In connection with the third mission, above, it should be remembered that the Unit Commander School had originally been established with the intent to train the Ju-88 units in offensive tactics. As it turned out, the axiom that a dive-bomber attack inevitably resulted in a direct hit was proved to be false, partly because the dive itself proved to be an extremely complex aeronautical problem and partly because, in any dive, the hitting accuracy is bound to be strongly influenced by the altitude at which bombs are released and by wind conditions at the target area. The reflector sight used by the dive-bomber force was designed for low-altitude employment only. As a result there were a number of serious difficulties to be resolved which were beyond the powers of an average dive-bomber crew. Only very good pilots - and then only after a good deal of training - were capable of timing their dives so that a direct hit might result. Admittedly, a long and intensive period of training was necessary to teach the bomber crews to carry out horizontal bombardment successfully; but this was no less the case with the dive-bomber force. In an attempt to ameliorate the situation, the bomb sight E.2.A.2 \(^{126}\) was developed and introduced into the front units during the winter of 1941/42. Training in the use of this very valuable electrical-optical aiming device was carried out first in the unit commander courses at Foggia, later in the Unit Commander School at Turin. The purpose of these courses was to train the Ju-88 units, by way of their commanders, in diving and bombarding in unit formation as well as in the proper use of the E.2.A. 2 as an aiming device.

In 1942, the Unit Commander School was made a part of the Bombardment School, and as time went on training was

\(^{126}\) The initials stand for "Bomben-Ziel-Anlage Nr. 2" (Bomb Aiming Device No. 2).
The report conformed to the

standard for the

year of 1958.
extended to cover all bomber units (including the He-111 units) as well. For, as a result of the change in tactics dictated by the need to operate over front areas harboring nests of strong enemy antiaircraft defenses, the Ju-88 units, too, had to be trained in horizontal bombardment with the help of the Leute 7-D.

In addition to this tactical training, a great deal of emphasis was placed on instruction in the various kinds of bombs and fuses available for use, for selection of the appropriate type for each particular mission was often a determining factor in the final outcome. The problem was to choose the right kind of bomb and the proper fuse (delayed-action, immediate, etc.) for each type of target (dead or living targets, ships, fortifications, vehicle parks, factories, port installations, residential areas, etc.). All possible combinations were dealt with in detailed bomb and fuse drills, and the trainees were taught to select the proper, or most effective equipment. It was not a case of "smother the enemy with explosives", but rather of achieving the highest possible degree of success with the most rational means available. The mere number of bombs released or bombardment missions flown was far less important than the requirement that the bombs released actually hit their target. In view of Allied material superiority, this was the only way in which the German Luftwaffe could make its operations count.

127 - This specialized aspect of training had been demanded by the Commander in Chief, Luftwaffe, in the very beginning and thus made a responsibility of every unit. See the cable message from the Reicha Air Ministry, No. 5901/41, Classified, dated 24 February 1941. Karlsruhe Document Collection.
The text on the page is not legible due to the quality of the image.
As regards the fourth and last mission mentioned above, it should be recalled that the Luftwaffe Air Armament School, for the training of all armorer and equipment maintenance personnel, had been established at Halle at a relatively early date. The original mission of the personnel trained there was to provide the units (in peacetime as well as in wartime) with up-to-date equipment. Industry, however, in order to bring newly-developed aiming devices into use at the front as soon as possible, initiated the practice of setting up travelling staffs to convert the front units to new equipment without their having to be withdrawn temporarily from front duty. In the case of the Lufte 7-D, whose performance opened the way to previously unexplored possibilities in offensive tactics, the Bombardment School itself organized an instructional staff to take over the task of converting the front units (at less hectic points at the front) to the new device and, at the same time, of explaining the new tactics it made possible.\(^{128}\)

Whenever possible, it was considered desirable that conversion to new equipment be carried out at the School, since the School had a much larger selection of training aids at its disposal and conversion, coupled with general and theoretical refresher training, could be carried out more systematically.

**Experience Gained**

The Luftwaffe Bombardment School should have started with its training in bombardment techniques and the utilization of the various types of bombs and fuses during peacetime; only then could it have fulfilled its most important mission.\(^{128}\)

128 - An example is the conversion to the Lufte 7-D in the III Group, 4th Bomber Wing, in the spring of 1943 on the Crimea Peninsula. Despite the fact that conversion training was frequently interrupted by missions, the Group soon reported excellent results with the new equipment (see the War Diary of the III Group, 4th Bomber Group, Karlsruhe Document Collection).
to evaluate the hitting effectiveness of the bomber forces and to develop ways and means of improving it. An early start would also have served to meet the later requirement for a corps of instructors uniformly trained in their subject matter and in the methods of its dissemination. After all, it was a matter of seeing that the bombs, the chief weapon of the bomber forces, reached their intended destination.

And when the Bombardment School was finally established, in 1939, it was with insufficient personnel and equipment—a result of the prevailing lack of recognition of its importance and of the urgency of its mission. In reality, it should have been assigned a first-class instructional staff, up-to-date equipment, and a large airfield so equipped as to make it invulnerable to weather conditions and thus available for lengthy training periods (for training in high-altitude bombardment). Unfortunately, however, there were a number of policy-making agencies in which an understanding for the real importance of horizontal bombardment was sadly lacking 129.

In conclusion, it can be said that the work of the Bombardment School did have a beneficial influence on the training program as a whole in that it provided instructional personnel well-trained in bombardment techniques and in the use of the various types of bombs and fuses. Training in these subjects was carefully planned and coordinated and, as a result, the results achieved in the units grew progressively better.

The success of the instructional group, however, was possible only in the light of the work accomplished by the experimental group (theory of bombardment, design and development of bomb sights).

The School remained in existence until the end of the war. 130.

129 - According to Major Taubert, commander of the instructional group, General - oberst Udet, then Quartermaster General of the Luftwaffe, directed the following statement to him on the occasion of a conference at the Reichs...
129 - (cont'd) Air Ministry during the summer of 1941: "Don't tell me you're still worrying about that funny bomb sight for horizontal bombardment - the dive-bomber is the only way to hit the target!"

130 - See Appendix 30.
There is no need to point out the decisive importance of aerial photography in the conduct of aerial warfare. It was recognized by the German Luftwaffe from the very beginning. For this reason, the Aerial Photography School at Hildesheim was one of the first to be established, on 1 October 1935.

Its missions were the following:

aa) Training of aerial photography personnel for the entire Luftwaffe as well as for those Army and Navy staffs which had need of such personnel;

bb) Training of German and foreign officers in aerial photography;

cc) Testing of photographic equipment, processing equipment, and processing methods; experimental work in connection with equipment, photochemical and technical processes;

dd) Supervision of camouflage activities; and

ee) Employment in enemy-occupied territory to take aerial photographs needed for terrain evaluation and artillery surveying.

The diversity of the missions facing aerial photography trainees required a diversified program of training from the very beginning. Students had to become familiar with a large number of different fields: photography, interpretation of aerial photographs, handling and storage of required equipment and materials.

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131 - The data contained in this subsection are based on a report by Generalmajor a.D. Eberhard Fischer, "Fliegerbildschule Hildesheim" (Aerial Photography School at Hildesheim). Karlsruhe Document Collection.
As regards the first of the above missions, immediately after completion of a brief introduction to photography, the students began their practical training, for this was the best way for them to learn from the mistakes they were bound to make in the beginning. Their training included work in the dark-room. The handling of films taken under risk of danger and death and frequently irreplaceable taught them the need for painstaking care in processing such material.

Interpretation and calibration were the next steps. Systematic mastery of the methods involved was necessary before the trainees could progress to evaluation in terms of strategical or tactical points of view. Effective evaluation, a science which became more and more specialized as the war continued, required not only aerial photographs of the target but photographs taken on the ground as well (in the case of industrial plants and port installations, for example). The calibration of aerial photographs required the most accurate and painstaking work; a mistake here could have devastating effects.

In addition to the personnel intimately concerned with aerial photography, the School was responsible for training the personnel whose job it was to care for the very valuable equipment and to repair minor defects and damages. Maintenance personnel of this category were also in charge of installing the photographic equipment with all its supplementary instruments and complicated electrical wiring. Perfect mastery in the installation of such equipment in front-type aircraft was unfortunately never attained, for the simple reason that the School, despite repeated requests, was never assigned a front-type aircraft for training purposes. It had to be satisfied with the sporadic loan of such aircraft for a few
days at a time.

In connection with the second mission, above, foreign officer personnel were trained in short-term courses designed to familiarize them with German concepts governing the employment of aerial photography as a tool of aerial reconnaissance. At the same time, they were instructed in the use of photographic and developing equipment.

The courses for members of the Army and Navy served the most varied purposes. In some, high-ranking troop commanders were introduced to the potential usefulness of aerial photographs in their own operations; in others, special lectures were held to demonstrate the role of aerial photographs in the planning of artillery actions.

As for the third mission, it should be pointed out that the cooperation between the School and German industry was very close and extremely fruitful. Experience, inspirations, and special wishes were exchanged and acted upon directly. This situation also served to inspire the School's instructional personnel to embark on research projects of their own and created an atmosphere of lively activity which did much to keep the school alert and up to date.

The job of supervising the camouflage of German industrial installations brought the School into close contact with the various plants, and inspection visits to them were made an effective part of the training program.

The last of the missions listed above had its origin in a request from the Reichs Air Ministry (in 1941) to set up an "instructional group for long-range aerial photography" (Grossflaechenbildflug). In response, the School established the Aerial Photography Squadron (Luftbildstaffel). With the help of especially-developed equipment and processing methods, the Squadron flew a number of missions for Branch 7 of the Luftwaffe General Staff, compiling photomaps of southern Greece, the course of the Danube
This is a page from a document containing text that is not legible due to the quality of the image. It appears to be a page from a report or a letter, but the content cannot be accurately transcribed.
at the Iron Gate, Tripolitania and Cyrenaica (for Feldmarschall Rommel's offensive), certain areas in the East, in Finland, and along the Vistula River.

The Courses and Their Objectives

Courses for Staff Officers (Offizierskurs)

The ultimate goals of these courses depended in part on the participants, who might be General Staff officers, on the one hand, or officers with purely technological interests, on the other hand. The School required that a photography officer, in addition to mastering the professional aspects of his job, be sufficiently schooled in tactics to be able to grasp the thinking of his superior headquarters, for only then could he be relied upon to make the best possible use of the means at his disposal. Unfortunately, no effort was made to enforce this requirement until 1943, after a map exercise held at the School had clearly demonstrated the lack of tactical understanding on the part of some of the officers who participated.

Courses for Military Personnel

The objective of these courses was to produce photography personnel capable of working quickly and accurately in accordance with specific instructions. Training in new developments and new professional requirements augmented the basic subject material as time went on, but there was no change in the original goal.

These courses were also made available to the Luftwaffe Women's Auxiliary (Luftwaffenhelferinnen), whose members proved to be invaluable in relieving male personnel on the home front for assignment elsewhere.
Courses for Non-Commissioned Officers

These courses were devoted to highly specialized training, which—in most cases—had already been begun in the units from which the participants came. Thus the emphasis here was placed on developing the student’s own individual talents; the final objective was production of an non-commissioned expert capable of leading his own particular group, whatever its specialty might be (photography, interpretation, or calibration).

Courses for Technical Sergeants

The purpose of these courses was to train especially qualified non-commissioned officer personnel to assist and, if necessary, take over the work of the officer photographers. Regardless of the special aspects in which they had been trained previously, they were given comprehensive instruction in all other aspects of the overall job.

Theoretically, both this course and the one for non-commissioned officer personnel were governed by a decree from the Reichs Air Ministry to the effect that promotion to the rank normally associated with the task to be performed was permitted only after successful completion of the training courses. During the war, unfortunately, this ruling was all too often ignored.

Selection of Trainees.

The students were recruited from all branches of the Luftwaffe and, during peacetime, even from the ranks of the Army and Navy. Volunteers were given preference.

