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PROVISIONAL INTELLIGENCE REPORT

THE OUTPUT
OF REFINED PETROLEUM PRODUCTS
IN THE EUROPEAN SATELLITES
AND COMMUNIST CHINA



CIA/RR PR-125

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CIA/RR PR-125

(ORR Project 25.675)

NOTICE

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FOREWORD

This report is a coordinated effort to present agreed postwar statistics on the output of refined petroleum products in the European Satellites and Communist China. Because of existing gaps in intelligence, these postwar estimates are provisional. As the gaps are filled, revised estimates will be developed.

To provide for comparative evaluation, this report gives prewar data for China and all of the European Satellites except East Germany and Poland. Boundary changes have made prewar data on those two countries of little value as bases for comparison.

During the period covered by this report the production of petroleum in Austria was confined to the Soviet Zone and was controlled by Soviet officials. For that reason, the output of petroleum products in the Soviet Zone of Austria is considered as output by a European Satellite.

Available data on the consumption of petroleum products in the European Satellites and Communist China are inadequate to provide a base for estimating output of petroleum products. The estimates of output, therefore, are based on the quantities and qualities of crude oil available for refining, on types of refining facilities, on refinery yield data, and on the production of synthetic petroleum products.

Although North Korea is not included in the scope of this report, the available data on the output of petroleum products by North Korean plants are given. Although these data are very tenuous, they serve to supplement the information on Communist China.

This report has been coordinated with AFOIN and the EIC Subcommittee on Petroleum.

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THE OUTPUT OF REFINED PETROLEUM PRODUCTS
IN THE EUROPEAN SATELLITES AND COMMUNIST CHINA*

Summary

The output of refined petroleum products in the European Satellites and Communist China has increased substantially during the postwar years. Refining capacity has kept pace with the increase in the production of crude oil in the Sino-Soviet Bloc, and refinery output has been adequate, in general, to meet the requirements of the expanding petroleum economy of the Bloc.

The output of petroleum products in the European Satellites has increased from 6.3 million metric tons** in 1948 to about 15.4 million tons in 1954. This 7-year increase of about 140 percent is equivalent to an annual growth rate of slightly more than 16 percent. In 1954 the output of petroleum products in the European Satellites was about 24 percent of the total output of the Sino-Soviet Bloc.

Of the total 1954 output of petroleum products in the European Satellites, about 8.7 million tons, almost 60 percent, were produced by Rumania. East Germany produced about 15 percent of the total; the Soviet Zone of Austria, about 10 percent; and Hungary, about 8 percent. Czechoslovakia and Poland produced most of the remainder, in about equal portions, and Albania and Bulgaria produced negligible quantities. The estimated output of petroleum products in the European Satellites in 1936 and 1946-54 is shown in Table 1.***

During the 1948-54 period the output of petroleum residuals in the European Satellites increased at a greater rate (about 180 percent in the 7-year period) than did that of other petroleum products. The output of diesel fuel increased slightly more than 140 percent during the period, and the output of gasoline, kerosine, and lubricating oil had a considerably slower rate of growth. The estimated output of petroleum products in the European Satellites, by type of product, in 1936 and 1946-54 is shown in Table 2.****

* The estimates and conclusions contained in this report represent the best judgment of ORR as of 1 September 1955.

** Tonnages are given in metric tons throughout this report.

*** Table 1 follows on p. 2.

**** Table 2 follows on p. 3.

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Table 1

Estimated Output of Petroleum Products in the European Satellites
1936 and 1946-54

Thousand Metric Tons

Year	Rumania	East Germany	Soviet Zone of Austria	Hungary	Czechoslovakia	Poland	Albania	Bulgaria	Total ^{a/}
1936	7,886	b/	125 c/	193 d/	283 d/	b/	0	23	8,510 b/
1946	3,840	350 c/	620	620	N.A.	120	N.A.	0	5,600
1947	3,240	570 c/	670	470	280 e/	170	N.A.	0	5,400
1948	3,900	620 c/	690	450	430	220	N.A.	0	6,300
1949	4,200	880	870	450	500	240	N.A.	0	7,100
1950	4,800	1,320	940	460	570	260	N.A.	0	8,300
1951	5,900	1,510	1,100	650	770	400	N.A.	0	10,300
1952	7,000	1,850	1,300	850	840	450	40	0	12,300
1953	7,900	2,100	1,400	1,000	940	630	40	0	14,100
1954	8,700	2,260	1,500	1,300	810	840	40	N.A.	15,400

a. Totals are derived from unrounded figures and do not always agree with the sum of the rounded data shown.

b. Data for East Germany and Poland are not included. On the basis of prewar boundaries, production in Germany was 2,251,000 tons and in Poland, 450,000 tons. ^{1/}* If these data were included, the total would be 11,211,000 tons. Prewar data for Germany include the entire country; information cannot be isolated for East Germany alone.

c. Excludes residual products.

d. Includes only limited amounts of residuals (wax).

e. Includes only output from synthetic oil products and benzol added as motor gasoline blending component; data for output of natural petroleum products are not available.

* For serially numbered source references, see Appendix C.

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Table 2

Estimated Output of Petroleum Products in the European Satellites
by Type of Product
1936 and 1946-54

Year	Thousand Metric Tons					Total a/
	Gasoline	Kerosine	Diesel Fuel	Lubricating Oil	Residuals and Others	
1936 b/	2,217	1,475	1,352 c/	93 d/	3,373 d/	8,510
1946 d/	1,600	770	940	190	2,000	5,600
1947 d/	1,800	660	960	260	1,800	5,400
1948	2,000	790 d/	1,200	320	1,900 d/	6,300
1949	2,200	850	1,400	370	2,400	7,100
1950	2,600	950	1,600	430	2,800	8,300
1951	3,100	1,200	2,000	510	3,500	10,300
1952	3,600	1,400	2,300	620	4,400	12,300
1953	4,100	1,500	2,700	720	5,000	14,100
1954	4,600	1,700	3,000	730	5,400	15,400

a. Totals are derived from unrounded figures and do not always agree with the sum of the rounded data shown.
b. Data for East Germany and Poland are not included. On the basis of prewar boundaries, production in Germany and Poland was as follows 2/:

Product	Thousand Metric Tons	
	Germany	Poland
Gasoline	878	88
Kerosine	56	146
Diesel fuel (includes fuel oil)	432	89
Lubricating oil	270	62
Residuals and others	615	65

c. Includes fuel oil from Hungary.
d. Data are not complete; some production figures are not available.

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The output of refined petroleum products in Communist China increased from 400,000 tons in 1951 to about 715,000 tons in 1954. Increased production of petroleum residuals and kerosine accounted for a major part of the 100-percent growth. Because of the lack of major sources of crude oil in Communist China, domestic output of petroleum products provides only about one-third of the total requirements of the country. The remainder is imported, primarily from other countries of the Sino-Soviet Bloc.

The postwar rate of expansion of petroleum refining capacity in the European Satellites and Communist China and the plans for the development of the refining industries indicate that the output of refined petroleum products in these areas will continue to keep pace with the growth of the petroleum economy of the Sino-Soviet Bloc.

Except in Rumania,* however, the output of petroleum products is dependent upon imports of stocks for processing. To the extent that transportation of these imports is subject to curtailment or stoppage, the petroleum refining industries of the European Satellites and Communist China are vulnerable, but because trade in petroleum charge stocks is largely intra-Sino-Soviet Bloc, the vulnerability is relatively slight.

Increased emphasis on imports and stockpiling of jet fuel and aviation gasoline or major increases in the output of those products at the expense of illuminating kerosine and motor gasoline might indicate preparations for military activity. The present patterns of trade, stockpiling, and refinery yield in the European Satellites and Communist China, however, do not indicate such preparations.

* It is assumed that with the signing of the Austrian peace treaty the Soviet Zone of Austria ceased to exist and can no longer be considered as a major factor in the petroleum economy of the Sino-Soviet Bloc.

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I. Introduction.

This report presents an estimate of the output of refined petroleum products in the European Satellites and Communist China in the postwar years where bases for estimation are available. Adequate data on the consumption of petroleum products are not available for any of these countries. Hence this preliminary effort to establish yield patterns for petroleum refineries is based on the quantity and quality of crude oil available for refining, synthetic oil operations, the general type of equipment available for refining, and immediate postwar refining yields published in official statistics. Each country is considered as an entity, and yields are obtained independently. Data covering prewar years are given for purposes of comparison where applicable.

Crude oil storage is not presented as such, because there is no reliable information to indicate the percentage to be included. To introduce this factor would involve an error of 2 to 3 percent in the figures, which already contain an error of minus 5 percent to plus 10 percent. The increment to the estimates, however, has been considered.

The output of refined products is presented in five categories throughout this report, as follows: gasoline, kerosine, diesel fuel, lubricating oil, and residuals and others. The yield of natural gas liquids has been included in total products for Poland alone, based on estimates of postwar production ^{3/} and projection through 1954. Postwar data on natural gas liquids are not quantitatively available for Rumania. Preliminary estimates of production of natural gas liquids for Hungary are available, but no consumption or distribution patterns have been determined, so these data have not been incorporated in this report.

Data for 1946 and 1947 in many instances were from official publications of the countries concerned. Definite gaps appear, however, in the output figures for these 2 years for East Germany, Czechoslovakia, and China.*

* For methodology, see Appendix A.

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II. Estimated Output.

