Y

BY FAST AIR BAG

SECRET

AO 2/5/2

Economic Advisory Branch,

(FOREIGN OFFICE & MINISTRY OF ECONOMIC WARFARE),

Lansdowne House,

Berkeley Square,

LONDON, W.1.

2nd December, 1944.

Dear Sid,

German Oil Position

I have had a note from Hartley in regard to the Minutes of the Meeting of the Western Axis Sub-Committee of November 7th and the reference to the proposal that the Enemy Oil Committee should produce a report on the current position and covering production, consumption and stocks.

I think he is a little apprehensive lest the E.O.C., in attempting to do what the Hartley Committee had decided that it (the Hartley Committee) is not capable of doing, may draw too fine a point on a position that is constantly changing, and thus incur the risk of compromising the reports of the operational committees.

I have told Hartley that it is not only understandable that the E.O.C. should wish to express a view on the German position but that in any case it would be useful if they issued authoritative figures for Roumania, France, etc. which would not only confirm the correctness of previous estimates but would also add strength to the confidence that is placed in their reports. I have also told him that I did not think it likely that the E.O.C. would produce any figure for tied stocks or residual stocks and especially as such a figure might once again start the uninitiated talking about hidden strength and other theories that may tend to take people's eye off the ball.

I sent to you yesterday a note upon our estimates of monthly production and which gives our views on maximum and minimum production for October, November and December. The picture as we now see it can be briefly summarised as follows:

Production rose from about 310,000 tons in September to nearly 400,000 tons in October. Output in November is likely to have been not less than 425,000 tons. Production in December could in no

circumstances exceed 565,000 tons. If, however, the 9 principal synthetic plants in central and eastern Germany were out of action during the first half of December the maximum production for December would not exceed 385,000 tons and might well be down to about 300,000 tons.

The increases in production in October/November are mainly due to rapid repair work on the major synthetic plants in Central and Eastern Germany which repair work has been but little interrupted by Allied attacks during the past two months. If the 9 plants in question succeed in attaining the production postulated by the Target Committee for December they will not only produce about 42% of the total oil available to Germany in that month, but they will also produce about 185,000 tons of gasoline out of a total of 250,000 tons.

We believe that all the synthetic plants in the Ruhr are at present out of action and their output in December will consequently be small. Thus the Central and Eastern synthetic plants are at present the mainstay of the whole position.

In regard to consumption we are not yet in a position to make estimates of the consumption by the armed forces in November. It is the opinion of the Air Ministry, and with which opinion we are in entire agreement, that G.A.F. operations have been further restricted during the past few weeks. In view of the urgent operational demands upon the G.A.F. during this period these restrictions appear to be clearly due to a drying up of basic supplies rather than to any policy of conservation for the purpose of accumulating any emergency reserve. It also looks as though the G.A.F. ground organisation has been almost totally deprived of motor gasoline, imposing a very great handicap on their operations.

In the case of the Army, the present position is not quite so clear. There is one school of thought that supplies on the Western Front in the latter part of November may have been slightly less stringent, although it is admitted that this theory is based on slender evidence. The present production-consumption equation, as applied to the ground forces, is complicated. It devolves upon the questions (a) has the production up-swing since September (which may well be of less significant proportions than our figures show) done more than take the bubbles out of the pipeline, (b) if so, has this additional production reached the front line, and (c) to what extent has consumption been increased by the start of the general offensive on the West. I do not think we can expect to give an answer to this equation before the middle of this month at the earliest. And what happens when the Russians open their big offensive?

There is nothing new to report on Naval shortages since my last note on this subject. We have, however, secured some recent German naval analyses. We have sent these to Professor Garner, chairman of the Black Oils Panel, and have asked him to try and give us the answer to the apparent anomaly of acute naval fuel oil shortage in the face of a possible abundance of raw tars and crude oil. The answer may simply be that such products are unsuitable.

Everything depends on how soon substantial damage can be inflicted upon the Central and Eastern synthetic plants. A determined attempt in this direction was made on Thursday, with results that have not yet been assessed.

Yours sincerely,

/s/ O.F. Thompson

P.S. A spare copy of this letter is attached if you would like to pass it on to Brandon Grove.

THE JOINT CHIEFS OF STAFF
Joint Intelligence Committee
Washington 25, D. C.

In reply refer to:
SU-999-MSI

JAN 13 1945

ENEMY OIL COMMITTEE

M E M O R A N D U M

To: Lt. Col. Benjamin F. Hake
Lt. Comdr. Paul L. Hopper
Major Robert R. Munoz
Major Irving E. Stark
Mr. Norris G. Wood

From: B. H. Grove
Executive Secretary
Enemy Oil Committee

B. H. Gr

Subject: "German Oil Position"

We are enclosing herewith copy of a letter from Oliver Thompson on the subject of the German oil position.

Enclosure - 1

THE JOINT CHIEFS OF STAFF
Joint Intelligence Committee
Washington 25, D. C.

In reply refer to:
SU-959-MSI

SECRET

JAN 13 1942

ENEMY OIL COMMITTEE

MEMORANDUM

To: Major Valentine A. Gates
Major Robert R. Munoz
Major Irving E. Stark ✓
Major Russell S. Tarr
Lt. Comdr. Paul L. Hopper
Mr. W. D. Crampton
Mr. B. J. Emmert
Mr. Sidney Kilbey

B. H. Gi

From: B. H. Grove
Executive Secretary
Enemy Oil Committee

Subject: "Production of Lubricating Oils From Rubber."

We are enclosing herewith for your information copy of a report on the production of lubricating oils from rubber.

Enclosure 1

AIR P/W. INTERROGATION UNIT.
MAIN HEADQUARTERS.
SECOND T.A.F.

PRODUCTION OF LUBRICATING OILS FROM RUBBER

This report is almost a straight translation of a paper written by the Belgian industrial chemist who supplied the information on German research on high octane fuels circulated under reference A.P/W.I.U. (2nd T.A.F.) 64/1944.

HISTORY.

2. The first Russian campaign yielded to the Germans a large haul of scrap rubber in the form of tyres and other articles which could not be re-used.

3. In 1942 I first heard in a vague way - not through any technical channels - that a German research centre was interested in scrap rubber starting from the results of some pre-war research on synthetic oil production from rubber, gum etc.

4. In 1943 I obtained through devious channels, some samples of an oil which analysis showed had had scrap as their origin. From this it can be assumed that by that date production was going on in German laboratories using medium-sized Hydrogenation equipment.

5. Subsequently I have been able to question several people and learnt from them that the production on a commercial scale began in the middle of 1943 and although the production capacity of the available installation in Germany was as much as 4/500 tons daily, only some 50/100 tons was being achieved owing to the shortage of scrap rubber.

METHOD.

6. The method used by the Germans is divided into three stages which can be modified or rather adjusted to produce a final product of higher or lower viscosity.

Stage I. Autoclaving with a solvent (Tetraline) to de-polymerize the rubber and to eliminate the free sulphur which is taken up by a suitable agent, sodium, lime, Caustic soda, etc. depending on the type of scrap to be treated.

Hydrogenation at up to 200 Kgs. pressure and at 250° - 280°C. followed by filtration and centrifuging.

Stage II. Total elimination of the combined Sulphurs. This is done by autoclaving with metallic Sodium and subsequent filtration.

Stage III. Final Hydrogenation in the presence of a Chromium Salt such as Copper Chromite. This is also carried out at a pressure of 200 Kgs. but the temperature is lower. The material is in solution of a solvent.

The synthetic oil is obtained by filtration and distillation.

INFORMANTS OWN IDEAS.

7. It is only fair to mention that this man is really interested in putting a plan of his own into operation. This depends on the low temperature carbonisation of Rubber scrap and he claims that one ton of material will yield the following:-

Primary tar	-	550 Kgs.
Coke	-	240 "
Gas	-	120 cu. metres (6000 Calories)
Water residues	-	50 litres

Fractional distillation of the tar will give :-

Temperature range.	Proportion	Material.
35° - 130°C.	10%	A solvent similar to Petroleum Ether. S.G. 0.680.
130° - 200°C.	15%	Turpentine substitute for paints etc. S.G. 0.785
200° - 260°C.	25%	Gas- or semi-diesel oil. S.G. 0.850.
260° - 320°C.	20%	Oil for printing inks, water-proofing, etc. S.G. 0.930.
Over 320°C.	30%	Viscous oil which by hydro-genation would yield greases. S.G. 1.030.

The Coke, it is claimed, can be used as a substitute for Carbon Black (Lamp Black?) in tyres, shoe polishes, etc. once the mineral salts have been extracted.

COPY

Economic Advisory Branch,
(Foreign Office and Ministry of
Economic Warfare),
Lansdowne House,
Berkeley Square,
LONDON, W.1.

SECRET
BY AIR BAG
AC 52/3

14th November, 1944.

Dear Sid,

German Oil Position

In our latest weekly report on the production position we have reduced the figure of 175,000 tons for "other sources" to 160,000 tons. The make-up of this new figure does not bear close examination and anyone asking how this figure is calculated is met with an evasive reply! However, the following shows a calculation which adds up to 160,000 tons:-

			Tons per month
1. Coke Ovens.			
Motor Benzol	20,000		
Motor Fuel from Tar	6,400	26,400	
2. Gas Works.			
Motor Benzol	3,000		
Motor Fuel from Tar	600	3,600	
3. L.T. Tar.			
Motor Gasoline		4,000	
4. Ethyl Alcohol		4,000	
			38,000
5. Tar and Crude Oil (used as finished products)			
Diesel Oils			25,000
Fuel Oils			85,000
6. Vegetable and Regenerated Oils			12,000
			160,000

SOURCE F.O. & MEW 14 NOV 1944

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

The two big questions are, firstly, what is the production of liquid fuels from bituminous coal and, secondly, to what extent are crude oils being used as finished products in the form of Diesel oil and furnace fuel. In regard to the former there are many indications that owing to the drying up of supplies of iron ore, to the adverse pig iron situation and to transport difficulties in the Ruhr, the German heavy industry relying upon bituminous coal is showing a declining output trend. On the other hand, recent intelligence has shown that German coal output as a whole has been higher during the past months than most people have expected. Furthermore, such recent air cover as is available of coke oven activity all point to output being substantial.

In regard to the use of crude oil as a finished product, we have asked the Industry for their views on the suitability of different crudes for this purpose, and I will be writing you on this point very shortly. In conclusion I would mention that there is a general feeling here that the figure of 175,000 tons for "other sources" is too high a figure, and such an output is not confirmed by the general weight of intelligence. On the other hand, whether 160,000 tons is closer to the mark is open to question!

Yours sincerely,

(Sgd.) O.F. Thompson

18 November 1944

MEW (Economic Advisory Branch)

TO: Mr. Kilbey

Our Coal Section has prepared new estimate German controlled Benzol and Tar production from coke ovens and gas works as of November. They have taken into consideration the estimated reduction in pig iron manufacture.

Total production of crude benzol is now put at annual rate of 554,000 tons.

On basis of this revised figure, we are assuming the amount of benzol available for liquid fuels is reduced to 23,000 tons per month (compared with 35,000 tons hitherto included in our total of 175,000 tons for liquid fuels from "other sources".

It is difficult to assess the quantity of products available for liquid fuel from tar sources and for the moment we are making no alteration to our figures, although we may later amend them. There is no doubt that there has been a drop in production of high temperature tars; on the other hand, smaller quantities of tar are being used as raw material for the synthetic oil plants.

Details November 1944

The metallurgical coke requirements at this time may be roughly estimated as follows:

		Million Tons Per Annum
Coke for blast furnaces and foundries		10.0
Coke for Synthetic Oil (Germany at 1/3 max. 1943 figure)		1.7
Coke for all other purposes:		
Germany	21.7	
Austria	0.2	
Czechoslovakia	1.5	
Poland	1.5	24.9
		36.6

Yield of crude benzol on dry coal is roughly:

Germany	0.97%
Czechoslovakia	0.95%
Poland	1.21%

On 36.6 tons of coke - crude benzol 472,000

Recovery for gas works 81,900

Tar yield is about 3% of coke production. On the above figures of coke production, this would amount to 1,098,000

Gas works production estimated:

Germany	417,000
Austria	45,000
Czechoslovakia	18,000
	480,000

The total German controlled production of tar from coke ovens and gas works therefore is about 1,578,000

(Poland omitted as Warsaw is virtually sole producer)

Of total crude benzol 554,000

Derivatives are:

Benzine	50/60%
Toluene	12½%
Solvent Naphtha	10%
Available for auto fuel	17½/17½%
Loss	10%

Million Tons Per Annum

Quantity available for auto fuel (A) 97,000/42,000
Benzine 277,000/332,000

Of Benzine, 100,000 is required for Synthetic Phenol manufacture, rubber, plastics, explosives and general solvent purpose

Thus, total benzole available for liquid fuels is:

For Benzene		177,000-232
As above	(A)	97,000- 42
Roughly		23,000 monthly

FROM: Mr. Kilbey 28 November 1944

Telegram received from J. O. T. C. revised estimates:

	October	November	December
Synthetic	116	182	288
Crude Refineries	114	107	129
Other Sources	175	160	160
	405	449	577
	30%	34%	43%

COPY

THE FOREIGN SERVICE
OF THE
UNITED STATES OF AMERICA

EOC. 793

SECRET

AMERICAN EMBASSY
MISSION FOR ECONOMIC AFFAIRS.