Photographer and photogrammetric candidates were required to have completed comprehensive preliminary training. Photographic experts, dark-room specialists, and qualified amateur photographers were given preference for training as photographers; surveyors, technicians, mathematicians, and draftsmen were selected for training in the evaluation and interpretation of aerial photographs.

Equipment maintenance personnel were recruited from the technical professions or from the skilled trades, particularly from among precision mechanics, opticians,
and metal-workers.

Aerial photography training was by no means popular among officer personnel, since – for younger active officers especially – promotional opportunities were extremely restricted. Thus, most of them were eager to get out of the field as soon as they could.

Length of Training and Number of Enlistees

Both of these factors were subject to constant change as a result of the exigencies of the military situation, since both were dependent upon the current personnel needs in the field. Another decisive factor was the size of the school and the adequacy of the available training facilities. Originally, a capacity of 200 trainees was planned; during the war this number was often doubled.

In general, the courses had the following duration:

- enlisted personnel – 6 months
- non-commissioned officer personnel – 4 months
- technical sergeant personnel – 3-4 months
- officer personnel – 4 months.

In each case, the duration given above represented the absolute minimum necessary if well-qualified personnel was to be placed at the disposal of the units at the front.

Course of Training and Subject-Matter Covered

There is little point in our presenting a detailed description of the training schedule followed for each individual course¹³², only the so-called photography shop practice need be examined in greater detail, inasmuch as it represented the final phase of training.

¹³² – See the appendices included in the study by Generalmajor Fischer (op. cit.).
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These shop sessions were designed to put/practice (under simulated front conditions) the knowledge acquired in the classroom and laboratories. Within the framework of a given tactical situation, a squadron photography station was set up in a suitable building in the vicinity of the school, or - as was often done - the participants were housed in tents, with motor vehicles, railway cars, and dark-room tents serving as shops for the technical aspects of the mission. The exercise began with the transport of equipment and materials in strict accordance with prepared loading and unloading schedules. The temporary station then had to be integrated into the local transport and communications networks. Films intended for combat reconnaissance purposes were developed and interpreted immediately in a photo laboratory truck located near the drop point utilized by reconnaissance aircraft; those intended for long-range reconnaissance projects were processed at the local photography station.

All the tasks making up the exercise were assigned to student personnel; not even the officers participating in the officer courses were spared. The exercises, running day and night, presented a fairly accurate picture of the difficulties trainees could expect to encounter in the field and thus were of great pedagogical value. It was extremely important, of course, that the school be supplied with all applicable regulations, with instructional materials, and with equipment, and on the whole this aspect of the program was adequately carried out. Ideally, of course, the students ought to have become familiar with all the various types of equipment which they might later be called upon to operate, and in this respect the school was sometimes unable to fulfill its responsibility due to the fact that it simply did not have the most up-to-date models.

The Lesson of Experience

Luftwaffe leaders were rather unfortunate in their choice of a location for the Aerial Photography School in that Hildesheim, lying at the edge of the north
German plain right at the foot of the mountains rising to the south, was subject
to heavy fogs, especially in spring and fall, and this often interfered with the
flight duty incidental to training. The officers in the photographers' course
were at a particular disadvantage in this respect.

We are justified in assuming that the training program, governed by the
guidelines set up in the beginning, was effective, for the performance of aerial
photography personnel earned consistent praise throughout the war from both the
troops and their command staffs.

There were certain delays in keeping the school supplied with material for
interpretation and evaluation, since the Aerial Photography Branch (Abteilung
Luftbild) of the Reichs Air Ministry refused to permit the school to receive
such material directly from the front units but required its distribution
through the Central Aerial Photography Office (Hauptbildstelle) of the Ministry.
Consequently, reconnaissance results did not arrive at the school until weeks,
and sometimes months, after the observations had been made. This was hardly
in the best interests of the training program.

It would have been extremely helpful if the school had had a qualified officer
at its disposal to instruct its officer trainees in tactics, but unfortunately
none could be spared once the war got under way.

**Aircraft Maintenance Unit (Luftbild)**

In order to carry out its training program, the school had at its disposal
a number of single-engine and multi-engine aircraft, among them the Ju-52, which
were used as a flying classroom. Although these aircraft were adequate in number
they left much to be desired in respect to type, for they included only a very
few of the most modern models. As a result, the school always lagged behind
the actual conditions at the front.
The school had its own aircraft maintenance shop, where any minor repairs could be carried out by school personnel. This obviated the necessity of disrupting established flight schedules to permit the airfield to be utilized by outside repair and maintenance units.

The End of the Aerial Photography School

Enemy bombardment, growing steadily more intensive after 1943, was a continuing source of interruption for the training activity at Hildesheim.

In an attempt to improve the situation, the photographers' courses were transferred to Goslar in 1944\(^{133}\), while all available vehicles, such as photo laboratory trucks and motorized columns, were mobilized at Hildesheim to permit continued instruction. In this way, training activity was carried on—though somewhat less than adequately at times—until Hildesheim fell into American hands.

\[^{133}\] Training in the Luftwaffe Navigation School (Navigationsschule der Luftwaffe)\(^{134}\).

As we have already stated, the Luftwaffe Bombardment School, for the teaching of bombardment techniques and the operation of the various kinds of bombs and fuses, was not established until much too late, in 1939. It has also been suggested that the reason for this was the preponderance of Luftwaffe leaders who considered flying to be the first and most important concern of an air force; in their opinion, the problem was to reach the target—hitting it would come automatically.

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\(^{133}\) See Appendix 30, showing the organization of the staff of the General of Pilot Training as of 8 February 1945.

\(^{134}\) In view of the lack of documentary material pertaining to this aspect of training, the subject can be dealt with here only superficially. Most of the data are based on the personal experience of the author.
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This stress on flying naturally led to early recognition of the important role played by air navigation. The Luftwaffe Navigation School was established as early as 1 April 1936 at Anklam.

At this school, qualified commissioned and non-commissioned officers who had already completed training at one of the standard observer schools were given specialised advanced instruction in navigation to fit them for assignment as instructors and assistant instructors in that field.

For the most part, the instructional staff was made up of experienced navigator personnel, including a number of Navy navigators. All the latter had their captain's commission and were thoroughly familiar with the principles of terrestrial navigation, compound navigation, and radio navigation.

The Navigation School trained instructors and assistant instructors for all the Luftwaffe schools which had anything to do with flight duty, viz:

Flight training schools of the A/B, C, and instrument flight categories;
Bomber schools;
Radio Schools;
Aerial gunnery schools (after 1939);
Aerial reconnaissance schools;
Fighter schools;
Flight instructor's school (after 1939);
Air academies;
etc.

At the same time a great deal of attention was paid to continued navigational training in the active units, particularly in the bomber units. Each group appointed a navigation officer, whose task it was to supervise the navigational training given in the squadrons, to see that the crews were kept up to date, and to make sure that his group was trained in the most modern developments in the field of navigation.
It is interesting to note that navigational training, from the very beginning, was carried out in accordance with uniform guidelines.

On 1 April 1939, the Navigation School was moved to Strausberg to make room for the new Bomber School at Anklam.

As the war progressed, the Navigation School received repeated requests for an increase in its program of instructor training. At the same time, new developments in the field and occasional shifts in training emphasis served to intensify the demands made upon it.

For missions ranging more than 620 miles, radio navigation was no longer adequate since the effective range of a radio beacon for direction-finding purposes was no more than 375 miles. Accordingly, perfect mastery of the techniques of compound navigation was emphasized as an indispensable requirement of the air navigator.

There was still another method of guiding an aircraft to its destination - celestial navigation, which had been advocated even before the beginning of the war and which was taught in theory at the Navigation School 135.

As the war progressed, the Navigation School was able to put this theoretical training into practice in long-range missions over the Atlantic (40th Bomber Group) and the Mediterranean. Unfortunately, however, the necessary observations and computations required so much space that it was practically impossible to find room for all the equipment in an aircraft designed for employment at the front, such as the Ju-88 for example 136.

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In addition to these training missions which the Navigation School undertook in behalf of the entire Luftwaffe, there were also special assignments, such as target location training for certain specified units. Examples of the latter were the training of the I Group, 66th Bomber Wing, for its part in the operations of the IX Air Corps against England and the training of the II Group, 4th Bomber Wing, for the role it was scheduled to play in the operations of the IV Air Corps on the middle sector of the Eastern Front in 1944.

In the last instance, the Group was assigned to Strassburg for special training from 29 December 1943 until 20 January 1944. All the crews were given thorough refresher training in compound and radio navigation, as well as a brief course in celestial navigation 137.

Target location training, however, which involved practice in the use of flares and other ground illumination devices, interfered too greatly with normal training activity at the School, and at the end of 1944 the entire target location training program was moved to the Bombardment School at Greifswald 138.

The Luftwaffe Navigation School fulfilled its training responsibilities in an exemplary manner and was highly successful in its program to standardize the training of all instructional personnel in the field. It remained in existence until the end of the war 139.

f. Training in the Luftwaffe Gunnery School (Schiessschule der Luftwaffe) 140

Like the Luftwaffe Bombardment School, the Luftwaffe Gunnery School was set up relatively

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137 - The reader is referred to "Das K.G.4 im Kriege" (The 4th Bomber Wing during the War), Karlsruhe Document Collection.
138 - See Subsection c, above.
139 - See Appendix 30, showing the organization of the staff of the General of Pilot Training as of 8 February 1945.
140 - In view of the lack of documentary material pertaining to this aspect of training, the subject can be dealt with here only superficially. Most of the data are based on the personal experience of the author.
late—too late in fact—, in 1941 at Vaerlose in Denmark.

Its purpose was twofold: the training of single-engine fighter pilots on the one hand and of airborne gunner personnel on the other.

In view of the growing significance of the fighter pilot's role in home air defense operations and the consequent urgent demand for more effective airborne armaments and improved gunnery methods and in consideration of the fact that the School was in charge of testing newly-developed airborne armaments and ammunition, it was placed under the administration of the Inspectorate for the Fighter Forces (General of the Fighter Forces). As far as troop welfare and administration were concerned, it was attached to the 4th Air Division (Training) (4. Flieger-Schuldivision)\textsuperscript{141}, not a very satisfactory arrangement, since the relationship between the School and the Division was never really defined clearly and unequivocally.

The mission of the Gunnery School was to test new developments in the field of aerial gunnery, including those applicable to the fighter forces. Thus, it worked closely with the weapons and ammunition development offices of the Luftwaffe Testing Station (Erprobungstelle der Luftwaffe) and with the industrial plants concerned.

The School also held regular two to three week courses for the fighter instructors of the 4th Air Division, in which the principles of aerial gunnery, the types of weapons and ammunition and their proper employment, the methods of offensive aerial combat, etc. were drilled, repeated, or introduced for the first time, as applicable.

The second, but no less important mission of the School was the training of instructors and assistant instructors for duty with the aerial gunnery training program.

The aerial gunners, including the airborne radio operators, had received their training at the bomber schools or at other
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141 - See Generalleutnant Gerd von Kassow, "Die Jagdfliegerausbildung in der ehemaligen Deutschen Luftwaffe 1925-1945" (Fighter Training in the Former German Luftwaffe, 1925-1945), Karlsruhe Document Collection.
Luftwaffe ordnance branch schools prior to the war, and had been assigned
from the schools directly to the active units.

During the course of 1939, the aerial gunnery schools (Bordgeschuetzen-
schulen) at Bug, on the island of Suegen, and at Halme were set up and successful completion of their courses made a prerequisite for all aerial gunner
personnel prior to their enrollment at a special branch school (bomber school,
reconnaissance school, etc.). At the special schools, they were assigned to aircraft crews and transferred to the front units, or rather to the replacement
groups of the front units, where they were given advanced training prior to
being employed in actual missions at the front.

