~~SECRET~~ COPY Nº 1

ECONOMIC INTELLIGENCE REPORT

PRODUCTION OF PETROLEUM COMPONENTS IN THE SINO-SOVIET BLOC 1945-60

CIA/RR 75
31 July 1956

CENTRAL INTELLIGENCE AGENCY

OFFICE OF RESEARCH AND REPORTS

~~SECRET~~

WARNING

This material contains information affecting the National Defense of the United States within the meaning of the espionage laws, Title 18, USC, Secs. 793 and 794, the transmission or revelation of which in any manner to an unauthorized person is prohibited by law.

Declassified in Part - Sanitized Copy Approved for Release 2013/07/24 : CIA-RDP79R01141A000700010002-0

S-E-C-R-E-T

ECONOMIC INTELLIGENCE REPORT

PRODUCTION OF PETROLEUM COMPONENTS IN THE SINO-SOVIET BLOC 1945-60

CIA/RR 75

(ORR Project 25.676)

CENTRAL INTELLIGENCE AGENCY

Office of Research and Reports

S-E-C-R-E-T

FOREWORD

The major purpose of this report is to derive current estimates and projections of production of the various petroleum components in the countries of the Sino-Soviet Bloc. The data on which the estimates and projections are based are fragmentary, and as additional information becomes available, it will serve either to confirm or to alter the estimates and projections. To facilitate the application of new information, the methodology applied to the data now available is developed in the text of the report.

The scope of this report is limited to the production of petroleum components in the countries of the Sino-Soviet Bloc -- extracting those petroleum components from the earth and making them available for use in the oil or gas fields or for transportation to points of consumption or processing. To place the estimates and forecasts in perspective, the report includes a brief discussion of the history, administrative structure, and technology of the production phase of the petroleum industry in the Sino-Soviet Bloc.

CONTENTS

50X1

Tables

CIA/RR 75
(ORR Project 25.676)

S-E-C-R-E-T

PRODUCTION OF PETROLEUM COMPONENTS IN THE SINO-SOVIET BLOC 1945-60*

Summary

In 1955 the countries of the Sino-Soviet Bloc produced 88 million metric tons** of total liquid petroleum hydrocarbons,*** about one-ninth of the total produced in the world in that year. Sino-Soviet Bloc production of these petroleum components -- crude oil and natural gas liquids -- in 1955 constituted an increase of 250 percent over Bloc production in 1945 and 95 percent over that in 1950. In 1955 the countries of the Bloc produced 11 million tons (14 billion cubic meters) of natural gas, an increase of 160 percent over Bloc production in 1945 and 62 percent over that in 1950. Of total liquid petroleum hydrocarbons produced in the Bloc in 1955 the USSR contributed 80 percent, and Rumania contributed 12 percent. Of total 1955 production of natural gas in the Bloc, the USSR produced 51 percent and Rumania 41 percent.

The pattern of contributions by the individual countries of the Sino-Soviet Bloc to total Bloc production of petroleum components has not changed significantly since 1945. Throughout the period the USSR and Rumania have been the major contributors. A summary of estimates and projections of production of petroleum components by countries of the Sino-Soviet Bloc in 1945-60 is shown in Table 1.****

Although production of petroleum components in the Sino-Soviet Bloc as a whole has fulfilled planned goals through 1955, some of the countries of the Bloc have failed to meet annual plan goals. The 1950 Soviet goal of 8.4 billion cubic meters of natural gas, set in the Fourth Five Year Plan (1946-50), was not met even in 1955. Production

* The estimates and conclusions contained in this report represent the best judgment of ORR as of 15 April 1956.

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

*** Definitions of the terms production and total liquid petroleum hydrocarbons and of other terms used in this report are given on p. 6, below.

**** Table 1 follows on p. 3.

of crude oil in Rumania in 1955, about 10.6 million tons, exceeded the goal originally set but fell short of the revised goal of 11 million tons for that year. It is probable that production of all petroleum components in Poland fell short of 1955 plan goals.

Production of total liquid petroleum hydrocarbons in the Sino-Soviet Bloc is expected to reach 160 million tons in 1960, an increase of 80 percent over that of 1955. Production of natural gas in the Bloc is expected to reach 36 million tons (46 billion cubic meters), an increase of 230 percent over 1955 production. With two exceptions the relative magnitude of the contributions of each country of the Bloc to total Bloc production should remain the same. The percentage contribution of the USSR to Bloc production of natural gas should increase substantially, assuming that in 1960, Soviet production of natural gas will reach the announced goal of 4.8 times the 1955 production. The percentage contribution of Communist China to Bloc production of total liquid petroleum hydrocarbons should increase significantly, even though the Chinese Communist 1957 goal of 2,012,000 tons of natural and synthetic crude oil probably is too high by at least 600,000 tons.

Although the Sino-Soviet Bloc petroleum industry as a whole has a number of economic weaknesses -- key suppliers, transportation bottlenecks, critical dependence on imports, and lack of skilled labor -- there are no apparent economic vulnerabilities in the production phase of the petroleum industry of the Bloc.

The status of present or future production of petroleum components in the Sino-Soviet Bloc is not a significant indication of Bloc intentions.

Table 1

Summary of Estimates and Projections of Production of Petroleum Components by Countries of the Sino-Soviet Bloc
1945-60 a/* b/

Million Metric Tons

Year	Category of Petroleum Components	Soviet Zone of Austria c/	Albania d/	Czecho-slovakia	East Germany	Hungary	Poland	Rumania	Total European Satellites	USSR	Total Soviet Bloc	Communist China	Total Sino-Soviet Bloc
		A	B	C	D	E	F	G	H	I	J	K	L
1945	Total liquid petroleum hydrocarbons	.45	.050	.014	0	.68	.11	4.8	6.1	19.3	25.5	.066	25.6
	Natural gas	.04	0	.0010	0	.059	.11	1.5	1.7	2.42	4.1	N.A.	4.1
1946	Total liquid petroleum hydrocarbons	.85	.12	.029	0	.73	.12	4.4	6.2	21.7	27.9	.070	28.0
	Natural gas	.047	0	.0020	0	.075	.12	1.6	1.9	2.51	4.4	N.A.	4.4
1947	Total liquid petroleum hydrocarbons	.99	.12	.035	0	.63	.13	4.0	5.9	25.9	31.8	.051	31.8
	Natural gas	.065	0	.0019	0	.092	.12	1.7	2.0	3.06	5.1	N.A.	5.1
1948	Total liquid petroleum hydrocarbons	.84	.11	.030	0	.53	.14	4.3	5.9	29.3	35.2	.073	35.3
	Natural gas	.085	0	.0080	0	.11	.12	1.9	2.2	3.37	5.6	N.A.	5.6
1949	Total liquid petroleum hydrocarbons	.90	.13	.060	0	.56	.15	4.7	6.5	33.5	40.0	.080	40.1
	Natural gas	.11	0	.012	0	.13	.11	2.2	2.6	3.47	6.0	N.A.	6.0
1950	Total liquid petroleum hydrocarbons	1.2	.17	.063	0	.55	.16	5.2	7.3	37.9	45.2	.11	45.4
	Natural gas	.12	0	.020	0	.14	.14	2.5	3.0	3.71	6.7	N.A.	6.7
1951	Total liquid petroleum hydrocarbons	2.2	.16	.074	0	.54	.18	6.4	9.6	42.2	51.8	.16	51.9
	Natural gas	.15	0	.038	0	.16	.22	3.0	3.6	4.01	7.6	N.A.	7.6
1952	Total liquid petroleum hydrocarbons	2.8	.20	.11	e/	.61	.20	8.2	12.2	47.3	59.5	.21	59.7
	Natural gas	.17	0	.055	.0063	.18	.24	3.4	4.1	4.09	8.2	N.A.	8.2
1953	Total liquid petroleum hydrocarbons	3.2	.28	.12	e/	.88	.19	9.4	14.0	52.8	66.8	.32	67.1
	Natural gas	.27	0	.061	.0063	.20	.25	3.8	4.6	4.20	8.8	N.A.	8.8
1954	Total liquid petroleum hydrocarbons	3.5	.33	.12	e/	1.3	.19	10	15	59.3	75	.45	75
	Natural gas	.29	0	.070	.0063	.21	.28	4.1	5.0	4.58	9.6	N.A.	9.6
1955	Total liquid petroleum hydrocarbons	3.7	.40	.13	.00054	1.7	.19	11	17	70.8	88	.53	88
	Natural gas	.32	0	.080	.0063	.23	.31	4.4	5.3	5.49	10.8	N.A.	10.8
1956	Total liquid petroleum hydrocarbons		.43	.14	.0010	1.8	.20	12	15	80	95	.64	95
	Natural gas		0	.090	.043	.24	.32	5.4	6.1	9.6	15.7	N.A.	15.7

* Footnotes for Table 1 follow on p. 4.

Table 1

Summary of Estimates and Projections of Production of Petroleum Components by Countries of the Sino-Soviet Bloc
1945-60 a/ b/
(Continued)

Million Metric Tons

Year	Category of Petroleum Components	Soviet Zone of Austria c/	Albania d/	Czecho-slovakia	East Germany	Hungary	Poland	Rumania	Total European Satellites	USSR	Total Soviet Bloc	Communist China	Total Sino-Soviet Bloc
		A	B	C	D	E	F	G	H	I	J	K	L
1957	Total liquid petroleum hydrocarbons		.46	.14	.0010	1.9	.20	12	15	100	110	.83	120
	Natural gas	0		.10	.043	.25	.32	6.4	7.1	14	21	N.A.	21
1958	Total liquid petroleum hydrocarbons		.49	.15	.0010	1.9	.21	13	16	110	130	1.1	130
	Natural gas	0		.11	.043	.27	.33	7.4	8.1	18	26	N.A.	26
1959	Total liquid petroleum hydrocarbons		.52	.16	.0010	2.0	.21	13	16	120	140	1.4	140
	Natural gas	0		.12	.043	.29	.34	8.4	9.2	22	31	N.A.	31
1960	Total liquid petroleum hydrocarbons		.56	.16	.0010	2.0	.22	14	17	140	160	1.7	160
	Natural gas	0		.12	.043	.30	.35	9.3	10	26	36	N.A.	36

a. Although production of petroleum in Bulgaria (since 1954) and in the Mongolian People's Republic (since 1952) has been reported, available information does not permit estimates of the magnitude of such production. Estimates and projections of the production of total liquid petroleum hydrocarbons in this table do not include any production of synthetic crude oil within the Sino-Soviet Bloc or any production of natural gas liquids in the Soviet Zone of Austria, Czechoslovakia, Poland, the USSR, and Communist China.

b. The data presented in this table are taken from Tables 4 through 12, below. Those figures for the USSR for 1945-55 are expressed in these significant digits; all other data are expressed in two significant digits with the exception of data in the aggregative columns, H, J, and L. Data in columns H, J, and L are derived from unrounded figures and while they do not necessarily agree arithmetically with the data shown, they have been stated in the maximum number of significant digits which addition of the data shown would allow.

c. From 1945 through August 1955 the USSR controlled production of petroleum in the Soviet Zone of Austria, and that production is considered a part of the production of the Sino-Soviet Bloc.

d. Figures include production of natural asphalt.

e. Less than 500 tons.

I. Introduction.

A. General.

A competent Free World source 1/* has estimated that 1955 world production of total liquid petroleum hydrocarbons was 785 million tons. If that estimate is correct, it may be inferred that in 1955, Sino-Soviet Bloc production of 88 million tons** of total liquid petroleum hydrocarbons was only 11 percent of total world production.

Estimates of total production of natural gas, exclusive of Soviet production, through 1952 in million cubic meters are available in a UN publication. 2/ These estimates can be converted to metric tons by applying a factor 3/ of 790 metric tons per million cubic meters. By adding the estimates of Soviet production of natural gas during the corresponding years,** estimates of world production of natural gas for 1945-52 are obtained. These estimates indicate that world production of natural gas increased at an annual rate of 10.8 percent, from 1945 to 1952. By extrapolation, using the rate of increase of 10.8 percent, an estimate of 290 million tons for total world production of natural gas in 1955 is obtained. Production of natural gas in the Sino-Soviet Bloc, which is estimated at 11 million tons,** was 3.7 percent of total world production of 290 million tons of natural gas in 1955.

Knowledge of the fuel and energy available in any area is essential in making a reliable estimate of the capabilities, vulnerabilities, and intentions of the area. This report presents information, estimates, and projections which are essential to any analysis of past, present, or future availability of fuel and energy in any country of the Sino-Soviet Bloc or in the Bloc as a whole. In presenting estimates and projections in this report, special emphasis has been placed on indicating the availability of information pertinent to each aspect of the subject and on the methodology by which the estimates and projections were made. The manner of presenting the methodology should facilitate future revision of those estimates and projections when new information becomes available.

This report presents a study of the capacity of the Sino-Soviet Bloc countries to extract petroleum components from the earth and make

50X1

** See Table 1, p. 3, above.

them available for use in the oil or gas fields or for transportation to points of ultimate consumption or of processing into petroleum products. Information on Bloc production of petroleum before 1945 has been included only where it has been pertinent to production for 1945-60.* The only information included in this report concerning exploration for petroleum deposits or transportation, refining, consumption, or trade of the petroleum components produced is that which was needed to support estimates or to furnish estimates of the existence or volume of production of petroleum components. Attention is restricted to the quantity of the petroleum components produced, and no effort is made to analyze either the quality or value of production.

B. Definition of Terms.

Production, as used in this report, refers to the process of removing petroleum components from the earth, separating these components, and making them available for transportation to a point of consumption or further processing. The term production also refers to the quantity of petroleum components made available for consumption or further processing. Neither the natural gas returned to the strata in a producing field nor the natural gas flared or otherwise wasted in the field has intentionally been included in references to the quantity of natural gas produced in that field.

Petroleum is "a material occurring naturally in the earth which is predominantly composed of mixtures of chemical compounds of carbon and hydrogen with or without other nonmetallic elements such as sulfur, oxygen, nitrogen, etc. Petroleum may contain, or be composed of, such compounds in the gaseous, liquid, and/or solid state, depending on the nature of these compounds and the existent conditions of temperature and pressure." 4/ The term petroleum component refers to any of the following: natural crude oil; asphalt; natural gas liquids proper or natural gasoline, liquified petroleum gases, finished gasoline, or the subcategory "other products" under the natural gas liquids category; wet natural gas; and methane, or dry natural gas.

Total liquid petroleum hydrocarbons refers to the aggregate composed of natural crude oil, asphalt, and natural gas liquids.

50X1

Natural crude oil refers to "that liquid component of petroleum separated at or near the well and stabilized at atmospheric pressure and temperature." 5/

Natural asphalt refers to a naturally occurring mixture in which bitumen is associated with a substantial proportion of inert mineral matter. 6/ Bitumen is "a non-crystalline solid or viscous material having adhesive properties, derived from petroleum ... by natural ... processes and which is substantially soluble in carbon disulphide." 7/

Natural gas liquids refers to "those hydrocarbon liquids which are gaseous or in solution with crude oil in the reservoir and which are recoverable as liquids by the processes of condensation, absorption, or adsorption which take place in field separators, scrubbers, gasoline plants, or cycling plants." 8/ In the US, production of natural gas liquids is reported under four subcomponents: natural gasoline, liquefied petroleum gases, finished gasoline, and other products. 9/

Natural gasoline refers to "a product produced from natural gas by: 1, compressing the natural gas; or, 2, an absorption process whereby the natural gas is bubbled through an absorption oil which picks up from the gas the desired natural gasoline; or, 3, by adsorption on a solid adsorbent." 10/

Liquified petroleum gases refers to "hydrocarbon fractions lighter than gasoline, such as butane, propane, etc., which are kept under pressure in a liquid state and marketed for various industrial and domestic gas uses." 11/

Natural gas refers to "that component of petroleum which is stabilized in gaseous form for pipeline transportation from the oil or gas field or petroleum-producing area." 12/ In referring to production of natural gas, such natural gas is "dry," or "pipeline," gas -- that is, natural gas after the removal of any natural gas liquids.

Wet natural gas refers to "natural gas carrying recoverable quantities of natural gas liquids before processing for the recovery of this latter component." 13/

Dry natural gas and methane are synonymous and refer to natural gas which does not carry recoverable quantities of natural gas liquids and is, therefore, not processed for the recovery of natural gas liquids.

The term primary sources refers to reports originating within the Sino-Soviet Bloc and issued through the media of the press or radio.

C. Historical Background.

1. USSR.

Crude oil was produced in the USSR before 1850. 14/ The recovery of natural gasoline from natural gas began in 1927. 15/ Production of natural gas from oilfields was instituted in the early 1920's, 16/ but large-scale production of natural gas from gas fields proper began during World War II. 17/ Soviet production of petroleum components has spread from its original center in the Baku area, so that the only regions in the USSR today which have no confirmed production of petroleum components are Economic Regions* Ia, II, IX, and XI. 18/ From a level of 12 million tons, which gave it first place in world production in 1901, Soviet production of crude oil dropped suddenly following nationalization of the industry in 1918, sloped to 3.8 million tons in 1920-21, and gradually climbed to 31 million tons in 1940. 19/ Damages to oil and gas fields sustained in World War II offset the effects of the wartime development of a new petroleum base, the Second Baku, and resulted in Soviet production of only 19 million tons** of crude oil in 1945. 20/ A natural gas trunkline was built in 1940-41 from Dashava to L'vov, and was followed by the completion of natural gas pipelines from Burguruslan to Kuybyshev in 1943 and from Saratov to Moscow in 1947. 21/ Production of natural gas, which was only 470 million cubic meters in 1930, was not developed until World War II. 22/

2. Albania.

Exploratory work conducted from 1926 to 1928 led to the development of the Devoli and Pahtosa oilfields in Albania. 23/ Exploitation of asphalt deposits at Selenitsa has gone on for over a century.

50X1

** See Table 1, p. 3, above.

3. Soviet Zone of Austria.

Production of about 100 tons in the Zistersdorf area in 1932 marked the beginning of commercial production of crude oil in Austria. Following the Anschluss, production rose from 33,000 tons in 1937 to 1.2 million tons in 1944. Part of this production in the later years came from the Muehlberg oilfield, which was developed by the Germans after 1941. The USSR seized the oilfields in 1945 and controlled production of petroleum in Austria until August 1955.

4. Bulgaria.

Drilling for oil in the Provadiya district of Bulgaria started before World War II and continued after the war with the help of Soviet specialists. 24/ Commercial production of crude oil in Bulgaria began with the filling of the first tank car with crude oil from an unidentified field on 9 September 1954. 25/

5. Communist China.

Natural gas of the Szechuan Basin has been known and used in the salt industry of China for almost 2,000 years. Production of crude oil in China was less than 500 tons per year until production was initiated in Sinkiang Province in 1938. Production from existing fields did not exceed 10,000 tons per year until 1941, when production of crude oil in China rose to 11,000 tons with the development of production in Kansu Province. By 1945, Kansu Province had become the major area of the crude oil production industry in China. 26/

6. Czechoslovakia.

Petroleum was found by drilling near Egbell in 1914, but annual production of crude oil in Czechoslovakia was only 14,000 tons* in 1945, and production of natural gas in the same year was only about 1,000 tons.*

7. East Germany.

East Germany has produced a negligible amount of natural gas for years. Production in 1955 was estimated at less than 10,000

* See Table 6, p. 37, below.

tons,* and production of total liquid petroleum hydrocarbons in 1955 was estimated at less than 1,000 tons.* 27/

8. Hungary.

Commercial production of petroleum began in Hungary in Zala County with the discovery of the Lispe, or Budafapuszta, oilfield in 1937. In 1940 a second field was discovered at nearby Lovaszi. In 1941 about 700 tons of oil were produced at a field near the village of Ujfalu, a field which was depleted by 1944, and in 1942, crude oil was produced from the Hahot field north of the Budafapuszta, or Lispe, field. Virtually all production of petroleum components in Hungary came from these fields at the time of the arrival of the Red Army in March 1945. About 200 tons, less than 1 percent of total production of total liquid petroleum hydrocarbons in Hungary in 1945, came from the Bukkszek oilfield in the northern part of the Great Hungarian Basin.

