CONFIDENTIAL COPY NO. 12

NOTE UPON ITEMS NOT CONCLUDED DURING THE AMERICAN-BRITISH CONVERSATIONS ON AXIS OIL

(Reference: J.I.C.(43) 312)

CIVIL CONSUMPTION IN AXIS EUROPE

1. (Page 41, paragraph 183)

Belgium, Holland and Denmark

The extent of present industrial activity in Belgium and Holland is estimated at about 50 per cent of the pre-war level. It is also interesting to note that the volume of freight traffic (excluding military traffic) in Belgium in 1942 was 10 per cent below that in 1941; this is probably due to the effect of military traffic and the increasing locomotive shortage. The British estimate of oil consumption in the Lowlands allowed for a greater proportionate decline in industrial activity, but the figures have been based upon a number of reports received month by month during the past year. A recent report stated that gasoline allocations in Belgium have been still further reduced and were in June only 600,000 litres compared with 800,000 litres in April.

Consumption in Belgium during the month of August is estimated as follows:-

(Figures at the annual rate in metric tons)

Motor spirit and blenders	11,000
Kerosine	3,000
Gas/Diesel Oil	15,000
Fuel Oil	5,000
Lubricating Oils	10,000
Total	44,000

These figures are based partly on a report, considered reliable, of the motor spirit and gas oil allocations in August (about 1,150 and 1,580 cu. metres respectively), and partly on the level of consumption in Denmark. Figures have been received of the July sales of one of the large Danish oil companies. Assuming that they are supplying the same proportions of the market as in 1938, the current annual Danish civilian consumption is estimated in metric tons at:-

Motor spirit and blenders	12,000
Kerosine	2,000
Gas/Diesel Oil	10,000
Fuel Oil	5,000
Lubricating Oil	10,000
Total	39,000

In view of the number of indications of drastic reductions in supplies allocated to the Occupied Countries, the current estimates of civilian consumption in Holland have been reduced to the following annual rates in metric tons:-

Motor spirit and blenders	12,000
Kerosine	6,000
Gas/Diesel Oil	14,000
Fuel Oil	10,000
Lubricating Oil	12,000
Total	54,000

FRANCE....

FRANCE

Information has been provided by an oil company official who recently escaped from France. It is considered that this information is reliable and his figures regarding the tonnage of petrol and gas oil placed at the disposal of the French market in June have, to some extent, been confirmed from other sources. The annual rate of consumption during August is estimated in metric tons at:-

Motor spirit and blenders	80,000
Kerosine	12,000
Gas/Diesel Oil	24,000
Fuel Oil	12,000
Lubricating Oil	32,000
Total	160,000

2. (Page 43, paragraph 185)

Greater Germany

Messrs. Alexander and Herbert considered in detail the factors used in the preparation of the estimates of oil consumption for non-military purposes in the Axis European countries by the Office of Strategic Services and by the British. The following note was made, but it was not possible to obtain Mr. Alexander's approval of the record before he left England.

It was found that in most instances there was substantial agreement in the two estimates. The chief differences were in regard to diesel oil consumption by lorries and tractors in Germany.

Lorries. The American estimates showed 1942 consumption of motor spirit and gases (excluding producer gas) by lorries as 665,000 tons, and that of diesel oil 38,000 tons, while the British figures were 420,000 tons and 408,000 tons respectively at the end of 1942.

The main difference was in respect of the number of diesel-driven engines which were assumed to be still running on that type of fuel. An allowance had been made in both estimates for a consumption of diesel oil in the converted vehicles equivalent to 30 per cent of the fuel used before conversion, but the British had assumed for such consumption a rate of 9 tons per year compared with the American figure of 3 tons.

The British estimate of the number of lorries operating on diesel fuel at October 1942 (24,000) had been based on the statement by the International Bureau of Automobile Manufacturers that 24.7 per cent of the lorries in 1939 were diesel driven, i.e. 95,000. The American calculation had assumed that only 51,000 diesel engined lorries were in use in 1938, that the German army had requisitioned more than a proportionate number of such lorries, and that by the end of 1942 only approximately 25,000 remained in civilian use, including those converted to liquid gas and generator fuel.

From considerations of the total amount of goods to be moved, the O.S.S. had adopted as the total number of lorries operating at June, 1942, 350,000, of which 155,000 petrol and 15,000 diesel driven vehicles had been converted. This compared with the British estimate of 375,000 vehicles, of which 192,000 petrol and 71,000 diesel driven vehicles had been converted to producer gas.

As the British maintained the view that a comparatively large number of diesel driven lorries would not have been requisitioned by the army because of their suitability for long distance haulage, it was not found possible to reach agreement pending further evidence of the position.

