During the year 1941, the requirements of the German Luftwaffe amounted to 120,000 tons of aviation gasoline per month. This included the amounts needed by the following areas of activity:

active units

training program

air armament industry (test flights, etc.)

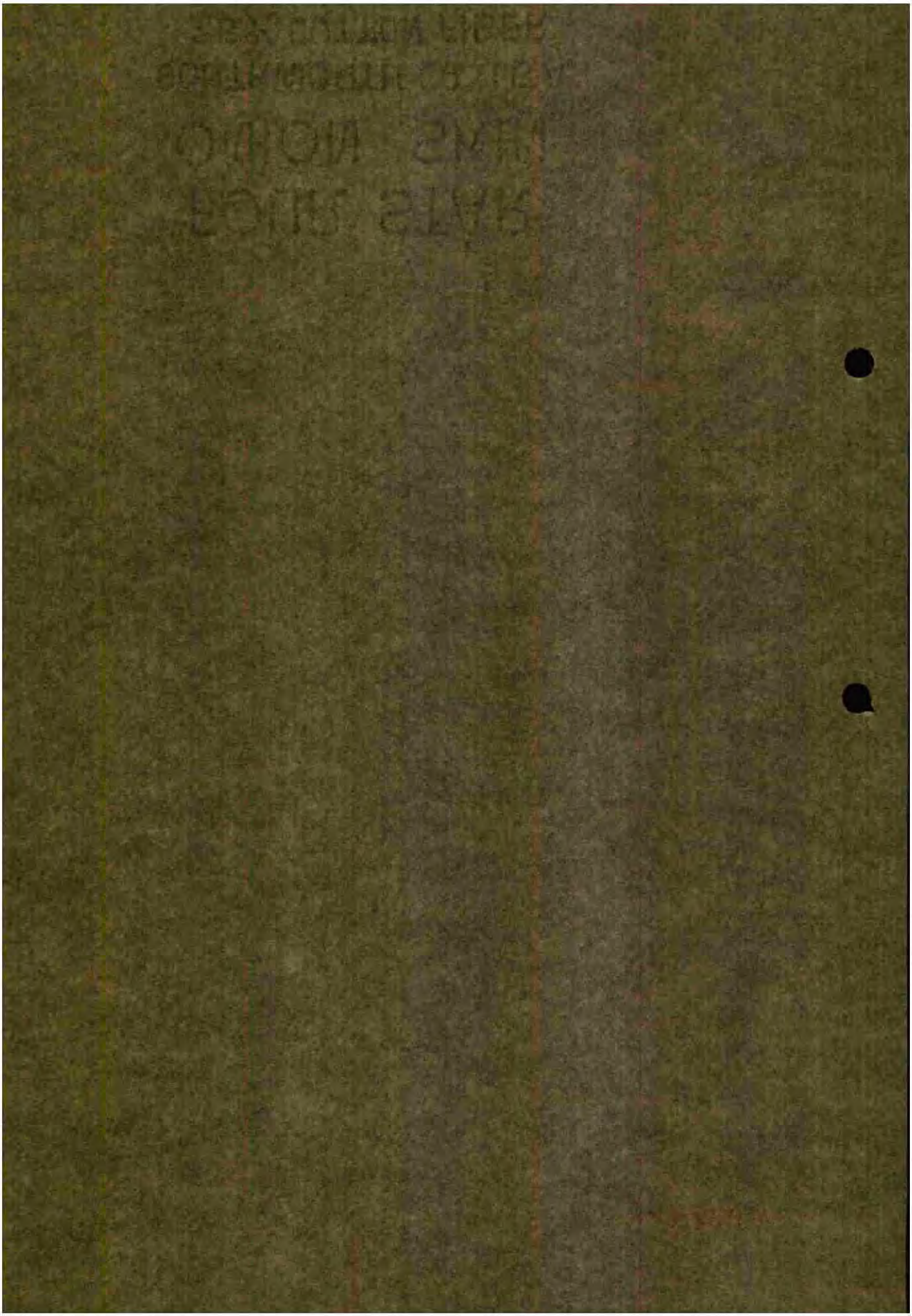
German Lufthansa (commercial airline)

subsidies to Germany's allies.

The largest consumers were the active units and the training program. Despite the steady rise in domestic production, these requirements could not be met from new stocks; as a result there was no alternative but to tap the available reserves, especially as the expansion of the front automatically raised requirements to 160,000 tons per month by 1942. Consequently, the situation had become critical by mid-1942, and the Luftwaffe's reserve supply had diminished to 160,000 tons. Stringent economy measures were ordered, and the training program suffered a serious cut in its allotment.

In a conference with Keitel in July 1942, Goering pointed out[189] that the events of the preceding winter, with their increased employment of transport aircraft and even training aircraft on behalf of the Army, had materially reduced the supply of aviation gasoline available. The Commander in Chief, Luftwaffe, made it clear that the resultant curtailment of gasoline allotments to the training program had resulted in a reduction in the number of trained crews available for assignment as replacement personnel. Based on the number authorized, only 40% of the necessary replacement crews could be trained for the fighter units, and only 20% for the bomber units. Consequently, Hitler's order to step up aircraft production was pointless; there would be no crews available to take over the new machines. In short, the situation was untenable - the training program simply had to have adequate supplies of aviation gasoline.

189 - Notes on a conference held at Rominten on 10 July 1942 (No. 124/42, Classified). Karlsruhe Document Collection.



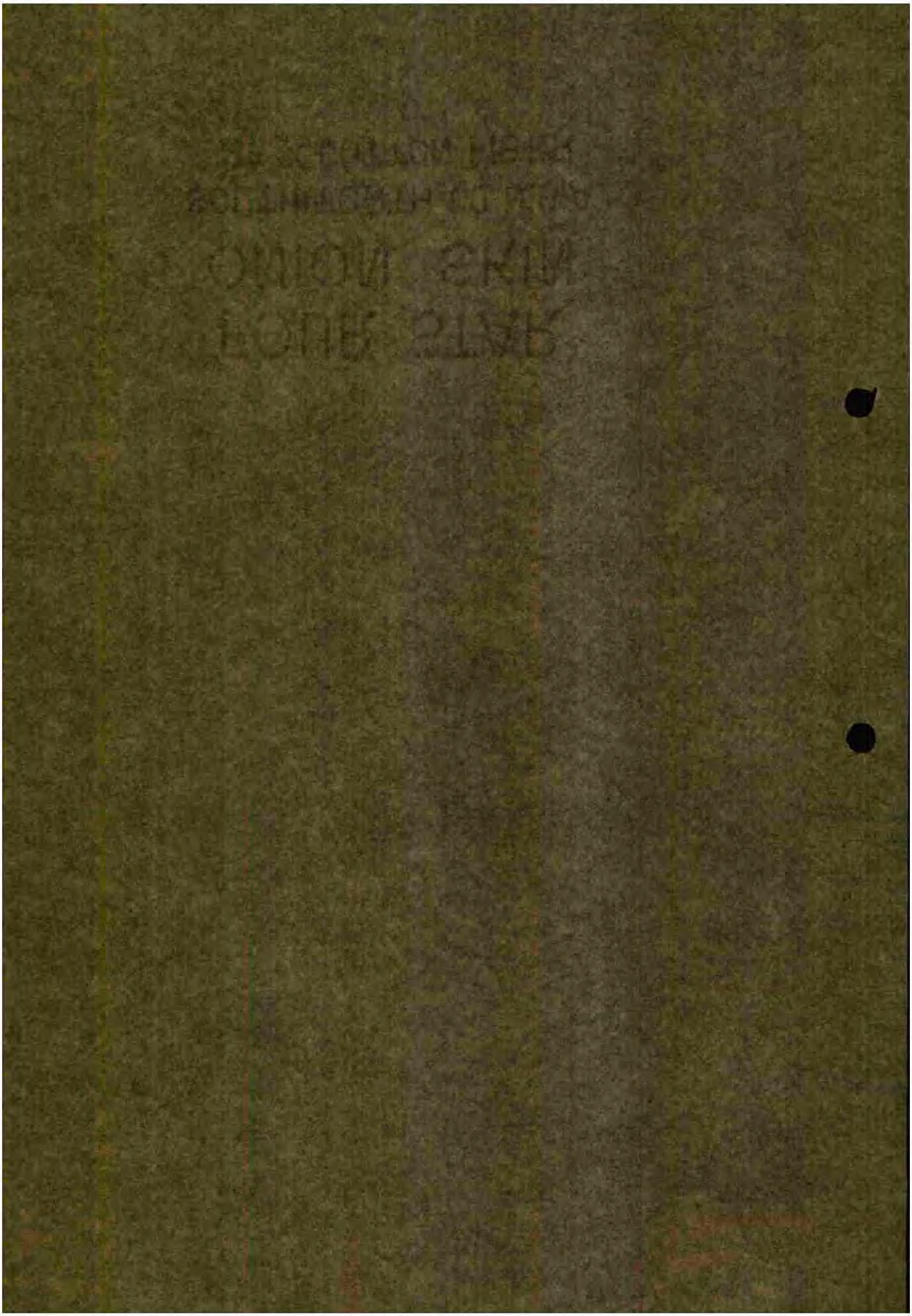
But conditions were too much, even for Goering, and flight training was practically discontinued during 1942. The Chief of Training's gasoline allotment sank to a minimum, and only by special permission were certain categories of students allowed to continue their training - in very limited numbers. The vast majority of trainees were kept busy with aerotechnical duties or with purely military training. In order to avoid any unnecessary taxiing, the aircraft from the A/B schools were pushed by hand to the take-off line, aircraft park, or hangar. The C school aircraft were drawn by horses or oxen requisitioned from the nearest farm or by Diesel tractors, i.e. as long as there was still Diesel fuel available. The gasoline needed for refueling during cross-country flights was available only on the basis of a carefully controlled exchange system, and its availability was often dependent upon the personal good will of the airfield commander involved. As a result, the training supervisors had no choice but to subordinate the usual criteria of flight feasibility, such as evaluation of weather conditions, to the question of how much gasoline was available for use. The C school commader were in a slightly more favorable position in that the normal range of their practice flights could be stretched to include trips to the replacement units or even to the front units, where special agreements based on their personal friendships with the commanders there permitted their aircraft to refuel.

A further difficulty for the schools was the fact (already mentioned) that during 1942 a good part of the instructional personnel and aircraft from the C schools and instrument flight schools was on temporary duty with the air transport forces.

As was to be expected, the result of all this was a delay in supplying the front units with badly needed replacement personnel[190]. The number of students ready for release by the Chief of Training for assignment to the front units sank to an unprecedented low in the fall of 1942. Broken down into the two most important Luftwaffe branches, the figures were as follows[191]:

190 - The average monthly allotment during 1942 was 15,000 tons as compared to 27,000 tons during 1941.

191 - See Appendix 43.



	September	October	November	December	January 1943
bomber pilots	122	65	167	143	110
fighter pilots	161	148	125	262	210

As a result the operational readiness of the bomber forces was so reduced that the Luftwaffe High Command, in January 1943, was seriously considering reducing the number of wings from seventeen to four or five, in order to retain the striking power of at least these few in the face of the existing shortage of replacement personnel. With an organization of seventeen wings, it was clear that the majority existed only on paper, as far as striking power was concerned; with the youngest lieutenants acting as squadron commanders, this could hardly be otherwise[192].

During 1942 the strict economy measures began to bear fruit, and the supply of aviation gasoline gradually became more stable. It was clear, however, that past difficulties were bound to repeat themselves in the future, and that the Chief of Training had to find another solution to his problem[193].

The Chief of Training had always been concerned with the improvement of training methods, and his interest was motivated by three main objectives: 1) to improve the over-all standard of training, 2) to reduce the number of flight hours needed, thereby economizing on gasoline, aircraft, and equipment, and 3) to shorten the time required for training without jeopardizing the quality of training.

The second objective was the most important one during 1943. It was imperative that a way be found to reduce the number of hours in the air in order to permit effective integration of the new courses with those already under way and, above all, to make up for the losses in training time sustained during 1942.

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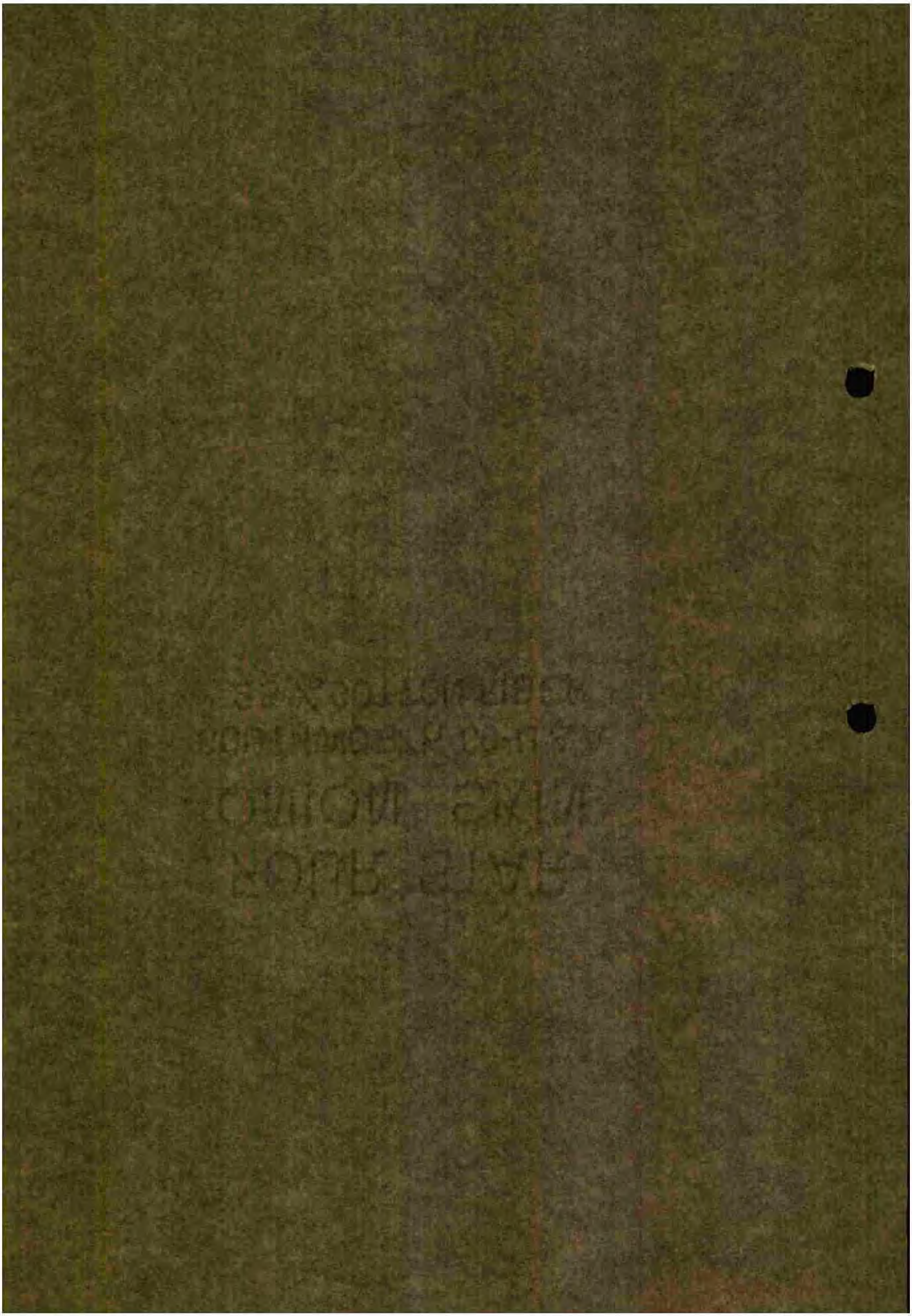
192 - And this was the situation in the average bomber unit in January of 1943, according to the notes of a general situation briefing held on 16 January 1943. Karlsruhe Document Collection.

193 - According to the notes on a general situation briefing held on 1 September 1942, the gasoline allotment for the Chief of Training was cut to 3,000

193 - (cont'd) tons for the five-week period beginning in September 1942.
Karlsruhe Document Collection.



Basically, the previous requirement of seventy weeks of flight hours was reduced to fifty-two weeks, by transforming the previous A/B training program into a new A program and cutting it from nine to six months. Training at the C schools and instrument flight schools, formerly separate, was combined into a new program of six months' duration. This was compensated by giving the students at the newly organized B schools extensive training in instrument flight, so that B-school training now comprised a total of 235 flight hours of pure flight training[194].

The Chief of Training, or rather the General of Pilot Training, was able to effect these reductions in training time by moving the decision as to whether a student was suited for further training as a fighter pilot (formerly taken at the end of training in the A/B school) forward to completion of the first twenty-five hours of flight training and by training from that point on. Those students judged capable of becoming fighter pilots were transferred from the Bue-181 via the fighter trainer Ar-96 to the fighter schools, while the rest progressed from the Bue-181 via the Caudron C-445 and the Siebel Si-204 to the aircraft types in use at the front. This system resulted in fewer flight hours for each individual student, but at the same time in proportionately more flight hours in the aircraft type which he would be operating at the front later on. In the course of time, this selective training system, strongly opposed by most of the training experts in the beginning, proved to be the only workable solution to the problem of providing single-engine aircraft pilots in sufficiently large numbers to meet the steadily rising demands and, at the same time, of complying with the restrictions set up to govern the utilization of available materiel[195].