A. Rumania.

The output of petroleum products by Rumanian refineries reached near-peak levels in 1936 but had begun to decrease before World War II, when much of the refining capacity was severely damaged by Allied bombing attacks. After the war the Western powers assisted in restoring this capacity to about one-half of the 1936 rate. No official statistics are available after 1947, but estimates of production of crude oil show accelerated increase after 1950. ^{4/} In 1953 total output approximated that of 1936, although the yield pattern varied. A marked increase in the yield of gasoline and lubricating oil is noted in 1953 as compared to 1936, with somewhat smaller decreases in kerosine, diesel fuel, and residuals. Planned goals for 1955 provide for a 30-percent increase in gasoline yield over 1950. ^{5/} The estimated output of petroleum products in Rumania during 1931-39 and 1946-54 is shown in Table 3.*

The yield of petroleum products from Rumanian refineries has represented approximately 60 percent of the total production of the European Satellites during 1948-54. This fact indicates the significance of the Rumanian position in the petroleum economy of the European Satellites.

Although previous estimates of refinery capacity in the Soviet Bloc had indicated insufficient capacity to produce the total products estimated for 1953 and 1954, a recent revision of estimates on Rumanian refining capacity ^{6/} presents figures for 1953 and 1954 which are in line with the estimates of output of petroleum products given in this report. Refinery expansion planned and under way in Rumania, however, makes necessary a revision of estimates of refining capacity. The 1955 Plan calls for an increase in refining capacity of 226 percent over 1950, ^{7/} but there are no firm data available to quantify these estimates.

B. East Germany.

Because East Germany has no known indigenous supply of crude oil, it must depend primarily upon its highly developed synthetic oil industry to fill its requirements for petroleum products. Synthetic oil products are obtained by the processing of coal by various

* Table 3 follows on p. 7.

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Table 3

Estimated Output of Petroleum Products in Rumania
1931-39 and 1946-54

Year	Gasoline	Kerosine	Diesel Fuel	Lubricating Oil	Residuals and Others	Total ^a / _{**}
1931 b/	1,338	1,254	793	89 c/	3,003	6,477
1932 b/	1,481	1,159	961	73 c/	3,235	6,909
1933 b/	1,539	1,121	1,142	73 d/	3,288	7,163
1934 b/	1,771	1,349	1,243	75	3,450	7,888
1935 b/	1,853	1,367	1,226	82	3,471	7,999
1936 b/	1,922	1,290	1,281	63	3,330	7,886
1937 e/	1,589	1,113	993	49 f/	2,726	6,470
1938 e/	1,529	1,083	858	65 g/	2,384	5,919
1939 e/	1,557	968	770	N.A.	2,197	5,492
1946 h/	1,150	570	530	110	1,490	3,840
1947 i/	1,060	440	410	80	1,260	3,240
1948 j/	1,200	550	510	110	1,400	3,900
1949 j/	1,300	600	560	120	1,600	4,200
1950 j/	1,500	690	630	130	1,800	4,800
1951 j/	1,900	840	780	160	2,200	5,900
1952 j/	2,200	1,000	920	190	2,600	7,000
1953 j/	2,500	1,100	1,000	220	3,000	7,900
1954 j/	2,800	1,300	1,200	240	3,300	8,700

* Footnotes for Table 3 follow on p. 8.

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Table 3

Estimated Output of Petroleum Products in Rumania
1931-39 and 1946-54
(Continued)

a. Totals are derived from unrounded figures and do not always agree with the sum of the rounded data shown.

- b. 8/
- c. 9/
- d. 10/
- e. 11/
- f. 12/
- g. 13/
- h. 14/
- i. 15/
- j. See Methodology, Appendix A, Section 2.

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hydrogenation and tar distillation processes. Some crude oil is also imported for the production of lubricating oils, and increasing amounts of crude oil are being processed at the synthetic oil installations because of the shortage of coal tar for hydrogenation.

The estimated output of petroleum products in East Germany in 1946-54 is shown in Table 4. These estimates were prepared for a report on the petroleum industry of East Germany. ^{16/} Earlier postwar data are incomplete and are so indicated in the table. Prewar data are not presented because there is no valid basis for comparison in view of boundary changes.

Table 4

Estimated Output of Petroleum Products in East Germany
1946-54

Thousand Metric Tons						
Year	Gasoline	Kerosine	Diesel Fuel	Lubricating Oil	Residuals and Others	Total ^{a/}
1946 ^{b/}	180	N.A.	150	20	N.A.	350
1947 ^{b/} ^{c/}	310	N.A.	220	40	N.A.	570
1948 ^{b/} ^{d/}	310	N.A.	260	50	N.A.	620
1949 ^{e/}	320	10	300	50	200	880
1950 ^{e/}	480	10	410	100	320	1,320
1951 ^{e/}	550	60	480	110	320	1,510
1952 ^{e/}	630	110	540	100	470	1,850
1953 ^{e/}	700	90	670	120	520	2,100
1954 ^{e/}	770	80	730	150	530	2,260

a. Totals are derived from unrounded figures and do not always agree with the sum of the rounded data shown.

- b. ^{17/}
- c. ^{18/}
- d. ^{19/}
- e. ^{20/}

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The output of petroleum products in East Germany has increased from about 10 percent of total output of the European Satellites in 1948 to about 15 percent in 1954. The most significant increases in output have occurred in the categories of gasoline and diesel fuel.

Plans for the expansion of facilities and improved processing methods seem to insure a continued increase in East German output of petroleum products.

C. Soviet Zone of Austria.

Although the Soviet Zone of Austria is not generally included in estimates for the Soviet Bloc, it ranks third in the output of petroleum products among the European Satellites and is an important exporter of crude oil to its Satellite neighbors. It contributed approximately 9 to 12 percent of the total output of petroleum products by the European Satellites in 1948-54, with the percentage decreasing in recent years.

The actual increase in output of petroleum products between 1948 and 1954 was approximately 120 percent. Major increases occurred in the output of gasoline, diesel fuel, and residuals, while the yield of kerosine declined.

The estimated output of petroleum products in the Soviet Zone of Austria in 1932-37 and 1946-54 is shown in Table 5.* Postwar estimates are based on yield patterns for refined petroleum products established for 1948 and 1953, which were interpolated for the intervening years.

D. Hungary.

The petroleum industry in Hungary was not an important factor in the petroleum economy of the European Satellites until 1952, at which time crude oil imports increased markedly. This was followed by a significant rise in indigenous production of crude oil in 1953. In 1954 a continued increase in Hungarian production of crude oil was reported, and imports were maintained at the high level of 1952. Thus there has been considerable increase in the output of petroleum products and a trend toward self-sufficiency in meeting domestic demands.

* Table 5 follows on p. 11.

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Table 5

Estimated Output of Petroleum Products in the Soviet Zone of Austria
1932-37 and 1946-54

Thousand Metric Tons						
Year	Gasoline	Kerosine	Diesel Fuel	Lubricating Oil	Residuals and Others	Total ^{a/}
1932 ^{b/}	68	34	14	N.A.	N.A.	116
1933 ^{c/}	81	41	18	N.A.	N.A.	140
1934 ^{c/}	80	36	19	N.A.	N.A.	135
1935 ^{d/}	77	36	11	N.A.	N.A.	124
1936 ^{e/}	80	38	7	N.A.	N.A.	125
1937 ^{e/}	59	21	5	N.A.	N.A.	85
1946 ^{f/}	40	60	130	40	350	620
1947 ^{f/}	40	70	140	50	370	670
1948 ^{g/}	70	80	190	50	300	690
1949 ^{f/}	90	100	240	70	370	870
1950 ^{f/}	120	100	250	70	400	940
1951 ^{f/}	160	90	300	60	500	1,100
1952 ^{f/}	180	80	350	80	630	1,300
1953 ^{f/}	230	50	380	80	700	1,400
1954 ^{f/}	240	50	390	80	710	1,500

a. Totals are derived from unrounded figures and do not always agree with the sum of the rounded data shown.

b. ^{21/}

c. ^{22/}

d. ^{23/}

e. ^{24/}

f. See Methodology, Appendix A, Section 4.

g. ^{25/}

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The estimated output of petroleum products in Hungary in 1954 exceeds the latest estimate of refining capacity. This estimate, however, was made in 1953, 26/ and actual capacity may, in the meantime, have exceeded this estimate. Some crude oil of inferior quality is processed at various refineries, necessitating process modifications which will result in greater output of petroleum products.

The estimated output of petroleum products in Hungary in 1933-38 and 1946-54 is shown in Table 6.* These data reveal a sizable increase in production of diesel fuel and residuals, with a somewhat smaller increase in the yield of gasoline.

The Hungarian contribution to the total output of petroleum products by the European Satellites decreased from approximately 7 percent in 1948 to less than 6 percent in 1950, but subsequently increased again to more than 8 percent in 1954. Internal output of these products increased by approximately 190 percent during 1948-54.

E. Czechoslovakia.

Czechoslovakia is deficient in petroleum and depends largely upon its synthetic oil industry and upon imports of crude oil and residuals to fill most of its requirements for petroleum products.

No data were available on the output of petroleum products in 1946 and 1947, so that figures for both Czechoslovakia and the European Satellites as a whole are incomplete for these 2 years. Figures on Czechoslovak production from synthetic oil operations in 1947 were available 27/ and are shown in the estimated output for that year.

The output of refined petroleum products from the processing of crude oil is estimated by applying the yield pattern shown in the 1949 Plan to figures on imports of crude oil and residuals. 28/ With these data the straight run yields are postulated and the total output of refined products are estimated.

The estimated output of petroleum products in Czechoslovakia in 1932-36 and 1947-54 is shown in Table 7.**

* Table 6 follows on p. 13.

