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PROVISIONAL INTELLIGENCE REPORT

DISTRIBUTION OF COAL IN ECONOMIC REGION XII OF THE USSR

CIA/RR PR-65

(ORR Project 26.201)

25 June 1954

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DISTRIBUTION OF COAL IN ECONOMIC REGION XII OF THE USSR*

Summary

The industrial economy of Economic Region XII** of the USSR is largely dependent on coal for its maintenance and development. The percentage of primary energy supplied by coal in the region is believed to be as high as the over-all Soviet average of 75 percent.

Total production for 1953 is estimated at 14.7 million metric tons.*** This production was supplemented by imports of high-grade bituminous coal, estimated at 830,000 tons, from Region XI and from Manchuria. The total supply of 15,530,000 tons was composed of 38 percent hard coal**** and 62 percent lignite.

Of the total supply, 4,242,000 tons -- approximately 28 percent -- were consumed in mining areas or in local communities that were supplied by short-haul transportation. The remaining 11,288,000 tons -- 72 percent -- were distributed to consuming areas that required long-haul transportation by rail, river, and sea movements. Included in the latter category were 218,000 tons which were exported to Japan from Sakhalin Island.

Approximately half of the total supply of coal was distributed to the three major consuming areas in and around the cities of Komsomol'sk, Khabarovsk, and Vladivostok.

Of the total estimated consumption for 1953, 20 percent was consumed by thermal electric power installations, 18 percent by the railroads, 8 percent for space heating, 4 percent for the production

* The estimates and conclusions contained in this report represent the best judgment of the responsible analyst as of 15 June 1954.

** The term region in this report refers to the economic regions defined and numbered on CIA Map 12048, 9-51 (First Revision 7-52), USSR: Economic Regions.

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

**** For the purposes of this report the term hard coal means anthracite, semianthracite, or bituminous coal.

of cement, and 2 percent for the production of ferrous metals. The balance of the coal, for which no detailed breakdown could be made, was distributed to a variety of consumers, including other industrial and military installations.

On the mainland the Trans-Siberian Railroad is the principal transportation facility. It serves most of the developed coal mining areas and industrial centers, and it provides access to both river and coastal ports. On Sakhalin Island the primary public rail transportation is provided by the Sakhalin Railroad Company.

The principal ports on Sakhalin Island for shipping coal have a limited season of navigation; this makes it necessary to store coal during the off season. It is estimated that 440,000 tons of coal were stored at the beginning of the navigation season in 1953.

Although Region XII could reasonably be expected to participate in the ambitious program of economic development planned for the entire USSR, it is believed unlikely that the pattern of coal distribution in the region will change, regardless of any increase in consumption.

I. Introduction.

The purpose of this report is to determine as fully as possible for Economic Region XII of the USSR the production, importation, and exportation of coal as they affect the pattern of its distribution and consumption; and the facilities, routes, and methods utilized in transporting it to areas of consumption.

Region XII is included in, but does not comprise, the entire Soviet Far East. It is bordered on the north by the Arctic Ocean, on the east by the Pacific Ocean, on the south by Manchuria, and on the west by a line running from Pokrovka on the Amur River generally northward to the mouth of the Kolyma River in the East Siberian Sea. In area it represents possibly no more than 10 percent of the total USSR.* Its population is estimated at 4.5 million. This is about 2½ percent of the total population of the USSR, which in 1952 was reported to be

* The regional area is assumed to comprise about one-third of the Soviet Far East, which is reported to comprise 31 percent of the total USSR. 1/ (Footnote references in arabic numerals are to sources listed in Appendix D.)

208 million. 2/ Much of the area is very sparsely developed, and the population is unevenly distributed. Approximately one-third of the population is located in Khabarovsk Kray (including Magadan Oblast), one-third in Primorskiy Kray, and the remainder is about evenly divided between Amur and Sakhalin Oblasts.*

The greatest concentrations of population are found along the main line and branches of the Trans-Siberian Railroad. This is the most important transportation system within the region. Connecting with the Trans-Siberian Railroad at Sui-fen-ho in the vicinity of Vladivostok is the Chinese - Ch'ang-ch'un Railroad (formerly the Chinese Eastern Railroad) which traverses northern Manchuria and again connects with the Trans-Siberian Railroad beyond the western boundary of Region XII near Chita. The Amur, Sungari, and Ussuri Rivers also serve much of this area. Another transportation system serving Region XII is the Northern Sea Route. Its southern terminus is at Vladivostok. It traverses the Pacific and Arctic waters to reach its northern terminus at Murmansk in European USSR. 3/

Within Region XII are four areas of economic development: (1) the interior mainland, (2) the mainland coastal area, including the city of Magadan, (3) Kamchatka Peninsula, and (4) Sakhalin Island. The largest of these is the interior mainland. Included in it are the cities Khabarovsk and Komsomol'sk and the greatest rural agricultural development of the region. The coastal area includes Vladivostok, the large shipbuilding and military center of Sovetskaya Gavan', the port of Nikolayevsk, and the Magadan-Kolyma area, which is the center of the gold-mining activities of the region. The Kamchatka Peninsula is important mainly as a fishing and fur-collecting area, although some development of military potential may be in progress. Sakhalin Island, separated from the mainland by the Straits of Tatar, is important as a producer of coal and petroleum and also for fishing, lumbering, shipbuilding, paper manufacturing, and miscellaneous industrial activity.