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194 - Report of a conference held by Reichs Air Minister Goering on 24 February 1943 in the staff office (Stabsamt). Among those present were Milch, Jeschonnek, Kuehl, Kreipe, Kleinrath, Galland, Peltz, Diesing, von Brauchitsch, and Loerzer. Goering stressed the fact that only by means of a first-class, highly concentrated training program would Germany be able to prevail against the fivefold numerical superiority of the American, English, and Russian air forces. Generalfeldmarschall Milch emphasized

194 - (cont'd) that the British pilots had 360 hours of flight training and were not assigned to the front units until they had completed 74 weeks' training. Karlsruhe Document Collection.

195 - See also the data contained in Chapter II, Section 4.

During the course of the conference referred to in Footnote 194 (preceding page), Feldmarschall Milch also quoted the figures pertaining to the number of students released by the training program for further assignment, as follows:

	Luftwaffe Pilots' License	Advanced Luftwaffe Pilots' License	Instrument Flight Certificate
Students released in February	333	300	340
Students scheduled for release in July	435	455	500

The estimated figures for July simply had to be attained if the integration of the training program with the replacement system for the front units was to be maintained. The most serious problem was in the instrument flight training program, which was beginning to show the effects of the repeated inroads made upon school equipment and of the inadequate gasoline allotments on the very crews whose training required the longest period of time. As early as July 1942, General Kuehl had warned that the C schools would soon represent the most serious bottleneck in the training program[196].

In the ultimate realization that an increase in the training program could no longer be avoided, Feldmarschall Milch set a goal of 2,000 crews for January 1945, or more than twice as many crews as had been originally planned for the one and one-half year period beginning in July 1943. Milch added, however, that this goal could be realized only if the monthly gasoline allotment to the training program were raised to 40,000 tons, and this retroactively to January 1943. He was fully aware of the fact that the increase could not be achieved on a continued allotment of 15,000 tons per month.

In a memorandum for the record written in May, the Chief of Training notes that his program would be capable of producing 1,030 crews per month on monthly gasoline allotment of 30,000 tons. These 1,030 crews would be broken down as follows:

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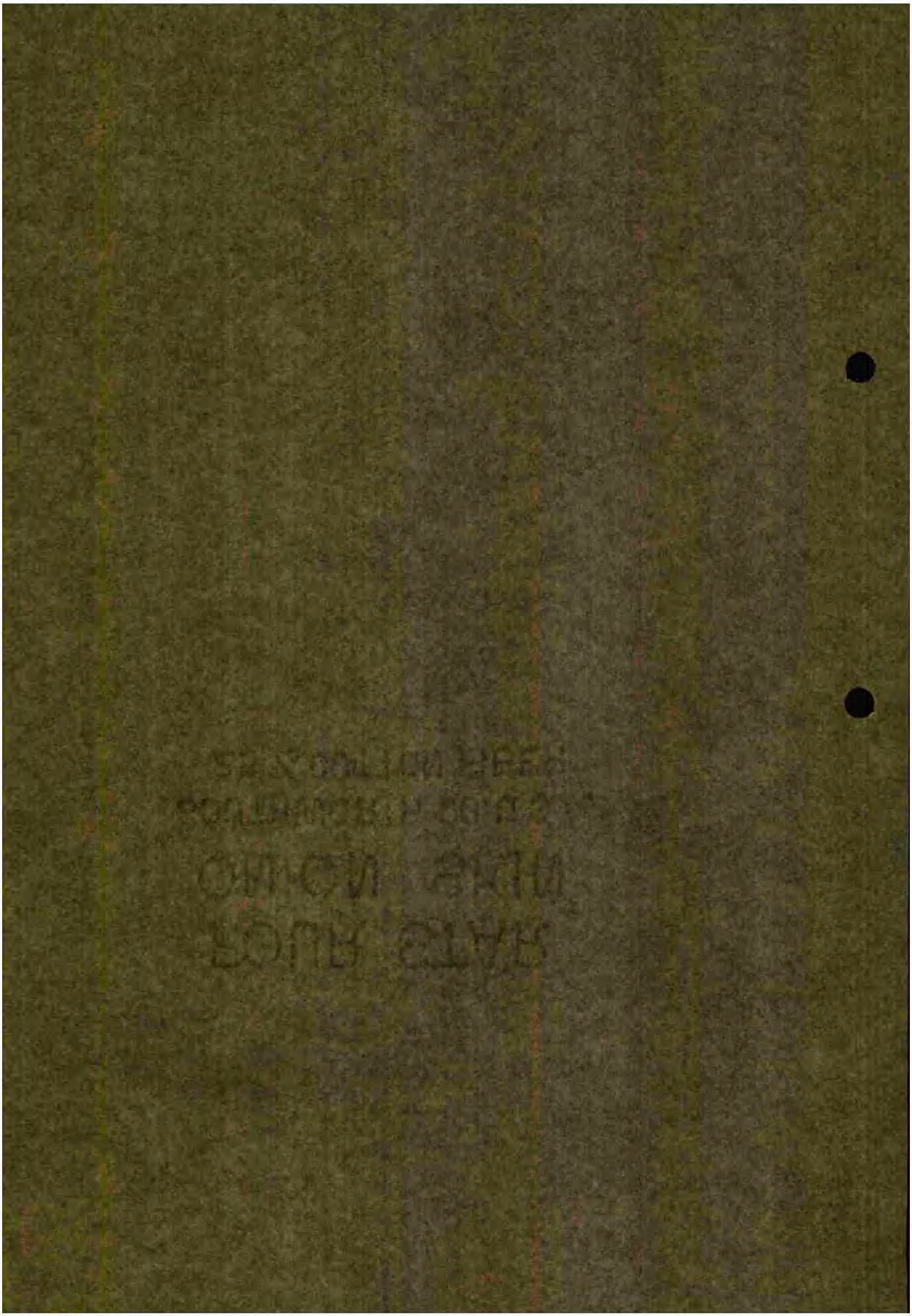
196 - Based on the report of a conference held by Reichsmarschall Goering (No. 127/42, Classified, dated 11 July 1942; Karlsruhe Document Collection). In addition, the 10-Day Report from the Quartermaster General dated 14 February

196 - (cont'd) 1942 contained the following statement: "Due to the inadequate supply of aircraft and aviation fuels, the training program is far behind in the release of crews holding the Luftwaffe Advanced Pilots' License and the Instrument Flight Certificate."



360 bomber pilots, 300 single-engine fighter crews, 75 dive-bomber crews, 50 night fighter crews, 30 close-support crews, 30 twin-engine fighter crews, 80 reconnaissance crews (long-range and close-range), and 15 crews for assignment to the Navy air units[197].

The Chief of Training also succeeded in having the distribution of aviation fuels, previously the responsibility of the air districts, placed under his control from 1943 on. He continued to utilize the air districts to distribute gasoline to the schools, but made it very clear to them that these supplies were for the exclusive use of the training program. The districts were instructed to lay in extra supplies at the school airfields for the use of all other consumers (eg. units arriving unexpectedly from the front) or, in case the latter should be forced to refuel with school supplies, to replace what they took without delay.

In October 1943, the Chief of Training requested an additional 2,200 tons of gasoline per month for the fighter schools in order to give the students an extra twenty hours in the air without increasing the over-all duration of the training period[197]; it seemed that the spring decision to shorten training had been slightly over-optimistic. In principle, Goering granted General Kreipe's request, but characteristically added that the availability of the supplies needed to fulfill it was quite another question.

Only during the months of April, May, and June 1944, when the pressure of the Allied air offensive conferred top-priority importance to the fighter training program, did the monthly allotment of gasoline for training purposes rise to more than 50,000 tons, and this amount was intended almost exclusively for

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197 - Office of the Chief of Training, No. 530/43, Classified, dated 6 May 1943, Subject: Training Goals, Memo for the Record. Karlsruhe Document Collection.

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the training of single-engine fighter and close-support pilots[198]. Appendix 45 makes clear the relationship between this increased gasoline allotment and the number of crews released for assignment to front units[199]. The Appendix also indicates that this temporarily high allotment soon began to sink rapidly as a result of the Allied attacks on the hydrogenation plants; by November and December, it had already dropped to below 5,000 tons per month.

The months of July and August 1943, with the development of military operations in the east, west, and south, marked the high-point of Luftwaffe gasoline consumption - 190,000 tons per month[200]. It was obvious, however, that the Luftwaffe could not afford to go on consuming gasoline at this rate while production facilities were steadily being put out of commission, and stringent economy measures were initiated. The Luftwaffe High Command set a gasoline consumption limit for each individual air fleet. Actually, the only aircraft still in the air were the single-engine fighters engaged in home air defense, the close-support aircraft, the transport aircraft, and the reconnaissance aircraft. The majority of the bomber units had been grounded, and the bomber training program had been discontinued almost entirely. Despite the most stringent economy, it was clear that supplies would be completely exhausted by April 1945; and in April production came to a standstill. The preliminary schedule of gasoline allotment prepared for April included none whatsoever for the training program[201].

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198 - See the report of the conference held by the Fighter Staff on 3 July 1944, op.cit.

199 - See Appendix 45. The large number of crews released for front assignment during August and September reflect the fact that the intensified training of the early summer months was beginning to bear fruit.

200 - See "Die Entwicklung der Flugbetriebsstofflage der deutschen Luftwaffe" (Development of the Aviation Fuel Situation Faced by the German Luftwaffe), op.cit.

201 - Ibid.

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5. Organizational Difficulties

a. At the beginning of the war it became apparent to the Chief of Training that the results achieved by his training program were diminishing rapidly rather than increasing, as should have been the case. One reason for this lay in its organization. The air fleets, to which the schools and training installations were subordinated, were showing no hesitation in requisitioning school personnel and equipment. It was not until after the conclusion of the campaign in Poland, as the war in the West was getting under way, that the Chief of Training - in a personal conference with the Commander in Chief, Luftwaffe - was able to eliminate the role of the air fleets in the training program and in the personnel replacement unit and to have the school commanders (including the senior pilot training commanders) made subordinate to himself. After this, the air fleets could no longer intervene in the activities of the training program; besides, the chain of command was considerably simplified. Once the senior pilot training commanders were exclusively and directly subordinate to the Chief of Training, the latter's office, previously restricted to issuing instructions in the name of the Luftwaffe High Command and to certain inspection duties, became a command agency for all practical purposes. Only the administrative details were still left up to the local agencies (air fleets and air districts).

The official title, Chief of Training, Office of the Reichs Air Minister and Commander in Chief, Luftwaffe, coupled with complete freedom from the burden of administration and logistics, had its undeniable advantages. Orders and instructions were issued in the name of the Reichs Air Minister and Commander in Chief, Luftwaffe, and the training staff, free of administrative duties, could be kept relatively small and flexible. This made it much easier to maintain contact with the offices of the Reichs Air Ministry. On the other hand, since the Chief of Training was not an integral part of the Luftwaffe General Staff, liaison with that body was sometimes rather difficult.

Nevertheless, the office of the Chief of Training never achieved a really clear and definite form of orgnization such as that typical of a training air fleet, for example, where the commander in chief was undisputed ruler within the area of his jurisdiction. In personnel matters, the Chief of Training's channels included the Luftwaffe Personnel Office, the air fleets, and the air districts; in the field of reports and communications, the twofold subordination of many agencies created a great deal of extra work; the Chief of Training did not have disciplinary and judicial authority over the training program and thus had no way of asuring that his training units would be subjected to uniform disciplinary action, especially since a number of the air district commanders, who had disciplinary authority over the senior pilot training commanders, had been recruited from the antiaircraft artillery forces and had no uniform concept of just what constituted grounds for disciplinary action against a flight trainee. On the other hand, the Chief of Training would have had to pay for a clear and definite organizational structure in the above respects in the forms of a large and unwieldy administrative apparatus, capable of handling a gigantic training fleet which spread out over almost all of Europe as the war progressed.

The reorganization of 1943, which replaced the office of the Chief of Training with that of the General of Pilot Training, came no closer to effecting a clearly-defined organizational set-up. The only basic difference was that the new office was an integral part of the Luftwaffe High Command and this did, of course, bring about closer coordination between the planning agency (Luftwaffe General Staff) and the executive agency (accomplishment of the training program).

The redesignation and reorganization of the former senior pilot training commands into training divisions resulted in a change

from a vertical, geographical grouping of the schools to a horizontal grouping based on training category. But if the senior pilot training commands had never succeeded in developing a smoothly-functioning procedure for guiding the students under their jurisdiction from one type of school to another, the new horizontal grouping by school categories was still less satisfactory, for it meant that each time a student changed to another school (i.e. division), he also changed the command agency having responsibility for his training. There is no doubt that this situation was undesirable from a number points of view, but it did have one advantage - it gave the divisions a chance to keep tabs on each others' work and thus to decrease the number of weaker students being promoted along with the well-trained and properly evaluated ones.

The subordination of the General of Pilot Training to the Tenth Air Fleet, on 1 July 1944, and finally to the Commander, Luftwaffe Reserve (Ersatzluftwaffe), on 6 March 1945, hardly had time to effect any fundamental organizational changes and in no case would they have been able to change the fate of the rapidly disintegrating training program. In effect, they only served to increase the confusion, as did the reestablishment (on 2 October 1944) of Branch III of the Luftwaffe General Staff with full authority over the training program[202].

b. The location of the schools and other training installations is also a problem deserving of closer examination. Some of the schools located in the west and east, for example, lay so close to the front that they were forced to discontinue training activity as the war went on, either because they were in constant danger of enemy attack or because their airfields

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202 - See Chapter II, Section 5.

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were taken over by active units operating at the front. As a matter of fact, the General Staff was aware of this potential problem even before 1939, but Germany's geographic extent was too small to permit the transfer of all the schools to areas remote from the front.

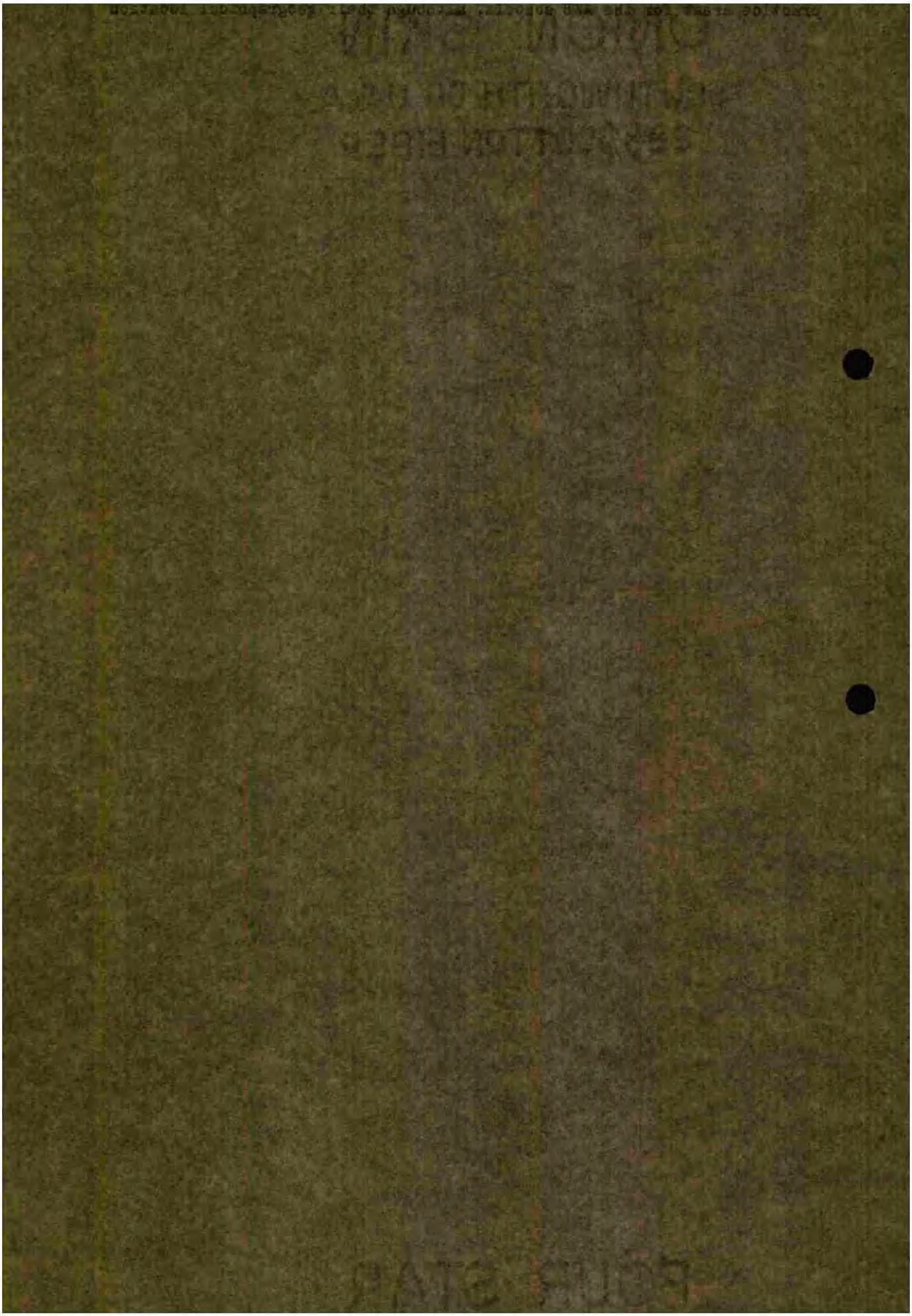
In view of the frequent changes in the military situation, it was inevitable that the schools should be moved about from time to time. It took a great deal of skillful planning to handle these moves in such a way that training activity was disrupted as little as possible.