** Table 7 follows on p. 14.

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Table 6

Estimated Output of Petroleum Products in Hungary
1933-38 and 1946-54

Thousand Metric Tons						
Year	Gasoline	Kerosine	Diesel Fuel	Lubricating Oil	Residuals and Others	Total ^{a/}
1933 ^{b/}	46	55	23 ^{c/}	8	4 ^{d/}	136
1934 ^{b/}	44	57	27 ^{c/}	9	6 ^{d/}	143
1935 ^{e/}	56	60	44 ^{c/}	13	6 ^{d/}	179
1936 ^{e/}	60	67	31 ^{c/}	6	29 ^{d/}	193
1937 ^{f/}	66	67	81 ^{c/}	13	8 ^{d/}	235
1938 ^{f/}	77	71	79 ^{c/}	14	3 ^{d/}	244
1946 ^{g/}	210	120	100	N.A.	200	620
1947 ^{g/}	160	100	90	N.A.	120	470
1948 ^{h/}	150	90	80	10	120	450
1949 ^{h/}	150	80	90	10	120	450
1950 ^{h/}	150	80	100	10	120	460
1951 ^{h/}	170	100	140	20	220	650
1952 ^{h/}	190	110	190	40	330	850
1953 ^{h/}	220	100	260	40	400	1,000
1954 ^{h/}	270	140	320	50	490	1,300

a. Totals are derived from unrounded figures and do not always agree with the sum of the rounded data shown.

b. ^{29/}

c. Includes fuel oil.

d. Data incomplete; covers only production of wax.

e. ^{30/}

f. ^{31/}

g. ^{32/}

h. See Methodology, Appendix A, Section 5.

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Table 7

Estimated Output of Petroleum Products in Czechoslovakia
1932-36 and 1947-54

Thousand Metric Tons						
Year	Gasoline	Kerosine	Diesel Fuel	Lubricating Oil	Residuals and Others	Total <u>a/</u>
1932 <u>b/</u>	206	71	27	28	1 <u>c/</u>	333
1933 <u>d/</u>	156	70	25	23	1 <u>c/</u>	275
1934 <u>d/</u>	132	67	32	27	4 <u>c/</u>	262
1935 <u>e/</u>	136	69	30	25	5 <u>c/</u>	265
1936 <u>e/</u>	151	73	30	24	5 <u>c/</u>	283
1947 <u>f/</u> <u>g/</u>	140 <u>h/</u>	20 <u>h/</u>	70 <u>h/</u>	50	N.A.	280
1948 <u>i/</u>	180 <u>j/</u>	40	120	60	40	430
1949 <u>i/</u>	170 <u>j/</u>	30	120	90	80	500
1950 <u>i/</u>	190 <u>j/</u>	40	160	90	100	570
1951 <u>i/</u>	220 <u>j/</u>	60	210	120	160	770
1952 <u>i/</u>	230 <u>j/</u>	60	220	160	160	840
1953 <u>i/</u>	250 <u>j/</u>	60	240	200	190	940
1954 <u>i/</u>	260 <u>j/</u>	60	220	150	110	810

a. Totals are derived from unrounded figures and do not always agree with the sum of the rounded data shown.

b. 33/

c. Data incomplete; covers only production of wax.

d. 34/

e. 35/

f. 36/

g. 37/

h. Includes output of synthetic oil production and motor benzol only. Data are not available on output of petroleum products from crude oil.

i. See Methodology, Appendix A, Section 6.

j. Includes refined benzol used as a blending agent for motor gasoline.

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Refined benzol is used as a blending agent in motor gasoline in Czechoslovakia and the estimated amount added to the estimated yield of gasoline.*

The yield of petroleum products in Czechoslovakia amounts to about 5 percent of the total production of the European Satellites. It is not anticipated that Czechoslovakia will increase in importance in this field because of its dependence upon imports and the limited possibilities for the development of indigenous production of crude oil.

F. Poland.

Poland is also limited in possibilities for the expansion of crude oil production and consequently must depend largely upon imports of crude oil and of petroleum products to satisfy civil demands. The synthetic oil industry -- which was so prominent during World War II under Germany -- was incapacitated, partly by Allied bombing and partly by Soviet dismantling immediately after the war. This industry is gradually being rebuilt, however, and became an increasingly important source of distillate fuels in Poland beginning in 1954.

Data on Polish refineries were available for 1946 and 1947, and the yield pattern thus obtained was projected through 1950. After this date, imports of crude oil became significant, and the quality and quantity of these imports were taken into consideration in estimating the output of refined petroleum products through 1954. Poland also utilizes refined benzol as a blending agent in motor gasoline, and an estimate of this quantity is included in the estimated output of gasoline.

The estimated output of petroleum products in Poland in 1946-54 is shown in Table 8.** From 1948 to 1954, total output increased approximately 280 percent. Because of the expansion of the synthetic oil phase of the refining industry, it is anticipated that Poland will continue to contribute at least 5 percent of the total output of petroleum products by the European Satellites.

* See Methodology, Appendix A.

** Table 8 follows on p. 16.

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Table 8

Estimated Output of Petroleum Products in Poland
1946-54

Thousand Metric Tons						
Year	Gasoline ^{a/}	Kerosine	Diesel Fuel	Lubricating Oil	Residuals and Others	Total ^{b/}
1946 ^{c/}	50	20	30	20	10	120
1947 ^{c/}	70	30	30	40	10	170
1948 ^{d/}	90	30	40	40	30	220
1949 ^{d/}	100	30	40	30	40	240
1950 ^{d/}	110	30	50	30	40	260
1951 ^{d/}	130	50	80	40	110	400
1952 ^{d/}	140	50	90	50	120	450
1953 ^{d/}	170	70	130	60	190	630
1954 ^{d/}	230	90	180	60	280	840

a. Includes natural gas liquids ^{38/} and benzol used as a blending agent for motor gasoline.

b. Totals are derived from unrounded figures and do not always agree with the sum of the rounded data shown.

c. ^{39/}

d. See Methodology, Appendix A, Section 7.

G. Albania.

There were no petroleum refineries in Albania before World War II. After the war, some small refineries were installed to satisfy local needs, but before 1952 the output is believed to have been insignificant on the basis of the crude oil available for refining. Beginning in 1952, however, production of indigenous crude oil and natural bitumen increased and exceeded the available capacity for refining. The estimated output of petroleum products in Albania in 1952-54 is shown in Table 9.* Total output during 1952-54 is estimated at about 40,000 tons per year.

* Table 9 follows on p. 17.

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Table 9

Estimated Output of Petroleum Products in Albania a/
1952-54

Thousand Metric Tons						
<u>Year</u>	<u>Gasoline</u>	<u>Kerosine</u>	<u>Diesel Fuel</u>	<u>Lubricating Oil</u>	<u>Residuals and Others</u>	<u>Total</u>
1952	7	4	9	2	20	40
1953	7	4	9	2	20	40
1954	7	4	9	2	20	40

a. See Methodology, Appendix A, Section 8. All estimates have been rounded to one significant figure. Crude oil available for refining is in excess of refining capacity. The output reflects approximate crude charge capacity of 50,000 tons per year.

A new refinery was under construction in Albania and should have been in operation in early 1955. ^{40/} The estimated capacity of 150,000 tons per year should establish Albania as an exporter of petroleum products as well as of crude oil. The output of petroleum products in Albania is unimportant in the petroleum economy of the entire Satellite area, however, and there is little possibility that its significance will increase.

H. Bulgaria.

The estimated output of petroleum products in Bulgaria in 1935-38 is shown in Table 10.* Until 1954, Bulgaria contributed nothing to the postwar output of refined petroleum products in the European Satellites. Production of crude oil was begun in late 1953, however, and Bulgaria may become an exporter of this raw material. There were some limited refining facilities during World War II (approximately 25,000 tons per year at Ruse), but no reliable information is available concerning their operation in any postwar year. With the increase in production of crude oil, however, it is

* Table 10 follows on p. 18.

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Table 10

Estimated Output of Petroleum Products in Bulgaria
1935-38

Thousand Metric Tons						
Year	Gasoline	Kerosine	Diesel Fuel	Lubricating Oil	Residuals and Others	Total
1935 a/	3	2	2	0	7	14
1936 a/	4	7	3	0	9	23
1937 b/	4	5	3	0	7	19
1938 b/	6	8	4	0	8	26
a.	41/					
b.	42/					

probable that these facilities will again be placed in operation. The construction of new refineries may also be undertaken to help Bulgaria attain some degree of self-sufficiency in meeting its requirements for petroleum products.

I. China.

The estimated output of petroleum products in China in 1931-37 and 1946-54 is shown in Table 11.*

Information on the postwar output of the petroleum industry is extremely limited, and estimates have been computed on the basis of quality evaluations of the estimated availability of indigenous and imported crude oil and shale oil. The yield patterns thus established have been used throughout the postwar period for lack of more adequate data.

Although the output of petroleum products in Communist China almost doubled between 1951 and 1954, China probably will continue to depend upon imports of crude oil and products to meet its needs at least until 1960. The natural crude oil resources of China are

* Table 11 follows on p. 19.

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Table 11

Estimated Output of Petroleum Products in China a/
1931-37 and 1946-54

Thousand Metric Tons						
<u>Year</u>	<u>Gasoline</u>	<u>Kerosine</u>	<u>Diesel Fuel</u>	<u>Lubricating Oil</u>	<u>Residual and Others</u>	<u>Total <u>b/</u></u>
1931 <u>c/</u>	6	3	3	N.A.	41	53
1932 <u>c/</u>	7	4	3	N.A.	47	61
1933 <u>c/</u>	9	5	4	N.A.	59	77
1934 <u>c/</u>	6	3	3	N.A.	37	49
1935 <u>c/</u>	12	6	6	N.A.	78	102
1936 <u>c/</u>	12	6	6	N.A.	81	105
1937 <u>c/</u>	14	7	7	N.A.	92	120
1946	20	10	10	N.A.	30	70
1947	10	10	10	N.A.	30	60
1948	20	10	10	N.A.	30	70
1949	20	10	10	5	40	85
1950	25	20	20	5	75	145
1951	90	55	55	20	180	400
1952	105	65	65	20	225	480
1953	135	90	90	25	280	620
1954	155	100	100	30	330	715

a. See Methodology, Appendix A, Section 10.

b. Totals are derived from unrounded figures and do not always agree with the sum of the rounded data shown.

c. 43/

favorable for significant increases in production, but transportation difficulties and the shortage of refining capacity impose restrictions on the expansion of the industry.

