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A REPORT ON ENEMY AIR ATTACKS ON RUMANIAN AND
GERMAN CENTRES OF FUEL PRODUCTION, AND GERMAN
COUNTER-MEASURES, AUGUST 1943 - JUNE 6, 1944.

A study issued by the Operations Staff of OKW.

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A report on enemy air attacks on Rumanian and German centres of fuel production, and German counter-measures.

For years it was noted with surprise that the British and American air forces hardly ever attacked German hydrogenation plants, though their location must have been known; in spite of all protective measures, such targets were easy to attack.

The possibility of attacks by the Russian air force on Rumanian centres of petroleum production grew greater as the Eastern Front was withdrawn. On August 1, 1943 the Allied air force had already attempted an attack after having secured a suitable base in southern Italy, but heavy losses were suffered and the attack was entirely without success, so there was no immediate attempt at a repetition. Then the enemy's squadrons of four-engined bombers were sent into action in an attempt to weaken Bulgaria by attacks on Sofia.

When the British and Americans renewed their operations against Ploesti on April 5 they lost 50 aircraft, with a further 16 "probables". Tanks were burnt out in three refineries, but the total damage was not heavy - in fact, it was less than that of August 1, 1943. The active and passive air defence forces acquitted themselves well.

On April 24 Ploesti and Bucharest were attacked. The maralling yards were hit, and at Ploesti three refineries suffered damage. German railway workers were employed to repair the damage, and trains were diverted via Bulgaria. In spite of these measures, the rail transport situation remained unsatisfactory, so the Chief Transport Officer of the Wehrmacht arrived in person. In addition to the difficulties relating to the supply of the army group in the southern Ukraine, there was the fact that during the last few days of April, only 50% of the oil was being transported. On May 5 the enemy attacked the oil-producing area by day and night, in addition to raiding Turnu-Severin. On May 6 400 aircraft attacked oil installations at Campina (second only in importance to Ploesti); further attacks were made on railway facilities in Siebenbuergen and Turnu-Severin.

Since the Danube was being continuously mined, it became more difficult to transport the oil by water. Shipping on the Danube was suspended between April 9 and 22, so it was only possible to ship 137,000 tons of mineral oil instead of the intended 264,000 tons. Only the cargoes from Hungary - 43,000 tons, of which 16,000 tons were crude oil - reached the amount aimed at.

In the first ten days of May an additional two fighter groups were transferred from Hungary and Italy to the defence of Ploesti. Night fighter forces were also strengthened. At the request of Marshal Antonescu, Germany increased the supply of materials for the railways, especially rails and switches, deliveries of which had been behindhand. In spite of the protest of the army group, these materials were included in supply transport as it was only in this way that supplies could be maintained.

The drop in production was no less significant than the damage to the railways, which endangered supplies for the front as well as the transport of mineral oil. By May 9 the fall in production amounted to 140,000 tons.

In order to gain a clear conception of the damage which had arisen and the counter-measures which were necessary, Major Dereser travelled by air to the oil-producing area; he was the special envoy of the Chief of OKW and had extensive powers.

It was his task to examine the possibilities of maintaining and increasing the Rumanian production of fuel and also to make arrangements for its removal. His tour of inspection lasted from May 9 to 13, and he was accompanied by Captain Dr. Cartellieri; on his return he submitted a comprehensive report, in which the necessary particulars were included.

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This report expressed the view that the enemy had begun his attacks on German hydrogenation plants on May 12.

A. The mineral oil situation

- (a) At the beginning of May the situation was as follows: the normal deliveries of crude oil at the beginning of 1944 averaged 430,000 tons per month, but air raids and the supply situation so affected the daily production that this figure fell to 240,000 tons per month. There was thus a decline of 190,000 tons per month, or 44%.

As the production of crude oil had been deliberately curtailed on economic grounds, it could be expected that an increase in production would be possible when the damaged refineries had been repaired and transport arrangements resumed.

