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**RESTRICTED**

A SURVEY OF GERMAN AIR OPERATIONS.

1939 - 1944.

A Study prepared by the German Air  
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Translated by

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1939 - 1941.

The course of the air war during the years 1939 - 1941 was dominated by the superiority of the German Air Force. The unchallenged air supremacy which our aircraft swiftly attained in all theatres of war enabled a vigorous offensive policy to be employed. This then became an important factor in the whole conduct of the war. The flexibility in attack over wide areas of the Air Force gave modern war its character. The determination to wage a battle of annihilation, and the mass breakthroughs effected to the very source of the enemy's power have determined its course.

Poland.

In the battles in Poland the independently operating Air Force made its first appearance as a decisive weapon. The tasks which it was allotted were part of a concentrated effort to accomplish the rapid defeat of the enemy and embraced:-

- (1) The destruction of the Polish Air Force with its ground and maintenance organisations.
- (2) Support of the Army in order to bring about a breakthrough and rapid advance.
- (3) Attack on the defensive installations and munition factories of Warsaw.

To implement this plan, two Luftflotten comprising 1538 aircraft were available. (1) Against this force the Polish Air Force could only muster 400 battle-worthy aircraft.

After a mere two days the mastery of the air over Poland had been attained. The enemy Air Force was dislocated by attacks and forced to use emergency airfields in the rear, and it was therefore impossible for him to co-ordinate his air attacks. Air support for the Army could thus be given priority earlier than had been anticipated.

The whole of the Polish deployment was hindered by systematic attacks on railway stations, goods yards and lines. It was possible, in some cases, to stop troop movements altogether. By the destruction of bridges and crossings over the Vistula the withdrawal of the Polish Army was so delayed that it was encircled. The constant attack on the enemy by close support formations made the advance of German troops easier and more rapid. It assisted the penetration of defences and, in close co-operation with the Army, destroyed enemy positions, pockets of resistance and spearheads.

The mass attack on Warsaw, carried out by Luftflotten 1 and 4, on the 15th September 1939, broke the resistance of the defenders and led to an early completion of the "Battle of Poland".

In the first days of September 1939, 483 aircraft were employed against enemy air formations. For the indirect support of the Army during

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(1) The units under the direct command of the Ob.d.L. are not included. Of the two Luftflotten the following numbers were employed: 8 Aufklaerungsstaffeln, 21 Kampfgruppen, 8½ Stukagruppen, 1 Schlachtgruppe, 5 Zerstoerergruppen and 5 Jagdgruppen.

the Polish retreat over the Vistula-San line 4806 aircraft were brought into use; for the direct support of ground forces 3740 were employed. The ratio of aircraft employed in the strategic air war to those used in close co-operation with the Army was thus 5:4.

In this manner the Luftflotte played a decisive part in the successful conclusion of the battle in Poland. Success was achieved by:-

- (1) The overwhelming surprise of the attack.
- (2) Carefully planned mass attacks and concentrations of force.
- (3) The haphazard direction of the Polish Air Force.
- (4) Superiority in men and materials.

#### Denmark and Norway.

With the occupation of Denmark and Norway, commencing on the 9th April 1940, the Luftwaffe was set a new and unusually difficult task:-

- (1) The capture of all important military strongpoints in the new battle area by large scale landings from the air.
- (2) Action against the British North Sea fleet and prevention of any attempts at a large scale invasion of Scandinavia by the enemy.
- (3) Support for, and the supplying of, the army and naval units involved in the occupation.

The carrying out of these tasks was entrusted to Fliegerkorps X which consisted of 12 Kampfgruppen (bombers), 1 Stukagruppe, 1 Kuestengruppe (Coastal), 2 Zerstoerergruppen (Twin-engined fighters), 1 Jagdgruppe (Single-engined fighters) and 14 Transportgruppen. The opposing Norwegian Air Force was so weak as to play a negligible part. Even the British were not in a position to interfere seriously with the German air attack.

