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ECONOMIC INTELLIGENCE REPORT

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SOLID FUELS AND COAL GAS
IN CZECHOSLOVAKIA



CIA/RR 44

1 November 1954

CENTRAL INTELLIGENCE AGENCY

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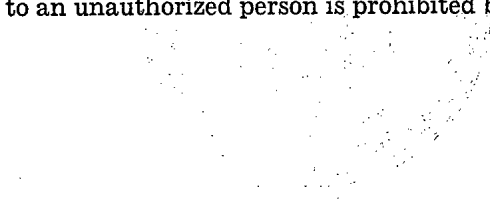
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SOLID FUELS AND COAL GAS IN CZECHOSLOVAKIA

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(ORR Project 26.197)

CENTRAL INTELLIGENCE AGENCY

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SOLID FUELS AND COAL GAS IN CZECHOSLOVAKIA*

Summary

Solid fuels constitute the main source of energy in Czechoslovakia. In 1953 solid fuels represented almost 99 percent of the total sources of primary energy in the country. Coal accounted for more than 97 percent of the total, firewood for 1.2 percent, and peat for 0.5 percent. Petroleum hydrocarbons, including natural gas, provided 0.8 percent of the total, and hydroelectric power provided only 0.4 percent.**

Czechoslovakia has the fifth largest reserves of hard coal*** in Europe and the third largest reserves of brown coal and lignite. The reserves of coking coal in Czechoslovakia, the largest in central Europe, are adequate for her vital iron and steel industry and also for export to some of the other European Satellites, notably East Germany and Hungary.

Although Czechoslovak industry in general doubled its production during the First Five Year Plan (1949-53), production of hard coal increased only 15 percent, and the production of brown coal and lignite increased only 45.5 percent. In 1953, total production of coal was about 54.7 million metric tons,**** of which 20.34 million tons were hard coal, 32.76 million tons were brown coal, and almost 1.6 million tons were lignite. The objectives for 1953, as established originally by the Five Year Plan, were 20.8 million tons of hard coal and 32.2 million tons of brown coal and lignite. Higher quotas were set in 1950, in line with the accelerated program of industrialization, but not even the original plans for production of hard coal have been met since 1950. The brown-coal mines have done better, largely because of expanding output at strip mines.

* The estimates and conclusions contained in this report represent the best judgment of the responsible analyst as of 1 August 1954.

** These estimates are based on 1953 domestic production, and data on production of peat and fuelwood are scarce and unreliable. Neither, however, is of any real importance. Estimates referring to total supply, including net imports and stocks, would show slightly higher values for coal and petroleum and lower values for other sources.

*** The term hard coal is used in the European sense and includes both anthracite and bituminous coal.

**** Throughout this report tonnages are given in metric tons.

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Because of increased requirements for fuel in all sectors of the Czechoslovak economy, the country is short of coal despite rising production and despite imports of hard coal from Poland, which amounted to 3.5 million tons or more annually during the period of the Five Year Plan. To offset these imports, hard coal, brown coal, and coke have been exported. Recently, however, exports have been declining under the pressure of domestic needs. Exports of hard coal dropped steadily from 1.2 million tons in 1950 to less than 0.4 million tons in 1953, and exports of brown coal were only 0.75 million tons in 1953, about half as much as in 1950. In 1953, virtually all exports of coal were to Austria, West Germany, and Hungary.

In 1953, from 83 to 85 percent of the hard coal and 70 percent of the brown coal and lignite consumed in the country went to power stations and industries. The railroads consumed approximately 11 percent of the hard coal and 12 percent of the brown coal. The remaining coal of both types was used almost entirely to heat buildings and homes.

Power stations use the inferior grades of hard coal, brown coal, and lignite, and in 1953 they used over 19 percent of the total coal consumed in Czechoslovakia. Almost 38 percent of the hard coal was consumed in the manufacture of coke. The Stalin Works at Most is an important user of brown coal, converting local coals with a high tar content into synthetic petroleum products. Significantly, the plant provides the bulk of the gasoline and oils, almost all of the brown-coal coke, and a considerable portion of the coal gas used in the country.

The government has been striving to raise coal output since the end of World War II. Fuel shortages, particularly of hard coal, have been a primary bottleneck in carrying out plans for greater industrialization. Power stations and the railroads have been affected to a considerable extent and have been forced to restrict operations. Furthermore, all types of coal have been of poor quality because of inadequate preparation. The ash content of hard coal is excessively high, and raw coal generally contains 20 to 30 percent ash. All coal used for coking must be washed.

Except in some strip mines in the North Bohemian and Sokolov brown-coal basins, where probably 40 to 60 percent of the output is now extracted by open-cast methods, mining conditions in the Czechoslovak coal industry are difficult and dangerous everywhere. Most of

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the brown-coal and lignite mines, as well as all of the hard-coal mines, have been developed by sinking shafts. The shafts in the Ostrava-Karvinna Basin in northeastern Moravia are rather deep, some exceeding 600 meters. The mining operations in this particular basin, which account for approximately 80 percent of the country's total output of hard coal, are working rather thin and pitching seams of coal, and gas is a constant hazard. Gas has been responsible for some serious explosions and has restricted the use of electrical machinery.

The Kladno Basin in central Bohemia, which accounts for another 10 percent of Czechoslovakia's hard coal, has some seams of coal which are readily subject to spontaneous combustion, and the mines are in bad condition. The mines in the three other hard-coal basins, as well as practically all of the underground mines in the brown-coal and lignite fields, are being operated by primitive methods and with obsolete equipment.

Dangerous roof conditions and the softness of the coal in the brown-coal mines of the North Bohemian and Sokolov basins have prevented the use of mechanical cutting and loading equipment in underground workings. The North Bohemian Basin furnishes 71 percent and the Sokolov Basin another 22 percent of the total production of brown coal and lignite in Czechoslovakia.

During World War II, the mines were exploited by the Germans, who made almost no investment in new equipment, and were left in extremely poor condition. The Czechoslovaks were able to import only minor quantities of essential equipment from the West during the years immediately after the war, and the USSR has provided only a few cutting and loading machines and other pieces of machinery since 1951. The Czechoslovak coal industry has consequently been handicapped, and conditions have become worse as prewar machinery has worn out. At present, machinery runs until it breaks down, and because of the urgent demand for coal, periodic small repairs that would prevent the need for the more costly repairs cannot be made. The most serious shortage of equipment is in conveyors. In 1953 the Czechoslovaks were just starting to make a few conveyors and combines to cut and load coal, and the common current method of mining coal in the deep mines is with pneumatic pickhammers, which are inefficient and contribute to low labor productivity.

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Conditions in the Czechoslovak mines are very unsatisfactory, but labor is probably an even more serious problem. A shortage of experienced miners has existed since 1945, when thousands of workers, including many Germans who were expelled from the country, left the mines. Bad working and living conditions in the mine fields have made it impossible to attract enough capable and permanent workers. As a result, production depends to a large extent on temporary brigade workers and, in recent years, even soldiers. There is constant recruitment of workers, and those in so-called volunteer brigades quit at the earliest opportunity, usually serving only 3 to 6 months. The Czechoslovaks admit that the key to the solution of their coal problems is building up the staff of permanent workers. Considerable improvement in general conditions in the mine fields appears necessary in order to keep workers and to reduce absenteeism, which has been at high levels for several years. To fulfill quotas, overtime work is necessary, and some miners have been working 12 hours daily, and frequently on Sundays, although the work week calls for only 48 hours. It is estimated that at the end of 1953 there were about 110,000 coal mine workers in Czechoslovakia.

The 1954 Plan calls for the production of hard coal to be increased 8.5 percent and of brown coal 7.9 percent, as compared with production in 1953. Therefore, the estimated 1954 target for hard coal is 22 million tons and for brown coal 37 million tons, increases of 1.7 and 2.7 million tons, respectively. On the basis of data reported on Plan fulfillment for the first 6 months of 1954, there are indications that the annual plans can be met. Production is estimated at 22.4 million tons of hard coal and 37.6 million tons of brown coal and lignite. It is believed that these figures will fall within a range of error of plus 1 percent to minus 4 percent.

According to the 1953 Plan, total production of coke in Czechoslovakia was to reach 8,031,000 tons, including 6,020,000 tons of coke-oven coke, 460,000 tons of gas-house coke, and 1,551,000 tons of brown-coal coke. It is estimated that actual production of coke-oven coke amounted to only 5.7 million tons, but that other types were probably close to plan. In recent years, somewhat more than 20 percent of the total production of the coke-oven coke has been exported. Exports to Western Europe almost ceased in 1953, and exports now go to the other European Satellites. The main domestic consumers of coke-oven coke are the iron and steel plants, which use the bulk of it in blast furnaces. About a third of the gas coke is used by the

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gas plants themselves, and the remainder is used for space heating. Virtually all of the brown-coal coke is produced at the Stalin Works in the manufacture of synthetic-fuel products, and the plant consumes a considerable portion of that coke in the manufacture of hydrogen.

In 1949, total output of coal gas was 2.2 billion cubic meters. Production was to reach 2.9 billion cubic meters in 1953, but it is believed that actual production was under plan. Oven-coke plants are the main source of coal gas, but the Stalin Works produces a considerable quantity, and gas works produce about 13 percent of the total. About 80 percent of the supply is used by industries, of which the iron and steel industry is by far the largest consumer. Domestic consumers, according to the 1949 Plan, were allocated only 7.5 percent of the total.

Fuelwood and peat have been of relatively little importance in Czechoslovakia. According to the original Plans for 1948 through 1953, production of fuelwood was to drop from 3.9 million cubic meters in 1948 to 2.9 million in 1949 and continue to decline gradually to 2.15 million in 1953. It is estimated, however, that because of coal shortages the cutback was not so drastic. Consumption of fuelwood, estimated at 2.75 million cubic meters in 1953, is equivalent to between 500,000 and 600,000 tons of hard coal.

The Czechoslovak coal and coke industries are vitally important to the industrial potential of the Soviet Bloc. The production of coal will affect the general industrial growth of the Satellite countries, which are producing material of great value to the military potential of the USSR. In itself the coal industry is not particularly vulnerable to military action or sabotage. The mines are widely dispersed, and many individual mines generate their own power. There are, however, no more than 13 oven coke plants in Czechoslovakia and all except 2 are located in the Ostrava-Karvinna Basin. The loss of some of these plants would, naturally, have an adverse effect upon the iron and steel industry, with consequent repercussions on all dependent industries.

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Czechoslovakia has the fifth largest reserves of hard coal and the third largest reserves of brown coal and lignite in Europe. Reserves of coking coal, which yields metallurgical coke of high quality, are among the largest in Central Europe and, to some extent, insure the future of an iron and steel industry of major importance to the Soviet Bloc. Production of pig iron and steel in Czechoslovakia is the highest among the European Satellites, representing about 36 percent of the total from those countries.

Because resources and production of natural gas and petroleum in Czechoslovakia are very small, and because there has been only limited development of water power, the country depends almost entirely on coal as a source of primary energy. Significantly, the bulk of the petroleum products used in the country is derived synthetically from brown coal, and practically all of the gas used for heating is manufactured from coal. Probably 85 percent or more of the electric power is generated from coal, and the railroads use coal almost exclusively. Bituminous coal is not only a source of coke but is also the source of several hundred derived products including tar, ammonia, benzol, phenols, and other chemicals.

The importance of coal in the indigenous energy supply of Czechoslovakia is evident from calculations based upon a study of production of primary sources of energy. All sources are converted to a standard fuel equivalent in terms of coal with a heating value of 7,000 kilocalories (k cal) per kilogram (kg), or 12,600 British thermal units (Btu)* per pound.

Coal represented 97.2 percent of the total indigenous supply of energy in 1937, 96.9 percent in 1950, and 97.1 percent in 1953. The production of firewood and peat have not been accurately determined, but these fuels, as well as natural gas, crude petroleum, and hydroelectric power, have little effect upon the energy balance.

Table 1** gives estimates of the production of primary sources of indigenous energy in Czechoslovakia for the years 1937, 1950, and 1953.

* A British thermal unit is the quantity of heat required to raise 1 pound of water 1 degree Fahrenheit.

** Table 1 follows on p. 7.

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Table 1

Estimated Production of Sources of Primary Energy in Czechoslovakia
1937, 1950, and 1953

Source	Unit	Production (Thousand Units)	Standard Fuel Equivalent <u>a</u> /* (Thousand Metric Tons)	Percent of Total Primary Energy
1937				
Coal				
Hard Coal	Metric Ton	16,777.5	16,057.8 <u>b</u> /	57.7
Brown Coal and Lignite	Metric Ton	17,895.4	10,991.3 <u>c</u> /	39.5
Total		<u>34,672.9</u>	<u>27,049.1</u>	<u>97.2</u>
Peat	Metric Ton	Negligible	Negligible	Negligible
Firewood	Cubic Meter	3,700.0	687.0 <u>d</u> /	2.5
Crude Petroleum	Metric Ton	16.6 <u>e</u> /	24.9 <u>f</u> /	0.1
Natural Gas	Cubic Meter, Dry	1,100.0 <u>e</u> /	1.7 <u>g</u> /	
Hydroelectric Power	Kilowatt-Hours	557,000.0 <u>h</u> /	68.4 <u>i</u> /	0.2
Total 1937			<u>27,831.1</u>	<u>100.0</u>

* Footnotes for Table 1 follow on p. 9.

Table 1

Estimated Production of Sources of Primary Energy in Czechoslovakia
1937, 1950, and 1953
(Continued)

Source	Unit	Production (Thousand Units)	Standard Fuel Equivalent a/ (Thousand Metric Tons)	Percent of Total Primary Energy
1950				
Coal				
Hard Coal	Metric Ton	18,456.4	17,664.7 <u>b/</u>	49.5
Brown Coal and Lignite	Metric Ton	27,506.0	16,894.2 <u>c/</u>	47.4
Total		<u>45,962.4</u>	<u>34,558.9</u>	<u>96.9</u>
Peat	Metric Ton	300.0 <u>j/</u>	133.9 <u>k/</u>	0.4
Firewood	Cubic Meter	3,490.0	648.2 <u>d/</u>	1.8
Crude Petroleum	Metric Ton	50.0 <u>e/</u>	75.0 <u>f/</u>	0.2
Natural Gas	Cubic Meter, Dry	63,000.0 <u>e/</u>	94.5 <u>g/</u>	0.3
Hydroelectric Power	Kilowatt-Hour	1,132,000.0 <u>l/</u>	139.1	0.4
Total 1950			<u>35,649.6</u>	<u>100.0</u>
1953				
Coal				
Hard Coal	Metric Ton	20,341.0	19,469.2 <u>b/</u>	46.6
Brown Coal and Lignite	Metric Ton	34,322.0	21,084.0 <u>c/</u>	50.5
Total		<u>54,663.0</u>	<u>40,553.2</u>	<u>97.1</u>

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Table 1

Estimated Production of Sources of Primary Energy in Czechoslovakia
1937, 1950, and 1953
(Continued)

Source	Unit	Production (Thousand Units)	Standard Fuel Equivalent a/ (Thousand Metric Tons)	Percent of Total Primary Energy
1953 (Continued)				
Peat	Metric Ton	500.0 <u>j/</u>	223.2 <u>k/</u>	0.5
Firewood	Cubic Meter	2,750.0	510.7 <u>d/</u>	1.2
Crude Petroleum	Metric Ton	75.0 <u>e/</u>	112.5 <u>f/</u>	0.3
Natural Gas	Cubic Meter, Dry	137,000.0 <u>e/</u>	205.5 <u>g/</u>	0.5
Hydroelectric Power	Kilowatt-Hours	1,397,000.0 <u>m/</u>	171.6 <u>i/</u>	0.4
Total 1953			<u>41,776.7</u>	<u>100.0</u>

- a. The heat value of standard fuel equivalent in Czechoslovakia is 7,000 k cal per kg, l/* or 12,600 Btu per pound.
- b. Estimated on the basis of an average heat value of 6,700 k cal per kg.
- c. Estimated on the basis of an average heat value of 4,300 k cal per kg.
- d. Estimated on the basis of 1.3 million k cal per cu m.
- e. 2/.
- f. Estimated on the basis of 1 ton of crude petroleum equaling 1.5 tons of standard fuel.
- g. Estimated on the basis of 1,000 cu m equaling 1 ton of crude petroleum.

50X1

Table 1

Estimated Production of Sources of Primary Energy in Czechoslovakia
1937, 1950, and 1953
(Continued)

-
- h. 3/.
 - i. Estimated on the basis of 8,139.5 kwh equaling 1 ton of standard fuel (860 k cal equal to kwh).
 - j. Estimate is subject to considerable error.
 - k. Estimated on the basis of 3,125 k cal per kg.
 - l. 4/.
 - m. Total electric power production is estimated at 12.7 billion kwh, 5/ of which 11 percent is assumed to be hydroelectric power.

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Prior to World War II the Czechoslovak coal mines were practically all under private ownership, and they are reported to have been as highly mechanized and efficiently managed as any in Europe. Following Munich, the Germans took control of the mines, and during World War II they exploited them under a policy of maximum production with the least investment in development. There were practically no installations of new equipment, and because of a lack of parts, not even the most necessary repairs were made. When the war ended, the mines were in extremely poor condition, and thousands of miners, including a large number of skilled German miners who were expelled from the country, left the industry.

Since the end of the war the government has given production of coal first priority on the economic front. In an address to miners in 1950, President Gottwald stated that coal was the fundamental basis of the whole industrial plan. Gottwald's speech was intended to induce the miners to cooperate in meeting higher quotas for coal so as to make possible the government's plans for accelerated industrialization.

Since 1950, however, coal requirements have been expanding faster than it has been possible to increase coal production, and coal has been one of the most critical bottlenecks. Although the hard-coal mines met the regular Plan in 1950, they failed to meet the super Plan for that year, and they have consistently lagged behind Plan during the years 1951-53. The hard-coal mines, particularly those in the Ostrava-Karvinna Basin, have been criticized strongly and frequently for their failures, and government efforts to get more output from each worker have been generally unsuccessful.

In mid-January 1954, the government held meetings to consider the problems of the coal industry, to take some action that would lead to higher production, and to promote more efficient use of the fuel. It was claimed that whereas industrial production in the course of the First Five Year Plan (1949-53)* had doubled, the production of hard coal had increased only 13.8 percent** and of brown coal only 45.5 percent. The production of coal was considered the

* The Second Five Year Plan for Czechoslovakia is not scheduled until 1955. The country is at present operating under an annual 1954 Plan.

** Reported later as 15 percent.

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most important task in the current stage of Socialist construction of the country, and it was deemed necessary to concentrate maximum means, attention, and effort on the production of coal. 6/

An article in Rude Pravo of 15 January 1954 complained that the country was short of coal despite the fact that output of coal was rising. The article stated that shortages existed because the country's economy had expanded during the past 5 years on an unheard-of scale and because the standard of living of all working people had risen simultaneously. According to the article, consumption of coal in households had gone up 36 percent, as compared with consumption during the capitalist Republic, because families which in the past did not purchase coal are now using it for heating. Furthermore, coal consumption will continue to rise, the article claimed, and the key to the elimination of the chief shortcoming in industry is the increased output of coal, which depends primarily on the recruiting of permanent workers. 7/

The lack of an adequate number of skilled and permanent miners in the coal industry has persisted since 1945. In recent years, efforts to expand the labor force have led to recruitment and forced labor. It has been necessary to depend more and more upon temporary brigade workers, who usually work only 3 to 6 months and, because of the bad working and living conditions, quit at the earliest opportunity. Increasing numbers of soldiers have been sent to the coal mines and have accounted for considerable production. Some mines depend almost entirely on the employment of soldiers.

Labor morale has been low, as is evidenced by high rates of absenteeism and labor turnover. The standard work week for a miner is six 8-hour shifts per week, but overtime work is necessary to fulfill quotas. After years of exhortations to increase production, regular miners are tired of overtime. Bad housing conditions and improper diet are also contributing to low morale.

B. Organization.

The Czechoslovak mining industry was totally nationalized in October 1945. The State created National Mining Corporations (Divisions), agencies of the State, to operate the mines as independent legal corporations. Thirteen of these corporations were formed for the entire mining industry. Eight of them assumed jurisdiction over coal mines and adjacent coke plants, briquette factories, power

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stations, and auxiliary enterprises. As a rule, each of the eight corporations took over the coal mines and allied enterprises located in a particular coal basin. The corporation represented a production unit which was subject to commercial law and was supposed to operate on a commercial basis. 8/

The various individual corporations were subordinate to the Czechoslovak Mines National Corporation, located in Prague, which acted as the central board for the entire mining industry. This principal corporation was under the Ministry of Industry. 9/

The administration of each national corporation was carried on by a Management Committee (board of directors), which was elected, in part, by the employees. The chairman of the committee had the right to revoke decisions of the committee as well as to take other measures that he considered necessary. The management of each corporation was usually divided into 4 groups or sections, the planning, technical-operative, administrative, and social-political sections. 10/

Research and mechanization were conducted by a special section attached to the central board (general management) in Prague. Extensive corporations with a large number of mines and allied enterprises had special group-managements, which controlled the technical operations of the entire industrial group. 11/

Authority over the distribution of coal, coke, and briquettes was concentrated in the Central Coal Sales Department, which was a part of the central board in Prague. This department distributed fuel through its own branch sales offices, located in areas of important consumption, and also through private coal dealers and cooperatives. The distribution of coal in Slovakia was carried out by a selling office attached to the regional board in Bratislava. 12/

In September 1951, there was a major reorganization which divided the Ministry of Heavy Industry into 5 new ministries. One of these was the Ministry of Fuel and Power, which assumed jurisdiction over coal mining and certain related enterprises, electric power, and the gas and petroleum industries. 13/ The former Central Board was dissolved, and a number of administrations were established. For coal mining, there was created the Main Administration of Black Coal* and

* The term black coal is frequently used by the Czechoslovaks when referring to hard coal.

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the Main Administration of Brown Coal, which became responsible for the two principal types of coal produced. Each Main Administration was divided into national enterprises which controlled groups of mines on a regional basis.

The national enterprises that were established are as follows 14/:

<u>Main Administration of Black Coal</u>	<u>Office</u>
<u>National Enterprises</u>	
Ostrava South	Moravska Ostrava
Ostrava North	Moravska Ostrava
Orlova	Orlova
Karvinna	Karvinna
West Bohemian Coal Mines	Pizen
Central Bohemian Coal Mines	Kladno
East Bohemian Coal Mines	Trutnov
Rosice Coal Mines	Rosice
<u>Main Administration of Brown Coal</u>	
<u>National Enterprises</u>	
North Bohemian Brown Coal Mines	Most
Sokolov (formerly Falknov) Brown Coal Mines and Briquette Factories	Sokolov
Handlova Coal Mines	Handlova
Modry Kamen Coal Mines	Modry Kamen
South Bohemian Lignite Mines	Mydlovary
South Moravian Lignite Mines	Ratiskovice
Novaky Coal Mines	Novaky
East Bohemian Coal Mines	Hradek
Peat Enterprises	Ceske Budejovice

It was announced on 2 February 1953 that the Ministry of Fuel and Power had been divided into a Ministry of Fuel and a Ministry of Power. 15/ A report of 26 February 1953 mentioned that Vaclav Pokorny was the Minister of Fuel. 16/ Pokorny formerly held the position of Minister of Fuel and Power.

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There is evidence that the announced division of the Ministry of Fuel and Power either did not occur or was of rather short duration, for references to Josef Jonas, Minister of Fuel and Power, and Vaclav Pokorny, First Deputy Minister of Fuel and Power, appeared in press statements during the latter part of 1953.

C. Supply.I. Production.a. Total.

Statistics on production of coal in Czechoslovakia have been generally reported separately for hard coal and brown coal. The hard-coal category is almost entirely composed of bituminous coal. Until recently, data on production of brown coal customarily included lignite, but there is now a tendency to report them separately. The Czechoslovak lignite is of poorer quality than the brown coal, and output has been relatively unimportant. Czechoslovakia occupies fourth place in the world in production of brown coal and lignite, following East Germany, West Germany, and the USSR, and is in twelfth place in the world (seventh in Europe) in production of hard coal.

In 1953, total production of coal was nearly 54.7 million tons,* which is about 13.5 million tons more than was mined in 1948, 20 million tons more than in 1937, and 2.5 million tons more than in the best year (1943) during World War II.** The planned production for 1953, established originally by the First Five Year Plan, was 20.8 million tons of hard coal and 32.2 million tons of brown coal (including lignite), a total of 53 million tons.

Although total output in 1953 exceeded the original Plan for that year, the hard-coal mines have consistently failed to meet the original targets each year since 1950, and the deficits

* The State Statistical Office reported on 14 April 1954 that the total production of hard coal, brown coal, and lignite was 54.7 million tons in 1953. Previously, the Chairman of the State Planning Commission reported 54.6 million tons [redacted] an increase of 13.5 million tons over 1948, indicating 54.8 million tons.

** See Appendix A, Tables 41 and 42 for production of hard coal and brown coal by basins for the years 1930 and 1935-53.

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were even more pronounced because the quotas were raised substantially as the demand for fuel became greater. Despite large imports from Poland, shortages of hard coal, which have existed since 1950, have retarded electric power output and railroad operations and have served as a general drag on industrial development.

The production of hard coal reached its peak in 1943, when 24.6 million tons were mined, but dropped to 11.7 million tons in 1945. During the 1920's and 1930's, output averaged about 13.4 million tons annually, although it was under 11 million tons in 1922 and during the depression years 1933 through 1935.

In 1950, hard coal production was 18,456,452 tons (see Table 2*), which was 4 percent more than the original target for that year but 2.1 percent less than the super Plan quota. The goal for 1951, which had been established at 18.05 million tons, is believed to have been raised about 2 million tons. It was reported, however, that the 1951 Plan was fulfilled only 91.4 percent. The revised goal for 1952 was 21,408,000 tons, 608,000 tons more than the original plan for 1953, but on the basis of a reported increase of 14.4 percent as compared with the year 1948, production was estimated at only 20.3 million tons.

In November 1952, it was stated in the Czechoslovak press that the hard-coal mines owed the country 1,806,000 tons from the beginning of the Five Year Plan. The deficit, declared the press, had to be overcome because a further increase of 27.2 percent was planned for 1953. Presumably, this report was issued for propaganda reasons without any expectation that such an increase could be realized. It may, however, indicate the amount that was needed to satisfy the demand without having to import Polish coal.

Zapotocky announced that production of hard coal in 1953 was 20,341,000 tons. It was claimed that production of hard coal was 405,000 tons less than the target. 17/

The brown-coal and lignite mines have been more successful in meeting their quotas, mainly because of expanding output of the highly mechanized strip mines. Under German control, output of the lower grade coals increased from 16 million tons in 1938 to 27.6 million tons in 1943, but in 1945 it dipped to 15.4 million tons, which was less than output for any year during the

* P. 20, below.

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1920's. From this low level, production advanced steadily to 34.3 million tons in 1953. This figure is estimated on the basis of a reported increase of 45.5 percent during the Five Year Plan. The revised goal for 1953 was probably about 34.9 million tons because it was underfulfilled by 600,000 tons. 18/

Zapotocky stated that production of brown coal was 32,763,000 tons in 1953 as compared with 17,496,000 tons in 1937. Production of lignite was evidently about 400,000 tons in 1937 and close to 1.6 million tons in 1953. During the First Five Year Plan, output of brown coal increased 45 percent and lignite 57 percent. 19/

The 1954 Plan calls for production to be increased 8.5 percent for hard coal and 7.9 percent for brown coal (may exclude lignite) as compared with 1953. 20/ At the tenth Congress of the Communist Party held from 11 to 15 June 1954 in Prague, it was announced that the 1955 Plan raised production of hard coal by at least 5 percent, brown coal by 7 percent, and lignite by 21 percent, as compared with 1954. 21/

It is estimated that the targets for hard coal are approximately 22 million tons in 1954 and 23.1 million tons in 1955. The indicated goals for production of brown coal and lignite are approximately 37 million tons in 1954 and 39.9 million tons in 1955. The planned output of lignite seems to be less than 1.7 and 2.1 million tons in the respective years.

A comparison of planned and actual production in recent years shows considerable differences and it is likely that any forecasts of coal production will be just about as inaccurate, mainly because of the unpredictable labor situation. The Czechoslovak coal industry has serious labor problems. The morale of the workers has been low, as reflected in the high rates of labor turnover and absenteeism. Increased production of coal depends to a considerable degree on reducing absenteeism and in expanding the labor force to include more permanent workers. To that end it would seem that the government considers it necessary to improve the working and living conditions of the miners.

In January 1954, Josef Jonas, Minister of Fuel and Power, made a report on the coal industry at the plenary session of the Central Committee of the Czechoslovak Communist Party. He stated that the following measures were to be put into effect in order to

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increase the rate of development: (1) improve the leadership and organization of work, (2) increase the number of workings and speed up construction of shafts, (3) increase mechanization and electrification of mines, (4) construct in 1954 over 14,000 new housing units for miners, (5) increase the bonus payments of certain categories of miners for overfulfillment of tasks, and (6) increase the basic wages of the engineering and technical workers of mining institutes according to the Socialist principle of rewards for the amount and quality of work done. 22/

During the last quarter of 1953, the hard coal mines exceeded the over-all quota, and the improvement carried forward into June 1954. Moreover, the North Bohemian Basin, which accounts for the bulk of the output of brown coal, overfulfilled the plan for the first 4 months of 1954 by 239,486 tons. Because of severe frosts in January, the open pit mines in the North Bohemian Basin and Sokolov Basin produced only 79.6 percent and 59.4 percent, respectively, of their planned output of brown coal in that month. 23/ Despite this drag on production, it would seem that the annual plan for production of brown coal will be exceeded. Lignite production, however, may be less than Plan. On the basis of these data, production in 1954 is estimated at 22.4 million tons of hard coal and 37.6 million tons of brown coal and lignite, approximately 1 percent over Plan.

An important reason for increased coal production is to be found in a statement by General Alexej Cepicka, Czechoslovak Defense Minister. On 12 June 1954, Cepicka told the Communist Party Congress in Prague that one-fifth of Czechoslovakia's total coal output is produced by the army. In the Ostrava region, which produced about 80 percent of the hard coal, soldiers produced one-quarter of the output. 24/

Work in the deep mines is not only arduous and dangerous but also it has to be performed mainly with obsolete equipment. Despite the lure of higher wages, mining has not attracted, and probably will not attract, sufficient numbers of capable workers willing to adopt it as a permanent vocation. In order to increase coal production, it has been necessary to depend more and more upon involuntary workers, including most of the soldiers and so-called "voluntary" brigade workers. It is believed that the government will have to continue its policy of drafting coal miners, and the manpower problem is one which is not going to be solved without some radical improvements in working and living conditions.

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The mines need modern equipment badly, and considerably greater productivity is possible if new types of mining machinery are installed generally. Czechoslovakia, however, was just getting started on production of certain essential machinery in 1953. A few combines and scraper conveyors are now operating experimentally, and it will be several years before enough are in actual use to have much effect on production. Significantly, a report of June 1954 states that existing machinery is not fully utilized, mainly insofar as combines are concerned. ^{25/} It is believed that the combines are giving considerable trouble, for a number of reasons, including inexperience of the operators and mechanics, lack of parts, and poor transport facilities.

The Second Five Year Plan will begin in 1956 and will coincide with the years of the plans of the USSR and the Peoples' Democracies. The only information about intentions during that time is a recent report that production of brown coal is to double during the next five years. This is interpreted to mean that during the period from 1958 to 1960 the annual output of brown coal and lignite must be in the magnitude of 68 million tons (twice the output in 1953). It is safe to predict that plans will call for increases in production of hard coal and that the goal for 1960 may be higher than 30 million tons. In view of current conditions in the coal industry, it seems that such objectives are higher than can be achieved.

Table 2* gives data on the production of coal in Czechoslovakia, 1913, 1919-55, and 1947-55 Plans.

b. Production of Hard Coal by Basins.

With the exception of some anthracite coal mined from the deeper seams in the Ostrava-Karvinna Basin in the north-eastern part of Moravia, all of the production of hard coal consists of bituminous coal. It is possible that there may be some production of anthracite each year from a small mine at Lhotice in southern Bohemia.

Bituminous coals are mined almost entirely from five basins,** of which the Ostrava-Karvinna Basin has furnished about 80 percent of the annual output of hard coal (anthracite and bituminous)

* Table 2 follows on p. 20.

** See the map, Czechoslovakia: Coal Deposits, inside back cover.

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Table 2

Production of Coal in Czechoslovakia a/*
1913, 1919-55, and 1947-55 Plans

Thousand Metric Tons

<u>Year</u>	<u>Hard Coal</u>	<u>Brown Coal and Lignite</u>	<u>Total</u>
1913	14,087.2	23,136.8	37,224.0
1919	10,254.3	17,324.0	27,578.3
1920	11,375.0	19,956.6	31,331.6
1921	12,023.2	21,335.1	33,358.3
1922	10,465.0	19,174.3	29,639.3
1923	12,347.3	16,265.5	28,639.8
1924	15,179.0	20,459.7	35,638.7
1925	12,559.0	18,604.7	31,163.7
1926	14,177.0	18,515.7	32,692.7
1927	14,017.0	19,620.6	33,637.6
1928	14,560.3	20,451.4	35,011.7
1929	16,548.2	22,534.0	39,082.2
1930	14,468.5	19,160.2	33,628.7
1931	13,165.0	17,869.3	31,034.3
1932	11,032.2	15,787.2	26,819.4
1933	10,627.4	14,967.7	25,595.1
1934	10,788.9	15,070.7	25,859.6
1935	10,894.5	15,113.6	26,008.1
1936	12,233.2	15,948.8	28,182.0
1937	16,777.5	17,895.4	34,672.9
1938	15,835.9	16,027.1	31,863.0
1939	18,803.0	19,392.8	38,195.8
1940	20,966.0	22,281.7	43,247.7
1941	20,071.0	22,439.7	42,510.7
1942	22,770.4	24,128.8	46,899.2
1943	24,617.1	27,582.7	52,199.8
1944	23,238.5	26,847.6	50,086.1
1945	11,716.0	15,356.1	27,072.1
1946	14,167.6	19,459.6	33,627.2
1947 Plan	16,374.0	21,822.0	38,196.0
1947	16,215.8	22,362.1	38,577.9
1948 Plan	17,746.0	23,900.0	41,646.0
1948	17,744.6	23,589.6	41,334.2

* Footnotes for Table 2 follow on p. 21.

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Table 2

Production of Coal in Czechoslovakia a/
1913, 1919-55 and 1947-55 Plans
(Continued)

Thousand Metric Tons			
<u>Year</u>	<u>Hard Coal</u>	<u>Brown Coal and Lignite</u>	<u>Total</u>
1949 Plan	17,750.0	26,500.0	44,250.0
1949	17,043.2	26,527.0	43,570.2
1950 Plan	17,750.0	27,125.0	44,875.0
1950	18,456.5	27,506.0	45,962.5
1951 Plan	20,050.0 <u>b/</u>	29,000.0 <u>b/</u>	49,050.0 <u>b/</u>
1951	18,325.7 <u>b/</u>	29,435.0 <u>b/</u>	47,760.7 <u>b/</u>
1952 Plan	21,408.0 <u>c/</u>	31,121.0 <u>c/</u>	52,529.0
1952	20,300.0 <u>b/</u>	33,330.0 <u>b/</u>	53,630.0 <u>b/</u>
1953 Plan	<u>d/</u>	<u>d/</u>	<u>d/</u>
1953	20,341.0 <u>c/</u>	34,322.0 <u>e/</u>	54,663.0 <u>f/</u>
1954 Plan	22,000.0 <u>g/</u>	37,000.0 <u>g/</u>	59,000.0
1954	22,400.0 <u>h/</u>	37,600.0 <u>h/</u>	60,000.0
1955 Plan	23,100.0 <u>i/</u>	39,900.0 <u>i/</u>	63,000.0
1955	22,900.0 <u>h/</u>	40,000.0 <u>h/</u>	62,900.0

a. See Appendix A, Tables 43 and 44 for details. All figures prior to 1951 are reported.

b. Estimate.

c. Officially reported.

d. Original First Five Year Plan targets were 20.8 million tons of hard coal and 32.2 million tons of brown coal and lignite. Probable revised targets were 20.75 million tons of hard coal and 35 million tons of brown coal and lignite.

e. 45.5 percent increase as compared with output in 1948. Production of brown coal was reported at 32,763,000 tons, and lignite is estimated at 1,559,000 tons.

f. Reported at 54.7 million tons.

g. Estimates are based upon reported increases of 8.5 percent for hard coal and 7.9 percent for brown coal (presumably including lignite) as compared with respective outputs in 1953.

h. Estimate; range of error: plus 1 percent to minus 4 percent.

i. Estimate is based upon report that production of hard coal is to be increased at least 5 percent, brown coal 7 percent, and lignite 21 percent in comparison with 1954 (presumably 1954 Plans).

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in past years. The other basins are the Kladno (Kladno-Rakovnik-Slany), Plzen (Plzen-Radnice), and Trutnov (Zacler-Svatonovice), all in Bohemia, and the Rosice (Rosice-Oslavany) in Moravia. There has also been a little bituminous coal mined in Slovakia.