London: December 21, 1944.

Mr. Leo T. Crowley,
Foreign Economic Administration,
Washington, 25, D. C.

Attention: Mr. B. H. Grove,
Executive Secretary,
Enemy Oil Committee.

Dear Sir:

Attached is a document entitled "German Development of High Octane Fuels", prepared by the Economic Advisory Branch of the Foreign Office and Ministry of Economic Warfare, which we thought might be of some interest to you.

Very truly yours,

(Sgd.) C. E. Meyer

C. E. Meyer,
Petroleum Attache.

esp

COPY

GERMAN DEVELOPMENT OF HIGH OCTANE FUELS

The following report has been received from an informant who claims some knowledge of German developments in high octane fuel production since 1940.

2. The informant was unable to give any really accurate details, but his report shows the general lines of German High Octane fuel research and also that several units are in operation at German Coke Oven plants for the production of the three fuels mentioned.

PROCESS USED.

3. The German research is in the nature of a development of the Thermo-Alkylisation process for the production of Neo-Hexane ($CH_3.C.(CH3)_2.CH_2.CH_3$) which was first worked out on a semitechnical scale by Philips Petroleum Corp. in 1938/39.

4. Broadly speaking, this process depends on the inter-action of Hydro-Carbons under heat and pressure in the presence of suitable catalysts.

5. Informant does not know accurately what treatment the basic Hydrocarbons undergo, but he believes that it is a modification of the Fischer-Tropsch process, which has been developed by the Germans for the production on a commercial scale of Triptane, Trimethyl pentane and Trabtane.

6. Coke oven gas furnishes the Hydro-Carbons - mainly Propane, Butane, and their derivatives Propene and Iso-Butane - which are used as Raw Materials and production is carried out in small units located at or in th vicinity of Coke oven plants.

7. In particular the demand for Iso-Butane as a raw material for High Octane fuels has increased so rapidly that German research institutes are investigating new methods for production. The Institute at Mulheim/Ruhr is trying to develop a method of producing Iso-Butane direct from Butane.

TRIPTANE & TRIMETHYLPENTANE.

8. Triptane, ($CH_3.C.(CH3)2.CH(CH_3).CH_3$) with a boiling point range of 90° - 130°C is being produced by the interaction of Propene, Iso-Butane, and a small proportion of Propane.

9. Trimethylpentane ($CH_3.C(CH_3)2CH(CH_3)$) with a boiling range similar to that of Triptane, is derived from normal Butene, Iso-Butane and a small proportion of Butane.

10. In both cases the reaction takes place at a temperature of 500/600°C. and a pressure of 100/300 kg. per sq. cm. Informant believes the catalyst

to be either Aluminium Chloride or Aluminium Bromide.

11. The yield of High Octane fuel is in the neighbourhood of 3 litres per cu. m. of gas treated.

TRABTANE.

12. Trabtane, or Tetramethylbutane ($CH_3.C(CH_3)_2.C(CH_3)_2.CH_3$) with a boiling point of 106/107°C. is being produced by the inter-action of Iso-Butene with a small proportion of Butane and Propene alkylisation in the presence of Sulphuric Acid.

13. It is believed that the basic process was developed by Anglo-Iranian Oil and then further investigated by I.G. Farben who succeeded in controlling the reaction temperature to 25°C and produced mainly Trabtane.

BY SAFE HAND

S.K.7

SECRET

BRITISH EMBASSY
WASHINGTON, D.C.

January 1, 1945

Dear Brandon,

AXIS PRODUCTION IN EUROPE

I have now received a further telegram from London giving me the most recent appraisal by the J.O.T.C. of the oil production in Axis Europe and I should, therefore, be glad if you will amend previous advices which I have given you.

	December	January
Synthetic Plants (Bergius and Fischer-Tropsch)	162	208
Crude Refineries	100	144
Other sources (benzol, alcohol, tars, etc.)	150	150
Total	412	502
Percentage of pre-raid total	51	37

These revised figures are the result of reconnaissance over all the major items immediately prior to December 26th, the date of the telegram and all the synthetic plants are believed to be inactive with the exception of the following:-

Troglitz, Scholven, Bohlen, Magdeburg, Lutzkendorf, Ruhland, Deschowitz.

Leuna and Poelitz, although inactive, might be in a position to resume partial operations by about the middle of January.

Although the December production for synthetic plants is given as 162 it is believed that production on the date of the telegram; i.e., December 26th, was at the low level of 100.

Yours sincerely,

S.Kilbey

B.H.Grove, Esq.
Foreign Economic Administration,
Washington.

ccs Norris G.Wood, Esq.,
Major I.E.Stark

Major R.R.Munos
Walter Levy, Esq.

17 November 1944.

Memorandum to Maj. J. L. Luke

Subject: Review of Present British Thinking on German Oil Position.

1. Letters from London to Mr. S. Kilbey of the British Embassy (dated late October and early November) give interesting evidence of current tentative British thinking concerning the present German oil position.

2. The British believe* that there are little or no free stocks of oil in Germany at present and that this condition has probably existed during October. Such oil as is not being used immediately on a production to consumer basis is believed to be obtained by removal to Germany of stocks located in such places as Norway and the Balkans.

3. Evidences of operational shortages have been seen for some time, but a particular stricture apparently occurred early in October. It is possible that this represents the disturbance caused by the heavy attacks of 10-14 September thus indicating a pipe line length of from 2-4 weeks.

4. The following "table" gives the present British estimates of consumption in thousands of metric tons.

	Jan.	Feb.	March	Apr.	May	June	July	Aug	Sept.	Oct.
Army	440	410	420	345	175	195	220	150		50
Air Force	195	175	192	192	196	167	167	85		43Avia. 10Grd.
Navy	145	145	145	145	120	144	137	100	100	175
Industrial & Civilian & Todt.	527	525	526	526	530	430	385	275		125
Total	1,332	1,280	1,308	1,233	1,121	1,036	909	500		408

5. Production during late 1943 and early 1944 ran slightly above consumption, allowing accumulation of stocks, but withdrawal from storage commenced in May because of attacks on oil and has continued at such rates that consumption has had to be drastically reduced as shown.

6. Estimates for October and November point to a rise in production for those months, due to the difficulties brought on by bad weather, thus slightly alleviating the great stringency which existed during early October.

Russell S. Tarr

RUSSELL S. TARR,
Major, Air Corps,

* It must be remembered that the statements which follow are not in official reports but merely represent the present trend of thought.

COPY

SECRET
AO2/3/Z.

ENEMY BRANCH (F.O. & M.E.W.),
LONDON, W.1.
September 15, 1944.

Dear Sir Harold,

GERMAN OIL POSITION

We will be circulating tomorrow our latest bulletin on the German position, but as it is somewhat vague in its conclusions about the present status of the producing plants, I think you will be interested in the following observations.

We have had several meetings this week to assess the position, but matters have been complicated, firstly by the fact that air reconnaissance has been hampered by adverse weather, and secondly by the large number of attacks that have been made towards the end of our usual weekly period.

Since September 10th every major plant that was producing any oil at all or that was likely to come into production has been heavily bombed. The total tonnage of bombs dropped during the period September 5th to 13th has been something in excess of 8,000.

We are still awaiting reconnaissances of most of these attacks. While it is not possible to state specifically that every synthetic oil plant, both Bergius and Fischer Tropsch, is currently out of action, it is quite probable that this is the case. Prior to the latest attacks, Brux and Bohlen-Rotha may have been in partial production and since then Bohlen-Rotha has been attacked twice and Brux once. A number of other plants were expected to be ready to resume operations before these latest attacks, and if therefore any of these attacks have not hit primary objectives, an early resumption of operations must be expected.

In the case of the mineral oil refineries none of the principal German refineries is at present operating, although Misburg, which sustained damage in both of two consecutive attacks, might be able to bring back one distillation unit in a week or two. It is interesting that no repairs are evident to the two principal refineries in Hamburg which we had been expecting would be rapidly repaired. In Austria two damaged refineries may be in partial operation although the results of further attacks upon them have not yet been received. There is probably a small output of finished products from partially damaged or minor plants in Hungary and Czechoslovakia, the total tonnage not amounting to figures of any great importance. There is, however, considerable repair activity and there are no signs that there can be any relaxation in the persistance of our attacks.

This, of course, applies to no less extent to the synthetic plants where repairs appear to be pressed forward however great the damage.

It would now seem that Germany's current output of motor fuel is limited to the miscellaneous fuels such as benzol, alcohol, etc. These are not likely to exceed a total of 50,000 tons a month and about a third of this quantity is produced from the Ruhr.

Yours sincerely,
(Signed) O.F.Thompson.

Sir Harold Hartley, K.C.V.O., F.R.S., etc.,
L.M.S. Headquarters,
Watsford, Middx.

BY SAFE HAND

S.K.145

SECRET

BRITISH EMBASSY
WASHINGTON, D. C.

January 23, 1945

Dear Brandon,

AXIS OIL PRODUCTION IN EUROPE

You will be interested in the latest production estimates issued by the Joint Oil Target Committee in London bringing the position up to January 25rd.

The latest estimates show a substantial reduction over those quoted in my last letter of January 18th (reference S.K.128) and they have been amended as follows:-

	January
Synthetic Plants (Bergius and Fischer-Tropsch)	107
Crude Refineries	117
Other sources, benzol, alcohol, tars, etc.	150
Total	374
Percentage of pre-raid total	27%

This figure is considered to be the maximum but at the same time it is stated the minimum would not be less than about 345,000, or 26%.

It is noteworthy that all synthetic plants are believed to be currently out of the picture with the exception of Boehlen-Rotha, Magdeburg, Lutzkendorf Bergius and Fischer, and Ruhland-Schwarzheide.

Yours sincerely,

S.Kilbey

B.H.Grove, Esq.,
Foreign Economic Administration,
Washington, D.C.

cc: Norris G.Wood, Esq.
Lt.Cdr.Paul L.Hopper
Major I.E.Stark
Capt.John D.Cockran
Walter Levy, Esq.

PETROLEUM ADMINISTRATION FOR WAR
Foreign Division
1204 Chanin Building
New York 17, N. Y.

CONFIDENTIAL

January 19, 1945.

Mr. Sidney Kilbey,
British Embassy,
3100 Massachusetts Ave., N.W.,
Washington, D. C.

Dear Mr. Kilbey:

I took the liberty of passing a copy of your letter of January 4, on to Dr. Peck requesting him for any views he might have as to what disposition Germany might be making on her excess tar production. The attached letter is a copy of his reply which I believe may be of some interest to you.

I have not had an opportunity of showing him a copy of your letter of January 15 as he has been making preparations to leave immediately for London. If an opportunity presents itself, I shall show him this letter before he leaves and pass on to you any additional comment he may care to make. Otherwise, I shall endeavor to obtain and pass on to you the views of another technical advisor who is somewhat familiar with the subject.

Sincerely yours,

Norris G. Wood
Special Representative
Foreign Division

Attachment

cc: Mr. B. H. Grove
Dr. H. G. Carlson
Lt. Robert W. Collins
Lt. Col. B. F. Hake
Dr. Walter Levy
Major Irving M. Stark
Mr. Rex Townsend

January 18, 1945

Mr. Norris Wood,
Special Representative, Foreign Division,
Petroleum Administration for War,
1204 Chanin Building,
122 East 42nd Street,
New York, N. Y.

Dear Mr. Wood:

Pursuant to Kilbey's letter to Grove of January 4th with d'Leny's letter to Thompson on the German utilization of L.T.C. Tars, I have the following comments.

There appears to be excess L.T.C. tar production in Germany in view of the reduced capacity for hydrogenating it to gasoline and diesel fuel. There are three courses for the Germans to follow, (1) reduce L.T.C. production to requirements, (2) work up the tar by conventional refining methods and (3) use selected fractions of tar for maximum yield of finished products from existing hydrogenation capacity.