Advances in technology may be expected in petroleum operations because of Soviet assistance to Communist China. It is not known to what extent refining capacity can be expanded, but it is doubtful whether it will exceed wartime capacity of approximately 1 million tons per year, including synthetic oil operations, within the next 5 years.

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J. North Korea.

There is no indigenous production of natural crude oil in North Korea and there are no serviceable facilities for refining crude oil. In 1935 the Japanese built a refinery at Wonsan designed to process an estimated 150,000 to 250,000 tons of crude oil annually.* 44/ There is no evidence that this plant ever produced at a rate corresponding to its capacity. In 1944 the refinery was reported to have produced approximately 50,000 tons of refined products. During the years 1946 through mid-1948, production of petroleum products was negligible. In late 1948, approximately 10,000 tons of crude oil from Sakhalin was reported to have been refined. During 1949 not more than 50,000 tons of crude oil was processed; and in February 1950 a fire at the refinery reduced operations, and not more than about 25,000 tons was refined before the plant was demolished by UN bombings in August. 45/ It is doubtful whether this refinery can be rehabilitated during the foreseeable future.

The Japanese also built synthetic oil plants at Yongan and Aoji to produce petroleum products from the processing of coal. The Yongan plant was a low-temperature carbonization plant built in 1933 with an annual capacity of approximately 12,000 tons of refined petroleum products. 46/ There is no evidence that this plant ever produced more than 5,000 tons of refined products in any year. It was reported that this plant was damaged by the Japanese and/or the Koreans at the end of World War II, and that it remained in a state of disrepair through the end of 1949. 47/ This plant was demolished by UN bombings in 1950. 48/ No reliable information is available to indicate that reconstruction has begun.

The Aoji plant consisted of low-temperature carbonization and hydrogenation facilities for the processing of coal to produce alcohol, petroleum products, and semicoke. It was built in 1938 and subsequently expanded and attained its maximum production of 15,000 tons of petroleum products in 1942. 49/ Production gradually decreased to 4,000 tons in 1945 and continued to decrease during the postwar years under the Russians. The plant was reported idle during the period 1947-49 50/ and was demolished by UN bombings in 1950. 51/ There is no evidence of any significant restoration.

* Based on a conversion factor of 7.5 barrels per ton of crude oil.

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III. Capabilities, Vulnerabilities, and Intentions.

With the expansion of refining capacity since World War II, the output of petroleum products in the European Satellites has increased steadily from 1948 through 1954. The average annual rate of growth has been more than 16 percent during this period, as compared with approximately 12 percent in the USSR for the same period. Reports of increased production of petroleum in Rumania, Hungary, Albania, and Bulgaria indicate a trend favorable to further expansion of refining capacity in the European Satellites, although the rate of growth may be somewhat lower than in the last 6 years. The facilities in this area represent a source of refined petroleum products which would be vital from a logistic point of view in any military operations which may be undertaken.

In Communist China there has been a significant increase in the contribution of the petroleum industry to the economic potential of the country during the past 5 years. As yet, however, this industry does not represent an important factor in the GNP of China. Most Chinese requirements for petroleum products will have to be met by imports for several years.

A major vulnerability of the petroleum industry in the European Satellites is the dependence upon imports both of raw materials for processing and of finished products. The curtailment or elimination of these imports would cause a disruption in the supply of petroleum products in more than half of the Satellite countries. Another significant vulnerability is the shortage of adequate transportation facilities for internal and intra-Bloc movement of charge stocks and products. In Hungary and East Germany there have been several instances of a shortage of tank cars for the transportation of petroleum stocks. In Poland, reports of sabotage of railroad lines have indicated delays and the rerouting of trains carrying petroleum products.

The dependence of Communist China upon imports of petroleum and petroleum products is even more critical than that of the European Satellites. The problem of transportation is complicated by great distances as well as by lack of equipment.

As of 1954 the yield patterns of refineries in the European Satellites and Communist China do not reveal any indication of preparedness for military operations. Any change in these yield patterns

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which would emphasize the output of jet fuels and/or high octane aviation gasoline at the expense of illuminating kerosine and/or motor gasoline would indicate increased military preparations. An increase in the imports and/or stockpiling of strategic petroleum products would also indicate an increased threat of military operations.

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APPENDIX A

METHODOLOGY

1. General.

Data are very limited, when available, on the actual output of refined petroleum products in the European Satellites and Communist China after 1948. In this report the following bases were utilized, where applicable, to estimate the net output of petroleum products in each country:

- a. Indigenous production of crude oil.
- b. Crude oil losses before arrival at refineries. A loss of 3.5 percent was assumed for each country. There is no firm evidence for this assumption. It is based, however, upon Soviet practice, for which the loss from wellhead to refinery is established as 4 percent, plus an additional 1 percent for use as fuel in the field. Since the distances over which crude oil is transported for processing are shorter in the Satellites, and no significant quantities of crude oil are consumed in the field, a loss of 3.5 percent is postulated.
- c. The import-export balance for crude oil.
- d. Residual imports, when intended for further processing.
- e. The output of products from shale oil and/or synthetic oil.

Lack of reliable information prevents the accounting for storage of crude oil as such in these estimates. Although no specific estimate on storage has been made, this increment has been considered. In the case of Rumania -- the largest producer of crude oil among the European Satellites -- an increment of 10 to 20 percent of the increase in production since World War II might be added to storage. To do so, however, would create an error of approximately 2 to 4 percent in estimates which already contain an error of minus 5 percent to plus 10 percent. The factor of storage, therefore, has not been propounded as a separate item.

For several countries rather firm data on the yield of refineries were available for 1946 and 1947. Where the lack of any recent information precluded an estimate of the current pattern of refinery yields, the data for 1946 and 1947 were projected to 1954 with minor modifications. Data on the quality of indigenous and imported crude oil were

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considered, where available, to reflect changes from the yield patterns of 1946 and 1947.

A separate discussion of the methodology employed for each country is given to indicate the steps undertaken to obtain the estimate of output. Methodology is discussed by country in order of importance.

2. Rumania.

The estimated availability of refinery charge stocks in Rumania in 1948-54 is shown in Table 12. These are the basic statistics used to estimate the output of petroleum products in Rumania. There were no known exports of crude oil before 1953. There is some very meager information which indicates that a small quantity of crude oil was exported during 1953 and 1954. This amount has not been confirmed, however, and for the purposes of this report it is neglected. At most this export figure would introduce an additional error of not more than 2 percent.

Table 12

Estimated Availability of Refinery Charge Stocks in Rumania
1948-54

Thousand Metric Tons				
<u>Year</u>	<u>Crude Oil Production</u>	<u>Crude Oil Loss (3.5 Percent)</u>	<u>Crude Oil Exports</u>	<u>Refinery Charge</u>
1948	4,417 a/	155	0	4,262
1949	4,815 a/	169	0	4,646
1950	5,465 a/	191	0	5,274
1951	6,728 a/	235	0	6,493
1952	7,987 a/	280	0	7,707
1953	9,046 a/	317	N.A.	8,729
1954	10,000 b/	350	N.A.	9,650

a. 52/
b. 53/

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From official Rumanian statistics reported for 1946 and 1947 (as shown in Table 3*) the approximate refinery yields from crude oil charged were established. These percentage yields were as follows**:

<u>Product</u>	<u>Percentage Yield</u>
Gasoline	29
Kerosine	13
Diesel fuel	12
Lubricating oil	2.5
Residuals and others	34
Gas and loss	9.5

Although an increase in Rumanian production of gasoline was planned for 1955 as compared with 1950, 54/ there are no firm data on which to base estimates of output of any product after 1947. An increase in cracking capacity was also planned in the postwar years 55/ which may have altered the yield pattern. In view of the lack of any reliable information, however, the yield pattern of 1946-47 is projected through 1954 to obtain the estimates shown in Table 3.

There are no current data available on the yield of natural gas liquids in Rumania during postwar years, so that this contribution to total output of products has not been considered in this report.

3. East Germany.

There is no known indigenous production of crude oil in East Germany. The entire output of petroleum products in East Germany is obtained from the processing of imported crude oil and residual stocks and from the processing of coal and coal tar. The synthetic oil products are produced primarily by coal and coal tar hydrogenation processes (Bergius and Fischer-Tropsch) and tar distillation. The synthetic oil industry in East Germany is the largest and most highly developed in the world.

Available data on East Germany for 1946 and 1947 provided only the estimated output of gasoline and diesel fuel, with some production of lubricating oil also reported. It was not possible to ascertain the output of residuals through 1948.

* P. 7, above.

** All tabulations on the yields of refineries are in terms of weight percentages.

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The output figures for 1949 through 1954 were obtained as the result of a comprehensive plant analysis study of the East German petroleum industry, the results of which appear in another report. 56/

4. Soviet Zone of Austria.

The estimated availability of refinery charge stocks in the Soviet Zone of Austria in 1948-54 is shown in Table 13.

