



DEPARTMENT OF THE AIR FORCE
AIR FORCE HISTORICAL RESEARCH AGENCY
MAXWELL AIR FORCE BASE, ALABAMA

26 August 2009

AFHRA/RSA
600 Chennault Circle
Maxwell AFB, AL 36112-6424
(334) 953-5834

John Greenewald


Dear Mr. Greenewald,

I am writing in response to your FOIA request, which we received on 20 August 2009. We have assigned this request AFHRA inquiries reference number 65552. Since your request was made under provisions of the Freedom of Information Act it has been designated FOIA number 2009-3273F. Enclosed is a copy of the requested document, "American Bombardment and the German Air Force," Iris number 214624, Call number 519.04-7. If you have any other questions, please let us know.

Thank you for your request.

Sincerely,

A handwritten signature in black ink, appearing to read "Kevin Burge", is written over a horizontal line.

Kevin Burge
Archivist
AFHRA/RSA

Attachments:

1. "American Bombardment and the German Air Force," Iris number 214624, Call number 519.04-7

This document is made available through the declassification efforts
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AMERICAN BOMBARDMENT
AND
THE GERMAN AIR FORCE

Director Air Force ATTN: Mr. [illegible] Maxwell Air	RETURN TO: [illegible]	519.04-7 1942-01-14
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PART I

When the Germans planned this war they understood the odds against them. Versailles had deliberately surrounded them with a hostile coalition whose potential manpower and armies exceeded theirs many times. The British Navy in 1939 was more powerful absolutely and relatively than the one which strangled Germany with such an effective blockade during the first world war. In Europe and the British Isles the aggregate war potential for both materiel and food vastly exceeded Germany's.

These were the factors that had beaten Germany in 1918. The political alignment of powers enforced then had been designed to accentuate their advantage. Yet 21 years after a decisive defeat Germany felt confident enough to begin another war against the same odds. This confidence was based upon no relative improvement of her manpower, sea position, or productivity. It was based upon a weapon that had been created to neutralize these inferiorities. That weapon was the German Air Force. It had been designed as the indispensable make-weight between German aspirations and German capabilities.

Long before the first shot was fired, the German Air Force had given startling proof of the capability its founders claimed for it. The very menace of its presence was the determinative factor in the German diplomatic maneuvers, which had already claimed Austria, dominated Munich, and eliminated from military calculation 40 divisions by the seizure of Prague. Its first successes were inherent in its very existence. They were won without the necessity of dropping a bomb.

But the German Air Force was forged for a sterner purpose than accessory usage in diplomatic blackmail. Specifically, it was expected to make swift work of the wavering neutrals, to crack the Maginot Line, to break British blockade, to spearhead the movements of armies, to protect lines of communication, to secure the flanks for Germany's audacious campaigns toward a usable coastline, an enslaved continent, a German Mediterranean, and the ancient dream of Ukraine wheat, Donetz nickel and manganese and Caucasus oil.

These prizes were to make Germany master of Europe. Once before they had proved too diverse in direction and too remote in distance for Germany's limited reach. Now she had an instrument to bring them all within her reach, both

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geographically and within the vital limits of time available before the coalition of her enemies could organize their aggregate superiority. This instrument was the German Air Force.

In addition to this offensive purpose, it was to provide the other pre-requisites of German ambition. It was not idle bombast which made Goering boast that no bomb would ever fall on German soil. He made the statement in profound understanding of Germany's gravest risk. This was the security of the homeland and war production while the armies were afield, staking out their claims on the entire perimeter of Europe. The German Air Force was to be likewise an innovation in defense, not only of the Reich but of its conquests. Under air superiority the whole continent could be organized to produce the weapons of aggression. Under air superiority the continent could be held inviolable by second and third-line troops, while the conquering armies under an irresistible air cover ranged as far as unlimited supply and ambition could take them.

PART II:

This was the German dream and design. How close they came to it is a matter of sober and frightening record. Under air superiority they did conquer, dominate and integrate Europe into one industrial and political empire. They not only broke the British blockade, but, in conjunction with their submarines, very nearly blockaded England into impotence. They secured Norwegian and Swedish ore, blockaded the Murmansk route beyond effective use, blockaded the Mediterranean completely, isolated Leningrad, possessed the Ukraine, Donetz and Crimea, dominated Africa to within 70 miles of Alexandria and Russia to the banks of the Volga.

Almost everywhere they were superlatively successful. Every success was conspicuous for the air supremacy under which it was won. Yet at five critical places their plans miscarried. In each of these also there was a common denominator. That was the failure of the German Air Force to maintain aerial supremacy. In the battle of Britain, in the struggle against Malta, for the final push through El Alamein, the assault on Moscow, and the last few yards through Stalingrad to the Volga, the German Air Force could not provide the make-weight of power on which the Germans had relied when they accepted the risks intrinsic in each operation.

Each of these ventures came critically close to success. Each in its turn could certainly have made the others possible. Even the last great effort at

Stalingrad would have secured the path to the Caucasus oil. Yet in each effort the Germans failed for want of slightly more air power at the time and place. The failures, both individually and cumulatively, marked the limits of German aggression. The German Air Force had taken conquest as far as it could go in its initial lunge. It remained to be seen whether it could provide the defensive power to protect the remote perimeters of that conquest until newly accumulated strength might extend them again.

PART III:

America sent the preponderance of its Army Air Forces to this theater with a clear understanding of three facts. Malta, in fact, was saved from Spitfires delivered from an American aircraft carrier. We had detached the Wasp from our precarious position in the Pacific because we understood that in modern air war Malta meant the Mediterranean. The Mediterranean meant Egypt, Egypt meant the Middle East, and a disastrous reversal between German shortage and Russian abundance of oil.

The first substantial operation of the American Army Air Forces in this theater was an attack on a German aircraft repair factory. The target selection was no accident. It was the first blow our range and numbers permitted against the German Air Force. It was the opening battle in a prolonged, systematic and bitter campaign which had one single purpose - the destruction of the German Air Force.

With this accomplished, the overwhelming Allied superiority could be brought to bear against Germany on all fronts and by all forces. Until it was accomplished, the Anglo-American armies could not even come to grips with more than the Afrika Korps. The possibility of delivering armies to this hemisphere remained in doubt. The Russians could not hope to counter-attack against an aerial supremacy that was driving them remorselessly eastwards. In the entire arsenal of the United Nations, there was no weapon that could even attempt destruction of the German Air Force, except American strategic bombardment.

For the German Air Force had to be destroyed over German Europe. Elsewhere, as in the Battle of Britain and at Stalingrad, it could limit its losses, terminating any scale of combat which threatened ruin. The Spitfires which had mauled it over Britain could not even persuade it to combat over France. It could dismiss night area bombardment as troublesome but without possibility of becoming decisive.