Moreover, we must bear in mind that the effectiveness of a flight training program depends to a very great extent upon the availability of a stable ground organization. The following factors are important: size and surfacing of runways and landing strips, availability of night illumination equipment, hangars, sheltered parking areas, repair shop facilities, billeting facilities, classrooms, nearby drill areas, gunnery and bombardment ranges, geographical situation (mountains, etc.), weather situation (frequency of fog, snow, etc.), accessibility to the transport facilities required for an adequate supply system, air and ground situation from the military point of view (vulnerability of area to partisan warfare, etc.).

Depending upon the category of school involved, one or the other of the factors detailed above, might be of considerably greater importance than the rest. The A/B schools, for example, needed large, well-surfaced runways which could be kept in use during fall, winter, and spring, as well as summer, and which permitted two or three simultaneous take-offs, a terrain which posed no serious problems, consistently favorable weather conditions, no military operations in the near vicinity, and nearby practice areas for students. Areas threatened by guerrilla warfare were carefully avoided because of the danger in case of emergency landings during cross-country practice flights. The C schools and instrument flight schools needed airfields with the largest possible number of individual take-off strips, laid out to permit practice take-offs under varying

wind conditions, night illumination equipment, and excellent radio communication facilities.

On the whole, the advanced airfields were very well-suited for use as practice areas for the A/B schools, although their geographical location

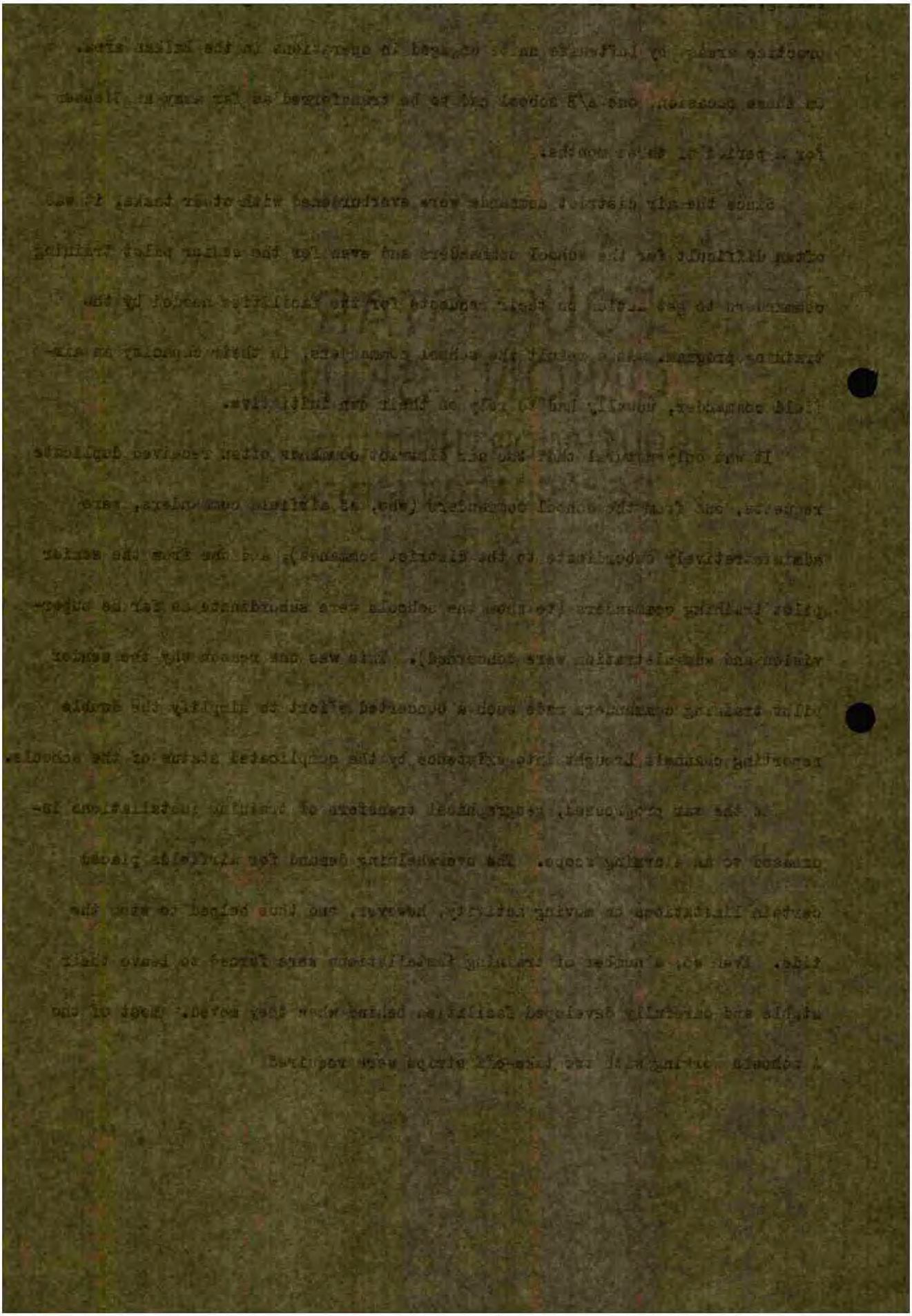


naturally brought with it the risk that they might have to be taken over at a moment's notice by active units. This was actually the case, for example, during the Balkan campaign, when the training airfields at Wels, Voeslau, Zwoelfaxing, Markersdorf, and Wiener Neustadt were occupied, together with their practice areas, by Luftwaffe units engaged in operations in the Balkan area. On those occasion, one A/B school had to be transferred as far away as Giessen for a period of three months.

Since the air district commands were overburdened with other tasks, it was often difficult for the school commanders and even for the senior pilot training commanders to get action on their requests for the facilities needed by the training program. As a result the school commanders, in their capacity as airfield commander, usually had to rely on their own initiative.

It was only natural that the air district commands often received duplicate requests, one from the school commanders (who, as airfield commanders, were administratively subordinate to the district commands), and one from the senior pilot training commanders (to whom the schools were subordinate as far as supervision and administration were concerned). This was one reason why the senior pilot training commanders made such a concerted effort to simplify the double reporting channels brought into existence by the complicated status of the schools.

As the war progressed, geographical transfers of training installations increased to an alarming scope. The overwhelming demand for airfields placed certain limitations on moving activity, however, and thus helped to stem the tide. Even so, a number of training installations were forced to leave their stable and carefully developed facilities behind when they moved. Most of the A schools working with two take-off strips were required



to give up one of them. To make up for this, "double school" were set up, in other words the capacity of those few A schools still having large-size airfields at their disposal was arbitrarily doubled.

During the course of 1943, a total of fifty-four transfers of staffs and schools took place; during 1944, conditions in this respect became chaotic. The steady shrinking of Germany's front lines made it imperative that active units, schools, aircraft parks, and industrial installations all be moved into the interior, and the interior was soon crowded far beyond capacity. There is no doubt that these hectic conditions had an extremely detrimental effect on the work of the training program. The loss of the airfields in southern France, Italy, and southeastern Europe represented a particularly severe blow, since weather conditions in these areas had permitted far more intensive training than was possible in Germany.

c. The collection and evaluation of experience gained on the front was of vital importance for the training program if, in spite of the many and serious difficulties it faced, it was to prepare replacement personnel capable of meeting the demands set by the front. Unfortunately, the Luftwaffe organizational setup never was able to provide a feasible procedure for keeping training agencies up to date on experience reports from the front and, as a result, the gap between front requirement and training program continued to widen.

During the early years of the war, the training program continued under nearly the same conditions and with substantially the same personnel as during peacetime. Nor was this wholly undesirable, for any fundamental alteration of the program - unless it had been very carefully planned in advance - was bound to result in a delay in the release in trained personnel and possibly in a reduction in their numbers. On the other hand, all too rigid adherence to the principle of no change could be expected to bring with it a number of serious disadvantage in the long run.

Most of the school commanders were older men, whose rank was too high to qualify them for appointment to any of the available posts as group commanders. As a result, the majority had had no practical experience in the active air units. After repeated requests to the Chief of Training, these school commanders were temporarily assigned to unit duty within the framework of so-called briefing groups (Informationskommandos), but this, of course, could be no more than a stop-gap expedient.

The training supervisors were in the same situation. Occasionally, officers who had been with an active unit were assigned to the schools as training supervisors, and invariably the artificially erected barrier between the Chief of Training and the front units made them feel as if they had been demoted in being transferred to the training program. It was not always easy to fire them with enthusiasm for their new task of preparing capable replacement personnel for the front within the framework of a program full of improvisations.

But not only the school commanders and training supervisors lacked front experience; the same thing was true of most of the flight instructors and the instructors in the fields of navigation, operation of weapons and bombs, signal communications, etc.[203].

This unfortunate personnel policy naturally served to isolate the training program from the front. And the gap between the two soon became apparent to new students, who would have found it much more inspiring to have as instructor an officer who had distinguished himself at the front.

The various attempts to bridge the gap, for example the designation of certain front units as "sponsor groups" (Patengruppen) and the introduction of a program of systematic rotation of personnel between the front and the training program, came too late and were of too limited scope to be of any effective assistance in a program of such wide

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203 - The author recalls meeting instructors in these subjects - commissioned and non-commissioned officers - at a large bomber school in 1942, who had had no front experience whatsoever.

geographic extent as the Luftwaffe training program. To be truly effective, the rotation of personnel between front and training duty would have to have been constant, for in view of the rapidity with which combat techniques were modified or changed completely at the various fronts, personnel reporting for instructor duty with up-to-date front experience were bound to become no more than theoreticians after a short time.

The front units themselves, as early as 1940, took steps to compensate for the training program's lack of familiarity with the latest front developments by establishing their "fourth groups", or personnel replacement groups. In this way, crews could be withdrawn temporarily from front duty for a comparatively restful period of instructional duty with the replacement groups, and there was no danger of the unit's losing them entirely (as sometimes was the case with crews detached to the office of the Chief of Training for "temporary" duty)[204].

d. The motivation given above for the establishement of the personnel replacement groups was not the only one, however, or even the most important one. Instead, the primary reason was based on the failure of mobilization planners to take into consieration the fact that during peacetime the final phase of training was carried out with the active units and that it was normally a year at least before a crew could be considered ready for full employment. During wartime, of course, with the active units on full-time front duty, it was clear that the vitally important final phase of training would have to be carried out somewhere else. During the winter of 1939/40, after the conclusion of the Polish campaign, the active units were still able to make up for the time lost in special instrument flight courses, etc. With the launching of operations in the West, however, there began a period of uninterrupted front duty for the flying units, so that

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204 - The fourth groups were also a useful instrument of personnel policy for the wing. Older first lieutenants and captains, for example, could be temporarily assigned to the fourth group until a post as squadron leader (lieutenant's rank) or group commander (captain's rank) was free at the front.

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there was simply no time available for the training of young replacement crews. The solution to this difficulty was the creation of the fourth groups. Thus the stages in the training program, already numerous enough, were augmented by one more and the administrative organization grew correspondingly larger and more complex. In reality, a solution should have been found right at the beginning of the war - ideally by so intensifying and expanding training at the schools (to include far more flight practice, for example), that the crews would come to the front units already provided with an adequate foundation, needing only specialized briefing for the missions to be accomplished. Instead, to cite just one example, the bomber wings of the German Luftwaffe were not uniformly trained parts of a large bomber fleet, as was the case in the US Air Force, but each one had a specialty of its own. The 26th and 30th Bomber Wings had entirely different missions to perform and were employed in quite different operational areas from the 4th, 27th, 53rd, and 55th; the 51st and 54th, in turn, were committed quite differently from the 76th and 77th, not to mention the 1st Training Wing. In the single-engine fighter wings, there was a considerable difference depending upon whether the units were employed in home air defense activities, on the Eastern front, or in the southern theater of war.

In order to fulfill their mission, the fourth groups also had to be provided with adequate gunnery and bombardment practice ranges. Even during peacetime, however, there was such a critical shortage of such practice areas that many units entered the war without having been adequately trained in gunnery and bombardment techniques, particularly in the techniques of high-altitude (13,500 ft. and above) bombardment. Many of the bomber wings were given as little as fourteen days' bombardment practice per year. As we have mentioned before, one reason for neglect in this sector was the fact that the Luftwaffe attached by far the greatest importance to pure flight training.

In any case, it was often very difficult for the replacement groups to find and equip their practice ranges in the first place, only to have to abandon them in the event the unit was transferred. Clearly, gunnery and bombardment training was bound to suffer under these circumstances[205].

Naturally, every attempt was made to assign the replacement groups to areas where they might reasonably expect to remain for a fairly long period. Furthermore, practice employment of the crews in difficult front missions was firmly discouraged, since it only served to interrupt the normal course of training. In addition, it led to higher losses in personnel and materiel, and delayed the release of the replacement crews for full-time front duty[206].

Within the limitations imposed by existing circumstances, however, it can be stated that the fourth groups proved highly satisfactory. They provided a uniformly-trained reserve of replacement personnel as well as a training center for each wing.

e. The examples discussed below will serve to illustrate some of the effects of an inadequate organizational set-up under the pressure of events:

At the beginning of March 1940, the Chief of Training was ordered to recruit from his C schools and instrument flight schools an "Air Transport Chief, Land" (Lufttransportchef, Land) and his staff, as well as seven air transport groups. In the hope that he could thereby keep all his aircraft and crews from leaving the training program altogether, the Chief of Training appointed

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205 - The author recalls his own assignment as instructor and training supervisor with a fourth group during 1943 and 1944, during which two moves made necessary by the developments in the military situation created a great deal of difficulty.

206 - In a study entitled "Bomberplanung" (Bomber Planning), dated 5 October 1943, the General of the Bomber Forces describes the fourth groups as regular "assembly lines for crews".

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the Commander of the Instrument Flight Schools as Air Transport Chief. At the end of May 1940, after operations in Norway and the West had been brought to a conclusion, the Quartermaster General, Luftwaffe, ordered that the office of the Air Transport Chief be redesignated the office of the Air Transport Commander, Quartermaster General, Luftwaffe (Lufttransportfuehrer bei Gen. Qu.). His order represented an attempt to bring all the special duty bomber units which were definitely committed to air transport duty under a single, central command agency. No subsequent orders confirming or clarifying the step were ever issued by the Chief of the General Staff, so that the position of the Chief of Training in the matter remained rather uncertain.

Consolidation of the positions of Commander, Instrument Flight Schools, and Air Transport Commander in a single person was a very poor solution, for it meant that the incumbent, as Air Transport Commander, was attached to the staff of the Quartermaster General, while he was subordinate to the Chief of Training in his other capcity. Conflicts were inevitable, and were bound to have a detrimental effect on both the transport units and the schools. Organizationally, the incumbent had two separate staffs at his disposal, one to deal with the instrument flight schools, and one to handle air transport matters. Placing the command of two such important staffs under a single person was a most unfortunate move, for no matter how conscientious the commander might be, he would inevitably tend to neglect one of the two activities. And, under the circumstances at that time, the one to be neglected could only be the training program. For the Air Transport Commander was morally obligated to exploit his units at the front in order to master the often difficult missions assigned to him (especially true of employment on the Eastern front during the winter of 1941/42). In addition he was often away from his office for lengthy periods at a time in connection with the activation of new units or with special missions; during the air supply operation at Demjansk, for example, he was away for several months at a stretch. It was not until April 1942, two years after it had begun, that the tug-of-war be-

tween the two aspects of the Commander's activity was finally resolved by the appointment of a new Commander, Instrument Flight Schools[207].

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207 - General Morzik, op.cit. Colonel von Gablenz, later Chief of the Technical Office, was Air Transport Commander until 1 October 1941; his successor was Colonel Morzik.