Such public railroad transportation as exists on Sakhalin Island is provided by the Sakhalin Railroad Company. This railroad operates only in South Sakhalin. Its service is confined primarily to points along the eastern seaboard and to about half of the southwestern coastal area. Private railroads, which are mostly electrified narrow-gage trolley lines, connect the coal mines in the northern area of the west coast of South Sakhalin with nearby coastal consuming points and

* CIA estimate.

transshipping ports. Another rail line terminating at Aleksandrovsk on the west coast of North Sakhalin serves the coal mines and other industries in North Sakhalin.

Before World War II, coal accounted for approximately 60 percent of the total primary energy of the USSR. 4/ Increased dependence upon coal as the primary source of heat and energy has been evident since then. By 1950 it was planned that 75 percent of the total primary energy requirements of the USSR would be supplied by coal. 5/ In Region XII the percentage of primary energy supplied by coal is presumably as high as the national average. Much of the region is underlaid with coal measures, and the proximity of the populated areas to developed areas of coal production simplifies and encourages the maintenance and continued development of its industrial economy with coal.

It is estimated that in 1953 the requirements of the region for coal for all uses -- including industrial and domestic consumption, the fueling of railroad locomotives, the bunkering of ships, and the maintenance of industrial reserve stocks and state storage reserves -- amounted to 15,312,000 tons. Of this amount, approximately 13,530,000 tons, or 88 percent, were used on the mainland and the balance of 1,782,000 tons on Sakhalin Island.*

II. Supply.

1. Natural Resources.

Although large areas of the region are underlaid with hard coal and lignite, apparently only the most accessible deposits and the seams that are most easily mined have been developed. The physical characteristics of the seams, insufficient supplies of mechanical mining equipment, and a shortage of mine labor contribute to the difficulty of developing new mines in the deep seams.

Where seams of commercially usable coal have been found comparatively near the surface, considerable progress has been made in mining them by strip or open-pit methods.

* CIA estimate. Production plus imports, minus exports.

The deep mines in the South Sakhalin area of Sakhalin Island have a demonstrably greater capacity than present production indicates. During the Japanese occupation of that area, production from these mines increased greatly, from 1,196,000 tons in 1934 6/ to 6,471,000 tons in 1941. 7/ When the Japanese occupation was forcibly ended in 1945, large numbers of technicians and experienced coal miners with the ability to operate and maintain the equipment in these mines were evacuated. Soviet technicians and miners have not yet been able to produce from these mines more than 50 percent of their prewar Japanese production.

2. Production.

The several developed coal fields within Region XII, the estimated tons of hard coal or lignite produced in 1953, and the percent each field contributes to total regional production are given in Table 1.

Table 1

Estimated Production of Coal in Region XII
by Producing Mines and Types of Coal a/*
1953

Area and Mine	Hard Coal (Thousand Metric Tons)	Lignite (Thousand Metric Tons)	Percent
Khabarovsk Kray			
Raychikhinsk-Kivda	0	5,400 b/	37
Urgal (Bureya Basin)	600 c/	0	4
Northern Regions			
Kolyma, Anadyr, Tilichiki	400 d/	0	3
Primorskiy Kray			
Artem	0	2,800 e/	19
Suchan	1,500 f/	0	10
Tavrichanka	0	300 g/	2
Lipovtsy	0	300 g/	2

* Footnotes for Table 1 follow on p. 6.

Table 1

Estimated Production of Coal in Region XII
by Producing Mines and Types of Coal a/
1953
(Continued)

Area and Mine	Hard Coal (Thousand Metric Tons)	Lignite (Thousand Metric Tons)	Percent
Primorskiy Kray (Continued)			
Vor-shilov	200 h/	0	1
Ugol'naya	500 h/	0	3
Sakhalin Island			
North Sakhalin	425 i/	0	3
South Sakhalin	1,275 j/	1,000 j/	16
Total	4,900	9,800	100
Grand Total	14,700		

a. Based primarily on 1952 and earlier production figures published in source 8/, adjusted to reflect probable interim growth.
b. Production in 1950 increased by 25.6 percent, or approximately 8.5 percent per year, which appears reasonable, as mines are all open-pit operations.
c. Estimated increase is 50 percent over 1950. Mines were being rehabilitated after an inactive period of several years.
d. Estimated increase is 45 percent over 1950.
e. Estimated increase over 1950 is 12 percent and compares with estimated increase in Primorskiy Kray as a whole of 11.4 percent. Production in Artem in 1950 was 49.75 percent of kray total. Estimated 1953 production is 50.0 percent of estimated kray total.
f. Production in 1950 was 27.86 percent of total Primorskiy Kray. Estimate for 1953 is 26.78 percent of the kray total.

Table 1

Estimated Production of Coal in Region XII
by Producing Mines and Types of Coal a/
1953
(Continued)

Increase in 1953 over 1950 is approximately 7 percent, which is slightly less than the kray as a whole.
g. These are small mines whose output is mainly used by local consumers. Although estimated increases over 1950 range from 33 percent to 50 percent, the amount produced remains small.
h. Estimated increases over 1950 range from 14 percent at Voroshilov mine to as much as 55 percent at the others. All are comparatively small mines, whose output is mainly used by local consumers. Although percentage increases loom large, the volume produced remains comparatively small.
i. CIA estimate. Based on 1940 production, 9/ adjusted to embody changes indicated in various prisoner-of-war reports in 1948 and readjusted to reflect interim changes.
j. Based on Japanese production prior to Soviet occupation, 10/ modified by inability of Russians to maintain Japanese rate of production, 11/ and adjusted to reflect average of production reports by many prisoners of war in 1947 and 1948. 12/

3. Types and Qualities.

Urgal (Bureya Basin). 13/

Bituminous coal in Urgal is produced from deep mines. Its ash content is high and varies from 14 to 15 percent in some workings to 18 to 22 percent in others. It is low in sulfur and is high in calorific value on an ash- and moisture-free basis. The coal is suitable for railroad locomotive use, for handfiring or stoker firing of stationary boilers, and for space heating. The basin was developed primarily for coking coal, and the coal can be made into coke suitable for metallurgical use if some leaner coal or low-temperature-carbonization coke is mixed with it in the oven charge.

