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PART I

P.R.C.

GERMAN AIR DEFENSE 1933-1945

SECOND VOLUME

21 March 1941-31 December 1942

CHAPTER 3

DEVELOPMENTS FROM ESTABLISHMENT OF AIR COMMAND CENTER TO ESTABLISHMENT OF THE HOME AIR FLEET ON 27 JANUARY 1944

1941

OPERATIONS IN THE BALKANS AND IN NORTH AFRICA

The spring of 1941 was dominated by preparations for execution of the strategic plans directed against eastern, southeastern, and southern theaters. These plans had resulted from the following factors:

1. Italy, a signatory member of the triple pact between Germany, Italy, and Japan, had attacked Greece on 28 October 1940, thereby precipitating developments leading up to the inclusion of the Balkan regions in the problems of the current power constellation.

2. After Hungary, Rumania, and Slovakia had joined the triple pact in November 1940, followed by Bulgaria on 1 March 1941, only one matter which categorically had to be settled to bring about a final solution of the Balkan problem remained open. This was the question

whether Yugoslavia and Greece, including Crete, were to fall within the political and strategic sphere of the Axis Powers or into that of the opposing Western Powers.

3. The Italian offensive against Egypt, which had commenced on 12 September 1940, had bogged down and could not continue without support from Germany.

In order to secure Axis control of the Mediterranean areas, however, the expulsion of Great Britain from her positions in North Africa and Egypt was a strategic objective of the first order.

4. The results achieved in the night air warfare conducted against Great Britain by German air forces in the winter of 1940-41 provided no justification for any hopes that Great Britain would accept Germany's peace offers and bring the war in the West to an end.

Germany had allowed the only possible chance for an invasion of Britain, in August 1940, to pass unexploited. From then on the obvious impossibility for a land power, such as Germany, to achieve success in an attempt at an invasion against Britain's naval power necessarily had the result that thoughts of the possibility of Russia going over sooner or later to the side of the enemy placed a dangerous aspect on further developments in the war.

It must be borne in mind here that Hitler's basic

political concept had always been one of peace in the West and expansion in the East to provide space for the rapidly growing German population.

The sequence of military operations based on these strategic concepts proceeded in logical succession:

With air support from the air units of Air Command africa, the German Africa Corps commenced its offensive on 1 April 1941 in a drive which carried it through Benghasi and Tobruk to Sollum, where the advance came to a halt on 14 April.

On 6 April 1941 a concentrated attack by air units of the Fourth Air Fleet opened the campaign against Yugoslavia and Greece. Yugoslavia capitulated on 17 April and the entire campaign was brought to a victorious close by the entry of German troops into Athens on 27 April 1941.

On 20 May 1941 the largest airborne operation hitherto staged was launched against the island of Crete, ending on 1 June 1941 in the successful occupation of the island by German troops.[301]

A decisively important drive against the south flank of Russia was thus brought to a successful conclusion to provide the necessary conditions for a campaign against that country.

As gratifying as the success achieved in these military

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301. Sources 113, 224.

operations appeared when considered alone, they were accompanied by a by no means unimportant element of weakness. Whereas in all former campaigns the annihilation of the hostile air potential through attack by the German operational air forces had, to a considerable extent, eliminated any air threat to German territories, thereby almost completely relieving the air defense forces of their mission, the British air forces this time retained the initiative for air attacks in the western theater of operations because the night air offensive maintained against Britain in the West was not directed specifically at annihilation of the British offensive air forces.

The mission of proteting Germany and the occupied western territories against British air attack therefore rested alone on the German air defense forces.

However, these forces had to be weakened by the units required to protect and support the current military operations in other theaters. Commitments for these purposes in the southeast and south comprised the following units:

A. FOURTH AIR FLEET (BALKANS)

Status 15 April 1941

Unit	Aircraft type
HQ, 26th Twin-Engine Fighter Wing	Me-110-D/E
1st Group	"
2d "	"

FOURTH AIR FLEET (BALKANS)--continued

Unit	Aircraft type
HQ, 27th Fighter Wing	Me-109-E
2d Group	"
3d Group	"
1st " 2d Training Wing	"
HQ, 77th Fighter Wing	"
2d Group	" Fighter-Bomber
3d "	Me-109-E
HQ, 54th Fighter Wing	" Fighter-Bomber
2d Group	"
3d "	"

On 30 June 1941 the antiaircraft artillery forces committed in the command zone of the Fourth Air Fleet comprised 9 heavy and 9 light batteries.

B. X AIR CORPS (ITALY AND AFRICA)

Status 15 April 1941

Unit	Aircraft type	Zone of operations
3d Group, 26th Twin-Engine Fighter Wing	Me-110-DB-601-N	Italy
1st Squadron, 3d Night Fighter Wing	Me-110 (Night-Fighter)	"
7th " 26th Fighter Wing	Me-109-E-DB-601-N	"
1st " 27th " "	Me-109-E (Tropical)	Africa

B. X AIR CORPS (ITALY AND AFRICA)--Continued.

The antiaircraft artillery forces committed under the X Air Corps as of 1 April 1941 comprised 3 light batteries in Africa, and 18 heavy and 5 light batteries in Italy.

The offensive and defensive air missions resulting from the expansion of the war to the Balkans and Africa thus necessitated a total commitment in air and antiaircraft artillery forces of

1 twin-engine fighter wing with 3 groups

3 fighter wings with 8 1/3 groups

1 night fighter squadron

27 heavy antiaircraft artillery batteries

17 light antiaircraft artillery batteries.[302]

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302. Sources 105, 186.

FIGHTER DEFENSES UNDER AIR COMMAND CENTER IN 1941

The shift of emphasis in offensive operations to the east and the necessity to reinforce the air defenses in the west involved the introduction of important organizational measures.

On 1 May 1941 the night fighter division was assigned the mission of a "Fighter Command Center." This meant that the daytime fighter forces within the command zones of Air Command Center were placed under the "Night Fighter Division/Fighter Command Center," a measure which consolidated the command and organizational control of all daytime and night fighter forces under one headquarters.[303]

The air district commands remained responsible for the commitment of antiaircraft artillery forces.

For daytime fighter operations the Night Fighter Division/Fighter Command Center subdivided its air defense zone into sectors and subsectors, established the necessary command posts, and assigned the required sector and subsector commanders. This organizational measure was completed by July 1941 and resulted in the following fighter defense order of battle in the command zone of Air Command Center, status 26 July 1941:

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303. Sources 173, 187.

NIGHT FIGHTER DIVISION/FIGHTER COMMAND CENTER

ZEIST, HOLLAND

HQ, 1st Night Fighter Wing

1st Group

2d "

3d "

HQ, 3d Night Fighter Wing (in process of activation)

1st Group (minus 1 squadron with X Air Corps in Italy)

2d " 2d Night Fighter Wing(Strategic), operating in command zone of Third Air Fleet

4th " 2d Night Fighter Wing (Strategic), as above

1st Searchlight Brigade (Stade)

2d " " (Arnheim)

Helligoland Bight Sector

HQ, 1st Fighter Wing

Subsector Lower Elbe River

1st Squadron, 1st Fighter Wing, Me-109-F aircraft

6th " 53d " " " "

27th Replacement Fighter Group

51st " " "

26th " Twin-Engine Fighter Group

Subsector-East Freesia

1st Group, 52d Fighter Wing, Me-109-F aircraft

52d Replacement Fighter Group

76th " Twin-Engine Fighter Group

Helligoland Bight Sector--Continued

Subsector Jutland/Zeeland

Replacement Twin-Engine Fighter Group Vaerldse

Subsector Holland

2d Group, 76th Twin-Engine Fighter Wing, Me-110 and DB-601-N aircraft

Ruhr Region/Holland Sector

2d Squadron, 1st Fighter Wing

3d Replacement Fighter Group

Frankfurt/Wiesbaden Sector

2 swarms*from Fighter School Fuerth, Bavaria

Wunstorf Sector

1 squadron from 2d Twin Engine Fighter School,Wunstorf

Berlin Sector

2 swarms*from Fighter School Werneuchen

For the rest of the territory of Germany the following forces were available for daytime fighter defense missions:

Air Fleet Zone	Air District Command	Unit
First	I	54th Replacement Fighter Group
Fourth	XVII	77th " " "

Control of these tactical units was a responsibility of the air district commands.[304]

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304. Source 188

* Usually about five aircraft. Not a regular standard unit.

Consonant with the increased command responsibilities of the Night Fighter Division/Fighter Command Center, the headquarters was expanded on 10 August 1941 to form the XII (Night Fighter) Air Corps.

The 1st and 2d Searchlight Brigades were expanded to form searchlight divisions.

The Night Fighter Division/Fighter Command Center remained in command of all daytime and night fighter forces within the command zones of Air Command Center.

The command organization of the air defense forces within the zone of interior, status 8 October 1941, was as follows:

AIR COMMAND CENTER, BERLIN

Fighter Defenses	Antiaircraft Artillery Defenses
HQ, XII Air Corps, Zeist	Air District Comd III, Berlin
Night Fighter Division/ Fighter Command Center, Oldenburg/Oldenburg	" " " IV Dresden
1st Searchlight Division, Stade	" " " VI Muenster
2d Searchlight Division, Arnheim	" " " XI Hamburg
	Under tactical control only:
	Air District Comd VII Munich
	" " " XII/XIII Wiesbaden Nuremburg

305. Sources 154, 189.

The creation of Fighter Commands Helligoland Bight (Jever), Holland/Ruhr Region (Schipol), and Berlin (Doeberitz) on 1 September 1941 established a clearly defined organizational top-level command at brigade level for the control of daytime fighter defense operations in three main defense areas.[306]

The determining factors for this new development in the organization of the fighter defense system, which had been in process since 1 May 1941, were as follows:

1. Requirements for the Russian campaign, which started on 22 June 1941, made it necessary

a. to withdraw strong bomber forces from the western theater for operations in the eastern theater and therefore to cease strategic warfare against Britain and particularly against the British air forces.

The air forces left behind in the west under the Third Air Fleet comprised

3 bomber wings with a total strength of 8 2/3 groups for operations against land targets (Of this force 2 wings comprising 5 2/3 groups were transferred to the eastern theater on 19 July 1941).

1 bomber wing totalling 6 groups for action against seaborne targets in the Atlantic.

Apart from harassing attacks, these small forces

306. Source 190.

were inadequate for the conduct of strategic air warfare.

b. to withdraw strong single- and twin-engine fighter forces from the west (including Norway) and from the zone of interior for protection of military operations in the eastern theater. The forces thus withdrawn comprised

3 fighter wings totalling 12 groups (51st, 52d, and 53d Fighter Wings)

1 twin-engine fighter wing (the 26th) with a strength of 3 groups.[307]

2. Developments in the air situation showed that the British in their conduct of air warfare were still placing main emphasis on night attacks against German territory. The ratio of daytime to night attacks at the time involved was 1:40. All of these operations were harassing penetrations and harassing raids designed to disturb the population and interrupt work in the German industry.

The raids were of the continuous-attack type, meaning that the targets were kept under continuous attack by individual planes or small units.

The first sizable night attack against Hamburg and Bremen occurred on 9 May 1941, to be repeated,

307. Sources 191, 210.

against the same targets, on the night of 11-12 May. Concurrent harassing attacks were carried out against various target areas in an effort to scatter the German defense effort.

In mid-1941 the Royal Air Force changed its tactics by concentrating its forces for attacks against specific targets. The attacking air units approached from various directions and echeloned in height at altitudes between 15 000 and 20 000 feet.

British penetrations during daylight remained restricted to individual reconnaissance planes operating at very high altitudes, during fair weather. Because of its speed and the extreme altitudes at which it operated, the Spitfire model used by the British for these reconnaissance missions represented a serious problem for the German air defense. As had always been the case any systematic commitment of interceptor fighters against these reconnaissance planes remained impossible because of the inadequate target tracking capabilities of the aircraft reporting services. Furthermore, the tactical units taken from schools and replacement groups for defense missions in the German interior all had older types of fighter aircraft and were unable to overtake a Spitfire reconnaissance

plane operating at top speed. For this reason their only chance for success was to attack from a favorable position and take the enemy plane by surprise.

On 12 August 1941 the Royal Air Force launched the only sizable daytime attack it carried out against German territory in that year. The attack was directed against the Ruhr region and resulted in the loss of 42 bombers.

From what has just been said above it is obvious that main emphasis in fighter defense operations was still on night fighter defense and called primarily for an expansion of the night fighter arm.

Consolidation of the daytime and night fighter forces under the XII Air Corps created a firmer organization and produced the advantage of a more precise knowledge of the air situation based on the data provided by the radar instruments available in the night fighter control positions.[308]

NIGHT AIR DEFENSE TECHNIQUES IN 1941

Pursuant to orders from the Commander in Chief of the Luftwaffe a system of combined tactics in night air defense operations was introduced on 8 April 1941 which provided for concurrent action by night fighter and antiaircraft artillery forces within the antiaircraft fire zones. The

308. Sources 173, 216.

system had evolved from the experiments carried out by the 1st Squadron, 1st Night Fighter Wing in the Berlin area early in 1941 and described above in Chapter 2.

To secure optimum effectiveness in coordinated fighter-antiaircraft artillery action the following the following method was employed:

The local antiaircraft artillery commander and the fighter control officer operated from one and the same command post, under command by the antiaircraft artillery commander. The night fighter unit was assigned a waiting area of 60 degress above the protected target, and while the unit was within this area the antiaircraft guns withheld fire. The orders to withhold fire were transmitted by radio to the antiaircraft artillery batteries. If an enemy target was picked up by searchlights within this sector, the night fighter unit could attack it without interference by antiaircraft fire.

It must be admitted that this method was complicated and required extensive technical communications networks.

However, if cooperation was good between the fighter control officer and the antiaircraft artillery commander, and if the night fighter pilots involved were experienced men, it produced appreciably successful results and considerably reduced the risk of loss through friendly fire.

The system was introduced in Berlin, Hamburg, Bremen, Kiel, Cologne, Duesseldorf, the Frankfurt-Darmstadt area, and Munich.[309]

However, the overall night fighter defense system in 1941 was based primarily on illuminated night fighter operations with support from searchlight units. The continuing equipment of the Freya radar instruments in the night fighter control positions with the supplementary control instruments made it possible in appropriate weather conditions to conduct dark night fighter operations or illuminated operations from one and the same position.

NIGHT FIGHTER GROUND SERVICE ORGANIZATION IN 1941

By the end of 1941 the ground service organization of the night fighter arm was developed in accordance with the following pattern:

1. Night Fighter Control Positions, each equipped with 1 Freya radar instrument plus the AN control attachment; 2 Wuerzburg (C or D) radar instruments;

309. Source 144.

1 Seeburg plotting table; 1 untra shortwave ground-air radio transmitter; 1-2 light type radio beacons; 1 light beacon.

On a frontage extending from the Isle of Sylt to the mouth of the Schelde River and as far rearward as the Dutch-German border 16 advance positions (the Auster, Pelikan, Hummer, Wal, Jaguar, Schleie, Gazelle Loewe, Tiger, Marder, Hering, Zander, Hase, Biber, Gorilla, and Hamster positions) had been established.

The following positions were established to control combined night-fighter-antiaircraft artillery operations:

Position	Location
Baer	Berlin
Kiebitz	Kiel
Hummel	Hamburg
Roland	Bremen
Drossel	Duesseldorf
Colibri	Cologne
Dachs-Nord	Frankfurt
Dachs-Sued	Darmstadt
Muecke	Munich

2. The illuminated night fighter belt of searchlight positions was subdivided into 5 sectors. In

each of thesea "night fighter regional command" in a centrally located command post directed the operations of the night fighter units in coordination with the searchlight units.

Region I extended from the Danish border to level with the Bight of Helligoland; Region II extended to the outskirts of Bremen; Region III to Muenster; Region IV to Duisburg; and Region V to Aachen.

Regions VII and VII were forward of the Berlin defense area and extended from Neuruppin to Halle.

Region VI was still under development to extend the illuminated night fighter belt from Aachen to Luxemburg.[310]

TACTICAL-TECHNICAL SPECIFICATIONS FOR THE DEVELOPMENT OF EQUIPMENT FOR NIGHT FIGHTER OPERATIONS IN 1941

The above development of the ground service organization for the night fighter arm was predicated on an adequate production of the necessary items of equipment.

In the winter of 1940-41 the Night Fighter Division had stated the following specifications for the development of items of equipment:

1. a radio locator or radar instrument with the same degree of precision as the Wuerzburg D instrument for lateral, altitude, and range data, but with

an operating range extended to 48 miles.

2. An airborne radar instrument, initially with an operating range equivalent to its altitude and later with farther; close-range dissociation properties down to a range of 660 feet; identifiable by friendly radar instruments.

3. Considerably improved and precisely functioning plotting tables.

The Wuerzburg Riese radar model was already under development as an improvement over the existing Wuerzburg D model and it was hoped that the new model would approximately meet the specifications.

The Lichtenstein radar instrument was already under development to serve as an airborne radar instrument.

As an improvement over the existing plotting tables the Seeburg plotting table was developed. Working on a scale of 1:50 000 this table could be used for an operating

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10. Source 7.

radius of 21 miles, which could be considered adequate.

On 27 July 1941 General Kammhuber, in command of the Night Fighter Division/Fighter Command Center, reported orally on the night fighter program at headquarters of the Wehrmacht High Command. Hitler approved his recommendations and contracts were awarded for a large-scale serial production of the instruments required. However, although the program was assigned the highest priority for production, it was autumn 1941 before the requisitioned equipment began to arrive in the front line units in any appreciable numbers.

With completion of the system of night fighter control positions forward of the illuminated night fighter belt the following principles governing night fighter defense operations evolved by the end of 1941:

Starting at the coastal positions, penetrating enemy aircraft could be intercepted by night fighters operating without searchlight support.

Each position permitted the commitment of one or a number of night fighters in successive waves within the operating range of the Wuerzburg D radar instrument, that range being 21 miles. If the fighter control position within its operating range failed to guide its fighters to within sight of the enemy aircraft, the searchlight

zone of the illuminated night fighting belt which then followed provided the possibility for night fighters to attack a spotted enemy plane.

This system was adapted to the British tactics of penetration by individual planes approaching their target scattered over a large area in width and depth. The system was applied in the same way against enemy aircraft on their home route. Even when enemy planes penetrated across the Bight of Helligoland and the northern parts of the night fighter defense area, it was necessary as a precautionary measure for the night fighter positions in the southern parts to prepare for action against the returning enemy planes, since these usually chose the shortest route across Holland for the home route.

In the most unfavorable event, that of penetration and exit over the northern or southern flank areas of the night fighter defense area, approximately one-third of the night fighter control positions and searchlight sectors had to be passed over, so that at best between ten and twenty night fighters could be committed against the penetrating enemy aircraft.

The defense action thus made possible was naturally inadequate to repel large-scale and more concentrated night attacks, and the existing possibilities on the whole

could only be increased by increasing the number of night fighter control positions and improving the control capabilities of each of them.

The final goal aimed at by the Commanding General of the Night Fighter Division, General Kammhuber, therefore was to have a completely interlocking network of night fighter control positions established throughout the zone of interior and throughout the occupied western territories.

It was this stated requirement of his that resulted in the adoption of his recommendation for the large-scale serial production of the required items of equipment.[311]

DEVELOPMENT OF THE He-219 MODEL

Besides the general approval of his program, General Kammhuber received from Hitler direct and special authority to expedite the implementation of his plans by means of

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311. Source 144.

direct cooperation between front line agencies and industry, eliminating the bureaucratic channels of the Reich Air Ministry.

This authority included authorization of measures to develop a special type of night fighter aircraft. By this means General Kammhuber desired to make himself independent of the requirements of other users for a share in the industrial output, since events had shown in the case of the Me-110 and Ju-88 that the need to satisfy the needs of other users slowed down efforts to expand the night fighter arm. Me-110 aircraft were required not only by the night fighter arm but also for the equipment of twin-engine fighter, reconnaissance, and fast bomber units, while the Ju-88 at the same time served as the standard bomber and strategic reconnaissance plane.

A model which General Kammhuber considered particularly well suited for night fighter purposes was a highly modernized twin-engine strategic reconnaissance plane, which already featured a nose wheel, designed by Heinkel as the He-210 in 1940, development of which had been halted by the Reich Air Ministry. Exercising his special powers he gave out contracts for the development and special equipment of this aircraft model and authorized three of his most successful night fighter pilots at the time, Captain Streib

Captain Streib, Captain Lent, and Captain Prince zu Lippe-Weissenfels, to participate in the work of developing the new plane.