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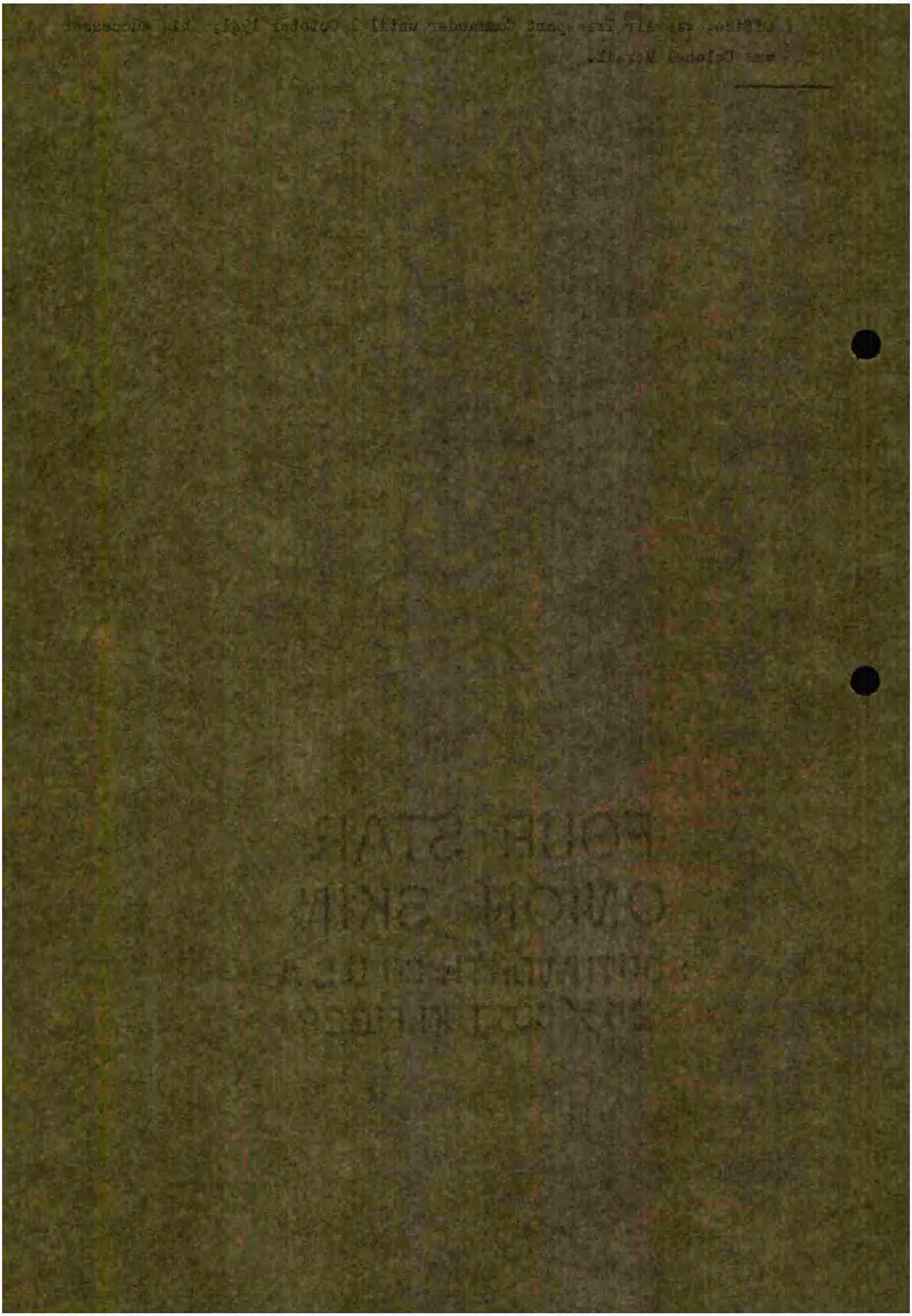

The critical situation at the front in the fall of 1942 led to an order to the Chief of Training for the establishment, utilizing his own personnel and aircraft, of a number of so-called night flight groups (Nachtflug~~zeug~~gruppen) to relieve the active units at the front[208]. Similar to the replacement groups, these night flight groups were expected to earn the gasoline provided them from the front contingent by relieving the air units in the East and by carrying on advanced bomber training at the same time. Equipped with He-111's and Do-17's, they were assigned to Poltava, Shitomir, and Bobruisk. As far as operations were concerned, the groups were subordinate to the local air fleets; as regards training, of course, to the Chief of Training. Since the order for the night flight groups came at the same time as the order for additional air transport units for Stalingrad, there were not enough aircraft for both. As a result, the night flight groups had to take a number of school aircraft fitted with dual controls, in which bomb-bays and airborne armaments had to be especially installed - at great expenditure of effort and loss in time. One of the groups was disbanded after two months - during which it had been employed in action on a total of only twelve days; the other one is supposed to have lasted somewhat longer. Apart from the commander of the first group, only a single one of his instructional crews had ever had any previous front experience.

During that same winter (1942/43), a similar project was undertaken with the advanced crews of the personnel replacement groups. Put into effect at the order of the General of the Bomber Forces, the project was only slightly more successful than that of the night flight groups. In Pleskau, during November and December 1942, two special squadrons were organized, one equipped with He-111's and the other with Ju-88's. They were to acquire the necessary experience in night flight by participating in missions over Leningrad and over the ice-passage across Lake Ladoga[209]. Quite apart from the fact

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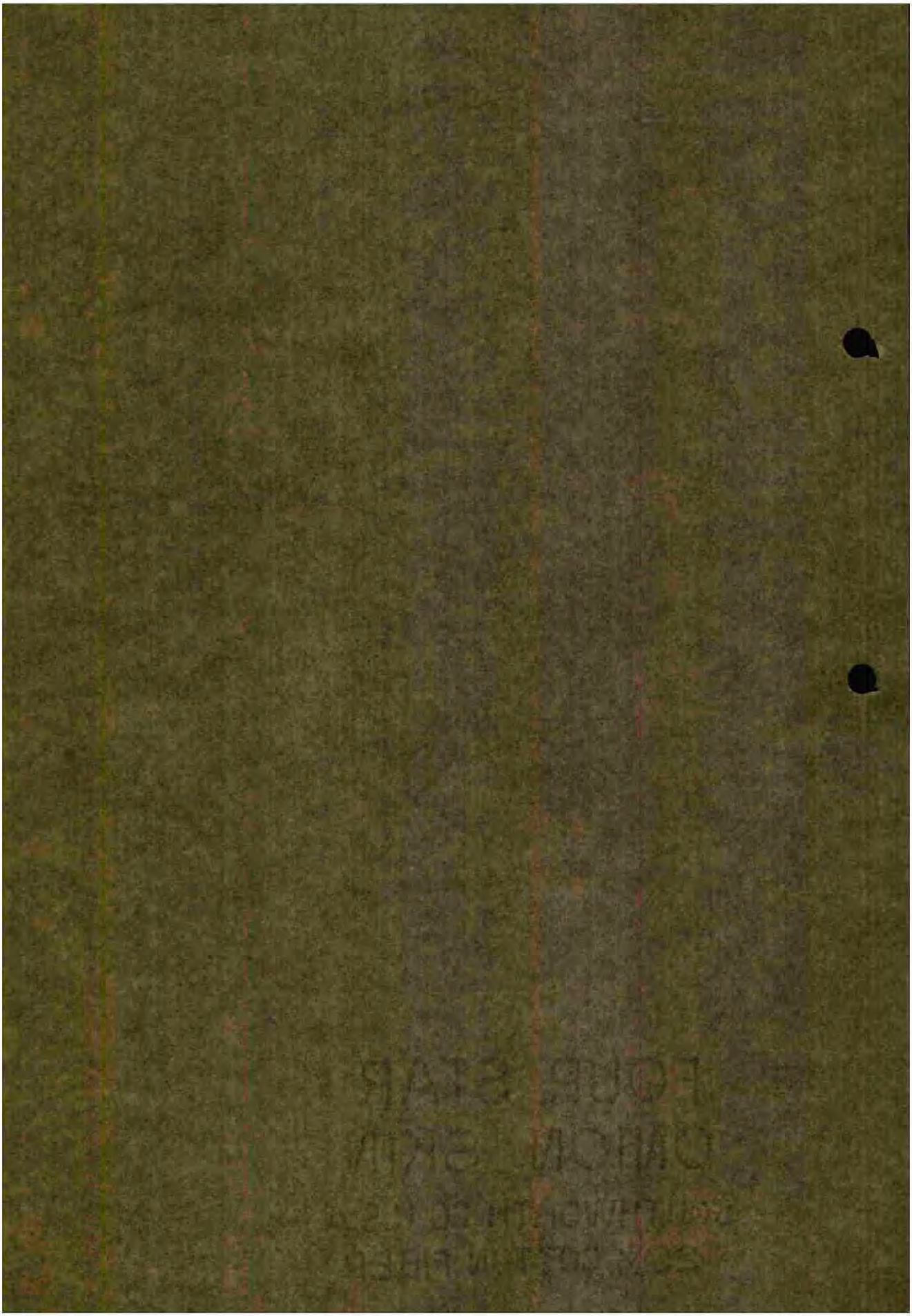
208 - This project probably goes back to a suggestion made by Hitler to the effect that emergency bomber units be set up for relief action on the Eastern

208 - (Cont'd) front. See the correspondence between Jeschonnek and Milch, 25 December 1945. Karlsruhe Document Collection.

209 - Based on the author's personal experience with the 4th Bomber Wing.



that some of the crews had to be sent back to Koenigsberg-Prowehren first to complete - togehter with a new beginners' group - basic training in night landings, winter conditions at Pleskau (from the standpoint of weather as well as of military operations) were hardly an auspicious beginning for freshly-trained young crews. In the author's recollection, this group lost three crews during night landings at the Pleskau airfield, compared with only one crew lost during commitment over the Lake Ladoga ice passage (admittedly well protected). The project was discontinued after the fall of Stalingrad.

In both cases, the questions arise as to whether the effort and expense involved were warranted by the results achieved, whether such organizational elements - concurrently subordinate to two different agencies and not even capable of full employment - could serve any purpose at all, and whether they did not simply complicate an organizational structure which was already overburdened by the dmmands made upon it.

In the last analysis, too frequent revision of an organization structure can have only damaging effects. Once such a structure has reached the point at which it is functioning smoothly, then it is probably better able to accomplish its purpose - despite minor deficiencies - unchanged than if it is subjected to well-meant modifications which only serve to disrupt the normal flow of business.

6. Single-Engine Fighters at all Costs

As we have already pointed out, the basis of the fighter training program was far too narrow from the very beginning[210]. One of the reasons

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210 - See Chapter III, Section 2.

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was surely the relative overevaluation of the principle of offensive action inherent in the bomber arm. Germany's top military leaders were advocates of the motto "aggression is the best defense".

After the victorious campaigns in Poland and the West, came the air war against England, during which Germany's highly vulnerable bombers could be committed by day only under fighter escort. And the toll of fighter aircraft and personnel was high. Thus, at the end of 1940, made the richer by bitter experience and looking ahead to the still secret campaign against Russia, General Jeschonnek accepted the consequences and ordered a broadening of the fighter training organization. In December 1940 the former Inspector for the Fighter Forces (Luftwaffe Inspectorate No. 3) was appointed Senior Commander, Single-Engine and Twin-Engine Fighter Schools, under the diredt supervision of the Chief of Training, with the express mission of directing the training of the fighter forces. Luftwaffe Inspectorate No. 3 continued to exist on the staff of the Chief of Training, but was henceforth restricted to inspection activity in connection with the training program. It was given the additional mission of concerning itself with the methods used in employing fighter units at the front and with the development of fighter aircraft armaments. In the fall of 1941, when the posts of the ordnance generals were created, the Inspectorate became the office of the General of the Fighter Forces.

When it became apparent that the offensive launched in the East was going to last a good deal longer than had been anticipated, Germany found herself facing a war on two fronts - or, as a matter of fact, a war on three fronts, for the African theater of operations was requiring more and more materiel. Consequently, the most important thing was to preserve the home area intact so that it would continue to be capable of waging war. And this could be managed only by means of a strong home air defense force on duty day and

night. By this time, of course, the night fighter forces had passed their initial test with flying colors, and the day fighter wings left behind in the western theater proved fully capable of coping with Allied daytime raids during 1941. But wouldn't the Luftwaffe have to start worrying about the Americans very soon? Udet, well acquainted with the American four-engine bombers, had already recognized the necessity of stepping up fighter production.

There is nothing to indicat that Generaloberst Jeschonnek, in anticipation of coming events, took any steps to raise the requirements for fighter aircraft; on the contrary, he was quite satisfied with a production figure of 360 aircraft per month during 1942[211], although he might easily have demanded a far larger number. Thus the year 1942, too, went by without any decisive steps having been taken to build up the fighter arm. Everyone's attention was riveted on the events on the Eastern front, where German forces were engaged in a last heroic struggle to turn the fortunes of war in their favor. But even before some 500 aircraft with 1,000 crew members were lost at Stalingrad, even before the coming catastrophe in Africa was foreshadowed during the months of October and November, the home area had already experienced the harbingers of approaching tragedy in the terrifying British raids on Cologne, Essen, Bremen, Krefeld, Munich, etc.

In a situation already so desperate, what would happen when the Americans with their four-engine bombers began - as they were bound to soon - to intervene in the air war over Germany? Would the monthly quota

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211 - See W. Baumbach, "Zu Spaet" (Too Late), page 63. On his initiative General-feldmarschall Milch, Luftwaffe Chief of Supply and Procurement, raised this figure to 720, and later to 1,000 aircraft per month.

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of 300 fighter crews which the training program was capable of producing during 1943 with the amount of aviation fuel alloted to it be adquate to meet this threat?

The Chief of Training and his successor, the General of Pilot Training, certainly do not deserve to be blamed in any way for their part in events; both did the best they possibly could within the limitations imposed upon the program, and during the year 1943 managed to achieve the following training goals (figures for 1942 given in parenthesis)[212]:

	Day Fighters	Night Fighters (single-engine)	Night Fighters (multi-engine)	Twin-Engine Fighters
Goal Established	3,288	160	1,326	435
Goal Achieved	3,276 (1,666)	306 (-)	1,358 (239)	371 (424)
	- 12	+ 146	+ 122*	-64

Thanks to close and willing cooperation among the agencies concerned, the training program had been able to utilize the personnel and aircraft available to it with an effectiveness previously not considered possible. Uninterrupted training was assured by regular, though very small, gasoline allotments and new records in the number of flight hours accomplished and the number of trained personnel released to the front were achieved - in spite of the 20% cut in training personnel.

Compared with the year 1942, then, the training program was tremendously successful during 1943, at least in terms of numbers. But what about the standard of the training enjoyed by these crews? Was it high enough to meet the demands subsequently made upon them, or did it leave a great deal to be done before the crews could be considered ready for front employment?

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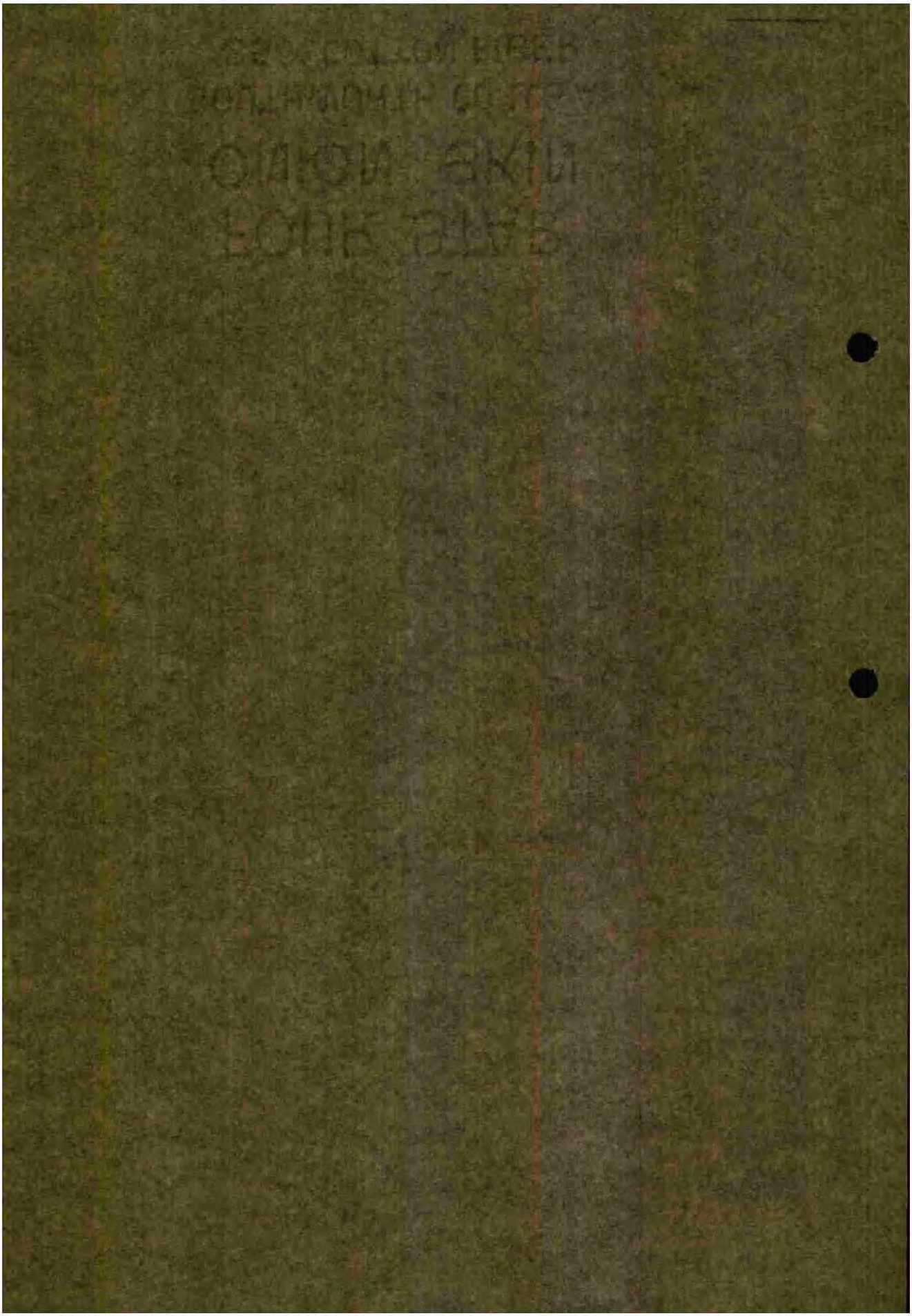
212 - Report from the General of Pilot Training, No. 110/44, Classified, No. 1/44. Operations Branch, Enclosure 3a (Karlsruhe Document Collection). According to this report, the situation was even more favorable for the bomber forces. During 1943, a total of 3,431 crews were trained (compared with 1,962 during 1942), which represented a plus of 645 over the established goal of 2,786, and corresponded to a monthly goal of 285. In the study "Bomberplanung" (Bomber Planning), dated 5 October 1943, the General of the Bomber Forces

212 - (Cont'd) requested the General of Pilot Training to meet the requirement of 380 bomber crews per month. In 1944, of course, this request was automatically cancelled by military developments.

* Translator's Note: There seems to be something wrong with this figure - Editor please check!



At the time the young pilots were released from the training program and turned over to the General of the Fighter Forces for further assignment, they had completed the following flight training[213]:

A school (Luftwaffe Pilot's License for single-engine aircraft, Instrument Flight Certificate, category I)

Day fighter and close-support pilots: 88 flight hours during a 4-month period, including 37 hours' instrument flight practice.

