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AIR HISTORICAL BRANCH

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TRANSLATION NO. VII/22

THE PROBLEMS OF GERMAN AIR DEFENCE

IN 1944.

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A. SURVEY OF THE PRESENT POSITION

I. The present situation is characterised by the importance of air defence operations, the onus of attacking enemy bomber formations resting with the German fighter arm.

The relationship between the strength of the enemy air force and that of our own fighter force, Germany's most effective defensive weapon at the present time, has become extremely unfavourable since the entry into the war of America, and the rapid growth of the Soviet Air Force. Our numerical inferiority can now only be countered by confronting the enemy with temporary and local concentrations of power.

For months the enemy has been able to carry out attacks on the immediate frontal areas and on the Reich without suffering appreciable losses, the simultaneous operation of three spearheads of attack indicating the strength of the Anglo-American formations. These tactics force our fighter defences either to effect a division of forces, or alternatively to make a concentrated effort against one of the attacking spearheads.

With the invasion of France, the concentration of fighters in the Reich was no longer possible, as the majority of units were transferred to the West, where, however, they found themselves facing such enormous odds that their arrival did little or nothing to restore the position. At the same time, Allied day and night bomber raids were stepped up to an appreciable extent.

After successfully beating off the attacks of our few available fighters, the Allied bombers could fly on unopposed save for flak defences. In order to achieve successes against the enemy, our fighters had to be directed by skilful ground control on to the attacking bombers before the latter had established contact with their fighter escort. These tactics often permitted us to carry out a single attack; further attempts were usually frustrated by the enemy fighter escort.

At the present time, the performance of our fighters, both day and night, is superior to that of the attackers, and actual combat presents no technical difficulties. This situation would however alter if the Americans introduce high altitude bombers, operating at over 12000 metres, which is a very possible development in the European theatre of war.

For effective defensive measures, a clear picture of the air situation is essential. As long as France and the Channel coast were in our hands, it was possible for enemy formations to be detected while over these areas, thus giving ample warning to the defences in the Reich. Since the loss of this forward defensive belt, it is possible for the enemy to carry out surprise attacks.

The occupation of France also permits the Allies to direct the full weight of their bomber, fighter and fighter-bomber attacks against the Reich. It must be remembered that similar mass attacks launched prior to the invasion were very largely instrumental in enabling the Allies to smash through the 'Atlantic Wall'. With their present, (September 1944), strength of nearly 10000 fighters and 12000 twin and 4-engined bombers, the enemy will be able to deliver even more devastating blows against the Reich in support of the invading armies. Road and rail traffic will be paralysed in strategically important areas and relentless attacks will be made on our ground positions.

In August, some 24000 enemy aircraft penetrated over the Reich. Approximately the same number operated over the then Western occupied territories, and are now free for other operations. 2500 aircraft flew against targets in Northern Italy. About 75% of all the attacks were

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flown from bases in Great Britain and 25% from Italian airfields. Adverse weather conditions in England resulted in a small reduction in the number of operations flown from that country.

Attacks on industrial targets accounted for 80% of all operations. Terror raids were fewer, but their effect was considerable. Of the sorties directed against our industries, two-thirds were made on plants producing aircraft equipment and fuel. German fuel production is now almost at a standstill.

Night raids ceased almost completely. This was due partly to the surprisingly high losses suffered by the enemy during night sorties at this time, and partly to the fact that on account of the weakness of our day fighter defences, day attacks met with opposition and were therefore more advantageous.

These successes against 4-engined night bombers were achieved despite severe jamming measures on the part of the enemy. 'Window', and W/T jamming aircraft were employed, and feint attacks immediately North or South of the real target were made in an attempt to mislead our defences and prevent any concentrated fighter effort. In addition, sudden changes of course often resulted in the attackers penetrating over areas where no night fighter protection was available.

During daylight attacks, only about 1-3% of the enemy bombers were destroyed.

## II.

(a) On the Western front, our day fighters are facing the best aircraft of the Allied Air Forces. Our one standard day fighter aircraft, the FW. 190, can equal the performance of the Spitfire, Thunderbolt, and Mustang at altitudes up to approximately 4000 metres, but at greater heights is undoubtedly inferior to these latter aircraft.

Recent modifications have made the performance of the ME 109 equal to that of the enemy fighters at all altitudes. Similar modifications will have to be undertaken to improve the performance of the FW 190.

Such measures are however of an emergency nature, dictated by the necessity of attempting to counter our marked numerical inferiority by an increase in performance. Should the enemy decide on similar modifications, any temporary advantage that we may have gained will once more be lost.

The inferiority of our personnel is also an important consideration. We are obliged to train our crews in about half the time allowed by the enemy for the purpose. In comparison with the enemy figure of 400 hours on training flying, our men can only be given 200 hours of instruction before being sent on operations. Total operational flying training time in the Luftwaffe at present is only 60-80 hours, as compared with the Anglo-American figure of 225 hours. Our pilots must attempt to counter-balance this obvious disadvantage by greater enthusiasm and courage.