With all special instruments and weapons installed, and powered by two DB-603 engines the He-216 had a maximum speed of 360 miles, and comparative tests carried out with it and the Ju-188, a development supported by the Reich Air Ministry, showed it to be far superior in speed and maneuverability. Later series of the model, powered by two Jumo-222 engines achieved a maximum speed of 420 miles.[312]

In the autumn of 1941 the strength of the night fighter arm, expressed in units, was as follows:

Status 26 July 1941

HQ, 1st Night Fighter Wing

1st Group

2d "

3d "

HQ, 3d Night Fighter Wing (in process of activation)

1st Group

1st Group, 2d (Strategic) Night Fighter Wing

4th Squadron, 2d " " " "

Status 2 September 1941

HQ, 1st Night Fighter Wing

1st, ed, and 3d Groups

312. Source 192.

HQ, 3d Night Fighter Wing (in process of activation)

1st Group

2d Group (in process of activation)

1st Group, 2d (Strategic) Night Fighter Wing

4th Squadron, 2d " " " "

Status I November 1941

HQ, 1st Night Fighter Wing

1st Group

2d "

3d "

HQ, 2d (Strategic) Night Fighter Wing (in process of activation)

1st Group

4th Squadron

HQ, 2d Group (in process of organization)

5th Squadron " " " "

6th " " " " "

HQ, 3d Night Fighter Wing (in process of activation)

1st Group

2d Group

3d Group (formerly 2d Group, 76th Twin-Engine Fighter Wing and currently retraining)

HQ, 4th Night Fighter Wing (formerly 26th Twin-engine Fighter Wing and currently retraining)

1st Group " "

2d " " "

Status 1 December 1941

As on 1 November 1941 minus losses through transfer of

2d Group, 2d Night Fighter Wing to Second Air Fleet, Italy

4th Squadron, 2d " " " " " " " "

2d Group, 4th Night Fighter Wing to VIII Air Corps in the eastern theater for employment as a twin-engine fighter unit.

Status 20 December 1941

As on 1 December 1941 minus loss through transfer of

1st Group, 4th Night Fighter Wing to VIII Air Corps in the eastern theater as a twin-engine fighter unit.

A prominent feature here is the way in which the night fighter arm was deprived of forces earmarked for it through the return of the 1st Group, 26th Twin-Engine Fighter Wing (which had been redesignated 1 Group, 4th Night Fighter Wing) and the 2d Group, 26th Twin-engine Fighter Wing (which had been redesignated 2d Group, 4th Night Fighter Wing) to their initially intended mission as twin-engine fighter-bombers, and their transfer to the eastern theater. This measure can be explained on the one hand by the precarious situation which had developed in Russia through winter conditions and on the other hand by the fact that the possibilities for the employment of night fighters, numerically, depended upon the progress made in the expansion of the night fighter control position system. Obviously this development had not reached a stage by the end of 1941 which would have justified giving priority to the activation of new night fighter groups.

On the other hand a long-sighted training policy provided for future increased personnel needs in the night fighter arm.

NIGHT FIGHTER PILOT TRAINING IN 1941

On 4 July 1941 the Schleissheim Fighter Pilot School was reorganized as the 1st Night Fighter Pilot School

under Colonel Vollbracht, hitherto in command of the Replacement Twin-Engine Fighter Group Varlöse and of Fighter Command Subsector Jutland/Zeeland, and formerly in command of the 2d Twin-Engine Fighter Wing.

This for the first time created the possibility for night fighter pilots to receive training in their specialized missions. Hitherto, crews had been taken chiefly from the twin-engine fighter and to some extent from the bomber forces and given the necessary training in the special features of night fighter operations at front line units.[313]

DAYTIME FIGHTER DEFENSES OF AIR COMMAND CENTER IN 1941

Whereas development of the night fighter arm received generous support in every respect in 1941, hardly any progress was noticeable in the development of daytime fighter strengths.

Reequipment with the new Me-109-F fighter plane commenced in mid-December 1940, units of the 2d Fighter Command, under the Second Air Fleet, being the first to receive the new model. The new model showed only minor changes in the fuselage against the Me-109-E but its stronger DB-601-E power units increased its speed by approximately 24 miles and gave it accelerated climbing abilities. However, the improvements introduced failed to

313. Sources 188, 190, 200, 202, 214, 215.

give the new fighter general superiority over the British Spitfire IV, all that was achieved was that the stronger power unit gave it equal speed.

On the whole the performances of the new Me-109-F were only slightly better than those of the Me-109-E with its DB-601-N engine. However, the generally superior diving speed of all Me-109 models enabled it to retain the ability to break combat contact at any moment under unfavorable conditions.[314]

The following new daytime fighter units were activated in 1941:

The 1st Group, 77th Fighter Wing was reconstituted at Stavanger in January-February, the former unit of this designation having been transferred in August 1940 to the 51st Fighter Wing and redesignated as the 4th Group of that wing.

The new 1st Group of the 77th Fighter Wing was equipped with Me-100-T aircraft, a model constructed prior to the war specifically for Aircraft Carrier Hindenburg, and had larger planes than the Me-109-E.

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314. Sources 150, 159, 193.

This gave it improved climbing and curving properties, and a smaller landing speed and landing distance, but reduced its speed to about 18 miles less than that of the Me-109-F.

In June 1941, after transfer of the 3s Group, 76th Twin-Engine Fighter Wing, to the eastern theater, a new fighter squadron, the 13th Squadron, 77th Fighter Wing, was activated and equipped with Me-109-T aircraft. In addition, a new twin-engine fighter squadron was organized in the field in Norway for the 77th Fighter Wing and equipped with Me-110 planes.

In July the 77th Fighter Wing received its 14th Squadron, but in November a Special Purposes Fighter Group headquarters was organized to control this squadron and the twin-engine fighter squadron the wing had received in June. These units provided the skeleton forces from which the 1st Group, 5th Fighter Wing, was organized later.

The above units had the mission of protecting Norway in general against air attack from the west and northern Norway also against attack from the east.[315]

In Germany and Holland development of the daytime fighter forces shows a continuously fluctuating pattern and numerous improvizations.

315. Sources 3, 163, 188, 191, 194

In July the 2d Squadron, 1st Fighter Wing was formed from the Fighter Squadron Muenster-Loddenheide.

In August a 1st Group Headquarters and a 3d Squadron, 1st Fighter Wing were established and consolidated with the 1st and 2d Squadrons of the same wing to form a group in Subsector Lower Elbe River.

On 15 September the 26th Replacement Fighter Group, hitherto under the 2d Fighter Command, was transferred to reinforce the defenses in Subsector Western Holland.

On 25 September the 2d Group, 53d Fighter Wing, minus one squadron, was withdrawn from the eastern theater and temporarily committed in defense missions in Subsector Northern Holland. On 2 October it was returned to the eastern theater and the wing's 6th Squadron transferred from there to Subsector Northern Holland. Wing Headquarters and the wing's 1st Group moved to thezone of interior, reequipped with Me-109-F-4 planes, and was then committed in Subsector Western Holland. There it replaced the 1st Group, 52d Fighter Wing, which moved to the zone of the 2d Air Command.

On 10 October 1941 the Night Fighter Division/Fighter Command Center exchanged with the Third Air Fleet its 26th and 51st Replacement Fighter Groups against the 53d Replacement Fighter Group. The 2d Group, 53d Fighter Wing returned from the Eastern theater and was committed in Sector Northern Holland.

On 15 November the 3d Group, 53d Fighter Wing, which had been withdrawn from action the previous month for reequipment with Me-109-F-4, powered by GM-1 engines, was transferred to reinforce the fighter defenses in Subsector Schleswig Holstein.

On 1 December Headquarters, 53d Fighter Wing and its 3d Group transferred to the command of the Second

Air Fleet (Italy-North Africa), and the wing's 2nd Group was withdrawn for rehabilitation.

In Koenigsberg/Eastern Prussia, and in Breslau and Gleiwitz, tactical fighter swarms were organized for defense missions.

At the same time an important change occurred in the command organization of the daytime fighter system: Night Fighter Division/Fighter Command Center was relieved of responsibility for the control of daytime fighter operations and a separate Fighter Command Center was established for the purpose under direct control by the XII Air Corps. Colonel Werner Junck, an experienced and very able fighter commander, was assigned to head the new command. He took up headquarters at the command post of the Night Fighter Division at Oldenburg, Oldenburg, where he was able to exploit data from the radar instruments of the night fighter control positions for interpretation of the current air situation.

Concurrently with the above measures a firmer concentration of the control of fighter operations was introduced throughout the command area of the XII Air Corps. The subsector command posts were discontinued and Fighter Commands Helligoland Bight (Jever), Holland/Ruhr Region (Schipol), and Berlin/Central Germany

(Dosberitz) assumed centralized control of all daytime fighter forces.

The replacement fighter groups organized tactical squadrons in the field , which brought them into closer contact with tactical missions.

On 10 December the 1st and 2d Groups, 53d Fighter Wing transferred to Second Air Fleet in exchange for the 1st Group, 3d Fighter Wing, which was assigned to Fighter Command Holland/Ruhr Region.

On 20 December the tactical fighter swarms of Koenigsberg, Breslau, and Gleiwitz were disbanded and replaced by 3 tactical swarms transferred to Fighter Command Center from the Third Air Fleet.

In the summer of 1941 and up to the end of the year a number of fighter units were returned from the eastern and southern theaters to the zone of interior for rehabilitation. No cognizance can be taken of them in an appraisal of the strength of the existing fighter defenses.[316]

The organization and strength of the daytime and night fighter forces available for the defense of German territory under Air Command Center were as follows: on 20 December 1941:

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316. Sources 188, 195, 196, 197, 198, 199, 200, 201, 202.

AIR COMMAND CENTER, BERLIN

CG: General (Generaloberst) Weise

HQ, XII Air Corps	Zeist/Holland	General Kammhuber
HQ, Night Fighter Division	Oldenburg in Oldenburg	General von Doering
HQ, 1st Night Fighter Wing	Me-110 aircraft	
1st Group	"	"
2d "	"	"
3d "	"	"
HQ, 2d Night Fighter Wing	Ju-88	"

2d Group (minus 4th Squadron) Ju-88 aircraft (in process of activation)

HQ, 3d Night Fighter Wing Me-110 aircraft

1st Group " "

2d " " "

3d " " " (formerly 2d Group, 76th Twin-Engine Fighter Wing. Retraining)

HQ, 4th Night Fighter Wing Me-110 aircraft (formerly HQ, 26th Twin-Engine Fighter Wing. Retraining)

1st Searchlight Division

2d " " Arnheim Colonel Luczny

HQ, Fighter Command Center — Oldenburg in Oldenburg — Colonel Junck

3 tactical swarms, tactically assigned, from Third Air Fleet

HQ, Fighter Command Helligoland Bight, — Jever — Colonel Vollbracht

HQ, 1st Fighter Wing — Me-109-F-4 aircraft

3d Tactical Squadron — " — "

27th " — "

52d " — "

HQ, Fighter Command Holland/Ruhr Region — Schipol — Colonel Viek

1st Group, 3d Fighter Wing — Me-109-F-4 aircraft

53d Tactical Squadron — " — "

2 Fighter Swarms from 4th Fighter School Fuerth, Bavaria

2 Swarms from 2d Twin-engine Fighter School, Wunstorf

Fighter Command Berlin/Central Germany — Doeberitz — Colonel Frommherz

2 Swarms from 1st Fighter School, Werneuchen.[317]

Whereas 6 regular groups were available for night fighter defenses, daytime air defense requirements had to taken care of by only 2 regular groups and a number of provisional units of only limited combat effectiveness.

This shows very clearly that in the field of fighter defenses emphasis was unmistakably on the night fighter

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317. Sources 202, 203.

arm.

The question presents itself to the mind here what the reasons may have been for this obvious neglect of the daytime fighter arm in spite of the obvious compulsion to increase the number of units available by means of expediants and improvizations. Were the emergency measures thus taken adequate or are they a visible proof of the fact that it was impossible to activate more fighter groups to defend the areas occupied by German military forces against air attack?

Before trying to answer these questions it is necessary to establish the following:

1. In the light of the initial success achieved in the Russian campaign, which were characterized by all the features which could be taken to indicate that it would be another Blitz war with an early ending, the German Command had very optimistic hopes that Russia would capitulate before the winter began, so that it would be possible to consolidate the eastern front.

This would have meant that all forces of the Luftwaffe currently committed in the eastern theater would be released for continuation of strategic warfare against Britain and therefore again available primarily for an offensive solution of the defense problem.

These optimistic views and this concept existed

even prior to the Russian campaign. Thus, as far back as in April 1941, Goering in a confidential discussion with Moelders and Galland, in command of the 51st and 26th Fighter Wings, respectively, stated in Paris that in view of the qualitative inferiority of the Russian air forces, the campaign would be over within three or four months, so that the existing undesireable status of defensive against Britain was only of a temporary nature. Then, he went on, it would be possible to throw all military power, vastly increased by the illimitable strategic resources of the Soviet Empire into the battle against the western opponent. In the meanwhile it would be necessary to continue air warfare against Britain with only weak bomber forces and with fighter-bombers operating against the British coastal areas.[318]

Later, in 1941, Goering on the occasion of a discussion concerning the increasing British air activity in daytime operations at the Channel coast stated to Galland:

> All this will be unnecessary once I can bring my air wings back to the west. Then the whole topic of daytime air defense will be settled for me. Therefore, Russia must be defeated as speedily as possible. This at the same time is the primary condition for

318. Sources 204, 205.

a succeseful continuation of the war as a whole.

The above quotations clearly reveal the basic view of the Commander in Chief of the Luftwaffe that with the bulk of the bomber and fighter forces available for the purpose, it would be possible to deny the British forces any initiative in the conduct of daytime air attacks. Furthermore, no acute threat to the zone of interior during daylight had become apparent as yet in 1941.

It thus seemed obvious that 2 regular groups of fighters committed in the areas of the Bight of Helligoland and of northern Holland were adequate to prevent British air reconnaissance and bombing attacks against the northwestern German and Dutch coastal areas by units approaching across the North Sea. This seemed especially the case after numerous small tactical air units had been stationed throughout Germany to intercept British reconnaissance units which might succeed in penetrating so far.

2. The supreme military commander, Hitler, held the basic view that air defense was a responsibility of the antiaircraft artillery, and that fighter aircraft were to serve the purposes of attack. Since offensive air forces were employed in consonance with the principles of power concentration, and thus in massed operations,

a necessity to increase the number of fighter units thus could only be considered together with an increase of the bomber forces.

In 1941, status 26 July, there were in existence a total of 46 bomber, 12 dive-bomber, 10 twin-engine and night fighter, and 29 fighter groups.

The ratio of bombers to fighters was thus 58:39 and apparently seemed to the supreme command to be appropriate enough, so that an increase in fighter strengths was not considered necessary.[320]

As previously mentioned in Chapter 2, above, General Jeschonnek, Chief of the Luftwaffe General Staff, in establishing the air armament program in September 1941 had provided for a monthly production of 360 fighter type aircraft. Apparently he considered this number sufficient

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319. Source 204.

320. Sources 188, 206.

to maintain the existing strength in fighters and shows that the Luftwaffe General Staff did not plan to expand the daytime fighter arm within the next fw years.

THE AIRCRAFT MANUFACTURING PROGRAM FOR 1941

That the Luftwaffe General Staff had no intention of increasing daytime fighter strengths is also obvious from statements by Field Marshal Milch, Inspector General of the Luftwaffe and later Chief of Luftwaffe Special Supplies and Procurement, on 18 August 1941 in an address to the Industrial Committe, as follows:

I shall now quote some figures from the program:

The out put in

Ju-88 will be increased from roughly 220 to 300

He-111 from 100 to 160

He-177, a new model, will be 120

Do-217 will be increased from 24 to 100

Me-210 from 90 to 140

Me-109 will remain at 200 until decreased when

FW-190 has increased from 170 to 485

Ju-87, with a present output of 55will be increased to 156 (a model which has been scoffed at abroad because it was considered outdated).

This new program will be established for two years: 1942-43. I first obtained this authorization

before drawing it up. We must know what types are to be constructed and for what time.

Inhave allowed myself to be swayed by nothing in arriving at my firm decision that in 1942-43 no new models can be placed in serial production in appreciable numbers

We are simply faced by the question of whether we are to have no aircraft at all in 1943 or are to have large numbers of aircraft types which hitherto have proved good. For this reason I have recommended to the Reich Marshal that in 1942-43 we should construct the tried and tested types in large numbers.

Long-sighted planning is the all important point in any kind of work. When orders are given to initiate a new production program 4-5 months are lost in preparations and another 6-7 month of labor follow, making a total of 11-12 months before even only 10 aircraft more can be produced than before.[321]

The manufacturing program quoted above is exceptionally revealing. It shows that the output was to be increased considerably in the case of 4 bomber, 1 fast bomber-twin-engine fighter, and 1 dive-bomber models. The increase planned for the Me-109 and FW-190 models is not equivalent.

321. Sources 139, 218.

Or, expressed in figures:

The monthly output in bombers of the Ju-88, He-111, Do-217, He-177, Me-210, and Ju-87 types, status 18 August 1941 totalled 489 aircraft

Plans for 1942-43 provided for an increase to a monthly output of 976 "

The current monthly output in fighters of all types was 370

Plans for 1942-43 provided for a monthly output of from 485-600 "

The planned increase in monthly output therefore was

100 percent in the case of bomber aircraft and

25-40 percent " " " " fighter "

A comparison of these figures with the actual losses in fighter aircraft after the opening of the Russian campaign reveals the following picture:

From 28 June-27 September 1941 1 106 fighter aircraft were damaged to an extent exceeding 10 percent, giving an average monthly loss of 369 aircraft of the front line in fighter units. 322

Deliveries of fighter aircraft from current output and from repair for allocation by the Chief of Luftwaffe Special Supplies and Procurement to all users of fighter types totalled

880 Me-109 and 60 FW-190 aircraft.[323]

This shows clearly that the target monthly output figure of 360 fighter type aircraft established as late as in September 1941 would hardly be adequate to replace the losses which had to be expected in the light of experience gained in the summer of that year. It must be borne in mind furthermore that no allowance has been made in the above computations for losses due to other causes than enemy action, such as the unavoidable losses incurred in training, testing, and during transport to the front.

No reserve aircraft were thus available for the establishment of new units.

From all of the above it is impossible to draw any other conclusion than that the German Air Command did not consider the necessity to reinforce the daylight fighter

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322. Source 101.

323. Source 138.

forces as a current problem or as a problem for the near future, that it considered that adequate protection was provided for the zone of interior by the existing antiaircraft artillery and night fighter forces, and that it attached no particular significance to daytime air operations along the Channel coast.

Typical of this attitude is a remark made by General Jeschonnek to a general staff officer reporting to him on his departure for another assignment in 1942, as follows: "Galland can take of air defense in the west with one wing."[324]

AIR SITUATION IN THE WEST IN 1941

The air situation in the west, as reflected in air operations along the Channel coast, was by no means so favorable that such optimism could have been justified.

After withdrawal of the fighter units required for operations in the south, southeast, and east the 26th and 2d Fighter Wings alone were responsible for fighter defense all along the line extending from Ostende to Bordeaux. Here also it was found impossible to avoid expediencies, such as the employment of replacements groups in defense missions.

Of these improvized units the following were committed in defense missions on 20 June 1941:

324. Source 207.

In the zone of

2d Fighter Command	26th Replacement Fighter Group
3d Fighter Command	2d Replacement Fighter Group
	53d " " "
	2 swarms from Fighter School Schwechat.

From 15 September- 10 October 1941 the 26th Replacement Fighter Group was assigned to the Night Fighter Division/Fighter Command Center.

On 10 October the 53d Replacement Fighter Group was assigned to the Night Fighter Division/Fighter Command Center, and on the same day the 26th and 51st Replacement Fighter Groups were withdrawn and transferred to the Third Air Fleet.

On 1 December 1941 the replacement fighter groups were reorganized to form the 2d, 26th, and 51st Tactical Squadrons.

In addition a tactical squadron was formed at 5th Fighter School and the Fighter Instructor School and placed under tactical control by the 3d Fighter Command.

All of these units were equipped with the older Me-109-E, and Me-109- F-1 and F-2 aircraft models. They were suitable for action against bombers and reconnaissance planes, but not against fighters. Accordingly, they were

intended only for defense missions in rearward areas beyond the penetration range of British fighters.