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Such bombardment could scarcely aim at a target smaller than morale. The German control of the morale was, as time has proved, confidently secure. With all of Europe as a workshop, no foreseeable scale of area bombardment could critically affect vital war production. There was no need to defend anything else.

We know, in fact, by indisputable intelligence that at the turn of 1942-43 the Germans themselves had settled upon a deliberate policy of conservation. It was their purpose to restore their Air Force by conserving use and accelerating production until it could recover the leverage of additional power which had once made it invincible.

Conversely, it was the American purpose to destroy their air force by bombarding their production facilities and inflicting ruinous attrition in the combat such bombardment must provoke. Even before we had bombed the first aircraft factory the Germans had seen that we could hit the precision targets wherever we could reach them. Both the Germans and the British had abandoned daylight precision bombing in this theater. Our success with the technique confronted the Germans with a new problem. They no longer had the option of fighting when they chose and then conserving through long alternative periods of rest and recuperation. They had to fight when we chose or risk vital damage. What is more, they had to fight where we chose. Finally, they had to fight successfully, or permit daylight precision bombardment to destroy their strength, at its production roots.

From the early autumn of 1942 these considerations dominated German air policy. They had to defeat us or accept as inevitable the complete loss of air supremacy, not only over their dream of blockade, their out-posts of conquest, their operating armies, but over the Reich itself. The German Air Force, the make-weight between German aspirations and German capability, was challenged in its own skies. If it succumbed the rest of German aspirations succumbed with it. As they comprehended this, the Germans turned to the battle with characteristic vigor. There began the long and unremitting struggle between the German Air Force and the American Air Force, which has not yet ended. It is the purpose of this paper to examine briefly the history of that struggle and the manifestations of its course as they have become apparent in the changes of the German Air Force, in its disposition, in its composition, and in its production.

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PART IV:

The graph of the Disposition of German Air Force operational planes has been made to illustrate the changes in disposition of the German Air Force from the date of America's entry in the war to the present. The black line at the top represents the aggregate strength of German Air Force units in operation at the dates indicated. The red, blue and green lines indicate the aggregate numerical strength in planes of the units engaged upon the Russian, Western, and Mediterranean Fronts, respectively. The lower half of the graph simply indicates the same proportion expressed in percentages instead of in numbers.

A few words of explanation about this graph are essential. The numbers represent at some times very exact knowledge of the strengths of the units composing them. At other times knowledge has been less certain, and the figures principally represent interpolation between two fixed points of certainty. Knowledge of these strengths has improved as the war continues and it is confidently felt that they are accurate within 10% for the times and places indicated. These totals lump together all classes of planes operated with very different functions and purposes. The Composition of the German Air Force will be illustrated later.

In December 1941 the German Air Force was divided among three fronts with widely separated commands, operational areas and strategic aims. The history of the whole air force since then is one of steady contraction around the inner core of Germany itself. Now there is only one unbroken land front around which units shift from one sector to another as pressure draws them.

Every effort has been made to represent fairly the portions committed against Germany's various enemies, but today almost any unit in Germany could operate from its bases against either the Russian or the Anglo-American armies. Finally, the whole character of the Air Force has shifted so that above 80% of the total involved are now short range fighter planes engaged in a desperate defense of Germany itself, whereas two years ago these dispositions represented balanced forces with strong offensive commands still operating on the perimeter of its conquest. Within these limitations, however, the graph usefully illustrates the changes in disposition or geographical location which we have forced upon the enemy.

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In December of 1941 almost 60% of the entire German Air Force was busy in Russia, the preponderance of it driving on Moscow. As will be seen, it was not until December of 1942 that the Western and Mediterranean Fronts together were able to draw half of the German Air Force away from Russia. The summer of 1942 had seen the German Air Force concentrate over 2,500 planes for a second and last sustained effort in Russia.

It was this drive which took the German Air Force into Stalingrad itself, but it will be noted that for a month preceding the German surrender there, the numbers of its planes out there were declining while the numbers of planes on the Western Front slowly increased. The Allied landings in North Africa had also attracted substantial quantities of planes away from Russia just at that critical time, but it is significant that the Germans continued desperately to build up strength in the West while permitting it to decline on both the Russian and Mediterranean Fronts during that time and through the spring that followed.

The reason, of course, was American bombardment. The Germans knew that they could afford to lose prestige, territory, allies, and even armies in every corner of Europe far better than they could afford to lose control of the air over Germany.

In the winter of 1942-43 our bombardment first challenged the air defenses of German Europe. As the spring and summer saw the challenge develop into full scale struggle over Germany itself, a steady shift of German fighter power to the Western Front was evident in the rise of the blue line.

In the summer of 1943, the Germans plainly wished to mount another offensive in Russia but a glance at the red line shows how feebly they were able to cover it with air power in comparison with previous years. By June of 1943 they could afford only 44% of their strength for Russian offensive, in contrast to the 59% of the previous year. 20% of the remainder was feverishly preparing to cope with the Allied invasion of Sicily, while 36% was now arraigned against the growing intensity of the Allied bombardment.

In the spring of 1943, in the very face of their difficulties in both Russia and the Mediterranean, the Germans had equipped and activated a brand-new fighter wing, the 11th Jagdgeschwader, and had sent it neither to Stalingrad nor the Western Desert but to North Germany to intercept American day bombing. At

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the height of the summer fighting before Kursk when the third German summer offensive was turning first to a reversal and then to a rout, they shifted the renowned 3rd fighter wing from that front to the western front, again in direct counter-move to the rising pressure of American bombardment.

From then until January of this year, the history of the German dispositions is a monotonous record of transfers to the West. In addition to this physical transfer of whole units, the existing units in the West were increased internally from an average of three to four squadrons per group. Most of the fighter wings were increased from three to four groups so that by the first of 1945, over 70% of the German Air Force was operating on the Western Front, while less than 30% remained on the Russian and Mediterranean Fronts. By now, of course, the Western Front had become in fact Western and Central Germany itself, in which no spot was safe from the threat of our continuous bombardment.

This process of transfer is reversing itself at the moment. Already somewhere between 15 and 20 groups of fighters and fighter-bombers numbering perhaps one thousand planes have turned east again to meet the Russian onslaught there. This is the first time in two and a half years of war that the Germans appear to have regarded any threat in the long succession of their reverses as being of greater importance than our unrelenting air assault.

From the early spring of 1943 until D-Day itself, a large majority of this preponderance in the West was single-engine fighters engaged directly and almost exclusively in opposition to American strategic bombardment. The remainder, and a substantial portion too, were twin-engine fighters, preponderantly designed for defense against the Royal Air Force night bombing. The single-engine fighter force in particular would have made enormous difference to the German position on either the Russian or the Mediterranean Fronts, where they first saw their bomber forces disintegrated for want of fighter protection, and later saw their armies reel backward, principally also for want of fighter cover. But against these considerations, they had to weigh the peril to Germany itself of Allied bombardment. The course of the blue line shows what the Germans themselves considered the foremost menace confronting them.