The Battle of Britain had given eloquent testimony to the vulnerability
of the German bomber aircraft, and this vulnerability was not only the result
of inadequate airborne armaments but also of poor aerial gunnery,

Consequently, training had to be improved. One step in this direction
was taken in 1941, when all gunnery instructors from the schools and from the
personnel replacement groups of the active units were assembled at the Luftwaffe
Gunnery School and given an intensive refresher training course. In addition
to theoretical instruction, they were schooled in the proper preparation,
supervision, and evaluation of gunnery practice sessions. For this purpose
the School had constructed a number of models illustrating typical fighter
approach positions, and these were used in the instructor training sessions
with such success that most of the schools and replacement groups copied them
later on on their own gunnery practice ranges. This new and intensive
training approach soon began to make itself felt in the front units in the
form of steadily improving gunnery performance.

142 - The construction of practice ranges of this kind required a great deal
of work. Whenever a training unit was transferred, one of its first
worries was to set up its gunnery range as soon as possible so that there
would be no break in training activity (based on the author's own
experience).
The compilation of facts and a presentation of the material (censored for security reasons) was the primary focus of the investigation. The report outlines various aspects of the investigation, including the methodology used and the findings. The document highlights the importance of maintaining confidentiality and preserving the integrity of the investigation. It also emphasizes the need for a thorough review of all available evidence. The report concludes with recommendations for future actions.
Despite its late beginning, the Luftwaffe Gunnery School was considered so vitally important that it was kept in operation until the very end of the war, whereas a number of other schools were closed prior to that time.¹⁴₃

¹⁴₃ - See Appendix 30, showing the organization of the staff of the General of Pilot Training as of 8 February 1945.
CHAPTER IV
CRISIS IN THE TRAINING PROGRAM

Section I. Prior to the Outbreak of World War II.

1. Crisis Aiding During the Period of Re build Training in the Reichswehr), 1925 - 1932 144

During the Reichswehr period, crises in the field of training in general and in connection with secret flight training in particular were, for the most part, insignificant and rarely political in character. It was up to the Army and Navy Command to cope with crises - with the help of the Minister of the Reichswehr, if necessary.

In the event of a crisis, the military leaders involved had to proceed with great caution in order not to jeopardize the secrecy under which they were operating and in order to keep the Reichstag (Parliament) from becoming involved any more deeply than was absolutely necessary. On the other hand, they were not under pressure of time and there was no danger of war threatening, so that most crises could be faced systematically and calmly and a satisfactory solution found for them.

In any event, the entire flight training organization under the Reichswehr was highly classified, so that any difficulties arising after 1925 either had to be quietly accepted by the military agencies affected or just as quietly overcome.

144 - The data contained in this subsection are based on the study by General der Flieger a.D. Fellm, Part I: Luftfahrt ausbildung in der Reichswehr von Versailler Diktat bis Ende 1928" (Flight Training in the Reichswehr from the Versailles Treaty until the End of 1928); Part II: "Die Luftfahrt ausbildung in der Reichswehr von 1929 bis zur Auflösung von Luppek Herbst 1933" (Flight Training in the Reichswehr from 1929 until the Disbandment of the Luppek Station in the Fall of 1933); Part III: "Das Ausbildung von 1934 bis 1938 (Kommando der Schule)" (Training from 1934 until 1938 (under the School Command)).
There are two instances of genuine crises during this period:

1) The Paris Air Agreement (1926)

Illogical as it may seem, the Agreement was a severe blow to Germany's program of training sport fliers, which had come along so well since 1925, since it required the abolition of Sport Fliers, Ltd. (see Chapter I). And it was precisely the schools sponsored by this association which were doing the most to train a new generation of pilots. According to the letter of the Treaty, however, sport flying could no longer be supported in any way by the government. The German Commercial Flight School was established to take their place, but this was of no use whatsoever to the Reichswehr, at least not in the beginning.

As a result of the Paris Agreement, the training of new pilots and the activity of those already holding licenses was completely dormant in Germany until the summer of 1927, when aviation, Ltd. was founded. Its schools, however, were not operating at full strength and effectiveness until 1928/29.

The training vacuum created by the Paris Agreement was a good-sized one for conditions at that time; based on Chapter I, Appendix 5, it can be estimated at between 400 and 500 pilots of the A-2 category. The vacuum made itself felt in 1935, when the Luftwaffe was set up, and even more later on, during the expansion of the fighter forces (see Chapter III, section dealing with the fighter forces).

During the period of the Weimar Republic, there was no way to compensate for this first crisis in the training program. Considerations of domestic policy, foreign policy, and fiscal policy were all against it. The ultimate result, of course, was a shortage of qualified squadron captains, training supervisors, and other key personnel during the early days of Luftwaffe organization and expansion.
There are two instances of genuine crises during this period.

1) The Paris Air Agreement (1926)

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2) The Order to Stop Training at Lippek (Class of 1927)

Approximately twenty-five fighter pilots, twenty-five reconnaissance pilots, and fifteen bomber pilots from the Office-Flight-Header (Fliinger-Offizierliste) were scheduled to attend the summer training course at Lippek in 1927. They had already completed training during the winter of 1926/27 in Berlin in a secret course designed to prepare them for the advanced work they would be doing at Lippek and for their future assignments as unit commanders.

All the necessary preparations had been completed without any difficulty, and there seemed to be nothing to prevent the trainee group from departing on schedule in the spring of 1927. Then, suddenly, just before the first contingent was to leave for Russia in April, the German government issued an order which was to cost the class of 1927 a full year of valuable training time.

The reasons for this entirely unexpected order were rooted in Germany's domestic and foreign policies. Reichs Chancellor Mueller, a Social Democrat, was forced to resign after violent Reichstag debate on "the illegal Reichswehr", "units in Russia", "the smuggling of weapons", and "the Treaty of Rapallo", and the new government decided to adopt an ultra-conservative course, at least in the beginning. The Russian government, too, had raised certain objections to the entry of the trainee group. It was not until Marx, of the Center Party, became Chancellor in early 1928 that the difficulties were ironed out and the order rescinded (April 1928).

The last year cost Reichswehr leaders twenty-five fighter, twenty-five reconnaissance, and fifteen bomber unit commanders.
all of whom could have been put to excellent use in 1935 as squadron captains, training supervisors, school commanders, etc.

_The Disbandment of the Lipsk Station_ 145

The closing of the training installation at Lipsk in the fall of 1935 can be considered only a minor crisis. In the first place, it did not come as a surprise, but had been planned since 1931, and in the second place, the number of training schools in Germany was increasing steadily. Moreover, in 1931, with Germany's increasing independence in the field of aviation, the Reichswehr reached an agreement with the Reichs Ministry of Traffic whereby Reichswehr flight training could be carried out to an ever increasing degree in the Commercial Flight Schools. On the basis of this agreement, the School at Braunschweig admitted Reichswehr personnel for observer training and the one at Schleisheim for pilot training and preliminary fighter training (excluding gunnery and bombardment training, of course). These arrangements were kept secret.

Even so, the abolishment of the Lipsk Station left a certain gap in the pilot training program, a gap which cannot be expressed in terms of statistics but was there nevertheless.

2. _Crisis Arising During the Period of Secret Training (1933 - 1935)_

With the avowed military policies of the National Socialist Party, which gained power in 1933, began a new era.

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of military training. The training program was now free of the politically-
inspired restrictions which had hampered it in the past; the need to camou-
flage training activity still remained, however, for foreign policy consider-
ations required the new government to keep its activities in the military
field secret from the signatories of the Versailles Treaty.

The entire complex of schools guided by the German Commercial Flight
School headquarters in Berlin, which had absorbed the training organisation
of the Reichswehr Ministry, as well as all its subsidiary training install-
ations, now lay in Germany itself. Such difficulties as budget limitations,
lack of room, and raw material shortages were now a thing of the past, and the
way was clear for the unhindered development of the new Luftwaffe.

Occasional problems arose, of course, to block the work of development and
expansion, but these were solved in amicable conference between the partners
concerned or, when necessary, by intervention of Reichs Commissioner (Reichs-
kommissar) Goering or even by Hitler himself.

The following difficulties are deserving of mention because they played
such a significant role in the operation of the training program:

aa) The inevitable petty rivalries and jealousies existing among the
Reichswehr Ministry (Inspectorate No. 1), the offices of the Reichs Commission
for Aviation (Reichsluftfahrtkommissariat), and the German Commercial Flight
School, which naturally had an adverse effect on the smooth functioning of the
program;

bb) Political differences and stubborn bickering as to the limitations
of each other's authority between Party agencies, on the one hand, and military
agencies and command headquarters, on the other.

c) Continual arguments concerning personnel problems, industrial com-
petence, raw material shortages; basic differences of opinion, charges of in-
adequacy on the part of certain agencies, etc., all of which could be solved
only by a shift to greater government control of the economy.
dd) Unwelcome interference on the part of other Reichs Ministries.

The conditions detailed above were kept within bounds and prevented from doing too much damage. The crises inherent in them could be avoided only because government control was strong enough to prevent them.

One real crisis during this period, however, was the Rohm affair in 1934. This is not the place to present a detailed history of these events (there are many published accounts available), but the following brief summary may be useful.

As early as the end of 1933, a feeling of tension began to make itself noticeably felt between the flight and aerotechnical training schools scattered throughout the Reich and the SA (Sturmbteilung - Storm Battalion). The conflicts and clashes provoked by the latter organization were becoming not only more numerous but also more serious in character and, by the time the planned coup went into effect in the summer of 1943, they had reached the point where they were not only alarming but also a grave disruption of training activity.

In order that they might be prepared for a possible defensive battle, the schools were secretly supplied with weapons, additional military drill and gunnery practice was held, and time-consuming combat games for the defense of barracks and airfield were carried out. Obviously, these necessary precautionary measures seriously disrupted normal training activity, and there were inevitable postponements in the planned deadlines for the release of trained personnel.

Fortunately, an overt conflict could be avoided, but even so the preparations for battle had cost the schools valuable training time, which could no longer be made up. The biggest losers were the (at that time) largest training units at the aerotechnical schools, whose total
capacity was over 2,000 men. The over-all loss in training time could be equated with at least ten to twelve work-days in the case of the aerotechnical schools, and with eight to ten full days of flight duty for the flight training and ordnance branch schools. Statistical data concerning the loss in training time are no longer available, but it is certain that the scheduled new activation of a number of schools and units was affected, since every training minute was decisive. 146.

In 1934, the beginning of a new crisis, one which was to grow to frightening proportions as time went on, became apparent.

The root of this crisis lay in the lack of flight discipline, which was to give rise to high losses attributable to aircraft accidents.

Practice flights carried out under the watchful guidance of training supervisors and instructors claimed almost no losses as a result of accidents. In spite of careful prior briefing, however, the unsupervised cross-country flights often resulted in serious accidents, most of which could be traced back to undisciplined flying, the pilot's exaggerated confidence in his ability and a penchant for showing off, underestimation of the possible dangers of acting as the lead aircraft, lack of experience in flying at dusk, or the unexpected advent of bad weather.

During the early years of Luftwaffe development, as long as the reserves were comparatively inexhaustible, these personnel and material losses were not terribly alarming. Nevertheless, they should have sounded a warning for the still secret Luftwaffe High Command. In accordance with the principle of keeping a careful check on the beginners, a slow-down was clearly indicated.

And this slow-down came about in the winter of 1933/34, when a number of independent accident investigation commissions (Unfalluntersuchungskommissionen) were established at the Commercial Flight School headquarters in Berlin.

146 - This statement is based on the personal experience of Colonel a.d. Koester.
These commissions, later officially supported by the Luftwaffe, were to become the extremely important Inspectorate for Air Traffic Control and Equipment. Even the Inspectorate, however, proved to be no match for the problems as time went on (more about this later on).

We no longer have statistics regarding the losses sustained during the period 1933 through 1935, but it can be stated that they remained within bearable limits.

