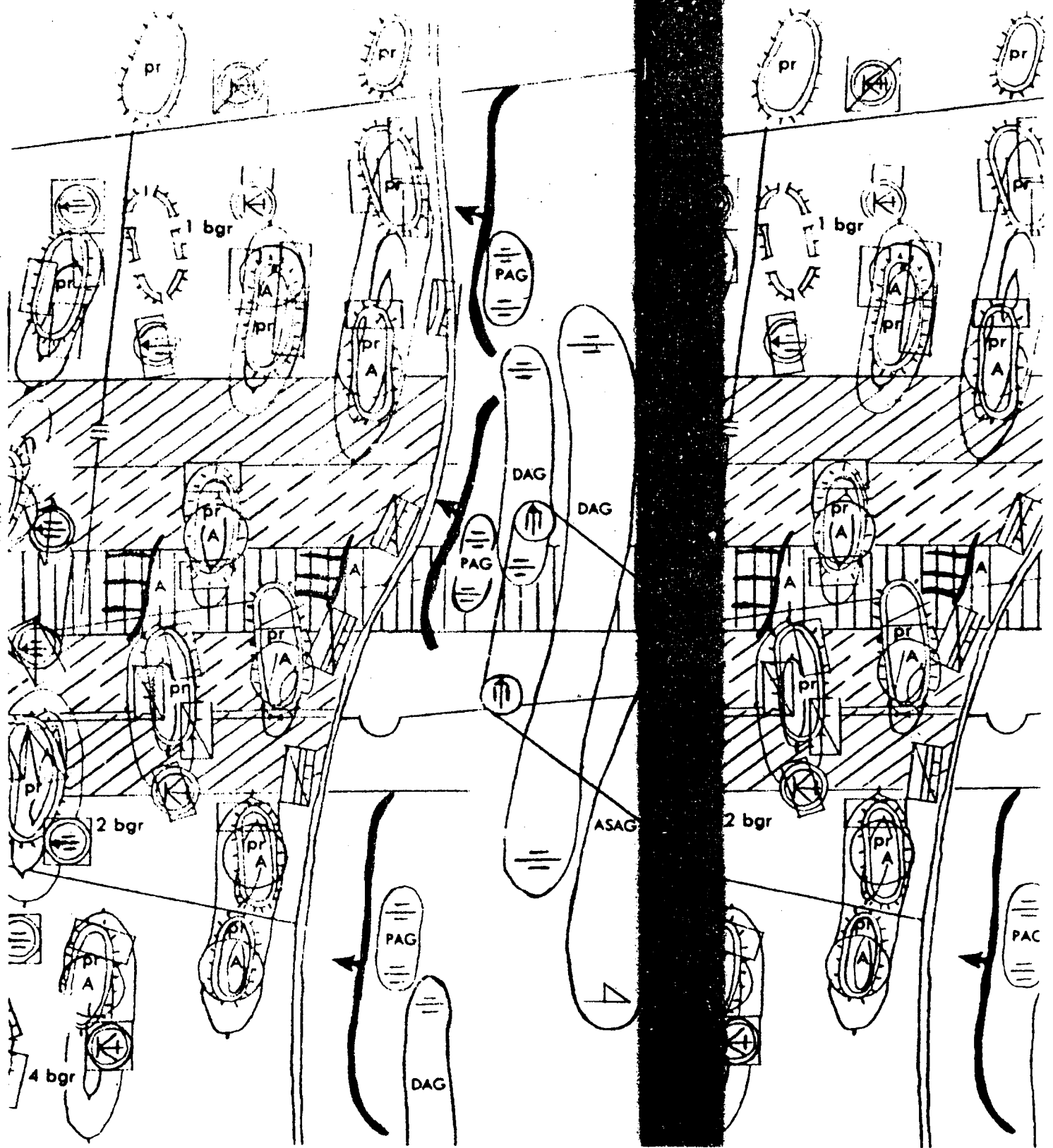
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