According to the original version of the First Five Year Plan, all increases in production of hard coal were to have come from the Ostrava-Karvinna Basin. It is evident, however, that the targets were later increased for the other basins, with the exception of the Plzen Basin, where the annual quota was reduced in 1952. The plan for the Ostrava-Karvinna Basin was 17,116,000 tons in 1952 as compared with 16,000,000 tons in 1951. Actually, this basin and the Plzen Basin have had very poor production records.

During the First Five Year Plan, production of coal in the Ostrava-Karvinna Basin increased from 14.1 million tons in 1948 to about 16.3 million tons in 1953. In the Kladno Basin, second in importance, production has probably increased from 1.9 to 2.1 million tons in the same period. In the Plzen Basin, production is estimated at a little more than 800,000 tons in 1952 and in 1953, although it may have been as low as 700,000 tons for each year and may not again reach the higher levels maintained during and prior to World War II. It is estimated that the Rosice Basin produced a little less than 600,000 tons in 1952 and in 1953 and the Trutnov (Zacler-Svatonovice) Basin less than 550,000 tons during each of the same two years.

Table 3* gives estimates of production of hard coal in Czechoslovakia by basins for the years 1946-53.**

c. Production of Brown Coal and Lignite by Basins.

The North Bohemian and Sokolov brown-coal basins in Bohemia provide, respectively, about 71 and 22 percent of the total volume of brown coal and lignite mined in Czechoslovakia. It is estimated that in the course of the First Five Year Plan output has increased from 16.8 to 24.2 million tons in the North Bohemian Basin and from 5.2 to 7.6 million tons in the Sokolov Basin. The balance of the brown coal comes mainly from Handlova in Slovakia and

* Table 3 follows on p. 23.

** Appendix A, Tables 43 through 51 furnish statistics of production of coal by basins for 1913 and 1919-53 with relevant information.

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Table 3

Estimated Production of Hard Coal in Czechoslovakia by Basins
1946-53

Thousand Metric Tons

<u>Year</u>	<u>Ostrava- Karvinna</u>	<u>Kladno</u>	<u>Plzen- Radnice</u>	<u>Trutnov</u>	<u>Rosice</u>	<u>Other</u>	<u>Total</u>
1946	11,225	1,501	637	421	332	52	14,168
1947	12,882	1,761	722	400	446	5	16,216
1948	14,111	1,861	797	470	500	6	17,745
1949	13,525	1,820	775	420	498	5	17,043
1950	14,644	1,972	795	484	550	11	18,456
1951	14,464	2,020	752	500	580	10	18,326
1952	16,270	2,082	804	540	593	11	20,300
1953	16,300	2,090	805	540	595	11	20,341

from some small, scattered mines in Bohemia and Moravia. Approximately 37 percent of the coal extracted in the North Bohemian Basin and 60 percent in the Sokolov Basin is strip mined.

The mines in the vicinity of Ratiskovice in the South Moravian Lignite Basin and at Novaky in Slovakia have provided nearly all of the lignite. Mines have been opened in recent years, however, near Potor in southern Slovakia, and production in the basin had increased over 5 times in 1952 as compared with 1948. This same area exceeded the 1953 Plan by 15,000 tons. 26/

Table 4* gives estimates of production of brown coal and lignite in Czechoslovakia by basins, 1946-53.**

* Table 4 follows on p. 24.

** See Appendix A for detailed statistical data.

Table 4
 Estimated Production of Brown Coal and Lignite in Czechoslovakia
 by Basins
 1946-53

Thousand Metric Tons						
<u>Year</u>	<u>North Bohemia</u>	<u>Sokolov</u>	<u>South Moravia</u>	<u>Small Mines in Bohemia and Moravia</u>	<u>Slovak Brown Coal and Lignite</u>	<u>Total</u>
1946	13,416	4,713	432	322	577	19,460
1947	15,678	5,092	479	392	721	22,362
1948	16,802	5,161	487	377	763	23,590
1949	19,040	5,850	540	285	812	26,527
1950	19,650	6,150	550	280	876	27,506
1951	21,150	6,400	575	350	960	29,435
1952	23,740	7,335	610	465	1,180	33,330
1953	24,180	7,570	625	475	1,472	34,322

S-E-C-R-E-T2. Foreign Trade.a. Imports.

Czechoslovakia has reversed its position from a net exporter of coal before World War II to a net importer in the postwar period. Sizeable exports of coke tend to compensate to some extent, however, for the unfavorable trade balance in coal.

During the 1933-37 period, imports consisted of 1.10 to 1.25 million tons of hard coal and less than 100,000 tons of brown coal annually. Germany furnished 85 to 90 percent of the hard coal, and Poland provided most of the remainder. Virtually all of the hard coal obtained from Germany came from the Upper and Lower Silesian basins, which now belong to Poland. Hungary supplied almost all of the brown coal, which was consumed in Slovakia in areas near the Hungarian border where it was more economical than domestic coal.

Czechoslovakia's production of hard coal, which fell sharply in 1945 from the high level maintained during World War II, has not increased rapidly enough to meet demands, and the country is forced to depend on Poland to augment domestic supplies. In 1946, only 108,253 tons of hard coal and 43,322 tons of brown coal were imported, 27/ but since that time imports of hard coal have increased greatly. It is possible that imports of brown coal from Hungary may have ceased in 1948. Poland supplied to Czechoslovakia 970,241 tons of hard coal in 1947, 2,121,886 tons in 1948, and, in subsequent years, from 3.50 to 3.75 million tons annually.

Although the Czechoslovaks requested Poland to furnish 4.2 million tons of hard coal in 1950, only 3.8 million tons were promised, 28/ and actual deliveries were about 80,000 tons less than promised. It has been reported that Poland exported 3,528,000 tons to Czechoslovakia in 1951, and it is estimated that the quantity was about 3,750,000 tons in 1953.

Tables 5* and 6** show Czechoslovak imports of hard coal and brown coal, respectively, during 1937-38 and the 1947-53 period.

* Table 5 follows on p. 26.

** Table 6 follows on p. 27.

Table 5
Estimated Imports of Hard Coal by Czechoslovakia
1937-38 and 1947-53

Exporting Country	1937 ^{a/}	1938	1947	1948	1949	1950	1951	1952	1953	Metric Tons
Non-Soviet Bloc										
West Germany	32,000 ^{b/}	24,000 ^{b/}	0	0 ^{b/}	0 ^{b/}	0 ^{b/}	0 ^{b/}	0 ^{b/}	0	
Soviet Bloc										
Poland	1,124,274 ^{c/}	760,161 ^{d/}	970,241 ^{e/}	2,121,886 ^{e/}	3,460,900 ^{f/}	3,720,000 ^{g/}	3,528,000 ^{g/}	3,500,000 ^{h/}	3,750,000 ^{h/}	
USSR	11,604	2,565 ^{e/}	0	0	0	0	0	0	0	
Other	2	1 ^{e/}	0	0	0	0	0	17,880 ^{i/}	0	
Total	1,167,880	786,727 ^{j/}	970,241	2,121,886	3,460,900	3,720,000	3,528,000	3,517,880	3,750,000	

- a. ^{29/}.
- b. Imports from present areas. ^{30/}
- c. Total imports from Germany were 1,108,547 tons in 1937, of which 32,000 tons came from the present area of West Germany. The balance or 1,076,547 tons came from areas that are now Polish. Shipments from Polish Territory in 1937 were only 47,727 tons.
- d. Imports from present Polish areas and exclusive of 390,223 tons from the Olza district of Czechoslovakia, which was ceded to Poland by the Munich agreement in November 1938. Imports from Poland in 1938 were only 72,458 tons exclusive of the Olza district. German areas which are now Polish furnished 687,703 tons. ^{31/}
- e. ^{32/}.
- f. Source unknown. Another estimate of 3,500,000 tons. ^{33/}
- g. ^{34/}.
- h. Estimate.
- i. Czechoslovakia received 15,816 tons from Bulgaria and 2,064 tons from Rumania in 1952. These imports were via the Danube River. ^{35/}
- j. Imports into present areas of Czechoslovakia and exclusive of 85,082 tons from the Sudetenland, which was incorporated by Germany and 390,223 tons from the Olza district which was incorporated by Poland under the Munich agreement.

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Table 6

Estimated Imports of Brown Coal and Lignite by Czechoslovakia
1937-38 and 1947-53

Exporting Country	Metric Tons								
	1937 <u>a/</u>	1938 <u>a/</u>	1947	1948	1949	1950	1951	1952	1953
East Germany	377	304 <u>b/</u>	0	0	0	0	0	0	0
Hungary	80,437	56,552	61,086 <u>c/</u>	20,150 <u>c/</u>	0 <u>d/</u>	0 <u>d/</u>	0 <u>d/</u>	0 <u>d/</u>	0 <u>d/</u>
Total	<u>80,834 e/</u>	<u>56,856</u>	<u>61,086</u>	<u>20,150</u>	<u>0 d/</u>	<u>0 d/</u>	<u>0 d/</u>	<u>0 d/</u>	<u>0 d/</u>

a. 36/.

b. Exclusive of 460,019 tons from the Sudetenland, which was taken from Czechoslovakia by the Munich agreement.

c. 37/.

d. Estimated, although small imports were possible.

e. Includes 20 tons from Austria.

S-E-C-R-E-Tb. Exports.

In the decade from 1929 through 1938, Czechoslovakia exported about 12 percent of its production of hard coal and 11 percent of its brown coal. During that period, exports averaged over 1.5 million tons of hard coal and nearly 1.9 million tons of brown coal annually. During the years 1929-32, however, more hard coal was imported than was exported.

Data are not available for the period 1939-44, when the country was occupied by Germany. In the postwar years, exports of both hard coal and brown coal increased each year until 1950. Only 32,673 tons of hard coal and 954,026 tons of brown coal were exported in 1947, but in 1950, shipments had increased to 1,234,677 tons of hard coal and 1,434,700 tons of brown coal.

Rising domestic requirements, coupled with unsatisfactory production of hard coal, necessitated a reduction in exports during each year since 1950. It is estimated that shipments amounted to only about 363,000 tons of hard coal and 748,000 tons of brown coal in 1953. Accurate figures cannot be furnished, however, because of the uncertainty about the quantities sent to other Satellite countries. It is known, however, that these exports have been relatively small. The Czechoslovaks have sent the bulk of their export coal to countries in Western Europe. Austria and Italy were the principal importers of Czechoslovak hard coal, although East Germany received substantial quantities in 1950 and 1951. In 1953, Austria received 185,741 tons of hard coal as compared with 173,280 tons in 1952, but, except for minor quantities sent to West Germany, Denmark, and Switzerland, no other hard coal was sent to Western Europe. Practically all of Czechoslovakia's exports of brown coal go to Austria and West Germany. Significantly, the Czechoslovaks have usually had difficulty in meeting their commitments to Austria and, probably to other countries.

The Austro-Czechoslovak Trade Protocol, covering the period 1 November 1953 through 31 December 1954, called for Czechoslovakia to supply Austria with 365,000 tons of solid mineral fuels plus additional amounts valued at US \$1.2 million. The quota is divided as follows: 230,000 tons of hard coal for production of gas, 20,000 tons of powdered coal (for steam raising), 75,000 tons of brown generator coal, and 40,000 tons of brown coal. The quota is only a little more than half the quota of the previous year, although the figure for hard coal was cut only from 260,000 tons to 230,000 tons. 38/

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Czechoslovakia agreed to furnish Hungary with 60,000 tons of hard coal (gas coal) in 1949 ^{39/} and the same quantity in 1950, ^{40/} but reported shipments were only about 44,000 tons annually during those years. It is believed, however, that because of Hungarian shortages of good-quality coal, Czechoslovakia has furnished considerably more in 1952 and 1953, and exports to Hungary are estimated at 150,000 tons in each of those years. Shipments in 1953 to East Germany, Poland, and Rumania are not known but are believed to have been insignificant.

Tables 7* and 8** furnish available data on Czechoslovak exports of hard coal and brown coal, respectively, during 1937-38 and the 1947-53 period.

3. Stocks.

Very little data are available concerning coal stocks. Reserves on 31 December 1948 consisted of only 291,000 tons of bituminous coal and 492,000 tons of brown coal and brown-coal coke. Planned reserves at the end of 1949 were 392,000 tons of bituminous coal and 380,500 tons of brown coal and brown-coal coke. These figures represented sufficient stocks for average daily consumption for 5 to 7 days, but they probably did not include all stocks held by consuming industries.

Critical shortages of coal, particularly of bituminous coal, have existed since 1950, and it is believed that stocks are always low. Railroad operations and electric power production have been restricted for lack of fuel, and allocations of fuel for domestic use during the winter of 1952-53 were only about two-thirds of Plan. Some industrial consumers may have inventories which, at times, are adequate to satisfy requirements for a month or longer, but it is probable that, on the average, industrial stocks are sufficient to last only about 2 weeks or less. Brown coal and lignite are unsuitable for prolonged storage. With loss of moisture they disintegrate to dust and are susceptible to spontaneous combustion.

It has been reported that in December 1952 stocks of the best quality coal, in addition to usual stocks, were established

* Table 7 follows on p. 30.

** Table 8 follows on p. 32.

Table 7
 Estimated Exports of Hard Coal by Czechoslovakia
 1937-38 and 1947-53

Importing Country	1937 a/	1938 a/	1947 b/	1948 b/	1949	1950	1951	1952	1953
Non-Soviet Bloc									
Austria	1,279,777	802,445	140	337,215	383,700 c/	262,656 d/	169,899 d/	173,280 d/	185,741 e/
Denmark	0	0	0	0	0	0	0	0	1,000 f/
Finland	0	0	0	0	0	300 g/	0	0	0
France	0	0	128	20	0	0	0	0	0
West Germany	h/	118,535 h/	4,580	26,312	43,000 i/	48,900 g/	400 g/	11,000 j/	20,000 f/
Italy	711,678	517,616	840	187,731	221,400 c/	223,800 g/	47,700 g/	59,200 j/	0
Switzerland	15,886	10,675	13,190	29,734	89,200 c/	124,800 g/	29,500 g/	15,000 j/	6,000 f/
Yugoslavia	4,640	4,452	340	150	0	0	0	0	0
Other	0	0	50	0	0	1,200 g/	1,200 g/	0	0
Total	<u>2,192,692</u>	<u>1,453,723</u>	<u>19,268</u>	<u>581,160</u>	<u>737,300</u>	<u>661,656</u>	<u>248,699</u>	<u>258,480</u>	<u>212,741</u>
Soviet Bloc									
East Germany	0 h/	0 h/	0	0	0	528,621 k/	450,000 k/	30,000 l/	N.A.
Hungary	29,161	24,769	13,405	14,582	44,100 m/	44,400 g/	44,700 g/	150,000 w/	150,000 n/
Poland	1,271	484	0	109	0	0	0	N.A.	N.A.
Rumania	1,509	544	0	0	0	0	N.A.	N.A.	N.A.
Total	<u>31,941</u>	<u>25,797</u>	<u>13,405</u>	<u>14,691</u>	<u>44,100</u>	<u>573,021</u>	<u>494,700</u>	<u>180,000</u>	<u>150,000</u>
Grand Total	<u>2,224,633</u>	<u>1,479,520 o/</u>	<u>32,673</u>	<u>595,851</u>	<u>781,400</u>	<u>1,234,677</u>	<u>743,399</u>	<u>438,480</u>	<u>362,741</u>

a. 41/.

b. 42/.

c. 43/.

d. 44/.

e. Austria imported 111 tons in the first quarter, 45/ 43,346 tons in the second quarter, 46/ 65,588 tons in the third quarter, 47/ 29,520 tons in October, 48/ 24,930 tons in November, 49/ and 22,246 tons in December. 50/

f. 51/.

g. 52/.

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Table 7

Estimated Exports of Hard Coal by Czechoslovakia
1937-38 and 1947-53
(Continued)

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- h. Exports to Germany are assumed to have been entirely to present West German areas, but considerable coal could have gone to present East German areas.
- i. 53/.
- j. 54/.
- k. 55/.
- l. 56/.
- m. Exports were 29,427 tons during the period of January through August 1949. 57/
- n. Estimate based on needs (no data). Imports may range from 50,000 to 250,000 tons.
- o. Exclusive of 1,315 tons to Czechoslovak territories incorporated into Germany in 1938.

Table 8

Estimated Exports of Brown Coal and Lignite by Czechoslovakia
1937-38 and 1947-53

Importing Country	Metric Tons								
	1937 ^{a/}	1938 ^{a/}	1947 ^{b/}	1948 ^{b/}	1949	1950 ^{c/}	1951 ^{c/}	1952	1953
Non-Soviet Bloc									
Austria	45,471	27,977	308,910	367,204	477,400 ^{d/}	400,800	439,900	285,000 ^{e/}	157,000 ^{f/}
West Germany	1,799,621 ^{g/}	1,236,112 ^{g/}	608,144	865,447	938,000 ^{h/}	1,033,500	362,100	527,000 ^{e/}	591,000 ^{i/}
Italy	0	0	1,182	0	0	0	0 ^{j/}	0 ^{j/}	0 ^{j/}
Sweden	100	0	0	0	0	0	0	0	0 ^{j/}
Switzerland	75	40	35,790	1,291	600 ^{k/}	400	2,500	300 ^{l/}	100 ^{l/}
Yugoslavia	0	0	0	182	0	0	0	0	0
Total	<u>1,845,297</u>	<u>1,264,129</u>	<u>954,026</u>	<u>1,234,124</u>	<u>1,416,000</u>	<u>1,434,700</u>	<u>804,500</u>	<u>812,300</u>	<u>748,100</u>
Soviet Bloc									
Hungary	30	15	0	0	0 ^{j/}	0	0	0 ^{j/}	0 ^{j/}
Grand Total	<u>1,845,297</u>	<u>1,264,144 ^{m/}</u>	<u>954,026</u>	<u>1,234,124</u>	<u>1,416,000</u>	<u>1,434,700</u>	<u>804,500</u>	<u>812,500</u>	<u>748,100</u>

- a. 58/.
 - b. 59/.
 - c. 60/.
 - d. 61/.
 - e. 62/.
 - f. 63/.
 - g. Exported to Germany and it is assumed that all went to West Germany.
 - h. 64/.
 - i. 65/.
 - j. Estimated. No reports of any shipments.
 - k. 66/.
 - l. 67/.
- Exclusive of 12 tons to territory incorporated by Germany.

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at remote places as a strategic reserve. 68/ This is probable, but it is unlikely that these strategic reserve stocks were significantly large.

D. Consumption.1. General.

Despite an increase in total Czechoslovak coal production of about 32 percent during the First Five Year Plan, there is ample evidence that requirements have increased more rapidly than production and that coal shortages have had a restraining effect on the economy. A Czechoslovak press report of 14 July 1953 stated that the country's economy had been most seriously affected by the failure of the Ostrava-Karvinna coal field to reach Plan targets. 69/

In November 1952, in order to insure an effective control over the use of solid fuels, the Czechoslovak Ministry of Fuel and Power established inspection agencies to exercise supervision over consumers whose annual solid fuel consumption exceeded 60 tons, and over supplies, storage, care, and use of solid fuels. These inspection agencies have no authority over consumers who are under the jurisdiction of the Ministries of National Defense and National Security. 70/

While the Czechoslovaks have admitted that fuel shortages existed (latest report in March 1954), it is difficult to gage the effects of stringencies on various categories of consumers. It is known that there have been restrictions on the use of electricity. On 23 May 1952 the government broadcast orders for drastic cuts in the use of electricity in plants, shops, and homes, 71/ and a report of 31 May 1952 stated that the electricity supply had been cut in Prague, Brno, and Bratislava. Authorities stated that power shortages were the result of growing consumption of coal and power by the heavy industries and had been aggravated by coal transport difficulties and the public's disregard of economy in heating and lighting. 72/

In the first 3 months of 1954, there were acute shortages of coal, wood, gas, electric power, and water seriously affecting industry, necessitating drastic cuts in consumption both by factories and by households. 73/

[redacted] specific industrial plants in which shortages of coal were hampering operation. [redacted] the Avia Aircraft Factory was critically short of fuel and might have to send "voluntary brigades" to the mines in order to produce coal for the factory. 74/

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50X1

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Many consumers have been forced to substitute brown coal for bituminous coal, either entirely or partially, and it is inevitable that this substitution has reduced efficiency. Although there has been a trend towards the installation of equipment that can use inferior fuels, many facilities are not designed to burn brown coal.

Railroad locomotives customarily burn a mixture of bituminous coal and brown coal. 75/ Efforts to use brown-coal dust in locomotives have met with doubtful success. 76/ A few reports have mentioned that because of poor-quality coal, trains could not keep schedules. According to the deputy chief of the Prague Area Railway Transport, it was necessary, during the winter of 1952-53, to burn Sokolov brown coal with an ash content of 45 percent. As a result, he claimed, 960 hours were lost on the railroads in December alone, necessitating the use of 130 more engine crews and 40 additional engines. His assertion that the breakdowns were all caused by poor coal was refuted by an engineer who claimed that coal was responsible in only 30 percent of the cases and that the rest were the result of bad management. 77/

It is believed that in using some of the poorer grades of brown coal and lignite there have been more difficulties than have been reported. Furthermore, nearly all consumers have probably been affected by shortages of coal. Because of high priorities, the coke plants and major steel plants may be the important exceptions.

2. Estimated Consumption, 1949 through 1953.

The 1949 Plan* figures for consumption of hard coal and brown coal in Czechoslovakia are the latest official available data which furnish a complete and detailed breakdown by consumer categories. After these data are adjusted for stocks and foreign trade and after briquettes and coke are eliminated, they serve as a base for estimating consumption during the years 1949 through 1953.

Czechoslovak coal consumption since World War II has increased greatly, as compared with the prewar period. In 1937, consumption amounted to approximately 31.8 million tons, slightly more brown coal than hard coal being used. Estimated consumption

* The 1949 Plan figures for consumption of hard coal and brown coal are given in Appendix B, Tables 57 and 58.

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in 1949 was 19.7 million tons of hard coal and 25.1 million tons of brown coal, a total of 44.8 million tons. This tonnage represents an increase of about 41 percent over consumption in 1937 (see Tables 9-12*). The estimated consumption was 57.3 million tons in 1953, an increase of 27.7 percent in 4 years and almost 80 percent in 16 years. Converting all coal to a standard fuel-equivalent basis (7,000 k cal per kg) the increase in 1953 is only 26 percent more than that in 1949 and 73 percent more than that in 1937.

It is estimated that in recent years from 83 to 85 percent of the hard coal and 70 percent of the brown coal and lignite consumed in Czechoslovakia went to power stations and to industries, including mining. The railroads consume approximately 11 percent of the hard coal and 12 percent of the brown coal. The remainder is used almost entirely to heat buildings and homes.

The most important consumers of hard coal are the coke plants, which take about 36 to 38 percent of the supply. These plants, located at coal mines and steel mills, produce high-quality metallurgical coke, even though the coals received from the mines contain large percentages of impurities which must be reduced by washing.

The Stalin Works, near Most, the largest single consumer of brown coal, used about 13.6 percent of the total brown coal consumed in Czechoslovakia in 1953. About three-fourths of the coal received by the plant is carbonized** in the process of making synthetic fuels. Most of the remaining coal is used to generate electricity, only a small quantity being used to provide manufactured gas.

Czechoslovak data on consumption of coal at electric power plants are deceptive. The figures represent only the consumption at the CEZ (public utility) plants, which, in the past, have furnished a minor share of the country's electricity. Most of the power has been produced in plants controlled by industries. It is believed that most of the coal assigned to the mining industry, and a large portion of the coal supplied to other industries, is used in generating power.

* Tables 9 through 12 follow on pp. 38-43.

** A considerable part of the brown-coal coke is used by the plant in making hydrogen.

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Industrial, or captive, power plants produced 62 percent of all the electric power generated in Czechoslovakia in 1937 and 57 percent of that generated in 1948. By the end of the Five Year Plan, however, they were to supply only 30 percent. 78/ It seems improbable that such a radical change in the relative importance of the public utilities and the industrial plants could have been realized without shifting the administration of certain power plants (including the mine plants) from industry to the CEZ and without increasing the production of hydroelectric power substantially.

The production of electricity has increased from 8.27 billion kilowatt-hours (kwh) in 1949 to 12.7 billion in 1953, 79/ an increase of nearly 54 percent.

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Czechoslovakia has more than 1,300 power stations with individual installed capacities of at least 100 kilowatts. The number of smaller plants is estimated to exceed 10,000. About 88 percent of 1950 capacity was concentrated in 217 plants which had individual capacities of at least 1,000 kilowatts. There were 15 plants of 50,000 kilowatts or more, which had almost 39 percent of total 1950 capacity. The concentrations of installed capacity in large plants will be further increased in the future. 81/ The Czechoslovaks announced on 12 February 1953 that several large hydroelectric power stations were being rapidly completed and that these stations would save thousands of wagonloads of coal. The Lipno Dam on the Vltava River in southwestern Bohemia, the Kruzberg Dam in the Ostrava region, and the Orava Dam in Slovakia were the stations named. 82/

Power stations in Czechoslovakia use the lower grades of bituminous coal, brown coal, and lignite. The heat values of the various coals range from 1,800 k cal per kg for lignite up to 6,000 k cal per kg (average) for bituminous coal, with an average for all coal of only about 3,850 k cal per kg (1949 Plan). The consumption of coal per kwh was to decrease from 0.82 kg per kwh (1.8 pounds per kwh) in 1948 to 0.68 kg per kwh (1.5 pounds per kwh) by the end of 1953. 83/ It is possible that these factors pertain only to the public utilities or to large and more efficient stations, and they are believed to be for so-called normal or standard fuel (7,000 k cal per kg). It was mentioned in the Czechoslovak press on 15 January

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1954 that approximately 1 kg of coal is needed for the production of 1 kwh, ^{84/} which reflects the use of much low-quality coal. It was reported in February 1954 that during the Five Year Plan, the power stations reduced the consumption of fuel per kwh by 12 percent. ^{85/} The minimum amount of coal that is believed to have been used in the production of electric power in 1953 is 11 million tons, over 19 percent of the country's total coal consumption.

The volume of coal that is used at briquette plants and at gasworks is relatively small. The larger industrial consumers of coal have been the mining, ferrous metallurgy, ceramics, chemical, textile, and glass industries. The Stalin Works, mentioned previously, is included with the chemical group.

The over-all requirements for private heating in Czechoslovakia have been expanding. Many consumers are now using coal who did not customarily use it before. It was reported in January 1954 that the quantities used for private heating were 36 percent greater than they were during the times of the capitalist republic. ^{86/} In 1937 the total quantity of coal, excluding briquettes, used for home heating was 5,710,000 tons (4,450,000 tons were brown coal), and in 1938 it amounted to 4,980,000 tons (3,730,000 tons were brown coal). Thus the indicated consumption in 1953 is from 6.8 to 7.8 million tons.

Tables 9-12* furnish estimates in tons and in percent for coal consumption during the 1949-53 period. The estimates are based on the 1949 Plan, and projections have been made on the basis of very little information concerning fuel consumption by most groups of consumers. There has probably been some conversion from black coal to brown coal, but it is likely that the general pattern of consumption has not changed appreciably during the last few years. The estimates must be regarded as tentative, but they are believed to be generally within a range of accuracy of plus or minus 10 percent.

* Tables 9-12 follow on pp. 38-43.

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Table 9

Estimated Availability and Consumption of Hard Coal in Czechoslovakia
1949-53

	Thousand Metric Tons				
	<u>1949</u>	<u>1950</u>	<u>1951</u>	<u>1952</u>	<u>1953</u>
Availability					
Production	17,043 <u>a/</u>	18,456 <u>a/</u>	18,326	20,300	20,341 <u>a/</u>
Stocks (as of 1 Jan) <u>b/</u>	291	327	375	300	325
Imports	3,461	3,720	3,528	3,518	3,750
Total	<u>20,795</u>	<u>22,503</u>	<u>22,229</u>	<u>24,118</u>	<u>24,416</u>
Exports	781	1,235	743	438	363
Stocks (as of 31 Dec) <u>b/</u>	327	375	300	325	325
Total Availability	<u>19,687</u>	<u>20,893</u>	<u>21,186</u>	<u>23,355</u>	<u>23,728</u>
Consumption <u>c/</u>					
Mining <u>d/</u>	2,700	2,900	2,900	3,100	3,100
Electric Power Plants <u>e/</u>	1,150	1,275	1,450	1,700	1,750
Gasworks <u>f/</u>	517	543	543	556	575
Oven-Coke Plants					
Mine Plants <u>g/</u>	5,110	5,170	5,325	5,250	5,250
Metallurgical Plants <u>h/</u>	2,300	2,530	2,605	3,230	3,735
Ferrous and Nonferrous					
Metallurgy <u>i/</u>	1,725	1,800	1,875	1,950	2,000
Briquette Plants <u>j/</u>	365	400	400	423	423
Other Industries <u>k/</u>	2,550	2,675	2,850	3,175	3,200
Railroads <u>l/</u>	2,100	2,225	2,300	2,500	2,600
Domestic Heating <u>m/</u>	1,170	1,375	938	1,471	1,095
Total Consumption	<u>19,687</u>	<u>20,893</u>	<u>21,186</u>	<u>23,355</u>	<u>23,728</u>

a. Reported officially.

b. Stocks on 1 January 1949 are a reported figure, which may be coal at mines only. Other figures are estimates, although they evidently do not include inventories in the hands of many consumers. The expected reserves of the railroads on 31 December 1948, for example, were 215,000 tons. 87/

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Table 9

Estimated Availability and Consumption of Hard Coal in Czechoslovakia
1949-53
(Continued)

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- c. The estimates are based upon requirements in the 1949 Plan. It is believed that the majority are within a range of error of plus or minus 10 percent.
- d. The planned allotment of hard coal to the mining industry during the First Five Year Plan was 43,170,000 tons, of which 8,843,000 tons were planned for 1953. ^{88/} These figures included coal to the mine coke plants, but estimated allocations to mining exclude those used for coking purposes, which are shown separately. It is believed that about 3.2 million tons were the original planned allocations to the mining industry in 1953, which would be used mainly for generating power and are exclusive of that for coking.
- e. CEZ plants (public utilities) only. These plants were to provide most of the increase in power production.
- f. Estimates are based upon requirements of 1.277 tons of coal per ton of coke produced (1949 Plan).
- g. Estimates are based upon requirements of 1.59 tons of coal per ton of coke production (1949 Plan).
- h. Estimates are based upon requirements of 1.556 tons of coal per ton of coke production (1949 Plan).
- i. Estimates are based upon the assumption that requirements were increasing moderately and steadily.
- j. Estimates are based upon coal requirements equivalent to 94 percent of the weight of briquettes produced. The estimates of briquette production, however, may be in error by plus or minus 50,000 tons.
- k. A considerable part of the coal is consumed in generating electricity. The ceramics, paper, and textile industries are the main consumers.
- l. Excluding hard-coal briquettes used by the railroads, which amount to 400,000 tons or more annually.
- m. The 1949 Plan called for allocations of 1,480,000 tons in that year, and, although the demand and consumption of coal for domestic heating has been rising, there are reports that allocations of hard coal were cut. Estimates for domestic heating are residual and are believed to be subject to a much greater degree of error than other estimates.

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Table 10

Estimated Consumption of Hard Coal in Czechoslovakia
by Various Categories of Consumers
1949-53

	Percent				
	<u>1949</u>	<u>1950</u>	<u>1951</u>	<u>1952</u>	<u>1953</u>
Mining	13.7	13.9	13.7	13.3	13.1
Electric Power Plants	5.8	6.1	6.8	7.3	7.4
Gasworks	2.6	2.6	2.6	2.4	2.4
Oven-Coke Plants					
Mine Plants	26.0	24.7	25.1	22.5	22.1
Metallurgical Plants	11.7	12.1	12.3	13.8	15.7
Ferrous and Nonferrous Metallurgy	8.8	8.6	8.9	8.4	8.4
Briquette Plants	1.9	1.9	1.9	1.8	1.8
Other Industries	13.0	12.8	13.5	13.6	13.5
Railroads	10.6	10.7	10.8	10.7	11.0
Domestic Heating	5.9	6.6	4.4	6.2	4.6
Total	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>

Table 11

Estimated Availability and Consumption of Brown Coal and Lignite
in Czechoslovakia
1949-53

	Thousand Metric Tons				
	<u>1949</u>	<u>1950</u>	<u>1951</u>	<u>1952</u>	<u>1953</u>
Availability					
Production	26,526 a/*	27,506 a/	29,435	33,330	34,322
Stocks (as of 1 Jan) b/	492	492	500	600	800
Imports	0	0	0	0	0
Total	<u>27,018</u>	<u>27,998</u>	<u>29,935</u>	<u>33,930</u>	<u>35,122</u>

* Footnotes for Table 11 follow on p. 41.

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Table 11

Estimated Availability and Consumption of Brown Coal and Lignite
in Czechoslovakia
1949-53
(Continued)

	Thousand Metric Tons				
	<u>1949</u>	<u>1950</u>	<u>1951</u>	<u>1952</u>	<u>1953</u>
Availability(Continued)					
Exports	1,416	1,435	805	812	748
Stocks (as of 31 Dec) <u>b/</u>	492	500	600	800	850
Total Availability	<u>25,110</u>	<u>26,063</u>	<u>28,530</u>	<u>32,318</u>	<u>33,524</u>
Consumption <u>c/</u>					
Mining <u>d/</u>	1,600	1,675	1,825	2,150	2,225
Electric Power Plants <u>e/</u>	2,700	3,000	3,500	4,300	4,500
Gasworks <u>f/</u>	20	20	25	30	35
Ferrous and Nonferrous Metallurgy	1,450	1,550	1,700	1,900	2,000
Stalin Works <u>g/</u>	3,900	4,100	4,300	4,400	4,550
Briquette Plants <u>h/</u>	484	494	612	652	693
Other Industries <u>i/</u>	6,800	7,150	8,000	9,100	9,500
Railroads <u>j/</u>	3,000	3,200	3,425	3,700	4,000
Water Transport, Urban Railroads	55	55	60	70	75
Domestic Heating <u>k/</u>	5,101	4,819	5,083	6,016	5,946
Total Consumption	<u>25,110</u>	<u>26,063</u>	<u>28,530</u>	<u>32,318</u>	<u>33,524</u>

a. Reported officially.

b. Stocks on 1 January 1949 are reported figures, which may be at coal mines only. Other figures are estimates.

c. The estimates are based upon requirements in the 1949 Plan. It is believed that the majority are within a range of error of plus or minus 10 percent.

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Table 11

Estimated Availability and Consumption of Brown Coal and Lignite
in Czechoslovakia
1949-53
(Continued)

- d. According to the Five Year Plan allocations to mining were to total 9,016,000 tons, of which 1,945,000 tons were the allocations for 1953. 89/ The estimated total is 9.5 million tons, based upon higher coal production and assumption that more was used to produce power than originally planned.
- e. CEZ (public utility) plans only, which were to provide an increasing share of the power. Power production increased 53.6 percent from 1949 to 1953. The estimates show an increase of 66.6 percent to these plants.
- f. Excludes coal used in manufacturing gas at the Stalin Works.
- g. The 1949 Plan shows total requirements as 4,067,000 tons, of which 2,894,000 tons were to be used in carbonization, 105,500 to produce gas, and 1,061,500 tons to produce electricity. 90/ It is believed that consumption was below plan in 1949 but has increased moderately in the following years.
- h. Estimates are based upon coal requirements of 1.63 tons per ton of briquettes (1949 Plan).
- i. The chemical, ceramic, and textile industries consume most of the coal. Much of it is used to generate electricity.
- j. Requirements were reported at 2,958,000 tons in the 1949 Plan. considerable brown coal of poor quality had to be substituted for hard coal. Estimates of net billion ton-kilometers increased 7 percent in 1951, 8 percent in 1952, and 10 percent in 1953.
- k. The 1949 Plan called for allocations of 5,034,000 tons, which were to be increased to 5,678,000 tons in 1953. 91/ Shortages of hard coal and overplan production of brown coal probably resulted in considerable substitution of brown coal. Also, the considerable criticism of waste leads to the belief that there were heavier purchases of brown coal in 1952-53.

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Table 12

Estimated Consumption of Brown Coal and Lignite in Czechoslovakia
by Various Categories of Consumers
1949-53

	Percent				
	<u>1949</u>	<u>1950</u>	<u>1951</u>	<u>1952</u>	<u>1953</u>
Mining	6.4	6.4	6.4	6.7	6.6
Electric Power Plants	10.8	11.5	12.3	13.0	13.4
Gasworks	0.1	0.1	0.1	0.1	0.1
Ferrous and Nonferrous Metallurgy	5.8	6.0	6.0	6.0	6.0
Stalin Works	15.5	15.7	15.1	13.9	13.6
Briquette Plants	1.9	1.9	2.1	2.1	2.1
Other Industries	27.1	27.4	28.0	28.3	28.4
Railroads	11.9	12.3	12.0	11.8	11.9
Water Transport, Urban Railroads	0.2	0.2	0.2	0.2	0.2
Domestic Heating	20.3	18.5	17.8	17.9	17.7
Total	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>

E. Quality.

Coals in Czechoslovakia vary greatly in quality. They range from low-grade lignite, containing over 40 percent moisture, to anthracite. The anthracites in the Ostrava-Karvinna Basin contain as much as 10 to 14 percent volatile matter and some probably would be properly designated as semianthracites. The bituminous coals are reported to be about on a par with those in the Ruhr District of Germany. The Czechoslovaks rank their brown coal above their lignites, and they are much superior to the brown coals of East Germany. In the US, the higher grade Czechoslovak brown coals would be ranked as sub-bituminous B or C.