9. Mongolian People's Republic.

There is one unconfirmed report of production of petroleum components in the Mongolian People's Republic, and the report only indicates that the industry existed as of May 1953. 28/

10. Poland.

Production of petroleum in Poland began in the 19th century, reached its peak in 1909, and was more than half a million tons in 1938. The oilfields of East Galicia, which contributed about three-fourths of total Polish production of crude oil in 1938, were ceded to the USSR in 1945.

11. Rumania.

Commercial production of petroleum in Rumania began in 1857, reached a peak of 8.7 million tons in 1936, and decreased afterwards. 29/ The decline in production was hastened by World War II air attacks and the looting of oilfield equipment by the Red Army following

* See Table 7, p. 44, below.

the occupation of Rumania in 1944, and production decreased to 4.8 million tons* of crude oil in 1945. Production of crude oil in Rumania in 1945 was concentrated in one main area, the Ploesti region, and in two smaller areas, one in the vicinity of the town of Buzau, northeast of Ploesti, and the other in the region of Bacau in Moldavia.

D. Administration.

1. USSR.

The organization of the petroleum industry in the USSR as of 1954 is shown in the accompanying chart.** The operation of the oil and gas fields in the USSR is supervised by officials responsible to the administrations of the various associations, trusts, or combines shown in the bottom level of the chart.

Mikhail Andrianovich Yevseyenko was appointed Minister of the Petroleum Industry of the USSR in May 1955, replacing Nikolay Konstantinovich Baybakov, who was promoted to Chairman of the State Commission of the Council of Ministers of the USSR for Long-Range Planning of the National Economy. 30/

2. Albania.

Production of crude oil and mining of natural asphalt were both subordinate to the Ministry of Industry and Mines as of 25 January 1955, according to a report of a meeting organized on that date under the chairmanship of Koco Theodosi, Minister of Industry and Mines. 31/

3. Soviet Zone of Austria.

About 94 percent of all petroleum produced in the Soviet Zone of Austria during the period of Soviet occupation was from Soviet-controlled and operated fields, and the remainder was from small fields owned by Free World interests. 32/ The administration of the Soviet-owned fields was the responsibility of the Soviet Mineral Oil Administration (SMV), whose chief as of 3 August 1955

* See Table 10, p. 71, below.
** Following p. 12.

was Tscheplakow. 33/ The SMV reported to Moscow. 34/ The two privately owned fields were indirectly controlled by the USSR because the private companies had to sell their crude oil to the SMV. 35/

4. Bulgaria.

The administration of the production of petroleum in Bulgaria in early 1956 was reported 36/ as the responsibility of Gorubso, a Soviet-Bulgarian joint mining company. Although in January 1956 the Soviet government reportedly 37/ sold back to Bulgaria her share in Gorubso, the actual degree of independence exercised by the Bulgarian government in operating the company is unknown.

5. Communist China.

The Ministry of the Petroleum Industry was created by a resolution of the National People's Congress on 30 July 1955. On the same date, Li Chu-kwei was appointed Minister of the Petroleum Industry, 38/ and on 5 August 1955 Li Pan-i, Li Jen-chun, and Chou Wen-lung were appointed Deputy Ministers of the Petroleum Industry, and Kang Shih-en, Liu Fang, and Huang Kai were appointed assistants to the Minister. 39/

6. Czechoslovakia.

In mid-1955 the government of Czechoslovakia announced the dissolution of the Ministry of Fuel and Power and its replacement by a Ministry of Fuel and a Ministry of Power. 40/ Josef Jonas was appointed Minister of Fuel. 41/ It is presumed that all petroleum production in Czechoslovakia falls within the responsibility of the Ministry of Fuel.

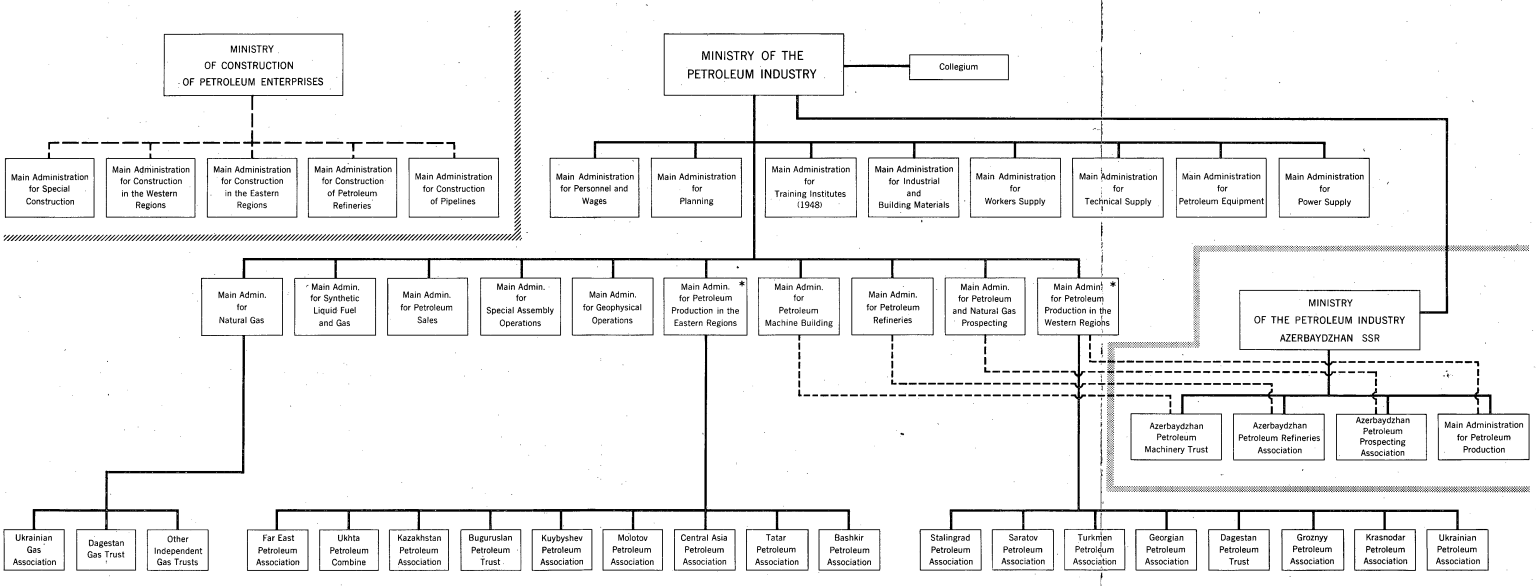
7. East Germany.

There is no significant commercial production of either crude oil or natural gas liquids in East Germany at present. The negligible production of natural gas existing in East Germany apparently is carried out under the supervision of the Main Administration for Gas of the Ministry for Heavy Industry. 42/

50X1

USSR

ORGANIZATION OF THE PETROLEUM INDUSTRY, 1954



*Subordination has been assumed in some cases on basis of geographical distribution.

13745 11-55

50X1

8. Hungary.

Production of petroleum in Hungary was administered as of 6 November 1954 by Maszolaj (Hungarian-Soviet Oil), a Soviet-Hungarian corporation. 43/ Since then the Soviet interest in Maszolaj allegedly has been sold and transferred to the Hungarian People's Republic, 44/ but the name and responsibilities of the organization apparently have not been changed, because a report of 28 March 1955 states that the Hungarian Petroleum and Natural Gas Research Institute "is in close touch with the petroleum industry and its control authorities, the Petroleum Directorate, the E/1 Department of the Home Trade Ministry, the Maszolaj, the Petroleum Department of the Ministry for Heavy Industry, etc."* 45/ The over-all administration of the production of petroleum in Hungary was implied in February 1956 46/ as falling within the jurisdiction of the Ministry of Chemical and Electric Power Industries.

9. Mongolian People's Republic.

No information is available concerning production of petroleum in the Mongolian People's Republic except a single reference to the existence of such an industry in that area as of May 1953. 47/

10. Poland.

Exploitation of crude oil and natural gas deposits was one of the many activities removed from the jurisdiction of the Minister of Mining and placed under the Central Petroleum Office in accordance with Decree No. 106, 18 April 1955, of the Council of State of Poland. Decree No. 106 outlined the organization of the Central Petroleum Office, which has a chairman and deputy chairman both of whom are to be appointed and recalled by the Chairman of the Council of Ministers. 48/

11. Rumania.

Production of petroleum in Rumania is administered by two companies, Sovromgaz and Sovrompetrol, both of which at one time were

* The underlining is that of the author.

joint Soviet-Rumanian companies. The USSR reportedly sold its shares in Sovromgaz in 1954 and its shares in Sovrompetrol in January 1956 to the Rumanian government. 49/ Sovromgaz and Sovrompetrol are both under the administration of the Ministry of the Petroleum Industry of the Rumanian People's Republic.

At the end of 1955, Ion Dumitru and Iancu Horatiu were Minister and Deputy Minister, respectively, of the Ministry of the Petroleum Industry in the Rumanian People's Republic. 50/

E. Technology.

Crude oil, natural gas liquids, and natural gas are present in all oil deposits and are simultaneously extracted in the exploitation of oil deposits. Gas deposits, in which there is only natural gas containing varying quantities of natural gas liquids, are exploited by gas wells. Gas deposits which yield only negligible quantities of natural gas liquids along with the natural gas are said to produce "dry" gas. Practically all oil deposits and many gas deposits, however, yield "wet" gas from which natural gas liquids can be extracted in sufficient quantities to warrant the processing of such gas. The facilities for the processing of wet gas for recovery of natural gas liquids may range from simple scrubbers for the recovery of drip gasoline, or lease condensate, to complex modern plants designed for the selective recovery of the several lighter hydrocarbons comprising the entire range of natural gas liquids.

Almost every reference to the latest technological developments in petroleum production everywhere in the Sino-Soviet Bloc indicates that the equipment and procedures used are of Soviet origin.

Analysis of Soviet technology indicates that the USSR is aware of the latest advances in the science of petroleum production throughout the world. Such advances are described in Free World trade literature, which is readily accessible to the USSR. The degree of success attained by the USSR in the application of the latest technology, however, is difficult to estimate. Soviet claims of technological success are at times no more than references to production techniques which have been applied for years in the US -- for example, hydraulic fracturing of the geological strata to increase the speed of flow of the petroleum components toward the well, and contour flooding, the well-known secondary-recovery procedure of forcing fluids down certain wells in

order to drive the petroleum in the reservoir toward a selected producing well. Other reports of Soviet technological success mention turbine drilling, use of water as a drilling fluid, and twin- or dual-well drilling, techniques which are not used in the US. There is no information on the operational efficiency of these techniques peculiar to Bloc production, and comparison of the relative efficiency of Bloc and Free World technologies is impracticable.

II. Production.

A. Country Contributions to Total Production.*

Estimated and projected country contributions to production of total liquid hydrocarbons in the Sino-Soviet Bloc in selected years, 1945-60, are shown in Table 2.** Estimated and projected country contributions to production of natural gas in the Sino-Soviet Bloc in selected years, 1945-60, are shown in Table 3.***

B. Methodology.

1. General.

The estimates and projections given in this report were based, wherever possible, on recorded and planned production [redacted] 50X1 50X1

Projections for 1956-60 are based on indications of future output such as official plan figures, history of production, present capacity, and estimated geological potential of the area.

2. Weaknesses of the Methodology.

The methodology used in deriving estimates for 1945-55 is weak in at least two respects. First, it evolves estimates of production which are only as accurate as are the Communist statistics. Although it apparently has been Soviet practice in the past to withhold rather than****

* The lack of information on which to base estimates of production of natural gas liquids in Bloc countries for any post-World-War-II year prevents an analysis of the contribution of each country to total production.

** Table 2 follows on p. 18.

*** Table 3 follows on p. 19.

**** Continued on p. 20.

Table 2

Estimated and Projected Country Contributions to Production of Total Liquid Petroleum Hydrocarbons in the Sino-Soviet Bloc a/
Selected Years, 1945-60

Percent

Country	1945	1950	1955	1960
USSR	75.7	83.6	80.2	88.3
Rumania	18.9	11.5	12.3	8.8
Hungary	2.7	1.2	1.9	1.3
Soviet Zone of Austria	1.8	2.6	4.2	0
Communist China	0.3	0.2	0.6	1.1
Poland	0.4	0.4	0.2	0.1
Czechoslovakia	0.1	0.1	0.1	0.1
Albania	0.2	0.4	0.4	0.4
East Germany	0	0	b/	b/
Bulgaria	0	0	N.A.	N.A.
Mongolian People's Republic	0	N.A.	N.A.	N.A.

a. Although production of petroleum components has been reported in Bulgaria since 1954 and in the Mongolian People's Republic for 1952 it was impossible to estimate any annual production since World War II. Estimates and projections of the production of total liquid petroleum hydrocarbons referred to in this table exclude any production of synthetic crude oil, any production of liquid petroleum hydrocarbons in Bulgaria since 1954, any production of liquid petroleum hydrocarbon in the Mongolian People's Republic since 1949, and any production of natural gas liquids in Soviet Zone of Austria, Czechoslovakia, Poland, the USSR, and Communist China. All data shown in this table are rounded to the closest 0.1 percent. Data in this table are based on Table 1, p. 3, above.
b. Less than 0.0550 percent.

Table 3

Estimated and Projected Country Contributions to Production of Natural Gas in the Sino-Soviet Bloc a/ Selected Years, 1945-60

Percent

Country	1945	1950	1955	1960
USSR	59.4	55.6	50.7	71.9
Rumania	36.6	38.1	40.7	25.8
Soviet Zone of Austria	1.0	1.8	2.9	
Hungary	1.4	2.2	2.1	0.8
Poland	2.6	2.1	2.8	1.0
Czechoslovakia	b/	0.3	0.7	0.3
East Germany	0	0	0.1	0.1
Albania	0	0	0	0
Bulgaria	0	0	N.A.	N.A.
Mongolian People's Republic	0	N.A.	N.A.	N.A.

a. Total production of natural gas in the Sino-Soviet Bloc excludes any production of natural gas for which no estimates or projections are available: natural gas produced in China since 1944, natural gas possibly produced in the Mongolian People's Republic since 1949, and natural gas produced in Bulgaria since 1954. All data shown in this table are rounded to the nearest 0.1 percent. This table is based on data presented in Table 1, p. 3, above.
b. Less than 0.0550 percent.

to falsify statistics, such a practice may not be uniform throughout the Sino-Soviet Bloc during the period under study. During recent years the policy may have been changed for deliberate deception. The series of estimates in this report, however, represent the claims of the Sino-Soviet Bloc [redacted] 50X1
50X1

Because the projections for 1956-60 are based on the estimates for 1945-55, reliability of the projections varies proportionally with the reliability of the estimates. Production of petroleum, moreover, is unpredictable even where dependable information is available concerning present capacity, geological potential, history of production, projected investment in exploration and development, and rates of depletion of existing mineral resources. Because scant information is available concerning those factors on which projections of future production must be based, estimates of future production are arbitrary.

3. Aims in the Application of the Methodology.

The first aim in applying the methodology was to list interpretations of almost all available [redacted] information. 50X1
In some instances, plan or plan fulfillment reports for periods shorter than a year were omitted from the list when they neither filled a gap left by an unavailable annual report nor conflicted with an annual report. The second aim was to explain as fully as possible all interpretations of claims [redacted] 50X1
and all assumptions made in such interpretation. A third aim was to explain as fully as possible all methodological decisions involved in making the estimates. It is hoped that these aims have been fulfilled sufficiently to make future revision easy.

4. Assumptions Made in the Application of the Methodology.

Besides the assumption that claims [redacted] 50X1
covering commodity production reflect the actual status of production as far as competent statisticians employing correct statistical procedures can measure it, two other basic assumptions must be made in order to apply this methodology.

a. Terms Used in [redacted] Statements. 50X1

The USSR could include production of natural gas liquids in the reported production of neft' for a particular period and exclude natural gas liquids from the reported production of neft' for another period. The term neft' is equivalent to the English petroleum or oil, generic terms which connote any or all three of the petroleum components. It has been assumed that if any changes had occurred in the meaning or inclusiveness of the terms used in expressing claims, the changes would have been made so that the analyst could take note of them. Notice has been given in Soviet statistical reporting 51/ of a change in the inclusiveness of the term production in referring to natural gas.

The Communist governments could include in their reported production of natural gas the natural gas which is returned to the strata in repressuring efforts. It has been assumed, however, that figures [redacted] for production of any petroleum component refer to the amount of that petroleum component which has been extracted from the well or from the natural gas and which has been used in the field, stored at the field for later shipment, or shipped from the field. This assumption is supported by figures for production of petroleum components and products in the USSR for 1913 and 1927-35 which were published in a Soviet statistical abstract 52/ in 1936. This publication says, "Up through 1932 inclusive of circulation gas output of the Grozny Petroleum Trust (107,800 tons in 1933)," which indicates that policy since 1932 has been to exclude the amount of gas used in repressuring efforts from the total reported Soviet production of natural gas. Recent articles in Soviet newspapers denouncing the practice of flaring gas in oilfields indicate that if gross withdrawals of gas were reported as production, the volume of production of natural gas indicated by Soviet claims would be low indeed. 50X1

When [redacted] refer to dobycha nefti or some of the various foreign language equivalents of dobycha nefti, no exact definition of terms is available to enable the reader to 50X1

determine whether [redacted] refer to the extraction of crude oil only or to the combined production of crude oil plus one or more other components. The production of any or all of the petroleum components within the natural gas liquids category has rarely been reported separately, and it is therefore possible that such production is included under the generic term dobycha nefti or equivalent in the same manner that in the USSR in recent years the production of natural gas and the production of artificial gas from coal and shale have been considered collectively under the category of proizvodstvo gaza (production of gas). 50X1

International practice, however, is to report the national production of crude oil separately, with footnotes frequently employed to denote that even natural gasoline has been excluded from consideration. The World Power Conference and the United Nations adhere to such international practice, and even though the countries of the Sino-Soviet Bloc have frequently failed to contribute statistics to these organizations since World War II, when estimates from the Bloc countries have been furnished, no qualifications were attached to the estimates to indicate that the production of other than crude oil as such was being reported. For the purposes of this report it has been assumed, therefore, that when [redacted] refer to dobycha nefti or its equivalent, the production of crude oil only is being considered. 50X1

b. Soviet Procedures for Rounding Figures.

In the following analysis of the data contained in Sino-Soviet Bloc claims it has been assumed, for purposes of determining internal statistical consistency, that responsible Communist statisticians have utilized the following standard procedures for rounding: discarded digits below half are rounded down, discarded digits above half are rounded up, discarded digits of exactly half are rounded down when they follow an even number and rounded up when they follow an odd number. For example, 86,500 and 85,500 would both be rounded to 86,000 to 2 significant digits. These rules are referred to in the text below as "rounding rules."

5. Specifics.

Interpretations of [redacted] claims are arranged below in chronological order in sections treating the production of crude oil, natural gas, or natural gas liquids within a Sino-Soviet Bloc country. 50X1

Interpretations of claims, by country, are presented by the category of petroleum components being considered. The statements are arranged chronologically according to the production year to which they refer. For each year there are listed first any references to planned, expected, or anticipated production of that category of component for that year, under the subheading planned. All references to alleged actual production for the year are listed under the subheading recorded.

The original form of the reference which reported the claim is reflected as closely as possible in the interpretation of each claim, in order that other researchers may analyze the data in the same form as it appeared for the original analysis. Such presentation also gives an idea of the problems of definition faced in analyzing Sino-Soviet Bloc claims.

50X1

[redacted]

In some cases the available claims were considered inadequate as bases for estimates and projections, but these claims nevertheless have been presented in order to show the extent of available information and for possible use by interested researchers elsewhere who may have additional information with which to round out the fragmentary data presented here. Where the available data [redacted] 50X1
[redacted] has been inadequate as a basis for estimates or projections, either no estimates or projections are given or an explicit methodology is given for the derivation of figures [redacted] 50X1
[redacted] 50X1

In most cases, fortunately, the interpretations available are sufficient for the construction of a series of estimates and projections. In some instances the data were surprisingly consistent. At times it was necessary to choose between the different histories of production recorded in conflicting data. Where the data were contradictory the basis for the choice made between them has been explained.