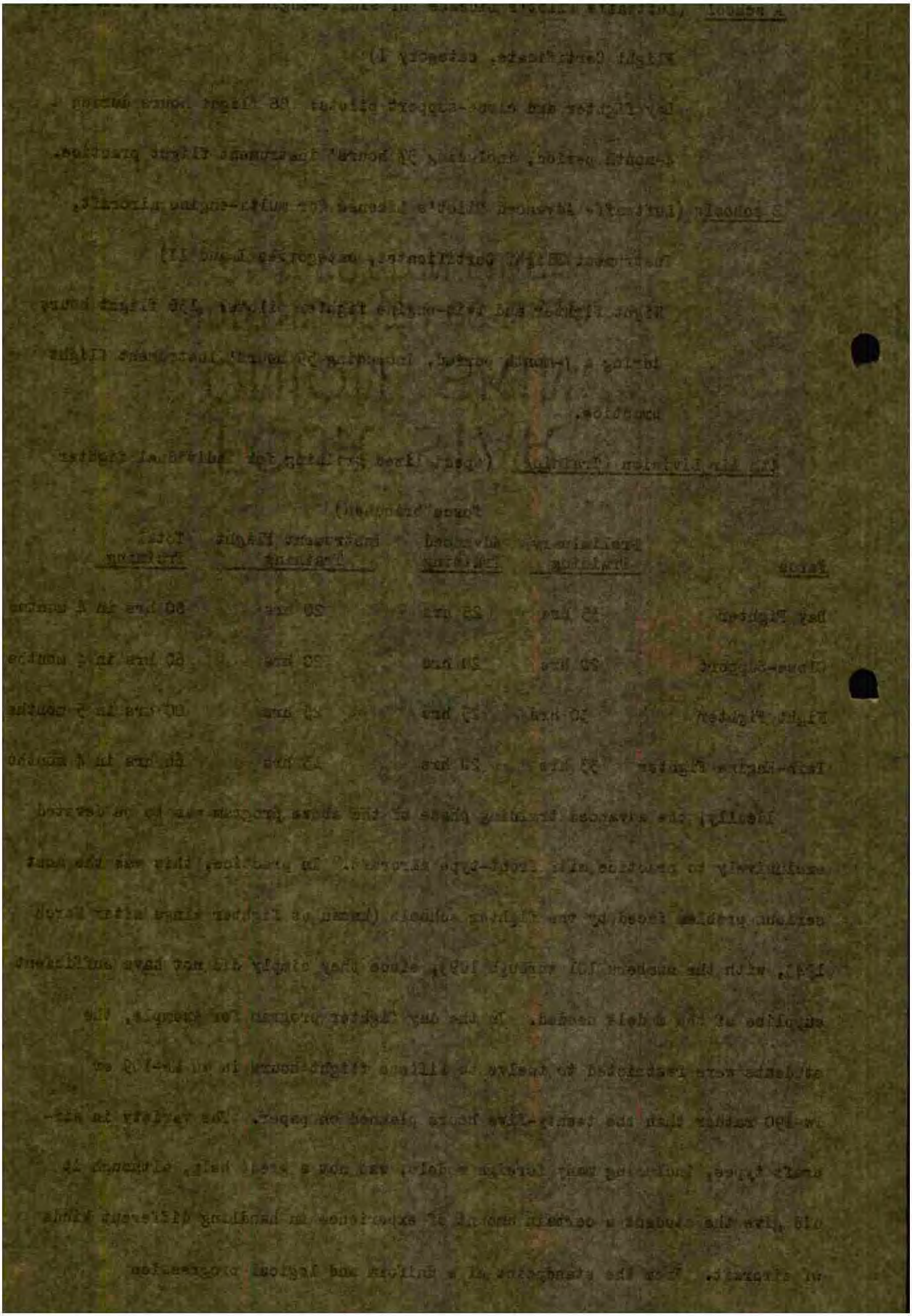
B school (Luftwaffe Advanced Pilot's License for multi-engine aircraft, Instrument Flight Certificates, categories I and II)

Night fighter and twin-engine fighter pilots: 138 flight hours during a 7-month period, including 59 hours' instrument flight practice.

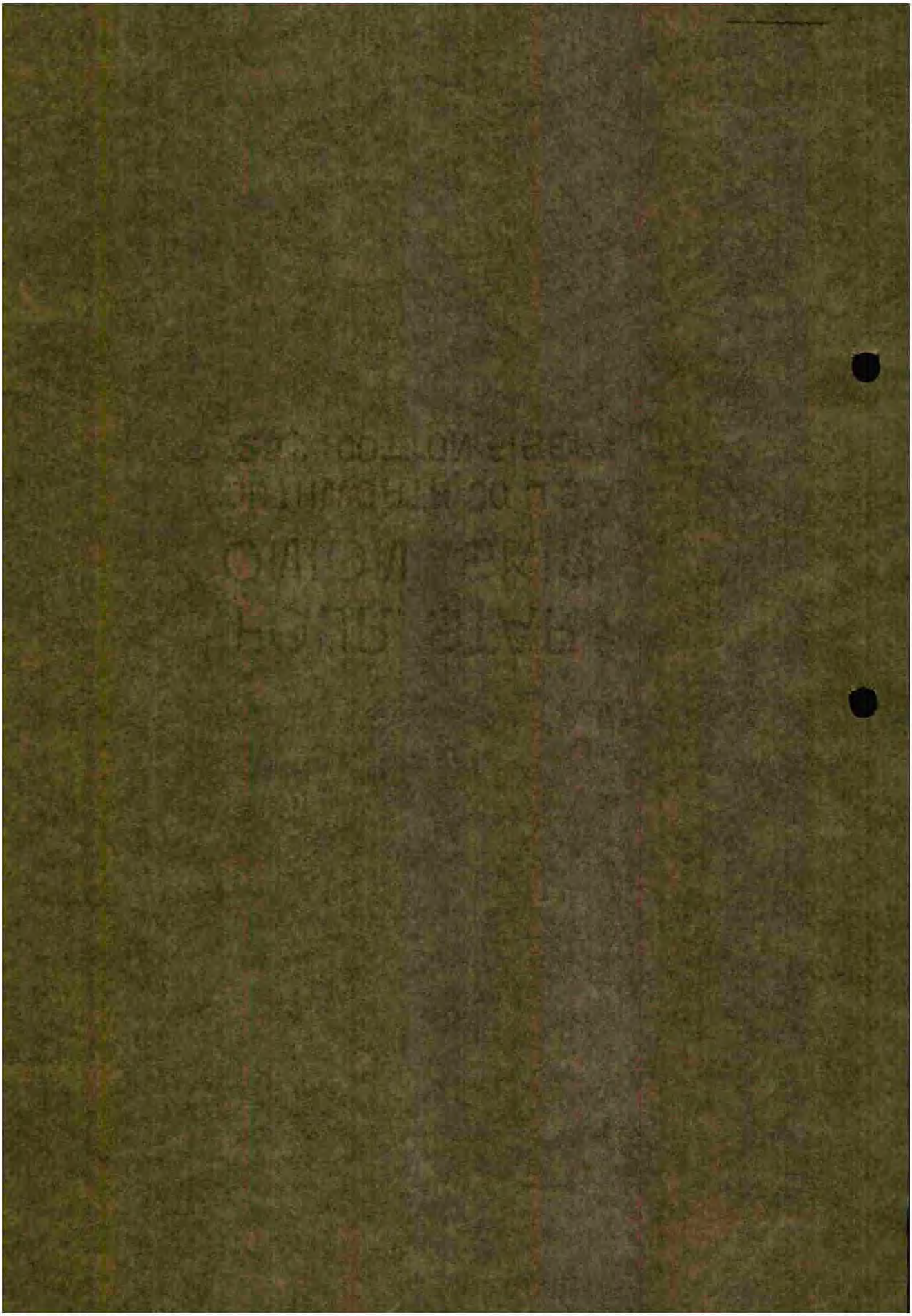
4th Air Division (Training) (specialized training for individual fighter force branches)

Force	Preliminary Training	Advanced Training	Instrument Flight Training	Total Training
Day Fighter	35 hrs	25 hrs	20 hrs	80 hrs in 4 months
Close-Support	20 hrs	20 hrs	20 hrs	60 hrs in 4 months
Night Fighter	30 hrs	25 hrs	25 hrs	80 hrs in 5 months
Twin-Engine Fighter	33 hrs	20 hrs	13 hrs	66 hrs in 4 months

Ideally, the advanced training phase of the above program was to be devoted exclusively to practice with front-type aircraft. In practice, this was the most serious problem faced by the fighter schools (known as fighter wings after March 1943, with the numbers 101 through 109), since they simply did not have sufficient supplies of the models needed. In the day fighter program for example, the students were restricted to twelve to fifteen flight hours in an Me-109 or Fw-190 rather than the twenty-five hours planned on paper. The variety in aircraft types, including many foreign models, was not a great help, although it did give the student a certain amount of experience in handling different kinds of aircraft. From the standpoint of a uniform and logical progression



213 - See Appendix 44, Luftwaffe High Command, Office of the General of Pilot Training, "Ausbildungsgang und Dauer des Fliegenden Personals (Land)" Course and Duration of Training for Flying Personnel, Land), dated 15 March 1944. Karlsruhe Document Collection.



of training activity, however, it was actually a hindrance - quite apart from the difficulties encountered by the aerotechnical services in connection with the procurement of spare parts. In short, there was no guarantee that the student had mastered the aircraft model he was expected to fly at the time of his transfer to the personnel replacement unit of the active wing. The shortage of front-type aircraft was simply too acute in 1943 to permit adequate allotment to the schools, and one reason for the shortage was the fact that so many aircraft were lost at the front as a direct result of incompetence on the part of newly-assigned crews (apart from the increasing rate of loss as a result of enemy action). Thus, failure to equip the training installations with sufficient front-type aircraft was to result in an even greater shortage of them. The table below shows just how inadequate the school allotment of front-type aircraft was during 1943. Authorized aircraft strength in each case was 480 Me-109's[214].

Period	Me-109 Series B-E	Me-109 Series F-G	Total	Discrepancy
1 Jan 43	237	95	332	148
1 Apr 43	194	104	298	182
1 Jul 43	194	61	255	225
1 Oct 43	155	23	178	302
31 Dec 43	204	31	235	245

The newest models, of the F and G series, were practically irreplaceable as far as the schools were concerned, so that each aircraft lost through accident was a severe blow to the program. In order to preserve these precious machines from the danger of pre-mature wrecking at the hands of an inexperienced and timid fighter pilot trainee, an interim model was

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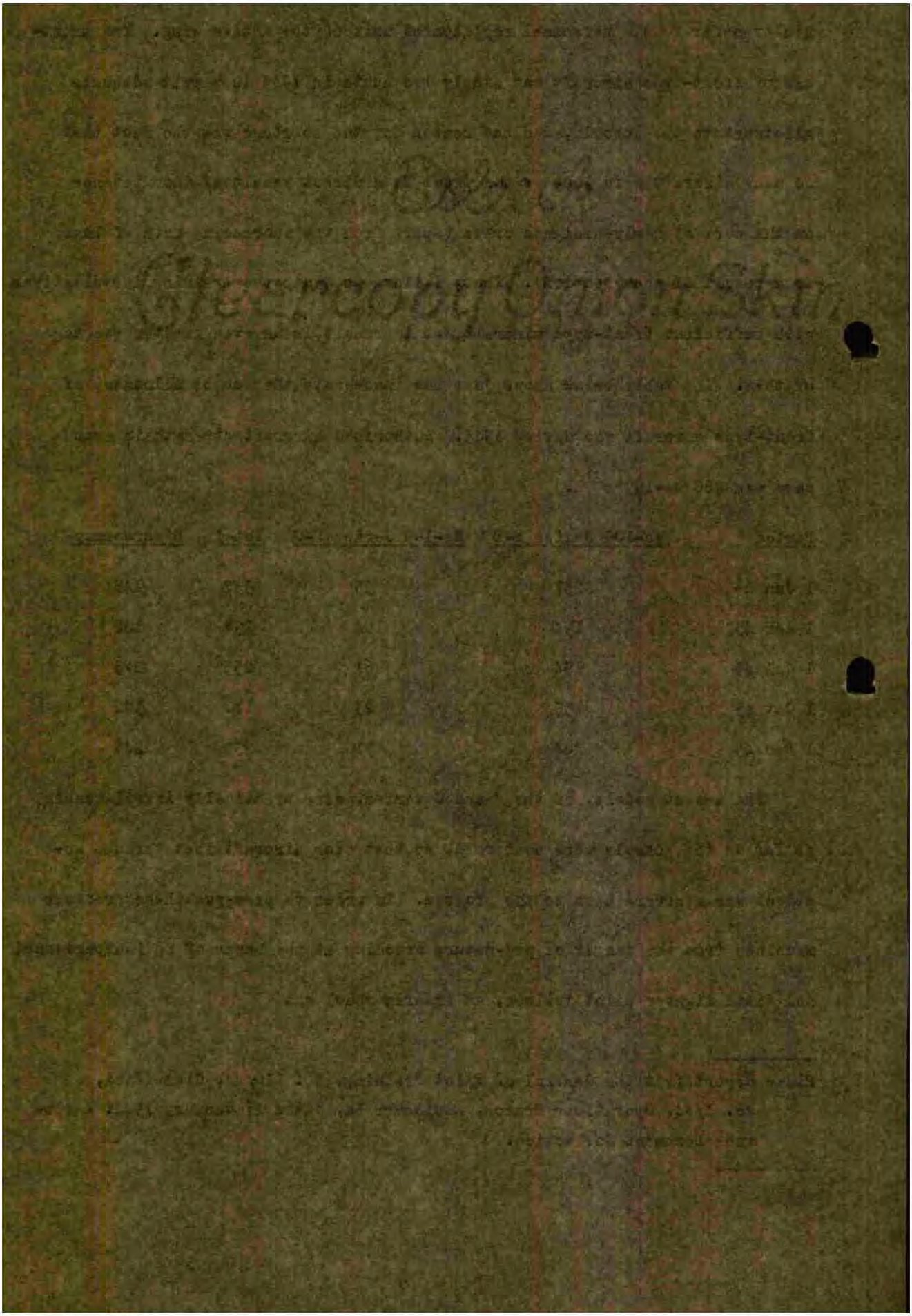
214 - Report from the General of Pilot Training, No. 110/44, Classified, No. 1/44, Operations Branch, Enclosure 3a, dated 27 January 1944. Karlsruhe Document Collection.



developed - the Me-109 G/Twin-Seater. Unfortunately, there were far too few of these available - during January 1944, for example, deliveries comprised only eight Me-109's and two FW-190's.

Just how critical the aircraft shortage was at that time is clearly evidenced by the fact that even the personnel replacement groups of the active wings at the front, which were supposed to put the finishing touches on the training of the young fighter pilot, were complaining of a lack of aircraft. The replacement groups had sufficient supplies of aviation fuel, drawn from the contingent set aside for the front, but not enough aircraft. One reason, of course, was that a large percentage of the aircraft returned after repair by industry was being consigned directly to the front to make up losses there, rather than channelled to the replacement groups for use in training activity, as had been originally planned. In the autumn of 1943, for example, there were more than 1,000 Me-109's under repair, and a good part of the damage was certainly due to inadequate training[215].

The fall of 1943 brought with it a new problem to be solved by the fighter training program - the demand for more intensive training (for day fighters as well) in the penetration of cloud covers in group formation. For it was anticipated that the Americans would soon begin to exploit periods of bad weather for their bombing raids. In preparation, the 10th Instrument Flight School (Singel-Engine Aircraft) was set up at Altenburg as the 110th Single-Engine Fighter Wing. Here, with the help of special radio equipment used for air traffic control, landing direction, and ground-to-air guidance, the fighter pilots were given special training in fighter control methods (the "Kringel" method+, Benito method, etc.). This meant, of course, an increase in the training requirements set for the 4th Air Division (Training).

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215 - According to General Galland, during the course of a discussion with Reichsmarschall Goering at the Obersalzberg on 8 October 1943. Karlsruhe Document Collection.

