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Enemy Branch, (F.O. & M.E.W.),  
Lansdowne House,  
London, W.1.

September 14, 1944.

SECRET

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Dear Sid,

German Synthetic Oil Industry

Peck and Noel have just returned from an instructive trip to Paris, where they were successful in picking up a certain amount of information. Their report is in preparation but I gather that their general findings are briefly as follows:-

They are of the opinion that there are no unknown synthetic plants.

I gather Peck is of the opinion that our estimates for Fischer-Tropsch production are likely to have been high by something like 100% (with the possibility that quite a proportion of the Fischer output has been devoted to the production of olefines for special purposes) and that, on the other hand, our Bergius estimates are likely to have been rather too low, the two errors roughly offsetting each other.

Yours sincerely,

Signed O.F.Thompson.

S. Kilbey, Esq.,  
British Embassy,  
Washington, D.C.

ESTIMATE OF PRODUCTION OF SYNTHETIC OIL

~~PLANTS IN AXIS EUROPE.~~  
PLANTS IN AXIS EUROPE.

(HYDROGENATION AND FISCHER TROPSCH)

Period: First 6 months 1944.

( T E N T A T I V E )

New York, June 15, 1944

TABLE I

HYDROGENATION PLANTS IN AXIS EUROPE

Estimated production in terms of motor gasoline capacity.  
Monthly figures shown at annual rate. All figures in  
thousands of metric tons.

	May	June	July	Aug.	Sept.	Oct.	Total (6 months)	
<u>A. Bit. Coal or Tar</u>								
*1. Gelsenberg J.	350	350	350	350	350	350	175	300 350
✓ 2. Scholven J.	400	400	400	400	400	400	200	400 400
✓ 3. Poelitz M. J.	600	-	480	480	480	600	220	600 600
**4. Blechhammer N.	125	125	125	125	125	125	63	125 125
**5. Blechhammer S.	300	300	300	300	300	300	150	300 300
6. Welheim	-	100	100	100	100	100	42	100 100
7. Liévin	10	10	10	10	10	10	5	10 10
8. Bethune	10	10	10	10	10	10	5	10 10
Sub-Total A	1795	1295	1775	1775	1775	1895	860	
<u>B. Brown Coal or Tar</u>								
9. Boehlen M. 2	175	90	175	175	260	350	102	350 350
✓ 10. Magdeburg M. 5	300	-	-	150	150	300	75	300 300
✓ 11. Zeitz M. 2	200	-	-	-	-	250	38	400 400
✓ 12. Bruex M. 1	350	350	350	350	450	450	192	750 750
✓ 13. Leuna M. 2	300	-	600	600	600	600	225	600 600
✓ 14. Luetzendorf M.	65	-	-	65	65	65	22	120 120
✓ 15. Vesseling A J.	200	200	200	200	200	200	100	300 300
Sub-Total B	1590	640	1325	1540	1725	2215	754	4775 4775
GRAND TOTAL	3385	1935	3100	3315	3500	4110	1614	1750 1750

\* Attacked again on June 12, but no information as to damage as yet available.

\*\* We provisionally accept the British figure which is based on the assumption that the plant is incomplete.

For detailed discussion of production estimates of these plants see Annex A.

## SUMMARY

Table I shows the estimated production from hydrogenation plants (in terms of motor gasoline capacity) for the first 6 months of 1944 and Table II those for the corresponding estimates (in terms of primary product capacity) of production from Hydrocarbon Synthesis (Fischer Tropsch) plants. Whereas Annexes A and B discuss the respective details of these estimates.

In most instances the available information (particularly aerial photographs of good quality) is still too incomplete to warrant any claim of accuracy and the estimates are only tentative ones subject to possible revisions as and when more detailed information on the bombed plants and more up to date information on the undamaged plants becomes available.

It will be noted that estimates are in terms of motor gasoline and primary product capacity respectively, no attempt having as yet been made to the intricate problem of estimating the production in terms of finished product categories.