3. Crises Arising during the Period of Luftwaffe Development, 1935 through 1939

From 1935 on, as the Luftwaffe continued to grow and the number of schools and units under its control increased, there was a corresponding increase in the difficulties faced by the training program. Experience had to be gathered, and crises had to be faced and solved, before they could serve as a basis for lessons applicable to the future. During this period prior to the war, the training program was characterized by personnel shortages and equipment bottlenecks rather than by genuine crises - although the latter were to make their appearance very soon.

In contrast to the relatively quiet decade just ended, the majority of the crises to come had their origin in the foreign policies advocated by the government.

Those events whose effects penetrated as far as the Luftwaffe training program are treated here in chronological order:

1935: The year of the Luftwaffe's official activation went by without overt difficulty. There were a number of protests on the part of the Versailles Treaty partners
against Germany's rearmament activity, but no action was taken to prevent it. The government's domestic policies had found firm footing in Germany, and the newly-established Luftwaffe was too busy with its own affairs to be affected in any way. Crises were unknown.

1936: This year represented the natural drawing to a close of the period of expansion which had begun in 1933 and, at the same time, the completion of a foundation capable of supporting future expansion of the training program. (See Chapter II, Section 1). As of 1 April 1936, there were sixty-five schools in operation, offering training in all the various Luftwaffe branches as well as in certain special subjects.\(^{147}\)

As early as 1936, however, it began to be apparent that even this relatively large number of schools with their increased capacities would not be able to keep up with the demands for trained personnel made by the active units. It is only fair to point out here that the demand for the activation of new units at a doubled rate of expansion did not have its origin in unrealistic requirements set by the Luftwaffe General Staff or by the School Command. On the contrary, it was Germany's political leaders, their eyes on the coming occupation of the Rhineland, who insisted on this method of activation, which did meet the demand for a sudden increase in quantity but at the same time served to dilute quality in a way which was to avenge itself later on.

By the end of 1935, the School Command was forced to admit that it was not in a position to keep up with the demands being made upon it. In order to relieve the overburdened schools and to assure implementation of the General Staff's activation schedule for 1936, those units which had completed school training in 1935 but had not yet finished the unit training which would fit them for final assignment to a front unit were detached to training duty.

147 - See Chapter II, Section 1, the subsection dealing with training in the original units after 1935.
The squadrons were turned into flight training squadrons, which meant, of course, that their own training in basic military drill, instrument flight, night flight, gunnery, bombardment, radio and radio navigation, and formation flight had to be neglected.

It was this new method of training, feasible only in times of peace, which was responsible for the critical shortage of crews whose general standard of training was sufficiently high to permit their employment under any and all conditions when the war broke out.

With the help of the newly organised training squadrons, the schools managed to meet the 1 April 1936 deadline with personnel for the planned new units quite creditably (with a small discrepancy of 10-15%) as far as quantity was concerned. As regards quality of training standard, however, neither the losing mother units nor the newly formed daughter units were anywhere near ready for actual employment under wartime conditions. And the schools themselves were in a similar predicament. Their instructional personnel, well-grounded as far as flight and aerotechnical training were concerned, were taken away from them to be assigned to the newly-formed "water-down" units for rapid refresher training designed to fit them for all-round employment. Because of the continued new activation of units under the "doubling" system, however, this project never had time to succeed (the year 1937 was an exception, due to the let-up of new activations).

The statistics pertaining to the operational readiness of the air crews in 1936, broken down into fully operational, operational under restricted conditions, and not operational, clearly reflect the inadequacy of the training standard maintained in the active units.
To conduct necessary people shown to be sympathetic towards non-Americanism, and
the task becomes immense. Thus, in that situation, the American interest must
be safeguarded from non-American influence. In this way, the American interests
are protected from the influence of non-Americans.

In order to protect American interests, it is necessary to conduct a systematic
program of educating the people shown to be sympathetic towards non-Americanism.
This program must be comprehensive and effective. It is essential to educate the
people about the dangers of non-American influence and the benefits of American
interests. The program must be conducted in a systematic and organized manner,
and it must be continued over a long period of time.

The program must include various activities such as lectures, seminars, and
workshops. It must also include the distribution of educational materials such as
books and pamphlets. These activities must be conducted in a manner that is
understandable and accessible to the people. The program must be designed to
reach all segments of the population, including the youth and the elderly.

The program must be supported by the government and the private sector. The
government must provide funding and resources for the program, and the private
sector must provide additional support. The program must be monitored and
evaluated regularly to ensure that it is effective.

In conclusion, it is necessary to conduct a systematic program of educating the
people shown to be sympathetic towards non-Americanism. The program must be
comprehensive, effective, and organized. It must be supported by the government
and the private sector. The program must be designed to reach all segments of the
population, and it must be monitored and evaluated regularly to ensure that it is
effective. By conducting this program, we can protect American interests from
the influence of non-Americans.
In 1936 the operational readiness of the bomber and long-range reconnaissance units was evaluated as follows:

- fully operational - 15%
- operational under restricted conditions - 45%
- not operational - 40%

In the case of the fighter and close-range reconnaissance units, the picture was more favorable, the majority of crews being rated in the first two categories.

In connection with the planned occupation of the Rhineland, which was bound to entail the risk of war, there arose a political and military crisis whose ramifications had a great deal of influence on the flight training program and on the schedule of new activations. In early March, 1936, in the realization that they had practically no air units with which to combat possible hostilities on the part of the Western Powers in case their occupation action should be contested by military force, Germany's leaders suddenly disbanded the fighter training school at Schleissheim and organized its instructors and better qualified advanced students into one fighter group and one dive-bomber group, equipped with the school's Ar-69's and He-51's. These new units were assigned to stations at Mannheim, Frankfurt, Cologne, and Dusseldorf. Their transfer into the Rhineland completed as of 7 March 1936, the new units served more as an optical deterrent than as a real striking force, for the aircraft recruited from the schools usually lacked such important items as airborne armaments, ammunition belts, etc. This precedent, carried out at the cost of the Luftwaffe's only

146 - Based on information provided by Colonel a.D. Koester, whose comments, in turn, are based on his recollection of unit reports during the years 1935 and 1936 and on his activity as a staff specialist in the Office Personnel Section of the Reichs Air Ministry.

fighter training installation, was unfortunately declined to make headway in the Luftwaffe and represented the first link in a long chain of actions resulting in an out-and-out plundering of the schools. In this particular instance, a Luftwaffe branch which was just beginning to stand on its own feet was robbed of its only training installation. Not until 1938, after a period of two years, was the loss made good by the establishment of the fighter training school at Werneuchen (the Fighter School at Oldenburg, planned as a successor to the Schleissheim installation, had never progressed beyond the planning stage).

During the two-year interval, the fighter units had been forced to get along with stop-gap measures such as the establishment of training squadrons. The time lost, however, could never really be made up and it continued to make itself felt in the expansion of the fighter forces and particularly in their training program. Fighter training in the squadrons did have the admitted advantage that the units took a greater interest in their own trainees and were thorough in teaching them the tactical principles followed in the operations of their own particular wing, but from the standpoint of long-range planning it was and continued to be a stop-gap solution. Later on, in fact, it was recognized as a bad mistake, for it deprived the fighter forces of a broad reserve of personnel to draw on for new activations, unit replacement operations, and reserves.

Both the schools and the active units were in urgent need of a training period free of outside interruptions, but unfortunately this was rendered impossible by the need to convert the active units to the new aircraft models coming into use at the front. The bomber units were changing over to the Heinkel He-111-D and He-111-H and the Dornier Do-17, the long-range reconnaissance units to the Do-17, and the fighter units to the Messerschmitt Me-109. The flight training schools
awarding the C-2 license, with their appalling shortage of even training aircraft of the Ju-52 variety, remained almost completely unaffected by the conversion action, due to inadequate planning for the distribution of front-model aircraft. As a result, the trainees released for assignment to the active units had to be trained by these units in the operation of the new aircraft models.

From the very beginning, in peacetime as well as in wartime, the failure to keep the schools adequately supplied with the aircraft models in use in the active units can be traced through the entire history of the training program. Germany's political and military leaders could not help being aware of the dangers inherent in a weakening of the training program at a time when rearmament as a whole was going ahead at full speed. Some of the adverse effects had already been observed, and it was clear that there were more to come unless the policy was changed.

As a result, it was decided to make 1937 a "year of pause" as far as the expansion of the Luftwaffe by new unit activations was concerned. Nevertheless, a number of new schools (radio schools and other specialized training schools) and command staffs were set up, and even a few new units needed to round out the existing forces and to stabilize the organizational structure.

The advantages which might normally have accrued to the unit training program as a result of this decision, however, were seriously offset by Germany's participation in the Spanish Civil War, for at the end of 1936 volunteer crews from the bomber, dive-bomber, fighter, and reconnaissance units were assigned to temporary duty in Spain. Assuming an average tour of duty of four to six months per

150 - On 1 April 1937, for example, the II Group, Bomber Wing Beelcke, was reorganized into the II Group, 254th Bomber Wing (based on the author's personal recollection).
T H I S  S P A G E  D E C L A S S I F I E D  I A W  E O 1 2 9 5 8
crew, this meant that each wing was continuously deprived of a number of its best crews. It is true, of course, that the crews in Spain were gaining combat experience and that both men and equipment were being tried against actual front conditions, but at the same time, they were sorely missed by their own units, where they could have been well employed in training activity, particularly in view of the continued policy of double activation of new units.

The critical lack of operational readiness of the air units at the outbreak of the war certainly can be traced in part to the effects of the intervening operations in Spain.

Nevertheless, the year 1937 cannot be spoken of as a crisis year.

The total flying strength of the Condor Legion, apart from its operations staff, amounted to one bomber group, one single-engine fighter group, one dive-bomber group, a number of close-range and long-range reconnaissance squadrons, a few Navy reconnaissance units, and a number of air transport units which had been recruited from the already low reserves of the schools. All in all, this meant the constant unavailability to German air units of some 200 to 250 fully-qualified crews, if one includes such factors as transport time, leave, sickness, and normal losses.

At the very period during which the active units and schools were most troubled by difficulties in the training field, there arose the Austrian crisis in the late winter of 1937/38, to be followed by the annexation operation in March 1938. The results were the following:

a) A forced speed-up in the previously neglected fields of formation flight and combat training, coupled with a temporary slow-down in the
training of personnel needed for the activation of new units;

bb) Withdrawal of those units slated to participate in the operation from their home units, thus depriving them for several weeks of the intensified flight training then being given by the wings;

c) A definite weakening of the flight training and aerotechnical schools as a result of the commandeering of instructional personnel and aircraft (although the Ju-52 was already in short supply at the schools) for active assignments;

d) The transfer of units and schools to new stations in Austria, which naturally cut into the time available for training; and

e) A noticeable decrease in the number of trainees released for assignment to the ordnance branch schools and to the active units.

The adverse effects of the operations in Austria had not yet been absorbed by the training program when new political clouds made their appearance on the horizons of the Sudeten Land. Although a crisis of Pan-European proportions was avoided by the agreement reached in the autumn of 1938, Germany's peaceful occupation of the area required extensive military planning and preparations, and the Luftwaffe was intimately concerned. Once again units and schools were transferred to new stations, bringing restlessness and insecurity into the orderly accomplishment of the training program. In this instance, too, the training time lost was paid for in the form of a lower degree of operational readiness in the units.

In short, the year 1938 did much to reduce the effectiveness of the training program. And time was too short to make up for the setbacks suffered.

Thus, 1939 dawned upon a temerously-anchored and generally inadequate training program. The lack of a central organization to take charge of training under the Luftwaffe General Staff (remedied as of 1 February 1939)
had had its origin in the rapid expansion of the Luftwaffe and, as a result, the training program had never enjoyed uniform guidance and supervision. The events of 1938 had proved conclusively that this situation was untenable and unsatisfactory. Thus, at the beginning of the year, the office of the Chief of Training in the Luftwaffe was created in an attempt to lend greater importance to the field of training.