It should be added that due to the comparative inexperience of many of our pilots, our losses, not only in actual combat, but also during take-off and landing, are much higher than those of the enemy.

A mere increase in aircraft production will not provide a solution to our difficulties at the front, since any additional aircraft produced must in the first instance be allocated to the training schools and units, where aircraft wastage will also inevitably increase if more training hours are allowed.

This situation leads to the conclusion that our operations must in future be governed by the training position. Inadequate training must be borne in mind; our pilots must not be made to carry out tasks or use equipment which they have not thoroughly mastered during their brief period of instruction.

(b) As regards night fighters, the position is rather more favourable at present. Substantial reinforcements have been received from disbanded bomber and transport units, and striking power has therefore greatly increased. Our total strength of approximately 1800 aircraft enabled about 200 fighters to take the air during each enemy attack. Night fighter crews have been trained on an almost peace-time scale, and successes have therefore been considerable.

## B. CAUSES OF THE PRESENT CRITICAL SITUATION

In order to reach an understanding of the underlying causes of our present predicament, the following matters must be briefly considered:

- 1) the state of our air defences at the outbreak of war, and
- 2) the general course of air warfare over the Reich from the beginning of the war until the present time.

1) At the outbreak of the war, our fighter arm was concerned exclusively with offensive operations, and it is therefore impossible to speak of an air defence system at that time. Offensive fighter sorties were directed against England in the West and against Poland in the East. The tactical employment of our fighter units lay in the clearing of the skies over enemy territory, the escorting of bomber and fighter-bomber formations, and in lending direct support to our armies in the field. The M.G. 15 was the standard armament of the fighters.

2) As regards operations over the Reich, a distinction must be drawn between day and night sorties.

(a) Day operations. The first penetrations over Reich territory were effected by British Wellington formations, on which severe losses were inflicted, particularly by the Schumacher Geschwader. The failure of these attacks led the enemy to abandon daylight operations in favour of night sorties, thus avoiding the strong German fighter defences.

With the entry into the war of the United States, daylight operations were resumed. These attacks became virtually confined to American 4-engined formations, the British being responsible for night bombing. With the commencement of the large-scale American daylight offensive against our industrial production, we were forced to transfer the bulk of our fighter defences to the Reich, thus stripping other fronts of fighter protection.

The German fighter arm, whose tasks had, as has been stated, been almost exclusively offensive in the early days of the war, had

to switch over to the defensive in the West at about the time of the opening of the Russian campaign. Twin-engined fighters were able to lend effective support to the single-engined fighter formations.

These operations proved very costly to the enemy, who at this juncture therefore began to employ fighter escorts, flying at first only as far as the borders of Germany, but extending their radius during the succeeding months to the very heart of Germany.

With the introduction of this strong fighter protection, our twin-engined aircraft, on account of their size, proved to be insufficiently manoeuvrable to engage the enemy either singly or in formation; single engined fighters had therefore to be detailed to protect our own heavy fighters, and were thus unable to fulfil their proper function, - that of attacking the enemy bombers.

Our fighter defences were therefore split into two groups, one of which had the task of engaging the enemy fighter escort, while the other tackled the bombers. This division of effort led inevitably to a further weakening in the overall efficacy of our defences.

Finally, mention may be made of the recent introduction of jet-fighters, which resulted in our destroying a number of enemy bomber and reconnaissance aircraft.

(b) Night operations. The performance of the British strategic Air Force was very inadequate at the beginning of the war. New aircraft types, however, were being developed, (the Stirling, Halifax and Lancaster.) Introduced towards the end of 1941, they proved unsuitable for daylight bombing due to their lack of speed and low ceiling, and after a short time the weight of British attacks was switched to night bombing.

Enemy tactics were considerably influenced by the development of Pathfinder technique, and were characterised by the strictly limited duration of the attacks and the employment of close formation flying. In order to confuse the air situation during attacks by 4-engined formations, Mosquitoes often used circuitous routes to the targets,

The enemy was also perfecting his navigational and target finding technique. (Obce and H2S). On the night of November 22nd/23rd, 1943, the first enemy raid under bad weather conditions was effected. Our nightfighter operations were severely prejudiced by the weather. The success of 'Himmelbett', (GCI), was very largely dependent on the strength of enemy jamming, but reasonably good results were achieved by the use of 'Wilde Sau', (ground controlled fighters.)

II. What has led to our present critical position? At the beginning of the war, the German Air Force was the strongest in the world. Its employment was largely responsible for the quick and victorious outcome of the campaigns in Poland, Norway, Holland, Belgium, France, Yugoslavia and Greece.

Our Air Force was concerned exclusively with offensive operations. For long range planning however, it is essential that the question of defensive tasks be accorded equal consideration. This principle was not followed by our leaders. On account of the success of our early campaigns, warnings as to the necessity of preparing effective defences were disregarded.

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Now that the problem of defence has become of critical importance, measures must be taken under great strain and at the cost of enormous sacrifices.