The better quality coals in Czechoslovakia are located in the Ostrava-Karvinna Basin. Except for a few seams of anthracite lying

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at great depth in the southwestern part of the Ostrava district, these coals are bituminous. In the same area, there are coals containing 15 to 25 percent volatile matter, and it is claimed that they make excellent coke. As the coal seams bear eastward, volatile matter increases. Gas coals (30 to 32 percent volatile matter) are found on the west side of the Orlova fault, and high-volatile, or steam coals (36 to 42 percent volatile matter), are found on the east side. 92/

[redacted] Fritz Selbmann, who was the East German Minister for Metallurgy and Ore Mining, visited the Ostrava-Karvinna region in June 1951 and obtained a list of the mines, classified according to the type of coal that each produced.* Two mines were working seams of anthracite, and 32 mines were producing bituminous coal. Of the 32 bituminous mines, 7 produced first-quality coking coal; 4, second-quality coking coal; 13, gas coal with coking characteristics; and 7, gas or steam (noncoking) coal. One of the 32 mines was unclassified (not operating at the time and evidently under construction), but would probably be in the group furnishing first-quality coking coal.

50X1

[redacted] the coals in the Ostrava-Karvinna Basin are high in grade and low in moisture, ash, and sulfur. Available analyses seem to support such statements, but apparently they are based upon washed coals or face samples containing a minimum of incombustible matter such as rock or clay partings and of pyrite, which commonly occurs in coal beds. Most of the available analyses are ultimate -- that is, on a moisture- and ash-free basis.**

50X1

Evidence that the mines in the Ostrava-Karvinna Basin are actually producing coal with excessively high ash content is found in a report that furnishes data on the mine-run coal supplied to washeries at mine coke plants for the month of November 1950. The coal delivered to 5 cokeries amounted to 400,826 tons, and the average ash content ranged from 23.3 percent at the General Svoboda plant to 30.5 percent at the Jan Sverma plant. In the process of cleaning, the average quantity of waste material eliminated amounted to 24.8 percent

* Appendix C lists the mines in the Ostrava-Karvinna Basin, classified according to the quality of the coal that each supplies.

** See Appendix C, Table 59, for analyses of coals from certain mines in the Ostrava-Karvinna Basin.

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of the input. The ash content of the dry washed coals ranged from 8.83 percent at the General Svoboda plant to 12 percent at the Trojice plant. 94/ These ash-content averages are higher than shown in most analyses that have been given in publications.

The high ash content of the run-of-mine coal is the result of the emphasis on fulfilling high production quotas and, probably, inability to impose penalties on miners for careless or willful loading of rock. Mining conditions furnish no incentive for the workers to care about quality.

The bituminous coals in other basins are generally lower in quality than those of the Ostrava-Karvinna Basin. Kladno coals are noncoking, but the larger and more modern coke ovens built at the Konev plant can use as much as 15 percent of such coal in blends with coals from the Ostrava-Karvinna Basin. 95/ The Rosice coals, although high in sulfur, are converted to coke which, however, is not used in blast furnaces. Some of the lower grade bituminous coals degrade considerably when stored. Screening is customary in all hard-coal basins, and the fines are sent to thermal-power stations.

The brown coals are dark brown to black in color and from lustrous to dull in appearance. They burn with a long flame and usually leave little ash. Those brown coals found in the North Bohemian Basin, although their average calorific value varies with individual mines from 3,300 to 5,600 k cal per kg, are the best. Generally, the quality of these particular coals improves with increased depth of the seam. The higher grade coal is usually in the middle part of the bed, and about a fourth of the coal in the upper and lower parts of the seam is low grade with alternating layers of clay and coal. This low-grade coal is left in the deep mines but is removed in strip mining. The better coal requires no cleaning.

The North Bohemian brown coals are mechanically screened into 7 sizes (dust is 0 to 7 millimeters, and the largest size is over 120 millimeters). The larger lumps are used for domestic heating and the smaller sizes for industrial purposes. 96/ Coals from the North Bohemian Basin are unique in that they have a high content of tar and favorable structure for hydrogenation. These qualities account for construction of the synthetic-petroleum plant near Most. 97/

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In mining the brown coals of the Sokolov Basin, as much as 40 percent of the product at the strip mines is in fines and low-grade coal. The chronic surplus of this coal, which had no market value, was a handicap to development in the past (prior to 1949), for the coal could not compete with the better coals produced in the North Bohemian Basin. In order to utilize the fine sizes of Sokolov coal, a calcium carbide plant was installed at Sokolov, which produces 100 tons daily, and a large power station (45,000 kw) and a gas plant with a capacity of 60 to 100 million cubic meters of manufactured gas were to be built and were expected to be operating in 1951 or 1952. 98/

The brown coals and lignites found in other areas are low grade and of local importance only. The lignites contain from 30 to 40 percent moisture, they dry out rapidly, and they disintegrate to dust when exposed to air. Furthermore, they are readily subject to spontaneous combustion and, consequently, are unsuitable for storage. The fines are used mainly at thermal-power stations. Briquetting would greatly improve the utility of the lignites, but there is no evidence to indicate that this has been done.

F. Prices of Coal and Coke.

A price list of coal and coke was published in a Prague newspaper shortly after the monetary revaluation that became effective on 1 June 1953. This price list is given in Table 13.* Presumably, the prices are those established at the retail level for the city of Prague. Because no study of prices has been made, it is not possible to furnish any other data for comparison with previous periods of time or with other parts of the country. Furthermore, because there is insufficient information about the actual qualities of various kinds and grades of fuel, it is not possible to make any satisfactory comparison of the prices within the given list. It would seem, however, that the prices have been established to equalize, to some extent, variations in quality.

In June 1953, Austria imported solid fuels from Czechoslovakia at prices which were a little less than they had been in previous months. The import prices were as follows: bituminous coal, US \$20.60 per ton; brown coal, US \$10.20 per ton; and coke (brown coal), US \$9.30 per ton. 99/

* Table 13 follows on p. 47.

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Table 13

Prices of Coal and Coke in Czechoslovakia a/*100/
11 June 1953

<u>Type</u>	<u>Koruny per 100 Kg</u>	<u>US \$ per Metric Ton <u>b/</u></u>
Hard Coal		
Screened, Grade A	18.80	26.11
Screened, Grade B	18.40	25.56
Screened, Grade C	15.00	20.83
Blacksmithing, Grade A	22.00	30.56
Blacksmithing, Grade B	21.20	29.44
Mine-Run, Grade A	15.40	21.39
Mine-Run, Grade B	15.00	20.83
Mine-Run, Grade C	10.60	14.72
Dust	12.60	17.22
Waste	9.20	12.78
Brown Coal		
Coarse, Grade A	13.00	18.06
Coarse, Grade B	11.40	15.83
Coarse, Grade C	9.60	13.33
Nut, Grade A	10.40	14.44
Nut, Grade B	9.40	13.06
Nut, Grade C	9.00	12.50
Dust	7.20	10.00
Waste	7.20	10.00
Hard-Coal Coke		
Screened	28.00	38.89
Foundry	29.40	40.83
Unscreened	27.00	37.50
Dust (Breeze)	11.80	16.39
Brown-Coal Coke		
Screened	11.60	16.11
Unscreened	9.40	13.06

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Table 13

Prices of Coal and Coke in Czechoslovakia a/
 11 June 1953
 (Continued)

- a. The prices in koruny per 100 kg were reported in a Prague newspaper and probably became effective at the time of the currency re-valuation. They are, presumably, retail prices in Prague.
 b. Conversion is at the rate of 7.2 koruny to the US \$.

G. Reserves and Deposits.1. Reserves.

Coal reserves in Czechoslovakia are concentrated mainly in the Ostrava-Karvinna and the North Bohemian basins. Reserve figures, as reported by various sources, show considerable variation, primarily the result of different standards having been adopted in making the estimates.

According to the Czechoslovak State Geological Institute, the country has 13 billion tons of hard-coal reserves and 11 billion tons of brown-coal and lignite reserves. 101/ These figures, published in January 1950, are believed to include seams at great depth, and much of the coal may prove uneconomical to mine.

Since World War II, Dvorak, a Czechoslovak mining engineer, has furnished estimates which are more conservative. Reserves of hard coal, consisting almost entirely of bituminous coal, and reserves of brown coal (including lignite) were estimated by Dvorak at 5.5 billion tons and 4.7 billion tons, respectively. Of significance is the fact that 98.5 percent of the hard coal is in the Ostrava-Karvinna Basin, and the balance is distributed in 4 basins, all of which are apparently almost exhausted. Reserves of brown coal and lignite are ample in the North Bohemian Basin, but in other basins they are calculated to be sufficient for only 50 to 70 years. Dvorak's figures are shown in Table 14.* 102/

* Table 14 follows on p. 49.

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Table 14

Estimated Coal Reserves of Czechoslovakia a/

Million Metric Tons

<u>Basin or Area</u>	<u>Reserves</u>	<u>Duration at Rate of Extraction</u>
Black Coal		
Ostrava-Karvinna	5,390.0	270 Years at 20 per Year
Kladno-Rakovnik	44.4	20 Years at 2.20 per Year
Plzen-Radnice	13.8	14 Years at 1.00 per Year
Trutnov (Zacler)	12.0	21 Years at 0.56 per Year
Rosice	10.0	18 Years at 0.55 per Year
Total	<u>5,470.2</u>	
Brown Coal and Lignite		
North Bohemian	4,077	200 Years at 20.0 per Year
Sokolov	429	70 Years at 6.0 per Year
South Bohemia (Lignite)	30	60 Years at 0.5 per Year
South Moravia (Lignite)	102	50 Years at 2.0 per Year
Handlova Basin	109	54 Years at 2.0 per Year
Total	<u>4,747</u>	

a. Data are taken from a secondary source, published in July 1949.

2. Deposits. 103/a. Anthracite Coal.

Anthracite coal is found in a few localities in Czechoslovakia, but production has been very limited.

At Bradov, north of Chomutov, on the border of Saxony, there is a small basin of hard coal which contains anthracite (Class A) with a volatile-matter content of less than 5 percent. The main seam, of 4 meters thickness, has been exhausted, and the remaining seams are only 0.50 to 0.75 meter thick at a depth of approximately 145 meters.

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At Ceske Budejovice and Sevetin in the southern part of Bohemia, there are small outcroppings of Permian anthracite (Class B₁*) and anthracite coal. Until the German occupation (1938), anthracite with a high content of ash was mined at Hury and Usilne, near Ceske Budejovice. In 1938 it was still mined at the Etna mine in Lhotice, near Sevetin, but the seams are only 0.5 meter in maximum thickness.

Other small basins of Permian anthracite coal (Class B₁) were found west of Vlasim, near Chobot, at Semily (Horensko and Nedvezi), and also at Cesky Brod.

[redacted] anthracite is produced in the Masaryk I and Masaryk II Mines in the Ostrava-Karvinna Basin. 104/

50X1

b. Bituminous Coal.(1) Ostrava-Karvinna Basin.

The Ostrava-Karvinna Basin is the southwestern extremity of a large coal basin, most of which is in Poland. The Polish part of the basin is known as the Upper Silesian Basin. The area of the Ostrava-Karvinna Basin in Czechoslovakia is about 950 square kilometers, 15 percent of the whole, and is located in the northeast corner of Moravia.

The Ostrava-Karvinna Basin begins near Bobrovnik and Klimkovice and stretches eastward into Poland. The southern fringe of the basin has not been definitely established, but coal deposits were followed as far as Valasske Mezirice, and at Frenstat thin seams were drilled at a depth of 700 meters. On the border of Slovakia and Polish Upper Silesia, no coal was found to a depth of 1,155 meters.

The basin has two major faults, the great Orlova fault and the Michalkovice fault, extending from the southwest to the northeast. They divide the basin into 3 districts: Ostrava, Sattel, and Karvinna. 105/ [redacted] the basin is divided by the Orlova fault into two parts: the western, or Ostrava; and the eastern, or Karvinna.

50X1

* Probably semi-anthracite.

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The geology of the basin is further complicated by a number of transverse faults extending in an east-west direction, notably the Michael, Mariana, and Eleanora faults. These earth movements have displaced and altered the coal seams. The oldest formations, which outcrop west of the city of Ostrava, dip steadily eastward, with several interruptions by faults, and are successively covered by younger formations, of which the Karvinna deposits are the uppermost. The coal-bearing formations are overlaid by Miocene strata consisting of clay overlaid by sands and conglomerates.

The basin contains a great many seams of different thickness. There are more than 300 which exceed 1 centimeter (cm), and there are 173 which exceed 30 cm. The thickest seams, which are found in the Karvinna district, are over 5 meters thick in some places. The seams in the Ostrava district are generally 1 meter or less in thickness and seldom exceed 2 meters.

Table 15* shows, from the top to the bottom of each formation, the number of seams, total thickness of seams exceeding 30 cm in thickness, and thickness of formations in the Ostrava and Karvinna districts.

Petrashek divides the seams according to the types of coal mined as follows: Ostrava district: Rothschild to Vincent, anthracite B₁; Adolph to Rothschild, coking coal B₂; Prokop to Adolf, gas coal B₃. Karvinna district: mostly coking coal.

The Ostrava district has good coking coals, but coking characteristics become progressively lower from west to east. Although some of the coals in the Karvinna district are of coking quality and these are the ones mostly mined, they do not make as good coke as do the coals in the Ostrava district. Karvinna coals are generally gas coals. The mines in the Karvinna district are highly gaseous, and in the past there have been many disastrous explosions.

Ostrava coals contain about 2 percent moisture and the Karvinna coals about 5 percent. Ash content is reported to range from 3 to 15 percent, the lower percentages in the upper seams. the ash content of coal as mined is considerably higher, varying from 15 to 30 percent.

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50X1

* Table 15 follows on p. 52.

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Table 15

Coal Seams in the Ostrava-Karvinna Basin of Czechoslovakia

<u>Formation</u>	<u>Number of Seams</u>	<u>Thickness of Seams (Meters)</u>	<u>Thickness of Strata (Meters)</u>
Ostrava District			
Seam Prokop to Jan	15	16.7	740
Seam Jan to Adolf	21	14.4	321
Barren Strata			200
Seam Emma to X	19	10.7	413
Seam X to Karel	17	11.9	443
Seam Karel to Ludvik	16	11.7	580
Seam Ludvik to Rothschild	20	12.1	435
Seam Rothschild to Vincent	7	5.1	171
Total	<u>115</u>	<u>82.6</u>	<u>3,303</u>
Karvinna District			
Nadlozi to Seam Ludvik	27	24	330
Seam Ludvik to Hubert	10	9	130
Seam Hubert to Kazimir	6	9	100
Seam Kazimir to Veronika	8	10	111
Seam Veronika to Pochhammer	7	18	230
Total	<u>58</u>	<u>70</u>	<u>901</u>

In the Ostrava-Karvinna Basin, there are about 36 operating mines concentrated in an area of only 160 square kilometers. The distance from Moravska to Karvinna is 14 kilometers. Outside of this area of the Ostrava-Karvinna Basin, there is no mining at the present time. South of Moravska Ostrava the seams have considerable rock partings.

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All of the mines are underground operations. Shafts vary from 285 to 664 meters in depth, but most are from 350 to 450 meters in depth.

(2) Kladno (Kladno-Rakovnik-Slany) Basin.

The Kladno Basin is in the central Bohemian area of Czechoslovakia, and its borders roughly extend on the north from Kralupy to the vicinity of Domosice and on the south from east of Kladno to Petrovice. In size and in production of bituminous coal, this basin is second only to the Ostrava-Karvinna Basin.

In the southern part of the Kladno Basin, the Radnice seams, the lowest seams in the Central Bohemian coalfields, are predominant, and the Kounov (or Slany) seam is the most important in the north. The Nyrany seam, between the Radnice seams and the Kounov seam, forms an isolated island in the neighborhood of Luben and Senec, where it is 0.8 to 1.8 meters thick.

The two Radnice seams, upper and lower, appear at a depth of 15 meters and continue at almost the same depth across Brandysek, Kladno to Kamenne Zebrovice, reappear near Rynholec and Rakovnik, and then disappear near Petrovice and Zavidov in the southwest. Their total length is approximately 60 kilometers. The northern limits have not been fully surveyed or explored. They have been traced as far as Motycin, but at this point the Radnice seams fall to a great depth in a northeast direction and are faulted. At Libusin they are found at a depth of 1,309 meters. The eastern boundary of these seams is the Vltava River at Kralupy, but it is possible that they pass eastward under the Vltava and are covered there by chalk formations.

The average depth and thickness of the main (upper) Radnice seam in various localities are as follows:

<u>Location</u>	<u>Depth (Meters)</u>	<u>Thickness (Meters)</u>
Kladno	360 to 420	13
Minice	15	1.5 to 2
Votvovice	60 to 80	3 to 5
Rynholec	300	2.5
Kamenne Zebrovice	N.A.	4 to 6
Ruda	N.A.	0.3 to 0.9
Rakovnik	N.A.	3 to 5
Lubna	80	1.5 to 3
Petrovice	20 to 30	1 to 1.8

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The bottom Radnice seam is 1.5 to 2.5 meters thick and in places is divided into several benches.

The Kounov seam may be defined, and its southern limit placed, by drawing a line from the east at Velvar across Noumerice, Studnovec, Hvezda, Krusovice and Knezeves, and perhaps as far as Klecetne. The northern limit, covered by chalk formations, has not been defined and apparently vanishes along a line extending across Kvilice, Zabor, Mila, Kroucova, Lhota pod Dzbánem, and Kounov. At the southern edge the seam is shallow and is mined at varying depths of from 5 to 130 meters. It is nearest the surface in the neighborhood of Pozden, and its greatest depth is 127 meters at Jedomelice.

The Kladno coal of the main Radnice seam is a high-volatile, noncoking coal. Its moisture content ranges from 8 to 20 percent. In the center of the basin between Kladno and Bustehrad the ash content ranges from 8 to 20 percent but is usually from 10 to 15 percent. The washed, quality coal averages under 5 percent ash and less than 8 percent moisture. Sulfur content is usually 0.3 to 0.6 percent. The calorific value is usually 5,300 to 6,300 k cal per kg, and washed coals may have calorific values as high as 6,800 k cal per kg.

Slany coals have a moisture content that is generally between 15 and 25 percent but is sometimes higher. The ash content varies greatly but is usually about 20 percent. In some cases, the ash content is only 10 percent, but it sometimes exceeds 30 percent. The calorific value is usually between 4,000 and 5,000 k cal per kg. The sulfur content is usually about 3 percent, although it may run as high as 6 percent.

Rakovnik coals range from 10 to 21 percent moisture content, and they average more than 15 percent. Their ash content is highly variable, although the fusion point is usually high, sometimes over 1,600 degrees Centigrade. Sulfur content is very low, sometimes under 0.2 percent. The heat value of the best coal does not exceed 5,600 k cal per kg, is usually between 4,000 and 5,000 k cal per kg, and occasionally is less than 4,000 k cal per kg.

Kounov coals contain 18 to 20 percent moisture, 10 to 21 percent ash and, frequently, a very large amount of sulfur (over 5 percent). The calorific value is between 4,000 and 5,000 k cal per kg.

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Although the Kladno coals are noncoking, they are used at the Konev coke plant in Kladno. They have to be blended with coals from the Ostrava-Karvinna Basin, however, and only 15 percent of the Kladno fines can be used in the blended coal.

There are about 31 shaft mines in the district, but it is probable that a third or more of these may not be in operation.

The most important mines are concentrated in the southeastern part of the basin and include the following: Zdenek Nejedly, Vaclav Nosek, General Svoboda, Fierlinger II (formerly President Benes), and Klement Gottwald. 107/

The mines are obsolescent, geological conditions are difficult, and mechanization is inadequate. 108/

there is near the Nejedly Mine a power plant which has a capacity of 35,000 kw. 109/

50X1

(3) Plzen and Radnice Basins.

The coal-bearing formations near Plzen include the same series of coal seams found to the northeast in the Kladno Basin. Actually, the Plzen and Radnice basins are separate, but they are discussed together here because of their proximity and because their production is combined. The small Radnice basin is about 20 kilometers northeast of Plzen. The Plzen Basin, which is larger, extends southward from the west of Plzen, and all except one of the mines are located within a radius of 12 to 15 kilometers west to south of the city.

It is very difficult to give the precise extent of the seams in these basins, for the hilly substratum divides the lowest seams into small basins, outcroppings, and traces. Furthermore, the upper seams show effects of late erosion and overflow of receding waters, which caused cleavages in formations originally whole.

Radnice seams appear to be missing altogether in places, in the northwestern part of the original Plzen Basin, for example, but near Dobrany, south of Plzen, they are very well developed. The bottom Radnice seam has a thickness here of 2.0 to 2.2 meters and is sufficiently clean to be mined. Generally, the Radnice seams show a great irregularity, even in places not far distant from each other.

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The Nyrany seam extends in a narrow strip from the former St. Pankrac mines, where the Krimich mine is the only one in operation, across Nyrany to Kotvice. The seam reappears again in an unimportant island near Tremosna.

The Kounov seam was opened for mining at Kusti, Ledec, Vseruby, Zitov, and Ladmerice.

Thickness of the seams varies greatly. In the Plzen Basin there are some seams 1.5 to 3.5 meters thick and some 5 to 6 meters thick. Near Bras, in the Radnice Basin, seams are up to 11 meters thick. In Merklin, they are between 1.5 and 2 meters thick.

The coals vary greatly in quality. In the Radnice seams the coals are high volatile and noncoking, although near Chotesov the coal was coking coal. At one time there was a coking plant at Chotesov. These coals have a moisture content of 5 to 10 percent. Ash content is sometimes lower than 5 percent, is usually between 7 and 12 percent, and often exceeds 15 percent.

The Nyrany seam coal has a dull appearance and contains over 50 percent volatile matter, but it is claimed to be good coking coal. Kounov seam coal is similar to the coal from the same seam in the Kladno-Rakovnik Basin.

Although the majority of the mines in the Plzen-Radnice Basin are not deep, usually only about 50 meters, there are in Nyrany mines 150 meters deep; in Mantov, 280 meters deep; near Tynec, 460 meters deep; and in Cerveny Ujezd, up to 750 meters deep.

There are about 22 mines in the two basins, but 4 of these were not operating in 1947. At that time, there were 6 mines working in the neighborhood of Radnice and 11 in the Plzen Basin. Information for 1951 indicates that there is major production at the Matylda, Ferdinand, and Prokop mines in the Radnice area, but that the bulk of the total production comes from the Plzen Basin. The Masaryk and Masaryk Jubilee mines near Zbuch, the Krimich II mine near Tlucna, and the Dobre Stesti mine near Dobrany are the major mines. Each of them furnished from 15,000 to 36,000 tons monthly in 1951. 110/

S-E-C-R-E-T(4) Trutnov (Zacler-Svatonovice) Basin.

The Trutnov Basin in Czechoslovakia is an extension of the Lower Silesian (Waldenburg) Basin, which underlies a large area on the Polish side of the border.

The deposits are found in three places; near Lampertice and Zacler, near Malé Svatonovice and Radvanice, and near Hranov and Zdarek. There are three distinct stratigraphic zones; Zacler, Svatonovice, and Radvanice. These zones are formed by numerous relatively thin and ashy parallel seams.

The lowest zone, the Zacler, is composed of 30 seams. About half of these have a thickness of from 0.6 to 3.0 meters and have been mined. Near Svatonovice, the seams disappear. Near Zdarek, they reappear but there they have been completely worked out.

The Svatonovice zone is composed of the main seam, more than 2 meters in thickness, and 3 to 4 seams of from 0.4 to 4.0 meters in thickness.

The Radvanice zone contains a total of 8 seams, 3 of which can be mined profitably. These 3 are from 0.4 to 1.0 meter in thickness. Mining is done at various depths from 30 to 550 meters.

These Trutnov Basin coals are similar in properties to those of the Rosice-Oslavany Basin and can be coked, although they are not used for that purpose. Moisture content varies from 1 to 4 percent. The better quality coals have an ash content of from 10 to 20 percent, but some of the coals in the basin have ash contents of from 20 to 30 percent. There are also some poor-quality coals with an ash content of over 40 percent. These are used by the local power industry. In the lower ash coals, sulfur content is approximately 3 percent, and as ash content increases so does sulfur, which is chiefly pyritic in excess of 5 percent.

There are about 10 mines in the Trutnov Basin. The Julie and Marie Mines at Lampertice are operated together. The Fanny Mine is exhausted, and the old shaft is used to ventilate the Julie and Marie Mines. These 2 mines employ about 1,000 workers on three 8-hour shifts. 111/

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The Tmavy Mine at Svatonovice is working three levels. Mining is done with compressed-air drills, and most of the machinery is old. This mine is connected with the Ida Mine, through which coal is brought to the surface. The Tmavy Mine employs from 400 to 450 workers. 112/

(5) Rosice-Oslavany Basin.

The Rosice-Oslavany Basin in Czechoslovakia is located in southwestern Moravia and extends in a narrow strip from Rosice (west of Brno) south to Oslavany. It covers an area of approximately 45 square kilometers.

There are three seams in the basin. The top, or main, seam is composed of three benches separated by thin partings. The top bench is 0.4 to 1.6 meters thick; the center bench is 0.3 to 2.2 meters thick; and the bottom bench, which contains more foreign matter, is from 0.3 to 1.4 meters thick. The middle seam lies at levels from 60 to 190 meters beneath the main seam, and its thickness is 0.5 to 1.0 meter. The third, or bottom, seam is very thin and has not been mined at all. All of the seams are deep, and mining is carried on at depths of from 500 to 800 meters.

The moisture content of these Rosice-Oslavany Basin coals varies from 1 to 4 percent but is generally less than 3 percent. Ash content varies from 10 to 20 percent, and it usually has a very low fusion point, sometimes below 1,100 degrees Centigrade. Sulfur content is high, and the coals make poor-quality coke. The heating value of the better grade coal is 3,900 to 5,500 k cal per kg (7,000 to 10,000 Btu per pound).

The coals in the basin are brittle, and the majority of the mine-run consists of the finer sizes (pea and buckwheat). Lump and egg sizes constitute only 10 percent, and dust (under 6 millimeters) makes up 40 percent. The coal dust is made into briquettes or is crushed for foundries and thermal power plants in Brno and Oslavany. Some of the small sizes (pea and buckwheat) are made into coke at the small plant in Zbysov.

In the Rosice-Oslavany Basin there are as many as seven operating mines, of which the Vaclav Nosek (formerly Kukla) and Antonin mines are reportedly the best mechanized pits with the highest outputs. Much of the machinery, however, was installed during

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the German occupation. The output of the Vaclav Nosek mine goes almost exclusively to the Oslavany power plant. 113/ Each of the larger mines can produce 500 to 1,000 tons daily, and each employs 600 to 1,500 workers, including many prisoners. 114/ [redacted] the Antonin coal is very soft and that ineffective timbering in the mine has caused several severe accidents. 115/

50X1
50X1c. Brown Coal and Lignite.(1) North Bohemian (Duchcov-Teplice-Chomutov) Basin.

The North Bohemian Basin extends about 62 kilometers in a relatively narrow strip, varying from 1 to 12 kilometers in width, from Trmice, near Usti nad Labem, southwest through Most and Chomutov to Kadan and Postoloptry. At its center, near Most, it is about 12 kilometers in width.

There is one important seam, which is found in the Miocene formation, and there are several seams of no commercial importance in the Oligocene formation.

The main seam is uniform in the greater part of the basin, but near the border partings appear in the seam and grow thick as they bear west until they divide it into three benches. The greatest thickness of the seam is 130 meters at Kopisty, and in other places it is as much as 40 meters in thickness. Over much of the basin, however, the thickness is from 10 to 14 meters.

The overburden varies from 20 meters at the outcrop on the borders to 500 meters at the deepest place, in the vicinity of Osek. The seam dips steeply southward from the Erzgebirge Mountains, flattens out, and then ascends to the outcrop in the southeast. In some places the cover contains large beds of quicksand. In most mines in the basin, water has also been a problem.

In the past, possibly more than 75 percent of the production in the North Bohemian Basin consisted of better grade coal, which comes from the middle part of the seam. This coal has only 2 to 3 percent ash, 20 to 28 percent moisture, and a heating value of 4,000 to 6,100 k cal per kg. The top and bottom parts of the bed are low-grade coal with alternating layers of clay and coal. On the top of these deposits, in many of the mine fields, is a 1- to 2-meters-thick layer of shaly-type coal having 30 to 40 percent ash and

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15 to 20 percent moisture. The heating value of the low-grade coal is only 2,400 to 3,600 k cal per kg. Economic mining of the low-grade coal is possible only in highly mechanized strip mines.

Mine fields to the west of a line from Most to Litvinov have an overburden of 20 to 125 meters, and the coal is distinguished by a very high tar content, from 10 to 15 percent of the original wet substance. The largest strip mines are concentrated in the central part of the basin, in the Most-Ervenice-Zaluzi area.

Coal fields to the east of the Most-Litvinov line have excellent coal, generally at depths of 160 to 500 meters. Except for a few strip mines on the border of the basin, all of the mines in this eastern area of the basin are underground operations. From 30 to 40 percent of the low-grade top coal was formerly left in the mine. The tar content in these coals is lower than it is in the coals in the western part of the basin, 2 to 6 percent, but moisture is also lower, varying from 15 to 18 percent. Ash content varies from 2 to 8 percent, and the heating value is from 4,500 to 6,100 k cal per kg.

(2) Sokolov Basin.

The Sokolov Basin is located in the northwestern part of Bohemia and is southwest of the North Bohemian Basin, from which it is separated by a mountain range. It extends for about 30 kilometers from the vicinity of Karlovy Vary to Pochlovice and has a maximum width of 8 kilometers. For the most part, it lies north of the Ohre River.

In the basin there are three coal seams, which do not underlay the entire area. The lowest seam, the Josef, is in 3 benches with a total thickness of 6 to 7 meters in the west and 4 to 5 meters in the east. This seam has 40 percent water content and, in many places, considerable ash. The heat value of the coal in this seam ranges from 3,500 to 4,500 k cal per kg.

The middle seam, the Anezka, is about 30 to 50 meters above the lower seam. It lies in the western part of the basin, to the north and west of Sokolov, and is 2 to 8 meters in thickness. This coal ranges from 20 to 30 percent moisture, from 4 to 9 percent ash, and from 4,200 to 4,500 k cal per kg. In the vicinity of Dolni

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Rychnov and at Habartov, there is in this bed some brown boghead coal, which sometimes has less than 10 percent water content.

The upper seam, the Antonin, also known as the lignite seam, is from 15 to 30 meters thick. It lies from 14 to 180 meters deep. The coal is brown to dark brown in color and has many "red" partings. In some places the coal is hard and in other places soft. The coal has over 40 percent water content and from 3 to 10 percent ash content. The calorific value varies from 3,200 to 3,500 k cal per kg. Three-fourths of the resources of the Sokolov Basin are found in the Antonin seam.

In isolated parts of the basin, the Jan mine at Pila, for example, there is some so-called "wax" coal mined.

The Sokolov coal is divided, according to the quality, into 5 price classes. The calorific value of the larger sizes varies from 3,100 to 4,700 k cal per kg. The run-of-mine coal is rather wet, some having up to 45 percent moisture content. The small coal of 0 to 12 millimeters, called "grits," generally contains more ash. The proportion of the small sizes of coal in the total output is very high, chiefly in open-cast mines, where it reaches 40 percent. In underground mines, the small-size coal usually does not exceed 25 percent of the total output.

The Sokolov coal is utilized in the district's well-developed chemical, ceramic, and glass industries. The small sizes of coal, mainly of inferior quality, are used in local plants for generating power.

For domestic heating, the coal is briquetted without the addition of any binding material. In 1948 there were five briquette plants in operation, and a large new one was under construction.

In 1948, there were 26 mines of varying capacities in operation, 7 of which were open-cast mines.

(3) Cheb Basin.

The Cheb Basin is small and is separated from the Sokolov Basin by the mountains running between Kacerov and Mariansky Chlum.

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In the Cheb Basin there is 1 coal seam with a thickness occasionally over 30 meters. The seam has a parting 0.5 meter wide, dividing it into 2 benches, of which the upper is composed of less valuable lignite coal. The lower bench consists of soft, earthy coal, which lends itself easily to briquetting and has a low ash content and a 40-percent moisture content. In the lower bench there are occasional occurrences of so-called wax coal.

The main pits in the basin are near Kynsperk, Pochlovice, and Zweifelsreute (Cizebna), but production is small.

(4) North Bohemian (Zittau) Lignite Basin.

At the extremity of the Zittau lignite basin, in northern Bohemia, there is one single open-pit mines at Hradek nad Nisou. The calorific value of this lignite varies from 2,000 to 2,800 k cal per kg, and the moisture content is about 40 percent.

(5) South Bohemian Lignite Basins.

There are several small lignite basins in a wide area around Ceske Budejovice. These basins extend to the south as far as Kamenne Ujezd, to the east as far as Veseli, to the north as far as Pisek and Strakonice, and to the west as far as Vodnany.

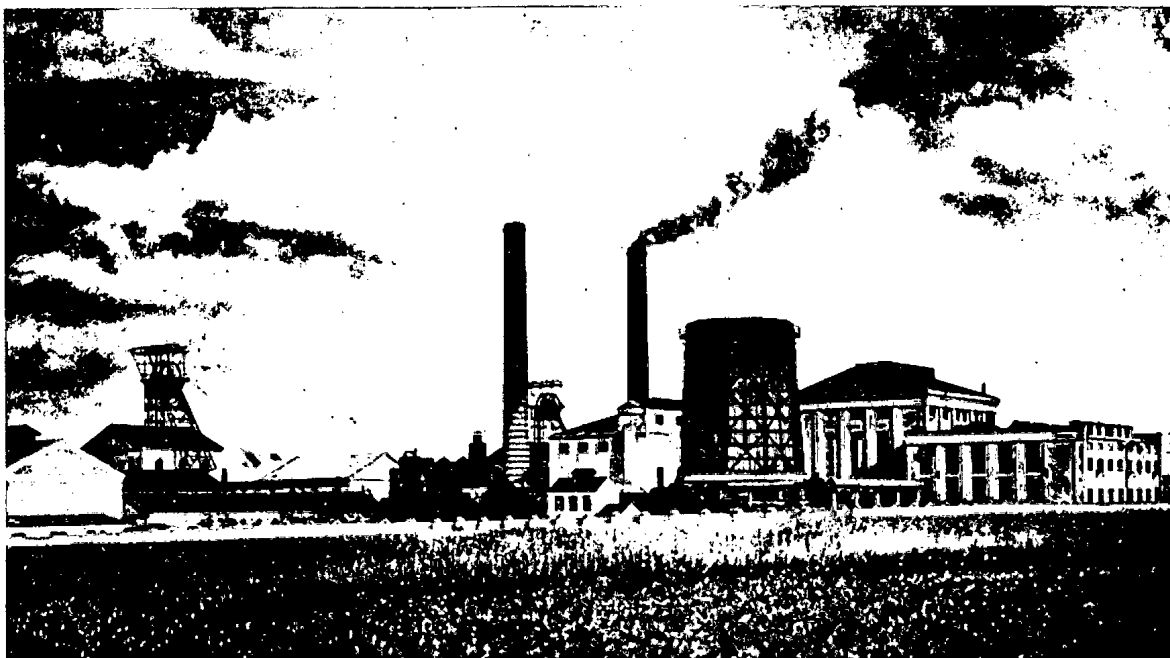
The richest deposits are north of Zliv, near Mydlovary; near Protivin; and near Zdar. The basins do not exceed a depth of 50 meters. They contain lignite mixed with earthy brown coal, and the thickness is generally from 1 to 8 meters with a maximum of 12 meters.

There is information of only two mines producing lignite in this basin during the postwar years. They are the Svatopluk mine at Mydlovary, which supplies fuel to the local power station, and the Jaroslav mine near Ujezd.