It is to be mentioned that most of the attacks on hydrogenation plants have been concentrated on those operating on L.T.C. brown coal tar which plants are less suitable for the manufacture of high grade aviation base stock. Also it must be noted that whereas these attacks may have considerably reduced the enemy hydrogenation capacity for some time, the total denial of liquid fuels is not quite as big as would appear at first sight, because the L.T.C. producing capacity has been little, if at all, affected. It is to be expected that to the extent the hydrogenation capacity has become insufficient to treat all of the L.T.C. tar, the Germans will try to convert such excess tar by other means (distillation, solvent extraction, etc.). This, and the fact that the Germans may be expected to try to put damaged plants back into production as quickly as possible even if this should mean temporarily a lower grade product seem to point to the probability that the loss in production of light products (particularly motor gasoline) may be more serious than would correspond to the figures given in tables I and II, but that the loss in production of the heavier products particularly Diesel and Fuel Oil is much less than would correspond to those figures.

In addition to the loss of production the raids on the German synthetic plants are estimated to have resulted in a loss of some 40,000 tons of intermediate and final products. It is suggested that this amount is deducted from the figure of the June production.

Summary

Page -2-

It is further more to be noted that whereas the latest Hartley Estimates (A.O. (44) 41.) show a deduction of 5% of the production of Synthetic Oil plants to allow for "adverse war time factors" we have made no such deduction. It is felt that any such allowance over and above the allowance made for far less than normal construction progress at the Blechhammer (for which we have tentatively adopted the British Estimate, failing any up to date data on which to have our own estimates) Bruex, etc. might entail the risk of counting the same factor twice and thus of under estimating the enemy.

TABLE II

HYDROCARBON SYNTHESIS PLANTS IN AXIS EUROPE

Estimated production in terms of primary products (synthetic crude) monthly figures shown at annual rate. All figures in thousands of metric tons.

Plant	1944						Total
	May	June	July	Aug.	Sept.	Oct.	
✓ 1. Holten J	130	130	130	130	130	130	65
2. Castrop Rauxel	150	150	150	150	150	150	75
3. Hoesch	90	90	90	90	90	90	45
✓ 4. Homberg	190	190	190	190	190	190	95
5. Krupp (Wanne Eickel)	130	130	130	130	130	130	65
6. Essener Verein	100	100	100	100	100	100	50
✓ 7. Luetzkendorf	75	-	-	75	75	75	25
✓ 8. Schwarzheide M. J	350	-	175	175	350	350	117
✓ 9. Deschowitz	110	110	110	110	110	110	55
10. Kuhlmann (Harnes)	<u>30</u>	<u>30</u>	<u>30</u>	<u>30</u>	<u>30</u>	<u>30</u>	<u>15</u>
Total known plants	1355	930	1105	1180	1355	1355	607
Estimated "unknown"	300	300	300	300	300	300	150
GRAND TOTAL	1655	1230	1405	1480	1655	1655	757

1730

For detailed discussion of production estimates of these plants see Annex B.

ANNEX A

HYDROGENATION PLANTS

Gelsenberg:

According to newspaper reports this plant was bombed on June 12. However, official confirmation and interpretation reports on this raid are still lacking and in our present estimate no allowance was made for any loss of production in this plant.

Scholven:

As far as is known this plant has not been raided recently and it has been put down for its full capacity.

Poelitz:

This plant was raided on May 29 by 233 planes carrying a bomb load of

2166 x 500 lbs. G.P.	= 1,083,000 lbs.
110 x 500 lbs. G.P.R.D.X.	= 55,000 lbs.
Total 2266 Bombs	1,138,000 lbs.

The raid is termed "moderately successful" which has been interpreted to cause a complete shutdown for one month and a 20% loss of capacity for the next three months. The Medmenham interpretation reports (k 2284 and S.A. 1908) and reconnaissance photographs do not permit a better accurate estimate of production loss, large clouds of smoke over the target area making interpretation of damage difficult. Until better information is available therefore we have let our first estimate stand.

Storage losses are estimated at 10,000 tons.

