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Group Special Topics

Lt.Gen. Prellerberg:

"Employment of AA in the area of an army (ground forces)

Guidance and cooperation with ground forces, strength,
command chain."

Points of view for AA employment and choice of firing
positions.

Shooting and AA shooting tactics.

AA in ground fighting construction of field positions.

Experiences in the Winter campaign.

Werner Prellberg
Major General [Generalleutnant]

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Employment of Flak
in an Army Defense Zone

- A. Introduction
- B. Coordination of Command with Ground Forces;
Antiaircraft Strength, and Chain of Command
- C. Aspects for Commitment and Selection of Positions
- D. Gunnery
- E. Employment of Flak in Ground Combat
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A. Introduction

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The following study is based upon my experiences as commanding officer of a flak division (mobile) in the East during 1944 - 45. In so far as it is possible without any reference material and after two years of war captivity, I shall briefly outline the principles which the command and the troops adhered to, and shall also cite experiences gained in combat.

My comments pertain only to the forces committed to the combat area. The units of a flak division (mobile), committed to protect airfields, supply and communication installations, will not be covered in this report in spite of the importance of these missions because such tasks correspond to those entailed in guarding military installations.

Inasmuch as requested war diaries were not secured, a discussion of selected phases of operations is precluded and thus it is not possible to substantiate established principles with examples. Consequently within the limits of this study, it is impossible, unfortunately, to evaluate adequately the performance of flak artillery. It is generally recognized that it was the mainstay of defense in many a difficult situation.

B. Coordination of Commandwith the Ground Forces, Antiaircraft Strength, and Chain of Command.

I. Headquarters of a flak division and a flak regiment were, primarily, operations staffs to whom varying numbers of units were attached, depending upon the situation, and availability of forces. The disadvantages resulting to command and troops through frequent shifts in command are generally recognized. Regardless of every effort made to bring about permanent

regimental units, at least in the East, it was impossible to eliminate these detrimental factors. Shifts were necessary in order to build strong points in sectors which were especially threatened; such threats were a frequent occurrence. Nevertheless, the headquarters of a flak division (the C.O. being the Army Anti-aircraft officer) was generally joined to an Army, and the headquarters of a flak regiment to a Corps. This procedure always worked out favorably toward establishing close coordination. Flak battalions fighting for a longer period of time in the sector of a ground force division usually established close ties with the latter. This spirit of comradeship between the services paid dividends during difficult situations.

II. Antiaircraft Strength and Chain of Command

1. Aside from the GHQ Flak battalions, an army engaged in a defensive role in a vital sector, usually had the following Luftwaffe flak units at its disposal, for employment close to the front:

3 flak regimental headquarters (mobile)

9 mixed flak battalions (mobile)

3 light flak battalions (mobile)

2. Since operational directives were issued by the Flak Corps (air command), the commanding officer of the flak division in his capacity as Army Antiaircraft Officer recommends commitment or changes of commitment of available forces to the Commanding General of an Army (Ground Force). In this connection, the situation on the ground and in the air as well as the current raiding techniques of enemy air forces in this area should receive careful consideration.

In formulating its plans, an Army - especially if it is not equipped with sufficient tanks and means for antitank defense - frequently will be influenced to a great extent in its desire to have antiaircraft artillery well-placed so as to contain break-throughs, particularly those effected by armor. On the other hand flak artillery personnel will place greater stress on air defense missions and the establishment of necessary strong points. Through mutual cooperation, a proper solution to the various problems can usually be arrived at.

3. Generally, a regimental commander will become the Antiaircraft Officer of the three corps attached/an Army. This procedure, however, should not become a general practice. The establishment of strong points in a Corps sector may also require, for example, that two regimental headquarters plus the bulk of the battalions be employed in one corps (the senior commander will then be the Corps Antiaircraft Officer), and in corps sector of the mission, which only one or two battalions are employed, that a battalion commander be appointed as Corps Antiaircraft Officer.

GHQ flak battalions which were located in their areas came under Corps the control of the/Antiaircraft Officer for tactical employment.