The spring of 1939 brought Germany's occupation of Bohemia/Moravia and of Slovakia, and with it the last and most far-reaching instance of disruption of the training program prior to the outbreak of the war.

Most of the air units were away from their home airfields, bombardment practice areas, and gunnery ranges for weeks at a time and the C-schools were weakened by the plundering of their personnel and aircraft for active assignment - two flagrant examples of conditions which were anything but conducive to the orderly conduct of a well-founded program of training. In May the situation finally showed signs of returning to normal once more, but this promised respite had to be utilized for the conversion of the active units to the new aircraft models in use at the front. The bomber units were in a particularly precarious position, since their present models were no longer capable of meeting the demands imposed by front conditions. The new models, the He-111-P, the Do-17-Z, and the new fighters of the Fw-190 series, all required a high degree of flying ability and perfect mastery of combat and instrument flight techniques on the part of the units.

In addition, the newly expanded training program in bombardment and aerial gunnery techniques and the training needed to convert airborne radio personnel to newly-introduced radio and direction-finding equipment (the

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151 - See Chapter II, Section 2.
152 - See Chapter II, Section 3, which gives a detailed summary of the organizational structure of the new office.
V-type direction finder and the X-type radio) were just as vitally important for the active units as the flight training program.

The Luftwaffe General Staff was responsible for the tactical training of Luftwaffe troops, and it provided its Branch III (Training) with detailed instructions in this field.\(^{153}\)

At the time he took office, the Chief of Training requested a study to determine the requirements in trained personnel needed to guard against the worst effects of a potential crisis in the training program. The conclusions drawn by this study made it clear that there were many areas of training in which the available schools and training agencies were simply not capable of producing the required number of personnel. This was chiefly true of the flight training program. Motivated by the study, the Chief of Training ordered that the training capacities of the schools be increased to the highest possible degree. His request that new schools be established to take care of the inevitable overflow was disapproved by the Luftwaffe General Staff - new activations were restricted to active units.

The training schedule drawn up on the basis of the available schools and training installations was recognized as a compromise, since the available facilities simply could not hope to meet the requirements in all training fields. The discrepancy between training capacity and training needs, soon to become apparent, was characteristic of the situation of the Luftwaffe throughout the entire period of its existence - a basically unhealthy situation made inevitable by the conditions under which it was forced to operate. The only solution would have been to adapt the schedule of new activations to the training facilities actually in existence or to expand the training facilities to such an extent as to make them capable of

\(^{153}\) See Chapter II, Section 3, 1.
keeping up with the personnel requirements implied in the activation schedule 
and of building up a certain reserve force besides — but of course this solution 
was unthinkable under existing conditions. For reasons of political expediency, 
Germany's top leaders preferred to have a large number of front units at their 
disposal, even if these units existed only on paper as far as their true opera-
tional readiness was concerned.

Nevertheless, the Chief of Training resorted to all manner of provisional 
measures in an attempt to adapt his training schedule to actual training re-
quirements. Some of these were the following:

aa) Curtailment of theoretical instruction, with a resultant reduction in 
overall training time;

bb) Assignment of additional instructional personnel and equipment, in 
order to increase the capacity of each training installation; and

cb) Making available additional provisionally-equipped landing fields in 
the vicinity of the school airfields, so that flight training could be speeded 
up by an increase in the number of take-offs and landings which could be practi-
ced within a given period of flight time.

Moreover, in the realm of long-range planning, the following measures were 
ordered:

aa) All the flying units (bomber, fighter, dive-bomber units, etc.) were 
instructed to set up provisional training schools, in which flight training could 
be given to successive groups of twenty-five men chosen from the unit's ground 
personnel. The goal was to qualify these men for the Luftwaffe Pilot's License 
(Land), which would permit them to operate all single-engine aircraft (excluding 
instrument flight).

The facilities available to the units did not, of course, permit advanced 
training similar to that given at the ordnance branch schools, the multi-engine 
flight schools,
or the instrument flight schools; particularly well-qualified trainees would be assigned to one of these schools for further training. Inasmuch as the units had been promised that they might keep the students they selected after completion of their training, barring any unforeseen circumstances, they were careful to pick out only those men who were really eager to learn to fly - the very personnel whom they had refused to release in the past for such training for fear of losing their services on the ground. The total number in training under this program was approximately 1,000. Flight instructors and instructors for the theoretical aspects of training were placed at the disposal of the units; the aircraft required for A/S training were charged to the airfield command or the unit concerned.

Since sufficient other flight schools were expected to be available after about three months to take over the advanced training of the students completing preliminary training with the units, the Chief of Training decided to separate beginning flight training from general military training altogether and to take over the unit schools for use as multi-engine flight training schools.

bb) From 1936 on, most of the private flight schools in Germany (sponsored by the various sport fliers' associations and supported by subsidies received from the state) were in the hands of the National Socialist Air Corps. The activity of this Corps was directed largely to the furtherance of sport flying; it concerned itself very little with Party and political matters.
One of the primary activities of the Corps was the training of enthusiastic youngsters in the principles of glider flight, and later on, if they proved to be talented, in the operation of engine-driven aircraft. Recognizing the possibilities inherent in this situation, the Chief of Training planned to turn over all beginning flight training to the Corps, thus relieving the schools of a part of their burden. If successful, his plan would free the existing A/S schools for use as training schools for multi-engine aircraft, instrument flight, and specialized branch training.

The outbreak of the war hindered the realization of this plan, already in an advanced stage of preparation. The schools maintained by the Corps were militarized as a part of the general mobilization plan and incorporated into the Luftwaffe training program.

Pre-induction training for future airborne radio personnel was also made a responsibility of the National Socialist Air Corps. In a remarkably short time, the Corps set up radio training courses throughout all of Germany, in which young people could be instructed in sending and receiving and in the operation of the radio equipment actually in use in the Luftwaffe. Even after the war had gotten well under way, the Luftwaffe still drawing on this reserve of Corps-trained youth to fill a good part of its requirements for airborne radio personnel.

Even the most intensive efforts of the Chief of Training and his staff had been unable to bring the Luftwaffe units up to their authorized strength by this time, and the Luftwaffe entered the war with an average 10% personnel lag in all its units. The figure of 10% is accurate.

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154 - See Appendix 15.
as far as the bomber units were concerned; in the single-engine fighter units it was 17% and in the twin-engine units 12%. This clearly reflects a lack of urgency in furthering the fighter program.

In addition to these specific deficiencies, the outbreak of war caught the Luftwaffe at a stage in its training program in which the following fields, in particular, were below the required standards:

aa) instrument flight and night flight;
bb) air-based and ground-based direction finding and navigation;
cc) tactical and flight safety training for airborne radio personnel; and
dd) bombardment techniques utilizing the most modern equipment.

In this connection, let us return once more to the problem of inadequate flight discipline, a problem which had grown to alarming proportions in the meantime.

The "plague", as it was called by the Commander in Chief, Luftwaffe, had been spreading with frightening rapidity since 1935 and was beginning to assume forms previously unheard-of in military history.

Circumstances beyond anyone's control which ultimately led to aircraft accidents for which the pilots were in no way to blame are not included in the present discussion; they will be dealt with later on in the study.

The lack of flight discipline which concerned the experts from the Inspectorate for Air Traffic Control and Equipment, all of whom enjoyed an unusual degree of authority in the accomplishment of their jobs, and the representatives of the military justice tribunals was quite a different thing. Experience showed that it almost always originated in deliberate or careless violation of the principles of flight safety. The most common causes of accidents were the following:

aa) Violation of written instructions as to course and route;
bb) Inadequate preparations for the mission;
cc) Attempting to fly by instrument or to brave bad-weather zones in
spite of inadequate training in these fields;
dd) Showing off with aerobatics, although this was expressly forbidden;
ee) Inadequate checking of performance certificates and flight orders on
the part of flight supervisors;
ff) Ordering of missions which exceeded student ability on the part of
inexperienced squadron captains and training supervisors;
egg) Requiring already weary crews to fly additional missions in order to
complete unit quotas; and

hh) Pilots taking over aircraft as fully operational without adequate
technical checking\textsuperscript{155}.

The personnel and materiel losses attributable to the factors listed above
were so high that they represented a serious threat to the maintenance of
operational readiness in the units. From this standpoint, lack of flight dis-

cipline was responsible for a genuine crisis.

In spite of warnings, briefing sessions, fines, and more drastic punish-
ments ranging from court sentences to the death penalty\textsuperscript{156}, with subsequent
dishonorable burial of the victims, it took a very long time before any notice-
able improvement occurred.

\textsuperscript{155} - Statistics pertaining to accidents of all kinds will be given in Chapter V
this study.
\textsuperscript{156} - As decreed by the Fuehrer and by the Commander in Chief, Luftwaffe, in
a desperate attempt to eradicate the "plague".
Section 2.  Crises Arising During the Course of World War II

1. The Attitude of Generaloberst Jeschonnek, Chief of the General Staff,

Towards the Training Program.

According to a statement attributed to the Austrian military leader
Montecuccoli, the conduct of war requires 1) money, 2) money, and 3) more
money. Applied to modern conditions, of course, this would seem to indicate
an unnecessary surplus in all respects, but even so it may be pertinent to
ask just what was the attitude of the Luftwaffe General Staff towards the
training program in general and towards the question of supplying sufficient
personal for such a program in particular.

To begin with, we must bear in mind that the Luftwaffe had entered the
war with an average personnel deficit of 10% per unit, primarily the result of
the stubbornly continued policy of activating new units in double-quick time,
which kept the existing units in a state of continuous flux and prevented them
from being ready for war when it came in September 1939.\(^{157}\)

What did the General Staff have to say about this lack of an adequate
personnel reserve? Did it take steps to warn Germany's top political leaders
and to point out that the Luftwaffe units, in the event of an armed conflict,
would soon be no more than burned-out hulls, with no striking power what-
soever?

\(^{157}\) Based on the testimony given by Feldmarschall Milch before the Interna-
tional Military Tribunal at Nuremberg, I.M.T. Volume IX, pages 67-73.

In his testimony, Milch points out that air units, schools, and aircraft
were all inadequate in number.
At this point we encounter a difference of opinion between the General Staff, or rather its Organization Branch, and the Chief of the General Staff, Generaloberst Jeschonnek\footnote{158}. During the course of a conversation between Generaloberst Jeschonnek and Lt Col Flocher (GSO), then chief of the Organization Branch, the latter, having presented his official report, pleaded informally for the timely establishment of an adequate reserve, not only of pilots but also of aircraft. Only through an intensified training program could the losses which a war would inevitably bring with it be made up fast enough to keep the operational readiness of the units up to the level needed for effective employment.

Jeschonnek, on the other hand, had quite a different view of the situation. No only in his conversation with Lt Col Flocher, but also during the speech which concluded the General Staff journey to the Rhine in June 1939, he stressed the fact that the largest possible number of troops would have to be thrown into the first surprise attack - and this largest possible number, of course, would have to include all the available reserves. In Jeschonnek's opinion, Germany must concentrate on a short war, a war which might well require the commitment of all her personnel and materiel at the very beginning.

In other words, Jeschonnek was in favor of horizontal armament and against any attempt to arm for the unforeseeable future - hardly a reassuring attitude from the standpoint of long-range planning!

Jeschonnek's thinking surprises us all the more when we consider that he was one of those present at Hitler's conference of 23 May 1939\footnote{159} with the commanders in chief of the three Wehrmacht branches and their general staff chiefs. Thus he must have been aware of Hitler's stated opinion that it was not always possible (for example, in the case of Poland) to
158 - Report by Generalmajor Ploch, "Zur Organisation der Luftwaffe; Gegen-, 
(Pertaining to Organization in the Luftwaffe. Differences of Opinion
between General Jeschonnek and Branch II (Organization)), Karlsruhe
Document Collection A.
159 - Contained in the Karlsruhe Document Collection.
limit operations to a blitzkrieg, and that every armed force and every government had no choice but to prepare itself for a war of ten to fifteen years' duration.