On 20 June 1941 the fighter forces within the command area of the Third Air Fleet were organized as follows:

Unit	Aircraft Type	Headquarters	Commander
HQ, 2d Fighter Command		St.Pol-Brias	General Osterkamp
1st Squadron, 1st Fighter Wing	reequipping with Me-109-F		
HQ, 26th Fighter Wing	Me-109-E with DB-601-N and GM-1 engines		
1st Group	"		
2d "	"		
3d " (minus 7th Squadron)	Me-109-F		
26th Replacement Fighter Group	Me-109-E/F		
HQ, 3d Fighter Command		Deauville	Colonel Ibel

Unit	Aircraft Type	Headquarters	Commander
HQ, 3d Fighter Command		Deauville	Colonel Ibel
HQ, 2d Fighter Wing	Me-109-F		
1st Group	Me-109-E w/DB-601-N and GM-1 engines		
2d "	Me-109-F		
3d "	"		
2d Replacement Fighter Group	Me-109-E/F		
53d Replacement Fighter Group	"		

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On 20 December 1941 the organization in the command area of the Third Air Fleet was as follows:

HQ, 2d Fighter Command		St.Pol-Brias	Colonel Huth
HQ, 2d Fighter Wing	Me-109-F-1 & F-2		
2d Group	"		
HQ, 26th Fighter Wing	reequipping with FW-190 w/reserve tank		
1st Group	" " FW-190-A-2 " " "		
2d "	FW-190		
3d "	reequipping with FW-190		
2d Tactical Squadron	Me-109-E/F		
26th " "	"		

325. Source 191.

Unit	Aircraft Type	Headquarters	Commander
HQ, 3d Fighter Command		Deauville	Colonel Ibel
1st Group, 2d Fight. Wing	Me-109-E w/ DB-601-N & GM-1 engines		
3d " 2d " "	Me-109-F-1 & F-2		
51st Tactical Squadron	Me-109-E/F		
4th Squadron, 5th Fighter School	Me-109-E		
Tactical squadron from Fighter Instructor School	Me-109-E/F		326

326. Source 202.

Photo

FW-190 Single-Seater Fighter

Throughout the 20 June-20 December 1941 period effective strengths were at all times reduced by 1 to 2 groups in process of reequipment.

On 10 January 1942 the total strength of all fighter units within the command area of the Third Air Fleet, excluding improvized units, was as follows:

Actual strength: 213 aircraft; Effective strength: 171 aircraft.[327]

The changed air defense situation in the west after withdrawal of the fighter forces earmarked for operations in the east is revealed strikingly by the operational reports of the Third Air Fleet:

1. The following is quoted from the report submitted on 5 May concerning operations of the Third Air Fleet in April 1941:

D. The available fighter forces were committed:

1. With main emphasis on the interception of enemy reconnaissance and bomber units in the Brest area and at the Channel coast: 1370 fighter aircraft.

2. To provide escorts for German naval and merchant ships in the Channel: 108 fighter aircraft.

3. To provide cover for German reconnaissance units returning from missions: 64 fighter aircraft.

4. In an unsuccessful fighter-bomber attack

327. Source 208.

against ships: 2 aircraft.

5. A total of 1544 Me-109 aircraft were committed.

6. 15 enemy planes were shot down.

7. Own losses in the month of April: 1 Me-109 plane.

E. Enemy Action against Western France.

1. Daytime.

a. Enemy air action during daylight was restricted primarily to reconnaissance activities, chiefly in the Brest and Cherbourg areas. Most of these missions were flown by Spitfire aircraft.

b. In most cases attacks during daylight were by individual planes, rarely by flight-size units. On two occasions, however, the Cherbourg area was attacked by forces of 18-20 aircraft under fighter escort....

There are no indications of any systematic planning in the daytime operations of the enemy bomber forces.

c. On a few occasions enemy planes carried out armed air reconnaissance off the northern and Atlantic coastline of France....

d. Enemy losses: 18 aircraft (6 Bristol; Blenheim, 2 Bristol-Beaufort, 2 Hampden and 8

Spitfire) brought down by fighters and antiaircraft fire.

2. Enemy night attacks in April were carried out by much larger units than was the case in March.

Altogether 42 attacks, involving 525 enemy planes, occurred.

a. Main emphasis was on attacks against ports, chiefly Brest (21 attacks involving altogether 290 aircraft).

Other attacks were directed at Cherbourg (3 attacks by 60 aircraft), Le Havre (3 attacks by 45 aircraft) without any success.

b. Apart from bombing attacks, aircraft dropped marine mines continuously in the port of Brest, and repeatedly in the mouth of the Gironde River (La Pallice), and of the Seine River.

c. Among the few attacks against airfields three, involving 120 aircraft, were directed at Bordeaux-Merignac in efforts to weaken the German basis for the conduct of operations over the Atlantic.

d. Enemy Successes: Military installations damaged at Brest and Merignac.

e. 22 enemy aircraft engaged in night attacks were brought down by antiaircraft fire (Hampden and Wellington planes)....

h. Radio Intercept Intelligence: 20 British fighter squadrons identified at the English coast and in the Bristol and Bristol Channel area.

2. The after-action report by the Third Air Fleet for the month of May 1941 gives a total figure of 2314 Me-109 fighters, 14 Me-110 (from Night Fighter Command Brest, the 3d Group, 1st Night Fighter Wing), and 9 Ju-88 (strategic units from the 2d Night Fighter Wing) in operation. Sixteen enemy planes were brought down in these operations against a loss of three Me-109 planes.

The enemy forces were appreciably less active, both in daytime and in night attacks, than in the previous month.

During daylight main emphasis was on reconnaissance, night attacks were directed chiefly against port installations at Brest, St Nazaire, La Pallice, Cherbourg, and Le Havre.

The radio intercept services identified 6 fighter groups within the British Fighter Command.

3. The Third Air Fleet report on activities in June 1941 contains the following passages:

C. Fighter Unit Operations:

1. Daytime. In most of the missions executed the units involved went into action in ecramble take-offs against penetrating enemy aircraft. From 16

June on strong enemy forces penetrated daily into the areas of northern France, imposing a severe strain on our defending fighter forces....

b Altogether 3 704 Me-109 fighters were committed during daylight action, during which they brought down 138 enemy fighters and 23 enemy bombers, against a loss of 39-Me-109 fighters, from two of which the crews were rescued.

2. Night Fighter Action. The Night Fighter Division committed a total of 241 aircraft in strategic night fighter missions. Units engaged in strategic night fighter actions brought down 19 enemy bombers and 1 fighter at a loss of 6 Ju-88 night fighters.

F. Enemy Air Activities.

1. Daytime.

a. In Western France the enemy concentrated primarily on reconnaissance, with Spitfire reconnaissance approaching Brest almost daily....

b. In northern France enemy units of relatively small size (particularly fighters) repeatedly attacked the immediate coastal areas in the first half of the month.

From 16 June on strong enemy forces penetrated daily, whenever weather conditions permitted, into

north French areas of Boulogne-Etaples-Bethune-Lille-Dunkirk. Most of these attacks were carried out by various groups approaching together. Several days occurred with 2-3 penetrations and one day with even five penetrations.

Basically, the pattern of these large-scale enemy attacks was always the same. Usually reconnaissance first reported a British bomber force taking off from the area of Harwich, which was met at the mouth of the Thames by a strong fighter force, averaging between 80 and 100 fighters, to provide direct escort protection.

Simultaneously strong fighter forces penetrated from the north over Dunkirk and from the west over Etaples in movements designed to scatter the German fighter defense effort. Usually these latter fighter forces approached on a wide frontage and steeply echeloned in altitude, in strengths varying between 50 and 100 aircraft.

In addition, strong fighter forces of 1-2 groups were dispatched towards the French coast to provide cover for the return flight.

The bombers participating in these operations attacked at altitudes of between 10 000 and 13 000 feet, with the escort fighters echeloned in height up to altitudes of 33 000 feet....

2. Enemy Night attacks.

a. Western France. The main target of attack was again Brest, which was attacked on four nights by strong bomber forces....

b. Belgium-Northern France. The majority of the aircraft penetrating into Northern France restricted their operations to the coastal areas, attacking the Channel ports. No appreciable damage was done to military installations.

In Belgium, the enemy attacks were scattered over the entire country, with no visible area of main effort

In Holland main emphasis was on the Rotterdam area, but here again the attacking aircraft failed to do any appreciable damage to military installations....

k. Air Intelligence Obtained through the Radio Intercept Services.

(1) Enemy Fighter Forces. Strength and disposition probably unchanged since May.[320]

4. Third Air Fleet Report on Operations in July 1941.

C. Commitment of Defensive Fighter Forces.

1. Daytime.

a. Continuing enemy attacks by bomber

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328. Source 209.

formationsunder strong fighter escorts against the occupied territories, and the resultant frequent scramble take offs which the defending fighters were required to make together with the frequent necessity to prepare for action at short notice imposed an exceptionally severe strain. Although outnumbered, the defending fighter forces accomplished their missions, although the physical strain on personnel at times was exceedingly severe.....

d. A total of 5 096 Me-109 fighter aircraft were committed in daytime defense missions.

e. Friendly fighters succeeded in downing 208 enemy fighter and 38 bomber aircraft.

f. German losses totalled 40 Me-109 planes; 13 of the pilots were rescued.

2. Night Operations.

a. The Night Fighter Division committed a total of 213 aircraft.....in strategic night fighter missions.

b. Units engaged in strategic night fighter missions downed 17 enemy bombers and 1 enemy fighter.

c. German losses totalled 3 Ju-88 aircraft.

d. Night Fighter Command Bretagne (1 swarm from the 3d Group, 1st Night Fighter Wing), committed ten planes, which failed, however, to contact the enemy.

F. Enemy Air Action.

1. Daytime.

a. Air District Western France. Apart from continuous reconnaissance operations by enemy Spitfire units against ports in northern France and, towards the end of the month, against ports on the Atlantic coast, British air activities on the whole were small. It was only during the 22-24 July period that strong enemy forces carried out simultaneous attacks during daylight against important ports on the Channel and Atlantic coasts. In combined action the defending fighter and antiaircraft artillery forces prevented aimed bombing of the targets and downed a considerable number of enemy bomber and fighter aircraft.....

b. Air District Belgium-Northern France. The enemy continued operating in accordance with the tactics noticed since mid-June, committing large forces, in some cases with direct, in some with indirect fighter support, and in some cases with escort fighters waiting at sea to receive the returning attack units.....

For the first time the enemy also committed 4-engine bombers in daytime attacks. As before, the

attacks were directed primarily against the industrial region of northern France in the Lille, Hazebrouck, and Bethune area, where armament works, including aircraft, and nitrate factories and electric power stations were bombed, but no serious damage was done.

c. Air District Holland. In the command area only very few enemy attacks occurred, including a low altitude attack by strong forces against ships at Rotterdam.....

2. Night Operations.

a. Air District Western France. Attacks were directed primarily against targets in the Channel and Atlantic coastal areas, following the same pattern as in the previous month. The areas most frequently attacked were Le Havre, Cherbourg, Brest, and St Nazaire. On the whole personnel losses and damage were insignificant.

b. Air District Belgium-Northern France. The enemy committed only small forces in attacks directed primarily against targets near the coast. Ostende came under attack ten times, Dunkirk three times...

c. Air District Holland. Here also most of the attacks which occurred were directed against targets near the coast. A clearly defined area of main

effort in the enemy air effort was noticeable in the Rotterdam area. Damage done by bombs to military installations was small.... Of all forward air district commands, the largest number of penetrations, 982, occurred in Air District Command Holland..[329]

5. Third Air Fleet report on operations covering the month of November 1941 contains the following passages.

E. Fighter Forces Committed.

1. The changed enemy tactics, introduced in October, with preference for low altitude attacks by small units instead of large scale penetrations, continued throughout the month of November.....

5. The aircraft committed in daytime defense action comprised 1821 Me-109 and 381 FW-190 making a total of 2202 fighter aircraft.

6. German fighters brought down 43 enemy aircraft.

7. Own losses: 4 Me-109 (1 pilot rescued) 1 FW-190 making a total of 5 aircraft lost, from which one pilot was rescued.

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329. Source 210.

H. Enemy Air Action.

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Massed attacks by enemy aircraft have become a rare occurrence. In contrast the enemy have further developed their tactics to achieve success in low level and fighter bomber attacks.

Three distinct methods are noticeable in the execution of fighter bomber attacks:

(aa) By fighter bomber squadrons at low levels and without fighter escorts. The choice of tactics probably depends on weather conditions.....

(bb) Fighter bombers attack at ground levels protected by only weak fighter escorts while other escorting fighters approach at high altitudes to scatter the defenders.

(cc) Fighter bomber squadrons attack at low levels without fighter escorts. The choice of tactics is probably dependent on weather conditions....

a. In the command area of Air District Western France enemy bombing attacks were concentrated chiefly against the Normandy peninsula. All penetrations were at low levels and directed chiefly at rail targets.

The main target of air reconnaissance was Brest, in which area Spitfire planes appeared daily at high

altitudes whenever weather conditions permitted.....

b. Air District Belgium/Northern France. Enemy air activities decreased considerably in comparison with the past month.....

Most penetrations which did occur were at low levels by small fighter units attacking airfields, military and rail installations, and small factories, generally in areas close to the coast.

c. Air District Holland. Here only very few enemy planes penetrated into areas near the coast.

d. Enemy attacks against shipping continued to decrease considerably.....

2. Night Action.

a. Air District Wegtern France. Enemy air action decreased considerably in November. Most of the attacks which did occur were directed against Brest, some against the ports of Cherbourg and Le Havre. No damage was done to military installations.

b. Air District Belgium/Northern France. Most of the attacks were directed at targets near the coast (orientation flights).

c. Air District Holland. Enemy air action agai against the area of Holland can in most cases be described as night fighter long range operations and at-

attacks against the ground service organization in Holland....

6. The Third Air Fleet report on Operations in December 1941 contains the following passages:

E. Commitment of Fighter Units.

1. The marked decrease in enemy daytime air action resulted in a corresponding decrease in friendly fighter commitments.....

The large-scale enemy attacks directed against Brest, particularly that on 19 December 1941 made it impossible for the defending fighters, because of their pronounced numerical inferiority, to accomplish their mission of preventing the attack from carrying through to the naval port.

After a second fighter group had been moved into the area the improved ratio of friendly to enemy units found expression in the higher percentage of attacking planes shot down in the second such attack, which occurred on 30 December 1941.

Efforts continued, with partial success, to prevent enemy low level attacks through the maintenance of appropriate patrol activities....

5. In daytime fighter missions 1 280 Me-109 and 416 FW-190, making a total of 1 696 fighter aircraft

were committed in action.

6. Fighter units shot down

13 enemy bombers

28 enemy fighters

Total 41 enemy aircraft.

7. Own losses: 4 Me-100 (1 pilot rescued)

1 FW-190

Total 5 fighter aircraft (1 pilot rescued)

H. Enemy Air Action.

1. On the whole enemy daytime air action decreased considerably compared with the previous month.

Main emphasis in all enemy action against the occupied territories is on attacks against Brest, in which the obvious objective is to damage the naval units in port there in order to prevent their operability.

a. In Air District Western France main emphasis in enemy air action was on attacks against Brest.....

Generally speaking, the enemy committed Whirlwind fighters to provide direct escort protection for the attacking bomber formations, while Spitfire and Hurricane fighters were dispatched to receive the returning attack forces at the northern coast of Bretagne.

b. Air District Belgium/Northern France.

No enemy air action during daylight is reported in this area. Fighter attacks with weapons fire continued to decrease markedly against the previous month.

c. Air District Holland. In the command area of Air District Holland attacks occurred repeatedly against installations of the ground service organization following the general pattern pf German twin-engine fighter attacks.....

2. Night Action.

a. Air District Western France. Enemy night attacks also were directed primarily against Brest..... Several attacks were also directed against the St Nazaire area..... No considerable damage was done by the enemy attacks.

b. Air District Belgium/Northern France. Enemy air action against the areas of Belgium and northern France continued to decrease.....

c. Air District Holland. An analysis of enemy strategic night fighter activities reveals that in December emphasis shifted to attacks against the ground service organization in the area of Holland....

7. In a brief summary of combat operations of the Third Air Fleet in the June-28 November 1941 period, the following is reported:

1. Out of the entire report period of 181 days, weather conditions made operations impossible on 74 days.

2. Total number of missions flown:

a. June 1941

Fighters 4 704, with an average effective strength of 224 aircraft

Strategic Night Fighters 248

b. 1 July-28 November 1941

Fighters 17 175 with an average effective strength of 187 aircraft

Strategic Night Fighters 595

3. Losses.

Fighters : 122 or 0.55 percent of the number of plane-missions

Strategic Night Fighters : 13 or 1.5 percent of the number of plane-missions flown.

4. British Aircraft Destroyed:

By	Bombers	Fighters
Fighters	88	793
Strategic Night Fighters	57	2
Antiaircraft Fire	141	138

The ratio of enemy aircraft destroyed to own

losses was thus 7.2:1 in the case of fighters and 4.5:1 in the case of strategic night fighters.[330]

The above operation reports by the Third Air Fleet covering the April-December 1941 period provide a revealing picture of the air defense situation in the west.

Concisely stated, the impressions they convey are as follows:

1. After the withdrawal of strong fighter forces for transfer to the east, the fighter forces remaining at the English Channel, representing a strength of 2 wings, were still able to maintain air supremacy. However, they were exposed to a far more severe strain than before.

2. In spite of their numerical inferiority, with an effective daily strength of only about 180 aircraft to oppose an enemy force committing 250-350 fighters daily, they inflicted such heavy losses on the enemy, at the rate of one own plane lost to 7.2 enemy planes downed, that they compelled the British to steadily decrease their daytime activities and change over to tactics holding out little prospect of success, namely, to low level fighter bomber attacks.

2. Throughout the period the attacking enemy air forces were unable to cause serious military damage.

3. The fighter forces available proved capable of accomplishing their air defense mission in the west.

In view of the above the reaction of the Luftwaffe High Command to the reports by the highest Luftwaffe command authorities in the west is hardly surprising. That reaction found expression in the views, previously quoted, of Reich Marshal Goering and General Jeschonnek: "In the west daytime air defense is in perfect order--Galland can manage the air defense with one wing. The whole rotten business will be unnecessary as soon as the units from the eastern theater are once again released."

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330. Source 211.

One of the most important persons involved, Galland himself, however, viewed the situation with entirely different eyes.

In his work DIE ERSTEN UND DIE LETZTEN, on page 135, he describes the situation at the English Channel in 1941, after commencement of the Russian Campaign, in the following words.

> The British pressed us damned hard. With fierce blows they chased us around and around in a circle. However, we struck back whenever we could. In these late summer and autumn months I shot down 21 Spitfires, 3 Blenheims, and 1 Hurricane.

FIGHTER AIRCRAFT PRODUCTION CRISIS IN 1941

There was one man in a prominent position in the Luftwaffe High Command, however, who was not so unconcerned. This was General (Generaloberst) Udet, the Chief of Luftwaffe Special Supplies and Procurement, responsible for the armament program and for replacements.

Influenced by F. W. Siebel he had as far back as in 1940, as previously recounted in this study, forwarded to Goering and Hitler a memorandum prepared by Siebel. The memorandum pointed out the need for a general increase in air armaments in view of the immense American armament

potential available to Great Britain.

Rejected in its original form, the memorandum had been submitted again with new evidence and was finally rejected by Hitler who with his words "I already have victory in my pocket" made it understood that he no longer considered the matter as a current problem.

To the Chief of Luftwaffe Special Supplies and Procurement such an attitude must have appeared inconceivable in view of the serious crisis which had developed in the summer of 1941 in the matter of aircraft replacements for the eastern theater and had only been mastered with the utmost difficulty.

On the badly constructed airfields in Russia hundreds of the aircraft in the German units had been put out of action by damage and by the lack of spare parts. The quick forward displacement of the units to keep pace with the rapid advance on the ground left no time for their repair, so that the combat capabilities of the units declined rapidly.

In an action rigidly enforced under personal direction by the Inspector General of the Luftwaffe, Field Marshal Milch, mobile repair columns had been sent to the eastern front to repair the damaged aircraft left behind

and deliver them to the troops engaged in combat. This action placed Udet, the Chief of Special Supplies and Procurement in a questionable light and resulted in seriously strained personal relations between Milch and Udet and, what was more serious, between Udet and Goering, because Goering failed to shield Udet, as Udet had expected him to do.

On the other hand Goering was reluctant to remove Udet openly from office and assign Milch in his stead. "You must remain and cooperate with Milch," he told Udet repeatedly, also remarking that "If I relieve you of your post the whole world will notice that something is wrong."

Udet suffered severely under these circumstances. He knew the United States and knew that at some future date armadas of American aircraft would be delivered to the opponents of Germany, which German output would be unable to counteract.

On 25 August 1941 Goering sent Udet on forced leave and during his absence Milch took over his position. When Udet returned to Berlin he found his office completely changed--all of his most trusted assistants had been removed. Broken in body and spirit he found himself "in the house of a strange man."