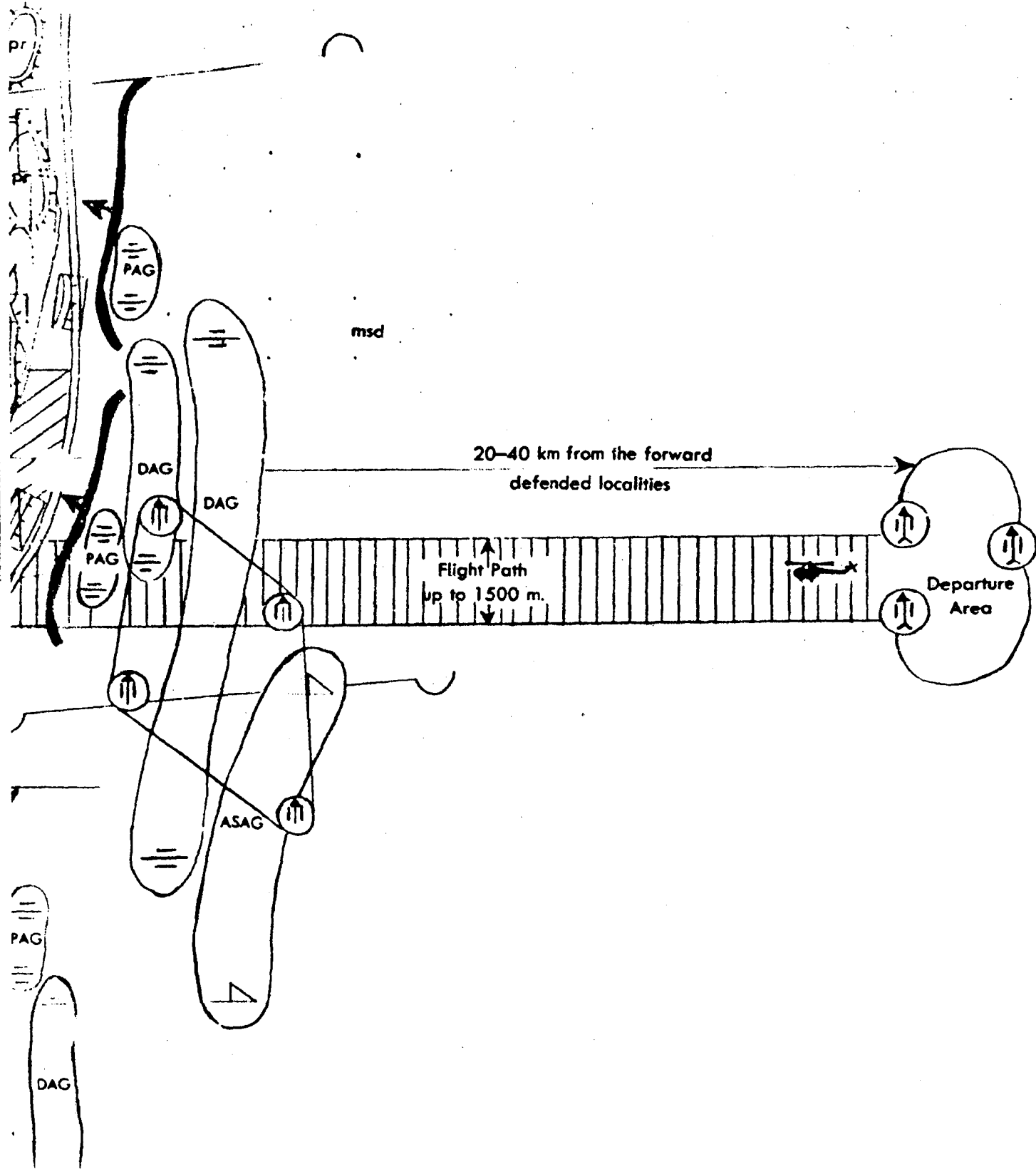
AN AT [REDACTED] FOR DIVISIONAL ARTILLERY FIRE DURING AN ATTACK WITH A LANDING OF TACTICA

