Participating in these air transport missions, carried out under almost peacetime conditions, the aircraft crews gathered valuable experience for their later commitment in Africa.*

C. The Occupation of the Isthmus of Corinth, 26 April 1941

Once the Germans had broken the Greek's Metaxas Line,/ it was of decided importance to the success of future operations that the enemy, already in retreat, be given no time to set up a new and effective defense. Terrain conditions and the Greek traffic network were in the enemy's favor because they offered a defending force a number of promising opportunities for the establishment of buffer positions from which a stronger attacker could be slowed down effectively by stubborn resistance. A rapid thrust by armored and motorized units was the only way to thwart the enemy's intentions and to assure a fast advance for the invaders.

It was fairly certain that this forward thrust down the mainland of Greece would not have the striking power to occupy the Peleponnesian Peninsula at the same time, and that a separate operation would have to be undertaken for this purpose. But the Isthmus of Corinth, which formed the only land approach to the peninsula and which was crossed, through its entire breadth, by a deep canal, was a natural barrier against an invader for it could be defended indefinitely by a comparatively small force. Reconnaissance reports indicated that there were at least one British brigade and one antiaircraft artillery battalion

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* Daily operational reports were forwarded to the Italian High Command and to the office of the Air Commander, Italy, through the German liaison officer at Rome. A summary of these reports is in the Karlsruhe Document Collection, F/VII/1.

/ Editor's Note: The German campaign in Yugoslavia and Greece began on 6 April 1941. It was prompted by the failure of the Italian campaign in Greece and the simultaneous British buildup in Crete, which could eventually threaten the strategic Rumanian oil fields with bombing attacks by Crete-based RAF planes. By 9 April 1941 the German 12th Army had taken Saloniki and thereby forced the Greek troops defending the Metaxas Line to surrender.

installed in well constructed positions along the southern edge of the canal.

Due to the presence of British forces which had been pushed back onto the peninsula during the course of operations on the mainland, and had traversed the isthmus, despite an attempted out-flanking maneuver by the Germans, it was clear that the natural defense barrier represented by the isthmus and the canal was also backed up by a defense in depth. Under these conditions, even a fresh and powerful German attacking force would be bound to run into heavy and costly fighting in this area.

An attack on the peninsula via the Straits of Corinth would have required weeks of careful preparation, for at this time neither the Germans nor the Italians had at their disposal the necessary shipping capacity in the form of assault boats, lighters, and landing barges, nor could these be procured on such short notice. On the other hand, there seemed to be no other way to achieve a breakthrough of the natural defense position on the isthmus and to open the way into the peninsula. Moreover, German leaders had no choice but to assume that the British, in the meantime, had been strengthening their force on the isthmus, for it was of the utmost importance for England to maintain her position on the Peleponnesus (as the apex of the triangle Crete - Peleponnesus - Malta) in order to protect her influence in the Mediterranean. The German naval forces were not strong enough to prevent any British moves to bring reinforcements into the area, and it is highly improbable that the Luftwaffe, utilizing newly captured bases on the Greek mainland, would have been capable of preventing them either, especially since any increase in the British force would automatically have meant an increase in the number of British fighter aircraft in the area.

In order to prevent the buildup of an excessively strong British force in Greece, a development which might well have had a detrimental influence on the campaign in Greece as well as on all other operations in the Mediterranean area, it was imperative that Germany occupy the Isthmus of Corinth at the earliest possible moment. A coup de main might keep the entrance to the Peleponnesus open for the troops advancing on the mainland. The surprise occupation, however, would have to take place before the British had time to realize that German armored units were heading for this area. Once the British became aware of such a possibility, they would

immediately take steps to assure the defense of the isthmus. In view of these factors, the only way in which a German action could succeed was by means of an attack from the air.

The employment of parachute forces in the occupation of the Isthmus of Corinth is one of the most interesting examples in the entire war of a mission which could be accomplished in this way and in no other. Inevitably, it also focuses attention on one of the primary missions of an air transport force, a mission which will no doubt always have high priority among the many and varied methods of employing such a force. With the help of paratroopers and air transport forces it was possible for Germany to strike a decisive blow overnight from the depths of her rear area against a key enemy position located far in advance of her own lines. A successful operation of this sort was clearly capable of depriving the enemy of every advantage and of exerting considerable influence on the entire campaign.

Generalleutnant Wilhelm Suessmann, Commanding General of the 7th Air Division, was ordered to occupy the Isthmus of Corinth on both sides of the canal (utilizing a reinforced parachute regiment for this purpose), to subdue enemy resistance, and to defend the occupied area until such time as contact could be established with the troops advancing down the mainland. Needless to say, it was imperative that the bridge across the canal come undamaged into German hands so that there would be no delay in the advance onto the peninsula.

The 2d Special Duty Bomber Wing, under the command of Colonel von Heyking, was assigned to the 7th Air Division for the duration of the operation. The Wing was to drop the parachute regiment over the target area and, later, to assume responsibility for air-supply operations if these should prove to be necessary.

In order to assure absolute secrecy the undertaking was to be carried out from the airfield at Plovdiv, in Bulgaria. The aircraft were to make an intermediate landing for refueling purposes at the airfield at Larissa, Greece, during the night immediately preceding the action, which was scheduled to begin at dawn on 26 April 1941.

Irrespective of their previous chain of command, the air transport units which had been stationed in the Wiener-Neustadt area since the beginning of the campaign in the southeast were utilized to form a

supplementary reinforced special duty wing,* which was to be available for employment at Corinth.

On the whole, the units were up to full equipment strength and each had fifty-three Ju-52's at its disposal. Since the units from the Wiener-Neustadt area had flown very few missions to Rumania and Bulgaria, with the exception of sporadic troop transport actions, the degree of operational readiness could be assumed to be fairly high.

There is little point in our devoting detailed attention to the factors of the personnel and technological adequacy of ground organization services, for no difficulty was encountered in this respect. The part played by these factors at Larissa, the airfield selected for the refueling landing, will be mentioned later.

The crews participating were well trained and experienced in the flight techniques needed to meet the demands of the operation. Additional requirements had been thoroughly covered during a specialized training course of several months duration which they had just completed. Most of the crews had also had combat experience in Norway and Holland.

The supplementary air transport groups scheduled to participate in the undertaking were assembled at the airfield at Plovdiv and placed under the command of the 2d Special Duty Bomber Wing. The paratrooper forces were transported from central Germany to Plovdiv, most of them by air. On 25 April both the transport units and the paratroopers received orders to stand by for immediate action. In the subsequent briefing period, the paratrooper forces were distributed among the available air transport units, within which they were assigned to specific aircraft. The move to Larissa, the refueling operation, the take-off line-up, and the actual accomplishment of the mission were discussed in detail.

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* The participating units were: the 2d Special Duty Bomber Wing; the 1st and 2d Groups, 1st Special Duty Bomber Wing; the 1st Group, 1st Airlanding Wing and the 60th and 102d Special Duty Bomber Groups. In addition, there was one squadron of Ju-52's and freight gliders (DFS-230's). The 101st and 172d Special Duty Bomber Groups and elements from the Bomber Group Babekuhl were held in reserve.

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In order to avoid too great a concentration of aircraft at Larissa, which might have given enemy reconnaissance aircraft a hint of the coming parachute landing, the beginning of the move to Larissa was timed in such a way that the first units would arrive there in the early dusk. If the enemy should become aware of the arrival of a comparatively large force of Ju-52's in the assembly area, he would be able to conclude immediately that a large-scale parachute or airlanding was being prepared, especially in view of the fact that past experience had shown him that such large concentrations of transport aircraft were never utilized for transport operations alone but invariably meant a joint operation with the paratrooper forces. Moreover, in view of the general over-all military situation, it would not have been difficult for him to guess the probable target of the action in time to counter the undertaking effectively. The elimination of the surprise factor would have jeopardized the success of the operation which might then have resulted in a catastrophe.

On the other hand, the chances of carrying out a move on such short notice--and a move which was to be followed immediately by the launching of the undertaking itself--with any degree of smoothness were good only if the participating units were accustomed to working together. And since many of the units had been organized so recently, this condition could not be fully met either by the air transport groups or by the parachute regiment.

The original loading operation had to be carried out as rapidly as possible, so that the aircraft could adhere to the take-off schedule; on the other hand, it had to be accomplished with great care and accuracy, since at Larissa there would be neither the time nor the opportunity to make any changes. Under these circumstances, it was perhaps understandable that the paratroopers insisted on taking more time for the loading operation, even though it meant that the aircraft could not take off on schedule. Since the timing at Plovdiv was so close, it was not feasible to set up a new take-off schedule to permit the units to start in closed formation. As a result, most of the aircraft took off for Larissa singly or in small groups. Not even all the aircraft belonging to one group managed to stay together. Even so, every machine had arrived at Larissa before nightfall.

It was during the night, however, that the untoward effects of the jumbled take-off began to make themselves felt. Each aircraft had to line up in its proper position within its unit, so that there would

be no delay in the take-off the next morning. Also, each aircraft had to be refueled during the night. Under normal conditions, the airfield would have been large enough to handle the transport units easily; at the time, however, it was also being used by one dive-bomber and one fighter unit, and as a result ground organization services were simply not adequate. No special arrangements had been made to provide for the servicing of the air transport units, and the fact that this extremely important measure had been neglected led to a great deal of inconvenience. Each and every Ju-52, after landing, had to taxi over to a central gasoline depot, where it was refueled with a hand-pump from a fuel drum. Since there were some 270 Ju-52's to be serviced in this primitive manner it is no wonder that the refueling operation lasted almost until morning, when the first unit was already lining up for take-off.

It was a happy coincidence that the airfield, which was chaotically disorganized, was left in peace by enemy aircraft during this particular night. Even a medium-scale enemy bombardment would have been bound to result in extremely high losses in both personnel and aircraft. And inasmuch as the reserve groups had been withdrawn in the meantime, the operation could simply not have taken place.

Despite the difficulties encountered during the night, the first unit was able to take off on schedule, at 0500. The following units took off slightly behind schedule but were able to make up the delay during their approach flight. The precaution of ordering all crews and all paratrooper units to remain with their aircraft, regardless of whether it was being refueled or was lining up in take-off order, proved to have been a very wise one. Climatic conditions in the assembly area were such that an order of this kind could be issued without fear of jeopardizing the physical stamina of the personnel involved. On the contrary, they were probably more comfortable and got more rest under these conditions than if they had been billeted somewhere away from the airfield, which would have required a fairly long march to and from the billets.

The take-off of the air transport units had been timed so that, allowing approximately two hours for the approach flight, the paratroopers would be landed at their target shortly after 0700. The three freight gliders, whose occupants had been assigned the mission of seizing both entrances to the canal bridge in a coup de main, overpowering

the bridge guards, and removing the explosive charges presumed to be laid there, were to land at the same time as the first paratrooper units. The three gliders had taken off ahead of the other aircraft to compensate for the fact that the aircraft towing them would fly approximately twelve and one-half miles per hour slower than the rest.

On the morning of 26 April, the weather was very nearly perfect--no clouds and almost no wind. The units took off in groups of three, each close behind the other, and set their course immediately for the south. An assembly in the air was impossible because of the dark, moonless night and the proximity of the mountains. The aircraft had been ordered to climb at full speed in order to lose no time in gaining the altitude needed (9,840 feet) to fly over the Pindus Mountains in safety. Navigational aids were not available, i.e., radio direction bearings could be neither given nor taken. They probably would not have been of much use in any case, since the terrain below was quite mountainous and landmarks almost impossible to discern in the uncertain light of dawn. To keep on course, the pilots had to rely upon the exactness of the carefully computed flight data and on visual contact with the aircraft flying immediately in front of them. The exhaust flames of the engines were of great assistance until it became light enough to see.

After crossing the Pindus Mountains the aircraft descended to about 100 feet above the water in the vicinity of Patras. Flying in a long column, three aircraft abreast, they turned towards the east-southeast and moved to their target over the Gulf of Corinth. Their low altitude and the layer of haze lying over the gulf permitted them to reach the target undetected. Because the contours of the canal were so easily recognizable, the pilots had no difficulty in locating the areas over which the paratroopers were to be dropped. Before reaching the target, the aircraft column climbed to 390 feet--the proper altitude for releasing paratroopers--and encountered no difficulty in carrying out the mission as planned.

Immediately before the first paratroopers started their leap, bomber and dive-bomber aircraft from the 8th Air Corps carried out an attack with bombs and airborne weapons over the target area in an attempt to eliminate enemy defensive fire, or at least to force the defenders to seek cover. Since the last of the bombs, the first paratroopers, and the three freight gliders landed simultaneously, the enemy's confusion was complete. This confusion was skillfully

exploited in order to assure a smooth landing for the rest of the paratroopers. The Pitzonka battalion, which had landed on the northern edge of the canal, soon succeeded in overcoming and taking prisoner the relatively weak enemy force stationed there, and was able to furnish valuable supporting fire for the units fighting the large enemy force on the southern side of the canal.

The units which had landed in the freight gliders were less fortunate. After the bridge was already securely in German hands, and the explosive charges removed, a stray shell from a British anti-aircraft artillery battery landed in the midst of the explosives lying on the bridge, igniting them immediately. The bridge was completely destroyed and with it the only connection between the two banks of the canal. During the same afternoon, however, an emergency bridge was constructed next to the wreckage of the old one--an excellent piece of work on the part of a reinforced engineer construction platoon belonging to the parachute regiment--and the way was clear for the advancing Army troops to cross from the mainland to the peninsula.

After releasing their loads of paratroopers, the transport aircraft flew back to their take-off base at Larissa, flying at low altitude and following substantially the same course as they had used for the approach flight. At Larissa they were made ready for a possible second wave during the afternoon. The initial phase of the operation had been such an outstanding success, however, that enemy resistance had been completely broken during the first few hours of fighting and there was no need for the immediate transport of reinforcements or of supplies. The only requirement to be met was a request for anti-tank mines, which were transported by one aircraft from the 102d Special Duty Bomber Group to an emergency airfield in the vicinity of the canal which had been designated by the parachute unit concerned. Further developments in the ground fighting were so conclusively favorable that the air transport units were immediately withdrawn.

The action at the Isthmus of Corinth, more than any other equally well-prepared parachute or airlanding action, serves to illustrate the tremendous advantages accruing to a military apparatus which has at its disposal a powerful paratrooper force and a capable air transport force. In this particular instance, the two forces, which happened to be stationed at localities far distant from one another, were brought together in a conveniently located assembly area in the shortest possible time and, after only a few hours of preparation,

were able to deliver a decisive blow against the enemy. The need for this mission had developed unexpectedly out of the over-all military situation, and the conditions under which it was carried out were entirely in keeping with the special, joint capabilities of the paratrooper and air transport forces.

It is true, of course, that there were several factors--some of which could be counted upon in advance and others of which could not possibly have been foreseen--which exerted a very favorable influence on the undertaking at Corinth. One of these was the personal efficiency of the unit leaders and the high degree of cooperation evidenced by all participants which made it possible to rule out the potentially catastrophic effects of the difficulties at Larissa.

A delay of even one or two hours in the take-off at Larissa, which would have been understandable under the circumstances and which could have been justifiably attributed to carelessness in the planning and preparations, could have resulted in a complete failure.

The success of the undertaking cannot be accepted as conforming to the rules, unless the parachute and air transport forces are always so closely allied that they can compensate for failures in planning by means of joint improvisations. In this particular case, both the officers and men of all the participating units were so familiar with the role of each instrument in the over-all operation, as a result of previous joint employment, that each force was able to appreciate the requirements of the other and to give them due consideration. In view of the probable variety of such joint missions in the future, however, one cannot always take such close previous association for granted. Accordingly, those charged with planning and organization will have to assume responsibility for guaranteeing that missions of this type (which are bound to occur time and again during the course of a war) can also be carried to a successful conclusion by units which have never before worked together. Such units must be able to rely on the routine taught them by past experience. The first alternative described above is more desirable from a personnel point of view, but the second alternative must be accepted objectively as being more flexible from an organizational point of view.

D. Sicily - Africa, 7 February 1941-10 December 1941

The military situation in the North African theater of

war* made necessary the transfer to Africa of a number of bomber, fighter, and dive-bomber units previously stationed in Italy. With their transfer there also arose the necessity of providing them with ammunition and aviation fuel. In early February, prior to the conclusion of the war in Albania, a part of the 3d Group, 1st Special Duty Bomber Wing, was withdrawn from air-supply operations for the troops in Albania and transferred to Comiso, Sicily, where it was soon joined by the rest of the Group, and made subordinate to the 10th Air Corps. Heretofore, the Africa Corps had been supplied exclusively by ocean transport, and now this method was to be supplemented by air shipment of reinforcements, weapons, and equipment.

In February, the German-Italian offensive began. On 31 March 1941, the 3d Group directed the transfer of tactical air units to their new locations in Africa and began to supply them by air for as long as might be necessary. On their return flights from these supply missions the 3d Group carried wounded and sick personnel, unserviceable equipment, and instructional materials. Group headquarters was in Catania to begin with and was later moved to Brindisi. The number and variety of the missions to be carried out and the need for having stocks of supplies stored at various places along the route made it necessary to utilize an entire series of take-off bases in Sicily, Greece, and Africa. In each case, individual squadrons were dispatched to the bases at which they were needed; the entire Group was never concentrated at any one base at one time. The command function, the welfare and morale of the personnel, and the accomplishment of the mission all suffered as a result of this situation. During the months of March and April, the 2d Group, 1st Special Duty Bomber Wing, was also employed in transport missions to Tripoli and Bengazi but

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* Editor's Note: On 12 September 1940 the 10th Italian Army, under Marshal Graziani, launched an attack across the border of Libya into Egypt. On 8 December the British responded with a counteroffensive under General Wavell. By early February 1941 the British had driven the Italians out of Egypt and neighboring Cyrenaica and had taken 130,000 Italian prisoners. At this point, in response to the Italian Government's urgent request, Hitler established the Africa Corps and sent it, under the command of General Erwin Rommel, to the aid of the Italians. The arrival in Africa of the Africa Corps was quickly followed by the first German-Italian offensive, which brought with it the need for increased German air transport and tactical air support.

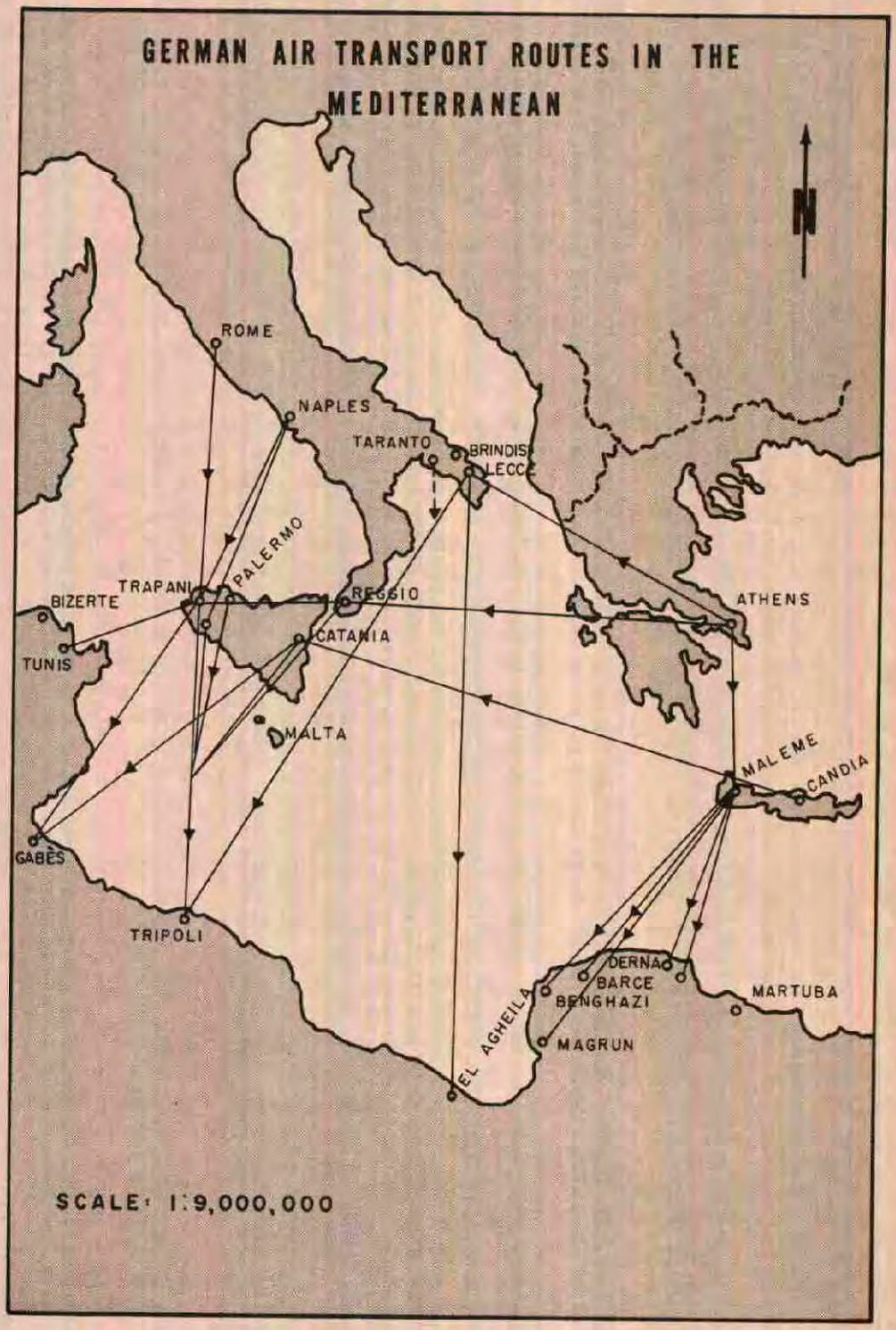
it was withdrawn again as soon as it could be spared.

Each transport mission was carried out by a group of approximately twenty-five Ju-52's, flying in close formation and--until late March--without a fighter escort. After the end of March, an escort of two Me-110's picked up each group as it approached the coast. At first the Ju-52's would come in over the water at hedge-hopping altitude, but the escort aircraft, flying high above the water, found that the transport aircraft could be detected by means of the black line which their exhaust fumes made over the water. From then on, the Ju-52's were ordered to maintain an altitude of at least 165 feet above the water.

Despite the fact that there was a British fighter force based at Malta, there were only seven days throughout the air-supply period on which the transport aircraft ran into enemy aircraft over the ocean; on one or two occasions a Ju-52 was attacked by a twin-engine Blenheim. The flight route leading from the take-off bases in Sicily to Tripoli followed a southwest course as far as Pantelleria and then veered to the east towards the islands of Lampedusa and Lampione and on to Tripoli; at every point it was a good sixty miles distant from Malta.

On those days when British ocean convoys crossed the route followed by the transport aircraft, the supply missions had to be cancelled because of the attendant enemy air activity. The movements of German convoys were radioed through to the air transport units, and the latter were expected to alter their course in order to skirt them by at least five-eighths of a mile upon receipt of a prearranged code signal. It always paid to be careful in encountering Italian ships, for their ship-based antiaircraft artillery units invariably opened fire against the Ju-52's. Because of the critical gasoline shortage, the missions to North Africa were restricted to the transport of urgently needed spare parts, ammunition, and gasoline for the armored divisions at Tripoli. After the occupation of Crete, transport missions could be flown from Greece to Derna, via Maleme.

Weather conditions caused no difficulty, inasmuch as the weather was uniformly good. Heat, dust, and sandstorms, however, made themselves unpleasantly felt and the personnel suffered from intestinal maladies. These same climatic conditions also resulted in frequent engine breakdowns, which could not be prevented entirely



even by such special measures as oil cooling devices and sand and dust filters.

As far as air traffic control and flight safety were concerned, the available facilities included the direction finding and radio stations on the mainland, the radio beacons at Bengazi and Derna in North Africa, the radio station at Tripoli, and the radio stations at Athens, Greece and Cape Sideros on Crete, all of which were in good operating condition.

E. Crete - Africa - Derna, 10 December 1941-30 June 1942

By December 1941 the Africa Corps had been pushed back to the Gulf of Sidra. Supply operations by sea had resulted in the loss of so many ships to British submarines and aircraft that the air transport of supplies--and particularly of urgently needed reinforcement troops--was becoming necessary in ever greater scope. The situation was further complicated by the fact that adequate transport space was simply not available, nor could it be spared from other fronts. As usual, the only solution was to order the Chief of Training to release the required crews and aircraft from the instrument flight and C-schools. Accordingly, on 10 December 1941, the 400th and 500th Special Duty Bomber Groups were formed at Munich-Riem and--even before they were completely organized--were ordered to Foggia, Brindisi, and Trapani, where they were assigned to the Air Transport Chief (Mediterranean).

With the arrival of these two groups, the following air transport units were available in the Mediterranean - North African theater: the 3d Group, 1st Special Duty Bomber Wing; the 400th and 500th Special Duty Bomber Groups; one air transport squadron from the Africa Corps; one air transport squadron from the 10th Air Corps.

The two newly organized units were utilized to transport replacement personnel for the Army and the Luftwaffe from Naples and Palermo to Tripoli. On their return flights, they carried wounded and--if there was transport space available--Italian refugee families, women, and children back to the mainland. The aircraft, however, could fly only one mission a day. The air transport squadron from the Africa Corps and one squadron from the 3d Group, 1st Special Duty Bomber Wing, were being used exclusively for air supply in North Africa. The transport squadron from the 10th Air Corps was

busy with air transport missions devoted to carrying supplies for its parent organization. Based at Athens-Tatoi, still another squadron from the 3d Group, 1st Special Duty Bomber Wing, was responsible for air supply to the islands of Crete and Rhodes.

The critical situation in Russia, mounting losses, and the inexperience of the crews had a detrimental effect on the air-supply mission to Africa. On 15 January 1942, the 500th Special Duty Bomber Group was transferred to the Eastern front to help out in air-supply operations for the forces at Demyansk. The 400th Special Duty Bomber Group (which had already lost eleven Ju-52's), together with two squadrons from the 3d Group, 1st Special Duty Bomber Wing, continued the air-supply missions in Africa. The total requirements, however, could no longer be met with the air transport facilities still available. The 400th Group continued to lose aircraft and crews as a result of enemy action and the young and inexperienced crews were simply not capable of meeting the demands made upon them.

After 11 December 1941, the shipments, consisting chiefly of gasoline for the vehicles of the retreating Africa Corps, were sent from Crete to Derna.* On 12 December, a supply of gasoline which had just been delivered was destroyed in the assumption that the British were about to attack the Derna airfield. When this turned out not to be the case, the transport aircraft had to deliver a second load of gasoline to Derna during the following night.

Transports of aviation fuel to the Gulf of Sidra, which is to the west and much farther from Crete than Derna, were fairly pointless. This was demonstrated on 14 December 1941 when transport aircraft used up half the supply, which they had just brought in to the Gulf of Sidra, to refuel for their return to Crete. As a result, air transports by way of Crete were discontinued as of 20 December. The air transport units were transferred to southern Italy, where they resumed air-supply missions to Tripoli via Sicily. On 26 December 1941, the 400th Special Duty Bomber Group was moved to Tripoli to carry out troop transports from Trapani to North Africa; gasoline transports

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* Air transport units also engaged in an air-supply mission over the Halfaya Pass within the framework of the retreat action. See Sondereinsatz Halfayapass, Dezember 1941-Februar 42 (Special Mission, Halfayapass), F/VII/1, Karlsruhe Document Collection.

Interior of a Ju-52 loaded with gasoline drums

A Volkswagen being transported to Africa in a Ju-52

had become fairly rare, and were undertaken only when it was absolutely necessary.

An almost continuous haze and rough seas combined to favor the transport missions, for these conditions diminished the likelihood of encountering British fighters from Malta. Also, experience had shown that British fighter aircraft coming upon a transport unit would leave it alone if the transport aircraft opened fire immediately. After two British fighters were shot down by transport aircraft on 8 January 1942 the British were even more willing to leave them in peace. Whenever German fighter aircraft were available the transport units were given a fighter escort through particularly dangerous areas. When the weather was good and the sea calm, a fighter escort of two Me-110's was assigned to accompany each transport unit as far as approximately sixty-three miles southwest of the southernmost point of Malta. There was no further danger of encountering British fighters beyond this point. At that time, an escort of two Me-110's was sufficient. When the weather was bad and the sea rough, the transport aircraft flew in groups of three to six; during good weather they flew in groups of twenty-five to thirty, accompanied by an escort of Me-109's. By the time these missions came to an end, the operational readiness of the air transport units had decreased to approximately 50 percent.

Meanwhile, the ground situation on the North African front had improved to such an extent that the Africa Corps was advancing once more.* Fighter and dive-bomber units had already been ordered back to Martuba, despite the fact that it was impossible to assure them of a continuing supply of aviation fuel because the situation between the Gulf of Sidra and Martuba was still uncertain. In the interim, all available air transport units were ordered to concentrate on flying gasoline from Bengasi to Martuba. Later, a routine was established whereby a group of twenty-five Ju-52's flew two gasoline missions per day, taking off from Crete and following the route over Derna. In the meantime, the 400th Special Duty Bomber Group moved to Brindisi and was employed in the air transport of replacement personnel from Brindisi via Greece to Crete; here they boarded other aircraft for the

* Editor's Note: Rommel began this offensive on 20 January 1942. By 1 July the Africa Corps reached El Alamein (about 70 miles southwest of Alexandria), but it was unable to go any farther. Four months later it began its final retreat and the German threat to Suez was ended.

trip to Derna. In the beginning, the Group transported approximately 700 troops per day, later on only 400.*

The shortage of fighter aircraft often made it impossible to insist upon the presence of a fighter escort on air transport missions; besides, up until 11 May 1942, British fighters had been very little in evidence. On 12 May, however, about 100 miles north of Derna, British fighter aircraft attacked a group of thirteen virtually unescorted Ju-52's. Hit by enemy fire, eight of them went down in flames over the water; one, despite heavy damage, was able to reach the beach at Derna; and the other four, also damaged, managed to make it to the airfield at Derna. Losses totaled thirteen Ju-52's and 175 men; forty-seven men were rescued from the water. Since no British aircraft had been sighted for so many weeks, a false feeling of security had resulted; thus, the transport missions were flown over the same course day after day and approximately at the same time each day. On this particular day there was one Me-110 flying with the group as escort, and it was the first aircraft to go down in flames. After 12 May, the flight course and timing were altered constantly, and each group of transport aircraft was accompanied by an escort of four fighters. In addition, whenever fighter aircraft could be spared from the African front, the transport units were picked up by escorts over the coast north of Derna.

Meanwhile, the operational readiness of the air transport forces sank lower and lower: one group had only eighteen to twenty serviceable machines available per day; another had been assigned so many special missions that it had only ten or twelve aircraft available for air-supply missions to the front. Serviceable aircraft were being utilized for as many as three missions per day--a flight time of twelve hours--and even so the requirements of the Africa Corps could not be fully met. After the capture of Tobruk by the Germans the 4th Group, 1st Special Duty Bomber Wing, and the 600th and 800th Special Duty Bomber Groups were transferred into the Mediterranean theater. With the arrival of these new groups, and with the occasional assistance of the 1st Airlanding Wing, it was possible to meet the demands of the Africa Corps for the daily transport of 1,000 troops and twenty-five tons of equipment. Despite its tremendous scope, this operation could be carried out because it was now possible to

* This was clearly an uneconomical use of air transport.

store the daily fuel needs of the transport units (approximately 79,250 gallons) at Crete.

In the meantime, facilities for the technological servicing of aircraft and the care and supply of troops had been organized in Africa, and aircraft repair shops, spare parts supplies, and personnel were available in sufficient number. However, there were not sufficient replacement aircraft available to compensate for the daily losses. At the airfields in both the take-off and target areas, loading and unloading operations were well organized and adequate facilities were available for the care of wounded and for their transport to hospitals.

F. Crete - Africa - Tobruk, 1 July 1942 - 19 November 1942

By late August 1942, the advance of the Africa Corps was brought to a halt at El Alamein because of a critical shortage of gasoline. For a while all air transports to Africa were restricted to gasoline, although the Ramcke Brigade, a number of Luftwaffe antiaircraft artillery units and a number of Army units--an average of about 850 troops per day--had been brought over by air during the latter part of July.*

Although the Air Transport Chief (Mediterranean)/ and his forces remained subordinate to the Air Commander, Italy, they were under the operational control of the Quartermaster Branch, Commander in Chief, South.

There were no basic changes in the methods used in carrying out these missions to Tobruk. The military situation, both in the air and at sea, had remained substantially the same except for the fact

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* A special mission was carried out at the end of July to occupy the Siwa Oasis. See Sondereinsatz Oase Siwah (Special Mission, Siwa Oasis), 23 July 1942, F/VII/1, Karlsruhe Document Collection.

/ The Air Transport Chief (Mediterranean) had the following units at his disposal: 3d Group, 1st Special Duty Bomber Wing (Tobruk); 4th Group, 1st Special Duty Bomber Wing (Maleme); 400th Special Duty Bomber Group (Brindisi); 600th Special Duty Bomber Group (Brindisi); 800th Special Duty Bomber Group (Brindisi); 1st Group, 1st Airlanding Wing (Athens).

that enemy submarine activity had increased. As soon as the transport units came in sight, the submarines submerged, but judging from the employment of the British fighter aircraft, the submarine reconnaissance reports had been carefully evaluated by the RAF. Interestingly enough, after mid-August no further attempts were made to harass the transport aircraft. This may be attributed to three main factors: 1) The majority of the British fighter units were busy on the North African front and could not be spared for other tasks; 2) the flight range of the fighters based at Malta and Alexandria was too limited to permit them to attack transport units on the North African run; and 3) it is quite possible that the British wanted to have as many German troops and as much German materiel as possible concentrated in Africa, so that the coming large-scale Allied offensive--the success of which was never doubted--would be really worthwhile.

During this phase, the transport units were accompanied by an escort of three to four fighter aircraft, depending upon the number available. After two British fighters were shot down by a group of Ju-52's, the British limited their attacks temporarily to those transport aircraft flying alone or leaving formation shortly before reaching the coast. These were aircraft which did not really belong to the units but were temporarily attached for the completion of special missions. Prior to the Battle of El Alamein, the majority of the British units were fairly weak and most of them had no desire to take on a transport unit flying in close formation. Once the British had succeeded in breaking through at El Alamein, however, they moved a number of fighter units to bases farther west, and enemy air activity over the North African theater of operations increased from day to day. It was remarkably quiet over the water but enemy fighter activity over the mainland was more than enough to make up for it, disrupting the course of the transport missions and occasioning constant heavy losses.

After the fall of Tobruk on 2/3 November 1942, the British had complete air superiority over the coast as far as the Gulf of Sidra, and made it almost impossible for the German transport units to continue air supply to the armored forces. It was during this phase of the operation that losses were highest. At the end of this period, a number of night missions were flown to airfields lying between Bengazi and El Agheila. Regular enemy bombardment of Maleme (Crete), beginning at the end of August, resulted in heavy losses in

both men and aircraft.

Basing their technique on past experience with British fighter aircraft, the transport units now began, when attacked, to close formation, then to drop down to just above the water, and to open fire immediately--even from a distance--the infantry troops on board manning the machine guns at the windows. The concentrated fire power of the entire unit and the inability of the enemy fighters to get in close enough to attack from below, usually constituted a successful defense. Once the first attack had been turned back successfully, the crews gained confidence and the appearance of an enemy fighter no longer had the power to render them helpless. During this phase of the campaign the Ju-52's were flying in formations of fifty to sixty aircraft.