Where estimates of production of petroleum components in the Sino-Soviet Bloc through 1955 have been made, they have been qualified by ranges of error expressed in percent. These ranges of error are the products of subjective appraisal. Because they are intended to indicate how closely the estimate reflects actual production, no ranges of error are given for projections of future production.

C. European Satellites.

1. Soviet Zone of Austria.

a. General.

Estimated production of petroleum components in the Soviet Zone of Austria in 1945-55 is shown in Table 4.

Table 4

Estimated Production of Petroleum Components in the Soviet Zone of Austria 1945-55 a/

	Crude Oil		Natural Gas	
Year	Production (Thousand Metric Tons)	Range of Error (Percent)	Production (Thousand Metric Tons)	Range of Error (Percent)
1945	450	+ or - 2	40	+ or - 10
1946	850	+ or - 2	47	+ or - 10
1947	990	+ or - 5	65	+ or - 10
1948	840	+ or - 5	85	+ or - 35
1949	900	+ or - 20	110	+ or - 35
1950	1,200	+ or - 20	120	+ or - 25
1951	2,200	+ or - 20	150	+ or - 10
1952	2,800	+ or - 20	170	+ or - 10
1953	3,200	+ or - 10	270	+ or - 10
1954	3,500	+ or - 10	290	+ or - 25
1955	3,700	+ or - 10	320	+ or - 10

a. All data are rounded to two significant figures.

b. Analyses of Statements of Production of Petroleum Components in the Soviet Zone of Austria and Derivation of Estimates in Table 4.

(1) Crude Oil.

(a) Statements of Production of Crude Oil since 1945.

50X1

Statement Number	Production Year	Allegation
1	1945	Recorded Production of oil, 454,000 tons
2	1946	Recorded Production of oil, 846,000 tons
3	1947	Recorded Production of oil, 986,000 tons
4	1948	Recorded Production of oil, 843,000 tons
5	1948	Recorded Production of crude oil, 910,000 tons
6	1949	Recorded Production of crude oil, 900,000 tons
7	1950	Recorded Production of crude oil, 1,200,000 tons
8	1951	Recorded Production of crude oil, 2,200,000 tons
9	1954	Recorded Production of oil, slightly less than 3,500,800 tons
10	1955 (First 8 months)	Recorded Production of oil, 2,448,000 tons
11	1955	Planned Production of oil, about 3,500,800 tons
12	1955	Planned Production of crude oil, about 3,500,000 tons
13	1955	Planned Production of crude oil, 3,900,000 tons
14	1955 (First 11 months)	Recorded Production of oil totaled, 3,367,571 tons

50X1

(b) Interpretation of Statements.

Analysis of the above list of interpretations of statements reveals conflicting reports of production for 1948 and 1955 and no reports of production for 1952 and 1953. It was decided that by resolving the conflicting reports for 1948 and 1955 and by filling the gaps for 1952 and 1953, a series of estimates of production of crude oil in the Soviet Zone of Austria for 1945-55 could be established.

(c) Derivation of Estimates in Table 4.

The estimates of production presented in statements 1, 2, 3, 6, 7, 8, and 9 were used for their respective years in constructing Table 4. The conflict between statement 4 and statement 5 was resolved in favor of statement 4 because that statement appeared in the trade journal of the Polish petroleum industry. The conflicting data for 1955 were resolved by estimating total production for the year on the basis of the rate of production for the first 11 months indicated by statement 14.

50X1

50X1

(2) Natural Gas.

(a) Statements of Production of Natural Gas since 1945.

50X1

Statement Number	Production Year	Allegation	
1	1947	Recorded	Production, 82 million cubic meters
2	1951	Recorded	Consumption of natural gas in Austria, 184 million cubic meters
3	1952	Recorded	Consumption of natural gas in Austria, 212 million cubic meters
4	At end of 1952	Recorded	Volume of gas, 1.15 times that at the end of 1951
5	1955 (First 11 months)	Recorded	"Production [of natural gas] ... almost 700 million cubic meters. Only little more than half of this production ... is now being utilized ... . The rest is lost."

50X1

(b) Interpretation of Statements.

The data presented in the list of claims of production of natural gas in the Soviet Zone of Austria were inadequate as bases for estimates and projections of production. In order to derive a series of estimates and projections for production of natural gas in the Soviet Zone of Austria it was necessary to [redacted] extrapolate and interpolate. 50X1 50X1

(c) Derivation of Estimates in Table 4.

Firm figures are available 66/ for annual consumption of natural gas in Vienna since World War II, and those figures indicate that the Soviet Zone of Austria must have produced at least 29 million cubic meters and 46 million cubic meters of natural gas in 1945 and 1946, respectively, to satisfy the Vienna demand alone. Production of natural gas in the Soviet Zone of Austria for 1945 and 1946 was accordingly estimated at 50 million and 60 million cubic meters,* respectively, in order to allow for production in the Soviet Zone of Austria other than that used in Vienna and to reflect a general rise in total production of natural gas in the Soviet Zone of Austria from the end of World War II to 1947, when, according to statement 1, 82 million cubic meters were produced. Straight-line interpolation between the figures given in statements 1 and 2 formed the basis for estimating production of natural gas in the Soviet Zone of Austria for 1948-50. Statements 2, 3, and 4 concurred in production figures for 1951 and 1952. Production of natural gas in the Soviet Zone of Austria during 1953 was estimated at about 345 million cubic meters, 270,000 tons. [redacted] 50X1 50X1

[redacted] On the basis of statement 5, it is estimated that production of natural gas in the Soviet Zone of Austria in 1955 was 400 (4.0×10^2) million cubic meters. The estimate of production for 1954 was derived by interpolating between the estimate for 1953 and the estimate for 1955. 50X1

* Estimates in millions of cubic meters were converted to metric tons by multiplying by the factor of 790 tons per million cubic meters -- a factor based on the character of US natural gas. Rounding of the products resulted in the figures presented in Table 4, p. 24, above.

2. Albania.

a. General.

Commercial production of natural gas or of natural gas liquids in Albania has never been reported and is assumed to be nonexistent for the 1945-60 period. Estimated and projected production of petroleum components in Albania in 1945-60 is shown in Table 5.

In deriving the estimates of production of petroleum components in Albania in 1945-55 the general procedure was to derive a series of estimates of production of crude oil from the Albanian oilfields; to derive a series of estimates of production of natural asphalt in Albania; and, because it is assumed that no production of natural gas and natural gas liquids existed in Albania in 1945-55, to add the two series of estimates in order to obtain estimates of production of total liquid petroleum hydrocarbons.

Table 5

Estimated and Projected Production of Petroleum Components in Albania a/
1945-60

	Crude Oil		Natural Asphalt		Total Liquid Petroleum Hydrocarbons	
Year	Production (Thousand Metric Tons)	Range of Error (Percent)	Production (Thousand Metric Tons)	Range of Error (Percent)	Production (Thousand Metric Tons)	Range of Error (Percent)
1945	40	+ or - 10	10	+ or - 10	50	+ or - 10
1946	100	+ or - 25	18	+ or - 10	120	+ or - 25
1947	100	+ or - 25	21	+ or - 10	120	+ or - 25
1948	80	+ or - 25	28	+ or - 10	110	+ or - 25
1949	100	+ or - 25	29	+ or - 10	130	+ or - 25
1950	130	+ or - 5	35	+ or - 10	170	+ or - 6
1951	120	+ or - 25	41	+ or - 5	160	+ or - 25
1952	140	+ or - 25	51	+ or - 10	200	+ or - 25
1953	210	+ or - 25	69	+ or - 10	280	+ or - 25
1954	240	+ or - 25	86	+ or - 10	330	+ or - 25
1955	290	+ or - 25	110	+ or - 10	400	+ or - 25
1956	310		120		430	
1957	330		130		460	
1958	350		140		490	
1959	380		150		520	
1960	400		160		560	

a. All data are rounded to two significant figures. Totals are derived from unrounded figures and do not always agree with rounded data shown. Commercial production of natural gas or of natural gas liquids in Albania has never been reported and is estimated as nonexistent for 1945-60.

b. Analyses of Statements of Production of Petroleum Components in Albania and Derivation of Estimates in Table 5.

(1) Crude Oil.

(a) Statements of Production of Crude Oil in 1938 and 1945-55.

50X1

Statement Number	Production Year	Allegation	
1	1938	Recorded	Production of crude oil, 120,000 tons
2	1945	Recorded	Production of petroleum, 40,020 tons
3	1946	Recorded	Production of petroleum, 149,760 tons
4	1946	Recorded	Production of crude oil, 92,000 tons
5	1947	Recorded	Plan for production of Kucove and Patos, fulfilled 90 percent
6	1947	Recorded	Production of petroleum, 54,706 tons
7	1947	Recorded	Production of crude oil, 160,000 tons
8	1948	Planned	Anticipated (as of 5 December 1948) production for the year exceeds the prewar level
9	1948	Recorded	Production of petroleum, 53,672 tons
10	1948	Recorded	Production at Kucove and Patos fulfilled the plan 84 percent
11	1948	Recorded	Production of crude oil, 191,000 tons
12	1948	Recorded	Production of crude oil, 245,000 tons
13	1948	Recorded	Production of petroleum, 1.597 times 1938
14	1945-49		(The petroleum industry was not mentioned in a newspaper account of the development of other principal industries in Albania during 1945-49.)
15	1949	Planned	Production of petroleum, according to the Two Year Plan, to be 1.24 times that of 1948

50X1

Statement Number	Production Year	Allegation	
16	1949	Recorded	Extraction of crude oil, 5 times that of 1945
17	1949	Recorded	Plan for petroleum alone was fulfilled by 83.7 percent
18	1949	Recorded	Production of crude oil, 237,000 tons
19	1949	Recorded	Production of crude oil, 330,000 tons
20	1950	Planned	Production of crude oil, 306,000 tons
21	1950	Planned	Production of petroleum, according to the Two Year Plan, 1.60 times 1948
22	End of 1950	Planned	Production of crude oil, according to the Two Year Plan, 1.60 times end of 1948
23	1950	Planned	Production of petroleum, according to the Two Year Plan, 1.597 times 1948
24	Two Year Plan	Recorded	Production of petroleum "cannot fulfill Two Year Plan"
25	1950 (First quarter)	Recorded	Production of crude oil, 0.97 times that of the first quarter of 1949
26	1950	Recorded	Production of crude oil was 0.85 times the plan for the first quarter of 1950
27	1950 (First half)	Recorded	Production of crude oil was 0.96 times the plan for the period in terms of 1949 figures
28	1950	Recorded	Production of crude oil, 131,500 tons
29	1950	Recorded	Production of neft' syraya (crude petroleum), 131,800 tons
30	1951	Recorded	(Production of any petroleum component other than bitumen was not mentioned in yearly plan fulfillment report.)
31	1952	Planned	Extraction of oil, 1.425 times that of 1951
32	1952 (First quarter)	Recorded	Production of petroleum, 1.109 times that of the first quarter of 1951

50X1

50X1

50X1

50X1

Statement Number	Production Year	Allegation	
33	1952	Recorded	Gross petroleum, 1.222 times that of 1951
34	1952	Recorded	Extraction of petroleum, 1.095 times that of 1950. (Bitumen mining was treated separately)
35	1953	Planned	Production of oil, 1.20 times that of 1952
36	1953		(No petroleum component was mentioned in the year's plan fulfillment report.)
37	1954 (First 9 months)	Recorded	Production of crude oil, 1.224 times that of the first 9 months of 1953
38	1954	Recorded	Production of oil, 4.3 times that of 1938
39	1954	Recorded	Production of crude oil (vajguri brut), 1.174 times that of 1953
40	1955	Planned	Production of neft' syraya, 263,000 tons
41	1955	Planned	Production of crude oil, 1.70 times that of 1938
42	1955	Planned	Production of crude oil, 1.082 times that of 1954
43	1955	Planned	Extraction of oil, 2.7 times (base period not given.)
44	1955	Recorded	Production of crude oil, 1.192 times that of 1954

50X1

(b) Interpretation of Statements.

The statements listed above present contradictory histories of production. Therefore, a series of estimates of production of crude oil in Albania in 1945-55 could be made only by selecting the most consistent and credible of the statements and by basing the estimates on them.

(c) Derivation of Estimates of Production of Crude Oil in Table 5.

Statement 2 furnished the estimate for 1945. The contradictory reports of production in 1946 and 1947 were not really resolved; estimates for those 2 years were set at 100,000 tons, plus or minus a 25-percent range of error, in order to reflect the contradiction and to include actual production. The estimate for 1950 was set at 130,000 tons in accordance with information given in the announcement of the Five Year Plan (statements 28 and 29). If production in 1950 was planned to be 1.597 times that of 1948 (statements 21, 22, and 23) and if such a plan could not have been fulfilled (statement 24), 1948 production must have been at least 132,000 tons (statements 28 and 29) divided by 1.597 or 83,000 tons, because anything less than 83,000 tons for 1948 would have enabled production of 132,000 tons in 1950 to have fulfilled the goal of 1.60 times the 1948 production. Production for 1948 accordingly was set at 80,000 tons plus a 25-percent margin of error. The estimate for 1949 was made to reflect the fact that planned production for 1949 (statement 15) was unfulfilled (statement 17). If 1948 production was 80,000 tons, plus or minus a 25-percent error, 1949 production was less than 100,000 tons times 1.24, 124,000 tons. The estimate for 1949 was accordingly set at 100,000 tons, plus or minus a 25-percent error. The estimate for 1952 was based on statement 34 and use of the 132,000-ton figure for 1950. The estimate for 1951 was arrived at by dividing the estimate for 1952 by 1.222, in accordance with information in statement 33. The estimate for 1954 was derived by assuming that the goal indicated in statement 42 is that of the Five Year Plan set in statement 40 and by dividing 263,000 tons by 1.082. The estimate for 1955 was derived by multiplying the estimate derived for 1954 by 1.192 (see statement 44). Then by dividing this report's estimate for 1954 by 1.174 (see statement 39) an estimate was derived for 1953.

(2) Natural Asphalt.

(a) Statements of Production of Natural Asphalt in 1938 and 1945-55.

Statement Number	Production Year	Allegation
1	1938	Recorded Production of asphalt, 20,000 tons
2	1946	Recorded Production of asphalt, 18,000 tons
3	1947	Recorded Production of asphalt, 21,000 tons
4	1948	Recorded Production of asphalt, 28,500 tons
5	1948	Recorded Production of bitumen, 1.426 times 1938
6	1949	Planned Production of bitumen, according to the Two Year Plan, 1.24 times 1948
7	1949	Recorded Production of asphalt, 29,200 tons
8	1949	Recorded Production of bitumen at Selenice, 1.174 times the plan
9	1949	Recorded Production of bitumen at Selenice, 1.74 times 1938
10	1949	Recorded Production of bitumen at Selenice, 1.22 times 1948
11	1949	Recorded Dobycha ochishchennogo bituma (extraction of refined bitumen) rose by 400.8 percent in comparison with 1945
12	1945-49	(Production of the petroleum industry not mentioned in a newspaper account in which the development of other principal Albanian industries was clearly outlined.)
13	1950	Planned Production of bitumen, according to the Two Year Plan, 1.60 times 1948
14	At end of 1950	Planned Production of asphalt, according to the Two Year Plan, 1.23 times that at the end of 1948
15	1950 (First quarter)	Recorded Production of natural bitumen, 1.70 times that of first quarter of 1949

50X1

50X1

50X1

Statement Number	Production Year	Allegation	
16	1950 (First quarter)	Recorded	Production of natural bitumen, 1.05 times plan for the quarter
17	1950 (First half)	Recorded	Production of natural bitumen, not mentioned in plan fulfillment report
18	1950	Recorded	Production of asphalt, 35,000 tons
19	1951	Recorded	Production of asphalt, 41,000 tons
20	At end of 1951	Recorded	Production of bitumen, more than 2 times 1938
21	1951	Recorded	Production of bitumen, 1.151 times 1950
22	1952	Planned	Production of bitumen, 1.29 times 1951
23	1952 (First quarter)	Recorded	Production of bitumen, 1.490 times that of the first quarter of 1951
24	1952	Recorded	Production of asphalt, 51,000 tons
25	1952	Recorded	Bitumen mining, 1.33 times 1950
26	1952	Recorded	Production of natural asphalt, 0.993 times 1951
27	1953	Planned	Production of bitumen, 1.50 times 1952
28	1953	Recorded	Production of bitumen, not mentioned in 1953 plan fulfillment report
29	1954 (First half)	Recorded	Production in bitumen, 1.25 times that of the first half of 1953
30	1954 (First 9 months)	Recorded	Production of bitumen, not mentioned in plan fulfillment report for first 9 months
31	1954	Recorded	Production of bitumen, not metioned in 1954 plan fulfillment report
32	1955	Planned	Production of asphalt, 1.158 times 1954.

50X1

Statement Number	Production Year	Allegation	
33	1955	Planned	Production of asphalt, 80,000 tons
34	1955	Planned	Production of ochishchennyy bitum (refined bitumen), 80,000 tons
35	1955	Planned	Production of natural'nogo bituma (natural bitumen), 100,000 tons
36	1955	Planned	Production of bitumen, 4 times (base not given)
37	1955	Recorded	Production of bitumen ore, 1.231 times that of 1954

50X1

(b) Interpretation of Statements.

It is difficult to tell whether the claims listed above specify the amounts of natural asphalt actually extracted from the earth or whether the claims specify the amount of ochishchennyy bitum, refined bitumen, or refined asphalt that is available after the primary processing of the natural asphalt. Analysis of the interpretations of claims indicated that a series of estimates and forecasts could be based on data selected from the list.

(c) Derivation of 1945-55 Estimates of Natural Asphalt in Table 5.

[redacted] (statement 33) states that planned production of asphalt in Albania in 1955 was 80,000 tons. [redacted] (statements 34 and 35) indicates that the 1955 goal of 80,000 tons refers to refined bitumen and that 100,000 tons is the 1955 goal for production of natural asphalt. [redacted] therefore, refers to the product of the primary processing of natural asphalt. Because less than 20 percent by weight apparently is lost in the primary processing of the natural asphalt (statements 34 and 35), indications of the

50X1
50X1
50X1
50X1

[redacted]

production of (refined) asphalt [redacted] used to measure production of natural asphalt. The margins of error assigned to these estimates of production of natural asphalt in Albania are calculated to compensate for any distortion resulting from the difficulty of differentiating between natural asphalt and refined asphalt. 50X1

The estimates of production of natural asphalt in Albania during 1946-52 were taken from statements 2, 3, 4, 7, 18, 19, and 24 -- [redacted] The estimate for 1945 was set arbitrarily at 10,000 tons in order partially to reflect production for 1945 compared with that of 1949 as indicated by statement 11. The estimate for 1954 was obtained by assuming that the goal indicated in statement 32 was the same goal established by the Five Year Plan (statement 35) and dividing 100,000 tons by 1.158. The estimate for 1955 was obtained by multiplying the estimate for 1954 by 1.231 (statement 37). 50X1

3. Bulgaria.

Although production of petroleum has been reported in Bulgaria,* no information is available concerning the volume of production, and no estimates or projections of production of petroleum components in Bulgaria are given in this report.

4. Czechoslovakia.

a. General.

There is no available information concerning the volume of production of natural gas liquids in Czechoslovakia during the period under study. Although it is assumed that possible production of natural gas liquids is almost negligible in view of the size of Czechoslovak production of other petroleum components, no estimates or projections of production of natural gas liquids in Czechoslovakia are given.

Estimated and projected production of petroleum components in Czechoslovakia in 1945-60 is shown in Table 6.**

* Section I, C, p. 9, above.
** Table 6 follows on p. 37.