Suchan. 14/

The Suchan coal mines are deep underground workings. They produce a medium-ash, low-sulfur bituminous coal of high calorific value. The coal has a hard structure and is suitable for a wide range of industrial uses. Approximately one-half is suitable for use in byproduct coke ovens, in gas-producing plants, and in beehive-type coking ovens.

Voroshilov. 15/

Bituminous coal produced from the Voroshilov mines is generally inferior to much of the Suchan coal. It is higher in ash, runs heavily to fines, and is used by local consumers.

Ugol'naya. 16/

Coal produced from this mine and small mines nearby is largely semianthracite in character, high in ash, and substantially similar in quality to Voroshilov and the poorer grades of Suchan coal.

Raychikhinsk-Kivda. 17/

Brown-colored lignite is produced from the Raychikhinsk-Kivda mines. It is mined in strip or open-pit mines. It is generally poor in quality and friable in structure and disintegrates rapidly in storage. Much of it is high in moisture (34 to 36 percent), medium in ash (6 to 12 percent), and low in sulfur (.03 to .05 percent). The coal is of medium calorific value. It is noncoking, and its use without beneficiation is limited primarily to railroad locomotives, to heating stationary boilers in small manufacturing and steam-power plants, and to space heating. It is suitable for making briquettes, and in this process its moisture content is reduced and its calorific value correspondingly increased. The briquettes make a better burning fuel, suitable for wider industrial use.

Six briquette plants were planned to be constructed at Raychikhinsk. Machinery from Germany is reported to have been received and stored there awaiting installation. Actual construction and operation of any of these plants, however, is without confirmation.

Artem. 18/

The lignite produced in the Artem mines is of superior quality and comes close to being low-grade bituminous coal. It is mined in underground mines. It is dull coal of the black lignite color, firmer in structure, noncoking in character, lower in moisture (13 to 15 percent), about the same in ash and sulfur, but higher in calorific value (5,500 to 6,000 calories) than the Raychikhinsk-Kivda lignites. It is good coal for producing steam. It burns easily and quickly with a long flame and thus has a wide range of industrial application including large steam and thermal electric power plants equipped with mechanical types of coal-burning equipment.

Tavrichanka and Lipovtsy. 19/

In their physical characteristics these coals are substantially similar to the Artem coal, but their chemical properties are not so favorable and they are more limited in their uses.

Sakhalin Island. 20/

The Sakhalin Island coals vary in character from good-quality lignite through medium-grade, noncoking bituminous steam coals, to high-grade bituminous coals of strong coking character. Both underground mines and strip or open-pit mines are used to exploit the deposits. Some of the lignite is pressed into briquettes for wider industrial use. Some of the deep-mined bituminous steam coal is cleaned and processed at the mines to improve quality and suitability for special uses. Some is processed in low-temperature carbonizing plants. Presumably, some of the coking coal is coked at ovens on Sakhalin Island. To supplement the supply of better grades of bituminous steam and coking coals needed by consumers on the mainland, it is estimated that approximately 700,000 tons, or about 25 percent of the island's total coal production, were moved by vessels from Sakhalin transshipment ports to mainland coastal ports from Vladivostok on the south to Kamchatka on the north.*

4. Imports.

Region XII appears to be deficient in the production of high-grade bituminous coals. In 1953, about 830,000 tons were imported to

* CIA estimate, calculated from many varied sources. 21/

make up for this deficiency. A portion of this deficiency, approximately 330,000 tons, 22/ was supplied with coal mined at Bukachacha in the Chita Oblast of Region XI and imported into Region XII over the Trans-Siberian Railroad.

Some 500,000 tons of high-grade bituminous coal are believed to have come from northern Manchuria, reaching Region XII through the rail connection between the Chinese - Ch'ang-ch'un Railroad and the Trans-Siberian Railroad at Sui-fen-ho and/or by way of the Sungari River from transshipment ports on the Chinese - Ch'ang-ch'un Railroad. 23/

III. Distribution.

1. Distribution According to Length of Haul.*

Coal is hauled either to local consuming areas or to consuming centers requiring longer transportation hauls from the mines.

Local consuming areas are those centers located within the mining fields for which no railroad service or only a switching service is performed, and nearby centers to which only short-haul rail movement is required. All points of consumption on Sakhalin Island are included in this classification.

* Hauling of coal from a more distant producing field to an industrial area in closer proximity to another field of coal production appears to be contrary to established Soviet policy. Where it occurs it seems to be confined largely to the needs of consumers for types of coal not produced in the nearby mining field. As a consequence the lignite mines of Raychikhinsk-Kivda and the bituminous coal mines in Urgal (Bureya Basin), which are in closest proximity to the industrial areas along the line of the Trans-Siberian Railroad to and including Khabarovsk and Komsomol'sk, supply the greatest percentage of coal distributed to that industrial area. The Artem-Suchan-Voroshilov and other mines in the Primorskiy Kray area, being located closest to the industrial areas developed along the Trans-Siberian Railroad from Khabarovsk on the north to and including Vladivostok on the south, provide the greatest concentration of distribution of fuel in that area. Also in this industrial area can be found the greatest concentration of distribution of coal imported from Manchuria. Although some of this coal may have moved as far north as Komsomol'sk, the bulk of it is believed to have been moved to Vladivostok.