(There has been no further intelligence on this subject since the time of this discussion and enquiries are still being pursued.)

Motor cars....

Motor cars and cycles. The British estimate was 268,000 tons per annum compared with the American figure for 230,000 tons. The latter was based on the assumption that 225,000 private cars and 800,000 cycles were in use. The British estimated not more than 200,000 cars and 700,000 cycles were running at the end of 1942, but allowed for a higher rate of consumption (see Consumption Factors below).

Omnibuses. According to the American estimate there was an annual liquid fuel consumption of 113,000 tons by 12,000 vehicles, compared with the British figures of 168,000 tons by about 14,000 'buses.

Tractors. There was a substantial divergence in the two estimates under this heading as regards both quantities and types of fuel. The total annual consumption of liquid fuels was estimated at 285,000 tons by the U.S.A. as compared with 220,000 tons by the British. It was generally agreed, however, that the number of tractors operating in early 1939 was about 70,000. The Americans estimated a net increase of 50,000 between 1939 and 1942, of which about half were diesel driven and that the ratio between diesel and Kerosine driven tractors was 4 to 1 in 1928 but 2 to 1 at the end of 1942 compared with the British present ratio of 7 to 1.

Of the total number of tractors now operating, i.e. 120,000 as estimated by the Americans, 25,000 are considered to be driven by solid fuels. The British assumed that 110,000 tractors are now working on liquid fuels and 40,000 on solid fuels, and that the average annual liquid fuel consumption is about two tons per tractor, compared with the American figure of 3 tons.

A further investigation of the tractor position is being made by the British and pending its completion it was agreed that no definite conclusions could be reached.

Consumption Factors. The following table shows the average annual consumption per vehicle as estimated by the U.S.A. compared with British figures based on the annual rate of consumption by vehicles of similar classes in the United Kingdom in 1939. The U.S.A. estimates are based on 20 per cent below the 1938 consumption.

Annual Consumption per Vehicle
(in tons)

		U.S.A.	British
Private cars		0.6	1.15
'Buses.	Motor Spirit	15	13(a)
	Diesel Oil	10	14
Motor Cycles		0.125	0.2(b)
Lorries.	Motor Spirit	3.6(c)	3.5
	Diesel Oil	4.6	9
Lubricating Oil; % of fuel equivalent		3	2.25

(a) Current estimate 12
(b) Current estimate .08
(c) Unconverted lorries 3)
Converted to liquid gas 5) average 3.6
Converted to solid fuel 3)

Industrial Black Oils. The British figure of 384,000 tons per annum was 86,000 tons lower than the American estimate. The difference is due largely to a higher rate of conversion of diesel driven stationary engines having been assumed by the British than by the Americans, the current consumption under this heading being 96,000 and 196,000 tons in the respective estimates.

The American....

The American view that the production of the necessary generating plant has not been sufficient to warrant the high rate of conversion allowed for by the British is now generally accepted, and the British estimate is therefore increased to 480,000 tons per annum.

Mercantile Shipping. The estimates were in agreement at 188,000 tons per annum, but it is now considered by the British that most of the fuel oil fired vessels have been converted to coal consumption. Their current estimates are therefore at the annual rate of 60,000 tons, representing 36,000 tons gas diesel oil and 24,000 tons fuel oil.

Inland and Danube Shipping. The British estimate was 300,000 tons per annum, or 240,000 for the Danube and 60,000 tons for inland shipping. The O.E.E. figure for inland shipping was 125,000 tons but their estimate of Danube shipping was only 200,000 tons, making a total of 325,000 tons for the two items. In the American calculations allowance had been made for some consumption of oil in vessels converted to producer gas. As the British had made no such allowance and their figures related to the six months' period ended April 1943 which included the winter months, it was felt that in respect of a full year their figures should be slightly increased. It is agreed that the British estimates for inland shipping should, therefore, be raised from 48,000 tons diesel oil and 12,000 tons fuel oil to 60,000 tons diesel oil and 24,000 tons fuel oil. The totals for Danube plus Inland shipping are now in agreement.

Kerosine. The two estimates were in close agreement in total, but the British figure of 120,000 tons per year (100,000 tons per annum for winter months) included 96,000 tons for household use, while the American estimate of 110,000 tons included only 30,000 tons for this item. The balance in each case related to agricultural tractors (see Tractors above).

Asphalt and Wax. It is evident that we are unlikely to be able to obtain any conclusive figures of the present usage of asphalt. No estimate can be made by comparison with pre-war consumption figures owing to the large quantities of asphalt and asphaltic crude that were imported from abroad.