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PART V. COMPOSITION OF THE GERMAN AIR FORCE

We have seen how the pressures of war since America's entry into it changed the disposition of the German Air Force. The graph of its composition illustrates the changes that war forced upon its functional structure and purposes. Like its predecessor, this graph has been composed of totals of the aggregate strength of identified operational units. The groupings by type are arbitrary. They have been made so in order to illustrate essentially the difference of German intentions for offensive and for defensive fighting.

The German Air Force began the war as a unit designed for aggressive campaign. The preponderance of its strength lay in bombers and dive bombers with a relatively small proportion allocated to the defensive or fighter role. Long before America entered the war its bomber forces had known their greatest triumphs--over the Polish Air Force, the Maginot Line, the Mediterranean, the Western Pacific approaches, and scores of helpless cities, from Coventry to Kharkoff. They had also known their worst defeat--in the Battle of Britain, from which they never fully recovered.

Yet at the time of America's entry into the war German bombardment was still a competent instrument, menacing England, blockading the Mediterranean, and sufficiently strong once again to spearhead the 1942 drive deep into Russia and keep the Murmansk lifeline to Russia a symbol rather than an artery.

It is impossible to distinguish with entire accuracy between bomber and fighter forces. At various times in this war all types of German aircraft have performed these functions, almost interchangeably. The Ju-88 remains an excellent night fighter, and the FW-190's, in operational use as fighter bombers now, have an aggregate bomb lift greater than the remnants of the multi-motor units known as bombers.

For the purpose of this graph, however, the heavy bombers, the long range reconnaissance and dive bomber units (He 111, Ju 88, Do 217, Me 410, and Ju 87 units) have been lumped together to represent the bomber, or offensive power of the German Air Force. All of them have been used at various times and places for all functions of offensive bombardment within their range. Similarly, the single and twin-engine fighters (FW 190, Me 109, Me 110, Me 410,

Ju 88, and Ju 188, and more recently the Me 163 and Me 262) Have been lumped together in the category of fighters or offensive planes. All of these, except the Me 163 have been used interchangeably as both day and night fighters against both British and American bombardment. Latterly, indeed, they have all been used as fighter bombers against both Anglo-American and Russian armies, but primarily they were designed for aerial defense. From this graph there have been excluded miscellaneous coastal and reconnaissance planes, which are irrelevant in both numbers and function to the judgment of German air intent.

The graph, in general, tells a very simple story. It indicates that at the time of America's entry into the war, over 60% of the German Air Force was still functionally designed and trained for offensive bombardment work; whereas, by January of this year, over 82% of the German Air Force had shifted to defensive work, barely 18% remaining committed to the offensive. In fact, both extremes understate the case they appear to demonstrate.

In January 1942 a considerable proportion of the German fighters was still engaged on offensive work, escorting the German bombers that retained their powerful operational capability. By January 1944 the bomber force, which had once blitzed England, was not a serious menace to Antwerp. The anti-⁵shipping force which had dominated the Mediterranean and the Murmansk passage, very nearly won the battle of the Atlantic in conjunction with submarines, and damaged a battleship and sub-cruisers at the time of Salerno, was impotent against OVERLORD landings, and did not even contest the invasion of Southern France.

The conversion of the German Air Force from offensive to a defensive instrument resulted from many causes. Yet among them one was paramount--that was the necessity to defend Germany from bombardment, with a consequent allocation of her plane producing capacity from bomber to fighter aircraft. None can doubt that the Germans wished to rebuild a strong bomber force. There were ambitious plans for the He 177, and an improved version of the Ju 88 and the Me 410, but while these were languishing between internal difficulty and postponement, the Germans were feverishly expanding their single-engine force.

The answer again was the imperative need to defend themselves against Allied bombardment, a need vastly more critical and imperative than even the hope of a resumption of aggressive campaigning. The Germans well knew that with war production in the Reich secure, they could some day resume offensive campaigning. Without that production they could not even protect their conquests.

The lines of fighter and bomber strength happen to cross each other in the early spring of 1943. Yet between strength in operational units and the production that supplies them there is always at least a six months' lag. By the autumn of 1942 at the latest the Germans had foreseen the need of strengthening their aerial defenses against the rising tide of British and American bombardment. It was then that they adopted the first of their many plans for increasing fighter production as the top priority of the German war effort. These plans were amended upwards many times, but their general purport was, and remains, the same--to stop the bombardment of Germany which, above all factors in this war, they have rightly dreaded.

It is for this reason that we can see, since March 1943, an almost unbroken rise in German fighter strength as contrasted with the practically continuous decline in German bomber strength. If their plans for production had succeeded, we should have seen the bomber and fighter curves going together again, for they would have had fighters enough to protect their factories. Under that protection they could have switched back to the restoration of their bomber force.

As it was, they did not succeed. Although they were able, by superhuman effort, to increase the actual numbers of their fighters, they never achieved half of their planned output of fighter planes, and the numbers they produced were insufficient to prevent systematic wrecking of the German Air Force by strategic bombardment.

The shift in the composition of their Air Force began with a far-sighted provision, to insure their air supremacy over Europe, by increasing the numbers of their fighters. It has ended with their frantic efforts to recover air supremacy even over Germany itself. In the long struggle, they have not only wrecked their bomber position by default, but have failed

entirely in their determination to prevent our systematic destruction of any target system we attack in Germany itself.

This change in their composition was largely forced upon them by fear of what Allied strategic bombardment could do to their industrial systems. Events have justified their fears, and although more than half of their Air Force is now composed of single-engine fighters alone, the Allies have enjoyed complete supremacy over the Allied skies of Europe since last March. They have put ashore two large expeditionary forces without mentionable resistance from the German Air Force. At present they enjoy almost uncontested freedom of the air over Germany itself, while the German Air Force, like the armies it once spearheaded in offensive campaign, maintains a precarious and faltering defensive within the borders of the Reich itself.

The aggressive offensive Air Force that was once an adequate make-weight between German aspiration and German capability has become an inadequate and declining defensive force. It is now only the make weight of a few more months of hopeless defensive resistance. Strategic bombardment effected this change in its composition.

We have seen the changes which the years since America's entry in the war have forced upon both the Composition and the Disposition of the German Air Force. These latter two facets of their air power were, of course, a reflection of the production behind it. With more planes the Germans would have disposed their forces differently. With more bombers they undoubtedly would have won the war. At several junctures they very nearly did. With more fighters they might have staved off our onslaught until their bomber position was restored.