When Hitler, in his speech, referred to the possibility of a war against England and France and described such a war as a life-and-death struggle, the Chief of the Luftwaffe General Staff must certainly have thought of the studies prepared by General der Flieger Felmy, then commander of Luftwaffe Group 2 (Luftwaffengruppe 2). These studies, dated 22 September 1938 and 13 May 1939, dealt with the conduct of a potential air war against England and concluded sensibly that the air units available to the Luftwaffe were insufficient to wage a war of destruction.

Logically, then, if there were instances in which a blitzkrieg could not be carried out with any prospect of success, it was the duty of the Luftwaffe General Staff Chief to prepare his forces for a long-term war, and this meant that surplus in all respects was to be considered welcome, and this included the training program, which represented the foundation of all effective armament efforts in that it assured the availability of the personnel needed to make use of the products of armament. One wonders whether the General Staff Chief recalled the office chiefs' conference in the Reichs Air Ministry in January of 1939, called to discuss Hitler's demand for a fivefold increase in Luftwaffe strength, motivated by British reaction to the Munich Agreement. At that time, Jodl stood up alone against his more cautious colleagues to insist that Hitler's demand be met. But was this possible without first strengthening the existing training program?

160 - Both memoranda are contained in the Karlsruhe Document Collection.
161 - See Richard Suchenwirth, "Jodl", a study in the Karlsruhe Series.
As far as the technical side was concerned, the Luftwaffe High Command assumed that the air units would be depleted to one-fourth of their original strength after nine months of war, despite emergency mobilization measures promising a large increase in aircraft production. Thus, in the opinion of the Technical Office, Luftwaffe equipment strength could be maintained at the required level only by means of an unprecedented expansion of the aircraft industry.¹⁶²

Logically, the same criterion ought to have been used in computing potential personnel losses, since in most cases the crews would be lost together with their aircraft. As early as 1935 and 1936, the General Staff had concerned itself with this matter and had reached the conclusion that an average rate of loss of 25-30% per month was to be expected for flying personnel.¹⁶³

Immanently the available training capacity was already being exploited 100% during peacetime, however, the only sure way of meeting the anticipated higher requirements for flying personnel was obviously the creation of additional training capacity. And every effort should have been made to incorporate increased training capacity into the plans being made for general mobilization measures. By the time the office of the Chief of Training was established, however, it was already too late, for the mobilization schedule for 1939 had already been approved. It called only for an expanded program of recruitment and for the reorganization of the schools maintained by the National Socialist Air Corps into military schools.

Although they had been aware of Hitler's plans for solving the Polish question since the early summer of 1939, Luftwaffe leaders

¹⁶³ - General Deichmann, op.cit., page 48.
had neglected to inform the office of the Chief of Training of the imminent danger of war. Thus that agency was taken completely by surprise on 1 September 1939.

Even after the war had begun, it proved to be impossible to obtain any definite figures on the projected requirements for trained personnel from the General Staff (Office of the Quartermaster General). The course of military operations, and above all their possible duration, were unforeseeable factors, and there was no body of experience on which to base an estimate of the rate of personnel loss to be anticipated. As a last resort, the Chief of Training set up a planning schedule of his own and presented it to the General Staff for comment.

The problem of estimating probable personnel losses was one of the most important of all, for if there was no way of determining such losses in advance with a fair degree of certainty, then the strength of the units already in being was of no more than temporary value - it had no meaning at all in terms of long-range planning.

The validity of this proposition became clear to German Luftwaffe leaders (and to their British counterparts, as well) during the Battle of Britain. Neither side had any reserves to speak of and, after submitting to an unprecedented bleeding of their active forces, had no choice but to call a halt to the air war. Neither the fighter nor the bomber units, the chief protagonists of aerial warfare, had any real striking power at the end. The 10-day reports of the Quartermaster General of the Luftwaffe after January 1941 make the situation painfully clear. Each of them emphasized the lack of trained crews to operate the Ju-88's, the very model which was closest to General Jeschonnek's heart and with which he hoped to carry on his tactical

164 - Office of the Commander in Chief, Luftwaffe, Quartermaster General, 10-Day Reports, Karlsruhe Document Collection.
The document appears to be a handwritten or typewritten page with some content difficult to read due to the quality of the image. The page contains text that seems to discuss topics related to history, policy, or social issues, but the specific details are not clear enough to transcribe accurately. The page is marked as declassified, indicating it is no longer restricted for public access.
air war. The recurring complaints, coming ever more frequently after 22 May, of a critical shortage in trained bomber crews must have had an even more frightening effect four short weeks before the beginning of the campaign against Soviet Russia.

It was at this point that the Luftwaffe’s failure to expand its training program at the very beginning of the war and - even more - its subsequent weakening of the program by continual plundering of the schools were to avenge themselves. A single-engine fighter crew needs approximately one year before it is capable of full employment, and a good bomber crew even longer. The lack, in terms of both quantity and quality, of the trained personnel needed to fill the gap now made itself acutely felt. Admittedly it is no easy task to provide those responsible for training with requirements applicable to some time in the far future, and in the case of the Luftwaffe, this would not even have been necessary. Instead the foundations of the training program should have been developed and strengthened to make the program flexible enough to adapt itself to any situation which Germany’s inconsistent and sometimes revolutionary top-level leaders might call into being. And it was precisely in this field that Luftwaffe planning was tragically deficient. One reason for this may have been the unquenchable optimism of Germany’s top-level military leaders, which led them to believe - as late as the winter of 1940/41 - that a short-term war was still possible and that the training program, whose effects could not make themselves felt before the end of a year at least, could therefore be neglected. By 1941, to be sure, the Chief of Training had managed to increase the facilities available to his program to the point where twice as many students could have been trained, if the training program had been accorded the same priority as the front in respect to personnel assignment, fuel allotments, and aircraft distribution. But lulled by their illusory hopes that the war would not last long, Luftwaffe leaders were not receptive to such think-
...ing and the chance to improve the situation.

165 - See Subsection 2, below.
was ignored. On the contrary, the Chief of Training was utilized as a scapegoat to salvage critical situations arising at the front. One instance of this was the order issued to the Luftwaffe Chief of Supply and Procurement (Generalleutnant) by the General Staff in June 1941 to the effect that 50% of the aircraft assigned to the training program were to be equipped for winter employment, so that the schools could not claim unsuitability when it came time to requisition their equipment. Jeschonnek's attitude is best illustrated by his reply, in 1942, to those who advocated greater emphasis on the training program:

"Let's get Russia first, then we can start training!" This was typical of the man who, at the beginning of his career as Chief of the General Staff, was content to leave the General Staff without any influence whatsoever on the training of the new generations of Luftwaffe personnel and who, on 1 February 1939, turned the entire problem over to the Chief of Training. Branch III (Training) of the General Staff retained supervision over tactical training only, and that only until the beginning of the war; on 2 October 1939, Branch III was disbanded entirely.

The office of the Chief of Training, working closely with Branch VI (Quartermaster) of the Luftwaffe General Staff (which had charge of setting personnel requirements for new unit activations and for replacement purposes), did its best to schedule training activity so that the proper number of trained students would be ready for assignment when they were needed. Such deadlines for personnel availability were necessarily dependent upon the deliveries of new aircraft. In this connection, the following ratios were accepted as typical:

- Aircraft delivered to replace losses suffered by the unit: 2 aircraft : 1 new crew;
- Aircraft delivered for the activation of new units: 1 aircraft : 1 crew;
- Aircraft delivered to units converting to new types: 1 aircraft : 0 crew.
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166 - Based on notes made by the Luftwaffe Chief of Supply and Procurement during a conference held on 19 June 1941. Karlsruhe Document Collection.

167 - Jeschonnek's reply was made to the Quartermaster General of the Luftwaffe, General von Seidel, when the latter requested additional allotments of aviation fuels for the training program (information contained in a letter from General von Seidel dated 9 November 1954; Karlsruhe Document Collection).

168 - See Chapter 2, Section 3.

169 - Colonel J. Possem, "Die Ausbildung der Fliegertruppe beim General der Fliegerausbildung, Ende 1942 bis Kriegsende" (Training of the Flying Forces under the General of Pilot Training, from the End of 1942 until the End of the War); Karlsruhe Document Collection.
Only timely recognition of the potentialities of the armament program and of the personnel requirements inherent in it might have made it possible to plan effectively in advance and to make the necessary preparations. In addition, the training program, alerted by systematic evaluation of these factors, would have to have presented its requirements for training facilities to the Quartermaster General of the General Staff in good time to permit their being filled.

A study carried out by the General of Pilot Training in 1944 gives us an idea of the figures involved. This study indicated that there were a total of seventy separate career courses in the flight training program, and approximately eighty in the aerotechnical training program. To maintain their strength in the face of a personnel loss rate of 20% per month, the 5,000 crews engaged in active operations (a total of approximately 10,000 men, based on the average number of men per crew in the various Luftwaffe branches), required a personnel replacement rate of 1,000 crews per month. Assuming an average training period of twenty months' duration and a normal degree of attrition in the training program of 50%, this would have meant a beginning trainee class of 60,000 men, or the potential numbers of 30,000 crews. In this connection, it must be pointed out that the recruitment of new personnel was no problem; trainees were always available in sufficient numbers.

170 - General a.D. Scheuerlen, "Die Ausbildung 1941/42" (Training During 1941/42), Karlsruhe Document Collection.
2. The Continual Plundering of the Schools

As has already been stated, the accomplishment of training activity, including that carried on by the schools, was under the jurisdiction of the air fleet commands, a system which - by no means ideal - could be accepted as workable during peacetime. When the war broke out, however, the air fleets became the instruments of military action, and success at the front was understandably more important to them than the training program. Consequently, they had no qualms about arbitrarily requisitioning the personnel and materiel reserves of the schools. They robbed the latter of their instructional staffs, aerotechnical personnel, and aircraft to set up special-duty units (liaison and transport squadrons, aircraft control squadrons - a kind of flying aircraft reporting service - , etc.) which were not included in the overall mobilization plan. Repeated protests on the part of the Chief of Training to the General Staff as well as to the air fleet commands were to no avail.

It was only after a great deal of effort that the Chief of Training finally succeeded in recovering at least a part of the personnel and aircraft taken from him by the air fleets; in the case of the Ju-52's commandeered for air transport duty, his efforts were rarely crowned by success.

And, indeed, the problem of the air transport units was by far the more important, the one which was to have the most far-reaching effects. No attempt had been made to create an independent air transport arm during peacetime, and when the war began there was only one transport wing (the 1st Special-Duty Bomber Wing), equipped with Ju-52's, available. In order to meet the rising requirements for this type of service,

171 - See Chapter II, Section 3.
the reserves of the schools were scrupulously plundered. And requirements
climbed steadily. For the campaign in Poland, for example, they amounted to
no more than one special-duty bomber group plus a wing staff; but the demands
made by the campaign in the West involved a severe blow to the training program.
In the fall of 1939, the Chief of Training was ordered to establish a number of
air transport groups which were utilized first during the operations of the
X Air Corps in Norway and then in the West, under the command of General Student's
7th Air Division - a total of six groups, consisting of four squadrons each, and
comprising a total of 378 aircraft with their crews (instructional personnel)
and aerotechnical personnel. Inasmuch as all pre-assignment preparations by the
schools were to be made in such a way that a transfer of forces could be ac-
complished within twelve hours and that each aircraft should be capable of at
least 100 flight hours before its next overhaul, the personnel and aircraft
involved in such preparations could not be fully utilized by the schools. More-
over, those units slated for employment with the 7th Air Division (paratroopers)
were frequently called away for joint practice sessions designed to familiarize
units
the transport and paratroopers with one another.