The first would seem to be probable in view of Germany's severe manpower shortage but I do not give this too much weight because a large part of German industry is keyed to the low temperature carbonization of lignite. Lignite is a poor fuel by itself whereas L.T.C. recovers over 80% of the theoretical fuel value of the lignite as tar 20-22%, coke 56-60% and net gas 3-6% (these are not weight percents but percent of heating value of original lignite). Thus there is around 3 heat equivalents of coke per equivalent of tar for which the Germans have central power plants and other installations for burning coke. These installations may have some difficulty in changing from this coke to other fuels, say raw lignite, and the overall industrial advantage to Germany may lie in maintaining L.T.C. operations. Offsetting this may be high thruput operations with lower tar yields that would throw the production toward a higher coke yield for less tar and at lower lignite consumption. It seems reasonable to credit lower tar production to some combination of the circumstances cited above.

It does not seem probable that more tar would be refined by conventional methods as this would be competing with crude oil which is believed to be in excess of refining capacity.

D'Leny's view on hydrogenating distillate L.T.C. tar while rejecting the bottoms or using it as boiler fuel seems entirely feasible. For any given amount of hydrogen and/or reactor oven capacity, more finished products can be produced from the lighter fractions of tar than from the whole. The increased production could be as much as 50% more as d'Leny indicates. The full capacity of Leuna was estimated to be 600,000 metric tons per year -- 400,000 by direct hydrogenation of lignite and 200,000 te/yr. from tar. If the plant operated entirely on tar the capacity for the same plant would be 1,000,000 te/yr. and if only the distillate fractions of tar were hydrogenated the capacity would be 1,400,000 to 1,800,000 te/yr. A limited distillation capacity is in general available at the hydro plants. Leuna, for example, had a rated capacity for distilling 350 tons per hour of tar or 3,000,000 tons per year, which with 40% distillate would make 1,200,000 te/yr. of feed stock or some 1,000,000 te/yr. of finished gasoline. All other distillation capacity in Germany may be assumed to be operating on crude oil. Any decision of tar production and utilization for hydrogenation must depend on estimating the presently existing distillation capacity in comparison with hydrogenation. In this connection, it may be useful to point out that distilling units are more readily repaired than hydro equipment and, furthermore, they can generally be operated at substantially higher rates than their rated capacity.

Very truly yours,

B. B. Peck

EPL:EK

BY SAFE HAND

S.K.28

BRITISH EMBASSY
WASHINGTON, D.C.

January 4, 1943.

Dear Brandon,

GERMAN OIL POSITION

One of the questions which has arisen following the bombing of the German Hydrogenation plants has been the question as to what is Germany doing with her tar production.

Our people in London are giving some consideration to this question and have undoubtedly raised this question with the Imperial Chemical Industries. In this connection I have received a copy of a letter from d'Leny of the I.C.I. to Thompson which I think our members will find of interest and I would be most grateful if Dr.Peck or others on this side have any views hereon.

Yours sincerely,

S.Kilbey

B.H.Grove, Esq.,
Foreign Economic Administration,
Washington,D.C.

cc: Morris G.Wood, Esq.
Walter Levy, Esq.
Major I.E.Stark
Major R.R.Emmes
Lt.-Cdr.Paul L.Hopper

IMPERIAL CHEMICAL INDUSTRIES LIMITED
BILLINGHAM DIVISION

Billingham,

Our Ref: Wd'L/EAN
Tel. Ext. 8146

Co. Durham.

December 13th, 1944.

C.F. Thompson, Esq.,
Economic Advisory Branch,
(Foreign Office and
Ministry of Economic Warfare),
Lansdowne House,
Berkley Square, W.1.

Dear Thompson,

Owing to my having to pick up the threads here on Monday after a few days absence the previous week, I had little time to consider your problem before the meeting yesterday. However, I gave it some more consideration in the train on the way back and thought of a few more points which may have occurred to you but were not specifically mentioned at the meeting.

(1) The plants which are now definitely out of action are those which, by the chance of their position, were those which, in the main, hydrogenated bituminous or brown coal direct and not the tars from carbonisation:- Scholven (bituminous coal plus some tar); Nordstern (bituminous coal); Welheim (bituminous coal via Pott Broch, or pitch); Wesseling (brown coal). The loss of these, therefore, does not affect markedly the tar/petrol balance and would cause no particular building up of tar stocks for use in other plants.

(2) However, the disturbance to these other plants has itself been sufficient to cause a big increase in tar stocks and the first thing we should expect to be done is for the feed to these plants to be changed from the complete tar to the light fraction (about 40 to 50%, depending on the tar) which can be hydrogenated in the vapour phase only and which for a given hydrogen and stalls capacity will increase the petrol production by almost 50%. For this, we must look for preliminary distillation of the tar, which, at the expense of transport, may be done in a large number of relatively small existing tar distillation units, or there may be transfer of whatever undamaged equipment exists in the Ruhr to suitable sites in Central Germany. Have we seen signs of any such removal of tar equipment? There would be a minor problem of what to do with the heavy fractions of the tar. If heated storage were available, they might be able to store it in the hope of being able to convert it later; but there is unlikely to be sufficient of this available, in which case it could be burnt in place of other fuel oil on any big furnaces, e.g. boilers, within a short distance; but, if they are to extract as much light oil as possible, the resultant heavy fraction is so viscous that it is not suitable for handling except in large quantities to large furnaces. Failing these, they could just dump it as a soft pitch; have we seen any evidence of this?

(3) Such a move would enable them to get maximum output from existing equipment for two thirds of the time, if the plants are allowed to run to that extent. The next move I should expect would be movement of Western Germany equipment to those plants (or their neighbourhood) where hydrogen is used at present for ammonia production. I am not completely up to date on all the German ammonia production, you presumably have all the data on these available to you, but it does increase the importance of Leuna which could thereby yield at least an additional million tons/year and we should certainly make a close study of the whole Merseburg area for any signs of the installation of such equipment.

(4) The most likely method of dispersal of equipment would be to use any existing reasonably pure hydrogen production of suitable size for one or two reaction vessels, say 5,000 M3/hour and instal compressors and converters, bring in light tar and take the product for distillation elsewhere. Have we knowledge of German Linde and electrolytic installations from which we could decide which were worth investigation?

/over

(5) The installation of equipment underground would, I consider, be the last to be done after the above and I have nothing at present to add to what we discussed yesterday; except, of course, that we should watch possible developments.

I am willing to help in any way I can and suggest that it might help if I go over appropriate photographs, in the light of the above suggestions, with Kent. If this were agreed, I could do this either at Medmenham, as I have done before, or in London, whichever is most convenient, but wherever it is, if it is done within the next fortnight which presumably is desirable, I would prefer a "first" sleeper in both directions (Newcastle to London) since I have little faith in the general public's ability to restrain itself from travelling at Christmas.

Yours sincerely.

E.D. 101/2

Economic Advisory Branch,
Foreign Office and M.E.F.
Lansdowne House,
Berkeley Square,
London W.1.

9th February 1945.

SECRET

AO 2/3/3

Dear Sid,

GERMAN OIL POSITION

During the course of the past week we have been studying jointly with the three Services some of the present aspects of the German Oil position, and the following observations may be of interest.

With regard to consumption the present thinking is along the following lines:-

Army

Consumption at the present time cannot be calculated. For the month of January total army consumption may have been between 80-100,000 tons, of which about 20% might have been Diesel oil. These figures may, however, be rather on the high side, as since the termination of the Ardennes offensive there have been quite definite signs that the fuel difficulties of the German armies in the West have intensified. In addition there are a number of P/W reports implying that off-specification fuels are being sent to the front; these reports have not, however, been verified.

Air Force

Consumption by the Air Force has been tentatively estimated as being a staight line projection from the

/December

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

December estimates, namely, aviation fuel 40,000 tons, jet and V-weapon fuels, 5,000 tons, motor gasoline 10,000 tons, totalling say, 55,000 tons. It is, however, doubtful whether this rate of consumption was prevailing during the latter part of January as during December and January there has been a sharp reduction in the output of aviation fuels. We have estimated that high octane fuel production during January will have been at extremely low figures and this would be expected to have its repercussion upon operations within a short time. C.A.F. activity in the West has recently been at lower levels than in December and this may well be the direct result of the fall in production. The position in the East is not clear, but such increases in activity as have probably occurred have no doubt been made possible by the consumption of tactical reserves. All the plants that normally produce aviation fuels are at present knocked out and it remains to be seen whether or not the BRABAG plants are capable of producing a suitable fuel.

Navy.

Consumption by the Navy for January is estimated at 100,000 tons, of which 25,000 tons is estimated to be Diesel oil. The Admiralty estimates that submarines will need only 12,000 tons out of these 25,000 tons in order to keep 240 submarines offensively active at a consumption rate of 50 tons per submarine per month. Such an allocation is, however, only theoretical as it would preclude supplies to the large number of submarines that are coming into commission and being worked up. It is, however, known that the U-boat fleet generally is suffering from the shortage of fuel. The Admiralty is of the opinion that essential operations, such as the evacuation of Baltic ports and convoy protection for such evacuation, is being most seriously handicapped by the lack of both fuel oil and heavy Diesel oil. Our intelligence confirms that this opinion is correct, and this means that whereas our statistics show that theoretically these heavy fuels should be available for consumption, the full quantities, for reasons that are not at present clear, are not available for consumption.

Civil

We have no means of assessing civil consumption during January. We do not know whether or not the catastrophic situation may have occurred under which industry will have been deprived almost totally of supplies of petrol and Diesel oil, which deprivation would, of course, mean general breakdown. Consumption of gasoline during January by industry, Todt, navy, commercial aviation, engine-testing, transport, etc. will probably have been between 25,000 and 60,000 tons. To this will have to be added losses caused by air attacks, sinkings, sabotage, etc. which may widen this bracket to say 30-80,000 tons.

/In regard

In regard to the gasoline position we estimate that the total output of both aviation and motor for the month of January will not have been in excess of about 100,000 tons. On the basis of the above consumption estimates it would appear that consumption has been exceeding production. Current output is substantially less than 100,000 tons and all indications point to a rapid deterioration in the whole position.

At the present time only three synthetic plants are believed to be in operation. What will the position be when all the plants are put out and kept out of operation? It is clear from hard statistics that the remaining plants can be knocked out within the next few weeks and all the plants policed, the total effort occupying only a part of the precision bombing effort available, and provided that operational considerations permit of a continuation of the present oil priorities. In these circumstances we estimate that the output of gasoline would drop to a figure that would not be in excess of 25,000 tons per month, and there would be virtually no output of high octane aviation fuel. In regard to Diesel oil it is estimated that production would drop to less than 70,000 tons per month.

In these circumstances it is considered that the German land and air forces would, within a period of six weeks of the knocking out of the remaining plants, be virtually totally deprived of operational mobility.

Yours sincerely,

Sgd.O.F.THOMPSON

BY SAFE HAND

S.K. 225

SECRET

BRITISH EMBASSY
WASHINGTON, D.C.

February 15, 1945.

Dear Brandon,

AXIS OIL PRODUCTION IN EUROPE

The following is the production in Axis Europe during the month of February as estimated by the J.O.T.C. according to a cable dated 14th February which I have just received:-

	February
Synthetic Plants (Bergius and Fischer-Tropsch)	111
Crude Refineries	141
Other sources, benzol, alcohol, tars, etc.	140
Total	392
Percentage of pre-raid total	29%

These figures, however, are the maximum and it is probable the production will be lower than this, although it is stated the minimum will not be below 550,000 tons, or 24%.

After excluding those plants which are out of operation the status of the remaining synthetic plants is estimated as follows:-

Positively Operating	Probably Operating	Possibly Operating
Boehlen Rotha	Magdeburg	Leuna
Ruhland Schwarzheide		Troglitz Zeitz

Yours sincerely,

S. Kilbey

S.Kilbey

B.H.Grove, Esq.,
Foreign Economic Administration,
Washington, D.C.

cc: Norris G.Wood, Esq.
Major I.E.Stark
Lt.Cdr.Paul L.Hopper
Capt.John D.Cockran
Walter Levy, Esq.

BY SAFE HAND

S.K. 451

SECRET

BRITISH EMBASSY
WASHINGTON, D. C.
[ZONE 6]

April 5, 1945.

Dear Brandon,

AXIS OIL PRODUCTION IN EUROPE.

In the place of the usual detailed estimates prepared by the J.O.T.C. it is stated that their weekly statistics are becoming increasingly academic and in the latest telegram dated April 3rd it is stated that the figures for March quoted in my letter of the 26th ultimo remain unchanged but the current rate is estimated to be between 140,000/150,000 tons only, which is considerably lower than the 250,000 tons estimated in their previous weekly telegram.

It is believed that only Leuna and Lutzkendorf Mucheln are active to some extent. Troglitz Zeitz is believed to have been put out of the picture again, although this has not been confirmed.