Weather conditions had little effect on the operations; even low-lying clouds and the resultant poor visibility still permitted flights in close formation over the water.

During the course of this air-supply action, in a total of 11,500 missions, the three groups transported: 42,000 troops; 15,000 tons of supplies, ammunition, and gasoline; and 9,000 wounded and sick personnel (flown back to the mainland).

During the six-day special mission to Martuba, the air transport units delivered a total of 330,690 gallons of gasoline. On one day alone, 4 September 1942, 150 missions were flown to deliver a total of 69,048 gallons.

Because of the British advance, the route flown to Martuba included a long approach flight over Bengazi. As a result, the transport aircraft utilized about one-half of the gasoline they transported in order to get back to their take-off bases, just as they had done a year earlier on flights from Crete to the Gulf of Sidra.* This naturally reduced the effectiveness of the missions and they were soon discontinued. In addition, the activity of the British fighter aircraft had increased to such a degree that further transport missions were no longer profitable.

This large-scale air-supply operation, so costly to the air

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* See above, p. 125

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transport units, was powerless to postpone the fate of the Africa Corps any longer.

G. Sicily - Tunis - Tripoli, 20 November-27 December 1942

Under the combined pressure of the British 8th Army's offensive against the Africa Corps and the Allied landings in northwest Africa (8 November 1942), the Germans prepared to establish a bridgehead at Tunis. As a direct result, there was an immediate demand for an increase of air transport to Africa.

In order to meet this demand, Generalmajor Buchholz, Air Transport Chief (Mediterranean), organized the available transport units into two wings, the Air Transport Wing S (Sicily), based in Sicily, and the Air Transport Wing N (Naples), based at Naples.

The following missions were assigned to the Air Transport Wing Sicily: 1) daily missions to the Tunis bridgehead transporting Army and Luftwaffe replacement troops, aviation fuel, air-to-ground explosives and ammunition for airborne weapons, and weapons and ammunition for the light antiaircraft and antitank artillery units; 2) transport of troops and gasoline supplies for the Africa Corps, and aviation fuel and ammunition for airborne weapons to the Luftwaffe units in the Tripoli - Gabes area; 3) evacuation of wounded personnel, empty gasoline drums, and special units with their equipment.

In the beginning, no daily requirements in terms of tons to be transported were established. This was contrary to the usual practice; but, in any case, the available air transport facilities were insufficient to meet all the requirements. The situation was characterized by improvisation and last-minute measures on the one hand, and by instability and a certain amount of general confusion on the other. As was the case in so many air transport missions, the majority of the conditions regarded as indispensable for the successful accomplishment of air-supply operations were simply not met. The inevitable results made themselves felt in the execution of the command function, organizational planning, the adequacy of supply services, and in the coordination with other agencies. No fundamental change had been made in the prevailing chain of command. However, the headquarters of the Air Transport Chief (Mediterranean), still in Rome, was unable to fulfill its responsibilities adequately because of the long distance involved. Accordingly, an advance headquarters was set up at Trapani

and this facilitated the work of directing the operation.

The technical proficiency of the crews varied considerably. For instance, the Air Transport Wing Sicily was made up of two experienced groups, the 3d and 4th of the 1st Special Duty Bomber Wing, and the 7th and 11th Special Duty Bomber Groups, the latter two having been recently organized from forces commandeered from the Office of the Chief of Training and made up of personnel who had had no experience whatsoever. Most of them had flown in a few practice exercises but had never participated in an actual undertaking, and the flight commanders and squadron captains had never seen their personnel until they arrived in the assembly area. In short, the personnel of the 7th and 11th Special Duty Bomber Groups lacked nearly all the qualifications for participation in a transport mission as difficult as the contemplated one; and this weakness could not be offset by their high morale.

In contrast, the ground organization at both Tunis and Bizerte was excellent and more than adequate to the demands made by a large number of aircraft taking off and landing in an uninterrupted stream. Both airfields were staffed by advance airbase groups flown over from the mainland.

The airfields at Gabes and Sfax, on the other hand, required a great deal of skill on the part of the pilots utilizing their facilities, for the ground organization itself was practically nonexistent and there were no facilities for servicing aircraft during the night. Accordingly, only the most experienced personnel could be assigned missions to these fields. During night missions the transport aircraft took off singly, at ten-minute intervals, the first take-off being timed for right after sundown and the last for 2200. British night fighters, based at Malta, frequently attacked the transport aircraft while they were still over the water and even more frequently near the take-off bases of Trapani and Castelvetrano. A number of Ju-52's were shot down in the immediate vicinity of these airfields.

During the daylight missions the Ju-52's and Me-323's flew in a stream composed of approximately 100 aircraft, broken down into smaller groups following one another at close intervals. The stream extended as far as Cape Bon, in other words for more than half the overwater distance between Trapani and Tunis. It was protected from enemy attack by three groups of three Me-110's (or

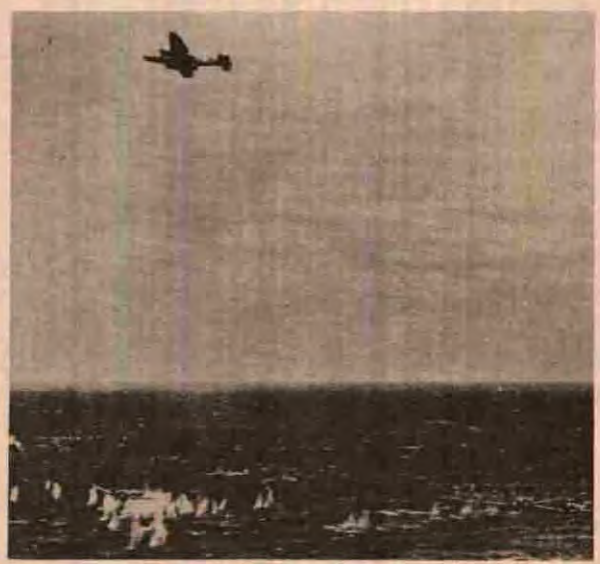
Me-109's) each. Despite the nearness of Malta the transport aircraft were not attacked by British fighter units during this period.

The air-supply action along the Tunis - Tripoli route began as an improvisation and came to an end without ever having gotten beyond the improvisation stage. It was a costly operation for the air transport units, quite apart from the fact that it did not succeed in bringing about any fundamental change in the situation in North Africa.

H. Italy - Sicily - Tunis, 27 December 1942 - 13 May 1943

At Christmastime 1942, air transport units were ordered out of the Mediterranean in order to take over air-supply operations at Stalingrad. The move had to be carried out as rapidly as possible. Approximately 200 Ju-52's and fifteen Me-323's remained behind in Italy and Sicily to continue the air transport missions to Tunis; there were also the Italian SM-81's and SM-82's, but these hardly counted. Only daylight missions to Tunis and Bizerte were possible. Sporadic single-aircraft night missions, however, were flown to the airfields at Gabes and Sfax. The organization of the remaining units into the Air Transport Wings Sicily and Naples remained in effect.

The Allied air forces enjoyed complete air superiority during this period and Allied fighter activity had increased to such a degree that it was no longer possible to send the transport aircraft up without a fighter escort. Units assigned to the Fighter Commander (Sicily) were given responsibility for escort duty. By the time this phase of the operation had been reached an escort of as many as 80 to 100 fighters was no longer enough. There was no let-up in enemy fighter-bomber attacks on the unloading depots at Tunis and Bizerte, especially since British and American fighter and bomber units were now within easy distance of these two bases. On 18 January 1943, during the course of a single Allied attack on the airfield at Tunis, a total of twenty-three Ju-52's were destroyed. The escort fighters had to refuel and replenish their supplies of ammunition in North Africa. While the fighters were being refueled, and while the transport aircraft were being loaded and unloaded, the fighters stationed at Tunis provided the necessary air cover. In addition, the fighter units from Tunis joined the transport aircraft when they reached Cape Bon and stayed with them until they landed. Quite apart from the fact that they were constantly being called away to the front, the fighter aircraft based at Tunis were not sufficient in number to



B-25's attack Ju-52's between Tunis and Sicily
April 1943

Passenger car being loaded into a Piaggio-108T

provide the degree of protection required by the transport units.

During the period 23 February through 28 March 1943, a total of 3,800 Ju-52's and 160 Me-323's landed at Tunis and Bizerte and 100 Ju-52's at Sfax.

Although British and American air superiority was an obvious fact, the Allies were not completely successful in their attempt to disrupt these air-supply operations. Air supply was no doubt one of the factors which delayed, but could not prevent, Germany's capitulation in North Africa. Its only tangible result, however, was the continuing loss of men and aircraft. During the period 18 through 24 April 1943, fifty Ju-52's and fourteen Me-323's were shot down over the Mediterranean alone, and only a few of the crew members could be saved. During these six days the air transport units lost nearly 320 men and some 240 tons of supplies.

One distinguishing facet of the air supply of the Tunis bridgehead was the first employment of two groups from the 5th Long-Range Air Transport Wing (equipped with Me-323's).[9] This innovation, however, was of little over-all significance and, as indicated above, the losses suffered by the two groups were high.

The losses in personnel and aircraft sustained during enemy bomber or fighter-bomber raids on the take-off and landing fields were in addition to the losses sustained in enemy combat. And these ground losses further reduced operational readiness because, due to inadequate facilities, aircraft damaged on the ground could not be repaired nor was it always possible to obtain spare parts to replace damaged or destroyed ones.

I. The Withdrawal from Sardinia and Corsica, Carried Out from the Pisa - Florence Area

Although it was assumed at the end of the Tunisian Campaign in May 1943 that an Allied invasion of the Italian mainland was bound to come, it was not yet certain when and where it would take place. Thus, German leaders decided to try to strengthen the comparatively weak security forces stationed in Sicily, Sardinia, and Corsica, and the remaining air transport units were assigned to this mission.

Once the Allies had landed in Sicily, the number of air

transport missions was reduced to a minimum. After the island forces had been somewhat strengthened and stores of supplies laid in, however, operations were begun from the Pisa area to evacuate these same forces. While this was happening, the Italians capitulated and the Italian forces were disarmed by German units. The lack of harmony which had earlier rendered cooperation with Italian agencies so very difficult was no longer a factor and the German units were free to operate independently. Corsica was the last of the islands to be evacuated by the German air transport units. Among the personnel and equipment taken off Corsica was an Italian parachute regiment which elected to remain with the German troops in spite of Italy's defection. With the clearing of the islands, the mission of the air transport units in the Mediterranean came to an end, and all but one air transport group were transferred to the Eastern front.

Air transport operations in the Mediterranean area had their beginning in the air-supply mission on behalf of the Italian troops in Albania. It is not within the purview of this study to examine the reasons lying behind Hitler's decision to support this Italian campaign. At that time (December 1940), Italy was still in a position to supply these troops by ocean transport, or--if she preferred--by air, for she had the necessary transport aircraft available. It is difficult to understand why the Albanian front was supplied by air, and by a German transport unit at that, for during the entire period there was no British harassment of transport missions, either from the air or at sea.

The air-supply mission in North Africa, which became so costly for the air transport units in 1943 (after the Tunis bridgehead was established and subsequently supplied by air), was a stopgap solution. Air transport in North Africa at first fulfilled a real purpose and was therefore justifiable, but only during the Africa Corps' offensive, until the capture of Tobruk and the advance to El Alamein. As the retreat began, German leaders were unable to relinquish the hope that intensive utilization of air transport units would assure adequate supply for the Africa Corps and thus bring about a change for the better.

It is possible that the situation might have been entirely different if German troops had occupied Malta; however, it is not

within the province of this study to discuss this theoretical possibility.* Instead, we will proceed to examine German air transport operations in Russia, for the Eastern Campaign was the fatal theater of operations for Germany in World War II and the role of German air transport there was highly significant and is still the subject of much misinterpretation.

* Editor's Note: For a discussion of this possibility, see USAF Study No. 189, Historical Turning Points in the German Air Force War Effort by Richard Suchenwirth, USAF Historical Division (Maxwell Air Force Base, 1959), pp. 90-99.

Chapter 4

OPERATIONS IN THE EAST

Section I: Demyansk and Kholm[1]

The action carried out by the German air transport units to supply the troops trapped at Demyansk during the winter of 1941-1942 was the first real airlift operation of World War II. The mission of this airlift was to supply the surrounded, reinforced 2d Army Corps--approximately 100,000 men--and thus keep its fighting power intact until the interrupted German offensive could be resumed. All necessary supplies of weapons, ammunition, equipment, spare parts, food, and clothing--as well as replacement personnel--were to be flown in to Demyansk; the returning aircraft were to bring back wounded and sick personnel and personnel on leave or change-of-station orders. In four months of grueling work, marked by the almost constant utilization of all the available personnel and materiel forces, the tremendous difficulties were overcome and the mission accomplished.

Demyansk, as it turned out, provided a rather dangerous illustration of the potential usefulness of air transport, for from this time on German military leaders were inclined to be indiscriminately enthusiastic regarding its employment. The extraordinary success of this first attempt at supplying an encircled force by air quite naturally implied that air transport could be utilized with equal success in any similar situation in the future. German leaders were convinced that they could compute the scope of such an operation on the basis of the need for supplies and the number of transport aircraft available for employment. In the case of Demyansk, the success of the enemy offensive which led to the encirclement of the German force in the first place resulted in the immediate employment of Luftwaffe transport aircraft to replace the ground communication facilities which had been lost rather than in the immediate initiation of appropriate countermeasures. The basic thinking behind this decision was to lead to seriously detrimental consequences as the war progressed. It is not from the undertaking itself, but rather from the planning and events which preceded it, that we shall be able to learn the most. A review of the developments leading to the operation will show us why the Demyansk undertaking--which, admittedly, began as a justifiable necessity--was, in reality, a borderline case from the point of view

A German sketch showing the direction of the German air attacks in Russia and the operational areas assigned to the air fleets (Luftflotten) and the air corps (Fliegerkorps).

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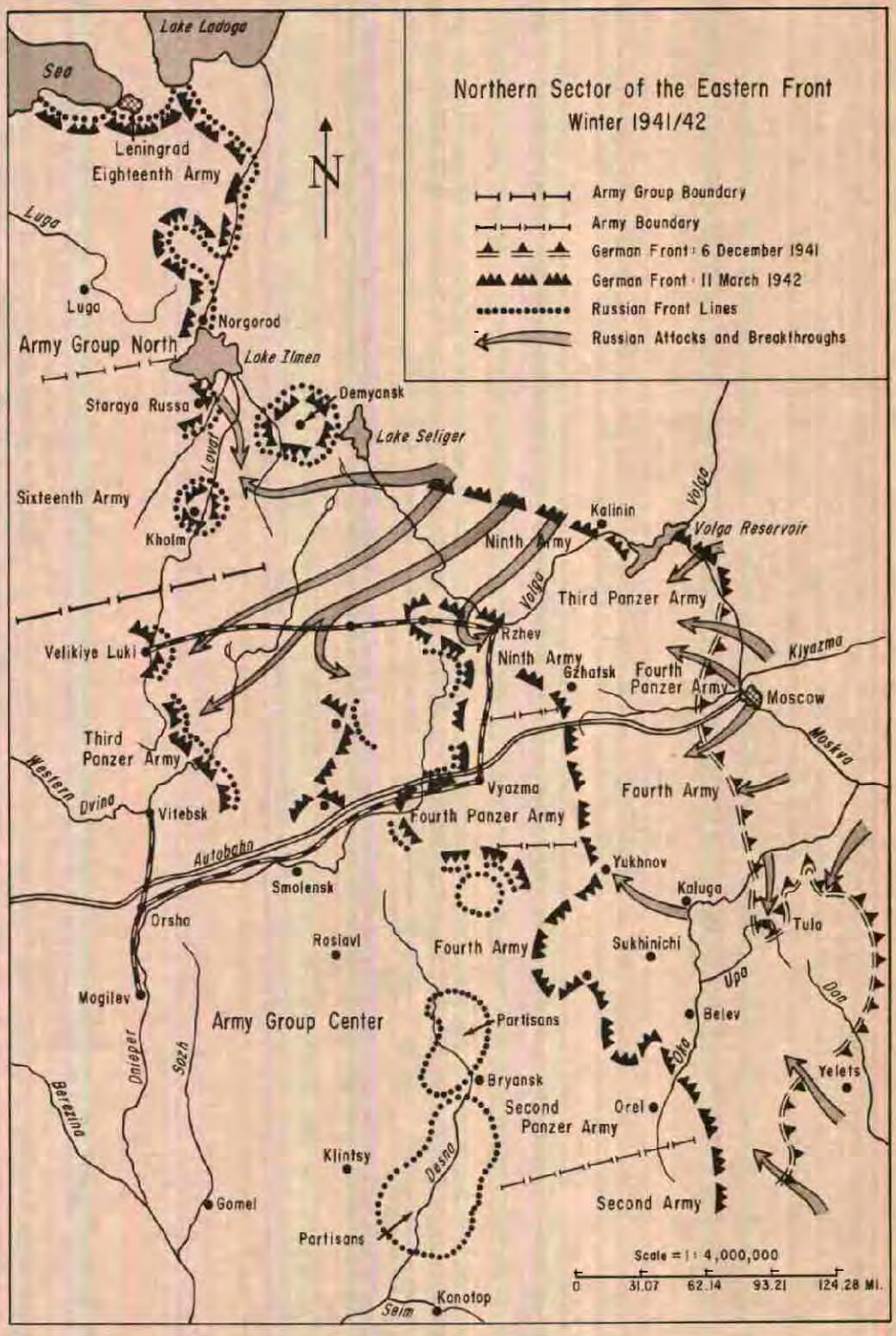
of the profitable employment of air transport. Careful treatment of these preliminary events will also provide a basis for the critical examination and objective evaluation of this, as well as subsequent, airlift operations. It will illustrate and make readily understandable certain basic principles and explain why the airlift undertaking at Demyansk must be viewed as the turning point for the German air transport forces.

A. Summary of the Over-all Situation

In the late autumn of 1941, German armored and motorized units began operations in the middle sector of the Eastern front which were to lead ultimately to the encirclement of Moscow. The advance forces had reached areas northwest and south of Moscow by the time the muddy period began; then, with unexpected suddenness even for Russian weather, the muddy period was followed by heavy frosts. As a result, the continuance of tactical operations was rendered extremely difficult and the transport of supplies over land was seriously hindered by frost and snow; the cross-country transport of supplies was bound to become completely impossible if the cold spell kept on much longer. The hope that Moscow could be taken before the onset of winter was doomed to remain unrealized; the plans had gone awry. The advance was brought to a complete standstill and the participating units had no choice but to prepare for defensive operations. Heavy frost and snow, the difficult terrain, and the relative immobility of tanks, heavy weapons, and motor vehicles combined to render the situation of the troops extremely difficult.

Due to the rapid forward thrust of the advance groups the course of the front line had become unbalanced, leaving the flank forces without adequate protection. Withdrawal of the advance groups was impossible at the moment, however, since it would have meant the loss of all their heavy equipment. Attempting to adapt themselves to local conditions, but handicapped by the lack of prepared positions and adequate equipment, the troops made ready to hold out through the winter; not all of them were successful in making adequate preparations. Supply channels were practically nonexistent, and it would take a good deal of time and trouble to restore them.

Russian leaders were not unaware of the critical conditions obtaining on the middle sector of the front. The pressure on Moscow had come to an end and the troops which had been brought from Siberia



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to defend the city were now free to begin a counteroffensive. These were fresh troops, they were close to their supply bases, and they were more familiar with the conditions of the Russian winter. Success was not long in coming. The German units, trapped in totally inadequate defense positions, were unable to turn back the force of the Soviet attack. Completely overrun, they were forced to abandon their heavy weapons and vehicles and retreat towards the west. The fact that the troops had no prepared positions to which to withdraw led to the first instance of the panic which was to characterize so much of the war in the east. Unless the Russian attack could be stopped by the battle-weary retreating troops, the complete collapse of the middle sector of the front seemed inevitable.

Every available reserve unit in the operational area was ordered into the fight and rear area services were cut to a bare minimum in order to free every able-bodied man for action. Immediate steps were taken to bring in additional reinforcements from the German-occupied eastern countries and from Germany but because of the long distances involved, the degree to which existing rail connections had been damaged or destroyed, and the inadequacy of the highway network, the movement of these reinforcements was slow and subject to great delays. The crisis, however, was one which could be met effectively only by bringing in a strong interim force as soon as possible to bridge the gap in time before the expected replacements could arrive on the scene. Otherwise the situation would be so completely out of control by the time the reinforcements arrived that they would be powerless to change it.

Full employment of all available air transport units was the only means whereby time, distance, and the inadequacy of the highway network could be overcome. Each aircraft which landed in the area of operations with a load of troops, weapons, and supplies served to improve the situation at the front and to weaken the threat inherent in that situation. The airfields at Orsha, Vitebsk, and Smolensk were utilized as distribution points for the personnel and supplies landed by the transport units. From these three bases, replacement personnel and equipment were channeled to the main points of German resistance. After a very short time the success of the air transport operation began to make itself felt; the main striking power of the Russian offensive was broken and new defense positions and lines of resistance were established as the old ones became strong enough to permit extension. In the awareness that they were no longer alone,

the original troops regained their confidence and total catastrophe was averted.

The additional troops brought in by air, however, were still not sufficient in number to achieve complete stabilization of the entire middle sector. The heavy fighting and the unusually hard frosts had taken their toll of men and equipment, and a constant stream of replacement personnel and materiel was urgently necessary. In the early stages, it was impossible to establish a continuous line of defense. The successful Russian breakthrough along the line between Army Group Center and Army Group North* had lengthened the front by a good deal and thereby increased the need for reinforcements. Again and again the enemy attempted to get past the defense lines in order to concentrate his attack on the relatively weaker flanks, breaking up resistance pockets by the employment of so-called infiltration troops /Sickertruppen/ or of parachute forces (as at Vyasma). Wherever these tactics succeeded, due to the weakness of German defenses, they resulted in minor encirclement actions by which individual units were cut off from the rest of their forces. Trapped in their prepared positions, the German units were forced to undertake a defense in the round. In most cases, provided that adequate defensive measures were taken immediately and provided that the enemy force was not too strong, contact was soon reestablished or the unit was able to fight its way through to its own lines.

The supplying of these encircled positions until such time as the situation could be stabilized represented a new field of endeavor for the air transport units. These air-supply missions were spur-of-the-moment actions and were of such short duration--if countermeasures had been initiated in time--that their scope could be kept fairly small. We must bear in mind (and this is one of the basic points to be considered in any detailed treatment of these operations) that all subsequent missions undertaken to supply an encircled position by air--whether they succeeded or failed--originated under more or less the same conditions. Later on, the Russians carried out similar operations of much greater scope and utilizing a considerably larger force. As far as our own operations were concerned, it must be admitted that German military leaders--perhaps because they placed too much confidence in the efficacy of air supply--often

* See map following p. 138.

neglected to initiate immediate countermeasures which might have averted the threat of enemy encirclement in its early stages.

The supply operations at Rzhev, Maloyaroslavets, and Yukhnov and the air-supply of the Stahel Group were the forerunners of the utilization of air transport facilities to supply encircled forces. There is no doubt but that each one of these actions could have attained the scope of the later operations at Demyansk, Stalingrad, and the area in which the 1st Panzer Army was trapped if German military leaders had held at that time the fundamentally erroneous view which prevailed later; namely, that it was quite all right to allow even a large force to be encircled by the enemy because the air transport units could be depended upon to keep it supplied until it was able to break out.

During the critical winter weeks of defensive fighting along the central sector of the Eastern front, the well-planned employment of the available air transport facilities helped to hold and strengthen the German centers of resistance so that they could be utilized as focal points in the establishment of a new defense line. Rzhev and Yukhnov, reinforced by air supply, developed into such strong buttresses of the defense front that the enemy, although he did manage to work his way around them, never succeeded in overrunning them. There were many other positions, of course, which figured in the air-supply operations of this period but their names no longer have more than local significance. They all had one thing in common, however; through the intervention of the air transport forces they were able to delay the Russian thrust towards the west and to develop into integral parts of the over-all defense system. The middle sector of the front, once stabilized, pushed a broad arc into previously occupied territory, its center facing the east and its two horns curving north and southeast.

With the arrival of adequate reinforcement troops, the air transport missions were gradually restricted in number and the transport units were free to enjoy a badly-needed break in their grueling activity. The break was not nearly long enough, however, to restore all the units to full operational readiness. In the meantime the main force of the Russian attack had shifted to the north where a situation, similar to the one which had prevailed in the central sector, developed; the available forces were simply not strong enough to stop the enemy's advance. The danger of a major breakthrough and the resultant dissipation of the entire German defense front were imminent. At this point the Soviet forces switched to the broadly extended operations which

were to lead to the encirclement of large German troop concentrations in the areas of Kholm and Demyansk.

Generalleutnant a. D. H. J. Rieckhoff, at that time a colonel and Chief of Staff of First Air Fleet, has given a good critical evaluation of the situation leading up to the encirclements and the resulting decision to supply the surrounded forces from the air.[2] According to Rieckhoff, the 2d Army Corps, composed of seasoned Pomeranian and Mecklenburg troops, had held its own against the Russian frontal attack until its right flank was overrun and the front was pushed back west of Kholm. Then the Russians quickly moved a force from the Kholm area towards the north through the valleys, and a force from the Lake Ilmen area towards the south in the direction of Staraya Russa, in an attempt to close in on the outermost flank of 2d Army Corps.* The ice covered rivers made excellent highways for the Russians. Rieckhoff adds that German reserves were nonexistent, that 2d Army Corps faced certain encirclement, and that First Air Fleet, although it was able to slow down the Russian advance, was unable to stop it.

Although the withdrawal of 2d Army Corps was considered, Rieckhoff states that Hitler was opposed to it because of the loss of prestige, men, and heavy equipment such a move would entail. Thus, the decision was made to hold Demyansk at any cost. According to Rieckhoff, rumor had it that Demyansk would be needed in the spring as an assembly point for a German army. Rieckhoff, however, brands all of these reasons as unrealistic. Demyansk had no rail connections and its roads were so bad that it would have been an impossible choice as assembly point for an army. In addition, the losses from the fighting at Demyansk were higher than any losses which would have been suffered during a timely withdrawal.

The Luftwaffe's record during the Demyansk airlift, however, gives the best indication of the real cost of Hitler's decision. During a period of nine months, the air-supply missions used up a total of 160 railway trains of gasoline. In addition, 265 Ju-52's were destroyed and the pilot training program was deprived of 300 aircraft for a period of four months.

The effects on the pilot training program were catastrophic

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* See map following p. 138.

for the entire Luftwaffe, and the gap created by the Demyansk operation had still not been closed completely by the end of the war. Germany's determination to tie up a number of Russian troops by holding Demyansk actually did more damage than good, for the German attempts to restore contact with the encircled troops were effectively hindered by a relatively weak enemy force, whereas the maintenance of the Corps at Demyansk--objectively viewed, an uneconomic operation--consumed an unreasonably large share of Germany's personnel and materiel resources. Objective evaluation of the over-all situation indicates clearly that a timely and forceful breakout would have made the extremely costly air-supply action unnecessary.

I have no wish to belittle in any way the sacrifices made by the air transport forces or the feats accomplished by them. It is tragic, however, to have to admit that it might have been better if the Demyansk action had failed completely in its initial phase. This would have forced German leaders to order the 2d Army Corps to attempt a breakthrough towards the west and to initiate simultaneous small-scale counterattacks in order to relieve the pressure on Demyansk. At the same time, German leaders would have been forced to realize that the personnel and materiel resources available were inadequate to assure fulfillment by air of the entire supply requirements of an Army unit numbering 100,000 men. Whether this would have had any effect on the decisions made later in connection with Stalingrad and North Africa is, of course, another question. In any case, the negative aspect of the success at Demyansk was that it led to erroneous evaluation of the status and potential development of a given military situation insofar as the suitability of air transport was concerned. The potentiality for success of the air transport forces was viewed with far too much optimism and, from this point of view, the Demyansk operation must be considered a turning point for air transport.

B. The Missions

In 1941 the First Air Fleet, working together with the Army Group North on the Eastern front, had at its disposal one air transport group which was utilized for the transport of urgently needed supplies for the Army and Luftwaffe units in the area. This group, the 172d Special Duty Bomber Group, was assigned to the Quartermaster Branch of the First Air Fleet. In addition, the 8th Air Corps (a close-support corps) had two air transport groups operating in the central sector, the 4th Group (of the 1st Special Duty Bomber

Wing) and the 9th Special Duty Bomber Group. After the collapse of the Moscow offensive, the air transport space represented by these three groups was no longer sufficient to meet the requirements of the central sector of the front.

On 16 December 1941, by command of the Quartermaster General, Office of the Commander in Chief, Luftwaffe, the large-scale air transport of reinforcement troops to the central sector of the Eastern front began. This required the employment of all available air transport units. In addition, elements from the air transport units already operating on the central and northern sectors of the Eastern front were utilized provided they could possibly be spared from front duty.

The headquarters command of the Office of the Air Transport Chief, Quartermaster General, set up an operations staff--located first in East Prussia and later in Smolensk--to be responsible for organizing and guiding the operation. The headquarters staff of the 8th Air Corps was assigned to the operations staff to render whatever assistance might be necessary. The two staffs were given the mission of moving all available replacement units into the threatened areas of the front as rapidly as possible, and this meant, of course, the uninterrupted utilization of every single available transport aircraft.

The transport flights were carried out from East Prussia and Poland, with intermediate landings at Minsk, Orsha, and Smolensk. Some of the replacement units had been moved to the latter points by rail, to be picked up by the transport aircraft for the rest of the trip to airports and landing fields close to the threatened sectors of the defense front. As the general troop transport neared its end, the transport aircraft were diverted to specific areas and utilized to move reinforcements to particularly important resistance centers. The main positions strengthened by these missions were Belyy, Rzhev, Sychevka, Gzhatsk, Maloyaroslavets, and Yukhnov.

As operations progressed, it was often necessary for the transport units to maintain encircled units exclusively by air, providing them with sufficient supplies to enable them to hold out until they could fight their way through to their own lines. The return flights were utilized to bring back wounded men and personnel suffering from the effects of frostbite. As the front gradually grew more stable and supplies began to arrive via rail and highway transport, the air-supply

missions became fewer and aircraft in need of repair or overhaul could finally be spared.

On the northern sector, where the 2d Army Corps was engaged in defensive operations against a large Russian force in the Demyansk area, the threat of encirclement was growing more and more imminent. Due to the inadequacy of overland transport channels, the demands for air supply were increasing daily. The single air transport group assigned to that sector was unable to meet more than a fraction of the total requirements.

In early February 1942, the Air Transport Chief, whose headquarters was now at Smolensk, received orders to transfer one of the air transport groups assigned to the central sector to Pskov-South to supplement the units engaged in air-supply operations for Demyansk. Those elements of the 9th Special Duty Bomber Group which were still capable of operations were detached to the First Air Fleet for assignment to the new mission.

Once the Russian forces, approaching from the north and south, had met at the Lovat River, the 2d Army Corps was completely cut off from the rest of the German forces. German leaders decided to intensify the air-supply action, which had already begun, and to expand its scope to take care of the presumably--as they thought--temporary need for supplies. On 18 February 1942 the operations staff of the Air Transport Chief* was ordered to move into the area covered by the First Air Fleet immediately and to take charge of supply operations in coordination with the supply sections of the Army Group North and the Air Fleet. The staff was ordered to organize transport missions to supply all the needs of the 2d Army Corps (personnel, ammunition, weapons, equipment, clothing, and foodstuffs) by air. Wounded troops were to be brought out on the way back. The daily supply needs of the Corps amounted to approximately 300 tons. It was impossible to estimate the duration of the mission in advance, since it would depend upon the development of the enemy situation and the possibilities it would offer for German action.

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* I. e. the Air Transport Chief, Quartermaster General, Office of the Commander in Chief, Luftwaffe.

C. The Air Transport Units and Airfields

For the duration of the Demyansk air-supply undertaking, the Air Transport Chief was assigned to Headquarters, First Air Fleet, commanded by Generaloberst Keller and located in Ostrov, south of Pskov.

Planning of the technical aspects of the undertaking was to be carried out by the Air Transport Chief in cooperation with the Quartermaster, First Air Fleet (General von Kriegern), whose headquarters was in Riga.

The operations staff of the Air Transport Chief, which consisted of six officers* and three enlisted men, established its headquarters at Pskov-South, in temporary barracks placed at its disposal by the 4th Bomber Wing, which was stationed at Pskov.[/]

Somewhat later the Air Transport Chief appointed a liaison officer to the Quartermaster, Army Group North, and one to the Quartermaster, First Air Fleet. The Headquarters, Air Administrative Command (Riga) designated an officer to act as liaison to the staff of the Air Transport Chief in connection with ground organization services.

All the air transport units participating in the undertaking were subordinate in every respect to the Air Transport Chief; these included the units already in operation as well as any new ones assigned to the Eastern front specifically for the Demyansk action. In all respects except those directly pertaining to the command of the operation, the Air Transport Chief remained subordinate to the Quartermaster General, Office of the Commander in Chief, Luftwaffe (Branch IV, Luftwaffe General Staff).

At the time the Demyansk action began, prior to the arrival of

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* They were: Colonel Morzik, Air Transport Chief; Captain Metscher, Operations and Intelligence Officer; Captain Trautwein, Technical Officer; 1st Lt. Langer, Personnel Officer; 1st Lt. Oberlaender, Signal Communications Officer and 2d Lt. Berndt, Aide.

[/] Editor's Note: During the period Pskov was held by the Germans in World War II, they called it Pleskau.

the Air Transport Chief and his staff, the 172d (at Riga) and 9th (at Pskov-South) Special Duty Bomber Groups were stationed in the operational area.

On 19 February 1942, five more special duty bombers groups* were transferred to the area of jurisdiction of the First Air Fleet to participate in the first major air-supply mission to Demyansk. By the end of February 1942 the air transport forces engaged in air-supply operations for Demyansk had been further increased by the transfer of three special duty bomber groups and some additional elements/ from the southern sector of the Eastern front where they had been under the command of the Fourth Air Fleet. At the beginning of March 1942 five more special duty bomber groups,// newly organized by the Office of the Chief of Training, were brought into the area to help in the Demyansk action.

It was only on rare occasions that the First Air Fleet was able to spare aircraft from its tactical and operational units for escort duty, armed reconnaissance, or weather observation for the transport units, for the number of fully serviceable tactical and operational aircraft was too small to meet more than a part of the demands for their services.

The Demyansk airlift, although it was coordinated with other

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* They were: 4th Group, 1st Special Duty Bomber Wing (Ostrov); 600th Special Duty Bomber Group (moved from Orsha to Korov'ye-Selo); 700th Special Duty Bomber Group (Orsha to Pskov-West); 800th Special Duty Bomber Group (Vitebsk to Korov'ye-Selo); 900th Special Duty Bomber Group (Vitebsk to Pskov-West).

/ The 500th Special Duty Bomber Group (transferred from the Mediterranean area to Pskov-West); Special Duty Bomber Group (Posen) (Ostrov-South); Special Duty Bomber Group (Oels) (Pskov South); 2d Group, 1st Special Duty Bomber Wing (Dnepropetrovsk to Ostrov); elements from the 105th Special Duty Bomber Group (Vitebsk to Pskov-South).