As has been pointed out, the youthful fighter pilot had completed approximately 160 flight hours by the time he was released to the General of the Fighter Forces for assignment to a personnel replacement group, where he was introduced to the special employment techniques used by his particular wing. In reality, he had received only the most basic of basic training and, compared with his Allied counterpart, for example, was hopelessly retarded. After all, the British fighter pilot had flown up to 360 hours, and his American colleague over 400 hours, by the time they were released from training. Thus, it is understandable that complaints about poorly prepared fighter pilot trainees - even from the replacement groups - never seemed to end. As a rule, the trainees remained with the replacement group for two to three weeks only and, at the end of this time, had to be employed in front operations because the need for replacements was so great. Two or three weeks, however, was far too short a time in which to provide the students with the training they needed to take their place effectively at the front. The gaps in their knowledge, both theoretical and practical, were frighteningly many[216]. On one occasion, for example, it turned out that not a single one of the youthful pilots was capable of handling an Me-109 or a FW-190 properly, that most the them still had difficulty flying the Me-108 and the Ar-96, although the latter had ostensibly been used during conversion training from school types to front models. Their knowledge of navigation was conspicuously lacking, and not a single one of them had mastered the techniques of orientation (neither long-range orientation, by course, compass, and clock, nor close-range orientation by reference to ground landmarks). Many were still having trouble in interpreting maps and charts, some in fact were so inept that they were unable to distinguish a map with a scale of 1:1,000,000 from one with a scale of 1:5,000,000. The report took into account that the fighter training wings simply did not have the means (front-type aircraft, aviation gasoline, even qualified instructors)

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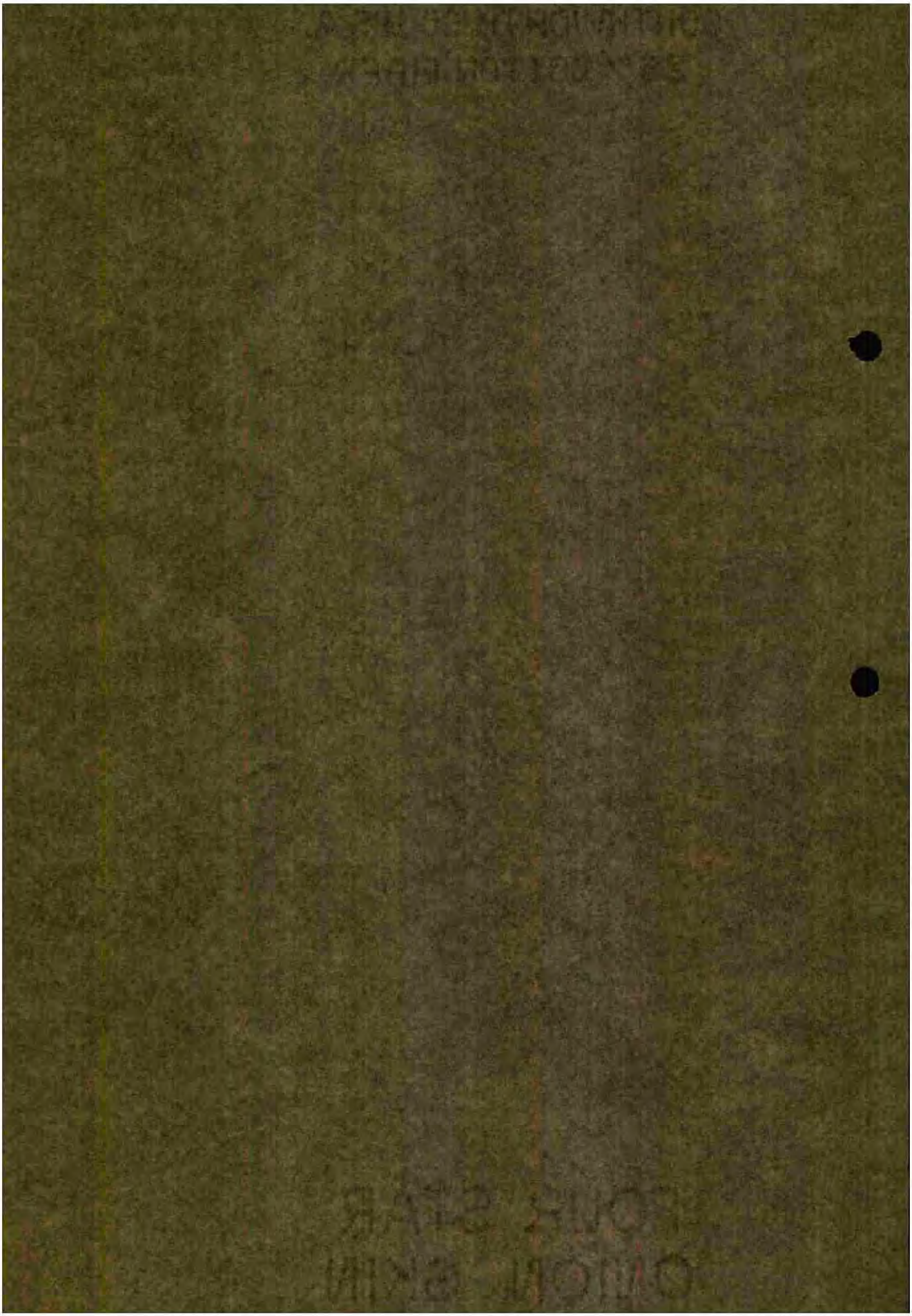
216 - Report of an inspection visit to the personnel replacement groups of the

216 - (Cont'd) single-engine fighter wings in the west, east, and north (Operations Branch, Training Section, dated 29 August 1944). Karlsruhe Document Collection.



to permit them to utilize the available training time to full effect. The report recommended that the General of Pilot Training reduce the high requirements established for the training program (despite the urgent need for more pilots) and concentrate on raising the quality of training. As the report pointed out, the enemy's figures could not be matched in any case. In general the morale in the replacement groups was rated as very good. But these findings, coming in the summer of 1944, when the numerically superior Allied bomber fleets were rapidly bringing Germany's air cover to the point of complete collapse in the face of the heroic but hopeless struggles of the home air defense fighter forces, were simply the result of the lack of attention paid to the problem of fighter aircraft for home defense activities throughout the past years. The far too narrow foundation of the fighter training program (two fighter schools as compared with four bomber schools) had been broadened too late. By 1944 there were ten fighter schools, but they had neither aircraft, gasoline, nor sufficient time to exploit their increased capacity effectively. During the period 1939 through 1942, Germany could have expanded the fighter training program wherever she had wanted in Europe; above all, she could have used the time to produce more fighter aircraft without any outside interference. And a rise in the production of fighter aircraft would soon have stimulated a demand for more fighter pilot training. As a result, the necessary expansion would have come at a time when it could still be effective. During those years, however, Germany was still optimistic, and even as late as 1943, when Feldmarschall Milch, Luftwaffe Chief of Supply and Procurement, recommended to Hitler and Goering that fighter production be increased to several thousand per month (the average monthly production during that year was only 840 aircraft), his suggestion was brushed aside[217]. A scant few months later, Saur

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217 - Generalingenieur a.D. Hertel, "Die Beschaffung in der deutschen Luftwaffe" (Procurement in the German Luftwaffe), Karlsruhe Document Collection.

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and his Fighter Staff were granted unlimited authority to supervise an all-out effort to raise fighter production to 2,130 per month. They attained a record figure of 3,110 aircraft in the month of September 1944, but it was already too late. (In this connection ,we should also bear in mind that these conventional models, the Me-109 and the FW-190, no longer represented the striking power they had possessed in 1940 and 1941, or even at the beginning of 1943). For by September, the gasoline situation had deteriorated seriously (15,000 tons for August, 12,500 for September) and with it, of course, the training program.

Those pilots scheduled for release to the front units in early 1944, however, had naturally begun their training eight months before. As a result, the General of Pilot Training was completely unprepared for the sudden increase in the number of fighter aircraft to be manned, and could do nothing to raise his figures for the early months of the year above the previously established goals (January - 270, February - 120, and March - 340)[218]. One of the steps initiated to take advantage of the improved situation was the appointment of Colonel Leutzow, from the staff of the General of the Fighter Forces, to draw up complete rosters of all pilots qualified for training as fighter pilots[219]. The objectives of Colonel Luetzow's activity were the following: 1) to ensure the availability of a sufficiently large reserve to fill out the active units, 2) to ensure the availability of an adequate reserve of trained personnel to reinforce the active units, 3) to identify all officers currently assigned to staffs, schools, or other units who might be qualified to act as unit commanders in the day fighter forces, 4) to raise the degree of operational readiness of the units at the front, 5) to improve the quality of training and

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218 - See Appendix 45 (Heldmann).
219 - Report from the Office of the Reichsmarschall des Grossdeutschen Reiches and Commander in Chief, Luftwaffe, No. 14650/44, Quartermaster General, Branch 2 (I), dated 8 May 1944.

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6) to encourage a system of recruitment and selection designed to meet the needs of the situation.

All this placed the General of Pilot Training before a very difficult decision[220] - whether it was wiser to refuse to increase his predetermined goals, thus sabotaging the potential effectiveness of the production increase achieved at the cost of such effort and sacrifice by depriving the extra aircraft of the personnel needed to operate them, or to do everything in his power to meet the higher requirements by dint of radical curtailment of the number of flight training hours originally planned.

Thus the situation demanded a decision between two alternatives, one of which was tantamount to sabotaging the armament program and the other of which meant just as certain sabotage of the training program.

In the end it was decided that the lesser of two evils would be to accept a drop in the quality of training in order to keep up with aircraft production, and to attempt to make up for any deficiencies later on. Naturally the training program had to give up its guiding principle - the goal of creating well-qualified fighter pilots with a high standard of training - for the new demands created an entirely different situation. The highest goal was no longer quality but quantity, expressed in terms of deadlines, subject to the need for saving flight hours, influenced by the lack of qualified instructors, inadequate supplies of aviation fuel, insufficient front-type aircraft, loss of flight hours due to alerts, moves to avoid threatening enemy action, etc. The fighter pilot had become the most important man in the country, his training en masse had been assigned the highest priority rating and was regarded as vital to the outcome of the war;

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220 - See Lt Col a.D. Poetter, GSC, op.cit.

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he had taken his place in the center of the planning stage and was expected to do his duty in connection with the suddenly expanded fighter program.

Under the circumstances, it was clear that the students released to the personnel replacement groups of the front wings could not possibly meet the demands made upon them - they had not even flown the required minimum number of hours. Due to the critical shortage of gasoline and to the hopelessness of any attempt to make up for all the gaps in training, the replacement groups usually had no alternative but to send the new crews on to the front after two or three weeks, in order to meet their own quotas of replacement personnel released. Goering's order of June/July 1944, to the effect that training time be lengthened in the fighter program, was no more than an empty phrase under the circumstances[221].

At this point arises the question of responsibility. If the leaders of the training program and the commanders of the schools, who saw these deficiencies every day, felt that they had to act as they did, then they must bear a part of the responsibility. They knew what inadequate training cost in terms of men and machines, and they knew that the cost would keep on rising, they saw the figures. At the same time, however, they could not close their eyes to the terrible destruction brought by the enemy bombers, and they may well have thought that it lay in their power to help alleviate the suffering to at least a small degree. If only they could meet their requirements, if only they could supply the active units with enough crews, perhaps they might succeed in warding off the catastrophe. We must recall that the British Fighter Command

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221 - See the report of a Fighter Staff Conference held on 3 July 1944. Karlsruhe Document Collection.

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also resorted to some very desperate measures during the climax of the air war against England in 1940[222].

Under these circumstances, however, the flight training program could no longer remain free of the symptoms of collapse which were becoming apparent on all sides. Neither command agencies nor troop leaders were free to take decisions in accordance with their best judgment. Their decisions were all forced, predetermined by the actions of their enemy and subsequent conqueror. The alternatives dictated by the enemy required responses which had nothing to do with objective considerations; every decision contained the seeds of catastrophes whose ultimate ramifications could not be foreseen at the moment.

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222 - The Fighter Command not only sent all its available instructors into action, but even most of its available students - some of whom had had no more than 7 flight hours. The risk involved was extremely great, but may have been justified in that this action did help to influence the outcome of the air war. The 7 flight hours are obviously to be interpreted as 7 flight hours with a front-type aircraft.

CHAPTER V

THE LESSONS OF EXPERIENCE. THE ACHIEVEMENTS OF THE TRAINING PROGRAM.

During peacetime as well as during wartime, training must be considered an extremely important aspect of any armament effort and must be integrated into it in such a way as to create a harmonious whole. The significance of training, which after all provides the foundation on which the armament program can progress, must never be underestimated.

Section 1. The Top-Level Organizational Set-Up

A command organization which is aware of the significance of training, then, should never relinquish its control over the training program. With the reorganization of the Reichs Air Ministry on 1 February 1939, however, and the subsequent establishment of the post of Chief of Training, directly subordinate to the Reichs Air Minister and Commander in Chief, Luftwaffe, it would seem that the Luftwaffe General Staff was embarking on a course which would eventually rob it of control over training. It is true that Jeschonnek's purpose in reorganizing was to free the General Staff, as a pure planning and command agency, of all unnecessary burdens in the field of supervision. The inevitable result, however, was that the press of events gradually led to total neglect of the training program by the General Staff, until it was suddenly recalled to its attention by complaints concerning it; by that time, of course, it was too late to do any good. Only under conditions such as these could it happen that the highly important pilot training schools could be mercilessly plundered year after year, in one emergency after another, to set up new air transport units or to restore the strength of existing ones, that the training program was treated

like a step-child when it came to allotting the most modern aircraft models as school aircraft, and - to name one very decisive instance of neglect - that the allotment of aviation gasoline was consistently inadequate. The perfectly valid objection may be made that the Chief of the General Staff could not very well allot supplies in excess of what he actually had, but we should remember this: if the General Staff had directed the training program during the war instead of merely administering it, then it certainly would have been able - in its own best interests - to find ways and means to make the training program as strong as possible. Was it not Jeschonnek who, in January 1939[223], had pleaded for unqualified acceptance of Hitler's demand for a fivefold increase of Luftwaffe strength in order to meet the British spurt in armament effort? Such an increase would have been possible, however, only if it were based on an immediate expansion of the foundation of the training program. This could not have taken effect during 1939, but the results would have been tangibly apparent by the summer of 1940, at the time the Luftwaffe was faced with the necessity of bringing the active units up to full operational strength just prior to and during the air war against England.

This course was not followed, however. Instead, horizontal armament was given preference over armament in depth; the result was a top-heavy structure erected on a far too narrow foundation.

In connection with what has already been described above, it is relevant to mention that Branch III of the General Staff (Tactical Training) was disbanded on 2 October 1939, right after the war began. Any directives dealing with tactical instruction and going beyond the purview of any one of the individual Luftwaffe branches (in which case, of course, they were handled by the Luftwaffe Inspectorate concerned)

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223 - See Chapter IV, Section 2, 1).

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could not very well allot supplies in excess of what he actually had, but we should remember this: if the General Staff had *directed* the training program during the war instead of merely *administering* it, then it certainly would have been able - in its own best interests - to find ways and means to make the training program as strong as possible. Was it not Jeschonnek who, in January 1939[283], had pleaded for unqualified acceptance of Hitler's demand for a fivefold increase of Luftwaffe strength in order to meet the British spurt in armament effort? Such an increase would have been possible, however, only if it were based on an immediate expansion of the foundation of the training program. This could not have taken effect during 1939, but the results would have been tangibly apparent by the summer of 1940, at the time the Luftwaffe was faced with the necessity of bringing the active units up to full operational strength just prior to and during the air war against England.

This course was not followed, however. Instead, horizontal armament was given preference over armament in depth; the result was a top-heavy structure erected on a far too narrow foundation.

In connection with what has already been described above, it is relevant to mention that Branch III of the General Staff (Tactical Training) was disbanded on 2 October 1939, right after the war began. Any directives dealing with tactical instruction and going beyond the purview of any one of the individual Luftwaffe branches (in which case, of course, they were handled by the Luftwaffe Inspectorate concerned)

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283 - See Chapter IV, Section 2, 14.

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were issued by the newly created Group II of Branch I (Operations)[224]. Usually, however, it was merely a matter of passing on the tactical experience gleaned during Luftwaffe operations. The reasoning behind the abolishment of Branch III was probably based on the idea that the employment of the troops would be far more important in case of war than their training. This thinking might well be justified for a short war, but for a war such as Germany was called upon to fight it represented a grave mistake. With Branch III the Luftwaffe General Staff lost what little influence it still had over the training program. Even more serious, however, was the fact that the General Staff cut itself off completely from any future contact with the entire field of training.

Not until 2 October 1944, when it was already too late to do any good, was Branch III recalled into existence, representing a return to conditions as they had been before the war[225]. It is interesting to note that it was General Kreipe, as acting Chief of the General Staff (General Korten's successor), who ordered the restoration of Branch III. General Kreipe had served for many years as Chief of Staff for the Chief of Training and later General of Pilot Training. General Kreipe's order placed the responsibility for training once more on that agency which was responsible for the over-all direction of the Luftwaffe. Unfortunately, the problem of the organization of a top-level command structure for the training program itself was never satisfactorily solved (this has already been discussed elsewhere in the present study[226]). In view of the significance of training as a basis

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225 - General der Flieger a.D. Deichmann, op.cit.

225 - See Chapter II, Section 5.

226 - See Chapter IV, Section 2, 5.

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for the entire future development of the Luftwaffe, the training program should have been placed on an equal footing with the air fleets, ideally from the very beginning but certainly during the war at the very least, so that it might have been in a better position to defend itself firmly against the inroads on its resources which the front units all too often considered necessary and justified. The commander in chief of a training fleet, for example, would certainly have had sufficient authority to maintain control of the training program and its resources. In addition, his rank would certainly have been useful in lending weight to the program's justified requests to top-level command. All in all, such a personage would have been tremendously useful to the program.[227]

Section 2. Personnel and Materiel Requirements

The degree of effectiveness achieved by any training program depends upon the quality and quantity of the means expended as well as on the participation of qualified personnel. Only when there are sufficient instructors available who are capable of meeting the necessary requirements in terms of pedagogical suitability and professional ability, can one expect that the difficult but rewarding task of training will be approached with the requisite enthusiasm. The training mission, by its very nature, makes heavy demands on instructional personnel, and if the latter are continually overburdened, loss of interest and enthusiasm is bound to result.

In the Luftwaffe training program during the war, there was another factor which contributed much to this loss of interest: instructional personnel were kept on the job for too long

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227 - In this connection, it is only fair to point out that the solution discussed here would have required a more complicated and expensive administrative apparatus.