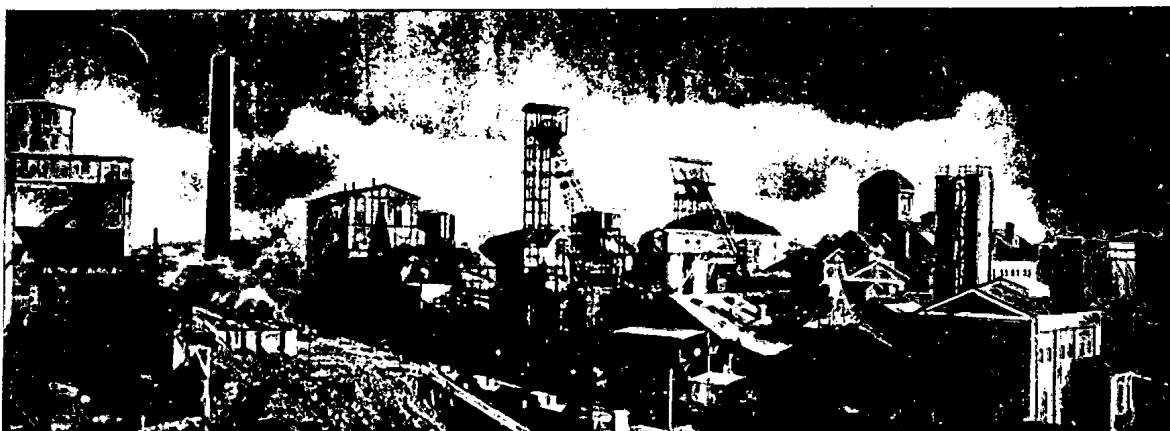
(6) South Moravian Lignite Basin.

The basin covers a wide area around Hodonin and has not been thoroughly investigated. There are probably two seams of lignite, of which the Hodonin seam is the uppermost. The seams vary from 1 to 5 meters in thickness. The workable seam is from 2.5 to 4.0 meters in thickness and is from 2 to 250 meters in depth.

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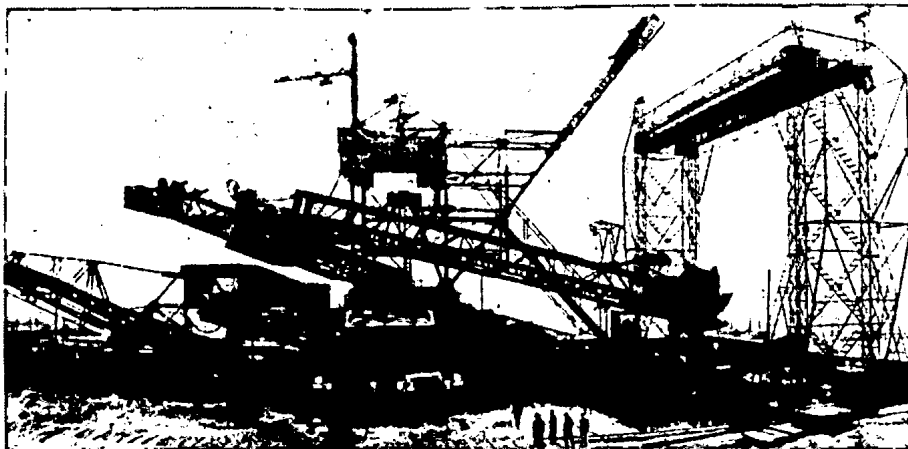
The Alexander Mine (1931); Breux, Bohemia, Czechoslovakia



The "VACLAV" State Mine (1931); Poruba, Silesia, Czechoslovakia

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S-E-C-R-E-T



Cantilever Excavator at Open-Pit Brown-Coal Mine (1952);
Most, Bohemia, Czechoslovakia



Excavator at Open-Pit Brown-Coal Mine (1952); Bohemia,
Czechoslovakia



Open-Pit Brown-Coal Mine, Defenders of Peace (1952);
Bohemia, Czechoslovakia

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The lignite has 35 to 40 percent moisture, 20 to 25 percent ash, and a calorific value of 2,500 to 3,000 k cal per kg. 116/
 [redacted] a large thermal-electric power plant was under construction near Hodonin. The plant would operate on lignite from mines near Ratiskovice. The lignite contains considerable water, and its heat content is only 2,000 k cal per kg. A special installation in the new plant would dry the lignite, then pulverize and burn it. 117/ 50X1

Mines of relatively small capacity, opened by Bata from 1933 to 1936 supply the relatively low-grade coal to local markets, including the power station at Gottwaldov. The mines are equipped with highly mechanized equipment, and operation is economical in spite of the low quality of the coal.

There are 12 to 14 mines in the basin, the majority located in the vicinities of Dubnany, Kelcany, Ratiskovice, and Bzinec.

(7) Handlova Basin.

The Handlova Basin, located in western Slovakia, has the largest coal deposits in the province, and mines are operating at Handlova and Novaky.

There are 2 seams in the Handlova district. The upper seam, also called the "main" seam, is 3 to 9 meters thick, and the lower seam, which is about 30 meters below the upper, is 1.5 to 2 meters thick. The lower seam is not developed throughout, and at some places it is unworkable. The seams belong to the Upper Mediterranean stage of the Miocene epoch. They dip less than 10 to 15 degrees and are considerably dislocated by faults. The thickness of the overburden increases, north to south, from 0 to 400 meters. Known deposits in the Handlova district are reported to be small.

The calorific value of the Handlova coal varies, according to depth, from 4,500 to 6,000 k cal per kg. At Handlova, there is a modern "Chance-Sand" preparation plant for washing the sizes of coal from 13 to 200 millimeters. The washed coal is consumed in Slovakia as local industrial and household fuel. The unwashed coal of 0 to 13 millimeters is burned in the mine power plant.

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In the Novaky district, west of Handlova, there is only one seam. It is 7 to 10 meters thick and of the same geologic age as the seams in the Handlova district. The structure of this coal is lignitic, and the calorific value is lower than that of the Handlova coal, varying from 2,400 to 3,500 k cal per kg. The moisture content is about 40 percent, and ash content is from 25 to 30 percent. The resources were estimated at about 70 million tons.

[redacted] there are 7 mines operating at Handlova and 4 others at Novaky. The first mine at Novaky was opened during World War II. In 1948, capacity at Novaky was 1,200 tons daily but was to be raised to 4,500 tons.

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(8) Modry Kamen Deposits.

In March 1948, a Czechoslovak newspaper announced that a new coal mine was opened in the vicinity of Potor in the Modry Kamen (16 kilometers southwest of Lucenec) district in southern Slovakia. The coal seam belongs to the same coal-bearing formation as the Salgotarjan coal basin in Hungary. The quality of the coal was alleged to be equal to that of the coal from Handlova. 118/ [redacted] 45 borings had been made and sinking of shafts was planned. The area of the coal bed was estimated at 250 square kilometers. It was expected that mines could start working after completion of a rail line to Modry Kamen from Lucenec. 119/ [redacted]

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[redacted] in the area of Blauenstein (Modry Kamen) a new town was being erected which would be named Sidliste and would have 20,000 inhabitants. Because of the poor quality of the coal, the deposits in the area had not been exploited for some time. In 1945 a mine was reactivated, and since then new mines were opened in six communities. Some of the miners were to be billeted in the new town, which was intended as a center of this coal area. The quality of the coal was still poor. 121/

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S-E-C-R-E-TH. Mines and Mining Methods.1. Mines.

Although there are approximately 250 coal mines in Czechoslovakia,* the number in actual operation may be less than 230. A 1948 list of mines showed that some were idle and that several smaller mines were to be closed down or merged with others. The concentration of smaller mines into a reduced number of large ones was expected to permit more economical surface operations, mainly in preparation plants, which, with the concentration of haulage and hoisting systems, could be operated by modern machines and methods.

There are about 109 hard coal mines in Czechoslovakia, of which 37 are in the Ostrava-Karvinna Basin and 31 are in the Kladno-Rakovnik Basin. With the exception of two anthracite mines in the Ostrava-Karvinna Basin, and possibly one at Lhotice in southern Bohemia, all of these mines are producers of bituminous coal. All of the hard-coal mines (anthracite and bituminous) are underground operations.

Most of the brown-coal mines, numbering about 119, are located in the North Bohemian (70 mines) and the Sokolov (31 mines) basins in Bohemia. There were at least 31 strip mines in these 2 basins and 10 others that have been operated by both deep and strip methods. In 1948, however, there were only 53 mines operating in the North Bohemian Basin and 26 in the Sokolov Basin.

In Czechoslovakia there are about 22 lignite mines, of which 14 are in the Southern Moravian Basin and 4 at Novaky in Slovakia. All of the lignite mines are deep mines, except two mines in southern Bohemia and another at Hradek nad Nisou in Northern Bohemia which are producing strip coal.

It has been reported that in 1939, 55 percent of the brown coal came from underground mines and 45 percent from strip mines, but in 1948 the situation was reversed. 122/ During that year, 54 percent of the production in the Sokolov Basin, for example, came from strip mines. 123/

* A list of Czechoslovak coal mines and locations is given in Appendix D, Tables 60-73. Photographs of representative coal mining operations in Czechoslovakia follow p. 62.

S-E-C-R-E-T2. Mining Methods.a. Deep Mines.

Underground mines have been developed by sinking vertical shafts, some of which exceed 600 meters in depth. The shafts in the bituminous-coal fields are generally much deeper than are those in the brown-coal and lignite fields. It is believed that the majority of the mining operations in the Ostrava-Karvinna Basin and some of those in other hard-coal fields are exploiting more than one seam.

Mining conditions are generally difficult and hazardous. The mines producing brown coal and lignite, as well as those producing bituminous coal in the Kladno Basin, are operating in seams where the coal is easily susceptible to spontaneous combustion, and special precautions must be taken to prevent fires. Several reports refer to the fact that there have been mine fires in recent years. Furthermore, roof conditions are a problem in working the thick seams in those mines. In the Ostrava-Karvinna Basin, many mines are very gaseous, and occasionally there have been disastrous explosions.

The methods of mining used depend mainly upon the thickness and hardness of the coal, the pitch of the seam, and the stability of the roof. Thick beds of coal (more than 2 meters) are generally worked by the room-and-pillar system, in some cases with backfilling but usually with roof caving. It is customary to mine thinner seams (2 meters and less) by the longwall system, with backfilling.

Except in the Novaky mines in Slovakia, virtually all of the brown coal and lignite from the underground mines is extracted by blasting from the solid and by using handpicks or pneumatic pickhammers. Significantly, mining with pickhammers or mechanical drills is regarded in Czechoslovakia as mechanized mining. Cutting machines are in general use at the mines in the Ostrava-Karvinna Basin. Mines in the other hard-coal basins, however, are relatively unmechanized, and it is believed that most of the coal is dug with pickhammers. Very few cutting machines have been employed in the brown-coal mines, mainly because of roof conditions and the softness of the coal. The presence of considerable gas has been responsible for the prevalent use of compressed-air equipment at many hard-coal mines.

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Although mechanical loaders were imported from the US after World War II and are known to be in use in the Ostrava-Karvinna Basin and at Novaky, coal is loaded almost entirely by hand shoveling into small cars or conveyors. Mechanical loading will increase considerably if combines prove successful and can be installed in quantity.

Combines are machines designed to cut, break, and load coal in one operation. They are used in conjunction with conveyors. The most satisfactory combine produced by the USSR is the Donbas combine, and a few of them have been imported by the Czechoslovaks. More than 250,000 tons of coal were produced in 1953 in the Ostrava-Karvinna Basin with the assistance of combines. Only 3 Donbas combines were in use there at the beginning of the year. 124/ [redacted] automatic loaders and 10 combines handle 4 percent of the output in that basin. 125/ [redacted] 127,500 tons of coal were extracted with combines in the last quarter of 1953 and that miners would hew a million tons with Soviet-made Donbas combines in 1954. 126/

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50X1
50X1
50X1

The Czechoslovak mines use shaker and belt conveyors, but there are indications that all new conveyors used will be the scraper type at the working face. In the Soviet coal industry, shaker conveyors were too slow and inefficient for the combines and have been largely replaced with scraper conveyors. The General Manager of the Czechoslovak mines stated in an article published in January 1951 that there was no large-scale mechanization in 1950, because all efforts in that direction were blocked by the shortage of scraper conveyors. Mechanization could not be accomplished without them, and the shortage prevented a better utilization of other mining machinery. No scraper conveyors were made in Czechoslovakia in 1950. 127/ It is believed that the availability of scraper conveyors had not improved in 1953. The Czechoslovaks were only beginning to produce these machines in 1952, and very few, apparently, had been imported from the USSR. It is claimed, however, that the Ostrava-Karvinna Basin had 10 times as many belt conveyors in use in 1953 as in 1938.

Although most of the belt conveyors are probably used in transporting coal in main haulageways, the bulk of the coal reaches the shafts in small pit cars moved by either locomotive or cable. Locomotives are of three types: pneumatic, electric, and diesel.

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Prior to World War II, the mines had adequate coal-preparation facilities, but increased output, particularly of brown coal, and generally higher content of impurities, have been too much for the facilities at many mines and have resulted in lower quality of output. The standard practice is to run the raw coal over screens and picking tables, although coking coal in the Ostrava-Karvinna Basin must be washed.

b. Strip Mines.

Favorable conditions for strip mining are found in certain parts of the North Bohemian and Sokolov basins, where the coal lies beneath a moderate thickness of overburden which is not especially difficult to remove. All of the known strip mines in the country, except one at Hradek nad Nisou in northern Bohemia and 2 others in southern Bohemia at Mydlovary and Cicenice, are located in these 2 brown-coal basins.

Before the war the ratio of overburden to coal was usually 2 to 1. It was economical to remove 40 meters of overburden to exploit a coal seam 20 meters in thickness. In the postwar years, use of improved conveying and distributing equipment has permitted economical mining where the ratio of overburden to coal is 4 to 1. It is claimed that as much as 120 meters of overburden can be handled economically, even where part of the coal has been removed by underground methods. 128/ In 1953, the open-cast mines removed 14 million cubic meters more earth than in 1949. 129/

The largest and most modern strip mines, located near Most in the North Bohemian Basin, were developed primarily to supply the Stalin synthetic fuel plant at Zaluzi and the power station at Ervenice. These mines remove the overburden with electrically driven chain-bucket and bucket-wheel excavators with stripping capacities of 1,000 cubic meters per hour. The coal is loaded with power shovels which have a bucket capacity of 7 cubic meters and load 300 tons per hour. The coal is transported in special side-dump cars with 88 cubic meters (60 tons) capacity hauled by electric locomotives weighing 150 tons. For transporting the overburden material, standard-gage electric trains with cars of 36 cubic meters capacity are used. 130/

Three large mines near Most have been contributing a substantial part of the brown-coal production. The planned annual capacities of these mines were as follows: Jan Sverma, 6.5 million tons;

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President Roosevelt, 4.5 million tons; and Mir (formerly President Benes), 2.5 million tons. [redacted] the Mir Mine is the largest. Prior to 1950 these mines were operating well below their planned capacities and were loading coal with power shovels obtained from Germany in the years before the end of World War II. Some of the shovels were of the steam type, but newer models were electric. Many of the shovels were built by DEMAG in Germany. The Skoda E-7, with a bucket capacity of 7 cubic meters, is replacing the older machines.

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Much of the brown coal produced in the North Bohemian Basin does not require cleaning, but that produced by strip mining contains more impurities, and the proportion of fines is about 40 percent. On 2 April 1954, a new cleaning plant was put into operation for a trial period at Komorany to wash strip coal from the Most district, 131/ and a cleaning plant was also built in the Sokolov Basin in recent years.

I. Mechanization.1. General.

Prior to World War II the coal mines in Czechoslovakia were considered to be as highly mechanized as any in Europe. Although the machinery and equipment were largely of Germany origin, many problems had been solved better than they had been in Germany. The strip mines in the brown-coal fields and the deep mines in the Ostrava-Karvinna Basin were relatively well equipped and were efficient producers. There was little mechanization, however, in the deep mines of the brown-coal fields where, because of the low prices of the coal, little investment had been made in machinery. 132/

During World War II the condition of machinery deteriorated substantially. The Germans installed only that machinery which was absolutely essential, and investments were very small. Machinery wore out as a result of lack of maintenance, poor lubrication, and the use of replacement parts made of inferior substitute materials. Up to the end of the war, not even the most necessary repairs could be made. 133/

When the Czechoslovaks regained control of the mines in 1945, requirements for new machinery and equipment were extensive. Furthermore, the over-all situation has not improved much in the post-war period. The inability to import sufficient machinery and the lack

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of facilities and experience to build certain essential types have had a restraining effect on coal production, especially in the deep mines.

The Czechoslovaks were able to import limited quantities of machinery from the West, until trade was restricted. The US furnished shuttle cars, coal loaders, rock loaders, and conveyor belting, 134/ as well as coal cutters. The UK furnished coal cutters and, possibly, some other types of machinery. During 1950 and 1951, apparently, there was very little machinery imported into Czechoslovakia, for until 1952 the USSR was not in a position to render much assistance. A radio news report of 28 February 1953 stated that the USSR had been supplying to Czechoslovakia coal combines, electrical and pneumatic drills, and other machinery. 135/ It is believed, however, that the quantities furnished by the USSR during 1952, and also in 1953, have been rather small as compared with needs.

Evidence of continuing shortages of machinery and poor maintenance is found in a Czechoslovak newspaper report of 5 February 1953. There was a daily average of 11 mechanical breakdowns at the Ostrava mines, and, during 1952, these had been responsible for the loss of about 200,000 tons of coal, which, in turn, had caused fuel difficulties in foundries, power stations, and factories. Most of the breakdowns were caused by failure to follow repair and maintenance instructions. Communist Party and Government directives, stipulating that after a given period mining machines should be removed for repair, were largely ignored, and pits in the Karvinna area ignored them altogether. Management at the mines claimed that because the machinery was needed for mining, repairs could not be made. 136/ [redacted] poor condition of machinery and the high incidence of breakdowns.

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During 1953 the Czechoslovaks gave indications that they intend to be less dependent on imports of mining machinery and, in time, will probably produce all they need. Steady improvement in the machinery situation can be expected. A news report of 29 December 1953 states that a modern factory for the manufacture of mining machinery had been completed on the outskirts of Opava. Together with its auxiliary works, the new concern, known as Ostroj, was supplying the mining industry with a growing range of machinery. 137/

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S-E-C-R-E-T2. Underground Mining Machinery.

The deep mines in Czechoslovakia have used pneumatic machinery extensively in the past, but attempts are now being made to convert to electricity. Through electrification, the cost of mining can be reduced considerably, and production can be developed more rapidly. It was claimed in October 1951 that the cost of mining in the Ostrava-Karvinna Basin was five times as much with compressed air as with electricity (probably with reference to power cost only). 138/ The inability to obtain machinery and supplies has been mainly responsible for the slow progress made in converting to electricity. It has been reported, however, that because of the danger of explosions electrical equipment is not used in some mines.

The prevalent use of pickhammers is one of the causes of low productivity. The General Manager of the Czechoslovak Mines stated in an article published in January 1951 that mechanization in the brown-coal pits (deep mines) was then as primitive as it had been 20 years before. 139/ This is an indication that most of the coal produced in those pits is dug with pickhammers, and it is believed that a considerable part of the hard coal is mined in the same way. Pickhammers have been used to extract coal mainly where natural conditions are not favorable to the use of undercutting machines. [redacted] pickhammers are supplied by a plant in Vitkovice. [redacted]

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Coal cutters are used in the Ostrava-Karvinna Basin, but they are used elsewhere to a very limited extent. Many of these machines were made in Germany before World War II and, presumably, need to be replaced. The US furnished 30 coal cutters in 1947 and 46 more in 1949-50. The UK supplied well over 100 cutters in the 1946-48 period, and as early as 1949 the USSR was scheduled to ship to Czechoslovakia 12 KMP-1 and 3 GTK-3 machines. 140/ There have been no reports that Czechoslovakia has been building the conventional chain type of undercutters. [redacted] the mass production of a new type of improved shearing coal cutter, the model F-29, began recently in the electrotechnical works at Frydlandt. It has caterpillar traction and may be used in seams only 65 centimeters high. 141/

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In August 1952, it was reported that a mining combine, suitable for work on narrow, 40- to 60-centimeter seams in the Ostrava-Karvinna Basin, was being built at the Ostrava Central Machine Works.

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This machine was a little shorter than the Soviet Donbas combine. 142/
 The first one (Ostravan 500) was to have been completed on 22 November
 1952. 143/ [redacted] the machine was tested on 7 Jan-
 uary 1953 at the Hlubina pit. 144/ [redacted]
 [redacted] an experimental model of the Ostrava-VKP combine, invented by a
 group of engineers from Ostrava, was also being tested. 145/

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In 1953 the Electric Power Distribution Enterprises (Ener-
 geticke Rozvodne Zavody) ERZ factory at Frydlant in Moravia was to
 produce 3 electrically driven combines of the Ostravan 500 series,
 and the designers were to produce 3 similar machines driven by com-
 pressed air. 146/ A news report of 11 December 1953 mentions that a
 new type of combine had been devised by a mechanic, Frantisek Sebesta,
 who worked at the Julius Fucik pit in Ostrava. 147/

All the evidence indicates that the use, as well as the
 manufacture, of combines in Czechoslovakia is in the experimental
 stage and that many difficulties are yet to be overcome. In view of
 Soviet accomplishments, combines offer potentialities for solving
 some serious production problems, particularly in the Ostrava-Karvinna
 Basin. Significantly, [redacted] only 10 were in use
 there at the end of 1953. [redacted] this coal
 basin had twice as many pit locomotives, 3 times as many conveyor-
 belt loaders, 10 times as many conveyor belts, and 30 times as many
 automatic loaders as it had in 1938. 148/ The actual quantities of
 machinery in use would probably not be as impressive as the increases
 seem to indicate, for in 1938 the number of some types, for example
 loading machines, were relatively few.

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The requirements for conveyors to be used at working
 faces are probably great. A Czechoslovak news report of 15 May 1952
 mentioned that two new scraper conveyors from the first series of new
 coal-mining machines built in the CKD (Ceskomoravska Kolben - Danek)
 Slany Plant were working in the North Bohemian Basin. Similar machines
 of Soviet origin had already been used. 149/ [redacted]
 [redacted] a new conveyor was being tested in one of the mines. 150/

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A Czechoslovak news report of 15 January 1954 refers to
 important deficiencies in machinery and equipment. While the Lenin
 Works in Plzen had fulfilled its obligations to the mining industry, a
 number of foundries and engineering factories which were complaining
 about a shortage of coal and electric power have failed to supply
 goods. The ERZ factory in Frydlant failed to deliver three Ostravan

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electric combines. The ironworks at Liskovec failed to deliver 2,355 coal cars, including 1,805 large cars needed for the construction of the May First colliery. The Klement Gottwald Ironworks at Vitkovice did not deliver 8 kilometers of chutes (possibly includes conveyors) for the transport of coal. The failure to make machinery deliveries in 1953 caused a loss of 405,000 tons of hard coal and 600,000 tons of lignite. 151/ The same report also mentions that because of shortages of railroad cars the country's economy was deprived of 129,403 tons of coal in the Sokolov coal field during the last quarter of 1953. Some of the blame was attributed to customers' delay in unloading. 152/ Engineering works in Brandys and in Uhersky Brod were criticized in March 1954 for delaying delivery of drilling equipment needed for prospecting work. 153/

3. Strip Mining Machinery.

Nearly all of the massive equipment used to strip heavy overburden was made in Germany before the end of World War II. During the past few years, East Germany has provided some equipment for a few mines. The USSR also sent a large walking dragline, which was in use at a mine in the North Bohemian Basin in early 1952. More of these draglines were to come from the USSR later. 154/

[redacted] a huge new excavator was undergoing tests for use at Ervenice. It was designed and built by the Klement Gottwald Ironworks in Ostrava. 155/ [redacted] the Roosevelt mine at Ervenice had in operation a giant excavator, model 53. Other excavators of Czechoslovak manufacture are models 1200, D-800 (chain-bucket excavator), D-1000, K-100, and K-1000. The Foundry and Assembly Works in Ostrava and the V.I. Lenin Works in Plzen are producing these machines. 156/

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The conventional type of power shovels in the small sizes used for loading coal and stripping relatively light overburdens have evidently been produced by the Skoda Works in Plzen in considerable quantities. [redacted] more than 100 steam power shovels with a bucket capacity of 2.5 cubic meters and some electric power shovels with a bucket capacity of 7 cubic meters were delivered to the USSR in 1947 and 1948. 157/ It would seem that Czechoslovakia is self-sufficient in small power shovels.

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S-E-C-R-E-TJ. Labor.1. Employment.

The number of wage earners employed at coal mines in Czechoslovakia declined rather steadily from about 100,000 in 1929 to about 70,500 in 1936 and then increased each year to reach a peak of nearly 125,000 in 1943. With the end of World War II, thousands of war prisoners, forced laborers, and ethnic Germans left the mines, and by December 1946, the number employed had dropped to 92,423, of which 55,742 worked in the hard-coal mines.*

In March 1949, employment in the hard-coal mines was 62,218 and in the brown-coal and lignite mines 38,354 a total of 100,572. By May 1949 the number of workers at the hard-coal mines had dropped to 57,027. [redacted] the total labor force was 3,000 less in 1950 than it had been a year earlier, it is estimated that during the first quarter of 1950 the total labor force was about 97,500. There was some increase in later months, but the planned labor force was not reached in any month during 1950. 158/

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During the first 9 months of 1951, there was a net gain of about 2,000 in the mining industry labor force, 159/ and during the first half of 1952, the Ministry of Fuel and Power had a net increase in employment of over 4,700, 160/ the great majority of whom, undoubtedly, became coal-mine workers. In the last 6 months of 1953, about 4,000 trade unionists were to be sent to the Ostrava-Karvinna Basin, but the authorities were disappointed by August because only 2,410 had volunteered. 161/ These figures indicate that by the end of 1953 the coal-mine labor force would probably be close to 110,000. This estimate represents about 3 percent of the total non-agricultural labor force and 2 percent of all gainfully employed civilians.

A government decision of January 1954 asked for 22,800 new workers for the mining industry. During January 1954, however, the recruitment target was met by only 64 percent on a national scale. 162/

Largely as the result of expansion in strip mining, there has been a notable increase in the number of surface workers at the brown coal and lignite mines. During the thirties, only about one-third

* Available data on employment at the coal mines during the years 1929-49 are given in Appendix E, Table 74.

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of the labor force at the brown-coal mines worked on the surface, compared with a little more than half in recent years. In 1948, about 23 percent of the labor force at the bituminous mines was employed on the surface, a slight increase over the pre-World War II period.

With the expulsion of thousands of Germans in 1945 and 1946, the industry lost a valuable segment of its labor force. Since that time there has been a consistent shortage of experienced miners. In order to increase coal production, it has been necessary to depend more and more upon temporary workers who have no desire for mining work and usually stay only 3 to 6 months. They form the so-called "volunteer brigades," "shock workers," and "punitive battalions." They include office workers, professional people, tradesmen, farm workers, political prisoners, criminals, and soliders, most of whom have been conscripted for mine service. Some mines have a considerable number of women, who are employed mainly on the surface. A great many of the workers are not physically able to do hard work.

[redacted] punitive battalions of the Auxiliary Technical Regiment Pomocny Technicky Pluk (PTP) were organized in 1951 in order to allow the government to send politically unreliable soldiers into mines or factories. Because of the persistent labor shortage, this method was so abused in 1952 and 1953 that some garrisons lost as much as 18 to 26 percent of their numbers. Many soldiers were designated as unreliable solely in order to send them to mines. Protests against the policy were made by the Czechoslovak General Staff and the Central Trade Union Council (Ustredni Rado Odburo -- URO), and it was proposed that it be abolished as of 1 November 1953, but the Minister of Fuel informed the government that several large mines would have to be closed if the soldiers were taken out of the mines, and the government was obliged not only to retain those soldiers already there but also to send other workers from nonmilitary construction. 163/

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In order to alleviate the growing shortage of permanent and skilled miners, the government has encouraged youths to adopt mining as a regular vocation. A program for conscripting and training youths has been in effect for a number of years. The youths who come under the program serve as apprentices for a 2-year period and receive class instruction as well as on-the-job training. Thus far the program has not been particularly successful.

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The general dissatisfaction with working and living conditions in the coal fields has been made apparent in high rates of labor turnover and absenteeism, as well as by a number of strikes. The government has acted promptly to settle any general strikes and they have been of short duration.

In the Ostrava-Karvinna Basin, sitdown strikes occurred in the fall of 1950, when output quotas were raised. 164/ In all of the major basins, the currency reform of June 1953 brought on sporadic strikes and slowdowns, extending from 1 June into July. After the first demonstrations, the government issued a decree making absenteeism a capital offense and attempted to make reprisals against the trade-union members. Strong opposition forced the government to rescind the decree on absenteeism on 6 July 1953. 165/ [redacted] at Kladno miners stayed away from work for 3 shifts. Units of the National Security Corps (Sbor Narodni Bezpecnosti -- SNB), and the regular army was present, but there was no violence. 166/ [redacted] in the early part of July there were slowdowns in the mines of the North Bohemian Basin over wages and that the militia was sent to quell the uprising. 167/

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Labor turnover and a shortage of permanent workers have affected coal production in all the coal fields, and this situation has been particularly serious in the Ostrava-Karvinna Basin. Between 1947 and August 1951 the number of regular workers in that field declined by about 5,000. During the year from August 1950 to August 1951, 9,903 regular workers left the field, and only 8,247 were hired. To make good the shortage of permanently employed labor, more than 30,000 workers who had been recruited as volunteers took turns working for an average period of 4 months only. The constant coming and going of such a large section of the labor force was one of the most serious obstacles to the implementation of production plans. 168/ In November 1951, Zapotocky, formerly Prime Minister, stated that during the first 9 months of the year, 20,561 persons had entered mining and 18,552 had left the mines.

[redacted] there were about 21,930 permanent miners and 17,414 voluntary temporary workers in the Ostrava-Karvinna Basin. Since 1947, approximately 131,800 temporary workers had passed through the Ostrava mines. In January 1952, there were 2 percent more workers than the Plan called for. 169/ In March 1954, it was reported that in the last 5 years 45,387 new workers came to the Ostrava coal region. During the same period, 41,061 workers left the region. 170/

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Absenteeism has been another cause for much concern. Monthly statistics from 1946 through March 1949 show that absenteeism among the underground workers was generally between 17 and 20 percent, and for all other mine workers it usually ranged from 10 to 15 percent.

During the early part of 1952, absenteeism averaged approximately 18 percent in the Ostrava-Karvinna Basin, 15 percent in the Kladno Basin, and about 13 percent in the North Bohemian Basin. 171/ In September 1953, it was reported that average absenteeism amounted to 18.4 percent and was 1 percent higher than in 1948. At a number of mines, absenteeism was as high as 38 to 41 percent. 172/

Since government regulations make it difficult for miners to get permission to miss work, a considerable part of the absenteeism is not excusable. [redacted] during the first 9 months of 1949 unexcused absenteeism amounted to 1,307,400 man-hours, compared with 927,585 man-hours in the same period for 1947. 173/ The rate is evidently still increasing, for according to a statement by Pokorny on 15 September 1953, 210,647 shifts had been missed without excuse during the year. 174/ Assuming that a shift was 8 hours in 1947 and 1949, unexcused absenteeism amounted to 115,948 and 163,425 shifts, respectively, for the 9-month periods.

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[redacted] brigade workers on a 1-year engagement are among the worst offenders in absenteeism. Absence did not result in a prolongation of the period of work, and these workers were not concerned about fines for shifts not worked or about smaller earnings. Absenteeism was least widespread among older workers who had families to support and needed supplementary ration tickets to get food. 175/

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[redacted] because of the relatively high pay and the scarcity of goods to be bought with the money alcoholism has increased. 176/

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On 6 July the June 1953 government decree to curb unexcused absenteeism had to be rescinded. Under the decree, a worker who stayed away from his job 1 day without justification was to be reprimanded by his supervisor and his union leaders; for 2 days, he was to be reprimanded before his fellow workers; for 3 days, he was to be demoted to lower paid work; and for 4 days, he was to be punished by a special

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trade-union court. 177/ Opposition to the monetary reform resulted in the demonstrations and strikes which the government attempted to suppress with this action. This is one of the few occasions when the government has been forced to back down in its demands on labor.

2. Labor Productivity.

Labor productivity in the coal industry in Czechoslovakia is low compared with that in the US, but mining conditions are considerably more difficult and are much less favorable to mechanization in the underground mines, particularly the mechanization of cutting and loading coal.

Average labor productivity in the underground mines reached its peak in 1937, declined during the German occupation, and has been on the upgrade since 1945. Employment of inexperienced workers, lower morale, poorer supervision, and the unsatisfactory condition of equipment have been the principal factors responsible for the lower productivity as compared with the years preceding World War II. In recent years, over-all labor productivity at the brown-coal and lignite mines has been exceeding the prewar average because of the higher proportion of coal produced at strip mines, where labor productivity is much greater than in the underground mines.

Table 16* shows available data on average output per man-shift in the coal mines in Czechoslovakia for selected years.**

Other available data on productivity on a man-hour basis are given in Table 17.*** In a speech on Miner's Day, 12 September 1952, Zapotocky, former Prime Minister, stated that during the past four years, output in kilograms per man-hour had increased 15.3 percent for black (hard) coal and 50 percent for brown coal. 178/

3. Work Time.

Statistics for the years 1929 through 1946 show that the highest average number of days worked annually at coal mines during that period was reached in 1946, with 309 days in the hard-coal mines and 304 days at the brown-coal mines.**** During World War II the

* Table 16 follows on p. 79.

** See Appendix E, Table 75 for data since 1929.

*** Table 17 follows on p. 79.

**** See Appendix E, Table 76 for 1929-46 data.

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Table 16

Average Output Per Man-Shift in Coal Mines in Czechoslovakia 179/
Selected Years 1929-53

<u>Year</u>	<u>Metric Tons</u>			
	<u>Hard-Coal Mines</u>		<u>Brown-Coal and Lignite Mines</u>	
	<u>Underground</u>	<u>Over-All</u>	<u>Underground</u>	<u>Over-All</u>
1929	1.316	1.009	3.027	1.938
1937	1.837	1.404	3.571	2.293
1944	1.076	0.802	1.762	1.203
1945	1.080	0.701	2.528	1.446
1946	1.349	0.928	2.645	1.739
1948	1.451	1.086	2.348	2.229
1949 (Mar)	1.468	1.148	2.512	2.663
1949 Plan	N.A.	1.210	N.A.	2.380
1950 Plan	N.A.	1.230	N.A.	2.470
1951 Plan	N.A.	1.250	N.A.	2.500
1952 Plan	N.A.	1.280	N.A.	2.640
1953 Plan	N.A.	1.330	N.A.	2.740

Table 17

Average Output Per Man-Hour in Coal Mines in Czechoslovakia 180/
1946, 1948-49, 1950 (Jan-Jun), and Sep 1952

<u>Year</u>	<u>Kilograms</u>	
	<u>Average Output Per Man-Hour</u>	
	<u>Hard Coal</u>	<u>Brown Coal and Lignite</u>
1946	137	258
1948	141	296
1949	150	343
1950 (Jan-Jun)	154	343
1952 (Sep)	163 a/	444 a/

a. Approximate. Figure based upon increase reported by Zapotocky.

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highest average was only 302 days at the hard-coal mines in 1940 and 1941 and 296 days at brown-coal mines in 1940.*

Since 1946, and more frequently in recent years, mines have been operating on Sundays and holidays. A regular shift is 8 hours, and practically all mines work 3 shifts on week days. Labor shortages limit only a few to 2-shift days.

In 1918, Czechoslovak coal miners won the right to work only 6 hours on Saturdays. In 1951 the government endeavored to increase the number of hours to 8, but strong protestations from the miners forced a compromise on 3 Saturday shifts of 8 hours each per month with 1 Saturday off. 181/ [redacted] miners in the Ostrava-Karvinna Basin were abolishing their Saturdays off and introducing a 6-day week. 182/

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It has become a general practice in the coal industry to work overtime in order to fulfill output quotas. An admission that in many places miners were working 12 hours daily was made at a government meeting on 30 September 1952. The Czechoslovak press reported that it was hoped to remedy this state of affairs gradually by transferring workers from other places. 183/ [redacted] miners are tired of doing voluntary "shock" shifts in addition to regular time. When ordered to do shockwork, they cannot refuse to go into the mines, but, reportedly, they do little work. 184/

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Josef Tesla, first secretary of the Central Council of Trade Unions, announced on 5 February 1954 that it would be necessary for miners, technicians, and engineers to work a special morning shift on 7 February 1954 and for three full shifts to be worked on 21 February 1954. 185/ In view of intentions to increase production of coal, the government will probably have to continue its policy of working coal mines on Sundays, particularly during winter months.

* See Appendix E, Table 76 for 1929-46 data.

S-E-C-R-E-T4. Wages and Loyalty Bonuses.*a. Wages.**

In the Ostrava-Karvinna mines in Czechoslovakia the average monthly earnings of a miner increased from 3,978 koruny*** in 1946 to 8,733 koruny in the first half of 1952 and in the Most coal-field from 3,780 koruny to 6,312 koruny in the same period. In the hard-coal areas, average monthly wages of miners increased between 1946 and the first half of 1952 by 111.7 percent and in brown-coal areas by 77.1 percent. 186/ In February 1953, hourly wages in the Ostrava-Karvinna mines were 66 percent higher and monthly earnings 68.8 percent higher than they had been in 1948. 187/

at the Kladno mines during 1951-52 that theoretically the soldiers were paid the same wages as the regular miners but that their entire pay for mining was deducted for food, lodging, and social insurance taxes. The soldiers' only cash income was their regular army pay. Because food and lodging for the soldiers did not cost the mine management as much as the wages that would have to be paid to regular miners, the use of military labor was a source of profitable exploitation for the mine management. 188/

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b. Loyalty Bonuses.