German aircraft production had been designed to fit a dream of intermittent short campaign and long rest. As the Germans found themselves engaged in almost continuous war on several fronts its inadequacy became apparent. As they found themselves confronted with the unexpected necessity for continuous defensive fighting they turned feverishly to a re-adjustment upward of their production potential.

The first plan to enlarge drastically the size of the German fighter force, by a very large increase in production, was probably endorsed and set in motion early in 1942. Like most of its successors that plan was speedily replaced. We have never had full intelligence on all these plans and have usually unravelled one only to find that it had been already superseded by an upward revision. Thus at various stages in the war we have furnished estimates of German production, both actual and planned. Most of these estimates were out of date before we procured the data on which they were based. For this reason, the plan illustrated in the accompanying graph does not agree with estimates produced before and doubtless will be supplanted itself by more solid but yet unobtainable intelligence.

We know that first retention and then recovery of air supremacy have been among the top priorities of German military intention since early 1942. We believe that this aim has been powerfully implemented by Hitler himself, and by drastic reorganization at least twice in the entire apparatus of German aircraft production. But between the original adoption of this idea by the Germans and their present desperate efforts to implement it with a relatively new program of jet manufacture, there have been several complete revolutions in the process by which the Germans sought adequate aircraft production.

There is no doubt, for example, that the original Milch plan contemplated centralized manufacture of Messerschmidt 109's around three different assembly complexes at Regensburg, Wiener/Neustadt, and Leipzig. A corollary of it projected equally centralized Focke Wulf manufacture around the northern centers of that ramified company. These plans were laid down prior to American bombardment. As we demonstrated our capacity to destroy factories with precision bombardment deep into the Reich, the existing plans and plants were abandoned or modified for a scheme of dispersal that in fact has replaced 30-odd targets by over 300. The loss to the Germans both directly and indirectly from destruction, dislocation and postponement is impossible to measure until long after the fact of its occurrence.

The graph lines on the attached chart represent the best estimates that can be made from intelligence now in hand, as to both what was happening and what had been planned in the way of production throughout the last three years. The line representing planned input actually follows a lower course than some of the German plans have mentioned. But the best evidence now available suggests that about this rate of increase would have been within their capability if it had not been for our direct attacks on aircraft production. The estimate includes an allowance for input from repair of planes in addition to new production.

The graph line of achieved input indicates the best evidence available to date on what the actual German input into operational units from both new production and repair has been.

It is evident that at many times in the past the estimates of monthly German production have been incorrect. The reason for this is that the estimates were frequently made when the evidence then available was fragmentary, when there was not sufficient evidence in hand to make them with even reasonable confidence. Estimates of aircraft production, to be accurate, require at least a representative sample of current works numbers. These can only be procured by erratic and often belated processes of Intelligence. There have been times, such as in the later stages of the African and Sicilian cam-

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paigns, when the capture of several hundred works numbers at a time revealed the German position very clearly.

For almost a year after that, however, there was a paucity of works numbers. This coincided with the very time when German production was going through a maelstrom of change, occasioned both by our bombardment and by their counter-moves to disperse. During this time Intelligence was pressed for periodical estimates of German aircraft production. It furnished them in accordance with the best interpretation possible from the material at hand. They are now being corrected by the more abundant intelligence available since D-Day.

The figures in this chart represent the latest estimates. They are based upon much new and helpful material, but they in their turn will be corrected when sound evidence indicates error in them. The general story that these curves tell confirms fairly well what we know of the events. They indicate that from some time early in 1943 the Germans began to receive a substantially increased flow of new aircraft, principally single-engine fighters, on which they had so wisely but so belatedly begun to concentrate.

We know only too well that single-engine fighters increased against us in both numbers and effectiveness during the bitter race of our respective building-ups in the spring of 1943. For the Germans it was imperative to build enough fighters to prevent us from bombing out their whole war production. For us likewise, it was imperative to check the increase of their fighters before they could make our daylight precision operations too costly to continue. In addition to this incentive, which was indeed paramount, the Germans had a second motive of critical importance.

The Ju-87 dive-bomber had not survived the technological advances of the war. Though it performed its early functions well, it was to prove no match for either Spitfires or Russian fighters. A large part of the German Air Force was equipped with these Stukas, and its utility both on the Russian Front and in Africa was seriously deteriorated. In the Focke Wulf 190 the Germans had created an excellent fighter-bomber, as well as a first-class interceptor. It was their intention to replace the Stukas with these and so restore supremacy of their vitally important ground-support units.

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Two critical needs, therefore, lent impetus to the expanding fighter production program and probably determined their original choice of the quicker, albeit more dangerous, expedient of accelerating production in centralized complexes.

We probably owe our aerial supremacy to this German choice. It had been made after a considered decision that night area bombing could never jeopardize production in more than one of the several major centers. It had consciously discounted the possibility that our daylight precision bombing could find and destroy several of these centers simultaneously. Experience in this theater had shown both the British and the Germans that daylight bombardment could not succeed against capable fighter defense. The Germans gambled late in 1942 that they still had a sufficiently capable defense left to hold American bombardment off until the factories and protection made their skies impenetrable.

The slowness of our build-up here gave them a long start toward the winning of their gamble. Not until late July of 1943 were we able to strike at the real roots of aircraft production in Germany itself. Then in three weeks of the most savage air fighting the war had yet seen we successfully bombed five of the major producing centers of German fighters. The effort cut our own effective force almost in half for several ensuing weeks, but its effect upon the German aircraft industry was even more profound.

None of the plants, except possibly Warnemunde, had been devastated, but all of them had been seriously damaged. At the time the German Air Force, like our own, had been fighting to the very limit of its replacement resources for many weeks. The check in their actual production meant a direct check in their actual strength. The portent for the future was far graver than that, for if we could successfully destroy one centralized plant, it was only a matter of time until we should recover strength to destroy the remainder.

The Germans reacted to these first blows both by rebuilding on the original sites, and by spreading the resources, originally planned for expansion, into dispersal factories. As the attacks proceeded, and especially after Speer took over the direction of aircraft production late in 1943, the

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process of dispersal was accelerated. Thus the combination of productive loss due to dispersal and bombardment damage kept output down for the remainder of 1943. The decision to disperse must have been a hard choice to make, for a force already incapable of fulfilling existing defensive commitments, and faced with their constant enlargement; but this time the Germans were gambling not for advantage but for survival. The decision to disperse undoubtedly saved aircraft production.

It was not until late February of 1944 that the proper combination of sufficient bomber strength, adequate fighter escort and visual weather again exposed the German aircraft industry to our bomb sights for sustained attack. Then for five days we showered upon German aircraft production the most concentrated bombardment that had ever been released upon a single industry.