Table 6

Estimated and Projected Production of Petroleum Components in Czechoslovakia a/
1945-60

	Crude Oil		Natural Gas	
Year	Production (Thousand Metric Tons)	Range of Error (Percent)	Production (Thousand Metric Tons)	Range of Error (Percent)
1945	14	+ or - 5	1.0	+ 200 to - 50
1946	29	+ or - 5	2.0	+ or - 100
1947	35	+ or - 10	1.9	+ or - 50
1948	30	+ or - 25	8.0	+ 75 to - 50
1949	60	+ or - 25	12	+ or - 80
1950	63	+ or - 2	20	+ or - 100
1951	74	+ or - 2	38	+ or - 40
1952	110	+ or - 2	55	+ or - 15
1953	120	+ or - 2	61	+ or - 15
1954	120	+ or - 2	70	+ or - 20
1955	130	+ or - 10	80	+ or - 20
1956	140		90	
1957	140		100	
1958	150		110	
1959	160		120	
1960	160		120	

a. All data are rounded to two significant figures.

b. Analyses of Statements of Production of Petroleum Components in Czechoslovakia and Derivation of Estimates in Table 6.

(1) Crude Oil.

(a) Statements of Production of Crude Oil in 1945-55.

Statement Number	Production Year	Allegation	
1	1945	Recorded	Production of petroleum, 13,700 tons
2	1946	Recorded	Production of petroleum, 28,800 tons
3	1947	Recorded	Production of petroleum, 36,189 tons
4	1947	Recorded	Production of naphtha, 32,468
5	1948	Planned	Production of naphtha, 82,000 tons
6	1948	Recorded	Production of petroleum, 27,622 tons
7	First Five Year Plan		Production of petroleum components not mentioned
8	1949	Planned	Production of naptha, 60,000 tons
9	1949	Planned	Processing of domestic crude oil in "Refineries of Mineral Oils," 36,000 tons
10	1949	Recorded	Dobycha nefti (extraction of oil), fulfilled the plan for 1949
11	1950	Planned	Production of naphtha, 80,000 tons
12	1950	Recorded	Production of crude oil, 63,000 tons

50X1

50X1

Statement Number	Production Year	Allegation
13	1950	Recorded Dobycha nefti, significantly overfulfilled the plan for 1950
14	1951	Planned Production of naphtha, 100,000 tons
15	1951	Production of petroleum components not mentioned in 1951 revision of the Five Year Plan
16	1951	Recorded Dobycha nefti, overfulfilled the plan for 1951
17	1951	Recorded Production of crude oil, 1.17 times that of 1950
18	1951	Recorded Production of crude oil, 74,000 tons
19	1951	Recorded Production of petroleum, 1.17 times that of 1950
20	1952	Planned Production of naphtha, 110,000 tons
21	1952 (First half)	Recorded Production of oil, 1.58 times that of the first half of 1951
22	1952	Recorded Production of oil especially exceeded the plan for the period
23	1952	Recorded Production of crude oil, 6 times that of 1932
24	1952	Recorded Production of crude oil, 1.50 times that of 1951
25	1952	Recorded Production of crude oil, 110,000 tons
26	1953	Planned Production of naphtha, 150,000 tons
27	1953	Planned Production of crude oil, 200,000 tons
28	1953	Production of petroleum components not mentioned in revision of the plan

50X1

50X1

50X1

State-ment Number	Production Year	Allegation	
29	1953	Recorded	Production of crude oil, 120,000 tons
30	1953	Recorded	Production of any petroleum component not mentioned in report on fulfillment of the plan for 1953
31	1953	Recorded	Production of neft' syraya 1.08 times that of 1952
32	1949-53	Recorded	Dobycha ... nefti za pyatiletku vozrosla pochti v tri raza (extraction of oil during the Five Year Plan rose almost by three times or production in 1953 was almost 4 times that of 1948)
33	1953	Recorded	Production of oil, 4 times that of 1948
34	1954 (First half)	Recorded	Production of crude oil, 1.10 times that of the first half of 1953
35	1954	Recorded	Extraction of crude oil, 1.03 times 1953
36	January 1955	Recorded	Level of production of crude oil, 4 times that of 1948

50X1

(b) Interpretation of Statements.

If statements 5, 8, 11, 14, 20, and 26 are considered long-range projections, which [redacted] implies that they are, the preceding claims are not significantly contradictory. The data were sufficiently adequate and consistent to be used as bases for a series of estimates of production of crude oil in Czechoslovakia for 1945-55. 50X1

(c) Derivation of Estimates of Crude Oil in Table 6.

The estimates of production of crude oil in Czechoslovakia during 1945 and 1946 are based on statements 1 and 2. The estimate for 1947 was based on the indication of 1947 production in statement 3, adjusted slightly in view of statement 4. The estimate for 1949 was derived by assuming that statements 8 and 10 refer to the same plan and by accepting their figures. The estimates for 1950, 1951, and 1952 were based on statements 12, 17, 18, 24, and 25 [redacted] The estimate for 1953 was furnished by statement 29 and is corroborated when statement 31 is applied to the estimate for 1952. The estimate for 1948 was obtained by dividing the estimate for 1953 by 4 (statements 32 and 33). The estimate for 1954 was obtained by multiplying the estimate for 1953 (120,000 tons) by 1.03 (statement 35). The estimate for 1955 was derived by consideration of the history of production indicated by other estimates, present productive capacity, and the estimated geological potential of Czechoslovakia. 50X1

(2) Natural Gas.

(a) Statements of Production of Natural Gas in 1932 and 1947-60.

Statement Number	Production Year	Allegations
1	1932	Recorded Production of natural gas, 900,000 cubic meters
2	1947	Recorded Production of natural gas, 0.1 percent of total gas production in Czechoslovakia

50X1

[redacted] 50X1

50X1

Statement Number	Production Year	Allegations	
3	1947	Recorded	Production of zemni plyn, 2,411,000 cubic meters
4	1948	Planned	Production of zemni plyn, 4,782,000 cubic meters
5	1949	Planned	Production of zemni plyn, 7,400,000 cubic meters
6	1950	Planned	Production of zemni plyn, 12,000,000 cubic meters
7	1951	Planned	Production of zemni plyn, 14,500,000 cubic meters
8	1951		Production of natural gas, not mentioned in plan fulfillment report for 1951
9	1952	Planned	Production of zemni plyn, 16,800,000 cubic meters
10	1952	Recorded	Production of natural gas, 70,000,000 cubic meters
11	1952	Recorded	Production of natural gas, 77 times that of 1932
12	1952	Recorded	Production of natural gas, 16.1 percent of total gas production in Czechoslovakia
13	1952	Recorded	Production of natural gas, 5,000 percent above that of 1948
14	1953	Planned	Production of zemni plyn, 20,500,000 cubic meters
15	1953	Recorded	Production of prirodnyy gaz (natural gas), 1.11 times that of 1952
16	1953		Production of natural gas, not mentioned in plan fulfillment report for 1953
17	1960	Planned	Production of natural gas, 17.6 percent of production of total gas in Czechoslovakia
18	1960	Planned	Public consumption of gas (natural gas only one component of this), 2 times that in 1952

50X1

(b) Interpretation of Statements.

An analysis of these claims indicates that the only firm data are those for 1947, 1952, and 1953; that the data appear sufficient for a projection of production of natural gas and of total gas by Czechoslovakia for 1960, and that a series of estimates and projections of production of natural gas in Czechoslovakia for 1945-60 may be made by interpolation and extrapolation.

(c) Derivation of the Estimates and Projections of Production of Natural Gas in Table 6.

Estimates and projections presented in Table 6 were obtained as follows: The figure given in statement 3 was accepted for 1947. Estimates for 1952 and 1953 were based on statements 10 and 15. It was decided that if a production of 70 million cubic meters (statement 10) of natural gas represented 16.1 percent of total production of gas in Czechoslovakia for 1952 (statement 12), total production of gas in Czechoslovakia for 1952 was approximately 434 million cubic meters. If the public consumption of gas -- total production of gas -- is supposed to be twice that of 1952 by 1960 (statement 18), it may be assumed that total production of gas in Czechoslovakia for 1960 should be approximately 870 million cubic meters. If natural gas is expected to contribute 17.6 percent of total production of gas in Czechoslovakia by 1960 (statement 18), production of natural gas in Czechoslovakia during 1960 should be approximately 150 million cubic meters. By applying a conversion factor 148/ of 790 tons per million cubic meters to the above figures, estimates and projections of 2,000, 55,000, 62,000, and 120,000 tons were obtained for production of natural gas in Czechoslovakia for 1947, 1952, 1953, and 1960, respectively. The other estimates and projections of production of natural gas in Table 6 were derived by interpolation and extrapolation from the figures for 1947, 1952, 1953, and 1960. An attempt was made in interpolating between 1947 and 1952 to show that the greater increase in production has occurred during the later years.

5. East Germany.

a. General.

Estimated and projected production of petroleum components in East Germany in 1952-60 is shown in Table 7.*

* Table 7 follows on p. 44.

Table 7

Estimated and Projected Production of Petroleum Components in East Germany a/
1952-60

	Crude Oil		Natural Gas Liquid		Total Liquid Petroleum Hydrocarbons		Natural Gas	
Year	Production (Thousand Metric Tons)	Range of Error (Percent)	Production (Thousand Metric Tons)	Range of Error (Percent)	Production (Thousand Metric Tons)	Range of Error (Percent)	Production (Thousand Metric Tons)	Range of Error (Percent)
1952	0		0.083	+ 10 to - 100	0.083	+ 10 to - 100	6.3	+ or - 15
1953	0		0.083	+ 10 to - 100	0.083	+ 10 to - 100	6.3	+ or - 15
1954	0		0.083	+ 10 to - 100	0.083	+ 10 to - 100	6.3	+ or - 15
1955	0.46	+ or - 20	0.083	+ 10 to - 100	0.54	+ or - 20	6.3	+ or - 15
1956	0.46		0.58		1.0		43.0	
1957	0.46		0.58		1.0		43.0	
1958	0.46		0.58		1.0		43.0	
1959	0.46		0.58		1.0		43.0	
1960	0.46		0.58		1.0		43.0	

a. All data are rounded to two significant figures. Totals are derived from unrounded figures and do not always agree with rounded data shown. Before 1952, production of petroleum components in East Germany is assumed to have been nonexistent.

b. Derivation of the Estimates and Projections in Table 7.

The estimates and projections shown in Table 7 were based on [redacted] a number of assumptions. A conversion factor 149/ of 790 tons per million cubic meters of natural gas was used in the calculations. 50X1

[redacted] 50X1

The assumptions made in the preparation of Table 7 are as follows:

(1) It was assumed that the "possible productive capacity" of the Fallstein 7 oil well mentioned in the reference 152/ was realized in 1955 and that this capacity will not be augmented by any new exploratory or developmental wells in East Germany before 1961.

(2) It was assumed that production of natural gas and of natural gas liquids did not resume in East Germany after World War II until 1952.

(3) It was assumed that the capacity to produce natural gas in East Germany remained stable during 1952-55 at the level for 1954 indicated in the reference 153/, that the potential capacity for production of natural gas in East Germany indicated in the same reference 154/ is to be realized by 1956 after the construction of the proposed pipelines, and that the East German capacity to produce natural gas during 1957-60 will remain stable at the level estimated for 1956.

(4) It was assumed that the East Germans have recovered and will recover those amounts of natural gas liquids which the reference 155/ indicates as available for recovery from the amount of natural gas which has been and will continue to be produced in East Germany. 156/

6. Hungary.

a. General.

Estimated and projected production of petroleum components in Hungary in 1945-60 is shown in Table 8.*

* Table 8 follows on p. 46.

Table 8

Estimated and Projected Production of Petroleum Components in Hungary a/
1945-60

Year	Crude Oil		Natural Gas Liquid		Total Liquid Petroleum Hydrocarbons		Natural Gas	
	Production (Thousand Metric Tons)	Range of Error (Percent)	Production (Thousand Metric Tons)	Range of Error (Percent)	Production (Thousand Metric Tons)	Range of Error (Percent)	Production (Thousand Metric Tons)	Range of Error (Percent)
1945	660	+ 2 to - 5	26	+ 10 to - 100	680	+ 2 to - 9	59	+ or - 5
1946	670	+ 5 to - 7	52	+ 15 to - 50	730	+ 6 to - 10	75	+ or - 20
1947	570	+ or - 3	52	+ or - 15	630	+ or - 4	92	+ or - 25
1948	480	+ 10 to - 7	52	+ 50 to - 15	530	+ 14 to - 8	110	+ or - 50
1949	510	+ 10 to - 7	52	+ 50 to - 15	560	+ 14 to - 8	130	+ or - 50
1950	500	+ 7 to - 11	52	+ 50 to - 15	550	+ 11 to - 12	140	+ or - 50
1951	490	+ 15 to - 11	52	+ 50 to - 15	540	+ 20 to - 11	160	+ or - 50
1952	560	+ 14 to - 11	52	+ 50 to - 15	610	+ 17 to - 11	180	+ or - 50
1953	830	+ 6 to - 3	52	+ 50 to - 15	880	+ 9 to - 4	200	+ or - 40
1954	1,200	+ 5 to - 3	52	+ 50 to - 15	1,300	+ 7 to - 4	210	+ 25 or - 50
1955	1,600	+ 5 to - 4	52	+ 50 to - 15	1,700	+ 7 to - 4	230	+ 25 or - 50
1956	1,800		52		1,800		240	
1957	1,800		52		1,900		250	
1958	1,900		52		1,900		270	
1959	1,900		52		2,000		290	
1960	1,900		52		2,000		300	

a. All data are rounded to two significant figures. Totals are derived from unrounded figures and do not always agree with rounded data shown.

b. Analyses of Statements of Production of Petroleum Components in Hungary and Derivation of the Estimates in Table 8.

The series of estimates and projections concerning crude oil was first derived in the manner outlined below. Second, the series of estimates and projections of production of natural gas liquids was derived. By adding the natural gas liquids in Table 8 to those on the same line under crude oil, there was derived a series of estimates and projections of production of total liquid petroleum hydrocarbons in Hungary. The series of estimates and projections of production of natural gas in Hungary was obtained by the means shown below.

(1) Crude Oil.

(a) Statements of Production of Crude Oil in Hungary in 1945-56.

50X1

Statement Number	Production Year	Allegation
1	1945	Recorded Production of petroleum, 655,755 tons
2	1945	Recorded Production of crude oil, 655,777 tons
3	1946	Recorded Production of petroleum, 660,641 tons
4	1946	Recorded Production of crude oil, 688,383 tons
5	1947	Recorded Production of petroleum, 574,632 tons
6	1947	Recorded Production of crude oil, 569,844 tons
7	1948	Recorded Production of petroleum, 475,186 tons
8	1948	Recorded Production of crude oil, 499,000 tons

50X1

50X1

Statement Number	Production Year	Allegation
9	1948	Recorded Production of crude oil, 470,000 tons
10	1949	Recorded Production of crude oil, 510,000 tons
11	1949	Recorded Production of mineral oil, 1.036 times that of 1948
12	1949	Recorded Production of mineral oil, 0.993 times the plan for 1949
13	1949	Recorded Production of petroleum, 497,000 tons
14	1950	Recorded Production of crude oil, "retrogression rather than progress has been experienced ... Oil production is also lagging both in drilling and research."
15	1950-54	Production of petroleum components, not mentioned in the First Five Year Plan
16	1950	Recorded Production of neft' did not fulfill the plan for 1950
17	1950	Recorded Extraction of mineral oil, 754,518 tons
18	1951-54	Production of petroleum components, not mentioned in the revised Five Year Plan
19	1951	Recorded Production of petroleum, below plan requirements until the last quarter.
20	1951	Recorded Production of neft' did not meet the plan for 1951
21	1951	Recorded Production of petroleum components, not mentioned in plan fulfillment report for 1951
22	1951	Recorded Extraction of mineral oil, 830,883 tons

50X1

50X1

Statement Number	Production Year	Allegation	
23	1952	Planned	Production of crude oil, 1.50 times that of 1951
24	1952, (First quarter)	Recorded	Production of crude oil, not mentioned in the report on plan fulfillment during the first quarter of 1952
25	1952, (Second quarter)	Recorded	Production of crude oil, not mentioned in the report on plan fulfillment during the second quarter of 1952
26	1952, Jan-Oct	Recorded	Production of crude oil, 1.176 times that of the Jan-Oct period, 1951
27	1952	Recorded	Production of crude oil, not mentioned in report on fulfillment of the plan during 1952
28	1952	Recorded	Extraction of mineral oil, 830,626 tons
29	1953	Recorded	Production of crude oil, 830,000 tons
30	1953	Recorded	Extraction of mineral oil, 958,859 tons
31	1954	Planned	Production of petroleum, 1.346 times that of 1953
32	1954	Planned	Production of crude oil, 1,118,000 tons
33	1954, Aug	Recorded	Production of crude oil, rate of 1,115,000 tons per year
34	1954, Jan-Sep	Recorded	Extraction of mineral oil, 830,171 tons
35	1954	Recorded	Production of crude oil, 2 times that of 1949
36	At end of 1954	Recorded	Production of crude oil, 2.40 times that at the end of 1949
37	1954	Recorded	Extraction of crude oil, 1.439 times that of 1953

50X1

Statement Number	Production Year	Allegation	
38	1954	Recorded	Production of petroleum exceeded the plan by 99,000 tons
39	At end of 1954	Recorded	Production of crude oil, 3.5 times that at the end of 1949
40	1954	Recorded	Production of crude oil, 1,219,000 tons
41	1954	Recorded	Production of petroleum, 1,118,000 tons
42	1954	Recorded	Production of crude oil, 1,219,000 tons
43	At end of 1954	Recorded	Production of crude oil, 711,000 tons more than at end of 1949
44	1955	Planned	Production of crude oil, 1,584,000 tons
45	1955	Planned	Production of crude oil, 1.29 times that of 1954
46	1955, (First quarter)	Recorded	Production of crude oil, substantially increased over that of the first quarter of 1954
47	1955	Recorded	Production of oil has fallen (as of Jul-Aug)
48	1955	Recorded	Production of oil was 1,600,000 tons, or 31.6 percent more than in 1954, or 1.7 percent more than the plan estimate for 1955
49	1956	Planned	Production of crude oil, to be about 1,750,000 tons, or 1.066 times the anticipated (as of mid-November 1955. BAT) production in 1955

50X1

50X1

50X1

(b) Interpretation of Statements.

Analysis of the interpretations of claims given above reveals that with the exception of statements 17, 22, 28, 30, and 34 [redacted] and statements 39 and 41, the interpretations are consistent. Analysis of the claims shows that there are no quantitative indexes of production for 1950, 1951, and 1952. It was decided that a series of estimates and projections of production of crude oil in Hungary for 1945-55 could be made [redacted] 50X1 50X1 50X1

(c) Derivation of Estimates of Crude Oil in Table 8.

The estimate for 1945 is supported by statements 1 and 2. Estimates for 1946 and 1947 were obtained by compromising [redacted] The estimate for 1948 was obtained by compromising among statements 7, 8, and 9. Production for 1949 was estimated at 510,000 tons in accordance with statement 10. If all the statements originating from [redacted] statements 39 and 41 are rejected because of their general inconsistency with the rest of the data, a body of data remains which agrees with the estimates for 1945-49 and with the estimates of 830,000, 1,219,000, and 1,600,000 tons for 1953, 1954, and 1955, respectively. 50X1 50X1

Estimates for 1950-52 must be based on the best available information on production from the old Zala fields and on the rise in production of crude oil from the Nagylengyel fields after their discovery in 1950. The date of the beginning of drilling of the first well at Nagylengyel is known to have been 29 August 1950. 192/ It is also known that the high-viscosity crude oil from Nagylengyel did not begin to reach the refineries until 1951. 193/ Output of Nagylengyel crude oil has been 0.6, 13.6, and 44.3 percent of total Hungarian production of crude oil for 1951, 1952, and 1953, respectively. 194/ By applying the figure of 44.3 percent to the estimate of 830,000 tons for 1953, an estimate of 368,000 tons is obtained for total Nagylengyel production in 1953, indicating that production from the old Zala fields and any other new discoveries could have totaled only 830,000 minus 368,000 -- 462,000 tons in 1953. By straight-line interpolation between the estimate of 510,000 tons for 1949 and the estimate of 462,000 tons for 1953,

estimates of 500,000, 490,000 and 480,000 tons for production of crude oil in the Hungarian oilfields other than Nagylengyel for 1950, 1951, and 1952, respectively, are obtained. If the Nagylengyel production for 1950-52 was 0, 0.6, and 13.6 percent of total production of total liquid petroleum hydrocarbons in Hungary, 195/ it is assumed that the remainder -- 100, 99.4, and 86.4 percent -- was contributed by production of 500,000, 490,000, and 480,000 tons from the Zala and other fields during 1950, 1951, and 1952, respectively. By dividing 500,000, 490,000 and 480,000 by 1.0, 0.994, and 0.864, respectively, the estimates for 1950, 1951, and 1952 were obtained.