4. Commitment of flak battalions, attached to the flak regiments, is first thoroughly discussed between the commander of the regiment with the ground force corps and the necessary orders are then issued.

5. Positions of the battalions will then be decided upon in detail with the divisions (ground forces) according to the assigned missions and sectors. Through planning of main firing positions, registration positions, alternate emplacements, and dummy positions are particularly important with

regard to corresponding plans of ground artillery so that unnecessary change of position and construction of position may be avoided.

C. Aspects for Commitment and Selection of Positions

I. General

For employment in the combat zone the selection of flak positions, is influenced mainly by ground force situations, areas of our own artillery used against ground targets, and the nature of the terrain, while in the protection of installations it is determined solely by the demands of air defense, tactics, and technique of fire. Furthermore, selection of positions is influenced in addition to antiaircraft defense, by the frequent demand to reinforce antitank defense of ground forces in the areas facing a tank threat, and to contain enemy forces which have broken through, and also, in many instances, to support artillery against ground targets.

Consequently, difficulties arise in weakly covered terrain particularly, and a need ensues for very close coordination with ground forces, especially with artillery commanders.

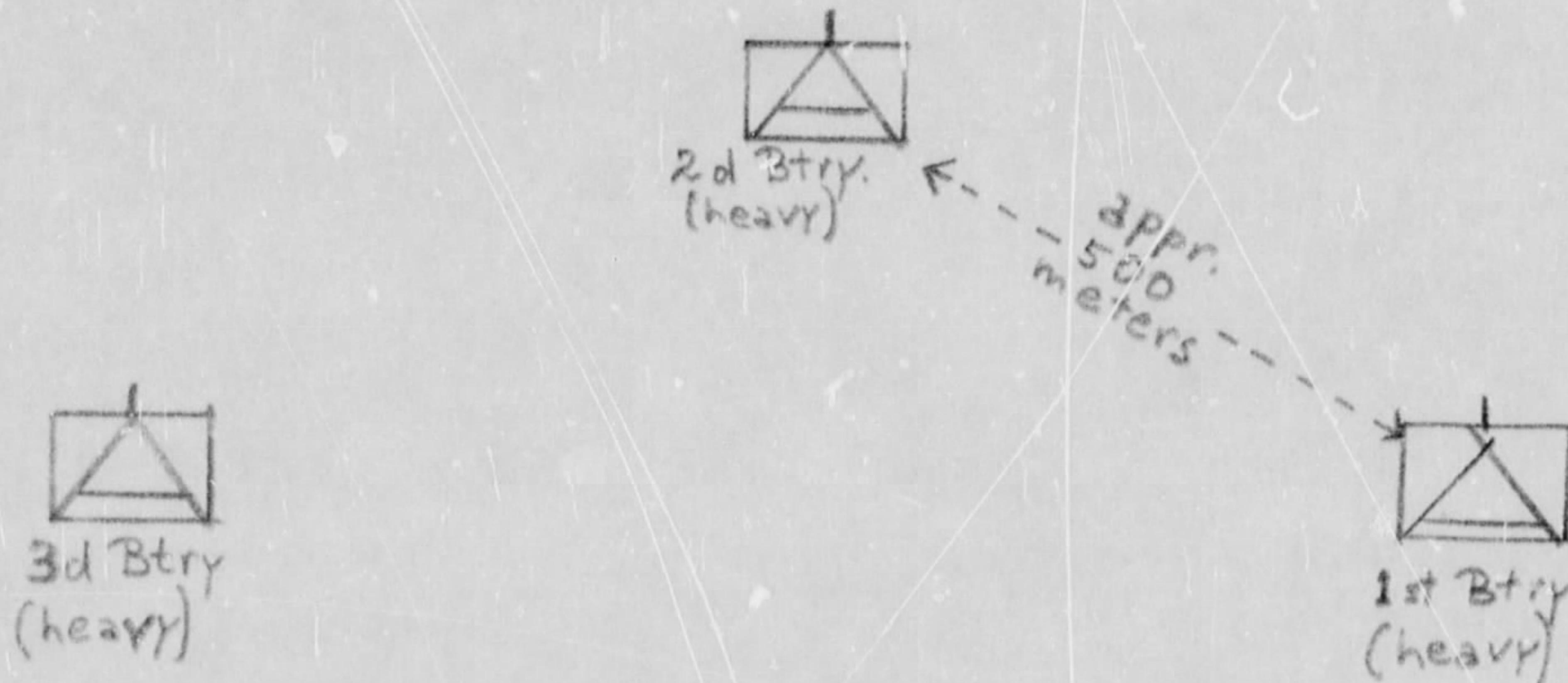
The prerequisite for selection of the right position is clear assignment of mission which must contain all the tasks required of the battalion.