For the success of the plan, rapid occupation of Denmark and the capture of airbases in the area, Oslo, Kristiansand, Stavanger, Bergen and Dronthelm were of the greatest importance. Immediately after the landing of parachute and airborne troops, fighters arrived at the Norwegian airfields, to be followed by reconnaissance and bomber formations. The all-important attacks on the enemy fleet were carried out with increasing success. Assaults of particular intensity were directed against enemy landings at Namsos and Andalsnes by fighter and Stuka formations. These were also engaged against concentrations in the Narvik area. In the meantime transport units were, together with the Navy, bringing up large quantities of supplies and reinforcements. Until the 5th May they were the sole means of supplying the north of Norway.

According to the final communique on the Norwegian campaign, issued by the Fuehrerhauptquartier, the Luftwaffe was the "deciding factor in the success of the operation". Without its assistance the occupation of that Country would have been impossible.

#### The Campaign in the West.

In the meantime, with the beginning of the campaign against Holland, Belgium and France on the 10th May 1940, the Luftwaffe became involved in a new series of attacks.

The objects of these attacks, based on previous battle experience were:-

- (1) The destruction of the enemy's Air Forces and their sources of supply.
- (2) Indirect and direct support of the Army.
- (3) Attacks on enemy harbours and shipping.

These tasks were entrusted to Luftflotten 2 and 3. Out of a strength of 5142 aircraft, the Luftwaffe had 3824 serviceable aircraft available at that time<sup>(1)</sup>. Compared with this, the Allies (including the Belgian and Dutch Air Forces) had 6000 aircraft, of which 3000 were at continental bases.

Right at the outset of the campaign the full weight of the German air offensive simultaneously hammered the ground organisations of the Netherlands, Belgium and Northern France. The Dutch and Belgian Air Forces were destroyed and the Franco-British Air Forces were hard hit and forced to use bases in the rear. Co-ordinated operations by the Allies, which from then onwards had become very difficult, were further hindered by the destruction of the Potez Works and 10 maintenance depots. In this manner, it was once more possible to gain mastery of the air at an early date, and to concentrate on Army support operations.

The successful airborne operations in Holland and Belgium had created the conditions necessary for a rapid advance by the Army. They represented the beginnings of a new type of warfare in which it was possible by landing in the rear of the enemy with the aid of the Air Force to overcome strong positions. After the defeat of the Allied flyers, the incessant air attacks on enemy troops, particularly the demoralising effect of "Stuka" attacks, had a decisive influence on the rapid progress of operations. The thrust towards the Channel could only be undertaken if both flanks of the salient were protected by constant reconnaissance and attack. German bombing of shipping and harbours reached a climax during the encirclement of the Anglo-French troops in the Dunkirk area.

The psychological effect of German air superiority, and the uselessness of resistance to it, must be taken into account when considering the collapse of French resistance.

Once again concentration and determination in air attack had proved its worth. In independent operations to attain mastery of the air, in the destruction of large industrial areas, and in operational and tactical co-operation with Army and Navy, the Luftwaffe was able to win decisive victories.

#### Air War Against England.

After the fall of France, the German air formations were to destroy the R.A.F. and its ground organisation, and also the economic war potential, and therefore the resistance, of Britain.

August 13th 1940 saw the opening of the air offensive against England, carried out by Luftflotten 2, 3 and 5 from bases in France, Belgium, Holland and Norway. The Luftwaffe had, at that date 4632 aircraft, of which 3306 were serviceable<sup>(2)</sup>. Of these 1 Fernaufklaerergruppe (long

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(1) Out of an average of 3824 serviceable aircraft there were 591 reconnaissance aircraft, 1120 bombers, 342 Stukas, 42 ground attack aircraft, 248 T.E. fighters, 1016 S.E. fighters, 401 transport aircraft and 154 seaplanes.

(2) Of an average of 3306 serviceable aircraft there were 390 reconnaissance, 981 bombers, 336 Stukas, 34 ground attack, 282 T.E. fighters, 282 S.E. fighters, 288 transport aircraft, and 156 seaplanes.

range recon.), 4 Nahaufklaerergruppen (short range recon.), 11 Fernaufklaererstaffeln, 2 Nahaufklaererstaffeln, 10 Kampfgeschwader (bomber), 14 Kampfgruppen, 1 Stuka geschwader, 6 Stukagruppen, 1 Zerstoerergeschwader (T.E. fighters), 3 Zerstoerergruppen, 7 Jagdgeschwader (S.E. fighters), 3 Jagdgruppen, 1 Nachtgeschwader (night fighters), 2 Transportstaffeln, and 3 Kuestenfliegergruppen (coastal) were used in the attack on England.