On 17 November 1941 he committed suicide in his Berlin home in despair over a situation in which he realized that, after failure of the Blitz campaign in the east, there would be no chance of resuming the air offensive against Britain and that Germany would have to contend against the gigantic air armament of the United States.[331]

The figures given in the Chief of Luftwaffe Supply and Administration reports for authorized, actual, and effective strengths in aircraft during the period of crisis from the summer of 1941 to the end of that year show the results of inadequate replacements due to insufficient industrial output as they were reflected in the capabilities of the fighter arm. The following figures are from those reports:

I. TOTAL STRENGTHS IN FIGHTER AIRCRAFT

Date 1941	Authorized	Actual Strength Aircraft	Actual Strength % of Authorized	Effective Strength Aircraft	Effective Strength % of Actual
June 28	1426	1266	89	885	70
September 27	1472	1226	83	774	64
December 27	1472	1298	87	670	51

331. Source 212

Date 1941	Autho-rized	Actual Strength Aircraft	% of Authorized	Effective Strength Aircraft	% of Actual
		II. TOTAL STRENGTH IN TWIN-ENGINE FIGHTERS			
June 28	225	210	93	132	62
September 27	186	155	83	83	54
December 27	51	48	94	21	45
		III. TOTAL STRENGTH IN NIGHT FIGHTER AIRCRAFT			
June 28	227	244	107	172	70
September 27	254	245	96	140	57
December 27	406	302	74	150	49

In the single- and twin-engine fighter forces the number of crews available throughout the 28 June-27 December 1941 period was at all times higher than the number of aircraft. In the night fighter arm there were less crews available than aircraft until 27 December 1941, from then on the number of crews available exceeded the number of aircraft by five.[332]

From the above compilation the excessive strain is clearly evident to which the Luftwaffe was subjected in the field of defense fighters, as an important component of the air defense forces, as a result of the expansion of military operations to the eastern theater and of the increasing intensity of air warfare in the west.

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332. Sources 101, 102, 153.

Since what was happening in the case of the defensive air forces was also happening in the case of the offensive air forces, there can be no doubt that in 1941 the Luftwaffe had no possibility to reinforce its fighter forces unless this was done by reducing the production of bombers in favor of fighter aircraft.

Such a solution, however, would have been in direct contradiction of the current concepts of the Luftwaffe High Command on the subject of air warfare. The view was still held that a strong offensive air arm, which included the available single- and twin-engine fighter units, provided the best guarantee for protection of the homeland against air attack, and confidently left responsibility for what was left to do in the field of air defense to the antiaircraft artillery and night fighter forces.

A logical consequence was that, in those parts of the zone of the interior not under Air Command Center and in the case of the oil regions of Rumania the only possibility was to adopt expedients.

Thus, on 3 August 1941 the 54th Replacement Fighter Group, hitherto committed in Air District I, was transferred to Air Command Baltic and the 77th Replacement Fighter Group, hitherto in Air District XVII, was transferred to the German Air Mission in Rumania.

This meant that the air district commands no longer had any fighter units under their control; all responsibility for control and for the conduct of operations had passed to the various local air commandds.[333]

FIGHTER DEFENSES IN 1941

SUMMARY

In summarizing, the following can be said of developments in the field of air defense, so far as fighter defense was concerned, in the 21 March-31 December 1941 period:

1. Developments in the air situation gave rise to the view that the only serious threat of air attack which might develop would be from the Royal Air Force

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333. Source 213.

and only in the form of night attacks.

Daytime fighter defense seemed to present no problems at all in any areas.

2. The build up of the night fighter organization was promoted on a grand scale. By the end of 1941 a system of night fighter positions and a searchlight belt were established forward of the main defense areas of Hamburg-Bremen, the Ruhr region, and Berlin. This made action possible against attacking enemy forces both during their approach and home flight.

The strength available in night fighter units was adequate and commensurate with the possibilities for their use.

The program for expansion of the night fighter arm was a long-range project and was set in operation by the allocation of high priorities and special authorizations.

3. The view prevailed that there was no necessity for any considerable increase of the existing daytime fighter defense capabilities although competent authorities rspeatedly pointed out the threat which was developing out of the American air armament potential.

The sumpreme military command adhered to its view that the daytime fighter arm was a component of the

offensive air forces and that daytime air defense was a mission of the antiaircraft artillery.

4. Once the crisis which began in the summer of 1941 in the field of aircraft and spare parts replacements was mastered by means of energetic and well organized action, no attention was paid to its causes.

5. Considerable improvement was brought about in the fighter defense command organization within the zone of Air Command Center through consolidation of the daytime and night fighter forces under the Night Fighter Division/Fighter Air Command Center (from 10 August 1941 on under the XII Air Corps), and through the establishment of special fighter commands.

6. In its views on the further development of the war the German military command allowed itself to be swayed by an exceedingly optimistic estimate of the duration of the campaign against Russia and evidently believedthat after the end of that campaign resumption of the air offensive against Britain, without any need for a considerable reinforcement of the existing daytime fighter forces, would also serve to end the war in the west in a reasonable time.

Furthermore, it was thought, that, if necessary, it would be possible to exploit the gigantic resources of

Russia once that country was conquered.

ANTIAIRCRAFT ARTILLERY STRENGTH MOVEMENTS IN 1941

The antiaircraft artillery arm was expanded considerably in 1941, after commencement of the Russian campaign.

The antiaircraft artillery situation maps maintained at headquarters of the Commander in Chief of the Luftwaffe show the following developments, the figures in parentheses being those for 1 October 1941:

I. GERMANY

Status 30 June 1941
(Figures for 1 October 1941 in parentheses)

Air District Command	Heavy Bttrs	Medium & Light Bttrs	Searchlight Bttrs
I Koenigsberg/ Eastern Prussia	54 (35)	23 (0)	6 (0)
II Poznan	88 (43)	59 (0)	6 (0)
III Berlin	93 (92)	50 (51)	31 (24)
IV Dresden	88 (85)	44 (5)	8 (8)
VI Muenster	130 (150)	98 (119)	31 (45)
VII Munich	14 (37)	29 (28)	0 (0)
VIII Breslau	107 (62)	53 (0)	13 (0)
XI Hamburg	104 (113)	113 (127)	41 (51)
XII/XIII Wiesbaden/Nuremburg	29 (66)	43 (52)	18 (21)
XVII Vienna	79 (75)	18 (7)	9 (0)
Total number of batteries in Germany	786 (758)	530 (389)	163 (149)

II. OCCUPIED WESTERN TERRITORIES

Status 30 June 1941
(Figures for 1 October 1941 in parentheses)

Air District Command	Heavy Bttrs	Medium & Light Bttrs	Searchlight Bttrs
Norway	33 (30)	26 (25)	0 (0)
Holland	16 (13)	27 (27)	48 (78)
Belgium/Northern France	27 (40)	38 (55)	9 (12)
Western France	54 (62)	81 (85)	14 (15)
Total number of batteries in occupied western territories	130 (145)	172 (192)	71 (105)

III. SOUTHERN AND SOUTHEASTERN THEATERS

Status 30 June 1941
(Figures for 1 October 1941 in parantheses)

Area	Heavy Bttrs	Medium & Light Bttrs	Searchlight Bttrs
Italy	6 (18)	2 (15)	0 (0)
Africa	0 (6)	3 (7)	0 (0)
Greece	9 (15)	9 (13)	0 (3)
Rumania	36 (48)	36 (45)	6 (6)
Total in Southern and Southeastern Theaters	51 (87)	50 (80)	6 (9)

IV. EASTERN THEATER

Status Summer 1941
(Figures for 1 October 1941 in parentheses)

Area	Heavy Bttrs	Medium & Light Bttrs	Searchlight Bttrs
Russia	239 (379)	135 (202)	0 (0)

The Luftwaffe on 30 June 1941 thus had the following total strengths available in antiaircraft artillery batteries:

Area	Heavy Bttrs	Medium & Light Bttrs	Searchlight Bttrs
Germany	786	530	163
Occupied Western Territories	130	172	71
Southern and Southeastern Theaters	51	50	6
Eastern Theater (Russia)	239	135	0
Totals	1206	887	240
Strength on 1 April 1941	890	720	214
Increase	316	167	26

On 1 October 1941 the Luftwaffe had the following strengths available in antiaircraft batteries:

Area	Heavy Bttrs	Medium & Light Bttrs	Searchlight Bttrs
Germany	758	389	149
Occupied Western Territories	145	192	105
Southern & Southeastern Theaters	87	80	9
Eastern Theater (Russia)	379	202	0
Totals	1369	863	263
Strength on 30 June 1941	~~1206~~	887	~~240~~ 334
Increase	163		23
Decrease		24	

Within six months the strength in antiaircraft batteries organic to the Luftwaffe had thus increased by 479 heavy and 143 medium and light gun batteries, plus 49 searchlight batteries.

These figures are evidence of the high importance attached to the antiaircraft artillery both as a weapon of air defense and as a highly effective weapon in ground combat. They are also evidence of the enormous effort expended both in personnel and in materiel, to insure a rapid expansion of the arm.

It must be borne in mind here that besides the increase shown, replacements had also to be provided for losses incurred, particularly when the batteries were employed in

334. Sources, 105, 216, 217.

ground combat.

Concerning the disposition of antiaircraft artillery forces in early 1942 the antiaircraft artillery situation map of the Commander in Chief of the Luftwaffe dated 10 January 1942 provides the following information:

I. GERMANY

Status 10 January 1942

Air District	Heavy Bttrs	Medium & Light Bttrs	Searchlight Bttrs
I Koenigsberg/Eastern Prussia	27	0	0
II Poznan	26	0	0
III Berlin	93	41	24
IV Dresden	82	40	10
VI Muenster	153	126	55
VII Munich	43	42	0
VIII Breslau	62	0	0
XII/XIII Wiesbaden/Nuremburg	77	52	30
XI Hamburg	116	130	55
Totals in Germany	742	438	174

II. OCCUPIED WESTERN TERRITORIES

Status 10 January 1942

Area	Heavy Bttrs	Medium & Light Bttrs	Searchlight Bttrs
Norway	44	36	0
Holland	13	28	78
Belgium/Northern France	34	56	9
Western France	75	99	12
Totals in Western Occupied Territories	166	219	99

III. SOUTHERN AND SOUTHEASTERN THEATERS

Status 10 January 1942

Area	Heavy Bttrs	Medium & Light Bttrs	Searchlight Bttrs
Italy	18	14	0
Africa	12	12	0
Greece	19	13	3
Rumania	~~41~~	~~34~~	6
Total in Southern and Southeastern Theaters	90	73	9

IV. EASTERN THEATER

Status 10 January 1942

Area	Heavy Bttrs	Medium & Light Bttrs	Searchlight Bttrs
Russia	148	162	0

Hence, the total strength available in antiaircraft forces available to the Luftwaffe on 10 January 1942 was as follows:

Area	Heavy Bttrs	Medium & Light Bttrs	Searchlight Bttrs
Germany	742	438	174
Occupied Western Territories	166	219	99
Southern & Southeastern Theaters	90	73	9
Eastern Theater	148	162	0
Overall Total	1146	892	282
Strength on 1 October 1941	1369	863	263
Increase		29	19
Decrease	223		

The decrease in heavy batteries was probably due to materiel losses in the eastern theater.[335]

A comparative study of the strength fluctuations in 1941 reveals a number of noteworthy features:

1. Germany.

a. In the case of heavy and medium and light batteries there is a very marked increase in units assigned to reinforce the defenses in the western air districts VI, XI, and XII/XIII in the 30 June-1 October 1941 and the 1 October 41-10 January 1942 periods.

It is apparent that these forces were taken from the eastern air districts I, II, and VIII to a great extent, and to a lesser extent from Air District XVII.

This is due to the changed tactics introduced by the British in night air warfare in mid-1941.

Up to that date there had been no defined areas of main effort in British night attacks, so that they were more in the nature of operational harassing attacks. As described previously the British then gradually went over to concentrated attacks and to a system in which the individual attacks were more clearly concentrated in time and area, the various units approaching their targets from different directions, usually 2 or 3, echeloned in

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335. Source 216.

height at altitudes between 15 000 and 20 000 feet and flying in closely spaced formations at brief intervals.

Some of the attacking units would slope down just before reaching the target area to attack at medium or low levels. It was therefore necessary to develop main defense concentrations to counter the enemy main attack concentrations and to increase the number of medium and light antiaircraft batteries to protect the target against enemy aircraft attacking at relatively low altitudes.[336]

b. In the case of searchlights it can be seen that the rearward air districts, generally speaking, were weakened by the same number of searchlight batteries as were assigned to reinforce Air Districts XI, VI, and XII/XIII.

c. The overall strength in antiaircraft artillery forces within Germany decreased considerably in the 30 June-1 October 41 period.

This is easilyexplained by the reinforcements assigned to the occupied western areas and the southern, southeastern, and eastern theaters noticeable during the same period.

The decrease in searchlight batteries within Germany is more apparent than real, since the number in Holland was increased considerably at the same time and since, for night fighter operations, Holland counted as part

336. Source 65.

of the home defense system.

d. In the figures given for 10 January 1942 a marked increase is noticeable in the number of searchlight batteries deployed in Air Districts VI, XI, and XII/XIII. This increase was connected with the progress made in developing the illuminated (searchlight) belt for night fighter operations.

2. Occupied Western Territories.

a. The figures for 1 October 1941 show a general increase over those for 30 June 1941. However, this increase was due exclusively to reinforcements committed in the zones of Air District Command Belgium-Northern France in reaction to the step up in British air activities noticeable since 16 June 1941.

Due to the increasing frequency of British low-level bombing and weapons fire attacks by fighter-bombers the largest increase noticeable is in medium and light antiaircraft batteries.

b. The large increase in searchlight batteries is due primarily to assignments to Air District Holland as the forward operational zone for night fighters in defense of the homeland.

c. Compared with the figures for 1 October 1941 those for 10 January 1942 show that the reinforcements

comprised primarily heavy and medium and light gun batteries.

This was probably a reaction to the fierce air attacks directed by the Royal Air Force against the German naval fleet in port at Brest.

3. Southern and Southeastern Theaters. The heavy reinforcements, comprising 12 heavy and 9 medium and light batteries sent to the German Africa Corps between 30 June 1941 and 10 January 1942 were taken primarily from the forces intended to defend the Rumanian oil fields.

4. Eastern Theater. The figures for 1 October 1941 show a considerable increase, by 140 heavy and 67 medium and light batteries, over those for 30 June 1941.

By 10 January 1942, however, strengths here decreased rapidly by 231 heavy and 40 medium and light batteries.

This clearly reflects the bitter tenacity of the war on the eastern front.

Although the increase in antiaircraft artillery strengths appears impressive when expressed in figures, sight should not be lost of the fact that quality had not been able to keep pace with quantity. The following reasons can be discerned for this fact:

a. Commensurate with the pace introduced in 1939 for the activation of new units, the time spent in training personnel was too short.

b. Owing to the inadequate number of up-to-date fire control instruments available, a large percentage of the newly activated heavy batteries had to be equipped with the Model-35 auxiliary fire control instruments which had been in use before the war. Even in action with optical aiming instruments they were only of restricted value.

c. A large percentage of the newly activated batteries, particularly those assigned for air defense within Germany were equipped with captured guns. Because of their lack of target locating and fire control facilities

these batteries could be used only to deliver barrage fire.

Thus, in the 15 September-15 October period of 1941 the units activated with up-to-date weapons comprised 5 105-mm, 4 37-mm, 5 20-mm gun batteries, and 1 150-cm searchlight battery, while during the same month 49 batteries, known as barrage fire batteries were activated with captured guns.

d. The tactics adopted by the Royal Air Force in the west of attacking at night even in conditions of poor visibility, in which searchlights were useless, made successful action by antiaircraft guns more and more dependent on the availability of fire control instruments functioning on the basis of radar or radio direction finding.

The output in these instruments, the Wuerzburg C and D models, lagged far behind requirements. This compelled those batteries not so equipped to restrict their action to map and barrage fire, the effectiveness of which decreased in direct proportion to the altitudes, speeds, and altitude-echoling at which the attacking enemy forces operated.

As an example: In the spring of 1941 two British forces of approximately equal strength attacked Emden

and Bremen at the same time. The defensive fire bythe antiaircraft guns at Bremen, which had radar instruments, proved far more effective than at Emden, where the antiaircraft units of the Navy were not so equipped,[337] and where the attack resulted in far greater damage.

ANTIAIRCRAFT ARTILLERY COMMAND ORGANIZATION IN 1941

In the command system to control antiaircraft artillery operations the following organization was adopted at the beginning of military operations in the southeastern, southern, and eastern theaters of operations:

1. Air Command Center assumed responsibility for control of the antiaircraft artillery within Germany in the zones of Air District Commands III (Berlin), IV (Dresden), VI (Muenster), XI (Hamburg), VII (Munich), and XII/XIII (Wiesbaden/Nuremburg).

The antiaircraft artillery units were assigned for all purposes to the respective air district commands.

In Air District Commands III and IV a single headquarters Air Defense Command Air Districts III/IV handled operations of the antiaircraft artillery forces.

Air District Commands VII and XII/XIII were still only tactically assigned to Air Command Center for air defense missions within Germany; in all other respects they were still assigned to the Third Air Fleet.

337. Source 173.

2. The Third Air Flett was responsible for antiaircraft artillery operations in the occupied western territories of Holland, Belgium-Northern France, Western France, and the Channel Islands.

The units within the air fleet zone were assigned to Air District Commands Holland, Belgium/Northern France, and Western France.

3. The Fifth Air Fleet was responsible for antiaircraft operations in Norway.

Units in the zone were assigned to Air District Command Norway for defense of southern Norway, and to Air Command Northern Norway (General der Luftwaffe Nordnorwegen) for the defense of northern Norway.

4. The Fourth Air Fleet was responsible for antiaircraft artillery in air defense missions in the following areas:

a. The Balkan countries of Yugoslavia, Greece, Rumania, Bulgaria, and the Island of Crete. Here, the units were assigned to the various Luftwaffe commands established as the German Air Mission to Rumania, Luftwaffe Command..... (General der Luftwaffe in....), and Special Air District Commands.

b. Within Germany in the zones of Air District Commands VIII (Breslau) and XVII (Vienna). After the opening

of the Russian campaign the air fleet was relieved of responsibility for the antiaircraft artillery in Air District Command VIII (Breslau).

The units in the air fleet's zone were assigned to the appropriate air district commands.

c. Within the Zone of Army Operations in the eastern theater (southern areas). Here the antiaircraft artillery units were consolidated under the II Flak Corps to secure mobility and flexibility.

5. With the opening of the Russian campaign the Second Air Fleet assumed responsibility for antiaircraft artillery operations in air defense missions

a. Within Germany in the command zone of Air District Command VIII (Breslau), and

b. In the central sector of the zone of operations of the army in the eastern theater.

For these purposes the antiaircraft artillery units were assigned to the I Flak Corps for mobile operations.

6. With the opening of the Russian campaign the First Air Fleet assumed control of the antiaircraft artillery for air defense missions in

a. Germany, within the command zones of Air District Command I (Koenigsberg), and II (Poznan), where the antiaircraft artillery units were assigned to these two headquarters, and

b. In the northern sector of the zone of army operations in the eastern theater. Here the antiaircraft artillery units were assigned to a special air district command.

7. The X Air Corps was responsible for the employment of antiaircraft artillery forces in air defense missions in Italy and Africa. On 1 December 1941 control over all Luftwaffe elements, including antiaircraft artillery units

organic to the Luftwaffe, in Italy and Africa passed to the Second Air Fleet, which moved its headquarters to Italy.[338]

On 1 September 1941 the Air Defense Commands within Germany were redesignated antiaircraft artillery divisions. This secured the uniform designation of all headquarters of this type and defined their position in the chain of command.

The following headquarters were thus redesignated:

Old Designation	Redesignated
Air Defense Command 1	1st AAA Division, Berlin
" " " 2	2d " " Leipzig
" " " 3	3d " " Hamburg
" " " 4	4th " " Duesseldorf
" " " 7	7th " " Cologne
" " " 8	8th " " Bremen.[339]

At the end of 1941 the command organization of the antiaircraft artillery forces employed in air defense missions was as follows:

I. GERMANY

Status 20 December 1941

AIR COMMAND CENTER

HQ, Berlin CG: General (Generaloberst) Weise

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338. Sources 65, 105, 154, 173, 216, 219.