Long-haul areas are consuming centers located away from the producing fields, to which a railroad transportation movement involving a mainline is required.* Included are rail movements to river transshipment ports for shipment to consuming centers served by river steamers or barges and rail movements to coastal ports for transshipment to ocean going vessels as cargo or for bunkering. Also included are vessel movements of coal from Sakhalin Island ports to coastal ports on the eastern shore of the mainland and to Japan.

Coal imported from Region XI and from Manchuria for consumption within Region XII would move within the region either by river or railroad or both. It has therefore also been included within the long-haul category.

The volume estimated to have been distributed to local areas within each producing field and the percentage of each to the total distributed locally are given in Table 2. Also shown in this table is the estimated long-haul volume, including exports, from each producing field and the percentage of each to the total so hauled.

Table 2

Estimated Distribution of Coal in Region XII
by Local Hauls and Long Hauls
1953

Area and Mine	Local Hauls (Thousand Metric Tons)	Percent	Long Hauls a/** (Thousand Metric Tons)	Percent
Khabarovsk Kray				
Raychikhinsk-Kivda	510	12	4,890	43
Urgal (Bureya Basin)	0	0	600	5
Northern Regions				
Kolyma, Anadyr, Tilichiki	400	10	0	0
Primorskiy Kray				
Artem	500	11	2,300	21
Suchan	200	5	1,300	12

* See Map, USSR: Region XII, Coal Distribution by Long-Haul Movement, 1953, following p. 12.
** Footnotes for Table 2 follow on p. 12.

Table 2

Estimated Distribution of Coal in Region XII
by Local Hauls and Long Hauls
1953
(Continued)

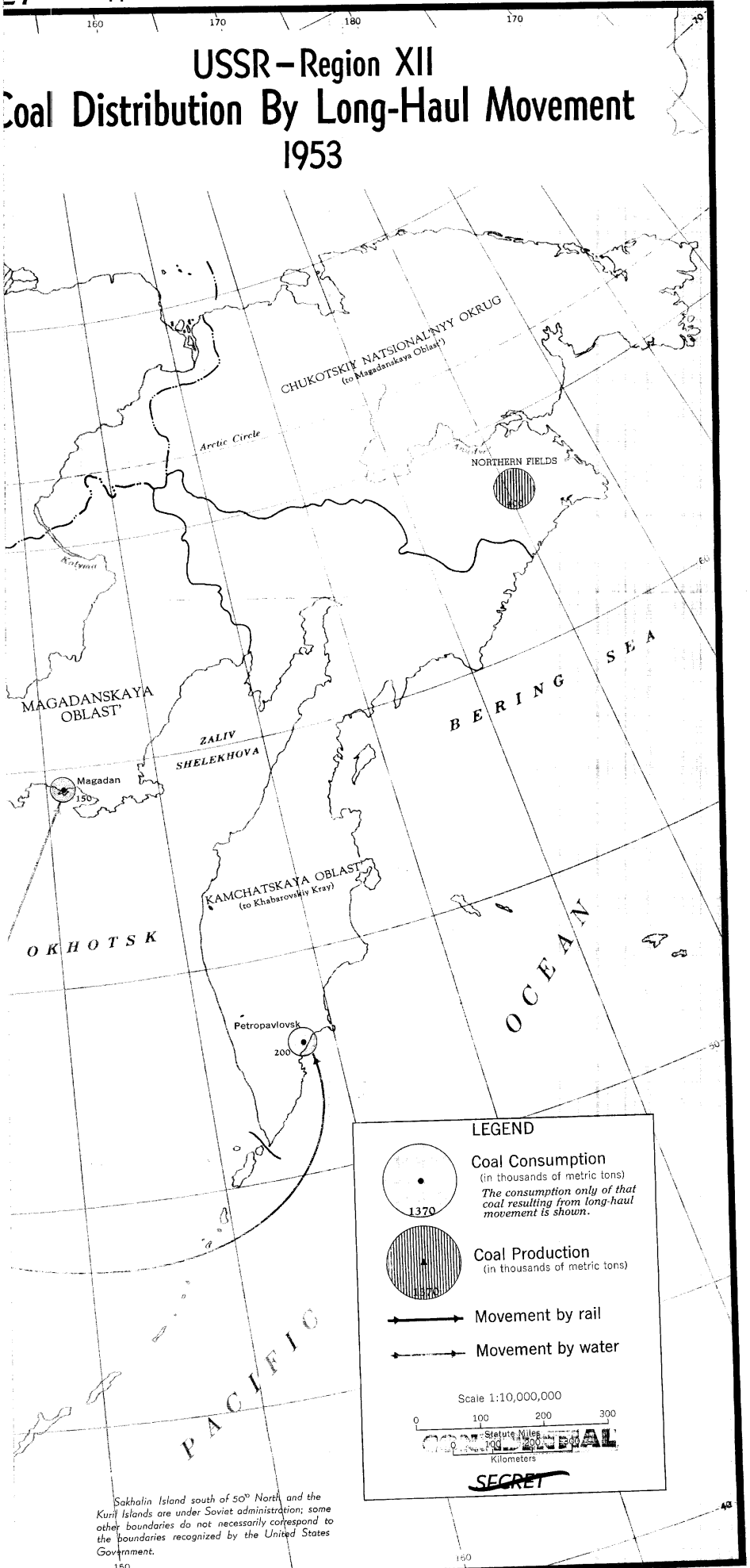
Area and Mine	Local Hauls (Thousand Metric Tons)	Percent	Long Hauls a/ (Thousand Metric Tons)	Percent
Primorskiy Kray (Continued)				
Tavrichanka	300	7	0	0
Lipovtsy	300	7	0	0
Voroshilov	200	5	0	0
Ugol'naya	50	1	450	4
Sakhalin Island				
North Sakhalin)	1,782	42	918	8
South Sakhalin)				
Imported Coal	0	0	830	7
Total	4,242	100	11,288 b/	100

a. Long-haul tonnage is the difference between total production (Table 1) plus imports, and amounts shown herein as being used locally.
b. Including 830,000 tons of coal imported from Region XI and Manchuria.