The strength of the British air defences had remained unimpaired by the campaign in the West. The R.A.F. had over 675 fighters, 860 bombers and 402 reconnaissance aircraft available in July 1940.

This new attack, which lasted until the start of the campaign in the East, was divided into five phases.

In the first phase the objective was, as in the cases of the Polish and French Air Forces, the destruction of the R.A.F. In August 1940, over 1000 separate attacks were made on the enemy Air Force and aircraft industry. It was, however, not possible to achieve the hoped for mastery of the air over the South of England. From this, two basic facts were apparent:-

- (1) The impossibility of achieving and retaining air superiority without occupying the enemy's territory.
- (2) The impossibility of forcing a decision by air offensive alone.

The second phase was marked by concentrated attacks on ports such as Plymouth and Liverpool, which were of predominantly politico-economic importance. In addition, regular reprisal raids were carried out on London with the object of striking at the political and economic centre of the British Empire and in particular, the destruction of military supply and production centres.

As proof of the success of these operations, the evacuation of many production plants showed that a good deal of disruption had been caused to British industry.

The third phase, from November 1940 to February 1941, was distinguished from the previous one only in the choice of targets and the improvement in accuracy and method of attack. Coventry and the industrial installations at Birmingham, Wolverhampton, Manchester, Liverpool-Birkenhead, Southampton, Sheffield, Portsmouth, Bristol-Avonmouth, Cardiff, Plymouth, Swansea, Derby and Hull were subjected to heavy and repeated attacks during the winter months. British industry was thus beset by increasing difficulties.

With the advent of more suitable weather conditions in March 1941, the air offensive on England entered a fourth phase. This was marked by the shifting of the attack to harbour installations, which formed an essential link in the English supply life-line. The enemy coast was mined and shipping attacked. Damage to ports was considerable and shipping losses rose rapidly. At the same time, the enemy air bases used for attacks on the Reich and occupied territories were repeatedly attacked and renewed and exceptionally heavy reprisal raids were directed against London.

The fifth phase was the result of a change of policy and a re-grouping of forces engendered by the preparations for the campaign in the East. The chief duties of the remaining formations of Luftflotte 3 lay in attacking the more important ports and shipping and the mining of estuaries. Apart from occasional reprisal raids, heavy attacks ceased.

In general, the 10 months of uninterrupted attacks on the British Isles were of considerable importance in the subsequent unfolding of events. Even if this purely strategic air offensive did not force any decisions, the

damage to enemy supplies and economy was nevertheless great. The effect of the air offensive on aircraft production and, therefore on the striking power of the R.A.F., cannot be denied. It was two years before the R.A.F. was able to deal any effective counter blows. Thus the time when the Reich would come under heavy attack had been delayed. Our flyers had assured that the Russian offensive would not be under-mined from the rear.

#### The Balkan Campaign.

With the commencement of the campaign in the Balkans on the 6th April 1941, the centre of gravity of the German air offensive shifted gradually from West to East. In this undertaking the Luftwaffe was set the following tasks:-

- (1) Effective support for the Army by attacks on the battlefield and by the elimination of enemy resistance in the rear areas.
- (2) The carrying out of an airborne invasion of Crete.

Luftflotte 4, which was entrusted with these plans, had no difficulty in attaining unchallenged mastery of the air from a numerically weak enemy (1) right at the outset. It commanded 1 Fernaufklaererstaffel, 1 Kampfgeschwader, 7 Kampfgruppen, 7 Stukagruppen, 2 Zerstoerergruppen, 7 Jagdgruppen and 3 Jagdstaffeln.

As in Yugoslavia, so in Greece, was it possible to attain decisive successes and thus to bring operations rapidly to a definite conclusion.