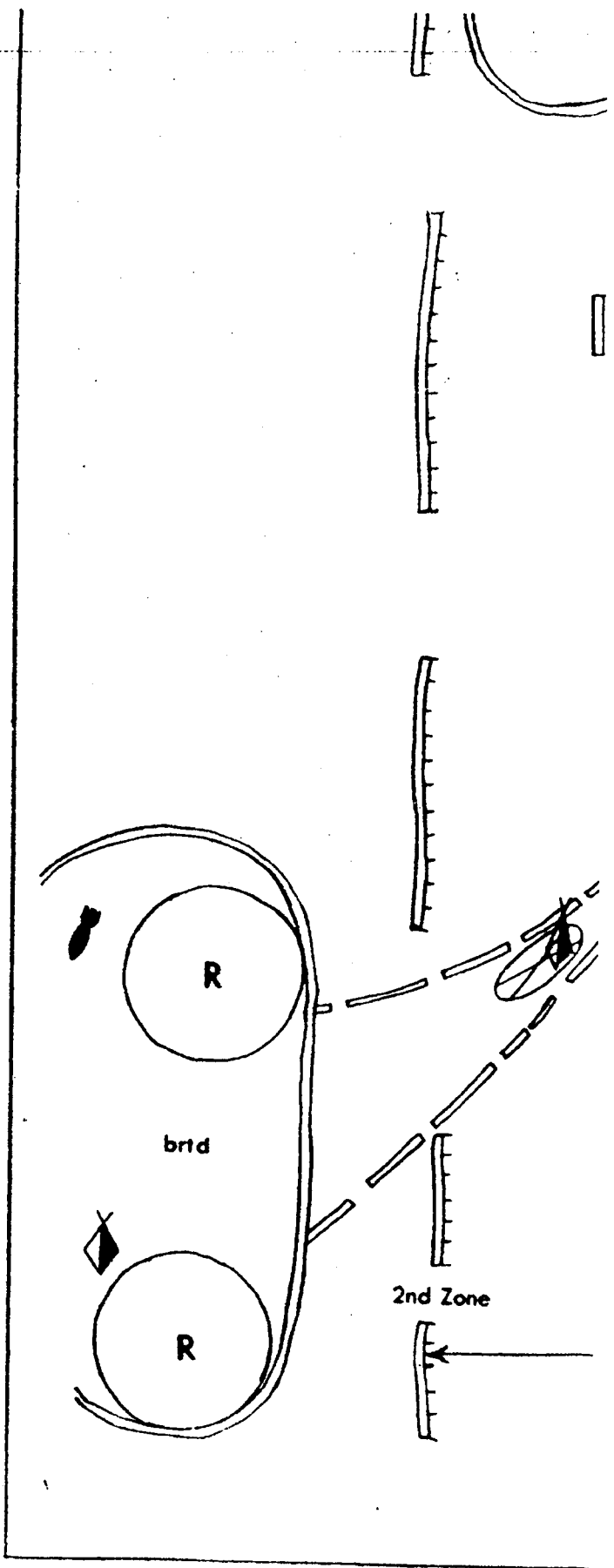


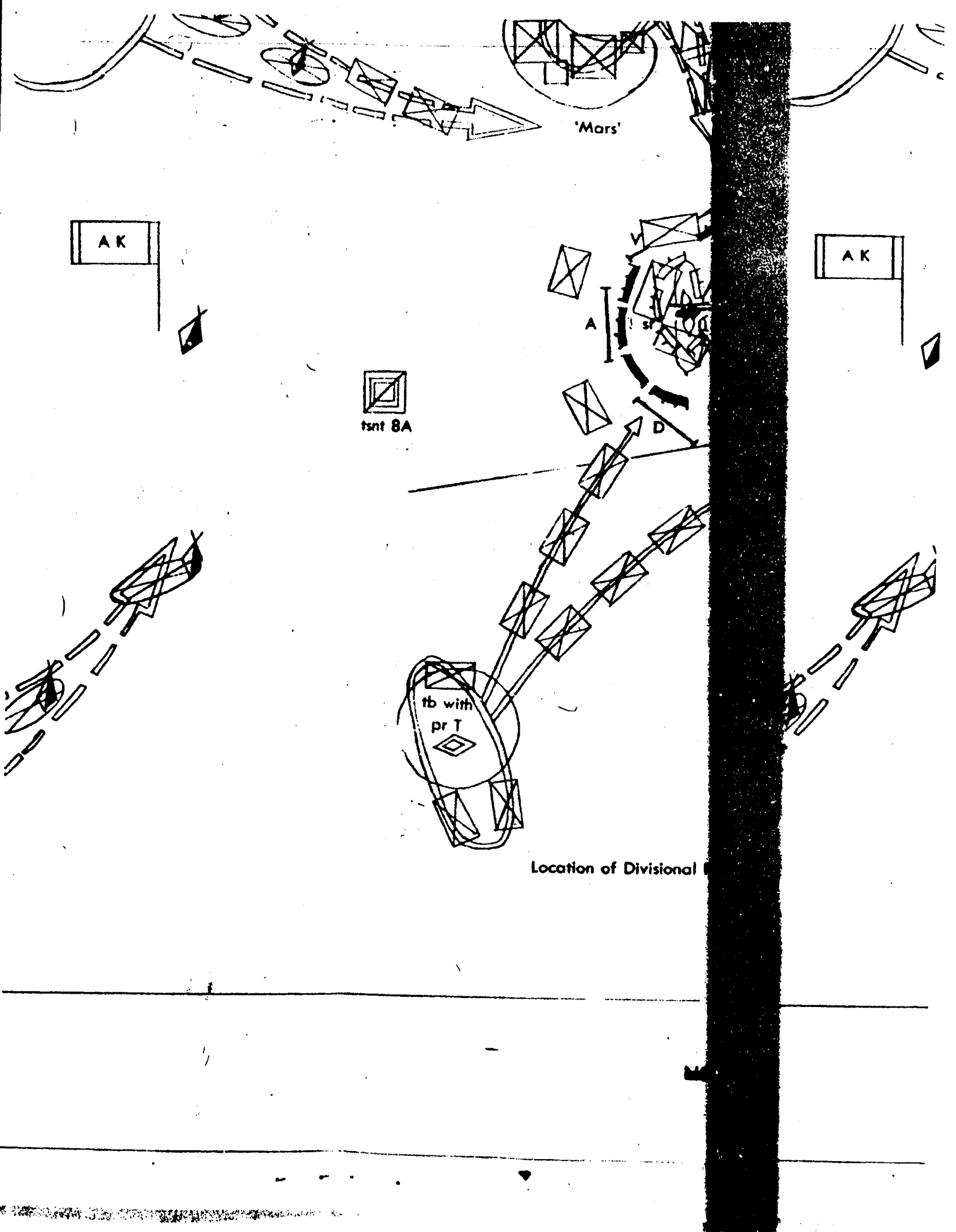
AIRBORNE FORCE (AN EXAMPLE)

AIRBORNE FORCE (AN EXAMPLE)









'Mars'