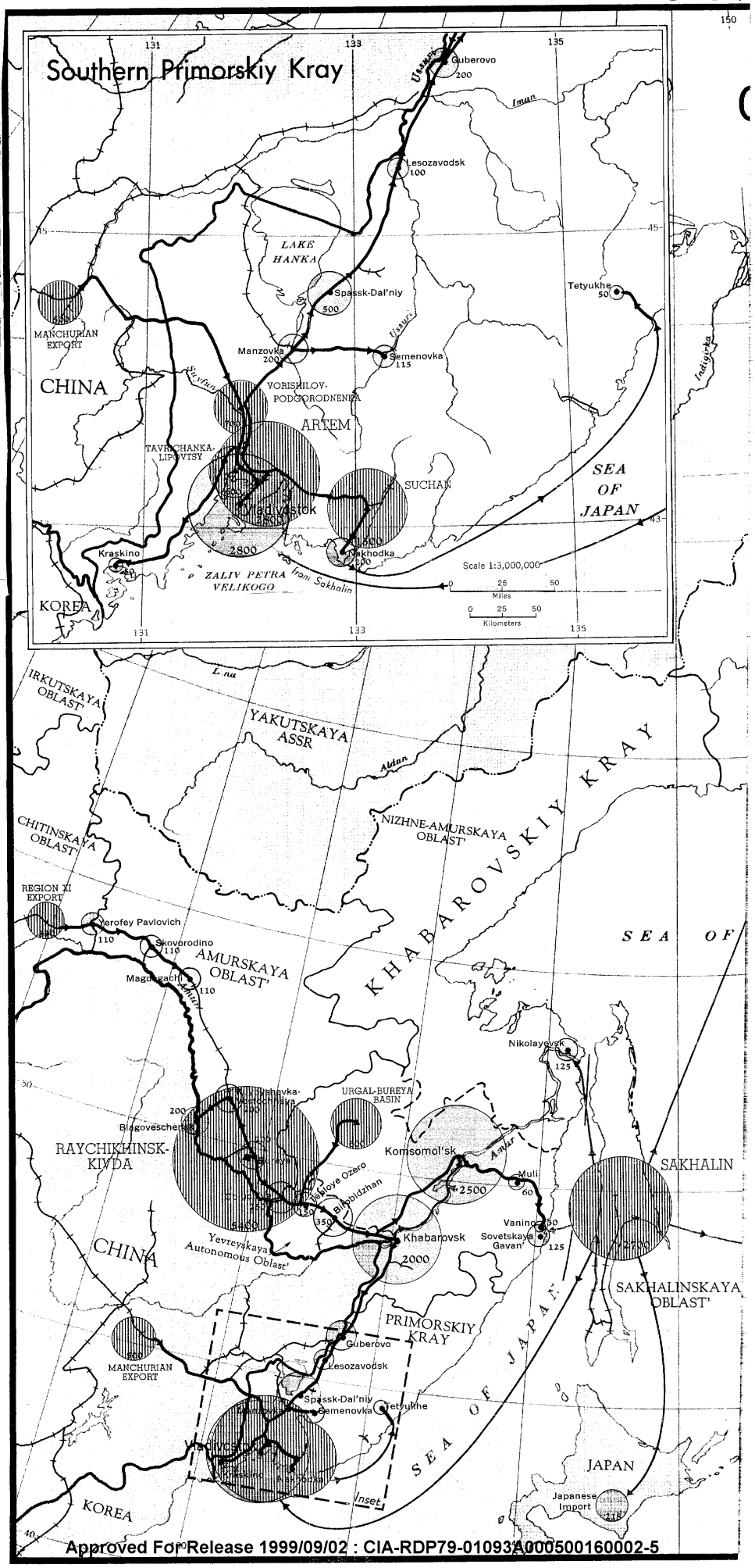
2. Distribution to Principal Consuming Areas.

The principal areas of economic development and industrial concentration are at Komsomol'sk, Khabarovsk, and Vladivostok. Approximately 7.3 million tons, or 65 percent of the total long-haul tonnage, were distributed to these three points. All three are served primarily by the Trans-Siberian Railroad, although service by

USSR – Region XII
Coal Distribution By Long-Haul Movement
1953



Sakhalin Island south of 50° North and the Kuril Islands are under Soviet administration; some other boundaries do not necessarily correspond to the boundaries recognized by the United States Government.



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way of the Amur River is also available to Komsomol'sk and Khabarovsk. Vladivostok is serviced by coastal and ocean-going vessels as well as by the railroad.

The tonnages distributed to these three areas; to the remaining consuming areas -- grouped as a whole -- which require long-haul movement; and to the group of areas previously identified as "local" are given in Table 3. The producing mines and tonnages distributed to all consuming areas by long-haul shipments are given in Table 4.*

Table 3

Estimated Distribution of Coal in Region XII to Principal Consuming Areas 1953

Consuming Areas	Distribution (Thousand Metric Tons)	Percent of Total Distribution
Vladivostok	2,800 a/	18
Komsomol'sk	2,500 b/	16
Khabarovsk	2,000 c/	13
Other Long-Haul (Including Exports)	3,988 d/	26
Local Areas	4,242 e/	27
Total	15,530	100

a. Calculated largely from reports of many prisoners of war who worked in Primorskiy Kray mines in 1947-48. 24/ The amounts of fuel used in railroad operations and in thermal electric power plants are CIA estimates. The amount of fuel used for space heating of homes and public buildings is roughly estimated at one-fourth ton per capita.
b. Calculated primarily from reports of many prisoners of war who worked in Khabarovsk Kray mines, and from

* Table 4 follows on p. 15.