The undertaking in Crete came neither as an operational nor as a tactical surprise to the enemy. A necessary condition for the success of the operation was once again quite clearly air supremacy. Victory was attained through the heroism of the paratroopers and mountain troops engaged. Their task was greatly facilitated by the uninterrupted activity of the air transport units and of formations of Fliegerkorps VIII.

## II.

### 1941-1944.

Henceforth, the air was characterised by the fact that the Luftwaffe could no longer concentrate its activities on the fighting of a single campaign, but was forced to divide its strength between a number of theatres of war. This inevitably caused a reduction in striking power in each sector, and led to the abandonment of strategic air warfare in favour of close support operations for the Army and Navy.

#### The Campaign in Russia.

Developments from the beginning of the Russian campaign on the 22nd June 1941, showed the need for such a change of policy. On the basis of past experience, the operational plans laid down the following tasks for the Luftwaffe:-

- (1) Destruction of the enemy Air Force.
- (2) Support for the Army by:-
  - (a) attacks on road and rail movements;
  - (b) close support on the battlefield.

/To

(1) The Yugoslav Air Force had at its disposal on the 15th February 1941, a total of over 357 military aircraft, consisting of 32 reconnaissance aircraft, 171 bombers and 154 fighters.

To operate this plan, Luftflotten 4, 2, 1 and parts of Luftflotte 5 went into action with the appropriate Heeresgruppen (Army Groups). With a strength of 5392 aircraft, of which 3701 were serviceable (1), the Luftwaffe had a total of over 2150 front-line aircraft, comprising 21 Fernaufklaererstaffeln, 51 Nahaufklaererstaffeln, 31 Kampfgruppen, 8 Stukagruppen, 1 $\frac{1}{2}$  Schlachtgruppen, 2 Zerstoerergruppen and 19 Jagdgruppen.

The Soviet Air Force was estimated by Listening Service reports to have double this strength. On the basis of Soviet losses, this soon proved to have been a very conservative estimate. For the first time therefore, our flyers had, at the outset of a campaign, to contend with a numerically superior enemy.

By exertion of the maximum effort, the first blows were aimed with overwhelming force at the enemy Air Force. By the evening of the second day of battle the enemy had lost 2582 aircraft and it was then believed that the numbers had been equalised. It was therefore possible to use the heavy bomber formations in direct support of the Army and they made a large contribution towards the success of the ground forces. The offensive was particularly successful against traffic installations and railroads in the enemy's rear. As most Soviet production plants were out of range, this proved to be the most damaging policy. The aim was to prevent the Russians from escaping in the vast spaces and from digging in behind the Dnjepervina line. In the battle of encirclement it was the intention to prevent the enemy from breaking out.

It was not possible, however, to attain a consistent mastery of the air between June and December 1941. Constant moves and the difficulty of bringing up supplies and reinforcements sapped the strength of the Luftwaffe. The deeper the Army penetrated into Russia, the greater was the demand for air support. Raids on industrial centres became more and more infrequent, and with the commencement of the winter battles, the situation demanded the constant attention of the greater part of the Air Force to close support for the Army.

The tremendous losses suffered by the Russians did not, however, lead to the end of the war. Although the Red Air Force had sacrificed 20,392 aircraft, it could not be eliminated. It was simply not possible, with the aircraft available, to give assistance everywhere. An effective fight against the enemy Air Force and close support of the Army were not to be achieved simultaneously.

#### The Mediterranean, 1941-1942.

With the inclusion of North Africa in the sphere of operations of the Wehrmacht, it became necessary to employ units of the Luftwaffe in the Mediterranean Theatre. Since December 1940, Fliegerkorps X had been in Sicily. A year later it was joined by Luftflotte 2, newly relieved from the East. For the time being the number of serviceable aircraft was small. In January 1942, it consisted of an average daily strength of 154 aircraft, comprising 10 reconnaissance, 55 bombers, 3 T.E. fighters and 86 S.E. fighter aircraft. The enemy's position was somewhat similar.

The tasks to be carried out in the Mediterranean were:-

- (1) The neutralisation of Malta.
- (2) Disruption of enemy shipping to Egypt.
- (3) Support for the Army in Africa.