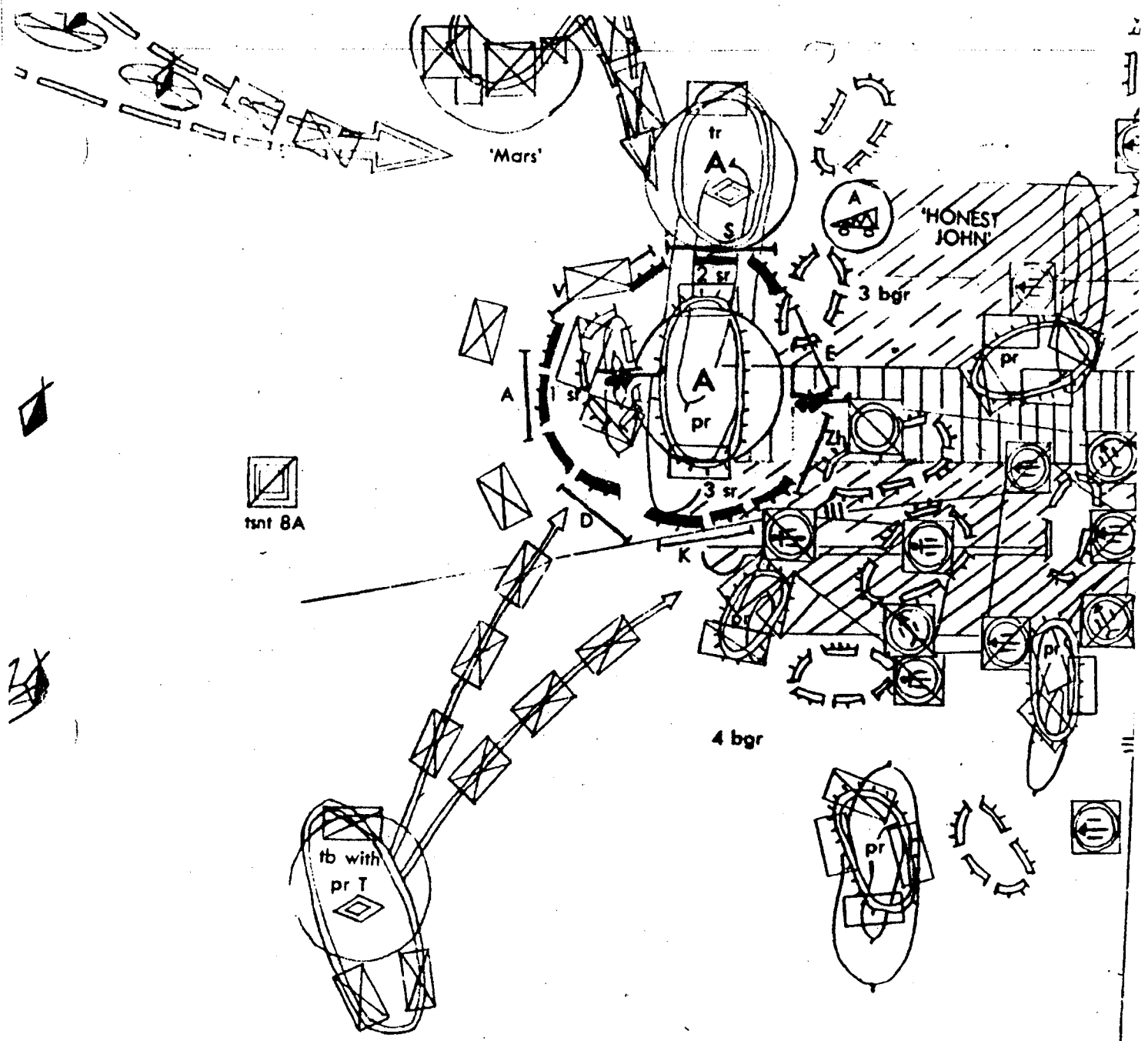
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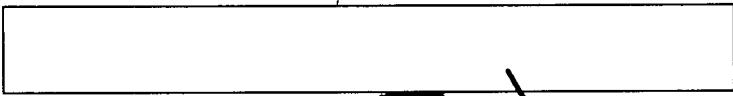
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Location of Divisional