- (b) The average amount of crude oil which was processed at the beginning of 1944 was 400,000 tons monthly; as a result of damage this figure fell to 160,000 tons per month. The loss therefore amounted to 240,000 tons per month, or 60%. This decrease meant that the monthly production of petrol was lowered by 25,000 tons and diesel and paraffin oil production by 62,000 tons monthly. It could be assumed that if evacuation measures were applied quickly and if there was more urgency in the repair of damaged works, and always provided no additional damage was suffered, then the amount processed monthly might well be increased to 300,000 tons. It would be necessary to assume for this that arrangements would be assured for the transport of the finished product.

The report indicated that the sites where there were large storage tanks were a particular source of danger, although they were protected to a large extent against the dangers of splinters.

A survey of the general fuel situation revealed the following shortages:

(1) Aviation fuel: A deficit of 32,000 tons (only to be met by drawing on the special reserves)

(2) Motor fuel: Petrol Diesel oil
 (tons monthly)

Deficit in Rumania in May	24,000	6,600
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Deficit in Germany in May	30,900	19,000
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After all other sources of supply had been exhausted, the May deficit was:

Petrol	Diesel oil
5,700 tons	5,300 tons

(3) Fuel oil:

There was scarcely any deficit in Rumania, but there was a fall in production in Germany of 8,000 tons. This loss could be covered from increased naval stores.

B. The transport situation

It had been planned to transport 270,000 tons in April, but the actual amount carried was 137,000 tons. Thus there was a drop of 133,000 tons, or 50%. In the first ten days there was a drop of 53,000 tons.

The measures introduced by the Director of Transport (more men and materials were made available) gave grounds for the belief that there would be an increase in deliveries in a month's time, provided that no additional damage was suffered and that there was no increased strain on the supply situation on the Eastern Front.

Pipe lines were to be repaired by May 20. Anything from 1 week to 10 weeks was estimated as the time necessary for repairing the refineries, which had suffered varying degrees of damage. Protective measures had shielded the main centres of the industry from serious damage. The railways were still running as though it were peacetime, and a stricter control was needed.

The report suggested the following measures:

- (1) The strengthening of the active air defence forces (fighters, T.E. fighters and A.A.)
- (2) The strengthening of passive air defence measures (decentralisation not removal of such industrial installations as railway stores, the use of transportable pipe lines, use of mobile tanks in cases of emergency, protection against splinters, improvement of the air raid warning system, construction of air raid shelters.)
- (3) The reconstruction of mineral oil works and transport routes.

Discussions showed the need for the following arrangements if the above measures were to be implemented:

- (i) Money must be made available.
- (ii) There must be an improvement in the way labour was used.
- (iii) There must be an increase in the volume of space available on the railways.
- (iv) Germany must make available supplies for railways and repairs.

The absence of any unified organisation caused difficulties. The report therefore suggested that General Gerstenberg, who was the Air Attaché in Bucharest and A.O.C.-in-C. in Rumania, should be appointed "German Commander of the Rumanian petroleum-producing area"; he should be immediately subordinate to OKW, and be entrusted with the unified control. There were already "refinery commanders" at work in each refinery.

In Hungary the situation was as follows: the supply of crude oil, which was normally 70,000 tons per month, fell to 65,000 tons in April, because the contents of the large tanks were decreased because of danger from the air. It could be expected that Hungary would be able to deliver 40,000 tons per month to Germany. Hungary's own needs amounted to 12,000 tons per month, of which 7,000 tons per month were for the Hungarian armed forces.) Measures already introduced within the framework of the Four Year Plan provided for the increase in crude oil during the year to 60,000 tons per month - i.e. the previous figure was going to be almost doubled. Moreover, economies were still possible in Hungary. Similar suggestions to those made for Rumania were made for the protection of Hungarian mineral oil.

/Difficulties

Difficulties stood in the way of the use of the two Hungarian sources of natural gas, as there was a shortage of steel cylinders and there were also problems of transportation; but here too alternative arrangements were possible. As there was also in Hungary the lack of unified control the report suggested that the German general in command in Hungary, General von Greiffenberg, should be entrusted with the task.