There is no doubt whatever that at that time we destroyed or severely damaged for long periods about three-fourths of German aircraft production as we had known it. What we did not know was the extent and scope of its dispersal. In the ensuing months we continued remorseless destruction of almost every known aircraft producing center. By the middle of March the German fighter position was so precarious that for the first time in history they were refusing combat on flyable days.

Throughout the spring, and indeed the summer, they continued in this impotent condition. They were, of course, suffering from an even worse drain than crippled production, for in the merciless combat that attended the air fighting of 1943 and 1944 they had lost the cream of their best pilots. The recruits had been trained on inferior machines for insufficient time before they were hurried into the breach, and our fighters enjoyed complete mastery over them.

The German Air Force had boasted, through Goering, that no bomb would ever be dropped upon the Reich. By early spring, as we continued bombarding what we chose in Germany, they were substantially grounded for want of planes and men on all except favorable occasions to them. Even then they could never impose upon us a loss rate comparable to the one we had endured through our long struggle toward air supremacy. When they came to the supreme crisis of defending Europe itself from sea-borne assault, the German Air Force virtually collapsed after five days of serious fighting. It was ineffective

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through them and has for all intents and purposes been virtually impotent since then.

Yet it must be recorded that German aircraft production as such weathered the storm: its dispersal was successful. By June we noticed the anomalous condition of an air force stronger in planes than it had ever been and increasing in numerical strength as it continued to decrease in fighting effectiveness.

That paradoxical condition prevails today. Up until December when it showed a few flashes of reviving aggressive spirit, and was soundly thrashed for them on several occasions, the German Air Force has continued to grow steadily stronger in numbers and weaker in effective strength. At long last it has filled up its decimated ground attack units on the Russian Front with modern aircraft. But they are currently fighting on the defensive within the German borders. Their presence on the Russian Front when it was still far out in Russia would have made a different story.

As has been mentioned in the previous sections of this paper, the other classes of German aircraft, notably the bombers, have declined in strength as in production. The process has been a compound of deficiency, economy and cannibalization. Crews from every branch of the German Air Force have been drawn off to become fighter pilots. The remnants of their bombers have been grounded for want of fuel and fighter cover, and the production of bombers has been subordinated at every turn to the insatiable demand for fighters.

It appears now that the conventional German fighter production is safely beyond the reach of our bombardment, though how its dispersal program will fare after the loss of Hungary, Silesia and East Prussia is problematical. It is quite probable that the Germans in their extremity have entirely abandoned all hope of restoring either production or any substantial strength of bombers. They do not need long range bombers; their enemies are on every border.

With their indefatigable determination, the Germans are now engaged in implementing a new plan for aircraft production. This time it is for the production of jet aircraft. In the jet planes so far developed they have for the first time an aircraft of distinctly superior quality. Their intention

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is the old intention to regain air supremacy, this time with mass production of a versatile all-purpose aircraft, which has proven its superiority to any the Allies operate.

The attacks on German fighter production may be regarded as having set back the planned expansion by about one year: the decisive period from July 1943 to June 1944. The Germans failed in their strategic intent to expand their force of conventional single-engine fighters to a point where it could seize and hold air superiority. On the other hand, in its response to attack, German aircraft production showed a resilience, tenacity, and a capability beyond anything we imagined. It seems improbable that any plant can now produce sufficient quantities of planes to upset our present air supremacy. Yet it once seemed improbable that German aircraft production could survive the destruction wreaked upon it. They did survive it by dispersal. Jet production is not yet hopelessly dispersed, and there remains time to take effective action to check it. Whoever doubts the need of this should ponder what would have happened had we not taken the action necessary to check and cripple conventional German aircraft production during the year ending June 1944.

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EFFECTS OF USAAF ATTACKS ON GERMAN TANK* PRODUCTION

Rational of the Attacks: The USAAF attacks on German plants producing tank engines and assembling tanks were based on an appreciation of the great importance of the panzer division as a prime weapon in the enemy's offensive and defensive armory. This importance is amply illustrated by the use of panzer divisions to spearhead the vain German attempt to relieve Budapest, as well as their use to lead the recent offensive in the Ardennes. This strategic importance, together with the heavy losses of tanks which the enemy suffered on both Eastern and Western fronts when attacks were initiated in force, meant that reduction of tank output would have valuable and quick effects on the enemy's fighting power. The enemy's own view of the importance of tank output is clearly shown by his continued efforts to increase production.

Scope of Operations: First raids were made against plants assembling tanks in the last months of 1943. Three important producers, all in Berlin, were hit at this time and significant damage was inflicted. Operations against tank production commenced in force in the summer of 1944. The biggest German army depot for handling and repairing tanks, at Magdeburg/Konigsborn, was attacked in May and June. In June and August the two plants producing all tank engines were seriously damaged and output greatly reduced. Production was then widely dispersed and consequently the Air Force turned to the attack of plants assembling tanks. Between August and November 1944, seven major tank assembly plants, accounting for over 80% of all tank production, were attacked. Damage produced varied from moderate to severe. German repair efforts have been persistent, and the campaign against these tank assembly plants is still going on.

Results of the Attacks: Reliable intelligence from many sources, including the interrogation of P/Ws and the examination of serial numbers on captured equipment, has given us a fairly accurate picture of the enemy's tank output. This output has almost doubled between 1942 and 1943, and the production program had set its sights still higher. Interrogation of high-ranking P/Ws holding responsible position in OKW has shown that the aim in 1944 was again to double the average rate of output achieved in 1943.

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The ultimate goal was a production program of 1600 tanks per month. The attacks at the end of 1943 slowed the rate of expansion, but production continued to increase. The heavy attacks of 1944, first on the tanks-engine plants, and then on the tank plants, finally reversed the trend. Current output is estimated at some 650 tanks per month, less than the average rate of output in 1943.

The effect of this fall in production has clearly been shown in the front lines. Few if any of the enemy's panzer divisions go into battle equipped with the number of tanks and self-propelled guns their tables of organization call for, even after the drastic downward revision of divisional establishments which has been imposed on the German Army. Losses are replaced slowly, and divisions engaged in fighting soon find themselves with less than half or even a quarter of their establishment strength.

*Tanks are defined as including tanks of Mark II, Mark III, Mark IV, Mark V (Panther), Mark VI (Tiger) and Czech 38t models, and Self-Propelled guns on these chassis. They do not include half-tracks armored cars, etc., the output of which was also affected by USAAF raids.

UNITED STATES AIR FORCES
ATTACKS UPON THE BEARING INDUSTRY

Theory of the Attacks: United States Air Force attacks upon the German bearing industry have been based upon the recognition of the importance of ball and roller bearings in modern, high performance military equipment and in the repair and maintenance of plants engaged in manufacture of such equipment. Technical examination of bearings in German tanks, guns, aircraft, motor vehicles, etc. confirm the validity of this analysis and strongly support the conclusion that only minimum stocks of essential types were in hand.