Yours sincerely,

S.Kilbey

B.H.Grove, Esq.,
Foreign Economic Administration,
Washington,D.C.

cc: Norris G.Wood,Esq.
Major I.E.Stark
Lt.Cdr.Paul L.Hopper
Captain John D.Cockran
Walter Levy, Esq.

18 November 1944

MEW (Economic Advisory Branch)

TO: Mr. Kilbey

Our Coal Section has prepared new estimate German controlled Benzol and Tar production from coke ovens and gas works as of November. They have taken into consideration the estimated reduction in pig iron manufacture.

Total production of crude benzol is now put at annual rate of 554,000 tons.

On basis of this revised figure, we are assuming the amount of benzol available for liquid fuels is reduced to 23,000 tons per month (compared with 35,000 tons hitherto included in our total of 175,000 tons for liquid fuels from "other sources".

It is difficult to assess the quantity of products available for liquid fuel from tar sources and for the moment we are making no alteration to our figures, although we may later amend them. There is no doubt that there has been a drop in production of high temperature tars; on the other hand, smaller quantities of tar are being used as raw material for the synthetic oil plants.

Details November 1944

The metallurgical coke requirements at this time may be roughly estimated as follows:

		Million Tons Per Annum
Coke for blast furnaces and foundries		10.0
Coke for Synthetic Oil (Germany at 1/3 max. 1943 figure)		1.7
Coke for all other purposes:		
Germany	21.7	
Austria	0.2	
Czechoslovakia	1.5	
Poland	1.5	24.9
		36.6

Yield of crude benzol on dry coal is roughly:

Germany	0.97%
Czechoslovakia	0.95%
Poland	1.21%

On 36.6 tons of coke - crude benzol 472,000

Recovery for gas works 81,900

Tar yield is about 3% of coke production. On the above figures of coke production, this would amount to 1,098,000

Gas works production estimated:

Germany	417,000
Austria	45,000
Czechoslovakia	18,000
	480,000

The total German controlled production of tar from coke ovens and gas works therefore is about 1,578,000

(Poland omitted as Warsaw is virtually sole producer)

Of total crude benzol 554,000

Derivatives are:

Benzine	50/60%
Toluene	12½%
Solvent Naphtha	10%
Available for auto fuel	17½/7½%
Loss	10%

Million Tons Per Annum

Quantity available for auto fuel (A) 97,000/42,000
Benzine 277,000/332,000

Of Benzine, 100,000 is required for Synthetic Phenol manufacture, rubber, plastics, explosives and general solvent purpose

Thus, total benzole available for liquid fuels is:

For Benzene 177,000-232

As above (A) 97,000- 42

Roughly 23,000 monthly

FROM: Mr. Kilbey

28 November 1944

Telegram received from J. O. T. C. revised estimates:

	October	November	December
Synthetic	116	182	288
Crude Refineries	114	107	129
Other Sources	175	160	160
	405	449	577
	30%	34%	43%

BY SAFE HAND

S.E. 57

BRITISH EMBASSY
WASHINGTON, D.C.

November 10, 1944.

Dear Brandon,

GERMAN OIL POSITION

At the meeting of the Sub-Committee the other day you proposed that the statistical side of the German Oil Position be reviewed and brought up to date. At that meeting I referred to some letters which I have recently received setting out the London view of Naval and Military consumption for the month of October also the trend of consumption, Army, Navy, Air Force and Civilian for the first six months of 1944. Several of our colleagues expressed a desire to receive copies of these letters and I am only too glad to make them available in the hope that they will be of assistance in the study which will now be made on the consumption side.

I, therefore, enclose a copy of the letter which I received early in September, the attachment to which shows the London view of consumption for the first six months of 1944. The estimated consumption during the months of July and August are shown in the body of the letter. I also enclose a letter dated October 28th in which Thompson mentions the very tentative estimate supplied by the Admiralty covering Naval consumption during October and would draw the attention of both your good self and those to whom copies are being sent to the request that they be not quoted pending confirmation from the Admiralty. Also enclosed is a letter dated October 31st giving the War Office view of the Ground Force consumption, also for the month of October, which you will notice shows a very severe contraction against the month of August and, of course, is more pronounced when compared with the months earlier in the year.

I have not received details of the Air Force consumption but as you will notice from the closing paragraph of the last mentioned letter, it is believed consumption in this branch has followed a similar trend to that of the German Ground Forces. I have received no recent indication of the London view regarding the civilian consumption and as agreed with you the other day I have sent a telegram asking for this and will circulate the reply as soon as it comes to hand.

/The outcome

B.E.Grove, Esq.,
Foreign Economic Administration,
Washington, D.C.

The outcome of the study into the present rate of consumption, if carried to its logical conclusion, will result in a figure for stocks and I would like to suggest that we be extremely careful in how such a figure is presented so that it is not thrown out of focus and thereby distort the whole picture. In this connection I have received yet another letter, also dated October 28th, copy of which is also enclosed, suggesting that operations on the ground were particularly affected during the early part of October and it is suggested that this is a sequel to the very heavy air attacks made on the German petroleum industry in the early days of September and the inference is drawn that the pipe line from source of supply to consuming areas may be of two weeks to four weeks duration. If this interpretation is the correct one then any stocks which the proposed statistical study shows that the Germans should have may be (a) tied up in the distribution system, (b) stored in the wrong place, or, (c) what is more important seeing that Naval activity in the early part of September was stepped up, be of the wrong grades. In other words while there may be ample stocks of heavy fuels either in the form of residue from natural crude oil or tar oils from high and low temperature carbonisation, there may be a shortage in the lighter products to such an extent that Germany is forced to operate on a hand to mouth basis.

In addition to sending you copies of these letters I am sending copies direct to those indicated below. I would, however, mention that these are not yet the official views of the Hartley Committee although they might very well be if that Committee were also called to make a re-appraisal of the statistical position. However, I think they are sufficiently representative of the London view to pass them on to our interested members without more than this reservation.

Yours sincerely,

S.Kilbey

cc: Dr.H.G.Carlson
Lt.-Comdr. Paul L.Hopper
Dr.Walter Levy
Major Russell S.Tarr

- COPY -

Economic Advisory Branch,
(Foreign Office & Ministry of
Economic Warfare),
Lansdowne House,
Berkeley Square.
London, W.1.

FAST AIR BAG

SECRET
AO 126/2

28th October 1944.

Dear Sid,

GERMAN OIL POSITION: STOCKS

In reply to your letter ED 2658 of October 19th, we are hesitant to make any suggestions in regard to any detailed statistics covering either tied stocks or operational stocks.

The latest official view of the intelligence sections of the War Office and the Air Ministry, and with which view we are in agreement, is that an acute operational shortage of gasoline has occurred within the past two weeks.

There has, of course, been evidence of operational shortages for some time but a particular stricture seems to have occurred at some time during the early part of this month. It is more than possible that this phenomenon represents the repercussion at the consuming end of the series of attacks that took place September 10th - 14th, at which time all the synthetic plants and crude oil refineries were virtually inoperative.

If this assumption is correct, and I have no reason to think otherwise, it would seem that the length of the pipeline for the highest priority supplies of gas is to the order of two weeks to one month.

The shortness of this pipeline insofar as it concerns the relatively small* quantities of gasoline required for the highest priority uses (E.g. armoured vehicles in battle areas, defensive fighters, flying bombs, etc.) emphasises the resiliency of gasoline production and the consequent expectation that any let-up in the air offensive will find the priority users again receiving their vital supplies.

This may in fact already be happening. Our estimates of total oil output for October consist of a fairly wide bracket of two figures because air cover is awaited on some 20 plants. Until we receive this cover our figures are a bracket of an absolute minimum of 370,000 tons and a maximum of 480,000 tons, giving a mean of, say, 430,000 tons. This compares with our estimate for September of 316,000 tons and, consequently, for the time being at any rate, it seems as though the rate of repair has overtaken the rate of destruction.

Yours sincerely,

(Sgd.) O. F. Thompson.

S. Kilbey Esq.
British Embassy.
Washington.

* For example, the fuel consumed in the last substantial fighter sortie against the 8th A.F. would be relatively very small indeed.

COPY

Economic Advisory Branch,
(F.O. and M.E.W.)
Lansdowne House,
Berkeley Square, London, W.1.

October 31, 1944.

SECRET BY PAST AIR BAG

AO 103/1/2

Dear Sid,

I recently wrote to you on the subject of German naval consumption. I have now received an estimate from the War Office on army consumption.

The War Office considers that consumption of the whole German army may be in the region of 70,000 tons per month, being made up as follows:-

Gasoline	45,000 tons
Diesel oil	20,000 "
Lubricants	5,000 "

These figures make allowance for transport in the rear of army zones and for the lubricants used in army vehicles converted to producer gas.

The estimate is, I think a "spot" one and, judging from the way it was probably worked up, it probably covers the early part of this month rather than the latter part. My view is that supplies are drying up and, if this is the case, then the 70,000 tons is likely to be a point plotted somewhere on the declining October part of a line on a graph.

You will notice that Ostran puts diesel oil consumption at 20,000 tons. In my letter to you on naval consumption I put the army allocation at 30,000 tons. This latter figure was simply arrived at by taking the estimated pre-attack consumption and reducing it in the ratio of the total reduction in output. It is interesting that these two figures, worked up by entirely different methods, are fairly close to each other.

I have not yet got detailed estimates for the G.A.F., but the general impression, I gather from the Air Ministry, is that consumption has been reduced very much to the same order as the Army.

Yours sincerely,

(Signed) O.F.Thompson.

- C O P Y -

Economic Advisory Branch
(Foreign Office & Ministry
of Economic Warfare),
Lansdowne House.
Berkeley Square.
London, W.1.

FAST AIR BAG
SECRET

AO/105/3/Z

28th October, 1944.

Dear Sid,

German Naval Consumption

In a separate letter I have written to you about the stock position and the gasoline shortage. The naval fuel position offers rather a different picture, and I think you will be interested in the following brief observations concerning some tentative figures received from the Admiralty.

It seems that total German naval consumption of both fuel oil and Diesel oil for the first two weeks of October was something like 100,000 tons or, say, at the rate of 200,000 tons a month. Out of this about 12,000 tons was Diesel oil equal to 24,000 tons per month; submarine consumption took up about two-thirds of this quantity.

The Admiralty have not worked out an official detailed consumption estimate for each of the past months, but in round figures monthly consumption prior to D-day
/at was running/about 145,000 tons per month, since when it is believed to have dropped by 10% and then by a further 20% during the period July-September. These figures should not be quoted as we have not received them in official form ~~by~~ but they give a guide to the trend. We then have this sudden recent increase, which would appear to be due to major fleet activities in the Baltic and also to a certain amount of activity in Scandinavian waters.

While I would hazard a guess that these increased activities have probably weakened their fuel oil supply position, there should nevertheless be, theoretically, an adequate supply of heavy tars for fuel oil. With the synthetic oil plants incapable of taking their normal quota of feedstocks, substantial quantities of such tars should be available for naval purposes.

The question has recently arisen as to the effect of dwindling oil output on future submarine activity. This is rather a difficult subject on which to be precise, but our thinking has been along the following lines.

There have been no indications that there has been any substantial change in the allocation of priorities insofar as Diesel oil is concerned; that is to say, we have not seen the army or inland water transport, for example, denuded for the benefit of the navy. If this assumption is correct, and assuming that recently the monthly output of Diesel oil has been about 70,000 tons per month, current monthly allocations (but not necessarily deliveries) might, therefore, have been to the following order:-

Army	30,000
Navy	15,000
Todt Organisation	5,000
Water Transport	5,000
Road Transport	10,000
Railways, Agriculture & Industry	5,000
Total	70,000

These figures are not more than a shot in the dark, but they show a position in which the navy gets almost enough Diesel oil for its submarines but not the full 24,000 tons per month required for all naval purposes.

The Admiralty is of the opinion that submarine activities, especially training, have for some time been handicapped by insufficient fuel, but not to the extent that there has been any important reduction in the menace of submarine activities as a whole.

As you probably know, submarine building activity is now going ahead at an increasing pace. Stocks of Diesel oil in Norway are estimated to be sufficient for 6 weeks' operations at the current rate of activity and recent additions to these stocks have been at not less than the current rate of consumption. It is, therefore, broadly estimated that provided the output of oil is not permitted to increase, submarine activities during the winter months are likely to be limited to not more than the present scale of operations.

Yours sincerely,

(Sgd.) O.F. Thompson.

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

[illegible] STANTON,
(Foreign Office and Ministry
of Economic Warfare),
[illegible],
[illegible], W.1.

Dear Kilbey,

ANGLO-AMERICAN OIL POSITION

We have noted with much interest the two draft reports by the Enemy Oil Committee dated July 28th and August 17th. These reports are comprehensive and, with certain exceptions, agree closely with our view of the position.

