

# FLAK vs. DAYLIGHT BOMBERS

## Captured German Document Describes

## The SOP for Engaging Our Aircraft

SOME interesting details of the enemy's experience with flak defenses against high-altitude daylight attacks by USSTAF bombers are contained in a captured document, dated April, 1944.

This document describes our tactics in attack and lists the methods used against them in defense of important target areas.

**Deployment of Defenses :** As the attacks are made from "great heights," the enemy finds that the long times of flight of the projectiles from 88-mm. Flak 18, 36 and 37 and from 105-mm. Flak 38 and 39 guns limit the period of engagement. This disadvantage, it is stated, can be overcome only by a concentration of many guns into *Grossbatterien* (large sites). These should be made up of three single *Batterien* (troops), each *Batterie* having six 105-mm. Flak 38 or 39 guns, or eight 88-mm. Flak 18, 36 or 37 guns. In large or especially important areas, a solid ring of *Grossbatterien* should be constructed, outside a line of bomb release calculated for a height of 8,000 meters (26,000 feet) and a speed of 150 meters per second (330 m.p.h.). *Batterien* equipped with 88-mm. guns should normally be sited further out than those equipped with larger calibers.

*Batterien* of 128-mm. and 88-mm. Flak 41 guns can only, at present, be deployed singly, but their formation into *Grossbatterien* is envisaged.

*Grosskampfbatterien* composed of triple or quadruple four-gun or six-gun positions sited close together have been previously reported, and it is interesting to note from the present document that these *Batterien* may also include three eight-gun positions. The document confirms that the purpose of these *Grossbatterien* is to achieve large centrally-controlled gun densities, and not to economize in "unseen" fire-control instruments.

**Methods of Defense :** Aircraft must, if possible, be engaged before bomb release, the document states. If the attack is carried out by waves from different directions, fire will be directed against any wave approaching the main target area.

If aircraft attack in waves from one direction, the first wave must be engaged by all guns together, at least up to the release of bombs. Fire will always be directed against the leading aircraft of a group and will be opened at maximum range. As fast a rate of fire as possible will be maintained.

Any particular wave of aircraft will normally be engaged only if at least five salvos can be fired at it before release of bombs, bearing in mind the time taken for change of target, the time of flight of the

projectile and the practicable rate of fire ; otherwise fixed barrages will be fired.

Assuming an average rate of fire of 15 rounds per minute for the 88-mm. Flak 36, an engagement of five or more rounds from one gun will, broadly speaking, only be possible below the "effective ceiling" of 26,000 feet ; the document therefore provides striking confirmation of the detrimental effect on flak efficiency of flying at altitudes in excess of this figure.

Choice of target and decisions regarding change of target are the responsibility of the controller.

**Optical and Radar Rangefinding :** The captured document reveals that when radar ranges are being used it is not possible to pick out the leading aircraft and ranges are therefore ordered to be taken on the center of the group. With this method, however, change of target is rendered difficult, as bomb release cannot be anticipated quickly enough, and there is also the risk that the radar and predictor may follow different targets. In conditions of good visibility, therefore, and provided that a good rangefinder is available, optical rangefinding will take precedence over radar rangefinding.

When a second radar is not available for the purpose, the regular radar will, if optical rangefinding is being carried out, search for fresh targets as soon as the predictor is "on target."

This instruction for the use of optical in preference to radar rangefinding against high-level daylight attacks is interesting, since previous information (contained in a document dated March, 1943) showed that at long ranges radar height-finding was considered more reliable and was to be used whenever possible. This conclusion was no doubt arrived at as a result of practice firing and the engagement of single aircraft, and it would appear that the present methods of attack, combined with the introduction of radar countermeasures, have caused a reversal of policy for engagements of this type.

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**REPORTS** on several new types of flak equipment have been compiled by MI 15, British War Office, and highlights from these are summarized below.

**Production of Flak 40 and 41 :** Indications from a reliable source suggest that the enemy may be concentrating on production of the 88-mm. Flak 41 and 128-mm. Flak 40, especially the former, and relying less and less on the 105-mm. flak gun. It is also reported that the mythical 150-mm., which has for so long appeared on the list of flak weapons,



but about which virtually no details have been available, has finally been abandoned. This would seem a logical policy, MI 15 declares, since the 88-mm. Flak 41 is a much better all-round weapon than the 105-mm. and is presumably a more satisfactory proposition for mass production, while in the larger class the 128-mm. appears to be a successful gun and should fulfil all reasonable requirements against present-day aircraft. New details on these guns:

Piece		Weight in action	Weight in draught	Rate of fire
Flak 41	...	8 tons	11 tons	—
Flak 40	...	13.5 tons	26 tons	12 r.p.m.

**Characteristics of Flak 18 and 36:** The differences between these two models of the 88-mm. gun, which have not previously been known with any certainty, have now been clarified by a captured document. This shows that a number of improvements are incorporated in the mounting of the Flak 36 and that this model has identical and interchangeable front and rear bogies, whereas the Flak 18 has not. In addition, the Flak 18 has a loose barrel, not readily changed in action, while the Flak 36 has a three-piece liner, which is much more easily changed. In practice, however, either type of barrel may be used indiscriminately, and this does not affect the nomenclature of the equipment.