Table 13

Estimated Availability of Refinery Charge Stocks
in the Soviet Zone of Austria
1948-54

Thousand Metric Tons				
<u>Year</u>	<u>Crude Oil Production</u>	<u>Crude Oil Loss (3.5 Percent)</u>	<u>Crude Oil Exports</u>	<u>Refinery Charge</u>
1948	960 <u>a/</u>	34	105 <u>b/</u>	821
1949	1,250 <u>a/</u>	44	179 <u>c/</u>	1,027
1950	1,500 <u>a/</u>	52	340 <u>d/</u>	1,108
1951	2,300 <u>a/</u>	80	926 <u>e/</u>	1,294
1952	2,800 <u>a/</u>	98	1,175 <u>f/</u>	1,527
1953	3,200 <u>g/</u>	112	1,423 <u>h/</u>	1,665
1954	3,100 <u>i/</u>	108	1,300	1,692

- a. 57/
- b. 58/
- c. 59/
- d. 60/
- e. 61/
- f. 62/
- g. 63/
- h. 64/
- i. 65/

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The Austrian output of refined products in 1948 was reported as shown in Table 5.* These data establish the yields of products obtained from the crude oil available for charge stock to the refineries in 1948. These yields** are as follows:

<u>Product</u>	<u>Percentage Yield</u>
Gasoline	8.2
Kerosine	10.2
Diesel fuel	23.1
Lubricating oil	6.5
Residuals and others	36.0
Gas and loss	16.0

In 1953 the Austrian output of refined products was also reported. ^{66/} The yield data thus obtained were applied to the estimated refinery charge in 1953. The percentages derived are given below**:

<u>Product</u>	<u>Percentage Yield</u>
Gasoline	14
Kerosine	3
Diesel fuel	23
Lubricating oil	5
Residuals and others	42
Gas and loss	13

In order to estimate the yield pattern for petroleum products for 1946 through 1953 using the two existing data points (1948 and 1953), a graph of Austrian requirements for petroleum products for 1946 to 1951 ^{67/} was plotted. This plot indicated the change in demand for petroleum products by the Austrian economy and was used in estimating refinery yields in 1946 and 1947. A linear straight-line relationship between the refinery yields of 1948 and 1953 was applied to obtain approximate percentage yields for intervening years. The refinery yields estimated for 1946 and 1950, which illustrate the changing trend, are as follows:

* P. 11, above.

** Derived from unrounded data.

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<u>Product</u>	<u>Percentage Yield</u>	
	<u>1946</u>	<u>1950</u>
Gasoline	6	11
Kerosine	8	9
Diesel fuel	17	23
Lubricating oil	6	6
Residuals and others	47	36
Gas and loss	16	15

For lack of more recent data, the yield pattern for 1954 is assumed to be the same as that for 1953.

5. Hungary.

The output pattern for Hungarian refineries was established for 1946 and 1947 (as shown in Table 6*) with an approximate product yield of 94 percent on crude charge for essentially straight-run and vacuum distillation operations. This yield was extremely high through the distillate range from a good grade of Hungarian crude oil. The approximate yields were as follows:

<u>Product</u>	<u>Percentage Yield</u>
Gasoline	31
Kerosine	19
Diesel fuel	16
Lubricating oil and residuals	28
Gas and loss	6

This yield pattern continued generally through 1950, with minor adjustments in the output of kerosine and diesel fuel. The approximate yields in 1950 were:

* P. 13, above.

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<u>Product</u>	<u>Percentage Yield</u>
Gasoline	30
Kerosine	16
Diesel fuel	20
Lubricating oil	3
Residuals and others	25
Gas and loss	6

In 1951 Hungary began to import crude oil from Austria. This crude oil averaged about 45 percent distillates and 45 to 50 percent residuals with a rather low gasoline and kerosine content. These imports increased from 181,000 tons in 1951 to 355,000 tons in 1954. In 1953 and 1954 Hungary also exported small quantities of crude oil to East Germany. It is assumed that the exports to East Germany were from the recently discovered Nagylengyel field. This oil is of inferior quality, with only 20 percent distillates (on straight-run distillation), but the residual portion is suitable for hydrogenation.

New producing fields in eastern Hungary which yield a good grade of crude oil were reported to have been discovered in 1953. ^{68/} Thus the yield pattern for 1953 was estimated from the quality of the various types of crude oil available and from a projected trend of consumption requirements available for 1951. ^{69/} The yield for 1953 was assumed as follows:

<u>Product</u>	<u>Percentage Yield</u>
Gasoline	20.0
Kerosine	9.5
Diesel fuel	23.5
Lubricating oil	4.0
Residuals and others	37.0
Gas and loss	6.0

In 1953, therefore, by processing the poorer grade Nagylengyel and Austrian crude oils -- which represent about 40 percent of the available charge to the refineries -- Hungary reduced the output of gasoline and kerosine and increased the output of diesel fuels and residuals. This trend is probably in line with the current pattern of demand for petroleum products in Hungary. The yields in 1954 are assumed to be approximately the same as in 1953.

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The estimated availability of refinery charge stocks in Hungary in 1948-54 is shown in Table 14.

Table 14

Estimated Availability of Refinery Charge Stocks in Hungary
1948-54

Thousand Metric Tons					
Year	Crude Oil Production	Crude Oil Loss (3.5 Percent)	Crude Oil Imports (from Austria)	Crude Oil Exports	Refinery Charge
1948	499	17	0	N.A.	482
1949	497	17	0	N.A.	480
1950	511	18	0	N.A.	493
1951	535	19	181 a/	N.A.	697
1952	570	20	350 b/	N.A.	900
1953	830 c/	29	320 d/	28 d/	1,093
1954	1,118 e/	39	355	60	1,374

- a. 70/
- b. 71/
- c. 72/
- d. 73/
- e. 74/

6. Czechoslovakia.

The estimated availability of refinery charge stocks and output of synthetic oil products and benzol in Czechoslovakia in 1948-54 is shown in Table 15.*

Data on the output of refineries in Czechoslovakia for 1946 and 1947 are not available. The total output of products from the synthetic oil plant at Most, however, as well as the total production of lubricating oil, is available for 1947, as shown in Table 7.** The

* Table 15 follows on p. 31.

** P. 14, above.

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S-E-C-R-E-T

Table 15

Estimated Availability of Refinery Charge Stocks and Output of Synthetic Oil Products and Benzol in Czechoslovakia 1948-54

Year	Thousand Metric Tons									
	Crude Oil Production	Crude Oil Loss (3.5 Percent)	Austrian Crude Oil	Austrian Residuals	Rumanian Residuals	Other	Refinery Charge	Synthetic Oil	Benzol ^{a/}	Finished Products
1948	49 b/	2	N.A.	15 c/	30 d/	100 d/	192	233 e/	31	
1949	60 b/	2	59 f/	79 c/	53 g/	0	249	245 e/	35	
1950	102 h/	4	155 f/	29 c/	20 g/	20 g/	322	260 e/	37	
1951	119 i/	4	280 f/	19 c/	61 j/	0	475	300 k/	38	
1952	181 l/	6	220 m/	45 m/	85 n/	0	525	325 k/	40	
1953	196 o/	7	230 p/	103 p/	85 p/	0	607	350 q/	43	
1954	202 r/	7	145 b/	4 b/	84 b/	0	428	375 s/	46	

a. Blended with motor gasoline. Calculated from source 75/.

b. 76/
c. 77/
d. 78/
e. 79/
f. 80/
g. 81/
h. 82/
i. 83/
j. 84/

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Table 15

Estimated Availability of Refinery Charge Stocks and Output of Synthetic Oil Products and Benzol
in Czechoslovakia
1948-54
(Continued)

k. Interpolated between 1950 and 1953 estimates.

85/
86/
87/
88/
89/
90/
91/

Extrapolated on the assumption of the same annual production increase as in 1952 and 1953.

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yield pattern utilized for the production of synthetic oil in Czechoslovakia for 1946 through 1954 is found in the 1949 Plan. 92/ The yields of liquid fuels* from coal tar hydrogenation are approximately as follows:

<u>Product</u>	<u>Percentage Yield</u>
Gasoline	55
Kerosine	10
Gas oil	35

For the years 1948-54, indigenous crude oil and imported crude oil and residuals are assumed to have been processed by Czechoslovakia according to the 1949 Plan. 93/ Petroleum distillates are also imported but, as stated in the 1949 Plan, they are processed at the synthetic plant at Most, so that this category is absorbed in the total output of synthetic oil and does not appear as an entity in calculations of yield.

The yield of products from Czechoslovak crude oil is as follows:

<u>Product</u>	<u>Percentage Yield</u>
Gasoline	1.4
Kerosine	3.3
Diesel fuel	25.0
Lubricating oil	50.3
Residuals and others	10.0
Gas and loss	10.0

Residuals imported from Austria show the yield of products to be as follows:

<u>Product</u>	<u>Percentage Yield</u>
Diesel fuel	5
Lubricating oil	45
Residuals and others	34
Loss	16

* This yield does not include gas and loss because only the estimated output of liquid fuel is estimated and loss on coal charge has no significance in calculating the output of petroleum products.

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The reported yield of products obtained from Rumanian residuals is as follows:

<u>Product</u>	<u>Percentage Yield</u>
Diesel fuel	10
Lubricating oil	40
Residuals and others	34
Loss	16

Crude oil imported from Austria is estimated to be primarily asphalt-base from the Matzen fields. The yield pattern is assumed to be as follows 94/:

<u>Product</u>	<u>Percentage Yield</u>
Gasoline	5
Kerosine	10
Diesel fuel	25
Lubricating oil	10
Residuals and others	45
Gas and loss	5

It was reported in 1954 that the output of liquid fuels from the synthetic oil industry is the mainstay of the Czechoslovak fuels industry, 95/ so that figures on production apparently are aligned in the correct order. It was estimated that the synthetic oil plant at Most produced 94 percent of the motor gasoline output and 69 percent of the kerosine and distillate fuels in Czechoslovakia in 1951. 96/

Estimated production of benzol, which is added as a blending agent to motor gasoline, is included in the total yield of gasoline. These data were obtained from a revised estimate of previously published information on the Czechoslovak chemical industry. 97/

7. Poland.

Data on Polish output of refined petroleum products in 1946 and 1947 are given in an official Polish publication 98/ and provide a yield pattern as follows:

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<u>Product</u>	<u>Percentage Yield</u>
Gasoline	28.1
Kerosine	18.0
Diesel fuel	16.8
Lubricating oil	20.9
Residuals and others	8.4
Gas and loss	7.8

These data reveal that paraffin-base crude oils were being produced and processed in Poland. This yield pattern is followed generally through 1948 and 1949 for refining indigenous crude oil. Minor adjustments were adopted which effected a reduction in output of kerosine and an increase in production of diesel fuel. Output of lubricating oil was also decreased, with a corresponding increase in residuals.