In the light of our latest understanding of the position we are of the opinion that stocks, and especially stocks of gasoline, were at a very low level at the conclusion of the Russian Winter offensive and that since that time consumption has had to be continuously subjected to downward adjustments (except where such adjustments have had to be modified by urgent military necessity) in order to maintain the position in balance. However, before discussing this aspect in more detail, we would mention a number of points where there are differences in our respective statistics.

Production

The figures given for production are higher than those postulated in the last Hartley Report. The difference appears to lie principally in the estimates for Roumanian crude production and synthetic oil output.

In regard to the former we do not yet know the precise figures for the first six months. There have, however, been reports from a variety of sources and, as previous predictions of output for Roumania have turned out to be approximately correct, it is possible that our estimates for the first half of 1944 may prove to be within reasonable limits of accuracy. Our estimates are as follows:

January	409,000 tons
February	409,000 "
March	409,000 "
April	409,000 "
May	190,000 "
June	141,000 "
	1,967,000 tons

In regard to synthetic production we would suggest the deletion of the allowance for unknown plants. Reconnaissances have been completed of all the areas in which plants have been most frequently reported and the results have been barren. We have consequently decided to delete any allowance for this factor, a decision with which Messrs. Peck & Noel are in agreement. Our estimate for May & June are based on the findings of the Target Sub-Committee, being the result of a detailed examination of the available evidence upon each plant. Our estimates are as follows:

/January

A. Kilbey Esq.,
British Embassy,
[illegible], D.C.

January	460,000	tons
February	470,000	"
March	470,000	"
April	400,000	"
May	385,000	"
June	325,000	"
	2,490,000	tons

Consumption

We have had considerable difficulty in estimating both military and civil consumption with any degree of confidence. Shortages have resulted in reduced allocations and, in many instances, allocations have not been implemented. In the case of army consumption, our calculations have been rendered more difficult by reductions in the number of consuming units and in estimating wastage of both vehicles and fuel due to military reverses.

An attempt at calculating consumption by categories and by months is shown in the table attached. While a number of the individual figures may later prove to be rather wide of the mark we believe they illustrate the correct trend.

The Balance Sheet

The attached balance sheet indicates that during the first four months of the year production and consumption were just in balance; the figures for these four months tend to confirm that only just sufficient production has been maintained to meet essential requirements. In May and June the position appears to have gone into the red and a withdrawal from stocks has occurred, such withdrawal having probably been principally from military dumps. Carrying the trend a stage further we arrive at the following tentative figures for July and August:

	July	August
Army	320,000 tons	150,000 tons
Navy	137,000 "	100,000 "
Air Force	167,000 "	55,000 "
Todt	50,000 "	25,000 "
Non-Military	336,000 "	250,000 "
Losses	100,000 "	75,000 "
Total	1,009,000 "	655,000 "
Production	671,000 "	525,000 "
Difference in Stocks	- 338,000 "	- 130,000 "

Stocks

The impression that we gain from these figures is that, even if a substantial stock in the form of free reserves existed in the early part of the year (and we do not think that stocks can have been any larger than is indicated in the last Hartley report), such stocks would have been largely dissipated by June-July. In any case recent intelligence now makes it clear that operational shortages not attributable to transport difficulties, are occurring and it is not conceivable that such shortages could have been permitted if any stocks were available to obviate them.

If this argument is correct there is but little support for the two points tentatively submitted by Mr. Grove in his Memorandum SD-359, namely, (1) that there were still 750,000 tons of free reserve at the period of low ebb in 1943, contrary to the Hartley Committee opinion that stocks were below the distributional

/minimum

minimum at that time and (3) that there may have been an addition to stocks of about 500,000 tons during the first half of 1944.

In regard to (1) it is our opinion that the position at that time was desperate and that local shortages were occurring which would have been ameliorated if a month's reserves were on hand. The difficulties experienced by the Italians at the time when their stocks were at their lowest ebb might be cited as a parallel condition to that which may have been occurring in Germany.

In regard to (2), the figures in the table attached, and the enforced cuts in consumption in May and June, indicate that an accumulation of 300,000 tons since the first of the year would be a maximum figure.

In discussing stocks we would stress that the position is more acute in some products than in others. Although there have been reports of serious shortages of marine bunker fuels, it appears likely that the position has been eased by supplies of surplus feedstocks that cannot be processed by the damaged synthetic plants.

In the case of motor and aviation gasolines it is certain that the shortage is now acute. Current production at the time of writing is not more than about 100,000 tons per month as compared with a consumption of about four times that amount when production was at more normal levels.

CONCLUSIONS

Whereas we feel that you may consider it advisable to present any statistics for the first half of 1944 in fairly general terms, it is our view that there should be no uncertainty in making plain the weakness and vulnerability of the position, especially in respect of gasoline, at the conclusion of the period under review.

Yours sincerely,

O.F. Thompson.

GERMAN AXIS OIL CONSUMPTION AND PRODUCTION ESTIMATES

First Six Months of 1944

Consumption (Including Satellites)	Jan.	Feb.	March	April	May	June	Total
	In Thousands of Metric Tons						
Army	440	410	420	345	175	195	1,985
Navy	145	145	145	145	120	144	844
Air Force	195	175	192	198	196	167	1,117
Todt	27	25	26	26	30	30	164
Non-Military	500	500	500	500	500	400	2,900
Losses	25	25	25	25	100	100	300
Total	1,332	1,280	1,308	1,239	1,121	1,036	7,310
Production	1,344	1,344	1,344	1,344	1,057	800	7,243
Difference in Stocks	+ 12	+ 64	+ 36	+ 111	- 64	- 236	- 67

8.9.44.

BY SAFE HAND

S.K. 493

SECRET

BRITISH EMBASSY
WASHINGTON, D. C.
[ZONE 8]

April 13, 1945.

Dear Brandon,

GERMAN CONSUMPTION OF AVIATION GASOLINE.

Under cover of my letter of the 15th ultimo (reference S.K. 366) I enclosed an estimate of the consumption by the German Air Force during the month of January 1945 which had been prepared jointly by the OSS and the Air Ministry in London. I have now received a similar calculation for the month of February which, in the absence of information, I assume to have been prepared by the same parties, copy of which is enclosed for your information and files.

Yours sincerely,

S. Kilbey

B.H.Grove, Esq.,
Foreign Economic Administration,
Washington, D.C.

cc: Major I.E.Stark
Lt.Cdr.Paul L.Hopper
Captain John D.Cockran
Norris G.Wood, Esq.

SECRET

No.3119

AIRCRAFT FUEL CONSUMPTION OF THE G.A.F.

FEBRUARY, 1945.

1. This paper presents the second monthly estimate of aircraft fuel consumed by the German Air Force. The figures for the month of February are summarised in the table below.

G.A.F.Aircraft Fuel Consumption, February 1945.

I.	First-Line Aircraft		
	A. Operstional flights	9,600 tons	
	B. Transfer and training flights	1,700 tons	
	C. Rest and refitting flights	200 tons	
	Total, First-Line Aircraft		11,500 tons
II.	Aircraft Industry		
	A. New production: test and ferrying flights	1,200 tons	
	B. Repair: test and ferrying flights	500 tons	
	Total, Aircraft Industry		1,700 tons
III.	Training Units		
	A. Single-engined fighter training	5,200 tons	
	B. Twin-engined fighter training	2,100 tons	
	C. Bomber, Transport and misc.training.....	700 tons	
	Total, Training Units		8,000 tons
IV.	Transport Units		4,700 tons
V.	Communications and Auxiliary Units		1,000 tons
VI.	Experimental Units.		300 tons
VII.	Second-Line Units		1,100 tons
VIII.	Miscellaneous		700 tons
	Total, German Air Forces		29,000 tons *

2. The methods by which the various figures were derived have been indicated in the Schedules appended to the January report. It is again stressed that these estimates should only be considered as provisional and approximate.

3. The downward trend of G.A.F. fuel consumption continued during February when a record low of 29,000 tons was reached. Apart from the continued overall shortage of aircraft fuel, the dislocation of activity resulting from the Russian advance was the chief cause of the further decline, which was felt primarily in non-operational flying by the transport and training organizations.

* Jet and rocket-propelled fighters are excluded from this estimate, since the types of low grade fuel consumed are not comparable to the standard types of aircraft fuel.

4. First-Line Aircraft

Single-engined fighter activity in the West, continually restricted by shortages of fuel, was confined largely to defensive tactical sorties; the scale of effort remained at the low level of the previous month. Although evidence of G.A.F. operations on the Eastern Front is relatively scanty, it is believed that a high level of activity was sustained during February, resulting in a net increase in fuel consumption by operational flying. The increased scale of effort was particularly noteworthy in the single-engined fighter and ground-attack categories, although this increase was partially counter-balanced by the shorter duration of these largely tactical sorties in the East. Twin-engined fighter effort remained at the January level in the West but increased substantially on the Russian Front. Long-range bomber and reconnaissance flights rose slightly on all fronts.

5. Aircraft Industry

Minor variations from the previous month in the output of new and repaired aircraft of all types were cancelled out; total fuel consumption in testing and ferrying flights remained approximately at the January figure.

6. Training.

The advance of the Russian armies in the East produced a serious disorganisation in the training programme of the A. and B. Schools. The flying hours lost through the transfer of a considerable number of the schools in the area, together with the dislocation of fuel supplies, loss of aircraft, etc., consequent on these transfers, reduced fuel consumption in the A. and B. Schools to roughly 75% of the January level.

The entire S.E.F. R.T.U. organization was obliged to transfer from its training airfields East of Berlin during the last week of January and the first fortnight of February. Fuel consumption is believed on balance, to have fallen to 70% of the January figure. T.E.F. and other training was not so seriously affected, although some decline in training activity was observed.

7. Transport and Communications.

The transport organisation consumed some 500 tons less fuel during February, accounted for by reductions, necessitated in part by the lack of fuel, in the number of supply-dropping missions to the Atlantic Fortresses and of Ju.52 flights in Central Germany and the East. Communications and auxiliary flights suffered a decline in activity amounting to 10% of the January figure.

BY SAFE HAND

S.K. 485

SECRET

BRITISH EMBASSY
WASHINGTON, D. C.
[ZONE 8]

April 13, 1945.

Dear Brandon,

AXIS OIL PRODUCTION IN EUROPE.

The latest estimate for the month of April is as follows:-

	April (in thousands of tons)
Synthetic Plants (Bergius and Fischer-Tropsch)	58
Crude Refineries	54
Other sources, benzol, alcohol, tars, etc.	75
Total	187
Percentage of pre-raid total	12½%

The above figure is the maximum possible to obtain and the minimum is believed to be 110,000 tons a month, or 8% of pre-raid production.

The current rate is also estimated at 110,000 tons per month, of which gasoline, including aviation spirit, is estimated to be in the neighbourhood of 20,000 tons a month.

Yours sincerely,

S. Kilbey

S.Kilbey

B.H.Grove, Esq.,
Foreign Economic Administration,
Washington,D.C.

cc: Norris G.Wood, Esq.
Major I.E.Stark
Lt.Cdr.Paul L.Hopper
Captain John D.Cockran
Walter Levy, Esq.

BY SAFE HAND

S.K. 283

SECRET

BRITISH EMBASSY
WASHINGTON, D. C.
[ZONE 8]

March 2nd 1945.

Dear Mr.Grove,

AXIS OIL PRODUCTION IN EUROPE

Following is the production in Axis Europe during the month of February as estimated by the JOTC according to a cable dated March 1st, which I have just received:-

	February
Synthetic Plants, (Bergius and Fischer-Tropsch)	69
Crude Refineries	108
Other sources, benzol, alcohol, tars, etc.	140
Total	317
Percentage of pre-raid total	24%

These figures, however, are the maximum. It is believed that current rate of production is about 280,000 tons, equal to 21%.

Mr.Kilbey informs us today that he expects to be back to duty sometime early next week.

Yours sincerely,

P. Bushe-Fox.

P.Bushe-Fox

B.H.Grove, Esq.,
Foreign Economic Administration,
Washington, D.C.

cc: Norris G.Wood, Esq.
Major I.E.Stark
Lt.Cdr.Paul L.Hopper
Captain John D.Cockran
Walter Levy, Esq.

BY SAFE HAND

S.K. 169

SECRET

BRITISH EMBASSY
WASHINGTON, D. C.

January 30, 1945.

Dear Brandon,

AXIS OIL PRODUCTION IN EUROPE

I tabulate below the estimated oil production in Germany as at January 29th,

	January
Synthetic Plants (Bergius and Fischer-Tropsch)	104
Crude Refineries	111
Other sources, benzol, alcohol, tars, etc.	150
Total	365
Percentage of pre-raid total	27%

It is believed that all synthetic plants are out of operation with the exception of Bohlen Rotha, Magdeburg, Lutzkendorf, Ruhland Schwarzheide, and it is believed that Brux is out of the picture for some time to come.