Of the air operations during 1941/42, the outstanding event was

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(1) Out of an average of 3701 aircraft there were 593 reconnaissance aircraft, 1030 bombers, 302 Stukas, 130 T.E. fighters, 1271 S.E. fighters, 231 transport aircraft and 144 seaplanes.

the offensive on Malta. It was possible, for a time, to attack the island so heavily that it had little value to the enemy as an air or supply base. Interference with enemy shipping in the Mediterranean was not very effective. As a result of the enemy's increasingly strong defences, attacks became increasingly difficult and almost impossible in daylight from 1942 onwards.

Units of "Fliegerfuehrer Afrika", formed from elements of Fliegerkorps X took over the close support of the Army as from February 13th, 1941, their offensive being concentrated on the British desert defences. By the destruction of these they made a considerable contribution towards the speeding up of land operations. This was the more laudable in that there was, for the first time, a noticeable increase in the air activity of the English. The enemy had, from past experience, greatly improved and strengthened his Air Force.

#### The Air War in the West, 1941-1942.

German air operations in the West during the year 1941/42 were overshadowed by events in the East and South. Luftflotte 3, the sole remaining formation in the West, had, apart from its fighter strength, only 2 Kampfgeschwader and 2 Kuestenfliegergruppen available. In August, 1941, the average daily operational strength was 186 aircraft of which 13 reconnaissance, 23 bomber and 150 fighter aircraft. For individual attacks in force, Kampfgruppen would be temporarily withdrawn from other theatres of war.

This limited force was to assist the Navy in its battle against the British supply lines by:-

- (1) Attacking the more important ports.
- (2) Mining of sea approaches.
- (3) Destruction of shipping in the sea areas around England and in the Atlantic.

The raids on the most important ports, such as Liverpool and Newcastle, were carried out in accordance with well tried tactics and in many instances caused considerable damage. Due to adverse weather conditions these attacks fell off during the Autumn of 1941.

In the following months, minelaying operations were carried out in the approaches to the important ports as far north as Newcastle and Liverpool. Whereas bombing was usually done on moonlit nights, minelaying was more successful on overcast nights and in weather conditions unsuitable for attacks in strength. Successes, on which information was generally delayed and only partial, caused appreciable stoppages and casualties amongst enemy shipping.

Attacks on shipping were particularly effective in the waters between the Thames Estuary and Flamborough Head. Here, appreciable losses were inflicted on the convoys passing to the North and South at regular intervals and on fixed routes.

The course of these battles was, by and large, already indicative of the changing nature of the overall war situation - the change-over to a defensive policy imposed by the air superiority of the enemy.

#### The Eastern Front 1942-1944.

The changed position was again made quite clear by the activities of the Luftwaffe in the East from 1942 onwards. The close connection with activities on the ground formed the outstanding indication of the course of events. The tasks of the Luftflotten embraced in general the support of

the fighting Army, each in close co-operation with a particular Heeres-gruppe.

With a total overall strength of 6821 aircraft in the Luftwaffe in July 1942, of which 4264 were serviceable<sup>(1)</sup>, the total employed by formations in the East fluctuated between 2000 and 3000.

The Red Air Force had risen anew after the shattering blows of 1941, strengthened and modernised, with its personnel trained on German lines. By 1942 it already had 5000 front line aircraft<sup>(2)</sup>.

The form of German air operations during the year 1942 was moulded by the attacks carried out by ground forces in the Southern sector, in the direction of the Volga and the Caucasus. In the main, the formations battling ahead with the Army were occupied with close support attacks. 4/5 of the bomber strength was employed in immediate support of ground operations. Only a few were given the task of attacking targets deep in enemy territory. It was more often in the Middle and Northern sectors of the Eastern Front that, when the situation permitted, attacks were made over a wider area. They were especially aimed at munition factories in Gorki, Rybinsk, Moscow and Leningrad, the harbours of Murmansk and Archangel and the all important railway network.