Table 3

Estimated Distribution of Coal in Region XII
to Principal Consuming Areas
1953
(Continued)

source 25/. The amounts of fuel used in railroad operations, in thermal electric power plants, in ferrous metals plants, and in cement plants are CIA estimates. The amount of fuel used in space heating of homes and public buildings is roughly estimated at one-fourth ton per capita.
c. Calculated largely from reports of many prisoners of war who worked in Khabarovsk Kray and Primorskiy Kray mines. 26/ The amounts of fuel used in railroad operations, in the thermal electric power plants, and in cement plants are CIA estimates. The amount of fuel used in space heating is estimated at one-fourth ton per capita.
d. This tonnage added to preceding three tonnages equals total long-haul tonnage given in Table 2.
e. Same as local tonnage reported in Table 2.

3. Distribution of Exports.

Although there is no evidence that any of the coal produced on the mainland was exported in 1953, there are reports of coal being exported from the mines on Sakhalin Island to Japan.

Before 1945 Sakhalin Island was divided into two areas: North Sakhalin, which was controlled by the Russians; and South Sakhalin, otherwise known as Karafuto, which was controlled and occupied by the Japanese. Sizable shipments of coal were made annually from Karafuto to Japanese homeland markets. These reached their peak of 3,912,000 tons in 1941. 27/ They ceased entirely when the Russians drove the Japanese out and took control of South Sakhalin in 1945. Thereafter and until 1952, coal shipped from Sakhalin Island was solely for Soviet use. During 1952 the Japanese, needing the Karafuto

S-E-C-R-E-T

Table 4

Producing Mines and Distribution of Long-Haul Shipments
in Region XII
1953

Thousand Metric Tons

Consuming Areas	Producing Mines										
	Raychikhinsk-Kivda	Urgal (Bureya Basin)	Northern Regions	Artem	Suchan	Tavrichanka and Lipovtsy	Voroshilov and Ugol'naya	Sakhalin Island	Region XI	Manchuria	Total
Komsomol'sk	1,500	600			400						2,500
Khabarovsk	1,800			200							2,000
Vladivostok				1,150	500		450	100		500	2,700 a/*
Birobidzhan	350										350
Blagoveshchensk	200										200
Bureya	200										200
Guberovo	100			100							200
Kraskino				50							50
Kuybyshevka-Vostochnaya	200										200
Lesozavodsk				100							100
Magadan								150			150
Manzovka				200							200
Muli	60										60
Nakhodka					200						200
Nikolayevsk								125			125
Obluch'ye	250										250
Petropavlovsk								200			200
Semenovka					115						115
Sovetskaya Gavan'								125			125
Spassk-Dal'niy				500							500
Teplóye Ozero	150										150
Tutyukhe					50						50
Vanino	30										30
Others	50				35				330		415
Total	4,890 b/	600 c/	0	2,300 d/	1,300 d/	0	450 e/	700 f/	330 g/	500 h/	11,070

* Footnotes for Table 4 follow on p. 16.

S-E-C-R-E-T

Table 4

Producing Mines and Distribution of Long-Haul Shipments
in Region XII
1953
(Continued)

a. Some mines in this group are so close to Vladivostok that it is believed that deliveries to that point would be considered as "local" for at least 100 tons; this would raise the Vladivostok total to 2,800 tons.
b. CIA estimates. Based largely on distribution study of traffic movements and density of traffic on the Trans-Siberian Railroad in 1952; supplemented in part by distribution data in reports of many prisoners of war who worked in the local mines; adjusted to include estimated volume of consumption by (1) railroads, (2) steel plants, (3) cement plants, and (4) thermal electric power plants. Fuels used for heating homes and public buildings calculated at one-fourth ton per capita.
c. CIA estimate.
d. CIA estimates. Based on traffic data and supplemented by consumption data for thermal electric power plants, for cement plants, and for space heating of homes and public buildings calculated at one-fourth ton per capita.
e. CIA estimate. Based on traffic data and supported by proximity of these small local mines to Vladivostok, a city needing a large volume of coal.
f. 28/
g. 29/
h. 30/

type of coal, prevailed upon the Russians to permit exportation of a small amount to Japan. Approximately 30,000 tons were exported under this arrangement in 1952. 31/

Continued negotiations resulted in a barter agreement under which, in 1953, the Russians were to supply the Japanese with 450,000 tons of Sakhalin coal and the Japanese were to repair Soviet fishing vessels in Japanese waters. 32/ Later in 1953 the amount of coal to be supplied was reduced to 352,340 tons, with delivery of 210,000 tons to be made in 1953 and the remainder in the first half of 1954. 33/ The amount of coal exported under this agreement in 1953 reportedly amounted to approximately 217,745 tons. 34/

IV. Consumption.

The amount of coal consumed is equal to the amount distributed, including any coal placed in plant inventory storage piles or in State Fuel Reserves. The volume consumed varies from one consuming center to another, depending on the number, size, and types of consumers located within each. Types of consumers vary between areas, depending in large measure on the availability of raw materials and facilities for distribution and consumption of the products of production. Prominent among the consumers are railroads, brick plants, clothing factories, and shipyards in the southern part; food and fish processing and packing plants along the coastline; thermal electric power plants, military and naval establishments, and public and private buildings requiring space heating, which are dispersed throughout the entire region.