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II. Heavy Flak

1. Success in the defense - primarily successes in downing planes - are only achieved through massed fire of several batteries. Massed fire can only be effected if the heavy batteries of one battalion are concentrated within a limited area.

2. Emplacing the three batteries of a battalion in a formation of an obtuse triangle (see sketch), with an interval of approximately 500 m.



between batteries proved to be a satisfactory measure in all missions.

This enables the battalion commander to command the batteries - from the site of his lead battery - and through personal observation issue orders as to selection of targets (approaching formation, not one plane in the formation), time to open fire and when to shift to another target (see also tactics in firing in d. II).

3. Since the operation was confined to such limited space, the possibility of greater vulnerability to fire from the ground and air had to be accepted in favor of achieving greater effectiveness. This vulnerability however had to be reduced as much as possible through more thorough construction of positions.

4. Heavy batteries should be set up in the shape of a flat trapzoid (see sketch), adapted to the terrain, and usually echeloned in such manner



that in delivering fire on ground targets, there will be a minimum of interference between guns. The gun-director should be located forward and somewhat to the side.

The light flak platoon should be deployed as one unit in a trapezoid formation so that it can take over the mission of protecting the battery against low-level enemy air attacks as well as against attacks of infantry forces which may have broken through.

5. In conformity with its most frequent mission, that of "protecting artillery strong points against air attacks", it was found advisable to empty flak unit to the rear of the artillery protective position, close to the rear edge of the artillery areas.

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6. Battalions (batteries) which remained in the same position for quite a period of time were either by-passed or knocked out.

Surprise fire from positions, unknown to the enemy, assures the greatest success. Out of this arose the necessity for frequent change of position in prepared, well-camouflaged alternate firing positions.

Beyond this requirement, skillfully constructed dummy batteries contribute toward deceiving the enemy about active positions and also toward feigning stronger forces. In this connection, good results were obtained in the area under my jurisdiction. Numerous attacks upon occupied emplacements were avoided, thus increasing successes of the batteries, and reducing losses. Coordination with adjacent units, advance planning, and consultation is important so that fire might not be drawn by them.

The strain placed upon the troops in constructing these positions should not be underestimated. All unnecessary construction should definitely be avoided.

7. The element of surprise is particularly important at the outset of an enemy attack. Consequently, no effort or thorough planning should be spared to move batteries into positions which are not yet known to the enemy, at the right time. Fire should be opened through a prearranged signal.

III. Light Flak

1. The success achieved also by light flak batteries is vastly dependent upon massed fire by as many pieces as possible upon one target. In order that they may not be observed too soon, they should also be concentrated within a small area.

2. It was found advantageous to maintain an interval of approximately 20 m. between guns and approximately 50 m. between platoons. The battery commander stationed with the lead platoon is then in a position to direct the fire of all platoons by means of signals.

3. In commitment close behind the main line of resistance, it is recommended to echelon the platoon of multiple antiaircraft guns to the rear because of their high construction.

4. The three batteries of a light battalion are concentrated in the same manner as the two light batteries of the mixed battalion so that they may be able to give close support in combat against the enemy in the air and on the ground; 3.7 cm. batteries to the rear of 2 cm. batteries.

5. Commitment of light flak forces generally is successful in or at the foremost edge of the artillery area which gives protection against low-level attacks.

c. What has been stated about heavy flak in regard to alternate positions, dummy positions, etc., applies equally to light flak.