(2) Natural Gas Liquids.

Combination absorption and pressure-maintenance plants were constructed in the Zala fields in the early 1940's, damaged by air raids during World War II, and reconstructed by the Red Army in March 1945. 50X1 50X1

50X1

By assuming that these plants were operating at 50 percent of capacity during 1945 and at least at capacity during later years, the estimates and projections of production of natural gas liquids given in Table 8 were obtained.

(3) Natural Gas.

(a) Statements of Production of Natural Gas in Hungary in Selected Years, 1938-55:

50X1

Statement Number	Production Year	Allegation
1	1938	Recorded Total** production of natural gas at the Zala fields, 14,999,000 cubic meters
2	1945	Recorded Total** production of natural gas at the Zala fields, 363,456,000 cubic meters

50X1

** Includes those amounts of natural gas which were wasted or returned to formation.

50X1
50X1

Statement Number	Production Year	Allegation	
3	1945	Recorded	Production of natural gas, 363,500,000 cubic meters
4	1945	Recorded	Production of natural gas implied to have been the peak annual production up until 1948
5	At end of 1948	Recorded	Dobycha prirodnogo gaza (extraction of natural gas), 25.3 times the prewar level of 1938
6	Jan 1949	Planned	"After deducting gas consumption for the manufacture of carbon black to be established at Lovaszi and that of the electric power plant, it was found that a residual quantity of 80,000 cubic meters per day could be conveyed to Budapest." (In connection with this, it is stated elsewhere 198/ that the plan was to use the pipeline on an alternating basis of 3 days for shipping of natural gas and 3 days for shipping of liquid petroleum hydrocarbons.)
7	1949		Production of natural gas, not mentioned in report concerning the fulfillment of the Three Year Plan
8	1950-54		Production of natural gas not mentioned in outline of the First Five Year Plan
9	At end of 1950	Planned	Dobycha prirodnogo gaza (extraction of natural gas), 21.7 times that of some prewar year
10	1950	Recorded	Dobycha prirodnogo gaza, above the plan for 1950
11	1950	Recorded	The amount of natural gas transported in oil pipeline from Zala fields to Budapest, 1.23 times the amount transported that way in 1949

50X1

Statement Number	Production Year		Allegation
12	1950	Recorded	Production of natural gas, 102,032 tons
13	1951-54		Production of natural gas, not mentioned in report concerning the revised Five Year Plan
14	1951	Recorded	The amount of natural gas transported in oil pipeline from Zala fields to Budapest, 1.05 times the amount transported that way in 1949
15	1951	Recorded	Dobycha prirodnogo gaza (extraction of natural gas), above the plan for 1951
16	1951	Recorded	Production of natural gas, 265,857 tons
17	1952	Recorded	The amount of natural gas transported in oil pipeline from Zala fields to Budapest was 1.12 times the amount transported that way in 1949
18	1952	Recorded	Production of natural gas, not mentioned in report concerning the fulfillment of the plan for 1952
19	1952	Recorded	Production of natural gas, 358,916 tons
20	1953	Recorded	The amount of natural gas transported in oil pipeline from Zala fields to Budapest, was 2.32 times the amount transported that way in 1949
21	1953	Recorded	Production of natural gas, 454,378 tons
22	Nov 1954	Planned	Daily production of natural gas to be carried to Ujpest in tankers, 30,000 cubic meters
23	Dec 1954		Pipelines just begun to be laid to carry Orszentmiklos natural gas to the Orszentmiklos railway station

50X1

50X1

50X1

50X1

Statement Number	Production Year	Allegation	
24	Nov 1954	Recorded	"The Transdanubian oilfields deliver through the oil pipelines an average of 80,000 cubic meters per day, ..."
25	1954	Recorded	The amount of natural gas transported in oil pipeline from Zala fields to Budapest, 2.63 times the amount transported that way in 1949
26	1954, Jan-Sep	Recorded	Production of natural gas, 345,205 tons
27	1954		Production of natural gas was not mentioned in a report on fulfillment of plan for 1954
28	1955	Planned	The amount of natural gas to be transported in oil pipeline from Zala fields to Budapest, 2.83 times the amount transported that way in 1949
29	1955, (First quarter)		Production of natural gas was not mentioned in report on fulfillment of the Plan for the quarter
30	1955, May	Recorded	Monthly production of bottled natural gas at the Hajduszoboszlo Natural Gas Producing and Marketing Enterprise was 100,000 cubic meters

(b) Interpretation of Statements.

The list of interpretations of claims gives indications of total production of natural gas in Hungary for 1945, 1948, 1950, 1951, 1952, 1953, and for the first 9 months of 1954.

50X1

50X1

50X1

If statements 12, 16, 19, 21, and 26 are rejected, only statements 1 through 5 remain to indicate production of natural gas in Hungary during any year since World War II. Research indicates that the figure of 363.5 million cubic meters for total production of natural gas in Hungary for 1945 includes the amount of gas which was wasted or returned to formation. 218/ About 70.9 million cubic meters of these 363.5 million cubic meters were used by the operating company in 1945, and only 3.7 million cubic meters were sold in that year. 219/ More than 218.2 million cubic meters of the total for 1945 were wasted, and another 70.7 million cubic meters were returned to formation. 220/ Production of natural gas in 1948, therefore, could not have exceeded greatly that of 1945, because 25.3 (statement 5) multiplied by 14.999 (statement 1) indicates that production of natural gas in Hungary in 1948 was about 380 million cubic meters. Because production of 363.5 million cubic meters of natural gas in Hungary in 1945 was apparently (statement 4) the peak production through 1947, it is assumed that the figure of 380 million cubic meters for 1948 includes wasted gas and gas which was returned to formation.

Analysis of the list of claims and their backgrounds leads, therefore, to the rejection of statements 12, 16, 19, 21, and 26 because of their inconsistency with other information and to consideration of the estimates of total production of natural gas in Hungary for 1945-48 as inclusive of natural gas that was wasted or returned to formation. In order to make estimates and projections of production of natural gas in Hungary, it is necessary to make estimates of the disposition during 1946-55 of the total amount of natural gas withdrawn from the Transdanubian oilfields of Hungary and to determine the volume of production of natural gas from fields other than the Transdanubian.

(3) Derivation of Estimates and Projections of Production of Natural Gas in Table 8.

[redacted] only 74.4 million 50X1
cubic meters of the 363.5 million cubic meters of natural gas withdrawn from the wells in the Transdanubian oilfields of Hungary in 1945 were used by the operating company or were sold. Production of natural gas in the Transdanubian oilfields for 1945, therefore, has been estimated at 74.4 million cubic meters, or -- after multiplying by a factor 222/ of 790 tons per million cubic meters and rounding -- at 58,800 or 59,000 tons.

An electric power plant is reported 223/ to have been using significant quantities of Transdanubian natural gas by the end of 1948, and between 1949 and 1954 a carbon black plant is reported 224/ to have started using substantial quantities of that gas. It is reported 225/ as of February 1955, however, regarding the production of natural gas from the Transdanubian oilfields that "besides the oilfields' own gas consumption only Budapest consumes limited amounts of gas admixed to town gas; carbon black fabrication consumes substantial amounts; and there are some smaller consumers such as the railroad, the town of Magykanizsa and its glass works, some villages and brickworks." [redacted] 50X1
"The case is that natural gas has been transported to Budapest /from the Transdanubian oilfields/ since 1949, and there is still an excess of gas." On the basis of this information, it is assumed that actual production (exclusive of gas wasted or returned to formation) of natural gas from the Transdanubian oilfields in 1955 did not exceed the figure for the total withdrawal of natural gas from those fields in 1945 minus the amount returned to formation in that year. The assumption is supported by two facts: (1) that production from the old Zala oilfields is declining 227/ and should therefore require that increasing amounts of the natural gas being withdrawn with the crude oil be returned to the strata, and (2) that no production of natural gas is possible in the recently developed Nagylengyel oilfields. 228/ The need to increase the amount of natural gas returned to formation each year is assumed to have offset any increase in the total amount of natural gas withdrawn annually from the Transdanubian oilfields. [redacted] 50X1
[redacted] the total natural gas available for consumption in the Zala oil- 50X1
fields in 1945 after the required amount was returned to formation was about 293 million cubic meters. It was assumed that the figure of 293 million cubic meters represents a reasonable estimate of total production

(exclusive of the amount of natural gas wasted or returned to formation) of natural gas in the Transdanubian oilfields in 1955. By multiplying by a factor 230/ of 790 tons per million cubic meters, 293 million cubic meters is converted to 230,000 tons.

Having estimated the growth in production of natural gas in the Transdanubian oilfields of Hungary from 1945 to 1955, information on production of natural gas from oil or gas fields other than the Transdanubian is needed in order to estimate and project total production of natural gas in Hungary during any year. Available information (statements 22, 23, and 30) indicates that production of natural gas from fields other than the Zala oilfields was insignificant for 1945-54. It is assumed that for 1945-55, virtually all production of natural gas in Hungary came from the Transdanubian oilfields. The estimates of 59,000 tons and 230,000 tons for production of natural gas in the Transdanubian oilfields of Hungary for 1945 and 1955, respectively, therefore, were taken as the estimates of total production of natural gas in Hungary in those years.

The estimates of production of natural gas in Hungary for years 1946-54 were derived by straight-line interpolation between the estimate of 59,000 tons for 1945 and the estimate of 230,000 tons for 1955 and by subsequent rounding to 2 significant digits.

7. Poland.

a. General.

Estimated and projected production of petroleum components in Poland in 1945-60 is shown in Table 9.*

b. Analyses of Statements of Production of Petroleum Components in Poland and Derivation of Estimates in Table 9.

In deriving the estimates shown in Table 9*, a series of estimates and projections concerning crude oil was made by the means outlined below. The series of estimates and projections of production of natural gas in Poland was made up as shown below.

* Table 9 follows on p. 59.

Table 9

Estimated and Projected Production of Petroleum Components in Poland a/
1945-60

Year	Crude Oil		Natural Gas	
	Production (Thousand Metric Tons)	Range of Error (Percent)	Production (Thousand Metric Tons)	Range of Error (Percent)
1945	110	+ or - 5	110	+ or - 7
1946	120	+ or - 5	120	+ or - 7
1947	130	+ or - 5	120	+ or - 7
1948	140	+ or - 5	120	+ or - 7
1949	150	+ or - 5	110	+ or - 7
1950	160	+ or - 5	140	+ or - 7
1951	180	+ or - 5	220	+ or - 7
1952	200	+ or - 5	240	+ or - 7
1953	190	+ or - 5	250	+ or - 7
1954	190	+ or - 5	280	+ or - 7
1955	190	+ or - 10	310	+ or - 7
1956	200		320	
1957	200		320	
1958	210		330	
1959	210		340	
1960	220		350	

a. All data are rounded to two significant figures. Totals are derived from unrounded figures and do not always agree with rounded data shown.

(1) Crude Oil.

(a) Statements of Production of Crude Oil in 1946-55.

Statement Number	Production Year	Allegation	
1	1946	Planned	Production of crude oil, 130,000 tons
2	1946	Recorded	Production of crude oil, 1.106 times that of 1945
3	1946	Recorded	Production of crude petroleum 116,742 tons
4	1947	Planned	Production of crude oil, 135,000 tons
5	1947	Recorded	Production of crude oil, 1.215 times that of 1945
6	1947	Recorded	Production of crude oil, 1.0984 times that of 1946
7	1947	Recorded	Production of crude petroleum, 128,000 tons
8	1947	Recorded	Production of crude oil, 128,000 tons
9	1947	Recorded	Production of crude petroleum, 128,238 tons
10	1948	Planned	Production of crude oil, 155,000 tons
11	1948	Planned	Production of crude petroleum, 128,000 tons
12	1948	Planned	Production of crude petroleum, 135,000 tons, (anticipated production, actually.)
13	1948	Recorded	Production of crude oil, explicitly not mentioned in a report commenting on that production during 1938, 1947, 1948, 1949, 1953, and 1955
14	1948	Recorded	Production of crude oil, 1.330 times that of 1945
15	1948	Recorded	Production of crude oil, 1.0943 times that of 1947

50X1

50X1

Statement Number	Production Year	Allegation	
16	1949	Planned	Production of crude petroleum, 142,000 tons
17	1949	Planned	Production of crude oil, 195,000 tons
18	1949	Recorded	Production of petroleum, 1.07 times production planned for 1949
19	1949	Recorded	Production of crude oil, 1.436 times that of 1945
20	1949	Recorded	Production of crude oil, 1.0791 times that of 1948
21	1949	Recorded	Production of petroleum, 1.08 times that of 1948
22	1949	Recorded	Production of crude oil, explicitly not mentioned in a report commenting on that production during 1938, 1947, 1948, 1949, 1953, and 1955
23	1949	Recorded	Production of crude oil, 140,000 tons
24	1950	Planned	Production of any petroleum component, not mentioned in the Polish economic plan for 1950
25	1950	Planned	Production of petroleum, 153,000 tons
26	1950	Recorded	Production of crude oil, 1.534 times that of 1945
27	1950	Recorded	Production of crude oil, 1.01 times production planned for 1950
28	1950	Recorded	Production of neft' (oil), 1.01 times production of neft' planned for 1950
29	1950	Recorded	Production of neft', 1.07 times that of 1949
30	1950	Recorded	Production of crude oil, 1.0687 times that of 1949
31	1950	Recorded	Production of crude oil, 150,000 tons
32	1950	Recorded	Production of crude oil, 162,000 tons
33	1950	Recorded	Production of crude oil, 155,300 tons
34	1951	Planned	Production of crude oil, 1.25 times that of 1950
35	1951	Planned	Production of petroleum, 157,000 tons

50X1

50X1

Statement Number	Production Year		Allegation
36	1951	Planned	Production of crude oil, increased by 1 percent during the year
37	1951		Production of any petroleum component, not mentioned in report on fulfillment of the plan during 1951
38	1951	Recorded	Production of crude oil, 1.718 times that of 1945
39	1951	Recorded	Production of crude oil, 1.0839 times that of 1950
40	1951	Recorded	Production of petroleum, 1.08 times that of 1950
41	1951	Recorded	Production of crude oil, 1.08 times that of 1950
42	1951	Recorded	Production of crude oil, 175,000 tons
43	1952	Planned	Production of petroleum, 160,000 tons
44	1952	Planned	Production of petroleum, 233,000 tons
45	1952	Planned	Production of crude oil, 1.354 times that of 1951
46	1952	Recorded	Production of crude oil not including the production of the Ustrzykl fields, 1.108 times that of 1951
47	1952	Recorded	Production of crude oil (not indicated whether or not this included production of the Ustrzykl fields), 1.19 times that of 1951
48	1952	Recorded	Production of crude oil, 1.942 times that of 1945
49	1952	Recorded	Production of petroleum, 208,000 tons
50	1953	Planned	Production of petroleum, 165,000 tons
51	1953, (Third quarter)	Recorded	Extraction of crude oil did not fulfill the plan
52	1953	Recorded	Production of crude oil, explicitly not mentioned in a report commenting on that production during 1938, 1947, 1948, 1949, 1953, and 1955

50X1

50X1

50X1

Statement Number	Production Year	Allegation	
53	1953	Recorded	Production of crude oil, 1.798 times that of 1945
54	1954	Planned	Production of oil, was not increased along with other goals in the Six Year Plan revision
55	1954	Planned	Production of petroleum, 175,000 tons
56	1954	Planned	Production of oil, around the 1953 level
57	1954	Recorded	Production of any petroleum component other than natural gas, not mentioned in the report on the fulfillment of the plan for 1954
58	1954	Recorded	Production of any petroleum component other than natural gas, not mentioned in the report on the fulfillment of the plan for 1954
59	1955	Planned	Production of petroleum, 185,000 tons
60	1955	Planned	Production of rock oil, 2.601 times that of 1949
61	1955	Planned	Production of crude oil, 394,000 tons
62	1955	Planned	Production of neft' (oil), 394,000 tons
63	1955	Planned	Production of petroleum, set at 394,000 tons "at the request of the Soviet Commission"
64	1955	Recorded	Production of crude oil, 0.98 times that of 1954

(b) Interpretation of Statements.

Analysis of the above list of interpretations of claims shows that, with the exception of those claims which referred to planned production, the claims referring to production of crude oil

50X1

in Poland are surprisingly consistent. The deviation of plan figures is to be expected. If production of crude oil in Poland is estimated at the figures shown in the second column of Table 9, all the statements of recorded production agree, with the exception of statements 23, 31, 39, 40, 41, 42, 46, 47, and possibly 49. [redacted] 50X1

[redacted] 50X1

[redacted] the conflicting information on production of crude oil in Poland for 1951 and 1952 may be attributed to differences in the statistical methods used in dealing with production from the Ustrzykl fields. Production from these fields may have complicated statistical reporting procedures when the fields were returned to Poland in the latter half of 1951. 50X1

(c) Derivation of Estimates of Crude Oil in Table 9.

A firm figure of 116,742 tons is available for total production of crude oil in Poland during 1946 from the Statistical Yearbook of Poland, 1948 (statement 3). [redacted] relates 1946 production to that of 1945 by stating that 1946 production was 1.106 times that of 1945. An estimate of 105,553 tons is derived for total production of crude oil in Poland during 1945 by dividing 116,742 by 1.106. By multiplying 105,553 by the various indexes [redacted] indicated in statements 5, 14, 19, 26, 38, 48, and 53, products were obtained which, when rounded, appear as the estimates in the second column of Table 9 for 1947-53. The estimate for 1954 was set at 190, the estimate for 1953, in accordance with statement 56. The estimate for 1955 was obtained by multiplying by 0.98 the figure which when rounded yielded the estimate for 1954 (statement 64). Each of the projections is the product of appraisal of the history of production indicated by the other estimates, the present productive capacity, and the estimated geological potential of Poland. 50X1 50X1

(2) Natural Gas Liquids.

(a) Statements of Production of Natural Gas Liquids in 1945-55.

Statement Number	Production Year	Allegation	
1	1945	Recorded	Production of natural gasoline, 2,263 tons
2	1946	Planned	(Anticipated, actually, as of 21 Sep 46) production of liquid gas and gasoline, 3,000 tons
3	1946	Recorded	Production of natural gasoline, 1.42 times that of 1945
4	1946	Recorded	Production of gasoline from gas and crude oil, 1.61 times that of 1945
5	1947	Planned	Production of liquid gas and gasoline, 5,000 tons
6	1947	Recorded	Production of natural gasoline, 2.16 times that of 1945
7	1947	Recorded	Production of gasoline from gas and crude oil, 2.63 times that of 1945
8	1948	Planned	Production of liquid gas and gasoline, 12,000 tons
9	1948	Recorded	Production of natural gasoline, 3.56 times that of 1945
10	1948	Recorded	Production of gasoline from gas and crude oil, 4.42 times that of 1945
11	1949	Planned	Production of liquid gas and gasoline, 16,000 tons
12	1949	Recorded	Production of gasoline from gas and crude oil, 5.60 times that of 1945
13	1950		Production of any petroleum component, not mentioned in report setting forth the fulfillment of the plan during 1950
14	1950	Recorded	Production of gasoline from gas and crude oil, 6.55 times that of 1945
15	1951	Recorded	Production of gasoline from gas and crude oil, 7.15 times that of 1945
16	1952	Recorded	Production of gasoline from gas and crude oil, 7.252 times that of 1945

50X1

50X1

50X1

Statement Number	Production Year	Allegation	
17	1953	Recorded	Production of gasoline from gas and crude oil, 6.654 times that of 1945
18	1954	Planned	Production of gasoline from gas and crude oil, 6.55 times that of 1945
19	1954		Production of natural gas liquids, not mentioned in report setting forth the fulfillment of the plan during 1954
20	1955	Planned	Prpizvodstvo gazobenzina (production of natural gasoline), 2.615 times that of 1949
21	1955	Planned	Production of gasoline from gas and crude oil, 1.515 times that of 1949

(b) Interpretation of Statements.