Crude oil from the Middle East was imported during 1948 and 1949. The pattern of refinery yield for this charge stock was assumed to be similar to that for the crude oil imported from the Middle East by Czechoslovakia in 1948. The percentage yields utilized, as determined from 1949 Plan data, were as follows 99/:

<u>Product</u>	<u>Percentage Yield</u>
Gasoline	20
Kerosine	13
Diesel fuel	18
Lubricating oil	20
Residuals and others	19
Gas and loss	10

Poland began to import crude oil in 1951 in significant quantities from Austria and Albania. Austrian crude oil imported is primarily from the Matzen fields, on the basis of data on shipments since 1952. Estimates of straight-run distillation yields from Albanian and Austrian crude oil imported by Poland are as follows:

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Product	Percentage Yield	
	Albanian Crude Oil <u>100/</u>	Austrian Crude Oil <u>101/</u>
Gasoline	13	5
Kerosine	7	10
Diesel fuel	18	25
Lubricating oil	4	10
Residuals	40	45
Gas and loss	18	5

The yield of refined products from all crude oil sources in Poland for 1953 and 1954 is estimated as follows:

Product	Percentage Yield
Gasoline	16
Kerosine	12.5
Diesel fuel	22
Lubricating oil	11
Residuals and others	30
Gas and loss	8.5

For the first time since World War II, the synthetic oil industry began limited operations in 1950, when the plant at Oswiecim (Dwory) went on stream. 102/ Production of synthetic oil through 1952 proceeded very slowly, but in 1953 other facilities began initial operations. The output of the synthetic oil industry has been estimated on a preliminary basis at 250,000 tons of petroleum products in 1954, with the Odertal plant in full operation. There are indications that this source will represent a significant factor in the output of petroleum products in Poland.

Refined benzol for motor gasoline blending is also included in the case of Poland. Data were obtained from a revised estimate of the benzol production in Poland. Bases for the calculations which give the yield of refined benzol are found in source 103/. The estimated availability of refinery charge stocks and output of synthetic oil products, benzol, and natural gas liquids in Poland in 1948-54 is shown in Table 16.*

* Table 16 follows on p. 37.

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Table 16

Estimated Availability of Refinery Charge Stocks
and Output of Synthetic Oil Products, Benzol, and Natural Gas Liquids
in Poland
1948-54

Year	Crude Oil										Finished Products			Benzol <u>a/</u>
	Production	Loss (3.5 Percent)	Imports					Middle East	Refinery Charge	Synthetic Oil	Natural Gas Liquids	Benzol <u>a/</u>		
			Austria	Albania	Hungary									
1948	140 <u>b/</u>	5	0	0	0	61 <u>c/</u>	196	0	8	8	30			
1949	152 <u>b/</u>	5	0	20	0	40 <u>c/</u>	207	0	13	13	34			
1950	162 <u>b/</u>	6	15 <u>d/</u>	50	0	0	221	10 <u>e/</u>	15	15	35			
1951	175 <u>b/</u>	6	65 <u>d/</u>	145 <u>f/</u>	0	0	379	10 <u>e/</u>	16	16	37			
1952	195 <u>b/</u>	7	130 <u>g/</u>	95 <u>g/</u>	0	0	413	15 <u>h/</u>	17	17	43			
1953	220 <u>b/</u>	8	233 <u>i/</u>	82 <u>i/</u>	15 <u>i/</u>	0	542	70 <u>j/</u>	18	18	48			
1954	230	8	240	85	15	0	562	250 <u>k/</u>	19	19	53			

a. Blended with motor gasoline. Calculated from source 104/.
 b. 105/
 c. 106/
 d. 107/
 e. Based on plans in source 108/.
 f. 109/
 g. 110/
 h. 111/
 i. 112/
 j. 113/
 k. 114/

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8. Albania.

Before World War II, no crude oil was refined in Albania. All crude oil was sent to Italy for processing. 115/

During World War II, the Germans set up three portable refineries at Kucove (Stalin), which were damaged during the withdrawal of the German troops. In 1947 one of these refineries was in operation, along with a small Italian refinery. These refineries, which supplied only local needs, may have processed a crude oil charge of approximately 15,000 tons to 20,000 tons a year. At most, 10 percent of the normal production of crude oil was required for local consumption. Thus crude oil became a principal item for export in Albania. 116/

In 1952 an excess of crude oil became available, over and above exports, for refinery charge. The refining capacity through 1954 is estimated to be not in excess of 40,000 to 50,000 tons per year, and estimates of output in 1953 and 1954 are based on this assumption. A new refinery at Cerrik should have begun operation in early 1955. 117/ This will add an additional 150,000 tons per year to Albanian refining capacity and provide for the processing of this excess crude oil.

In view of the increase in Albanian production of crude oil and the reduction in exports, this surplus of crude oil probably was planned. With the construction of the new refinery, Albania will become an exporter of refined petroleum products.

The estimated availability of refinery charge stocks in Albania in 1947-54 is shown in Table 17.*

9. Bulgaria.

Before World War II, Bulgaria produced very small quantities of petroleum products, obtained primarily from the topping plant at Ruse.

No firm data were available on the postwar operation of this plant at Ruse, but it may have had the capacity to refine 25,000 tons per year in 1953. 118/ There has been no evidence, however, that crude oil was produced or imported for refining in Bulgaria before 1954. It is estimated, therefore, that there was no output of refined petroleum products from 1946 through 1953.

* Table 17 follows on p. 39.

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Table 17

Estimated Availability of Refinery Charge Stocks in Albania
1947-54

Year	Crude Oil Production	Crude Oil Loss (3.5 Percent)	Crude Oil Exports			Refinery Charge ^{a/}
			USSR	Poland	Yugoslavia	
1947 ^{b/}	78	3	0	0	75 ^{c/}	0
1948 ^{b/}	98	3	35 ^{d/}	0	40 ^{c/}	20
1949 ^{b/}	132	5	100	20	0	7
1950 ^{b/}	132 ^{e/}	5	70	50	0	7
1951 ^{b/}	125 ^{f/}	4	30 ^{g/}	145 ^{g/}	0	N.A.
1952	153 ^{h/}	5	0	95 ^{i/}	0	53
1953	169 ^{j/}	6	0	82 ^{k/}	0	81
1954	198 ^{l/}	7	0	85	0	106

a. 119/

b. Unknown quantities of natural bitumen are included in the crude oil production figures for 1947-49 and in export figures for 1947-51.

c. 120/

d. 121/

e. 122/

f. 123/

g. 124/

h. 125/

i. 126/

j. 127/

k. 128/

l. 129/

In 1954 it was reported that Bulgaria had begun the production of indigenous crude oil. 130/ As of March 1955, no data were available to indicate the quantity, if any, being refined in Bulgaria. It is possible that the entire amount is exported and that refined products still are imported.

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10. China.

There is no positive intelligence on which to base estimates of the output of refined petroleum products for the postwar years in China. The following factors were used to estimate output from the indigenous crude oil and shale oil produced, considering the type of raw material and refining equipment available for processing.

<u>Product</u>	<u>Percentage Yield</u>	
	<u>Natural Crude Oil</u>	<u>Shale Oil</u>
Gasoline	22	10
Kerosine	15	5
Diesel fuel	15	5
Lubricating oil	5	0
Residuals and others	33	65
Gas and loss	10	15

The estimated availability of refinery charge stocks in China in 1946-54 is shown in Table 18.* These data are used as the base figures for determining the output of refined products in China. Crude oil has been imported from the USSR (primarily Ekhabi crude oil from Sakhalin) since 1950. No reliable data are available on imports of crude oil before that time, although refined products were and still are imported. Quality data on Ekhabi crude oil are available, 131/ and the yield from crude oil charged to the refinery equipment available in China is assumed to be as follows:

<u>Product</u>	<u>Percentage Yield</u>
Gasoline	25
Kerosine	15
Diesel fuel	20
Lubricating oil	5
Residuals and others	25
Gas and loss	10

* Table 18 follows on p. 41.

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Table 18
 Estimated Availability of Refinery Charge Stocks in China
 1946-54

Year	Thousand Metric Tons					
	Crude Oil Production	Crude Oil Loss (3.5 Percent)	Crude Oil Imports from the USSR	Refinery Charge	Shale Oil Production	Total Refinery Charge
1946	64 <u>a/</u> <u>b/</u>	2	N.A.	62	20 <u>c/</u>	82
1947	50 <u>a/</u> <u>b/</u>	2	N.A.	48	20 <u>c/</u>	68
1948	62 <u>a/</u>	2	N.A.	60	15 <u>c/</u>	75
1949	60 <u>d/</u>	2	N.A.	58	30 <u>e/</u>	88
1950	100 <u>f/</u>	4	N.A.	96	60 <u>e/</u>	156
1951	150 <u>f/</u>	5	200	345	100 <u>e/</u>	445
1952	215 <u>f/</u>	8	200	407	140 <u>e/</u>	547
1953	310 <u>f/</u>	11	200	499	180 <u>e/</u>	679
1954	410 <u>f/</u>	14	200	596	200 <u>e/</u>	796

a. 132/
 b. Excludes Formosan production data 133/ from total Chinese production as shown in source 134/.
 c. 135/
 d. 136/
 e. Estimated on the basis of available link relatives.
 f. Based on link relatives in source 137/.