Yours sincerely,

S.Kilbey

B.H.Grove, Esq.,
Foreign Economic Administration,
Washington.

cc: Norris G.Wood,Esq.
Major I.E.Stark
Lt.Cdr.Paul L.Hopper
Captain John D.Cockran
Walter Levy, Esq.

BY SAFE HAND

S.K. 25

SECRET

BRITISH EMBASSY
WASHINGTON, D.C.

January 4, 1945

Dear Brandon,

AXIS PRODUCTION IN EUROPE

Since writing you my letter of the ~~15th~~ 18th instant I have received another telegram giving the position up to January 2nd and the revised figures are as follows:-

	December	January
Synthetic Plants (Bergius and Fischer-Tropsch)	159	206
Crude Refineries	110	175
Other sources (benzol, alcohol, tars, etc.)	150	150
Total	419	529
Percentage of pre-raid total	31	39

It is believed that all the synthetic oil plants are inactive with the exception of the following, -

Troglitz
Boehlen
Magdeburg
Lutzkendorf
Ruhland
Scholven
Deschowitz

although Scholven and Deschowitz have not been flown over since they were last attacked on December 30th and 26th respectively and in estimating the position it has been assumed that they are still operating.

There has also been an increase in the amount of crude oil processed during the month of January and in this connection London state that the present condition is not known of those refineries processing crude from the Hanover field.

Yours sincerely,

S.Kilbey

B.H.Grove, Esq.,
Foreign Economic Administration,
Washington.

cc: Norris G.Wood, Esq.
Major I.E.Stark
Major R.R.Munos
Walter Levy, Esq.

BY SAFE HAND

S.K.197

SECRET

BRITISH EMBASSY
WASHINGTON, D.C.

December 20, 1944.

Dear Brandon,

AXIS PRODUCTION IN EUROPE

I refer to my letter of the 13th instant (reference S.K.159) giving you the production figures as estimated by the J.O.T.C. up to December 12th and would advise that I have now received a further telegram dated December 19th stating that Bulletin No.24 will show total production at 52% and 38% of pre-raid totals for the months of November and December instead of the percentages shown in my letter under reference.

The telegram goes on to say that information on the present status of Leuna, Poelitz, Magdeburg and Brux is still lacking.

The information in the present telegram will be contained in Bulletin No.24 and my letters of December 15th and December 5th should be changed to Bulletins No.23 and No.22 respectively.

Yours sincerely,

S.Kilbey

B.H.Grove, Esq.,
Foreign Economic Administration,
Washington,D.C.

cc: Norris G.Wood,Esq.
Major Russell S.Tarr
Major R.R.Munos
Walter Levy, Esq.

BY SAFE HAND

S.K. 47

BRITISH EMBASSY
WASHINGTON, D.C.

November 13, 1944.

Dear Brandon,

GERMAN OIL POSITION

I refer to my letter of the 10th instant enclosing copies of various letters I had received from London dealing, inter alia, with German Army and Navy consumption and their general views regarding the stock position. In that letter I mentioned that in accordance with the request at the last meeting, I had wired London for their views regarding Civilian consumption and I have now received their reply, which reads as follows:-

"All indications point to an increasingly sharp decline in all four categories. Estimate Army consumption now two-thirds of figures given my letter October 31st. Detailed calculation of Air Force Consumption for September gives forty-three thousand plus ten thousand ground, totalling fifty-three thousand. Estimates for October not yet complete but figures likely to be lower than September. Although Naval Consumption was forced to high figures in first half of October, recent figures have been probably not above a level of about seventy-five thousand. We have little or no information upon which to estimate Civilian Consumption inclusive of Organisation Todt but on assumption that under present critical circumstances only absolutely essential transport requirements are being met and industrial users totally deprived, these requirements might amount to one hundred and twenty thousand of all products. This, therefore, puts total current allocations at around three hundred thousand which ties in reasonably well with statistics given in our weekly reports bearing in mind time lag."

It is admitted by London that they have little evidence to go upon in estimating Civilian Consumption and this has been reduced substantially based on the little evidence available to them. You will also notice that there has been a revision downwards in their estimates for the consumption of the Ground Forces and for the German Navy as against the figures given in those letters which I enclosed with my earlier letter to you and consumption of the Air Force is also placed at a very low level.

I hope that the information contained herein will be useful to those members of our Committee who are charged with the responsibility of producing new estimates.

/As in

B.H.Grove, Esq.,
Foreign Economic Administration,
Washington, D.C.

As in the case of my earlier letter I am sending copies to those indicated below and three additional copies to you in case you desire to give this information wider circulation.

Yours sincerely,

S.Kilbey

cc: Dr.H.G.Carlson,
Lt.-Commdr. Paul L.Hopper
Dr.Walter Levy
Major Russell S.Tarr

BY SAFE HAND

S.K. 125

SECRET

BRITISH EMBASSY
WASHINGTON, D. C.

November 30, 1944.

Dear Brandon,

AXIS PRODUCTION IN EUROPE

I refer to my letter of the 28th instant (reference S.K.108) giving you London's latest views on Production in Axis Europe as at that date. I have now received a further telegram to the effect that new information reveals that Gelsenkirchen is inoperable for some time and the figure for synthetic plants for the month of December should be changed from 288 to 276, consequently changing the total to 585, representing 42% instead of 45% of normal.

Yours sincerely,

S.Kilbey

B.H.Grove,Esq.,
Foreign Economic Administration,
Washington,D.C.

cc: Norris G.Wood,Esq.
Major Russell S.Tarr
Major R.E.Munos
Walter Levy, Esq.

BY SAFE HAND

S.K. 42

SECRET

BRITISH EMBASSY
WASHINGTON, D.C.

January 10, 1945

Dear Brandon,

AXIS PRODUCTION IN EUROPE

I have now received a telegram dated January 9th advising me of the latest estimates of the Joint Oil Targets Committee on the status of the German Oil Industry. In my letter of January 4th (reference S.K.23) I gave you London's estimates for December and January and in their latest telegram they advise that while the figure for December is unchanged, the maximum figures for January are estimated as follows:-

	January
Synthetic Plants (Bergius and Fischer-Tropsch)	188
Crude Refineries	145
Other sources, benzol, alcohol, tars, etc.)	150
Total	483
Percentage of pre-raid total	56

While the above figures are, as stated, the maximum possible during the month of January, the current rate of production is as follows and it is, therefore, unlikely that the above maximum rates will be attained:-

	January
Synthetic Plants (Bergius and Fischer-Tropsch)	109
Crude Refineries	86
Other sources (benzol, alcohol, tars, etc.)	150
Total	345
Percentage of pre-raid total	28

Yours sincerely,

S. Kilbey

B.H.Grove, Esq.,
Foreign Economic Administration,
Washington, D.C.

cc: Norris G.Wood, Esq.,
Major I.E.Stark
Major R.R.Munoz
Walter Levy, Esq.

BY SAFE HAND

S.K. 123

BRITISH EMBASSY
WASHINGTON, D. C.

January 16, 1945.

Dear Brandon,

AXIS PRODUCTION IN EUROPE

I have received a further telegram bringing the estimates of German Production issued by the Joint Oil Target Committee up to January 15th.

The production for December is unchanged at 419,000 tons, or 51% of normal, but the January figures are amended as follows:-

	January
Synthetic Plants (Bergius and Fischer-Tropsch)	170
Crude Refineries	148
Other sources, benzol, alcohol, tars, etc.	150
Total	469
Percentage of pre-raid total	35%

However, the most recent visits to Leuna, Poelitz and Magdeburg have not yet been reported but if they were successful the above total would be reduced to 426,000 tons, or say 32% of normal.

Yours sincerely,

S.Kilbey

B.H.Groves,Esq.,
Foreign Economic Administration,
Washington,D.C.

cc: Morris G.Wood,Esq.
Lt.Cdr.Paul L.Hopper
Major R.R.Munoz
Major I.E.Stark
Walter Levy, Esq.

By SAFE HAND

S.K.92

BRITISH EMBASSY
WASHINGTON, D.C.

January 15, 1945.

Dear Brandon,

GERMAN OIL POSITION

I refer to my letter of the 4th instant (reference S.K. 23) in which I mentioned that our people were giving some consideration to the use to which Germany if putting her tar production at the present. With that letter I sent you a copy of a letter d'Leny of I.C.I. had written to Thompson. I now enclose copy of a further letter which d'Leny has written which speaks for itself.

I would be most grateful if you would secure the views of the technical experts on this side as to what they think Germany is doing or can do with her excess Tar Production since it has an important bearing on the choice of targets.

Yours sincerely,

S.Kilbey

B.H.Grove, Esq.,
Foreign Economic Administration,
Washington, D.C.

cc: Morris G.Wood, Esq.
~~Alexander Lury~~, Esq.
Major I.E.Stark
Major R.R.Sumos

IMPERIAL CHEMICAL INDUSTRIES LIMITED
BILLINGHAM DIVISION

Billingham,
Co.Durham

Your Ref: AO.52/1/6/4

Dec.30, 1944.

O.F.Thompson, Esq.,
Economic Advisory Branch,
M.I.

Dear Thompson,

A fairly virulent cold soon after I returned spoilt my Christmas and delayed my confirming in writing the discussion with Kent. However, it was nothing worse than a cold so I won't grumble but just apologise for the delay.

As I said in a previous letter, it would be necessary to keep a petroleum feed stock quite separate from any tar oils and Kent and I decided that the available evidence is that Brux and Pölitz are the only plants which have sufficient storage capacity left to be able to do this easily. Their geographical position also makes them the most suitable for taking the Vienna and Hanover crudes respectively. In view of this and the recent attacks on them, I should like to have photographs of these plants after the attacks when available, to study.

On Leuna, we went through the recent P.O.W. report and, this and the photographs, suggest that the new plants are for the conversion of hydrocarbon gases via CO + H_2 to (a) methanol and (b) and I.G. variation of Fischer Tropsch. There are indications (a) that the Methanol is, partly at any rate, converted to a plastic, possibly with phenol extracted from hydrogenation oils (b) that the Fischer Tropsch oils are used for making fats and soaps. Catalysts are made on the spot and from mention of colours probably contain cobalt and iron.

A first survey indicates that the hydrogen capacity available now at Leuna is only sufficient to feed the old hydrogenation plant but I should like to have the most recent photographs to study for a longer time to confirm this. There is no indication from increased distillation, etc. that any conversion of nitrogen capacity has yet taken place.

At Ludwigshafen, the evidence that the plant between Oppau, and Ludwigshafen is probably for the production of either or both iso-octane from butanol or cumene from propanol grows stronger and probably Oppau is now more used for making alcohols than nitrogen. In a quick survey I agreed with Medmenham that there seems to be no evidence of underground work but I should like to study this further.

could
I/offer no further help in the problem why Brux was shut down for so long except that I do not think it was connected entirely with the damage to the Winkler generators. Scholven and Gelsenkirchen we should continue to watch for signs of use of the distillation units, probably for cutting light fractions of tar oil for use elsewhere; and also of course for movement of equipment.

The discussion at Medmenham suggested to me that apart from continuing to help, where required, in the interpretation of attack results, the other most useful help I can give is on interpretation of doubtful points in P.O.W. reports. I think there is no doubt that we were able together to go a good deal further in deciding what is happening at Leuna so that if you ever have any points on such reports that you would like to discuss, don't hesitate to let me know, and I will either come and discuss them or write you.

Best wishes for the New Year.

Yours sincerely,

M.A.HIGGINS

p.o. W d'Leny

BY SAFE HAND

S.K.12

SECRET

BRITISH EMBASSY
WASHINGTON, D.C.

January 4, 1945.

Dear Brandon,

GERMAN OIL POSITION

You will, no doubt, be interested in the enclosed letter which I have received from Oliver Thompson keeping me up to date with their thinking as to the trend of oil consumption in Germany.

Yours sincerely,

S.Kilbey

B.H.Grove, Esq.,
Foreign Economic Administration,
Washington,D.C.

cc: Lt.-Commdr.Paul L.Hopper
Major R.R.Munes
Major I.E.Stark
Dr.H.G.Carlson
Dr.Walter Levy

SECRET - C O P Y - BY FAST AIR BAG

Economic Advisory Branch,
Foreign Office & Ministry of
Economic Warfare,
Lansdowne House,
Berkeley Square.
London, W.1.

A.C.2/3/2

14th December 1944.

Dear Sid,

The German Oil Position

I attended yesterday our usual fortnightly discussion with our service colleagues on the current position.

The general opinion of all three services was that whereas production since September has shown an upward trend there has been no evidence in the latest intelligence of any alleviation of the shortage prevailing in all branches of the armed forces.