// The 4th Special Duty Bomber Group (Riga); 5th Special Duty Bomber Group (equipped with He-111's) (Riga); 6th and 7th Special Duty Bomber Groups [these were both mixed groups; they were soon deactivated and their personnel and equipment utilized to bring other units up to strength]; 8th Special Duty Bomber Group (Daugavpils).

units from the Army and Luftwaffe, was not a joint operation. Thus, there is no need to discuss here the organizational setup and chain of command of the other agencies.

The training and experience of the air transport personnel participating in the undertaking were extremely uneven at the beginning. The units had been committed in so many different theaters of operations that the older, more experienced crews were mixed with newcomers. Pilots who had just finished flight training were thrown together with personnel who had been wounded on previous transport missions, then, after convalescence, assigned to duty with replacement bomber or reconnaissance units, and who were now reassigned to transport duty with the new units set up through the Office of the Chief of Training. Moreover, there were crews made up of instructional personnel detached from special duty staffs and special mission units. On the whole, combat experience and flight experience soon reached a comparable level, and young and inexperienced crews, committed in daily missions, quickly acquired the necessary combat experience to make them capable of full employment.

The questions of technical personnel, aeronautical and technological equipment, and ground organization services--all of vital importance to the accomplishment of the mission--will be discussed in greater detail later on.

The airfields utilized as take-off bases were:

1) Pskov-South, which was approximately 3,950 feet square, equipped with hangars and repair shops, and connected by side-spur with main railroad line. It had permanent barracks, a well-built runway, facilities for handling bad-weather landings, and was equipped to handle night air traffic.

2) Pskov-West was an emergency airfield, with no technological equipment, and no billeting facilities.

3) Korov'ye-Selo* was an advance airfield approximately 3,280 feet

* Editor's Note: Korov'ye-Selo was located about 14 miles south-southwest of Pskov.

square. It had no hangars and no natural barriers (free access). The highways leading to it were poor, and it had no established runways and only temporary barracks.

4) Tuleblya was only an emergency take-off and intermediate landing field, with no billeting or technological facilities whatsoever.

5) Riga was a commercial airfield adapted for military use.

6) Riga-North, a temporary take-off and landing strip on the ice-covered Bay of Riga, was used during thaw and muddy periods, when other airfields were useless.

7) Daugavpils was an existing airfield which had been adapted for military use.

The following airfields were utilized as landing bases:

1) Demyansk had a field airport without any of the usual facilities; a landing strip 2,625 feet long and 164 feet wide, a small taxiing area, and an unloading area had been cleared by removing the top snow and packing the underneath layers hard; 20 to 30 aircraft could utilize these improvised facilities at a time.

2) Pieski* had only a take-off and landing strip 1,968 feet long and 98 feet wide made of hard-packed snow in fairly flat terrain. Loading and unloading areas were very small, and only 3 to 6 aircraft could use these facilities at a time.

3) Supply Drop Area, Demyansk, was a marked area in open terrain, where supplies could be dropped during the muddy period.

4) Kholm had a field airport without any of the usual facilities; despite the heavy snows, it could be used for limited landing activity.

D. The Accomplishment of the Mission

Prior to 18 February 1942, when the Air Transport Chief and

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* Editor's Note: German sketches locate Pieski within the Demyansk defense perimiter and south-southeast of Demyansk.

his staff arrived in Pskov-South, the air-supply missions to Demyansk were directed first by Major Hammer, Commander of the 172d Special Duty Bomber Group, until the arrival of the 9th Special Duty Bomber Group, and thereafter by Lt. Colonel Jansen, who was given responsibility for conducting the operation. On 18 February, immediately after its arrival in Pskov, the staff of the Air Transport Chief assumed command authority over the mission. Its first act was the issuance of orders transferring the transport units assigned to the middle sector of the front to Pskov-South, effective on 19 February 1942. Advance units were transferred immediately. The Air Transport Chief and his operations officer flew to Ostrov for consultation and a briefing conference with the staff of the First Air Fleet.

At this stage of the operation, the daily supply requirements of the 2d Army Corps in the Demyansk area amounted to 300 tons. During the course of the conference at First Air Fleet Headquarters the participants were forced to agree that these requirements simply could not be met by the number of serviceable aircraft at the disposal of the available air transport units. All of the units together had approximately 220 Ju-52's, the majority of which were in need of repair and overhaul as a result of the demanding missions of the central sector of the Russian front. Some of them, in fact, were already in rear area repair shops for partial overhaul and badly needed repairs. Of the total aircraft strength, approximately 30 percent were still available and serviceable. The following conditions were established as indispensable to the success of the planned air-supply undertaking:

1) Reinforcement of the units by the procurement of at least 300 more transport aircraft so that an average of 500 Ju-52's would be serviceable at any given time. Taking winter conditions into account, and assuming 30 percent effectiveness for the available ground service facilities, it would be possible to commit 150 aircraft daily, each with a load of two tons of supplies, thus meeting the requirement of 300 tons daily.

2) Far-reaching improvements in the technological facilities at the take-off bases, an increase in ground organization personnel, the installation of adequate technical equipment, the establishment of more Ju-52 repair shops, the laying in of sufficient stores of spare parts, winter equipment, particularly warmup trucks and starting motors, the installation of traffic control facilities, and the setting up of adequate signal communications facilities. As far as the

Demyansk airfield was concerned, certain necessary modifications would have to be undertaken in order to assure its constant use as a landing base. The fulfillment of all these conditions was the only way to guarantee a high degree of operational readiness for the air transport units over any long period of time.

3) Elimination of the usual chain of command by giving the Air Transport Chief the authority to issue orders directly to ground organization and supply units and to submit requisitions for needed services and items of supply directly to these agencies. Their superior headquarters would receive information copies of both orders and requisitions afterwards.

The above requirements were based on the clear realization that an improvised undertaking of the contemplated scope could succeed only if the necessary authority were concentrated in one person. For there is only one agency capable of surveying and integrating the many requirements of a large-scale operation, and that agency is the one charged with the responsibility for directing it.

In consideration of the fact that both the situation and the mission were unusual, the commander in chief and chief of staff of the First Air Fleet agreed to the conditions established by the Air Transport Chief. The necessary instructions were issued at once to the various ground organization headquarters (the air administrative command, the airfield area command, and the command staffs at the various individual airfields). Under the circumstances, of course, the Air Transport Chief and his staff could expect little support from the Air Fleet, inasmuch as the sections concerned were quite unfamiliar with the special problems and requirements of a large-scale air transport mission. On the other hand, despite the undeniable advantages of almost complete independence of action, it was not expedient that the air transport action be viewed as a completely extraneous mission. It was far wiser to fit it in, insofar as possible, with the normal over-all mission of the Air Fleet. For example, the Air Transport Chief had only a small staff at his disposal to handle the entire apparatus of command and organization, and if the well-established operations staff of the Air Fleet had been more sympathetic it could have rendered valuable assistance in solving the small day-to-day questions and problems. On one occasion, for instance, the Air Transport Chief requested information regarding the best approach route into Demyansk at a period during which the losses in transport

aircraft as a result of Russian antiaircraft defenses were rising daily. The reply, from the Intelligence Branch of the Air Fleet staff, advised the Air Transport Chief to "select that route which offers the best chance of avoiding losses."

On another occasion, the Air Fleet staff failed to inform the Air Transport Chief that the enemy had carried out a parachute landing in the encircled area. It is true that the landing was met effectively at local level but the fact remains that the Air Transport Chief knew nothing about it until a number of transport aircraft came back in need of repair because they had been hit accidentally by antiaircraft artillery fire intended for the Russian attackers.

Although such instances as these are not necessarily significant, they are characteristic of the daily course of operations and they illustrate that, regardless of the delineation of authority or chain of command which has been established, an air transport mission must always remain a part of the over-all operation. If, in the present instance, the needs of the transport missions had been more closely integrated with the requirements of the Air Fleet's over-all mission, it is possible that the more efficient utilization of fighter escorts over the front lines might have saved the transport forces considerable losses. From the organizational standpoint the Air Fleet rendered valuable service, and the extremely close cooperation with its Quartermaster Branch was one of the chief keys to the ultimate success of the transport missions.

The Air Transport Chief and his staff moved into the improvised quarters and reported to First Air Fleet Headquarters ready to assume their duties as of 19 February 1942. The airfield command staffs at the various take-off bases were informed of the size of the units assigned to them, and the advance units from the central sector of the front, arriving at Pskov-South, flew on to their assigned take-off bases in order to make the necessary preparations for the arrival of the rest of their groups. These groups, still in the central sector of the front, were ordered to load up with supplies for Demyansk and to take off with every single serviceable aircraft on the morning of 19 February. After delivering their supplies at Demyansk, they were to land at their new bases in the northern sector. During the night, flight leaders were informed by telephone regarding the air and ground situations, the condition of the landing strips at Demyansk, and the best approach and return routes. Any Ju-52's which were not fully

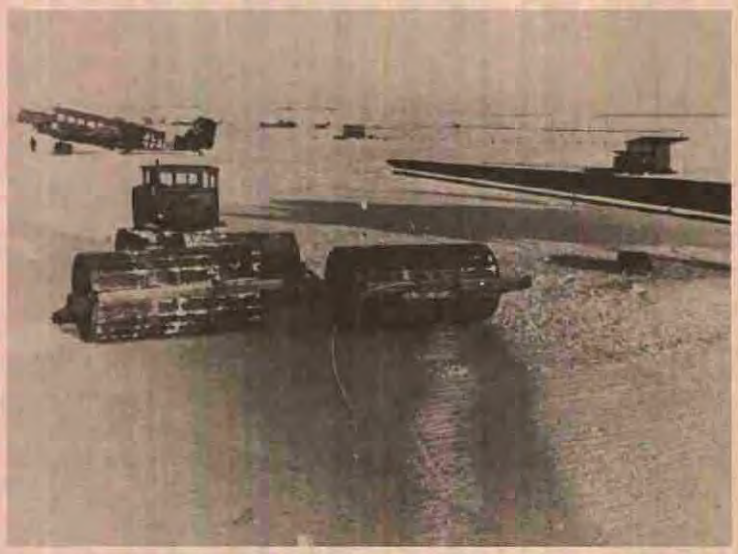
serviceable but which could still fly were to be utilized to ferry ground personnel and equipment to the new take-off bases. On the evening of 19 February the groups reported that both their move to the new airfields and their first supply mission to Demyansk had been accomplished as ordered, with the one exception that the aircraft in need of repair had been left behind at the old airfields together with the personnel required to fly them to their new bases as soon as they were ready. The degree of operational readiness for 20 February represented approximately 30 percent of the actual strength of the units concerned.

The dimensions of the Demyansk airfield were very small. Every day those units scheduled to fly were given a time schedule prepared by the Air Transport Chief on the basis of the number of aircraft each group had reported as fully operable. The schedule designated a specific time during which each unit was to land at Demyansk, unload, and take off for the return flight. The timing was computed so as to permit the units to follow one another in fairly rapid sequence--provided the missions did not get too badly off schedule--to avoid the danger of concentrating too many aircraft over the field at once, and to assure that the facilities of the field were being constantly exploited to the fullest extent.

Basing their computations on the established landing times and on the duration of the approach flight, each unit commander worked out the take-off schedule for his aircraft. In the beginning, in spite of the fact that daylight hours were relatively short, the units were small enough so that a certain amount of leeway could be allowed and no difficulties were encountered. Later, with the onset of the thaw and the subsequent muddy period, difficulties arose which frequently resulted in take-off delays and the consequent failure to land at Demyansk at the appointed time, but by this time the days were longer and the dangers inherent in a massing of aircraft over Demyansk correspondingly fewer. By the time the operations were well under way and as many as 600 transport aircraft were being serviced each day at the landing bases, the need for exact compliance with the time schedule had become second nature to the crews. The fact that the supply missions ran like clockwork on most of the peak days was due to the careful guidance provided by the group commanders, the highly developed ability of the crews, and the adherence to absolute discipline.

The airlift undertaking as a whole can be divided into three

Ju-52 unit parked next to a snow-runway
Demyansk, winter of 1942



Preparation of a snow-runway with tractor and rollers
Russia, January 1942

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quite different phases. The first of these covers the period from the beginning of the operation until the onset of the thaw and the muddy period; the second, the thaw and muddy period itself; and the third, the period lasting until the reestablishment of ground communications.

The First Phase

In its early stages the mission suffered from a great many lacks and imperfections in the technological field, with which we shall deal in greater detail later on. The first phase was a valuable training period; the crews gathered a good deal of experience, became seasoned combat pilots, and grew familiar with the peculiar conditions imposed by the Russian winter. Their eagerness, their courage, and their increasing mastery of flight techniques all helped to overcome the difficulties connected with each mission. Because so many aircraft were not fully operable during this phase, some of the crews flew two or three missions a day. Supply requirements could not be fully met, so that the demand increased proportionately.

It was not always possible to prepare extra missions carefully. Indeed, during this period careful preparation of an individual mission was far less important than the continuing struggle to achieve some improvement in the over-all conditions under which the missions were being accomplished. Thus, preparations were usually limited to careful orientation of the units in regard to the enemy situation, and main emphasis was placed on the evaluation and dissemination of the experience gathered so far.

The Second Phase

This covered the so-called thaw and muddy period, and was characterized for the air transport forces by a sharp decrease in the adequacy of taxiing and landing areas at the take-off bases and, to an even greater degree, by the reduced usefulness of the unloading areas at the landing bases. It was futile to try to schedule the units in any kind of sequence or to assign them specific landing times, for it was impossible for them to adhere to a definite schedule. There was no way to compensate accurately for potential delays in the take-off from the various bases, for the considerably longer approach routes from the Riga and Daugavpils areas, and for the sharply reduced freedom of action at Demyansk itself.

During this period aircraft were taking off simultaneously in groups of two to six machines from all the take-off bases, not, however, in any particular sequence, but simply as soon as they were ready. Once in the air there were fairly long time intervals between the groups, either as a result of the different distances of the various take-off fields from the target or as a result of specific orders issued by the mission leader. This system of operation, though not ideal, did not result in an overloading of the facilities at Demyansk, for the number of aircraft coming in simultaneously was not greater than if each unit had been assigned a specific landing time. From the point of view of command efficiency, of course, the system was not particularly desirable, since the margin for error was undeniably greater. This factor was accepted as a necessary evil. The alternative would have meant confining some serviceable transport aircraft to the ground because of organizational difficulties. Moreover, by this time radio communication between the office of the Air Transport Chief and the Demyansk airfield was functioning well, so that operations at the airfield could be followed easily and emergency instructions relayed to the units there if it appeared that too many aircraft were coming in for landing at once.

For the return flight over the critical area near the front, all the transport aircraft, regardless of whether or not they were loaded and regardless of which unit they might belong to, were assembled into groups. The groups stayed together until they had crossed the enemy territory and had reached the Dno area, where they separated to return to their individual take-off bases.

The Third Phase

It was not until the onset of this phase that firm adherence to time schedules set by official order became necessary and possible. Improved take-off and landing bases and an increase in the technological facilities had led to a considerable increase in the degree of operational readiness of the air transport forces. In order to assure strict compliance with the timing schedule, the highest ranking officer of one of the transport units (this assignment was rotated among the participating units on a daily basis) remained at the landing field to take charge of air traffic control until the day's missions were completed. A staff composed of the transportation officers of the airfield command staff and the group or unit furnishing the traffic control officer and an Army officer from the supply section of the 2d Army

Corps was assigned to help the traffic control officer. This practice proved to be especially valuable in cases where the landing strips were temporarily blocked by enemy fighter attacks, by sporadic bombardment, or by crash landings carried out by the transport aircraft, for the traffic control officer could hold approaching machines in the air until the strips had been cleared.

As the scope of the air-supply missions increased, the auxiliary landing field at Pieski was utilized to an ever greater degree although it was too small to accommodate more than sixty aircraft per day. Its take-off and landing strips of hard-packed snow on a layer of ice were usable for a long time. The Pieski field was utilized by units on the same time schedule as at Demyansk. A landing there was assigned only to the more experienced pilots; they would leave their unit during the approach flight, land at Pieski to complete their mission, and then join their unit again for the return flight. With the advent of warmer weather the field could no longer be used, for the snow strips became too soft and the surrounding terrain did not lend itself to the clearing of an adequate unloading area or to the construction of a road for the use of vehicles transporting landed supplies to their ultimate destination.

The situation was similar at the supply-drop area at Demyansk: it could be utilized only for a short period, in order to increase the volume of supplies delivered on a given day without having to expand the facilities of the other landing fields. The drop area was so clearly marked that an experienced pilot--and every attempt was made to select the more experienced ones for this mission--had no difficulty in releasing his supply load accurately. The supply drops were carried out at hedge-hopping altitude at a very low speed and had to be limited to items such as bales of straw, blankets and clothing, and unusually stable boxes of ammunition, which could survive a fairly violent impact (despite the cushioning action of the snow) without breaking. Attempts were made to drop other items, such as sacks of flour or potatoes, or gasoline cans, all of which were wrapped in straw to protect them from damage, but these attempts had to be discontinued because the containers invariably burst upon landing. The collection of dropped supplies in open terrain covered with deep snow was extremely taxing for the troops, especially since it was impossible to avoid a certain degree of scattering, no matter how willing and skillful the pilots were. The supply-drop operations can be viewed only as an emergency measure and the actual success they attained

Pieski, near Demyansk; Ju-52's being unloaded

Landed supplies being loaded on sleds for further transport; Pieski, March 1942

was in no way proportional to the amount of difficulty involved.

E. Enemy Defenses, Flight Formations, and Escort Fighters

Between the western end of the encircled area and the German lines south of Staraya Russa lay a strip of enemy-occupied territory approximately thirty-two miles wide. Apart from a system of prepared enemy positions along the mutual front line there seemed to be no enemy troop concentrations of any size within the area. Accordingly, during the first weeks of the operation the air transport units were ordered to cross this danger zone at hedge-hopping altitude in a corridor some twenty to twenty-four miles in width. There was a single road crossing the corridor from north to south and this was the only point where antiaircraft artillery might be expected. If artillery fire was spotted, the transports were to open fire against it immediately. Simultaneously, they were to drop to a low altitude and take advantage of every undulation in terrain and every wooded area to reduce the danger of their being hit by fire from infantry weapons. Crossing the front line itself would not be so difficult because enemy fire would be held pretty well in check by German batteries. The transport aircraft were to open fire immediately against any recognized or even suspected enemy target in the front line and thus force the defenders to seek cover. This last order was withdrawn at the request of the ground forces, however, for the German positions were not always clearly marked and it was possible that they might be hit by mistake. The order remained in effect, though, as far as targets inside enemy-occupied territory were concerned.

As was later learned during the interrogation of prisoners of war, as soon as the enemy realized that the air-supply missions to the encircled troops were part of a systematic and continuing operation, every soldier was under orders to carry a weapon with him at all times, and was to open fire immediately at any transport aircraft passing overhead. During this period the crews reported that they were being fired upon with machine guns, infantry weapons of all kinds, submachine guns, and even flare pistols. One Ju-52 crashed because its pilot, while flying at low altitude, was seriously wounded by submachine-gun fire. The 20-mm antiaircraft machine guns mounted on self-propelled carriages were extremely unpleasant, for the enemy could move them about freely along the north-south road and even on the ice-covered Lovat River. He could change his

position constantly in keeping with the daily alterations in the route followed by the transport aircraft.

During this period there was a daily increase in the number of aircraft which failed to return and in the number of dead and wounded brought to Demyansk or to the take-off bases in badly damaged aircraft. There was also a steady rise in the number of aircraft which had to be taken out of action for repairs and were thus temporarily lost to the operation. In a few exceptional cases crews who were uninjured, but were forced to land in enemy territory because of aircraft damage, managed to find their way back to their own lines after weeks of grueling effort. It was a frequent occurrence for pilots to land their aircraft in open terrain in order to pick up stranded comrades, thus saving them from freezing, starvation, or the uncertain fate of a prisoner of war.

The steady rise in losses necessitated a change in the transport missions. Thus, the Air Transport Chief ordered future missions to be flown at an altitude of between 6,500 and 8,200 feet. The practice of flying in groups of two or three aircraft was discontinued, and instead the transports were to fly in units of twenty to thirty machines so that their concentrated fire power would be greater in case of attack by enemy fighters. Approach and return courses were changed each day. This new method seemed to be a success. Soon, however, the enemy altered his tactics too, and began to attack the cumbersome transport aircraft with single-engine fighters. The fighters showed little enthusiasm for attacking a large group of transport aircraft flying in close formation, especially when the transports opened fire immediately, and even from a distance. Consequently, the Russian fighter attacks, usually carried out by two to four aircraft, were dangerous only to those Ju-52's straggling along behind the main unit. If the pilot maneuvered skillfully and if the gunner made judicious use of his tracer ammunition, the Russian attackers usually turned around and flew off. In contrast to the losses occasioned by Russian antiaircraft artillery and infantry fire, the losses sustained through enemy fighter action were relatively slight, and a number of Russian fighter aircraft were even shot down by the transport aircraft.

The 51st and 54th Single-Engine Fighter Wings had been assigned responsibility for providing fighter cover for the transport units over the area of operations. Because of the sharply differing speeds, no attempt was made to organize a regular fighter escort for the transport missions. Arrangements were made with the fighter

commander to have the Ju-52 units met at a certain time at a predetermined altitude by the fighter aircraft, which would then provide air cover while they were in the encircled area and accompany them back to their own territory. Although cooperation was excellent, and the fighter commander showed great understanding for the needs of the transport units, the number of fighter aircraft available was simply not sufficient to guarantee really effective protection.* The fighter wing, of course, faced the same winter-induced technical difficulties as the transport units. In addition, the fighter units had many other missions of equal importance to fulfill, and not nearly enough men and equipment to fulfill them.

Escort duty was quite popular, for the relatively slow-moving transports were an attractive target for the Russian fighter aircraft, and the Me-109's were usually able to chalk up a number of successes. Often the presence of as few as two friendly fighter aircraft, or even of only one He-111, was enough to scare off the Russian fighters. The enemy then went over to strafing attacks with bombs and airborne weapons on the Demyansk airfield during unloading operations. A surprise attack at this particular moment was always unpleasant, resulting in serious losses in personnel and aircraft and endangering the smooth landing of the following transport units. The strengthening of the German ground defenses around the airfield by the addition of light antiaircraft artillery and infantry weapons helped somewhat; the strafing attacks lessened and losses could be reduced to a minimum.

A request submitted by the Air Transport Chief for a small force of Me-110's, to be operated by transport unit crews to provide continuous cover over the operational area, was disapproved by higher headquarters because the aircraft were simply not available in sufficient quantity. Another suggestion, to have three or four fighter aircraft land at the Demyansk airfield at the beginning of a transport mission so that they would be available to take off in case enemy fighters were reported, was dropped because of the limited facilities at the field. The interest and the degree of understanding which the fighter units showed for the airlift were praiseworthy, but their good will was frustrated by the complete lack of the necessary technological facilities. The protection of transport missions by even a token

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* The number of single-engine fighter aircraft in the area varied from two to ten Me-109's.

fighter force made the enemy extremely careful and provided the transport crews with a certain degree of moral support. It was largely due to the fighters that enemy air activity did not reach the point of disrupting the transport missions entirely and that losses were kept as low as they were.

The weakness of the Russian Air Force also helped to keep air transport losses low. Throughout the entire airlift, the transport units were not attacked a single time on the ground at their take-off bases, despite the fact that parked aircraft, the take-off line-up, the loading operation, the massing of aircraft for take-off, the technical facilities (which are of vital importance to a winter mission), the supply stores, and the supply columns from the Army Corps all represented extremely rewarding targets for enemy bombers. A short, tightly concentrated action against the German take-off bases would have enabled the enemy to halt the entire airlift within a very short time, for the transport forces, utilized constantly almost beyond the limit of endurance, had no reserves to fall back on. A well-timed, intensive Russian attack would have effectively sealed the fate of the 100,000 men trapped at Demyansk.

In the long run, of course, it is possible that the enemy was able to chalk up a greater success because of his inactivity; because the Russians did little to harass the airlift operation, it was able to drag on for months, all the while consuming vast numbers of badly needed personnel and vast quantities of valuable materiel. In addition, the pilot training program in Germany (not only for the transport forces but also for the Luftwaffe as a whole) suffered a serious setback over such a long period that its effects could not be effectively overcome throughout the entire course of the war.

F. The Ground Organization

On the day immediately following the arrival of the transport units from the central sector at their new take-off bases, the commanders reported that technological facilities and ground organization services were totally inadequate and requested immediate action to improve them. Their request, which was certainly not an unreasonable one in view of the missions which the transport units were expected to perform, could not possibly be complied with in its entirety. Each group had brought with it a maintenance supervisor for each squadron and one maintenance man for each aircraft. The rest of the

technical personnel, organized into airfield maintenance companies, had not yet arrived. Because of their relative lack of mobility and their cumbersome equipment these companies could not be transported by air, and they had set out for their new bases by land transport; most of them had not even reached the central sector as yet. The urgent request that they be brought into the jurisdiction of the First Air Fleet as soon as possible was disapproved, presumably because this would involve a detour which would create insurmountable difficulties for the transport agencies.

At the beginning, then, the transport groups were dependent upon the cooperation of other Luftwaffe units stationed at the same airfields for all technical services. The amount of help which they could expect was limited and inadequate, for these other units were plagued with technical difficulties of their own because of the heightened requirements of winter employment. The available repair shops, warmup trucks, starter motors, and other technological facilities of the airfields were not even adequate to meet the needs of the original units, and now that the total needs had increased twofold, the inadequacies were doubled.

Thus, when the Air Transport Chief requested that at least 50 percent of the available facilities be assigned to his transport units and persuaded First Air Fleet Headquarters to issue an order to this effect, it was quite understandable that the order was obeyed only with great reluctance and that full compliance was delayed as long as possible, for the order was bound to have a detrimental effect on the effectiveness of the original units. Again and again the Air Transport Chief and his staff reported these deficiencies and submitted urgent requests for improvements, for the inadequacy of technical services was jeopardizing the feasibility of the air-supply operation.

Both the Air Fleet and the Air Administrative Command did everything in their power to improve the situation, but obviously they had exhausted their own resources, and it was clear that they were not prepared to accommodate an additional force of more than 400 aircraft within the area assigned to them. Weeks went by before changes and improvements were made; various technical experts were dispatched to study conditions on the spot in order to obtain confirmation of the fact that facilities were hopelessly inadequate. Operational readiness sank to less than 25 percent of the authorized strength. As a result of the lack of adequate ground organization services, only

half of the 150 serviceable aircraft available were actually able to participate in the missions. During the early stages the transport crews, in addition to flying their daily missions, had to work with the maintenance men and the maintenance supervisors (who, incidentally, often went along on the missions to take the place of the airborne mechanics who had not yet arrived) to prepare their aircraft for take-off, refuel them, service them, and carry out minor repairs.

Gradually it was becoming obvious to all concerned that the decision to keep an encircled army corps supplied exclusively by air had been based on a completely erroneous, or at least overly optimistic, estimation of the Russian winter, of the resources available to meet the technical requirements, and of the insurmountable difficulties inherent in covering the tremendous distances involved. Moreover, no one had realized that measures which would have been timely and effective under normal conditions either took a very long time to become effective or proved totally inadquate under Russian winter conditions, with the temperature at 40° below zero.

After weeks of totally inadequate operations resulting from the slowness of Luftwaffe supply channels, the delivery of some of the most urgently needed equipment resulted in a vast improvement. However, because of the long period of inadequacy, requirements had increased to such a high level that even the most favorable of measures were no longer able to correct the situation. As a result, there were certain conditions which continued to defy improvement. And in this connection one must bear in mind that the airfield area commands and the field command staffs were doing everything in their power--improvising wherever they could, and exploiting the units under their command to the limit of their endurance--to improve the situation. Billets were cleared for the transport personnel, tents were procured, wind screens were improvised from wood and canvas in order to facilitate the servicing of aircraft in the open air, heating fuels and foodstuffs were plentifully and generously placed at their disposal without regard for regulations and issue schedules, and the ground service agencies at all the take-off bases were extremely understanding and helpful. Despite their eagerness to be of assistance, however, the inadequacy of technical facilities made it impossible for them to render a great deal of support. All of these agencies assigned top priority to the fulfillment of the requirements established for the airlift operation, but the relief measures undertaken (involving the requisitioning of reserve personnel and materiel from Germany) could

hardly be expected to bear discernible fruits before the end of March.

Improvisations and stopgap measures, often resulting in insufficiencies elsewhere, were the order of the day. There was no alternative but to make use of channels disapproved by higher headquarters--channels which were later accepted as a necessary evil. But it was these methods, and these methods alone, which kept the Demyansk operation from coming to a complete standstill as early as the end of February. The technical personnel, maintenance supervisors, and technical officers deserve a great deal of recognition for working day and night to overcome the almost insuperable obstacles facing the air transport forces.

The first improvement to make itself generally felt was the assignment of a Ju-52 repair platoon to each take-off airfield. Then, supplies of spare parts (wing and engine parts) began to arrive, and the corps of technical personnel was also being reinforced steadily. On his own responsibility and in complete defiance of all established supply channels, the Air Transport Chief obtained authorization from his home headquarters in Berlin to have replacement aircraft and aircraft being returned to the front after repair, bring warm-up trucks, engine parts, starter motors, and other parts directly from the aircraft equipment depots, from the stores administered by the Luftwaffe Chief of Procurement and Supply, and even right from the factory, to the transport units on the northern sector. Shipments of fuselage parts and spare engines (of the BMW-132 type) from the aircraft equipment depot at Riga were still too few and far between to meet the requirements. Many a Ju-52 was forced to violate safety regulations by flying back to a repair depot in Germany on only two engines.

Whenever possible, minor repairs were taken care of at the take-off bases, while the field shops at Riga and Pskov were available for more complicated jobs. Partial overhauling and engine replacement jobs were done at repair shops in German-occupied territory, for it was impossible for maintenance personnel to install a new engine in the open air at 40° below zero. In order to keep the aircraft in action as long as possible, the maximum number of flight hours permissible before partial overhauling was raised from 450 to 500. All serviceable parts were salvaged from wrecked aircraft and utilized in carrying out repairs. Fundamentally, this was a period during which it was impossible to adhere to established channels and procedures--whatever was possible was permissible.

In addition to normal and expected wear and tear, the winter cold caused a number of technical failures and these helped to account for the unusually high consumption of spare parts. The most important cold-induced deficiencies were the following:

1) The rubber on the wheels had a tendency to crack, and the constant weight of a fully-loaded aircraft on the tires at the time of take-off and landing led to a loss of tire pressure. As a result, the tires were worn out far earlier than would have been the case under normal conditions.

2) The oil and gas lines froze. The engines ran on the oil present in the block until it was all used up. The inevitable result was a high incidence of eroded pistons. On the average an engine could stand only forty hours of flight time between overhauls, as compared with 200 hours under normal conditions. Engine wear and tear of this scope had been completely unknown before; thus it is clear that even the most generous estimates regarding presumable spare engine requirements were far too low to assure an adequate supply. The cold-start method, which had just been introduced on the Eastern front, was of immeasurably great assistance.* (At that time there was no information available to indicate what its effects might be on the life of an engine.)

3) The freezing of the oil lines led to burst oil tanks.

4) Instruments either took a long time to start functioning at such low temperatures or functioned inaccurately. In turn, the unreliability of the instruments led to more serious damage or to total functional failure.

5) As a result of the extreme cold, hydraulic oil pumps lost pressure and, with it, a great deal of their effectiveness.

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* Editor's Note: The "cold-start method" consisted in adding gasoline to the engine oil in amounts of up to 2.5 percent of the engine oil. This resulted in greatly increased oil viscosity, which in turn made the aircraft engines easier to start. As the engines became warm, the gasoline would evaporate and the proper viscosity would thus be maintained.

6) Because of the effects of extreme cold on metals, the windage of the valves had to be altered, resulting in additional difficulties in starting the engines.

7) The water in transformers, radio equipment, and in other sensitive instruments condensed and froze.

Ideally, the preventive measures and equipment listed below should have been provided for as a part of the preparations for the operation. In practice, they had to be provided for on the spot, often with the help of improvisations and stopgap measures. These measures and equipment included:

1) Felt screens for gasoline tanks, oil filters, and pumps.

2) Protective wrapping for all oil tanks.

3) Protective screens with which to cover aircraft wings in case of snow.

4) Felt-lined hoods for the engines.

5) Antifreeze lubricants for, among others, starters, airborne armaments, instruments, and radio equipment.

6) Provisions for removing batteries and storing them in heated rooms until they were needed.

7) Preparation of exact instructions for starting cold engines (cold-start method).

8) De-icing equipment for keeping wings, engines, and propellers free of ice.

Without these absolutely vital aids, there was no permanently effective way of meeting the difficulties created by the extreme cold and its effects on materiel.

All of the Luftwaffe units on the Eastern front encountered the same difficulties, but it was among the transport units that their effects were most keenly felt. The bomber, fighter, and reconnaissance units could more easily afford to limit their missions when

only a fraction of their in-being strength was capable of operation. The transport units, on the other hand, had a definitely established goal to meet, a goal whose accomplishment would have required a tremendous expenditure of effort even under normal conditions; and the fate of 100,000 men depended entirely upon their meeting it. Every single serviceable transport aircraft meant two, four, or six tons of urgently needed supplies per day for the encircled troops. Every instance of neglect and, above all, every unnecessary delay--in the beginning there were all too many of the latter--meant further weakening of the army corps.

Because conditions made it virtually impossible, no plans had been made to service aircraft at the landing bases. There was a group of ground personnel at Demyansk, under the leadership of an energetic and capable airfield commander, but its duties were limited to the direction of air traffic at the field and the elimination of difficulties and delays. Damaged or disabled aircraft left at Demyansk were repaired by maintenance personnel flown from the take-off base by the unit to which the aircraft belonged, bringing with them the necessary tools and spare parts. Only those repairs required to enable the aircraft to fly back to its take-off base for further work were undertaken at Demyansk.

Army units were assigned to work with the airfield command staff to keep the field open for use at all times. The take-off and landing strips had to be packed down regularly and cleared of newly fallen snow. These strips, hard-packed and partially frozen, were usable long after the onset of the thaw period.

G. The Gasoline Supply

Because of the difficulties of overland transport, there were occasions during the first few weeks when the supplies of aviation fuel were not entirely adequate. Gasoline supplies were issued to the First Air Fleet in accordance with an established issue schedule, and it proved to be difficult to obtain approval for the modification necessary to meet the additional requirements of the air-supply operation. In view of the rail transport situation, which was already critical, it is understandable that there were conflicts among the various agencies dependent upon railroad facilities. Even though precise requirement requests were submitted well in advance, it was not always possible to assure adequate fuel supplies at the airfields where they were needed at the time they were needed. Accordingly, it was often

necessary for the transport units, before they could begin their actual missions, to make intermediate landings for refueling at airfields where the tank trucks had already arrived. Ordinarily the Air Transport Chief was not informed until late at night which airfields had gasoline supplies available, which meant that the operational orders already issued had to be amended by telephone to include the refueling order. Each Ju-52 had been provided with a hand pump, so that fueling up from gasoline drums was a relatively rapid operation.

Because individual supply units insisted on rigid adherence to issue schedules, it sometimes happened that the trucks bringing miscellaneous supplies for the take-off base were unloaded first, while the Luftwaffe tank trucks, without which none of the missions could get off the ground, were allowed to wait. Gradually, however, a certain spirit of cooperation developed among these various units, for the good of the over-all undertaking was uppermost in everyone's mind.