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APPENDIX B

GAPS IN INTELLIGENCE

Except for East Germany and the Soviet Zone of Austria, the lack of information on the yield of petroleum refineries after 1947 has precluded a quantitative estimate of the output of petroleum products in the European Satellites and Communist China. A comprehensive study of the refineries in each country has not been made for this report, but it is known that adequate data are not available for many of the Satellites. Revisions of estimates of refining capacity are deemed necessary, however, to account for the increased processing of crude oil.

Other factors which contribute to the qualitative nature of the estimates in this report include the following: (1) the specious nature of data on the quality of crude oil, both indigenous and imported, processed in Hungary, Poland, Czechoslovakia, and China; (2) the lack of any firm figure to account for the loss of crude oil from the wellhead to the refinery in any of the Satellite countries; (3) the unavailability of quantitative data on production of natural gas liquids in postwar years for any country except Poland. Although preliminary estimates of natural gas liquids output for Hungary have been made, these data have not been included because of the lack of information on consumption and distribution.

A fundamental gap which prevents a more realistic estimate of the output of petroleum products is the deficiency of data on consumption in any of the Satellites except East Germany. As long as this gap exists, a quantitative assessment of the yield patterns for petroleum products cannot be made.

Very meager data were available on plan and plan fulfillment of individual categories of petroleum products in the Satellites. The available information on percentage increases for some of the products was sparse and could not be related to a base year. Even for the period after 1947 no firm data are available to serve as a basis for the projection of many of the link relatives. Thus the approach utilized in the report has not undertaken the full utilization of these potential statistics because of their incomplete nature. Further research on these statistics is needed in order to achieve a more accurate assessment of the output of petroleum products in the Satellites.

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APPENDIX C

SOURCE REFERENCES

Evaluations, following the classification entry and designated "Eval.," have the following significance:

<u>Source of Information</u>	<u>Information</u>
Doc. - Documentary	1 - Confirmed by other sources
A - Completely reliable	2 - Probably true
B - Usually reliable	3 - Possibly true
C - Fairly reliable	4 - Doubtful
D - Not usually reliable	5 - Probably false
E - Not reliable	6 - Cannot be judged
F - Cannot be judged	

"Documentary" refers to original documents of foreign governments and organizations; copies or translations of such documents by a staff officer; or information extracted from such documents by a staff officer, all of which may carry the field evaluation "Documentary."

Evaluations not otherwise designated are those appearing on the cited document; those designated "RR" are by the author of this report. No "RR" evaluation is given when the author agrees with the evaluation on the cited document.

-
1. Gt Brit, Imperial Institute. The Mineral Industry of the British Empire and Foreign Countries, Statistical Summary 1935-1937, London, 1938, p. 279-81, Interior TN/57 1852, U. Eval. RR 2.
 2. Ibid.

- 45 -

S-E-C-R-E-T

S-E-C-R-E-T

3. CIA. ORR Project 25.194 (Research Aid), Statistical Analysis of Petroleum Production in the Soviet Bloc, 24 Jan 55, p. 18, S/US ONLY.
4. Ibid., p. 16.
5. Air. Treasure Island 137179, 24 Nov 52, Productivity of Petroleum Industry, info Jul-Aug 51, U. Eval. RR 3. (tr from Przemysl chemiczny, vol 7-8, Warsaw, Jul-Aug 51, p. 513, U)
6. EIC, Subcommittee on Petroleum. Agreed Basic Statistics on European Satellites, 26 Apr 55, S.
7. Air. Treasure Island 137235, 4 May 53, Anticipated Oil and Gas Production, info Jul-Aug 51, U. Eval. RR 3. (tr from Przemysl chemiczny, no 25, Warsaw, 30 Jan 52, p. 1, U)
8. Institut Central de Statistica. Annural statistic al Romaniei 1937 si 1938 (Annual Statistics of Rumania, 1937 and 1938), Bucharest, 1939, p. 454-55, Interior TN/95 R82, U. Eval. RR 2.
9. Gt Brit, Imperial Institute. The Mineral Industry of the British Empire and Foreign Countries, Statistical Summary 1931-1933, London, 1934, p. 268-69, Interior TN/57 1852, U. Eval. RR 2.
10. Gt Brit, Imperial Institute. The Mineral Industry of the British Empire and Foreign Countries, Statistical Summary 1933-1935, London, 1936, p. 273-76, Interior TN/57 1852, U. Eval. RR 2.
11. Transactions of the American Institute of Mining and Metallurgical Engineers, Petroleum Division, New York, 1941, vol 142, p. 552, Interior TN1 A5, U. Eval. RR 2.
12. Gt Brit, Imperial Institute. The Mineral Industry of the British Empire and Foreign Countries, Statistical Summary 1935-1937, London, 1938, p. 279-81, Interior TN/57 1852, U. Eval. RR 2.
13. Gt Brit, Imperial Institute. The Mineral Industry of the British Empire and Foreign Countries, Statistical Summary 1936-1938, London, 1939, p. 276, Interior TN/57 1852, U. Eval. RR 2.
14. "Roumanie: Activité des raffineries en 1946," Moniturul petrolului roman, Bucharest, vol 6-7, May-Jun 47, p. 148-49, U. Eval. RR 2.
15. "Roumanie: Estimation de la production petroliere probable, ainsi que des obligations pour 1947," Moniturul petrolului roman, Bucharest, vol 1-2, Jan-Feb 47, p. 35, U. Eval. RR 3.

- 46 -

S-E-C-R-E-T

S-E-C-R-E-T

25X1A2g

16. CIA. CIA/RR PR-121, Petroleum in East Germany, 29 Aug 55, S/NOFORN.
17. Army, EUCOM. "Liquid Fuel Production in the Soviet Zone of Germany," Intelligence Summary 88, 20 Jun 50, CIA 466435, S. Eval. RR 3.
18. Army, Berlin. S-2BMP, R-268-48, Chemistry Production Planning, 23 Sep 48, C. Eval. RR 3.
19. [REDACTED]
20. CIA. CIA/RR PR-121, op. cit. (16, above).
21. Gt Brit, Imperial Institute. The Mineral Industry of the British Empire and Foreign Countries, Statistical Summary 1931-1933, London, 1934, p. 268-69, Interior TN/57 1852, U. Eval. RR 2.
22. Gt Brit, Imperial Institute. The Mineral Industry of the British Empire and Foreign Countries, Statistical Summary 1933-1935, London, 1936, p. 273-76, Interior TN/57 1852, U. Eval. RR 2.
23. Gt Brit, Imperial Institute. The Mineral Industry of the British Empire and Foreign Countries, Statistical Summary 1935-1937, London, 1938, p. 279-81, Interior TN/57 1852, U. Eval. RR 2.
24. UN. Statistical Yearbook, 1948, New York, 1949, p. 218-25, U. Eval. RR 1.
25. State, Vienna. Rpt 11, 31 Jan 49, Austrian Oil Production, 1948, encl no 1, R. Eval. RR 3.
26. CIA. ORR Project 25.195 (Research Aid), Petroleum Refineries in the Soviet Bloc, 1 Sep 54, p. 10, S/US ONLY.
27. CIA. FDD Translation 19/49, 15 Mar 49, Summary of the Five-Year Plan of the Czechoslovak Chemical Industry, p. 38, info 1947, S. Eval. RR 2. (tr of Uhrnny petilety plan prumyslu chemickeho, 10 Jul 48, S)
28. CIA. FDD, Special Translation 6, 21 Dec 50, 1949 Operational Plans for Production and Allocation of Fuel and Power in Czechoslovakia, p. 11-16, S/US ONLY. Eval. RR 2. (tr of Provadeci plany uhrady a potreby surovin pomocnych hmot a energie na rok 1949, Prague, S)
29. Gt Brit, Imperial Institute. The Mineral Industry of the British Empire and Foreign Countries, Statistical Summary 1933-1935, London, 1936, p. 273-76, Interior TN/57 1852, U. Eval. RR 2.

- 47 -

S-E-C-R-E-T

S-E-C-R-E-T

30. Gt Brit, Imperial Institute. The Mineral Industry of the British Empire and Foreign Countries, Statistical Summary 1935-1937, London, 1938, p. 279-81, Interior TN/57 1852, U. Eval. RR 2.
31. Gt Brit, Imperial Institute. The Mineral Industry of the British Empire and Foreign Countries, Statistical Summary 1936-1938, London, 1939, p. 276, Interior TN/57 1852, U. Eval. RR 2.
32. State, Budapest. Dsp 155, 12 Nov 47, Petroleum Industry of Hungary, p. 2-3 and annex 3, info 1946-47, C. Eval. RR 3.
33. Gt Brit, Imperial Institute. The Mineral Industry of the British Empire and Foreign Countries, Statistical Summary 1931-1933, London, 1934, p. 268-69, Interior TN/57 1852, U. Eval. RR 2.
34. Gt Brit, Imperial Institute. The Mineral Industry of the British Empire and Foreign Countries, Statistical Summary 1933-1935, London, 1936, p. 273-76, Interior TN/57 1852, U. Eval. RR 2.
35. Gt Brit, Imperial Institute. The Mineral Industry of the British Empire and Foreign Countries, Statistical Summary 1935-1937, London, 1938, p. 279-81, Interior TN/57 1852, U. Eval. RR 2.
36. CIA. FDD, Translation 19/49, op. cit. (27, above).
37. CIA. FDD, Special Translation 6, op. cit. (28, above), p. 24-25, S/US ONLY. Eval. RR 2.
38. CIA. ORR Project 25.194, op. cit. (3, above).
39. Statistical Yearbook of Poland, 1948, Warsaw, 1949, p. 80, CIA 55 M/6 914.7, U. Eval. RR 1.
40. Air. Treasure Island 119259, 19 May 52, Petroleum Refinery: Construction Started, info Jan 52, U. Eval. RR 2. (tr of Krasnaya zvezda, no 25, Moscow, 30 Jan 52, p. 1, U)
41. Gt Brit, Imperial Institute. The Mineral Industry of the British Empire and Foreign Countries, Statistical Summary 1935-1937, London, 1938, p. 279-81, Interior TN/57 1852, U. Eval. RR 2.
42. Gt Brit, Imperial Institute. The Mineral Industry of the British Empire and Foreign Countries, Statistical Summary 1936-1938, London, 1939, p. 276, Interior TN/57 1852, U. Eval. RR 2.