No consumption estimates have recently been worked out, there being some hesitation in tackling statistics on account of the lack of facts to go upon and the risk of drawing wrong conclusions. However, the general weight of intelligence is that G.A.F. consumption has recently been continuing to decline. In November consumption of aviation fuel and motor fuel by ground organisations was probably not in excess of 40,000 tons, and may have been rather less than this.

There are also some indications that Naval consumption has declined although the evidence upon this is not too firm. There have however been some indications of shortages of heavy diesel oil for service craft. If this is the case, this is of some interest as possibly indicating that the Germans are either unable or unwilling to use raw oils for slow speed diesels.

The War Office has not yet given us an official view upon the trend of recent consumption in the west, but we continue to receive reports from S.H.A.E.F. of German forces being embarrassed by lack of adequate stocks and of mechanised equipment coming to a stop on account of empty tanks.

Yours sincerely,

(Sgd.) O.F. Thompson

CONFIDENTIAL

OFFICE OF STRATEGIC SERVICES

WASHINGTON, D. C.

DISTRIBUTED	7 February 1945	DISSEMINATION NO.	A-49655
COUNTRY	Hungary	ORIGINAL REPORT NO.	GB-3415
SUBJECT	Oil	DATE OF REPORT	11 Jan. 1945
		EVALUATION	F and as Stated
		CONFIRMATION / SUPPLEMENT / CORRECTION	
SOURCE			
SUB SOURCE	As Stated	NUMBER OF PAGES	2
DATE OF INFORMATION	8 December 1944	ATTACHMENTS	
PLACE OF ORIGIN	Italy	THEATRE	MEDTO

Oil

F-0 1. Lispe Oil Fields (Yugoslavia 1:100,000, Sheet 7, A-0775)

Source heard that the cracker plant in Lispe was not badly damaged by the 15th Air Force on 28 July 1944. Exact extent of damage could not be confirmed.

F-3 2. Gasoline Shipments from Germany to Hungary

The Germans promised to furnish the Hungarian Air Corps with one million liters of gasoline per month commencing 1 January 1946. Actually only three hundred thousand liters per month were delivered from January to December 1944. The grade of gasoline shipped was B-4.

(Comment: This is equivalent to American 90 octane gasoline.)

Until April 1944, the gasoline was shipped from Germany to Hungary in railroad tank cars. After that time, the Germans were forced to send it via trucks in drums as a consequence of intensive Allied bombings of railway lines. No shipments of 100 octane gasoline were ever received.

F-3 3. Gasoline Shortage and Storage

The shortage of gasoline at air fields in Hungary from April 1944 until early December 1944, was so acute

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CLASSIFICATION

MID	ONI	A-2	STATE	TREAS.	OWI	FEA	AMS	UC	FCC	JICA	L
✓	✓	✓	✓			✓	-				

that whenever a test flight was made, gasoline was robbed from other planes. Each storage location at the fields was spaced and camouflaged differently. Some of the fields had cellars for storing drums, and others placed the drums in the nearby woods. Most of the pre-war fields had cement reservoirs.

F-3 4. Civilian Consumption

a. As of 8 December 1944, civilian automobiles were permitted 15 liters of gasoline (approximately 4 gallons) per month. An exception was made in the case of physicians, who were granted 60 liters per month.

b. No butane is permitted civilian consumers. It is shipped direct from Lispe to Germany.

BY SAFE HAND

BRITISH EMBASSY
WASHINGTON, D.C.

March 8, 1944.

Dear John,

GERMAN AIR FORCE REQUIREMENTS.

I enclose a copy of some notes prepared by Squadron Leader Dendney on the Axis Air Force requirements for petroleum during 1943, which brings our figures very close to yours as regards the consumption of Aviation Gasoline, and when the consumption of the ancillary services on the ground is added it is slightly in excess of your total figure. You will notice, however, that while the total of Aviation Gasoline is fairly close there is considerable difference of view regarding the operational and training consumption, our figures being just the reverse of those reflected in the report to be put out by our Committee here.

Table I is of considerable interest as it breaks down the consumption by uses and by countries which will facilitate the checking on this side. Also Table II setting out the methodology used in the build up will be of assistance in showing how our total figures are arrived at.

I am sending copy of this letter and enclosure to Messrs. Grove and Levy and also to Major Tarr and I am in hopes of receiving considerable comments from the last two named.

Yours sincerely,

S.Kilbey.

John D.March, Esq.,
Petroleum Administration for War,
Washington,D.C.

cc: B.M.Grove, Esq.,
Walter Levy, Esq.
Major R.E.Tarr

AXIS AIR FORCE REQUIREMENTS OF PETROLEUM 1945.

AO (44)1 reviewed British and American estimates of Air Forces Consumption for 1942. It was mentioned there that recent intelligence had indicated that estimates so far made for 1943 were too low, due to increasing unit consumption in newer types of aircraft and the growth in establishment of miscellaneous formations such as communications aircraft, air-sea rescue, etc., Satellite air forces had also been excluded.

The estimates have now been reviewed, and the attached pro-forma shows the new basis. Changes from the pro-forma attached to AO (44)1 are as follows:-

1. GAF Consumption

a) LRB consumption increased from 50 to 60 galls. per engine hour.
b) Transport and training flight factors and establishments have been brought up to date.
c) Ferrying consumptions revised in the light of latest production figures.
d) Communications aircraft establishment introduced.
e) Experimental establishments introduced.
f) 10% on all flying consumption added to cover miscellaneous aircraft
g) 10% on all flying consumption added to cover consumption in repair organizations.

2. Satellite Air Forces now included at 12000 tons/month. Table I attached gives Details of the revised estimates. The following table compares these figures with the American estimates of EOC 68-8

Table II

Aviation Fuel G.A.F.	U.S.Estimates.		Air Min.Est.	
Operational A/C	740		349	
Transport A/C	441	37	394 +	33
Training and Testing	392	33	741 **	62
Total	1575		1484	
Total	99		98	
Satellites	109		144	
	1781	150	1726	144

\+ Includes ferrying and communications
** Includes experimental, misc. and repairs.

Motor Fuel		
Total	499	604
Lubricants	88	95
Grand Total	2568	2425

The overall agreement is quite satisfactory, but it appears that the U.S. estimates include training in operational aircraft and consumption in miscellaneous flying and repairs under the heading of operational flying. This appears to be misleading in that it suggests too high a consumption in forward areas.

TABLE I.

AXIS AIR FORCE REQUIREMENTS OF PETROLEUM 1943

MONTH	G.A.F. CONSUMPTION									I.A.F. Consumption TOTAL	Satellite Air Forces TOTAL	Total Aviation Fuel Consumption	Total Motor Fuel Consumption	Motor Lubes	Aviation Lubes	Civil Air Lines	GRAND TOTAL
	Operational Aircraft	Ferrying	Transport	Training	Communications A/c	Experimental A/c	Misc. Flying	Repairs	TOTAL G.A.F. Aviation Consumption								
JAN.	23,138	1,900	25,050	39,900	5,700	1,500	9,640	9,640	116,518	11,500	12,000	140,018	52,000	2,080	5,607	1,000	200,705
FEB.	23,726	1,855	25,050	39,900	5,700	1,500	9,698	9,698	117,127	11,000	12,000	140,127	48,500	1,940	5,573	1,000	197,140
MAR.	30,718	1,905	25,050	39,900	5,700	1,500	10,393	10,393	125,559	12,927	12,000	150,486	53,500	2,140	5,986	1,000	213,112
APR.	32,820	2,025	25,050	39,900	5,700	1,500	10,603	10,603	128,201	13,000	12,000	153,201	52,000	2,080	6,089	1,000	214,370
MAY	27,404	2,025	25,050	39,900	5,700	1,500	10,061	10,062	121,702	12,500	12,000	146,202	53,600	2,144	5,809	1,000	208,755
JUNE	31,800	2,150	25,050	39,900	5,700	1,500	10,502	10,502	127,104	12,500	12,000	151,604	52,000	2,080	6,020	1,000	212,704
JULY	40,355	2,265	25,050	39,900	5,700	1,500	11,356	11,357	137,483	12,500	12,000	161,983	53,600	2,144	6,431	1,000	225,158
AUG.	33,821	2,280	25,050	39,900	5,700	1,500	10,203	10,203	128,657	12,500	12,000	153,157	45,000	1,800	6,116	1,000	207,073
SEPT.	33,270	2,150	25,050	39,900	5,700	1,500	10,648	10,648	128,866	-	12,000	140,866	52,000	2,080	5,591	1,000	201,537
OCT.	23,622	2,140	25,050	39,900	5,700	1,500	9,684	9,684	117,280	-	12,000	129,280	45,000	1,800	5,128	1,000	182,208
NOV.	26,130	2,060	25,050	39,900	5,700	1,500	9,934	9,934	120,208	-	12,000	132,208	45,000	1,800	5,248	1,000	185,256
DEC.	22,323	1,930	25,050	39,900	5,700	1,500	9,553	9,553	115,509	-	12,000	127,509	52,000	2,080	5,106	1,000	187,695
TOTALS	349,177	24,685	300,600	478,800	68,400	18,000	122,275	122,277	1,484,214	98,127	144,000	1,726,641	604,200	24,168	68,704	12,000	2,435,713

TABLE I.

AXIS AIR FORCE REQUIREMENTS OF PETROLEUM 1943

G.A.F. CONSUMPTION							I.A.F. Consumption TOTAL	Satellite Air Forces TOTAL	Total Aviation Fuel Consumption	Total Motor Fuel Consumption	Motor Lubes	Aviation Lubes	Civil Air Lines	GRAND TOTAL
pport	Training	Communications A/c	Experimental A/c	Misc. Flying	Repairs	TOTAL G.A.F. Aviation Consumption								
,050	39,900	5,700	1,500	9,640	9,640	116,518	11,500	12,000	140,018	52,000	2,080	5,607	1,000	200,705
,050	39,900	5,700	1,500	9,698	9,698	117,127	11,000	12,000	140,127	48,500	1,940	5,573	1,000	197,140
,050	39,900	5,700	1,500	10,393	10,393	125,559	12,927	12,000	150,486	53,500	2,140	5,986	1,000	213,112
,050	39,900	5,700	1,500	10,603	10,603	128,201	13,000	12,000	153,201	52,000	2,080	6,089	1,000	214,370
,050	39,900	5,700	1,500	10,061	10,062	121,702	12,500	12,000	146,202	53,600	2,144	5,809	1,000	208,755
,050	39,900	5,700	1,500	10,502	10,502	127,104	12,500	12,000	151,604	52,000	2,080	6,020	1,000	212,704
,050	39,900	5,700	1,500	11,356	11,357	137,483	12,500	12,000	161,983	53,600	2,144	6,431	1,000	225,158
,050	39,900	5,700	1,500	10,203	10,203	128,657	12,500	12,000	153,157	45,000	1,800	6,116	1,000	207,073
,050	39,900	5,700	1,500	10,648	10,648	128,866	-	12,000	140,866	52,000	2,080	5,591	1,000	201,537
,050	39,900	5,700	1,500	9,684	9,684	117,280	-	12,000	129,280	45,000	1,800	5,128	1,000	182,208
,050	39,900	5,700	1,500	9,934	9,934	120,208	-	12,000	132,208	45,000	1,800	5,248	1,000	185,256
,050	39,900	5,700	1,500	9,553	9,553	115,509	-	12,000	127,509	52,000	2,080	5,106	1,000	187,695
,600	478,800	68,400	18,000	122,275	122,277	1,484,214	98,427	144,000	1,726,641	604,800	24,168	68,704	12,000	2,435,713

G.A.F. FIGURES

AIRCRAFT. ENGINE HOURS Month of: (days)

Type and No. of Engines		Number	No. of Sorties per day	Per Sortie	(3) Oper: per day	(3) Non-Oper: per day	(3) Total per day	Galls/ Eng. hour	TONS (2) Per day	TONS (2) Total for period
I.R.D. & B.R. (2)	A			6				60		
	B									
	C									
D.B. (1)	A			1				50		
	B									
	C									
S.E.F. (1)	A			0.75				75		
	B									
	C									
T.E.F. (2)	A			3				55		
	B									
	C									
A.C.	A			1.5				50		
	B									
	C									
C.S.	A			10.0				50		
	B									
	C									
TOTAL	C									
Transport C) (3) & (4))				10.0						
Training C) (1.5))				4.5						

Total for operational aircraft

TOTAL for ferrying (see Note 4)

Transport Operations (see Note 5)

Training Operations (see Note 6)

Communications Aircraft (see Note 8)

Experimental Aircraft (see Note 9)

Miscellaneous Flying at 10% on all types

Consumption by Repair Organisation at 10% on all types

Civil Air Lines

TOTAL G.A.F. Aviation Fuel Consumption .....