339. Sources 154, 173.

AIR COMMAND CENTER--Continued

Command HQ	Command Post	Commanding General
Air District Command III/IV	Berlin/ Dresden	General Haubold
1st AAA Division	Berlin	General Schilffahrt
14th AAA Division	Leipzig	General Feyerabend
Air District Command VI	Muenster	General August Schmidt
4th AAA Division	Duesseldorf	General Hoffmann
7th " "	Cologne	General Burchardt
Air District Command XI	Hamburg	General Wolff
3d AAA Division	Hamburg	General Spiess
8th " "	Bremen	General Wagner
Air District Command VIII	Breslau	General Waber
Air District Command VII (tactically assigned)	Munich	General Zenetti
Air District Comd XII/XIII (tactically assigned)	Wiesbaden/ Nuremburg	General Heilingbrunner

FIRST AIR FLEET

Eastern Theater CG: General (Generaloberst) Keller

Air District Command I	Koenigsberg/ Eastern Prussia	General Putzier
Air District Command II	Poznan	General Bieneck

FOURTH AIR FLEET

Eastern Theater CG: General (Generaloberst) Loehr

Air District Command XVII	Vienna	General Hirschauer

II. OCCUPIED WESTERN TERRITORIES

Status 20 December 1941

FIFTH AIR FLEET

HQ, Oslo, CG: General (Generaloberst) Stumpff

Command HQ	Command Post	Commanding General
Air District Norway	Oslo	General Harmjanz
Air Command Northern Norway	Bardufos	General Bruch

HQ THIRD AIR FLEET

HQ, Paris, CG: Field Marshal Sperrle

Air District Command Holland	Amsterdam	General Siburg
Air District Command Belgium/Northern France	Brussels	General Wimmer
Air District Command Western France	Etampes	General Dr. Weissmann

III. SOUTHERN THEATER

Status 20 December 1941

SECOND AIR FLEET

CG: Field Marshal Kesselring

Special Air District Command		
Special Air District Command		
Special Air District Command Airlog		General Mueller.

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Of the Balkan States only Rumania was assigned sizable antiaircraft artillery forces, which were controlled by the German Air Mission to Rumania, with headquarters at Bucharest

The performances of the antiaircraft artillery forces in air defense missions since the beginning of the war are

340. Sources 3, 154, 173, 175, 202, 219, 220

are summed up in a report by the Commander in Chief of the Luftwaffe covering the 1 September 1939-31 October 1941 period as follows: 5 381 aircraft shot down, 2 000 of them in Russia.

A tabulation of performances achieved by antiaircraft artillery forces employed in ground action lists the following as destroyed:

1 253 bunkers and pockets of resistance

34 armored fortresses and 1 citadel (Boulogne)

1 930 tanks and armored reconnaissance cars

279 battery positions

2 901 artillery guns of all calibers and mortars

5 631 machine-gun pockets

5 024 motorized vehicles

119 transport columns

55 transport trains

4 destroyers and torpedo boats

19 smaller warships

16 transport ships

32 ammunition depots

The following materiel was captured by antiaircraft artillery units employed in ground combat:

254 aircraft

32 guns

1 armored railway train

10 transport ships

7 gunboats

5 E-boats

1 small warship

Antiaircraft artillery units also brought in 48 914 prisoners.[341]

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341. Source 221.

Such a list of performances could not fail to be impressive and was the cause for the high esteem in which the antiaircraft artillery was held both as a weapon of air defense and as a weapon of attack in ground combat in line with the concepts of offensive warfare ruling at the highest levels of the Luftwaffe command.

PROBLEMS INVOLVED IN THE IMPROVEMENT OF ANTIAIRCRAFT FIRING PERFORMANCES

Because of the grandiose scale on which the program for expansion of the antiaircraft artillery arm was planned there was no cause for concern initially about securing the necessary quantities of materiel.

The real problem in 1941 was that of improving the quality of the arm. This was a problem of

(1) securing and training the necessary personnel, and

(2) improving the performances per gun by (a) equipping existing units with modern weapons of German manufacture in place of their outdated guns or captured materiel, and (b) introducing improved target locating and fire control instruments.

The materiel thus to be replaced comprised the following:

In use since the beginning of the war	To be replaced by
Type 30 AAA gun 20-mm	Type 38 20-mm AAA gun and 4-barrelled AAA gun
Types 18 and 36 37-mm AAA guns	Type 37 37-mm AAA gun
Types 18 and 36 88-mm AAA gun	Type 37 88-mm AAA gun
	Types 38 and 39 105-mm AAA guns
	Type 40 128-mm AAA gun
Type 36 fire control instrument and Type 35 auxiliary fire control instrument	Type 40 fire control instrument
Type 39-T (A,B,C) Wuerzburg radar instruments	Type 40-T Wuerzburg (Riese) radar instruments
Types 34 and 37 AAA 150-cm searchlight	Type 40 200-mm AAA searchlight[342]

342. Source 65.

The most serious bottleneck was still in the production of electrical target locating instruments, which were indispensable for firing at night during weather with conditions of poor visibility. In spite of all efforts to expedite production only enough Wuerzburg instruments to equip one-third of the existing heavy batteries were delivered by early 1942. The main difficulty in the manufacturing field was that the number of qualified personnel available was too small to expand the production program.

For this reason the Chief of Luftwaffe Signal Communications, Office of the Commander in Chief of the Luftwaffe, introduced special measures to release 13 000 technical personnel from the Air Signal Corps for allocation to the industry. After about 7-8000 personnel had been transferred to the appropriate industrial concerns under this program, the measures had to be halted because of the acute shortage of personnel which had developed in the eastern theater, and the men who would have been transferred to industry had to be released for assignment as soldiers to the eastern theater.[343]

Systems had also been under consideration whereby the data from available radar instruments could be used to direct the fire of a larger number of batteries, at about

343. Source 222.

battalion level. Experiments had shown, however, that the inaccuracies introduced while recomputing such data were too great. It was thought that the errors were beyond the limits of tolerance--and it must be borne in mind that the use of radar instruments was still in the initial stages--which could be accepted for transmission to the guns of an entire battalion.

Night operations by the antiaircraft artillery during weather conditions of poor visibility thus remained a problematical and unsatisfactory matter. This gave special importance to the problem of securing optimum cooperation between antiaircraft artillery and night fighter forces.

In theory, the projection of night fighter operations into the antiaircraft fire zone was a considerable improvement, although the question of preventing friendly fighters from being hit by antiaircraft fire still presented some problems of a technical nature. Their solution was primarily a matter of adequate and securely functioning signal communications and fire discipline.

In summarizing it can be said of developments in the antiaircraft artillery component of air defense in 1941 that

1. The antiaircraft artillery arm still held an important position as a weapon of air defense. In

daytime air defense action it was the cardinal weapon.

The largely increased number of units available, due to new activations, made it possible in the field of air defense to keep adequate pace with the continuous expansion of the areas to be defended, an expansion due to the progress of military operations.

2. One inherent factor of weakness was: the quality of the individual antiaircraft artillery units declined with their growing numbers. However, this was not so apparent at the time, since well trained regular units still preponderated in the areas of main air defense effort, such as Brest, Hamburg-Bremen, and the Ruhr region, developed as a result of the enemy strategy.

Wherever there was a preponderance of regular units, with peacetime training, as was the case in the two Flak corps, the results achieved in air defense action were so impressive that they served to mislead the highest levels of command and prevent their recognition of the weaknesses inherent in the arm as a whole.

3. The tactic had proved sound of countering attack concentrations of the enemy by reinforcing the antiaircraft artillery defenses at the main targets by weakening the defenses at less endangered targets.

4. The antiaircraft artillery armament program

gave no cause for concern in the matter of materiel procurements for an expansion of the arm. The quality of equipment could be improved steadily by the introduction of new models.

In the personnel field it was not possible to achieve the required standards of quality because the time spent in training was too short and also because the demands made on training increased steadily with the growingly complicated technical equipment.

5. Owing to the number of users requiring radar instruments from current production, it was not possible to fulfill the antiaircraft artillery program in this field. In full realization of the high importance of this branch of industry, every effort was made to promote production.

THE AIRCRAFT REPORTING SERVICES IN 1941

In this field there was one fundamental problem still under discussion in 1941. This was the question of who was to control the radar organization.

The aircraft reporting service, as a component of the air district command system/insisted that it should responsible for the ground service organization, be given control of the network. The reason advanced was that air situation reporting was based largely on electrical target locating and that therefore the

"electric eye" should be built in as an organic part of the existing reporting organization relying on human vision and hearing.

The other party claiming unrestricted control of the radar network was the Night Fighter Division/Fighter Command Center, later the XII (Night Fighter) Air Corps. The arguments here were that the radar instruments had a dual mission to perform: they were used not only to locate the enemybut also to control friendly fighter operations.at night (the Freya-AN and Wuerzburg instruments). A fundamental requirement in the application of the approved night fighter methods was that data on the position of the enemy and of friendly night fighters must reach the night fighter control position without delay for computation, since this was the only way to make a rational and immediate direction of night fighter action possible.

The needs of the aircrfat reporting service, it was argued, could be met at the same time without difficulty through the establishment of communication lines to the nearest air observation center, which could thus be posted currently on radar data concerning enemy units.

In a hotly contested discussion at headquarters of the Commander in Chief of the Luftwaffe in the Summer of 1941 it was decided finally that the fighter command was to be

given control over the radar organization. This meant that the system was assigned to the XII (Night Fighter) Air Corps which was responsible for the conduct of daytime and night fighter operations.[344]

The Freya and Wuerzburg instruments assigned to the XII Air Corps were consolidated in what were called Heavy (motorized) aircraft reporting companies. At the time a company of this type comprised

1 Freya instrument, with the AN attachment, mounted on a mobile mount

2 Wuerzburg instruments on mobile mounts.

The heavy (motorized) aircraft reporting companies were included in air signal battalions, which in turn were part of the 201st Air Signal Regiment, with headquarters at Arnheim, Holland.

Pending completion of the system of night fighter positions under development in the areas of northwestern Germany, the heavy (motorized) aircraft reporting companies had to be employed in mobile operations in accordance with

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344. Source 222.

the main areas of enemy penetration and exit. Once the system of positions was completed, the instruments were permanently emplaced.

With the extension of the system of night fighter control positions to the areas of northwestern Germany, the 202d Air Signal Regiment, with headquarters at Neukloster, was organized in the spring of 1941 and assigned to the XII Air Corps.

To coordinate the electrical system of air observation with the visual and oral system of aircraft reporting the following aircraft reporting centers were to be linked with the night fighter control positions according to arrangements made in the autumn of 1941: Niebuell, Brunsbuettelkoog, Cuxhaven, Wilhelmshaven, Emden, Oldenburg in Oldenburg, Bremen, Osnabrueck, Zwolle, Dortmund, Duisburg, Cologne, Koblenz, Frankfurt, Mannheim, Stuttgart, Donaueschingen.

However, because the heavy (motorized) aircraft reporting companies were not organized for continuous 24-hours-per-day operations and were required primarily to serve the needs of night fighter operations, this cooperation for some time remained a theoretical objective impossible of realization in practice.[345]

345. Source 7.

PASSIVE AIR DEFENSE IN 1941

In the field of passive air defense the practice of establishing dummy installations some distance from especially important targets became a particularly important feature in 1941.

In an attack directed against the city of Berlin in 1941, for example, the attacking planes dropped 43 times as many explosive and 47 times as many incendiary bombs on Dummy Installation V-500 as on the actual city area.

As time passed, however, the system proved too inflexible. Furthermore, the dummy installations frequently were located too far from a course which could be plotted navigationally with precision, so that they were easily recognized as dummies.[346]

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346. Source 173.

EXPERIENCE AND STATED REQUIREMENTS OF
AIR COMMAND CENTER IN 1941

The following items of experience and stated requirements for air defense in Germany are taken from a memorandum prepared by Air Command Center on 1 August 1941; and refer to requirements for operations in the winter of 1941-42:

I. Operations.

1. Experience.

a. Night Fighter Operations. The season of short nights and fair weather conditions made successful night fighter action possible in illuminated night fighter operations, with support from the searchlights of the searchlight belt, in dark night fighting, without searchlight support, and in combined night fighter-antiaircraft artillery operations.

b. Daytime Fighting Operations. In daytime fighter operations the following disadvantageous factors made themselves felt:

(1) The possibility for enemy aircraft to approach at altitudes too low or too high (at extreme altitudes around 33 000 feet) for detection by the

target detecting instruments. This resulted in an incomplete interpretation of the air situation, which made a properly planned commitment frequently impossible.

(2) The fact that many of the single- and twin-engine fighter units on line still had older types of aircraft.

c. Antiaircraft Artillery. In Air Districts VI and XI antiaircraft artillery units were massed at the principal targets requiring protection, for which purpose units were moved from less endangered targets. This made it possible to reinforce the antiaircraft artillery defenses in the most seriously threatened areas of the Helligoland Bight and the Ruhr region in spite of the withdrawals for assignment to the eastern theater.

The organization of mobile reserves comprising one to two motorized antiaircraft artillery battalions in each of the Air Districts VI, XI, and XII/XIII to facilitate quick shifts in the main effort proved a sound measure. In addition, successful use was made of rail carried antiaircraft artillery guns with Wuerzburg C instruments and of low carriage batteries of the 1st Battalion, 42d Regiment, to develop

temporary concentrations in the most seriously threatened areas of Air Districts VI, XI, and XII/XIII.

It was found that the only way to secure success with searchlights in areas defended by antiaircraft artillery was, as a rule, to consolidate four searchlight battalions in such areas. Such concentrations were developed in Air Districts VI, XI, and XII by stripping Air Districts VII and XIII of searchlights.

d. Air Signal Forces. Throughout the command zone the air signal troops committed are able to meet all requirements in their present strength and if all elements put forth their utmost effort. They would not be able to cope with additional operational missions or to release personnel for the activation of new units.

e. Passive Air Defense. Hitherto the security and auxiliary service units available for the repair of bomb damages have proved adequate.

The use of dummy installations has proved a sound measure.

Particularly good results were achieved in areas where, in addition to normal antiaircraft batteries and searchlights, and so-called barrage batteries/smoke screening was used for concealment.

2. Requirements.

a. Night Fighter Operations. In view of the approaching season of long nights and weather condition of unfavorable visibility the present standards of success in night fighter operations can only be maintained if the following conditions are fulfilled:

(1) Reinforcement of the night fighter forces, since units must be held ready also in the rear areas when unfavorable weather conditions hamper operations in the forward areas.

(2) Reinforcement of the searchlight forces with the Night Fighter Division/Fighter Command Center for use in establishing illuminated fighter zones also in the rear areas.

(3) Speedy equipment of the night fighter aircraft with aircraft target detecting instruments for use in dark night fighter operations. (Spanner and Lichtenstein type instruments).

(4) Resumption of the combined night fighter antiaircraft artillery tactics halted in 1940. Me-109 aircraft to be used for the purpose after they have received equipment for blind navigation and radio sets, in which case the chances of success can be described as good.

This measure would at the same time provide a readily available reserve for the daytime fighter units.

b. Daytime Fighter Operations.

(1) Equipment of the units with modern fighter aircraft types.

(2) Solution of the problem of identification of friendly radar instruments.

(3) Improvement of the operating range of radar instruments (Wuerzburg Riese type).

(4) Establishment of all-weather fighter units through the assignment of twin-engine fighter aircraft with air carried target detecting instruments.

(5) Assignment of an additional replacement fighter group to close the existing gap in the defense in the Holland-Ruhr region sector.

c. Antiaircraft Artillery. It is to be expected that enemy aircraft from the west will make deeper penetrations in the winter half-year of 1941-42. It is therefore essential to reinforce the antiaircraft artillery defenses in Air Districts III, IV, and VII as follows: In Air District III by 1 composite battalion; in Air District IV by 1 composite battalion each for the Ruhr region, Halle-Leuna, and Bernburg sectors,

in Air District VI by 3 composite and 1 light battalions for Air Defense Command 4, 2 composite and 1 light battalions for Air Defense Command 7, 3 composite and 1 light battalions for the X AAA Brigade; in Air District VII by 1 light battalion for the Stuttgart area, 1 composite battalion for the Augsburg area, and 1 composite plus 1 light battalion for the Friedrichshafen area; in Air District XII/XIII by 2 composite battalions for the Nuremburg area, making a total of 16 composite and 5 light battalions.

Reinforcement by 20 searchlight battalions is also required for the main defense areas in the rear.

d. Air Signal Forces. Assignment of 2 additional Air Signal Construction Regiments to cope with current construction projects in the various night fighter zones and to remove large scale interferences due to damage done by bombs.

e. It is to be expected that enemy air attacks will increase. Therefore the return to the command is essential of at least one of the four motorized security and auxiliary service battalions presently operating elsewhere. In addition the establishment of four additional such battalions is necessary.

II. ORGANIZATION.

1. Air Forces. It is considered essential to separate the control of the daytime fighter forces from that of night fighter forces (Night Fighter Division), since the fields of endeavor are entirely different.

No solution has been found as yet for specific problems of daytime fighter operations, such as development of pursuit action and action against single aircraft operating at extreme altitudes.

2. Antiaircraft Artillery. It is recommended that the antiaircraft battalion should contain four instead of three batteries in order to secure a more clear-cut organization and improved defense capabilities. This applies to heavy and light gun battalions and to searchlight battalions. Heavy gun batteries should contain only 128-mm, or 105-mm, or 88-mm guns; in the case of light batteries it is recommended that these should comprise each 1 50-mm, 1 37-mm, and two 20-mm batteries.

In order to secure effective defenses against the large-scale attacks, particularly intimidation raids against cities, which the Royal Air Force must be expected to launch in the autumn season it is

considered essential to organize five 2-battalion railway antiaircraft artillery regiments.

In order to preserve the combat capability of the antiaircraft artillery it is recommended that no further new units should be activated, and that the guns coming from current output should be allocated to the existing batteries instead. This would make it possible to furnish Type 40 fire control instruments to the reserve antiaircraft artillery battalions in place of the Type 35 auxiliary fire control instruments they now have.

For units to be activated later the captured guns of the barrage fire batteries should be replaced by 88-mm guns, thus turning them into fully effective heavy antiaircraft artillery batteries.

In order to secure uniformity it is again recommended that the existing antiaircraft artillery units organic to the army should be disbanded and absorbed by the Luftwaffe antiaircraft artillery forces.

III. EQUIPMENT.

1. Air Forces.

1. Night Fighter Arm. The increased speeds, strong armor protection, and heavy armament of enemy

bomber aircraft makes a speedy reequipment of night fighter units with Do-217 aircraft, with heavier fire power and all equipment for night fighter operations, a compelling necessity.

b. Daytime Fighter Arm. For effective action against fast enemy planes operating at extreme altitudes it is necessary to equip single-engine fighter units with Me-109-F planes and twin-engine units with Me-110 planes powered by DB-601-N and GM-1 engines. For all-weather fighter operations equipment of the Me-110 planes with Lichtenstein type target locating instruments, and of the Me-109 planes with Type-G-IV locators is indispensable.

The use of Wuerzburg-Riesen radar instruments would facilitate the direction of fighter operations from the ground.

c. Antiaircraft Artillery. Of the 423 antiaircraft artillery batteries committed within the command zone of Air Command Center

61 percent are equipped with Type 36 or Type 40 fire control instruments and

39 percent with Type 35 auxiliary fire control instruments.

The Type 35 auxiliary fire control instrument, used in combination with the Wuerzburg C and D instruments, is inadequate.

Therefore, 166 Type 40 fire control instruments are required in order to give each battery modern fire control equipment.

The reequipment of more 88-mm batteries with 105-mm and 128-mm guns must be carried out on a larger scale than in the past in order to counteract the increased speeds, greater operating altitudes, and heavier armor protection of enemy aircraft. It is recommended that the program for reequipment with 105-mm guns be abandoned in favor of the 128-mm gun, since the latter is the only gun capable of effective fire against targets at altitudes above 26 000 feet.

The antiaircraft artillery Type T (A) (Wuerzburg A) radar instrument cannot provide useful data for destructive fire. By 1 October 1941 these instruments therefore must be replaced by the allocation of 236 Type T (C) or T (D) instruments.

The Type T (A) instruments are suitable for the aircraft reporting service.

Current stocks and supplies received in replacement barrels for 88-mm and 105-mm antiaircraft guns

are inadequate.

A monthly supply of 120 barrels is required, namely, 100 88-mm and 20 105-mm barrels.

d. Aircraft Reporting Service. The supply of more Freya and Wuerzburg instruments would make it possible to release a large number of air observers.

The following are required to equip the aircraft reporting service within the zone of Air Command Center

20 Freya instruments
20 Wuerzburg-A "
50 light radio detachments
50 light radio beacons
50 Type G-X radio sets.

e. Passive Air Defense. In view of the expected increased severity of the air situation it is necessary to return the items of air raid protection equipment taken from the reserve stocks of Air Command Center for the eastern theater at the beginning of the Russian campaign.[317]

In the above Air Command Center memorandum of 1 August 1941 concerning the air defense of Germany in the coming winter of 1941-42 the following points are worthy of note:

1. The results achieved by the night fighter arm under the favorable conditions of good weather and

347. Source 225.

short nights are considered satisfactory.

In view of the approaching season of unfavorable weather and long nights, which would facilitate deeper penetrations by bombers of the Royal Air Force, effective night fighter defense action is described as dependent upon

a. development of " illuminated" night fighter zones also in the rear areas;

b. reinforcement of the existing night fighter forces; and

c. speedy equipment of night fighter aircraft with Type Spanner and Type Lichtenstein target locating instruments for dark night fighter operations.

2. In the case of the daytime fighter arm the only problems stated were that of organizational measures and that of the requirement that themostmodern types of fighter aircraft should be introduced and that the twin-engine fighter units should be equipped for all-weather operations. The demand for all-weather equipment was probably made from the viewpoint that this would make fighter operations possible in cloudy weather as well as at night.