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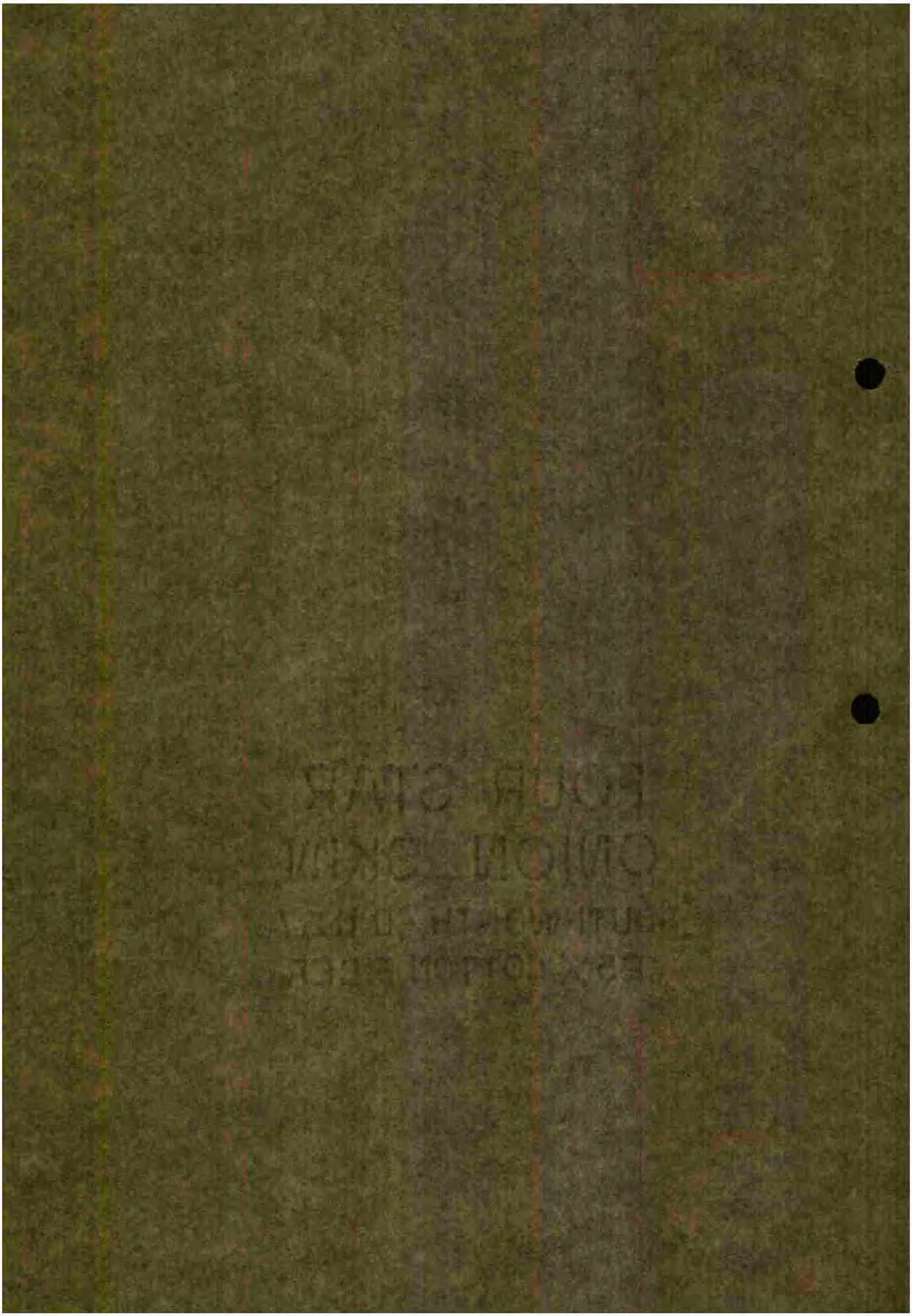
at a time. Every real soldier, of course, was eager for assignment to the front, where he would have a chance to show what he could do, and where the chances of promotion were considerably greater than in the training program. Just as instructional personnel were released for temporary duty at the front for periods of specified length, personnel released by the active units for instructional duty at the schools should have been on a predetermined schedule, so that they knew exactly when they would be able to get back to the front. This would have had two advantages: 1) knowing that their assignment was definitely limited, the instructors from the active units would have approached their task with greater enthusiasm, and 2) there would have been no danger of their losing touch with the newest tactical developments at the front and being forced to teach already obsolete principles of employment. In reality, misdirected egotism on the part of the training installations all too often kept instruction personnel away from the front for too long at a time.

This particular question is very closely connected with the problem of the role of a hypothetical commander in chief of training within the framework of the over-all Wehrmacht branch. The weight of authority necessarily accorded such a commander would be bound to have an influence all down the line. It would never enter anyone's mind to think of the training program as a second-class activity under such circumstances; no one assigned to it would have had the feeling that he was being utilized in a subordinate field of endeavor. Achievement of a reputation as a successful instructor should be equated with achievement in any other capacity at the front; in no case should assignment as an instructor in the training program be permitted to bring with it disadvantages of any kind. During World War II, however, this attitude never gained currency in the Luftwaffe. Nor was any real attempt ever made to carry out a systematic program of personnel exchange between the front and the training program. As a result, the training program simply did not have enough qualified instructors at its disposal - to the detriment of the entire Luftwaffe.

The supply of the materiel needed for the practical accomplishment of training activity is a problem whose importance is at least equal to that of the instructor problem.



The training program did not demand a surplus of materiel, but it did need to be sure of the availability of a certain minimum supply. And unfortunately, this minimum was all too often lacking. One possible solution was improvisation, and it was utilized frequently and ubiquitiously, but it was hardly wise to permit it to become the rule rather than the exception. Flight hours which had to be cancelled because of a lack of gasoline, for example, simply could not be made up in the form of drill on a Link trainer and increased emphasis on theoretical instruction, no matter how excellent the latter might be. Similarly, if the young pilot was to be capable of handling a Ju-88 or Me-109 at the front without being hampered by lack of confidence and inadequate technological ability he simply had to be given ample opportunity to fly it during his training period. By the same token, an observer - no matter how well-founded his theoretical knowledge might be - could not be counted fully trained unless he had had sufficient flight experience, including a number of cross-country flights under difficult conditions. The observer's training in bombardment techniques also frequently left much to be desired, for target approach flights in an FW-58 (still used in many courses) could not possibly replace an actual approach flight in a real front-type bomber; on the contrary, they could only succeed in conveying a completely false impression of the real thing. As for the airborne radio operator it is certain that he learned a great deal more during the course of a single navigation or instrument flight than during countless hours in the classroom.

At the time they were released from the training program for assignment to the active units, not a single category of flying personnel, including the aerial gunners, had had the flight practice necessary to assure them adequate mastery over the equipment they were expected to operate. In the majority of cases, however, the training program cannot be made responsible for this deficiency - it simply did not have the necessary equipment available. The relation between the constant inadequacy of materiel supplies and the constantly increasing personnel

demands of the active units led to the constant necessity of making unsatisfactory compromises. A minimum in materiel was expected to produce a maximum in effectiveness; both theoretical and practical training were dangerously jeopardized by the need for compromise.

The inevitable consequence, of course, was a steady rise in the rate of materiel and personnel loss to a level which could no longer be compensated. The loss in human life was especially deplorable in view of the fact that it was one of the main objectives of the training program to preserve its personnel by giving it adequate training. Each instructor should have been imbued with the determination to give his students the very best training of which he was capable in order to help them achieve perfect mastery over the equipment they would later be required to operate. From this standpoint, the training mission was charged with a high moral obligation. One wonders whether Germany's top-level military leaders were fully aware of this, whether they really exhausted every possibility in trying to preserve the training program.

Section 3. The Course of Training

If we accept the premise that the most direct and simplest method is usually also the best one, then we must admit that the training program succeeded in finding the best method during the course of the war. In illustration of this statement, let us examine the field of pilot training, the most important of the training categories.

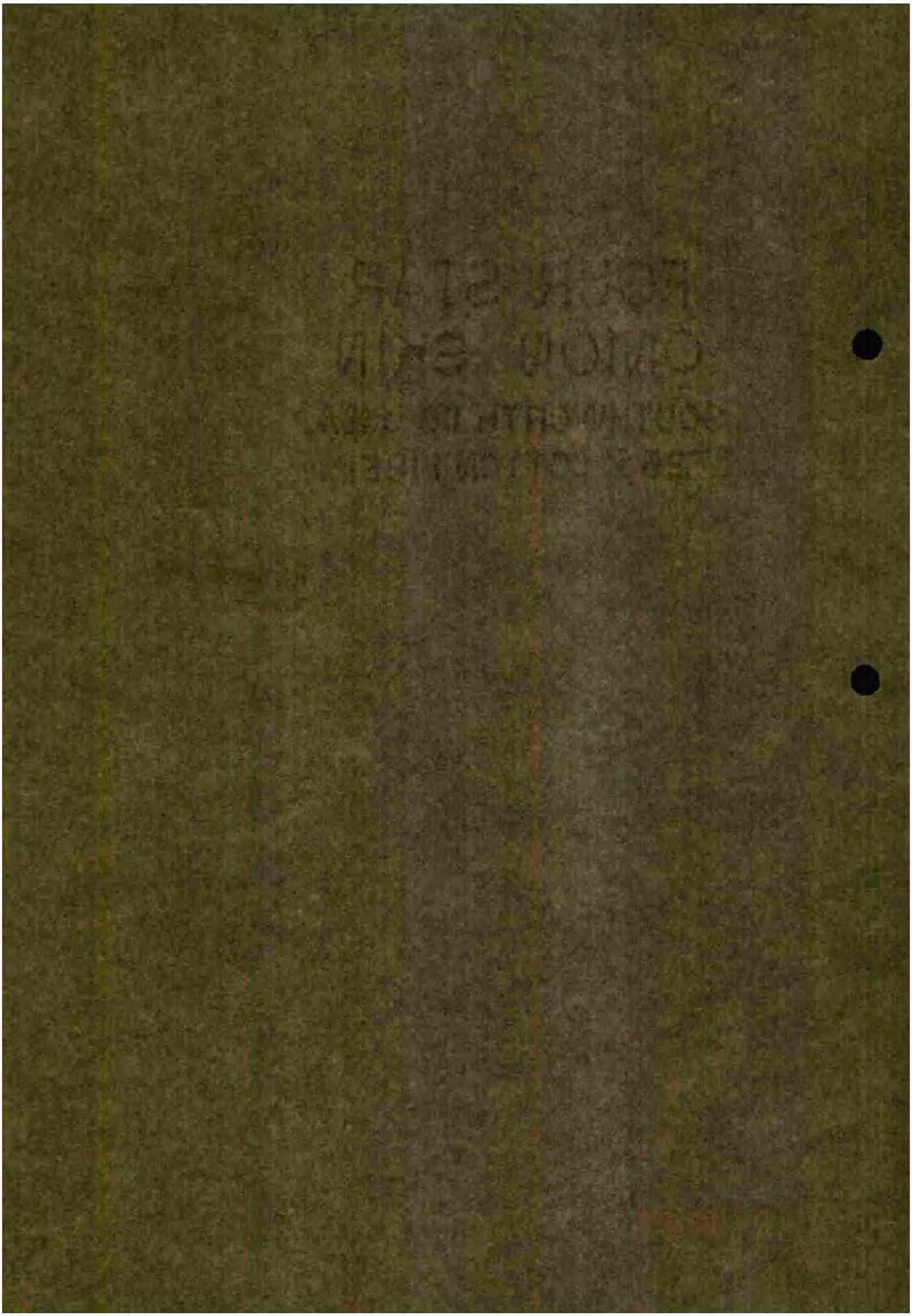
From the beginning of the war until 1943, a trainee working towards the Luftwaffe Advanced Pilot's License started his training at an A/B school, progressed to the C school, instrument flight school, and finally was assigned to the special branch school involved (bomber, reconnaissance, twin-engine fighter, night fighter). This meant that the student had to complete four separate training stations within the training program alone, involving three transfers and the need for becoming accustomed to a new set of instructors at each station. Once the student had completed

all four stations, he was assigned to the personnel replacement section of one of the front units. Training for the Luftwaffe Pilot's License (required of pilots destined for the single-engine fighter, close-support, dive-bomber, and close-range reconnaissance units) was somewhat less complicated in its organization. The student went from the A/B school directly to the specialized branch school, and was assigned from the latter to the personnel replacement group of the front wing.

Even after the reorganization of training which took place in 1943, the course of training for the pilots indicated above remained substantially the same, except that the former A/B school was replaced by the newly-established A school. As far as the multi-engine pilot trainees were concerned, however, the reorganization did much to tighten up their previously complicated training course. After successful completion of the A school, the trainee was sent to the newly-established B school, where he could complete training for the Advanced Pilot's License as well as for the Instrument Flight Certificate without having to transfer elsewhere. This new arrangement eliminated one station on the way to assignment to the replacement unit. For trainees earmarked for assignment to the Ju-88 or He-111 bomber units, the school training period was shortened even more by the omission of training at a bomber school. Instead, the pilot trainees came directly from the B school to the personnel replacement group, where they were assigned to crews together with the observers, airborne radio personnel, and aerial gunners[228]. Their subsequent crew training was a direct responsibility of the General of the Bomber Forces.

It cannot be denied that the shortening and tightening up of the course of training represented a step forward. It might have had a more salutary effect, however, if it had not been motivated primarily by the desire to save time and wear and tear on equipment. It is true, of course, that it simplified the course of training and that it permitted greater emphasis on instrument flight instruction.

228 - In this connection, the reader is referred to the detailed and instructive Appendices 42 and 44, which present a complete picture of the course and length of the training given to flying personnel with Luftwaffe and Navy air units.



the importance of which was still steadily increasing. But even such a well-planned reorganization as this could do nothing to correct the basic trouble of the training program - the lack of sufficient flight practice. There was not a single category of flying personnel which could be said to have completed a really adequate number of flight hours prior to assignment to the replacement units. The latter, as the last and - in view of the deficiencies of the training program - absolutely necessary training station before the front, unfortunately had too little equipment and too little time at their disposal to give the young crews enough practice to keep them from encountering technological difficulties in combat later on.

We have already discussed the establishment of the fourth groups, or personnel replacement groups, as the last training installation prior to transfer to the front[229]. Originally, they were intended only to introduce the young crews to the specialized missions carried out by the wing to which they were assigned. As the war progressed, however, they were forced to spend more and more of their time dealing with subjects which had been neglected during previous training and filling in the gaps which the schools had been forced to leave because of the pressure of time or the lack of instructors, aircraft, or gasoline.

In view of the way in which the training program had developed, the replacement groups probably represented the best possible solution of the problem of final training. As the final training station, they shared the responsibility for instructing new personnel and at the same time took over the most difficult aspect of instruction. For after all, each inadequately trained crew was bound to decrease the over-all striking power of the active units at the front, either because it was lost prematurely or because it could not be employed with any prospect of success.

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229 - See Chapter IV, Section 2,3.

Section 4. Results of the Training Program (Number of Students and Standard of Training.

In a report from the General of Pilot Training covering the year 1943, the following statement appears[230]: "In general, the goals established for the training program were met. The number of students released resulted in a slight increase of the personnel reserve over the materiel reserve; the discrepancy, however, is not so great as to be considered exaggerated."

Unfortunately, "the goals established for the training program" were achieved in terms of numbers only; if quantity was to be accepted as the criterion of success, then the statement of the General of Pilot Training was perfectly true. But what about the quality of training of the crews released for further assignment? Unless these crews were at least equal to their enemy counterparts in terms of quality of training, there was little chance of their being able to hold their own in combat.

In this connection, the following data are relevant: according to a summary prepared on the basis of reliable sources, the German Luftwaffe lost 21,288 aircraft during the course of the war due to reasons other than enemy action[231]; of this total, only 11,411 were damaged so slightly that repair was possible.

From this summary we have selected the month of February 1944 for closer examination. It is of particular interest in that it provides the necessary commentary on the statment of the General of Pilot Training given above and because it belongs to approximately the same period as his statement. During the month of February, then, the German Luftwaffe lost a total of 1,791 aircraft

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230 - Report from the General of Pilot Training, No. 110/44, Classified, No. 1/44, Operations Branch, dated 27 January 1944.

231 - "Verluste und Beschaedigungen an Flugzeugen auf deutscher Seite ohne Feindeinwirkung" (Destruction and Damage of Luftwaffe Aircraft for Reasons Other than Enemy Action), a summary prepared on the basis of official documents. Karlsruhe Document Collection.

(i.e. due to enemy action and due to other reasons). According to a second summary, however, more than 70% of this total - i.e. 1,319 aircraft - represented indirect losses, in other words losses caused by reasons other than enemy action[232].

An investigation of the factors responsible for such a frighteningly high rate of loss revealed the following main causes:

39,4% operational errors during take-off and landing,

7,4% other operational errors,

9,7% accidents occurring during taxiing operations,

6,1% collisions on the ground,

9,9% accidents due to straying into bad-weather areas despite previous weather briefing, and

6,8% accidents due to running out of fuel and losing orientation.

The reasons given above were the most common.

We must also bear in mind that February, because of normally inclement weather, was a relatively quiet month, not only for the training program but also as regarded the employment of air units at the front. Beginning in March 1944, the rate of loss continued to climb throughout the entire year.

There is no doubt that a large percentage of these losses could have been avoided if it had been possible to improve the training program. The reasons why improvement was not feasible have already been discussed here. We must bear in mind, though, that inadequate training was responsible not only for numerous losses occurring during flights which were totally unaffected by enemy action, but also for a good part of the losses

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232 - See Appendix 46, which presents a picture of the indirect losses suffered by the Luftwaffe, based on a report by Branch VI, Luftwaffe High Command. Karlsruhe Document Collection.

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sustained during actions carried out against the enemy[233].