None of the statements can be identified positively as referring to the production of natural gas liquids proper. Even statements 2, 5, 8, and 11 are taken from a context in which those statements could best be considered as inclusive of gasoline other than natural gasoline. By means of the information in statements 1, 3, 6, and 9, estimates could be derived for the production of natural gasoline in Poland during 1945-48, thus indicating what the minimum production of natural gas liquids in Poland was during those years. The information in the foregoing listing was judged inadequate, however, for making a series of estimates of the production of natural gas liquids in Poland during 1945-60.

(3) Natural Gas.

(a) Statements of Production of Natural Gas in 1946-55.

50X1

50X1

Statement Number	Production Year	Allegation	
1	1946	Planned	(Or anticipated as of 21 Sep 46) production of natural gas, 130,000,000 cubic meters
2	1946	Recorded	Production of natural gas, 1.11 times that of 1945
3	1946	Recorded	Total production of natural gas, 149,294,000 cubic meters
4	1947	Planned	Production of natural gas 130,000,000 cubic meters
5	1947	Recorded	Production of natural gas, 1.086 times that of 1945
6	1947	Recorded	Production of natural gas, 148,000,000 cubic meters
7	1947	Recorded	Total production of natural gas, 148,264,000 cubic meters
8	1948	Planned	Production of natural gas, 150,000,000 cubic meters
9	1948	Planned	Production of natural gas, 210,000,000 cubic meters
10	1948	Planned	Production of natural gas, 162,000,000 cubic meters
11	1948	Recorded	Production of natural gas, 1.145 times that of 1945
12	1949	Planned	Production of natural gas, 200,000,000 cubic meters
13	1949	Planned	Production of natural gas, 200,000,000 cubic meters
14	1949	Planned	Production of natural gas, not mentioned in report on the fulfillment of the economic plan during 1949
15	1949	Recorded	Production of natural gas, 0.993 times that of 1945
16	1950	Planned	Production of natural gas, 220,000,000 cubic meters
17	1950	Planned	Production of natural gas, not mentioned in report on the fulfillment of the economic plan during 1950

50X1

50X1

50X1

Statement Number	Production Year	Allegation	
18	1950	Recorded	Production of natural gas, 1.333 times that of 1945
19	1951	Planned	Production of natural gas, 230,000,000 cubic meters
20	1951	Planned	Production of natural gas, 1.11 times that (actually) produced during 1950
21	1951	Planned	Production of natural gas, not mentioned in two different references to the report on the fulfillment of the economic plan during 1951
22	1951	Recorded	Production of natural gas, 2.03 times that of 1945
23	1951	Recorded	Production of natural gas, 1 1/2 times that of 1950
24	1952	Planned	Production of natural gas, 240,000,000 cubic meters
25	1952	Planned	Production of natural gas, not mentioned in the report on the fulfillment of the economic plan during 1952
26	1952	Recorded	Production of natural gas, above the plan for 1952
27	1952	Recorded	Production of natural gas, 2.291 times that of 1945
28	1953	Planned	Production of natural gas, 265,000,000 cubic meters
29	1953	Recorded	Production of natural gas, 2.334 times that of 1945
30	1954	Planned	Production of natural gas, 285,000,000 cubic meters
31	1954	Planned	Production of natural gas, 1.088 times the amount of natural gas produced in 1953
32	1954	Planned	Production of natural gas, 2.429 times that of 1945
33	1954	Recorded	Production of natural gas, 1.12 times that amount of natural gas produced in 1953

50X1

50X1

Statement Number	Production Year	Allegation
34	1954	Recorded Production of natural gas, 1.13 times that amount of natural gas produced in 1953
35	1955	Planned Production of natural gas, 3.520 times that of 1949
36	1955	Planned Production of natural gas, 310,000,000 cubic meters
37	1955	Planned Production of prirodnogo gaza (natural gas), 480,000,000 cubic meters
38	1955	Recorded Production of natural gas has gone up over 2 1/2 times in the past 10 years
39	1955	Recorded Production of natural gas, 1.10 times that of 1954

(b) Interpretation of Statements.

50X1

Analysis of the above indicates three principal facts: that firm figures for production of natural gas in Poland during 1946 and 1947 are available (statements 3 and 7) [redacted] that means are available (statements 2, 5, 11, 15, 18, 22, 27, and 29 -- [redacted] for deriving estimates of production for 1946-53 based50X1 on a figure for production in 1945; and that with few exceptions the remaining data refer to planned production. The indications of production given by the claims referring to planned production deviate from the estimates given below, but not more than would be expected. Besides the claims referring to planned production, the remaining data given in the above list of interpretations of claims are consistent with the estimates of production of natural gas in Poland shown in Table 9.

[redacted]

50X1

(c) Derivation of Estimates of Natural Gas in Table 9.

In deriving estimates of production of natural gas in Poland, an estimate of production in 1945 was obtained. This could be obtained either by dividing 149,294,000 (statement 3) by 1.11 (statement 2) or by dividing 148,264,000 (statement 7) by 1.086 (statement 5). An estimate of 134,500,000 cubic meters was obtained by the former procedure, and an estimate of 136,520,000 cubic meters was obtained by the latter procedure for 1945 production. The claims were equally consistent or inconsistent whether compared with a series of estimates based on 134,500,000 cubic meters or a series based on 136,520,000 cubic meters. The figure based on the 1946 estimate was used as the foundation figure for 1945 because it was believed that the figure for 1947 was more likely to be provisional or preliminary than the 1946 estimate.

Estimates of production of natural gas in Poland for 1946-53 in units of cubic meters were derived by multiplying the 134,500,000 figure for 1945 by the indexes presented in statements 2, 5, 11, 15, 18, 22, 27, and 29 [redacted] 50X1
[redacted] An index of production in 1954 compared with that of 1953, 1.125, 50X1
was derived by compromising between the indications of statements 33 and 34. The estimate of production of natural gas in Poland for 1954 in units of cubic meters was derived by multiplying the estimate already derived for 1953 by the 1.125 compromise figure. The estimate for 1955 was derived by multiplying the estimate for 1954 by 1.10 (statement 39). By multiplying all the estimates by a conversion factor 291/ of 790 tons per million cubic meters and by rounding the products to 2 significant digits the estimates of production of natural gas in Poland for 1946-54 shown in the right-hand column of Table 9 were obtained. Each of the projections is the product of subjective appraisal of the history of production as it is indicated by the other estimates, the present productive capacity, and the estimated geological potential of Poland.

8. Rumania.

a. General.

Estimated and projected production of petroleum components in Rumania in 1945-60 is shown in Table 10.*

* Table 10 follows on p. 71.

Table 10

Estimated and Projected Production of Petroleum Components in Rumania a/
1945-60

Year	Crude Oil		Natural Gas Liquids b/		Total Liquid Petroleum Hydrocarbons		Dry Natural Gas c/		Wet Natural Gas		Total Natural Gas	
	Production (Million Metric Tons)	Range of Error (Percent)	Production (Million Metric Tons)	Range of Error (Percent)	Production (Million Metric Tons)	Range of Error (Percent)	Production (Million Metric Tons)	Range of Error (Percent)	Production (Million Metric Tons)	Range of Error (Percent)	Production (Million Metric Tons)	Range of Error (Percent)
1945	4.7	+ or - 2	.14	+ or - 2	4.8	+ or - 2	.49	+ or - 5	1.0	+ or - 5	1.5	+ or - 6
1946	4.3	+ or - 2	.14	+ or - 2	4.4	+ or - 2	.55	+ or - 5	1.1	+ or - 5	1.6	+ or - 6
1947	3.8	+ or - 2	.13	+ or - 2	4.0	+ or - 2	.80	+ or - 5	.94	+ 7 to - 3	1.7	+ 7 to - 4
1948	4.2	+ or - 2	.12	+ 10 to - 0	4.3	+ 3 to - 2	.90	+ or - 10	1.0	+ 13 to - 11	1.9	+ 12 to - 11
1949	4.5	+ or - 2	.14	+ 20 to - 0	4.7	+ 3 to - 2	1.2	+ or - 20	1.1	+ or - 15	2.2	+ or - 19
1950	5.1	+ or - 2	.15	+ 30 to - 0	5.2	+ 3 to - 2	1.4	+ or - 10	1.1	+ or - 15	2.5	+ or - 12
1951	6.2	+ or - 2	.19	+ 35 to - 0	6.4	+ 3 to - 2	1.8	+ or - 15	1.2	+ or - 15	3.0	+ or - 15
1952	8.0	+ or - 2	.24	+ 40 to - 0	8.2	+ 4 to - 2	2.1	+ or - 20	1.3	+ 11 to - 17	3.4	+ 17 to - 19
1953	9.1	+ or - 2	.27	+ 50 to - 0	9.4	+ 4 to - 2	2.4	+ or - 10	1.3	+ 10 to - 16	3.8	+ 10 to - 12
1954	9.8	+ or - 2	.29	+ 60 to - 0	10.0	+ 4 to - 2	2.7	+ or - 15	1.4	+ 5 to - 15	4.1	+ 12 to - 15
1955	11.0	+ or - 2	.32	+ 80 to - 0	11.0	+ 5 to - 2	2.9	+ or - 5	1.5	+ 0 to - 15	4.4	+ 4 to - 9
1956	11.0		.34		12.0		3.8		1.5		5.4	
1957	12.0		.35		12.0		4.8		1.6		6.4	
1958	12.0		.37		13.0		5.7		1.7		7.4	
1959	13.0		.39		13.0		6.6		1.8		8.4	
1960	14.0		.40		14.0		7.5		1.8		9.3	

a. All data are rounded to two significant figures. Totals are derived from unrounded figures and do not always agree with the rounded data shown.
b. Estimates and projections for 1948 and later years in this column actually indicate production of only one subcomponent of natural gas liquids -- natural gasoline. The estimated ranges of error of all the estimates and projections in this column are intended, however, to make these estimates and projections indicative of annual production of natural gas liquids.
c. Methane.

b. Analyses of Statements of Production of Petroleum Components in Rumania and Derivation of Estimates in Table 10.

In deriving the estimates shown in Table 10, estimates of production of crude oil were obtained by the procedures described below. Estimates of production of methane, or dry natural gas, and of wet natural gas were obtained by procedures described below. The estimates of production of the two types of natural gas were added to give the estimates of total production of natural gas in Rumania in the last column of Table 10. The series of estimates of production of natural gas liquids was derived by the method described below. Annual estimates of production of total liquid petroleum hydrocarbons were obtained by adding the estimate of production of natural gas liquids to the estimate of production of crude oil for each year.

(1) Crude Oil.

(a) Statements of Production of Crude Oil in 1936, 1938, and 1945-60.

Statement Number	Production Year	Allegation	
1	1936	Recorded	Production of crude oil, 8,704,000 tons
2	1936	Recorded	Production of crude oil, 2.08 times that of 1948
3	1938	Recorded	Production of crude oil, 6,610,000 tons
4	1945	Recorded	Production of oil, 0.54 times that of 1936
5	1945	Recorded	Dobycha nefti, 4,600,000 tons
6	1945	Recorded	Production of crude oil, 4,680,000 tons
7	1946	Recorded	Production of oil, 0.49 times that of 1936
8	1946	Recorded	Dobycha nefti, 4,200,000 tons
9	1946	Recorded	Production of crude oil, 4,257,000 tons

50X1

50X1

50X1

Statement Number	Production Year	Allegation	
10	1947	Planned	Production of oil, 4,250,000 tons
11	1947	Recorded	Production of oil, 0.44 times that of 1936
12	1947	Recorded	Production of crude oil, 3,800,000 tons
13	1947	Recorded	Production of crude oil, 3,856,000 tons
14	1947	Recorded	Production of crude oil, 3,840,000 tons
15	1947	Recorded	Production of crude oil, 3,800,000 tons
16	1947	Recorded	Dobycha nefti (extraction of oil), 3,900,000 tons
17	1948	Recorded	(Anticipated production of crude oil based upon recorded production during the first 10 months), 4,750,000 tons
18	1948	Recorded	Production of oil, 0.45 times that of 1936
19	1948	Recorded	Production of crude oil, 4,154,000 tons
20	1948	Recorded	Dobycha nefti, 4,200,000 tons
21	1948	Recorded	Production of crude oil, 4,500,000 tons
22	1949	Planned	Production of oil, 1.136 times that of 1948
23	1949	Recorded	Production of crude oil, 1.094 times that of 1948
24	1949	Recorded	Production of oil, 1.094 times that of 1948
25	1949	Recorded	Production of oil, 1.09 times that of 1948
26	1949	Recorded	Production of crude oil, 4,500,000 tons
27	1949	Recorded	Production of crude oil, 4,200,000 tons
28	1950	Planned	Extraction of crude oil, 3 times that of 1948

50X1

50X1

Statement Number	Production Year		Allegation
29	1950	Planned	Production of crude oil, 1.325 times that of 1949
30	1950	Recorded	Production of oil, 1.22 times that of 1948
31	1950	Recorded	Production of oil, 1.217 times that of 1948
32	1950	Recorded	Production of oil, 1.135 times that of 1949
33	1950	Recorded	Extraction of oil, 0.9714 times the goal for that extraction in 1950
34	1950	Recorded	Production of neft' implied that production was equal to 10,000,000 tons divided by 1.83 or 5,460,000 tons
35	1950	Recorded	Production of crude oil, 5,047,000 tons
36	1951	Recorded	Production of petroleum, 1.231 times that of 1950
37	1951	Recorded	Production of neft', 1.231 times that of 1950
38	1951	Recorded	Production of oil, 1.50 times that of 1948
39	1951	Recorded	Production of oil, 1.497 times that of 1948
40	1952	Recorded	Production of crude oil as of November 1952 surpassed the 1938 level
41	1952	Recorded	Production of petroleum, 2.08 times that of 1947
42	1952	Recorded	Production of oil, 1.929 times that of 1948
43	1952	Recorded	Production of oil, 1.93 times that of 1948
44	1952	Recorded	Production of crude oil, 8,000,000 tons
45	1953	Planned	(Rather the anticipated as of August 1953) production of crude oil, 9,500,000 tons

50X1

50X1

Statement Number	Production Year	Allegation
46	1953	Planned (Rather the anticipated as of August 1953) production of crude oil, 9,300,000 tons
47	1953	Planned (Rather the anticipated as of August 1953) dobycha nefti (extraction of oil), around 9,300,000 tons
48	1953	Planned Expected production of crude oil, surpassed the 1936 level
49	1953	Recorded Production of petroleum, 1.50 times that of 1938
50	1953	Recorded Production of crude oil, 2.36 times that of 1947
51	1953	Recorded Production of oil, 2.18 times that of 1948
52	1953	Recorded Production of oil, 2.19 times that of 1948
53	1953	Recorded Production of oil, 1.13 times that of 1952
54	1953	Recorded Production of oil, almost 9,000,000 tons
55	1953	Recorded Dobycha nefti, over 9,000,000 tons
56	1953	Recorded Production of oil, 9,300,000 tons
57	1954	Planned Production of oil, 1.14 times that of 1936
58	1954	Planned Production of oil, 2.37 times that of 1948
59	1954	Planned Production of petroleum, more than 10,000,000 tons
60	1954	Recorded Production of petroleum, 2.348 times that of 1948
61	1954	Recorded Production of petroleum, 1.075 times that of 1953
62	1954	Recorded Extraction of crude oil, 1.075 times that of 1953
63	1955	Planned Production of neft', 10,000,000 tons
64	1955	Planned Production of oil, 11,000,000 tons

50X1

Statement Number	Production Year	Allegation	
65	1955	Planned	Proizvodstvo nefti (production of oil), 11,000,000 tons
66	At end of 1955	Planned	Dobycha nefti (extraction of oil), 11,000,000 tons
67	1955 (First quarter)	Recorded	Production of crude oil, greater than the target
68	As of 2 Sep 1955	Recorded	Rate of production of crude oil, over 10,500,000 tons per year
69	1955	Recorded	Production of crude oil reached 10,000,000 tons ahead of schedule
70	1955	Recorded	More than 10,500,000 tons of crude oil, or 3 times more than the production at the end of the last war, had already been produced by 14 Dec 55
71	1955	Recorded	Production of crude oil ... (according to a 23 Dec 55 report) exceeded the Five Year Plan for production in 1955 and amounted to 10,575,000 tons "which is 600,000 tons in excess of the Five Year Plan target and almost 2,000,000 tons more than the bourgeois-landowner regime."
72	1955	Recorded	Production of crude oil, (according to a 31 Dec 55 report) "reached 10,570,000 tons -- nearly 2,000,000 tons more than the highest annual production attained under the bourgeois-landlord regime."
73	1960	Planned	Production of crude oil, to be 13,500,000 tons or 1.28 times the 1955 production according to the Second Five Year Plan

50X1

50X1

50X1

(b) Interpretation of Statements.

The claims [redacted] given in the above list concerning the production of crude oil in Rumania for 1945-60 are surprisingly consistent when compared with the estimates in the third column of Table 10. All but 9 of the 73 statements are consistent with the estimate listed in Table 10, within the limits of standard rounding rules. 50X1

Of the statements dealing with planned production, only statements 28 and 45 are definitely inconsistent. Statement 28 is an impossible figure, and statement 45 is refuted by statements 46 and 47.

Of the statements dealing with recorded production, only seven are definitely inconsistent within standard rounding rules. One of the contradictory statements, number 18, comes from a source 335/ which also gives information that is inconsistent with other available information concerning production of petroleum components in other countries of the Bloc during 1948. [redacted] 50X1

[redacted] 50X1

[redacted] Statement 32 gives an index of 1.135 that is inconsistent with the index of 1.112 indicated by the estimates in the second column of Table 10 for the ratio of production in 1950 to that of 1949. Although such an inconsistency as that of statement 32 is to be expected in an analysis of this type, the inconsistency of statement 34 is not accounted for so easily. Statement 34 comes from the announcement of the Five Year Plan in Rumania. According to that plan, 337/ production of crude oil in 1955 was set at a goal of 10 million tons, 83 percent more than production in 1950, implying that production of that component in 1950 was approximately 5.46 million tons. The figure 5.46 million does not agree with the estimate of 5.1 million given in Table 10 for production of crude oil in Rumania during 1950. The rejected figure of 5.46 million tons possibly could be the result of a statistical error or an indication that the Communists were exaggerating the volume of production for purposes of propaganda in the early days of their regime. The index of 1.50 indicated in statement 49 was only one of a number of indexes 338/ which were apparently rounded off to the nearest five-tenths. Therefore, although the 1.50 index indicated in statement 49 differs from 50X1

the 1.373 index indicated in Table 10 for the ratio of production in 1953 to that in 1938, the apparent inconsistency of statement 49 could be the result of rounding an actual index to the nearest five-tenths. The inconsistency of statement 56 could be the result of reporting the figure given by Gheorgiu-Dej 339/ for anticipated production as the figure for recorded production.

(c) Estimates and Projections of Production of Crude Oil in Table 10.

The series of estimates presented for 1945-55 in the second column of Table 10 was obtained by examining the implications of the data in the above list, and by testing those implications against trial estimates. The projections given in the second column of Table 10 were obtained by accepting the Communist plan figure (statement 73) and by straight-line interpolation. The estimates and projections given in the second column of Table 10 agree with all but 9 of the 73 claims listed. The 9 contradictory claims have been commented on in the preceding analysis of the list.

(2) Natural Gas.

Production of natural gas in Rumania since 1944 has included production of methane, or dry natural gas, from the Transylvanian and the Manesti-Vladeni fields and production of wet natural gas from the oilfields. The estimates of production of natural gas in Rumania presented in Table 10 were obtained by adding the estimates of production of dry natural gas to the estimates of production of wet natural gas. The methodology by which the estimates of production of wet and dry natural gas were obtained is given below.

(a) Methane or Dry Natural Gas.

i. Statements of Production of Dry Natural Gas in Rumania in 1938, 1945-55, and 1960.