25X1A2g 43.

S-E-C-R-E-T

S-E-C-R-E-T

44. NIS 41, Mar 50, Korea, chap 6, sec 62, "Fuels and Power,"
p. 19, C. [REDACTED] 25X1A2g
- 25X1A2g 45. [REDACTED] 25X1A2g
46. NIS 41, Mar 50, Korea, chap 6, sec 62, "Fuels and Power,"
p. 21, C. [REDACTED] 25X1A2g
- 25X1A2g 47. [REDACTED] 25X1A2g
48. [REDACTED]
49. NIS 41, Mar 50, Korea, chap 6, sec 62, "Fuels and Power,"
p. 22, C. [REDACTED]
- 25X1A2g 50. [REDACTED]
51. [REDACTED]
52. CIA. ORR Project 25.194, op. cit. (3, above), p. 16,
S/US ONLY. [REDACTED] FOIAb3b1
- FOIAb3b1 53. [REDACTED] FOIAb3b1
54. Air. Treasure Island 137179, op. cit. (5, above).
55. Ibid.
56. CIA. CIA/RR PR-121, op. cit. (16, above).
57. CIA. ORR Project 25.194, op. cit. (3, above).
- 25X1A2g 58. [REDACTED]
59. [REDACTED]
60. Ibid.
CIA. CIA/RR PR-17 (II-D), Refinery Production of Petroleum
in the European Satellites, 25 Jun 52, p. 7, info 1950-51, S.
State, Vienna. Dsp 1076, 9 Apr 51, Annual Economic Report
for 1950, U. Eval. RR 2.
- 25X1A2g 61. [REDACTED] 25X1A2g
- [REDACTED]
- Ibid., no 354, 16 Apr 52, p. 10, S. Eval. RR 3.
- 25X1A2g 62. CIA. CIA/RR PR-17 (II-D), op. cit. (60, above). 25X1A2g
- [REDACTED]
- CIA. CIA/RR IM-375, Flow of Petroleum in the Soviet Bloc
European Satellites - 1952, 13 Jul 53, p. 6, S/US ONLY.

S-E-C-R-E-T

S-E-C-R-E-T

- 25X1A2g 63. [REDACTED]
64. CIA. CIA/RR PR-107, Soviet Bloc Trade in Petroleum and Petroleum Products: Intra-Bloc and East-West, 1947-1953, 6 Apr 55, p. 16, S/NOFORN.
65. State, HICOA. "Developments in the Austrian Petroleum Industry between July 1952 and June 1954," Weekly Summary, vol 3, p. 9, S. Eval. RR 2.
- FOIAb3b1 66. [REDACTED]
67. State, Vienna. Dsp 1, Austria's Oil in Soviet Hands: 1946-1951, 1 Jul 52, encl no 3, S. Eval. RR 2.
- 25X1A2g 68. [REDACTED]
69. CIA. CIA/RR PR-17 (II-F), Civil Consumption of Petroleum Products in the European Satellites, 24 Jun 52, p. 6, info 1951, S.
- 25X1A2g 70. [REDACTED]
71. CIA. CIA/RR IM-375, op. cit. (62, above).
72. "Report of Central Bureau of Statistics on Fulfillment of 1953 Plan," Szabad nep, 27 Jan 54, U. Eval. RR 3.
73. CIA. CIA/RR PR-107, op. cit. (64, above).
74. Szabad nep, 25 May 54, U. Eval. RR 3.
75. CIA. ORR Project 88-51-I (WP), The Coal-Tar Chemical Industry in Czechoslovakia, 15 Jun 53, p. 20 and 23, S.
76. UN. Statistical Yearbook, 1951, New York, 1951, p. 141, U. Eval. RR 1.
- 25X1A2g 77. [REDACTED]
78. State, Prague. Dsp 34, 12 Apr 49, Petroleum Developments in Czechoslovakia in 1948, C. Eval. RR 3.
- 25X1A2g 79. CIA. FDD, Translation 19/49, op. cit. (27, above).
80. [REDACTED]
81. State, HICOG, Frankfurt. Dsp 2628, 1 Apr 52, Czechoslovak Imports of Petroleum and Petroleum Products between 1947 and 1950, encl no 1, p. 2, C. Eval. RR 3.
82. Uredni list, Mar 51, U. Eval. RR 3.
83. Planovane gospodarstvi, no 3, 1953, p. 130, U. Eval. RR 3.
- 25X1A2g 84. [REDACTED]
85. Planovane gospodarstvi, no 3, 1954, p. 216, U. Eval. RR 3.
86. CIA. CIA/RR IM-375, op. cit. (62, above).
- 25X1A2g 87. [REDACTED]
88. Planovane gospodarstvi, no 5, 1954, U. Eval. RR 3.
89. CIA. CIA/RR PR-107, op. cit. (64, above).

- 50 -

S-E-C-R-E-T

S-E-C-R-E-T

- 25X1X7 90. [REDACTED] 25X1X7
91. Planovane hospodarstvi, no 2, 1955, p. 85, U. Eval. RR 3.
92. CIA. FDD Special Translation 6, op. cit. (28, above),
p. 24-25, S/US ONLY. Eval. RR 2.
93. Ibid.
- 25X1A2g 94. [REDACTED] 25X1A2g
95. CIA. FDD, Summary no 298, 7 Dec 54, "Prerequisites for
Cracking Petroleum," p. 63, C. Eval. RR 3. (tr of Poliva,
Prague, Sep 54, U)
96. NIS 18, May 53, Czechoslovakia, chap 6, sec 62, "Fuels and
Power," p. 26, S.
97. CIA. ORR Project 88-51-I (WP), op. cit. (75, above).
98. Statistical Yearbook of Poland, 1948, op. cit. (39, above).
99. CIA. FDD Special Translation 6, op. cit. (28, above),
p. 12 and 13, S/US ONLY. Eval. RR 2.
100. Interior, Petroleum Administration for War. Petroleum
Resources of Albania, by F. Reeves, Dec 52, p. 5, R.
Eval. RR 2.
- 25X1A2g 101. [REDACTED] 25X1A2g
102. [REDACTED]
103. CIA. ORR Project 88-51-II (WP), The Coal-Tar Chemical
Industry in Poland, 15 Jun 53, p. 26 and 28, S.
104. Ibid.
105. CIA. ORR Project 25.194, op. cit. (3, above), p. 13,
S/US ONLY.
106. CIA. CIA/RR PR-107, op. cit. (64, above), p. 13, S/NOFORN.
107. [REDACTED] 25X1A2g
- 25X1A2g 108. [REDACTED]
109. CIA. CIA/RR PR-17 (II-D), op. cit. (60, above).
110. CIA. CIA/RR IM-375, op. cit. (62, above).
- 25X1X7 111. [REDACTED]
- 25X1A2g [REDACTED] 25X1A2g
- 25X1A2g 112. CIA. CIA/RR PR-107, op. cit. (64, above).
113. [REDACTED] 25X1A2g
- 25X1A2g 114. [REDACTED]

S-E-C-R-E-T

S-E-C-R-E-T

115. Interior. Mineral Resources of Albania, Washington, 1944, p. 18, U. Eval. RR 2.
116. Nicholas, E., Jr. Economic Potentials of Albania, New York, Jun 50, p. 4, U. Eval. RR 3.
- 25X1A2g 117. [REDACTED] 25X1A2g
118. CIA. ORR Project 25.195, op. cit. (26, above), p. 9, S/US ONLY.
119. CIA. ORR Project 25.194, op. cit. (3, above), p. 8, S/US ONLY.
120. State, Belgrade. Dsp 20, 21 Feb 49, Yugoslav Petroleum Industry, info 1947-48, S. Eval. RR 2.
- 25X1A2g 121. [REDACTED] 25X1A2g
122. State, OIR. Intelligence Rpt 6049, 31 Dec 52, Albania's Five-Year Economic Plan, 1951-55, info May 52, p. 12, Eval. RR 3.
- 25X1A2g 123. [REDACTED] 25X1A2g
124. CIA. CIA/RR PR-17 (II-D), op. cit. (60, above).
- FOIAb3b1 125. [REDACTED]
126. CIA. CIA/RR IM-375, op. cit. (62, above).
127. Interior, Petroleum Administration for War, op. cit. (100, above).
- FOIAb3b1 [REDACTED]
128. CIA. CIA/RR PR-107, op. cit. (64, above).
- FOIAb3b1 129. [REDACTED] FOIAb3b
130. [REDACTED]
131. CIA. ORR Project 25.193 (Research Aid), Part 1, Specifications for Crude Oil in the USSR, 1 Nov 54, info 1946, p. 102, C.
132. CIA. ORR Project 25.194, op. cit. (3, above), p. 17, S/US ONLY.
133. UN. Statistical Yearbook, 1954, New York, 1954, p. 118, U. Eval. RR 1.
134. CIA. ORR Project 25.194, op. cit. (3, above), p. 17, S/US ONLY.

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25X1A2g

135.



136. The Oil Forum, Apr 49, p. 165-68, U. Eval. RR 2.

137. State, Hong Kong. Dsp 838, 17 Nov 54, The Economy of Communist China: Third Quarter 1954, p. 15 and 16,
U/OFF USE ONLY.

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