Interruptions of this kind were so time-consuming in the programs of the
C-schools and instrument flight schools, that they were reduced to 20% of their
normal effectiveness.172 This situation was bound to have far-reaching effects
on the crew replacement program for the active units, especially in consideration
of the fact that relatively few of the aircraft requisitioned for transport duty
came back to the schools in fully operable condition; most of them were either
lost in action or in the repair shops for lengthy periods of time, for the latter
naturally gave

172 General Deichmann, op.cit., page 67.
preference to front aircraft over aircraft belonging to the schools. The return of requisitioned personnel to the schools was also a problem, for some of them - and usually the best ones - did all in their power to keep from being re-assigned to instructor duty. The front units, of course, were most eager to cooperate with them in this respect. As a result, the Chief of Training suffered considerable personnel losses not directly attributable to enemy action. It was always a matter of several months before such losses could be made up.

Unfortunately, this practice of requisitioning air transport units from the training program for commitment in the West found a considerable number of imitators, until finally the Luftwaffe General Staff began to adopt it as the line of least resistance whenever there were emergency situations to be salvaged.

The weakening of the facilities assigned to the Chief of Training continued without let-up; the following links were added to the never-ending chain of plunderings:

aa) At the end of August 1940, in connection with the planning for Operation SEA LION, all the special-duty (i.e. air transport units) units remaining under the jurisdiction of the Chief of Training were consolidated and transferred to France. When it was finally decided to postpone the Operation indefinitely, they were returned to their respective schools.

bb) In conjunction with preparations for the campaign in the Balkan countries, three air transport groups were requisitioned from the schools in January 1941, and another three in February 1941.

173 During the air landing operations in Norway, Holland, and Belgium, for example, a total of 242 Ju-52's were lost. The production of new Ju-52's, however, was never more than thirty-six aircraft per month during the first four months of the war; in 1940, this figure dropped to thirty-two per month (or sixty-seven per month, including rebuilt and repaired aircraft returned to action). During 1941, the figure was forty-one per month (or seventy-one, including aircraft rebuilt and repaired). These figures are based on material contained in the Karlsruhe Document Collection. In this study "Der Einsatz der Luftlandetruppe im Westen 1940" (The
173 - (cont'd) Employment of Air Landing Forces in the West during 1940), W. Plesic states that 183 Ju-52's were lost during the operations in Holland alone!

174 - Based on the study by General a.B. Horzik, "Lufthverkeunternehmen der deutschen Luftwaffe" (Airlift Undertakings of the German Luftwaffe).
These six groups were utilized to transport bomber and single-engine fighter units to the southeast.

cc) Subsequently the six groups were employed in operations on Crete, where they sustained extremely heavy losses (destroyed - 145 aircraft; missing in action - 8 aircraft; seriously damaged - 120 aircraft). The survivors returned to their respective schools in June 1941.

dd) The launching of the British offensive in North Africa brought with it new demands on the office of the Chief of Training, who was required to relinquish three more air transport groups during November and December. This time, they came primarily from the instrument flight schools.

ee) In mid-December 1941, the Chief of Training was ordered to set up five air transport units within forty-eight hours, drawing upon the C-schools and instrument flight schools. These units were transferred to the Eastern front to help relieve a crisis occasioned by the sudden advent of winter weather.

ff) In early January 1942, approximately 100,000 troops of the reinforced II Army Corps were cut off from their own forces in the area of Demjanjuk, northeast of Lake Ilmen. In order to keep them supplied by air, the Chief of Training had to provide five more air transport groups, one of which had to be equipped with He-111’s since there were no more Ju-52’s available; even the Ju-52’s equipped as flying classrooms for navigation training had to be sacrificed. The employment of these groups in Russia lasted for months on end - until the summer of 1942 - and was continued even after the encircled troops had managed to establish tenuous contact with their own forces. In large part, it was responsible for the fact that 1942 was one of the

low-points in training.

6d) In the autumn of 1942, the Chief of Training was ordered to set up three air transport groups to be placed at the disposal of the Commander in Chief, South (Oberbefehlshaber Sud). These were incorporated into the Special Duty Bomber Wing, Sicily. In February 1943, the wing was disbanded, but its personnel and equipment were distributed among other active units. The Chief of Training, it was decided, had no further claim on them.

hh) In November 1942, air supply operations to Stalingrad were begun, in complete disregard of the tragic example set by Demjanek, and this was the last link in the chain of events which led inexorably to the ruin of the training program. The Chief of Training was ordered to furnish two special duty bomber groups, which he was forced to equip with He-111's and Ju-88's - his supply of Ju-52's had long since been exhausted.

As has already been pointed out, the loss of aircraft almost always meant the loss of the personnel manning them. Thus it is no wonder that the schools, which had suffered under a shortage of instructional personnel since the beginning of the war, were chronically understaffed - and this in the face of the fact that the schools were heavily overburdened to begin with. This situation was particularly true of the highly important instrument flight schools, whose instructors were often required to participate in operations demanding up to ten flight hours per day, after which they were expected to meet their instructional obligations.

In this emergency situation, which had become the normal state of affairs for the Chief of Training and his program, the practice of selecting the best-qualified students to participate in a brief training methods program at the Flight Instructors' School at Brandenburg-Bries and then assigning them to flight instructor duty at a school paid welcome dividends. These instructors, most of whom were only slightly older than their students and thus better able
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to sympathise with their personal difficulties, were able to achieve a high
degree of training effectiveness. Of high psychological importance, however,
was that the promise of assignment to the front after a year’s duty as in-
structors was faithfully kept. Only by means of this rather unorthodox measure
could the effectiveness of the schools be maintained.

The release to the Army of some 1,500 young Luftwaffe officers fully
qualified for front duty (during the winter of 1941/42), a measure dictated by
the need for rapid compensation of the heavy losses in officer personnel suffered
by the Army during operations on the Eastern front, deprived the aerotechnical
organization of the Chief of Training, including the flight training regiments,
of almost all of their combat-seasoned officers of the rank of captain and above.
Needless to say, this was a severe blow to the command organization required to
support the training program effectively. Although the Chief of Training had
concluded an agreement with the Army High Command whereby the latter would assume
responsibility for giving these officers, who after all had not had any training
in the more modern principles and techniques of ground combat, immediate and
adequate training in these fields, the Commander in Chief, Luftwaffe, issued
explicit orders to the effect that the Chief of Training was to be responsible
for such training himself. In the absence of qualified instructional personnel,
this training mission had to be assigned to the paratrooper units, at that time
under the command of Colonel Heidrich. Nevertheless, the Chief of Training had
to assume responsibility for providing the administrative personnel needed to
staff the Luftwaffe Combat School (Kampfschule der Luftwaffe) set up at Gross-
born for this purpose.

The belated establishment of the Luftwaffe Field Division (Luftwaffenfeld-
division) in 1942 took the last combat-seasoned personnel, both officer and en-
listed, left to the Chief of Training (and, incidentally, to other Luftwaffe
branches as well). In order to get around complying with instructions requiring the release of Luftwaffe personnel to the Army, Goering offered the divisions concerned to Hitler, whose mind was occupied exclusively with the Eastern front, as the Luftwaffe's contribution to victory over Soviet Russia.
These units, composed of all combat-qualified personnel of the generations of 1906 and younger, had never had any training in ground fighting. In the East however, since they were only tactically subordinate to the Army, they were usually employed in critical sectors of the front, where they were decimated in heavy fighting. Thus, without providing any real relief for the troops fighting on the Eastern front (as they might well have done, if they had been distributed as reinforcements among the Army units), the Luftwaffe's most highly-qualified personnel were sacrificed. There can be no doubt that this sacrifice is one of the reasons for the subsequent decline in performance in all branches of the Luftwaffe, including the training program. The troops turned over to the Army included not only irreplaceable personnel, but - above all - highly-qualified key personnel. Later, even flying personnel were assigned to the Field Division. In the summer of 1944, when the majority of the bomber units were disbanded together with the training facilities serving them, not only highly-qualified aerotechnical personnel, but also instructors and advanced students were freed for further assignment. The Luftwaffe's top-level command, harried into inflexible apathy, made no attempt to absorb these personnel into the fighter training program, which implacably continued to train beginners from scratch under great difficulty and without conspicuous success.

3. Supplying the Schools with Training Aircraft

Prior to the creation of the office of the Chief of Training, the allotment and distribution of school and training aircraft lay in the hands of the Technical Office of the Reichs Air Ministry. The only exception to this rule was a concession granted to Luftwaffe Inspectorate No. 9 (Flight Training Schools), whereby the allotment of reconditioned and repaired aircraft, as well as the re-assignment
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of aircraft from one school to another was considered the responsibility of the
Inspectorate. This arrangement applied only to the flight training schools, however.

The difficulties inherent in this system were akin to those experienced in
the personnel assignment field as long as the Luftwaffe Personnel Office remained
in charge of the assignment of trainee personnel.

In order to obviate these difficulties, the Chief of Training established
an Aircraft and Equipment Group (Gruppe Flugzeug und Geräte) (later termed the
Quartermaster Group) at the beginning of the war. Working closely with the Supply
Office (Nachschubamt), this Group assumed responsibility for the issue and
distribution of all aircraft within the jurisdiction of the Chief of Training. The
frequent resort to provisional and stop-gap measures in the equipment field, a
corollary of the rapid expansion of the Luftwaffe, had left the schools in
chaotic condition as regards the aircraft types with which they were supplied.

Difficulties in the aircraft maintenance program and bottlenecks in the supply
of spare parts were the inevitable result.

In an attempt to ameliorate the situation, a number of standard aircraft
types were developed. Naturally, this development program had to be slanted
towards those types which could later be utilized effectively at the front; bi-
planes and high-wing monoplanes, for example, had to be stricken from the program.
The primary requirements were for: low-wing monoplanes with cabin, robustly
constructed landing-gear or - even better - retractable landing-gear, seats
next to one another rather than behind one another; double controls, landing
flaps or supplementary wing-slots, easy maintenance, and ease in installing
substitute engines and body parts.

An ideal training aircraft battery for the A/B schools (later A schools) would
have consisted of the Bue-161 for preliminary training, the Ar-96 for training
leading to the B-1 license, and the Si-204 for training in the operation of twin-
engine aircraft. Unfortunately this ideal was never attained. The preliminary flight training program was best supplied: the schools were up to authorized equipment strength from the beginning. As of 1 January 1943, they still had at their disposal 504 Bue-161's.176

as of 1 January 1944, this figure had increased to 1189 Bue-181's, and in
addition there were still sufficient Ki-43's available in case of need.

The training program leading to the B-1 license was not nearly as well off,
since the Ar-96, an excellent model designed to prepare the trainee for the
operation of the front models Ju-87, Me-109, and Fw-190, was never available
in sufficient quantity. As of 1 January 1943, the B-1 program had at its
disposal 597 Ar-96's; as of 1 January 1944, 376. Since these supplies
were inadequate, the program was forced to resort to the older Ar-86's and
Ge-145's, which had been intended for use in "harrassing squadrons" at the
front (like the notorious Russian "sweating machines"). After the campaign in
France, captured American aircraft of the NAA-57 and NAA-64 types were added
to the training aircraft available to the B-1 program.

The twin-engine training program also encountered difficulty, but of a
different kind; the Fw-53 and Fw-54, eminently suited for use as training air-
craft, had been made obsolete by the development of more advanced models for
use at the front. The Fw-56, designed as a training aircraft, represented a
step-gap solution at best, but one which simply had to be put up with. Although
this aircraft differed slightly from the products of German aircraft development,
a number of relatively simple modifications succeeded in making it usable.

During the course of the war, the models Siebel Si-204 and Caproni C-515 were
brought to the stage of series production, but deliveries were not begun until
1943 and even then never in adequate quantity.