7. On the basis of our experiences we found that large-scale attacks were preceded by increased enemy air activity against approach and supply routes, which was extremely annoying to ground forces. This activity had to be countered by shifting commitment of light batteries (half of a battery), at stretches of roads which were particularly vulnerable to the air attack. Commitment of mixed units of 3.7 cm. multiple and single guns proved satisfactory for this purpose. In order to take the enemy by surprise, it is/particular importance to camouflage positions.

Since major troop movements are usually carried out at night, defense against harassing raids at night is important. In this defense, it was necessary to employ light flak searchlights (60 cm.). In view of the small number of searchlights which generally were at our disposal, downing of enemy planes could be expected unless rigid control of searchlights and an exceptionally high state of training is maintained.

To carry out mobile and flexible operations, it is taken for granted that there be an ample supply of gasoline. This must be clarified before orders are issued.

D. Gunnery

I. General

Successful application of fire is dependent upon:

- a. Combat morale, combat experience and state of training of all elements of the batteries.
- b. Technique of fire and tactics of fire.
- c. Proper selection of positions.
- d. Condition of guns and ammunition.

At this time, we shall briefly discuss tactics of fire.

II. Employment of Heavy Flak against Air Targets

1. Complete utilization of available time for effective fire is of even greater importance in furnishing AA protection in the field, than it is in the protection of installations in which case the enemy, depending upon his strength remains within effective range of flak for a much longer period of time.

2. Continuous, thorough search of the sky and proper arrangements for alert stages for radar and gun service are necessary prerequisites so that proper time for opening of fire is assured and excessive strain on the men is avoided.

3. Much experience and keen perception are necessary to determine the proper time for opening fire. Moreover the enemy's activity, computation of firing data for the gun-director and the guns and the effective range must be taken into consideration.

Opening fire prematurely, based upon inaccurate data at an ineffective range and before the enemy's intention is detected, is an error frequently committed by an inexperienced gunner.

4. Simultaneous, unexpected opening of fire preferably by all three batteries of the battalion, employing several groups in rapid succession and by using a short fuse, will bring down the enemy plane if firing data has been utilized and computed accurately. In any event a defensive success will be achieved.

Continuation of fire timed at the same formation during ensuing defensive movements is generally a waste of ammunition.

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5. This simultaneous opening of fire of all three batteries, as previously mentioned, can be achieved only if the batteries are confined within narrow limits - approximately 500 m. apart - if, on the basis of personal observation, the fire of the battery is directed toward one enemy formation by means of brief instructions (relayed by telephone), and if the exact moment for opening of fire as well as for shifting on another target has been determined for all the batteries.

6. The so-called "close range fire" with ammunition, prepared for this purpose in advance, (pre-cut fuses) proved satisfactory for defense against a formation attacking the battery unexpectedly - for example, appearing out of clouds.

III. Employment of Light Flak

1. The principles which were outlined for tactics of fire of heavy flak apply equally to light flak (also medium).

2. It is even more important for the fire control officer of light flak than that of heavy flak to keep steady nerves in selecting the time to open fire, to allow the enemy to fly into effective range, and then to take him by surprise with the concentrated fire of as many weapons as possible.

3. The greatest number of planes was shot down at distances ranging from approximately 500 meters (for 2 cm. pieces) to 800 meters (3.7 cm. pieces). Fire delivered at greater ranges usually resulted in a waste of ammunition.

4. Fire, delivered by a platoon of single mount, 2 cm. antiaircraft guns, will achieve defensive success but will rarely bring a plane down.

Excellent results were obtained through concentration of light (medium) batteries if they were located within a limited area so that the battery commander - as tactical commander - could direct the fire of his battery - from the lead platoon - by means of signals.

5. Morale and combat experience are of greater importance for light (medium) flak units which have to fight low flying formations, than for heavy flak units.

E. Employment of Flak in Ground Combat

I. General

Aside from their accomplishments against the enemy in the air, heavy and light flak were also employed to full satisfaction at all fronts and throughout World War II in ground combat against tanks, infantry and in hand-to-hand combat - as well as in support of field artillery.