Blechhammer North:

No recent reconnaissance data being available to us production has been taken at the British figure shown in the Hartley report of May 27, 1944 (A.O. (44) 41.)

Blechhammer South:  
(Reigersfeld)

Same comments as for Blechhammer North.

Welheim:

According to the above mentioned Hartley Report this plant was damaged in April, and largely closed down. One half of the boiler house was wrecked and the lights blown out of the generator hall. No reconnaissance photographs or damage interpretation reports being available here we have tentatively assumed this plant may remain inactive during the month of May and come back to full production in June.

Liévin and Béthune:

No recent information available on these plants. Production taken same as previously.

Boehlen:

This plant was raided on May 12 by an unknown number of planes. No interpretation report is available, but we have the Provisional Statement of Damage and reviewed one of the reconnaissance photographs taken shortly after the attack.

The smoke obscures approximately one half of the target area but it is evident that the hydrogen generating plant, part of the refinery (distillation) and the low temperature carbonization plant have been hit. These are, on the whole, non-critical equipment that should normally be repaired without great difficulty. Accordingly, the plant is set down for a total loss of production during the first month and 50% loss in the three months following. Storage losses are estimated at 5,000 tons.

Magdeburg:

This plant was attacked on May 28th by 55 planes carrying the following bomb load

	176 x 500 lbs. G.P. = 88,000 lbs.
	<u>1,406</u> x 100 lbs. G.P. = <u>140,600</u> lbs.
Total	1,582 Bombs 228,600 lbs.

From the Medmenham Interpretation Report (S.A. 1893) it appears the oil storage is burning and that the following installations have probably received hits: Distillation Plant, Injector House, Hydrogenation Stalls, Compressor House and Offices. Until more positive and detailed information shall be available it is estimated that the effect of the damage on plant operation is as follows:

2 months complete shutdown  
2 months @ 50% capacity  
thereafter full capacity

Storage losses are estimated at 5,000 tons.

Zeitz:

This plant was attacked on May 12 by an unknown number of bombers and again on May 28 by 187 planes carrying a bomb load of

	660 x 500 lbs. G.P. = 330,000 lbs.
	<u>5,646</u> x 100 lbs. G.P. = <u>564,600</u> lbs.
Total	6,306 Bombs (May 28 894,600 lbs. raid only)

The Interpretation Report S.A. 1889 shows that damage is very severe the main installations damaged being: Gas generating plant, compressor houses, gas purification plants, hydrogenation stalls, injector house, boiler house, liquid air plant, conversion plant, distillation plant, oil storage, catalyst plant, offices and storage yards.



Zeitz (continued):

It would appear that hydrogen production at this plant would be completely out for 3 or 4 months and damage to the compressors might even put the plant out for longer, except for excess compressor capacity at ammonia or other plants that could be diverted to Zeitz.

Also most of the vital instruments in the injector house must be considered to be very difficult to replace. All in all, it is estimated that this plant would be totally inoperative for 4 months and at not more than 50% capacity for at least the next 2 months. An alternate possibility must be considered to the effect that there is sufficient undamaged equipment at Zeitz to speed up repairs of its equally damaged sister plants, Boehlen and Magdeburg, and/or even to speed up the completion of Blechhammer, particularly since the great number of plants damaged must have put the Germans for great problems of allocation of repair crews and materials.

Aerial reconnaissance within the next few weeks ought to give clues as to whether the Germans are taking this course.

Storage losses are estimated at 10,000 tons.

Bruex:

This plant was attacked on May 12 by an unknown number of planes. The provisional statement of damage but not the Medmenham interpretation reports are presently available and we have considered some reconnaissance photographs taken shortly after the raid. Heavy black smoke obscures a large part of the plant; the main damage appears to be in the gas generating and purification area, the L.T.C. plant and part of the boiler house. The boiler house at Bruex is a very large affair and it is not believed that more than one quarter of the capacity is affected by the three direct hits at one end of the plant. Similarly the damage in the L.T.C. plant seems to be confined to about one eighth of the capacity. The damage to the gas generating equipment concerns only low pressure equipment but a possible damage to the oxygen plant may entail some extra delay in reconstruction. The plant is estimated to be completely shut down for a half month and operating at 50% capacity for the remainder of the month and three succeeding months. In the fifth and sixth months the capacity is estimated to be about 75%. There is estimated to be a loss of 5,000 tons of products from storage tanks.