Estimated consumption of coal in Region XII is given in Table 5.* The consumers are divided into the following groups: Group 1, those for which information was available on all units or a major portion of the units of the group; Group 2, those for which information was available on some units but was fragmentary for other units; and Group 3, those for which consumption was unknown for any units.

The estimated distribution of coal to specific consumer groups in the various consuming areas in Region XII is shown in Appendix A.

* Table 5 follows on p. 18.

Table 5

Estimated Consumption of Coal in Region XII
by Consuming Groups a/*
1953

	Quantity (Thousand Metric Tons)	Percent of Total Consumption
Group 1		
Thermal Electric Power	3,032 b/	20
Railroads	2,855 b/	18
Space Heating	1,319 c/	8
Cement	579 b/	4
Ferrous Metals	215 b/	2
Total	8,000	52
Group 2		
General Industrial	389 d/	
Pulp and Paper Mills	403 e/	
Synthetic Fuel Plant	190 f/	
Military and Naval Bases	200 g/	
Miscellaneous Uses	187 h/	
Bunkers and Vessel Cargoes	35 b/	
Total	1,404	9
Group 3		
Consumed in part by categories in Group 2 above, and partly by miscellaneous consumers not otherwise shown.	5,908 i/	39
Total	15,312	100

Footnotes for Table 5 follow on p. 19..

Table 5

Estimated Consumption of Coal in Region XII
by Consuming Groups a/
1953
(Continued)

a. Excluding exports.
b. CIA estimate.
c. CIA estimate, roughly calculated on allowance of one-fourth ton per capita for urban areas, with less or no allowance for rural areas more readily accessible to wood lots.
d. 35/.
e. Averaged from many reports. 36/
f. Based on 1948 reported figures. 37/
g. Based on an assumed consumption of approximately 15 percent of total Sakhalin Island consumption.
h. Including coal made into coke at mines 38/ and coal used in lead and zinc smelters. 39/
i. Balance of estimated total consumption remaining after allotting tonnages shown for Groups 1 and 2.

Because of the relatively close proximity of most consuming centers to coal mining areas, the fact that much of the coal is subject to spontaneous combustion or quickly deteriorates in storage, and the evident ability of the railroad to supply adequate transportation service, it seems likely that the stocking of reserve supplies at the plants is limited to amounts necessary to tide them over seasonal interferences with normal deliveries.

The principal ports for the transshipment of coal on Sakhalin Island are on the west coast, facing the mainland across the Straits of Tatar. Prominent among them are Mgachi, Aleksandrovsk, and Makar'yevka (Due) in North Sakhalin; and Boshnyakovo (Nishi Sakutan), Krasnogorsk, Shaktersk, and Uglegorsk in South Sakhalin. Because of severe weather conditions the season of navigation is short, averaging about 170 calendar days to northern ports and about 200 days to southern ports. 40/

The mines serving these ports with coal are located short distances inland from the shore, and the coal moves to the beaches in shuttle service over narrow-gage trolley lines operated by the mine managements. 41/ Although loading into vessels is possible only during the short navigation season, the mines must be kept in operation throughout the year. It is not feasible to operate them in the summer and close them in the winter, and furthermore, their winter production as well as their summer production is needed to supply all the coal required for vessel loading. During the winter season when the ports are closed the daily mine production accumulates in storage areas at or near the mines or at the ports to await summer loading. 42/

Amounts in storage vary from time to time and from port to port depending upon the productivity of the mines, the size of the ports, the availability of vessels, and the capacity and efficiency of port facilities and services for loading them. At the close of navigation in September or October the amount in storage is comparatively small. It increases month by month until the peak is reached in late March or in early April.

Although figures are not available on the amount in storage when the 1953 navigation season opened in April, it is believed to have approximated 440,000 tons. From an estimated 40,000 tons stored in October 1952, it would have grown at the rate of approximately 80,000 tons per month through March 1953. In April 1953, probably no more than 40,000 tons would have been added to the storage pile.

V. Conclusions.

The ambitious program of economic development for the USSR as a whole, promulgated in the current Five Year Plan, was to be supported by a progressively increasing production of coal from Soviet mines, which by 1955 would be 43 percent greater than the production of 1950. 43/ Region XII could reasonably be expected to participate in and provide its share of the planned increase in volume of industrial production of steel, cement, electric power, chemicals, machinery and equipment, and many varieties of consumer goods, the importance of which was emphasized by Malenkov in his speech of 9 August 1953 before the Supreme Soviet. This increased industrial activity would naturally result in increased consumption of coal. It is thought that there would be little change in the distribution patterns.

The Trans-Siberian Railroad in Region XII is such a vital link between the coal mines of that region and the consumers dependent upon the output of those mines that any interference with continued operation of the railroad could have a serious collateral effect upon industrial operations located along its lines.