In view of the disadvantageous results of these close ties with the Army, the year 1943 was marked by the efforts made to adopt a strategic bombing policy. This led to the heavy attacks carried out in the intervals between battles, on the tank factory at Gorki and the synthetic rubber plant at Jaroslavl. With the start of the Soviet summer offensive, however, the pressure of circumstances forced all formations to return to close support of the Army. Thus our air power was dissipated and it was not possible to give any attention to troop concentrations behind the enemy's front.

In 1944, Fliegerkorps IV was given the task of renewing the long range bomber offensive against communications in the enemy's rear. Good results were obtained by using methods employed in Western air operations, modified to suit conditions in the East. In general, however, the activities of the Air Force were still closely allied with those of the Army. In 1943, 80% of the operations were devoted to tactical co-operation with the Army, and 1944 showed no appreciable difference.

#### Africa and Italy, 1943-1944.

After the successful landing of Anglo-American forces in French North Africa, the Luftwaffe in the Mediterranean was, as elsewhere, forced more and more on the defensive.

Within this policy it was given a threefold objective:-

- (1) The holding down of Allied forces in North Africa.
- (2) Maintenance of the blockade in the Sicilian channel.
- (3) Obstructing any direct attack on the German fortress of Southern Europe.

The formations of Luftflotte 2 assigned to this task had an average daily operational strength in April 1943 of 432 aircraft. Of these 30 were reconnaissance, 109 bomber and 293 fighter aircraft.

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(1) Of the average of 4264 aircraft serviceable in July 1942 there were 486 reconnaissance aircraft, 1237 bombers, 369 Stukas, 278 T.E. fighters, 1253 S.E. fighters, 529 transport aircraft and 112 seaplanes.

(2) Of these approx. 15% were U 2's, used as auxiliary bombers and courier aircraft.

At the same time the Allies had increased their strength throughout the whole Mediterranean theatre to 4500 aircraft. They commanded 2700 fighters, 1350 medium bombers and 450 heavy bombers.

Nevertheless, considerable successes were achieved even here. Irrefutable proof of this were the heavy casualties suffered by the enemy in Africa, the bitter fighting for Sicily and the costly Anglo-American advance in Southern Italy. Despite its numerical disadvantage, the Air Force was able to strike powerful blows in support of the Army.

Against enemy shipping in the Mediterranean and against the invasion fleets off Sicily, Salerno and Nettuno successes were also achieved, which proved costly in men and materials to the British and Americans. In the summer of 1944, however, the enemy Air Force was in a position to hamper the movements of the German Army to a great extent. It was possible for the German flyers to achieve only a temporary and local mastery of the situation.

#### Air War in the West, 1942-1944.

A new policy came into force in the West from April, 1942 onwards, as the terror attacks on the Reich which the enemy had started made it necessary to carry out reprisals.

Whereas the number of enemy aircraft was steadily increasing, the strength of our own flyers in the West remained the same. The reprisal raids were therefore flown by an average of only between 40 and 70 aircraft. They were directed chiefly against the towns of Exeter, Bath, Sunderland, Newcastle, York, Norwich, Bedford, Canterbury and Weston-super-Mare.

At the same time, efforts were made to keep the previous objectives in view. Minelaying and attacks on shipping had to be continued as far as possible. This required the maximum of effort from all personnel. The difficulties involved in the air war on England thus reached a climax in the Spring of 1943. Nuisance raids were confined almost entirely to South and South-East England, while destructive raids were only successful to a small extent. Even the larger scale operations were only carried out against towns near the coast, such as Hull, Norwich, Ipswich, Chelmsford, Portsmouth, Plymouth, Cardiff etc. Reprisal raids were not renewed until the beginning of 1944, when, for the first time since May, 1941, attacks could be directed against the British capital.

#### The Air War against the Reich.

In the meantime the Anglo-American attacks on the Reich territories were increasing in tempo and weight. In May, 1944, 777 S.E. fighters and 20 T.E. fighters were available for the defence of the Reich. Endeavours were made to concentrate and co-ordinate to the highest degree possible the formations attacking the bomber streams. Despite this, enemy losses decreased, due to the increased range of their fighter cover and heavier defensive armament on the bombers. In the daylight attacks they dropped from 5.5% in January 1944, to 1.4% in July. At night, the enemy lost 6% in January and 2.8% in July. Our own losses, on the other hand, stood at 6% by day in January and 13% by July. At night they were 3.5% in January and 4.5% in July.