50X1

Statement Number	Production Year		Allegation
1	1938	Recorded	Production of methane, 310,820,000 cubic meters
2	1938	Recorded**	Level of dobycha prirodnogo gaza (extraction of natural gas), implied that that level was equivalent to 3,900,000,000 cubic meters divided by 5 or 780,000,000 cubic meters
3	1945	Recorded	Production of dry gas in Transylvania, 537,600,000 cubic meters
4	1945	Recorded	Extraction of dry natural gas in Transylvania, 537,577,000 cubic meters
5	1945	Recorded	Production of dry gas in the Manesti-Vladeni fields, 114,100,000 cubic meters
6	1946	Recorded	Extraction of dry natural gas in Transylvania, 653,232,000 cubic meters
7	1946	Recorded	Production of dry gas in the Manesti-Vladeni fields, 90,300,000 cubic meters
8	1946	Recorded	Production of dry gas in Transylvania, 642,200,000 cubic meters
9	1947	Recorded	Production of dry gas in Transylvania, 981,100,000 cubic meters
10	1947	Recorded	Production of dry gas in the Manesti-Vladeni fields, 85,000,000 cubic meters
11	1948	Planned	(Expected, actually) production of dry gas in Rumania, 1,200,000, cubic meters

50X1

** Statement of claim which apparently refers to production of both dry natural gas and wet natural gas.

50X1

Statement Number	Production Year	Allegation	
12	1949	Recorded	Potrebleniye (consumption) (of natural gas) uvelichilos' v sravnenii s dovoyennym urovnem v 5 raz (has increased in comparison with the prewar level 5 times).
13	1950	Planned	Production of methane gas, 1,089 times that of 1949
14	1950	Recorded	Ispol'zovannogo (of the used) natural gas, 1,800,000,000 cubic meters
15	1950	Recorded	Level of dobycha prirodnogo gaza (extraction of natural gas), implied that that level was equivalent to 3,900,000,000 cubic meters divided by 2 or 1,950,000,000 cubic meters
16	1950	Recorded	Production of natural gas, implied that that production was equivalent to 3,900,000,000 cubic meters divided by 2.04 or 1,912,000,000 cubic meters
17	1951	Recorded	Production of natural gas, 1.312 times that of 1950
18	1953		Production of either type of natural gas, not mentioned in the report concerning fulfillment of the Plan during 1953
19	At end of 1953	Recorded	Production of methane, over 10 times that of 1938
20	1953	Recorded	Production of methane, 7 times that of 1944
21	1953	Recorded	Production of methane, 1.32 times that of 1951
22	At end of 1953	Recorded	Production of natural gas, possibly over 3,500,000,000 cubic meters
23	At end of 1953	Recorded	Production of methane, 3,500,000,000 cubic meters

50X1

50X1

Statement Number	Production Year	Allegation	
24	1954	Planned	(Estimated, actually) production of methane 1.20 times that of 1953
25	1954	Planned	Production of methane gas, 1.044 times that of 1953
26	1954	Planned	Production of natural gas, 12 times that of 1938
27	1954	Recorded	Consumption or production of methane gas, 3 times as large as in 1948 and 1.4 times that of 1950
28	1955	Planned	(Actually, foreseen) potrebleniye gaza (consumption of gas), 3,900,000,000 cubic meters
29	1955	Planned	(Actually, foreseen) potrebleniye gaza prevysit y 13 raz 1938 potreblenive (consumption of gas will exceed the 1938 consumption 13 times)
30	1955	Planned	Production of natural gas, 3,900,000,000 cubic meters
31	1955 (First quarter)	Recorded	Production of methane, over the target for the quarter-year
32	Jan 1955	Recorded	"Assuming that annual production of methane gas will be maintained at about 500,000,000 cubic meters ..."
33	1955	Recorded	Production of methane gas fulfilled the target of the Five Year Plan
34	1960	Planned	Production of methane gas, according to Second Five Year Plan, to be 2.6 times that of 1955
35	1960	Planned	Production of natural gas, according to Second Five Year Plan, to reach 10,000,000,000 cubic meters by 1960, to be 2.6 times that of 1955

50X1

ii. Interpretation of Claims.

With the exception of statements 27 and 32, which give contradictory accounts of production of dry natural gas in Rumania in 1954, there is no significant inconsistency among the claims interpreted in the above list. The data in the list were considered adequate as a basis for deriving estimates and projections of production of dry natural gas in Rumania during 1945-60 by the procedure outlined below.

iii. Derivation of Estimates and Projections of Production of Dry Natural Gas in Table 10.

An estimate of 651.7 million cubic meters was derived for total production of dry natural gas in Rumania in 1945 by adding the figures in statements 3 and 5. An estimate of 489,000 or 490,000 tons for production in 1945 was derived by multiplying 651.7 million cubic meters by a conversion factor 363/ of 750 tons per million cubic meters. An estimate of 549,000 or 550,000 tons for 1946 was derived by adding the figures in statements 7 and 8 and multiplying by the 750 factor. When the figures in statements 9 and 10 were added, they yielded a total which, when converted, yielded an estimate of 799,600, or 800,000 tons for 1947.

An estimate of 900,000 tons was derived for 1948 by assuming that planned production (statement 11) was realized and by converting the 1.2 million cubic meters by the 750 factor.

An estimate of 1.15 million, or 1.2 million, tons was derived for 1949 by interpolating between the estimate of 900,000 tons for 1948 and the estimate of 1.4 million tons derived for 1950 as indicated below.

Statements 14 and 16 indicate production of 1.8 billion cubic meters and 1.91 billion cubic meters, respectively, for 1950. The 1950 production was estimated at 1.35 million tons and 1.43 million tons by multiplying the 1.8 figure and the 1.91 figure each by the 750 factor. An estimate of 1.4 million tons for production of dry natural gas in Rumania during 1950 was obtained by compromise between the two estimates of 1.35 million tons and 1.43 million tons.

An estimate of 1,837,000 or 1,800,000 tons for production of dry natural gas in Rumania during 1951 was obtained by multiplying the estimate of 1.4 million tons for 1950 by the 1.312 index (statement 17).

An estimate of 2,143,000 or 2,100,000 tons for 1952 was derived by interpolating between the estimate of 1,837,000 tons derived for 1951 and the estimate of 2,450,000 tons derived for 1953, by the procedure described below.

Production of dry natural gas in Rumania during 1953, according to the above list, falls within a range of 2.3 million tons to 2.6 million tons. If statements 1 and 19 are accepted, production in 1953 would have been about 3.1 billion cubic meters or (multiplying by the 750 factor) 2.3 million tons. If the estimate of 1.8 million tons for 1951 given above and the index of 1.32 given in statement 21 are applicable, production in 1953 was closer to 2.4 million tons. Statements 22 and 23 indicate production of 3.5 billion cubic meters which equals almost 2.6 million tons when multiplied by the 750 factor. The figure of 2.45 million (rounded to 2.4 million) tons was chosen as the best estimate of production of dry natural gas in Rumania during 1953 because that figure is midway between the low estimate of 2.3 million tons and the high estimate of 2.6 million tons and is also close to the indication of 2.4 million tons.

By multiplying the estimate of 900,000 tons for production during 1948 by 3 (statement 27) an estimate of 2.7 million tons was derived for production of dry natural gas in Rumania during 1954.

By assuming that the plan indicated in statements 28 through 30 for production of dry natural gas in Rumania during 1955 was the plan which statements 33 and 35 indicate as having been fulfilled, and by applying the 750 factor, an estimate of 2,925,000, or 2.9 million, tons for that production during 1955 was obtained.

The projection for 1960 was derived by assuming that planned production for 1960 (statements 34 and 35) will be attained, and by applying the 750 factor to 10 billion cubic meters.

Straight-line interpolation between the estimate for 1955 and the projection for 1960 produced the projections for 1956-59.

(b) Wet Natural Gas.

i. General.

Before the announcement of the Second Five Year Plan the only available information 364/ concerning production of wet natural gas in Rumania since World War II indicated that 1,294,000,000 cubic meters were produced in 1945, 1,350,000,000 cubic meters in 1946, and 1,175,000,000 cubic meters in 1947. The only available indication of production of wet natural gas in Rumania after 1947 [redacted] is a comment made by Ion Dumitru, Minister of the Oil Industry, on the goals set by the Second Five Year Plan. Dumitru said: 50X1

> According to the directives, natural gas production will increase 2.6 times, reaching 10 billion cubic meters per year by 1960. Simultaneously with the increase of crude oil output, production of well gases will go up. In 1960, 2.3 billion cubic meters of these well gases will be produced, of which 2 billion cubic meters will be used by the chemical industry, as fuel, and for household use. 365/

Total production of wet natural gas in Rumania in 1960 accordingly was estimated at 2.3 billion cubic meters.

ii. Derivation of Estimates of Production of Wet Natural Gas in Table 10.

Straightline interpolation between the estimate of production of 1,175,000,000 cubic meters of wet natural gas for 1947 366/ and the goal of 2.3 billion cubic meters set by the Second Five Year Plan 367/ yielded estimates and projections of production of wet natural gas in Rumania for 1948-59 in units of cubic meters. Estimates in cubic meters were converted to tons, as they appear in Table 10, by using a conversion factor of 796 tons per million cubic meters. 368/

(3) Natural Gas Liquids.

(a) General.

The estimates given in the second column of Table 10 for 1945-47 can be used as estimates of total production of natural gas liquids in Rumania for those years. The estimates and projections given in the second column of Table 10 for 1948 and later years are actually estimates of production of natural gasoline which have been modified by ranges of error to serve as estimates of the entire production of natural gas liquids. Available information is not sufficient for the derivation of estimates of production of liquefied petroleum gases, finished gasoline, and other products in Rumania after 1947; therefore, no precise estimates of total production of natural gas liquids in Rumania for 1948 and later years can be made.

(b) Derivation of Estimates and Projections of Production of Natural Gas Liquids in Table 10.

i. 1945-47.

Figures for production of natural gasoline 369/ and of liquefied petroleum gases 370/ in Rumania for 1945-47 are available [redacted] By adding the figures for production of these two natural gas liquids, the estimates for 1945-47 given in the second column of Table 10 were obtained. 50X1

ii. 1948-60.

The method used to derive the estimates and projections for 1948-60 given in the second column of Table 10 is based on an adaptation of the method proposed by Constantin N. Jordan in The Romanian Oil Industry.

In estimating production of wet natural gas in Rumania since 1947, Mr. Jordan states:

> Between 1943 and 1947, the ratio between quantities of primary gas* and crude oil** produced was on the average 286 cubic meters per ton. This figure includes the production of independent gas-bearing formations in the oilfields, which were being exploited intensively in those years. Gas production after 1948 could normally be computed on this basis. It is the author's belief that gradual degasification of some strata in the oilfields was compensated by the contribution of new formations developed after 1948 ... . 373/

Mr. Jordan also supports 374/ the theory that the probable yield of natural gasoline has been 100 kilograms per 1,000 cubic meters of wet natural gas, and that the probable quantity of wet natural gas treated has been 10 percent*** more than the amount of primary gas produced in Rumania since World War II.

Using Mr. Jordan's method of estimating production of wet natural gas in Rumania for 1955 and using the estimate of production of crude oil in Rumania for 1955 given in this report, an estimate of 3 billion cubic meters for production of wet natural gas in Rumania in 1955 is obtained. Because the Rumanian Second Five Year Plan sets a goal of 2.3 billion cubic meters for production of wet natural gas in 1960, Mr. Jordan's method is considered usable only for estimating the possible availability of wet natural gas at the wellheads rather than production of wet natural gas in Rumania for 1948 and later years. Although the use of Mr. Jordan's method for

---

* By production of primary gas Mr. Jordan refers to production of wet natural gas, 371/ as defined in this report.

** Mr. Jordan differs with the viewpoint of this report (see pp. 21-22, above) in that he views Rumanian crude oil statistics as being inclusive of natural gasoline recovered in the fields. 372/ Such a difference, however, in no way precludes the use of Mr. Jordan's methodology for estimating the availability of wet natural gas in Rumania since 1948.

*** The 10 percent apparently enters into Mr. Jordan's calculations in order to account for the recovery of natural gasoline from wet natural gas which was recirculated to the strata and, therefore, not included in the accounting of production of wet natural gas.

estimating production of wet natural gas in Rumania was not considered justifiable by this author, an adaptation of the method was used in this report in estimating and projecting the amount of wet natural gas available for processing for the recovery of natural gasoline in Rumania for 1948 and later years.

The figures for 1948 and later years presented in the second column of Table 10 were each multiplied by a factor of 300 (3×10^2) cubic meters per ton of crude oil in order to derive estimates and projections of the availability of wet natural gas at the oilfield wellheads in Rumania for 1948 and later years. (The factor 300 cubic meters was used because it included the result obtained by multiplying by both of Mr. Jordan's factors (286 and 1.10) and because use of a figure more precise than 300 was not considered justifiable.) Having derived estimates and projections of the amount of wet natural gas available in Rumania for processing for the recovery of natural gasoline, it was necessary only to multiply each of those estimates and projections by Mr. Jordan's factor of 100 kilograms per 1,000 cubic meters of wet natural gas in order to derive figures which were rounded to furnish the estimates for 1948-60 presented in the second column of Table 10.

D. USSR.

1. General.

Available information is not sufficient for estimates or projections of production of natural gas liquids in the USSR. Estimated and projected production of crude oil and of natural gas in the USSR in 1945-60 is shown in Table 11.*

2. Analyses of Statements of Production of Petroleum Components in the USSR and Derivation of Estimates and Projections in Table 11.

a. Crude Oil.

(1) Statements of Production of Crude Oil in 1913 and 1940-60.

* Table 11 follows on p. 88.

Table 11

Estimated and Projected Production of Petroleum Components in the USSR a/
1945-60

Year	Crude Oil		Natural Gas	
	Production (Million Metric Tons)	Range of Error (Percent)	Production (Million Metric Tons)	Range of Error (Percent)
1945	19.3	± 2	2.42	± 5
1946	21.7	± 1	2.51	± 5
1947	25.9	± 1	3.06	± 5
1948	29.3	± 1	3.37	± 5
1949	33.5	± 1	3.47	± 5
1950	37.9	± 1	3.71	± 5
1951	42.2	± 1	4.01	± 5
1952	47.3	± 1	4.09	± 5
1953	52.8	± 1	4.20	± 5
1954	59.3	± 1	4.58	± 5
1955	70.8	± 1	5.49	± 5
1956	80		9.6	
1957	100		14	
1958	110		18	
1959	120		22	
1960	140		26	

a. All estimates have been rounded to three significant figures. All projections have been rounded to two significant figures.

Statement Number	Production Year	Allegation	
1	1913	Recorded	Dobycha nefti (extraction of oil), 9,234,100 tons
2	1940	Recorded	Production of oil, 3.44 times that of 1913
3	1940	Recorded	Dobycha nefti, 31,000,000 tons
4	1940	Recorded	Dobycha nefti, 31,147,000 tons
5	1946	Recorded	Proizvodstvo ... neft' (production ... oil), 1.12 times that of 1945
6	1946	Recorded	Production of oil, 1.122 times that of 1945
7	1947	Planned	Production of oil, 1.18 times that of 1946
8	1947	Recorded	Production of oil, 1.33 times that of 1945
9	1947	Recorded	Proizvodstvo ... neft', 1.19 times that of 1946
10	1947	Recorded	Production of petroleum, 1.196 times that of 1946
11	1948	Recorded	Production of oil, 1.51 times that of 1945
12	1948	Recorded	Proizvodstvo ... neft', 1.13 times that of 1947
13	1948	Recorded	Production of crude oil, 29,100,000 tons
14	1949	Planned	Production of oil, according to the Five Year Plan was supposed to reach the 1940 level in 1949
15	1949	Recorded	Production of oil, for the first time since end of World War II exceeded that of 1940
16	1949	Recorded	Proizvodstvo ... neft', 1.14 times that of 1948
17	1949	Recorded	Production of oil, 1.143 times that of 1948
18	1949	Recorded	Production of crude oil, 33,200,000 tons
19	1950	Planned	Production of oil, 16,000,000 tons more than that of 1945

50X1

50X1

Statement Number	Production Year	Allegation	
20	1950	Planned	Production of oil, 35,400,000 tons
21	1950	Planned	Production of oil, 35,445,000 tons
22	1950	Planned	Production of oil, 35,500,000 tons
23	1950	Planned	(Actually, anticipated) production of oil, 2,200,000 tons more than the goal set in the Five Year Plan
24	1950	Recorded	Production of oil, 4.20 times that of 1913
25	1950	Recorded	Production of oil, 1.22 times that of 1940
26	1950	Recorded	Proizvodstvo ... neft', 1.13 times that of 1949
27	1950	Recorded	Production of oil, 1.07 times the Five Year Plan goal for 1950 production
28	1950	Recorded	Dobycha nefti (extraction of oil), 37,800,000 tons
29	1950	Recorded	Production of crude petroleum, monthly average during year, 3,160,000 tons. (Inferred annual production, 37,900,000 tons.)
30	During the past (as of 6 Nov 1951) several years	Recorded	Production of oil increased annually by 4,500,000 tons
31	1951	Recorded	Proizvodstvo ... neft', 1.12 times that of 1950
32	At end of 1951	Recorded	Production of crude petroleum, 13,000,000 tons more than at the end of 1948
33	1951	Recorded	Production of crude petroleum, monthly average during year, 3,520,000 tons. (Inferred annual production, 42,200,000 tons.)
34	1952	Planned	(Actually, anticipated) production of crude petroleum, 47,000,000 tons

50X1

50X1

50X1

50X1

State-ment Number	Production Year		Allegation
35	1952	Planned	Production of oil, anticipated as of 6 Nov 1952 to be 1.24 times that of 1950
36	1952	Recorded	Dobycha nefti (extraction of oil), 1.50 times that of 1940
37	1952	Recorded	Dobycha nefti, 1.25 times that of 1950
38	1952	Recorded	Proizvodstvo ... neft' (production ... oil), 1.12 times that of 1951
39	1952	Recorded	Extraction of petroleum, 47,000,000 tons
40	1952	Recorded	Production of crude petroleum, monthly average during year, 3,940,000 tons. (Inferred annual production, 47,300,000 tons.)
41	1953	Recorded	Dobycha nefti, 1.70 times that of 1940
42	1953	Recorded	Proizvodstvo ... neft', 1.12 times that of 1952
43	1953	Recorded	Production of oil, 1.116 times that of 1952
44	At end of 1953	Recorded	Extraction of petroleum, almost 19,000,000 tons more than at the end of 1949
45	1953	Recorded	Production of oil, 5,000,000 tons more than in 1952
46	1953	Recorded	Dobycha nefti, 52,000,000 tons
47	1953	Recorded	Production of crude petroleum, monthly average during year, 4,400,000 tons. (Inferred annual production, 52,800,000 tons.)
48	1954	Recorded	Production of oil fulfilled the yearly plan by 26 Dec 1954
49	1954	Recorded	Proizvodstvo ... neft', 1.12 times that of 1953
50	1954	Recorded	Production of crude petroleum, monthly average during year, 4,940,000 tons. (Inferred annual production, 59,300,000 tons.)

50X1

50X1

Statement Number	Production Year	Allegation	
51	1955	Planned	Production of oil, 7.77 times that of 1913
52	1955	Planned	Dobycha nefti (extraction of oil), 2.3 times that of 1940
53	1955	Planned	Production of oil, to nearly double the 1950 figure
54	1955	Planned	Production of oil, 1.85 times that of 1950
55	1955	Planned	Production of oil, 60,000,000 tons
56	1955	Planned	(Actually, anticipated) dobycha nefti, 70,000,000 tons
57	1955	Recorded	Proizvodstvo ... neft', 1.19 times that of 1954 first half
58	1955	Recorded	Production of oil fulfilled the 1955 plan on 18 Dec 1955
59	1955	Recorded	Production of oil, 1.194 times that of 1954
60	1960	Planned	Dobycha nefti (extraction of oil), to increase to 135,000,000 tons or 1.91 times that of 1955.

50X1

(2) Interpretation of Statements.

There are five contradictory points in the information listed above. In the light of the estimates and projections presented in Table 11, the figures given by statements 13, 18, 28, 46, and 55 are questionable after they have undergone standard rounding procedures.