In bitter defensive engagements, flak batteries frequently contributed in a decisive manner toward restoration of position, often in the face of far superior enemy forces.

II. Combat against Tanks

1. The number of tanks which were knocked out by heavy flak batteries in the East in the unbalanced fight between tank and virtually unprotected gun crews servicing the high 88 mm. guns, is known and recognized.

2. Tactical commitment had to conform to the changing methods of attacks conducted with ever-increasing numbers of tanks and their power.

3. During the first years of the war, the so-called "flak combat squads", generally consisting of two 88 mm. guns with three 20 mm. (for defense against the Infantry), were fully adequate for effective combat.

4. Since these flak combat squads were either overrun or by-passed by the ever increasing number and power of armored forces, it became necessary to commit several flak combat squads as flak combat groups, side by side and were able to give each other mutual support in combat.

As the war continued, entire battalions were committed, in fact, often a considerable number were employed to constitute so-called "antitank positions." Many armored break-throughs were contained and smashed by them.

5. Major withdrawals, as for instance during the large-scale Russian offensive in 1945, resulting in a heavy tank antitank strength, made it necessary to dissolve some heavy and light flak batteries and to again organize flak combat squads of the same strength as previously.

Through skillful employment under seasoned commanders, they achieved exceptional success against tank and also infantry forces (up to battalion strength) which had/penetration. These squads delayed the enemy's advance and thus gave our own forces the possibility of again gaining a foothold.

6. During critical situations, small combat teams formed upon own initiative - consisting either of a flak battery or flak combat squad, one assault gun and several infantry rifle squads - frequently stopped far superior enemy forces for long periods of time.

7. Aside from accuracy in firing, success in combatting tanks is chiefly dependent upon:

a. The Commander's proper evaluation of the tactical situation and the terrain.

b. Selection of an advantageous position - good fields of fire, within effective range for the 88 mm. gun; if possible good concealment.

c. Coordination with other batteries (flak combat squads) and exploitation of flanking fire.

8. Surprise fire from well-camouflaged batteries or concealed guns at the closest possible range proved most successful (destroyed tanks could often be found only 50-100 m. in front of the guns).

Situation, terrain, and number of tanks, nevertheless, often made it necessary to open fire at greater ranges. Even at ranges of 500 - 1000 m., hits were generally scored. As a matter of fact, tanks were destroyed at a range of 200 meters.

III. Light Flak in Ground Combat

1. 20 mm. and 37 mm. antiaircraft guns are particularly effective weapons primarily against exposed infantry. Their tracers achieve an additional psychological effect.

If possibilities exist of delivering flanking fire, flak may also be used effectively against infantry in slit trenches, machine gun nests, etc. In fact light tanks were knocked out of action by hits on vulnerable points or into the vision slits.

2. Light flak was generally employed in coordination with heavy flak - in flak combat squads and flak combat groups.

Nevertheless, light flak battalions (batteries) often also fought unassisted against enemy forces which had penetrated, inflicting heavy losses on them and in that manner crushing the attack.

3. In the absence of infantry, necessary forces were organized for ground defense of the battery from available personnel, such as gun

crews whose pieces had been put out of action, and also service troops.

At times, supported by self-propelled 20. mm. guns, the detachments took up the pursuit of the retreating enemy, and restored the situation.

Whenever the enemy had achieved deep penetrations and our own infantry forces had been split, light flak units often with only a few 20 mm. guns, held entire sectors for quite some time.

IV. Employment of Heavy Flak to Reinforce Field Artillery

1. Heavy flak frequently participated in the artillery preparation for our large-scale attacks within the framework of the field artillery and thanks to the remarkable performance of the 88 mm. gun proved satisfactory. In a defensive situation this participation was limited to special instances with the exception of course of the actions carried out by flak combat squad (flak combat groups).

2. While awaiting an enemy attack, which generally occurred simultaneously on the ground and in the air, flak artillery had to concentrate on its primary mission - protection of ground forces, especially of the artillery, and to establish strong points against air attacks.