On May 12 the enemy delivered his first heavy blow against German hydrogenation plants; for years it had been expected that they would be bombed, but the enemy had shown a remarkable disinclination to attack. The resultant loss in production was as follows:

Bruex	100%
Troeglitz	100%
Boehlen	50%
Leuna	60%

Approximately 25,000 tons of petrol were lost.

(Later reports indicated that the damage was even greater.)

The report made the point that OKW had anticipated such a development in good time and had taken as many counter-measures as possible. Thus mineral oil supplies for the Wehrmacht were assured for the time being, but further attacks on the same scale would soon lead to the exhaustion of the OKW reserves and to a decrease in fuel supplies. It would be impossible to prophesy the consequences on the further conduct of the war.

The following suggestions were therefore made:

- (1) Immediate steps should be taken to improve active and passive defence at all centres of fuel production; the emphasis must be on passive measures, particularly the provision of a unified command.
- (2) A state of emergency should be proclaimed for all centres of fuel production, and the mineral oil production programme should be accorded the same degree of priority as the fighter production programme.
- (3) A.R.P. measures should be checked in all concerns which had been evacuated.
- (4) The most stringent economy measures should be introduced.
- (5) More use should be made of alternative materials.
- (6) There should be further and more extensive plans made for the production of mineral oil.

Finally, the report - which had the full approval of the Chief of OKW - suggested that discussions should take place with the German authorities concerned.

Among the general impressions received on the tour of inspection, the following deserve mention.

Up to that time, all security measures which had been taken in the oil-producing area had been taken by the German authorities. The protection against splinters had proved of particular value; at the insistence of General Gerstenberg, walls had been built around vital machinery and apparatus. Such measures were responsible for the fact that the largest refinery, the Astra-Romana, was only out of commission for two months.

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There were sufficient numbers of workers available for evacuation projects, but the civil population fled, not only at the beginning of an air raid, but also when one was even expected, and the Rumanian authorities were not in a position to do anything to prevent it. On the German side, plans were therefore made for the use of workers from the East, who were less likely to be upset by bombing. As German labour could not be made available, it was a matter of using the so-called "defence squads", i.e. armed police formations, prisoners of war and volunteer auxiliary workers. It was however recognised that Marshal Antonescu would reject any official demand, as he had already objected to the infiltration of volunteer auxiliary workers into the Wehrmacht, since he feared that they might form guerilla bands. The following solution was therefore suggested: the Chief of OKW gave General Gerstenberg authority to bring in as many workers as were necessary to the oil-producing areas and to move them to where they were required. General Gerstenberg would be assisted by SS General Hildebrandt.

On May 20 the Operations Staff of OKW submitted a report on the existing situation. Although the Quartermaster General of the Army had given up a claim for 4,000 cubic metres, and although other economy measures had been introduced, there was still a deficit in May of 18,000 tons, which had to be made up out of the OKW reserves. (These reserves were supposed to be 185,000 cubic metres on June 1). If this could not be done, a 32% cut in supplies of petrol was to be expected, together with a 28% cut in diesel oil. If the deficit in petrol could not be balanced in June, then it could be assumed that the OKW reserves would be down to 152,000 cubic metres by the end of June.

A rough estimate showed that there would be a drop in production in Rumania of one half and in Germany of one third.

On May 22 and 30 discussions took place with the Fuehrer on the mineral oil production programme; as a result the programme was accorded first priority. To make good the losses inflicted by the enemy, OKW introduced the following measures:

(1) Economy measures

On May 19 the Chief of OKW had already informed the three branches of the Services, the Director of Armaments, the Commander of the Reserve Army, and the Director of M/T that there would have to be a cut of 20% in June. Gas-driven vehicles would have to be used for driving practice, and all vehicles would have to be converted for this by July 1. In addition, specific instructions were issued. As there were threatening developments in the supply of aviation fuel, the Chief of OKW made available 13,000 tons in May and 20,000 tons in June from the OKW reserves.

On May 25 it was made the duty of all commanding officers to limit their demands even further.