Scope of Operations: Since the first operation against the industry in August 1943, some 80% of the ball or roller bearing capacity of Germany and occupied countries has been attacked and reattacked by American aircraft operating from the West and South. Key centers have been hit and hit again; dispersal or shadow plants have been located and bombed. Careful integration of this program with sabotage operations and pre-emptive purchasing programs in neutral countries has further served to reduce alternatives open to the enemy.

Success of the Attacks: Damage assessments fully support intelligence reports of the success of these operations. For a year or more Germany has had less than 50% of the bearings used before the attacks began. Many key types, essential to the production of vital armaments, have been denied her almost entirely.

Results of the Attacks: Intelligence reports from all of German occupied Europe, supported and even extended by the captured files of the German Ball Bearing Controller in France, attest the soundness of the reasoning behind the attacks and the impact resulting therefrom.

Assignment of top production priority to bearing manufacture, enormous expenditures of manpower and materials in plant repairs, strict rationing and control of bearing use, abandonment or postponement of certain important production schedules, imposition of an extremely uneconomic and costly program of recovery and salvage of bearings from captured and even from newly completed German transport aircraft and similar lower priority items, extensive undertakings of redesign and substitution - all of these steps have been taken, but have proved mere palliatives.

Production schedules of all types of military equipment have not been met, many plants have been forced to shut down for many days. Tank and tank engine and component production in France, Germany, Austria, Czechoslovakia and Poland has proved particularly vulnerable. Aero-engine and fuselage manufacture and repair is reliably reported to have been affected in Poland, France, Italy, Germany and Rumania. Many reports confirm the seriousness of the situation in regard to the development and production of new model assault guns, 88 mm guns, radar and acoustical devices, lorries, tractors, as well as lathes, drills, and other machine tools.

Finally, the shortages and bad quality of bearings actually produced have taken their toll in the poor serviceability of the military equipment which has been manufactured. Thousands of prisoners complain of breakdowns, repair difficulties and short life of tanks, trucks, tractors, and other equipment. Captured Army orders speak of "difficulties in the procurement" of bearings and of the consequent need for using "existing stocks sparingly". Thus, bearing attacks have effectively limited enemy capabilities, not only in the factory, but in the field.

INTRODUCTION

The total effects of the Allied air attacks against the oil industry of the greater Reich will be fully realized only after Germany's capitulation. However, statistics and intelligence have revealed part of the story as the devastating attacks have progressed.

In an attempt at brevity only the most revealing statistics and conclusive intelligence will be used to point up the valuable benefits, which have accrued to all of the Allied fighting fronts as a result of the air attacks on enemy oil. It should be borne in mind that the Mediterranean based American Air Power on numerous occasions bombed gasoline plants feeding the Eastern Front. The bombing of oil targets has required that strikes be made on relatively small vulnerable objectives. Until November of 1944 the Royal Air Force did not specifically participate in attacking such objectives but the statements and figures in this paper reflect overall results achieved.

Attention is drawn to Appendices "A" and "B" since it is believed that this material from the pens of the enemy so ably confirms the general conclusions in this report.

THE PROBLEM FACING USSTAF IN APRIL, 1944.

After the American raid on Ploesti in August 1943 immobilized a large percentage of the refining capacity of the large Ploesti refineries, it was confirmed that the German oil industry was vulnerable to attack from the air. However, further attacks against oil targets could not be mounted until the German Air Force was effectively dealt a severe blow.

In April 1944 the decision was reached to attempt to limit, by aerial bombing, the supply of gasoline which was then pouring from the large synthetic oil plants and the refining facilities of German controlled Europe. This problem involved a continuing attack on approximately 81 plants producing gasoline for the Germans.

The magnitude of the task was realized at the time the attacks commenced. However, satisfactory evidence of the German's ability to repair and improvise was not forthcoming until the attacks were well along. The problem of bombing faster than the Germans could repair required the utmost in operational and intelligence concentration.

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THE EVOLUTION OF THE AIR ATTACKS ON OIL.

The first major allout effort on oil, excepting the American Ploesti raid in 1943, occurred on 12 May 1944 and was a distinct success. Thereafter, the American attacks mounted in intensity and strength until the Germans, already stretching their available gasoline to meet the rising requirements of mobile forces, began to feel the pinch of a stoppage of the flow of gasoline to these forces.

Continuing through the late Spring and Summer months of 1944, the great aerial attacks on oil gained on the German's ability to repair their plants, so that by September 1944 the Germans were only able to produce 20% of what was considered normal gasoline production. The attacks at this time were aided by reasonably fair bombing weather.

During the adverse weather of October and November, the German ability to repair overtook ours to destroy, and a recovery in gasoline production took place, in November 1944, to approximately 33% of normal output.

By constant application of blind bombing technique we were again able to turn the curve downward so that in December 1944 the gasoline rate of production was becoming embarrassing to the German High Command at a figure of 27% of normal output.

In January 1945 the German gasoline output is estimated to have been reduced to 18% of normal, which was an alltime low.

A recapitulation of the above in statistics shows the progress of the bombing attacks and is as follows:

GERMAN GASOLINE PRODUCTION
(All figures are thousands metric tons)

<u>1944</u>	<u>GASOLINE FROM</u>		<u>Sub-</u>	<u>Grand</u>		<u>Diff.</u>
	<u>Synthetics</u>	<u>Refineries</u>	<u>stitutes</u>	<u>Total</u>	<u>%*</u>	<u>from</u>
						<u>Normal</u>
April	312	140	30	482	90%	50
May	260	110	30	400	75%	132
June	159	71	30	260	49%	272
July	111	75	50	236	44%	296
August	69	51	50	170	32%	362
September	43	13	50	106	20%	426
October	82	18	50	150	28%	382
November	119	19	38	176	33%	356
December	101	16	28	145	27%	387
<u>1945</u>						
January	56	13	28	97	18%	435

* "Normal" 532,000 tons = 100%

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THE RESULTS OF THE AIR ATTACKS ON THE GERMAN OIL PLANTS.

The following table indicates the results achieved throughout ten months of bombing effort:

	<u>Oil Plants</u> <u>in Enemy</u> <u>Hands</u> <u>April 1944</u>	<u>Oil Plants</u> <u>in Enemy</u> <u>Hands</u> <u>Jan. 1945</u>	<u>Bombed</u> <u>by</u> <u>USSTAF</u>	<u>Fully</u> <u>Active</u> <u>21 Jan.</u> <u>1945</u>	<u>Partly</u> <u>Active</u> <u>21 Jan.</u> <u>1945</u>	<u>In-</u> <u>Active</u> <u>21 Jan.</u> <u>1945</u>
Syn. Oil Plants	23	23	21	0	5	18
Refineries	58	22	52	0	12	10
Total Oil Plants	81	45	73	0	17	28

Had it not been for the concentrated bombing of German held oil plants, it is estimated that the German armed forces would have had available for use in their fighter planes, Panzer divisions and motorized infantry units, 2,590,000 tons more gasoline than they actually had available during the last nine months of 1944 and the first month of 1945.