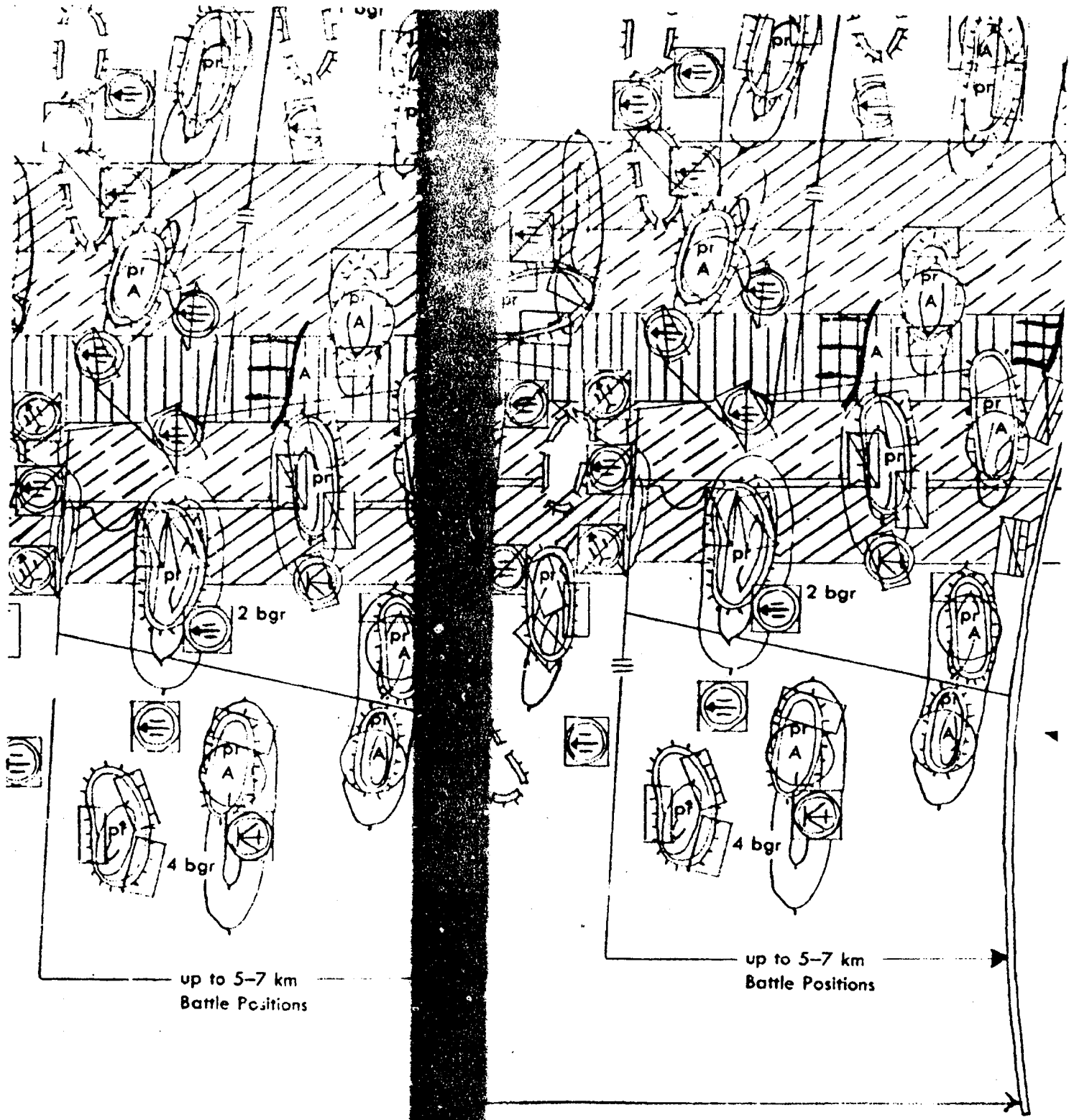
Location of Divisional Reserves

up to 40 km