**50-mm. Flak 41:** A specimen of the 50-mm. (1.97-inch) Flak 41 gun has been found in Normandy, and a preliminary report on it has been received. In appearance it may best be described as a large 37-mm. Flak 36. For transport the gun is mounted on a four-wheel carriage, similar in design to that used for the 88-mm. Flak 36; it can be brought into action speedily by lowering the platform and pulling away the two front and two rear wheels of the carriage. Ammunition is fed in clips of five from the left.

**Defense Against Low-Flying Aircraft:** Further information has been received, though still without positive confirmation, of the use by the enemy of some special contrivance for defense against low-level attack (SUMMARY No. 27, page 10). On report refers to a line of projectors, apparently sited for the protection of châteaux containing headquarters in Northern France. According to this report, the equipments fire rocket projectiles of between 105-mm. and 150-mm. caliber, which, on detonating, are suspended from a parachute; they are said to be fired electrically, and to have a ceiling of 800 meters

(2,625 feet). The report asserts that the Germans themselves have little confidence in the effectiveness of the weapon, in spite of the fact that the particular installation described inaugurated its career auspiciously by shooting down a friendly fighter!

**Use of Captured Equipment:** It has been known for some time that the Germans have been making increasing use of captured AA equipment. A document recently received—a handbook of the French predictor Aufière 35—sheds some useful light on this subject by revealing that the instrument may be equipped with transmission systems for connecting to several types of French, Russian and German guns.

The fact that the Aufière predictor is highly immobile (according to the handbook it requires a detachment of 16) is presumptive evidence of the use of foreign guns in the west; a specimen of a Russian 85-mm. bored out to 88 mm. has, in fact, already been recovered in Normandy.

**Cable Flak:** An Eighth Air Force report describes a phenomenon which was observed at 20,000 feet over Charleroi recently. A mass of wires was seen to emanate from what appeared to be an ordinary flak burst, but was more likely to have been some form of rocket. The wires were described as being 20-30 yards long and joined at a central point.

A ground report of unknown reliability has described a similar type of projectile, whose purpose was to entangle the wires in the propellers of the attacking aircraft. The employment of such a device, which would have to be extremely accurate to achieve any results, seems unlikely, but further information is being sought by MI 15.

**Balloons:** During the Eighth Air Force Munich mission of 13 July, three balloons about 6-8 feet in diameter, and described as white or silver, were reported in the target area. Another similar balloon, brown in color, was seen some time after crossing the enemy coast. All the balloons were reported floating free at from 20,000 to 30,000 feet, and there was no question of confusion with stale flak bursts.

On previous operations large numbers of similar balloons apparently flying free at high altitudes have been reported, and in some cases were described as having small objects suspended from them by wires. The obvious explanation of meteorological balloons does not seem to fit the descriptions entirely, and MI 15 hopes that clarification may be obtained from future observations.



## Recognition Marking of G A F Reconnaissance Planes

NEW recognition markings of German fighter reconnaissance aircraft were prescribed in a captured document dated 4 July and effective 20 July. The marking consists of a black-and-white spiral painted on the spinner, and will apply only to fighter and reconnaissance types of planes. The regulation applies only to the area of Luftflotte 3 (France and the Low Countries).

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AUTHORITY: COMMANDING GENERAL, USSTAF INITIALS: HAS DATE: 30-7-44

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# UNITED STATES STRATEGIC AIR FORCES IN EUROPE

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EO 11652

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2009-03



## AIR INTELLIGENCE SUMMARY No. 38

For Week Ending 30 July, 1944

COPY NO. 1483

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Key Information

IRIS Public Record

Main: UNITED STATES STRATEGIC AIR FORCES IN EUROPE

Rev'd:	Rel	Entered Date:	QC ID:	Scanner ID:	Acc ID:
1987/08/11					
		Entered Date:	QC'd Date:	Scanned Date:	Acc Date:

Document Type:  
Call Number: 519.607A-38  
IRIS Number: 00217303  
Accessions Notes:  
Old Accession Nbr: 4555-20

Title:  
Beginning Date: 1944/07/01  
End Date: 1944/07/31  
Publication Date:  
Classification: UNCLAS

Media Roll #: 6751  
Old MFIm Roll #: A5723  
NUMPAGE: 0  
Title Extensions:  
Abstract: DOCUMENT SUMMARIZES ALLIED MILITARY ACTIVITIES, PROVIDES DATA ON VARIOUS FRONTS AND MISSIONS, AND PROVIDES INTERESTING ARTICLES ON RELATED TOPICS.  
Descriptive Notes: SOME PAGES DIFFICULT TO READ. MAPS AND PHOTOGRAPHS INCLUDED.  
Title: AIR INTELLIGENCE SUMMARY NO. 38 FOR WEEK ENDING 30 JUL 44

Administrative Markings  
No Administrative Markings Listed  
Security Review Information: