PROVISIONAL INTELLIGENCE REPORT

PETROLEUM IN COMMUNIST CHINA

CIA/RR PR-145
30 July 1956

CENTRAL INTELLIGENCE AGENCY

OFFICE OF RESEARCH AND REPORTS

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.

Approved For Release 1999/09/26 : CIA-RDP79-01093A001100090001-7

S-E-C-R-E-T

PROVISIONAL INTELLIGENCE REPORT

PETROLEUM IN COMMUNIST CHINA

CIA/RR PR-145

(ORR Project 25.871)

NOTICE

The data and conclusions contained in this report do not necessarily represent the final position of ORR and should be regarded as provisional only and subject to revision. Comments and data which may be available to the user are solicited.

CENTRAL INTELLIGENCE AGENCY

Office of Research and Reports

S-E-C-R-E-T

Approved For Release 1999/09/26 : CIA-RDP79-01093A001100090001-7

FOREWORD

This report discusses selected phases of the petroleum industry in Communist China from 1949 through 1955. Particular attention has been directed to the activities in the petroleum industry during 1952 and the first 3 years of the Chinese Communist First Five Year Plan (1953-57).

The project, as originally conceived, was designed to provide a comprehensive report on all phases of the petroleum industry. Intelligence data were so limited, however, that the completed report is, in effect, a summary of petroleum production and productive capacity in Communist China, together with a qualitative discussion of the distribution and consumption phases of the industry.

CONTENTS

Appendixes

Tables

Map

CIA/RR PR-145
(ORR Project 25.871)

S-E-C-R-E-T

PETROLEUM IN COMMUNIST CHINA*

Summary

Although the petroleum industry in Communist China has made marked progress during the 1949-55 period, the country is still critically dependent on imports of petroleum. In 1955, Communist China was forced to obtain about 57 percent of total domestic requirements for petroleum and petroleum products from other countries of the Sino-Soviet Bloc. The Chinese Communist First Five Year Plan (1953-57) places great emphasis on a program of petroleum prospecting and exploration and sets a 1957 goal for the production of more than 2 million metric tons** of crude oil. It is unlikely that this goal can be reached -- even with extensive Soviet aid -- and if the goal were reached, the 2 million tons would be insufficient to meet the 1957 requirements for petroleum.

Chinese Communist production of crude oil, from both natural and synthetic sources, increased from 120,000 tons in 1949 to 980,000 tons in 1955, and production of petroleum products increased from 100,000 tons to 1.1 million tons during the same period. Although these increases indicate that the Chinese Communist petroleum industry has made remarkable progress during the 5-year period, on a comparative basis the industry is still underdeveloped. In 1955 the total annual production of crude oil in Communist China was about equal to daily production in the US, and the total annual production of petroleum products by Chinese Communist refineries was about equal to the daily production of US refineries.

In the 1949-55 period the estimated annual throughput capacity of the petroleum refineries of Communist China*** increased from 860,000 tons to 1.3 million tons, and the completion of a new refinery scheduled for construction at Lan-chou will add about 1 million tons of capacity

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

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

*** Facilities for the production and refining of petroleum in Communist China as of 1 January 1956 are shown in Table 1, p. 2, below.

Table 1

Facilities for the Production and Refining of Petroleum in Communist China
1 January 1956

Designation	Coordinates [a]	Place [b]	Province	Function
Northeast Petroleum Plant No. 1	41°51' N - 123°52' E	Fu-shun	Liaoning	Production and refining of crude shale oil
Northeast Petroleum Plant No. 2	41°50' N - 124°03' E	Fu-shun	Liaoning	Production of crude shale oil
Northeast Petroleum Plant No. 3 [c]	41°50' N - 123°49' E	Fu-shun	Liaoning	Refining [d]
Northeast Petroleum Plant No. 4 [c]	41°50' N - 123°49' E	Fu-shun	Liaoning	Refining [d]
Northeast Petroleum Plant No. 5	40°45' N - 120°49' E	Chin-hsi	Liaoning	Refining
Northeast Petroleum Plant No. 6	41°08' N - 121°06' E	Chin-chou	Liaoning	Refining of synthetic oil
Northeast Petroleum Plant No. 7	31°21' N - 121°33' E	Dairen	Liaoning	Refining
Northeast Petroleum Plant No. 8 [c]	43°56' N - 126°32' E	Kirin	Kirin	Refining [d]
Northeast Petroleum Plant No. 9	42°56' N - 126°42' E	Hua-tien	Kirin	Production of crude shale oil
Northeast Petroleum Plant No. 10	43°51' N - 126°33' E	Kirin	Kirin	Refining of shale oil
Yumen Oilfield and Refinery	39°42' N - 97°50' E	Yumen	Kansu	Production and refining of natural crude oil
Yen-ch'ang Oilfield and Refinery	36°30' N - 110°04' E	Yen-ch'ang	Shensi	Production and refining of natural crude oil
Wu-su Oilfield and Refinery	44°29' N - 84°40' E	Wu-su	Sinkiang	Production and refining of natural crude oil
Lan-chou Refinery [e]	36°03' N - 103°41' E	Lan-chou	Kansu	Refining (planned)
Shanghai Refinery [c]	31°14' N - 121°28' E	Shanghai	Kiangsu	Refining (planned)

a. Approximate coordinates.
b. Nearest city or town.
c. Current status unknown.
d. Includes distillation facilities for liquid raw material from coal.
e. Plans for this refinery were announced in the First Five Year Plan; completion after 1957 is expected.

Approved For Release 1999/09/26 : CIA-RDP79-01093A001100090001-7

to the total, perhaps by the end of 1958. The Lan-chou refinery, which is to be built with Soviet aid, will have facilities for the production of aviation gasoline and jet fuel -- products which the present Chinese Communist refineries do not produce.

Requirements for, and imports of, crude oil and petroleum products in Communist China increased considerably during the 1949-55 period, particularly during the first 3 years of the First Five Year Plan. Total requirements increased from 1.3 million tons in 1952 to 2.1 million tons in 1955, and total imports increased from 950,000 tons to 1.2 million tons. In the same period the proportion of total requirements supplied by imports decreased from 72 percent in 1952 to 57 percent in 1955. Almost all Chinese Communist imports of crude oil and petroleum products are supplied by countries of the Sino-Soviet Bloc, primarily the USSR. Clandestine shipments from countries of the Free World make up a negligible part of the total.

Although the Chinese Communist petroleum industry has made substantial progress during the 1949-55 period, the industry will not be capable of meeting all domestic requirements in the immediate future. Progress made thus far has been the result of the rehabilitation and expansion of existing oilfields and refineries. It is possible that the program of development outlined in the First Five Year Plan eventually will make available adequate sources of natural crude oil, and it is possible -- although unlikely -- that the 2-million-ton goal for 1957 production of crude oil will be achieved. It is virtually impossible, however, for the Chinese Communists to construct and put into operation within the next few years the refineries and transportation facilities which would be necessary to any degree of self-sufficiency in petroleum products.

The dependence of the Chinese Communist petroleum industry on imports of petroleum and of petroleum industrial equipment is the major apparent vulnerability of the industry. Of some consequence, also, is the concentration of about 50 percent of the facilities for production of crude oil and about 60 percent of the petroleum refining capacity in Northeast China.

The petroleum industry in Communist China might be an indicator of national intentions only to the extent that military preparations might be revealed by the relocation of facilities for bulk storage or construction of new facilities, precipitant efforts to develop production of aircraft fuels, markedly increased imports of petroleum products

that could be identified as military end items, and unusual efforts to procure petroleum drums or sheet steel for the fabrication of drums. At the end of 1955, none of these factors was apparent, and the development of the Chinese Communist petroleum industry appeared to be geared to the generally expanding industrial economy of Communist China.

I. Introduction.

Communist China covers an area of about 3.75 million square miles and, according to the 1954 census, 1/* has a total estimated population of about 560 million. 2/ The country is divided into nine administrative regions, as follows 3/:

1. Northeast China**: Jehol, Liaoning, Kirin, and Heilungkiang Provinces.
2. North China: Shansi and Hopeh Provinces
3. East China: Shantung, Kiangsu, Anhwei, Chekiang, and Fukien Provinces
4. Central and South China: Honan, Hupeh, Hunan, Kiangsi, Kwangtung, and Kwangsi Provinces
5. Southwest China: Yunnan, Kweichow, Szechwan, and Sikang Provinces
6. Northwest China: Shensi, Kansu, Ningsia, and Tsinghai Provinces
7. Sinkiang-Uighur Autonomous Region***
8. Inner Mongolia Autonomous Region
9. Tibet

---

* For serially numbered source references, see Appendix D.
** A large part of the former territory of Manchuria is included in Northeast China.
*** Until September 1955, when the Sinkiang-Uighur Autonomous Region was formed, Skinkiang Province was part of Northwest China. 4/

The railroads which the Chinese Communists took over from the Chinese Nationalists were located principally in the regions of Northeast, North, and East China. New construction of both railroads and highways in the western provinces has received considerable emphasis in the Chinese Communist press. 5/ The inauguration of service on the new Trans-Mongolian Railroad in January provided a third rail connection between China and the USSR, supplementing the two existing rail lines which enter Communist China through Inner Mongolia and Northeast China. 6/

Although Communist China has one of the largest undeveloped supplies of energy in the world, coal is the only exploited energy resource which is significant in relation to total world production. 7/ Neither production of crude oil nor refining capacity in China is sufficient to satisfy domestic demands for petroleum products. In 1955, total production of crude oil in China is estimated to have been 980,000 tons, which was approximately equal to the average daily production in the US. 8/ Similarly in 1955 the annual throughput capacity of refineries in China -- about 1.3 million tons -- was approximately equal to the daily throughput capacity of refineries in the US. 9/ The principal sources of raw material for the petroleum industry in China are the deposits of natural crude oil in Northwest China and the synthetic oil facilities in Northeast China. The crude oil producing areas and refineries in Communist China are shown on the map.*

In the 1949-54 period the management and development of the petroleum industry in Communist China was under the direction of the Petroleum Administration Bureau, which was subordinate to the Ministry of Fuel Industries. 10/ In July 1955 the Ministry of Fuel Industries was abolished, and independent ministries were established for coal, electric power, and petroleum. 11/

II. First Five Year Plan (1953-57).

A. General.

The published Five Year Plan includes the first available announcement by the Chinese Communists of absolute statistics on

* Inside back cover.

production of crude oil* and provides a summary of the goals and accomplishments of the petroleum industry in Communist China.

The discussion of the petroleum industry in the Five Year Plan begins with an acknowledgement of the backward condition of the petroleum industry and closes with the admission that the petroleum industry is the weakest segment of the industrial economy of Communist China.

B. Reserves.

The Chinese Communist Plan describes the condition of the natural petroleum resources (exclusive of resources recoverable from oil shale and coal) as "obscure" and establishes as a goal for 1957 a "total petroleum reserve" of 55.18 million tons, 2.8 times the reserves in 1952.

Although the real meaning of the expression "total petroleum reserve" is not clear from the context, it may represent proved reserves.** In US practice, proved reserves are sometimes expressed as the ratio of such reserves to production for a given year. Except in the Middle East, where conditions are unusual, such ratios vary between 10 and 30. The estimated 1957 production of natural crude oil, shown in Table 2,*** indicates that such a ratio for China would be about 40. In view of the relatively high ratio and of the obstacles which difficult terrain, inadequate communications, and locations remote from sources of logistic support present to orderly and efficient exploration for oil in Northwest China, the goal of 55.18 million tons of petroleum reserves may be too ambitious.

---

* The following description of the term crude oil appeared in source 12/ to assist in the study of the Five Year Plan:

> Petroleum is a type of mineral oil which may be either "natural petroleum" -- created underground by nature -- or "synthetic petroleum" derived from the processing of coal or oil shale. Before processing, the petroleum is called "crude oil." After processing, crude oil is transformed into "petroleum products."

** Proved reserves in the US include only the crude oil, natural gas liquids, and natural gas recoverable from known deposits under existing economic and operating conditions. 13/

*** Table 2 follows on p. 10, below.

C. Production.

The first Chinese Communist publication of absolute figures for petroleum was the announced production of 436,000 tons of crude oil in 1952. Previous references to production were expressed as percentages of selected years. The goal for 1957 was announced as 2,012,000 tons, 4.62 times production in 1952, or an increase of 1,576,000 tons.

The Chinese Communist Plan also uses the term production capacity as distinct from production. The distinction is interpreted to establish the difference between capability of equipment to produce and absolute production. It was announced that by 1957 the production capacity of natural crude oil would be 4.2 times that of 1952, that the production capacity of synthetic crude oil would be 2.6 times that of 1952, and that the production capacity of crude oil would increase by 1.52 million tons.

D. Refining.

The Chinese Communist Plan indicated that a new refinery would be constructed and existing refineries would be restored or expanded. By 1957 the "oil processing" (refining) capacity would be 2.5 times that of 1952. It is estimated that the serviceable capacity for refining crude oil in 1952 was almost 900,000 tons, and the total capacity planned for 1957, therefore, would approach 2.25 million tons.

On the basis of Chinese Communist press reports of performance at various refineries, it is considered unlikely that there are any unidentified serviceable refineries of significant size in Communist China. Rehabilitation and expansion of identified refinery facilities since 1952 resulted in a 1955 refining capacity of about 1.3 million tons. An additional capacity of 1 million tons annual refining will therefore be required to reach the estimated goal of 2.25 million tons in 1957. The Plan refers to the construction of a single new refinery, and it is believed that the capacity of the new refinery may be about 1 million tons per year. 14/

It would be impractical to export crude oil produced in the far Northwest. Similarly, it would be uneconomical, even by oriental standards, to produce crude oil in the Northwest for stockpiling only. It may be inferred, therefore, that the available refining capacity in 1957 may establish the ceiling on the quantity of crude oil to be produced.

E. Consumption.

The Chinese Communist Plan includes an exhortation to economize in the consumption of petroleum products and indicates that Communist China would continue to be deficient in petroleum even if the very ambitious goals of the Plan should be attained.

F. Construction.

The Chinese Communist Plan includes mention of the construction of 13 projects by the petroleum industry -- 9 to be completed in the 5-year period. Two of the 13 projects would be constructed with Soviet assistance -- one of these two, the refinery at Lan-chou, is scheduled for completion during the 5-year period.

III. Prospecting and Exploration.

The First Five Year Plan of the Chinese Communists includes, as part of its program for the petroleum industry, a plan to "carry out geological prospecting and test drilling in Kansu, Sinkiang, Szechwan, and Tsinghai Provinces to determine the amount of petroleum deposits in those areas." 15/ For the development of this program it was planned to "utilize new techniques, carry out aerial surveying, improve combined geological research and geophysical prospecting, undertake test drills, and carry out geological surveying of natural oil resources /and,/ at the same time, ... /to/ increase the prospecting of oil shale reserves and reserves of coal which can be used for liquefaction." 16/

Reports by the Chinese Communist radio and newspapers indicate that considerable and intensive effort has been directed toward the implementation of this program. The number of geological personnel engaged in oil prospecting in Communist China reportedly has increased from about 18 in the early days of the Communist regime to several thousand in 1955. 17/ In 1955, a total of more than 300 petroleum prospecting teams were operating in China 18/; in 1952 there were approximately 25 teams. 19/ In addition to the increase in the volume of geological prospecting activity, the Chinese Communists now employ advanced scientific surveying and drilling methods, including aerial surveys, 20/ in numerous areas of China.

In 1955, geological prospecting was to be undertaken in the five basins of Chiu-ch'uan, which is located in Kansu Province and contains the already developed Yumen field; in Tsaidam, Tsinghai Province; Szechwan, Szechwan Province; and in Dzungaria and Turfan, Sinkiang-Uighur Autonomous Region. Detailed prospecting was to be concentrated in the Tsaidam and Turfan Basins as the most promising areas. 21/ Considerable publicity attends the large-scale prospecting for oil conducted in the Tsaidam Basin in Tsinghai Province. 22/ Work on a new highway through the northern part of the basin was started in August 1955 in order to facilitate support of the prospecting for oil. 23/ In December 1955 the Chinese Communists announced that in 1956, construction would begin on a new railroad from Lan-chou 24/ through Sining to the northern part of the Tsaidam Basin. 25/

Available intelligence does not permit the development of a quantitative estimate of the oil resources which may be discovered in Communist China. The magnitude of the effort -- in terms of labor and budget allocations -- directed to exploration and prospecting, however, suggests favorable possibilities in the areas mentioned. Recent reports indicate that in November 1955, drilling began on the first deep exploratory well in the Tsaidam Basin 26/ and that crude oil of good quality had been discovered. 27/ Further exploration and drilling will be carried out at this site in order to reach the main oil bearing deposit. 28/

IV. Production.

A. General.

Total production of crude oil in Communist China has increased from an estimated 120,000 tons in 1949 to an estimated 980,000 tons in 1955, an increase of about 700 percent. Of this quantity, production of natural crude oil is estimated to have increased from 80,000 tons in 1949 to approximately 530,000 tons in 1955, an increase of 562 percent. Production of synthetic crude oil is estimated to have increased from about 40,000 tons in 1949 to about 450,000 tons in 1955, or about 900 percent.

Estimated production of crude oil in Communist China in 1949-60 is shown in Table 2.* The table shows production from natural and synthetic sources for each producing location in China for the 1949-57 period and gives forecasts of production of crude oil from natural and

* Table 2 follows on p. 10.

Table 2

Estimated Production of Crude Oil in Communist China a/
1949-60

Thousand Metric Tons

Designation	Place	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958 b/	1959 b/	1960 b/
Synthetic plants c/													
Northeast Petroleum Plant No. 1	Fu-shun	40	90	140	210	270	300	300	300	300			
Northeast Petroleum Plant No. 2	Fu-shun	0	0	0	0	0	10	100	180	200			
Northeast Petroleum Plant No. 6	Chin-chou	0	0	0	10	14	16	20	25	30			
Northeast Petroleum Plant No. 9	Kirin	0	0	0	4	12	20	30	40	50			
Total d/		40	90	140	220	300	350	450	540	580	600	650	700
Natural crude oilfields													
Yumen	Kansu	80	110	160	200	300	410	480	560	760			
Yen-ch'ang	Shensi	0	0	0	0	2	4	4	5	5			
Wu-su	Sinkiang	0	0	1	12	22	30	50	60	70			
Total d/		80	110	160	210	320	440	530	620	840	1,100	1,400	1,700
Grand total d/		120	200	300	436 e/	620	790	980	1,200	1,400 f/	1,700	2,000 f/	2,400

a. For the methodology for the estimates shown in this table, see Appendix B. Estimated margin of error: for total production of crude oil, plus or minus 10 percent; for component estimates, plus or minus 15 percent.
b. Production by location has not been forecast for the 1958-60 period.
c. Available intelligence does not permit the development of estimates or forecasts of production of crude petroleum at Northeast Plants No. 3, No. 4, and No. 8. Based on performance at these plants before World War II, production is estimated as negligible. Northeast Plants No. 5, No. 7, and No. 10 do not produce crude petroleum.
d. Totals have been rounded to two significant figures and may not agree with the sum of the components shown.
e. The grand total shown for 1952 was announced in the First Five Year Plan and has not been rounded.
f. The goal for 1957 announced in the First Five Year Plan was 2,012,000 tons.

Approved For Release 1999/09/26 : CIA-RDP79-01093A001100090001-7

synthetic sources for the 1957-60 period. The grand totals shown in the table for the 1949-56 period reflect the application of production indexes claimed by the Chinese Communists to the absolute figure for production for 1952 announced in the First Five Year Plan.

Although the claims of the Chinese Communists concerning production appear to be high, there is no positive evidence to disprove them. Similarly, the analysis of available plant capacity and ancillary facilities and services suggests that the fulfillment of the claims for the years through 1956 is physically possible. On the basis of such considerations, the Chinese Communist claims concerning total production of crude oil for the 1949-56 period have been accepted.

B. Natural Crude Oil.

Chinese Communist claims concerning resources of natural crude oil indicate that Communist China now has a relatively high potential for the development of production of natural crude oil -- in contrast to previous estimates that indicated a very low potential. The producing areas for natural crude oil, as well as the sites where prospecting is now being undertaken, are located in western China, and are remote from the principal industrial complexes in East and Northeast China, where the consumption of petroleum products would be expected to be high. In 1955, natural crude oil was produced at only three locations in China: Yumen, Kansu Province; Yen-ch'ang, Shensi Province; and Wu-su, Sinkiang-Uighur Autonomous Region. Production at Yumen amounted to about 480,000 tons, approximately 90 percent of the total production of natural crude oil, production at Shensi amounted to about 1 percent of the total, and production at Wu-su accounted for the remaining 9 percent. Production of natural crude oil in 1955 represented more than 50 percent of the total production of crude oil in Communist China.

1. Yumen.

The development of the Yumen oilfield under the Chinese Nationalist regime began in 1939. 29/ Average annual production at the Yumen oilfield in the 1944-46 period was about 70,000 tons. 30/ The indiscriminate exploitation of the oilfield which took place during World War II resulted in a sharp decrease in production in the immediate postwar years, but the decrease had been arrested by mid-1948. 31/ The Chinese Communists began rehabilitation of the oilfield immediately after they took possession of it, and production is estimated

to have been about 110,000 tons in 1950. 32/ Production has increased gradually since that time, and it is estimated that in 1955, production at the oilfield amounted to about 480,000 tons. 33/ The Yumen oilfield has been the only important area of production of natural crude oil in Communist China and is described in the Chinese Communist press as the country's largest producer of crude oil. 34/ The principal producing area is located at Lao-chun-miao, northwest of Yumen, but the oilfield is commonly referred to as the Yumen oilfield and is under the control of the Yumen Petroleum Administration. 35/

The Chinese Communists have concentrated efforts to delineate and rehabilitate the oilfield and to expand production by drilling new wells. Frequent references to the presence of Soviet and Rumanian technicians at the oilfield and to the use of imported equipment indicate both the importance of the effort and Chinese dependence on foreign assistance. 36/ The most recent project, also undertaken with Soviet aid, is the project for the repressurization of the oilfield by the injection of water. 37/ This is consistent with the Soviet practice of secondary recovery methods to restore and/or to increase production of crude oil.

Limited access to the isolated oilfield has delayed the Chinese Communists in the exploitation of the resources at Yumen. Until recently the nearest railhead was about 800 kilometers from the oilfield, and all supplies and equipment for the production operations were transported by truck. The extension of the projected Lan-chou - Sinkiang Railroad toward Yumen has helped to accelerate the development. Rail service probably will be available to Yumen by mid-1956. 38/ The lack of rail facilities has also restricted the distribution of the crude oil and refined products produced at Yumen. Until November 1953 the production of the oilfield was refined at the local refinery. Since that time, some crude oil has been shipped by truck to the railhead for shipment to the East. 39/ The capacity to ship crude oil from the area has, of course, increased as the railroad approached the oilfield.

The Yumen oilfield will continue to be the principal source of natural crude oil in Communist China for the next few years and will assume an increasingly important role in the petroleum economy of China as transportation facilities are improved. Additional areas producing crude oil are being developed in the vicinity of Yumen, and by 1960, production at Yumen may be double production in 1955. 40/

2. Sinkiang.

The development of resources of natural crude oil in Sinkiang Province began in 1935 under the joint supervision of the provincial government and the USSR. 41/ Production was concentrated at the Tu-shan-tzu oilfield near Wu-su, and in 1942, production was estimated to be about 20,000 tons. 42/ In 1943 the USSR withdrew from the joint operation and removed most of the equipment. Only sporadic and insignificant production occurred in the 1943-50 period. 43/ In 1950 the USSR and Communist China formed the Sino-Soviet Petroleum Company for the purpose of developing petroleum resources in Sinkiang. The company had virtually no equipment or personnel, and most of the necessary material for the development of production was supplied by the USSR. 44/ Production resumed at Wu-su in 1951, 45/ but the planned production of 70,000 tons for 1957 46/ indicates the relatively minor contribution of Sinkiang crude oil to the over-all petroleum economy of China. Production of crude oil in Sinkiang will continue to be of local importance only, unless there is a significant discovery of additional resources of crude oil as a result of the extensive exploration program in the region.

3. Shensi.

Production of crude oil near Yen-ch'ang in Shensi Province began in 1907. 47/ Production in 1955 is estimated to have been about 5,000 tons.* Production in this area is not expected to increase significantly in the forseeable future and will, therefore, continue to be of local importance only.

C. Synthetic Crude Oil.

The entire synthetic crude oil industry in Communist China is located in Northeast China. The industry was developed by the Japanese in Manchuria in order to utilize the abundant local resources of oil shale and coal. In China, production of crude oil from oil shale is considerably more important than processes for production of synthetic crude oil from coal. In 1955, production of crude shale oil amounted to about 95 percent of total production of synthetic crude oil and more than 40 percent of total production of crude oil in China. Considerable effort has been expended in the rehabilitation of the synthetic oil facilities which existed at the time that the Chinese

* See Table 2, p. 10, above.

Communists assumed control, and it is probable that these facilities will be expanded. Synthetic crude oil will continue to be significant in the petroleum economy of China, although the proportionate contribution will decrease as production of natural crude oil increases.

1. Crude Shale Oil.

The principal area for production of crude shale oil in Communist China is Fu-shun in Liaoning Province, where deposits of oil shale are estimated to be about 5.5 billion tons. These deposits lie between the surface soil and the coal beds and must be removed to permit mining of the coal. 48/ The oil shale has an average oil content of about 6 percent and provides raw material for the shale oil industry. 49/ Two large shale oil manufacturing plants are located in Fu-shun -- Northeast Petroleum Plant No. 1 (formerly the Fu-shun West Plant) and Northeast Petroleum Plant No. 2 (formerly the Fu-shun East Plant). 50/ It is estimated that in 1955 the two plants produced 400,000 tons of crude shale oil, about 40 percent of total Chinese Communist production of crude oil.

Construction of Northwest Petroleum Plant No. 1 began in 1929, and the plant was expanded through the addition of a second section in 1936. 51/ At the time of the Japanese surrender the plant consisted of 140 retorts for the destructive distillation of oil shale, including 80 retorts with a capacity of 100 tons of oil shale each and 60 retorts with a capacity of 120 tons of oil shale each. 52/ The reported annual capacity of the plant was about 280,000 tons of crude shale oil. 53/ The USSR removed some small machinery and equipment from the plant, but at the time of the Pauley Commission's inspection in 1946 the basic facilities remained. 54/ The Chinese Nationalists operated Northeast Plant No. 1 at a reduced level until 1948, when it was lost to the Communists. 55/ The Chinese Communists resumed operations at the plant in 1949 and continued the restoration and rehabilitation of its facilities. 56/ The plant is believed to have been restored to its original capacity in 1953. 57/ Technical improvements of facilities may have raised the production capacity of the plant in 1955 to 300,000 tons of crude shale oil. 58/

Construction of Northeast Petroleum Plant No. 2 was undertaken during World War II, and the plant was in partial operation in 1944, when production of about 90,000 tons of crude shale oil was attained. 59/ The facilities at the plant included 60 retorts, each with a capacity of 200 tons of oil shale. Planned annual production of the plant was 180,000 tons of crude shale oil. 60/ The Chinese

Communists were in possession of Northeast Plant No. 2 in 1946, and it could not be inspected by the Pauley Commission, but it was believed that the basic facilities were intact. 61/ In May 1953 the Chinese Communists began the repair and restoration of the plant, which had remained idle since the Japanese surrender. 62/ Essential reconstruction was completed in December 1954, 63/ but available evidence suggests that the plant did not attain its designed operating capacity before the end of 1955. 64/ Technical improvements are expected to raise the production capacity of the plant to 200,000 tons of crude shale oil by 1957. 65/

One other shale oil plant exists at Hua-tien in Kirin Province and is designated by the Chinese Communists as Northeast Petroleum Plant No. 9. 66/ No recent description of the facilities at this plant is available but total production in 1955 probably did not exceed 30,000 tons.* Although this area is of minor importance now, recent Chinese Communist press reports have claimed the discovery of rich new oil shale deposits at Hua-tien. 67/

2. Other Production of Synthetic Crude Oil.

Northeast Petroleum Plant No. 6, located at Chin-chou in Liaoning Province, is the only plant in Communist China known to have produced synthetic crude oil from coal in the 1949-55 period. 68/ The plant began operation in 1944 and was operated for only a few months in that year. 69/ It employed the Fischer-Tropsch process for production of synthetic crude oil from coal and had an estimated annual capacity of 30,000 tons of crude oil. 70/ The plant is believed to have been in operation since 1952 71/ and, on the basis of press reports, is expected to attain its original capacity by 1957.

Recent press reports indicate that the Chinese Communists are rehabilitating a low-temperature carbonization plant at Chin-hsi in Liaoning Province, 72/ the site of a refinery for natural crude oil, Northeast Petroleum Plant No. 5. Northeast Petroleum Plants No. 3 73/ and No. 4, 74/ both of which are located at Fu-shun, and Northeast Petroleum Plant No. 8 in Kirin 75/ may produce synthetic petroleum. Available information and the lack of claims by the Chinese Communists suggest that production at these plants is very small. 76/

* See Appendix B.

D. Natural Gas.

The only identified area of production of natural gas in Communist China is in Szechwan Province, where production is estimated to be of local importance only. Some of the natural gas produced in this area is consumed in the local carbon black plant. 77/ Press reports in 1954 referred to production of natural gasoline from Szechwan natural gas, but there has been no indication of the development of this process on a commercial scale. 78/

V. Refining.*

A. General.

In order to appreciate the magnitude of the refining phase of the petroleum industry of Communist China, it is appropriate to consider the crude oil charge capacity in terms of a daily rate as well as in the light of similar capacities in US industry. The principal refineries in Communist China -- Fu-shun, Yumen, Dairen, and Chin-hsi, each with a charge capacity of less than 10,000 barrels per day -- comprise 90 percent of the total capacity in China. In the US, refineries of similar size contain only 7 percent of the total capacity, and refineries with charge capacities in excess of 100,000 barrels per day represent 50 percent of the total capacity.

The installed capacity for refining crude oil in 1952 was estimated at about 900,000 tons annually, of which about 35 percent was allied with the shale and synthetic oil plants. In 1955, such plants contained about the same percentage of almost 1.3 million tons of refining capacity.

B. Natural Crude Oil Refineries.

1. Yumen Refinery.

A natural crude oil refinery is located at Shih-yu-ho, Kansu Province, in the natural crude oil producing area of Northwest China.

* Detailed plant studies have not been included in this report. Source 79/ includes such detailed information for selected plants in Communist China.

The development of refining at Yumen is estimated to have coincided with the development of production of crude oil beginning in 1939. The original distillation equipment consisted of shell stills, 6 batteries of 4 stills each. Three of these batteries were destroyed by floods in the summer of 1943. 80/ Production of crude oil at Yumen in the years immediately following 1943 81/ suggests that the distillation capacity of the remaining 3 batteries was about 75,000 tons of crude oil per year.

Information related to the expansion or development of the Yumen refinery during and since World War II is obscure. It was reported that a topping plant with a crude oil charge capacity of 150,000 tons per year was completed during 1945, 82/ but another report indicated that a similar unit was installed in early 1947. 83/ The similarity of equipment and time period involved suggests that both reports concern the same item. A topping plant with a crude oil charge capacity of 75,000 tons per year reportedly was installed in the spring of 1948. 84/ On the basis of the reported installations described above, the total annual refining capacity at the time the Chinese Communists assumed control is estimated at about 300,000 tons.

No further information related to increased capacity for refining crude oil is available until 1954, although the Chinese Communist press did report that a cracking unit had been completed in 1950. 85/

Plans to expand the Yumen refinery in 1954 included the installation of a "crude oil tower." 86/ It was also reported that the capacity of the Yumen refinery would be increased by 26 percent in 1954. 87/ The estimated refining capacity in 1953 indicated that such a percentage increase -- about 75,000 tons -- would raise the annual crude charge capacity at the Yumen refinery to about 375,000 tons for 1954 and 1955. Two 75,000-ton topping plants were in India on the way to Communist China at the end of World War II. 88/ It is possible that the topping plant installed in the spring of 1948 was one of these two plants. The "crude oil tower" to have been installed in 1954 may have been the other.

2. Wu-su Refinery.

Very little information is available on the Wu-su refinery, which is located in the natural crude oil producing area at Tu-shan-tzu in Sinkiang Province. A small refinery with a crude oil charge capacity of about 50,000 tons per year was dismantled by the USSR when the

Red Army abandoned operations in the area in 1943. It was reported that by 1951 the Chinese Communists had rebuilt or otherwise developed refining facilities to process between 30,000 and 50,000 tons of local crude oil per year. 89/ A cracking unit, probably a thermal type, supplied by the USSR, was placed in operation at the refinery in May 1954. It was claimed that this unit would increase gasoline output about 80 percent. In addition, a coking plant, an asphalt manufacturing plant, a thermal power plant, and drum manufacturing and auto repair plants were scheduled for completion in 1955. 90/ It was indicated that construction of these accessory units would "complete the oil refining department." 91/

The total annual crude charge capacity of the refinery is accepted as about 50,000 tons per year in 1952 and 1953, and as about 70,000 tons in 1954 and 1955 -- on the basis of the report that in 1957 the Sinkiang Petroleum Company would produce such a quantity, which in turn would "supply the demands of the province." 92/

The relatively small local demand for petroleum and the remote location of the petroleum deposits in Sinkiang make unlikely any further expansion of the refining facilities at Wu-su. It is probable that any additional increase in production of crude oil would be shipped to refineries elsewhere in Communist China, at points closer to centers of consumption.

3. Yen-ch'ang Refinery.

A small refinery was built at the town of Yen-ch'ang in Shensi Province in 1911. No particulars are available concerning this plant, but it is understood to be primitive in design. 93/ The capacity is estimated to be about 5,000 tons per year, sufficient to process the negligible local production of crude oil.

4. Northeast Petroleum Plant No. 7 (Dairen).

Northeast Petroleum Plant No. 7, built by the Japanese before World War II, is located on the southeast shore of Kan-ching-tzu Peninsula, 2.3 nautical miles north of, and across the Ta-lien Bay from, the main Ta-lien harbor area. 94/

In October 1945 the USSR removed selected pieces of refinery equipment. 95/ The principal refining equipment that remained after the USSR had completed cannibalization was a 2-stage crude oil distillation unit with a crude oil charge capacity of about 200,000 tons per year. 96/

There is no evidence to indicate that any processing equipment which would increase the crude oil charge capacity has been installed since the end of World War II. The expansion planned in 1954 97/ referred only to the development of facilities for manufacturing lubricating oils from Yumen crude oil.

Although the degree of serviceability of Northeast Plant No. 7 during the 1952-55 period is not known, the plant is estimated to have a capability of processing about 200,000 tons of natural crude oil annually during the 1952-57 period.

5. Northeast Petroleum Plant No. 5 (Chin-hsi).

Northeast Petroleum Plant No. 5 is located about 8 nautical miles west of the port of Hu-lu-tao, southwest of the town of Lien-shan on the west side of the main highway and the Peiping-Shenyang Railroad. 98/

Construction of the plant was begun by the Japanese in 1941 and was about 70 percent completed at the end of World War II. Some plant equipment was cannibalized or shipped elsewhere, but at the time the Chinese Communists arrived, the equipment remaining at the refinery included a topping unit with a crude oil charge capacity of 150,000 tons per year and a cracking unit with a charge capacity of 35,000 tons per year. 99/

The Chinese Communists did not undertake rehabilitation of the existing facilities at the plant until 1952, when restoration of the cracking unit was begun. The cracking unit was completed in September 1953 and operated on charge stock from Northeast Petroleum Plant No. 1 until the topping unit at Northeast Plant No. 5 was placed in operation. Restoration of the topping unit began in March 1954 and was completed in October 1954. The Chinese Communist claim that the capacity of the restored topping unit was approximately four times the plant capacity when only the cracking unit was employed 100/ is consistent with these estimated capacities. The completed plant was described as "one of the largest domestic natural crude oil refineries in China." 101/

6. Shanghai Refinery.

Early in 1954 the Chinese Communist press made several references to the construction and/or expansion of a refinery in the Shanghai area. The site was described as an old oil-storage installation at which efforts to install simple refining equipment were made in 1950. In April 1954, construction was under way to expand the results of the earlier effort in order to provide a "huge new modern oil refinery" 102/ which would produce 11 times as much product as in 1950. 103/ A cracking unit of unidentified type and capacity is to be included in the completed plant. 104/

Available information on the existence of refining facilities in Shanghai before 1954 is conflicting. The information varies from reports that deny the existence of any refinery to reports of a 400,000- to 500,000-ton refinery which would exceed the capacity of any refinery known to exist in Communist China. A single reference to the shipment of Yumen crude oil to "refineries in the East and Northeast" represents the only Chinese Communist implication that operational refining capacity might exist at Shanghai. A related news report identified the arrival of crude oil from Yumen at the Dairen area, but there was no such report to indicate that any had arrived at Shanghai. Although there have been recent news reports of research and development activities at the Shanghai Refining Plant, 105/ there has been no reference to the shipment of crude oil to Shanghai and no reference to the recent operation or production of a petroleum refinery at Shanghai.

On the basis of available information, it is believed that there was a small refinery of insignificant capacity at Shanghai during the period from 1950 through 1955. Although the status of construction of new refining facilities at Shanghai is unknown and no date of completion has been announced, it is estimated that the refinery will not operate before completion of the rail link to Yumen and probably not before the end of the First Five Year Plan.

7. Lan-chou Refinery.

The Chinese Communist press reports related to the new Lan-chou refinery describe it as the "first of its size in China" and indicate that the plant will have a capacity of about 1 million tons and will produce, among other things, aviation gasoline and aviation kerosine (jet fuel). 106/ The planned production of aviation gasoline implies

the use of specialized conversion equipment -- that is, catalytic cracking. Reports indicate that such preliminary work as the preparation of the ground and the construction of rail sidings was under way in the last calendar quarter of 1955 and that construction of the refinery would be under way in 1956. 107/

On the basis of US experience, it is estimated that a refinery of the type and size implied in the Chinese Communist press reports would require at least 2 years to complete. Using US experience as an analogy, the completion of the Lan-chou refinery during the period of the First Five Year Plan is not probable.

C. Synthetic Oil Plants and Refineries.

1. Northeast Petroleum Plant No. 1 (Fu-shun West Plant).

At the end of World War II, refining facilities at Northeast Petroleum Plant No. 1 included distillation equipment with an annual crude charge capacity of about 440,000 tons. 108/ Two thermal cracking units with an annual capacity of about 40,000 tons each were also constructed at Plant No. 1. 109/ There was some minor cannibalization of the plant by the USSR following World War II, and it is believed that the earlier capacity may have been reduced to about 300,000 tons per year. The restoration of Plant No. 1 was completed in 1953, and after that year the capacity has been considered as 440,000 tons.

2. Northeast Petroleum Plant No. 2 (Fu-shun East Plant).

Facilities for refining crude shale oil were planned or under construction at Northeast Petroleum Plant No. 2 at the end of World War II, but there is no evidence that such facilities were ever completed or operated. Crude shale oil produced at Northeast Plant No. 2 is refined at Northeast Plant No. 1. 110/

3. Northeast Petroleum Plant No. 3 (Fu-shun).

Except for casual references to the manufacture of gasoline and kerosine in 1954, there is no available information to provide an estimate of the current status of Northeast Petroleum Plant No. 3. The plant originally had a capacity for refining crude oil of about 84,000 tons per year. 111/ In the absence of

positive information, the contribution of this plant to the petroleum economy of Communist China is estimated to be negligible, and the original refining capacity is not included in current estimates.

4. Northeast Petroleum Plant No. 4 (Fu-shun).

The origin and current status of Northeast Petroleum Plant No. 4 is obscure. Although the Chinese Communist press had identified Northeast Refinery No. 4 (and No. 3), it is conceivable that Plants No. 3 and No. 4 may represent a delineation of the old Fu-shun Coal Liquefaction Plant (No. 4) into two sections.

There was a single reference in the Chinese Communist press to the manufacture of kerosine at this plant, and there have been several references to the manufacture of coke and carbon black. In the absence of positive information on the operation of this plant, its contribution to the petroleum economy of Communist China is considered to be negligible.

5. Northeast Petroleum Plant No. 6 (Chin-chou).

There is little available information on the processing facilities at Northeast Petroleum Plant No. 6. On the basis of the estimated capacity for production of synthetic oil, it is estimated that processing capacity was 10,000 tons in 1952 and 30,000 tons in each year thereafter through 1955.

6. Northeast Petroleum Plant No. 8 (Kirin).

No information which describes the current status of Northeast Petroleum Plant No. 8 is available. No references to this plant have been noted in Chinese Communist press reports, and the plant's contribution to the petroleum economy of Communist China is considered to be negligible.

7. Northeast Petroleum Plant No. 9 (Hua-tien).

There is no evidence that Northeast Petroleum Plant No. 9, which is located at Hua-tien, has any refining facilities. There are reports that the crude shale oil produced at Northeast Plant No. 9 is refined in the facilities at Northeast Petroleum Plant No. 10. 112/

8. Northeast Petroleum Plant No. 10 (Kirin).

Northeast Petroleum Plant No. 10 was designed to operate in concert with Northeast Plant No. 9. Northeast Plant No. 10 is reported to have conducted small-scale refining operations through the years ending in 1952. 113/ The refining capacity for the years after 1952, as shown in Appendix B, is a function of production of crude shale oil at Northeast Plant No. 9. Estimated increases in production of crude oil at Plant No. 9 indicate that by 1957, Plant No. 10 may have a refining capacity of 50,000 tons per year.

D. Production of Petroleum Products.

The variety and quality of refined products that are produced in Communist China are limited by the types of available raw material and processing equipment. There is no evidence that either reciprocating-engine or jet-engine aircraft fuels are manufactured in China. Preliminary announcements related to the planned refinery at Lan-chou indicate, however, that there are plans for production of both types of aircraft fuels. Except for aircraft fuels and high-grade lubricating oils, the petroleum industry of Communist China can produce a relatively complete line of liquid and solid petroleum products.

Although crude shale oil produced at Northeast Petroleum Plants No. 1 and No. 2 represents a large portion of Chinese Communist raw material, only nominal quantities of such liquid petroleum products as gasoline, kerosine, and diesel fuel are recovered. Attempts to produce kerosine-type products have resulted in costly consumption of treating reagents such as sulfuric acid. As much as 80 percent of the crude shale oil is recovered in the form of residual fuel, paraffin, and coke. A portion of the residual fuel oil included in the 80 percent represents feed stock for the cracking facilities at Northeast Plant No. 1. The yield from the cracking process represents an addition to the gasoline and coke yield from the crude shale oil. Lubricating oils are not normally produced from the crude shale oil.

There have been reports of the inferior quality of motor gasoline and kerosine used in Communist China, but the origin of the inferior products -- from Soviet or indigenous sources -- is obscure. The national shortage of petroleum products suggests that products of low quality would be acceptable to consumers.

Estimated availability of crude oil, refining capacity, and production of petroleum products in Communist China in 1949-55 are shown in Table 3.* The estimated product-yield pattern shown in Table 3 is based on assays of the types of raw material available and on identified refining facilities. A description of the yield pattern of refined products at Yumen for the second quarter of 1950 is the single reference to such information. Because of the lack of information and because the yield pattern can be varied over a wide range by modification of procedures for operating refineries, any estimates of such a pattern are, of necessity, tenuous.

In the absence of absolute data on production from Chinese Communist sources, the available indexes for production of gasoline and other petroleum products do not yield a consistent series of estimates of production.

VI. Foreign Trade.

A. General.

In the pre-Communist era, China was a consistent importer of petroleum and petroleum products. In 1937, China imported approximately 900,000 tons of petroleum products. In addition, about 150,000 tons of crude oil were imported for refining at Northeast Petroleum Plant No. 7 at Dairen. A small amount of products, about 70,000 tons, was exported from Northeast Petroleum Plant No. 2 at Fu-shun. 114/ In 1947, imports of petroleum products amounted to about 1.8 million tons, or twice the 1937 imports. 115/ In addition, about 3,000 tons of crude oil were also imported in 1947 for refining at Northeast Petroleum Plant No. 5 at Chin-hsi. 116/ No petroleum products were exported in 1947. 117/

Imports of petroleum products from the Free World by Chinese Communists in 1949 and 1950 were at a very low level compared with imports by the Chinese Nationalists in 1947, 118/ and since the Western embargo was put into effect in July 1950, no large quantities of petroleum have been received from the Free World. 119/ Quantities of petroleum products smuggled into Communist China through Hong Kong and Macao have never been significant. 120/

* Table 3 follows on p. 25.

Table 3

Estimated Availability of Crude Oil, Refining Capacity, and Production of Petroleum Products in Communist China a/*
1949-55

Thousand Metric Tons

	1949	1950	1951	1952 b/	1953 b/	1954 b/	1955 b/
Crude oil							
Production	120	200	300	436	620	790	980
Imports	N.A.	N.A.	N.A.	150	200	200	250
Loss (field and transportation)	4	6	8	13	19	25	33
Available for refining	120	190	290	570	800	960	1,200
Refining capacity c/	860	860	860	880	1,000	1,200	1,300
Refinery balance d/							
Products							
Gasoline	31	46	58	130 (37)	170 (48)	220 (48)	240 (61)
Kerosine	9	12	18	43 (15)	65 (20)	78 (20)	100 (25)
Diesel fuel	5	7	11	22 (7)	32 (10)	38 (10)	48 (12)
Lubricating oil	4	5	8	16 (7)	25 (10)	30 (10)	35 (12)
Residuals e/	54	100	160	290 (66)	410 (88)	490 (88)	640 (110)
Total products	100	170	260	500 (130)	710 (180)	850 (180)	1,100 (220)
Gas and loss	13	24	36	70 (15)	94 (20)	110 (20)	140 (25)
Crude charged to refinery	120	190	290	570 (150)	800 (200)	960 (200)	1,200 (240)

* Footnotes for Table 3 follow on p. 26.

Approved For Release 1999/09/26 : CIA-RDP79-01093A001100090001-7

Table 3

Estimated Availability of Crude Oil, Refining Capacity, and Production of Petroleum Products in Communist China
1949-55
(Continued)

a. For the methodology for the estimates shown in this table, see Appendix B. Except for 1952 production of crude oil, all data have been rounded to two significant figures and may not agree with corresponding data shown in Appendix B.
b. The quantities shown in parentheses represent that portion of total production of products which was derived from imported crude oil.
c. The estimated range of error is plus or minus 10 percent.
d. The estimated range of error is plus or minus 15 percent.
e. Includes fuel oil, asphalt, coke, and similar residual products.

Approved For Release 1999/09/26 : CIA-RDP79-01093A001100090001-7

As a result of the embargo by the West, Communist China has been dependent on the Soviet Bloc for requirements of crude oil and petroleum products to supplement domestic supplies. Estimated Chinese Communist imports of crude oil and petroleum products from the Soviet Bloc in 1952-55 are shown in Table 4.

Table 4

Estimated Chinese Communist Imports
of Crude Oil and Petroleum Products from the Soviet Bloc a/
1952-55

Thousand Metric Tons

Year	Crude Oil	Petroleum Products	Total
1952	150 b/	800 c/	950
1953	200 d/	800 c/	1,000
1954	200 d/	800 e/	1,000
1955	250 f/	1,000 f/	1,200 g/

a. Information for 1949-51 is not available.
b. 121/
c. 122/
d. This is based on requirements for Northeast Petroleum Plant No. 7. 123/
e. This is believed to have remained at the level of 1953.
f. The amount of petroleum imported from the USSR "increased very much" in 1955. 124/ It is believed that this increase amounted to about 25 percent.
g. Rounded to two significant figures. The total is rounded and does not agree with sum of components.

B. Imports of Crude Oil.

Imported crude oil was required for Northeast Petroleum Plant No. 7 at Dairen, which began operations under the Chinese Communists in the last half of 1950, and for Northeast Petroleum Plant No. 5 at Chin-hsi, which resumed operations in 1954. Crude oil imported in the 1950-53 period is believed to have originated on Sakhalin Island and probably was imported by rail via Sui-fen-ho or by barge via the

Sungari River. 125/ Crude oil imported in 1954 and 1955 originated in the central areas of the USSR as well as in the Soviet Far East. 126/

C. Imports of Petroleum Products.

Available information on Chinese Communist imports of petroleum products in the 1952-55 period is insufficient to warrant estimates by origin and by type of product. In this period the Chinese Communists produced no aviation fuels and only a few types of lubricants. All aviation fuels probably were supplied by the USSR, 127/ and lubricants were imported from Hungary and Czechoslovakia as well as from the USSR. 128/ As recently as August 1954, approximately three-fourths of the lubricating oils and greases offered for sale by the China Petroleum Company in Sian were of foreign origin. 129/ Such fuels as gasoline, kerosine, and diesel fuel were imported from the USSR and from Rumania. 130/

The major portion of the petroleum products imported by Communist China is transported on the Trans-Siberian Railroad from western USSR and enters China through the border stations at Otpor/Man-chou-li and Grodekovo/Sui-fen-ho. 131/ The recently completed Trans-Mongolian Railroad will provide a shorter alternate route for the transportation of petroleum products from the USSR to China. 132/ Tanker shipments of petroleum products from the Black Sea area to China represent another medium of supply. Shipments of petroleum products from Rumania to Chinese ports amounted to about 100,000 tons in 1954. 133/ In 1955, they dropped to about 50,000 tons, all of which was shipped directly to South China ports. 134/ Although shipments from the Black Sea to China declined in 1955, the coincident increase in shipments of petroleum from the Black Sea to the Soviet Far East suggests that a large portion of such shipments was destined ultimately for China. 135/

VII. Distribution.

A. General.

Available information on the distribution of crude oil and petroleum products within Communist China is sufficient to provide only a general pattern. It is not possible to develop quantitative estimates of the movement of petroleum.

Means of transportation by land historically have been inadequote in Communist China. Although inland waterways have served to distribute much of the imported petroleum within China, the distribution of indigenous sources of petroleum is dependent principally on land transportation. In addition to the limitations of local transportation, the lack of upcountry facilities for bulk storage and the inherent limitations of tank trucks necessitate heavy dependence on the use of drums and other types of containers. The long supply routes and the relatively slow transportation facilities make the demand for containers a significant problem in the petroleum industry.

B. Crude Oil.

The only indigenous crude oil that enters into the internal distribution pattern in Communist China is that produced at the Yumen oilfield. Since November 1953, increasing quantities of Yumen crude oil have been transported from Northwest China to the refineries for natural crude oil in Northeast China, a distance of about 2,000 miles. 136/ The amount of crude oil transported from Yumen to the Northeast is estimated to have been from 100,000 to 150,000 tons in 1955. The crude oil was transported from the oilfield to the railhead by truck, either in drums or in tank trucks, and thence by rail tank cars. 137/ Completion of the Lan-chou - Sinkiang Railroad to Yumen -- probably by mid-1956 -- will facilitate the transportation of crude oil from the oilfield. 138/

Imported crude oil is used only in the refineries for natural crude oil in Northeast China. Crude oil from the central USSR is transported via the Trans-Siberian Railroad to Otpor/Man-chou-li and continues by rail to the refineries. 139/ Crude oil from Sakhalin Island can be imported by tanker, by rail, through the border station at Grodekovo/Sui-fen-ho, or by shallow draft vessel up the Sungari River to in-transit storage at the river port of Chia-mu-ssu. 140/ The Sungari River route could not be used during the winter season.

C. Petroleum Products.

The general direction of flow of petroleum products within Communist China is from the north to the central and southern areas. Practically all imported products enter Northeast China,* and domestic

* Use of the Trans-Mongolian railroad will relieve the concentration of imports of products in the Northeast.

production of petroleum products is concentrated in Northwest and Northeast China. The small quantity of petroleum which is imported or smuggled into South China probably is consumed in that area. The small production of petroleum products in Sinkiang and Shensi Provinces is consumed locally and is not distributed generally.

Petroleum products manufactured at Yumen, Kansu Province, probably are distributed in the Northwest and Southwest regions, Tsinghai Province, and Tibet -- principally by truck. In addition, an unidentified quantity of refined products is also shipped east from Yumen by truck and rail. The total amount available for distribution from this area in 1955 was about 290,000 tons. Imported or indigenous products which originate in Northeast China probably constitute the principal supply of petroleum for North, East, and Central China. Products available in Northeast China in 1955 amounted to about 1.7 million tons. These products are shipped via the main north-south rail line through Peiping to Hankow and Canton to supply the central area of China, or by water from ports in Northeast China to Shanghai and to such intermediate ports along the North China coast as Ta-ku, Chefoo, and Tsingtao. 141/ The large storage facilities at Shanghai make it an excellent terminal point for products received by rail or water from Northeast China. From Shanghai these products can then be distributed to points along the Yangtze River as far inland as Chungking. Products received at Hankow by rail from the north can also be transshipped to points along the Yangtze River. Coastal shipment between Shanghai and Canton would be subject to harassment by the Chinese Nationalists, and the quantity shipped by this route presumably represents only a negligible percentage of the total internal distribution of petroleum products.

D. Future Trends.

The construction of a large new refinery at Lan-chou, at the hub of such projected rail lines as the Lan-chou - Pao-t'ou line, the Lan-chou - Sinkiang line, and the Ch'eng-tu - Paoki line, probably will eliminate the cross-country shipment of crude oil and will certainly facilitate the internal distribution of petroleum products. Crude oil produced in the Yumen oilfields probably will be transported only as far as the refinery at Lan-chou. The refined products from the Lan-chou refinery will supply the planned industrial complex in the Lan-chou area as well as consumers in the Southwest and Northwest regions.

VIII. Consumption.

The principal petroleum products consumed in China before World War II were kerosine, fuel oil, and gasoline. Imports of kerosine alone amounted to between 33 percent and 40 percent of total imports. In 1947 under the Chinese Nationalists, consumption of petroleum products in China reached a level of more than 2 million tons, more than double the annual consumption in the 1935-37 period. This large increase was principally the result of greatly increased imports of fuel oil, financed in part by the US Government. The shortage of coal in Nationalist-held territories and the relatively easy supply of fuel oil through US aid influenced industries and utilities to convert from coal to oil. The principal products consumed in 1947 were fuel oil, gasoline, and kerosine. The increased consumption of fuel oil in 1947 represented about 50 percent of total consumption, and consumption of kerosine remained at approximately the same level as in the prewar period. 142/

In the first few years of the Communist regime in China, consumption of petroleum products was drastically reduced because of a shortage of supplies. This reduction necessitated rationing, the use of substitute fuels, and reconversion to coal for industrial fuel wherever possible. The minimum annual civil requirements in 1949 and 1950 have been estimated at about 500,000 tons of petroleum products. 143/

Available information does not permit the development of estimates of civil consumption in Communist China by region, by type of product, or by consuming sector. Estimated annual consumption of petroleum products by the Chinese Communist military forces in 1950-55 is shown in Table 5.* The estimated petroleum supply-demand balance in Communist China in 1952-55 is shown in Table 6.**

In spite of the increasing availability of petroleum products for civil consumption, numerous press references to campaigns for the conservation of fuels such as gasoline and diesel fuel 144/ and the institution of kerosine rationing in Liaoning Province 145/ indicate that the requirements for petroleum have also increased. Users of lamp kerosine increased from about 90 million in 1950 to about 380 million in 1953, 146/ and sales of kerosine in 1954 increased 81 percent over sales in 1953. 147/ The increase in domestic production

* Table 5 follows on p. 32.
** Table 6 follows on p. 33.

Table 5

Estimated Annual Consumption of Petroleum Products
by the Chinese Communist Military Forces a/
1950-55

Thousand Metric Tons

Product	1950	1951	1952	1953	1954	1955
Aviation gasoline	13	31	48	53	52	56
Motor gasoline	20	48	60	74	84	103
Jet fuel	0	74	95	157	156	170
Diesel fuel	52	81	105	123	142	156
Fuel oil	38	48	84	104	117	137
Lubricants	3	5	7	8	9	11
Total b/	130	290	400	520	560	630

a. 148/
b. The totals are rounded to two significant figures and may not agree with the sum of components.

of petroleum in the 1950-55 period was insufficient to meet the increase in consumer demand. 149/ The First Five Year Plan indicates that even the production of more than 2 million tons as planned for 1957 will be inadequate to supply the country's needs.

IX. Supply-Demand Balance.

Communist China was dependent on imports of both crude oil and petroleum products from 1952 through 1955. For purposes of this report, total demand is considered to equal total new supply, and civil demand is represented by the difference between total demand and military demand. During the period from 1952 through 1955 the output of petroleum products from indigenous sources increased by about 125 percent, and the estimated total demand increased by about 60 percent.

Table 6

Estimated Petroleum Supply-Demand Balance in Communist China a/
1952-55

Thousand Metric Tons

	1952	1953	1954	1955
New supply				
Domestic production b/	500	710	850	1,100
(includes yield from the following quantities of imported crude oil) c/	(150)	(200)	(200)	(250)
Imports of products c/	800	800	800	1,000
Total	1,300	1,500	1,700	2,100
Demand				
Military requirements d/	400	520	560	630
Civil requirements e/	900	990	1,100	1,500
Total	1,300	1,500	1,700	2,100

a. All quantities shown have been rounded to two significant figures. Totals are derived from unrounded data.
b. See Table 3, p. 25, above.
c. See Table 4, p. 27, above.
d. See Table 5, p. 32, above.
e. Total new supply less military requirements.

X. Capabilities, Vulnerabilities, and Intentions.

A. Capabilities.

The domestic petroleum resources of Communist China are incapable of meeting the petroleum demands of the economy. Nevertheless, the petroleum industry has accomplished remarkable results under the Chinese Communists. Within the short period of Communist control the

quantity of domestically produced petroleum products has increased from about 100,000 tons in 1949 to more than 800,000 tons in 1955. Although the emphasis on industrialization within the total Chinese economy probably will precipitate increased demands for petroleum, the rapid progress during the past 6 years suggests that China will become decreasingly dependent on imports to satisfy such domestic demand. Fulfillment of the announced goal for production of 2 million tons of crude oil in 1957 is considered to be contingent on Chinese Communist ability to refine such a quantity. On the basis of Free World experience, it is concluded that the additional refining capacity required will not be completed by 1957 and that the Chinese probably will not attain the announced goal. The admission by the Chinese Communists that the goal for production of crude oil in 1957 would not be sufficient to meet anticipated demand in 1957 implies that, in any case, dependence on petroleum imports will continue beyond 1957.

The exploration for oil deposits in the Tsaidam Basin may disclose a potential the exploitation of which would be dependent on the development of routes of communication to serve the basin. The speed with which rail communications were extended to serve the Yumen oilfields suggests a capability to accomplish the same for the Tsaidam Basin.

The continued reliance on outside resources for technical assistance in crude oil exploration and development and the admission that the USSR will design and provide the equipment for the new Lan-chou refinery implies limited local capabilities on the part of the Chinese Communists. The inauguration of programs of academic training, research, and development at Shanghai and the transfer of qualified technicians within the petroleum industry indicate the possible increase of native technological capabilities.

B. Vulnerabilities.

Communist China is potentially vulnerable in its dependence on imports of petroleum and petroleum industrial equipment and facilities. Action which would prevent the movement of any such petroleum supplies to China would have an immediate effect on the total Chinese economy. The economic sanctions imposed by the UN in 1950, however, have not had such an effect. Except for additional freight costs and inconveniences, the UN embargo has not worked any apparent hardship

on Communist China. Adequate supplies of petroleum and petroleum equipment continue to be supplied to China from the Soviet Bloc, and there have been few noteworthy attempts to procure such items from Western sources.

The concentration in Northeast China of almost 50 percent of Communist China's facilities for production of crude oil and about 60 percent of the refining capacity represents an additional vulnerability. The vulnerability inherent in the extended routes of communications between the oil resources in Northwest China and consumption centers elsehwere in Communist China is offset, in part, by the strategic advantages of such dispersal.

The lack of upcountry facilities for storage of bulk petroleum and the corollary dependence on containers, rail tank cars, and trucks for internal distribution of petroleum imply a vulnerability to the degree that regional consumers could be isolated from petroleum supplies.

The deterioration and obsolescence of facilities for the production and refining of petroleum in the Northeast -- those constructed by the Japanese before and during World War II -- are expected to be manifest during the next few years. If, as is suspected, the natural crude oil refineries at Northeast Petroleum Plants No. 5 and No. 7 process the high-sulfur crude oils imported from the Ural-Volga fields, deterioration of equipment through corrosion may be accelerated.

C. Intentions.

No activities related to the petroleum industry which would reveal exclusively military intentions have been noted. There are, however, several activities which, if carried beyond the normal activity expected in the development of a backward industry, might be considered indicators of military intentions. These activities are as follows:

1. Relocation of existing facilities for bulk storage or construction of new facilities. (Development of such facilities at locations remote from centers of population or consumption might reveal purely military intentions.)

2. Precipitant efforts to develop production of aircraft fuels.

3. A significant increase in imports of petroleum products which could be identified as military end items.

4. Persistent attempts to procure large quantities of petroleum drums or sheet steel for the fabrication of drums.

APPENDIX A

FACILITIES FOR STORAGE AND DISTRIBUTION OF PETROLEUM IN COMMUNIST CHINA

1. Facilities for Storage of Bulk Petroleum.

Identified facilities for the storage of petroleum products in Communist China in 1955 are shown in Table 7.* The location of most of the nonrefinery storage was dictated by the pattern of imports and distribution established by the operations of foreign oil companies in China before World War II. These storage facilities have not been changed significantly since the establishment of the Communist regime, although changes in the pattern of distribution have resulted from the increased availability of domestic petroleum and the import of petroleum from the USSR through Manchuria. Before the Chinese Communists assumed control, most of the imports of petroleum entered the Shanghai area, where about 60 percent of the Chinese nonrefinery storage is located. The Shanghai facilities now serve principally as intransit storage for petroleum shipped from Northeast China. The lack of upcountry facilities for bulk storage is emphasized by the fact that there are no identified facilities for the storage of nonrefinery products west of about 110° East longitude.

2. Merchant Marine Tankers.

The Chinese Communist merchant fleet includes 10 petroleum tankers with a total capacity of about 16,800 dead weight tons (dwt). These tankers are used almost exclusively for coastal shipping. No estimate is available for the number and tonnage of merchant shipping involved in the coastal and river movement of packaged petroleum products.

3. Railroad Tank Cars.

The number of tank cars in petroleum service is estimated to vary between a minimum of 3,000 and a possible maximum of 5,000. On the basis of an average capacity of 35 tons each, the tank car inventory represents a capacity of between 100,000 and 150,000 tons of petroleum.

* Table 7 follows on p. 39.

4. Petroleum Drums and Containers.

Available information does not permit the development of an estimate of the inventory of, or demand for, petroleum drums and containers, but the limited availability of facilities for bulk storage, tankers, and railroad tank cars suggests that there is a large demand for petroleum containers.

Table 7

Identified Facilities for the Storage of Petroleum Products
in Communist China a/
1955

Location	Identification	Coordinates	Capacity (Thousand Metric Tons)
Refinery			
Dairen	Dairen Refinery	31°21' N - 121°33' E	50.0
Chin-hsi	Refinery	40°45' N - 120°49' E	25.0
Ssu-p'ing	Synthetic Fuel Plant	43°11' N - 124°23' E	30.0
Fu-shun	Shale Oil Plant No. 1	41°51' N - 123°52' E	20.0
Fu-shun	Synthetic Fuel Plant	41°50' N - 123°49' E	6.0
Chin-chou	Synthetic Fuel Plant	41°08' N - 121°06' E	10.0
Kirin	Synthetic Fuel Plant	43°56' N - 126°32' E	2.0
Yumen	Yumen Refinery	39°42' N - 97°50' E	15.0
Wu-su	Wu-su Refinery	44°29' N - 84°40' E	7.0
Total			165.0
Nonrefinery			
Shanghai	Gough Island	31°21' N - 121°33' E	200.0
	Standard Vacuum	31°16' N - 121°33' E	108.3
	Caltex, Riverside	31°16' N - 121°33' E	47.1
	Shell, Upper Wharf	31°15' N - 121°32' E	20.7
	Cathay	31°17' N - 121°34' E	16.4
	Shell, Yang-shu Pu	31°16' N - 121°33' E	2.0

* Footnote to Table 7 follows on p. 41.

Approved For Release 1999/09/26 : CIA-RDP79-01093A001100090001-7

Table 7

Identified Facilities for the Storage of Petroleum Products
in Communist China
1955
(Continued)

Location	Identification	Coordinates	Capacity (Thousand Metric Tons)
Nonrefinery (Continued)			
Sui-fen-ho		44°24' N - 131°10' E	5.0
Chia-mu-ssu		46°50' N - 130°21' E	10.0
Dairen	Jijiko	38°55' N - 121°41' E	39.4
	Kan-ching-tzu	38°59' N - 121°38' E	6.0
Port Arthur	Port Arthur, Navy	38°48' N - 121°15' E	35.0
Hu-lu-tao		40°44' N - 121°01' E	38.6
Tsingtao	Tsingtao	36°05' N - 120°20' E	34.7
	Waterfront	36°05' N - 120°19' E	4.0
Ta-ku	Asiatic	38°59' N - 117°41' E	15.6
	Japanese	38°59' N - 117°40' E	8.2
T'ang-ku	China Petrol Corporation	39°02' N - 117°38' E	7.9
Tientsin	Standard Vacuum	39°07' N - 117°13' E	39.1
	Texas, Tientsin	39°06' N - 117°13' E	12.6
Canton	Standard Vacuum	23°05' N - 113°14' E	11.7
	Shell	23°06' N - 113°14' E	8.7
	Caltex	23°04' N - 113°15' E	5.7
	China Petrol Corporation	23°05' N - 113°15' E	5.0
	RR Terminal	23°06' N - 113°13' E	3.0

Approved For Release 1999/09/26 : CIA-RDP79-01093A001100090001-7

Table 7

Identified Facilities for the Storage of Petroleum Products
in Communist China
1955
(Continued)

Location	Identification	Coordinates	Capacity (Thousand Metric Tons)
Nonrefinery (Continued)			
Hankow	Hankow Reach	30°39' N - 114°20' E	38.8
I-chang	Shell	30°40' N - 111°19' E	7.6
Nanking	Kuan-yin-men	32°09' N - 118°49' E	10.0
	China Petrol Corporation	32°06' N - 118°44' E	4.3
P'u-k'ou	China Petrol Corporation	32°06' N - 118°43' E	5.6
Amoy	Shell, Amoy	24°27' N - 118°02' E	16.0
Ying-k'ou	Asiatic	40°43' N - 122°16' E	25.2
Yu-lin	China Petrol Corporation	18°13' N - 109°32' E	6.3
Ch'ang-sha	Shell	28°12' N - 112°57' E	7.5
Lu-pin		49°35' N - 117°26' E	4.0
Ha-erh-pin		44°48' N - 126°41' E	3.0
Other			82.0
Total			895.0
Grand total			1,060.0

a. 150/

Approved For Release 1999/09/26 : CIA-RDP79-01093A001100090001-7

APPENDIX B

METHODOLOGY

1. General.

The estimates of production of crude oil shown in Table 2* represent a synthesis of available information which was obtained principally from Chinese Communist press and radio announcements and from a few reports from individuals who have been in Communist China within the past 6 years. The estimates are predicated on the achievement of the announced percentage increases for total production of crude oil, including natural and synthetic crude oil. Where necessary, available information on individual producing locations has been slightly adjusted within the limits of the announced total figure for production of crude oil. Until mid-1955, no absolute figure for production of crude oil in Communist China had ever been released by the Communists. The text of the First Five Year Plan, published in August 1955, contained a figure for production of crude oil in 1952. Absolute figures for production in 1949, 1953, and 1954 were subsequently released. The announced figures and the concomitant production indexes for 1949-56 were the basis for the estimates for crude oil.

The consistency of information on individual producing locations from Chinese Communist announcements and other sources tends to substantiate the estimates of total production, but it must be emphasized that all of the estimates are based on Chinese Communist claims.

2. Estimates of Total Production of Crude Oil.

Absolute quantities and production indexes described in the following discussion were obtained from official Chinese Communist announcements.

a. 1949 -- In 1952, production was 358 percent of production in 1949, 151/ yielding a figure of 122,000 tons for 1949. The absolute figure announced for production in 1949 was also 122,000 tons. 152/

b. 1950 -- In 1950, production was 203,000 tons, 166 percent of production in 1949. 153/

* P. 10, above.

c. 1951 -- In 1951, production was 306,000 tons, 251 percent of production in 1949. 154/ Production in 1952 was 143 percent of production in 1951, 155/ yielding a figure of 305,000 tons for 1951.

d. 1952 -- An absolute figure of 436,000 tons for production in 1952 was announced in the First Five Year Plan. 156/

e. 1953 -- In 1953, production was 628,000 tons, 144 percent of production in 1952. 157/ The absolute figure announced for production in 1953 was 622,000 tons. 158/

f. 1954 -- In 1954, production was 127 percent of production in 1953. 159/ Using a figure of 628,000 tons for 1953, production in 1954 was 798,000 tons. Using the announced figure of 622,000 tons for 1953, production in 1954 was 790,000 tons. The announced figure for production in 1954 was 789,000 tons. 160/

g. 1955 -- In April 1955 the Chinese Communists announced a plan to increase production in 1955 by 30 percent over production in 1954. 161/ The petroleum industry, however, was one of several which did not meet the plan for the first half of 1955. 162/ In September 1955, Li Fu-chun, Chairman of the State Planning Commission, announced that production of petroleum in 1955 would increase by more than 120 percent over that of 1952 and that the production capacity for petroleum would "go up over 980,000 tons." 163/ On the basis of 220 percent of production in 1952, production in 1955 is estimated at 960,000 tons. Because the planned increase was to be an unspecified amount more than 120 percent and because the absolute figure of 980,000 tons was mentioned at the same time, production in 1955 is estimated at 980,000 tons. This represents an increase of about 24 percent over production in 1954, compared with the planned increase of 30 percent announced earlier.

h. 1956 -- Production in 1956 is planned at 1.2 million tons, 120 percent of the goal for 1955. 164/

i. 1957-58 -- Fulfillment of the goal for 1957 of about 2 million tons is considered to be contingent upon completion of the Lan-chou refinery. Completion of the refinery is now expected after 1957, and the full effect of such completion is expected in 1959. In the meantime, within the limits of anticipated refining capacity, production in 1957 may increase over that of 1956 at the same rate as production in 1956 increased over that of 1955. A similar increase is expected in 1958 over production in 1957.

j. 1959 -- Production in 1959 is expected to coincide with the effect of the additional refinery capacity at Lan-chou and is expected to fulfill the goal for 1957.

k. 1960 -- It has been assumed that production in 1960 will increase 20 percent over that of 1959.

3. Estimates of Production of Crude Shale Oil at Northeast Petroleum Plant No. 1.

Estimates of production of crude shale oil at Northeast Petroleum Plant No. 1 are based on Chinese Communist announcements, on information from persons who have visited this plant, and on information concerning the available facilities at this plant. In the interest of internal consistency and in acknowledgement of the discrepancies which accrue from small errors in basic data, certain minor modifications were made in the estimates, which were developed by applying general increases such as "double," "treble," and the like.

a. 1949 -- The designed annual capacity of the "West Section" of Northeast Petroleum Plant No. 1 was 120,000 tons of crude shale oil. 165/ It was reported that in 1949 the capacity of the "West Section" had been restored to about 40,000 tons, one-third of its operating capacity. 166/

b. 1950 -- In 1950, production of crude shale oil was planned at twice the level of 1949. 167/

c. 1951 -- In 1951, production of crude shale oil was three times production in 1949. 168/

d. 1952 -- Production of shale oil in 1952 was reported to be about 200,000 tons, 43 percent more than production in 1951. 169/ The estimate of 210,000 tons assumes that in 1952 this plant achieved 75 percent of its total capacity of 280,000 tons.

e. 1953 -- This plant reportedly produced at the rate of 280,000 tons per year after May 1953. 170/ Estimated production in 1953 was 270,000 tons.

f. 1954 -- The planned ultimate capacity of this plant was 300,000 tons. 171/ Chinese Communist press reports indicated that

production at this plant increased in 1954. 172/ In view of the rate of production in 1953 this plant is estimated to have operated at or near capacity in 1954 and to have produced about 300,000 tons.

g. 1955-60 -- There has been no evidence of a planned increase in the present facilities for producing shale oil. It is unlikely that production in this plant will be increased until additional refining facilities are available in the Northeast.

4. Estimates of Production of Crude Shale Oil at Northeast Petroleum Plant No. 2.

a. 1949-53 -- Northeast Petroleum Plant No. 2 was not in operation during this period. 173/

b. 1954 -- Reconstruction of this plant was started in May 1953. 174/ Press reports implied that the first section of this plant began partial operation in June 1954, 175/ that the second section was completed in August 1954, 176/ and that the third section was completed in December 1954. 177/ Because the initial production of the first section was only about 400 tons per month, 178/ it is estimated that total production in 1954 did not exceed 10,000 tons.

c. 1955 -- A press report of January 1955 announced that production of Northeast Plants Nos. 1 and 2 in the first calendar quarter would be 46.4 percent greater than in the first quarter of 1954. 179/ Northeast Plant No. 2 was not in operation in the first quarter of 1954. Because Northeast Plant No. 1 probably was still operating at the rate of 280,000 tons* per year, production in the first quarter of 1954 was estimated at 70,000 tons. Production for the first quarter of 1955 is estimated at about 100,000 tons, 146.4 percent of 70,000 tons. The estimated total for the 2 plants for 1955 is, therefore, 400,000 tons, of which 300,000 tons were produced at Northeast Plant No. 1, leaving an estimated total of 100,000 tons for total production at Northeast Plant No. 2 in 1955. Although reconstruction of Northeast Plant No. 2 was completed in December 1954, it is believed that the mechanical difficulties which would be present during the early period of resumed operations limited production in 1955 to less than maximum. 180/

* See 3, f, Appendix B, p. 45, above.

d. 1956 -- It is believed that by 1956 Northeast Plant No. 2 should be capable of producing at the original designed rate of 180,000 tons of crude shale oil per year. 181/

e. 1957-60 -- Estimated production in 1957 and subsequent years is based on the planned ultimate capacity of this plant 182/ and assumes no construction of additional facilities.

5. Estimates of Production of Synthetic Crude Oil at Northeast Petroleum Plant No. 6.

The Japanese constructed Northeast Petroleum Plant No. 6, employing the Fischer-Tropsch process for production of synthetic crude oil. Estimates of production are based on Chinese Communist press reports and on the Pauley Commission's report of the condition of plant facilities in 1947.

a. 1949-51 -- The Chinese Communist press reported that this plant would be restored to one-half its capacity by the end of 1950. 183/ A repatriate indicated that this plant was restored by that time, but that because of operational difficulties production in 1951 was negligible. 184/

b. 1952 -- Estimated production in 1952 was based on the estimate for 1953. Actual production in 1953 was 129.2 percent of plan, 185/ therefore planned production was probably about 11,000 tons, and actual production in 1952 could have reached 10,000 tons.

c. 1953 -- A Chinese Communist press report in 1953 indicated that daily production of crude oil at this plant in October 1953 was 2.1 tons greater than in September 1953 and that the plan for production was overfulfilled by 5.8 percent. 186/ Total overproduction in October was, therefore, 65 tons, and planned production for the month would have been 1,122 tons. Using a monthly production rate of 1,122 tons for the first 9 months and a monthly production rate of 1,122 tons plus 65 tons, or 1,187 tons, for the last 3 months, estimated production for the year is 9 times 1,122 plus 3 times 1,187, or 13,659 tons.

d. 1954 -- The reported average daily production of crude oil in April 1954 increased 9.9 percent over that of the first quarter, and daily production of crude oil in May increased 9.2 percent over

that of April. 187/ Based on the daily rate of production of 38 tons per day from the last quarter of 1953 (1,187 divided by 31), the daily rate for April would have been 42 tons and for May, 46 tons. Total production in 1954 is estimated as follows:

First quarter (38 tons per day)	3,420
April (42 tons per day)	1,260
May (46 tons per day)	1,426
June through December (1,426 tons per month)	9,982
Total	16,088

Confirmation of the estimate of 16,000 tons, based on Chinese Communist press reports, may be found in the report of a German technician who visited this plant and reported that production in June 1954 was at the annual rate of 16,000 tons. 188/

e. 1955 -- Crude oil produced during the first 10 months at this plant exceeded production in 1954 by more than 3,600 tons. 189/

f. 1956-57 -- The estimate for 1956 is interpolated. The estimate for 1957 is based on the assumption that this plant will operate at the designed capacity of 30,000 tons 190/ of synthetic crude oil.

6. Estimates of Production of Crude Shale Oil at Northeast Petroleum Plant No. 9.

The production estimates for Northeast Petroleum Plant No. 9 are based principally on reports from Japanese repatriates and on scattered reports in the Chinese Communist press.

a. 1949-51 -- This plant, which was smaller and more primitive than Northeast Plant No. 1, did not operate in 1948-51. 191/ In late 1951, plans were under way for rehabilitation and expansion of this plant. 192/

b. 1952 -- Operation of this plant was started in 1952 with reported production of about 4,000 tons. 193/

c. 1953 -- This estimate was interpolated.

d. 1954 -- The original plan for expansion called for annual production of 20,000 tons by 1954. 194/ References to this plant in the Chinese Communist press in 1954 195/ suggest that the goal may have been fulfilled.

e. 1955-57 -- By May 1953 the original goal had been increased to 40,000 tons per year. 196/ Recent Chinese Communist press reports of increased availability of rich oil shales in the area suggest that further expansion may be planned. 197/ An arbitrary increase of 10,000 tons per year has been estimated for 1955-57.

7. Estimates of Production of Crude Oil at the Yumen Oilfield.

Estimates of production of crude oil at the Yumen oilfield are based primarily on Chinese Communist claims, substantiated in a few instances by first-hand reports on the area. It has not been possible to reconcile all the claims for Yumen with claims for other producing areas within the estimates of total production. The claims for total production issued by the State Statistical Bureau have been preferred over claims issued by local agencies in the individual producing areas.

a. 1949 -- In 1950, production was reported to be 138 percent of 1949 production. 198/ The estimate of production in 1950, 110,000 tons, is 138 percent of 79,710 tons.

b. 1950 -- Estimated production of 110,000 tons is based on the plan for production of refined products in the second quarter. 199/ Another source reported that production of crude oil at Yumen in 1950 was approximately 2,000 barrels per day, or about 100,000 tons. 200/

c. 1951 -- Production in 1951 was 140 percent of production in 1950 201/ and 195 percent of production in 1949. 202/ Based on these figures, the estimate of production in 1951 is 155,000 tons.

d. 1952 -- Production in 1952 is estimated at about 4,000 barrels per day, or 200,000 tons. 203/

e. 1953 -- Production for 1953 is interpolated as 303,000 tons.

f. 1954 -- In December 1954, it was reported that production of crude oil in 1954 was 5 times as great as in 1949. 204/ This rate would yield an estimate of production of about 400,000 tons.

An alternative estimate of about 413,000 tons may be developed on the basis of a report that production of crude oil as of 21 December 1955 was more than 112 percent of production in 1954. 205/ The average of these 2 estimates gives an estimate of 406,000 tons for 1954.

g. 1955 -- According to a Chinese Communist report, the rate of production at the end of December 1955 was about 1,300 tons per day, 206/ which would yield an estimate of about 474,000 tons for the year. This estimate includes an extra 12,000 tons produced in the last 9 days, so that the actual plan for the field is estimated to have been about 462,000 tons. 207/

h. 1956-57 -- The projected estimate for 1956 anticipates an increase of almost 20 percent over production in 1955, contingent upon the completion of the railroad to the oilfield by mid-1956. The increase of 30 percent in 1957 over 1956 assumes the availability of rail facilities throughout 1957.

8. Estimates of Production of Crude Oil at Yen-ch'ang.

Estimates of production at Yen-ch'ang are based primarily on Chinese Communist sources. Recent information from a repatriate confirms the relative size of figures on production. 208/

a. 1949-52 -- Available statistics on production indicate that production in these years was less than 500 tons per year. Production in 1952 was 167 percent of production in 1950, 209/ and production in 1953 was 5.5 times production in 1950. 210/

b. 1953 -- Production in 1955 was 290 percent of production in 1953. 211/ Using an estimate of 4,380 tons for 1955, production in 1953 is estimated at 1,510 tons.

c. 1954 -- Production in 1955 was 110 percent of production in 1954. 212/ Using the estimate for 1955, production in 1954 is estimated at 3,982 tons. An independent source reported that production in 1954 was about 3,600 tons. 213/

d. 1955 -- The plan for production in 1955 was completed 76 days ahead of schedule, 214/ and it was planned to produce an extra 900 tons of crude oil during the remaining 76 days. 215/ Based on a rate of production of 12 tons per day, annual production in 1955 is estimated at 4,380 tons.

e. 1956 -- This estimate was interpolated.

f. 1957 -- Production in 1955 was to be 80 percent of the plan for 1957, 216/ which yields an estimate of about 5,475 tons for 1957. Other evidence suggests that no great increase is planned in this area in the immediate future. 217/

9. Estimates of Production of Crude Oil in Sinkiang.

Estimates of production in Sinkiang are based entirely on Chinese Communist claims.

a. 1949-50 -- The Sino-Soviet Oil Company was not established until 1950, 218/ and production for that year is believed to have been negligible.

b. 1951 -- Production increased 25 times between 1951 and 1954. 219/ Estimated production for 1954 divided by 26 yields an estimate for 1951 of about 1,174 tons.

c. 1952 -- This estimate was interpolated.

d. 1953 -- Production in 1953 was 19 times production in 1951, 220/ yielding an estimate for 1953 of about 22,306 tons.

e. 1954 -- Production in 1955 was planned to be 163.87 percent of production in 1954. 221/ Using an estimate of 50,000 tons for 1955, production in 1954 is estimated to be 30,512 tons.

f. 1955 -- Total production of crude oil in Communist China is estimated to be 980,000 tons. By subtracting the estimates for other producing areas, production in Sinkiang is estimated at about 50,000 tons. This estimate is believed to be consistent with planned production for 1957 and with available production indexes.

g. 1956 -- This estimate was interpolated.

h. 1957 -- The goal for production in 1957 was reported to be 70,000 tons. 222/

10. Estimates of Production of Refined Products.

Product yields in petroleum refineries in Communist China, by product and by plant, in 1955 are shown in Table 8.* Estimated availability of crude oil, refining capacity, and production of petroleum products in Communist China in 1949-55 are shown in Tables 9 through 13.** The scarcity of crude oil assays and the lack of detailed information on the availability and serviceability of processing equipment precludes the development of an accurate pattern of product yields. Similarly, simple modifications in refinery operating procedures by the Chinese Communists would prohibit the preparation of probable estimated yields. The estimated refinery balance should be considered a representative pattern.

In the absence of the publication of absolute figures for production of refined products for any year by the Chinese Communists, estimates of production of particular refined products cannot be developed on the basis of announced production indexes.

* Table 8 follows on p. 53.
** Tables 9 through 13 follow on pp. 55 through 64.

Table 8

Product Yields in Petroleum Refineries in Communist China
by Product and by Plant
1955

Percent of Weight a

Product	Synthetic Petroleum Facilities			Natural Petroleum Facilities				
	Northeast Petroleum Plants						Northeast Petroleum Plants	
	No. 1 b/	No. 6 c/	No. 10 d/	Yumen e/	Yen-ch'ang f/	Wu-su g/	No. 5 h/	No. 7 h/
Gasoline	1	40	1	25	25	25	25	25
Kerosine	2	15	2	10	35	35	10	10
Diesel fuel	2	15	2	5	5	5	5	5
Lubricating oil	0	5	0	5	0	0	5	5
Residuals i/	80	10	80	45	25	25	45	45
Gas and loss	15	15	15	10	10	10	10	10
Total	100	100	100	100	100	100	100	100

a. Percentages above 5 percent are rounded to units of 5. No information is available which would permit accuracies greater than 5 percent.

b. 223/. The yield as shown is modified by the use of cracking facilities to process residual fuel oil recovered in primary distillation (60 percent of the total crude oil charge). Based on estimated operational cracking capacity, a maximum of 40,000 tons of residual fuel oil were processed annually in 1949-51, and a maximum of 80,000 tons were processed annually in 1952-55. The yield from the fuel oil charged to cracking was 48 percent gasoline and 52 percent residual fuel oil.
224/

Table 8

Product Yields in Petroleum Refineries in Communist China
by Product and by Plant
1955
(Continued)

d. The estimated yield is similar to the yield shown for Northeast Plant No. 1. No cracking facilities are known to exist at Northeast Plant No. 10.

e. Source 225/ is modified to reflect the yield shown in source 226/.

f. 227/. The total distillates boiling through 300° C have been arbitrarily distributed. Quantities involved are negligible and do not warrant attempts to determine a more accurate yield pattern.

g. The yield shown in source 228/ is modified to reflect the effect of cracking facilities. Quantities involved are too insignificant to show different yields before the installation of cracking facilities in 1954.

h. The yield is estimated to be similar to the yield at Yumen. These plants include topping and cracking facilities similar to those at Yumen, and both plants are believed to process at least a portion of the crude oil produced at Yumen.

i. Includes residual fuel oils, and solid and semisolid products such as paraffin, candles, asphalt, coke, and the like.