3. Nevertheless, since weather conditions can neutralize enemy air operations - as was the case, for instance, at the outset of the large-scale Russian attack in the area of Army Group Center in January 1945 - it is necessary that all preparations for use as field artillery be complete at all times.

All artillery data such as firing charts, maps, etc., are taken over by the field artillery, and observation posts of the flak batteries are combined with those of the field artillery, if possible.

4. After release of the flak batteries for field artillery mission and after ammunition has been placed at their disposal - dependent upon the ammunition supply - the fire orders etc. are issued by the artillery commander.

Barrages are to be avoided entirely because of the wear and tear on the guns and the waste of expensive, special ammunition. Map firing should be kept to a minimum.

5. It is not recommended that field artillery and flak fire from the same position so that enemy observation will not be attracted to an increasing extent toward the flak emplacements which then could be destroyed easily by enemy artillery while the guns were being employed against an air attack.

-10- As for ground firing missions of limited duration, it is advisable to place two guns in firing position. These will suffice to execute the firing mission by virtue of the rapid rate of fire.

6. The principles of field artillery apply to employment of ground flak in a ground role, except for special considerations which must be given to peculiarities of flak pieces and equipment.

7. Flak batteries should be detailed to ground artillery missions only if the situation urgently requires it.

The heavy wear and tear on the batteries by these supplementary missions lowers the firing performance against air targets, and thus impairs the accomplishment of the primary mission of flak.

F. Guiding Principles for the Construction of Positions

I. Generalities

1. The utmost accuracy and speed are required in the operation of flak equipment and guns under bombardment and fire by aircraft guns. Failure of the director and loss of key personnel during operations impair the performance decisively, and during an important phase of combat might put an entire battery out of action. In addition, forward areas were brought under enemy artillery fire which often coincided with enemy air raids in order to neutralize particularly annoying German flak batteries.

2. The foregoing brings out the importance of well constructed flak positions. Special emphasis which had been placed on thorough construction of positions contributed considerably to the fact that losses in equipment, guns, and personnel were low even under heavy fire, and thus the batteries remained in action.

II.

1. Guiding principles to be applied in the construction of positions are laid down in directives and supplementary pamphlets, based on wartime experiences and published by the Chief of Antiaircraft Artillery.

Within the scope of this study it is possible to note only a few of these principles.

2. Immediately after the pieces have been placed into firing position, construction of the position is begun. Construction is pushed forward by every means and all available personnel are fully utilized to this end. Proper organization will assure that readiness for action will be impaired

to as small an extent as possible during the construction of positions.

By detailing most reliable aircraft spotters it will be possible to sound the alarm in sufficient time when enemy planes are approaching.

3. The first task is excavation of emplacements for guns and for the instrument section. As soon as these installations have been hastily established, then one or two man foxholes skirting the gun emplacements are dug. The gun crews ther will be able to take cover in these during enemy artillery fire (if no air raid takes place at the same time); or personnel, not absolutely necessary at the guns during firing may use them as shelter.

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4. Not until then will the gun emplacements be improved, shelters be constructed, communication and defense trenches be dug, and ammunition storage pits constructed in conformity with a carefully formulated plan.

The actual construction is dependent upon the nature of the soil and availability of local construction materials.

5. Gun and director emplacements should primarily fulfill the following requirements:

a. The gun crews should not be restricted in their necessary movements, and on the other hand, the emplacements should not be so large that the protection of personnel and equipment is decreased thereby.

b. Fire on ground targets should be possible without change of emplacement.

c. Quick displacement of heavy guns should be possible.

d. Ammunition should be stored so as to keep it dry and readily available.

6. Emphasis is to be placed on good camouflage measures while positions are under construction so that the battery will not be recognized and knocked out before it can be effectively employed.

7. Alternate positions should be prepared in such manner that they could be used for action within the shortest possible time.

Construction of these should be limited to gun and director emplacements as well as absolutely necessary one man foxholes. Thus camouflage would be facilitated and an unnecessary strain on personnel avoided.