In order to raise production by providing inducements to permanent and steady employment, loyalty bonuses were established for coal miners. The original regulations did not produce the intended results, and new regulations were issued on 16 July 1952. 189/

Those eligible for the bonus include the majority of the workers engaged directly in the production of coal. Technicians are included, as are students and instructors in training schools. Specifically excluded are administrative officials and employees of coking plants, mine railroads, central repair shops, auxiliary installations, and construction units; and guards, watchmen, and other in minor capacities not related to coal production.

* Figures on wages and bonuses in this section are in old koruny except where noted. The monetary reform of June 1953 resulted in considerable reductions in payments.

** Undoubtedly the wage figures include bonuses.

*** At the current rate of exchange, 7.2 koruny = US \$1.00.

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Brigade workers, a sizeable component of the labor staff, are also excluded, although their time may be credited if they become permanent workers.

The bonus rates which became effective 30 July 1952 were based upon job classification. They ranged for workers (excluding pupils and technical employees) from 11.60 koruny per hour in Class II to 27.30 koruny per hour in Class VIII (highest classification for workers). Plant engineers, chief engineers, mechanics, and section foremen, all classified as technical employees, received 31.40 koruny per hour. Other technical employees and employees of the ROH (Revoluchi Odborove Hnuti -- Revolutionary Trade Union Movement) Federation of Mining Employees, deputies, and school instructors received 27.30 koruny per hour.

It has been reported that miners receiving hourly wages are paid an increase of 5 percent if the norm is fulfilled 100 to 110 percent and an increase of 10 percent if the norm is fulfilled 110 percent or over. For salaried employees, the increase in annual earnings is 5 percent if the norm is fulfilled 100 to 120 percent and goes up to 25 percent if the norm is fulfilled 143 percent or more. 190/

Bonuses are calculated quarterly. To qualify for the full bonus, an employee cannot miss a work shift without excuse, and the Plan conditions must be fulfilled. No bonus is paid to a miner with 4 or more unexcused shifts during a year. 191/

Every unworked shift for which properly documented reasons have not been furnished is considered an unexcused missed shift and has to be recorded. The decision on whether or not a shift is excused rests with the mine administration and the mine council. A compensatory shift, worked to make up for a shift missed without proper excuse, does not count for loyalty-bonus purposes.

The payment of the loyalty bonus, according to the law, is due in the month following the end of each quarter. Payment, for the period 30 July 1951 to 27 July 1952, however, was to take place on Miners' Day, 12 September 1952. In a speech at that time, Zapotocky stated that during the first 2 years of the operation of the law, miners and mining technicians received 1,345,185,000 koruny. For 1951-52, a total of 436 million koruny was paid. 192/ Payments for 1951-52, which were due at the end of each quarter, may have been withheld because of very poor production in 1951.

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Plan conditions are especially difficult to fulfill, and qualifications for the bonus depend primarily on group rather than individual attainment. High output quotas, and the fact that the mine has to fulfill the Plan, tend to discourage the average worker from making the necessary effort. Poor working and living conditions have also contributed to low productivity.

The continuing high rates of labor turnover and absenteeism are evidence that loyalty bonuses, despite the changes made in 1952, have not had the desired results. In fact, Minister of Fuel and Power Jonas stated in January 1954 that the loyalty bonus, which should have insured adequate permanent labor and reduced absenteeism and fluctuation, did not fulfill its task and, therefore, would have to be changed. He promised that new wage regulations would eliminate all existing shortcomings. Premiums would be increased for the miners who exceeded the norms and for the transport and auxiliary workers. It would also be necessary to raise the salaries of engineers and other technical employees in order to eliminate the current disparity between them and the miners. 193/

On 12 March 1954 the Czechoslovak trade union's newspaper, Prace, announced that the government had introduced a series of measures to make miners' jobs more attractive. Miners who sign on for a 3-year period at the Ostrava-Karvinna, Sokolov, and Handlova mines now get a bonus of 1,200 koruny (new), payable in installments at the beginning of each year. In other mining areas, the bonus is 1,000 koruny (new), also paid in three installments. To attract new miners for training, allowances ranging from 10 to 40 percent of the miners' pay will be paid. Married miners working away from home get a separate allowance of 8 koruny (new) a day, and miners moving with their families to the neighborhood of the mines get 1,600 koruny (new) moving allowance. 194/

5. Pensions.

The average monthly pensions for invalidism and old-age in the coal industry in Czechoslovakia have been reported as follows 195/:

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<u>Year</u>	<u>Invalidism</u>	<u>Old-Age</u>
1937	235 Koruny*	235 Koruny*
1949	2,555 Koruny	3,799 Koruny
1950	3,136 Koruny	4,035 Koruny
1951	3,323 Koruny	4,135 Koruny

6. Vacations.

The law provides that miners shall be granted paid vacations on the following basis: (a) Miners who have worked underground for the 9 months preceding their holiday are entitled to 5 days; (b) after 11 months employment, a miner is entitled to 14 days; (c) workers under 18 years of age or over 50 and those who have been employed in the mines for 5 years receive 21 days; and (d) miners who have worked over 15 years receive 28 days. 196/

7. Health and Recreation.

In 1948 the number of miners sent to health centers for summer and winter recreation and recuperation was 7,917, and by 1951 the number had risen to 17,936. Every year some 350 to 500 miners are sent abroad for a vacation. Medical care at spas and sanitariums was accorded to 5,000 miners in 1949 and to 6,000 miners in 1950. 197/

8. Food Rations.

[redacted] of all categories of workers in Czechoslovakia, miners receive the largest food rations. In July 1952 the normal consumer received rationed food of 52,000 calories. Surface workers at the mines received 116,068 calories, and the miner working underground was allocated rations of 134,580 calories. 198/

50X1

[redacted] at the Centrum mine in the Most district [redacted] miners who work underground are entitled to additional ration cards, the "HL" cards. These cards entitle them to extra monthly rations of 1,600 grams of fat, 4 kilograms of bread, and 3 kilograms of meat. 199/

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50X1

* Old koruny. At the 1937 rate of exchange, 33.33 koruny = US \$1.00.

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[redacted] a bad food situation. Un-
 doubtedly, the diet has been monotonous and unsatisfactory and has
 contributed to low productivity and morale. [redacted] at
 the Jan Sverma mine in the Ostrava-Karvinna Basin until August 1953,
 [redacted] the quality of food had deteriorated since 1948 and was
 actually deplorable [redacted] There was almost no
 good meat available, and fish, fruit, and fresh vegetables were vir-
 tually never served (presumably at the mine cafeteria). On the rare
 occasions that vegetables were provided, they consisted of refuse
 that the nationalized food stores could not sell. 200/ At another
 mine, the cafeteria was closed because of too many complaints about
 the food, which consisted mainly of soup.

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[redacted] there were bread short-
 ages in Kladno and Teplice during the first 3 months of 1954 and
 miners often went to work without bread. In Prague, there was a
 shortage of green vegetables, dairy produce, meat, and canned milk.
 Oranges and lemons were unobtainable. 201/

50X1

9. Housing.

Between the end of 1945 and 31 July 1952, a total of
 11,650 modern housing units were provided for miners. The expendi-
 tures amounted to 4,500,000,000 koruny (old). An additional 2,000
 older units were renovated. 202/ [redacted]

50X1

[redacted] only 739 dwelling houses were built in the Ostrava-Karvinna
 coalfield from 1918 to 1938, whereas, during the 5-year period (1948-
 53) 11,756 apartment units were built there. 203/

50X1

Housing facilities in coal mining areas are generally in-
 adequate. On 15 January 1954 Minister of Fuel and Power Jonas stated
 that many brigade workers leave mining because they cannot find ac-
 comodations. If building workers had reached their Plan target in the
 mining areas during the preceding 2 years, the mines would have had
 4,000 more permanent workers than they had at that time. The building
 workers had to provide for the miners 8,231 apartment units and cul-
 tural, social, and health institutions. 204/

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S-E-C-R-E-TII. Briquettes.A. General. 205/

Briquettes have been manufactured in Czechoslovakia since before World War I. When briquetted, small sizes of coal and coal dust, otherwise of limited value as a fuel, are converted into a useful, but relatively small, source of heat and energy. In addition, briquetting of brown coals reduces their moisture content, thereby improving their heating and storage properties.

Briquettes made with hard coal from the Ostrava-Karvinna and Rosice basins contain between 1 and 5 percent moisture. Tar is used as a binding agent with hard coal and amounts to a little more than 6 percent of the weight of the briquettes.

The brown coals from the Sokolov Basin are high in moisture and low in heat value and are uneconomical to transport any great distances. The bulk of the brown-coal briquettes are produced in the Sokolov Basin, and they contain a little more than 10 percent moisture, compared with only 5 to 10 percent moisture in those briquettes made in the North Bohemian Basin. Brown-coal briquettes are made without the use of a binder. The weight of the brown-coal briquettes is approximately 42 percent less than the weight of the inputs. Before drying, the raw coal contains approximately 40 percent moisture, and some coal is used for making steam, which is used for drying.

B. Supply.1. Production.

The peak annual production of bituminous coal briquettes was 553,435 tons in 1943. In the 1930's the average annual output was about 395,000 tons and in 1948 the output was about 331,489 tons. (See Table 18.*) There has probably been some expansion of production in recent years, but it is unlikely that the level reached in 1953 was in excess of 500,000 tons, and it is estimated at only 450,000 tons. During the years 1932-35, about 5 percent of the annual production of bituminous coal was converted into briquettes, but since 1940 less than 3 percent of total annual production has been used for briquettes.

* Table 18 follows on p. 87.

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Table 18

Production of Hard-Coal Briquettes
in Czechoslovakia a/
1913 and 1919-53

		Metric Tons	
<u>Year</u>	<u>Amount</u>	<u>Year</u>	<u>Amount</u>
1913	196,141 <u>b/</u>	1936	414,896 <u>c/</u>
1919	72,957 <u>b/</u>	1937	459,680 <u>c/</u>
1920	70,633 <u>b/</u>	1938	439,514 <u>c/</u>
1921	82,890 <u>b/</u>	1939	508,814 <u>c/</u>
1922	64,791 <u>b/</u>	1940	535,434 <u>c/</u>
1923	99,631 <u>b/</u>	1941	360,669 <u>c/</u>
1924	75,710 <u>b/</u>	1942	468,819 <u>c/</u>
1925	156,477 <u>b/</u>	1943	553,435 <u>c/</u>
1926	181,797 <u>b/</u>	1944	464,059 <u>c/</u>
1927	160,254 <u>b/</u>	1945	71,309 <u>c/</u>
1928	214,613 <u>b/</u>	1946	209,180 <u>c/</u>
1929	270,294 <u>c/</u>	1947	259,130 <u>d/</u>
1930	239,081 <u>c/</u>	1948	331,489 <u>e/</u>
1931	285,782 <u>c/</u>	1949	388,000 <u>f/</u>
1932	406,574 <u>c/</u>	1950	425,000 <u>g/</u>
1933	396,840 <u>c/</u>	1951	425,000 <u>g/</u>
1934	386,463 <u>c/</u>	1952	450,000 <u>g/</u>
1935	408,539 <u>c/</u>	1953	450,000 <u>g/</u>

a. Also referred to as patent fuel.

b. 206/.

c. 207/.

d. 208/.

e. 209/.

f. 210/. Possibly about 350,000 tons.

g. Estimates; no data. More dust available because of increased coal production since 1949.

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The manufacture of brown-coal briquettes has been even less important, as is indicated by production figures and by the fact that only a little over 2 percent of the annual production of brown coal has been required by the briquette plants. Table 19* shows that annual production during the 20 years following World War I ranged only between 172,000 and 265,000 tons annually. In 1939, the year of highest production, only 333,758 tons of brown-coal briquettes were made, and the last official figure is 291,326 tons in 1948. It is believed, however, that production has increased substantially since 1950, and it is estimated at 425,000 tons in 1953.

A Prague news report of 14 November 1953 mentions that a coal substitute, marketed under the trademark "Bulet," has been on sale to the Ostrava public for some time. This substitute is made from a mixture of brown-coal dust and sawdust and, reportedly, is of high calorific value. 211/ Since Ostrava is the most important center of hard-coal production in the country, the use of a coal substitute is additional evidence of the shortage of coal for household heating.

Tables 18** and 19* show data on production of hard-coal briquettes and production of brown-coal briquettes, respectively, in Czechoslovakia, 1913 and 1919-53.

2. Foreign Trade.

The largest annual exports of brown-coal briquettes since World War II were only 34,900 tons in 1950, and exports were down to about 7,000 tons in 1953. Imports of these briquettes were negligible prior to 1950, but the fuel shortages which developed in Czechoslovakia in that year resulted in imports of 300,357 tons from East Germany in 1951, and it is believed that about the same amount was imported by Czechoslovakia in 1952 and 1953. There is no evidence to indicate that Czechoslovakia has either imported or exported hard-coal briquettes in recent years.

Table 20*** gives statistics on imports of brown-coal briquettes by Czechoslovakia, and Table 21**** gives statistics on exports of brown-coal briquettes by Czechoslovakia.

* Table 19 follows on p. 89.

** P.87, above.

*** Table 20 follows on p. 90.

**** Table 21 follows on p. 91.

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Table 19

Production of Brown-Coal Briquettes
in Czechoslovakia
1913 and 1919-53

Metric Tons			
<u>Year</u>	<u>Amount</u>	<u>Year</u>	<u>Amount</u>
1913	242,497 <u>a/</u>	1936	189,304 <u>b/</u>
1919	226,113 <u>a/</u>	1937	264,482 <u>b/</u>
1920	213,083 <u>a/</u>	1938	199,163 <u>b/</u>
1921	250,942 <u>a/</u>	1939	333,758 <u>b/</u>
1922	172,659 <u>a/</u>	1940	330,364 <u>b/</u>
1923	196,205 <u>a/</u>	1941	295,033 <u>b/</u>
1924	175,613 <u>a/</u>	1942	261,132 <u>b/</u>
1925	211,884 <u>a/</u>	1943	323,644 <u>b/</u>
1926	197,211 <u>a/</u>	1944	328,998 <u>b/</u>
1927	211,770 <u>a/</u>	1945	192,485 <u>b/</u>
1928	241,174 <u>a/</u>	1946	278,452 <u>b/</u>
1929	256,111 <u>b/</u>	1947	283,645 <u>c/</u>
1930	180,718 <u>b/</u>	1948	291,326 <u>c/</u>
1931	209,435 <u>b/</u>	1949	297,000 <u>c/</u>
1932	202,003 <u>b/</u>	1950	303,300 <u>c/</u>
1933	194,497 <u>b/</u>	1951	375,000 <u>d/</u>
1934	194,893 <u>b/</u>	1952	400,000 <u>d/</u>
1935	188,466 <u>b/</u>	1953	425,000 <u>d/</u>

a. 212/.b. 213/.c. Figures for 1949 and 1950 are estimates. 214/.

d. Estimate; no data. Figure may be subject to considerable error.

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Table 20

Imports of Brown-Coal Briquettes by Czechoslovakia
1937-38 and 1947-53

Metric Tons			
<u>Year</u>	<u>Exported from East Germany</u>	<u>Year</u>	<u>Exported from East Germany</u>
1937	22,000 <u>a/</u>	1950	137,500 <u>e/</u>
1938	16,000 <u>a/</u>	1951	300,357 <u>f/</u>
1947	100 <u>b/</u>	1952	300,000 <u>g/</u>
1948	0 <u>c/</u>	1953	300,000 <u>h/</u>
1949	100 <u>d/</u>		

a. 215/.b. 216/.c. 217/.d. 218/.

e. [redacted] East Germany failed to deliver 162,504 tons. It is assumed that the plan called for imports of 300,000 tons, but the estimate may be in considerable error.

f. 220/. Deliveries by East Germany against plan of 300,000 tons.

g. Estimate based upon 1951 deliveries.

h. [redacted] 6,640 carloads (136 trains) were dispatched from Bad Schandau to Czechoslovakia from 1 March to 31 May 1953, and, [redacted] 1,920 cars (42 trains) were dispatched in the period 21 September to 10 October 1953. Reports for intervening periods show no shipments of brown-coal briquettes, although some may have been included in trains containing mixed cargoes. Assuming that each car averaged 22 tons, reported shipments amounted to more than 200,000 tons. The total for the year is an estimate and may be in considerable error.

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Table 21

Exports of Brown-Coal Briquettes by Czechoslovakia
1937-38 and 1947-53

Year	Importing Country			Metric Tons
	Austria	West Germany	Switzerland	Total
1937	300 <u>a/</u>	100,000 <u>a/</u>	4,000 <u>a/</u>	104,300
1938	300 <u>a/</u>	39,000 <u>a/</u>	3,000 <u>a/</u>	42,300
1947	0	0	1,295 <u>b/</u>	1,295
1948	0	0	0 <u>b/</u>	0 <u>b/</u>
1949	0	30,000 <u>a/</u>	1,900 <u>c/</u>	31,900
1950	0 <u>c/</u>	34,800 <u>c/</u>	100 <u>c/</u>	34,900
1951	8,457 <u>d/</u>	6,500 <u>e/</u>	0	14,957
1952	11,432 <u>d/</u>	0	0	11,432
1953	7,114 <u>f/</u>	0 <u>g/</u>	0 <u>g/</u>	7,114

a. 223/.b. 224/. Possibly 100 tons in 1948.c. 225/.d. Austrian imports e. 227/.f. 228/.g. 229/.

50X1

C. Consumption.

Prewar figures show that 84 percent of the total hard-coal briquettes produced in Czechoslovakia were consumed by the railroads and 13 percent by industrial establishments. About 88 percent of the total brown-coal briquettes produced were used for household heating and cooking, and the remainder was exported.

In 1949, the railroads were allocated more than 90 percent of the hard-coal briquettes, and the rest was consumed by various industries and domestic consumers. It is possible that the use of these briquettes for domestic heating has been discontinued because of shortages of high-quality coal.

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Data for the first 8 months of the years 1948 and 1949 show that slightly more than 90 percent of the brown-coal briquettes were consumed in domestic heating and that the railroads used most of the remainder. 230/

The pattern of distribution may have changed considerably during the last few years. Because of increased production and sizeable imports from East Germany, more brown-coal briquettes have been available, but the enlarged supplies probably have been allocated to the railroads and industrial plants rather than to domestic consumers.

D. Plants.

There were 6 hard-coal and 5 brown-coal briquette factories in operation during the 1931-34 period, and there have been about the same number operating in recent years. Except for one plant in the Rosice-Oslavany Basin, all of the hard-coal briquette plants are in the Ostrava-Karvinna Basin. It is believed that all of the brown-coal briquette plants are located in the Sokolov Basin, with the exception of a plant at Komorany, in the North Bohemian Basin, which is probably the one operating at the President Benes mine.

It has been reported that in 1950 a new plant was under construction at the Karvinna II (Czechoslovak army) mine in the Ostrava-Karvinna Basin and that in August 1952 machinery was being installed. 231/ According to a Czechoslovak news release, 232/ the construction of a huge plant at Sokolov was started in the early part of 1953. There was also a plan to build either at the Jaroslav mine or at the Svatopluk mine near Mydlovary a plant to utilize the local lignite, but there has been no evidence to indicate that construction was ever started.

The location and capacity of briquette plants in Czechoslovakia in 1950 is shown in Table 22.*

* Table 22 follows on p. 93.

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Table 22

Location and Capacity of Briquette Plants in Czechoslovakia 233/
1950

<u>Basin</u>	<u>Plant</u>	<u>Location</u>	<u>Annual Capacity a/ (Thousand Tons)</u>
Bituminous Coal			
Ostrava-Karvinna	Karolina	Ostrava	150
Ostrava-Karvinna	Pokrok	Petrvald	75
Ostrava-Karvinna	Trojice	Slezska-Ostrava	100
Ostrava-Karvinna	Michal	Michalkovice	100
Ostrava-Karvinna	Karvinna II <u>b/</u>	Karvinna	N.A.
Rosice-Oslavany	Julius	Zastavka u Brna	75
Brown Coal			
North Bohemian	President Benes <u>c/</u>	Komorany	100
Sokolov	Nove Sedlo	Karlovy Vary	75
Sokolov	<u>d/</u>	Habartov	75
Sokolov	<u>d/</u>	Kysperk nad Orlici	N.A.
Sokolov	<u>d/</u>	Dolni Rychnov	N.A.
Sokolov	Sokolov <u>e/</u>	Sokolov	N.A.

a. Approximate capacity in 1950.

b. A new plant has been under construction since 1950 and installation of machines began in August 1952. The production of briquettes was to begin in 1953. The Karvinna II coal mine is also known as the Large Czechoslovak Army Mine.

c. A plant is located at the President Benes mine, but the name is not known.

d. No information.

e. A new plant with large capacity was under construction in 1953.

S-E-C-R-E-TIII. Coke.A. General.

Of the European Satellites, Czechoslovakia is second only to Poland as a producer of metallurgical coke. In the Ostrava-Karvinna Basin, there are substantial deposits of coal which yield coke reputed to be excellent for blast furnaces. East Germany, Hungary, and Rumania, because of their own extremely limited resources of good coking coal, depend heavily on Czechoslovakia to meet their deficiencies of metallurgical coke.

In addition to coke-oven coke,* which is made by high-temperature carbonization of coal in byproduct ovens, Czechoslovakia produces gas coke, which is obtained in making gas at gasworks and there is considerable brown-coal coke (semicoke or char), made from brown coal, almost entirely at the Stalin Works (synthetic fuel plant) near Most.

The total production of coke in Czechoslovakia has increased from about 4.15 million tons in 1947 to 6.76 million tons in 1950, and it was probably about 7.7 million tons in 1953. The original Five Year Plan (1949-53) target for 1953 was established at 8,031,000 tons, including 6,020,000 tons of oven coke, 460,000 tons of gas coke, and 1,551,000 tons of brown-coal coke. Production of oven coke has been below Plan during each year of the Five Year Plan, and the output of other coke was probably close to Plan.

B. Oven Coke.1. Supply.a. Production.

Prior to World War II, all production of oven coke in Czechoslovakia, with the exception of small output at a plant in Zbysov in the Rosice Basin, was concentrated in the Ostrava-Karvinna Basin. During World War II the Germans built a coke plant at the United Steel Works, now the Konev plant, in Kladno.

* Coke-oven coke (oven coke as referred to in this report), should not all be considered of metallurgical grade. Some oven coke fails to meet standards for size, hardness, and chemical characteristics.

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In recent years there has been some expansion in capacity with the completion of 1 battery of coke ovens at Trinec and 2 batteries at Kuncice. The plant at Kuncice is new and, when completed, will have 4 batteries with 288 ovens and an annual capacity of about 1.5 million tons.

In Czechoslovakia, there are at least 11 oven-coke plants and possibly as many as 13. The Ostrava-Karvinna Basin is known to have 9 plants and may have 11. There has been no postwar information concerning the Jan (or San) plant near Karvinna or the Vaclav plant at Poruba, which had a combined output of probably about 275,000 tons annually prior to World War II.

Production of oven coke amounted to 4,876,000 tons in 1950. Production is estimated at 5,071,000 tons in 1951; at 5,375,000 tons in 1952; and at 5,700,000 tons in 1953.

Table 23* shows available statistics on production of oven coke in Czechoslovakia in 1913 and from 1919 through 1953 and gives the 1947-53 Plan figures.

In recent years, approximately 90 percent of the annual production of oven coke has come from the Ostrava-Karvinna area. In 1949, three of the cokeries were located at steel plants, Trinec and Vitkovice in the vicinity of Ostrava, and the Konev plant in Kladno. Although the Czechoslovaks have referred to these plants as metallurgical-coke plants and to the others as mine-coke plants, the distinction is based upon location, and there is no difference in the quality of the coke produced.

Estimates of oven-coke plant production in Czechoslovakia are given in Table 24.**

b. Foreign Trade.

Czechoslovakia has been a major exporter of oven coke, which is vital to the iron and steel industry. In 1937, Czechoslovakia shipped to other nations 943,435 tons, almost 29 percent of its production, and has exported more than 20 percent of its production in recent years.

* Table 23 follows on p. 96.

** Table 24 follows on p. 98.

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Table 23

Production of Oven Coke in Czechoslovakia a/
1913, 1919-53, and 1947-53 Plans

		Metric Tons	
<u>Year</u>	<u>Amount</u>	<u>Year</u>	<u>Amount</u>
1913	2,561,778 <u>b/</u>	1940	3,733,440 <u>c/</u>
1919	1,628,096 <u>b/</u>	1941	3,696,000 <u>c/</u>
1920	1,706,232 <u>b/</u>	1942	3,889,340 <u>c/</u>
1921	1,416,821 <u>b/</u>	1943	4,280,545 <u>c/</u>
1922	880,710 <u>b/</u>	1944	4,528,480 <u>c/</u>
1923	1,809,598 <u>b/</u>	1945	1,900,557 <u>c/</u>
1924	2,218,375 <u>b/</u>	1946	2,250,661 <u>c/</u>
1925	2,009,442 <u>b/</u>	1947 Plan	3,334,000 <u>d/</u>
1926	1,957,213 <u>b/</u>	1947	3,337,869 <u>e/</u>
1927	2,423,081 <u>b/</u>	1948 Plan	3,854,000 <u>d/</u>
1928	2,815,973 <u>b/</u>	1948	4,099,000 <u>f/</u>
1929	3,163,194 <u>c/</u>	1949 Plan	4,830,000 <u>d/</u>
1930	2,712,332 <u>c/</u>	1949	4,695,000 <u>f/</u>
1931	2,045,527 <u>c/</u>	1950 Plan	5,040,000 <u>d/</u>
1932	1,277,295 <u>c/</u>	1950	4,876,000 <u>f/</u>
1933	1,258,611 <u>c/</u>	1951 Plan	5,150,000 <u>d/</u>
1934	1,344,786 <u>c/</u>	1951	5,071,000 <u>g/</u>
1935	1,551,152 <u>c/</u>	1952 Plan	5,565,000 <u>d/</u>
1936	1,955,445 <u>c/</u>	1952	5,375,000 <u>h/</u>
1937	3,279,864 <u>c/</u>	1953 Plan	6,020,000 <u>d/</u>
1938	2,766,300 <u>c/</u>	1953	5,700,000 <u>i/</u>
1939	3,221,200 <u>c/</u>		

a. Production at byproduct oven plants. It is believed that the figures exclude breeze.

b. 234/.

c. 235/.

d. 236/.

e. 237/.

f. 238/.

g. Production was reported to be 12 percent higher than in 1944. 239/

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Table 23

Production of Oven Coke in Czechoslovakia
1913, 1919-53, and 1947-53 Plans
(Continued)

h. Estimated increase of 6 percent in 1952. Coke output increased 5 percent during the first half of 1952 as compared with the same period in 1951. ^{240/} A new battery started operating at Kuncice on 22 March 1952, and another was fired on 6 August 1952. Each battery had an annual capacity of about 375,000 tons.

i. Pokorny reported on Miners' Day, 13 September 1953, that the production of mine coke had increased by 19.3 percent as compared with 1948. ^{241/} This indicates production of around 3.3 million tons at the mine-coke plants, as compared with the Plan of 3.55 million tons, and it is believed that production at the metallurgical-coke plants was below Plan.

the Plan figures for mine and metallurgical plants were as follows (thousand metric tons):

<u>Year</u>	<u>Mine-Coke Plants</u>	<u>Metallurgical-Coke Plants</u>
1947 Plan	2,120	1,214
1948 Plan	2,420	1,434
1949 Plan	3,350	1,480
1950 Plan	3,550	1,490
1951 Plan	3,550	1,600
1952 Plan	3,550	2,015
1953 Plan	3,550	2,470

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Table 24

Estimated Oven-Coke Production in Czechoslovakia by Plants a/
1950-53

Plant	Production November 1950 <u>b/</u>	Thousand Metric Tons			
		Estimated Production			
		1950	1951	1952	1953 <u>c/</u>
Ostrava-Karvinna					
General Svoboda <u>d/</u>	98.9	1,356 <u>e/</u>	1,456	1,420	1,420
Karolina <u>d/</u>	44.5	565	575	570	570
Vitkovice <u>f/</u>	N.A.	525 <u>g/</u>	535	525	525
Trinec <u>f/</u>	N.A.	675 <u>g/</u>	690	675	675
Sverma <u>d/</u>	39.0	525	545	525	525
Trojice <u>d/</u>	13.8	185	190	180	180
Lazy (Orlova) <u>d/</u>	18.9	250	250	250	250
President Benes <u>d/</u>	28.9	325	335	310	310
Kuncice <u>f/</u>	0	0	0	425	750
Subtotal		<u>4,406</u>	<u>4,576</u>	<u>4,880</u>	<u>5,205</u>
Kladno					
Konev <u>f/</u>	N.A.	425 <u>g/</u>	450	450	450
Rosice					
Zbysov <u>d/</u>	N.A.	45 <u>g/</u>	45	45	45
Total	<u>N.A.</u>	<u>4,876</u>	<u>5,071</u>	<u>5,375</u>	<u>5,700</u>

a. Estimates of total production are believed to be within a range of error of plus or minus 5 percent. Estimates for individual plants are excessive if the Jan and Vaclav plants have been operating.

b. 243/.

c. According to Pokorny, mine-coke production on Miners' Day had increased 19.3 percent as compared with 1948. 244/ If it is assumed that the mine-coke plants produced 2.75 million tons in 1948 (they evidently exceeded the plan of 2.42 million tons by a considerable amount), then their production in 1953 was around 3.3 million tons.

S-E-C-R-E-T

Table 24

Estimated Oven-Coke Production in Czechoslovakia by Plants
1950-53
(Continued)

-
- d. Mine coke plant.
e. Produced 686,700 tons as compared with the Plan of 674,000 tons during the 6 months, January to June 1950.
f. Metallurgical coke plant.
g. The 1949 Plan targets were as follows: Vitkovice, 480,000 tons; Trinec, 650,000 tons; Kladno, 350,000 tons; Rosice, consumption of 60,000 tons of Rosice coal. 245/ Rosice production may be about 50,000 tons annually.

During the Five Year Plan exports have been probably between 1.1 and 1.3 million tons annually. Shipments to the Free Nations have declined steadily from 580,464 tons (over 50 percent of the country's total exports) in 1948 to 6,604 tons in 1953. Austria, France, and Switzerland have received practically all of the oven coke exported to non-Soviet Bloc countries since 1949.

Shipments to the West have been reduced in order to meet the needs of the expanding metallurgical industry at home and to help meet the demands for coke in the other European Satellites, especially East Germany. In recent years, the demand for Czechoslovak coke has been greater than the supply, and deliveries generally have fallen below commitments.

Table 25* gives estimates of exports of oven coke by Czechoslovakia in 1937 and 1938 and from 1947 through 1953.

Records show that Czechoslovakia has imported some oven coke in the past, but there are no indications of imports since 1948. Poland furnished 24,231 tons in 1947 and only 3,878 tons in 1948.

Table 26** gives estimates, based on available data, of imports of oven coke by Czechoslovakia for the years 1937-38 and since 1947.

* Table 25 follows on p. 100.

** Table 26 follows on p. 102.

Table 25

Estimated Exports of Oven Coke by Czechoslovakia a/*
1937-38 and 1947-53

Importing Country	1937 b/	1938 b/	1947 c/	1948 c/	1949	1950	1951	1952	1953	Metric Tons
Non-Soviet Bloc										
Austria	227,130	86,676	85,442	139,656	67,000 d/	104,168 e/	120,034 e/	33,483 e/	6,604 f/	
Belgium	0	0	20	0	0	0	0	0	0	
Denmark	0	0	80	40	0	0	0	0	0	
Finland	11,808	1,500	0	0	0	0	0	0	0	
France	94,398	63,153	30,590	46,917	74,000 g/	2,100 g/	600 h/	6,000 i/	0	
West Germany	0	0	0	0	0	0	0	0	0	
Italy	25,388	5,607	6,568	5,536	0	0	0	0	0	
Norway	8,983	2,357	0	0	0	0	0	0	0	
Sweden	191,538	155,775	0	0	0	0	0	300	0	
Switzerland	20,107	8,690	75,864	116,008	46,000 g/	68,100 g/	23,400 h/	14,000 j/	0	
Trieste	0	0	31	1,315	0	0	0	0	0	
Yugoslavia	71,071	99,058	175,856	270,292	90,000 k/	0	0	0	0	
Other	0	10,498	950	700	0	0	0	0	0	
Total	<u>650,423</u>	<u>433,314</u>	<u>375,401</u>	<u>580,464</u>	<u>277,000</u>	<u>174,368</u>	<u>144,034</u>	<u>53,783</u>	<u>6,604 l/</u>	
Soviet Bloc										
Albania	0	0	0	0	0	0	0	m/	m/	
Bulgaria	337	300	3,061	2,000	2,500 n/	2,800 n/	2,800 n/	4,000 n/	5,000 n/	
East Germany	17,378	13,729	190	79,100	404,000 o/	348,000 p/	416,800 h/	670,000 q/	625,000 E/	
Hungary	211,015	176,816	139,326	257,673	225,000 s/	301,200 h/	301,100 h/	300,000 t/	325,000 u/	
Poland	52,406	47,464	0	105,934	208,700 v/	177,600 h/	180,000 h/	150,000 u/	150,000 u/	
Rumania	11,676	20,291	4,624	45,482	100,000 w/	150,000 x/	200,000 x/	25,925 y/	150,000 x/	
Other	200	2,381	0	0	0	0	0	0	0	
Total	<u>293,012</u>	<u>260,981</u>	<u>147,201</u>	<u>490,189</u>	<u>940,200</u>	<u>979,600</u>	<u>1,100,700</u>	<u>1,149,925</u>	<u>1,255,000</u>	
Grand Total	<u>943,435</u>	<u>694,295</u>	<u>522,602</u>	<u>1,070,653</u>	<u>1,217,200</u>	<u>1,153,968</u>	<u>1,244,734</u>	<u>1,203,708</u>	<u>1,261,604</u>	

* Footnotes for Table 25 follow on p. 101.

S-E-C-R-E-T

Table 25

Estimated Exports of Oven Coke by Czechoslovakia a/
1937-38 and 1947-53
(Continued)

- a. Figures for Austria, France, and Switzerland are imports by those countries in recent years. Over-all exports in recent years are believed to be within a range of error of plus or minus 10 percent.
- b. 246/.
c. 247/.
d. 248/.
e. Austrian imports. 249/
f. 250/.
g. 251/.
h. 252/.
i. 253/.
j. 254/.
k. Estimate. Planned deliveries of 54,000 tons in first quarter and 66,000 tons in second quarter. Exported 87,840 tons January-August; only 20 tons in July and 140 tons in August. 255/
l. Estimate. Available data for various countries indicate none during first half of 1953 except for Austria.
m. Possibly up to 2,000 tons.
n. Estimate; no data. The range of error may be considerable, particularly in 1952 and 1953.
o. 256/.
p. 257/. Possibly about 50,000 tons too low.
q. To be delivered according to trade agreement. 258/ East Germany received 528,000 tons by end of September. 259/
- s. Estimate. Exports were 200,480 tons for 8 months, January to August 1949. 261/
t. Estimate
u. Estimate subject to considerable error. Shipments to Poland may have ceased in 1951.
- w. Estimate. Exports amounted to 45,970 tons for 8 months, January to August 1949 but were 10,320 tons in July and 10,300 tons in August. 264/
x. Estimate subject to considerable error.
y. 265/. This is the only figure available since 1949. Actual shipments are believed to have been higher on the basis of needs.

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S-E-C-R-E-T

Table 26

Estimated Imports of Oven Coke by Czechoslovakia
1937-38 and 1947-53

Year	Exporting Country			Metric Tons
	West Germany	Hungary	Poland	Total
1937	15,000 <u>a/</u>	1,000 <u>a/</u>	149,000 <u>a/</u>	165,000
1938	10,000 <u>a/</u>	1,000 <u>a/</u>	97,000 <u>a/</u>	108,000
1947	0	0	24,231 <u>b/</u>	24,231
1948	0	0	3,878 <u>b/</u>	3,878
1949-53	0	0 <u>c/</u>	0 <u>c/</u>	0 <u>c/</u>

a. 266/.

b. 267/.

c. Probably small, if any.

2. Consumption.

The 1949 Plan* furnishes the most recent data regarding consumption of coke, but allocations of oven coke and gas coke to various categories of consumers are not shown separately. It is believed that the figures do not include breeze (dust).

About two-thirds of the oven coke used in the country is consumed in the metal industries, and most of the remainder is used for domestic heating. According to the 1949 Plan, 2,047,000 tons were needed for metallurgical purposes, presumably all for making pig iron at blast furnaces. Another 264,000 tons were to be used for metal-working and machine building, principally in foundries, but these requirements were expected to increase to 412,000 tons by 1953. 268/ Requirements for blast furnaces are believed to have increased between 100,000 and 200,000 tons annually.

* The 1949 Plan for consumption of oven coke and gas coke by categories of consumers is given in Appendix F, Table 77.

S-E-C-R-E-T

Table 27* furnishes estimates of availability and consumption of oven coke and gas coke in Czechoslovakia during the years 1949-53.

3. Product Yields.

According to the 1949 Plan,** the mine-coke ovens were to produce 3,230,000 tons of coke from 5,135,000 tons of coal, and the metallurgical-coke plants (at steel mills) were to produce 1,480,000 tons of coke from 2,303,000 tons of coal.*** These figures indicate coke yields of 62.9 percent and 63.3 percent, respectively, and are apparently exclusive of breeze. A breakdown of the yields of coke and other products in the 1949 Plan shows large tonnages of sludge, or waste, which is assumed to be the wet breeze (dust).

4. Oven Coke Plants.a. Ostrava-Karvinna District (Northeastern Moravia).(1) General Svoboda (formerly Frantiska).

The General Svoboda plant is reported to be one of the most modern in Europe. It is equipped with batteries of ovens of the Otto, Bochum; Koppers, Essen; and Still, Recklinghausen types. It also contains equipment to wash out sulfur and to produce sulfuric acid by the Lurgi contact process. There is also a flotation coal-washing plant. Coal is received from the General Svoboda, Zarubek, Stachanov, and Frantiska mines. In June 1951 the plant handled 4,000 tons of coal daily. 269/ [redacted] in February 1951 the plant received 450 cars daily from the General Svoboda, Masaryk I and II, and Stalin I mines. 270/

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(2) Karolina.

The Karolina plant, located in Moravska-Ostrava, produces coke and gas for the Klement Gottwald Iron and Steel Works. In June 1951 the plant had 4 batteries of Koppers ovens and handled 2,100 tons of coal daily from the Stalin I and Hlubina mines. 271/

* Table 27 follows on p. 104.

** Appendix F, Tables 78 and 79 furnish the 1949 Plan figures for production of coke and byproducts at mine-coke ovens and at metallurgical coke ovens.

*** The total of 4,710,000 tons disagrees with the figure of 4,830,000 tons reported as the 1949 goal.

S-E-C-R-E-T

S-E-C-R-E-T

Table 27

Estimated Availability and Consumption of Oven Coke
and Gas Coke in Czechoslovakia
1949-53

	Thousand Metric Tons				
	<u>1949</u>	<u>1950</u>	<u>1951</u>	<u>1952</u>	<u>1953</u>
Availability <u>a/</u>					
Production <u>b/</u>					
Oven Coke	4,695	4,876	5,071	5,375	5,700
Gas Coke	405	425	425	435	450
Imports <u>c/</u>	0	0	0	0	0
Total	<u>5,100</u>	<u>5,301</u>	<u>5,496</u>	<u>5,810</u>	<u>6,150</u>
Exports <u>d/</u>	1,217	1,154	1,245	1,204	1,262
Total Availability	<u>3,883</u>	<u>4,147</u>	<u>4,251</u>	<u>4,606</u>	<u>4,888</u>
Consumption <u>a/</u>					
Industry					
Metallurgy <u>e/</u>	2,310	2,475	2,600	2,850	3,000
Other <u>f/</u>	530	575	600	700	750
Railroads	35	40	45	50	60
Electric Power Stations	2	2	4	5	10
Gasworks <u>g/</u>	130	135	135	135	140
Domestic Heating <u>h/</u>	876	920	867	866	928
Total Consumption	<u>3,883</u>	<u>4,147</u>	<u>4,251</u>	<u>4,606</u>	<u>4,888</u>

a. Stocks are not taken into account; they are relatively small. The 1949 Plan shows stocks of only 19,000 tons on 31 December 1948, and there were to be none at the end of 1949. It is probable that these data refer to stocks held at the source of supply. Doubtless, some consumers have stocks sufficient to last several weeks or more.

S-E-C-R-E-T

Table 27

Estimated Availability and Consumption of Oven Coke
and Gas Coke in Czechoslovakia
1949-53
(Continued)

- b. It is believed that coke-production figures do not include breeze (dust).
 c. Probably none.
 d. Probably all oven coke.
 e. All oven coke, of which probably 90 percent or more was used in making pig iron.
 f. Over 50 percent of the total was for the ceramics and chemical industries in 1949.
 g. All gas coke.
 h. coke was scarce in 1951 and 1952, and consumption may have been less than estimated. Much of this coke went for heating commercial buildings.

50X1

These ovens may be the same that existed in 1929, at which time there were 4 batteries (216 ovens) of the Koppers regenerative type which had a total daily output of about 1,650 tons of coke.

(3) Vitkovice.

The Vitkovice plant is located in Vitkovice, a suburb of Moravska-Ostrava. It belongs to the Klement Gottwalt Iron and Steel Works and produces coke and gas for the Vitkovice steel plant. It was reported that in June 1951 the plant coked 1,800 tons of coal daily in 3 batteries of Koppers ovens and 1 Otto battery. The 1949 Plan called for this plant to produce 480,000 tons of coke (apparently exclusive of breeze) from 820,000 tons of coal.

(4) Trinec.

The Trinec plant is located at the V.M. Molotov Steel Works in Trinec. It is claimed that the plant is modern and has 4 Koppers batteries using 1,800 tons of coal daily (June 1951) from the 1 May and Pokrok mines. The coke is used at the Trinec iron works. The 1949 Plan called for this plant to produce 650,000 tons of coke (apparently exclusive of breeze) from 1,013,000 tons of coal.

S-E-C-R-E-T

In 1930, this plant had 3 batteries of Koppers regenerative ovens, built from 1925 to 1930, consisting of 118 ovens with a total daily output of about 1,500 tons of coke. There was also a battery of Otto ovens, built in 1913, which were replaced after 1930, 272/ evidently with a battery of Koppers ovens.

The sixth blast furnace was brought into operation at Trinec in May 1952. 273/ This increased coke requirements and it is possible that the 4 batteries may not supply all that the plant consumes.

(5) Jan Sverma.

The Jan Sverma plant is located near the Jan Sverma (formerly Ignat) mine, west of Moravska-Ostrava. There are, reportedly, 2 modern Koppers and 1 Otto battery, which together handled 1,800 tons of coal daily (June 1951) from the Jan Sverma mine.

In 1929 there were 7 batteries at this plant, but 4 old ones, built in 1900 and 1905, were later dismantled, and evidently another, built in 1913, was also dismantled. There was an Otto twin-type battery (built in 1923) with 46 ovens and a battery of Koppers regenerative ovens (built in 1926) with 35 ovens, which had a total daily output of about 775 tons of coke. These batteries may still be in operation. [redacted] at the Jan Sverma coal mine in recent years [redacted] the plant had 80 coke ovens. 274/

50X1
50X1:(6) Trojice.

The Trojice plant is located at the Trojice mine in Slezska Ostrava, east of Moravska-Ostrava. It was reported that 800 tons of coal (June 1951) from the Trojice mine were consumed daily in 1 battery of Otto ovens and 2 old batteries of Koppers ovens.

In 1929, this plant had 2 Otto-Kaufman batteries with 60 ovens (built in 1906) and one Koppers battery with 30 ovens (built in 1907), which at that time had a total daily output of about 400 tons of coke. 275/

S-E-C-R-E-T

S-E-C-R-E-T(7) Lazy (Orlova).

The Lazy plant is located at, or near, Orlova. It was reported to be modern, having 3 Otto batteries that handled 1,200 tons of coal (June 1951) daily from the Zapotocky mine.

In 1929, this plant had 1 battery of Otto twin-type ovens (55) with a capacity of 475 tons of coke daily. This battery was installed in 1925. 276/

(8) Kuncice.

The Kuncice plant, located at Kuncice, is new. When completed, the plant is to have 4 Koppers-type batteries, each with 72 ovens. The 288 ovens will process 5,750 tons of coal (10 percent water) daily. The dimensions of each oven are as follows: 12.9 meters long, 4 meters high, and 0.44 meter wide. Each oven has a capacity of 17.6 tons of coal, and the coking time is 20.5 hours. It was planned to use a mixture of coals from the President Benes mine (85 percent) and Pokrok mine (15 percent). The yield of dry coke from dry coal would be 73 percent, and the daily production would consist of 4,200 tons of coke, 1.7 million normal cubic meters of gas, 200 tons of tar, and 75 tons of benzol. The resulting coke will contain 5 percent water, 12 to 13 percent ash, and 0.8 percent sulfur. Tests indicate that 60 to 65 percent of the coke will be larger than 40 millimeters in diameter. 277/

The first battery of coke ovens at the Kuncice plant were put into operation at the same time the first Martin furnaces were lighted (March 1952). 278/ According to a radio broadcast, 279/ the main section of the plant began operating on 22 March 1952. [redacted] the second battery of 72 coke ovens was fired on 6 August 1952. Construction time was one-third shorter than it was for the first battery. 280/ [redacted] the 72 ovens of the second battery had been fired. 281/

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If the 2 coke batteries operated at capacity during 1953, they produced about 750,000 tons of coke.

S-E-C-R-E-T

S-E-C-R-E-T

(9) President Benes (formerly Hohenegger).

The President Benes plant is in the vicinity of Karvinna and may be known as the Czechoslovak Army plant. The former President Benes mine is now the huge Czechoslovak Army mine. There was a coke plant adjoining the former Hlubina mine, which has been merged into the Czechoslovak Army mine. 282/

b. Kladno District.

Konev (Kladno).

The Konev plant, located at Kladno, is a division of the United Steel Works. It was constructed in 1942-43 by the Germans. [redacted]

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50X1

It is probable that there is 1 battery with 60 ovens. The plant used a mixture of local coals from the Kaldno district and coals from the Ostrava-Karvinna district. The coke is used in the three modern blast furnaces at the Konev plant, and the gas is used to heat furnaces at the Konev and Poldi plants.

Coke production has been reported as follows (in tons): 1946, 99,840; 1947 Plan, 237,000; 1947 actual, 234,460; 1948 Plan, 300,000; 1948 (January to June), 149,254. 283/ The 1949 Plan called for production of 350,000 tons of coke from 470,000 tons of coal. There is a Czechoslovak newspaper report (5 December 1952) that the plant produced 13,000 tons of coke above the Plan quota by 23 November 1952. 284/

c. Rosice District.

[redacted] the Rosice district near Brno in Moravia has its own little coke-oven plant, and it supplies metallurgical coke to many gray-iron foundries in Brno and vicinity. Output in 1929 was 50,000 tons. 285/ The 1949 Plan shows that 60,000 tons of Rosice coal were to be coked. [redacted] in Zbysov there was a plant with 12 ovens which processed local coal.

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S-E-C-R-E-TC. Gas Coke.1. Supply.a. Production.

Gas coke is a byproduct in the manufacture of gas from bituminous coal at gasworks. There were about 80 gas plants in Czechoslovakia before World War II, but the number may be less at the present time. Some old plants have become inoperative, and there has been a trend toward long-distance transmission of gas from the Stalin Works and the oven-coke plants.

The production of gas coke increased annually except for 2 years, from 178,192 tons in 1929 to 413,421 tons in 1944, but production dropped to less than 300,000 tons after World War II. The last year for which a reliable output figure is available is 1947, when production was 289,809 tons. The original Five Year Plan figures are available, however, and show that production was to be increased to 460,000 tons in 1953.

[redacted] production was 92,596 tons during the second quarter of 1949, compared with a planned production of 96,170 tons. ^{287/} The original Plan for 1949 was 423,000 tons, and the estimate for that year is 405,000 tons. Although no data are available, it is believed that output has been somewhat less than Plan during subsequent years, and it is estimated that production in 1953 was 450,000 tons, 10,000 tons less than originally planned.

50X1

Table 28* gives available data on production of gas coke in Czechoslovakia from 1929-53, including 1947-53 Plan figures.

b. Foreign Trade.

It is possible that Czechoslovakia may have exported some gas coke in recent years, but quantities, if any, were undoubtedly very small.

* Table 28 follows on p. 110.

S-E-C-R-E-T

Table 28

Production of Gas Coke in Czechoslovakia
1929-53 and 1947-53 Plans

		Metric Tons	
<u>Year</u>	<u>Amount</u>	<u>Year</u>	<u>Amount</u>
1929	178,192 a/	1945	290,764 a/
1930	210,715 a/	1946	290,000 b/
1931	224,300 a/	1947 Plan	290,000 c/
1932	213,161 a/	1947	289,809 d/
1933	223,521 a/	1948 Plan	306,000 c/
1934	219,207 a/	1948	296,000 b/
1935	225,570 a/	1949 Plan	423,000 c/
1936	234,663 a/	1949	405,000 e/
1937	246,705 a/	1950 Plan	426,000 c/
1938	248,508 a/	1950	425,000 e/
1939	256,451 a/	1951 Plan	428,000 c/
1940	283,090 a/	1951	425,000 e/
1941	338,696 a/	1952 Plan	446,000 c/
1942	384,534 a/	1952	435,000 e/
1943	402,552 a/	1953 Plan	460,000 c/
1944	413,421 a/	1953	450,000 e/

a. 288/.b. 289/.c. Original Five Year Plan target. 290/d. 291/.

e. Estimates are based upon the original Five Year Plan targets. It is possible that the estimates for the period 1950-53 are as much as 25,000 tons too low.

2. Consumption.

Data are not available on the consumption of gas coke in Czechoslovakia by consumer categories. Figures are available on the consumption of oven coke and gas coke combined and are given in Table 27.* The gasworks evidently use about one-third of the total output, and it is probable that the remainder is distributed in the vicinities of the individual plants, mainly for heating homes and commercial buildings.

* P. 104, above.

S-E-C-R-E-T3. Product Yields at Gasworks.*

On the average, 100 kilograms of coal used in the manufacture of gas yield about 40 cubic meters of gas, 78 kilograms of coke (including breeze), 3.7 kilograms of raw tar, 0.56 kilograms of raw benzene, 0.34 kilograms of ammonia, and 0.47 kilograms of ammonium sulfate. Ammonium sulfate and benzol are made only in the Prague works. 292/

D. Brown-Coal Coke.1. Supply.a. Production.

Available statistics show that in the years prior to World War II, production of brown-coal coke was insignificant. After the Germans occupied Czechoslovakia, they began construction, in May 1939, of a synthetic-gasoline plant at Zaluži, 2 miles northwest of Most in Northern Bohemia. This plant, then known as the Herman Goering Works and now known as the Stalin Works, was to have a capacity of 1 million tons of petroleum products annually, and considerable brown-coal coke was to have been derived as a byproduct in the production of tar. The plant began operating in October 1942 but was hit by a series of aerial attacks, and, by May 1945, it was estimated to have been 80 percent destroyed. Reconstruction commenced soon after the war ended, and the Czechoslovaks are evidently still working to increase capacity.

The planned production of brown-coal coke was 807,000 tons in 1948, 1,298,000 tons in 1949, and 1,551,000 tons in 1953, the last year of the Five Year Plan. According to the 1949 Plan, the Stalin Works was to produce 1,272,000 tons (1,163,000 tons of dry coke), but it is not known where the remainder was to be made.

It has been reported that output in the second quarter of 1949 amounted to 340,742 tons, which was 104.3 percent of Plan. It is estimated that the total production for the year was 1,363,000 tons, which is probably within 10 percent of actual production. The estimate

* Appendix F, Table 80 furnishes data on the planned production of gas coke, gas, and other products at gasworks in 1949. It will be noted that the planned production of coke is 446,300 tons, which is probably a revised goal and is higher than called for originally.

S-E-C-R-E-T

for 1950 is 1,461,000 tons and is a residual figure derived by deducting estimated oven-coke and gas-coke production from a reported figure of total coke production. No data are available for subsequent years, but it is believed, on the basis of coal deliveries to the Stalin Works, that the production of brown-coal coke has been close to Plan.

Production of brown-coal coke in Czechoslovakia for 1913 and 1919-53, including 1947-53 Plan figures, is shown in Table 29.*

b. Foreign Trade.

There is no evidence to indicate that Czechoslovakia imports brown-coal coke, and exports have been relatively small. In 1953, 104,000 tons were exported to Austria and West Germany, but the total exports to these countries amounted to only 31,000 tons in 1952.

Table 30** gives estimates, based on available statistics, of exports of brown-coal coke by Czechoslovakia for 1937-38 and 1947-53.

2. Consumption.

Available data for the first 8 months of 1948 and of 1949, showing the consumption of brown-coal coke in Czechoslovakia, exclusive of that used at the Stalin Works, are given in Table 31.***

According to the 1949 Plan, the Stalin Works was to produce 1,272,000 tons of coke (1,163,000 tons of dry coke), of which 501,000 tons were for consumption at the plant in the manufacture of hydrogen and electricity. The amount planned for sale was 771,000 tons, 60.6 percent of the total. 293/

It is assumed that the Stalin Works consumed 500,000 tons in 1949. The remainder available (less exports) for other use in the country is indicated to have been 794,000 tons. Although consumption for these other purposes during the first 8 months of 1949 was only

* Table 29 follows on p. 113.

** Table 30 follows on p. 114.

*** Table 31 follows on p. 115.

S-E-C-R-E-T

S-E-C-R-E-T

Table 29

Production of Brown-Coal Coke in Czechoslovakia
1913, 1919-53, and 1947-53 Plans

		Metric Tons	
<u>Year</u>	<u>Amount</u>	<u>Year</u>	<u>Amount</u>
1913	36,790 <u>a/</u>	1936	70 <u>b/</u>
1919	0 <u>a/</u>	1937	0 <u>b/</u>
1920	0 <u>a/</u>	1938-46	N.A.
1921	2,318 <u>a/</u>	1947 Plan	706,000 <u>c/</u>
1922	1,655 <u>a/</u>	1947	700,000 <u>d/</u>
1923	0 <u>a/</u>	1948 Plan	807,000 <u>c/</u>
1924	2,181 <u>a/</u>	1948	800,000 <u>d/</u>
1925	6,526 <u>a/</u>	1949 Plan	1,298,000 <u>c/</u>
1926	4,549 <u>a/</u>	1949	1,363,000 <u>e/</u>
1927	5,503 <u>a/</u>	1950 Plan	1,410,000 <u>c/</u>
1928	5,450 <u>a/</u>	1950	1,461,000 <u>f/</u>
1929	7,435 <u>b/</u>	1951 Plan	1,457,000 <u>c/</u>
1930	2,338 <u>b/</u>	1951	1,500,000 <u>g/</u>
1931	844 <u>b/</u>	1952 Plan	1,504,000 <u>c/</u>
1932	515 <u>b/</u>	1952	1,505,000 <u>g/</u>
1933	770 <u>b/</u>	1953 Plan	1,551,000 <u>c/</u>
1934	0 <u>b/</u>	1953	1,550,000 <u>g/</u>
1935	2,717 <u>b/</u>		

a. 294/.b. 295/.c. 296/.d. Estimate. Disposable production was 521,797 tons in 1947 and 666,214 tons in 1948. 297/ These figures exclude coke used at the source of production.e. Estimate production in the second quarter of 1949 was 340,742 tons and 104.3 percent of Plan. 298/ The total production of coke (oven, gas, and brown coal) was reported at 6,589,000 tons. 299/f. Residual figure after deducting production of oven coke and gas coke from total coke-production figure, which was reported at 6,762,000 tons. 300/

g. Estimate based on Plan.

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Table 30

Exports of Brown-Coal Coke by Czechoslovakia
1937-38 and 1947-53

Destination	Metric Tons								
	1937 <u>a/</u>	1938 <u>a/</u>	1947 <u>b/</u>	1948 <u>b/</u>	1949	1950	1951	1952	1953
Non-Soviet Bloc Countries									
Austria	0	0	8,049	4,828	28,300 <u>c/</u>	11,600 <u>d/</u>	9,100 <u>e/</u>	4,000 <u>f/</u>	10,000 <u>g/</u>
West Germany	0	0	39,942	52,203	40,400 <u>h/</u>	54,500 <u>d/</u>	16,900 <u>e/</u>	27,000 <u>f/</u>	94,000 <u>g/</u>
Italy	0	0	2,677	0	0	0	0	0	0
Sweden	0	0	500	0	0	0	0	0	0
Switzerland	0	0	5,562	0	0	0	0	0	0
Total	<u>0</u>	<u>0</u>	<u>56,730</u>	<u>57,031</u>	<u>68,700</u>	<u>66,100</u>	<u>26,000</u>	<u>31,000</u>	<u>104,000</u>

- a. 301/.
b. 302/.
c. Imported by Austria. 303/
d. Import figures. 304/
e. Import figures. 305/
f. Import figures. 306/
g. Import figures. 307/
h. Imported by West Germany.

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Table 31

Consumption of Brown-Coal Coke in Czechoslovakia
Excluding Captive Tonnage at the Stalin Works 309/
January-August 1948 and January-August 1949

Consumer	Metric Tons	
	January-August 1948	January-August 1949
Industries	168,655	198,324
Electric Power Stations	65,406	62,388
Domestic Heating	121,753	161,229
Internal Navigation	83	131
Total	<u>355,897</u>	<u>422,072</u>

422,072 tons, it is believed that allocations to various industries and to domestic heating was at a higher rate in the fall of the year than in the earlier months.* Allocations to electric power stations, however, probably showed little change. The estimates of consumption of brown-coal coke in 1949 indicate the following distribution: Stalin Works, 38.6 percent; other industries, 29.7 percent; electric power stations, 7.7 percent; and domestic heating, 24.0 percent.

In view of the higher requirements and shortages of fuel since 1949, some cutbacks in allocations of brown-coal coke for domestic heating probably occurred after 1950.

Estimates of the availability and consumption of brown-coal coke in Czechoslovakia during the 1949-53 period are given in Table 32.** The estimates are believed to generally within a range of error of plus or minus 15 percent.

* In 1948 the quantity of coke that was commercially disposable amounted to 666,214 tons, although only 608,000 tons were available after exports. These figures are assumed to be exclusive of coke used at the Stalin Works. They indicate higher allocations in the last 4 months of the year.

** Table 32 follows on p. 116.

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Table 32

Estimated Availability and Consumption of Brown-Coal Coke
in Czechoslovakia
1949-53

	Thousand Metric Tons				
	<u>1949</u>	<u>1950</u>	<u>1951</u>	<u>1952</u>	<u>1953</u>
Availability <u>a/</u>					
Production	1,363	1,461	1,500	1,505	1,550
Imports <u>b/</u>	0	0	0	0	0
Total	<u>1,363</u>	<u>1,461</u>	<u>1,500</u>	<u>1,505</u>	<u>1,550</u>
Exports	69	66	26	31	104
Total Availability	<u>1,294</u>	<u>1,395</u>	<u>1,474</u>	<u>1,474</u>	<u>1,446</u>
Consumption					
Stalin Works	500 <u>c/</u>	540	560	560	575
Other Industries	384 <u>d/</u>	425	504	524	525
Electric Power Stations	100 <u>d/</u>	105	110	115	120
Domestic Heating <u>e/</u>	310 <u>d/</u>	325	300 <u>f/</u>	275 <u>f/</u>	226 <u>f/</u>
Total Consumption	<u>1,294</u>	<u>1,395</u>	<u>1,474</u>	<u>1,474</u>	<u>1,446</u>

a. Stocks are relatively small and are not taken into account.

b. East Germany is the only probable source, and none have been reported.

c. The 1949 Plan was 501,000 tons.

d. Estimate is based partly upon consumption for the period January to August 1949. 310/ The disposable surplus at the Stalin Works was planned at 771,000 tons. 311/ It is assumed that allocations to other industries and to domestic heating are at a higher rate during the latter months of the year.

e. Includes buildings and hospitals.

f. It is believed that allocations were cut in 1951, 1952, and 1953 to make more coke available for other use.

S-E-C-R-E-T3. The Stalin Synthetic Fuel Plant. 312/*

The Stalin Works is the former Herman Goering Works, which the Germans began planning as early as 1936, at least 2 years before the occupation of Czechoslovakia. Construction started in 1939, and the plant began operating in October 1942. Although its primary purpose is to produce gasoline, fuel oil, and lubricants, it also produces coal gas and electricity as well as considerable tonnages of brown-coal coke.

The process of making the gasoline employs hydrogenation of coal tar, contained in abundance in local brown coal (Hedvika coal, 14.3 percent; Kolumbus coal, 11.7 percent; Quido I-III, 13 percent; Centrum, 12.1 percent; average, approximately 13 percent), rather than direct hydrogenation of pulverized coal. Brown coal is transported in 60-ton Talbot (side-dump) railroad cars to the plant, where it is crushed and graded. Coal chips and dust serve as fuel for the plant's electric power station, which also supplies hundreds of thousands of kwh daily to the Ervenice electrical works and to the brown-coal mines of western Czechoslovakia.

Graded pieces of coal, 8 to 16 millimeters in diameter, are pressure-distilled to produce illuminating gas, which supplies the 135-kilometer pipe line extending along the border to Varnsdorf and Zhelezny Brod. This gas supplies 35 cities, many glass factories, and other enterprises. In the summer of 1952, preparations were under way to distribute gas generated at the Stalin Works to Prague and to certain cities -- those without gasworks -- situated along the pipeline.

Coal particles larger than 16 millimeters in diameter are distilled at 700 degrees Centigrade in a Lurgi distillery, which consists of a vertically arranged drying chamber (through which the coal passes first), on top of an aluminum Fischer-type carbonizing retort. Heat for the drying and distillation is provided by burning part of the gases produced in the distillation process in burners located outside the coal-filled chambers. Two ventilators, 1 pusher, and 1 exhaust provide draft for the smoke gases passing through the dryer.

* Information is from a 1952 Hungarian magazine article by the former director of the Stalin Works, Dr. Stanislav Landa.

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A flushing gas is also passed through the carbonizer. The hot gas passing through the coal permits distillation of 90 percent of the tar at 700 degrees Centigrade. The annual average moisture content of the coal is 29 percent.

Tar is recovered in three stages: heavy tar from the air cooler, "electrotar" from the electrostatic tar percipitator, and middle oil from the water cooler. Benzene is scrubbed out of the distillate gas with the aid of the tar-oil. Synthetic fuels and byproducts are obtained in further processing of the tar.

The brown-coal coke, which is removed at the bottom of the carbonizer, is cooled with carbon dioxide and is graded. The composition of the dried brown-coal coke is as follows: ash, 17 to 20 percent; carbon, 72 to 73 percent; hydrogen, 1.5 to 1.7 percent; sulfur, 0.7 to 1.4 percent; nitrogen, 0.9 to 1.0 percent; heating value, 6,400 to 6,620 k cal per kg.

About 30 percent of the coke has been sold for smokeless household fuel, some of which is exported to foreign countries. Part of the remainder is used to make water gas in large-capacity Winkler generators (20,000 to 25,000 cubic meters per hour). Approximately 1,200 cubic meters of gas (carbon monoxide and hydrogen) are produced from 1 ton of coke, requiring 0.33 normal cubic meters of 98 percent pure oxygen per cubic meter of gas produced. Approximately 1 kilogram per normal cubic meter of steam is required for the production of water gas, which is used to make hydrogen. The hydrogen is used in the hydrogenation of tar, and about 1,000 cubic meters are required to produce a ton of gasoline.

On the basis of 1946 data, a heat energy balance was calculated. Taking the calory content of coal, crude oil, pakura (residual oil), and tars entering the plant as 100 percent, the calory content of products leaving the plant is expressed in the following percentages: coke, 22.942 percent; motor fuels, 16.031 percent; illuminating gas, 1.482 percent; electric current, 1.122 percent; steam (for the coal mines), 0.170 percent; solvents, 1.301 percent; hydrogenated crude oil, 0.137 percent; bottled hydrogen, 0.01 percent; total, 43.195 percent. Many products are not accounted for in the heat energy balance -- the phenols, for example.

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The 1949 Plan figures for the Stalin Works* show that coal requirements were 4,067,000 tons, of which 2,894,000 tons were to be used in carbonization. The yield of coke was calculated at 40.19 percent.

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 during the months from May to November 1951, the plant received on the average, 85,000 tons of coal weekly at a minimum rate and 91,000 tons at a maximum rate. In the winter months, from November 1951 to April 1952, receipts were between 50,000 and 70,000 tons weekly.

These data indicate that the plant consumed between 3.8 and 4.0 million tons of coal during the 12-month period, May 1951 to May 1952, a little less than planned for 1949.

At the beginning of 1953, two additional carbonizing units began operating. 314/ What this expansion represents in terms of end products and coal requirements has not been determined.

IV. Coal Gas.A. General.

Because Czechoslovakia's reserves and production of natural gas are small, the country has depended almost entirely for its gas supply on gas made from coal. From 1930 through 1946 the production of natural gas amounted to only 26.5 million cubic meters. 315/ In 1948 total production of natural gas was 4.7 million cubic meters, compared with 2 billion cubic meters of coal gas.

Byproduct coke ovens at steel works and coal mines account for the major part of the output of manufactured gas. The primary product at such plants is metallurgical coke, and the gas, as well as chemical byproducts, are incidental. The crude gas contains tar, gaseous ammonia, hydrogen sulfide, and benzol, which are removed by sending the gas through a series of condensers, exhausters, tar extractors, ammonia washers, and purifiers. The bulk of the coke-oven gas is consumed in heating the ovens of the coke plants themselves, and by the iron and steel plants.

* Appendix F, Table 81, furnishes 1949 planned requirements of coal and production of carbonization products at the Stalin Works.

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Gasworks provide 13 percent or less of the total production of coal gas. Gas coke is obtained as a secondary product in the process of carbonizing the coal. There were about 80 of these plants before World War II, but the present number is probably less.

The Stalin Works near Most, which uses brown coal, and the Bata plant, probably at Gottwaldov, are other sources of supply.

B. Supply.1. Production.

The production of gas at coke-oven plants and gasworks in Czechoslovakia amounted to 1.4 billion cubic meters in 1937. In 1945 production was only 960 million cubic meters, considerably less than annual production during World War II. By 1949, output was back to about 2.2 billion cubic meters. The Five Year Plan called for production to increase rather steadily to almost 2.9 billion cubic meters by 1953. On the basis of data on coke production, it appears that the coke ovens have supplied 2 to 5 percent less gas annually than planned. Although data on recent production at the gasworks are unavailable, it is believed that gasworks also failed to fulfill the Plan.

Table 33* gives available statistics on production of coal gas in Czechoslovakia for 1937 and for 1945 through 1949, and also 1949-53 Plan figures.

Coke-oven plants account for 80 to 85 percent of the total volume of coal gas produced in Czechoslovakia. The remainder is produced by the gasworks, except for relatively minor quantities made from brown coal at the Stalin Works and the Bata Plant. Production at the Stalin Works near Most amounted to 50 million cubic meters in 1947, 316/ a little more than 3 percent of the total, and the 1949 Plan called for production of 87 million cubic meters, which was about 4 percent of the total planned production.

Table 34** shows the 1949 planned production of coal gas in Czechoslovakia, on the basis of sources of supply.

* Table 33 follows on p. 121.

** Table 34 follows on p. 122.

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Table 33

Production of Coal Gas in Czechoslovakia 317/
1937, 1945-49, and 1949-53 Plans

Year	Million Cubic Meters		
	<u>Coke-Oven Plants</u>	<u>Other ^{a/}</u>	<u>Total</u>
1937	1,282	134	1,416
1945	795	165	960
1946	882	222	1,104
1947	1,289	271	1,560
1948	N.A.	N.A.	2,064
1949	1,864	325 ^{b/}	2,189
1949 Plan	1,878	357	2,235 ^{c/}
1950 Plan	1,961	371	2,332 ^{c/}
1951 Plan	2,005	386	2,391 ^{c/}
1952 Plan	2,176	426	2,602 ^{c/}
1953 Plan	2,365	522	2,887 ^{c/}

a. The figures for 1945 and the following years include gas made from brown coal at the Stalin Works.

b. Estimate.

c. On the basis of coke production, it is believed that actual output of coal gas has ranged from 2 to 5 percent under the annual Plan during the period of the Five Year Plan.

2. Foreign Trade.

The 1949 Plan shows no imports of coal gas by Czechoslovakia and exports of only 500,000 cubic meters. According to a 1950 report, a gas-exchange contract was concluded between Czechoslovakia and East Germany whereby Kraslice (Graslitz) in Czechoslovakia receives gas from the Markneukirchen gasworks in East Germany and an equal amount of gas is exported from Velky Senov (Gross-Schoenen) in Czechoslovakia to Ebersbach in East Germany. 318/

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Table 34

Planned Production of Coal Gas in Czechoslovakia 319/
1949 Plan

Source of Supply	Thousand Cubic Meters		
	Bohemia and Moravia	Slovakia	Total
Gasworks (CEZ)	221,292	16,670	237,962
Mine Coke Ovens	1,275,000		1,275,000
Metallurgical Coke Ovens	603,000		603,000
Stalin Works	87,000		87,000
Bata Plant	5,000		5,000
Total	<u>2,191,292</u>	<u>16,670</u>	<u>2,207,962 a/</u>

a. This figure does not agree with the figure given in Table 33, but the difference is relatively small.

C. Consumption and Distribution.1. Consumption.

According to the 1949 Plan, almost 81 percent of the total supply of coal gas in Czechoslovakia was to have been furnished to various industries. Iron and steel plants are the major consumers. They control over 25 percent of total production and take considerable gas from the coke ovens located at the mines. To domestic use for heating and cooking was allocated 7.5 percent of the total, and transportation and public use were each to receive less than 1 percent. After line losses, estimated at a little more than 1 percent, and minor exports, there was expected to be a surplus of 8.6 percent, which was intended for use in firing boilers.

Table 35* shows the planned distribution of coal gas in Czechoslovakia in 1949.

* Table 35 follows on p. 123.

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Table 35

Distribution of Coal Gas in Czechoslovakia 320/
1949 Plan

Distribution	Thousand Cubic Meters		
	Bohemia and Moravia	Slovakia	Total
Industry a/	1,785,000	1,581	1,787,381
Public Use	17,856	910	18,766
Transportation	20,112	89	20,201
Other Domestic Needs	153,094	11,960	165,054
Exports	500		500
Losses	23,930	2,130	26,060
Surplus Coke-Oven Gas (to Fire Boilers)	190,000		190,000
Total	<u>2,191,292</u>	<u>16,670</u>	<u>2,207,962</u>

a. Mainly to the iron and steel industry.

The volume of coke-oven gas not needed by the captive consumers and representing a surplus for outside distribution is small in relation to the total output of such gas. This surplus, together with gas from other sources, makes up what can be regarded as the commercial supply. The relative importance of the sources of this commercial supply in 1948, 1949, and 1950 is shown in Table 36, which indicates that the proportion of the gas supplied by gasworks has been declining in recent years, whereas the share supplied by each of the other sources has increased.

Table 36

Commercial Supply of Gas in Czechoslovakia 321/
1948-50

	Percent		
	<u>1948</u>	<u>1949</u>	<u>1950</u>
Manufactured Gas			
Gasworks	70.4	61.6	53.1
Coke-Oven Plants	10.0	13.6	18.0
Stalin Works	19.1	23.7	24.6
Natural Gas	0.5	1.5	4.3

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S-E-C-R-E-T2. Distribution.

Prior to World War II, there were no high-pressure grids in Czechoslovakia. The distribution of coke-oven gas was confined to the Moravska-Ostrava area, and the communities in other areas were supplied with gas by local gasworks.

The laying of long-distance gas lines and the interlinking of local gasworks was started during World War II. In 1947 the networks of local lines amounted to approximately 3,400 kilometers and of long-distance lines to 450 kilometers. The networks served 381,000 customers in 86 communities. 322/

The northern part of Bohemia is supplied with coal gas by a pressure gas plant at Horni Litvinov, near Most, using gas from the Stalin Works. The pipeline serves Chomutov, Most, Duchcov, Teplice Sanov, Usti nad Labem, Decin, Podmokly, Ceska Lipa, Litomerice, Varnsdorf, Rumburk, and Ebersbach. In addition, 36 industrial factories were supplied with coal gas by this 300-kilometer network, which was built by the Germans during the war. A 100-kilometer branch of the gas pipeline, connecting Horni Litvinov-Most and Prague, was claimed to be nearing completion about 1947. 323/

During the war, a long-distance pipeline was completed from the gasworks in Mlada Boleslav to Kosmonosy, Bakov, Mnichovo Hradiste, Turnov, and Zelezny Brod. The gasworks in Chrudim serves Pardubice and the industrial plants of the Association for Chemical and Metallurgical Production (Spolek pro Chemikou a Hutni Vyroku) in Rybitvy. Another line connects Gottwaldov (Zlin) and Batov, and a 50-kilometer line for natural gas extends from Podivin to Brno. 324/

In 1947 there was a plan to extend the existing mainlines from Most to West Bohemia by laying a line through Plzen to Prague and then connecting the Pajizeri region, to complete a circle in the direction of Liberec and Prague. The South Bohemian region would need two branches, one to Pardubice and Prague, and another to the Pajizeri region to the north. 325/

in 1952 a plan was under way to distribute gas from the Stalin Works to Prague and to along-the-line communities which lacked gasworks. 326/

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It may be inferred [] that the Horni Litvinov-Plzen-Prague line had not been built by 1952.