A recapitulation of the loss of gasoline production to Germany is shown as follows:

	<u>Metric Tons</u> <u>of Gasoline</u>
Loss in production to Germany by Bombing - - - - -	2,590,000
Loss in production to Germany by capture - - - - -	<u>500,000</u>
Total loss (10 Months) - - - - -	3,090,000

With reference to paragraph above it is of interest to note that current estimates indicate that total enemy gasoline consumption for December 1944 was less than 200,000 metric tons.

Results of the air attacks on German oil plants were not confined merely to the loss of gasoline but also affected the supplies of diesel oil, lubricating oils and greases, kerosene, cylinder oils, etc. A general table indicating the reduced production of some other petroleum products is shown below:

GERMAN PRODUCTION OF
(Metric Tons)

	<u>Gas/Diesel Oil</u>	<u>Kerosene</u>	<u>Fuel Oils</u>	<u>Lube Oils</u>
Estimated April 1944	250,000	90,000	250,000	150,000
Estimated January 1945	115,000	15,000	120,000	30,000

THE BENEFITS OF THE ALLIED ATTACKS ON GERMAN OIL TO ALL ALLIED FIGHTING FORCES

The major benefits of the program for denial of oil to Germany are recited as conclusions to this paper:

a. The Luftwaffe, although growing in strength with each succeeding month since April 1944, has become more and more reluctant to utilize its carefully hoarded supply of gasoline except when opportunities for calculated success are considered available. There is ample proof that gasoline has been the restraining factor of this constantly growing fighter air force.

b. The Wehrmacht, once largely a mobile fighting machine, is now only mobile in a few of its crack divisions. The remainder of this once driving force is reduced to producer gas and horse-drawn transport for its supplies and to bicycles for personnel carriers. While this transition does not affect a defensive position to the same degree as it does offensive operations, the evidence is also conclusive that gasoline shortage has limited the German offensive potential on the ground.

c. The drastic restrictions placed on training of various German military units through lack of adequate gasoline is substantiated by innumerable documents. This lack of adequate training unquestionably makes for reduced combat effectiveness and would not have been achieved had the American Air Forces permitted the Germans to have sufficient gasoline.

d. While it can be safely stated that the greatest benefits of the aerial attack on oil have accrued to the Allied air and ground forces, ample evidence is coming to hand that the training of U-boat crews and the operations of U-boats, in general, has been restricted through lack of sufficient diesel oil allocations.

e. The attack on oil has made the average German's daily task more difficult through lack of any gasoline for transportation, severe restrictions on heating oils and general disturbance in his economic sphere.

f. Finally the attacks by the U. S. air forces on the oil of the greater Reich have been designed, not only to affect the German armed forces in the West and South, but have been pressed home with unrelenting vigor to affect deeply the flow of gasoline and oils to the Germans facing our Russian allies

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on the Eastern front. The attacks on Rumanian, Hungarian, Austrian, Czechoslovakian and Polish refineries and the great Silesian synthetic plants have lowered the fighting values of the German air, land and sea forces retreating from the East.

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EFFECTS OF USSTAF ATTACKS ON MISCELLANEOUS GERMAN
ARMAMENT FACTORIES

General: Many armament factories not in the primary target systems have been attacked in USSTAF operations as secondary targets, diversion targets, or because operational conditions prevented missions against first priority plants. Despite the varied nature of these attacks, they have occurred with such frequency that an impairment of German first line strength and replacement ability must have occurred.

Motor Transport Capabilities: The attacks upon motor transport took two forms, (besides the oil and ball bearings attacks discussed elsewhere) attacks upon MT production proper, and attacks upon synthetic rubber and tire production. The first attacks upon synthetic rubber and tire plants occurred in 1943; additional attacks took place in 1944. In the aggregate, plants producing approximately half of Germany's synthetic rubber and over half of Germany's tire supplies have been attacked. It is known that these attacks were successful in reducing output of these vital items, and it is likely that resulting tire shortage played a part in reducing German tactical and strategic mobility.

Successful attacks upon MT (including unarmored tracked vehicles) accounting for over half of total German production took place in 1944. Some of the plants were heavily damaged and it is known that the loss of output was considerable.

Chemicals: Germany's preeminence among chemical producers argued against the probability of shortage in chemicals. Nevertheless, these large complexes presented numerous opportunities for unpredictable benefits. Also, because of the size of some of these plants, they made admirable blind bombing targets, the attack on which also imposed wastage on the GAF.

It is estimated that one-quarter of all German chemical producers with a range of products from pharmaceuticals and dyestuffs to propellants and explosives have been attacked, some of them repeatedly. The reduced output of chemicals probably reduced the output in other industrial plants and it is probable that useful front-line effects have occurred.

Artillery: Attacks by USAAF on Germany's heavy engineering plants, some of them gun producers for decades, have produced useful reductions in artillery output. The attacks have been reinforced by attacks upon major gun repair facilities and ordnance depots.

Other Armaments and Military Supplies: Miscellaneous armaments and military supplies plants damaged are numerous. They include small arms factories, ammunition and shell plants, signals factories and depots, military research and testing stations, marine engines and miscellaneous naval equipment plants, engineer stores producers, motor vehicle component plants, and other factories. It has also become clear that shortages and unserviceability have occurred on the Western front as a result of insufficient output in motor vehicle spare parts, small arms, signals, and other items.

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GERMAN RESOURCES COMMITTED
TO STATIC DEFENSE AGAINST
BOMBARDMENT

The ever present threat of heavy air bombardment of Germany and German occupied territory has compelled the commitment by the enemy of very substantial resources to purely static defenses. These defenses include the manpower and materiel required to establish and maintain the elaborate air raid warning and plotting system, the huge flak establishment of heavy and light guns, and the smaller but none the less substantial commitments to smoke screens, searchlights and balloon barrages.

In addition to the personnel and equipment directly tied down to these static defenses, the constant threat of air attack and the crushing actuality of such attacks have imposed an unimaginable burden upon the entire German economic and industrial system. Exact measurement of this burden is impossible. But consider, for example, the manpower and materiel (1) expended on replacing, rebuilding and repairing destroyed and damaged property, particularly the industrial facilities which had to be replaced to enable Germany to continue the war; (2) committed to civil defense tasks, such as fire fighting and watching; (3) expended on the construction of shelters; (4) diverted to moving, feeding and rehousing the bombed-out millions; and (5) required to effect the wholesale dispersal and, more recently, underground construction of essential productive facilities. All of this manpower and materiel would otherwise have been free for direct contribution to the military might of Germany.