Due to their numerical inferiority, the defenders of the Reich were not able at that time to hinder to any extent the blows struck by the enemy at German residential quarters and industrial centres.

From the choice of targets it was possible clearly to recognise a plan of attack. In the first half of 1943, the Allies chiefly made terror attacks on German towns, at the same time attempting to hit any industrial and munition plants. Towards the middle of the year these increased in

weight to "Obliteration Raids" on residential areas, industrial installations and communications. During the Spring of 1944, the enemy's offensive was concentrated on communications and the aircraft industry, in particular that part of it concerned with fighter production. In the middle of May, 1944, the Allied incursions over the Reich were directed against German fuel production, a large proportion of which was brought to a standstill.

#### The Invasion.

The Invasion set new problems for the Luftwaffe in the West. Numerically Luftflotte 3 was far weaker than the enemy. It only had 496 aircraft. Of these 61 were reconnaissance, 174 bombers, 37 T.E. fighters, 38 ground attack (including fast bombers), and 186 S.E. fighter aircraft.

In comparison the strength of the enemy Air Force was 12,200 aircraft, consisting of 5400 fighters, 5500 long range bombers and 1300 medium and light bombers.

The task facing the German Air Force was that of lending immediate support to the Army in its desperate defensive struggle, by means of effective attacks on the invasion fleet and interference with enemy reinforcements and supplies.

These activities could not, of course, alter the course of the battle. In effect, they tended to underline the results of developments which, ever since the outset of the Eastern campaign, had forced a change over to a defensive policy in the air. Our forces were dissipated by expansion in the East, South and West, and the increase in the number of our aircraft in no way corresponded with the widening of the scale of operation. Because of this, it was impossible to adhere to the basic principle of beating the enemy Air Force before turning to the support of ground forces.

Hence the enemy Air Force could be countered neither in the East, nor in the Mediterranean, nor in the West. From their experience in the first years of the war the English built up a numerically vastly superior Air Force, which was suited both to strategic and to close support operations. They were able to employ their aircraft on a narrow front, along the same lines as the Luftwaffe in the years 1939/40.

Our setbacks in the last years were, therefore, the outcome of a quantitatively and qualitatively inadequate aircraft production. The Invasion could only succeed if the Allies had overwhelming air superiority. Had our own Air Force been of equal strength, it would never have succeeded.

### III.

#### Conclusions.

The use of the Vergeltungswaffen (V weapons) on England represents a basic alteration in the future tactics of air warfare. In an age of revolutionary discoveries, prophecies may seem dangerous. In view of past events, however, it is quite clear that, particularly as far as the fierceness of the air war is concerned, everything depends on keeping the steadiest nerves. We must use foresight in adopting the right technical principles in order that we may have a reasonable hope of winning back that air superiority so necessary for final victory.

Past developments in the German conduct of the air war are marked by the changeover, under pressure of circumstances, from offensive to defensive operations. Germany entered the war with superior armaments but

has, for the moment, lost those technical and material advantages which she had in 1939. The rapid concentration of air power at crucial points won mastery of the air at the beginning of the war. This was the condition necessary for the downfall of the enemy in Poland, in Norway, in the West and in the Balkans.

With the start of the war in the East and the simultaneous use of the Luftwaffe in more than one theatre of war, the change of policy set in. The situation in the East provides an example. Because of its loss of air superiority the strategic Air Force was compelled to abandon its proper function, despite clear recognition of the attendant drawbacks. The change over to the defensive, brought about by enemy air superiority, had become a fact.

By themselves, the defeats thus suffered are not decisive. It is a characteristic of modern war, that the periods of apparent technical stagnation are but the seed for a renewed resurgence of strength. Underneath the surface, new things are being born from ceaseless toil and research. On the horizon are signs of a new period of technical progress. Inbued with new energy, it leads us onward once more to the offensive in the air and hence to a decisive end.

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