It was suggested by the Operations Staff of OKW that 90% of all armoured cars should cease running. On June 2 that order was given - but it applied only to 30%. On June 6 limitations were put on the use of aircraft for official journeys and courier purposes.

On May 29 the enemy attacked the hydrogenation plant at Poelitz (this plant had a production capacity of 47,000 tons per month and was working principally for the Luftwaffe); it was so badly damaged that at least two months' production was lost. The following day, industrial installations in the Dessau-Halberstadt area were attacked. Consequently it was necessary to increase the amount saved to one third of the previous allocation. The authorities concerned were informed on May 31.

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On May 30 the Chief of OKW reminded the Chief of the Army General Staff of the importance of the Rumanian and Galician oil-producing areas, and asked him to bear this in mind when making operational plans.

(2) The Chief of OKW informed the authorities concerned of the decisions which had been taken at the discussions with the Fuehrer on May 22.

- (a) There must be increased A.R.P. protection for factories and for transport, particularly at the more important points, and especially at Poelitz (monthly production of 47,000 tons, mostly aviation fuel).
- (b) All passive defence services were to be exploited to the full (an accurate warning system, the use of smokescreens, a more stringent system of command, protection against splinters).
- (c) The protection of loading and transportation facilities, particularly by the use of A.A. and passive defence measures, the most important of which was dispersal. (Specific orders were given for railways and shipping).

(3) As a result of discussions with the Fuehrer, the Chief of OKW sent a letter to Reichsminister Speer on June 3; copies were also sent to the authorities concerned in the implementation of the measures detailed in it. The letters listed the following demands of the Wehrmacht on the Minister:

- (a) The assurance of special priority for all programmes which had as their aim the saving of fuel and the finding of alternative sources of power.
- (b) The use of all technical possibilities, particularly the use of smokescreens.
- (c) The greatest possible use to be made of those fuels which were simple to produce.

(4) Since February consideration had been given to the problem of how A.A. protection could be improved at the mineral oil works. On April 3 the Chief of OKW expressed to the Chief of the General Staff of the Luftwaffe his satisfaction with the fact that A.A. defences had been improved since the middle of December 1944 by the addition of 35 heavy A.A. batteries and lighter A.A. weapons. He nevertheless demanded a further increase of A.A. strength. In this connection, the Chief of OKW said that there did not seem to be adequate protection for Zeitz and Rositz and he referred to his conversation with the Chief of the General Staff of the Luftwaffe, when the latter was informed that the fuel production programme would have first priority.

On May 2 the Feldwirtschaftsamt (economics office for front supplies) noted from a map which had been submitted by the Operations Staff of OKW that A.A. defences still remained very restricted and that the areas where crude oil was produced had not been included for A.A. protection.

The Operations Staff of the Luftwaffe was ordered by the Fuehrer to take immediate steps for the protection of the mineral oil industry; on June 2 it was announced that measures had been taken for the protection of key centres of production, for the security of shipping on the Danube, for the more extensive use of

/smokescreens

smokescreens and for the improvement of existing defence measures. It was decreed that:

- (a) There should be a survey of the A.A. defences in the mineral oil-producing area.
- (b) These defences should be strengthened wherever necessary.

Loading points were to be included; the most important being Ploesti, Campina, Bucharest, Kronstadt, Giurgiu, Vienna. The defences were to be strengthened by a redisposition of forces in the area.

- (5) (a) In accordance with the suggestion of Major Dereser, the Chief of OKW appointed General Gerstenberg, A.O.C.-in-C. Rumania, as "German Commander of the Rumanian oil-producing area" (June 4); he was entrusted with the unified command of all military operations affecting the oil-producing area, including transport matters, and he was to be responsible for any demands which were made on the Rumanians. The Commander was immediately subordinate to the Chief of OKW and was granted High Command authority; he also received other extensions of his authority.
- (b) Similarly, Director Geilenberg was appointed as a Special Delegate of the Fuehrer for the area of the Reich; he was given authority to requisition anything which he required to restore a hydrogenation plant, and he was also given control of labour forces.
- (c) Admiral Marschall was appointed with special powers to be responsible for the maintenance of shipping on the Danube; he was also to be responsible for minesweeping operations in the river, which the enemy had been constantly attempting to mine. This appointment had to be delayed for a time as some system of division of duties had to be found between Admiral Marschall and the Reichskommissar for Shipping, Gauleiter Kaufmann.