8. Dummy positions should be constructed with as little labor and material as possible, and yet to such an extent that from the air they appear as occupied positions to the enemy. Otherwise they would not serve their purpose.

9. The principles cited above apply, with minor variations, to heavy as well as light flak.

G. Special Experiences during Winter Warfare

1. My experiences in winter warfare are limited to the withdrawal in Poland and West Prussia during winter of 1944 - 45. These engagements required the unit to move over vast areas and change positions frequently despite deep snow, snow-drifts and severe cold. However, the difficulties encountered here are not to be compared with those of winter warfare in Russia.

Battalions with experience in winter warfare, as a rule, were able to get along without much difficulty: Instruments and guns were provided with winter equipment, adapted to low temperatures, which were fully satisfactory.

2. In winter warfare, the command must pay special attention to the following:

a. In setting up time schedules, it must be taken into consideration that in movements and in taking up new positions, while the ground is covered with deep snow, at least twice as much time is required (it is impossible to estimate the time required when snow has drifted and streets are heavily covered).

Careful consideration of future situations and issuing of orders in good time are, therefore, very important. Otherwise the orders might already be outdated as the situation develops. This would destroy confidence in the command.

b. Shifting of units and changes of position should be ordered only when the situation actually demands it. These changes place a burden particularly on personnel and materiel.

c. Areas for positions should be assigned adjacent to passable streets and roads. Thorough reconnaissance should be conducted on highways and positions and particularly as to the possibility of moving into position (time required should be taken into consideration).

d. Allocation of gasoline and oil should be two to three times more than the normal requirement. There is heavy wear and tear on snow-chains and tires.

e. Sufficient TNT should be brought up in order to blast ground for construction of gun emplacements, etc., when the ground is frozen to a considerable depth.

f. Special attention should be directed toward good rations and winterized clothing.

3. In my area of jurisdiction, it proved beneficial to have a meeting at division headquarters of regimental and battalion ordnance and supply specialists, and thoroughly discuss again all questions pertaining to the approaching winter warfare. These men then met with the key battery personnel and instructed them accordingly. Written directives alone were not enough.

4. Firing performance and accuracy of fire were scarcely impaired even during low temperatures.

Functioning of ballistic directors, delivery of various types of oils, heating devices, etc., met all winter requirements.

Certainly special emphasis should be placed on meticulous care of equipment.

G L O S S A R Y

- ARMEEABTEILUNG - A reinforced corps, commanded by a Corps commander with a Corps Staff.
- ARMEEGRUPPE - A weak improvised army under an Army Commander with an improvised Army Staff.
- DIVISIONSGRUPPE - A unit formed by transferring the designation of a partially destroyed division to one of or a consolidation of its regiments.
- GAU - Nazi Party administrative area.
- GAULEITER - Official in charge of a Nazi Party administrative area (Gau). His control over party matters in his area was complete, and gradually after 1933, and even more after 1939, he assumed complete control over the entire civilian population.
- JAEGER (division or other size unit) light infantry
- KAMPFGRUPPE - A term loosely assigned to improvised combat units of various sizes, named usually after their commanders.
- KORPSABTEILUNG - A reinforced division commanded by a (usually senior) Division Commander, with a Division Staff.
- KORPSGRUPPE - Two or three understrength divisions assembled into a tactical unit under a Corps Commander, with an improvised Corps Staff.
- LUFTGAU - Administrative and supply organization of the German Air Force; its authority was limited to a well defined and permanently fixed geographical area. Those established in Germany were designated by Roman numerals, those in occupied areas by their location.
- ORGANIZATION TODT - Paramilitary construction organization of the Nazi Party, auxiliary to the Wehrmacht. Named after its founder, Dr. Todt. Consisted of a cadre of engineers, expanded as necessary by the use of hired, conscript, or foreign labor.
- PANZERFAUST - Recoilless anti-tank grenade and launcher, both expendable.
- PANZERGRENADEIER (division or other size unit) - usually motorized, occasionally mechanized infantry.
- PANZERGRUPE - Armored force the size of an army, but operating in conjunction with an army. (When operating independently, normally redesignated as a Panzer Army.)