There are fairly firm estimates, made by British War Office, on the strength and disposition of German flak. These indicate that as of 1 January 1945, there were some 11,500 heavy flak guns, 29,500 light guns and approximately 705,000 flak personnel committed to the defense of Germany. These figures exclude flak equipment and personnel committed to the Eastern, Western and Southern Fronts. They represent, in short, the flak resources reserved exclusively for defense of the Reich against air attack. It is not possible to say how many of these personnel, or how much of this equipment, would have been free for utilization on the fighting fronts had there been no threat of such attack. It is manifest, however, that vast quantities of the guns and equipment would have been so released, and that practically

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all of the 705,000 personnel would have been freed for other war effort.

An interesting manifestation of the relationship between flak dispositions and American heavy bombardment is found in the defense of high priority oil targets. On 1 July 1943 there were approximately 2580 heavy guns and 4030 light guns disposed in the flak defended areas around the priority oil targets. An increase in these guns began shortly following our offensive against oil, and by 1 January 45 it was estimated that these same areas disposed some 5900 heavy guns and 7200 light guns. These shifts in flak dispositions eloquently reflect German apprehension as to the consequences of our attacks.

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APPENDIX "A"

The following letter is a translation of enemy document and illustrates the importance Speer assigns to synthetic oil plants in the German scheme of war.

The Reichminister for
Armament and War Production
M 731/44 Top Secret

Berlin W.8, 16.9.1944
Pariser Platz 3

To:
Reichsleiter B O R M A N N
Presently at Fuhrerheadquarters.

Dear Party comrade B O R M A N N:

It is being felt more and more that the rebuilding of the synthetic oil plants and refineries is really pointless since the enemy always destroys these works with his aerial attacks at the proper moment shortly after the starting of production.

If I had not pushed the rebuilding of the synthetic oil plants and refineries with the utmost energy from the very beginning, many thousands of tons of fuel which were produced during the short period which the enemy has left us would never have been forthcoming.

These amounts of fuel have contributed substantially to the stretching of our reserves.

It is to be seen to, with all possible means, that the crews who work on rebuilding of the synthetic oil plants do not relax their activities.

I ask you to do everything on your part to see that the will power of those taking part in rebuilding strengthens and that the efforts for speedy starting of production are reinforced. We are about to build underground installations especially for aircraft fuel and simultaneously to refine the crude oil production at very small installations which are relatively safe from air attack.

These measures, however, would come too late or they would not be sufficient in amount if the synthetic oil plants had not resumed their production before hand. After a long period of extraordinary good weather the season of bad weather with fog etc. is in front of us now.

The bombardment of the synthetic oil plants can therefore not be carried through with the old precision. Our air force at the same time, using less fuel and under certain circumstances can be augmented and reinforced through rest and larger production of fighters.

We must not lose hope that it will be possible to become the master of the enemy air force in the Reich. The development of the last few days has shown that with a relatively small effort of fighters a large number of bombers can be shot down.

Several weeks of rest in the air and our fighter units will have been strengthened considerably.

On the other hand we will be able, in spite of the heavy destruction, to produce about two thirds of the monthly production which was put out by the synthetic oil plants and refineries before the attacks started. This production would be sufficient to cover the requirements of our entire air force because of the smaller spheres of operation and possibility of operation. It is therefore not right to consider the rebuilding of the synthetic oil plants as useless work, on the contrary, the successful prosecution of the war is depending on it.

Therefore we have to take care with all our efforts that the synthetic oil plants and refineries are supported in their scheme for rebuilding.

Heil Hitler!

(Signed) S P E E R

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APPENDIX "B"

The following comprises excerpts from a statement by the former head of the German oil administration in Bucharest who is now a prisoner in Russian hands. This source cannot be relied on for detailed figures but his more general statements are probably near the mark. The information in this report largely confirms our understanding of the position.

Stocks

"Reserves never were higher than a month's requirements - generally less. From May and June on, reserves declined rapidly. In July it was estimated in Berlin that at the end of August there would be no more reserves at hand, and at that time Roumania had not broken away from Germany. Even Wehrmacht reserves scarcely existed. How small they were is shown by the fact that for the Wehrmacht in France at the beginning of June (before the invasion) there were only 40,000 tons available as operational reserves."

Comment

This statement affords confirmation of the following view which was expressed in our report of 7th August (J.I.C. (44) 344):

"Strategic reserves were very tentatively estimated at something over one million tons at the beginning of May. Even allowing for a substantial margin of error in this estimate it is safe to conclude that they have by now been seriously depleted, and must be nearing the point at which it will be impracticable to deplete them further."

Repair Policy

"The problem of providing petroleum has become the central problem in the Reich. In June, at the Führer's H.Q., a conference was held presided over by Hitler to discuss this problem. A Commissar was appointed who received the greatest power ever given to an economist in Germany. The programme for the rebuilding of refineries ranks above the fighter programme and the U-boat programme. All demands for material and labor must be met immediately. It was stated during the above mentioned meeting that the war could be lost if Germany did not succeed in always rebuilding the refineries and the synthetic plants. With regard to new construction of refineries

this was left out of consideration because of:-

- (a) the lack of material
- (b) the lack of time.

The building of new synthetic plants in particular demands much time and material. Underground refineries and synthetic plants demand so much work that decision was taken against them.

In July 1944 very small distillation plants with a monthly capacity of 800-1000 tons (which yield minimal performance and primitive operation) began being set up and when possible hidden in woods. This, however, is only a stop-gap measure."

Comment

The meeting at Hitler's Headquarters has already been reported by another source. The Commissar is Geilenberg whose appointment for this purpose was reported at the time by reliable sources.

The statement that the rebuilding of oil plants had been given the highest priority has been reported by other sources, and this information has been confirmed from copies of official German documents.

There have been other reports of plans to erect small concealed distillation plants, although none of these plants has yet been found. If such plants are in operation, which is quite possible, the output is not yet likely to have reached important figures.

There have been a number of indications from intelligence that a start may have been made with the construction of underground refineries and synthetic plants. If this is the case, it means a reversal of the decision made in June and it would be unlikely that such plants, if of a large size, would be ready to come into substantial operation for some considerable time.

Conversions to Gas Fuels

"The conversion of automobiles to producer gas (charcoal-burning and butane-butylene) has already been carried as far as possible. This conversion is not possible for the Wehrmacht (for reasons of supply). The principal thing which remains to Germany is the necessity of always rebuilding the petroleum plants."

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Comment

Whereas a substantial proportion of Wehrmacht vehicles have been converted to producer gas, the evidence is that, on account of production and fuel limitations, such conversion has probably reached the practical limit. The informant evidently supports this view.

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