The only clue to the consumption of asphalt and wax is afforded by the probable production programmes of the various refineries. The tabulation given in Appendix A, pages 12-13 of the Axis Oil Position in Europe, May 1943, (J.I.C.(43) 253) is based upon a normal range of primary finished products and upon the assumption that lubricant bearing crudes are refined to produce a maximum of lubricants. It is, however, probable that the 336,000 tons of asphalt and wax reported by this tabulation is higher than the actual case in view of the substantial proportion of oil that is devoted to cracking stock. The comparable figure is 247,000 tons.

There is scope for more study of this subject and the British would welcome any suggestions that would throw more light on the position.

3. (Page 46, paragraph 197)

Alcohol

Intelligence upon both the production of methyl alcohol and consumption of alcohol as liquid fuels is generally somewhat deficient. The following notes in respect of different countries are submitted.

Germany. Calculations of requirements of motor fuel in Germany and of the supplies of such fuel available from all sources indicated that it would be unlikely that resort would be made to alcohol to any extent. In the circumstances it is considered that there is not justification for making the allowance for a 25 per cent blend as previously included in the British estimates and, that pending new evidence, it should be assumed that no alcohol is being used as liquid fuel in Germany.

It has recently been stated that the French alcohol blend must be suitable for the German occupational forces in France, but as the quantity likely to be consumed by the German army will probably be small, and therefore will not materially affect the estimates, it is proposed that no special account should be taken of this item.

France. The available supplies of alcohol, which for 1942 were estimated at 100,000 tons of ethanol and 82,000 tons of methanol, have been reduced by 20,000 tons for 1943 but they are still considerably more than the amount required for automotive fuel blends. It has recently been reported that the Germans do not permit neat methyl alcohol to be used for automotive purposes. The new standardised fuel now in use in France comprises 58% gasolene, 13% benzol and 29% alcohol. On the other hand there have been reports that the alcohol content of automotive fuel for civilian purposes had at one time been as high as 66%. In view of the possibility of further restrictions in imports of petrol into France the foregoing figures would appear to be liable to change at any time, but the current alcohol consumption as motor fuel is estimated at 24,000 tons per annum.

Belgium. It has been reported that motor fuel is comprised of a 90 per cent benzol and 10 per cent petrol blend for summer use, and a 70 per cent benzol and 30 per cent petrol blend for winter use. It has recently been reported that a new blend has been put on the market which also includes alcohol and which has an octane rating of 88. As this octane rating is the same as that of the new fuel in France, it may be inferred that the alcohol content is similar to that in France, namely 29 per cent.

Hungary. It has been announced that the blending of alcohol with petrol to the extent of 10 per cent will be continued until the end of 1943.

The quantities of alcohol now used for automotive purposes are therefore estimated as follows:-

France	24,000	metric tons per annum
Belgium	3,000	" " " "
Hungary	6,000	" " " "
Total	33,000	" " " "

There is no evidence of alcohol being used in Norway, Denmark, Holland, Poland, Roumania, Bulgaria, or Yugoslavia, but an allowance of 7,000 tons per annum has been made to cover these countries, making a total annual consumption in Axis European countries of 40,000 tons.

Sweden. The present practice in Sweden is of interest. As from 1st July, 1942, the following mixtures were introduced on to the market:-

MOTYL 50 — A mixture of 50 per cent by volume Motor Alcohol and 50 per cent by volume Motor Spirit, which was to be used as a starting fuel.

MOTYL 85 — A mixture of 85 per cent by volume crude alcohol (as distinct from refined almost water free Motor Alcohol) and 15 per cent by volume Benzine. This to be used as operating fuel in motors and instead of Motor Kerosine in tractors.

MOTYL 98 — A pure 95 per cent Cellulose Alcohol similar to the Crude Alcohol used in MOTYL 85. This to be used as a substitute for Gasoil in sailing smacks with auxiliary engines.

The scales of the various blends up to April 1943 were Motyl 50 59 per cent, Motyl 85 37 per cent, Motyl 98 4 per cent.

4.....

4. (Page 65, paragraph 315)

See note under item 2 above.

PRODUCTION

5. (Page 67, paragraph 334)

Rhine Valley Crude Production

We are still without any evidence of crude oil production in the Rhine valley. A German geologist in a lecture in March on German mineral oil production gave a list of oil fields from which crude was being obtained, but no reference was made to the Rhine valley; this is possibly significant.

In view of the number of miscellaneous reports received upon all known producing areas, it is considered unlikely that there is a field of any importance which has not yet been reported upon. In the circumstances it is felt that an allowance for fields in the Rhine valley is not at present justified.