Apparently it was not thought that daytime air warfare over Germany would become increasingly severe, sincethe only reinforcement asked for consisted of one

additional replacement twin-engine fighter group.

3. In the appraisal of the antiaircraft artillery defenses concern over shortages in personnel and materiel are apparent. As stated previously in this stude, the antiaircraft artillery forces moved from Germany between 30 June and 1 October 1941 comprised a total of 28 heavy plus 141 medium and light batteries.

Viewed together with the necessity to reinforce the western air districts (XI, VI, and XII/XIII), which could only be accomplished by weakening other districts, the request for the assignment of an additional

16 composite battalions
comprising 48 heavy & 32 light batteries

and 5 light battalions
comprising 5 medium &10 light batteries

making a total of 48 heavy and 47 medium plus light batteries, appears fully justifiable.

Opposed to the requirement, however were the factors of

a. increased attrition and increased requirements in other theaters of operations, particularly in Russia,

b. the difficulties which were beginning to make themselves felt in meeting personnel and training requirements.

c. The lack of adequate replacements in

fire control equipment from current production.

The fact is therefore not surprising that figures for 10 January 1942 show that antiaircraft artillery strengths in Germany on the whole not only had not increased but had in fact been futher decreased by 16 heavy batteries, and it was just in this very field, in heavy guns, that reinforcements were most urgently required for night action against the Royal Air Force bombers (compare page 413, above).

Nevertheless, the reinforcements assigned to Air Command Center in antiaircraft artillery forces by 1 October 1941 were actually far in excess of those requested on 1 August of that year.

According to the antiaircraft artillery disposition map dated 30 June 1941 Air Command Center had in its Air District Commands III, IV, VI, VII, XI, and XII/XII a total of 459 heavy plus 337 medium and light gun batteries, and 128 searchlight batteries. According to the memorandum of 1 August 1941 the command on that date had only 438 heavy batteries.

The antiaircraft artillery disposition map of 1 October 1941 shows that the air district commands of Air Command Center on that date had a strength of 543 heavy plus 382 medium and light gun batteries and 149 searchlight batteries. This shows an increase over the figures for

30 June 1941 of 85 heavy plus 5 medium and light gun batteries and 20 searchlight batteries, over the figures for 1 August 1941 an increase of 120 heavy batteries.

A comparison of the figures for antiaircraft artillery strengths in Air Districts I, II, VIII, and XVII on 30 June with the figures for 1 October 1941 shows an overall decrease in these district commands of 203 heavy plus 146 medium and light batteries, and 34 searchlight batteries (compare page 410).

It is thus clear that all reinforcements assigned to Air Command Center by 1 October 1941, as well as all assignments to other theaters, were made at the expense of the other home air districts.

As previously mentioned above, the Royal Air Force had given proof of its ability as far back as in August 1940, through its attack against the Skoda Works in Pilsen, of its ability to operate against the eastern territories of Germany. In the meanwhile, the British had increased their number of bombers, and had improved models, including 4-engine aircraft. It must be noted therefore that the weakening of defenses in the eastern air districts of Germany in the autumn and winter of 1941 was not done without incurring certain risks.

The most unfavorable point remained that of equipment

with Type 39-T (C) or (D) antiaircraft artillery control instruments. The fact that 236 of these instruments were on requisition indicates that practically every heavy battalion deployed in the command zone of Air Command Center required one to replace the Type-39-T (A) instruments, which were unsatisfactory for electrically controlled fire.

THE TURN OF THE TIDE

The Military Situation at the End of 1941

In two theaters of operations events occurred at the end of 1941 which had a decisively important impact on the military situation as a whole and on the entire strategic concept.

1. After the German Army of the East had inflicted annihilating defeats on the Soviet military forces in a rapid succession of battles of envelopment, and when the armored forces spearheading the advance of Army Group Center had even pressed forward to just outside of Moscow, the last Soviet reserves from Siberia and the Russian winter with its mud and snow brought the blitz campaign in the east to an abrupt halt.

This situation imposed on the German command the necessity, at the end of December 1941, to withdraw its troops to rearward defense positions and revert to static warfare for the rest of the winter season.

2. On 18 November 1941 the British commenced their counteroffensive in North Africa and forced Field Marshal Rommel's Africa Corps to withdraw as far as El Agheila.

This placed the German military forces in the eastern and southern theaters on the defensive, and they remained on the defensive from then all along the line in the east, from the North Polar Seas to Africa. There was no room for doubt that a quick consolidation of a "second front" was not to be expected.

These circumstances did not fail to influence the existing basic concept for the continued conduct of the war in the west.

On 3 November 1941 the Joint Military Command (Wehrmacht High Command) issued orders for the basic measures to be taken to reinforce the coastal defenses in the west. These orders concerned

1. Continuation of the projects for the field type fortification and strongpoint type reinforcement of the threatened areas through the construction of permanent battle positions in the following sequence of priority: Norway-the Franco-Belgian Channel coast, including the projecting areas of Normandy and Brittany-the Atlantic coastline south of Brest, and from Quibéron to the Gironde River-west coast of Holland and North Jutland-the Bight of Helligoland, including the exits from the Baltic Sea.

2. The concentration of air defense forces as

part of the entire air defense organization of Germany and the occupied western territories, in the seriously threatened coastal areas.

3. Reduction of the number of units currently deployed to defend the coastline concurrently with the improved defensibility brought about by permanent installations.[348]

These orders reveal that the German military command had accepted the fact that it would have to wage defensive warfare in the west in 1942, and that it would have to reinforce the front there, by means of fortifications, in such a manner that it would be secure enough to permit the resumption of offensive operations in the eastern and southern theaters when the time came.

The declaration of a state of war between the United States of America and Germany on 11 December 1941 must be considered as the event of paramount importance in 1941 in its influence on the course of the war. It was an inescapable consequence of the outbreak of war between Japan and the United States and of Germany's obligations under the Triple Pact between Germany, Italy, and Japan of 27 September 1940.[349]

So far as the basic German strategic concept of defense

348. Sources 226, 113. 349. Source 113.

in the west was concerned, it implied the appearance of the strongest world power on the front to be defended, a potential threat of grave danger in spite of the military handicap of war against Japan.

It remains now to examine in the light of history how these fateful events of December 1941 affected the German air defenses in 1942.

DEVELOPMENTS IN THE AIR SITUATION IN THE ZONE OF INTERIOR IN 1942

Wehrmacht High Command reports reveal the following air situation as it existed over Germany in 1942:

Month	Number of days on which enemy planes penetrated over Germany during		Main Areas under Attack
	Daylight	Night	
1942			
January	1 (formation)	10 (formations)	North and Northwest Germany
February	4 "	14 "	North, northwest, and west Germany
	1 (reconnaissance plane)		Southwest Germany
March	1 "	11 "	North and west Germany (Luebeck)
April	1 "	20 "	North and west Germany (Cologne, Kiel, Hamburg Rostock).

Month	Number of days on which enemy planes penetrated over Germany during		Main areas under attack
	Daylight	Night	
1942--continued			
May	2 (reconnaissance)	10 formations	North and west Germany (1000-bomber attack against Cologne; Hamburg, Rostock)
June	1 "	13 "	Northwest and west Germany (Duisburg, Oberhausen, Osnabrueck, Bremen, Emden, Hamburg)
July	2 "	12 "	West and southwest Germany (Osnabrueck, Mainz, Wiesbaden, Frankfurt, Kassel)
September	2 "	16 "	North, northwest, south, and southwest Germany (Karlsruhe, Bremen, Duisburg, Duesseldorf, Wilhelmshaven, Munich)
October	8 " & bomber formations	9 "	North and west Germany (Osnabrueck, Kiel)
November	2 (reconnaissance)	4 "	North, northwest, and south Germany (Stuttgart)
December	5 "	6 "	Northwest, west, and southwest Germany (Rhine-Main river areas, Duisburg, Munich). [350]

350. Source 227.

The following comparative table of figures for July 1941 and 1942 (the latter in parentheses) shows haw the air situation had changed:

Target attacked	Number of planes penetrating	Number of demolition and other high-explosive bombs dropped	Number of incendiary bombs dropped
Kiel	147 (-)	165 (-)	425 (-)
Hamburg	159 (148)	275 (648)	1100 (22798)
Bremen	229 (50)	579 (280)	3475 (5720)
Wilhelmshaven	106 (73)	258 (124)	2575)(10000)
Emden	61 (40)	135 (49)	900 (air mines)
Berlin	40 (-)	150 (-)	500 (-)
Hanover	113 (-)	300 (-)	1500 (-)
Bielefeld	39 (-)	250 (-)	2500 (-)
Muenster	126 (65)	595 (388)	7250 (8615)
Essen	137 (-)	365 (-)	3125 (-)
Cologne	131 (49)	485 (-)	3250 (8500)
Aachen	122 (-)	465 (-)	5500 (-)
Frankfurt	123 (63)	385 (401)	3100 (8500)
Mannheim	27 (-)	60 (-)	400 (-)
Stuttgart	73 (-)	160 (-)	700 (-)

Target attacked	Number of planes penetrating	Number of demolition and other high-explosive bombs dropped	Number of incendiary bombs dropped
Munich	29 (-)	63 (-)	250 (-)
Danzig	(19)	(25)	(-)
Flensburg	(65)	(131)	(3220)
Duisburg	(379)	(2037)	(40000)
Saarbruecken	(23)	(203)	(3350)[351]

The above survey of the overall air situation over Germany and the comparison of figures for July 1941 with those for the same month in 1942 reveal the following noteworthy features:

1. Dayteme defense had to contend almost exclusively with small numbers of reconnaissance planes.

2. Bombing attacks took place almost exclusively at night.

3. The number of days on which night air attacks took place apparently was influenced largely by weather conditions. The greatest frequency was in the months of generally good weather conditions.

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351. Source 228.

4. Whereas in 1941 the enemy air forces still operated over a very wide area, including Berlin, the Bight of Heligoland, the Ruhr region, the Frankfurt basin, Stuttgart, and Munich as the main target areas, a more clearly defined concentration on the areas of the Bight of Heligoland, the Ruhr region, and the Frankfurt basin is noticeable in 1942.

5. Compared with 1941 the bombloads carried pere penetrating unit in 1942 was considerably larger when the attacking forces used the same routes to the same targets as in 1941.

In the attacks carried out by Royal Air Forces over German territory in 1942 the following characteristic features are particularly prominent:

1. On the night of 3-4 March 1942 4-engine Lancaster aircraft were used for the first time in a marine mine-laying operation off the German North Sea coast. In a steadily increasing measure these planes were introduced to replace the old British 2-engine models.

2. In the night attack against Essen of 8-9 March 1942 the Royal Air Force for the first time used a new navigation system, the Gee system, which functioned with extraordinary precision.

3. Lancaster aircraft were used for the first time as night bombers in an attack against Essen on the night of 10-11 March 1942.

4. On the night of 10-11 April 1942 the first 8 000-pound bomb was used in an attack against Essen.

5. On 17 April 1942 8 Lancaster bombers, flying without fighter escort, succeeded in penetrating to Augsburg and bombing the MAN factories in a daylight low level attack. The attack was a complete failure and 7 of the attacking planes were shot down.

6. On the night of 30-31 May 1942 the Royal Air Force dispatched 1 000 bombers in the biggest night attack hitherto carried out against Cologne.

All aircraft and crews available in all schools were pressed into service to achieve this large number of planes.

On the following day the new twin-engine Mosquito made its first appearance with bombs over Cologne. At top speeds this model was as fast as the defending German fighters, at medium altitudes it was even faster.

7. On the night of 1-2 June 1942 Essen was again attacked by a force of 1 000 bombers.

On the night of 25-26 June 1942 960 British bombers attacked Bremen. In the biggest night defense hitherto success achieved 52 of the attacking planes were shot down by night fighters and anti-aircraft guns.

8. On 16 August 1942 the Royal Air Force established its "first pathfinder squadron"

This innovation introduced an entirely new technique in attack tactics, which was to create exceedingly difficult problems for the defense. The first time these new techniques were employed was in an attack against Kiel on the night of 13-14 October 1942 (target marking flare bombs).

9. In an attack against Duesseldorf on the night of 10-11 September 1942 4 000-pound incendiary bombs were used for the first time.

10. On 10 September 1942 6 Mosquito bombers attacked Berlin for the first time during daylight. Only one of these planes was downed by the defenses.

11. On the night of 20-21 December 1942 the Oboe (Bumerang) navigational instrument, developed for pinpoint bombing, was used for the first time. The operating range was limited to the Ruhr Region.[352]

Briefly, the air situation over Germany in 1942 can be summarized as follows:

1. Main emphasis was clearly on night air attacks.

2. The Royal Air Force had introduced improved navigational instruments, bombers, and other aircraft, as well as more effective bombs.

3. The tendency was to carry out quick, massed, area bombing attacks against industrial targets.

352. Sources 112, 229, 230.

DEVELOPMENT OF NIGHT FIGHTER DEFENSES IN THE ZONE OF INTERIOR IN 1942

Measures had been initiated in November 1941 to reinforce the existing night fighter units. Obviously this was in response to the requirements stated by Air Command Center in its memorandum of 1 August 1941 concerning the steps which would have to be taken to insure proper air defense in its area of command in the winter of 1941-42.

Transfer of HQ, 26th Twin-Engine Fighter Wing with its 1st and 2d Groups, redesignated as the 4th Night Fighter Wing would have given the night fighter defense arm a complete new wing.

As mentioned previously above, however, the two groups , while already retraining for their night fighter mission had been moved to the eastern theater as twin-engine fighter units in December 1941. This meant that for the time being the night fighter arm would receive no reinforcements.

On 10 January 1942 the Night Fighter Division had available the following night fighter units:

HEADQUARTERS, NIGHT FIGHTER DIVISION, OLDENBURG IN OLDENBURG
COMMANDING GENERAL: GENERAL VON DOERING

Unit	Aircraft Type	Actual Strength	Effective Strength
HQ, 1st Night Fighter Wing	Me-110	2	1
1st Group	"	31	21
2d "	"	34	26
3d "	"	25	18

NIGHT FIGHTER DIVISION--Continued

1st Group, 3d Night Fighter Wing	Me-110	28	19
2d Group, 3d Night Fighter Wing	"	29	17
Totals in aircraft		149	102

The following units were in process of activation or were retraining as night fighter units on 10 January 1942:

2d Group(minus 4th Squadron), 2d Night Fighter Wing	Me/110 & Do-215
Hq, 3d Night Fighter Wing	Me-110
3d Group	"
Hq, 4th Night Fighter Wing	" [353]

The 2d Group(minus 4th Squadron), 2d Night Fighter Wing, and the 3d Group, 3d Night Fighter Wing, were ready for commitment on 14 February 1942.

This raised the strength of the night fighter forces to and actual strength of 234 and an effective strength of 180 aircraft.[354]

By 14 March 1942 these fighure had dropped to an actual strength of 222 and an effective strength of 138 aircraft although the number of units remained unchanged.[355]

By 18 April 1942 the actual strength increased to 250 and the effective strength to 139 within Air Command Center. The 4th

353. Source 231. 354. Source 232. 355. Source 233.

Photo

Do-215 Night Fighter Plane

Squadron of the 2d Night Fighter Wing, hitherto committed under the Second Air Fleet, had returned meanwhile to its parent unit, the 2d Group, 2d Night Fighter Wing.[356]

At this time the following units were being activated or were receiving training:

HQ, 4th Night Fighter Wing, organized from the headquarters of the 26th Twin-Engine Fighter Wing

2d Group from the 5th Squadron of the 26th Twin-Engine Fighter Wing

3d " from the 2d Group of the 26th Twin-Engine Fighter Wing.[357]

With the 2d Group, 4th Night Fighter Wing ready for commitment on 20 May 1942 the strengths in night fighter forces available under Air Command Center changed to the following figures:

Actual strength 233, effective strength 158 aircraft.[358]

CHANGES IN THE COMMAND ORGANIZATION OF THE NIGHT FIGHTER SYSTEM IN GERMANY

In the January-20 May 1942 period important changes were introduced in the command organization of the night fighter arm.

These changes had become necessary because of the existing air situation and because of the progress made in the development of the night fighter ground service organization.

As previously recounted, the Royal Air Force had not restricted its night attacks in 1941 to the heavily defended areas of

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356. Source 234. 357. Sources 93, 235. 358. Source 235.

northwestern and western Germany and Berlin, but had extended its operations to attacks against targets in southwestern and southern Germany, such as Frankfurt, Mannheim, Stuttgart, and Munich.

While Berlin and Central Germany were protected by the forward defense belt extending from the German border to Denmark as far south as Luxembourg, and while Berlin itself was protected directly by a searchlight belt eextending from Mueritz Lake to Gardelegen, the open route through France to southwestern and southern Germany remained to be closed in the command system. The headquarters of the Night Fighter Division in its command post at Oldenburg was no longer capable of handling all problems in the constantly expanding zones of night operations, so that a modified command organization was urgently required. The necessary changes were introduced step by step, as follows:

On 13 January 1942 Headquarters, Night Fighter Division was transferred to Deelen, Holland, and redesignated as the 1st Night Fighter Division. At the same time 2d Night Fighter Division Headquarters was organized at Stade and a start was made at establishing a central command post for the direction of all night fighter operations.

On 1 May 1942 Headquarters, 2d Night Fighter Division assumed responsibility for the conduct of night fighter operations in the areas of northwestern Germany and Berlin.

Also on 1 May 1942, Headquarters, 3d Night Fighter Division was established with a centrally located command post at Metz.

So far as the command system was concerned this closed the the gap for enemy penetrations into southwestern and southern Germany.

The night fighter divisions now in existence were designated 1st Fighter Division (Deelen), 2d Fighter Division (Stade), and 3d Fighter Division (Metz).[359]

This established a clear cut organization for the direction of night fighter operations from the Danish to the Swiss border, to prevent air penetrations from the west.

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359. Sources 26, 235, 236.

The organization of night fighter defenses within the command zones of Air Command Center on 29 May 1942 was as follows:

XII AIR CORPS HEADQUARTERS, ZEIST
General Kammhuber

Unit	Actual Strength	Effective Strength	Aircraft Type	Command Post	Commander
HQ, 1st Fighter Div	4	0	Me-110	Deelen	General von Doering
HQ, 1st Night Fighter Wing	4	0	Me-110		
1st Group	26	17	"		
2d "	29	20	"		
3d "	25	14	"		
HQ, 2d Fighter Div				Stade	General Schwabedissen
HQ, 3d Night Fighter Wing	-	-	"		
1st Group	28	22	"		
2d "	27	22	"		
3d "	32	25	"		
HQ, 3d Fighter Div				Metz	Colonel Junck
2d Gp., 2d Night Fighter Wing	36	21	"		
3d Gp., 4th Night Fighter Wing	26	17	"		
Total	233	158 aircraft.[360]			

Noteworthy facts here are that in all night fighter units, and in some case quite considerably so, actual strengths were below the authorized strengths, and that the percentage of actual

360. Source 235.

strength reported as effective, namely 67 percent, was lower than average. The low effective strengths were a matter of aircraft, not of personnel.

The Chief of Luftwaffe Supply and Administration report for 28 March 1942 shows that for an effective aircraft strength of 140 (night fighter aircraft), including those with the Second Air Fleet, 203 crews were available; on 30 June 1942 198 crews were available for 167 aircraft. This shows that there was no shortage in personnel.[361]

The authorized strength of a night fighter group was 39 aircraft and 39 crews. The question therefore merits scrutiny of what the reasons were that the authorized strengths in night fighter units were not achieved.

1. According to Chief of Luftwaffe Supply and Administration reports the requirements of twin-engine fighter units equipped with Me-110 aircraft in the 27 December 1941-28 March 1942 period mounted from a total authorized strength of 50 to a total authorized strength of 466 aircraft.

This is due to the activation of new twin-engine fighter units for daytime operations in the eastern and southern theater.

The output in Me-110 aircraft, hitherto available in the bulk for night fighter forces, therefore must have been required to a considerable extent in this period for the equipment

361. Source 153.

of newly activated twin-engine fighter units.

2. In the bomber forces in the winter of 1941-42 units were reequipping with Ju-88 and Do-217 planes to replace their old He-111 and Do-17 models.

On 20 December 1941 2 groups of bombers were reequipping with Ju-88-A-4, and 2 with Do-217 aircraft. Six groups had no aircraft and were awaiting allocations. This shows clearly that Ju-88 and Do-217 planes were in such critical demand to equip the bomber units, that no appreciable numbers of these types could be made available from output for the fighter arm.[362]

3. From current output and returns from repairs the following Me-110, Ju-88, and Do-217 aircraft became available in the first halfyear of 1942 for allocation to the bomber and fighter forces:

Month	Me-110 (twin-engine day & night fighter type)	Ju-88 Bomber Type	Ju-88 (twin-engine day & night fighter type)	Do-217-K (Bomber type)	Do-217 (Night fighter type)
January	23	141	8	16	0
February	23	222	9	11	0
March	39	321	20	0	0
April	137	242	28	19	8
May	98	256	32	94	27
June	79	236	19	84	34
Totals	399	1 418	116	224	69(sic)[363]

These figures clearly reveal that the major part of the output in Ju-88 and Do-217 aircraft were allocated to the bomber forces.