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APPENDIX A

Table 6

ESTIMATED DISTRIBUTION OF COAL TO SPECIFIC CONSUMER GROUPS
IN REGION XII
1953

Thousand Metric Tons

Consuming Areas	Specific Consumer Groups					Total Available Tonnage	Total Distributed	Balance Available for Other Uses
	Railroad Fuel a/*	Thermal Electric Power a/	Cement a/	Ferrous Metals a/	Space Heating b/			
Komsomol'sk	220	450	70	195	130	2,500	1,065	1,435
Khabarovsk	370	360	60	0	180	2,000	970	1,030
Blagoveshchensk	0	110	0	0	30	200	140	60
Kuybyshevka-Vostochnaya	110	15	0	0	15	200	140	60
Bureya	50	10	0	0	10	200	70	130
Birobidzhan	185	40	0	0	25	350	250	100
Obluch'ye	185	20	0	0	15	250	220	30
Teploye Ozero	0	0	135	0	15	200	150	50
Nikolayevsk	0	85	0	0	10	125	95	30
Magadan	0	20	0	5	40	150	65	85
Petropavlovsk	0	60	0	0	10	200	70	130
Kraskino	30	0	0	0	10	50	40	10
Vladivostok	180	235	0	0	180	2,800	595	2,205
Nakhodka	30	40	0	0	10	200	80	120
Manzovka	150	15	0	15	15	200	195	5
Spassk-Dal'niy	90	40	314	0	15	500	459	41
Lesozavodsk	80	5	0	0	15	150	100	50
Guberovo	200	0	0	0	0	200	200	0

* Footnotes for Table 6 follow on p. 24.

APPENDIX A

Table 6

ESTIMATED DISTRIBUTION OF COAL TO SPECIFIC CONSUMER GROUPS
IN REGION XII
1953
(Continued)

Thousand Metric Tons

Consuming Areas	Specific Consumer Groups					Total Available Tonnage	Total Distributed	Balance Available for Other Uses
	Railroad Fuel a/	Thermal Electric Power a/	Cement a/	Ferrous Metals a/	Space Heating b/			
Semenovka	0	54	0	0	15	115	69	46
Tetyukhe	15	0	0	0	15	50	30	20
Muli	20	10	0	0	10	60	40	20
Sovetskaya Gavan'	0	110	0	0	10	125	120	5
Vanino	15	0	0	0	5	30	20	10
Sakhalin Island	160	273	0	0	159	1,782	592	1,190
All Other Areas	765	1,080	0	0	380	2,675	2,225	450
Total	2,855	3,032	579	215	1,319	15,312	8,000	7,312

a. CIA estimate.
b. Calculated on the basis of approximately one-fourth ton per capita.

APPENDIX B

METHODOLOGY

Basic and current regional production data were derived by applying Soviet percentage data for recent years from various sources to the production figures for 1950. 44/ Detailed producing field data were estimated primarily from analysis and compilation of a large number of reports on individual mines during 1948-49, and a scant supply of percentage data released by the USSR. The analyzed data from reports were used to establish the proportional breakdown of the regional figures from the individual producing mine basis. This breakdown was projected into the regional production data of current years with modifications as required by Soviet percentage data and other current Soviet information obtained from such sources as Soviet technical and other publications.

Sakhalin Island production figures were calculated in part from a comprehensive Japanese report 45/ on the coal industry in South Sakhalin (Karafuto) as it developed during their occupation of that area. This was modified and made current by reports of conditions existing after control of the area passed to the USSR in 1945 and by analysis of Soviet statements in press and radio on mining conditions and achievements.

The estimate of imports from Manchuria was calculated in part from reports that in 1949 daily shipments of 2,000 tons were being made to Vladivostok from Ching-Hsing Mine on the Chinese - Ch'ang-ch'un Railroad in Manchuria, and that in 1950 "large quantities" of coal from the Mu-ling Mine -- also in Manchuria on the Chinese - Ch'ang-ch'un Railroad -- were sent to the USSR through the Pogranichnoye Station (Sui-fen-ho).

The Fu-shun Mine in Manchuria also was reported to be shipping coal to the USSR. Between 1 August and 15 December 1951, 65,000 tons were reportedly shipped on a contract for 200,000 tons, and shipments were continuing at the rate of 400 tons per day. 46/

If shipments continued from all three mines without interruption in continuity, annual tonnages could easily exceed 1 million tons. It is believed unlikely that such continuity of shipment could be

maintained, and in the absence of any definite information it is assumed that 500,000 tons more nearly represents the tonnage actually imported in 1953.

In estimating the amount of coal stored at transshipment ports on Sakhalin Island, an average daily volume of production of the mine serving those ports was calculated primarily from reports for the years 1946-48. 47/ This figure was then adjusted to reflect subsequent developments in the Sakhalin coal mining industry as a whole.

After allowing for local consumption, the maximum average daily volume of production available for vessel loading was determined to be approximately 3,075 tons. Of this amount, 1,300 tons per day would come from mines serving the northern ports, and 1,775 tons from mines serving the southern ports.

Excluding Sundays, the number of production days during the 1953 season of navigation was 140 in the north and 165 in the south. The combined maximum summer production would approximate 475,000 tons. This would be 443,000 tons less than the amount needed to supply the 700,000 tons for Soviet use and the 217,745 tons exported to Japan.

The deficit would have to be supplied from coal in storage. This would be accumulated by adding to any tonnage remaining at the close of the previous navigation season the daily mine production. The number of mine working days during the 1952-53 winter season was 160 at northern mines and 135 at southern mines. Using the summer rate or daily production, the maximum production available for storage would approximate 440,000 tons.

APPENDIX C

GAPS IN INTELLIGENCE

The following gaps in intelligence are listed in their order of importance:

1. The amount of coal consumed by individual plants in Region XII.

2. The amount of coal in working inventories or in State Reserves.

3. The amount of coal imported into Region XII from Manchuria.

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APPENDIX D

SCURCES AND EVALUATION OF SOURCES

1. Evaluation of Sources.

The most important and reliable source of information used in compiling this report was the data from FBIS. Next in order of reliability were the reports emanating from the Far East Command. The US Strategic Bombing Survey provided valuable and generally reliable material. Prisoner-of-war reports, although sketchy, offered some reliable confirming information.

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