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In 1947 it was stated that South Bohemia and the Czecho-Moravian Highlands would continue for some time to use their own independent gasworks, which would have to be expanded. 327/

In 1947 the Ostrava area was being supplied with coke-oven gas from the Karolina, Vitkovice, and Trojice cokeries. Valuable coke-oven gas was being utilized inefficiently in furnaces and boiler works. It was considered quite feasible to replace the gas used for such purposes with lower quality coal or with cheaper generator gas. After completion of a long-distance distribution system in Central Moravia and Silesia, the Ostrava network would be connected with the Brno network, which was being supplied with natural gas from South Moravia. 328/

Although the long-distance network, when completed, would improve the gas situation, many towns would be without gas for a long time and some entire regions would still be without gas. These regions are principally Southern Bohemia, the Czecho-Moravian Highlands, Slezsko, Valassko, and entire areas in Slovakia, where, as late as 1947, only six cities were being supplied with gas. 329/

D. Plants.

The plants in Czechoslovakia producing gas at coke ovens, as well as the plant at the Stalin Works, are discussed in the coke section of this report, III, B, 4, above.

Although there were about 80 gas plants* in Czechoslovakia before World War II, it is believed that the number is now smaller.

V. Peat.

Peat in the bog contains about 90 percent water, and it is a problem to reduce the water content sufficiently to make peat a satisfactory fuel. After peat has been removed from the swamp and allowed to dry in the open air for several weeks, it still has a moisture content of at least 30 percent. Its heat content is relatively low,

* See Appendix G, Table 82 for data on the gasworks operating in 1934 and 1936.

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and for various other reasons it is not nearly as economical for fuel purposes as is coal, gas, or oil.

Czechoslovakia has a number of scattered peat bogs, but their total area is reported at only 13,200 hectares. 330/ There is little information about the industry, and mining is probably done only on a small scale.

It was reported that the Lezaky (formerly Richard) mine is the largest source of peat in Czechoslovakia. During the summer of 1950 the mine employed 1,000 workers working 3 shifts and was producing 2,500 tons daily. The peat was dug with 10 old German excavating machines and 10 new machines made in Czechoslovakia by Skoda. Two-thirds of the peat produced was sent by rail to Prague, and the remainder was sent by rail to Komorany, for use at the electric power plant and the gasworks. 331/

It is probable that production of peat is reduced in the winter months, and at times may be suspended entirely, because of bad weather. In the USSR, peat is exploited only during the months from April to October, and this situation may also prevail in Czechoslovakia. It is believed that the total quantity of dried peat produced in Czechoslovakia does not exceed 500,000 tons annually. The serious shortages of coal that have existed for several years in Czechoslovakia probably have contributed to greater use of peat in some localities.

VI. Fuelwood.A. Production.

The total annual roundwood production in Czechoslovakia is between 10 million and 11 million cubic meters, of which about one-third is fuelwood.

Both industrial wood and fuelwood are allocated to consumers according to directives laid down in the Five Year Plan. To prevent the use of potential industrial wood as fuel, 332/ special efforts are being made to reduce the consumption of fuelwood.

The planned decrease in production of fuelwood, as well as the decrease in proportion to total roundwood produced, is indicated by the planned woodfelling program in Czechoslovakia as shown in Table 37.*

* Table 37 follows on p. 127.

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Table 37

Planned Woodfelling in Czechoslovakia a/ 333/
1948-53 Plans

Thousand Cubic Meters (Round Timber with Bark)						
Kind of Wood	1948 Plan	1949 Plan	1950 Plan	1951 Plan	1952 Plan	1953 Plan
Softwood Fuelwood		1,035	910	805	705	685
Hardwood Fuelwood		1,885	1,795	1,705	1,515	1,465
Total Fuelwood	<u>3,900</u>	<u>2,920</u>	<u>2,705</u>	<u>2,510</u>	<u>2,220</u>	<u>2,150</u>
Roundwood	11,500	11,670	11,330	10,990	10,650	10,300

a. Data refer to planned production and probably do not include local gathering.

Production of fuelwood in 1953 is estimated at 2.75 million cubic meters, substantially less than the annual average, estimated at 3.4 million cubic meters, for the 1946-53 period. Estimates of production of fuelwood in Czechoslovakia for 1935-38 and 1946-53 are given in Table 38.*

Estimates of production of fuelwood in the Czechoslovak provinces of Bohemia and Moravia and in Slovakia in recent years are not available, but on the basis of estimates of some years ago, Slovakia probably produces from 55 to 60 percent of total production. Table 39** shows estimates of production of fuelwood in Czechoslovakia by provinces for 2 years 1946-47 and 1947-48, and the relation of production of fuelwood to total production of roundwood.

B. Consumption.

The consumption of fuelwood in Czechoslovakia during recent years has probably been higher than either planned or estimated production would indicate. The Plan figures and the estimates are believed to exclude considerable wood that is gathered for personal and

* Table 38 follows on p. 128.

** Table 39 follows on p. 128.

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Table 38

Estimated Production of Fuelwood in Czechoslovakia a/
1935-38 and 1946-53

Thousand Cubic Meters			
Year	Amount	Year	Amount
1935	4,470	1948	3,320
1936	3,400	1949	3,770
1937	3,700	1950	3,490
1938	3,500	1951	3,250
1935-38 Average	3,768	1952	3,000
1939-45	N.A.	1953	2,750
1946	4,070	1946-53 Average	3,413
1947	3,650		

a. De facto boundaries for dates shown. Data are estimates of total production, including planned and local gathering. The measure is a cubic meter of solidwood content and is not a stacked measure. Data include wood for charcoal.

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Table 39

Estimated Production of Roundwood and Fuelwood
in Czechoslovakia by Regions 335/
1946-47 and 1947-48

Thousand Meters (Roundwood)				
Year (12 Months)		Bohemia and Moravia	Slovakia	Total
1946-47	Total Roundwood	5,570	4,516	10,086
	Fuelwood (Estimated)	1,250 to 1,500	2,250	3,500 to 3,750
1947-48	Total Roundwood	6,819	4,572	11,391
	Fuelwood (Estimated)	1,550 to 1,800	2,250	3,800 to 4,050

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local use, and coal shortages have probably affected actual consumption. Allocations of coal for domestic heating have been less than planned, and fuelwood is probably being substituted not only by domestic consumers, but also by others, including railroads and industrial plants.

According to the Five Year Plan for private consumption, planned allocations of fuelwood were to be 2.3 million cubic meters in 1953. 336/ Production in 1953, however, is estimated to be higher because of shortages of other fuels and because the planned figure probably does not include large amounts of fuelwood that would not enter commercial channels and hence would not be included in official statistics.

C. Reserves. 337/

The present forest area of Czechoslovakia is about 3.5 million hectares (8.6 million acres), approximately 27.5 percent of the land area of the country. In 1947 the volume of standing timber was estimated at 388 million cubic meters. Only one-quarter of this amount, however, was in trees of saw-log size (10 inches and larger in diameter). Of the total volume, about two-thirds is in soft woods and one-third is in hardwoods. Present Czechoslovak plans are to hold annual forest output to about 11 million cubic meters, slightly less than estimated annual growth, so that the forest may regain normal growing stock and growth capacity.

Major forest areas are eastern and central Slovakia and the mountains bordering the basins of the Elbe and Morava rivers. Even regions that are predominantly agricultural contain a fair share of forest land.

The Czechoslovak forests have been intensively managed for many years and consist, in many instances, of even-aged plantations of Norway spruce and Scotch pine. The Slovak forests, where exploitation was not regulated until recently, are more natural in appearance, with hardwoods, mainly beech and oak, at the lower elevations, and mixed conifers, such as spruce, silver fir, and larch, in the higher mountains. There is a transition zone, mixed hardwoods and conifers, at intermediate locations.

S-E-C-R-E-TVII. Charcoal.

Data indicate a downward trend in production of charcoal, kiln charcoal as well as charcoal from destructive distillation. Many of the chemical products once obtained by destructive distillation are now obtained by cheaper synthetic processes. The production of charcoal, a byproduct of the industry, has probably declined.

Table 40 gives estimates of quantities of wood consumed in the production of charcoal in Czechoslovakia from 1945 through 1950.

Table 40

Estimated Consumption of Wood in Production of Charcoal
in Czechoslovakia a/
1945-50

Year	Wood Production (Thousand Cubic Meters) <u>338/</u>			Charcoal Production <u>d/</u> (Metric Tons)
	Softwood <u>b/</u>	Hardwood <u>c/</u>	Total	
1945	384	284	668	134
1946	133	230	363	73
1947	44	165	209	42
1948	N.A.	N.A.	N.A.	N.A.
1949	N.A.	N.A.	120 <u>e/</u>	<u>f/</u>
1950	N.A.	N.A.	120 <u>e/</u>	<u>f/</u>

a. Production of wood for charcoal and distillation during 1945-47 are assumed to be quantities consumed in charcoal production.

b. Coniferous.

c. Broadleaved.

d. Wood converted to charcoal on the basis of 1 ton of charcoal equivalent to 5 cubic meters of roundwood.

e. Includes hewn sleepers, poles, piling, posts, and tanning wood as well as charcoal and chemical wood.

f. Apparently small.

S-E-C-R-E-TVIII. Capabilities, Vulnerabilities, and Intentions.A. Capabilities.

Since coal reserves in Czechoslovakia are large, the fuel problem is primarily a matter of production. Deficits can be reduced or eliminated by making more manpower and equipment available to the coal industry. Furthermore, an improvement in working and living conditions would result in reductions in labor turnover and absenteeism and in an increase in labor productivity. Many workers quit the mines simply because of bad food and housing. It is to be expected that the government will make a greater effort to remove some of the causes for labor unrest. Unless this is done, the labor problems will continue to be a serious obstacle to production.

The possibilities for improving working conditions in the underground mines are considerable, but in the immediate future progress will be slow. It is quite possible that the Czechoslovaks can do as well as the USSR in overcoming many mine problems through the installation of efficient machinery. In 1953 the state of mechanization was at a low level. Several years of experimental work will be necessary before mass production of certain essential types of machinery can begin. A particularly serious difficulty lies in the conversion of mines from use of compressed air to electricity.

B. Vulnerabilities.

Despite the economic importance of solid fuels, particularly coal, the industry is in a position of rather low vulnerability. To a great extent, indigenous supplies can be made to cover essential requirements.

Because they are too numerous and widely dispersed, coal mines are not primary targets for destruction by bombing. Moreover, many mines (37 in 1948) have their own power stations, so a major mining district cannot be shut down by destruction of a large central station. Because of discontent among the workers and the highly gaseous conditions, particularly in the important Ostrava-Karvinna Basin, the underground mines do offer possibilities for sabotage. Coal production rose during the German occupation, however, indicating that any sabotage during that time was inconsequential. Probably the greatest vulnerability of the coal industry lies in its dependence on the railroad system. Practically all coal moves by rail.

S-E-C-R-E-T

There are not more than 13 oven coke plants in Czechoslovakia and all except 2 are located in the Ostrava-Karvinna Basin. The loss of a few of the larger plants would create a chain reaction extending through the iron and steel industry, with repercussions on all allied industries.

C. Intentions.

The Czechoslovak government has made no effort to conceal the fact that fuel shortages have been affecting the economy and that the situation in the coal industry is serious. Undoubtedly the Czechoslovaks want to eliminate the necessity for importing Polish coal, so it is to be expected that targets for the production of hard coal will be established considerably higher than current production levels, not only to overcome the deficit, but also to provide additional coal commensurate with rising requirements. In order to have met both domestic requirements and export commitments in 1953, the hard coal mines would have had to supply at least another 3.5 to 4.0 million tons.

Czechoslovakia could sell, or trade, more coal to other countries, both inside and outside the Soviet Bloc. East Germany, Hungary, and Rumania are all attempting to expand heavy industry, particularly the iron and steel industry. This effort creates greater requirements for hard coal -- especially coking coal, of which both reserves and production are inadequate in all of those countries. There is every reason to believe that the Czechoslovaks will have to supply East Germany, Hungary, and Rumania with additional quantities of coal and coke if those countries are to realize their objectives for higher levels of industrialization.

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S-E-C-R-E-T

APPENDIX A

COAL PRODUCTION IN CZECHOSLOVAKIA

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S-E-C-R-E-T

Table 41

Total Production of Coal in Czechoslovakia by Basin
1930 and 1935-44

	1930	1935	1936	1937	1938	1939	1940	1941	1942	1943	1944
Hard Coal (Metric Tons)											
Bohemia and Moravia											
Ostrava-Karvinna Basin	10,665,963	7,724,539	8,928,490	12,888,771	11,842,705	14,384,930	16,254,358	16,688,300	18,261,400	19,967,710	18,994,534
Kladno-Rakovnik-Slany Basin	1,864,126	1,305,923	1,490,193	1,829,289	1,940,812	2,181,464	2,383,616	2,160,753	2,153,665	2,216,401	2,070,331
Pizen-Radnice Basin	951,378	938,538	801,322	900,407	917,744	1,012,695	1,110,745	1,060,151	1,061,126	1,093,075	1,012,421
Zaclar-Svatonovice Basin	463,500	467,753	492,673	568,142	511,316	517,705	487,060	470,903	583,670	646,814	540,723
Rosice-Oslavany Basin	486,200	362,400	427,300	476,400	513,500	569,757	554,991	515,088	535,500	537,900	509,000
Other Mines	3,835	8,517	6,400	9,412	17,379	24,877	30,203	34,996	40,329	38,161	32,223
Total	14,435,002	10,807,670	12,146,378	16,672,421	15,743,456	18,691,428	20,820,973	20,930,191	22,635,690	24,500,061	23,159,232
Slovakia	33,517	86,813	86,803	105,098	92,471	111,644	145,035	140,812	134,695	117,066	79,288
Total Hard Coal	14,468,519	10,894,483	12,233,181	16,777,519	15,835,927	18,803,072	20,966,008	21,071,003	22,770,385	24,617,127	23,238,520
Brown Coal and Lignite (Metric Tons)											
Bohemia and Moravia											
North Bohemian Basin (Teplice-Duchcov-Chomutov)	14,782,932	11,449,983	12,045,066	13,346,079	11,770,362	13,978,982	16,152,856	16,124,374	17,294,299	20,246,527	19,734,942
Sokolov Basin (Sokolov-Loket-Karlovy Vary)	3,526,495	2,738,919	2,853,336	3,312,102	2,972,255	4,022,477	4,569,831	4,696,173	5,132,689	5,610,362	5,535,270
South Moravian Mines	199,615	276,973	342,327	382,543	404,290	437,513	524,098	536,331	587,013	629,107	567,203
Other Mines	86,137	93,540	109,732	121,364	144,602	175,529	229,832	266,483	302,542	264,274	274,647
Total	18,595,179	14,559,415	15,350,461	17,162,088	15,291,509	18,614,501	21,476,617	21,623,361	23,316,543	26,750,270	26,112,062

S-E-C-R-E-T

Table 41
Total Production of Coal in Czechoslovakia by Basin
1930 and 1935-44
(Continued)

	1930	1935	1936	1937	1938	1939	1940	1941	1942	1943	1944
Brown Coal and Lignite (Metric Tons) (Continued)											
Slovakia	564,973	554,161	598,306	733,271	735,575	778,266	805,069	816,349	812,261	832,375	735,513
Total	<u>19,160,152</u>	<u>15,113,576</u>	<u>15,948,767</u>	<u>17,895,359</u>	<u>16,027,084</u>	<u>19,392,767</u>	<u>22,281,686</u>	<u>22,439,710</u>	<u>24,128,804</u>	<u>27,582,645</u>	<u>26,847,575</u>
Grand Total	<u>33,628,671</u>	<u>26,008,059</u>	<u>28,181,948</u>	<u>34,672,878</u>	<u>31,863,011</u>	<u>38,195,839</u>	<u>43,247,694</u>	<u>43,510,713</u>	<u>46,899,189</u>	<u>52,199,772</u>	<u>50,086,095</u>
Percent											
Hard Coal	43.02	41.89	43.41	48.39	49.70	49.23	48.48	48.43	48.55	47.16	46.40
Brown Coal and Lignite	56.98	58.11	56.59	51.61	50.30	50.77	51.52	51.57	51.45	52.84	53.60

S-E-C-R-E-T

Table 42

Total Production of Coal in Czechoslovakia by Basins
1945-53

	1945	1946	1947	1948	1949	1950	1951	1952	1953
Hard Coal (Metric Tons)									
Bohemia and Moravia									
Ostrava-Karvinna Basin	8,834,880	11,225,300	12,882,000	14,110,940	13,525,000	14,644,000	14,464,000	16,270,000	16,300,000
Kladno-Rakovnik-Slany Basin	1,503,231	1,501,005	1,760,400	1,860,597	1,820,000	1,972,000	2,020,000	2,082,000	2,090,000
Plzen-Radnice Basin	613,448	637,361	722,000	797,099	775,000	795,200	751,400	804,000	805,000
Zaclet-Svatonovice Basin	444,502	420,612	460,000	470,039	420,000	484,075	500,000	540,000	540,000
Rosice-Oslavany Basin	286,000	331,700	446,000	500,210	498,000	550,200	580,000	593,000	595,000
Other Mines	19,866	14,121	5,400	5,700	5,229	10,977	10,300	11,000	11,000
Total	<u>11,701,921</u>	<u>14,130,099</u>	<u>16,215,800</u>	<u>17,744,585</u>	<u>17,043,229</u>	<u>18,456,452</u>	<u>18,325,700</u>	<u>20,300,000</u>	<u>20,341,000</u>
Slovakia	14,068	37,480	a/	a/	a/	a/	a/	a/	a/
Total	<u>11,715,989</u>	<u>14,167,579</u>	<u>16,215,800</u>	<u>17,744,585</u>	<u>17,043,229</u>	<u>18,456,452</u>	<u>18,325,700</u>	<u>20,300,000</u>	<u>20,341,000</u>
Brown Coal and Lignite (Metric Tons)									
Bohemia and Moravia									
North Bohemian Basin (Teplice-Duchcov-Chomutov)	11,059,153	13,416,000	15,678,000	16,801,945	19,040,000	19,650,000	21,150,000	23,740,000	24,180,000
Sokolov Basin (Sokolov-Loket-Karlovy Vary)	3,339,472	4,713,000	5,092,000	5,161,314	5,850,000	6,150,000	6,400,225	7,335,000	7,570,000
South Moravia Mines	329,557	432,000	479,000	487,150	540,000	550,000	575,000	610,000	625,000
Other Mines	289,790	322,000	392,400	376,690	285,000	280,000	350,000	465,000	475,000
Total	<u>15,017,972</u>	<u>18,883,000</u>	<u>21,641,400</u>	<u>22,827,099</u>	<u>25,715,000</u>	<u>26,630,000</u>	<u>28,475,225</u>	<u>32,150,000</u>	<u>32,850,000</u>

a. No data, although minor production may be included with other hard coal or with brown coal in Slovakia.

S-E-C-R-E-T

S-E-C-R-E-T

Table 42

Total Production of Coal in Czechoslovakia by Basins
1945-53
(Continued)

	<u>1945</u>	<u>1946</u>	<u>1947</u>	<u>1948</u>	<u>1949</u>	<u>1950</u>	<u>1951</u>	<u>1952</u>	<u>1953</u>
Brown Coal and Lignite (Metric Tons) (Continued)									
Slovakia	338,100	576,600	720,700	762,480	811,979	875,997	960,000	1,180,000	1,472,000
Total	<u>15,356,072</u>	<u>19,459,600</u>	<u>22,362,100</u>	<u>23,589,579</u>	<u>26,526,979</u>	<u>27,505,997</u>	<u>29,435,225</u>	<u>33,330,000</u>	<u>34,322,000</u>
Grand Total	<u>27,072,061</u>	<u>33,627,179</u>	<u>38,577,900</u>	<u>41,334,164</u>	<u>43,570,208</u>	<u>45,962,449</u>	<u>47,760,925</u>	<u>53,630,000</u>	<u>54,663,000</u>
Percent									
Hard Coal	43.28	42.13	42.03	42.93	39.12	40.16	38.37	37.85	37.21
Brown Coal and Lignite	56.72	57.87	57.97	57.07	60.88	59.84	61.63	62.15	62.79

S-E-C-R-E-T

Table 43

Total Production of Hard Coal in Czechoslovakia a/
1913, 1919-53, and 1947-53 Plans

		Metric Tons	
<u>Year</u>	<u>Amount</u>	<u>Year</u>	<u>Amount</u>
1913	14,087,205 <u>b/</u>	1940	20,966,008 <u>c/</u>
1919	10,254,233 <u>b/</u>	1941	21,071,003 <u>c/</u>
1920	11,374,954 <u>b/</u>	1942	22,770,385 <u>c/</u>
1921	12,023,209 <u>b/</u>	1943	24,617,127 <u>c/</u>
1922	10,464,980 <u>b/</u>	1944	23,238,520 <u>c/</u>
1923	12,347,251 <u>b/</u>	1945	11,715,989 <u>c/</u>
1924	15,178,942 <u>b/</u>	1946	14,167,579 <u>c/</u>
1925	12,558,992 <u>b/</u>	1947 Plan	16,374,000 <u>d/</u>
1926	14,176,998 <u>b/</u>	1947	16,215,800 <u>e/</u>
1927	14,016,904 <u>b/</u>	1948 Plan	17,746,000 <u>f/</u>
1928	14,560,305 <u>b/</u>	1948	17,744,585 <u>g/</u>
1929	16,548,227 <u>c/</u>	1949 Plan	17,750,000 <u>h/</u>
1930	14,468,519 <u>c/</u>	1949	17,043,229 <u>i/</u>
1931	13,165,051 <u>c/</u>	1950 Plan	17,750,000 <u>j/</u>
1932	11,032,172 <u>c/</u>	1950	18,456,452 <u>k/</u>
1933	10,627,357 <u>c/</u>	1951 Plan	20,050,000 <u>l/</u>
1934	10,788,880 <u>c/</u>	1951	18,325,700 <u>m/</u>
1935	10,894,483 <u>c/</u>	1952 Plan	21,408,000 <u>n/</u>
1936	12,233,181 <u>c/</u>	1952	20,300,000 <u>o/</u>
1937	16,777,519 <u>c/</u>	1953 Plan	N.A. <u>p/</u>
1938	15,835,927 <u>c/</u>	1953	20,341,000 <u>q/</u>
1939	18,803,072 <u>c/</u>		

a. Bituminous and minor quantities of anthracite.

b. 339/.c. 340/.d. 341/.e. 342/.f. 343/.

g. a total of 33,960,385 tons was produced during the Two Year Plan (1947-48). This figure is only 1,158 tons less than the total of separate annual figures that are usually reported, but it is broken down into field production. A Czechoslovak newspaper announced that total production of hard coal and brown coal was 41,334,000 tons in 1948. 345/

50X1

S-E-C-R-E-T

Table 43

Total Production of Hard Coal in Czechoslovakia a/
 1913, 1919-53, and 1947-53 Plans
 (Continued)

- h. 346/.
- i. 347/. Reported figure given for 1950 and stated it was 1,413,223 tons more than in 1949.
- j. 348/.
- k. 349/. The regular Plan quota was exceeded by 4 percent, but output was 2.1 percent short of the super-Plan quota.
- l. The original Five Year Plan quota was 18,050,000 tons, but it was revised. It was reported on 3 January 1951 that the 1951 target had been raised 6.5 percent. 350/ Hard coal target for 1951 was approximately 20 million tons. 351/ The target may have been as low as 19.65 million tons.
- m. Plan was met by only 91.4 percent. 352/ According to Zapotocky, hard-coal output fell short of Plan by almost 1.5 million tons at the end of September. 353/ It is possible that actual production may have been as much as 350,000 tons less than the estimate.
- n. Zapotocky stated in a speech given in late April or early May 1952 that the Republic was in present need of 21,408,000 tons of hard coal and 31,121,000 tons of lignite. 354/ These figures have been generally accepted as the goals in 1952.
- o. Increased 14.4 percent as compared with 1948 and 21.8 percent as compared with 1937. 355/
- p. The original Five Year Plan target was 20,800,000 tons, 356/ but it was revised.
- q. During the First Five Year Plan, production of hard coal increased by only 13.8 percent. 357/ On 23 February 1954, Zapotocky reported that hard coal production was 20,341,000 tons in 1953 and 22 percent higher than in 1937, for which he reported 16,672,000 tons. 358/ Zapotocky's figure for 1937 does not include 105,098 tons mined in Slovakia. The State Statistical Office reported on 14 April 1954 that production of hard coal increased 15 percent during the Five Year Plan.

S-E-C-R-E-T

Table 44

Total Production of Brown Coal and Lignite in Czechoslovakia a/
1913, 1919-53, and 1947-53 Plans

		Metric Tons	
<u>Year</u>	<u>Amount</u>	<u>Year</u>	<u>Amount</u>
1913	23,136,796 b/	1940	22,281,686 c/
1919	17,323,961 b/	1941	22,439,710 c/
1920	19,956,610 b/	1942	24,128,804 c/
1921	21,335,128 b/	1943	27,582,645 c/
1922	19,174,296 b/	1944	26,847,575 c/
1923	16,265,530 b/	1945	15,356,072 d/
1924	20,459,690 b/	1946	19,459,600 d/
1925	18,604,678 b/	1947 Plan	21,822,000 e/
1926	18,515,666 b/	1947	22,362,100 f/
1927	19,620,637 b/	1948 Plan	23,900,000 g/
1928	20,451,421 b/	1948	23,589,579 h/
1929	22,534,026 c/	1949 Plan	26,500,000 i/
1930	19,160,152 c/	1949	26,526,979 j/
1931	17,869,296 c/	1950 Plan	27,125,000 k/
1932	15,787,245 c/	1950	27,505,997 l/
1933	14,967,731 c/	1951 Plan	29,000,000 m/
1934	15,070,706 c/	1951	29,435,225 n/
1935	15,113,576 c/	1952 Plan	31,121,000 o/
1936	15,948,767 c/	1952	33,330,000 p/
1937	17,895,359 c/	1953 Plan	34,322,000 q/
1938	16,027,084 c/	1953	34,322,000 r/
1939	19,392,767 c/		

a. Lignite has constituted a very minor part of the production.

b. 359/.

c. 360/.

d. 361/. [redacted] a breakdown by districts and total of 19,475,000 tons in 1946. 362/

50X1

e. 363/.

f. 364/. [redacted] a total of 45,952,199 tons of brown coal and lignite was produced during the Two Year Plan (1947-48).

50X1

g. 366/.

h. 367/.

S-E-C-R-E-T

Table 44

Total Production of Brown Coal and Lignite in Czechoslovakia a/
 1913, 1919-53, and 1947-53 Plans
 (Continued)

-
- i. 368/. The original quota was 25,800,000 tons.
- j. 369/.
- k. 370/.
- l. 371/.
- m. Original target. 372/ It was reported on 3 January 1951 373/ that the 1951 target had been raised 7.5 percent.
- n. The Plan was fulfilled 101.5 percent 374/ and probably applied to the original Plan. Production for the January-May period was 12,034,000 tons. 375/
- o. Announced by Zapotocky. 376/ Original target was 30.6 million tons.
- p. During 4 years of the current Five Year Plan the production of brown coal and lignite increased by 41.3 percent. 377/ Total output of coal (hard coal, brown coal, and lignite) was 54.4 percent more than in 1937. 378/
- q. The original target was 32.2 million tons. 379/ It was revised and was probably as much as 35 million tons or more in 1953.
- r. Production of brown coal increased 45.5 percent as compared with 1948. 380/ On 23 February 1954, Zapotocky reported that brown coal production was 32,763,000 tons in 1953 and 87.3 percent more than in 1937 for which he reported 17,496,000 tons. 381/ Analysis of all available data (see details by basins and areas) indicate that Zapotocky's figures exclude the output of lignite. Total coal production was 54.6 million tons according to the Chairman of the State Planning Commission Pucik 382/ and 13.5 million tons higher than in 1948 (indicating 54.8 million tons) according to source 383/. The State Statistical Office reported on 14 April 1954 that the total production of hard coal, brown coal and lignite was 54.7 million tons in 1954 as compared with 34.7 million tons in 1937. During the Five Year Plan, production of brown coal increased 45 percent and lignite 57 percent. 384/

S-E-C-R-E-T

S-E-C-R-E-T

Table 45

Production of Coal in the Ostrava-Karvinna Basin of Czechoslovakia a/
1913, 1919-53, and 1947-53 Plans

		Metric Tons	
<u>Year</u>	<u>Amount</u>	<u>Year</u>	<u>Amount</u>
1913	9,966,423 <u>b/</u>	1941	16,688,300 <u>d/</u>
1919	6,840,365 <u>c/</u>	1942	18,261,400 <u>d/</u>
1920	7,587,711 <u>c/</u>	1943	19,967,710 <u>d/</u>
1921	7,893,965 <u>c/</u>	1944	18,994,534 <u>d/</u>
1922	6,715,200 <u>c/</u>	1945	8,834,880 <u>d/</u>
1923	8,304,434 <u>c/</u>	1946	11,225,300 <u>e/</u>
1924	10,702,051 <u>c/</u>	1947 Plan	12,750,000 <u>e/</u>
1925	9,140,135 <u>c/</u>	1947 (Jan-Jun)	6,407,300 <u>f/</u>
1926	10,512,612 <u>c/</u>	1947	12,882,000 <u>g/</u>
1927	10,279,588 <u>c/</u>	1948 Plan	13,710,000 <u>h/</u>
1928	10,843,490 <u>c/</u>	1948 (Jan-Jun)	7,110,670 <u>i/</u>
1929	12,485,884 <u>d/</u>	1948	14,110,940 <u>j/</u>
1930	10,665,963 <u>d/</u>	1949 Plan	14,000,000 <u>k/</u>
1931	9,561,272 <u>d/</u>	1949 (Apr-Jun)	3,251,700 <u>l/</u>
1932	7,728,463 <u>d/</u>	1949	13,525,000 <u>m/</u>
1933	7,600,701 <u>d/</u>	1950 Plan	14,000,000 <u>n/</u>
1934	7,461,075 <u>d/</u>	1950	14,644,000 <u>o/</u>
1935	7,724,539 <u>d/</u>	1951 Plan	16,000,000 <u>p/</u>
1936	8,928,490 <u>d/</u>	1951	14,464,000 <u>q/</u>
1937	12,888,771 <u>d/</u>	1952 Plan	17,116,000 <u>r/</u>
1938	11,842,705 <u>d/</u>	1952	16,270,000 <u>s/</u>
1939	14,384,930 <u>d/</u>	1953 Plan	N.A.
1940	16,254,358 <u>d/</u>	1953	16,300,000 <u>t/</u>

a. Bituminous and minor quantities of anthracite.

- b. 385/.
- c. 386/.
- d. 387/.
- e. 388/.
- f. 389/.
- g. 390/.
- h. 391/.
- i. 392/.

S-E-C-R-E-T

S-E-C-R-E-T

Table 45

Production of Coal in the Ostrava-Karvinna Basin of Czechoslovakia a/
1913, 1919-53, and 1947-53 Plans
(Continued)

- j. Production for 1947-48 was 26,992,940 tons. 393/
- k. Approximate.
- l. 394/. Fulfilled 99.6 percent of Plan (3,265,340 tons).
- m. Estimate is believed to be accurate within 100,000 tons. It was necessary to close the Doubrava mine because of an explosion and it was claimed that this affected production.
- n. The original target was probably 14 million tons. A news broadcast on 1 December 1950 stated, however, that the Ostrava-Karvinna mines were to work Saturday and Sunday shifts to fulfill their pledge for an output of 15 million tons. 395/ The latter figure was evidently a super-Plan quota.
- o. Estimate. The regular Plan was fulfilled 104.6 percent. 396/
 10,873,440 tons were produced during the first 9 months, which was 448,000 tons over Plan and that 4,126,560 tons were to be produced in the last quarter. 397/
- p. 398/.
- q. Estimate. The 1951 Plan was fulfilled 90.4 percent. 399/ According to Zapotocky, the Ostrava-Karvinna mines were 1.3 million tons behind Plan by the end of September. 400/
- r. The Chief Engineer at Ostrava mentioned the figure in a news report. 401/
- s. Increased 15.3 percent as compared with 1948. 402/ Zapotocky reported on 13 September 1953 that production was 16,570,070 tons, 403/ but this figure cannot be reconciled with the total output of hard coal and output from other basins.
- t. Reported at 16.3 million tons. 404/ It was reported on 11 March 1954 that hard coal output in the Ostrava region had increased 20.7 percent during the Five Year Plan. 405/ This increase, apparently, does not compare annual output in 1953 with that in 1948.

50X1

S-E-C-R-E-T

Table 46

Production of Coal in the Kladno-Rakovnik-Slany Basin
in Czechoslovakia a/
1913, 1919-53, and 1947-53 Plans

		Metric Tons	
<u>Year</u>	<u>Amount</u>	<u>Year</u>	<u>Amount</u>
1913	2,543,518 <u>b/</u>	1941	2,160,753 <u>d/</u>
1919	1,699,336 <u>c/</u>	1942	2,153,665 <u>d/</u>
1920	1,847,058 <u>c/</u>	1943	2,216,401 <u>d/</u>
1921	2,227,086 <u>c/</u>	1944	2,070,331 <u>d/</u>
1922	2,075,161 <u>c/</u>	1945	1,503,231 <u>d/</u>
1923	2,251,041 <u>c/</u>	1946	1,501,005 <u>e/</u>
1924	2,479,535 <u>c/</u>	1947 Plan	1,830,000 <u>e/</u>
1925	1,826,175 <u>c/</u>	1947 (Jan-Jun)	904,300 <u>f/</u>
1926	1,889,583 <u>c/</u>	1947	1,760,400 <u>g/</u>
1927	1,970,864 <u>c/</u>	1948 Plan	2,000,000 <u>h/</u>
1928	1,847,469 <u>c/</u>	1948 (Jan-Jun)	954,452 <u>i/</u>
1929	2,052,415 <u>d/</u>	1948	1,860,597 <u>j/</u>
1930	1,864,126 <u>d/</u>	1949 Plan	2,000,000 <u>k/</u>
1931	1,751,616 <u>d/</u>	1949 (Apr-Jun)	444,637 <u>l/</u>
1932	1,593,756 <u>d/</u>	1949	1,820,000 <u>m/</u>
1933	1,386,968 <u>d/</u>	1950 Plan	2,000,000 <u>n/</u>
1934	1,419,695 <u>d/</u>	1950	1,972,000 <u>o/</u>
1935	1,305,923 <u>d/</u>	1951 Plan	2,100,000 <u>p/</u>
1936	1,490,193 <u>d/</u>	1951	2,020,000 <u>q/</u>
1937	1,829,289 <u>d/</u>	1952 Plan	N.A.
1938	1,940,812 <u>d/</u>	1952	2,082,000 <u>r/</u>
1939	2,181,464 <u>d/</u>	1953 Plan	N.A.
1940	2,383,616 <u>d/</u>	1953	2,090,000 <u>s/</u>

a. Bituminous coal.

b. 406/.

c. 407/.

d. 408/.

e. 409/.

f. 410/.

g. Estimate is based upon January to June production and reported output of 3,620,997 tons during 1947-48. 411/

S-E-C-R-E-T

Table 46

Production of Coal in the Kladno-Rakovnik-Slany Basin
in Czechoslovakia a/
1913, 1919-53, and 1947-53 Plans
(Continued)

- h. 412/.
i. 413/.
j. Estimate is based upon January to June production and reported output of 3,620,997 tons during 1947-48. 414/
k. Approximate.
l. 415/. Fulfilled 91.8 percent of Plan (484,270 tons).
m. The estimate is believed to be accurate within 100,000 tons. Kladno was one of the districts that failed to fulfill the 1949 Plan. 416/
n. Original Plan figure.
o. Estimate. The regular Plan quota was fulfilled 98.6 percent. 417/
p. Estimate. The original Plan was 2,000,000 tons.
q. Estimate. The Plan was fulfilled 96.2 percent. 418/
r. Increased 11.9 percent as compared with 1948. 419/
s. Estimate. Production may have been as much as 200,000 tons less than the estimate.

Table 47

Production of Coal in the Plzen-Radnice Basin in Czechoslovakia a/*
1913, 1919-53, and 1947-53 Plans

		Metric Tons	
<u>Year</u>	<u>Amount</u>	<u>Year</u>	<u>Amount</u>
1913	1,361,835 <u>b/</u>	1941	1,060,151 <u>d/</u>
1919	974,613 <u>c/</u>	1942	1,061,126 <u>d/</u>
1920	1,050,747 <u>c/</u>	1943	1,093,075 <u>d/</u>
1921	1,056,217 <u>c/</u>	1944	1,012,421 <u>d/</u>
1922	946,824 <u>c/</u>	1945	613,448 <u>d/</u>
1923	996,569 <u>c/</u>	1946	637,361 <u>e/</u>
1924	1,049,960 <u>c/</u>	1947 Plan	810,000 <u>e/</u>
1925	858,256 <u>c/</u>	1947 (Jan-Jun)	363,370 <u>f/</u>
1926	969,921 <u>c/</u>	1947	722,000 <u>g/</u>

* Footnotes for Table 47 follow on p. 146.