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362. Sources 3, 202. 363. Source 138.

4. In the 28 March 1942-30 June 1942 period night fighter losses totalled 131 aircraft damaged to an extent greater than 10 percent.

In the same period the daytime twin-engine fighter arm lost 270 aircraft damaged to an extent greater than 10 percent.

Replacement requirements of the night fighter and daytime twin-engine fighter forces thus totalled 401 aircraft.

Aircraft becoming available for allocation from current output and returned from repair in the 1 April-1 July period totalled 462 (314 Me-110, 79 Ju-88, 69 Do-217).

This shows that the number of aircraft available for allocation was adequate to replace losses but left very little over for the activation of new units or for allocations to bring the existing night fighter units up to authorized strength.[364]

5. That there was no possibility to allocate appreciable numbers of aircraft to the night fighter arm from the Ju-88 and Do-217 planes produced for the bomber forces becomes obvious from a comparison of figures for the losses of the bomber units and the aircraft becoming available for replacements.

In the 27 December 1941-30 June 1942 period a total of 1 758 bomber aircraft were damaged to an extent exceeding 10 percent.

During the same period 1 642 aircraft (Ju-88 and Do-217

bomber types) were received from current output and from repair. In addition, 690 He-111 planes were received, but this number can hardly be taken into account because only very few bomber units were still equipped with this type.

It is thus obvious that the replacements received in Ju-88 and Do-217 aircraft were not even adequate to cover the lossess incurred by the bomber units, so that it was not possible to make more of these types available for allocation to the night fighter forces.[365]

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364. Sources 102, 153, 138.
365. Sources 138, 237.

INCREASING NIGHT ATTACK ACTIVITIES OVER OVER GERMANY IN 1942

Attacks in the night of 30-31 May 1942 had subjected the German night fighter defenses to the severest trial hitherto experienced.

Scraping together every operable bomber and every man that could be released for the purpose from front line and training units, the Royal Air Force sent out more than 1 000 aircraft to bomb Cologne.

Cologne was a particularly favorable for an attack operation of this type because of the following circumstances:

1. It was the closest important German industrial center from the British Isles.

2. It was in the western fringe area of the Ruhr region, which was heavily defended by antiaircraft artillery.

3. It was in the center of the night fighter belt, so that the attacking force would have to cross the smallest number of German night fighter positions, so that German counteraction would be restricted.

In the attack the German night fighter and antiaircraft artillery forces shot down a total of 36 British aircraft.

Compared with the size of the attacking British forces, totalling more than 1 000 aircraft, this result could not be

considered satisfactory.

In a second operation of the same type, with 1 000 Royal Air Force bombers attacking Essen on the night of 1-2 June 1942, German night fighters and antiaircraft guns brought down a total of 37 British aircraft.

In view of the fact that the target under attack this time was in the center of an area heavily defended by antiaircarft artillery, this again was an unsatisfactory result. It seemed obvious that the existing defense system by night fighters and antiaircraft artillery was not suitable to obtain maximum defense results against attacks of this type.

German experience in the air offensive against Britain had shown that it was only when losses exceeded 10 percent of the total number of aircraft committed in an attack, that the ratio of losses exceeded the bounds of tolerance to such an extent that a change of targets and of methods in the execution of strategic air warfare had to be taken into consideration.

The British losses counted by the German side totalled only 3.6 percent, in the attacks against Cologne and Essen, and even if the uncounted losses incurred during the return flight and at landing in Britain were included, the overall total could not even approximate the critical limit of 10 percent.[366]

366. Sources 112, 227.

The XII Air Corps recognized the weaknesses in the defense system and stated certain requirements designed to increase the chances of success in night fighter defense operations:

1. Measures to expedite development of the radar network on the ground (night fighter control positions for dark nigh operations) with a view to closing the existing gaps at the borders and to provide conditions for action against enemy units penetrating into the rear areas.

2. Measures to increase the number of night fighter units.

3. Measures to equip all night fighter aircraft for control by the so-called Y-method (untra short wave radio control). This method required only one Wuerzburg Riese radar instrument on the ground, so that the second instrument required under the current system would have been free to

direct operations against another target.

This would have made it possible to direct the operations of two night fighters simultaneously from one night fighter control position, meaning that it would have been possible to track simultaneously two enemy aircraft in the area, each with one Wuerzburg instrument and, using separate transmission frequencies, to guide two fighters to their targets at one and the same time, transmitting the data received to only one Seeburg plotting table and employing two control officers to direct the fighters.

The chances of success in night fighter operations would thus have been doubled.

4. Measures to expedite the introduction of the UHU control system. This method was based on the principle of remote control directly from the night fighter control position to guide the defending fighter to its target, which was tracked by a third Wuerzburg Riese instrument at the control position.

Used in conjunction with the Y-method, this would have made it possible to direct three night fighters simultaneously, and thus would have tripled the chances of success.

All of the above advantages also would have applied in the successive commitment of a number of night fighters from one and the same position, if the area was crossed for any

length of time, so that fighters could operate at separate intervals.

In such cases the fighters to be committed would be maintained in waiting positions over the radio beacon of the night fighter control position to be committed when their turn came.

The most favorable circumstances which could be envisaged, namely an enemy force requiring an appreciable time to cross the control position's area, thus would have permitted the commitment of a number of successive groups of three night fighters per night fighter control positions.

5. Measures to expedite development of a panorama rader instrument with an operating range of 90 miles to remove the disadvantages inherent in the small range of only a radius of roughly 20 miles over which the existing Wuerzburg Riese was effective.

This would have resulted in a multiple of the time for night fighter action. At the same time it would have compensated for the advantages the enemy had which resulted from the increasing speeds of aircraft and from the fact that the predominantly westerly wind increased this speed and permitted the attacking bombers to aim at more distant targets.

The XII Air Corps fully realized the disadvantages

and limitations imposed by the increasing tendency of the British to concentrate their bombers in time and area on its "waiting area" tactics (Himmelbett Verfahren), meaning the tactics of fighter direction by a night fighter control position. These disadvantages and limititations could be removed only through fulfillment of the requirements stated in the spring of 1942 in the light of experience gained in the British attacks against Cologne and Essen.

That the efforts to fulfill these requirements failed was due to the following reasons:

1. In 1942 the industrial output of radar and similar instruments was too small to permit the planned development of the night fighter control position network with the required speed.

Plans for the expansion of the night fighter defense system included not only Germany but also the areas of Belgium, northern France and central France, areas which had to be crossed in attacks directed against southern Germany.

Implementation of these plans was a responsibility of the Commanding General, XII Air Corps, in his dual capacity of Inspector of the Night Fighter Arm.

2. Shortages in aircraft made it impossible to reinforce the existing night fighter forces in the required measure.

3. Not enough pressure was applied to expedite the development of the panorama radar instrument, which made its first appearance in the field in 1944. Instead, effort was expanded on the development of an improved Wuerzburg Riese model, the Giant Wuerzburg (Wuerzburg Gigant), with an operating radius of 43 miles. The whole operating principle of this type of instrument proved inadequate, since it was doomed finally to failure by the British use of the tinfoil method of July 1943.[367]

From the above it is obvious that the higher levels of the Luftwaffe command did not take as serious a view of the problems of night fighter operations which the increasing British air attack activities produced as that held by the XII Air Corps.

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367. Sources 222, 239.

This may have been due in part to the revival of the concept of offensive warfare against Britain in the form of strategic air attacks, which commenced in April 1942.

In a conference on 16 May 1942, a few weeks before the Royal Air Force launched its 1000-bomber attacks against Cologne, Goering personally stated to the Commanding General, Third Air Fleet, and to the commanding officers of the bomber units committed in the west the following fundamental views:

1. It was necessary to reckon with possibility of British landing operations at some point on the Channel or Atlantic coast at any time. The repulsion of any such attempts was a responsibility of the Third Air Fleet, which would commit all available air, antiaircraft artillery, paratrooper, and replacement units for the purpose, in action coordinated with that of forces of the Army and the Navy.

2. The daytime fighter defense forces had the direly important mission of denying enemy bomber formations all approach routes to Germany, since nothing was available within Germany to combat such enemy forces if they succeeded in penetrating the fighter defense belt at the coast.

3. In the conduct of strategic air warfare the following types of missions evolved:

a. Action against shipping in the Atlantic, in British ports, and in shipbuilding yards.

b. Destructive low altitude daytime attacks by individual bombers against industrial installations.

c. Concentrated night attacks by bombers against targets, such as cities, selected for retaliatory action, against ports, and against other targets selected for destruction.

4. He, Field Marshal Goering, would use his influence to see that the strategic night fighter offensive against the British Isles was resumed, in support of the general offensive, and that the night fighter attacks were coordinated with action by the bomber units of the Third Air Fleet.[368]

THE 1942 SUMMER OFFENSIVES

In the summer of 1942 the offensive concept was also the ruling idea in the German military command in all other theaters.

On 30 May 1942 the battle of encirclement at Kharkov, in the central sector of the eastern front ended in German victory and the way was open for the drive on Stalingrad by forces of Army Group South.

On 21 June 1942 the German Africa Corps in its drive in North Africa captured the British fortress of Tobruk and on 2 July reached El Alamein.

On 1 July 1942 the big German drive opened in the southernmost area of the eastern front, and on 2 July 1942 German troops conquered Sevastopol.

368. Source 240.

On 31 July 1942 forces of Army Group A crossed the Don River in its upper reaches on a frontage of 150 miles in their drive on the Caucasus and brought the oil center of Maikop under German control.[369]

These developments in the overall military situation undoubtedly nourished a certain degree of optimism in any appraisal of the problem of how soon the campaigns in the east and in Africa could be brought to a close and Germany's entire potential released for action in the west.

The main emphasis in all efforts therefore naturally had to be on supporting the offensive operations in the east and the south. This alone explains that the problem of air defense did not receive the equal amount of attention or consideration.

Furthermore, the fact that German night fighters and antiaircraft guns shot down 52 planes out of the Royal Air Force units attacking Bremen on the night of 25-26 June 1942 could be considered such a resounding success for the German defenses that it seemed justifiable to expect that it would have a retarding effect on the British.

DISBANDMENT OF THE SEARCHLIGHT DIVISIONS IN 1942

It is only in the light of these circumstances that an explanation can be found for the action taken by the German Air

369. Source 113.

Command on 31 July 1942 in disbanding the two searchlight divisions hitherto assigned to the XII Air Corps and, leaving only one regiment with the corps for experimental purposes, transferring the component units of the divisions to the antiaircraft artillery.

All efforts of the Commanding General of the XII Air Corps to prevent this decision had been fruitless. Over his protests the Commander in Chief ordered the change, the result of which was that the night fighter arm from then on had to restrict its operations to dark night fighter action and combined night-fighter-antiaircraft artillery action.

Here once again is a clear sign of Hitler's marked esteem for the antiaircraft artillery.[370]

One factor which may have been a decisively important contributing cause in this decision was that the measures taken in the autumn of 1941 to fulfill the requirements of the night fighter

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370. Source 144.

arm had stripped Air District Commands XIII and VII completely of searchlight units.

In view of the fact, on the other hand, that the Royal Air Forces extended its operations to the areas of southern Germany, that because of its lack of electrical target locating equipment the antiaircraft artillery to a large extent had to depend at night on support by searchlights, and that the night fighter arm could if necessary operate without searchlight support and as yet had no clearly established organization, the transfer of the searchlight units of the XII Air Corps to the antiaircraft artillery must be considered as the proper reaction to a compelling necessity in connection with air defense in southern Germany.

THE NIGHT FIGHTER DEFENSE SITUATION IN GERMANY ON 1 SEPTEMBER 1942

In a conference at Headquarters of the Commander in Chief of the Luftwaffe on 1 September 1942 basic problems of the night fighter arm came up for discussion. The following passages are quoted from the minutes of that conference:

1. Realization of the program for continued expansion of the night fighter ground organization to a large extent has become a matter of the availability of personnel.

The Commander in Chief of the Wehrmacht has therefore approved the assignment of personnel, to service radar equipment,

f om non-military organizations, such as the SA, the SS, the National Youth Movement, and the Reich Labor Service.

2. Wherever possible, able-bodied men employed in non-combattant positions, such as in the servicing of telephone exchanges and radar stations, or in the various headquarters, will be replaced by women in order to help relieve the shortage of military personnel in the field.

In the Air Signal Corps this exchange of personnel had to a large extent already been carried out.

3. The Commanding General of the XII Air Corps has reported that units of the Third Air Fleet have suffered only 3 percent losses in their attacks against Britain; the British, in contrast, lose between 15 and 20 percent through German night fighter action.

He states that the night fighter defenses must be organized in sufficient depth, since only a limited number of night fighters can be committed in restricted areas for technical command reasons.

4. The area of Berlin and Central Germany is indicated as the next most important region for development of a night fighter ground organization, and the establishment of a 4th Night Fighter Division in Berlin is recommended.

5. There is a shortage in aircraft and crews for the night

fighter arm. For the night fighter control positions presently (status 1 September 1942) in existence, totalling 96, there are only units with a total actual strength of 350 aircraft, only 219 of which are operable, available, together with the same number of crews. Experience shows that the percentage of operable aircraft drops to even lower levels in winter.

Therefore it is recommended that the 5th Night Fighter Wing should be established, initially with 1 group.

6. Protection for Eastern Prussia against Russian night air attacks has become an urgent necessity.

Night fighter operations in Eastern Prussia are directed by two mobile night fighter control positions mounted on rail cars.

The equipment of a control position of this type consists of 1 Freya radar instrument with AN attachment, 2 Wuerzburg radar instruments, and 1 Seeburg plotting table.

The time required from arrival in the area of operations to commencement of control operations is six hours.

On 5 September another of these mobile night fighter control positions will be complete and ready for operation.

7. For the overall development of the Night fighter defense system within Germany the Commanding General, XII Air Corps, states the following requirements:

a. Night Fighter Units — a total of 8 wings

b. Radar Instruments. — 600 Wuerzburg Riesen. The

	present monthly output in such instruments is 30.
c. Equipment per Night Fighter Control Position	1 Freya instrument with AN attachment, 2 Wuerzburg Riesen instruments, 1 Seeburg plotting table.
d. Additional Personnel required	150 000

6. In connection with these stated requirements, Reich Marshal Goering and General Jeschonnek, Chief of the Luftwaffe General Staff, stated their opinion that this ambitious program could not be fulfilled, neither in the personnel nor in the materiel field.

Reich Marshal Goering expressed himself as follows:

> In view of these numerous requirements it will apparently be cheaper to attack the British directly than to build up this gigantic organization. I do not believe that the British are as strong as we in the defense.

Colonel Galland, Chief of the Daytime Fighter Forces, also expressed grave doubts about this night fighter program in view of the fact that the daytime fighter forces also required equipment while, apart from German territories, night fighter systems also had to be developed in the western occupied territories, in Norway, at North Cape, in the Caucasus, and in individual critically important areas in the east.

9. At this juncture (1 September 1942) the 1st Group, 2d Night Fighter Wing, has been returned from the zone of the Second Air Fleet to the zone of the XII Air Corps, and is intended for commitment in strategic night fighter missions against Britain, operating from airfields in the zone of the Third Air Fleet. These operations are to commence in October. Requests for reinforcement by another group could only be taken into consideration, Reich Marshal Goering stated, after the 1st Group, 2d Night Fighter Wing can show a record of successful operations which would warrant such a step.

10. The Commanding General, XII Air Corpssubmits that night fighter training should be taken over by the XII Air Corps itself, since the standards achieved under the Chief Training Officer were not satisfactory in respect to quantitative or qualitative results.[371]

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371. Source. 238.

The following remarkable features are noticeable, so far as the situation in respect to the night fighter defenses in the autumn of 1942 is concerned, in the above conference notes:

1. The expansion of the fighting fronts in the east and south, with their large requirements in personnel and materiel, was beginning to make itself felt in the form of personnel and meteriel shortages and thereby to have repercussions on the continued development of the night fighter organization.

2. In a steadily growing measure air defense in the east against night attacks by Russian bomber forces was becoming a currently acute problem. This raised the necessity for a night fighter organization in the east before such an organization had even been completed in the areas threatened by the Royal Air Force, namely, the areas of central, southwestern, and southern Germany.

3. In view of the immense expenditures which a really tight night fighter organization would involve to cover Germany, plus the requirements in this field for the occupied territories in all theaters of operations, the Luftwaffe High Command was again toying with the idea of an offensive solution of the problem of air defense, meaning operations to destroy the aircraft of the Royal Air Force on the ground at their home bases.

It was probably this viewpoint which created a condition of mind in favor of a resumption of night fighter operations

against Britain. However, it is obvious that here the intention was more to support bombing operations against Britain than to regard such night fighter action as a part of air defense.

STATUS OF THE NIGHT FIGHTER ARM ON 4 OCTOBER 1942

As previously stated the 1st Group, 2d Night Fighter Wing, and the 4th Squadron, 2d Night Fighter Wing, which were activated for the night fighter arm and initially were employed in night fighter missions in the zone of the Second Air Fleet in the southern theater, were withdrawn in September 1942 and again committed in strategic night fighter operations against Britain, operating under the XII Air Corps within the zone of the Third Air Fleet.

Lieutenant Colonel con Lossberg, GSC, in a conference at the Office of the Chief of Special Supplies and Procurement--Field Marshal Milch--on 4 October 1942 reported on a visit to these two units in the field as follows:

1. The Type Do-217 aircraft with which the 4th Squadron was equipped were described by the troops as not very suitable for long-range night fighter operations. This was due to their excessive deadweight and consequent unfavorable flight properties in climbing, in acceleration, and in curving as well as when flying with only one engine.

2. The Type Ju-88-C-6 aircraft of the 1st Group, 2d Night Fighter Wing

Wing were considered good by the troops, but certain improvements are desired, such as

De-icing equipment for the nose and wings,

Type Lichtenstein R instruments to detect enemy fighters attacking from the rear,

Electrical precision altitude meter, Type Fy-G-101,

Contact altitude meter to warnpilot during low-altitude fligtht when lowest safe level has been reached.

The 1st Group 2d Night Fighter Wing is to be committed in action soon.

3. At present (status 4 October 1942) the units committed in strategic night fighter missions have to restrict their action to attacking British aircraft taking off or landing at British airfields, because they have not been equipped yet with Lichtenstein target detecting instruments owing to the need for security.[372]

TECHNICAL EQUIPMENT OF THE NIGHT FIGHTER FORCES STATUS 4 OCTOBER 1942

In the same conference on 4 October 1942, referred to in the preceding passages, the following points concerning the technical equipment of the night fighter arm were discussed:

1. The XII Air Corps insists upon accelerated development

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372. Source 241.

of the Me-219 as a specialized night fighter type aircraft in order to preclude the possibility of its units being taken for other purposes in times of crisis, as has happened frequently with Ju-88 and Me-110 planes.

The Ju-188 which the Chief of Special Supplies and Procurement recommends for night fighter purposes is slightly inferior to the Me-219 in general flying properties and speed, but has better climbing abilities.

2. The fire extinguishing apparatus installed in the Me-110 reduces the life span of that planes engines to between 20 and 50 hours. Improved valve seating rings are to restore the engines to a life span of 100 hours.

3. The Lichtenstein aircraft target locating instruments are not proof against altitude interferences. At altitudes of only 20 000 feet they already begin to fail.

These altitudes would be adequate for action against British night bombers, but not for action against Soviet night bombers in Eastern Prussia, which penetrate at altitudes up to 30 000 feet.

The disadvantage is to be removed by the installation of new condensors.

4. The troops state the minimum time-in-air requirements for night fighter aircraft as follows:

Tactical units: 2 hours 45 minutes

Strategic units: 6 hours.

Longer time-in-air capacities would be unnecessary for tactical units since crew members would not be able to stand the strain of concentration longer than 2 hours at a stretch.

5. The XII Air Corps states the following requirements in respect to the future development of night fighter aircraft:

a. Consistent adherence to development of the Me-219 as a standard night fighter model to replace the Me-110 and Ju-88-C-6 (with Jumo engines) aircraft currently in use.

b. In the meanwhile improvement of the Ju-88-C-6 through the installation of BMW-801 engines.