Approved For Release 1999/09/26 : CIA-RDP79-01093A001100090001-7

Table 9

Estimated Availability of Crude Oil, Refining Capacity, and Production of Petroleum Products in Communist China a/*
1949-51

Thousand Metric Tons

	1949			1950			1951		
	Synthetic	Natural	Total	Synthetic	Natural	Total	Synthetic	Natural	Total
Crude oil									
Production b/	40	80	120	90	110	200	140	160	300
Field loss c/	0	4	4	0	6	6	0	8	8
Available for refining	40	76	116	90	104	194	140	152	292
Refining capacity d/	300	300	855 d/	300	300	855 d/	300	300	855 d/
Refinery balance e/									
Products									
Gasoline	12	19	31	20	26	46	20	38	58
Kerosine	1	8	9	2	10	12	3	15	18
Diesel fuel	1	4	5	2	5	7	3	8	11
Lubricating oil	0	4	4	0	5	5	0	8	8
Residuals	20	34	54	53	47	100	93	68	161
Total products	34	69	103	77	93	170	119	137	256

* Footnotes for Table 9 follow on p. 56.

Approved For Release 1999/09/26 : CIA-RDP79-01093A001100090001-7

Table 9

Estimated Availability of Crude Oil, Refining Capacity, and Production of Petroleum Products in Communist China
1949-51
(Continued)

Thousand Metric Tons

	1949			1950			1951		
	Synthetic	Natural	Total	Synthetic	Natural	Total	Synthetic	Natural	Total
Gas and loss	6	7	13	13	11	24	21	15	36
Crude oil charged to refinery	40	76	116	90	104	194	140	152	292

a. The only significant production of domestic crude oil in 1949-51 was at the Northeast Plant No. 1 and at the Yumen oilfield. Estimates of imports of crude oil or of products derived from such crude oil are not available.
b. See Table 2, p. 10, above.
c. The quantity of natural crude oil consumed as fuel in the production phase and/or lost before refining, which is estimated at 5 percent of production.
d. See V, p. 16, above. Totals include 225,000 tons of refining capacity, located at Wu-su, Yen-ch'ang, and Northeast Plant No. 7, the operational status of which was unknown.
e. See Table 8, p. 53, above.

Approved For Release 1999/09/26 : CIA-RDP79-01093A001100090001-7

Table 10

Estimated Availability of Crude Oil, Refining Capacity, and Production of Petroleum Products in Communist China
1952

Thousand Metric Tons

	Synthetic Petroleum Facilities a/*							Natural Petroleum Facilities a/					
	Northeast Petroleum Plants											Northeast Petroleum Plants	
	No. 1	No. 2	No. 6	No. 9	No. 10	Total	Grand Total	Total	Yumen	Yen-ch'ang	Wu-su	No. 5	No. 7
Crude oil													
Production b/	210	0	10	4	0	224	436	212	200	0	12	0	0
Imports c/	0	0	0	0	0	0	150	150	0	0	0	0	150
Yield loss d/	0	0	0	0	0	0	10	10	10	Negligible	Negligible	0	0
Transportation e/	0	0	0	0	Negligible	0	3	3	0	0	0	0	3
Available for refining	210	0	10	0 f/	4 f/	224	573	349	190	0	12	0	147
Refining capacity g/	300	0	10	0	10	320	875	555	300	5	50	0	200
Refinery balance h/													
Products													
Gasoline	40	0	5	0	Negligible	45	133	88	48	0	3	0	37
Kerosine	4	0	1	0	Negligible	5	43	38	19	0	4	0	15
Diesel fuel	4	0	1	0	Negligible	5	22	17	9	0	1	0	7
Lubricating oil	0	0	0	0	0	0	16	16	9	0	0	0	7
Residuals	130	0	1	0	3	134	289	155	86	0	3	0	66
Total products	178	0	8	0	3	189	503	314	171	0	11	0	132
Gas and loss	32	0	2	0	1	35	70	35	19	0	1	0	15
Crude oil charged to refinery	210	0	10	0	4	224	573	349	190	0	12	0	147

Footnotes for Table 10 follow on p. 58.

Approved For Release 1999/09/26 : CIA-RDP79-01093A001100090001-7

Table 10

Estimated Availability of Crude Oil, Refining Capacity, and Production
of Petroleum Products in Communist China
1952
(Continued)

a. See Table 1, p. 2, above.
b. See Table 2, p. 10, above.
c. See Table 4, p. 27, above.
d. The quantity of natural crude oil consumed as fuel in the production phase and/or lost before refining, which is estimated at 5 percent of production.
e. This is estimated at 2 percent of natural crude oil and applies only to that quantity of crude oil produced at one location which is transported to another location for refining.
f. Crude oil produced at Northeast Plant No. 9 is refined at Northeast Plant No. 10.
g. See V, p. 16, above.
h. See Table 8, p. 53, above.

Approved For Release 1999/09/26 : CIA-RDP79-01093A001100090001-7

Table 11

Estimated Availability of Crude Oil, Refining Capacity, and Production of Petroleum Products in Communist China
1953

Thousand Metric Tons

	Synthetic Petroleum Facilities a/*							Natural Petroleum Facilities a/					
	Northeast Petroleum Plants											Northeast Petroleum Plants	
	No. 1	No. 2	No. 6	No. 9	No. 10	Total	Grand Total	Total	Yumen	Yen-ch'ang	Wu-su	No. 5	No. 7
Crude oil													
Production b/	270	0	14	12	0	296	620	324	300	2	22	0	0
Imports c/	0	0	0	0	0	0	200	200	0	0	0	0	200
Field loss d/	0	0	0	0	0	0	15	15	15	Negligible	Negligible	0	0
Transportation e/	0	0	0	0	Negligible	0	4	4	0	0	0	0	4
Available for refining	270	0	14	0 f/	12 f/	296	801	505	285 g/	2	22	0	196
Refining capacity h/	440	0	30	0	15	485	1,040	555	200	5	50	0	200
Refinery balance i/													
Products													
Gasoline	42	0	6	0	Negligible	48	173	125	71	0	6	0	48
Kerosine	5	0	2	0	Negligible	7	65	58	29	1	8	0	20
Diesel fuel	5	0	2	0	Negligible	7	32	25	14	Negligible	1	0	10
Lubricating oil	0	0	1	0	0	1	25	24	14	0	0	0	10
Residuals	178	0	1	0	10	189	412	223	128	1	6	0	88
Total products	230	0	12	0	10	252	707	455	256	2	21	0	176
Gas and loss	40	0	2	0	2	44	94	50	29	Negligible	1	0	20
Crude oil charged to refinery	270	0	14	0	12	296	801	505	285	2	22	0	196

* Footnotes for Table 11 follow on p. 60.

Approved For Release 1999/09/26 : CIA-RDP79-01093A001100090001-7

Table 11

Estimated Availability of Crude Oil, Refining Capacity, and Production
of Petroleum Products in Communist China
1953
(Continued)

a. See Table 1, p. 2, above.
b. See Table 2, p. 10, above.
c. See Table 4, p. 27, above.
d. The quantity of natural crude oil consumed as fuel in the production phase and/or lost before refining, which is estimated at 5 percent of production.
e. This is estimated at 2 percent of natural crude oil and applies only to that quantity of crude oil produced at one location which is transported to another location for refining.
f. Crude oil produced at Northeast Plant No. 9 is refined at Northeast Plant No. 10.
g. A quantity of crude oil produced at Yumen which was reportedly shipped to the Northeast in November 1953 has been ignored as insignificant.
h. See V, p. 16, above.
i. See Table 8, p. 53, above.

Approved For Release 1999/09/26 : CIA-RDP79-01093A001100090001-7

Table 12

Estimated Availability of Crude Oil, Refining Capacity, and Production of Petroleum Products in Communist China
1954

Thousand Metric Tons

	Synthetic Petroleum Facilities a/*							Natural Petroleum Facilities a/					
	Northeast Petroleum Plants											Northeast Petroleum Plants	
	No. 1	No. 2	No. 6	No. 9	No. 10	Total	Grand Total	Total	Yumen	Yen-ch'ang	Wu-su	No. 5	No. 7
Crude oil													
Production b/	300	10	16	20	0	346	790	444	410	4	30	0	0
Imports c/	0	0	0	0	0	0	200	200	0	0	0	40 d/	160
Field loss e/	0	0	0	0	0	0	20	20	20	Negligible	Negligible	0	0
Transportation f/	Negligible	0	0	0	Negligible	0	5	5	0	0	0	1	4
Available for refining	310	0	16	0 g/	20 g/	346	965	619	350 h/	4	30	39	196 h/
Refining capacity i/	440	0	30	0	20	490	1,180	690	375	5	70	40	200
Refinery balance j/													
Products													
Gasoline	55	0	7	0	Negligible	62	217	155	88	1	8	10	48
Kerosine	6	0	2	0	Negligible	8	78	70	35	1	10	4	20
Diesel fuel	6	0	2	0	Negligible	8	38	30	17	Negligible	1	2	10
Lubricating oil	0	0	1	0	0	1	30	29	17	0	0	2	10
Residuals	197	0	2	0	17	216	489	273	158	2	8	17	88
Total products	264	0	14	0	17	295	852	557	315	4	27	35	176
Gas and loss	46	0	2	0	3	51	113	62	35	Negligible	3	4	20
Crude oil charged to refinery	310	0	16	0	20	346	965	619	350	4	30	39	196

*Footnotes for Table 12 follow on p. 62.

Approved For Release 1999/09/26 : CIA-RDP79-01093A001100090001-7

Table 12

Estimated Availability of Crude Oil, Refining Capacity, and Production
of Petroleum Products in Communist China
1954
(Continued)

a. See Table 1, p. 2, above.
b. See Table 2, p. 10, above.
c. See Table 4, p. 27, above.
d. Crude oil distillation facilities at Northeast Plant No. 5 are estimated to have been in operation during the fourth calendar quarter of 1954 and to have operated on imported crude oil only.
e. The quantity of natural crude oil consumed as fuel in the production phase and/or lost before refining, which is estimated at 5 percent of production.
f. This is estimated at 2 percent of natural crude oil and applies only to that quantity of crude oil produced at one location which is transported to another location for refining.
g. Crude oil produced at Northeast Plant No. 9 is refined at Northeast Plant No. 10.
h. It is estimated that 40,000 tons of Yumen crude oil were shipped to, and refined at, Northeast Plant No. 7 in 1954. The movement of such a quantity would permit employment of estimated refining capacity at Yumen, Northeast Plant No. 5, and Northeast Plant No. 7. Such capacity coincides with estimated production and imports of crude oil.
i. See V, p. 16, above.
j. See Table 8, p. 53, above.

Approved For Release 1999/09/26 : CIA-RDP79-01093A001100090001-7

Table 13

Estimated Availability of Crude Oil, Refining Capacity, and Production of Petroleum Products in Communist China 1955

Thousand Metric Tons

	Synthetic Petroleum Facilities a/*							Natural Petroleum Facilities a/					
	Northeast Petroleum Plants											Northeast Petroleum Plants	
	No. 1	No. 2	No. 6	No. 9	No. 10	Total	Grand Total	Total	Yumen	Yen-ch'ang	Wu-su	No. 5	No. 7
Crude oil													
Production b/	300	100	20	30	0	450	984	534	480	4	50	0	0
Imports c/	0	0	0	0	0	0	250	250	0	0	0	75	175
Field loss d/	0	0	0	0	0	0	24	24	24	Negligible	Negligible	0	0
Transportation e/	2	0	0	0	Negligible	2	9	7	0	0	0	3	4
Available for refining	398	0	20	0 f/	30 f/	448	1,201	753	350 g/	4	50	150 g/	199 g/
Refining capacity h/	440	0	30	0	30	500	1,300	800	375	5	70	150	200
Refinery balance i/													
Products													
Gasoline	42	0	8	0	Negligible	50	240	190	88	1	13	38	50
Kerosine	8	0	3	0	1	12	101	89	35	1	18	15	20
Diesel fuel	8	0	3	0	1	12	48	36	17	Negligible	2	7	10
Lubricating oil	0	0	1	0	0	1	35	34	17	0	0	7	10
Residuals	280	0	2	0	24	306	635	329	158	2	12	68	89
Total products	338	0	17	0	26	381	1,059	678	315	4	45	135	179
Gas and loss	60	0	3	0	4	67	142	75	35	Negligible	5	15	20
Crude oil charged to refinery	398	0	20	0	30	448	1,201	753	350	4	50	150	199

Footnotes for Table 13 follow on p. 64.

Approved For Release 1999/09/26 : CIA-RDP79-01093A001100090001-7

Table 13

Estimated Availability of Crude Oil, Refining Capacity, and Production
of Petroleum Products in Communist China
1955
(Continued)

a. See Table 1, p. 2, above.
b. See Table 2, p. 10, above.
c. See Table 4, p. 27, above.
d. The quantity of natural crude oil consumed as fuel in the production phase and/or lost before refining, which is estimated at 5 percent of production.
e. This is estimated at 2 percent of natural crude oil and applies only to that quantity of crude oil produced at one location which is transported to another location for refining.
f. Crude oil produced at Northeast Plant No. 9 is refined at Northeast Plant No. 10.
g. It is estimated that 106,000 tons, the quantity represented by the difference between crude oil production, less field loss, and the quantity estimated to supply fully the refining capacity, was shipped to Northeast Plant No. 5 and Northeast Plant No. 7. In order to effect an arithmetical balance and to reflect the Chinese Communist claims that Northeast Plant No. 5 processed sizable quantities of domestic natural crude oil, the Yumen crude oil shipped to the Northeast was divided as follows: 78,000 to Northeast Plant No. 5, and 28,000 to Northeast Plant No. 7.
h. See V, p. 16, above.
i. See Table 8, p. 53, above.

Approved For Release 1999/09/26 : CIA-RDP79-01093A001100090001-7

APPENDIX C

GAPS IN INTELLIGENCE

The outstanding gap in intelligence disclosed by research for this report is the general lack of information from sources other than the Chinese Communist government and press. This lack of information precludes validation of Chinese Communist claims. Particular gaps exist in the matter of production of petroleum products, geographical and sectoral consumption of petroleum products, and petroleum stockpiles and inventory changes.