Leuna:

This plant was raided on May 12 by an unknown number of planes and again on May 28 by 65 planes carrying a bomb load of

	320 x 500 lbs. G.P. = 160,000 lbs.
	<u>1,414</u> x 100 lbs. G.P. = <u>141,400</u> lbs.
Total	1,734 Bombs (May 28 301,400 lbs. raid only)

From the Medmenham interpretation report (S.A. 1887) and reconnaissance photographs taken shortly after the raid it would appear that among others the following installations have been damaged: gas plant, boiler houses, paste preparation, injector building (slight), carbonizing ovens and gas washing and circulation buildings. For the purposes of this estimate it is assumed that all of the losses on the gas production and purification equipment will be taken up in reduced production of ammonia or methanol except for a half month's shut down that may have been necessary in the oil plant for adjustments caused by the general turmoil in the gas producing area.

Oil storage losses would appear negligible.

Luetzkendorf:

This plant which has both a Fischer Tropsch and a hydrogenation plant, was attacked on May 28 by 66 planes carrying a bomb load of

	350 x 500 lbs. G.P. = 175,000 lbs.
	<u>1,358</u> x 100 lbs. G.P. = <u>135,800</u> lbs.
Total	1,708 Bombs 310,800 lbs.

From the Medmenham interpretation Report (S.A. 1892) and photographs (showing a good deal of the plant covered by smoke) it would appear that damage was done to the injector house of the hydrogenation plant and to the compressor house, contact oven houses and gas generators of the F.T. plant. It is tentatively estimated that this plant will be down for 2 months to resume operations at the rate of 50% for a period of 3 months and at 100% thereafter.

Storage losses are estimated at 5,000 tons.

ANNEX B

HYDROCARBON SYNTHESIS (FISCHER-TROPSCH) PLANTS

- Holtien: In the absence of any recent information capacity of this plant has been assumed to have remained unchanged at the rate of 130,000 Tons prim. prod. per year.
- Castrop-Rauxel: In the absence of any recent information capacity of this plant has been assumed to have remained unchanged at the rate of 150,000 Tons prim. prod. per year.
- Hoesch: In the absence of any recent information capacity of this plant has been assumed to have remained unchanged at the rate of 90,000 Tons prim. prod. per year.
- Homberg: In the absence of any recent information capacity of this plant has been assumed to have remained unchanged at the rate of 190,000 Tons prim. prod. per year.
- Krupp (Wanne Eickel): In the absence of any recent information capacity of this plant has been assumed to have remained unchanged at the rate of 130,000 Tons prim. prod. per year.
- Essener Verein: In the absence of any recent information capacity of this plant has been assumed to have remained unchanged at the rate of 100,000 Tons prim. prod. per year.
- Luetzkendorf: Estimates of this plant have been fully discussed in Annex A.
- Schwarzheide: This plant was attacked on May 28 by 38 planes carrying a bomb load of  
1,391 x 100 lbs= 139,100 lbs.  
From the Medmenham interpretation report (S.A.1894) and aerial photographs the following installations would appear damaged:  
watergas plants, contact oven houses, gas purification, boiler house, active carbon plant and oil storage (slight). It is tentatively estimated that this plant will be shut down for 1 month, resume activity at 50% for the next 2 months and at full capacity again thereafter. Oil storage losses are estimated at 1,000 Tons.

Deschowitz:

In the absence of any recent information capacity of this plant has been assumed to have remained unchanged at the rate of 110,000 Tons prim. prod. per year.

Kuhlmann:

In the absence of any recent information capacity of this plant has been assumed to have remained unchanged at the rate of 30,000 Tons prim. prod. per year.