If necessary the Ju-188 should be adopted as a strategic night fighter as an interim solution.

c. Development of the Me-410 plane as a night fighter

against the eventuality of the He-219 proving inadequate to meet all requirements.[373]

THE CONCEPT OF RATALIATORY ATTACKS IN 1942

The records of the conference held at Headquarters of the Chief of Special Supplies and Procurement on 4 October 1942 also reveal that, in line with explicit orders from the Commander in Chief of the Luftwaffe, the strategic concept of air warfare was one exclusively of retaliatory attacks against large industrial cities so far as Britain was concerned.

The case was stated of the bomber units being compelled to carry out a "mass" attack under circumstances in which the total operable strength of the bomber forces of the Third Air Fleet was only 12 aircraft.

On an average German bomber units over Britain were opposed by night fighter forces comprising between 120 and 130 aircraft. The point was made that when numerically weak bomber forces attacked the losses perforce were disproportionately heavy.[374]

From the above it is obvious that this type of strategic warfare against Britain could do nothing to support German air defenses, since the British air forces and their ground service organization were not damaged in any way through retaliatory attacks against British cities.

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373. Source 241. 374. Source 241.

PRODUCTION FIGURES FOR NIGHT FIGHTER TYPE AIRCRAFT

July-December 1942

Since the reports by the Chief of Luftwaffe Supply and Administration give the figures for night fighter and twin-engine fighters coming from current output in one sum, it is not possible to determinel exactly the number of planes allocated to the night fighter arm in the July-December 1942 period from current production, reconstruction, and repair.

However, the following tabulations reveals the general tendency in allocations:

Month 1942	New Aircraft			Repaired Aircraft			Total available for allocation by Ch of Sup & Admin
	Ju-88	Me-110	Do-217	Ju-88	Me-110	Do-217	
July	20	43	21	-	36	-	110
August	16	63	12	2	24	-	127
September	16	66	13	3	23	-	112
October	22	53	14	2	30	-	113
November	35	73	4	1	11	-	86
December	45	25	10	2	23	-	138
Totals	155	323	74	10	147	-	686

The number of aircraft available is not identical with the number of aircraft actually allocated by the Chief of Luftwaffe Supply and Administration, since the aircraft coming from current output, repair, and reconstruction did not always meet the specifications for acceptance.

375

~~375~~ Source 138.

A comparison of the authorized and actual strengths of the twin-engine and night fighter arms in aircraft shows the following picture:

Date 1942	Twin-Engine Fighter Arm			Night Fighter Arm		
	Authorized	Actual	% of Authorized	Authorized	Actual	% of Authorized
Mar 28	466	166	36	367	265	73
Jun 30	426	362	85	406	255	63
Sep 30	424	297	70	506	350	70
Dec 31	402	212	53	653	389	60

In the 30 June-31 December 1942 period losses in aircraft damaged to an extent exceeding 10 percent totalled

From twin-engine fighter units	593
From night fighter units	170
Total	763 aircraft

Since allocation by the Chief of Luftwaffe Supply and Administration totalled 686 Me-110, Ju-88, and Do-217 twin-engine fighter and night fighter aircraft plus 91 Me-210 twin-engine fighter aircraft, the total available for resupply in the 30 Jun-31 December 1942 period was 775 aircraft ofr both the twin-engine and night fighter arm together.

It is obvious from the above figures that a surplus of 12 aircraft was inadequate for purposes of new unit activations and for allocations to bring unit strengths up to the authorized figures.

In an examination of the figures for authorized and for actual strengths the following points are of interest:

1. In the 28 March-30 June 1942 period the actual strength in twin-engine fighter units increased from 166 to 362 aircraft, although the authorized strengths were reduced; during the same period the actual strength in night fighter units dropped from 265 to 255 although the authorized strengths were increased.

This makes it obvious that the activation of new twin-engine fighter units hampered measures to bring the night fighter units up to full authorized strength.

2. In the 30 June-30 September 1942 period figures for the actual strength in twin-engine fighter units shows a sharp decline, while at the same time the actual strength of the night fighter arm mounted considerably together with an increase in authorized strengths.

During this period the night fighter arm was reinforced at the expense of the twin-engine fighter arm.

3. In the 30 September-31 December 1942 period the strength of the twin-engine fighter arm, both authorized and actual, declined still further, whereas a marked discrepancy is evident between the authorized increase of 147 and the actual increase of only 39 aircraft in the night fighter arm .

The above figures serve to show that both in the case of the

twin-engine fighter arm and of the night fighter arm , the requirements for newly activated units far exceeded the manufacturing capacities of the German aircraft industry.[376]

COMMAND AND UNIT ORGANIZATION OF THE NIGHT FIGHTER FORCES IN THE ZONE OF AIR COMMAND CENTER AT THE END OF 1942

No records are available at writing on the 20 May 1942-20 February 1943 period which could serve to show in detail the expansion of the night fighter arm during this period.

From the increased authorized strengths shown by Chief of Supply and Administration reports, however, it is evident that two series of new units were activated in the second half-year of 1942:

1. Between 30 June and 30 September 1942 figures for authorized strengths show an increase of 147 aircraft and crews.

The following is a breakdown of the authorized strength of 406 aircraft, status 30 June 1942:

4 wing headquarters, each 4 giving a total of	16	aircraft
10 groups " 39 " " " "	390	"
Aggregate total	406	aircraft.

The units in question were the

1st Night Fighter Wing with 3 groups
2d " " " " 2 "
3d " " " " 3 "
4th " " " " 2 "

376. Sources 102, 153.

No records are available showing precisely for what new units the increased authorized strength by 100 aircraft wasintended at the end of September. It is certain that two new groups, the 4th Group each of the 1st and 3d Night Fighter Wings were established, This would account for 78 of the total increase authorized, namely, two groups witheach 39. The two new groups were activated at Leeuwarden and probably at Lueneburg, respectively. It is possible that the remaining 22 authorized aircraft were for units of the 1st Group, 100th Night Fighter Wing, a unit somewhat later organized/specifically for night action against rail targets.

The authorized strength of 653 aircraft in the night fighter arm on 21 December 1942 can be broken down as follows:

5 wing headquarters	each with	4	giving a total of 20 aircraft
16 groups (minus 1 squadron)	" "	39	" " " " 612 "
Aggregate total			632 aircraft.

It is not possible on the basis of available records to account for the difference of 21 aircraft.

The units involved were as follows:

1st Night Fighter Wing	with	4	groups
2d " "	"	2	"
3d " "	"	4	"
4th " "	"	4	" (minus 1 squadron)
5th " "	"	2	"

From the above figures it can be gathered that the following new night fighter units were activated in the second half of 1942:

First series, 30 June-30 September 1942

4th Group, 1st Night Fighter Wing, at Leeuwarden

4th " 3d " " " probably at Lueneburg

Second series, 30 September-31 December 1942

1st Group, 4th Night Fighter Wing, under 3d Fighter Division

4th " 4th " " " " " " " " (minus 1 squadron)

Hq, 5th Night Fighter Wing " 4th " "

1st Group " " " "

2d " " " " " 377

On 6 December 1942 Colonel von Buelow assumed command of the 1st Night Fighter School at Schleissheim and at the same time was assigned as Acting Commander, Fighter Command Southern Germany.[378]

On 20 February 1943 the fighter forces under Air Command Center were organized as follows:

Command HQ	Command Post	Aircraft Type	Commander and Strength Actual	Effective
Hq, XII Air Corps	Zeist		General Kammhuber	
Hq, 1st Fighter Div.	Deelen			
Hq, 1st Night Fight. Wing	Deelen	Me-110	5	3
1st Group	Venlo	Me-110 & Do-215	32	23
2d "	St Trond	" " Do-217	33	25

377. Sources 102, 153, 238, 241. 378. Sources 242, 250.

Command HQ	Command Post	Aircraft	Commander and Strength Actual	Effective
HQ, 1st Night Fight. Wing--continued				
3d Group	Twente	Me-110	26	21
4th "	Leeuwarden	Me-110 & Do-215	28	22
HQ, 2d Fighter Div	Stade		General Schwabedissen	
HQ, 3d Night Fight. Wing	Stade	Me-110	2	1
1st Group	Wunstorf(?)	Me-110 & Do-217	27	21
2d "	Vechta (?)	Do-217 & Me-110	37	17
3d "	Stade	Me-110	25	16
4th "	Lueneburg (?)	Ju-88	31	22

Command HQ	Command Post	Aircraft	Commander and Strength Actual	Effective
HQ, 3d Fighter Division.	Metz		General Junck	
4th Night Fighter Wing	Metz	Me-110	1	1
2d Group	St.Dizier (?)	Me-110 & Do-217	21	15
4th " (minus 12th 12th Squadron)	Metz (?)	" "	20	19
HQ, 4th Fighter Division	Doeberitz		Colonel Huth	
HQ, 5th Night Fight.Wing	Doeberitz	Me-110	1	1
1st Group	Stendal (?)	"	23	20
2d "	Parchim (?)	Me-110 & Do-217	25	19
1st " 4th Wing	Brandis (?)	" "	28	20
3d " 4th "	Juterbog (?)	" "	26	16
HQ, Fighter Command Southern Germany	Schleissheim		Colonel von Buelow	
4th Group (Rail Interdiction) 5th Wing	Leipheim/ Lechfeld	"	" 33	24
3d Group, 1st Night Fight.School	Schleissheim/ Kitzingen	Me-110		5

All in all, the night fighter units under Air Command Center (excluding the 3d Group, 1st Night Fighter School) on 20 February 1943 had in aircraft

an actual strength of 427 and an effective strength of 307 planes.[379]

NIGHT FIGHTER DEVELOPMENTS IN THE WEST UNDER THIRD AIR FLEET IN 1943

As previously related certain units moved out of Third Air Fleet

379. Sources 243, 249.

zone to that of the Second Air Fleet in November 1941 were returned to the Third Air Fleet command zone in September and October 1942 for the conduct of strategic night fighter operations against Britain The units in question were the 1st Group and 4th Squadron of the 2d Night Fighter Wing.

These units were assigned tactically and administratively to the XII Air Corps, for supplies to the Third Air Fleet. Their operations were coordinated with the strategic operations of the bomber units of the Third Air Fleet.[380]

Between 10 January and 20 February 1943 these strategic night fighter units were again moved out of the zone of the Third Air Fleet and transferred to the Second Air Fleet, where they operated from bases on Sicily.[381]

The reasons for this change were probably as follows:

1. The strong British night fighter defenses, using single-engine and fast twin-engine night fighters turned the German strategic night fighter units into the hunted rather than the hunters*

Also, the assignment of only one and one-third groupd for the purpose of these operations was inadequate to achieve appreciable results.

2. The Commander in Chief of the Wehrmacht (Hitler) was not convinced that strategic night fighter action could produce appreciable results.

* The German term "Jaeger" for "fighter plane" in everyday German means "hunter."

When the shortage of units began to make itself felt and the urgent necessity arose to provide nighttime protection against air attack by British bombers and torpedo bomber aircraft for German convoy traffic from Italy to Africa, Hitler therefore ordered cessation of strategic night fighter operations against Britain and employment of the 2d Night Fighter Wing under the Second Air Fleet in Sicily and Afroca.

With its transfer to the Second Air Fleet the 2d Night Fighter Wing passed completely from control by the XII Air Corps.[382]

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380. Sources 245, 246.
381. Sources 245, 247.
382. Sources 144, 246.

DAYTIME FIGHTER DEVELOPMENTS IN THE ZONE OF AIR COMMAND CENTER IN 1942

The daytime fighter defense situation of Germany proper, as previously pointed out, is characterized by the view expressed by Reich Marshal Goering in the conference of 16 May 1942 that if enemy bomber units succeeded in penetrating beyond the German fighter defense belt at the Channel coast there was nothing left in Germany to oppose them.

As also pointed out previously above, developments in the daytime air situation over German territory gave no cause fro serious concern, since Germany's western opponents restricted their activities to reconnaissance flights carried out by a few planes each month, and since German territory was under no threat whatever from the east during daylight.

Nevertheless, it is noticeable that the regular strength of the fighter arm in regular groups was increased by 10 January 1942 by two newly activated groups, the 2d and 3d Groups, 1st Fighter Wing.

However, the 2d Group, 1st Fighter Wing, was transferred to Denmark and assigned to operate under Fighter Command Norway, while

the 1st Group, 3d Fighter Wing, assigned to Fighter Command Holland-Ruhr Region on 20 December 1941 was withdrawn again on 10 January 1942 and transferred to the eastern theater.

Thus, the overall strength of two fighter groups assigned to defend the coastline of Holland and the Bight of Helligoland, as had been the status on 20 December 1941, was unchanged on 10 January 1942.[383]

On 18 April 1942 the newly activated 4th Group, 1st Fighter Wing , was ready for combat assignment, at the same time the wing's 2d Group was assigned to the coastal area of Holland.

The daytime fighter forces thus available for defense in the coastal areas comprised

Under Fighter Command Bight of Helligoland:

1st and 3d Groups, 1st Fighter Wing

Under Fighter Command Holland-Ruhr Region:

HQ, 1st Fighter Wing with the wing's 2d and 4th Groups.

This strength in fighter groups of a regular type assigned for defense at the coast remained unchanged throughout 1942.[384]

In addition the tactical units from the schools and replacement units stationed within Germany were available, but were of little use against British reconnaissance activities, in which the British used the most up-to-date models of their Spitfire IX

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383. Source 231.
384. Sources 235, 234.

and from the summer of 1942 on their Mosquito model, because of the o old types of aircraft with which they were equipped.

To remedy this weakness in the defenses a recommendation had been made at a meeting between staff members of the Chief of Special Supplies and Procurement and members of the Supply Branch (Branch 6) of the Luftwaffe General Staff on 1 June 1942 that "self defense" squadrons should be organized at the various aircraft factories. This solution seemed to offer the advantage that during the lag between completion of aircraft and their removal from the factory a number of factory-new aircraft of the latest, up-to-the-minute models, would be available for combat action.

Since the British reconnaissance units were unarmed, action to shoot down one of these planes, which operated alone, could present no problem, even for personnel whose normal duty was only to make test flights with the new aircraft, so that it should be possible to take successful combat action against the fast British reconnaissance units by such means.

Plans provided for the organization of such self defense units at the following factories:

Focke Wulf, Bremen; Messerschmitt, Augsburg; Fieseler, Kassel; Erla, Leipzig; and Heinkel and Arado, Warnemuende.

However, it was 1943 before these plans materialized.[385]

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385. Source 248.

THE DAYTIME FIGHTER DEFENSE COMMAND ORGANIZATION UNDER AIR COMMAND CENTER IN 1942

As previously reported above, control of all fighter forces within the command zone of Air Command Center had been centralized on 1 December 1941 under Fighter Command Center, with headquarters at Oldenburg in Oldenburg, which headquarters in turn was under the XII Air Corps.

In February 1942 the headquarters was raised to division status and redesignated as Senior Fighter Command Center (Stab Hoeherer Jafue/Mitte).[386]

This headquarters still retained control over the following command units:

Fighter Command Helligoland Bight, Jever

Fighter Command Holland-Ruhr Region, Schiphol

Fighter Command Berlin, Doeberitz.

On 1 May 1942 the headquarters was dissolved and its elements used to establish the new 3d Fighter Division Headquarters, at Metz.

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386. Source 232.

In addition to the above command units, the new division headquarters was assigned the following sub-commands:

Fighter Command Helligoland Bight, hitherto under 2d Fighter Division, Stade,

Fighter Command Holland-Ruhr Region of the 1st Fighter Division, Deelen, and

Fighter Command Berlin of the 2d Fighter Division, Stade.

On 1 December 1942 control of Fighter Command Berlin/Doeberitz was transferred to the newly established 4th Fighter Division, with headquarters at Berlin/Doeberitz.

With the exception of the 3d Fighter Division, at Metz, each fighter division thus from 1 May 1942 on was responsible for the conduct of day and night fighter operations within its command area.

The 3d Fighter Division, with headquarters at Metz, was responsible exclusively for the conduct of night fighter operations, and the responsibility for daytime fighter activities within the entire command zone of the Third Air Fleet remained a responsibility of Fighter Command West, with headquarters at Paris/Chantilly, and the fighter commands it controlled.

As previously mentioned Fighter Command Southern Germany was established on 6 December 1942 in combination with the headquarters of the 1st Night Fighter School at Schleissheim to direct daytime and night fighter operations in southern Germany.[387]

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398. Sources 255, 244.

The command organization of fighter defenses under Air Command Center at the end of 1942 was as follows:

Command Headquarters	Command Post	Commander
HQ, XII Air Corps	Zeist	General Kammhuber
HQ, 1st Fighter Division	Deelen	General von Doehring
HQ, Fighter Command Holland-Ruhr Region	Deelen	Colonel Grabmann
HQ, 2d Fighter Division	Stade	General Schwabedissen
HQ, Fighter Command Helligoland Bight	Stade	Colonel Hentschel
HQ, 3d Fighter Division (night fighter operations only)	Metz	General Junck
HQ, 4th Fighter Division	Doeberitz	Colonel Huth
HQ, Fighter Command Berlin	Doeberitz	Colonel Frommherz
HQ, Fighter Command Southern Germany	Schleissheim	Colonel von Buelow[388]

The outcome of the organizational changes thus introduced in 1942 for the direction of fighter operations showsmarked progress, in the form of clarity and simplification, over the system existing in 1941. The weakest point was in the area of the 3d Fighter Division, Metz, because of the division of responsibility for night and daytime fighter activities between Air Command Center and the Third Air Fleet.

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388. Sources 243, 244.

This solution, which was inconsistent with the principles of organization, can be considered to have resulted from the following compelling reasons:

1. Forward from the 3d Fighter Division, in the west, was almost the whole of France as the advance outpost area. This area was within the command zone of an air fleet, and was to serve not only the purposes of air defense but also that of a base area for offensive strategic air warfare.

2. Daytime air warfare within the zone of the Third Air Fleet was restricted almost exclusively to areas near the coast. This called for concentration of the daytime fighter units on airfields near the Channel coast.

3. The allocation of daytime fighter forces to the 3d Fighter Division was unnecessary because any enemy formation penetrating during daylight would have been intercepted either by the daytime fighter forces of the Third Air Fleet within France or by those of Air Command Center stationed in Holland and Belgium.

4. No daytime fighter units could have been made available to develop daytime fighter defenses in the areas of the 3d Fighter Division without weakening more important front areas.

THE DAYTIME DEFENSE FORCES UNDER AIR COMMAND CENTER

ORDER OF BATTLE EARLY IN 1943

The order of battle for the fighter defense system under Air Command Center in early 1943, status 20 February 1943, was as follows:

Command HQ Units	Command Post Airfield	Aircraft Type	Aircraft Strength Actual	Effective
HQ, 1st Fighter Division	Deelen			
HQ, Fighter Command Holland-Ruhr Region	Deelen	Me-109	1	1
HQ, 1st Fighter Wing	Schiphol	FW-190	2	2
2d Group (minus 4th Squadron)	Woensdrecht	FW-190	33	28
4th Squadron	Schiphol	FW-190		
4th Group	Muenchen-Gladbach	FW-190	?	?

Command HQ Units	Command Post Airfield	Aircraft Type	Aircraft Strength Actual	Effective
HQ, 2d Fighter Division	Stade			
HQ, Fighter Command Helligoland Bight	Stade	FW-190	1	0
1st Group 1st Wing	Jever	Me-109	37	24
3d " 1st Wing	Husum	FW-190	45	35
HQ, 3d Fighter Division	Metz	Me-109	1	1
(No daytime fighter units)				
HQ, 4th Fighter Division	Doeberitz	--	-	-
HQ, Fighter Command Berlin	Doeberitz	--	-	-
(No daytime fighter units)				
Fighter Command Southern Germany	Schleissheim			
Tactical elements from 4th Fighter School	Fuerth, Bavaria			
Industrial Squadron Messerschmitt	Regensburg			
Tactical elements from 2d 2-Eng. Fighter School	Memmingen			
Tactical elements from 1st Night Fight. School	Schleissheim[389]			

No official records are available concerning the tactical units from schools and replacement groups committed in the command areas of the 2d and 4th Fighter Divisions. It can be assumed, however,

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389. Sources 3, 244, 249, 250.

that such tactical units did exist at the following schools:

1st Fighter School, Werneuchen

2d " " Zerbst

3d " " Bad Eibling

6th " " Lachen-Speyerdorf (from October 1942 on).

Early in 1943 most of the replacement groups of the various fighter wings had been transferred to areas in Southern France and reorganized there in 3 replacement groups, Replacement Group South, West, and North.[390]

In a study of the order of battle on the daytime fighter forces in the command zone of Air Command Center, the following points are noticeable:

1. Protection of German territories against daytime air attack was organized in a system of perimeter defenses by

a. Fighter units of Air Command Center deployed in the coastal areas of the Bight of Helligoland and of Holland and Belgium to as far as the Schelde estuary.

b. Fighter units of the Third Air Fleet deployed in the forward outpost area of France.

2. In the western and interior areas of Germany only tactical elements taken from school units were available for daytime defense activities.

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390. Sources 251, 208.