Germany's military leaders, who not only failed to do their best to aid the training program but actually contributed to a deliberate diminution of its potential, proved to be extraordinarily short-sighted. For it was not only enemy action which led to the sharp reduction of striking power of the units at the front; inadequate training played an equally important role.

Section 5. The Operational Strength of the Units at the Front

The monthly report issued by the Quartermaster General of the Luftwaffe under date of 23 February 1942[234] contains the following statement pertaining to the personnel situation: "Flying Personnel - With reference to the aircraft situation, it can be stated that there is no lack of flying personnel; in reference to the authorized and actual strength figures, however, there is a very definite lack of flying personnel in the bomber, naval air,

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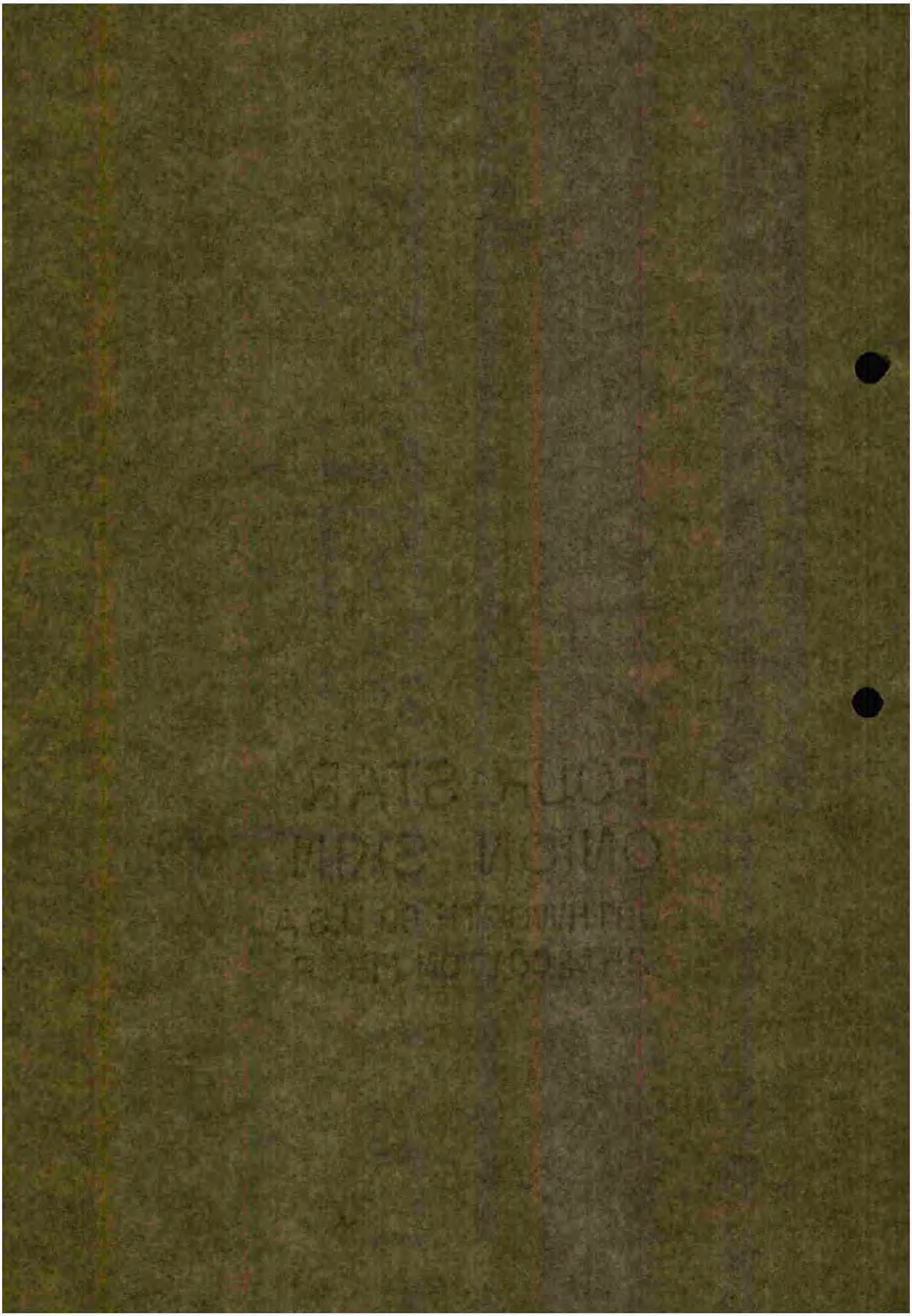
233 - In this connection, the French fighter pilot Pierre Clostermann, in his book "Die grosse Arena" (The Big Arena), Bern, 1951, describes the following typical situation on the Allied side. During the winter of 1944/45, the 122d Wing of the Royal Air Force was stationed at Volkel in Holland. It was equipped with the new "Tempest" single-engine fighter, which was the Allies' most effective weapon against the German Luftwaffe's Me-262. Since the 122d Wing was bearing the brunt of the operations against the "Me-262 plague", its losses increased correspondingly. During the four-week period from 15 February through 15 March 1945, for example, the group led by Clostermann lost a total of 31 pilots (compared with his normal front strength of 24 pilots). A considerable percentage of these losses could be traced back to too hasty training. On page 258 of Clostermann's book appears the following: "During the forenoon of 20 March, the "Anson" brought us four non-commissioned pilot officers and one non-commissioned adjutant officer. The last of the five newcomers was killed in action no later than 23 March. The older pilots, utterly exhausted by their three missions per day, had more than enough to do to save their own skins, they had no time to bother about the new personnel. Those poor kids, fresh from a conversion course, had had perhaps three, at most four, flight hours in a Tempest. They still had difficulty in operating their aircraft and, because they were not sufficiently familiar with it, were still afraid of it; it was no wonder that they were easy game for the German antiaircraft artillery and for the Me-109's." Clostermann goes on to say that the Wing had no choice but to accept the disproportionately high rate of loss as a necessary evil, for it had been ordered to hold out until the Allies had crossed the Rhine.

234 - Report from the Office of the Commander in Chief, Luftwaffe, Quartermaster General, Branch VI, No. 1402/42, Classified, Operations Branch, dated 23 February 1942. Karlsruhe Document Collection.



night fighter, and twin-engine fighter units. Due to the inadequacy of aircraft and gasoline supplies allotted to the office of the Chief of Training, the training program is far behind in the release of crews with the Luftwaffe Advanced Pilot's License and the Instrument Flight Certificate."

The above tends to substantiate the statement made by the General of Pilot Training, namely that there had been a slight increase in personnel reserves over equipment reserves.

On the whole, his contention is also substantiated by the figures pertaining to the front strength of the single-engine fighter, twin-engine fighter, night fighter, bomber, dive-bomber, close-support, and long-range and close-range reconnaissance units[235]. The statistics in question indicate the authorized strength of each unit, as well as the actual strength in crews and in aircraft. The ratio of crew strength to aircraft strength is especially interesting in that it shows the relationship between personnel and materiel replacement. Almost every unit had more crews than aircraft, but it was only in very rare instances that the authorized strength was actually attained.

Let us examine the situation of the single-engine fighter and bomber units somewhat more closely; after all, these two were the most important of the various branches.

The single-engine fighter forces[236] entered the war with too few crews, the result of the fact that the fighter schools had been closed since the occupation of the Rhineland and not reopened until 1938 (Werneuchen) and 1939 (reestablishment of Schleissheim). After the conclusion of the campaign in the West, the number of crews exceeded the number of aircraft for the first time in

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235 -, See Appendix 41, which shows the ratio between crews and aircraft in the various types of flying units.

236 - See Appendix 41.

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the single-engine fighter units and the crews continued to predominate numerically from that point on. After August 1941, the single-engine fighter units had even more crews than was specified by authorized strength figures - until the spring of 1944, when a flurry of new activations raised the authorized strength of the fighter forces far out of proportion to the actual strength of both crews and aircraft. In 1943 the discrepancy between actual strength in terms of crews and actual strength in terms of aircraft continued to increase rapidly until, as of 1 January 1944, the single-engine fighter units had about 700 more crews than aircraft.

The bomber units, too, were understrengthed in crews at the time the war began[237], which is all the more surprising when we consider the importance which Germany's leaders attached to offensive action. In July 1940, the actual strength in bomber crews surpassed the actual strength in bomber aircraft for the first time, and the former consistently exceeded the latter from this point on until the end of the war - with two remarkable exceptions. The first of these was the spring of 1941 (the final phase of the Battle of Britain) and the second the early summer months of 1942 (occasioned by a drop in training activity due to insufficient allotments of aircraft and gasoline to the office of the Chief of Training). The actual strength in terms of aircraft reached its lowest points as of 1 January 1943 (as a result of the operations at Stalingrad) and as of 30 September 1943 (after the desperate battles on the Eastern front and in the Mediterranean theater of operations); at these points, it was actually lower than it had been at the beginning of the war. It is significant to note, however, that on 31 March 1943 - right between the two lowest points - the bomber units had more aircraft than crews. This was due largely to the withdrawal of instructional crews and training aircraft from the training program for employment in the Stalingrad operations; at the same time, it shows how sensitively the training program reacted to such inroads.

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237 - See Appendix 41 (Bomber Forces).

In the case of the single-engine fighter units, as we have seen, actual crew strength had reached authorized strength by August 1941 and remained at the proper level until February 1944. In the bomber units (the instrument of offensive air warfare), on the other hand, there was a lack of 300 crews as early as 1 January 1941, and this figure was to increase to approximately 750 crews as of 1 January 1943, at the climax of the Stalingrad operation. One reason for this, of course, was the fact that bomber training required more time than fighter training. The year 1944 brought with it a sharp decrease in bomber strength as a result of the disbandment of so many of the units. The fact that actual crew strength exceeded authorized crew strength on 30 September 1944 is merely a reflection of the concentration of all available crews in the few front units still in existence.

One may be tempted to conclude from the facts that most units never managed to attain their authorized strength but that there were usually more crews available than aircraft, that it was the materiel aspect of armament which failed in the end. That such a conclusion would not be valid is shown by the summary mentioned above in connection with the loss of aircraft because of factors other than enemy action[238]. It was perfectly possible for a crew to lose one, or even a number of aircraft and still be saved itself for future commitment, and this is a factor which certainly played an important role as time went on. It was one of the reasons why the operational readiness of the front units simply could not be increased beyond a certain point.

In addition, there was the fact that aircraft production was hopelessly inadequate during 1940 and 1941. Not only was no attempt made to exploit the potential of industry, but due to Udet's lack of systematic planning[239], it was practically allowed to stagnate. During 1940, a total of 6,527 aircraft (including all the main front models)

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238 - See Section 4 of the present Chapter.

239 - See Richard Suchenwirth, "Ernst Udet, Generalluftzeugmeister der deutschen Luftwaffe 1939-1941" (Ernst Udet, Chief of Supply and Procurement of the Luftwaffe, 1939-1941), a Karlsruhe study.

were produced; during 1941, 8,878. Nor is it possible to cite the lowering of the priority rating accorded Luftwaffe production as an excuse for these low figures, for Udet's successor, Milch, managed to produce 13,733 aircraft in 1942 and 21,946 in 1943 without having any higher priority rating[240].

In any case, since there were too few aircraft available during 1940 and 1941 to bring even the active units up to their authorized equipment strength, it was obvious that there were none left over for the training program, particularly after the summer of 1941, when it became clear that Germany was facing a war on three fronts. Thus, the training program was not in a position to assure its trainees of adequate practical instruction. The situation was made all the worse by the fact that not only the single-engine fighter and bomber forces, but almost all the other Luftwaffe branches as well, had been understrengthened in crews when they entered the war and were all understandably eager to come up to strength. Getting off to a poor start, the training program was never able to escape the pressure of time; all its activity was subject to the most stringent deadlines. Moreover, there was the constant inadequacy of the allotments of front-type aircraft, without which it was simply impossible to give the students the training they needed to cope with conditions at the front. During the period 1939 through 1941, Germany would have had more than enough time and, above all, full freedom from outside interference, to produce sufficient aircraft to equip the schools with what they required for a thoroughly well-based program of training[241].

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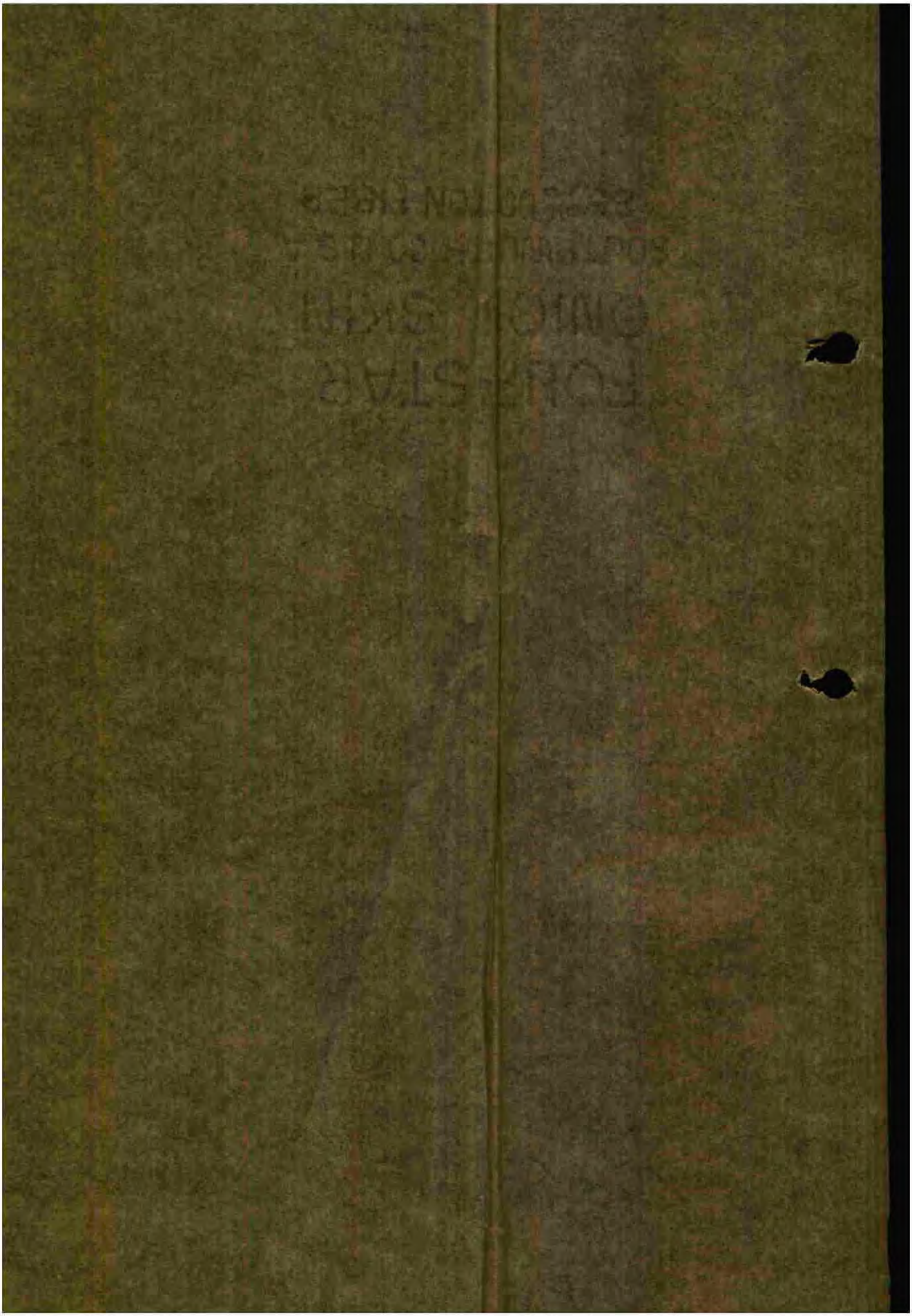
240 - Aircraft production figures for the period 1 September 1939 through 31 March 1945, based on documents of the Luftwaffe General Staff dated 8 July 1945, Karlsruhe Document Collection. According to these figures, Udet issued a total of 1,124 vitally important Ju-87 dive-bombers during 1940 and 1941. Milch, on the other hand, was able to deliver 1,200 in 1942 alone, and another 2,190 during 1943.

241 - Clostermann, op.cit., page [illegible]: "The Luftwaffe seemed to have no such thing as an average pilot. Luftwaffe fliers could be quite clearly divided into two categories: 1) the 'aces', making up from 15 to 20% of the total, who were really super to the average Allied pilot, and 2) the rest, who were nothing special - they had a great deal of courage, but

241 - (Cont'd) they were incaple of making the most of their superb aircraft. This difference in qualitwas due above all to the fact that, after the enormous losses suffered Germany during the Battle of Britain and the campaign in Russia, replament personnel had to be thrown into action before they were ready. The hasty, uneven training....."



In connection with Germany conduct of operations during World War II, there is a certain tendency to speak "a poor man's war". If one considers the unlimited resources available the three big powers after 1942, there is indeed some truth in the expression. But the fact remains that the German Luftwaffe failed to mobilize all its potential strength during the decisive early years between 1939 and 19, and it was due to this failure that the training program was given such poor start. It was a vicious circle, in which each factor was automaticly followed by the next - inadequate training led to high losses in aircraft; these losses resulted in a lack of aircraft at the front; and because of t need for aircraft at the front, there were none available for assignment tthe training program. There was little use in the training program's meeti its established goals in terms of numbers of students, so long as these sdents lacked the very thing which might have enabled the German air units tohold their own against the numerical superiority of the Allied air forces - the aining required to mold them into good-quality crews.