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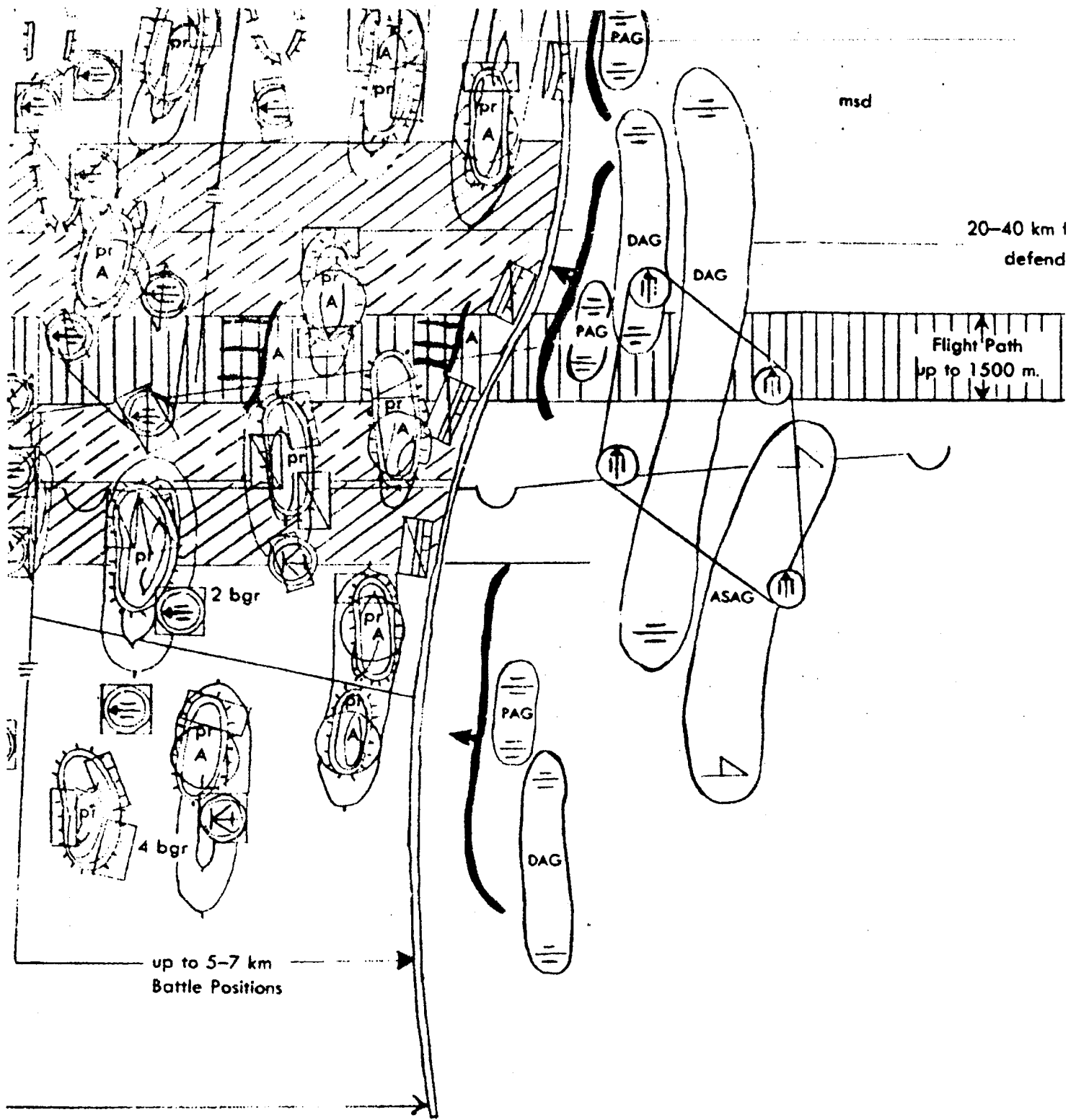