In order to achieve the necessary degree of cooperation it was sometimes necessary for the Air Transport Chief and his staff to overstep their bounds and to assume responsibility for functions not ordinarily within their purview, and this meant additional work for them. If the preparations for the air-supply undertaking had been more comprehensive, a good many of the difficulties later encountered could have been avoided or at least resolved more rapidly.

H. The Signal Communications and Reporting Network

At the beginning of the Demyansk airlift, the Air Transport Chief and the units under his command were wholly dependent upon the local signal communications network. Very soon, however, it became evident that unless the existing network could be expanded it would not be adequate to the demands made upon it. The staff of the Air Transport Chief had only one field telephone at its disposal, and it was impossible to handle all telephone communication with the individual transport groups and with higher headquarters using this one instrument. Finally, a number of additional lines from the airfield telephone network were freed for the Air Transport Chief. These were used to establish direct lines to the Air Fleet Headquarters, the Administrative Command Headquarters, and to the command staff of the Army Group Headquarters. Additional direct lines were laid to connect the various take-off bases of the transport units to the

switchboard at Pskov-South.

Teletype channels, some of them running directly and some of them via the equipment of the Air Administrative Command, were also set up and connected to the existing wire communications system. As far as radio communication was concerned, only already existing local stations were available in the beginning. Radio communication with the Demyansk airfield was extremely difficult and time-consuming during the early stages of the operation, since messages had to be routed through the Army Group and the 2d Army Corps to the airfield.

It was imperative that the Air Transport Chief and his staff have a radio communication network of their own constantly available. The frequent interference in wire communication made it unsatisfactory for the relaying of orders and for the maintenance of flight safety. Thanks to the tireless efforts of the signal officer, the Air Transport Chief was finally authorized a large-size radio installation for his use at Pskov-South; heretofore his staff had had to be content with the airborne radio equipment from a staff Ju-52.

A communications aircraft, a Ju-52 equipped with radio direction finding instruments, was assigned to the Demyansk airfield; later on, a small radio company with lightweight equipment was also assigned to the field. The direction finding station at Pskov-South was given the necessary extra equipment to enable it to handle air traffic control duties for the units flying the supply missions. By this time, communications facilities had improved to such an extent that both tactical and flight safety aspects could be considered adequately served. The existing facilities now permitted reliable communication between airborne aircraft and the ground stations, the rapid relaying of orders originated by the Air Transport Chief and his staff, and a dependable contact with the Demyansk airfield and with the Army supply agencies involved in the operation.

Through the ground radio stations at the take-off bases and at the Demyansk field, the Air Transport Chief was able to follow the development of each mission and to intervene at any time it might be necessary. As a matter of principle, all aircraft had been ordered to maintain radio silence. Only the unit leader of his deputy were authorized to break radio silence in order to report unforeseen developments affecting the accomplishment of the mission, data concerning the enemy situation, requests for escort fighters, sudden

changes in weather conditions, or changes in the take-off and landing schedules occasioned by a crash landing or by the destruction of an aircraft by enemy fire. After careful analysis of these reports, any necessary changes in the orders were radioed through to the airborne units and to the take-off bases.

Ju-52's coming for landing could be routed to a stand-by area until the field had been cleared of wreckage; or in case of sudden fog, returning aircraft could be routed to an alternate airfield. The air traffic control center, with its radio direction finding equipment, guided approaching aircraft into the proper landing position and directed the landing itself. Because these measures had been worked out in such careful detail it was possible to avoid difficulties which might have had adverse effects on the accomplishment of the over-all operation and to take the proper action rapidly in case of unforeseen developments.

I. The Weather Reporting Service

During the cold season weather conditions in the area of operation were, in general, consistently good. It was usually cloudless or else clouds were loosely scattered and at high altitude; occasionally, there were low-hanging clouds with intermittent snow flurries and fogs. During the spring, weather conditions grew progressively worse and there were days when only crews experienced in instrument flying could be employed. The ratio between crews with this type of experience and the number of serviceable aircraft was such that serviceable aircraft never had to be kept on the ground because of the weather. The pilots participating in these bad-weather missions became so expert at instrument flight that they thought nothing of taking off when visibility was less than 2,000 feet and the cloud ceiling almost down to the ground. Suffice it to say, in proof of this, that there was not one single day throughout the entire time the operation lasted during which no missions at all were flown.

The following weather observation and reporting stations were at the disposal of the operations planning staff: the central station at the Pskov-South airfield; the local stations at the take-off and landing bases; the central station of the First Air Fleet at Ostrov; the Weather Observation Squadron, First Air Fleet, at Pskov-South.

The unit leaders and squadron captains were responsible for

gathering and evaluating weather reports, and the results of their evaluations were presented to the crews each morning during the orientation period. Whenever reports were inconclusive and further developments unpredictable, the operations planning staff sent up its own He-111 for weather reconnaissance duty. As the He-111 covered its assigned route, it radioed weather conditions back to the units. Beginning two hours before the scheduled take-off, the local weather station at Demyansk transmitted reports every half hour to the operations planning staff. Once the missions had gotten under way reports were given every hour and relayed by the operations staff to the units. Because the reports received from the various weather stations overlapped so closely there was little chance that the crews, once in the air, would be surprised by any sudden changes in weather conditions during the mission.

J. Army Handling of Supplies

The transport of supplies destined for the 2d Army Corps to the take-off bases and the preparations for loading them into the transport aircraft were directed by the quartermaster officer of the Army Group North and his subordinate agencies. A special staff, the Toppe Staff,* was set up to supervise these operations. All supply requests coming from the 2d Army Corps were routed directly to this staff. As far as the loading operation was concerned, the transport units were responsible only for seeing that all the available space was fully utilized without endangering the operational stability of the aircraft. Army medical units, aided by the medical detachments assigned to the take-off bases, took charge of the wounded personnel brought back from Demyansk by the returning transport aircraft.

All available supply transport columns were employed to bring the requested supplies to the take-off bases so that they would be ready for loading on the morning of the mission. In the beginning the slowness and relative lack of mobility of truck and sled columns led to a number of delays, as did the fact that the supply units were not yet fully familiar with the way in which the missions were carried out. These delays, however, were without significance for the success of the over-all undertaking.

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* Editor's Note: Probably named after Generalmajor Alfred Toppe.

Since the number of aircraft participating in the previous day's operations was used as a basis for computing the volume of supplies delivered for loading on the following day, it sometimes happened that the avai lable aircraft could not be fully utilized. There was no way to avoid this, for it was impossible to tell ahead of time whether or not additional aircraft might become availab le overnight. If the transport aircraft were not able to transport all the supplies waiting to be loaded, the rest were sent back. During the early stages of the operation a certain lack of coordination in this respect seemed inevitable; sometimes the available transport space was wasted because there were not sufficient supplies and sometimes supplies had to be left behind because there were not enough transport aircraft.

During the first few weeks there was a definite lack of purposeful and systematic coordination for the good of the over-all cause. Reports directed to the Quartermaster Branch of the Army Group soon resulted in a change for the better. The procurement and transport of supplies to the take-off bases were more carefully organized. Before, it had happened occasionally that the transport columns, unaccompanied by any responsible supervisor from the supply unit, simply unloaded their supplies at the edge of the take-off field, leaving the transport units the task of loading them into the aircraft. The situation at the landing bases was similar; there, too, it was quite a while before the 2d Army Corps agreed to provide men and facilities for unloading the aircraft and transporting the supplies to their destinations. From that point on, however, each airfield established a supply storage depot of fairly large capacity and provided the necessary personnel to administer it, after which there were no further difficulties in connection with the loading of the transport aircraft. The same sort of arrangement was made at Demyansk.

The lack of any definite instructions and the newness of the mission were responsible for the initial difficulties with the Army supply agencies. These agencies were completely unfamiliar with the technical requirements of an air-supply mission, they were unaware of the limitations inherent in the air transport forces, and they were incapable of estimating the demands which an air-supply mission must necessarily make on their own supply system. All of these factors, which naturally could not be overcome from one day to the next, acted to hinder operations in the beginning. As later events were to show, the lessons which might have been learned from these early phases of the operation were not applied systematically to future

instances in which the problem of air supply for encircled forces arose.

K. The Accomplishments of the Air Transport Forces

From January 1942 until the final clearing of the Demyansk area in late 1942 and early 1943, 64,844 tons of materiel, equipment, ammunition, weapons, spare parts, gasoline, clothing, foodstuffs, medical supplies, mail, and miscellaneous supplies were airlifted to Demyansk. Further, 30,500 men were flown in to join the 2d Army Corps as replacement and relief troops. Some of these troops were returning from leave and others had been newly assigned to the Corps itself. Equally important was the air evacuation of 35,400 wounded and sick personnel, as well as a number of troops on leave orders.

Expressed in other terms, a total of 32,427 missions were flown by the transport units to bring supplies into Demyansk; another 659 transport missions were limited to personnel. The transport missions consumed a total of 42,155 tons of aviation gasoline and 3,242 tons of lubricants.

After the supply channels connecting the 2d Army Corps with its own lines had become inoperable, the Corps required 300 tons of supplies per day, all of which had to be delivered by air transport. During the following period, from 18 February until 19 May 1942, the air transport units, utilizing every single serviceable aircraft, were able to deliver an average of 302 tons per day, thus slightly exceeding the minimum requirement.

During the air-supply operation at Demyansk, the air transport forces sustained the following losses in personnel and aircraft as a result of enemy defensive activity (on the ground and in the air) and as a result of crashes occurring during the supply missions: 2 group commanders killed in action; 383 personnel (officers, non-commissioned officers, and enlisted men) either killed, wounded, or missing in action; 265 aircraft totally destroyed through enemy action, crashes, or emergency landings.*

* These figures, which are based on incomplete evidence, may not be strictly accurate.

Troops with minor injuries being flown out of Demyansk

Seriously wounded personnel being unloaded at Pleskau (Pskov)

L. Kholm

The air-supply action carried out for the Assault Group Scherer (approximately 3, 500 troops), trapped by enemy forces at Kholm, may best be considered a subordinate part of the over-all Demyansk operation. The action, assigned to the 4th Special Duty Bomber Group (equipped with He-111's), was carried out almost exclusively by means of supply drop. In addition, freight gliders of the DFS-230 and Go-244 types, the former being towed by Ju-52's and the latter by He-111's, participated. The Ju-52's alone could not be permitted to land at the Kholm airfield, which lay directly on the main line of enemy resistance and was under constant fire. In late February 1942, the First Air Fleet ordered a forced landing there by seven Ju-52's; as a result, five of the seven were totally destroyed, and no further attempts were made.

When first trapped, the Assault Group Scherer had sufficient supplies on hand for the time being, and it was anticipated that it would soon be able to make contact with German lines. Once the 2d Army Corps had been encircled, however, the group at Kholm no longer had any hope of reestablishing ground communication and became wholly dependent upon supply from the air. In comparison to the requirements of the Demyansk force the supply needs of the Kholm group were relatively small and could be met effectively by the supply-drop missions of the 4th Special Duty Bomber Group and by the missions carried out by the freight gliders.

The Kholm action was characterized by another factor, however, -- one which fortunately was not present in the Demyansk undertaking. At Kholm, the enemy forces gradually moved in closer and closer, and the mission of the air-supply units became correspondingly more and more difficult. It was this factor, on a somewhat larger scale, which was later to lead to the failure of the air-supply operation at Stalingrad. The enemy realized that if he could capture the landing field the force at Kholm would be completely cut off from its only source of supply, and thus he increased the pressure against the airfield side of the encircled area. Despite the stubborn resistance offered by the assault group--which understood fully the implications in the enemy's action--the Russians slowly gained ground. In the beginning, despite Russian artillery fire, it had been possible for Ju-52's and freight gliders to land at the airfield; as the enemy forces moved closer, however, Russian intermediate and light infantry fire

Supply drop over Kholm, winter of 1942

Recovery of drop containers, Kholm

came within range of the field, and it was impossible for aircraft to approach it. Thus, supply drop became the only solution.

In spite of the situation, the freight-glider missions were not discontinued immediately. The gliders, which now had to land on a street in the middle of the town of Kholm, were protected by their escort of He-111's which did its best to hold down enemy ground fire. Even so, the glider missions were pointless, for they resulted in an excessive rate of loss in machines and crews. To be sure, the Kholm garrison profited to the extent that it now had sufficient supplies to hold out for a while longer, but it was still not in a position to stabilize or even to improve the over-all situation.

Objectively considered, the air-supply missions for Kholm lost whatever justification they might have had as soon as contact on the ground was broken, for there was no longer any possibility of restoring the contact through a counterattack. The assault group should have begun at once to fight its way through to German lines, and the employment of transport aircraft to support such an attempt by limited air-supply service would have been proper and justifiable. As a matter of fact, some of the Kholm troops did manage to break out and join their own lines to the west and the south. The feasibility of such action was also illustrated later on, when an entire panzer army broke out of enemy encirclement and, with the support of the air transport forces, managed to get back to its own lines. The position of Kholm was admittedly an important one, for it was the intersecting point of the east-west line of the control sector of the front and the north-south line of the northern sector of the front. It was wrong, however, to make the holding of this position entirely dependent upon the successful accomplishment of an air-supply operation whose duration could not possibly be determined in advance. Since the take-off areas utilized by the transport forces were not well equipped, the employment of freight gliders was extremely difficult. The expenditure of effort required was in no way proportionate to the degree of success which could be expected, nor was the volume of supplies which could be transported by air sufficient to maintain the fighting power of the encircled force for any length of time. Moreover, the encircled force was not even in a position to assure that the landing field could be utilized consistently enough to permit an air-supply operation of the necessary scope. Although the garrison was able to hold out longer than would otherwise have been the case, an extension of the period of resistance was no guarantee of ultimate success in holding the position.

The Kholm action could have taught us a number of lessons, not concerning the methods used to accomplish the mission so much as concerning the basic potentialities inherent in the employment of air transport forces. The primary lesson, namely that air supply is never satisfactory as a stopgap solution within the framework of defensive operations on the part of encirlced forces, was unfortunately never seriously considered, even though the Kholm operation provided such a clear illustration of the limitations in such a situation. Although sufficient air transport space was available, the operation was doomed because of the inadequacy of the facilities in the target area.

M. The Lessons of Demyansk and Kholm

In evaluating the lessons of Demyansk and Kholm, the historian must first examine both operations as an integral part of the over-all military situation obtaining at that time and determine whether or not the success of these operations justified the employment of all available air transport forces. Then he must study the course of the two missions--quite apart from whatever conclusions he may have reached regarding their justifiability--and determine the lessons which may be learned from them for application to future missions of the same type.

From beginning to end the Demyansk-Kholm operation possessed the character of a stopgap solution. Freedom of action lay on the side of the enemy, which meant that the decision to supply the 2d Army Corps by air did not develop out of the intentions of the German leaders. Rather, the need for an air-supply operation had been forced upon them by certain measures initiated by the enemy and by German inability to prevent these measures from succeeding. A careful and critical evaluation of the military situation should have been undertaken before, or immediately after, the enemy carried out his encirclement action, in order to appraise the advantages and disadvantages of an air-supply action. The following questions should have been posed and their answers weighed carefully before making a final decision:

1) Could the enemy breakthroughs northwest and southwest of the Valdai hill position held by the 2d Army Corps be met effectively by locally available forces?

2) If the breakthrough points could be effectively localized, could the new front line be held as a firm line of main resistance with the help of locally available forces or troops brought in for that

purpose?

3) Provided sufficient relief forces could be brought in, would there be a fairly good chance of stabilizing the situation within a reasonable time despite the encirclement of the 2d Army Corps?

Any objective appraisal of the situation in the light of these three questions would certainly have eliminated the possibility of a large-scale air-supply operation, except as a temporary measure within the framework of a systematically planned counter-action on the part of the forces so supplied. It was unrealistic to rely solely on air supply--the need for which could be expected to extend over a period of several months--without initiating definite relief measures at the same time.

The air transport forces were successful in accomplishing the mission assigned to them and, consequently, in meeting the purpose behind that mission. This cannot, however, be accepted as valid justification for the decision to order the mission. For the success of the operation was purchased at a price in men and materiel far exceeding the military value of temporarily prolonging the staying power of 100,000 troops. In the long run, the success of the air-supply mission merely resulted in the accomplishment of the original purpose of the ground operation; the front was recaptured at the end of 1942. The supply mission as such did not in any way augment the ultimate gain.

Another question which should have been weighed carefully before a final decision was made was whether or not the available air transport space was adequate to the accomplishment of a supply mission of the contemplated scope. Inasmuch as the statistics indicate that the average volume of supply deliveries did meet the daily requirements established, we must assume that the answer would have been "yes." However, since the number of aircraft mobilized for the operation represented a potential rate of performance two or three times as great as the actual rate,we are surely entitled to wonder if this answer would have been a valid basis for justifying the mission. If the conditions under which an action is carried out are such that one-third of the force mobilized to carry it out is necessary to assure the desired success, i.e. if an action requires the mobilization of a force three times as large as is actually needed, then that action can be justified only under very special circumstances and as a rare exception rather than as a rule. In no case is it sound to

continue an action of this type over a long period of time, particularly if it has the character of a stopgap solution.

Once the decision had been taken to carry out an air-supply mission, extremely careful consideration should have been given to the question of whether or not the conditions recognized as indispensable to the accomplishment of such a mission actually obtained. This, of course, should always be done, regardless of whether or not the original decision is justifiable. In the case of the Demyansk-Kholm operation, the Air Transport Chief, as the officer in charge of its accomplishment, was firmly--and quite rightly--convinced that the necessary conditions were not present. For even a superficial examination of the available facilities was enough to indicate that the ground organization was far from adequate to the requirements involved.

The deficiencies already discussed did indeed prove to be serious enough to create any number of difficulties during the course of the mission. The majority of these deficiencies were such that they could not soon be overcome, no matter how effective the command and organization of the transport units might be. It was purely due to good fortune--and this represents the element of risk which entitles us to term the operation a stopgap solution--that the most glaring deficiencies could be overcome in time to prevent complete failure. At the time the operation began, however, the participants had nothing more than a vague hope that this would be the case. Operational planning for the action had included no margin for safety whatsoever, although this should have been a sine qua non for an undertaking of this scope.

From the standpoint of the command function, a small staff whose members were used to working closely together proved to be most satisfactory, although this meant that they were constantly burdened almost beyond capacity. On the other hand, a small staff was comparatively free of the need for formal adherence to procedure and of much of the routine work necessary in a larger staff body; its contact with subordinate units and with the key personalities of higher headquarters was direct and personal. For the conduct of a mission as vulnerable to upsets as the Demyansk-Kholm action it was absolutely necessary that all aspects of the command function be concentrated in one person (or in a single small group) in order to avoid the delays inherent in a complicated reporting and command channel. Every modification in any aspect of the operation had to be processed

for immediate implementation at troop level.

As far as the organizational structure of the units themselves was concerned, the Demyansk-Kholm action did not indicate a need for any fundamental changes. The appointment of an "operations officer" for airfields utilized by more than one unit proved to be a good idea. This officer had the authority necessary to direct operations at his field in such a way as to obviate the development of local difficulties or, if they should develop, to take the action required to overcome them. Since the entire operation depended to a large extent on improvisation, the methods to be used in carrying out the individual missions were pretty much left up to the units themselves; specific instructions were issued only when they were necessary for purposes of coordination. It was far more important to issue orientation material concerning details of the situation in the operational area for immediate transmittal to the units than it was to give specific operational orders; in view of the rapidly changing situation, the orientation material was much more valuable in the actual performance of the missions.

As far as the Army's supply organization was concerned, the Demyansk operation illustrated for the first time that the agencies involved were totally unfamiliar with the potentialities and the requirements of air transport. The reasons lay in the complete lack of any previous theoretical or practical cooperation with air transport forces. It is possible that both parties were at fault, but the fact remains that the employment of air transport forces, as it had figured in operational planning up to this time, had been rather one-sided. The winter campaign on the Eastern front forced the opening of an entirely new field of employment for the transport forces, when the Army supply agencies became their chief customer for air-supply services. Certain difficulties and failures in coordination were inevitable at first and had to be accepted as such; there was little excuse, however, for the complete lack of understanding displayed by some Army representatives in the beginning. If the Army supply people had been as willing to improvise as were the air transport personnel there would have been considerably fewer difficulties for the latter to overcome.

In summary, it can be said that the Demyansk operation--as the first large-scale airlift undertaking of World War II--provided conclusive proof of the results which could be attained by an air-supply action carried out by a large air transport force. At the

same time, it illustrated a number of basic principles which deserve to be adopted as criteria for the justifiability of an air-supply action. The employment of transport units in air-supply operations is warranted only when they are the sole instrument by which the desired goal can be achieved. With all due respect for the critical situation on the northern sector of the Eastern front during the winter of 1941-42, it can hardly be maintained that this criterion was fully met. In the last analysis, the Demyansk airlift, badly prepared and carried out at the cost of tremendous expenditures in materiel and effort, must be booked as a failure, a failure whose superficial success brought with it the danger of too easy recourse to the employment of air supply as a stopgap solution.

The employment of air transport units is proper and justifiable only if their commitment represents an integral part of an offensive action.

Section II: Stalingrad, 23 November 1942 - 3 February 1943[3]

A. General

It has been established beyond any doubt that Stalingrad represented for Germany the turning point of World War II. Germany lost not only her Sixth Army but also well over half of the Ju-52's in operation at that time, a great many bomber aircraft, and much valuable materiel which could not be immediately replaced. The transport units lost the majority of their experienced crews, who could not be replaced at all.

Army representatives have always maintained that the Luftwaffe was to blame for the catastrophe at Stalingrad because it had made certain rash promises to Hitler which it was later incapable of fulfilling. In order to clarify this situation once and for all, the author has examined and evaluated all the available pertinent material.* None of these source documents provides conclusive evidence as to whether such promises were ever actually made, or--if so--by whom and concerning what aspects of the operation.

* This includes official reports, excerpts from war diaries, records of conferences, personal diaries, notebooks, and memoranda, copies of which are to be found in the Karlsruhe Document Collection.

The necessity of utilizing all available Luftwaffe resources to help the Sixth Army was clearly recognized by all concerned. At the same time, there were many who doubted that the requirements of the Army (varying between 300 and 750 tons of supplies per day) could be met adequately in view of the military situation and the prevailing weather conditions.

It is impossible to understand why Goering did not tell Hitler immediately that 300,000 men could not be supplied by air for any length of time, and why he did not limit his willingness to attempt such an operation to the period during which preparations for a breakout were being made.

We may assume with a fair degree of certainty that the success of the Demyansk operation--a success which, as noted above, * was distinctly superficial--was one of the factors which influenced evaluation of the possibility of supplying Stalingrad by air. Military planners forgot, however, that the encircled force at Demyansk numbered only 100,000, that the front was fairly well stabilized, that fighter aircraft were available for escort duty, that the approach and return routes were reasonably short, that fairly well organized supply channels existed, and that the take-off bases used by the transport forces remained unchanged throughout the duration of the airlift. While the forces at Demyansk could look forward to the coming of spring, at Stalingrad the Siberian winter was just beginning. Moreover, planners must have realized that even the Demyansk operation--carried out under comparatively favorable conditions--was brought to a successful conclusion only at the expense of high losses in men and materiel and through the ruthless commitment of almost the entire available air transport force. [4]

Objective comparison of the conditions at Demyansk with those at Stalingrad should have warned German planners that the air supply of the Sixth Army was a military impossibility. From the very beginning, responsible officials from the Fourth Air Fleet, to which the mission had been assigned, did not hesitate to voice their reservations to Army representatives.

In defiance of all these doubts and reservations, Hitler ordered

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* See above, pp. 137, 178-179.

the Sixth Army to remain in Stalingrad. It is possible that strategic and tactical considerations may have played a role in his decision, but it may be assumed that the determining factor was his fear of losing prestige by withdrawing his forces. A few months before, he had made the following assertion in a political speech: "Once the German soldier has taken up his position, there is no power in the world strong enough to dislodge him." Hitler decided to let events take their course, relying on the unfounded hope that things would turn out all right in the end.

The command was given to launch the air-supply operation; the Sixth Army had to be maintained. In view of the over-all situation on the Eastern front, however, and considering the harshness of the Russian winter, it is inconceivable that the Sixth Army was ordered to dig in. In the logical assumption that the Army was preparing for a breakout the Fourth Air Fleet was doing everything in its power to support such an action. It was completely beyond the realm of possibility to keep the Sixth Army supplied by air indefinitely, particularly during the winter months. Comparison with Demyansk was misleading, since at Demyansk at least a few of the necessary conditions had been present from the very beginning.

The Commander in Chief and Chief of Staff of the Sixth Army showed by their rigid demands for air-supply service that they had no conception whatsoever of the limitations in performance which the military situation and weather conditions imposed on the air transport units.[5]

B. The Ground Situation

How did Stalingrad happen in the first place?

During the early summer of 1942, the German Army Groups A and B advanced along the southern sector of the Eastern front as far as the Caucasus Mountains and the Volga River near Stalingrad. They had encountered only minor enemy resistance. It was not until the German forces had reached the bend in the Don River that resistance, especially in the Stalingrad area, developed such strength that the Sixth Army--despite stubborn perseverance--was unable to occupy Stalingrad completely and thus put a stop to traffic along the Volga River.

In a carefully planned, brilliant move, Russian leaders had

deliberately enticed the German forces into the area between Rostov and Kharkov as far as the Volga River. The Russians still held a number of strong bridgeheads along the Don River, which was the northern flank of this area and of Army Group B, and as luck would have it, it was precisely this flank which was manned by Italian and Rumanian troops. To the south of Stalingrad and over the Kirghiz Steppes /Kazakhstan/, the Army Group was protected only by a thin makeshift fortification line stretching towards the Caucasus and the Volga.

The orders and directives issued by Hitler during this period give voluble evidence of his optimism. He and the Party leaders were of the firm opinion that the Russians were so badly beaten that it was only a question of time until they could be destroyed completely. The actual situation along the front, confirmed repeatedly by the reports turned in by air reconnaissance units since October 1942, was diametrically opposed to the optimistic concepts of Hitler and his circle.[6] The German troops, committed without respite since the beginning of the offensive, were exhausted; tanks, weapons, vehicles, and in fact all types of equipment had been subjected to constant use and needed to be repaired or, in some cases, replaced.

Because the advance had been so rapid, there had not been time to establish an adequate transport channel for supplies. There was only one single-track railway line available, and even this was not in full operation and could accommodate only twelve supply trains per day. Only one and one-half of these were reserved for the transport of Luftwaffe supplies. Both the Army and the Luftwaffe had already utilized supplemental air-supply service by the transport forces--without it, the thrust to Stalingrad would have been impossible. Thus, even before the enemy encirclement action, air transport space had been required to an abnormal degree.[7]

C. Luftwaffe Units in the Area Prior to the Russian Breakthrough

In mid-November 1942, Fourth Air Fleet was in command of the Luftwaffe units operating within the areas covered by Army Group A (the Caucasus) and Army Group B (Stalingrad). Subordinate to the Air Fleet were the Air Transport Chief (Crimea), the 4th Air Corps (Caucasus), the 8th Air Corps (Stalingrad), and the 25th Air Administrative Command (Rostov), which provided ground organization

services. The area assigned to the Air Administrative Command covered that assigned to the Fourth Air Fleet, and was divided into a number of airfield area commands for the purposes of administering ground organization services. The 1st Antiaircraft Artillery Corps, with the 15th and 9th Antiaircraft Artillery Divisions (the latter stationed at Stalingrad), was also under the command of the Fourth Air Fleet.

As of mid-November, the following air transport units were present in the operational area of the Fourth Air Fleet: the 900th Special Duty Bomber Group (Fourth Air Fleet); the 172d Special Duty Bomber Group (25th Air Administrative Command); the 50th Special Duty Bomber Group (8th Air Corps); the 102d Special Duty Bomber Group (8th Air Corps); the 5th Special Duty Bomber Group (equipped with He-111's) (8th Air Corps); the staff of the 1st Special Duty Bomber Wing (8th Air Corps). In addition, the Fourth Air Fleet also had at its disposal the 55th and 27th Bomber Wings (equipped with He-111's) and the 3d Group, 4th Bomber Wing, all of which could be employed for air transport duty if the need should arise.

The degree of operational readiness of these units, which had been in action uninterruptedly since the summer, was approximately 40 percent. During early November, a number of groups had to be withdrawn to the rear area or to Germany in order to be brought up to full personnel and materiel strength.

Because the rate of advance had been so rapid and because supply channels were totally inadequate, the ground organization had not been able to equip all the airfields along the line of march as completely as might have been desired. This was true particularly of the area east of the Donets. The transport units moved into improvised barracks and bunkers and into mud huts at their assigned airfields and prepared to meet the onslaught of winter. Winter clothing and equipment were procured.

D. The Russian Breakthrough and the German Decisions which Followed

The Russian breakthrough northwest and south of Stalingrad on 19 and 20 November 1942 resulted in the encirclement of the Sixth Army on 22 November. The Army was completely cut off from all sources of supply; its supply situation was already critical and was

bound to become catastrophic within a few days. During the evening of 22 November, the Commander in Chief, Sixth Army, radioed the following message:[8]

> Army completely encircled . . . ammunition situation critical; food supplies on hand for six days; the Army intends to hold the territory between Stalingrad and the Don River and has made the necessary preparations. Success depends upon closing the gap on the southern front and on whether or not adequate food supplies can be delivered by air . . . Paulus.

On the same evening, the Commander in Chief, Army Group B, sent a teletype message to the Army High Command. Its contents may well have a bearing on our subsequent evaluation of the Stalingrad operation, and for this reason part of it is quoted below:[9]

. . . . . .

> Despite the unusual difficulty involved in reaching this particular decision--one whose potential consequences are quite clear to me--I must state that I consider the withdrawal of the Sixth Army, suggested by Paulus, to be absolutely imperative.
>
> Justification: It is not possible to keep an army made up of twenty divisions supplied from the air. Even assuming that weather conditions are favorable, the available air transport space is not sufficient to provide the encircled force with more than one-tenth of its actual daily requirements in supplies.
>
> s/ Baron von Weichs
> Generaloberst

On 20 November, as soon as the encirclement of the Sixth Army seemed unavoidable, the Fourth Air Fleet had begun preparations for an air-supply action. The transport units were to fly in ammunition and gasoline to begin with, and then foodstuffs, in order to enable the Army to succeed in breaking out of encirclement.

In a teletype message addressed to Hitler on 24 November 1942, the Commander in Chief, Sixth Army, outlined his situation, voicing his conviction that a breaktrhough towards the southwest was

the only way to save at least some of his men and materiel. In reply, he received the following message:

> The Sixth Army has been temporarily encircled by Russian forces. I intend to assemble the Army in the area (here follows a designation of the area concerned). The Army may rest assured that I will do everything in my power to see that it is kept adequately supplied in the meantime and relieved as soon as possible.
>
> I am familiar with the courageous performance of the Sixth Army and of its Commander in Chief, and I am convinced that it will do what is expected of it.
>
> s/ Adolf Hitler

We have no way of determining whether this positive promise was responsible for inducing the Commander in Chief of the Sixth Army to give up his plans for a breakout. In any case, he placed his reliance on air supply, although he had been warned by General der Flieger Martin Fiebig and Generalmajor Wolfgang Pickert that the Army could not possibly be supplied by air. [10]

The Sixth Army's supply requirements were established at 750 tons per day at the beginning. Somewhat later, this figure was reduced to 500 tons per day. This meant that 375 Ju-52's, each carrying a payload of two tons, would have had to take off each day and actually land in the encircled area. Since a degree of operational readiness of only 30 to 35 percent could be relied on, 1,050 Ju-52's would have been required to meet the needs of the Sixth Army. Even if this number had been available for employment, the take-off base at Tatsinskaya could never have accommodated them all. But at this time the Luftwaffe had only about 750 Ju-52's. The air commanders at the front were well aware of the fact that this number of aircraft could never succeed in keeping the Sixth Army adequately supplied, if only because of weather conditions. In addition, there were the inadequacy of technological services and the enemy situation to consider.

At a conference between Goering and Jeschonnek on 23 November 1942, a goal of 350 tons per day was mentioned as being within the realm of possibility. Goering, however, demanded 500 tons. [11]

E. Transfer of Units and Requisitioning of Aircraft for the Stalingrad Operation

At the order of the Quartermaster General, all Ju-52's, Ju-90's, FW-200's, He-111's, and even Ju-86's (though totally unsuited for transport purposes) were requisitioned from all units, staffs, ministries, and--as usual--from the Office of the Chief of Training. The fact that 600 aircraft, together with some of the best flight instructors, were commandeered from the latter source alone is ample illustration of the ruthlessness with which every single available aircraft was mobilized for the air-supply mission at Stalingrad. Germany's top military leaders, seeing the figures on the number of aircraft commandeered, were convinced that these were high enough to assure adequate supply for Stalingrad.

By early December 1942, these ruthless measures began to have their effect. Ten groups* of Ju-52's, four groups and two wings/ of He-111's, two groups// of Ju-86's, one wing** of He-177's and one long-range transport group*** equipped with FW-200's, Ju-90's and Ju-290's had all be assigned to Fourth Air Fleet. These units had approximately 500 aircraft at their disposal. As the operation progressed, however, more aircraft would be made available.

The employment of freight gliders of the DFS-230 and Go-244 types was also given consideration, but the proposal was finally dropped. The additional ground facilities required for the employment of gliders were simply nonexistent and there was no way of establishing them in time. Moreover, this would have meant a disruption--at times even a complete stoppage--in the handling of the transport aircraft at the two take-off bases, particularly at the one in Pitomnik. Also, the gliders could be employed only under favorable weather

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* The 9th, 50th, 102d, 105th, 172d, 500th, 700th, 900th, Special Duty Bomber Groups and the 1st and 2d Groups of the 1st Special Duty Bomber Wing.

/ The 5th and 20th Special Duty Bomber Groups, the 27th and 55th Bomber Wings, the 1st Group, 100th Bomber Wing and the 3d Group, 4th Bomber Wing.

// The 21st and 22d Special Duty Bomber Groups.

** The 50th Bomber Wing.

*** The 200th Special Duty Bomber Group.

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conditions and with a fighter escort; and there were no fighter aircraft available for this purpose. At the order of the Luftwaffe High Command, the 11th Air Corps had already initiated action to move the gliders to the airfields at Stalino and Makeyevka by rail and to assemble the glider tow squadrons there.

The penchant of Luftwaffe leaders for issuing indiscriminate orders regarding all sorts of things was amply illustrated by the order to transfer an He-177 unit (which was still in process of activation) to the airfields at Stalino and Zaporozhe. The He-177 was totally unsuited to transport purposes, both because of its flight characteristics and because of its vulnerability to technical failure, and after a number of them had been destroyed in action the unit was withdrawn from supply missions.[12] The situation was much the same as regarded the 200th Special Duty Bomber Group which was equipped with FW-200's (Condors), Ju-90's and two Ju-290's. The unit appeared reassuringly in the daily morning reports sent out to the Luftwaffe High Command and to other top-level headquarters, but its appearance over Stalingrad as part of a supply mission was rare indeed.[13]

F. Early Difficulties

It was wishful thinking on the part of top Armed Forces leaders to assume that the order of 23 November, requisitioning all available Ju-52's, would automatically result in their beginning operations at Stalingrad twenty-four hours later. Immediately after their arrival at their new base they were more of a nuisance than a blessing, for they blocked the field at Tatsinskaya, where they had to be equipped--without the help of adequate facilities--for winter employment. The intermediate stations at Kirovograd and Zaporozhe were not supposed to send the aircraft on to Tatsinskaya until after the necessary conversion work was completed. Unfortunately, these stations were overenthusiastic about getting aircraft out without delay in order to be able to report a particularly high figure of machines processed each evening; as a result, a good many aircraft arrived at Tatsinskaya incompletely equipped for winter missions.