Statements 13 and 18, which give absolute figures for production of crude oil in the USSR for 1948 and 1949, are especially questionable. [redacted] 50X1
[redacted] 50X1
[redacted] The figures presented in statements 13 and 50X1
18 were each approximately 200,000 tons too low when compared with other available information and were not accepted in preparing the estimates presented in Table 11.

Before the recent release of the estimates given in statements 29, 33, 40, 47, and 50 425/ by the Central Statistical Administration of the USSR, the estimates given by statement 28 was the only known estimate of annual production of crude oil for any year since World War II which the USSR had published as an absolute figure of 3 significant digits. The difference between 37.8 (statement 28) and 37.9 (statement 29), however, could be attributed to unusual rounding procedures.

If the estimate of 52.8 million tons for production of crude oil in the USSR for 1953, which was implied in the recent statistical release of the Central Statistical Administration 426/ is accepted, there is a question why the USSR spoke of production of only 52 million tons (statement 46) in that year. Legitimate rounding procedures would have made this figure almost 53 million tons.

Finally, statement 55 implies that production of crude oil in the USSR for 1955 aimed at a goal of 60 million tons.
[redacted] 50X1
[redacted] The 60-million-ton goal is com- 50X1
pletely out of line with all the other statements, and statement 55, therefore, was rejected.

(3) Derivation of Estimate and Projections of Production of Crude Oil in Table 11.

Estimates for 1950-54 recently released by the Central Statistical Administration (statements 29, 33, 40, 47, and 50) were accepted. In deriving other estimates and projections presented in the first column of Table 11, the general approach was to work backwards from the 1950 estimate to derive estimates for 1945-49 and to interpolate by a straight line between an estimate of 71 million tons for 1955, derived as indicated below, and the Sixth Five Year Plan goal of 135 million tons for 1960 to obtain projections for 1956-59. A detailed exposition of the derivation of the estimates for 1945-49 and for 1955 is given below.

By dividing the 37.9 figure for 1950 (statement 29) by 1.13 (statement 26) and by rounding the quotient, an estimate of 33.5 million tons for production of crude oil in the USSR in 1949 was obtained.

By dividing the 33.5 figure for 1949 by 1.143 (statement 17) and by rounding the quotient, an estimate of 29.3 million tons for production of crude oil in the USSR in 1948 was obtained.

By dividing the 29.3 figure for 1948 by 1.13 (statement 10) and by rounding the quotient, an estimate of 21.7 million tons for production of crude oil in the USSR during 1946 was obtained.

By dividing the 25.9 figure for 1947 by 1.196 (statement 10) and by rounding the quotient, an estimate of 21.7 million tons for production of crude oil in the USSR during 1946 was obtained.

By dividing the 21.7 figure for 1946 by 1.122 (statement 6) and by rounding the quotient, an estimate of 19.3 million tons for production of crude oil in the USSR during 1945 was obtained.

By multiplying the 59.3 figure for 1954 (statement 50) by 1.194 (statement 59), an estimate of 70.8 million tons for production of crude oil in the USSR during 1955 was obtained.

b. Natural Gas:

(1) Statements of Production of Natural Gas.

50X1

Statement Number	Production Year	Allegation
1	1930	Recorded Production of natural gas, 472,600 tons of equivalent oil
2	1945	Recorded Dobycha prirodnogo gaza (extraction of natural gas), 6.40 times that of 1930
3	1946	Recorded Dobycha prirodnogo gaza, 6.73 times that of 1930
4	1946	Recorded Proizvodstvo ... gaz prirodnyy (production ... natural gas), 1.14 times that of 1945
5	1947	Recorded Dobycha prirodnogo gaza, 8.20 times that of 1930
6	1947	Recorded Proizvodstvo ... gaz prirodnyy, 1.22 times that of 1946
7	1948	Recorded Proizvodstvo ... gaz prirodnyy, 1.10 times that of 1947
8	1949	Recorded Proizvodstvo ... gaz prirodnyy, 1.03 times that of 1948
9	1950	Planned Production of natural gas, 8,400,000,000 cubic meters
10	1950	Planned Dobycha prirodnogo gaza, 4,500,000,000 cubic meters
11	1950	Planned Dobycha prirodnogo gaza, 3 times that of 1945
12	1950	Recorded Proizvodstvo ... gaz prirodnyy, 1.07 times that of 1949
13	1951	Recorded Proizvodstvo ... gaz prirodnyy, 1.08 times that of 1950
14	1952	Recorded Proizvodstvo ... gaz prirodnyy, 1.02 times that of 1951
15	1953 (First half)	Recorded Proizvodstvo ... gaz prirodnyy, 1.06 times that of 1952, first half

50X1

50X1

Statement Number	Production Year		Allegation
16	1953		Magnitude of production of natural gas not mentioned in a report on the fulfillment of the Plan during 1953
17	1953	Recorded	Dobycha prirodnogo gaza, fulfilled the Plan in 1953
18	1954	Recorded	Proizvodstvo ... gaz prirodnyy, 1.09 times that of 1953
19	1955 (First half)	Recorded	Proizvodstvo ... gaz prirodnyy, 1.14 times that of 1954, first half
20	1955	Recorded	Production of natural gas, 1.20 times that of 1954.
21	1960	Planned	Extraction of natural gas to be 4.8 times that of 1955. Production of artificial gas from coal and shale to be double that of 1955. Natural gas to be 91 percent and artificial gas to be 9 percent of the total production of gas in 1960.
22	1960	Planned	Production of gas, to reach 40 billion cubic meters or 3.88 times that of 1955

(2) Interpretation of Statements.

The data presented in the above list are contradictory in two instances but are considered sufficiently adequate and consistent to serve as a bases for estimating production of natural gas in the USSR since 1945:

(a) Statement 2 says that production of natural gas in 1945 was 6.40 times that of 1930, statement 3 says that production of natural gas in 1946 was 6.73 times that of 1930, and statement 4 says that production in 1946 was 1.14 times that of 1945. These three ratios cannot

50X1

all be true. The information in statements 2 and 3 [redacted] 50X1
[redacted] is accepted because statement 50X1
4 was made when statistical reporting possibly was confused as a result of World War II.

(b) Statement 10 gives 4.5 billion cubic meters for planned production of natural gas in the USSR in 1950. This figure has been repudiated by many other references which support the figure of 8.4 billion cubic meters advanced by statement 9. The figure of 4.5 may have been a typographical error because statement 11 [redacted] gives an acceptable ratio of 50X1
production of natural gas in the USSR in 1945 as estimated in this report and the goal of 8.4 billion cubic meters for 1950 given in statement 9.

(3) Derivation of Estimates and Projections of Production of Natural Gas in Table 11.

The general procedure followed in deriving the estimates and projections given in Table 11 was to derive estimates for 1945-47 from data in the list which relate production for those years with that of 1930; to derive estimates for 1948-52 from data which relate production for each of these years with that of the previous year; to derive an estimate for production in 1955 in the manner detailed below; to derive estimates for 1953-54 by working back from 1955 from data which relate 1955 production to that of 1954 and relate 1954 production to that of 1953; to derive estimates for 1956-59 by straight-line interpolation between the estimate derived for 1955 and the projection derived as indicated below for 1960. Some details of the procedure follow.

Because Soviet practice in the past has been to consider 1,000 cubic meters of natural gas as equivalent to 1 ton of crude oil, it was assumed that statement 1 indicates a production of 472.6 million cubic meters of natural gas in the USSR in 1930. By multiplying the 472.6 figure in statement 1 by 6.40 (statement 2), 6.73 (statement 3), and 8.20 (statement 5) and by rounding the products, estimates of 3.02 billion cubic meters, 3.18 billion cubic meters, and 3.88 billion cubic meters were derived for the production of natural gas in the USSR for 1945, 1946, and 1947, respectively.

By multiplying the estimate of production for the previous year by the indexes shown in statements 7, 8, 12, 13, and 14, estimates were derived for 1948-52 in units of billion cubic meters.

The average calorific value of natural gas in the USSR in 1950 was 8,500 kilocalories per normal meters, and that of artificial gas from coal and shale was 4,200 kilocalories per normal meter. 446/ These calorific values probably have not changed, and they will not change significantly during the 1950-60 period. It may be said that at the stated calorific values, a planned production of 6.7 billion cubic meters of artificial gas and 33.3 billion cubic meters of natural gas in 1960 and a recorded production in 1955 of 3.35 billion cubic meters of artificial gas and 6.950 billion cubic meters of natural gas are estimates and projections which make both statements 21 and 22 appear to be true. Production of natural gas in the USSR was accordingly estimated at 6.95 billion cubic meters for 1955 and projected at 33.3 billion cubic meters for 1960.

A factor of 790 tons per million cubic meters 447/ was used to convert the estimates and projections in cubic meters to those figures presented in Table 11.

E. Communist China.

1. General.

Estimated and projected production of petroleum components in Communist China in 1945-60 is shown in Table 12.* Three categories of production of petroleum are dealt with: natural crude oil, synthetic crude oil, and the additive category, natural and synthetic crude oil.

Estimates of production of natural crude oil and of production of synthetic crude oil for 1945-48, shown in Table 12, [redacted] 50X1
[redacted] By adding these estimates, the estimates of production 50X1
of natural and synthetic crude oil for 1945-48, shown in Table 12, were obtained. The derivation of the estimates and projections of production of natural and synthetic crude oil for 1949-60, shown in Table 12, is made explicit below. The estimates and projections of production of synthetic crude oil in Communist China for 1949-60 have been taken from a study 448/ which is in progress [redacted] By subtracting the estimates 50X1
and projections of production of synthetic crude oil from these estimates and projections of production of natural and synthetic crude oil, estimates of production of natural crude oil, given in the first column of Table 12, were obtained.

* Table 12 follows on p. 99.

Table 12

Estimated and Projected Production of Natural and Synthetic Crude Oil in Communist China a/
1945-60

Year	Natural Crude Oil		Synthetic Crude Oil		Natural and Synthetic Crude Oil	
	Production (Thousand Metric Tons)	Range of Error (Percent)	Production (Thousand Metric Tons)	Range of Error (Percent)	Production (Thousand Metric Tons)	Range of Error (Percent)
1945	66	+ or - 5 b/ c/	17	+ or - 5 d/	84	+ or - 5
1946	70	+ or - 5 b/ c/	20	+ or - 5 e/	90	+ or - 5
1947	51	+ or - 5 b/ c/	20	+ or - 5 e/	71	+ or - 5
1948	73	+ or - 5 b/ c/	15	+ or - 5 e/	88	+ or - 5
1949	80	+ or - 15	40	+ or - 15 f/	120	+ or - 15
1950	110	+ or - 15	90	+ or - 15 f/	200	+ or - 15
1951	160	+ or - 15	140	+ or - 15 f/	300	+ or - 15
1952	210	+ or - 15	220	+ or - 15 f/	440	+ or - 15
1953	320	+ or - 15	300	+ or - 15 f/	630	+ or - 15
1954	450	+ or - 15	350	+ or - 15 f/	800	+ or - 15
1955	530	+ or - 15	450	+ or - 15 f/	980	+ or - 15
1956	640	+ or - 15	540		1,200	
1957	830	+ or - 15	580		1,400	
1958	1,100		600		1,700	
1959	1,400		650		2,000	
1960	1,700		700		2,400	

a. All data have been rounded to two significant digits. Totals are derived from unrounded data and do not necessarily agree with those figures shown.
b. 449/
c. A conversion factor of 7.333 tons per barrel was used. 450/
d. 451/
e. 452/
f. 453/

2. Analyses of Statements of Production of Natural and Synthetic Crude Oil in Communist China and Derivation of Estimates and Projections in Table 12.

a. Statements of Production of Petroleum Components in 1949-57.

50X1

Statement Number	Production Year	Allegation	
1	1949	Recorded	Production of petroleum, 0.38 times the prewar level
2	1950	Recorded	Production of petroleum, 1.66 times that of 1949
3	1950	Recorded	Production of crude oil, 1.66 times that of 1949
4	1951	Recorded	Production of petroleum, 2.48 times that of 1949
5	1951	Recorded	Production of crude oil, 1.95 times that of 1949
6	1952	Recorded	Production of petroleum, exceeded highest previous level
7	1952	Recorded	Production of petroleum, 1.36 times peak production before "liberation"
8	1952	Recorded	Production of petroleum, 1.43 times the prewar level
9	1952	Recorded	Production of crude petroleum, 3.58 times that of 1949
10	1952	Recorded	Production of petroleum, 3.58 times that of 1949
11	1952	Recorded	Production of petroleum, 2.12 times that of 1951
12	1952	Recorded	Production of crude petroleum, 436,000 tons
13	1952	Recorded	Production of crude oil, 1.19 times the peak production before "liberation"
14	1952	Recorded	Dobycha nefti (extraction of oil), 3.10 times that of 1949
15	1952	Recorded	Production of crude oil, 3.14 times that of 1949

50X1

50X1

Statement Number	Production Year	Allegation	
16	1952	Recorded	Production of crude oil, 1.42 times that of 1951
17	1953	Planned	Production of petroleum, 1.90 times the prewar level
18	1953	Planned	Production of petroleum, 1.42 times that of 1952
19	1953	Planned	Production of crude petroleum, 1.291 times that of 1952
20	1953	Recorded	Production of petroleum, 1.376 times that of 1952
21	1953	Recorded	Production of petroleum, 1.326 times that of 1952
22	1953	Recorded	Production of petroleum, 1.082 times the target for 1952
23	1953	Recorded	Production of petroleum, 1.086 times the target for 1952
24	1953	Recorded	Production of oil, 5.32 times that of 1949
25	1953	Recorded	Production of crude oil, 3.36 times that of 1949
26	1953	Recorded	Production of crude petroleum, 1.44 times that of 1952
27	1953	Recorded	Production of crude oil, 1.3348 times the plan for 1953
28	1953	Recorded	Production of crude oil, 1.097 times the plan
29	1953	Recorded	Production of crude oil, 1.097 times the 1953 target
30	1954	Planned	Production of petroleum, 1.51 times (presumably) that of 1953
31	1954	Planned	Production of petroleum, 1.5088 times that of 1953
32	1954	Planned	Production of crude oil, 1.3528 times that of 1953
33	1954	Recorded	Production of oil, 7.46 times that of 1949

50X1

50X1

Statement Number	Production Year	Allegation	
34	1954	Recorded	Production of crude oil, 1.27 times that of 1953
35	1954	Recorded	Production of crude oil, 1.059 (according to preliminary statistics) times the target for 1954
36	1955	Planned	Total production of petroleum, 5 times the recorded output in 1950
37	1955	Planned	Production of crude oil, 1.34 times the recorded output in 1954
38	1955	Planned	Production of crude oil, 1.316 times (presumably) that of 1954
39	1955	Planned	(Actually, anticipated) crude oil production, over 2.20 times that of 1952, about 980,000 tons
40	1955	Planned	(Actually, anticipated) oil output, 9 times that of 1949
41	1955 (First half)	Recorded	Production of crude oil, not up to the plan for the first half of the year
42	1956	Planned	Production of crude oil, 1.20 times the target for that output in 1955
43	1957	Planned	Production of crude petroleum, 2,012,000 tons
44	1957	Planned	Production of crude oil, 4.6 times the recorded output in 1952

50X1

50X1

50X1

b. Interpretation of Statements.

Analysis of the claims [redacted] concerning production of petroleum components in Communist China for any year since 1948 shows that those claims are almost entirely inconsistent with one another when they are interpreted in the manner used in the above list. 50X1

The chief reason for the apparent inconsistency of the claims is that the exact meaning of the terms used in expressing the claims is uncertain, and it is very difficult to tell which petroleum components are specified in the claims. The meanings of the claims are frequently distorted in translation.

Estimates and projections of production of natural and synthetic crude oil in China for 1945-60 were based on data selected from the above list and on the assumptions stated below.

c. Derivation of Estimates and Projections of Production of Natural and Synthetic Crude Oil in 1949-60.

In deriving the estimates of production of natural and synthetic crude oil, shown in Table 12, the procedure was first, to accept the figure given in the First Five Year Plan of the People's Republic of China for production of natural and synthetic crude oil in 1952; second, to derive the estimate for 1949 by the method described below; third, to derive the estimates for 1950-51 from data which relate production for 1950-51 to production in 1949; and fourth, to derive estimates for 1953-55 and a projection for 1956 from data given in the above list which relate production during each of the years from 1953 through 1956 with production in the previous year. The projections for 1957-60 are the product of subjective appraisal of available information concerning current capacity, geological potential, history of production, the intended size of investment in exploration and development, existing and proposed transportation facilities, and the like. A few details of the procedure follow.

The estimates for 1949, 1950, and 1951, shown in Table 12, were derived from the figure of 436,000 tons which, when rounded, yielded the estimate for 1952. A reference 484/ states that the Chinese

State Statistical Bureau indicated that production of natural and synthetic crude oil in Communist China in 1950, 1951, and 1952 was 1.66, 2.48, and 3.58 times, respectively, production in 1949. The estimate for 1949 shown in Table 12,* was derived by dividing the figure of 436,000 by 3.58. By multiplying this estimate for 1949 by 1.66 (statements 2 and 3) and by 2.48 (statement 4) the estimates for 1950 and 1951, respectively, given in Table 12 were derived.

By multiplying the figure of 436,000 tons for 1952 by 1.44 (statement 26) the estimate for 1953, shown in Table 12, was derived.

By multiplying the estimate for 1953 by 1.27 (statement 34) the estimate for 1954, shown in Table 12, was derived.

The estimate for 1955 was derived by assuming that the planned production of 980,000 tons indicated in statement 39 was realized.

By assuming that the plan for production indicated in statement 42 will be fulfilled and by multiplying the estimate for 1955 by 1.20 the projection for 1956, shown in Table 12, was derived.

* P. 99, above.

III. Capabilities, Vulnerabilities, and Intentions.

A. Capabilities.

The capability of the petroleum production industry of the Sino-Soviet Bloc to meet current requirements can be judged by comparing estimates of 1955 production with plan figures for 1955. No plan figures are available for 1955 production of petroleum components in the Soviet Zone of Austria, Bulgaria, Czechoslovakia, East Germany, and the Mongolian People's Republic. Comparison of these available Communist plans with recorded production, given in II, above, indicates that only a few sectors of the Sino-Soviet Bloc petroleum production industry are lagging.

The status of production of natural gas in the USSR is indicated by the fact that the goal of 8.4 billion cubic meters set in the Fourth Five Year Plan (1946-50) for 1950 was not reached even by 1955, if the estimate used in this report is correct. Production of each of the petroleum components in Poland is not estimated to have reached the plan figure for 1955. Production of crude oil in Rumania in 1955 is estimated to have fulfilled the original goal set for it in the Five Year Plan but to have fallen short of the revised goal of 11 million tons. For all practical purposes, however, Sino-Soviet Bloc production of petroleum components fulfilled the tasks set for it in the plan periods ending in 1955.

The scope of this report does not include projections of future requirements of production of petroleum in the Sino-Soviet Bloc, and few Communist plan figures are available for 1955-60. Where such plan figures are available, they have been taken into consideration in forecasting Bloc production of petroleum components in 1960. The ambitious goals for production of petroleum components set forth in the latest Five Year Plan in both the USSR and Rumania are presumed to be within the capabilities of each of these countries. The Chinese Communist goal of 2,012,000 tons for combined production of natural and synthetic crude oil by 1957 is estimated as too high for that country's capabilities. Projections of production of petroleum components in the countries of the Sino-Soviet Bloc are presented in Table 1.*

---

* P. 3, above.

B. Vulnerabilities.

The petroleum refining industry in the Sino-Soviet Bloc has a number of economic weaknesses including key suppliers, transportation difficulties, dependence on imports, and lack of skilled labor. In the data used in this report, however, there are no indications of economic weaknesses in the petroleum production industry of the Bloc.

C. Intentions.

The status of present or future production of petroleum in the Sino-Soviet Bloc is not an indicator of Sino-Soviet Bloc intentions.

Next 28 Page(s) In Document Denied

Declassified in Part - Sanitized Copy Approved for Release 2013/07/24 :
CIA-RDP79R01141A000700010002-0