TOTAL I.A.F. " " Consumption (see Note 7) .....

SATELLITE AIR FORCES .....

TOTAL Aviation Fuel Consumption .....

TOTAL Motor Fuel Consumption (see Note 10).....

TOTAL Aviation Lubes @ 4% on Aviation Fuel .....

TOTAL Motor Lubes @ 4% on Motor Fuel .....

GRAND TOTAL .....

NOTES

(1) A = I.A.F. Aircraft Operationally Engaged
B = I.A.F. " non " "
C = New Aircraft Built During The Period

(2) 300 gallons per ton

(3) Assumes 25% of operational engine hours for operational aircraft.
10 engine hours p.w. for T.E. non-operational aircraft
4 " " " " S.E. non-operational aircraft

(4) All new aircraft assumed to make one flight of 3 hours.

(5) Transport Operations.

Type of A/C	No. of A/C	Hours/Day	Galls/Eng.Hr.	Tons/D
3E		2.0	35	
2E		1.25	50	
TOTAL				

(6) Training Operations

Type of A/C	No. of A/C	Hours/Day	Galls/Eng.Hr.	Tons/D
El. 1E		3	8	
Ad. 1E		1.0	35	
2E		1.0	20	
3E		1.0	35	
Op. 1E		1.0	60	
2E		1.0	50	
TOTAL				

(7) I.A.F. Consumption estimated as follows:

Type of A/C	No. of A/C	Oper. Sorties per day	Eng.Hrs. per Sortie	Eng.Hrs.per day Oper.	Eng.Hrs.per day non-oper.	TOTAL	Consumption Galls Eng.hr.	Consumption Tons per day
L.R.B. 2 & 3			9				40	
S.E.F. (1)			1.5				60	
A.C. 1, 2 & 3			7				40	
C.E. 1 & 3			8				40	
TOTAL								
I.A.F. Transport			9		-		35	
Ferrying			5		-		45	
Training			1.65		-		30	
TOTAL								

(8) Communications Aircraft

Type of A/C	No. of A/C	Hours/Day	Galls/Eng.Hr.	Tons/D

(9) Experimental Aircraft

Type of A/C	No. of A/C	Hours/Day	Galls/Eng.Hr.	Tons/D

(10) M/T Fuel Requirements

U.A.F. Vehicles	4 galls/day/vehicle
FIAR Vehicles	
I.A.F. Vehicles	

A.I.3(b)

Consumption

SECRET.

DATA ON G.A.F. AIRCRAFT FUEL (FOR TARGET PURPOSES).

The following notes are intended to be of use to those concerned with attacks on G.A.F. fuel.

The figures (typical of conditions since "D" day, unless otherwise stated) are in many instances approximate estimates based on a variety of evidence; but, in some instances, they are based on specific information obtained from prisoners of war and captured documents, duly checked. Larger figures are mostly given as a guide to the order of magnitude.

For convenience in calculating smaller quantities, i.e., on airfields and in Airfield Regional Commands, etc., figures both of tons and cubic metres are given. The larger quantities, e.g., in Luftgau and Luftflotte, are given in tons only.

I. STOCKS.

1. On active airfields.

Pre-1944 figures used to be 100-300 tons (137-410 cbm.) on a bomber airfield, and 50-100 tons (68-137 cbm.) on a fighter airfield. Recent figures for airfields in West Germany are 30-100 tons (41-137 cbm.); generally about 40 tons (55 cbm.).

2. In an Airfield Regional Command area (comprising total stocks of all airfields in its area and any small reserves in Fuel Issuing Stations).

Present figures: 400-800 tons (548-1096 cbm.) - rarely up to 1,500 tons (2,055 cbm.) - of which the proportion of B4 to C3 varies according to circumstances. Very often nowadays the proportions are about equal. But, at times, one or the other appears to predominate. (Pre-1944, the amount of B4 in an A.R.C. was generally about four times the amount of C3, chiefly due to the then importance of L.R.B.'s.).

3. In a Luftgau area (including stocks on airfields and also reserve stocks in Luftgau Fuel Depots).

Present figures. 4,000-8,000 tons - rarely perhaps up to 10,000 tons.

Luftgau stocks vary not only according to the availability of supplies from synthetic plants (direct, or via Main Fuel Depots controlled by the Air Ministry), but also, of course, according to anticipated needs in the Luftgau area.

When the Field Luftgaus in the West were well stocked up prior to "D" day, Luftgau West France had stocks of 18,000 tons and Luftgau Belgium-North France 12,000 tons. These Luftgaus, however, had to satisfy very large supply requirements.

4. In a Luftflotte area (including stocks on airfields and also reserve stocks in Fuel Depots).

10,000-15,000 tons (but stocks may exceptionally fall below 10,000 tons).

NOTE 1. The proportions of C3 to B4 in reserves of Luftgau and Luftflotte may now be about equal, whereas, pre-1944, B4 used to be about four times C3 (see above).

NOTE 2. Stocks of lubricant are about 5% of aircraft fuel, or slightly more.

II. CONSUMPTION.

1. By G.A.F. as a whole.

The monthly consumption was estimated as at November 1943 at about 120,000 tons, of which 20% was thought to be in respect of operational aircraft; 35% training aircraft; 25% transport; and 20% miscellaneous types.

It was estimated that, at September 1944, the monthly consumption of aircraft fuel by the G.A.F. was about 45,000 tons, of which 11,360 tons were used for operational sorties.

2. By Commands.

(i) Luftgau: 100-200 tons a day, or 3,000-6,000 tons a month. As against these figures it may be noted that Luftgau Belgium-North France used 300 tons a day in June 1944; but it had L.R.B.'s to cater for.

(ii) Luftflotte: 200-300 tons a day, or 6,000-9,000 tons a month. (Pre-1944, a large Luftflotte used to consume as much as 500 tons a day).

The G.A.F. Forces now in the West may be regarded for the present purpose as comparable to a Luftflotte.

3. By types of aircraft.

	Gallons per hour	Gallons per sortie of average duration of 82 mins.*	Number of sorties per 100 cbm.(75 tons)
Me.109	50	68	323
FW.190	80	109	202
Me.110 (Night fighter)	135	184	120
Ju.88 (Night fighter)	220	301	69

* Including sorties made with auxiliary tanks, which probably predominate.

III. STORAGE.

1. Main Fuel Depots. (e.g. DERBEN, FARGE, NEUBURG).

Information regarding stocks in these is scanty. They may hold at the present time about 30,000 tons each. Capacity for fuel in these depots is, of course, very much more, running into hundreds of thousands of tons for each depot. The storage is buried, with thick covering of earth and concrete.

2. Luftgau Fuel Depots and Field Fuel Depots.

500-5,000 tons in stock.

Capacity in the larger of these depots is up to about 15,000 tons. The storage is generally in surface vertical tanks; but sometimes as much as 1,000 tons of fuel may be stored in barrels.

3. Barrel dumps.

500-1,000 tons.

These dumps are chiefly used for replenishing fighter airfields, where stocks may be kept partly in, say, five to ten small tanks if available and partly in barrels, or, alternatively, solely in barrels.

N.B. Increasingly rigorous steps are believed to be taken by the G.A.F. to disperse fuel stocks and to protect surface tanks by brick walls, concrete structures and earth mounding. Barrel dumps are often protected by concrete structures and are semi-sunk. Sidings in Fuel Depots are generally well camouflaged, e.g., with netting; and railway tank wagons in sidings, when they have to be left there full, are generally well spaced out.

IV. TRANSPORTATION.

1. By Rail.

(i) Each railway tank wagon holds either 20 cbm. (15 tons), (the most common kind), 30 cbm. (22 tons) or 63 cbm. (46 tons). A fuel train, of up to 30 wagons generally holds about 500-600 cbm. (365-438 tons).

(ii) Aircraft fuel is also transported by rail in barrels. Barrels hold either 200 litres (44 gallons) or 300 litres (66 gallons). The total amount of fuel on a barrel train is about 400 cbm. (292 tons).

N.B. Empty or non-inflammable wagons are often interspersed between fuel wagons, and fuel trains are often run in halves nowadays, so as to minimise risks from bombing.

2. By Road.

(i) Medium Fuel Columns (M/T) consist of about 8-10 tank lorries, each holding about 3½ to 5 cbm. Total fuel carried by a column is usually about 35 cbm (26 tons), but can be as much as 50 cbm. (36 tons).

(ii) Small Fuel Columns (M/T) consist of about 8-12 ordinary lorries each holding about 2-3 cbm. in barrels, i.e. 10-20 barrels per lorry. Total fuel carried by a column is usually about 25 cbm. (18 tons), but can be as much as 40 cbm. (29 tons).

N.B. Trailers are also used.

3. By Water.

Fuel Depots and storage at airfields are occasionally replenished by fuel-barges and lighters.

4. By Air.

This method was used in emergencies on battle fronts in occupied countries where transportation facilities were poor. It is hardly likely to be used in Germany.

N.B. Fuel is generally delivered to airfields by rail, where possible. About 2-20 railway tank wagons may be so delivered at a time.

Where delivery to airfields by rail is impracticable, fuel is generally delivered by Small Fuel Columns carrying fuel in barrels.

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SECRET No 3104

AIRCRAFT FUEL CONSUMPTION OF THE G. A. F.

FEBRUARY, 1945

1. This paper presents the second monthly estimate of aircraft fuel consumed by the German Air Force. The figures for the month of February are summarised in the table below.

G.A.F. Aircraft Fuel Consumption, February 1945

I.	First-Line Aircraft		
	A. Operational flights	9,600 tons	
	B. Transfer and training flights	1,700 tons	
	C. Rest and refitting flights	200 tons	
	Total, First-Line Aircraft		11,500 tons
II.	Aircraft Industry		
	A. New production: test and ferrying flights	1,200 tons	
	B. Repair: test and ferrying flights	500 tons	
	Total, Aircraft Industry		1,700 tons
III.	Training Units		
	A. Single-engined fighter training	5,200 tons	
	B. Twin-engined fighter training	2,100 tons	
	C. Bomber, Transport and misc. training	700 tons	
	Total, Training Units		8,000 tons
IV.	Transport Units		4,700 tons
V.	Communications and Auxiliary Units		1,000 tons
VI.	Experimental Units		300 tons
VII.	Second-Line Units		1,100 tons
VIII.	Miscellaneous		700 tons
	Total, German Air Force		29,000 tons H

2. The methods by which the various figures were derived have been indicated in the Schedules appended to the January report. It is again stressed that these estimates should only be considered as provisional and approximate.

3. The downward trend of G.A.F. fuel consumption continued during February when a record low of 29,000 tons was reached. Apart from the continued overall shortage of aircraft fuel, the dislocation of activity resulting from the Russian advance was the chief cause of the further decline, which was felt primarily in non-operational flying by the transport and training organisations.

H Jet and rocket-propelled fighters are excluded from this estimate, since the types of low grade fuel consumed are not comparable to the standard types of aircraft fuel.

/...

4. First-Line Aircraft

Single-engined fighter activity in the West, continually restricted by shortages of fuel, was confined largely to defensive tactical sorties: the scale of effort remained at the low level of the previous month. Although evidence of G.A.F. operations on the Eastern Front is relatively scanty, it is believed that a high level of activity was sustained during February, resulting in a net increase in fuel consumption by operational flying. The increased scale of effort was particularly noteworthy in the single-engined fighter and ground-attack categories, although this increase was partially counter-balanced by the shorter duration of these largely tactical sorties in the East. Twin-engined fighter effort remained at the January level in the West but increased substantially on the Russian Front. Long-range bomber and reconnaissance flights rose slightly on all fronts.

5. Aircraft Industry

Minor variations from the previous month in the output of new and repaired aircraft of all types were cancelled out; total fuel consumption in testing and ferrying flights remained approximately at the January figure.

6. Training

The advance of the Russian armies in the East produced a serious disorganisation in the training programme of the A. and B. Schools. The flying hours lost through the transfer of a considerable number of the schools in the area, together with the dislocation of fuel supplies, loss of aircraft, etc. consequent on these transfers, reduced fuel consumption in the A. and B. Schools to roughly 75% of the January level.

The entire S.E.F. R.T.U. organisation was obliged to transfer from its training airfields East of Berlin during the last week of January and the first fortnight of February. Fuel consumption is believed on balance, to have fallen to 70% of the January figure. S.E.F. and other training was not so seriously affected, although some decline in training activity was observed.

7. Transport and Communications

The transport organisation consumed some 500 tons less fuel during February, accounted for by reductions, necessitated in part by the lack of fuel, in the number of supply-dropping missions to the Atlantic Fortresses and of Ju.52 flights in Central Germany and the East. Communications and auxiliary flights suffered a decline in activity amounting to 10% of the January figure.

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