As early as 1942, the suggestion was made that two fighters should be built for every 4-engined enemy bomber, but this plan was rejected by the Higher Authorities. The opinion prevailed that our difficulties would be solved by means of a compromise between the need of bombers and that of fighters.

The enemy's intention to build by 1943/44 an Air Force of hitherto unparalleled size was never a secret. Details were even published in the Press, but were never taken seriously. How could anyone fail to realise that a Nation capable of peace-time industrial mass production would be able to do the same in time of war? The most serious accusation that can be levelled against those responsible for the direction and development of the German Air Force is that they refused to take the enemy seriously, and shut their eyes to the ever increasing gravity of the situation.

At the beginning of the war there was talk of reducing the number of different aircraft types, but in its fifth year, the Junkers organisation was still producing nine different types, the Ju. 90, 290, 52, 252, 88, 188, 388, 86 and 87. The attempts made in 1944 to reduce the number of types by means of so-called 'production programmes', (there were three in 1944,) led to the aircraft industry losing all confidence in the wisdom of the planning of the High Command, and working eventually more or less at its own discretion.

This wastage of industrial capacity led to a situation in which attempts were made to satisfy all demands, but no single arm of the Air Force was at full strength. In the meantime, the enemy bomber formations were able to attack the Reich by day and by night. Finally, in the middle of 1944, the decision was taken to concentrate almost exclusively on fighter production.

III. It may be convenient at this stage to summarise the nature of enemy tactics and of our own defences up until the present time.

(a) After a few isolated British daylight attacks on German coastal towns in the winter of 1939/40, there followed a lengthy period in which there was very little British bomber activity. By the summer of 1942, a new force had been built up, and systematic air warfare was opened against the Reich. The course of the campaign may be broadly divided into three phases, each characterised by a particular method of attack. 1) Rolling attacks by strong formations on clear nights were carried out until March 1943. The strengthening of the German nightfighter arm at this time demanded a change in tactics, and 2) in the second phase, lasting until November 1943, the attackers flew in close formation. This could only be countered by the operation of an equally concentrated and mobile defensive force.

The rapid construction of the single-engined nightfighter forced the enemy to alter his methods once more, and 3), in the third phase, advantage was taken of low cloud and bad weather conditions over the approach and target area. Our methods of attack remained unaltered.

The transition from the second to the third phase was not very noticeable, as the use of H2S enabled the enemy to adopt new tactics without difficulty. The following important results may be mentioned:-

- 1) Shorter duration of attack during night raids,
- 2) Attacks were now made from different directions,
- 3) Widely distant return routes were chosen, in order to confuse our defences,

- 4) Increased use of jamming aircraft, and
- 5) Increasing number of diversionary attacks by long-range night fighters.

(b) A study of American bombing tactics reveals the following characteristics:-

- 1) Close formation daylight attacks with visual bombing in clear weather,
- 2) Attacks from cloud cover with the use of H2S,
- 3) Intense fighter escort protection.

The enemy has thus often succeeded in evading our defences, either by flexible control of his formations, or by frequent changes of tactics.

#### C. REMEDIES FOR THE PRESENT SITUATION

The fundamental condition necessary for an improvement in our air defences is the fulfilment of demands for the provision of better armed aircraft of superior speed and climbing capacity. As regards armament, special attention must be paid to the installation of guns having the highest flat trajectory and rate of fire. Navigational aids must also be improved, so that fighters can operate in all weather conditions.

In general, the aim of all such improvements must be to counter the enemy's numerical superiority by increased performance, and to make the control of the aircraft and the operation of guns and navigational aids as simple as possible for the pilot, who can only receive relatively short training.

Further possibilities, which however can at present only indirectly influence the course of operations, include:-

- 1) The reintroduction of long-range nightfighters,
- 2) Immediate participation of the Luftwaffe in radio warfare,
- 3) Simplified control and organisation of our air defence system.

In the future, the High Command must endeavour to regain air supremacy and to resume offensive operations as soon as possible. If our day fighter strength can be increased, we must attempt to move our defensive line away from its present position in the heart of the Reich towards the West.

As regards nightfighters, a plan must be devised for the concentration of our forces in Western Germany. In this connection, the following suggestion may be borne in mind. Since the present fuel shortage only permits of the employment of nightfighters for a few days each month, our forces, of which one group should be concentrated in the Ruhr, and another in the Reich/Main area, should carry out operations at full strength on certain days and times based on previous experience.

Although a certain percentage of such sorties would be fruitless, it can be assumed that 50% will succeed in contacting the enemy. Such contact would be established either over, or as the enemy is leaving the target, and in view of the concentrated form of the attack, would almost certainly achieve considerable success. This is the only way in which immediate protection can be given to the heavily bombed areas of Western Germany.

A further solution would be to convert some of our night-fighter units on to Me. 262's. This would enable us to attack and inflict heavy losses on the Mosquito squadrons which are operating in ever increasing strength over North-Western Europe.

#### Distribution

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