As regards type and function, the aircraft committed in the Stalingrad operation were the following: Ju-52 (transport aircraft); Ju-86 (trainer); He-111 (emergency transport aircraft); He-177 (long-range bomber); FW-200 Condor, Ju-90 and Ju-290 (all long-range reconnaissance aircraft).*

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* See above, p. 40 ff.

Not all of the newly activated units were capable of meeting the demands of a mission so difficult as the Stalingrad one was. There was no time for the crews to become accustomed to conditions gradually; they had to be employed fully, right from the start. The harshness of the winter cold; the long and dangerous approach and return flights over enemy territory in the face of heavy fighter and antiaircraft artillery defenses; the constant enemy bombardment of take-off and landing fields; the unloading and loading in the encircled area, while constantly harassed by artillery fire and grenades; and the ever-present danger of icing and other technical failures in the bitter cold all combined to make the situation faced by the transport personnel a very difficult one. In addition, there was the psychological depression they were bound to feel at the sight of the half-starved troops in the encircled area and of the countless numbers of wounded personnel, many of whom had to be left behind because there was not sufficient space available to fly them out. It is no wonder that young and inexperienced crews were badly shaken by what they saw; it would be unfair to reproach them for this.

The Fourth Air Fleet had been entrusted with the conduct of air-supply operations for Stalingrad; General Fiebig was appointed Air Supply Chief (Stalingrad). Colonel Foerster, Commanding Officer of the 1st Special Duty Bomber Wing, assumed command over the air transport units assigned to the Air Fleet at that time. The units were assembled at the Tatsinskaya airfield, and the wing staff acted as their operations staff. The transfer to Tatsinskaya was delayed several days because of fog and low-hanging clouds over the Don-Donets area. As soon as they arrived at the take-off base, the transport aircraft began their supply missions--under the worst imaginable weather conditions.

As additional aircraft began to arrive, the work of the operations staff increased. By command of the Fourth Air Fleet, General-major Victor Carganico, Commander of the Airfield Area Tatsinskaya, was appointed Air Supply Chief.[14] It soon became apparent that the new Air Supply Chief and his staff were incapable of fulfilling the demands made upon them because they had had too little experience in air-supply operations. The Air Fleet, in its eagerness to get the air-supply action under way as soon as possible, had temporarily accepted this fact as a necessary evil, probably because it had no fully qualified staff available. On 29 November 1942, the Fourth Air Fleet ordered the 8th Air Corps relieved of its previous mission, and General Fiebig assumed responsibility for directing the air-supply operations at

Stalingrad. With this shift, an experienced command staff became available, with its already established communication facilities, weather observation stations, and bomber and fighter units for escort duty.

With the above change in command, the 55th and 27th Bomber Wings began to be utilized for air-supply duty. In addition, the heavy fighting along the front, particularly on the encircling sector, re-required their continued employment there in bombardment missions. It was at this time that the He-111 units, stationed at Morozovsk, were placed under the command of Colonel Kuehl, as Air Transport Chief (Morozovsk). Colonel Foerster, the Air Transport Chief (Tatsinskaya) retained command over the Ju-52 units stationed at the latter airfield. Major Willers, Air Transport Chief (Stalino), assumed command of the long-range aircraft units assigned there.

The Quartermaster General, Sixth Army, whose headquarters were at Morozovsk, submitted his requisitions for the desired type and amounts of supplies to the Army Group Don. The Army Group then arranged for the required items to be transported to the take-off bases and made ready for loading. At each airfield there was an Army Group liaison officer who was in charge of a supply detail responsible for packing and loading operations; the officer also assisted the medical services staff at each field in the unloading and transporting of wounded personnel. After a few preliminary difficulties had been ironed out, coordination among these agencies was good. Delays in the take-off of the Ju-52's were sometimes unavoidable; if the weather took a sudden turn for the worse, for example, the aircraft had to stand by until the supplies, already packed for transport, were re-packed in containers suitable for air drop. (A last-minute change of this sort was not so serious for the He-111's, since the supply drop containers merely had to be fastened to the underside of the wings.) The unpredictable and rapidly changing weather conditions created a special problem for the three Air Transport Chiefs. Crews and ground personnel could be permitted no respite; they had to be ready to start at a moment's notice at all times so that every period of favorable weather could be fully exploited for the missions.

G. Operational Problems Prior to the Loss of Pitomnik

When the weather was good and the cloud ceiling high, the supply units flew in squadrons or in groups of five aircraft with a

fighter escort; during periods of bad weather, when visibility was poor and the cloud ceiling low, only those crews fully experienced in instrument flight flew in groups of five--the rest flew singly or at most in groups of two or three aircraft. Night missions were always flown singly, the take-off schedules at Morozovsk and Tatsinskaya being carefully coordinated. Throughout the duration of the operation the transport aircraft were attacked constantly from the air and from the ground. Even the relatively strong German antiaircraft artillery battery at Pitomnik was not sufficient to deter Russian fighters from attacking the airfield there. The losses in personnel and aircraft were high, especially when the attacks came during take-off or landing operations or when the transports were being loaded or unloaded. The constant enemy harassment with bombs, artillery fire, and grenades disrupted the supply missions considerably and sometimes even brought them to a complete standstill. With time, it was possible to expand air traffic control facilities at both the take-off and landing fields to an adequate degree. Some of the feats accomplished by the transport crews under conditions of dense fog and low-hanging clouds were nothing short of unbelievable.[15]

The withdrawal from the Tatsinskaya airfield on 24 December 1942, by which at least 108 out of a total of 180 Ju-52's were saved from destruction, is a case in point. With visibility less than 2,000 feet, the pilots took off under a steady hail of fire from Russian tanks, and it was only due to their superior skill that most of them succeeded in saving their aircraft. Today it may well be asked why the Air Fleet did not give the order to clear the airfield earlier; General Fiebig had requested permission for a take-off on 23 December, when the Russian tanks were moving into position before the airfield. In this instance, General Fiebig's evaluation of the situation was perfectly correct. The Air Fleet made a serious error in adhering to Hitler's order that the field not be abandoned until enemy artillery fire actually started.[16] As a result of this error, all the ground equipment and about seventy Ju-52's were lost. The consequences were not long in making themselves felt, and the units were the ones who had to suffer. Germany's war leaders were unimpressed by the fact that the operational readiness of the transport forces had sunk to less than 25 percent; the important thing was to meet the increased demand for supply tonnage. Whatever else happened, the supply missions had to go on, and the transport units continued to do their duty. The losses sustained as a result of enemy activity continued to increase, as did those attributable to crashes occasioned by technical failures and icing.[17]

Salsk, the new take-off base assigned to the Ju-52 units, was poorly equipped for continuous use by units flying daily missions, and it was some time before the units could reestablish a daily routine, partly because heavy frosts and snowstorms had further reduced the degree of operational readiness. The approach route was now nearly 250 miles long, dangerously close to the maximum range of the transport aircraft. Aircraft consuming an abnormal amount of oil had to be withdrawn from operations, and the daily quota in supply tonnage decreased more and more. Desperate, the Sixth Army appealed to supreme headquarters for help, but there was no way out; daily deliveries simply could not be increased--the forces of nature were too strong and the Russian tanks rolled inexorably westward. The call for help from the Sixth Army merely served to increase Hitler's nervousness. In the hope that at least something could be saved, Generalfeldmarschall Erhard Milch was dispatched to the Fourth Air Fleet, armed with special authority. He arrived at Taganrog on 16 January 1943, together with a staff of experts who thought that they could improve conditions. One look at the actual situation at the take-off bases was enough to convince them that nothing more could be done with the inadequate resources available.[18]

After the failure of the attempt made from Kotelnikovo by the Fourth Panzer Army to relieve the encircled force, the Russians began to attack with ever stronger forces. The airfield at Salsk was in danger of being overrun at any moment. In the area west of the Donets there were neither established nor improvised landing fields. Zverevo, a cornfield lying along the railroad line north of Shakhty, and just barely within the operational range of the Ju-52's, was selected as a landing field and provisionally equipped as such. A take-off and landing strip approximately 2,000 feet long and 100 feet wide was created of hard-packed snow with the help of the native population. There were no rollers available. There were no billeting facilities whatsoever in the vicinity. In the beginning, the personnel lived in snow huts, which were replaced later by tents and wooden barracks. On the day after the move the crews were ready to resume their missions.

On 18 January 1943 enemy bombardment and strafing attacks resulted in the loss of thirty Ju-52's; ten were destroyed completely and twenty had to be sent off for repairs. During the attacks the Rumanian antiaircraft artillery forces took cover in the shelter trenches; the German antiaircraft platoon, equipped with 20-mm.

artillery, managed to shoot down one IL-2.[19]

It was inevitable that the sudden move from Salsk to Zverevo would disrupt the course of the supply operations. Neither Germany's top-level command nor the Sixth Army seemed to be able to comprehend this fact, and neither could understand why there was a decrease in the number of supply tons delivered daily. In addition, during this period there were a number of heavy snowstorms which rendered the improvised field useless for days at a time. Each Ju-52 had to be dug out of the snow drifts individually. The He-111 airfields lying in the same area were soon abandoned because of the ever-present danger of attack by Russian armored forces; Zverevo, as the only airfield from which the Ju-52's could continue their missions, had to be held.

H. Supply by Air Drop

On 16 January 1943, Pitomnik, which had been under steady enemy fire for several days, had to be given up. Its loss meant that the transport aircraft could no longer land anywhere within the encircled area; henceforth supplies had to be delivered by air drop, and there was no longer any way to bring out wounded personnel. Despite the favorable reports of the Sixth Army the airfield at Gumrak proved to be totally unsuited for use by the transport aircraft; the snow was much too deep, and the Sixth Army troops, weakened by hunger, were physically incapable of packing it down firmly enough to support the impact of a landing. Because of the deep snow and their generally weakened condition the troops were no longer equal to the task of collecting the supply containers as they were dropped. In addition, many containers were blown off course and landed in Russian hands. The situation within Fortress Stalingrad grew more desperate from day to day.

The air-supply missions were harassed constantly by Russian fighter units, which attacked the Ju-52's during their approach and return flights as well as over the target area. The Russians were a bit more careful in the case of the He-111 units because of their heavier airborne armaments. The Russians had also established antiaircraft artillery screens (medium and light artillery) along the transport route and at the target area, where their effectiveness was supplemented by infantry fire. The way in which the Russian fighter units carried out their attacks indicated clearly that they were not

operating according to systematic plan. If the available fighter forces had been employed from the very beginning in accordance with a pre-established plan there is no doubt but that they could have halted the air-supply mission immediately after its inception.[20]

I. Results of the Airlift

During a total of seventy days of operations, the air transport units delivered 6,591 tons of supplies to the Sixth Army. This total may be distributed as follows among the various phases of the over-all undertaking:

25 Nov-29 Nov 42	269 tons	(Operations get under way)
30 Nov-11 Dec 42	1,167 tons	(After the assumption of responsibility by the 8th Air Corps)
12 Dec-21 Dec 42	1,377 tons	(During the relief operation attempted by the Fourth Panzer Army)
22 Dec-11 Jan 43	2,214 tons	(Until the beginning of the Russian all-out offensive)
12 Jan-16 Jan 43	300 tons	(Until the abandonment of Pitomnik)
17 Jan-23 Jan 43	485 tons	
24 Jan-2 Feb 43	779 tons	(Supply drop; approximately 50 percent of these supplies were actually collected by the troops)

The following kinds of supplies were delivered to the encircled forces:

Gasoline	58,190 cubic feet
Ammunition	1,122 tons
Food	2,020 tons
Miscellaneous	129 tons
Flown out of the encircled area	24,910 sick and wounded personnel

There were three days (24 and 25 December 1942 and 2 January 1943) on which no air-supply missions were flown. At the other end of the scale, on 19 December 1942, 290 tons of supplies were transported. Reliable figures on the type and number of supplies delivered are unavailable, for the existing source documents differ greatly from one another. The reports made by Army and Luftwaffe agencies inside and outside the encircled area were obviously not all based on the same premises and they must be evaluated accordingly. It is certain, however, that a large percentage of the supplies transported and delivered by air drop did not actually reach the troops for whom they were intended. This was due to the following reasons:

1) The prearranged drop areas were often difficult to recognize when visibility was poor, and when the cloud ceiling was very low containers were simply dropped over the radio beacons.

2) The encircled troops had no means of marking the drop areas properly.

3) The wind blew a number of the containers off course.

4) The containers were often so deeply buried in snow or among the ruins that the troops could not find them.

5) Because of their weakened condition and the lack of gasoline for their vehicles, the troops were unable to collect and transport the containers.

6) Some of the containers were broken by the landing impact and the contents too badly damaged for use.

With the loss of Pitomnik, the only suitably equipped landing field within the target area--for neither Gumrak nor Stalingradskiy was adequate for continued use--, the volume of supply transports was sharply reduced.

Despite radical and ruthless measures, the intervention of top-level officials armed with all-encompassing powers, the heroic performance of aircraft crews, technical and ground personnel, and the all-out effort made by the command staffs concerned, it was simply not possible to achieve the operation's goals. Why? Because the tactical and technological prerequisites were not adequately met

and because the developments occurring in the ground, air, and weather situations imposed very definite limitations on the potential scope of air-supply services. There was not one instance in which the established daily requirement of 500 tons was met.

The losses sustained by the air transport forces were extremely high; during the period 24 November 1942 through 31 January 1943, they totaled 488 aircraft.* The aircraft losses were tantamount to the loss of five wings, or an entire air corps. A great many of these losses were not directly due to enemy action, but could be attributed to the military situation and the unusual weather conditions which made it impossible to comply with all the necessary safety precautions.

A number of losses were also the result of the inevitable overburdening of the few available take-off bases. The resultant crowding together of aircraft was especially catastrophic when an airfield had to be cleared suddenly because of enemy attack. Such actions were invariably chaotic. A more timely evacuation of endangered airfields would have avoided many a loss in aircraft and equipment.

The losses in flying personnel amounted to approximately 1,000 men, among them many of the older and experienced crews--the nucleus of the air transport force.

J. The Role of Ground Services in the Stalingrad Airlift

The 25th Air Administrative Command in Rostov was entrusted with the establishment of the necessary ground organization services. The technical facilities in the take-off and target areas were sadly inadequate to the demands of a large-scale airlift undertaking. By utilizing all the available personnel and materiel resources, the Air Administrative Command was able to improve conditions to some extent but never to the point of true adequacy. Once the airfields at Tatsinskaya and Morozovsk had been evacuated, Novocherkassk was the only remaining airfield suitable for the He-111 units and the field at Salsk the only one for the Ju-52's. Soon, however, enemy pressure in these two areas grew so intense that they, too, had to be abandoned.

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* The figure included 266 Ju-52's, 165 He-111's, 42 Ju-86's, 9 FW-200's, 5 He-177's, and 1 Ju-290.

The He-111's moved back to Voroshilovgrad, Stalino, and Konstantinovka, and the Ju-52's to Zverevo.

As already noted, Pitomnik was the only airfield in the encircled area which was fully equipped to handle day and night air traffic. The fields at Basargino, Gumrak, Karpovka, and Stalingradskiy had been used occasionally as landing fields prior to the encirclement action, but they were not adequate to the continued demands of an airlift--not even by day, let alone at night. Despite this fact, Sixth Army representatives persisted in their opinion that the fields were usable for landing purposes. It was not enough that half of a group of twenty transport aircraft attempting a landing there (piloted by the best and most experienced crews) crashed, their wreckage blocking the field and making further landings impossible. By the end of January, things had progressed to the point where further landings within the encircled area were unthinkable, no matter how willing and able the transport crews might be. Besides, during this period the encircled troops were no longer in a position to collect and transport the supplies landed.

Generalmajor Pickert, Commanding General of the 9th Anti-aircraft Artillery Division, was in charge of ground organization services within the encircled area. All Luftwaffe units there were under his command, including the two advance airfield commands at Pitomnik, which were responsible for handling air-supply traffic there. Here, too, technological equipment and ground organization facilities were inadequate. Difficulties multiplied as the winter cold became more and more bitter. It is clear, of course, that conditions within the encircled area had a depressing effect on all the agencies concerned with the airlift.

K. Communications and Air Traffic Control During the Airlift

Communications channels and air traffic control facilities had been successfully expanded to the point where they were able to meet the unusually high demands of the airlift and they functioned perfectly until the very end. Utilizing a Luftwaffe receiving station as relaying link, a voice-radio transmitter was connected with the command stations outside the encircled area, and was maintained as long as the power supply lasted.

The following air traffic control facilities were available:

two strong radio beacons at Tatsinskaya and Tsimlyanskiy; a strong radio beacon within the encircled area; weaker radio beacons at Morozovsk, Pitomnik, and Basargino; two-man radio direction finding stations at Morozovsk and Pitomnik; the flight safety wave-length of the Air Corps, operating at Tatsinskaya on long wave frequency and also by means of an Adcock short-wave direction finder.

The strong radio beacons could always be heard clearly; the one at Tsimlyanskiy was particularly good for guided approaches and take-offs. The weaker beacons were often subject to Russian interference and jamming, so that they were not always available for direction finding purposes. It was necessary to vary the wave length several times each day in order to obviate the danger of enemy jamming. The direction finding station at Pitomnik was excellent, but it was so overburdened by the number and frequency of landing approaches that not every aircraft was able to make contact and some had to turn back without landing.

The Elektra set* at Zaporozhe proved to be invaluable for night and bad-weather missions, as did the short-wave radio landing beacon there. Unfortunately, however, the aircraft participaing in the air-supply operation were of so many different types and vintages that they did not all possess the modern radio equipment needed to take advantage of these aids.

L. The Role of Weather Reporting During the Airlift

The weather observation and reporting facilities used were: the Air Fleet weather station; the Air Corps weather station; the wing weather stations; the weather stations at the various airfields.

Because the operational area was subject to the influences of both continental and coastal climates, weather conditions changed rapidly and unpredictably; thus the task of the meteorologists was both vitally important and extremely difficult. Weather predictions, particularly those pertaining to the target area, were a determining factor in establishing take-off schedules and in planning the course of each day's missions, and thus in the success of the over-all supply

* Translator's Note: Elektra was the code name for a type of guiding set with many beams in a fixed field of operation.

operation. The rapid changes in weather often created almost insoluble problems for operations staffs and flying personnel alike. For example, pre-flight briefings might indicate good weather over Pitomnik, yet when the pilots arrived there they might encounter low-lying clouds, fog, or snowstorms; or they might be confronted by these conditions when they returned to Morozovsk or Tatsinskaya. All too often it happened that pilots, finding these two fields too obscured by bad weather to risk a landing, were forced to fly on to Novocherkassk, Taganrog, Rostov, Stalino, or to airfields located even farther west. As a result, aircraft were unavailable for operations for one or more days until the pilots could get back to their assigned bases.

Thanks to the extraordinary skill of the meteorologists, most of whom had developed a certain intuitive talent during their years of experience, weather reporting services were on the whole very good. The reports brought in by the Weather Reconnaissance Squadron of the Fourth Air Fleet, covering the entire operational area, were also of valuable assistance.

After the German forces had withdrawn from the bend of the Don River and from the Kotelnikovo and Salsk areas, weather reconnaissance was restricted to an area approximately 185 miles in depth. Reports on weather conditions inside the encircled area were often impossible to obtain, because there was too little power to permit radio communication. Each pre-flight briefing covered the general weather situation, probable developments, weather conditions along the flight route, and conditions over the target area itself. The main air traffic control station also radioed weather reports periodically, so that the crews could be kept informed of changes.[21]

M. Aircraft Servicing and Maintenance During the Airlift

The facilities available for the technological servicing of aircraft and the procurement of spare parts would hardly have been adequate to meet the demands of a normal-scale supply mission; they were totally inadquate to the requirements created by the unprecedented concentration of such a large transport force in one area and by the resultant overcrowding of the one available airfield at Tatsinskaya. It must not be forgotten, of course, that the available resources were exploited to the fullest possible extent and that conditions were improved somewhat. In addition, by dint of clever improvisation, the units themselves managed to correct some of the more glaring

deficiencies. The Ju-52 units were the ones which suffered most, for they bore the lion's share of responsibility for the supply mission. The situation of the He-111 units was somewhat better. Their airfield, Morozovsk, had been in use for a longer period of time and was therefore better supplied and equipped to handle aircraft of this type. We may well ask why the ground organization was not better developed and better prepared to accommodate the required number of units. The main reason why the necessary preparations were not undertaken in time is, undoubtedly, that the Air Fleet commanders were simply incapable of conceiving of and planning for such a large concentration of air transport forces in one place.

In order to reduce the daily burden on the facilities of the take-off bases, aircraft which were inoperable and which could not be made serviceable within forty-eight hours were sent to fields in the rear area, where they were repaired as rapidly as possible. The same thing was true of personnel not needed to maintain the degree of operational readiness represented by the number of aircraft available for operation. Special repair details, under the leadership of aeronautical engineers, were organized and assigned to these rear-area fields. Technical officers from the units to which the aircraft belonged were also on hand to supervise repairs and to arrange for finished aircraft to be sent back to their take-off bases without delay.

Shipments of new replacement aircraft were few and far between. Only a small percentage of the daily losses could be made up by aircraft released from the repair depots. As far as supplies of spare parts were concerned, the Air Fleet relieved the situation somewhat by permitting the units themselves to pick up needed parts from the equipment depots and procurement and supply stations. And needless to say, any aircraft in the operational area which were damaged beyond repair were dismembered completely in order to salvage all usable parts for repair purposes.

The increasing nervousness felt by Germany's war leaders as the Stalingrad operation progressed found its expression in their demands for more and more detailed reports. This finally went so far that the highest-level commands were making inquiries going down to the lowest unit-level. The information given by the operations officer was sometimes not enough and would be followed by requests to the unit commanders or the air transport chiefs asking them to confirm the data given--hardly a procedure calculated to

maintain a feeling of mutual confidence. It is obvious that these constant inquiries were a nuisnace and interfered with the daily course of operations but the top-level agencies did not seem to be aware of this.

N. Conclusions

The Stalingrad airlift proved conclusively that there are certain prerequisites which must be met if an air-supply undertaking is to succeed; almost without exception these prerequisites were lacking in the case of the Stalingrad operation. From the very beginning it was clear that the Sixth Army could not be adequately supplied by air for any length of time, because of the following factors:

1) The size of the encircled force.

2) The small amount of supplies that the encircled force had on hand.

3) The inadequacy of the available take-off and landing bases, the distances involved, and the lack of sufficient technical facilities.

4) The inadequacy of supply channels leading into the take-off area.

5) The forced abandonment of take-off and landing bases.

6) The season of the year and the weather situation (all of the large-scale air-supply operations in support of encircled forces took place during the winter).

7) The lack of sufficient air transport space (here the number of aircraft actually employed is decisive, and not the total number of aircraft available).

8) The duration of the air-supply operation.

9) The impossibility of providing sufficient escort fighters and sufficient antiaircraft artillery protection for the take-off and landing bases.

It is the right and the duty of command agencies at the front

to determine whether or not a particular operation can be accomplished and to base their determination on the proper evaluation of the situation. And once the determination has been made, it should not be summarily rejected by higher headquarters. In this particular case, Hitler was unable or unwilling to comprehend the true situation and its inevitable consequences.

Just as the Army lacked understanding for many of the problems faced by the Luftwaffe, here the Luftwaffe felt justified in asking why the Army had failed to take appropriate action in time.

In this connection, the following questions are of paramount importance:

1) During the fall of 1942, information was received repeatedly to the effect that the Russians were strengthening their forces north of Stalingrad and along the Don River. Why did the Army fail to initiate timely countermeasures?

2) Why was the Sixth Army so inadequately supplied that on the day it was encircled it was forced to radio that its ammunition situation was critical and that it had only enough food on hand to last for six days?

3) Sixth Army commanders realized that a breakout was the only way to save the situation. Why then did they not disregard Hitler's order and go on with their original plans? Luftwaffe commanders at the front had warned them repeatedly that a successful air-supply mission was out of the question.

But just as the Luftwaffe faced a task which defied accomplishment, Army leaders were confronted with a situation which they simply could not resolve with the forces and resources available to them.

The responsibility for the failure is not to be sought in any particular Armed Forces branch or staff, nor does it lie in the inadequacy of the troops or their leaders. The fault lies, rather, in the top-level Armed Forces command, in that its members underestimated the strength of the enemy forces. By failing to follow the time-honored principles of military leadership, they brought the entire front to such a pass that escape was impossible and the ultimate

catastrophe inevitable.

It is not the province of the present study to attempt to fix the blame. Suffice it to say that there is no official document which states unequivocally that Hitler decided to leave the Sixth Army at Stalingrad because the Luftwaffe High Command had assured him that the fortress could be supplied by air or that Goering had promised him that 300 tons of supplies could be delivered each day. In addition, Colonel a. D. Bernd von Brauchitsch, Goering's adjutant, has stated that the Demyansk operation should have warned Goering against an attempt to supply Stanlingrad by air, rather than persuaded him to promise Hitler that it could be done.[22] However, General a. D. Kurt Zeitzler does have the following to say: "On the morning of 24 November, Hitler was to sign the order authorizing the Sixth Army to attempt a breakout. General Jeschonnek had just come in to report that the Reichsmarschall had given his personal guarantee that the Sixth Army could be supplied by air for several months. The Luftwaffe was totally incapable of carrying this out."

Zeitzler's well-founded arguments were brusquely rejected by Hitler. In a conference with his General Staff Chief and the commander of the transport forces, Goering had decided--over their objections--that the air-supply operation was to take place.

This conference took place on 23 November 1942, and was attended also by General der Flieger Hans-Georg von Seidel and General der Flieger Otto Langemeyer. The names of the other participants are not available. In any case, the Air Transport Chief was not present, nor was his opinion sought. General Langemeyer informed him by telephone that Stalingrad was to be supplied by air and that detailed orders were on their way.[23]

Section III: The Kuban Bridgehead, 4 February 1943-13 February 1943[24]

A. General

The large-scale Russian offensive of November 1942, which resulted in the encirclement of Stalingrad and the loss of the German Sixth Army, gained new impetus after the fall of Stalingrad freed additional Russian troops. Strong enemy forces began a thrust towards the west and southwest. The Russians obviously intended to exploit their winter successes by carrying the offensive on into the

Donets Basin. The German defenders, already seriously weakened, were unable to turn back the attack and were forced to abandon their position at Rostov. And, the loss of this position meant a break in the front line which had linked the Donets Basin with the troops fighting in the Kuban sector of the Caucasus. At the same time, the landing of a strong Russian assault force at Novorossisk cut off the Kuban area from the other approach route, via the Crimea and the Strait of Kerch. Thus, with the Sea of Azov at its back, the Kuban Bridgehead* had become another encircled area, completely cut off from all source of supply and fighting on three sides to defend itself against strong Russian attacks.

The troops at Kuban had sufficient supplies on hand to last for the immediate future, but it was desirable that they be provided with adequate reserves to maintain their fighting power and their mobility so that they could fight their way back to their own lines, either by way of Rostov or via the Crimea and the Strait of Kerch. It was not yet possible to tell how soon forces could be freed from other sectors to reestablish contact with the bridgehead through a series of local attacks. Under the circumstances, supply by sea transport--which would have required armed support--was out of the question. Here again, air transport seemed to be the only possible means of furnishing the bridgehead with the needed supplies of ammunition, fuel, and food.

A systematic supply operation of the airlift type was beyond the realm of possibility at this time. The recently concluded Stalingrad airlift had exhausted the capabilities of almost all the air transport units in the East and its high consumption of personnel and materiel had reduced the resources of these units to a bare minimum. In addition, there was no adequately equipped take-off area and the distances involved were prohibitive. Since practically none of the

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* Editor's Note: Hitler's reasoning was that by leaving 400,000 men on the Caucasus' side of the Kerch Strait (i.e. the area of the Kuban Bridgehead), he would tie down large Russian forces in the region and keep open a path to the Caucasus' oil fields. In addition, he hoped to deny the Russians the use of Novorossisk, an important port to the south of the Kuban Bridgehead. The holding action continued until 15 September 1943, when the Germans were forced to retreat to the Crimea.

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prerequisites was met, there could be no thought of a systematically planned airlift operation. After careful weighing of the requirements and the prospects for their successful fulfillment, the only type of operation possible was the utilization of the rest of the air transport units (including freight-glider units) and the 200th Bomber Group in individual air-supply missions.

Although the requirements were unlimited, no specific delivery goal could be guaranteed. The promise was made, however, that all operable transport aircraft would be pressed into service. The fact that air transport represented the only supply channel open to the bridgehead was accepted, but it was made clear to Army commanders in that area that they could not count on a full-scale airlift. The employment of the 200th Bomber Group, which was equipped exclusively with FW-200's,* was not to be construed as the systematic beginning of a possible and successful airlift; it was purely a stopgap solution, and one which could not be countenanced over a long period of time because of the glaring discrepancy between the degree of personnel and materiel consumption and the prospects of success. Nevertheless, the utilization of long-range aircraft for air-supply purposes at the Kuban Bridgehead was an interesting milestone in the history of air transport and brought with it a body of valuable experience.†

B. The Mission, and Early Preparations

After the Stalingrad airlift, Grossadmiral Doenitz recalled the 200th Bomber Group back to duty over the Atlantic. The group was made up of personnel and aircraft which had been detached from the 40th Bomber Wing for the duration of the Stalingrad operation. Now the group was ordered to Staaken for refitting and was then to report to France for employment on the Atlantic front.

At the request of Generalfeldmarschall von Richthofen, Commander in Chief of the Fourth Air Fleet, these orders were countermanded temporarily by the Commander in Chief, Luftwaffe, with the justification that the 200th Bomber Group was needed for short-term combat and supply missions by the Fourth Air Fleet. In

* The FW-200 (Condor) was a four-engine passenger machine which had been converted for employment as a long-range bomber; see above, p. 43.

† See above, pp. 81-82; and below, pp. 367-371.

addition to the Kuban supply operation, the group was to fly bombardment missions against rail targets in the Stalingrad area and two large-scale missions over the oil fields at Tiflis and Baku.

Organizationally and operationally, the group remained under the command of the Air Transport Chief, Colonel Morzik, at Zaporozhe. The group received its orders for the bombardment missions directly from the Air Fleet, while responsibility for directing its air-supply missions rested with the Air Transport Chief, in conjunction with the quartermaster staffs of the Fourth Air Fleet and the Army Group.

The mission assigned to the group was the utilization of all available aircraft to deliver supplies of ammunition, gasoline, and food to the Kuban Bridgehead. On the return flights all available space was to be utilized for the transport of wounded personnel, other specifically designated personnel, and copper back to Zaporozhe. No daily goal was established in terms of the average volume of supplies to be transported. The duration of the operation would depend entirely upon the development of the military situation in the target area and upon the length of time the group could be spared to remain in the east. The group itself, whose personnel were the same as during the Stalingrad operation, was fully qualified. The crews had had a great deal of experience and their flying ability was wholly adequate to the demands of the operation.

As far as technological services were concerned, all those measures which had been taken for the Stalingrad operation, but which had not yet had time to bear fruit because of the delays occasioned by the tremendous difficulties involved in the mass commitment of such a large transport force, now began to make themselves felt. On 4 February 1943, for example, after weeks of delay a carload of specialist mechanics for the FW-200, who had been requested weeks before for the Stalingrad mission, arrived from the mother unit of the 200th Bomber Group* in Chateaudun, France. These men had been assigned top priority for transport to Stalino, but their train had been shunted from station to station in Poland in order to let the Division Reich through on its way to the front. Thanks to excellent coordination between the Air Transport Chief and Branch IV (Quartermaster) of the Luftwaffe General Staff, additional spare parts and

* The 4th Group, 40th Bomber Wing.

special equipment (aircraft jacks, for instance) had been added to this train and thus were brought into the operational area at the same time. Needless to say, the arrival of this train did much to increase the degree of operational readiness among the FW-200 units. The specialist personnel were organized into an efficient workshop platoon.

On 7 February 1943, the Air Transport Chief took over the 4th Special Duty Airfield Maintenance Company, Office of the Quartermaster, 8th Air Corps, which turned up unexpectedly at Zaporozhe without any definite assignment. This action was later approved by the Quartermaster General, and the company was placed at the disposal of the 200th Bomber Group. The Quartermaster General, 8th Air Corps, was most cooperative in lending his full support to the measures taken by the Air Transport Chief. Initial take-off difficulties experienced by the group were soon relieved by the arrival of a shipment of warm-up trucks. These examples are all illustrative of the fact that requisitions for personnel and equipment which should have been on hand for the Stalingrad airlift were just beginning to be filled, several weeks after they had been submitted.

Ground organization services in the operational area were fully adequate to the needs of the group, for their requirements were very small compared with those of the Stalingrad operation. Zaporozhe, the only suitable airfield for use as a take-off base to Kuban, was well equipped with all the necessary technological facilities; it could also be utilized for night missions and for instrument take-offs and landings. Its radio direction finding station also made it suitable for bad-weather flights. Whenever instrument landings were to be made, the group commander saw to it that the direction finding station was manned by an experienced group radioman, for only someone from the group itself could be thoroughly acquainted with the abilities of the individual crews and the flight characteristics of the FW-200. The radio transmitter and radio beacon operated at regularly established intervals, so that the pilots had no difficulty in taking their bearings. In addition, the pilots had the air traffic control station at Zaporozhe at their disposal, and this station operated very effectively.

Since it was essentially a long-range bomber unit, the 200th Bomber Group was relatively independent of the local weather stations, and these were consulted only in connection with take-off and landing operations. The FW-200's always radioed back the weather conditions encountered along their route, however, so that the ground stations,

well acquainted with the general weather tendencies from east to west, were usually able to achieve reliably accurate predictions for the use of other units.

The signal communications and reporting network within the operational area had been much improved during the Stalingrad airlift and were now adequate to the demands made upon them.

C. Accomplishment of the Mission

The first of the FW-200 missions to the Kuban Bridgehead was flown on 4 February 1943 and the last was flown nine days later, on the 13th.* All of these air-supply missions were carried out during the day time. However, on each night during this period a bombardment mission was carried out by one FW-200 against rail targets.

The backlog of supplies awaiting transport at the take-off bases

* Editor's Note: Briefly summarized, these missions were flown as follows: on the 4th, seven FW-200's transported supplies from Zaporozhe to Slavyanskaya, then flew two missions between Krasnodar and Kerch IV (Kerch'/Katerles), and wounded personnel were picked up for the return flight and were flown back to Zaporozhe together with other personnel and a load of copper; on the 5th, six FW-200's transported supplies from Zaporozhe to Slavyanskaya, then flew two missions between Slavyanskaya and Kerch IV, and returned with the same type of cargo as on the previous day; on the 6th, seven FW-200's flew supplies from Zaporozhe to Krasnodar, then returned to Zaporozhe with an intermediate landing at Bagerovo (Crimea); on the next day, four FW-200's flew missions similar to those flown on the 6th; on the 8th, six FW-200's brought ammunition from Zaporozhe to Timashevskaya, carried soldiers and wounded personnel from there to Bagerovo, flew supplies to Krasnodar, and then returned to Zaporozhe with a load of copper; on the 9th, the day the order for the 200th Bomber Group to prepare for transfer to Berlin-Staaken was received, three FW-200's flew supplies from Zaporozhe to Krasnodar, flew back to Mariupol (Zhdanov) for more supplies which they brought to Slavyanskaya, and then returned to Zaporozhe; missions identical to those flown on the 9th were flown on the 10th, 11th, and 12th by two, four, and three FW-200's respectively; the last mission was flown on the 13th by a single FW-200 from Zaporozhe to an unspecified airfield in the Kuban.

remained high because of the high percentage of aircraft temporarily deadlined for technical failures. Loading and unloading operations in the encircled area were well organized, since the landing fields there were also utilized by the Ju-52's flying supplies in from the Crimea. The fields at Kerch and Bagerovo were not entirely adequate to the requirements of an air-supply operation, and occasional difficulties were encountered. The newly established field at Timashevskaya, in the bridgehead, had only limited value as there was no ground organization there. Moreover, it was extremely damp. The pilots of the 200th Bomber Group had received instructions to land in the encircled area only when their own experience told them that they could land and take off safely.