In view of the enemy landing in the west, the Chief of OKW released 10,000 cubic metres from the OKW oil reserves on June 6.

After the invasion had begun there was some decrease at first in the attacks on the Reich; but the four-engined squadrons in Italy were not affected and they maintained their attacks against the south-eastern territories.

On June 11, 300 enemy bombers flew in from the south-west to attack oil tanks at Giurgiu and Konstanza. It was not possible to prevent the tanks from being hit, but as this attack had been expected, emergency measures had been prepared. On June 12 there was an attack on the hydrogenation plant at Komora, and on June 14 on the plant near Budapest. But these events do not come within the scope of this study, which only covers the time prior to the enemy invasion in the west.

C. Enemy air attacks on transport and communication facilities

The preceding paragraphs have already referred to the disruptive effect of enemy air attacks on transport facilities, and to German counter-measures.

In this particular part of the air war, the enemy was preparing for and giving support to the conduct of the war on the ground.

In Italy the enemy was attempting to interfere with our conduct of operations on the southern front and opposite the Nettuno bridgehead (which had been established on January 22); he hoped to achieve this by

destroying rail facilities in central Italy and by attacks on communication centres in northern Italy and the Alps. How far he was successful and to what extent German counter-measures restored the freedom of transport is discussed in the survey dealing with events in the south-west.

Operational considerations also influenced the role of the enemy air force in the west; there the enemy hoped to destroy all the bridges over the Seine and Loire and thus interfere with German movements towards the invasion area. The attacks on the rail routes between Italy and France and between south-west Germany and France had the same object.

The same applied to Russian attacks on rail targets behind the eastern front (e.g. on Lemberg) but the effect was not so serious, as the eastern railway system was less vulnerable to air attacks and the Soviet air force did not possess the offensive power of the Anglo-Americans.

If the German war economy had been hampered by these attacks also, that would undoubtedly have been regarded by the enemy as a desirable result. Operational considerations only coincided with matters of war economy in the south-eastern area. For the mining of the Danube, together with the destruction of the Rumanian, Yugo-Slav and Hungarian railways meant that not only was there a threat to fuel production, but the front which had been built up with such difficulty was also in danger.

Summary

The developments which have been described must be considered in conjunction with the British policy of blockade on one hand and the preparations for an attack from many directions on the fortress of Europe on the other.

..... The success of the enemy blockade in 1918 could not be repeated as Germany no longer depended to such an extent on supplies from abroad.

..... This time the enemy blockade was concentrated on depriving Germany of her supplies of rubber and petrol, but this development had been foreseen, and even before the outbreak of war synthetic materials had been prepared. Supplies of other essential raw materials (nickel, manganese and molybdenum) had been secured by the intervention of the Wehrmacht.

The only real difficulty developed when the enemy began his attacks on centres of fuel production in Rumania, Hungary and in the Reich itself. It had been foreseen for some time that such a development would come, and as many counter-measures as possible had been taken, but it was still not possible to prevent significant damage being inflicted.

The enemy offensive in the west meant that two alternatives arose:

- (a) Would German counter-measures be successful in restoring production in Rumania and the Reich, and would transport difficulties be solved so that there would be no interference with the conduct of the war ?
- (b) Would the enemy succeed in inflicting further damage on fuel production and destroy Germany's ability to resist ?

The attacks on the transport system in the oil-producing areas were only part of the attacks on the whole German transport system; the aim was to deprive Germany of the advantages of internal lines of communication.

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It became obvious to the enemy that these measures alone would not be sufficient to break Germany's power of resistance. Therefore he had to reconcile himself to the fact that the war would have to be conducted in the only way which could lead to a decision - namely with men and weapons.

A. H. B. 6 Distribution

Same as for Translation VII/75