up to 5-7 km  
Battle Positions

up to 5-7 km  
Battle Positions

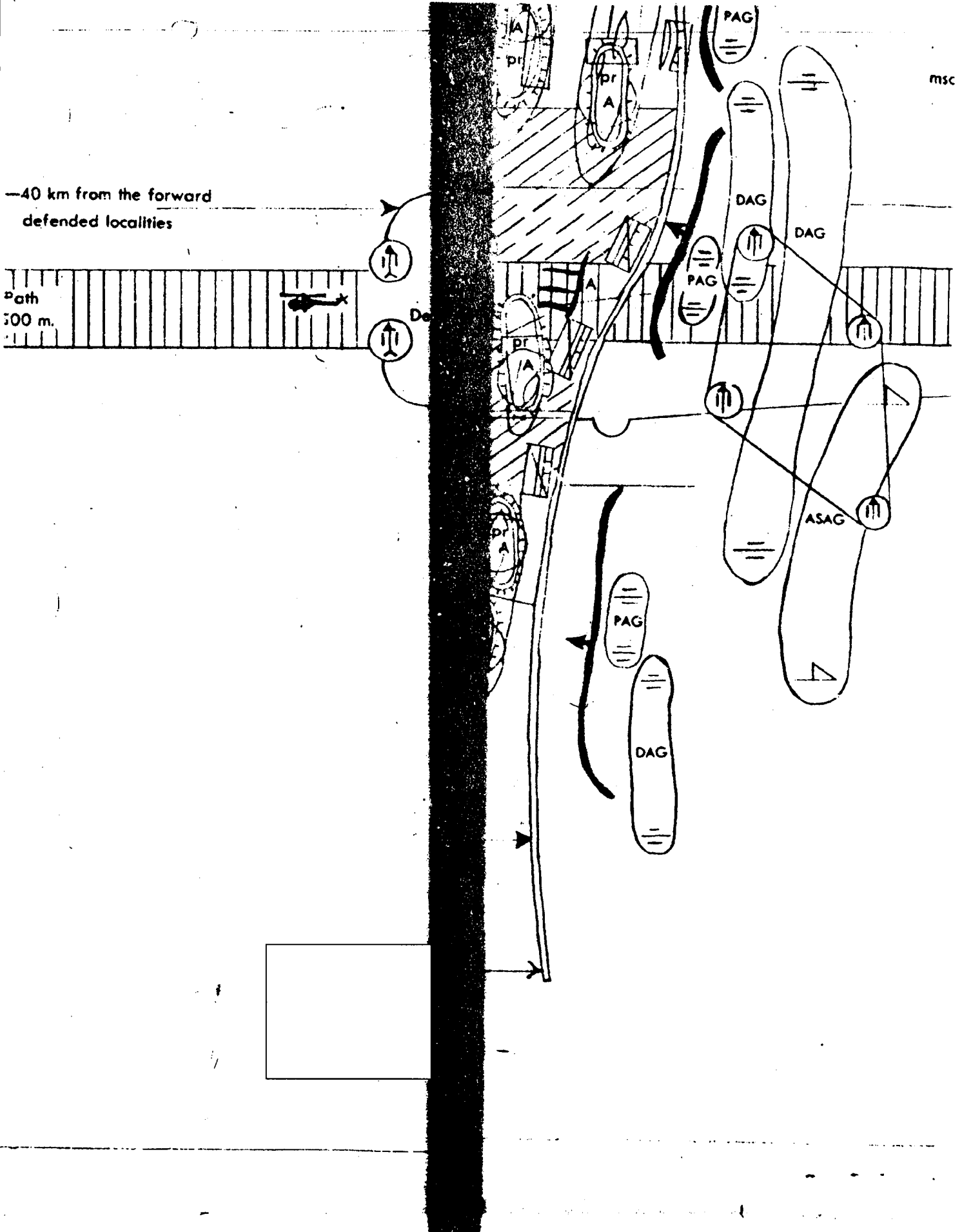
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msc

-40 km from the forward  
defended localities

Path  
500 m.



PAG

msd

20-40 km from the forward  
defended localities

DAG

DAG

Flight Path  
up to 1500 m.

Departure  
Area

ASAG