The availability of sufficient aviation fuel* at the landing fields in the encircled area was a great advantage for the aircraft flying supply missions between the bridgehead and the Crimea. Because of it, they could count on refueling at Bagerovo and so were spared the necessity of tanking up for the entire day's operations before their take-off from Zaporozhe. In this way they could also carry a heavier payload.

On 13 February 1943, one FW-200 was employed for the Group's last air-supply mission. The airfields at Krasnodar and Timashevskaya had been evacuated because of increasing enemy pressure on the Kuban area. A second Russian force had landed at Novorossisk, and the possibility of a Russian offensive directed against the Kuban Bridgehead had to be taken into serious consideration. Although there was every reason to continue air-supply operations as long as possible in order to assure the encircled force of a reserve for the coming battle, the arguments which motivated the withdrawal of the 200th Bomber Group must be recognized as valid. Every flight into the encircled area involved serious danger for the FW-200's. Not only enemy action but also the technological vulnerability of the FW-200 itself often led to disabilities which could be corrected only by specially trained personnel, with the help of special spare parts and equipment. In view of the uncertain situation at the bridgehead, a minor technical failure there might mean the loss of an aircraft, for carrying out

* Editor's Note: This was probably a result of the proximity of the Caucasus' oil fields and the presence of various refineries in the Kuban Bridgehead.

repairs on an FW-200 without the necessary spare parts and equipment was an operation requiring several days. Another reason was that the FW-200 might better have been employed in bombardment or armed reconnaissance missions far into enemy territory, for it was well equipped for utilization as a long-range reconnaissance aircraft. The primary reason for withdrawing the group, however, was the desire to return it to the 40th Bomber Wing as soon as possible for employment as a long-range bomber unit on the Atlantic front, where its chances of attaining more significant success were greater and its employment more in keeping with its inherent potential.

After the supply missions to Kuban had come to an end, the 200th Bomber Group remained in the east, where, under the direction of the Fourth Air Fleet, it was employed in air combat against enemy aircraft over the Stalingrad area until 22 February 1943. On that date the group, with all its serviceable aircraft, was released from duty on the Eastern front and transferred to Berlin-Staaken.

D. Enemy Defensive Measures and the Employment of Fighter Escorts

The night nuisance raids carried out by Russian aircraft over the take-off base at Zaporozhe had no effect whatsoever on the accomplishment of the air-supply missions. Russian tank assaults into the Zaporozhe area during the last few days of the air-supply operation gave cause for alarm, however, for there were no forces available to turn back the enemy and to defend the field. In the event that the danger should become too acute, the 200th Bomber Group, together with all its technological equipment and supplies--it was not capable of operations without these--was to be evacuated to the airfield at Nikolayev. Zaporozhe, however, was not to be abandoned until the last possible moment.

During these last critical days, the advance forces of the Russian armored troops penetrated to within six miles northeast of Zaporozhe, and still the order for evacuation was not given. On the initiative of the group commander, an antiaircraft artillery battalion, which had arrived at Zaporozhe two days before without a definite assignment, was commandeered from the railway station. Reporting his action to the Air Fleet for retroactive approval, the group commander assigned this battalion the task of defending the airfield against enemy ground and air attacks. In this way, he succeeded in

assuring a certain measure of cover so that a systematic evacuation action could be carried out if necessary.

The FW-200's encountered very few Russian fighter aircraft along their approach and return flight routes, and, in any case, the heavy armaments of the FW-200's deterred the Russians from attempting a serious attack. Whenever several FW-200's were employed in a supply mission, they flew in close formation in order to increase their fire power. Not a single FW-200 was lost as a result of enemy air action. On the ground, however, at the airfields in the encircled area, the aircraft were constantly subjected to Russian air attacks with bombs and airborne weapons, and these attacks did cause a great deal of damage. As soon as the airfields inside the encircled area came into the range of Russian artillery, the FW-200's were withdrawn from the supply flights.

It was impossible to provide the 200th Bomber Group with a fighter escort, inasmuch as the available fighter aircraft were so few in number that they were hardly able to meet the demands for their services in urgent combat missions.

E. Summary of the Operations of the 200th Bomber Group, 4 through 13 February 1943

During the period 4 through 13 February 1943, the 200th Bomber Group flew a total of forty-one missions from the airfield at Zaporozhe, and thirty-five missions between the Crimea and the Kuban Bridgehead.

During the course of these missions, they transported 116 tons of ammunition, 50.4 tons of gasoline, 75.6 tons of foodstuffs, and 12 tons of equipment into the encircled area at Kuban. On their return trips they brought 830 wounded personnel, 1,057 troops, and 55.1 tons of copper out of the encircled area.

F. The Employment of Ju-52 and Freight-Glider Units

1. The Ju-52's. During the night of 1/2 February 1943, the Ju-52's took off from Zverevo for their last supply-drop mission over Stalingrad. On 3 February, at the order of the Fourth Air Fleet, the Air Transport Chief moved his Ju-52 units from Zverevo to the airfield at Mariupol (Zhdanov) and prepared to employ them in air-supply

operations for the Kuban Bridgehead. On 9 February, the Air Transport Chief moved his staff to Sarabuz (Ukromnoye). These moves involved no alteration in the chain of command; the Air Transport Chief remained under the command of the 8th Air Corps. At the beginning of March 1943, Colonel Jaeckel, Commanding Officer of the 9th Special Duty Bomber Group, took over the duties of the Air Transport Chief, since Colonel Morzik had been ordered back to his assignment in Germany by the Luftwaffe General Staff, Branch IV (Quartermaster).

On 3 February 1943, those other elements of the Stalingrad transport units which were still able to operate began preparations for the move from Zverevo to the following airfields: Taganrog, Stalino, Zaporozhe, Mariupol (Zhdanov), and Kherson. Some of the transport aircraft which had been put out of action during the Stalingrad airlift were still at Taganrog, where they remained temporarily. After the move, the units were reorganized. Several of the groups had suffered such depletion in personnel and aircraft because of heavy losses that they were totally inoperable. The reorganization resulted in five groups with full personnel and equipment strength.* After reorganization and refitting, the five transport groups were transferred to four airfields on the Crimea: Sarabuz (Ukromnoye), Zamorsk (Primorskoye), Bagerovo, Kherson.

Each group of Ju-52 units had from forty to forty-five aircraft at its disposal; the degree of operational readiness maintained was quite good, averaging thirty Ju-52's per day. This meant that a total of 160 to 180 aircraft were available for air-supply operations, and that 120 were capable of employment each day. The fact that the units were able to maintain their high degree of operational readiness, and the shortness of the approach routes utilized for the second and third phase of each mission, contributed much to the extraordinary success of air-supply operations during the period from 4 February through

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* The following units contributed personnel, aircraft, and equipment to the five groups: 700th Special Duty Bomber Group, 900th Special Duty Bomber Group, 1st and 2d Group, 1st Special Duty Bomber Wing. The remaining personnel and equipment from these four groups were sent back to Germany by rail transport. There the groups were to be refitted as soon as possible. The 105th Special Duty Bomber Group was detached to the Luftwaffe Command (Don).

30 March 1943.*

2. The Freight-Glider Units. At the command of Generalfeldmarschall Milch, who held final responsibility for the Stalingrad airlift, freight gliders were to have been employed during the last phase of that operation in order to increase the volume of supplies delivered. At that time, however, neither the airfields in the take-off area nor those in the encircled area were equipped with the necessary facilities. Nevertheless, the 1st, 2d, and 3d Groups of the 1st Airlanding Wing (an aircraft tow unit) had all been transferred into the area under the jurisdiction of the Fourth Air Fleet. The wing had an He-111 tow group equipped with Go-242's and a few He-111's for towing the Me-321's (Gigant). These units/ were not utilized in the Stalingrad operation,

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* After this period, during the spring of 1943, an additional transport force, made up of one group of Ju-52's (over-water transport) and twenty-two Do-24's, was organized on the Crimea to carry out air-supply operations to the Kuban Bridgehead. This force, under the command of Lt. Colonel Hansing, at that time Commanding Officer of the 12th Sea Rescue Area, was made up of the following units: one group of Ju-52's (over-water transport), stationed at Tobechikskoye Lake, near Kerch; 1st Sea Transport Squadron (11 Do-24's), stationed at Sevastopol; 2d Sea Transport Squadron (11 Do-24's), stationed at Sevastopol. Approximately 1,000 tons of supplies were transported by air from Sevastopol to the Kuban Bridgehead. The loading and unloading of the aircraft, each of which carried three tons of supplies, was accomplished by engineer construction troops at Kuban. The aircraft were maneuvered into shallow water, where they were unloaded into assault boats which had been equipped with two lateral rafts, each capable of supporting one and one-half tons.

/ They were equipped with towing aircraft and with freight gliders, as follows: 1st Group, 1st Airlanding Wing - Do-17's (tow aircraft) and DFS-230's (freight gliders); 2d and 3d Groups, 1st Airlanding Wing - He-45's, He-46's, and Hs-126's (tow aircraft), DFS-230's (freight gliders); and He-111 tow group with Go-242's; and an He-111 tow aircraft with Me-321's. Carrying capacity of the freight gliders: DFS-230 - 1,980-2,205 lbs; Go-242 - 3,970-4,410 lbs; Me-321 - 16,000-20,000 lbs.

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and in January 1943 they were moved to the airfields at Bagerovo and Kerch IV.

The tow groups began limited air-supply operations for the Kuban Bridgehead at the end of January. They transported ammunition, foodstuffs, and, especially, fodder for the Haflinger horses* of the mountain troops in the encircled area. Wounded personnel and troops were flown out on the return trips.

Operationally, the tow units were under the command of the 8th Air Corps; organizationally, they remained subordinate to the 11th Air Corps, which was a paratroop corps.

An intermediate aircraft depot was set up at Kherson in order to make sure that all the aircraft turned in for repair by the units were sent on to the appropriate workshops within the area of the Fourth Air Fleet as rapidly as possible, and that repaired aircraft brought back to the depot were flown on to the appropriate unit without delay. Thanks to the efficiency of this depot, the units were able to achieve a high degree of operational readiness in a relatively short time and to maintain it throughout the duration of the operation.

Prior to their move to the Crimea the freight-glider units utilized the airfields at Taganrog, Stalino, and Zaporozhe as take-off bases. After their transfer to the Crimea, the pilots could fly second and third missions from the Crimean airfields, provided there were sufficient supplies awaiting shipment. In the Crimea, they utilized the airfields at Sarabuz (Ukromnoye), Bagerovo, Zamorsk (Primorskoye) and Kerch IV (Kerch'/Katerles).

Operational orders required that the first mission be flown from the airfield to which the group was assigned. The second and third missions were then flown--with all available aircraft--from the field at Kerch IV, which had been equipped to serve as a loading base.

The landing fields in the encircled area were usually in open

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* Editor's Note: This is a small breed of Alpine horses from the Tirol. The result of a cross between native European and Oriental stock, Haflinger horses were widely used by German mountain troops.

terrain, at previously reconnoitered points near improvised landing strips. These points were subject to constant change as the course of the front altered. During the first few days of the operation, the fields at Krasnodar and Tuapse were still in use; later on, the fields at Temryuk, Slavyanskaya, Timashevskaya, and Varenikovskaya were utilized. Because of the rapid changes in the weather (frost at night and thaw conditions during the day), the airfields could be utilized for landings only during the early morning hours and during the forenoon. The rest of the day's missions had to be carried out by air drop.

The condition of the take-off and landing strips (covered with deep snow in the beginning and later on softened by the thaw) created grave problems for the aircraft tow units. The groups had no winter ground equipment, and this lack was an even greater hindrance than in the case of the Ju-52 units. Moreover, the freight-glider units were entirely without experience in winter conditions in the East. The most serious difficulties were overcome with the help of the ground organization. Because of the uninterrupted take-off and landing traffic at the airfields in both the take-off and target areas, the conduct of a freight-glider mission required a great deal of care and skill. With a few exceptions, the gliders were towed back from the target fields to their take-off bases. Taking into account the constant changes in the airfields within the bridgehead area, it is clear that this could be accomplished only by a highly mobile, especially trained technical force. There are no exact figures available regarding the number of glider missions flown, the volume of supplies transported, or the losses sustained. There can be no doubt, however, but that the gliders and their tow units contributed to the fullest extent possible to the excellent record achieved by the units responsible for supplying the Kuban Bridgehead.

According to information based on the War Diary of the Fourth Air Fleet, however, a total of 5,418 tons of supplies were transported by all types of participating units into the Kuban Bridgehead area during the fifty days the undertaking lasted--an average of 182 tons per day. This compares with a total of 6,591 tons transported to Stalingrad during seventy operational days--an average of 94 tons per day.

In contrast to the Stalingrad airlift, the Kuban operation was characterized by great smoothness; the crews participating in it were not continually subjected to the same degree of strain as they had been at Stalingrad and the command staffs were not faced with

impossible or unreasonable orders and instructions. Those factors which had rendered the Stalingrad operation so difficult (weather conditions, continual change of take-off bases, lack of sufficient landing fields, light over enemy territory, distance away from target area, enemy fighter and antiaircraft artillery defenses, the constant threat of enemy tank attacks at the airfields, lack of adequate fighter escorts, and poor coordination of supply channels) played little or no role in the air-supply operations for the Kuban Bridgehead.

On the whole, the Kuban undertaking may be viewed as a successful and effective operation, carried out to support the Seventeenth Army in combat.

G. The Lessons of the Kuban Airlift

It does not seem necessary to give detailed consideration to every phase of the air-supply undertaking for the Kuban Bridgehead. Although the way it was carried out, dictated by local conditions and the ground situation, made it differ from other operations of a similar type, it brought no fundamental changes or innovations in the employment of air transport. The utilization of the 200th Bomber Group, however, deserves special attention, and for one very good reason. It presents the first opportunity to examine the problem of whether or not the use of long-range bombers for air transport purposes has contributed anything new or fundamental which may be applied to the future development of air transport. The unfavorable conditions under which the Stalingrad airlift was carried out had a detrimental effect on the performance of all the air transport units. This was especially true in the case of the 200th Bomber Group, so that its performance at Stalingrad cannot be accepted as a valid measure of its potential effectiveness. The group had been pressed into service for the Stalingrad operation as a last resort, and from the very beginning it was faced with difficulties which had nothing to do with its own inherent capabilities or potentialities.

In evaluating the performance of the 200th Bomber Group at Kuban, we must disregard completely those technical defects typical of the FW-200 as an aircraft type but not typical of a long-range bomber. These defects exert only a minor influence in the basic decision of whether or not to accept the long-range bomber as a valuable addition to an air transport force.

The ground organization services, while far from ideal, were better than they had been during the Stalingrad operation, and command effectiveness and personnel competence were adequate to the demands of the undertaking. Even the technical vulnerability of the aircraft, because of the help of specialized personnel and special equipment, had no significant effect upon the accomplishment of the missions. Thus, all things considered, the take-off area facilities were adequate.

As for the missions themselves, the Kuban undertaking enjoyed a tremendous advantage because the enemy, although more numerous and much stronger in the air, was not eager to attack. Enemy air and ground defenses along the approach and return flight routes were such that there was little danger of their inflicting losses. Attacks by enemy fighter aircraft were rare, and besides, the transport aircraft had sufficient fire power to defend themselves effectively. Thus, there was no need for fighter escorts and, if there had been, the fighters would not have been available.

The FW-200's could land at the airfields located in the encircled area without undue risk, even though, because of the military situation, these airfields could not be so well equipped as those in the take-off area. The adequacy of the fields in the take-off area was a far more important factor. So long as the take-off area was secure, an aircraft could load up to full capacity for its flight into the target area. Then, having landed at its appointed field in the target area, the aircraft could make one or two flights on to another airfield nearer the front--all as a part of the same mission--and thus bring its original load of supplies (or even more, if two flights were made) directly into the operational area, taking a number of troops or wounded personnel back on its return flight. At the close of the day's operations, the aircraft returned to its take-off base and the crew was relieved of duty until the next day. Considering that each FW-200 could transport a payload of three and one-half to four tons, each aircraft was capable of transporting an average of ten to twelve tons of supplies into the operational area each day.

The same results could have been obtained by using Ju-52's, provided that they were employed in supply ferries back and forth between the target airfield and airfields closer to the front. It is clear, however, that a unit whose technical service and command organizations are able to operate under the more favorable conditions

of a well-equipped rear area field is capable of maintaining a much higher degree of operational readiness. In the Eastern theater of war, and under the conditions of a general withdrawal--which constitute the conditions that made air-supply operations to encircled areas necessary in the first place--, the difference between the well-equipped rear area fields and the airfields lying within the target area was particularly conspicuous. However, the feasibility of air-supply operations from a rear area with medium and light transport aircraft will no doubt always be limited by the range of action of the aircraft concerned. Range, fuel consumption, and speed must always remain reasonably proportional to the load which can be transported and thus to the prospects of fulfilling the purpose of the mission. For example, the employment of a Ju-52 to carry two tons of supplies over a route of four or five hours duration (approximately 500 miles, assuming a flight speed of 106 to 112 miles per hour) can hardly be considered profitable. Even if the Ju-52 continues its mission by means of a series of shorter flights within the target area, the time factor alone would prevent an increase of more than two, or at best four, tons in the total volume of supplies which it could handle on one day. For this reason, the Ju-52 is inevitably forced to select take-off airfields lying as close as possible to the area to be supplied.

Even during the short span of the Kuban operation, the factors listed above decidedly favored the employment of the FW-200--which should be thought of in this connection not as a long-range bomber but as a long-range transport aircraft. The plane's higher speed and greater tank capacity made the length of the approach route fairly irrelevant, and its greater carrying capacity permitted it to transport twice as much as a Ju-52. Again because of its higher speed it had more time for ferry missions at the front itself, and here, too, its greater carrying capacity was an advantage. Its range of action was large enough that it did not have to refuel in the target area in order to carry out the supplemental ferry missions. And there is no way of telling to what degree the ratio of speed, range, and fuel consumption to carrying capacity could be improved in a long-range aircraft specifically developed for transport purposes.

The part played by the 200th Bomber Group in the air-supply operations for the Kuban Bridgehead reveals certain very definite limitations to the use of long-range aircraft. As long as the ground situation and the target airfields in the operational area remain constant, the long-range aircraft offers operational advantages which

cannot be met by a medium or light transport aircraft. On the other hand, the employment of long-range aircraft must be discontinued much sooner if enemy defenses in the operational area are intensified, or if the landing fields come into the direct range of enemy offensive action due to a narrowing of the encircled area. A long-range aircraft, because of its size, offers a far better target for enemy fire than the smaller transport aircraft; it is far more cumbersome in landing and unloading operations; and it is far more vulnerable in a critical situation (for example, during a short-notice evacuation action), or in the event of unexpected last-minute changes in landing fields. Another important consideration is that when a long-range aircraft is disabled by minor damage or technical failure, two or three times as much transport space is lost to the operation as in the case of a smaller transport aircraft. Should a long-range aircraft be put out of action permanently, the resultant reduction in available space may have a far more serious effect on the efficacy of the over-all undertaking.

The continued employment of the FW-200 could no longer be justified at a time when Ju-52 missions were still well within the bounds of reasonable risk. Thus, the withdrawal of the 200th Bomber Group was warranted not only by the vulnerability of the aircraft model itself but also by the unfavorable discrepancy between the risk involved and the prospects of tangible success. To reduce all this to a simple formula, the employment of the group at Kuban illustrated clearly that there is a certain stage in the effectiveness of enemy antiaircraft defenses at which the chances of losing one long-range aircraft are far greater than the chances of losing three smaller aircraft.

It must be admitted, of course, that the experience resulting from the employment of the 200th Bomber Group in air-supply missions to the Kuban Bridgehead was fairly one-sided and, therefore, can not be fully evaluated for future use; moreover, the principles deduced from this experience were never substantiated because no similar missions occurred during the remainder of the war. The basic concepts and considerations of this problem have been covered elsewhere in the present study; they must in any case be handled somewhat abstractly, and not as factors inextricably bound to the operation as it actually happened. Thus, there is no need for our going into greater detail regarding the employment of the FW-200 at this point. Suffice it to say that the success achieved by the 200th Bomber Group at Kuban, the result of a superhuman effort on the

part of all the flying and ground personnel concerned, was remarkable, the more so when one considers that it was achieved by an aircraft type (and its technological organization) which had never been designed for air-supply missions and which--objectively considered--was not fundamentally suited to them. We must bear in mind, too, that the difference between a combat mission over the Atlantic and a landing in an encircled area in the east in order to deliver ammunition and gasoline required a certain psychological adjustment on the part of the crews concerned. Both the members of the command staff and the personnel participating in the operation succeeded beautifully in making this adjustment.

Section IV: Cherkassy/Korsun-Schevchenkovskiy,* 31 January 1944-19 February 1944[25]

A. General

By December 1943, the military situation on the Dneiper front had reached a critical stage. The German Eighth Army, supported by the First Panzer Army, was engaged in heavy fighting in the Cherkassy-Kirovograd area, east and southeast of Kiev. During the last days of December, Russian armored forces, moving south from Belaya Tserkov and east from Kirovograd, succeeded in breaking through the Eighth Army front. The Russians came together at Zvenigorodka on 28 and 29 December. As a result, approximately eight divisions of the German Eighth Army were encircled in the Korsun-Schevchenkovskiy area and cut off completely from their rear army service area.

After their experience with Stalingrad, during the previous winter, military leaders outside the encircled area decided immediately to take the necessary steps to relieve the encircled force. At the same time, the encircled force itself was determined to break out and lost no time in making the necessary preparations for such an action. The Luftwaffe did its utmost, contributing air-supply services for the Stemmermann/ Group to maintain the fighting power of the

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* Editor's Note: Korsun-Schevchenkovskiy was called "Korsum" by the Germans.

/ Editor's Note: General Stemmermann, together with General Lieb, commanded the Army troops in the pocket. Apparently, either a part or all of the encircled forces came to be known as the "Stemmermann Group." According to von Manstein, General Stemmermann was

encircled force for the difficult battles to come. In this case, air-supply operations were proper and purposeful, for definite plans had been made for a breakout, coupled with a simultaneous relief action from outside the encircled area.

On 3 February 1944, the 3d Panzer Corps, First Panzer Army, began its relief operations, advancing towards the east from Lysyanka; up to that time, the encircled force had been able to turn back all enemy attacks on its perimeter. On 18 and 19 February, after heavy and costly fighting, the Stemmermann Group succeeded in breaking out and met the advance forces of the armored breakthrough wedge. Approximately 30,000 troops were saved, although all their heavy weapons and equipment had been left behind and the losses sustained were extremely high. The SS Division "Viking" covered itself with glory during the heavy fighting, and its performance was a determining factor in the ultimate success of the operation.

B. Air-Supply Operations Begin

During late December, air-supply operations for the Eighth Army in the Cherkassy area had increased greatly in scope, and after the encirclement of the Stemmermann Group they acquired the character of an air-supply undertaking for encircled forces. The daily delivery goal established was seventy tons of ammunition, gasoline, tank parts, weapons, food, other supplies, and medical personnel. In the very beginning, a light antiaircraft artillery battery and ground organization personnel were flown into the encircled area for the defense and operation of the landing field at Korsun-Schevchenkovskiy.

Air-supply missions into the encircled area at Korsun-Schevchenkovskiy began on 31 January 1944. The Fourth Air Fleet had assigned responsibility for the operation to the 8th Air Corps, which had turned the mission over to Major Knapp and his staff, located at advanced headquarters at the airfield at Uman. Originally, the air transport units had been under the command of Major Riesch, Commanding Officer of the 3d Group, 3d Air Transport Wing,

killed during the breakout operations. Erich von Manstein, Verlorene Siege, Athenaeum-Verlag (Bonn, 1955), p. 586, (American edition: Lost Victories, Henry Regnery (Chicago, 1958)).

The landing field at Korsun-Schevchenkovskiy (in the encircled area at Cherkassy); Ju-52's on the ground and a Ju-87 dive-bomber unit overhead

Seriously wounded being loaded into a Ju-52

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stationed at the Uman airfield. On 2 February 1944, at the order of the Air Transport Chief, Major Baumann, Commanding Officer of the 2d Group, 3d Air Transport Wing, was appointed mission leader and placed in charge of the air transport units. At that time, his unit was stationed at Golta; later on, it moved to the airfield at Uman.

The 1st, 2d, and 3d Groups of the 3d Air Transport Wing were available for the mission. Major Schmidt was in command of the 1st Group, which was stationed at Korsun.-Schevchenkovskiy. The 2d Group, under Major Baumann, was stationed at Golta/Uman, and the 3d Group, commanded by Major Riesch, was at Uman. At the beginning of the air-supply operations, however, the units utilized the airfields at Uman, Golta, and Proskurov (Khmel'nitskiy) for take-off bases.

Since the Army's supply transport system was not fully organized in the beginning, only one of these airfields could be utilized for loading purposes. Later on, even when surface transportation was operating more smoothly, all the supplies were brought to the field at Uman and the air transport units all took off from there. Uman was also the most satisfactory airfield from which to pick up wounded personnel brought out of the encircled area. The distance to the encircled area was approximately twenty-two miles and several missions could be flown each day.

C. Low-Altitude Flight in Close Formation

The first missions were carried out in close formation, the aircraft flying at low, or even hedgehopping altitude. Russian ground antiaircraft defenses had been set up immediately after the armored wedges had completed the encirclement action. Although the transport units frequently altered both their approach and return routes, they were constantly exposed to ground fire from all types of light weapons. There were occasional losses and a good many aircraft were damaged so badly that they required lengthy repairs. Unfortunately, the transport units could not always be oriented accurately as to the course of the encirclement front, since it was subject to daily alterations.

Over the encircled area, and especially over the landing field at Korsun-Schevchenkovskiy, Russian fighter aircraft made their presence unpleasantly felt, particularly when there was no fighter

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escort accompanying the transport aircraft. On one occasion the 3d Group, 3d Air Transport Wing, had carried out a mission, flying at the low altitude prescribed. Because of heavy ground antiaircraft artillery fire, the unit commander--contrary to explicit orders to fly at low altitude--decided to make the return flight at a higher altitude. The aircraft took off from the field at Korsun-Schevchenkovskiy and, as they were assembling for the return flight over the field, they were attacked by a group of Russian fighters. Twelve Ju-52's were shot down.

D. High-Altitude Flight in Close Formation

After the third day of operations both the approach and return flights were carried out at a higher altitude (7, 640 to 9, 550 feet) with fighter escort. Because of the lack of sufficient fighter aircraft the escort was often inadequate (three Me-109's for approximately thirty-six Ju-52's), and occasionally not available at all. The presence of even a few German fighters, however, was enough to keep the Russian fighters from attacking the transports. If there was no fighter escort available for the return flight, the transport aircraft postponed their return until twilight or during the night, whenever possible. Enemy air attacks on the airfield at Korsun-Schevchenkovskiy, particularly those carried out by low-flying IL-2 units,* increased steadily in intensity. On 3 February, low-flying enemy aircraft attacked the field fourteen times.

Rapidly changing weather conditions--frost at night, followed by thaw weather during the day--eventually made landing so difficult that the Korsun-Schevchenkovskiy airfield had to be temporarily avoided. The necessary preparations for the procurement and transport to Uman of freight parachutes, supply-drop containers, and packing materials had not been made in time, so that supply operations by air drop could not begin immediately. Later on, as soon as the necessary equipment was made available, supply-drop missions were carried out during the period in which the airfield was unusable.

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* The IL-2 was a single-seater, low-wing, Russian aircraft. It was so heavily armored that even concentrated fire by light anti-aircraft artillery was ineffective against it.

E. Bad-Weather and Night Flights

In order to be able to carry out air-supply missions from the Uman airfield during all kinds of weather and during the night as well as during the day, the 2d Group, 3d Air Transport Wing, moved on 4 February from Golta to Uman. At this time light, night frosts made it possible for aircraft to land at Korsun-Schevchenkovskiy; thus, night missions--an average of three per aircraft--were flown during all kinds of weather. Repair and aircraft salvage details, together with their equipment and a supply of spare parts, were flown to Korsun-Schevchenkovskiy, so that damaged machines could be repaired and refitted within the encircled area. On 5 February, however, the area was blanketed in such dense fog that air-supply flights were impossible. In any case, the field at Korsun-Schevchenkovskiy was no longer usable by this time, and immediate action was taken to reconnoiter the area for new fields to replace it. During the interim period, the number of supply-drop missions over the encircled area was increased. By 8 February the improvised landing fields at Korsun-Schevchenkovskiy (West) and at Yablonovka were ready for use, and during the following days more than 100 supply-landing and supply-drop missions were flown to these two fields. By 12 February it was no longer possible to take off from the airfield at Uman; thaw weather had softened the take-off strips and constant use had damaged them beyond repair.

F. Missions to Supply the Armored Units Engaged in Relief Operations

The 3d Panzer Corps, advancing from the west, had launched an attack on the Lysyanka area as a part of its operation to relieve the encircled forces. As a result of the spring thaw, highways had become almost impassable, making the overland transport of supplies for the Corps impossible. Air transport was the only answer, and the necessary supplies of ammunition, gasoline, and food were dropped in containers over a strip three and one-half to five miles wide (only one and one-fifth miles wide along the last stretch) on the Corps' route of advance. Sometimes the transport aircraft managed to drop the containers directly in the field emplacements right next to the tanks. At night, if frost conditions were right, the best and most experienced pilots tried landings in the open terrain along the road. The armored wedge, moving forward very slowly, was still quite narrow and was subject to constant attack from both sides, and the transport aircraft--

despite skillful utilization of the terrain by the pilots (flying low around wooded areas and taking advantage of every bit of cover)--were unable to escape enemy fire. Heavy damage and losses in personnel resulted.

The practice of dropping supply containers fitted with freight parachutes out of the door or loading aperture of a low-flying aircraft had to be discontinued for two reasons: 1) even when there was very little wind and the containers were dropped at a very low altitude, they were frequently carried so far off their course that the troops were unable to pick them up; and 2) enemy ground fire during the ten minutes it took to release the containers was far too heavy.

Next the practice was adopted of releasing containers without parachutes from the loading door of an aircraft flying at reduced speed at an altitude of only about twelve feet from the ground. Packed in heavy boxes, 88 and 75-mm. ammunition delivered in this way almost always escaped damage, for the mud and snow reduced the force of impact. Gasoline could be dropped only in the very stable 26. 5-gallon drums, and even so an average of two out of every ten drums burst upon impact. An improvised flare path, made up of lanterns and vehicle headlights which began to blink on and off as soon as the aircraft was heard approaching, was set up along the armored wedge in order to facilitate night supply-drop missions. As long as night frosts continued, it was also possible for aircraft to land inside the encircled area.

During the night of 15/16 February the highest number of missions was flown, some of the crews averaging four and five take-offs. After 16 February, the troops in the encircled area were able to get along without air supply; the transport missions continued until 20 February, however, in order to supply the advance elements of the 3d Panzer Corps.

G. Conclusion

On 19 and 20 February the advance elements of the Stemmermann Group managed to reach the armored relief force. The breakout had succeeded. The troops were exhausted, and sick and wounded personnel were barely able to drag themselves to safety. The Ju-52's, landing at two airfields previously reconnoitered along the retreat route, picked up the sick and wounded and transported them to Uman. During these two days alone, a total of 2, 000 sick and wounded were

flown back to Uman. Troops incapable of marching any further were assembled at a nearby airfield to await air transport to Uman. During these last two days, the enemy attempted to reencircle the escaping group by means of a strong assault against the northern side of the wedge. Fortunately, the front could be held until the Stemmermann Group had gotten out safely.

Thirty-two Ju-52's were lost due to enemy action, technical failures, and weather conditions; there are no figures available regarding the number of personnel lost. One hundred and thirteen Ju-52's were damaged by enemy fire, but were later repaired.

No information is available on the amount of ammunition and gasoline transported to the advance elements of the Panzer Corps during the period from 12 through 20 February. Counting 2,400 wounded personnel flown out of the encircled area, 2,000 sick and wounded transported after the breakthrough, and 30,000 troops who managed to make their way through to the armored forces, a total of almost 34,500 soldiers from the Stemmermann Group were saved.

The air transport units and the bomber units, which were also sporadically employed for air-supply missions, flew a total of 1,500 missions and delivered 2,026 tons of supplies to the encircled area. The daily goal of seventy tons was met.

The Cherkassy/Korsun-Schevchenkovskiy airlift can be counted as one of the few air-supply operations to encircled areas during World War II which was truly purposeful. Together with plans for air-supply operations, definite preparations were made to relieve the encircled force from outside and, at the same time, the force itself was preparing to break out of encirclement. We have no way of telling whether or not these decisions were approved by Germany's top military leaders only because of the experience at Stalingrad. In any case, the fact that the breakthrough was a success--despite the heavy losses in personnel and despite the fact that all heavy equipment had to be left behind--is incontrovertible evidence of the rightness of the decisions made. By means of air supply the fighting power and mobility of the Stemmermann Group was maintained for seventeen days at such a high level that 30,000 men were able to fight their way through to the approaching relief force.

Even the Cherkassy/Korsun-Schevchenkovskiy operation was

not spared the many orders and demands by the Fuehrer for special reports. Depending upon the interpretation assigned to these things at Air Fleet or Air Corps level, they served to increase the atmosphere of nervousness and to bring unrest to the air transport units. For the most part, however, those agencies of the Air Fleet which were best acquainted with the requirements and potentialities of air transport were content to leave the details to the capable and experienced leader of the mission, and by doing so they helped to facilitate his difficult task.

Section V: The Crimea, 5 November 1943 - 2 May 1944[26]

A. General

The military situation on the southern sector of the Eastern front was characterized by the constant pressure exerted by Russian forces against the right wing of the Army Group as the Russians attempted to regain the lower course of the Dneiper River. In this way, the Russians hoped to cut off the Crimea. The Crimea would not be cut off entirely until the Russians had occupied the Isthmus of Perekop,* but the very fact that they were approaching would serve to disrupt the functioning of normal overland supply channels to the Crimea. Russian recapture of the Perekop Isthmus would mean the withdrawal of German troops from the Crimea and the loss to Germany of a dominant position on the Black Sea.

Under these circumstances Germany's top military leaders decided to hold the Crimea at all costs and to strengthen the Seventeenth Army there.† Supply transport was now shifted from overland to sea and air. So long as the enemy did not strengthen his naval forces in the Black Sea, water transport from Odessa and Constanta

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* Editor's Note: The Perekop Isthmus is a flat, treeless, steppe-like landbridge, from two to twelve miles wide and about 25 miles long. It connects the Crimea to the Ukranian mainland to the north and is the route von Manstein used to invade the Crimea in the fall of 1941.