6. (Page 57, paragraph 274)

Fischer-Tropsch Units at Hydrogenation Plants

The Central Interpretation Unit has scrutinised the gas synthesis section of all the large Bergius plants having in mind the possibility of recognising the employment of Fischer-Tropsch or other known processes. Except for Blechhammer South and Ludwigshafen, where the possibility of the occurrence of Fischer plants was mentioned in the reports, no suggestion of their presence has been found.

In no case have Couper stoves (said at the meeting to be characteristic of the high pressure Fischer-Tropsch process) been recognised at Bergius plants.

7. (Page 59, paragraphs 288-290)

Surplus Gases

A report upon the tail gases of the synthetic oil plants is being prepared in conjunction with Dr. Nieuwenhuis and will be completed shortly.

OIL CONSUMPTION BY THE TODT ORGANISATION

8. (Page 32, Annex "B")

It is believed that the numbers employed by the Todt Organisation have recently substantially increased, possibly to over 1 million compared with 450,000 in 1941. It is known, for example, that large numbers of German workers have lately been recruited from all parts of the Reich. That numbers have increased, is also confirmed by a report that while there were 40/50 O.T. camps in France in 1941, there were 450 in 1943. Some of the more recent activities of the organisation have been as follows:

(1) general purposes in Russia and immediately behind the fighting front,

(2) road building in Slovakia, Rumania, Moldavia, Transylvania and also pipe line construction,

(3) work upon roads, canals, bridges, dams, mines and grain silos in the Balkans,

(4) construction of port facilities and bridges in Bulgaria,

(5) work on the Atlantic and Channel defence fortifications.

More.....

More recently the German press have been making numerous references to the presence of Todt workers in the Ruhr for the purpose of repairing air raid damage.

An indication of the extent of Todt operations is to be found in a recent German newspaper report. In this it is stated that one N.S.K.K. regiment did 42,000 million ton-kilometres (25,000 million ton-miles) on the Russian front; another did 82,250 million ton-miles in Africa. On the Atlantic Wall 52 million tons have been carried over 325 million kms. and 55 million passengers have been carried 44 million kms.

From these reports it is evident, firstly, that Todt workers are highly mobile and, secondly, that there has been no slackening of Todt activity. In endeavouring to estimate the oil consumption of the Organisation, it would appear that the following factors might result in an increase in consumption:-

(a) Greatly increased number of workers, notwithstanding that these workers are largely of a manual character.

(b) Extensive use of concrete mixers, tractors, bull-dozers, etc. particularly in connection with defence fortifications.

On the other hand, economics in consumption may have been effected by:-

(a) The conversion of Todt vehicles to producer gas which, on good evidence, has proceeded rapidly.

(b) Much of the work being done closer to railheads than heretofore, thus reducing road mileage.

A study is being made of the extent of fortification work and aerodrome construction that is now being done, and of the equipment being used for these projects. It is hoped, as a result of this study, that some statistics may emerge that will afford a basis for discussion with the leading construction firms in this country and which may help to bring our estimates nearer to the

READING OF THE TECHNICAL PRESS

9. (Page 90, Item 455)

Arrangements for securing copies of the technical and non-technical press are apparently comprehensive but there is scope for improvement in ensuring that items of technical interest are fully screened by those informed in these subjects. Steps have now been taken to ensure that no items in these journals are overlooked.

Apart from the daily press, which is regularly screened for items of oil intelligence, some 50 technical or trade journals are scrutinised, of which the following apply more particularly to the oil industry:-

Allgemeine Automobil Zeitung
Automobiletechnische Zeitschrift
Braunkohle
Chemische Technik
Chemie
Forschungen und Fortschritte
Gluckauf
Gas und Wasserfact
Oel u. Kohle
Brennstoff-Chemie
Reichsgesetzblatt
Warme
Zeitschrift des V.D.I.
Zeitschrift dur Komprimierte und Flussige Gase
Moniteur de Petrole Roumain.

In addition.....

In addition to the press reading bureaux in this country, similar arrangements in Sweden and Turkey also cover at least part of the same ground. In addition items of special interest are occasionally received in photostat from secret sources.

We have not been receiving the Roumanian technical journal "ANALELE MINELOR"; arrangements have now been made to obtain this.

10. (Page 70, Appendix 14A)

Synthetic Production in Japan

A revised report, comprising a review of Washington paper E.C.C. 55 and including all items of intelligence available in London on the Japanese synthetic oil plants, is attached to this memorandum*.

* Not attached.

September, 1943.