As far as the C schools and instrument flight schools (later used for
B-license training) were concerned, the Ju-52 was and remained their standard
training model. This serves to explain just why the continual requisition of
this model
177 – Haldmann, op.cit.
178 – See the report of a conference between the Chief of Supply and Procurement, General Staff Chief Jeschonnek, and Luftwaffe Chief Engineer (Lt. Chef-Ing.) Luucht on 1 March 1940. Karlsruhe Document Collection.
was capable of leading to the desintegration of the training program. The procurement of the Ju-52 always remained one of the most serious Luftwaffe bottlenecks. In order to mitigate its inevitably serious effects on the training program, the Chief of Training, immediately after the first inroads on school aircraft supplies, requested that the twin-engine Ju-86 be converted for use as a training aircraft. Equipped with a crude oil engine, the Ju-86 had proved to be impracticable for use at the front but, in the opinion of the Chief of Training, it was both better suited to training purposes and more economical than the three-engine Ju-52. Nevertheless, State Secretary (Staatssekretär) Milch—with Goering's concurrence—disapproved his request. Milch claimed that the Junkers works did not have the capacity needed for the work of conversion (although the Chief of Training had previously been assured of the contrary), and that future production schedules envisioned eighty Ju-52's per month, which would be enough for both the training program and the establishment of new air transport units. As consolation prize, the Chief of Training was given control over all the Ju-52's in the Luftwaffe, with the authority to commandeer for the use of the training program all the Ju-52's assigned to "government personalities" (many state and Party bigwigs had Ju-52's at their disposal for official trips) and special duty staffs.

It is true that this concession gave the Chief of Training exclusive control of all available Ju-52's, but this did not give him the right to ignore the demands for such aircraft to relieve emergency situations at the front. In the course of time, the two models already mentioned (the Ju-52 and Ju-86) were augmented by the He-111, the Do-217, the Me-110, and Me-210, and the Ju-88, from domestic production sources, and by the captured models Bloch-200 and Me-200. This bewildering variety of
179 - (cont'd) General Kuehl (No. 172/42, Classified, dated 11 July 1942).
180 - General Deichmann, op.cit.
181 - Despite sincere efforts to achieve the contrary, the Chief of Training was
forced to admit that the captured aircraft models, because of their un-
familiar performance qualities, vastly different maintenance requirements,
and the difficulties involved in their repair, were not very popular in
the schools to which they were assigned and, in many cases, were not
fully utilized. The effort and expense needed to convert them to use as
training aircraft were often greater than was warranted by the actual use
made of them.
aircraft models assigned to the schools was reduced somewhat by the reorganization of the C-schools and instrument flight schools into B-schools. The new B-schools were set up as pure Ju-88, He-111, or Do-17 schools. As a whole, the B-schools were to comprise a selection of over twenty-five front-type models, but they always had to get along with the older models.

The allotment of front-type aircraft to the schools was a problem in itself—and a most unfortunate one at that. After all, the schools were expected to release only such flying and aerotechnical personnel for assignment to front units as had actually been trained in the operation and maintenance of the aircraft they would encounter there. The distribution of front-type aircraft, however, was the prerogative of the Luftwaffe General Staff, and the Chief of Training, even with Goering's personal intervention, never succeeded in having a sufficient supply allotted to the schools. The inevitable result, abundantly substantiated by statistics, was the destruction of a frighteningly large number of front aircraft because of wrong operation attributable to a lack of adequate training.

In an ingenious attempt to improve this situation, the Chief of Training established the 1st, 2nd, 3rd, and 4th Salvage Units (Bergungskommandos 1-4), whose task it was to collect front-model aircraft no longer capable of being repaired at the front repair depots. Those which could still be used were sent on to the schools, and those beyond repair were wrecked on the spot and salvageable parts returned to industry. The Salvage Units managed to save some 1,000 aircraft for the schools in this way, aircraft which helped a great deal to fill the gap created by insufficient allotment of front models.

Since conversion training to the more difficult front models such as the Ju-88 and the He-109 required a large number of aircraft, the demand soon arose for models equipped with double controls. Although the Technical Office consistently promised to have the aircraft slated for training purposes converted immediately, it was
not until the winter of 1942/43 that the first deliveries were received. In the meantime, acting on his own initiative, the Chief of Training, had arranged to have his own repair depots and aero technical schools do the conversion job themselves with the help of parts requisitioned from industry. During the year 1940, the Chief of Training had the following converted models at his disposal:

- **Ju-52** - 25-30 aircraft equipped with dual control
- **Ju-86** - 6-8 aircraft equipped with dual controls, and
- **He-111** - 5-7 aircraft equipped with dual controls.

These numbers, of course, were very far from adequate, and the Ju-88 program, in particular, was in urgent need of improvement, especially since there prevailed an unfounded feeling of antipathy towards this model in a number of schools.

As of 1941, under these circumstances, the number of Ju-88's converted to dual controls under the auspices of the Chief of Training himself was no longer sufficient for the needs of the program, and a request for 100 aircraft of the Ju-88-4-12 (with dual controls and wider cockpits) was submitted to the Chief of Supply and Procurement, Luftwaffe General Staff. Even this increase, however, proved inadequate to guarantee the effectiveness of the conversion training program and, in November 1942, a further request was submitted, this time for the Ju-88-8-7 (with dual controls but normal cockpits). The number of aircraft of these types actually available to the schools was as follows:

<table>
<thead>
<tr>
<th>Type</th>
<th>As of 1 Jan 43</th>
<th>As of 31 Dec 43</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ju-88-4-7</td>
<td>41</td>
<td>129</td>
</tr>
<tr>
<td>Ju-88-4-12</td>
<td>156</td>
<td>157</td>
</tr>
</tbody>
</table>

In the active units, the following forces had been converted to the Ju-88 by the winter of 1941/42: 8 bomber wings, all long-range reconnaissance squadrons, 4 bomber groups assigned to the Navy, and most of the night fighter units; the 3rd and 6th Bomber Wings were
182 - Heldmann, op.cit.
converted during the course of 1943. By the time bomber production was discontinued in the summer of 1944, for example, the General of Pilot Training had no more than thirty-six Ju-88's on hand to turn over to the bomber units.

Even taking into consideration the fact that the distribution of these aircraft, intended for commitment at the front, was very carefully supervised, this figure is astonishingly low and gives us a revealing picture of the situation as a whole.

In view of this abysmally unfavorable ratio between existing training capacity and actual training needs, it is clear that the crews could not possibly be familiar with all the various types of air ordnance when they left the jurisdiction of the Chief of Training. The job of rounding out their education in this respect was left to the replacement groups of the active wings. In other words, the responsibility of assuring an adequate degree of operation effectiveness on the part of the younger generation of Luftwaffe personnel was postponed to echelons nearer and nearer the front; ultimately it was passed on to the last link in the chain of using agencies.

An attempt was made to compensate for the critical shortage of modern aircraft types and to intensify the effectiveness of training by consigning a growing percentage of training activity to the ground. The schools', supplies of drill models and link trainers came in very handy in this respect. Models of the Ju-88 and Do-217, obtained from the wreckage of damaged aircraft, were jacked up in the hangars or in sheltered areas and wired so that the students could practice all the manual operations required for take-offs and landings and learn to work the landing flaps and tail-gear. The cockpit could be artificially darkened, so that mastery of these operations gradually became instinctive and automatic. One simulated practice flight over the airfield with a Ju-88, for example, required forty-eight separate manual operations (including the

185 - Based on a Morning Report from the Chief of the Luftwaffe Operations Staff, No. 4532/44, Classified, dated 1 July 1944.
handling of the engines), which each student was made to recite from memory.
A total of ten hours' training on the model was the standard.

Beginning in 1942, the number of Link trainers allotted to the schools was
increased somewhat. A total of twenty hours per student was the accepted standard.
The Link trainer was a highly complex piece of electronic equipment and was an
elegant device for training in instrument flight and in the techniques of
course computation.

In addition to the instructional aids described above, it goes without saying that all the available aircraft were exploited to the allowable limit of
flight hours permissible between overhauls. This was especially true of the
Ju-52, used in instrument flight training, and of the Ju-88 and He-111, used in
bomber training. Such an intensive flight program, however, presupposed the
availability of a well-organised technical maintenance service, with repair
depots of its own in which the pre-repair waiting time could be cut to a
minimum. In order to guarantee such service, the Chief of Training, alerted
to difficulties arising in connection with the engine repair jobs turned over
to the aircraft industry, equipped his aviation technical schools with so-called
engine-belts (Motorenstrassen), on which the assembly-line technique was applied
in the overhauling of engines belonging to the schools. An attempt was made
to apply the same system to maintenance activity, but this was wholly ef-
effective only when the school concerned had only one type of aircraft to service.
The maintenance troops were organized into units, each of which was responsible
for carrying out the same type of service on all aircraft. One unit checked
ingines, a second worked on landing gear and steering system, a third was in
charge of cleaning the aircraft, etc. Women were also employed in this activity
on an experimental basis.

The results were gratifying - faster and better maintenance service and a
saving in military personnel. Careful instructions, of course, were necessary.
The guiding purpose of all these measures was an increase in the operational readiness of all the aircraft available to the training program, in order that the schools might have the maximum number of aircraft at their disposal at all times.

As of September 1944, the number of aircraft assigned to the schools totaled 9,738. Even in terms of quantity, this was far below the standard considered necessary by the General of Pilot Training, who maintained that the training program should have twice as many aircraft as specified by the authorized equipment strength of the front units. Even more important, however, was the fact that only a relatively small percentage of the total was made up of the most up-to-date models. Thus the student could not be expected to be "at home" in his aircraft when he reported for duty at the front.

4. Allotment of Aviation Fuels to the Schools

As we have seen, the training program did not have sufficient late-model aircraft at its disposal to fit the crews for full effectiveness with the units at the front and thus was forced to resort to all kinds of emergency measures to compensate for this lack. None of these measures was of the least use, however, once fuel allotments were cut to the point where the program was unable to put even its few available front-model aircraft into the air. On the contrary, as the course of military developments began to require frequent geographical transfer of the schools, their aircraft inventories became a liability. In the case of sudden moves out of threatened territory, aircraft for which no gasoline was available had to be deliberately wrecked or even blown up.

186 - Based on documents from the office of the Quartermaster General, Luftwaffe, Karlsruhe Document Collection.
187 - General a.d. Scheuerian, "Die Ausbildung 1941/42" (Training during 1941/42), states: "Altogether the front units had 6,441 aircraft at that time." Karlsruhe Document Collection.
During the years 1939 and 1940, the procurement of aviation fuels created no special problems. From 1941 on, however, it became one of the most important headaches of the Chief of Training and the organisation which succeeded him.

As early as mid-1941, the requisitioning of the minimum amount of gasoline needed to operate the training program was subject to monthly battles which were usually decided against the Chief of Training. Even when he succeeded, by dint of personal interview with the Commander in Chief, Luftwaffe, in obtaining assurances that the necessary allotment would be granted, it often happened that new developments and the decisions they required rendered these assurances worthless.

Any special military operation, the campaign in Yugoslavia with subsequent occupation of Greece and Crete, the campaign in Russia, the air supply operations at Demjansk, and then at Stalingrad, etc., served to reduce the supply of aviation fuel slated for the training program.

The extension of the war to Russia and North Africa had a very detrimental influence on the gasoline situation. Domestic production had started too late and, as of early 1941, amounted to no more than approximately 60,000 tons of aviation gasoline per month. This figure was raised to 120,000 tons per month by the end of 1942, and by early 1944, when the Allies began their systematic bombardment of German hydrogenation plants, to 180,000 tons per month. By September 1944, as a result of the Allied bombardments, production was down to 3,500 tons per month, only to rise again to 25,000 tons per month by December of the same year. As a result, the total supply of aviation gasoline, largely made up of imported stocks, amounted to approximately 400,000 tons in September 1939; by the end of 1940, it had been increased to some 600,000 tons, thanks to the intervening capture of French stocks.

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166 - "Die Entwicklung der Flugbetriebesstofflage der deutschen Luftwaffe" (The Development of the Aviation Fuel Situation Faced by the German Luftwaffe) a study prepared by Branch VI of the Luftwaffe General Staff under date of 25 May 1945. Karlsruhe Document Collection.
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