† Editor's Note: Among the reasons for attempting to hold the Crimea were that its loss might upset Turkish neutrality and its possession by the Russians would bring the Russian Air Force within bombing range of the Rumanian oil fields.

was possible and continued to be utilized until German forces were withdrawn from the Crimea.

On 23 October 1943, the Isthmus of Perekop was occupied by the Russians and land communication with the Crimea permanently disrupted. From this point on, air-supply operations were needed to supplement supply by sea. The German forces managed to keep the enemy invaders from pressing forward into the Crimea, and the front line across the isthmus remained unchanged. A landing attempt by the Russians at some point on the peninsula was considered highly improbable. The scope of the air-supply undertaking remained within reasonable limits for the time being, since it was restricted to the transport of reinforcements and urgently needed supplies. At this time, the encircled force had sufficient supplies of ammunition and gasoline on hand, and its food needs could be adequately met by requisitioning from the local population.

Enemy pressure on the southern sector of the front increased steadily, pushing the front line back farther and farther towards the west, until German forces had been forced to retreat from almost all the northern coast of the Black Sea. Under these circumstances, it seemed pointless to try to hold the Crimea, particularly since there was no longer any chance of utilizing it as a base of operations from which to launch an offensive designed to recapture the territory lost in the Caucasus. Thus in the spring of 1944, the inevitable decision to withdraw from the Crimea was made--the available forces were simply too weak for any other solution. Air transport, heretofore utilized as a means of supplying the troops on the Crimea, was now viewed by military leaders as a means with which to evacuate the remainder of the Seventeenth Army. So, after nearly six months of operation (5 November 1943-2 May 1944), the airlift came to an end in the attempt to transport as many troops and as much equipment as possible from the Crimea to the Rumanian mainland by early May.

B. The Mission

The mission assigned to the air transport units already stationed in the area covered by the Fourth Air Fleet and to those newly assigned there was to maintain uninterrupted air contact with the Crimea, utilizing Uman and Odessa as take-off bases in the beginning, and later, Odessa only. In addition, these take-off bases were also used for urgent air transport missions to that sector of the

front located east of Kirovograd and Nikopol in order to give support to the Eighth and Sixth Army elements engaged in heavy defensive fighting there. Whereas the Army elements at this sector of the front--for as long as it could be held--needed supplies of all kinds, the majority of the transports to the Crimea were restricted to reinforcement personnel for the Seventeenth Army. On the return flights, the transport aircraft were utilized to bring back sick and wounded personnel, personnel on leave or change-of-station orders, and specialists. Later, when it became necessary to replenish the supplies on hand, the missions were devoted to an ever greater degree to the transport of foodstuffs, ammunition, gasoline, and vehicle parts, and the transport of reinforcement personnel was relegated to the background. During the last phase of the supply operation, after it had already become apparent that German forces would have to abandon the Crimea, the transport of these supplies was not discontinued. Incomprehensible as it seems, a few of these later missions were devoted to the transport of armed reinforcements, despite the fact that the missions were drawing to a close. For the return flights, every single aircraft was loaded to capacity with sick and wounded personnel and any space left over was reserved for the transport of troops no longer needed in the operational area.

No daily goal had been established for supply deliveries to the Crimea, nor because of the uncertainty of the military situation, was it possible to predict the duration of the operation in advance. The Air Transport Chief II, Generalmajor Fritz Morzik,* had simply been instructed to utilize all available air transport aircraft to carry out regular air-supply missions as long as was necessary.

C. The Chain of Command and the Participating Units

For the duration of the Crimean airlift, the Air Transport Chief II was subordinate to the Fourth Air Fleet, which was under the command of Generaloberst Otto Dessloch. General Morzik coordinated with the Quartermaster Officer of the Air Fleet, Colonel Hans von Koppelow, concerning the supplies to be transported by the airlift.

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* General Morzik's staff included an operations officer (Captain Mueller), a technical officer (Captain Langer), a signal communications officer (Lieutenant Ockerlaender), a medical officer (Captain Muckhoff), and an Army liaison officer (Captain Thomas).

Headquarters for Air Transport Chief II was at Uman until 5 December 1943, then at Odessa III (Odessa/Fontan) until late March 1944, when it was transferred to Fokschany.

Seven groups,* which included five groups of Ju-52's, one group of Me-323's, and one group of Savoyas,/ were assigned to the Air Transport Chief II for the duration of the mission. On 11 April 1944, during the last phase of the airlift, this force was augmented by a group of He-111's and a freight-glider group of He-111's and Go-242's.//

These last two groups had been recently organized. The freight-glider group had been utilized in supply missions for the First Panzer Army during late March and early April, prior to its assignment to Odessa. The 1st Group, 4th Air Transport Wing, and elements of the 3d Group, 4th Air Transport Wing, had also been withdrawn from the Crimea to assist in supply operations for the First Panzer Army; both groups returned to Odessa immediately after the latter mission was over. During the month of April all the air transport units had to leave the Odessa area, and were transferred to Constanta, Galati, Fokschany, and Bucharest, in Rumania.

Prior to the beginning of the Crimean airlift the 2d** and 3d***

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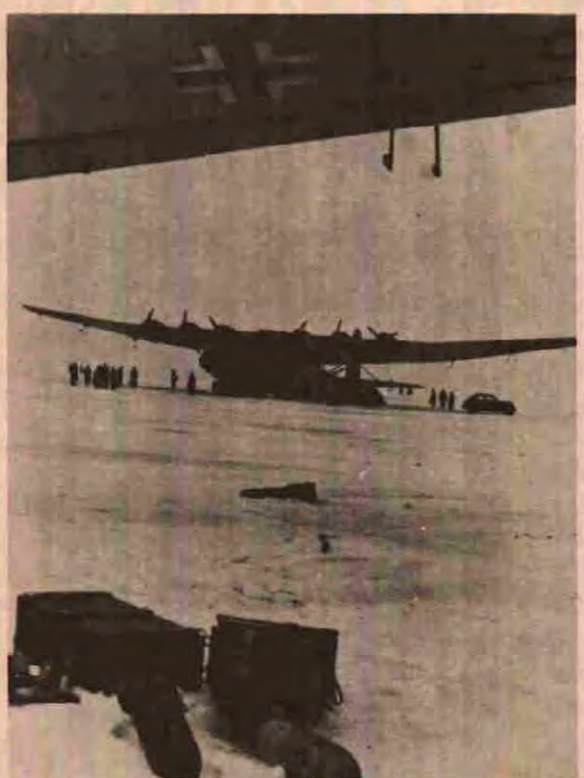
* These seven groups were: the 1st and 3d Groups, 2d Air Transport Wing (Commander - Colonel Erdmann); the 2d and 3d Groups, 3d Air Transport Wing (Commander - Colonel Schroeder); the 1st Group, 4th Air Transport Wing; the 1st Group, 5th Air Transport Wing (Me-323's); the 3d Group, 1st Air Transport Wing (Savoyas). The two groups from the 2d Air Transport Wing were transferred to Odessa after the German withdrawal from North Africa, in October 1943. By February 1944, the 1st, 4th and 3d, 1st were transferred to Odessa I (Odessa/Usatovo) and the 1st, 5th was transferred to Odessa II (Odessa).

/ The Savoya was an Italian twin-engine transport aircraft, which was to be utilized as a replacement for the Ju-52.

// These two groups were: the 30th Air Transport Group (He-111's) under Major Hornung and the 1st Group, 1st Airlanding Wing (He-111's and Go-242's) under Captain Fae.

** Then stationed at Golta, except during the Cherkassy airlift when it was stationed at Uman.

*** Stationed at Odessa I (Odessa/Usatovo).



An Me-323 being loaded for
the Crimean airlift (1943-44)

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Groups, 3d Air Transport Wing, and the 1st* Group, 1st Air Transport Wing, flew regular supply missions to the Dneiper front, and occasional missions, of lesser scope, to the Crimea. They had been temporarily detached from the Crimean operation to participate in the operations to supply the Cherkassy area. After the conclusion of the Cherkassy mission, the 2d Group, 3d Air Transport Wing, moved temporarily to the airfield at Tiraspol. Soon thereafter, it was sent back to Germany to be refitted and subsequently assigned to the Luftwaffe High Command for special missions.†

The 3d Group, 1st Air Transport Wing, which had been converted to Savoya aircraft, was soon withdrawn from commitment. The Savoya was unsuited to winter employment, both technically and from the standpoint of its flight characteristics; moreover, the procurement of spare parts proved to be an insurmountable obstacle.

D. The Take-Off and Landing Bases

Except for Odessa I (Odessa/Usatovo), the airfields in the Odessa area [Odessa II (Odessa) and Odessa III (Odessa/Fontan)] were suitable for night and blind-flying missions. Odessa II had a take-off strip approximately 2,290 feet long; unfortunately, the concrete surfacing was too thin to permit a take-off by a fully-laden Me-323 and the strip had to be reinforced before it could be used. Utilization of Odessa III was extremely difficult during the muddy and thaw periods, for the constant day and night traffic had furrowed the taxiing area to a depth of almost sixteen inches. Since the supply missions to the Crimea had to go on, the transport aircraft had no choice but to continue to use the field. It was purely a matter of luck that the fully-laden Ju-52's usually managed to get off the field by the time they reached the end of the runway.

Because of its nearness to the Black Sea, the Odessa area was characterized by unpredictably sudden fogs at all of the take-off bases. Whenever the fog was too thick, the transport aircraft were contacted by radio while they were still over the Black Sea and guided to the alternate landing fields at Nikolayev and Galati. They had to be reached while still over the Black Sea, because otherwise their fuel

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* Stationed at Uman and Korsun-Schevchenkovskiy.

† One of these special missions was the parachute landing on the Hohe Venn. See below, p. 281 ff.

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supply would not have been sufficient for them to reach the alternate fields. Occasionally the aircraft could not be contacted in time and the pilots had no alternative but to attempt a bad-weather landing at Odessa III. Only the most experienced had the good fortune to succeed.

Both Kirovograd and Uman were equipped for night and blind-flying missions, although a bad-weather landing at Kirovograd entailed a certain amount of risk and could only be attempted in an emergency. On the Crimea itself, the airfield at Karankut was suitable for both night and blind-flying operations. During the thaw and the subsequent muddy period, however, the condition of the landing and take-off strips was poor, a factor which did much to hinder operations, particularly at night.

Saki, a small Crimean landing field, could be utilized for night operations in emergency; however, bad-weather landings there were out of the question. The airfield at Vladislavovka, an emergency landing field with no ground organization services whatsoever, was utilized only when reinforcements and ammunition had to be delivered at an airfield located near the front. During the last phase of the Crimean operation, transport aircraft also landed at emergency airfields within the fortress area of Sevastopol and, during the last few days, at Khersones (Sevastopol West).

E. Personnel and Ground Services

The majority of the flying crews were well qualified for the airlift. If a mission promised to be particularly difficult, only the most experienced crews were assigned to it. Those groups which had been previously employed in the Mediterranean area needed time to accustom themselves to the conditions prevailing on the Eastern front.

The normal prerequisites in the way of ground organization services were only partially fulfilled in both the take-off and landing areas at the time the airlift began; later on, these services were expanded somewhat.

The number of technical personnel assigned to the airfields was sufficient. In addition, each group had an airfield maintenance company at its disposal, and the companies, together with the technical personnel from each squadron, were fully capable of handling the servicing and repair of the aircraft. The workshop platoons of the

maintenance companies were able to deal with minor repairs, including the installation of new engines. The more serious repair jobs, such as the repair of shell damage to fuselage parts, were referred to the field repair shops assigned to each airfield area. The personnel manning these repair shops had been requested for the Stalingrad airlift, but had not arrived until much later; they were utilized to full advantage to maintain the operational readiness of the units participating in the Crimean operation. At the individual airfields, fairly large-scale repair jobs could be carried out in tents or in small hangars. The aircraft equipment depots had sufficient supplies of spare parts and even spare engines on hand. The aircraft had to be sent back to repair depots in Germany for partial overhauling. The accompanying crews picked up finished aircraft and flew them back to the operational area. In this way as little time as possible was lost and a continuing supply of Ju-52's was assured. The total loss in aircraft was fairly small, and the number of new aircraft assigned was sufficient to make up for them.

Technical personnel, emergency repair equipment, and spare parts were also available at the landing fields on the Crimea. A supervising technical officer, assigned by the Air Transport Chief, was responsible for making sure that necessary repairs were carried out as rapidly as possible and that serviceable aircraft were returned to their units without delay.

Ground organization facilities in both the take-off and landing areas, manned by experienced airfield area command staffs, were adequate to the demands made upon them. The command agencies such as the air administrative command, the airfield area commands, and the airfield commands had had sufficient experience so that they were able to make effective preparations to handle the air transport units, particularly as they did not all arrive at once. These command agencies were quick to lend whatever support they could to the air transport units. Depending upon local conditions, the units often had to take independent action to improve their winter quarters and equipment.

Liaison activity with the supply units was carried out by an Army officer assigned to the staff of the Air Transport Chief. Basing his requisitions on the operational readiness reports submitted by the transport units, this officer was responsible for requesting, by radio or telephone, the type and amount of supplies needed from the supply

units; the latter, in turn, arranged for their transport to the proper take-off base. Each airfield was assigned a loading detail of company strength which was responsible for loading the personnel and materiel listed on the transport summary of the officer in charge. The gunners from each aircraft crew were in charge of directing loading operations, for there were certain aeronautical and technological principles which had to be considered. Discrepancies between the available load to be transported and the available transport space were rare, for there were usually sufficient extra supplies on hand to take care of any transport aircraft which had become serviceable since the last report. At the order of the Air Transport Chief, all aircraft flying over the Crimea--regardless of unit and mission--were to join an air transport unit for the stretch over the Black Sea. Thus, the extra transport space could be utilized for supplies and, since the air-sea rescue squadrons at Odessa and Constanta could be committed only at the order of the Air Transport Chief, the flight safety of all of these aircraft was considerably increased.

F. Accomplishment of the Mission

The slow and gradual development of the Crimean airlift out of a series of isolated, emergency supply flights was characteristic of the operation. In the beginning, these flights were carried out as secondary phases of supply missions flown to other sectors of the front. The air transport units carrying them out were groups which had long been stationed in the area covered by the Fourth Air Fleet and which had been placed at the disposal of Air Fleet Headquarters for general air-supply activity wherever it might be required. It was not until there was a substantial increase both in the supply transport system and the supply requirements of the force on the Crimea that the employment of additional air transport forces became necessary and possible. In contrast to the Demyansk and Stalingrad operations, which were characterized by tremendously heightened requirements during the final phase, the requirements of the Crimean airlift remained fairly constant and never really exceeded the capabilities of the available units.

As a result, in its initial phase the operation did not require the full utilization of all the transport space available. Actually, the Crimean airlift developed out of a gradual shift of the supply missions assigned to the Air Transport Chief II from the area around Kirovograd and Nikopol to the Crimea. As the Kirovograd and Nikopol areas were abandoned, the Crimea remained as the exclusive target for air-supply

operations.

For example, the groups from the 2d Air Transport Wing had been withdrawn from the Mediterranean and assigned to the Eastern front in October. Single aircraft from these groups were employed in supply flights to the Eighth Army; the first mission involving an entire group was the transport of an Army battalion, together with its weapons and ammunition, to Nikopol. It was not until 5 November 1943 that the two groups, under the command of the wing leader, flew their first mission to the Crimea, transporting reinforcements from Odessa III (Odessa/Fontan) to Vladislavovka.

The two groups had arrived at Odessa III on 26 October, but for technical reasons their employment in missions involving overwater flight was not immediately possible. Having no definite information relative to their next assignment, the groups had turned in all their overwater emergency equipment (inflatable boats and life preservers) when they left the African theater of operations. The new equipment, which was indispensable if the groups were to be employed over the Black Sea, was still being procured. The groups were also not adequately equipped for winter employment. They had no felt-lined hoods for their engines, oil tanks, and oil filters; radiator screens still had to be installed; and de-icing equipment for the wings and tail assembly still had to be procured. After their withdrawal from the Mediterranean, the equipping of the two groups for winter employment was accomplished as rapidly as possible, for their services were urgently needed. Only the squadron technical personnel had been transferred together with the groups; the airfield maintenance companies, and the heavy equipment, had been dispatched from the Mediterranean by rail transport and had not yet arrived. Under these circumstances it is understandable that the two groups needed more than a week to establish their operational readiness. Once these delays and initial difficulties had been overcome, however, all the units participating in the Crimean airlift settled down into an efficient routine.

For the first few months, nearly all the supply flights were carried out during daylight hours. It happened occasionally that the last units participating in the second mission of the day had to complete their return flight at night. Whenever this was the case, the aircraft broke formation while over the Black Sea and came in singly for landing, in order to avoid a night massing of aircraft over the landing fields.

Depending upon supply requirements, the missions were flown to the target airfields at Karankut, Sarabuz, or Saki. Sometimes the aircraft were instructed to report to another landing field before returning, in order to pick up wounded personnel. The average flight time from the take-off base to the landing field was from two to two and one-half hours, depending upon wind conditions. The distance from Odessa to Karankut was 280 miles.

As air-supply missions over the Black Sea area became more and more frequent, enemy fighter defenses made themselves felt to a correspondingly increasing degree. As a result, during the last phase of the airlift the majority of missions were carried out at night. This meant that the units could no longer fly in close formation. By this time, however, the pilots had acquired so much experience that they were fully capable of carrying out night missions without mishap.

The movement of the supplies landed at the target fields to their final destination was the responsibility of the transport details, assigned to each field by theArmy Transportation Officer. These details worked closely together with a liaison officer from the staff of the Air Transport Chief II. The duties of this liaison officer, who was responsible for seeing that operations ran smoothly, were important. He maintained constant liaison with the supply agencies of the Seventeenth Army and appropriate sections of the Armed Forces, to which he submitted his supply requisitions according to their priority. He also radioed requirements to the staff of the Air Transport Chief, together with daily reports of the number of supply missions accomplished, the latter being a precautionary measure for the benefit of the Army liaison officer on the Air Transport Chief's staff. In addition, he reported the number of aircraft stranded at the landing fields each day, the reasons therefor, and the probable length of time needed for their repair. He also made arrangements for the crews of these aircraft. His other duties included radioing regular weather reports prior to and during each mission, reporting the number of wounded personnel and checking the movement orders of personnel being evacuated from the Crimea. As can well be imagined, this last duty became, during the final phase of the airlift, a particularly thankless job and one which inevitably led to unpleasant disagreements.

During the many weeks this airlift was in operation, the communications and liaison network functioned very well. It was not overburdened by demands for pointless and superfluous reports but

was utilized effectively to provide a clear picture of the course of operations at all times. Like the over-all accomplishment of the mission, the reporting and liaison duties became routine, and this was of great value later on, during the final, critical phase.

The communications system connected all the agencies concerned in the operation and functioned perfectly. The ground radio stations of the air transport units were in constant contact with the radio station maintained at the headquarters of the Air Transport Chief, and this station, in turn, could reach all the transport aircraft during the missions. The transport groups aloft could also contact their own ground radio stations via the headquarters station. This system assured complete and accurate transmission of reports on enemy activity, changes in weather conditions, and other important data. The liaison officer on the Crimea was tuned in on the same wave length, so that there was no need for a double transmission of reports and instructions.

The organization of the return flights from the Crimea was extremely important. The available transport space was reserved for wounded and sick personnel, personnel on leave orders, and special technical personnel from the Army. The Army liaison officer attached to the staff of the Air Transport Chief transmitted information via the radio station at Karankut (later Sevastopol) regarding the number of aircraft taking off, their destination, and their probable time of arrival. This data was then transmitted to the appropriate Army agencies and to the field hospitals so that there would be plenty of time to prepare for the loading of wounded.

The loading operation was under the direction of a medical officer. On those days when unusually large numbers of wounded, including men with serious injuries, were to be picked up, transport unit medical personnel and the medical officer from the staff of the Air Transport Chief went along in case any of the wounded needed medical attention during the return flight. All available ambulances were mobilized in order to pick up the wounded immediately after the aircraft landed and to move them to hospitals in the rear Army area as rapidly as possible. It was not always feasible to have hospital trains ready and waiting, and this often created serious billeting difficulties, particularly since the number of wounded awaiting transport was sometimes as high as several thousand.

During the first few months of the airlift, only about 60 percent of the available transport space was utilized for the return flights; during the evacuation phase, facilities were constantly overburdened and every available inch was fully exploited. The Ju-52 was capable of carrying up to thirty troops, and the He-111, up to twenty-four wounded personnel in addition to its four-member crew. All the agencies concerned did everything in their power to make certain that at least the wounded were evacuated in order to keep them from being taken prisoner. However, despite the fact that all the available transport aircraft were employed to the limit, a large number of wounded and a great many troops had to be left behind.

As could be predicted, conditions during the last few days of the Crimean airlift were pretty harrowing. Apart from the wounded, the only troops eligible for evacuation were those no longer needed for combat in the Crimea and those who were returning to a definite assignment elsewhere. In many cases, the method of selection used seemed unfair to the troops and did much to shake the confidence they felt in their leaders, particularly since the aircraft--and aircraft were the only possible means of evacuation--were subject to strict loading regulations and were permitted to take only the normal established load. As far as the pilots themselves were concerned these loading limitations could have been exceeded far earlier. Moreover, during the very last days of combat, at a time when the abandonment of the Crimea was inevitable and imminent, orders came through to fly additional fresh reinforcements to the last bridgehead there. This was completely beyond the comprehension of the transport crews, for by this time the available transport space was no longer sufficient to keep the troops already there adequately supplied for effective resistance to enemy pressure; under these circumstances, the transport of additional troops to the Crimea seemed pointless indeed.

It is understandable that the transport crews resorted to all sorts of excuses to keep from loading the full number of troops for their flights to the Crimea, whereas they took off for their return flights with almost irresponsibly overloaded aircraft. In this way, a good many troops were spared an uncertain fate, and, in any case, it cannot be maintained that holding the Crimea at this time could have had any influence on the military developments elsewhere on the front.

G. Enemy Antiaircraft Defenses and the Employment of Fighter Escorts

After enemy aircraft had carried out a number of attacks

against the transport units over the Black Sea and along the coast, plans were made to have future transport missions accompanied by fighter escort. Unfortunately, however, there were not enough fighter aircraft available for escort duty. On those occasions when fighter aircraft could be spared, their activity was usually limited to meeting the transport units over the coast and screening them from enemy fighters along the coastal area. Actually, Russian fighter activity was not nearly so intense as had been expected and, on the whole, can be considered insignificant during this period. Provided a transport unit was flying in close formation and opened fire immediately, Russian fighter aircraft did not even attempt an attack--in contrast to the behavior of the British fighters over the Mediterranean. The practice of having the unit leader direct the fire of the entire formation proved to be very effective. As soon as the leader sighted Russian fighters approaching he released a green flare signifying "prepare to fire." The subsequent red flare meant "open fire." Ordinarily, the Russian fighters withdrew as soon as the transport aircraft opened fire and did not come back to renew their attack. Whenever there were German fighters in the vicinity the Russian aircraft did not even approach a transport unit.

Towards the end of the operation, as Russian fighter activity increased, fighter escorts were provided for the entire flight route. Take-off signals had to be followed exactly so that the assembly of transports and fighters could be accomplished smoothly. The fighter aircraft remained with the transport unit and protected it until it landed. At the landing field itself protection was provided by antiaircraft artillery. The escort fighters also had to land in order to refuel for the return flight.

There was little sign of enemy antiaircraft artillery during the early stages of the operation. During the last phase of the supply action, and particularly during the evacuation phase (when the ring encircling the defenders was becoming tighter and tighter, and heavy fighting was going on, first on the outer perimeter of the fortress area, then on the inner perimeter), heavy concentrations of enemy antiaircraft artillery came into being. The supply missions, effectively hindered by enemy fighter and antiaircraft artillery defenses during the day, had to be carried out at night when antiaircraft artillery operations were less effective.

This Ju-52 was hit, while in flight, by ground fire. Its load of antiaircraft artillery ammunition was ignited, forcing it to make a crash landing at Odessa III.

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H. Weather Service

Both on the Crimea and in the Rumanian assembly area climatic conditions during winter were quite bearable. Temperatures of less than 10. 5° Fahrenheit were rare. However, because of the high degree of humidity--a result of the area's proximity to the Black Sea--, sudden and unpredictable changes in the weather had to be expected. These were usually accompanied by heavy fogs, which were a serious disadvantage to operations.

There were weather observation stations at all of the take-off bases; in addition, the weather station at the headquarters of the Air Transport Chief II, under the direction of Dr. Heim, could be relied upon for accurate information. Dr. Heim was intimately acquainted with the needs of the air transport units, and his weather forecasts, particularly on days which threatened to be foggy, were so exact that the units could be given definite take-off times and could be told precisely the time when they must have landed in order to escape the worst of the fog. During foggy periods, the weather stations maintained constant radio contact with the groups, both in the air and on the field after their landing. Once a unit had been instructed that it was safe to land it very rarely had to be routed to another airfield. The amount of time which the unit had at its disposal until the last aircraft had to have landed before the fog became too dense was usually computed to the minute, so that the last, and sometimes the next to last aircraft had to come in under bad-weather landing conditions. The excellence of the weather service assured that every favorable weather period was utilized fully and that both aircraft and personnel were protected from weather-induced risks.

I. Some Statistics

Figures regarding the amount of supplies and the number of troops transported to the Crimea, and the number of wounded and sick personnel and troops evacuated are not available. Some idea may be gained from the reports of the 3d Group, 2d Air Transport Wing, for the period from 5 November 1943 through 2 February 1944, and of the 1st Group, 30th Air Transport Wing, for the period from 12 April through 11 May 1944. There are also no statistics available concerning aircraft and personnel losses. Here, again, the losses recorded by these two groups serve to provide some indication of the over-all losses sustained during the course of the air-supply operation.

During the period from 5 November 1943 through 2 February 1944, the 3d Group, 2d Air Transport Wing (Ju-52's), in a total of 3,112 missions, transported 30,838 troops and 2,600 tons of supplies to the Crimea, and brought back 17,140 wounded personnel, 7,625 troops, and 840 tons of equipment. In performing these missions, the 3d Group lost five Ju-52's (two to enemy action, two to technical failures and one to weather) and five personnel killed, eight wounded, and seven missing in action.

The 30th Air Transport Wing (He-111's), during the period from 12 April through 11 May 1944, in a total of 765 missions, transported 6,240 troops, 280 tons of supplies, and 762 supply drop containers (552.75 pounds each) to the Crimea, and brought back 12,480 wounded personnel and 1,640 troops. As a result of these missions, the 30th lost: 7 He-111's (six to enemy action and one to technical failure); and 22 personnel killed, 6 personnel missing, and 4 personnel wounded in action.

J. Conclusion

Although the Crimea was an encircled area once the Isthmus of Perekop was cut off, the utilization of air transport forces to supply the troops on the Crimea was not an air-supply mission to encircled forces in the sense applicable to the Demyansk and Stalingrad operations. The very fact that the tonnage of supplies transported each day was not dependent upon the supply needs of the encircled troops, but rather on the number of transport aircraft available for employment, gave the airlift an entirely different character. A true air-supply operation for encircled forces has only one constant factor, the daily volume of supply deliveries; and every conceivable effort must be made to meet the daily goal (or at least to try to meet it), no matter what difficulties may be involved and regardless of the fact that the available forces may be overburdened beyond endurance. In the case of the Crimean operation, on the other hand, which by contrast was an airlift operation, there were several constant factors contributing to the success of the mission.

In the first place, the assembly and take-off area, which was relatively secure from enemy intervention, possessed all the prerequisites necessary for the effective organization and accomplishment of operations. The lack of unreasonably exaggerated requirements permitted the orderly expansion of ground organization and

technical services and facilities to the point where they were not only adequate to the demands of the moment but were capable of being further expanded if the need should arise, so that they would have no difficulty in keeping pace with gradually increasing requirements. We must not underestimate the advantages inherent in an orderly development such as this; in the long run, it is of far greater value to the over-all mission than a hasty expansion of services during the initial phase, which inevitably imposes a certain burden on the personnel and agencies concerned. In the case of the Crimean airlift, the relative lack of urgency of the supply missions themselves left more time for orderly development of supporting services than in the case of any other air-supply operation.

A second advantage was that the missions rarely burdened the participating forces beyond their capabilities. Since there was no pressure to meet a daily goal, the squadron captains were free to apply the normal personnel and technical criteria in selecting the force for each day's mission, thus assuring that the basic potential was maintained. We may assume that the morale of the crews maintained the same high level as in previous missions. Contrary to the opinion held in some quarters, poor morale was never a factor in the reduction of operational readiness; it was often seized upon as an excuse, however, to cover up errors and omissions in higher-level planning.

Thanks to the constancy of conditions in the take-off area and to the fact that the scope of the operation remained fairly constant, the Crimean airlift developed into a routine, whereby only the inevitable and normal element of risk could be considered an unknown factor. And even the influence of this factor was somewhat reduced in that the long approach flight over the Black Sea served to limit the possible effects of changes in the ground situation on the accomplishment of the air missions. The only remaining possibility, then, was that of enemy attacks from the air. And by means of precautionary measures, such as the employment of escort fighters and antiaircraft artillery in the target area, this eventually was reasonably well controlled.

The conditions within the target area itself constituted a third factor which remained fairly constant throughout the duration of the airlift. It was not until the last phase of the airlift that these conditions got out of control. The effective organization of the take-off bases was counterbalanced by effective organization of the landing fields in

the target area, so that the two areas served as pillars for the airlift. Between these two poles the individual air transport missions could develop into a settled routine. There was no danger that the participating forces would be materially reduced by attrition, or that conditions would change so radically that the missions could no longer be carried out. Regardless of whether or not the airlift succeeded in keeping the Seventeenth Army alive and capable of combat, it does give us some indication of the conditions under which a long-term air-supply operation can profitably be carried out.

Section VI: Air-Supply Operations for the First Panzer Army, 26 March-10 April 1944[27]

A. General

With the surrender of the front along the Dnieper River and west of Kiev, the German forces which had been fighting there from January through early March 1944 were forced back into defensive positions east of the Bug River. On 4 March the Russians launched heavy attacks along the entire sector, their main striking force being directed against the front held by the First Panzer Army and the Eighth Army in the Vinnitsa and Uman areas, and their general trend being towards the southwest. The enemy gained ground rapidly in the area northwest of Vinnitsa and by 10 March the Russian advance forces had already reached the railway line connecting Ternopol and Proskurov (Khmel'nitskiy). Fanning out on both sides of the city, the Russian forces encircled Ternopol.

There was no way for the First Panzer Army, still holding out against heavy enemy pressure in the area east of Vinnitsa, to prevent the enemy from pressing harder against its left flank between Ternopol and Vinnitsa; enemy encirclement of the entire area seemed inevitable and imminent. Realizing the potential danger of its position, the Army began working its way westwards along the line Vinnitsa - Kamenets - Podol'skiy, engaging in heavy defensive fighting the entire way. This maneuver, however, was soon frustrated by strong Russian armored forces pushing forward from the north and cutting off the Army's escape route. By 24 March, the Russian maneuver was successfully completed; all connections with rear area services were destroyed and the majority of the First Panzer Army was surrounded by the enemy.

At this time there were not sufficient forces available to carry

out a successful counterattack from the rear area in order to re-establish the disrupted connections. Thus the Commanding General of the First Panzer Army, Generaloberst Hube, determined to continue the interrupted withdrawal maneuver despite the constantly increasing force of the enemy attacks on the periphery of the encircled area, and to fight his way through to the west, making contact with the German front lines east-southeast of Lvov.* The Army was entirely on its own in the accomplishment of this plan, for it had been cut off completely from all supply channels. The supplies which it had on hand were far from sufficient to keep its 300,000 men mobile and in fighting condition for the presumable duration of the planned operation. The only solution which gave promise of ultimate success and thus salvation of the Army was the employment of air transport units to deliver urgently needed supplies of ammunition, gasoline, and other equipment and goods. Accordingly, orders were issued to launch the war's first air-supply operation to a constantly moving force encircled by the enemy. /

B. Preparations for the Mission

The Fourth Air Fleet was assigned the mission of directing air-supply operations to the First Panzer Army. Operations were to be carried out from Lvov and were to continue until the Army forces had reached German lines. Depending upon the supply requirements of the encircled force, all available Luftwaffe units suitable for air transport duty were to be committed. No goal was established in terms of tons to be delivered daily. The transports were to carry chiefly ammunition, gasoline, and medical supplies, as well as tank parts and other equipment if this should become absolutely necessary. Army leaders specifically prohibited the transport of foodstuffs; the troops were to requisition these from the local population.

As far as the take-off area was concerned, there seemed to be no doubt of its ability to fulfill the prerequisites for an air-supply mission. The main problem was the selection of suitable landing and supply-drop areas within the encircled territory. Allied to this was the problem of organizational and communications facilities. These would have to be adequate to assure that the transport units would

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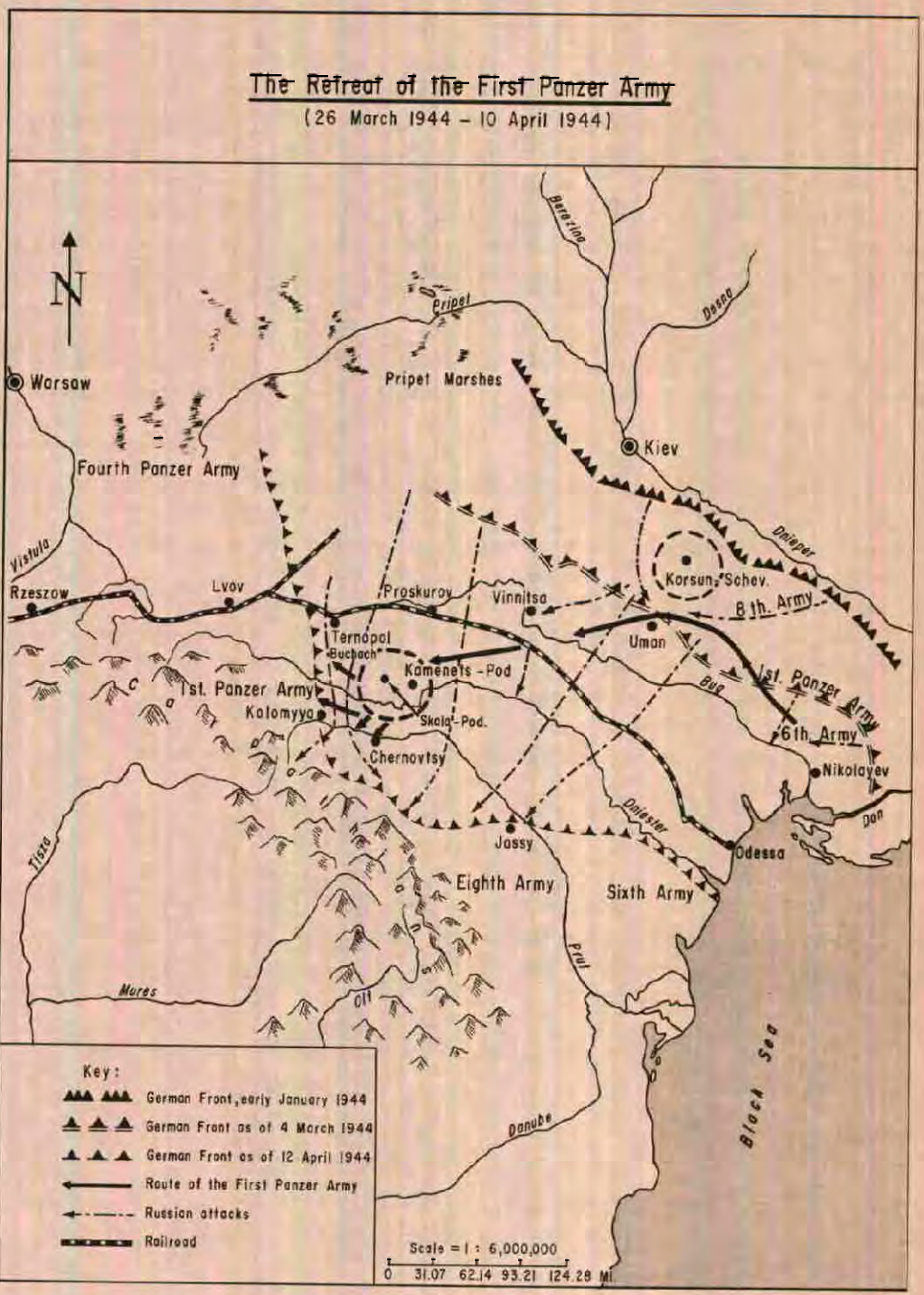
* Editor's Note: Lvov was called Lemberg by the Germans.