Although continuing research may fill certain gaps such as estimates of the details of consumption, other gaps would not be closed by additional research unless additional information becomes available.

APPENDIX D

SOURCE REFERENCES

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

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

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

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

---

1. CIA. CIA/RR 33, The Economic Development of Communist China through 1957, 30 Apr 54, p. 15. S.
2. Ibid., p. 14. S.
3. NIS 39, China, sec 62, Fuels and Power, Dec 53, p. 1. S.
4. [redacted]

STATSPEC

5. CIA. CIA/RR-MR-39, Geographic Intelligence Review, Apr 54, p. 1. C.
6. STATSPEC [redacted],
7. NIS 39 (3, above), p. 1. S.
8. Swain, Paul, and Gibson, Ray G. "World-Wide Oil Report," Oil and Gas Journal, 26 Dec 55, vol. 54, no 34, p. 141. U. Eval. RR 1.
9. Ibid.
10. CIA. FDD Summary no 216, 16 Sep 54, p. 38. C. Eval. RR 2.
11. STATSPEC [redacted]
12. CIA. FDD Translation no 478, First Five-Year Plan of People's Republic of China, 12 Oct 55. C. Eval. RR 2.
13. CIA. CIA/RA (ORR Project 25.470), Petroleum Terminology, 31 May 55, p. 15. C.
14. CIA. FDD Summary no 902, 23 Apr 56, p. 55. C. Eval. RR 3.
15. CIA. FDD Translation no 478 (12, above), p. 35. C. Eval. RR 2.
16. Ibid., p. 36. Eval. RR 2.
17. [redacted]
18. STATSPEC
19. [redacted]
20. [redacted]
21. 25X1A
22. [redacted]
23. Ibid.
24. [redacted]
25. STATSPEC
26. [redacted]
27. CIA. FDD Summary no 817, 10 Feb 56, p. 38, info 18 Dec 55. C. Eval. RR 3.
28. Ibid.

25X1A

29. [redacted]

30. [redacted]

Kai-yung King. "Chinese Oil Output One-fortieth Her Consumption," The Oil Forum, Apr 49, p. 165-168. U. Eval. RR 2.

31. Kai-yung King, op. cit. (30, above).

25X1A2g 32. [redacted]

STATSPEC 33. [redacted]

34. State, Hong Kong. Survey of China Mainland Press, 14 Jul 55, p. 22. U. Eval. RR 3.

35. CIA. FDD Summary no 255, 29 Oct 54, p. 28. C. Eval. RR 3.

STATSPEC 36. [redacted]

25X1A [redacted]

CIA. FDD Summary no 579, 13 Jul 55, p. 27, info 14 May 55. C. Eval. RR 3.

STATSPE [redacted]

CIA. FDD Summary no 176, 2 Aug 54, p. 28, info 18 Jun 54. C. Eval. RR 3.

37. CIA. FDD Summary no 313, 15 Dec 54, p. 41, info 8 Sep 54. C. Eval. RR 3.

STATSPEC [redacted]

25X1A 38. [redacted]

39. CIA. FDD Summary no 295, 2 Dec 54, p. 44-46, info 13 May 54. C. Eval. RR 3.

STATSPEC 40. [redacted]

25X1A2g [redacted]

41. [redacted]

25X1A2g 42. Ibid.

Next 1 Page(s) In Document Exempt

25X1A2g

95. [redacted]

96. Ibid.

97. Ibid., IR-239-54, 11 Feb 54, Oil Production in China, info Dec 53. C. Eval. F-6.

25X1A2g 98. [redacted].

25X1A 99. Ibid.

100. [redacted]

101. CIA. FDD Summary no 263, 8 Nov 54, p. 39. C. Eval. RR 3.

25X1A 102. Ibid., no 229, 29 Sep 54, p. 37, info 8 Apr 54. C. Eval. RR 3.

103. [redacted]

104. CIA. FDD Summary no 225 (35, above).

105. Ibid., no 817, 10 Feb 56, p. 32, info 18 Dec 55. C. Eval. RR 3.

106. Ibid., no 754, 14 Dec 55, p. 13, info 23 Oct 55. C. Eval. RR 3.
Ibid., no 902 (14, above).

107. Ibid., no 731, 25 Nov 55, p. 15-16, info 30 Sep 55. C. Eval. RR 3.

108. [redacted]

25X1A2g 109. 110. 111. 112.

113. Ibid.

25X1A 114. NIS 39 (3, above), p. 62-74. S.

115. Ibid., p. 62-21. S.

116. [redacted]

117. NIS 39 (80, above), p. 62-22. S.

118. CIA. CIA/RR PR-17, Petroleum in the Soviet Bloc, sec III-A, 24 Jun 52. S.

25X1A2g 119. [redacted]

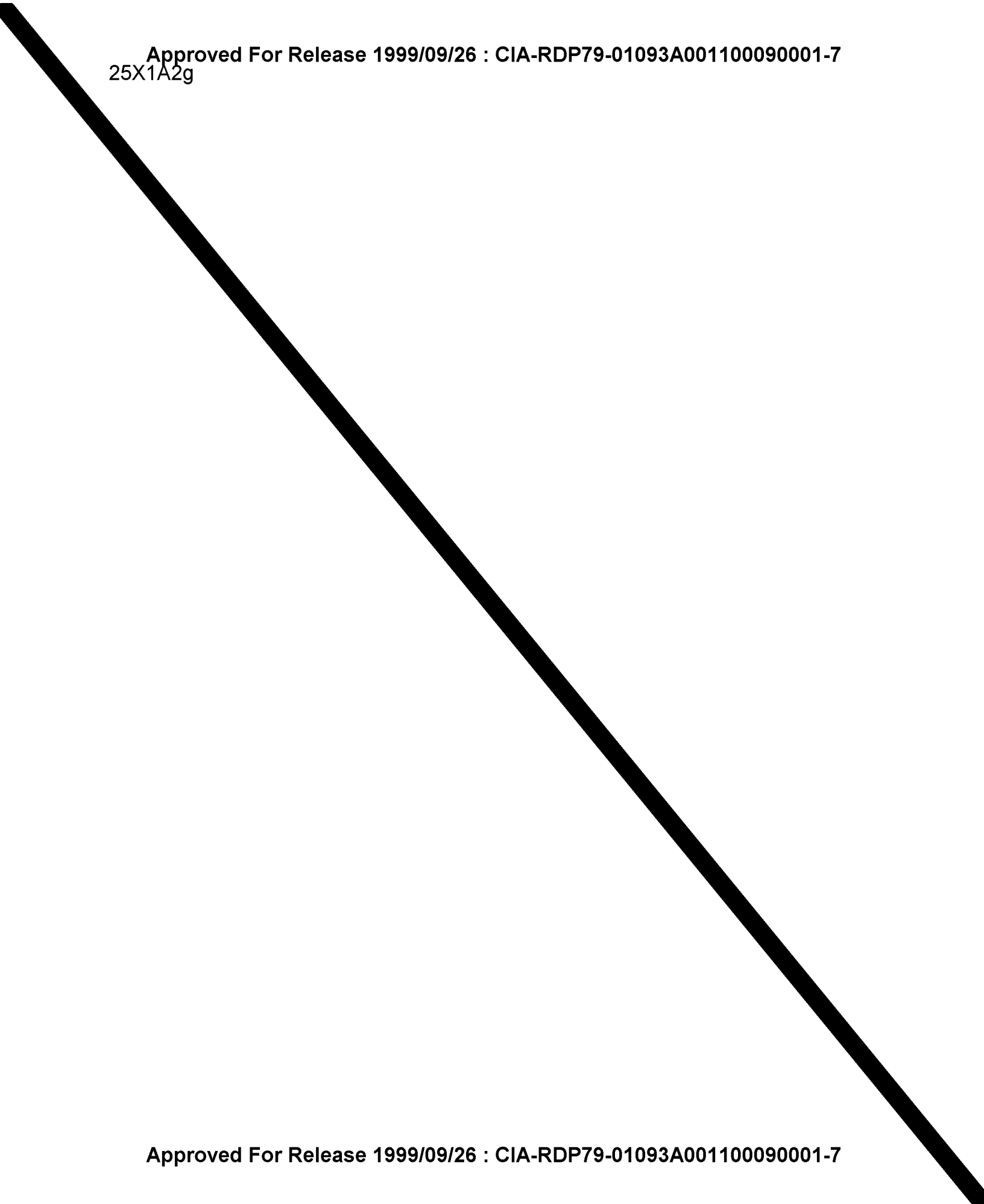
120. Ibid.

121. [redacted]

122.

25X1A2g

25X1A2g



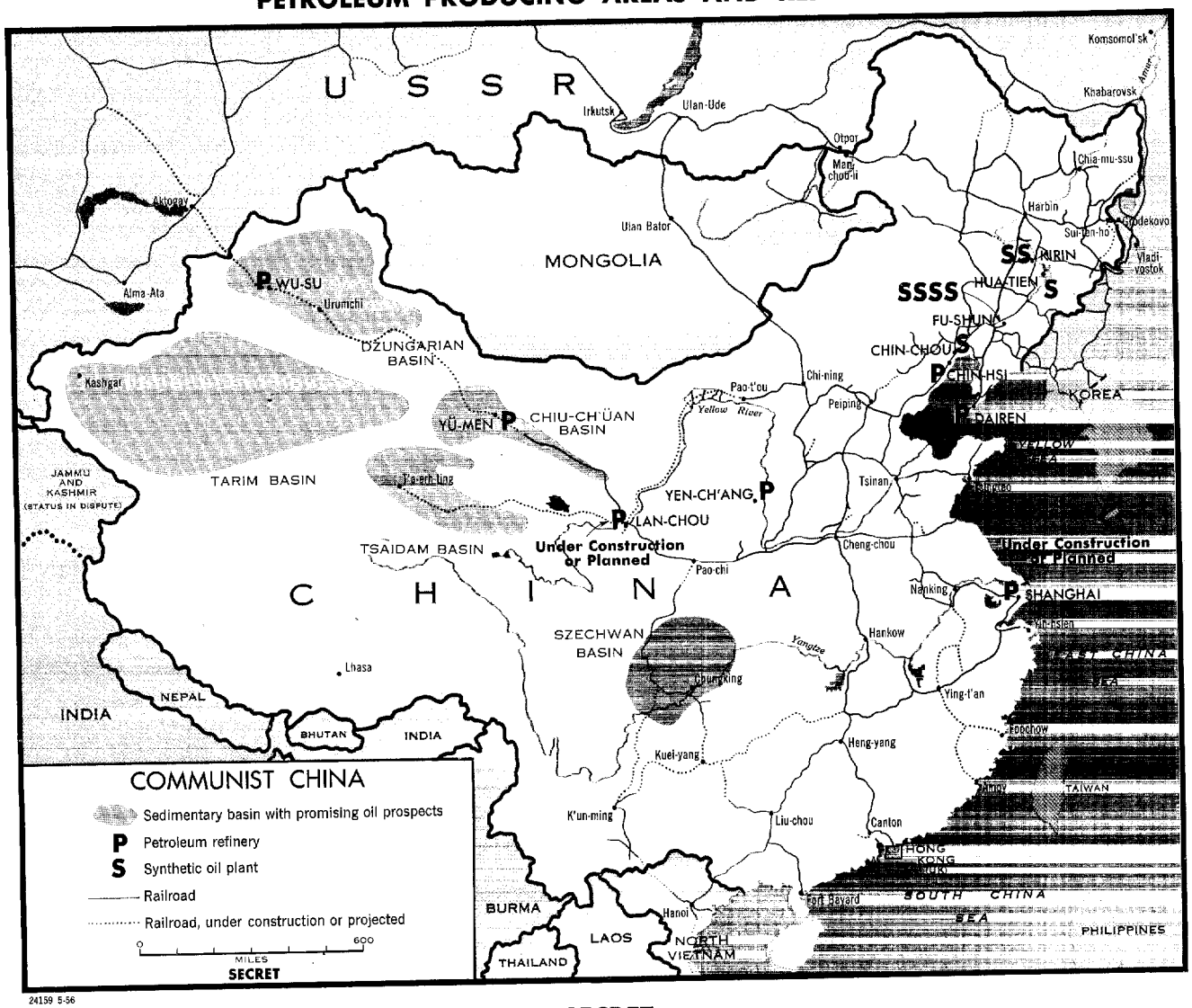
139. CIA. FDD Summary no 780 (137, above), p. 59-60. C. Eval. RR 3.
140. [redacted]
25X1X7 [redacted]
25X1A2g 141. [redacted]
142. NIS 39 (3, above), p. 62-22. S.
143. Ibid.
144. CIA. FDD Summary no 676, 4 Oct 55, p. 27. C. Eval. RR 3.
STATSPEC 145. [redacted]
146. CIA. FDD Summary no 579, 13 Jul 55, p. 13. C. Eval. RR 3.
147. [redacted]
STATSPEC
148. CIA. EIC-P-10, Military Consumption of Petroleum Products, Sino-Soviet Bloc, 1950-1955 (to be published). S.
149. CIA. FDD Summary no 579 (146, above).
150. [redacted]
25X1A2g
151. CIA. FDD Summary no 313, 15 Dec 54, p. 56-67. C. Eval. RR 3.
152. CIA. FDD Translation no 521, Statistical Data on Economic, Cultural, and Educational Development in China, 1949-54, 29 Feb 56, p. 4. C. Eval. RR 3.
153. CIA. FDD Summary no 313 (151, above).
154. Ibid.
155. Ibid.
156. CIA. FDD Translation no 478 (12, above), p. 19. C. Eval. RR 3.
157. State, Hong Kong. Current Background, no 292, 15 Sep 54, p. 3. U. Eval. RR 3. 25X1A
25X1A
158. CIA. FDD Translation no 521 (152, above).
159. [redacted]
160. CIA. FDD Translation no 521 (152, above).
161. [redacted]
STATSPEC
162. [redacted]
163. [redacted]
164. [redacted]
165. [redacted]
25X1A2g

Next 2 Page(s) In Document Exempt

Approved For Release 1999/09/26 : CIA-RDP79-01093A001100090001-7

SECRET

PETROLEUM PRODUCING AREAS AND REFINERIES



24159 5-56

SECRET