/ See sketch on the following page.



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have no difficulty in locating their landing areas and in carrying out their missions even in the event of last-minute changes. Since it was difficult, and in some cases impossible, to reconnoiter all the possible landing areas in advance and to prepare them adequately for use, the skill of the individual pilots was of critical importance. These pilots, in turn, could not succeed in accomplishing their difficult missions unless they could be sure of support from the appropriate agencies of the First Panzer Army. There was little chance that an outside agency, such as the offices responsible for directing the air-supply undertaking, could exert much influence on the activity of the units once inside the encircled area. This is another reason why close cooperation between the air transport units and the First Panzer Army headquarters played such a decisive role.

The Fourth Air Fleet assigned the operational responsibility for the undertaking to the Air Transport Chief II, who was stationed with his subordinate air transport units in the Odessa area for air-supply operations to the Crimea. On 25 March 1944, he transferred his headquarters to Krosno. A number of the Ju-52 units under his command were withdrawn from the Crimean airlift and moved to the area east of Lvov. At the same time, Branch IV of the Luftwaffe General Staff ordered the transfer of additional Ju-52 units, a number of He-111 bomber groups, and the 30th Air Transport Group to the Lvov area. Preparations for this move were undertaken immediately.

The supply sections of the Army Group and the Air Fleet assumed responsibility for the procurement of the necessary supplies, supply-drop containers, freight parachutes, and packing materials and for their transport to the take-off area, and the required organizational measures were undertaken to accomplish this. The initial difficulties, which were to be expected in view of the newness of the undertaking, were soon overcome.

On 26 March 1944, the first air-supply missions were flown into the area west of Vinnitsa.

C. The Chain of Command and the Participating Units

As during the Crimean airlift, General Morzik, Air Transport Chief II, was subordinate to the Fourth Air Fleet* and coordinated

* Fourth Air Fleet, commanded by Generaloberst Otto Dessloch, had its headquarters at Stryy.

with quartermaster officers* from Fourth Air Fleet and the Army Group concerning the supplies to be transported. His staff, except for three additions,† remained the same as during the Crimean airlift and his headquarters were located in Poland, at Krosno airfield.

In order to handle regular liaison duties between the staff of the Air Transport Chief II and the air transport units, one operations officer was assigned to each of the take-off bases (Krosno and Lvov).

Four groups of Ju-52's, one group of He-111's, and one aircraft tow group of He-111's and DFS-230's were commanded by Air Transport Chief II during the entire operation.†† These units were subordinate to the Air Transport Chief in every respect. In addition, one bomber group and elements of two bomber wings** (all He-111's) were operationally subordinate to the Air Transport Chief. Together, the above units totaled approximately 100 He-111's and 150 Ju-52's.

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* Colonel von Koppelow of Fourth Air Fleet and Colonel Finkh of the Army Group.

† These were: the medical officer, Captain Trueck; a liaison officer from Fourth Air Fleet, Major Ernst Knapp; an aide, Lieutenant Ruehl. Major Knapp handled the necessary liaison between the Air Fleet, the Army Group and the First Panzer Army. He also served as advisor for tactical matters. For other members of the staff see note above, p. 228.

†† These units were: 1st Group, 1st Air Transport Wing (Ju-52's) under Major Schmidt, stationed at Reichshof (Rzeszow); 1st Group, 4th Air Transport Wing (Ju-52's) under Lt. Col. Koegl, stationed at Reichshof (Rzeszow); 1st Group, 3d Air Transport Wing (Ju-52's) under Major Ellerbrock, stationed at Lvov; 4th Group, 1st Air Transport Wing (Ju-52's) under Major Penkert, stationed at Lvov; 30th Air Transport Group (He-111's) under Major Hornung, stationed at Krosno; 2d Aircraft Tow Group (He-111's and DFS-230's) under Captain Fae, stationed at Lvov. With the exception of two missions to the First Panzer Army, the 2d Aircraft Tow Group was employed exclusively in air-supply operations for the beseiged city of Ternopol.

** The bomber groups were: 1st Group, 4th Bomber Wing (He-111's) under Captain Goepel, stationed at Krosno; elements of the 55th Bomber Wing (He-111's) stationed at Lvov; elements of the 54th Bomber Wing (He-111's) stationed at Krosno.

The He-111 units bore the brunt of operations, however, inasmuch as most of the missions were of the supply-drop type. By contrast, the employment of the Ju-52's was limited. It was extremely difficult to pick out suitable landing areas in the open terrain, and inevitably, by the time a suitable area had been found, the troops had already moved beyond it in their push towards the west.

D. Personnel and Ground Services

The level of proficiency of the aircrews and the degree of operational readiness maintained varied greatly from unit to unit. There were crews who had so much experience behind them that they could be committed without reservations under the most difficult conditions. A great many had had more than sufficient combat experience during the eastern campaign. The demands which could safely be made of the replacement personnel, however, had to be estimated in accordance with the length of their service with the unit to which they belonged. The newly assigned replacement personnel were distributed fairly evenly among the units, in accordance with the length of their experience at the front and the skills which presumably would be required of them.

Although there were undeniably certain disadvantages involved in breaking up experienced crews who were used to working together, this method seemed to raise the general level of operational readiness. Because conditions in the target area were so difficult, the ability and experience of each crew member were factors of the utmost importance. It was far more important that the members of each crew complement one another in respect to the sum total of skill and experience than that the older, more experienced crews fly each mission in complete safety, while the weaker ones might not even be able to take off or be incapable of completing their missions properly. There is no information available as to whether the same method of crew assignment was also followed by the bomber units, but we may assume that this was not the case; there is no indication that these crews ran into difficulties of any kind.

There were sufficient technical personnel available to serve all of the units. The personnel of the airfield maintenance companies, some of whom belonged to the units themselves and some to the airfield area commands, were assisted in the servicing and repair of aircraft by the airborne mechanics and maintenance supervisors from the squadrons. A workshop platoon (field workshop) was assigned to

each take-off base to carry out major repairs and overhauling jobs. It was a very fortunate thing that the area aircraft equipment depot had a branch at the Krosno airfield; in this way, spare parts were always immediately available. This branch was exceptionally well organized and was flexible enough so that it would not only issue required parts without a specific order from the main depot, but would even fly them to the airfield where they were needed so that repairs could be completed without any delay whatsoever. We know of no instance during the airlift in which any lacks or deficiencies in the technical servides made themselves felt, nor was there any lack of technical equipment.

Since the take-off area utilized for the air-supply operations to the First Panzer Army consisted of well organized and well equipped airfields, or advance airfields, ground organization services were, for the most part, adequate. The only incipient difficulty occurred with the sudden arrival of a large air transport force, especially since the agencies directing airfield services had become accustomed to regarding themselves as a part of the home theater system. Their first reaction was one of helplessness at the thought of having to provide billeting, messing, and maintenance facilities for so many units. Very soon, however, they came to recognize the vital importance of the operation, and--leaving their traditional thinking behind--they did everything they could to support the units in the accomplishment of their difficult mission. These agencies were very well organized and were fully capable of meeting the demands made upon them as a result of their increased responsibility.

Air traffic control, weather observation and reporting, radio communications, direction finding, and flight safety facilities were all present and in effective operation. The airfields at both Lvov and Krosno had one take-off strip which was equipped for night and bad-weather landings. The Lvov field was overcrowded, serving as a base for a large number of bomber, close-support, and fighter units. In this instance, however, the transport aircraft had priority over the combat units. Conditions were extremely difficult during the thaw and muddy periods when the field could not be used as a taxiing area, for aircraft from all the units were concentrated along the edge of the take-off strip, waiting for their turn to leave the field. Difficulties were also experienced in connection with the refueling of aircraft, for there were not enough gas pumps to take care of the number of aircraft to be serviced. The situation was alleviated somewhat by the

use of hand pumps to refuel directly from the gasoline drums. As far as the He-111's were concerned, their long radius of action and the shortness of the approach flight combined to obviate the necessity of their refueling as often as the Ju-52's. Whenever they were refueled the job was done while they were being loaded. After the daylight missions had been accomplished, there was still plenty of time to refuel for night employment. There was always sufficient aviation gasoline available in the take-off area.

E. The Army's Role

If the operation were to succeed, excellent cooperation between the air transport units and the Army supply agencies would be a necessity. Attainment of this level of coordination was the responsibility of a liaison officer appointed by the Army to the staff of the Air Transport Chief. His duties were difficult and required a high degree of skill and tact. The liaison officer had direct radio, telephone, and teletype channels to the Army High Command, the Army Group Ukraine, and to the individual supply agencies concerned with the operation. It was his responsibility to see that supplies, drop containers, and freight parachutes were delivered to the proper take-off bases in time. Moreover, he was in charge of packing the containers, moving them to the loading areas, and fastening them to the release racks of the aircraft. He based his preparations for each day's missions on the operational readiness reports turned in by the transport units. It was particularly important to avoid discrepancies in the amount of supplies available for transport and the number of available aircraft, so that no otherwise serviceable machine would be grounded because there were no supplies on hand for it to transport. During the entire course of the air-supply operation this officer performed his duties with outstanding efficiency, and it was due to his energetic and purposeful intervention that a great many of the initial lacks and difficulties could be alleviated. It can be said without exaggeration that all of the agencies concerned in the undertaking did their utmost to see that any difficulties were overcome without delay.

The Army placed a platoon of trained supply personnel, with all of their equipment and facilities, at the disposal of each air transport unit. These personnel picked up supplies delivered by the transport columns and packed them into the drop containers, being careful that applicable weight regulations were followed. They also packed the freight parachutes, transported the containers to the aircraft,

fastened the containers to the release racks, and carried out the preparations necessary for the second and third missions each day. In order to help them, all available personnel--regardless of rank or position--were assigned from the transport units and from the ground organization units. Even personnel from the Rumanian dive-bomber training group, a part of which was still stationed at the Krosno airfield, were pressed into service. After a few days, the entire operation had become routine.

F. Accomplishment of the Mission

By 25 March 1944 the majority of the Ju-52 and bomber units had arrived at the take-off bases Krosno, Lvov, and Reichshof (Rzeszow) and were ready to start operations. On the same date, the Air Transport Chief II had moved with his staff from Odessa to Krosno. During a conference with the quartermaster officers of the Fourth Air Fleet and the Army Group, it was decided that those aircraft ready for operation would begin their missions on 26 March. At this time, of course, the Army supply transport channels were not yet in effective operation, which created a certain degree of difficulty for the first missions. For example, the individual transport units (or even a few aircraft from each unit) were forced to change take-off base for each mission. After the first two days, however, an efficient routine was established and supplies were arriving in the proper quantity at the proper take-off bases. The Ju-52 units utilized the field at Lvov almost exclusively for loading purposes. The supplies had to be prepared in such a way that they could be either landed or dropped in containers, depending upon whether conditions in the encircled area had changed to such an extent since the last mission that the predetermined landing areas were no longer in German hands.

The first missions were carried out as supply-drop missions by the He-111 units, and were flown to the area west of Vinnitsa. The Ju-52 units, on the other hand, landed their supplies at the Proskurov (Khmel'nitskiy) airfield, which, incidentally, was the only really suitable airfield located in the encircled area between Proskurov and Lvov. Unfortunately, it was in German hands for only two days, for the encircled troops soon left it behind on their way westward.

During the first few days of operations, the weather situation was particularly bad (snow storms, low-lying clouds, and poor visibility). Because German leaders did not anticipate very much in the

way of enemy antiaircraft artillery or fighter defenses along the approach route or over the front line of the encircled area, the first missions were carried out by day. Communications channels between the take-off area and the target area were not yet in good working order and the possibility of inaccurate weather forecasts represented a serious safety factor, particularly since the first day's operations had revealed that weather conditions varied greatly between take-off and target areas. Sometimes the transport units encountered much better weather over the encircled area, but this advantage was balanced by the greater danger from enemy antiaircraft artillery and fighter defenses. On other occasions, snow and low-lying clouds which had not been forecast made it almost impossible to locate the predetermined supply-drop areas. Supply drops over the wrong area--sometimes even over enemy-occupied territory--could not be entirely avoided and had to be accepted as a normal risk.

After 28 March, weather conditions and visibility were much better at night than during the day, and from this date on, the supply missions were flown at night. The units took off immediately after nightfall, adhering to a strict take-off schedule which provided for a five-minute interval between aircraft. Later on, this interval was reduced to three minutes for those units with particularly well-qualified crews. In this way the entire unit could manage at least three--and the first aircraft even four--missions per night, which naturally increased the volume of supplies delivered. Morale was excellent, and each crew was eager to fly as many missions as possible.

The greatest problem of the entire undertaking was the impossibility of marking the landing fields within the target area so that they could be recognized at night. After the loss of the Proskurov airfield and the improvised landing area at Kamenets-Podol'skiy--the latter was utilized by the Ju-52 units until 2 April--all the supply missions had to be carried out by air drop. Several attempts were made to provide night illumination for a fairly suitable stretch of open terrain inside the target area, approximately 1,300 feet long and 65 to 100 feet wide, but all attempts were without success, and the majority of landings made there turned out to be crash landings. There was a small, rather uneven landing field, approximately 325 by 1,315 feet, located in the area west of Kamenets-Podol'skiy which was available for use. The pilots were not given a general order to land there; instead, it was left up to each individual pilot to decide whether or not to risk a landing.

Due to the fact that it was almost impossible for aircraft to land in the target area, there was no adequate way to fly wounded personnel out. Most of the wounded had no choice but to remain with the encircled Army and to try to reach the German lines. The transport units dropped sufficient medical supplies to assure that the wounded could be given adequate care. Inasmuch as they never could be certain whether or not a landing might be possible, the Army authorities took no steps to arrange a system for transporting wounded personnel to the landing areas so that only those who already happened to be nearby when a plane landed could be flown out.

The supply-drop points in the target area were subject to almost daily change; sometimes they were even altered from one mission to the next during a single night. When the airlift started, the Air Transport Chief II organized three so-called "encircled area details" and had them flown in to the First Panzer Army. Each detail was made up of four men and carried with it the equipment needed to illuminate a landing field or supply-drop point (i. e. marker beacons, signal flares, and a light radio beacon). All four men were specialists in their own right, but each of the four was capable of performing the tasks of the other three. Working together with the command agencies of the Army and with an air liaison officer, these details reconnoitered the terrain along the Army's planned route of march for suitable landing areas or supply-drop points and prepared them for use by the transport units. The facilities available for the further transport of landed or dropped supplies (which, of course, was the Army's responsibility) had to be taken into account in the selection of landing area and drop points. The agencies of the First Panzer Army did everything in their power to support these details. In order to facilitate their reconnaissance the Army provided them with half-track vehicles; for, after all, the safe delivery of the Army's supplies for the following night depended upon the details' completing their mission successfully during the day.

The transport aircraft were guided in their approach flight and in their release of the supply containers by the radio beacons manned by the details. It soon became apparent, however, that the enemy radio interference personnel--who must have been fast and efficient workers--were tuning in on the same frequency and were leading the transport aircraft off course. An enemy move of this kind had been anticipated and the pilots were instructed to take careful bearings and compare them with the radio beacons in order to determine whether

or not they were being lead astray. During the pre-mission briefings the units were informed of the exact location of the radio beacons, but the latter often had to be moved around during the course of the night in keeping with developments in the ground situation.

Bonfires were utilized as a supplementary means of illuminating the landing areas and supply-drop points at night. The fires were set in predetermined patterns, such as crosses, circles, or triangles, which were agreed upon in advance via radio communication and which were changed from night to night. Soon the Russians caught on to the significance of the fires and began to lay patterns of their own around the target area in order to confuse the transport aircraft. In addition, of course, there were many other fires (campfires and flare points, for example) within the area. The patterns set by the enemy did very little damage inasmuch as the Russians had no way of knowing the proper pattern before the first mission had been flown, and by the second and third missions the crews were already fairly familiar with the location of the drop areas and could not be confused easily. As the transport aircraft approached the drop area a prearranged signal flare was released. Even though the signal was agreed upon beforehand and known to the crews, the system was not very satisfactory, for the same or similar signals could also be given by the enemy from a confusing number of locations. There are very few ways to vary signals given by flare and their use often resulted in confusion and uncertainty.

On the whole, the marker devices (with the exception of the radio beacons) utilized during the undertaking, which was the first of its kind, were extremely primitive. They were acceptable as emergency improvisations only because they could be developed into useful aids as the experience and routine of the crews increased. It was not easy to recognize a fire pattern at night from the air, particularly since the smoke and the presence of other fires, which--by coincidence--might even have the same pattern, were inevitably a source of error and uncertainty.

As far as the flying skill required by the missions was concerned, there were no real difficulties. Despite the shortness of the intervals between individual take-offs there was little danger of mid-air collisions, since both take-off and landing approach lanes were strictly defined. This did not in any way decrease the need for maintaining exact flight discipline over the target area and during landings,

both in the assembly and target areas, in order to avoid accidents. Due to the absence of enemy night-fighter activity, however, it was possible for the aircraft to show position lights. In this way, such operations as taxiing to the end of the field, leaving the landing strip, and lining up by the take-off position could be observed exactly and any traffic jams or difficulties avoided.

G. Enemy Defensive Measures and the Employment of Escort Fighters

At the beginning of the undertaking the transport aircraft flying daylight missions encountered heavy enemy fighter activity over the target area whenever weather conditions permitted it. Only very rarely were German fighters available to accompany the transport units, quite apart from the fact that their radius of action would hardly have permitted them to engage in combat over the target area if they were expected to cover the transport aircraft on their approach and return flights. The night missions had no contact whatsoever with Russian fighter aircraft, so that there was no need for escorts. The transport units did not want an escort of night fighters, for difficulties in recognition were such that the fighters might have mistaken the transports for enemy aircraft and fired upon them.

Enemy antiaircraft artillery fire over the target area was of average strength during the day; during the night it was too slight to have any effect on the transport missions. Those areas in which antiaircraft artillery was concentrated could be avoided. During the first few night missions, it became apparent that the Russians concentrated their antiaircraft artillery not in the areas in which they might have anticipated a breakout by the First Panzer Army, but in the areas which had been crossed the previous night by the transport units. The enemy was extremely flexible in moving his antiaircraft artillery around; therefore the approach and return flight routes had to be changed from night to night, sometimes even from mission to mission. The practice of sending out advance aircraft manned by experienced crews before each mission in order to determine where the enemy antiaircraft artillery fire was heaviest proved to be excellent. The advance aircraft were able to report which areas were relatively free from artillery concentrations, and the approach routes were established accordingly.

Russian air attacks on landing and supply-drop areas were

carried out occasionally by single nuisance raiders, but these were invariably unsuccessful. The Russians bombarded the Lvov airfield on one occasion but their attack was unsuccessful.

Enemy ground action disrupted landing operations at the Kamenets-Podol'skiy airfield in one instance, when Russian tanks advanced to the edge of the field and bombarded the taxiing area until the German forces were able to drive them off. The transport aircraft took off right over their heads.

H. Signal Communications, Air Traffic Control, and Weather Services

The units and staff elements in the take-off area had at their disposal a well-established and efficient signal communications network, which assured adequate telephone, teletype, and radio communication with superior staff headquarters and among the organizations stationed in the area. Operational readiness reports, operations reports, and flight confirmations were transmitted in a special, abbreviated code, so that the units would not be bothered excessively by reporting requirements. The preliminary report on operational readiness had to be transmitted to the Air Transport Chief by 1000 hours, and the final one by 1300 hours. The operational orders for each unit were prepared on the basis of these reports, and they also served as a basis for the supply requisitions submitted by the liaison officer. No formal intermediate reports were required while the missions were going on, but the operations officer on the staff of the Air Transport Chief was given informal orientation reports indicating whether or not the missions were going according to plan. Any unusual happenings or important observations regarding enemy activity were reported at once and evaluated without delay.

There was an excellent radio channel connecting the Army Group with the target area, and the Air Transport Chief was tuned in by relay via Army Group headquarters.

In addition to his own radio network, the Air Transport Chief could also utilize the very efficient air traffic control station at Reichshof (Rzeszow) for purposes of directing the missions.

As far as weather observation and reporting services were concerned, in the beginning the units had to rely on the local weather

stations. These, however, were not really in a position to meet the demands of an air transport undertaking. It was a great help when the transport units were assigned a weather observation station of their own, under the direction of Dr. Heim, Chief Meteorologist. Dr. Heim was well acquainted with the specialized requirements which weather conditions exacted from the transport units, since he had worked closely with the air transport forces during many previous missions. The crews had the greatest confidence in his advice. Weather reports from the target area were few and inaccurate, and for this reason Dr. Heim usually sent up a weather reconnaissance aircraft before each mission. His forecasts and evaluations of the weather situation provided a reliable picture of what could be expected along the approach route and over the target area. Since weather conditions were fairly constant during the night, they created no particular difficulties as far as accomplishment of night missions was concerned.

I. The Use of Drop Containers

Since the encircled troops were constantly on the move, it was obvious that there could be few, if indeed any, established landing areas within the target area. Thus, the majority of supply missions had to be carried out by air drop. The supplies assigned to the Ju-52's for transport were packed in 560-lb. containers equipped with freight parachutes. If a landing was made, these were unloaded; otherwise they were dropped through the loading aperture or the open door of the airborne machines.

The He-111 units bore the main brunt of operations, and their inherent capabilities--their excellent aerodynamic qualities, their loading capacity, and their wide radius of action--fitted them ideally for air transport duty. The H-20 model proved to be the best. Its intermediate racks permitted a load of nine 560-lb. containers, or even eight 560-lb. containers and one 1,125-lb. one. Despite the fact that the containers were carried in racks suspended from the interior of the aircraft, it was able to maintain an average speed of 167.5 miles per hour. If all its gas tanks were filled before it took off for the first mission, it was capable of carrying out an additional three missions before refueling. In contrast to the aircraft belonging to the 30th Air Transport Group, the machines of the bomber units were not equipped with intermediate racks and could carry only five containers each.

There were sufficient supplies of containers available. On

rare occasions, even containers weighing 2,250 pounds were dropped. The containers had to be packed very carefully, and under no circumstances could the permissible maximum net weight be exceeded. When one aircraft carried containers holding different kinds of supplies, i.e. ammunition, gasoline, and medical equipment, it was imperative that the containers be suspended in such a way that the total weight under each wing was the same. Sometimes, because of technical deficiencies, the freight parachutes were a source of trouble. Occasionally they became unfastened from the containers as a result of properller wind and got tangled up around the tail-skid--in one instance, around the landing gear. Luckily, the steering control was not blocked, and the pilot was able to release the container and make a pancake landing near the field. Any instance of neglect or ignorance on the part of packing and loading personnel was capable of leading to a serious accident. For the most part, the Ju-52 units limited their supply-drop actions to boxes of ammunition and gasoline drums.

The First Panzer Army was responsible for gathering and storing the supplies landed or dropped in the encircled area. We have no information available to indicate whether there were any difficulties experienced in this connection, or whether and to what degree supplies were damaged.

J. Some Statistics

Official lists indicating the volume of supplies delivered are no longer in existence. However, an estimated total may be computed on the basis of the volume of supplies delivered by the 30th Air Transport Group.

In its 1,285 missions, the 30th Air Transport Group dropped 11,020 supply containers over the target area. Since the average weight of the contents of each container was approximately 305 pounds, this would mean a total of around 1,670 tons of supplies dropped by the group.

On the basis of the above figures, we may assume that the total volume of supplies delivered during the operational period by all participating units was approximately 200 to 250 tons per day, or an over-all total of 3,500 to 4,000 tons of supplies, gasoline, ammunition, medical supplies, and spare parts. All together, the participating transport and bomber units must have flown a total of approximately

8,000 missions.

In comparison with the number of missions completed, the losses sustained were relatively small. The 30th Air Transport Group lost two He-111's as a result of enemy fighter activity over the target area. Two additional He-111's were lost as a result of technical failures, and fourteen others returned from their missions damaged by enemy fire.

Personnel losses were 3 dead, 32 wounded, and 9 missing in action.

K. The Secondary Missions to Ternopol

In addition to serving as a take-off area for air-supply operations to the First Panzer Army, the Lvov-Krosno area was also utilized for supply-drop missions to the troops besieged at Ternopol. These missions were carried out by the bomber units, which combined the dropping of supply containers into the fortress with the dropping of bombs on the enemy antiaircraft positions concentrated around the city. Since the supply-drop area was definitely limited, it was absolutely necessary that the antiaircraft artillery fire be held down long enough to permit the aircraft transporting supplies to get in directly over their target. In addition to supply-drop operations, freight gliders were employed at Ternopol. They were released by the tow aircraft at an altitude of from 6,500 to 8,200 feet, from which their glide carried them into the encircled area. Because of the heavy enemy antiaircraft artillery, the gliders could be used only in the early morning and in the evening. During these missions, too, antiaircraft artillery fire was held down by bombardment until the gliders had reached their target.

L. Conclusion

On 10 April 1944, the First Panzer Army made contact with German lines in the area south of Lvov. Its 300,000 troops had covered a distance of approximately 186 miles in fifteen days, fighting stubbornly every inch of the way. Cut off completely from its own sources the Army had been dependent exclusively on supply from the air. The bomber and air transport units employed in air-supply missions, and they alone, made it possible for the Army to break out of enemy encirclement with the loss of nothing more than its heavy

weapons and equipment. Although the decision to supply the First Panzer Army by air did not develop from the plans and intentions of the German leaders, but was forced upon them as a last resort by successful operations on the part of the enemy, the air-supply undertaking for the encircled First Panzer Army--apart from certain deficiencies in its planning and accomplishment resulting from the local military situation--must be considered a perfect example of the purposeful and proper utilization of air transport. Not only was it successful, in that it met the goal established for it, but it was fully justified because the Army was simultaneously doing everything in its power to limit the duration of the undertaking to the shortest possible period. If we consider the retreat of the First Panzer Army as an offensive action (and we are certainly justified in doing so), then the entire operation becomes an illustration of the principle that the employment of air transport units is appropriate and valuable within the framework of an over-all offensive operation. The experience gathered at Demyansk and Stalingrad bore fruit during the air supply of the First Panzer Army; from this point of view, the two previous actions had not been in vain.

There were initial difficulties, of course, but these will always be inevitable when ground organization requirements are increased materially and suddenly by the need to carry out a large-scale operation without adequate time for preparation. The difficulties were soon overcome, however, and the remainder of the undertaking was characterized by smooth and effective cooperation among all the agencies concerned. Mutual understanding on the part of Luftwaffe and Army agencies and the recognized need to contribute every effort for the attainment of a common goal were the keys to success. The fact that the take-off area remained constant throughout the operation and that it was established and well-organized was a point in the mission's favor; this meant that the mission leaders were free to concentrate their attention and efforts on conditions in the target area.

We must bear in mind that it was no easy task for the highly mobile encircled force to keep itself capable of receiving air-supply services at all times and under rapidly changing conditions. It is obvious and understandable that the First Panzer Army did everything in its power to achieve this goal. It is equally true, however, that there were no precedents or principles for the Army to follow in its unique situation. The fact that the many technical difficulties could be overcome successfully was due primarily to the energy, adaptability,

and ingenuity of the leaders of the encircled force.

The "encircled area details" flown in at the beginning of the undertaking also contributed a great deal to the ultimate success. They proved to be extremely valuable, and they might well be retained as a necessary aid to future air-supply operations of this type. It would be necessary, of course, to perfect their equipment and to delineate their functions more exactly, possibly with a view to expanding them somewhat, and, above all, to develop a training program for this type of personnel.

The undertaking also indicated the need for multiple communications channels between the transport units and the forces within the encircled area, in order to guard against unforeseen failures in communication. It is quite possible, for example, that one or more radio stations in the target area may be put out of action or that equipment may be lost as a result of the constant moving about, and unless it was possible for aircraft to land in the area, such equipment could not be replaced, for there was no way to drop it without damaging it. If this had been the case, of course, the situation would have been grave indeed. For this reason, it might, in the future, be wise to have a fleet of freight gliders available for operations of this sort, for they could land inside the target area with delicate equipment which could not be delivered by supply drop. In the case of the undertaking just described, freight gliders were available and could have been employed at any time. Moreover, long-range freight gliders could be utilized to increase the fighting power of the encircled force by bringing in weapons and armor-piercing ammunition.

Other factors which acted favorably for the air-supply of the First Panzer Army were the lack of enemy activity against the take-off bases utilized by the transport units and the absence of Russian night fighters; as a result, the losses due to enemy action were exceedingly small. Enemy antiaircraft artillery along the approach and return routes and over the target area had very little effect on the accomplishment of the missions. If, in an undertaking of this sort, it should be necessary to protect the target area against enemy activity, there should be close coordination between the leaders of the transport units and the fighter units in order to lessen the danger of misunderstandings and errors in recognition in the air. On the one hand, the employment of fighter aircraft gives the transport crews a feeling of security; on the other hand, the presence of fighters also creates a

certain amount of unrest, which can be eliminated only by the use of a complicated system of recognition signals. During the operations under discussion no experience in this field could be gathered.

As regards the employment of bomber units in air-supply operations, it can only be said that, in the present instance, the unit leaders as well as the crews were remarkably quick to accustom themselves to their new duties, perhaps because the dropping of supply containers is closely akin to the dropping of bombs. In any case, no difficulties of any kind were encountered, either in their methods of preparation for the missions or in the accomplishment of the missions.

The best possible guarantee for the successful accomplishment of the mission, however, was the combination of high morale and fighting spirit of the participating units, the long experience of the commanding officers and the majority of the aircrews, and their acquaintance with the conditions peculiar to the eastern theater of war.

Section VII: Budapest, 28 December 1944-15 February 1945[28]

A. General

The situation in Hungary in mid-December 1944 was dominated by the continued relentless advance of Russian forces towards the west; their goal was to reach the Danube River as rapidly as possible. German military leaders were convinced that they could tie down strong Russian forces by holding Budapest, although this meant almost certain encirclement for the city. On 24 December 1944, Budapest was surrounded and 46,000 troops under the command of General der Waffen SS Pfeffer-Wildenbruch were completely cut off from the German lines. The plan was to hold Budapest until a new defense front could be established west of the Danube. It is doubtful that German leaders had any intention of attempting to relieve the besieged troops. In any case, orders were issued to supply Budapest by air.

It was unrealistic to think that the encircled force could be supplied adequately with ammunition, gasoline, food, and other necessary supplies by air; the facilities were far too few. Whether--and if so, to what extent--the German leaders were thinking of supplying the civilian population of the city (which included 10,000 small children) along with the encircled force, is questionable. Apparently leaders of the Armed Forces had learned nothing from the debacle at

Stalingrad. Whether or not conditions at Budapest provided, or could be made to provide, the prerequisites necessary for a successful air-supply operation, was quite irrelevant to them. It was clear from the very beginning that air supply was not capable of providing even a fraction of the material which the encircled troops would need in order to defend the city effectively or even to hold it for very much longer. With the courage of desperation the troops defended the city against strong enemy attacks for a period of six heroic weeks, at the end of which they were abandoned to their fate.

The Army Group demanded that sixty tons of supplies be landed daily, and an additional twenty tons be brought in each day by air drop. The chief items to be flown in were ammunition, gasoline, foodstuffs, medical supplies, and flour; the bread could be baked in Budapest. Wounded personnel were to comprise the load for the return flights; no able-bodied man, regardless of rank, would be allowed to leave the city.

The Army's requirement of eighty tons of supplies per day was based on the premise that the available air transport space, which was already at a premium, would be sufficient and that the necessary supplies could be transported to the take-off bases. Even if these two premises could be accepted, weather conditions were bound to be a determining factor.

B. Chain of Command and Participating Units

The Fourth Air Fleet entrusted Generalleutnant Gerhard Conrad, Commanding General of the Air Fleet Troops, with the accomplishment of the air-supply undertaking and with the appointment of an operations staff, * which would be subordinate to the Air Fleet.

Since the volume of supplies which could actually be flown into the encircled area was in no way even remotely proportionate to the demand, in this case--as in so many other hopeless situations--

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* General Conrad's staff was made up as follows: Operations Officer, Major Hornung; Signal Communications Officer, Major Heck; Meteorologist, Dr. Heim; Army Liaison Officer, Captain Thomas; and three additional operations officers-- Lieutenants Rehbehn, Kraft, and Arnold.

General der Flieger Johannes Fink was detached to the Fourth Air Fleet to superintend the operation and was assigned to the Air-Supply Operations Staff as observer. His presence, however, did nothing to facilitate accomplishment of the mission; on the contrary, it made it much more difficult, for it complicated the chain of command and created new reporting requirements.*

Two groups of Ju-52's, one Hungarian squadron of Ju-52's, and one group of Do-17's were assigned to the Air Supply Chief for the performance of the mission.† In addition, the 4th Bomber Wing (He-111's), under the command of Major Graubner, was also at the disposal of the Air Supply Chief for certain phases of the mission. Both air transport groups possessed more than enough experience in air-supply operations to encircled areas; however, they were reduced to half their normal aircraft strength.

The 1st Group, 2d Airlanding Wing, equipped with Do-17 aircraft, was restricted in its usefulness. Its flying personnel were well trained in glider-tow techniques but had had no experience at the front and none in night flying. Moreover, their aircraft were not equipped with rigid-two apparatus.†† Some of the He-111's belonging to the 4th Bomber Wing were so equipped, and those which could be spared were employed in glider-tow operations. Crews trained in towing techniques were assigned to the Wing, and as soon as their bombardment missions were over for the day they and their aircraft were at the disposal of the transport units for air-supply operations.

The Hungarian air transport squadron, equipped with nine Ju-52's, was of little use in the air-supply missions to Budapest, for

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* See chart on following page.

† The units and their commanders were: 3d Group, 3d Air Transport Wing (Ju-52's) under Major Penkert; 3d Group, 2d Air Transport Wing (Ju-52's) under Major Reimann; 1st Group, 2d Airlanding Wing (Do-17's) under Captain Faé; and an undesignated Hungarian squadron of Ju-52's

†† The standard towing method was by means of a cable 130 feet long, but this could not be used for night or bad-weather flying. The rigid-tow method utilized a rigid rod six and one-half feet long to connect the glider with the towing aircraft.