S-E-C-R-E-T

Table 47

Production of Coal in the Plzen-Radnice Basin in Czechoslovakia a/
1913, 1919-53, and 1947-53 Plans
(Continued)

		Metric Tons	
<u>Year</u>	<u>Amount</u>	<u>Year</u>	<u>Amount</u>
1927	956,239 <u>c/</u>	1948 Plan	920,000 <u>h/</u>
1928	1,000,355 <u>c/</u>	1948 (Jan-Jun)	399,744 <u>i/</u>
1929	1,011,110 <u>d/</u>	1948	797,099 <u>j/</u>
1930	951,378 <u>d/</u>	1949 Plan	800,000 <u>k/</u>
1931	946,785 <u>d/</u>	1949 (Apr-Jun)	189,428 <u>l/</u>
1932	897,833 <u>d/</u>	1949	775,000 <u>m/</u>
1933	831,567 <u>d/</u>	1950 Plan	800,000 <u>n/</u>
1934	970,194 <u>d/</u>	1950	795,200 <u>o/</u>
1935	938,538 <u>d/</u>	1951 Plan	850,000 <u>p/</u>
1936	801,322 <u>d/</u>	1951	751,400 <u>q/</u>
1937	900,407 <u>d/</u>	1952 Plan	N.A.
1938	917,744 <u>d/</u>	1952	804,000 <u>r/</u>
1939	1,012,695 <u>d/</u>	1953 Plan	N.A.
1940	1,110,745 <u>d/</u>	1953	805,000 <u>s/</u>

a. Bituminous coal.

b. 420/.

c. 421/.

d. 422/.

e. 423/.

f. 424/.

g. Estimate is based on January to June production and reported production of 1,519,099 tons during 1947-48. 425/

h. 426/.

i. 427/.

j. Estimate is based on January to June production and reported production of 1,519,099 tons during 1947-48. 428/

k. Approximate.

l. 429/. Fulfilled 96.3 percent of Plan.

m. Estimate is believed to be accurate within 25,000 tons.

n. Estimate, although possibly as much as 825,000 tons.

o. Estimate. The regular Plan was fulfilled 99.4 percent. 430/
Output possibly ranged up to 820,000 tons.

p. Estimate; possibly 900,000 tons or more.

S-E-C-R-E-T

Table 47

Production of Coal in the Plzen-Radnice Basin in Czechoslovakia a/
1913, 1919-53, and 1947-53 Plans
(Continued)

- q. Estimate. The Plan was fulfilled only 88.4 percent. 431/ Actual production was probably within 50,000 tons of the estimate.
r. Estimate. The Plan was completed only 84.4 percent, although the goal had been reduced considerably. 432/ Actual production may have been as low as 700,000 tons.
s. Estimate. Actual production may have been as low as 700,000 tons.

Table 48

Production of Coal in the Trutnov (Zacler-Svatonovice) Basin
in Czechoslovakia a/*
1913, 1919-53, and 1947-53 Plans

		Metric Tons	
Year	Amount	Year	Amount
1913	461,760 <u>b/</u>	1941	470,903 <u>d/</u>
1919	345,288 <u>c/</u>	1942	583,670 <u>d/</u>
1920	452,532 <u>c/</u>	1943	646,814 <u>d/</u>
1921	432,905 <u>c/</u>	1944	540,723 <u>d/</u>
1922	360,284 <u>c/</u>	1945	444,502 <u>d/</u>
1923	409,578 <u>c/</u>	1946	420,612 <u>e/</u>
1924	516,151 <u>c/</u>	1947 Plan	534,000 <u>e/</u>
1925	381,292 <u>c/</u>	1947 (Jan-Jun)	193,820 <u>f/</u>
1926	414,070 <u>c/</u>	1947	400,000 <u>g/</u>
1927	395,784 <u>c/</u>	1948 Plan	610,000 <u>h/</u>
1928	448,018 <u>c/</u>	1948 (Jan-Jun)	224,565 <u>i/</u>
1929	480,520 <u>d/</u>	1948	470,039 <u>j/</u>
1930	463,500 <u>d/</u>	1949 Plan	425,000 <u>k/</u>
1931	428,361 <u>d/</u>	1949 (Apr-Jun)	101,382 <u>l/</u>
1932	420,441 <u>d/</u>	1949	420,000 <u>m/</u>
1933	428,342 <u>d/</u>	1950 Plan	425,000 <u>n/</u>
1934	461,847 <u>d/</u>	1950	484,075 <u>o/</u>

* Footnotes for Table 48 follow on p. 148.

S-E-C-R-E-T

Table 48

Production of Coal in the Trutnov (Zacler-Svatonovice) Basin
in Czechoslovakia a/
1913, 1919-53, and 1947-53 Plans
(Continued)

		Metric Tons	
<u>Year</u>	<u>Amount</u>	<u>Year</u>	<u>Amount</u>
1935	467,753 <u>d/</u>	1951 Plan	500,000 <u>p/</u>
1936	492,673 <u>d/</u>	1951	500,000 <u>p/</u>
1937	568,142 <u>d/</u>	1952 Plan	N.A.
1938	511,316 <u>d/</u>	1952	540,000 <u>q/</u>
1939	517,705 <u>d/</u>	1953 Plan	N.A.
1940	487,060 <u>d/</u>	1953	540,000 <u>r/</u>

a. Bituminous coal.

b. 433/.

c. 434/.

d. 435/.

e. 436/.

f. 437/.

g. Estimate is based on January to June production and reported production of 870,039 tons during 1947-48. 438/

h. 439/.

i. 440/.

j. Estimate is based on January to June production and reported production of 870,039 tons during 1947-48. 441/

k. Estimate. It is probable that the 1949 Plan figure was less than in 1948 as the second quarter quota was only 93,541 tons.

l. 442/.

m. Estimate, which is believed to be within 25,000 tons of actual.

n. Estimate of regular quota.

o. Estimate. The regular Plan was fulfilled 113.9 percent. 443/

p. Estimate; no data.

q. Increased 15 percent as compared with 1948. 444/

r. Estimate. Margin of error is believed to be plus 25,000 tons to minus 20,000 tons.

S-E-C-R-E-T

Table 49

Production of Coal in the Rosice-Oslavany Basin in Czechoslovakia a/
1913, 1919-53, and 1947-53 Plans

		Metric Tons	
<u>Year</u>	<u>Amount</u>	<u>Year</u>	<u>Amount</u>
1913	483,519 <u>b/</u>	1941	515,088 <u>d/</u>
1919	374,086 <u>c/</u>	1942	535,500 <u>d/</u>
1920	409,768 <u>c/</u>	1943	537,900 <u>d/</u>
1921	388,530 <u>c/</u>	1944	509,000 <u>d/</u>
1922	344,330 <u>c/</u>	1945	286,000 <u>d/</u>
1923	356,837 <u>c/</u>	1946	331,700 <u>e/</u>
1924	410,163 <u>c/</u>	1947 Plan	450,000 <u>e/</u>
1925	348,930 <u>c/</u>	1947 (Jan-Jun)	223,600 <u>f/</u>
1926	386,100 <u>c/</u>	1947	446,000 <u>g/</u>
1927	409,418 <u>c/</u>	1948 Plan	506,000 <u>h/</u>
1928	417,200 <u>c/</u>	1948 (Jan-Jun)	252,430 <u>i/</u>
1929	487,200 <u>d/</u>	1948	500,210 <u>j/</u>
1930	486,200 <u>d/</u>	1949 Plan	525,000 <u>k/</u>
1931	410,400 <u>d/</u>	1949 (Apr-Jun)	123,290 <u>l/</u>
1932	317,150 <u>d/</u>	1949	498,000 <u>m/</u>
1933	274,500 <u>d/</u>	1950 Plan	525,000 <u>n/</u>
1934	354,800 <u>d/</u>	1950	550,200 <u>o/</u>
1935	362,400 <u>d/</u>	1951 Plan	600,000 <u>p/</u>
1936	427,300 <u>d/</u>	1951	580,000 <u>p/</u>
1937	476,400 <u>d/</u>	1952 Plan	N.A.
1938	513,500 <u>d/</u>	1952	593,000 <u>q/</u>
1939	569,757 <u>d/</u>	1953 Plan	N.A.
1940	554,991 <u>d/</u>	1953	595,000 <u>r/</u>

a. Bituminous coal.

b. 445/.c. 446/.d. 447/.e. 448/.f. 449/.g. Estimate is based on January to June production and reported production of 946,210 tons during 1947-48. 450/h. 451/.i. 452/.S-E-C-R-E-T

S-E-C-R-E-T

Table 49

Production of Coal in the Rosice-Oslavany Basin in Czechoslovakia a/
 1913, 1919-53, and 1947-53 Plans
 (Continued)

- j. Estimate is based on January to June production and reported production of 946,210 tons during 1947-48. 453/
 k. Approximate.
 l. 454/. Fulfilled 96 percent of Plan (128,400 tons).
 m. Estimate is believed to be accurate within 25,000 tons.
 n. Estimate of regular quota.
 o. Estimate. The regular quota was fulfilled 104.8 percent. 455/
 p. Estimate; no data.
 q. Increased 18.5 percent as compared with 1948. 456/
 r. Estimate. Margin of error is believed to be plus or minus 25,000 tons.

Table 50

Production of Hard Coal in Other Mines
 in Bohemia and Moravia a/*
 1913, 1919-53, and 1947-53 Plans

		Metric Tons	
<u>Year</u>	<u>Amount</u>	<u>Year</u>	<u>Amount</u>
1913	N.A.	1939	24,877 <u>c/</u>
1919	20,546 <u>b/</u>	1940	30,203 <u>c/</u>
1920	27,138 <u>b/</u>	1941	34,996 <u>c/</u>
1921	24,507 <u>b/</u>	1942	40,329 <u>c/</u>
1922	23,191 <u>b/</u>	1943	38,161 <u>c/</u>
1923	28,793 <u>b/</u>	1944	32,223 <u>c/</u>
1924	21,083 <u>b/</u>	1945	19,860 <u>c/</u>
1925	4,204 <u>b/</u>	1946	14,121 <u>d/</u>
1926	4,712 <u>b/</u>	1947 Plan	N.A. <u>e/</u>
1927	4,407 <u>b/</u>	1947	5,400 <u>f/</u>
1928	3,773 <u>b/</u>	1948 Plan	N.A. <u>e/</u>
1929	4,328 <u>c/</u>	1948	5,700 <u>f/</u>

* Footnotes for Table 50 follow on p. 151.

S-E-C-R-E-T

S-E-C-R-E-T

Table 50

Production of Hard Coal in Other Mines
in Bohemia and Moravia a/
1913, 1919-53, and 1947-53 Plans
(Continued)

		Metric Tons	
<u>Year</u>	<u>Amount</u>	<u>Year</u>	<u>Amount</u>
1930	3,835 <u>c/</u>	1949 Plan	N.A.
1931	4,278 <u>c/</u>	1949	5,229 <u>g/</u>
1932	3,378 <u>c/</u>	1950 Plan	N.A.
1933	9,915 <u>c/</u>	1950	10,977 <u>h/</u>
1934	19,867 <u>c/</u>	1951 Plan	N.A.
1935	8,517 <u>c/</u>	1951	10,300 <u>i/</u>
1936	6,400 <u>c/</u>	1952 Plan	N.A.
1937	9,412 <u>c/</u>	1952	11,000 <u>i/</u>
1938	17,379 <u>c/</u>	1953 Plan	N.A.
		1953	11,000 <u>i/</u>

a. Anthracite and bituminous coal.

b. 457/.

c. 458/.

d. 459/.

e. The over-all Plan figures did not include quotas for these small local mines.

f. Estimate is based on reported output of 11,100 tons for other mines during 1947-48. 460/

g. Estimate. Output may have been 6,000 tons or more.

h. Residual figure after deducting the estimates of five principal districts from the reported total. It is possible that the figure is in considerable error.

i. Estimate, which is subject to considerable error.

S-E-C-R-E-T

Table 51

Production of Hard Coal in Slovakia a/
1929-53

		Metric Tons	
<u>Year</u>	<u>Amount</u>	<u>Year</u>	<u>Amount</u>
1929	26,770	1939	111,644
1930	33,517	1940	145,035
1931	62,339	1941	140,812
1932	71,151	1942	134,695
1933	95,364	1943	117,066
1934	101,402	1944	79,288
1935	86,813	1945	14,068
1936	86,803	1946	37,480
1937	105,098	1947-53	N.A. b/
1938	92,471		

a. ⁴⁶¹/. Includes Soviet Sub-Carpathia prior to 1945.

b. There are no data and no estimates have been made. Statistics of 1947-48 output by districts do not indicate any production for Slovakia. It is possible that any tonnage was included with other hard coal districts or with Slovak brown-coal output. Of significance is the fact that references to total hard coal production in Czechoslovakia in 1937 have excluded Slovakia's production in a few instances.

S-E-C-R-E-T

Table 52

Production of Coal in the North Bohemian Basin in Czechoslovakia a/
1913, 1919-53, and 1947-53 Plans

		Metric Tons	
Year	Amount	Year	Amount
1913	18,607,042 <u>b/</u>	1941	16,124,374 <u>d/</u>
1919	13,112,920 <u>c/</u>	1942	17,294,299 <u>d/</u>
1920	14,983,530 <u>c/</u>	1943	20,246,527 <u>d/</u>
1921	16,353,519 <u>c/</u>	1944	19,734,942 <u>d/</u>
1922	15,093,836 <u>c/</u>	1945	11,059,153 <u>d/</u>
1923	12,899,923 <u>c/</u>	1946	13,416,000 <u>e/</u>
1924	16,403,593 <u>e/</u>	1947 Plan	15,900,000 <u>e/</u>
1925	14,478,831 <u>c/</u>	1947 (Jan-Jun)	7,653,000 <u>f/</u>
1926	14,439,556 <u>c/</u>	1947	15,678,000 <u>g/</u>
1927	15,189,904 <u>c/</u>	1948 Plan	17,145,000 <u>h/</u>
1928	15,563,401 <u>c/</u>	1948 (Jan-Jun)	8,398,405 <u>i/</u>
1929	17,400,919 <u>d/</u>	1948	16,801,945 <u>j/</u>
1930	14,782,932 <u>d/</u>	1949 Plan	19,000,000 <u>k/</u>
1931	13,886,896 <u>d/</u>	1949 (Apr-Jun)	4,579,075 <u>l/</u>
1932	12,052,550 <u>d/</u>	1949	19,040,000 <u>m/</u>
1933	11,487,548 <u>d/</u>	1950 Plan	19,400,000 <u>n/</u>
1934	11,362,398 <u>d/</u>	1950	19,650,000 <u>o/</u>
1935	11,449,983 <u>d/</u>	1951 Plan	N.A.
1936	12,045,066 <u>d/</u>	1951	21,150,000 <u>o/</u>
1937	13,346,079 <u>d/</u>	1952 Plan	N.A.
1938	11,770,362 <u>d/</u>	1952	23,740,000 <u>p/</u>
1939	13,978,982 <u>d/</u>	1953 Plan	N.A.
1940	16,152,856 <u>d/</u>	1953	24,180,000 <u>q/</u>

a. Brown coal.

b. 462/.c. 463/.d. 464/.e. 465/.f. 466/.g. 467/.h. 468/.i. 469/.j. Production for 1947-48 was 32,479,945 tons. 470/

S-E-C-R-E-T

Table 52

Production of Coal in the North Bohemian Basin in Czechoslovakia a/
1913, 1919-53, and 1947-53 Plans
(Continued)

- k. 471/. Possibly a super-Plan quota.
 l. 472/. Fulfilled 101.2 percent of Plan (4,507,560 tons).
 m. In 1949 the North Bohemian Basin produced over 19 million tons and 100.21 percent of target. 473/
 n. Estimate of super-Plan quota.
 o. Estimate is believed to be within a few hundred thousand tons of actual.
 p. Increased 41.3 percent as compared with 1948. 474/
 q. Estimate. Margin of error is believed to be plus or minus 150,000 tons. On 10 December 1954, the miners of the North Bohemian Basin completed their targets for the entire Gottwald Five Year Plan. This was primarily due to the miners at open-cast mines, particularly those situated in the Most district. 475/ In 1953 the North Bohemian Basin produced over 24 million tons. 476/

Table 53

Production of Coal in the Sokolov Basin in Czechoslovakia a/*
1913, 1919-53, and 1947-53 Plans

		Metric Tons	
<u>Year</u>	<u>Amount</u>	<u>Year</u>	<u>Amount</u>
1913	2,707,040 <u>b/</u>	1941	4,696,173 <u>d/</u>
1919	3,780,784 <u>c/</u>	1942	5,132,689 <u>d/</u>
1920	4,440,504 <u>c/</u>	1943	5,610,362 <u>d/</u>
1921	4,528,137 <u>c/</u>	1944	5,535,270 <u>d/</u>
1922	3,659,785 <u>c/</u>	1945	3,339,472 <u>d/</u>
1923	2,917,690 <u>c/</u>	1946	4,713,000 <u>e/</u>
1924	3,443,603 <u>c/</u>	1947 Plan	4,275,000 <u>e/</u>
1925	3,520,237 <u>c/</u>	1947 (Jan-Jun)	2,526,890 <u>f/</u>
1926	3,435,784 <u>c/</u>	1947	5,092,000 <u>g/</u>

* Footnotes for Table 53 follow on p. 155.

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Table 53

Production of Coal in the Sokolov Basin in Czechoslovakia a/
1913, 1919-53, and 1947-53 Plans
(Continued)

		Metric Tons	
<u>Year</u>	<u>Amount</u>	<u>Year</u>	<u>Amount</u>
1927	3,718,649 <u>c/</u>	1948 Plan	4,950,000 <u>h/</u>
1928	4,105,795 <u>c/</u>	1948 (Jan-Jun)	2,641,699 <u>i/</u>
1929	4,260,039 <u>d/</u>	1948	5,161,314 <u>j/</u>
1930	3,526,495 <u>d/</u>	1949 Plan	5,700,000 <u>k/</u>
1931	3,153,573 <u>d/</u>	1949 (Apr-Jun)	1,411,244 <u>l/</u>
1932	2,967,794 <u>d/</u>	1949	5,850,000 <u>m/</u>
1933	2,748,948 <u>d/</u>	1950 Plan	6,000,000 <u>n/</u>
1934	2,855,227 <u>d/</u>	1950	6,150,000 <u>o/</u>
1935	2,738,919 <u>d/</u>	1951 Plan	N.A.
1936	2,853,336 <u>d/</u>	1951	6,400,225 <u>p/</u>
1937	3,312,102 <u>d/</u>	1952 Plan	7,000,000 <u>p/</u>
1938	2,972,255 <u>d/</u>	1952	7,335,000 <u>q/</u>
1939	4,022,477 <u>d/</u>	1953 Plan	N.A.
1940	4,569,831 <u>d/</u>	1953	7,570,000 <u>r/</u>

a. Brown coal.

b. 477/.

c. 478/.

d. 479/.

e. 480/.

f. 481/.

g. Estimate is based on January to June production and reported output of 10,253,314 tons during 1947-48. 482/

h. 483/.

i. 484/.

j. Estimate is based on January to June production and reported output of 10,253,314 tons during 1947-48. 485/

k. Approximate.

l. 486/ Fulfilled 101.2 percent of Plan (1,394,959 tons).

m. Estimate which is believed to be within 100,000 tons of actual.

n. Estimate of super-Plan quota.

o. Estimate, which is believed to be within 100,000 tons of actual.

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Table 53

Production of Coal in the Sokolov Basin in Czechoslovakia a/
1913, 1919-53, and 1947-53 Plans
(Continued)

p. 487/. Target in 1952 was in excess of 7 million tons.
q. 42.1 percent higher than in 1948. 488/ Overfulfilled Plan by 255,528 tons at the end of October 1952. 489/
r. After having fulfilled the targets of the Five Year Plan on 2 November 1953, the miners of the Sokolov Basin extracted 33,243,000 tons of coal by 29 December 1953 instead of 32 million tons planned. 490/ The estimate for 1953 is the result of deducting estimates for the 1949-52 period from the total and adding 2 days' production (approximately 30,000 tons daily).

Table 54

Production of Coal in the South Moravian Basin in Czechoslovakia a/*
1913, 1919-53, and 1947-53 Plans

		Metric Tons	
<u>Year</u>	<u>Amount</u>	<u>Year</u>	<u>Amount</u>
1913	254,445 <u>b/</u>	1941	536,331 <u>d/</u>
1919	239,946 <u>e/</u>	1942	587,013 <u>d/</u>
1920	253,083 <u>c/</u>	1943	629,107 <u>d/</u>
1921	186,493 <u>c/</u>	1944	567,203 <u>d/</u>
1922	158,018 <u>c/</u>	1945	329,557 <u>d/</u>
1923	175,990 <u>c/</u>	1946	432,000 <u>e/</u>
1924	230,811 <u>c/</u>	1947 Plan	480,000 <u>e/</u>
1925	204,459 <u>c/</u>	1947 (Jan-Jun)	244,600 <u>f/</u>
1926	212,018 <u>c/</u>	1947	479,000 <u>g/</u>
1927	208,718 <u>c/</u>	1948 Plan	537,000 <u>h/</u>
1928	218,543 <u>c/</u>	1948 (Jan-Jun)	250,850 <u>i/</u>
1929	225,186 <u>d/</u>	1948	487,150 <u>j/</u>
1930	199,615 <u>d/</u>	1949 Plan	530,000 <u>k/</u>
1931	219,785 <u>d/</u>	1949 (Apr-Jun)	131,429 <u>l/</u>
1932	200,562 <u>d/</u>	1949	540,000 <u>m/</u>

* Footnotes for Table 54 follow on p. 157.

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S-E-C-R-E-T

Table 54

Production of Coal in the South Moravian Basin in Czechoslovakia: a/
1913, 1919-53, and 1947-53 Plans
(Continued)

		Metric Tons	
<u>Year</u>	<u>Amount</u>	<u>Year</u>	<u>Amount</u>
1933	183,848 <u>d/</u>	1950 Plan	550,000 <u>n/</u>
1934	216,149 <u>d/</u>	1950	550,000 <u>n/</u>
1935	276,973 <u>d/</u>	1951 Plan	N.A.
1936	342,327 <u>d/</u>	1951	575,000 <u>n/</u>
1937	382,543 <u>d/</u>	1952 Plan	N.A.
1938	404,290 <u>d/</u>	1952	610,000 <u>o/</u>
1939	437,513 <u>d/</u>	1953 Plan	N.A.
1940	524,098 <u>d/</u>	1953	625,000 <u>p/</u>

a. Lignite from Ratiskovice district.

b. 491/.

c. 492/.

d. 493/.

e. 494/.

f. 495/.

g. Estimate is based upon January to June production and reported production of 966,150 tons during 1947-48. 496/

h. 497/.

i. 498/.

j. Estimate is based upon January to June production and reported production of 966,150 tons during 1947-48. 499/.

k. Approximate.

l. 500/.

m. Estimate is believed to be accurate within 20,000 tons.

n. Estimate; no data.

o. Close to actual. Production increased 24.9 percent as compared with 1948. 501/ Output in October 1952 was 12,165 tons below Plan (fulfilled 79.1 percent) and 59,358 tons short for the 10-month period. 502/

p. Estimate. Margin of error is plus 15,000 tons or minus 5,000 tons. According to source, 503/ mining in the South Moravian lignite mines is increasing every year. In 1953 those mines fulfilled the Plan only 94 percent, but 1954 production will double as compared with 1949.

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Table 55

Production of Coal in Various Small Mines in Bohemia and Moravia a/
1913, 1919-53, and 1947-53 Plans

		Metric Tons	
<u>Year</u>	<u>Amount</u>	<u>Year</u>	<u>Amount</u>
1913	N.A.	1941	266,483 <u>c/</u>
1919	43,158 <u>b/</u>	1942	302,542 <u>c/</u>
1920	66,469 <u>b/</u>	1943	264,274 <u>c/</u>
1921	48,323 <u>b/</u>	1944	274,647 <u>c/</u>
1922	43,596 <u>b/</u>	1945	289,790 <u>c/</u>
1923	35,424 <u>b/</u>	1946	322,000 <u>d/</u>
1924	49,528 <u>b/</u>	1947 Plan	308,000 <u>d/</u>
1925	57,505 <u>b/</u>	1947 (Jan-Jun)	170,000 <u>e/</u>
1926	45,909 <u>b/</u>	1947	392,400 <u>f/</u>
1927	64,407 <u>b/</u>	1948 Plan	344,000 <u>g/</u>
1928	68,191 <u>b/</u>	1948 (Jan-Jun)	150,759 <u>h/</u>
1929	88,486 <u>c/</u>	1948	376,690 <u>f/</u>
1930	86,137 <u>c/</u>	1949 Plan	300,000 <u>i/</u>
1931	68,293 <u>c/</u>	1949 (Apr-Jun)	67,318 <u>j/</u>
1932	74,839 <u>c/</u>	1949	285,000 <u>k/</u>
1933	82,116 <u>c/</u>	1950 Plan	300,000 <u>l/</u>
1934	101,103 <u>c/</u>	1950	280,000 <u>l/</u>
1935	93,540 <u>c/</u>	1951 Plan	N.A.
1936	109,732 <u>c/</u>	1951	350,000 <u>l/</u>
1937	121,364 <u>c/</u>	1952 Plan	N.A.
1938	144,602 <u>c/</u>	1952	465,000 <u>m/</u>
1939	175,529 <u>c/</u>	1953 Plan	N.A.
1940	229,832 <u>c/</u>	1953	475,000 <u>n/</u>

a. Mines are at Mydlovary, Hradek, and a few other places.

b. 504/.

c. 505/.

d. 506/.

e. 507/. Figure appears to represent output at Mydlovary only.

f. Estimate is based on January to June production and quantities reported for the 2 years 1947-48 are as follows: Mydlovary, 661,387 tons; Hradek, 79,843 tons; and others, 27,860 tons, or a total of 769,090 tons.

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Table 55

Production of Coal in Various Small Mines in Bohemia and Moravia a/
1913, 1919-53, and 1947-53 Plans
(Continued)

- g. 508/. The Two Year Plan called for 570,000 tons from Mydlovary (Plzen area in southern Bohemia) and 82,000 tons from Trutnov area (probably the Hradek mine). 509/
- h. 510/. Figure appears to represent output at Mydlovary only.
- i. Approximate. The second quarter planned quotas were as follows: southern Bohemia (Mydlovary), 60,900 tons; Hradek, 6,336 tons; Uhelna, 3,075 tons. It is probable that planned output was somewhat higher during the winter months.
- j. 511/. Output was as follows: southern Bohemia, 55,097 tons; Hradek, 7,522 tons; and Uhelna, 4,699 tons.
- k. Estimate is believed to be accurate within 30,000 tons.
- l. Estimate.
- m. Production at Mydlovary increased 23.2 percent as compared with 1948. 512/ Mydlovary accounted for 86 percent of the output during the years 1947-48. The increase was applied to the estimated total for all districts in 1948 and it is believed that the 1952 estimate is within 50,000 tons of actual.
- n. Estimate. Margin of error is believed to be plus or minus 50,000 tons.

Table 56

Production of Coal in the Slovakian Mines in Czechoslovakia a/*
1913, 1919-53, and 1947-53 Plans

		Metric Tons	
<u>Year</u>	<u>Amount</u>	<u>Year</u>	<u>Amount</u>
1913	N.A.	1941	816,349 <u>c/</u>
1919	147,153 <u>b/</u>	1942	812,261 <u>c/</u>
1920	213,025 <u>b/</u>	1943	832,375 <u>c/</u>
1921	218,655 <u>b/</u>	1944	735,513 <u>c/</u>
1922	219,061 <u>b/</u>	1945	338,100 <u>d/</u>
1923	236,404 <u>b/</u>	1946	576,600 <u>d/</u>

* Footnotes for Table 56 follow on p. 160.

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Table 56

Production of Coal in the Slovakian Mines in Czechoslovakia a/
1913, 1919-53, and 1947-53 Plans
(Continued)

		Metric Tons	
<u>Year</u>	<u>Amount</u>	<u>Year</u>	<u>Amount</u>
1924	332,154 <u>b/</u>	1947 Plan	769,000 <u>e/</u>
1925	343,646 <u>b/</u>	1947 (Jan-Jun)	349,640 <u>f/</u>
1926	382,399 <u>b/</u>	1947	720,700 <u>g/</u>
1927	438,959 <u>b/</u>	1948 Plan	924,000 <u>h/</u>
1928	495,491 <u>b/</u>	1948 (Jan-Jun)	377,586 <u>i/</u>
1929	559,396 <u>c/</u>	1948	762,480 <u>g/</u>
1930	564,973 <u>c/</u>	1949 Plan	970,000 <u>j/</u>
1931	540,749 <u>c/</u>	1949 (Apr-Jun)	195,710 <u>k/</u>
1932	491,500 <u>c/</u>	1949	811,979 <u>l/</u>
1933	465,271 <u>c/</u>	1950 Plan	N.A.
1934	535,829 <u>c/</u>	1950	875,997 <u>m/</u>
1935	554,161 <u>c/</u>	1951 Plan	N.A.
1936	598,306 <u>c/</u>	1951	960,000 <u>n/</u>
1937	733,271 <u>c/</u>	1952 Plan	N.A.
1938	735,575 <u>c/</u>	1952	1,180,000 <u>o/</u>
1939	778,266 <u>c/</u>	1953 Plan	N.A. <u>p/</u>
1940	805,069 <u>c/</u>	1953	1,472,000 <u>q/</u>

a. Production is from the Handlova and Novaky mines in the western part of Slovakia and, in recent years, from the Modry-Kamen (Potor) area in the south.

b. 513/.

c. 514/.

d. 515/.

e. 516/.

f. 517/.

g. Estimate is based on January to June production and reported output of 1,485,700 tons during 1947-48. 518/ However, [redacted]

[redacted] a total production figure for brown coal and lignite during 1947-48, which is 2,520 tons more than the generally reported total and the Slovak figure has been adjusted by that amount.

h. 519/.

i. 520/.

50X1
50X1

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Table 56

Production of Coal in the Slovakian Mines in Czechoslovakia a/
 1913, 1919-53, and 1947-53 Plans
 (Continued)

-
- j. Approximate.
- k. 521/. Fulfilled 81.4 percent of Plan (240,438 tons).
- l. Residual figure obtained by deducting estimates for other districts from total output of brown coal and lignite. Also, the figure is based upon output in the second quarter.
- m. Estimate. The margin of error is believed to be plus or minus 50,000 tons. It was reported that brown coal production in Slovakia increased 19.29 percent in the third quarter of 1950 as compared with the like period in 1949. 522/
- n. Estimated by interpolation. Margin of error is believed to be plus or minus 50,000 tons.
- o. Production of brown coal increased 23 percent in Slovakia as compared with 1951. 523/ Production increased 26.7 percent at Handlova, 94.6 percent at Novaky, and 517 percent at Modry-Kamen as compared with 1948. 524/ The estimate for 1952 is a residual figure, which is believed to be within 25,000 tons more or less than actual. Estimates of total output of brown coal and for other basins are reasonably accurate.
- p. The 1953 Plan called for an increase of 34.2 percent as compared with output in 1952 in Slovakia. 525/
- q. Production of coal increased during the first quarter of 1953 by 16.5 percent as compared with the same period of 1952. 526/ A production record was achieved in a Gottwald shift worked in the Novaky coal field on 29 March 1953. Some 1,807 tons of lignite was extracted, the biggest daily output on record. 527/ The Novaky mines received 120 percent of their target on 25 February 1953, setting new output record up to that time. 528/ It was announced in January 1953 that the Novaky mines were to produce 25 percent more coal than Handlova according to the 1954 Plan. The productivity increase planned for the end of 1953 had already been achieved. 529/ Coal pits at Modry-Kamen in Slovakia fulfilled their production targets by 107.1 percent in the first quarter of 1953 and by 113.34 percent in the second quarter. In honor of Miners' Day they pledged that they would produce 23,146 tons of coal above the planned output for the year. 530/ The third quarter 1953 Plan for coal production in Slovakia was not met, although output of lignite increased 14 percent compared with the

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Table 56

Production of Coal in the Slovakian Mines in Czechoslovakia a/
1913, 1919-53, and 1947-53 Plans
(Continued)

same period in 1952, 531/ The Slovak coal industry reached its First Five Year Plan target during the night of 29-30 December 1953. 532/

In 1953, the output of brown coal and lignite increased in Slovakia by 93 percent as compared with 1948. 533/

The estimate for 1953 is believed to be within a margin of error of plus 100,000 to minus 50,000 tons.

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APPENDIX B

PLANNED SUPPLY AND REQUIREMENTS OF COAL
IN CZECHOSLOVAKIA IN 1949

Table 57

Planned Supply and Requirements of Hard Coal and Hard-Coal Briquettes
in Czechoslovakia 534/
1949 Plan

	Thousand Metric Tons		
	<u>Bohemia and Moravia</u>	<u>Slovakia</u>	<u>Quantity</u>
Supply			
Reserves as of 31 December 1948			291
Extraction of Coal			17,750
Production of Briquettes			372
Imports			2,800
Savings from Consumption			582
Total			<u>21,795</u>
Requirements			
Mining	2,703	26	2,729
Sugar	220	40	260
Distilling	59	18	77
Brewing, Malting	77	20	97
Milling	21	9	30
Food	87	25	112
Metallurgy <u>a/</u> *	3,608	<u>b/</u>	3,608
Iron, Metals	360	75	435
Wood	14	6	20
Paper	190	210	400
Chemical Industry	166	79	245
Ceramic	549	128	677
Construction	12	21	33

* Footnotes for Table 57 follow on p. 164.

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Table 57

Planned Supply and Requirements of Hard Coal and Hard-Coal Briquettes
in Czechoslovakia
1949 Plan
(Continued)

	Thousand Metric Tons		
	<u>Bohemia and Moravia</u>	<u>Slovakia</u>	<u>Quantity</u>
Requirements (Continued)			
Glass	15	10	25
Textiles, Clothing	336	64	400
Leather, Rubber	237	74	311
Ministry of Information	2	1	3
Waterworks	3	2	5
Electric Power Plants <u>c/</u>	1,032	170	1,202
Gasworks	527	43	570
Water Transport, Urban Railroads	12	17	29
Total	<u>10,230</u>	<u>1,038</u>	<u>11,268</u>
Mine Coke Plants	N.A.	N.A.	5,135
Briquette Plants <u>d/</u>	N.A.	N.A.	352
Czechoslovak State Railroads	N.A.	N.A.	2,532
Domestic Heating	1,300	180	1,480
Exports	N.A.	N.A.	636
Remaining Supplies	N.A.	N.A.	392
Total	<u>N.A.</u>	<u>N.A.</u>	<u>21,795</u>

a. Almost two-thirds was allocated for coke production.

b. Requirements for metallurgical plants in Slovakia are included in the requirements of the iron and metals industry for Slovakia.

c. Public utility plants; excludes power stations at mines and various industrial plants.

d. Includes coal for drying.

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Table 58

Planned Supply and Requirements of Brown Coal, Brown-Coal Coke
and Brown-Coal Briquettes in Czechoslovakia 535/
1949 Plan

Thousand Metric Tons			
	<u>Bohemia and Moravia</u>	<u>Slovakia</u>	<u>Quantity</u>
Supply			
Reserves as of 31 December 1948			492
Production of Coal			26,500
Zaluzi Coal <u>a/</u> *			26
Production of Briquettes			413
Production of Brown-Coal Coke			1,326
Imports			20
Total			<u>28,777</u>
Requirements			
Mining	1,656	233	1,889
Sugar	455	45	500
Distilling	186	45	231
Brewing, Malting	194	27	221
Milling	39	7	46
Food	375	27	402
Metallurgy	485	b/	485
Iron, Metals	885	90	975
Wood	78	42	120
Paper	415	110	525
Chemical Industry			
Stalin Works	4,621 <u>c/</u>	0	4,621 <u>c/</u>
Other	1,270	80	1,350
Ceramic	1,130	100	1,230
Construction	30	8	38
Glass	995	23	1,018

* Footnotes for Table 58 follow on p. 166.

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Table 58

Planned Supply and Requirements of Brown Coal, Brown-Coal Coke
and Brown-Coal Briquettes in Czechoslovakia
1949 Plan
(Continued)

	Thousand Metric Tons		
	<u>Bohemia and Moravia</u>	<u>Slovakia</u>	<u>Quantity</u>
Requirements (Continued)			
Textiles, Clothing	1,108	112	1,220
Leather, Rubber	109	21	130
Ministry of Information	19	0	19
Waterworks	14	3	17
Electric Power Plants <u>d/</u>	3,163	46	3,209
Gasworks	18	1	19
Water Transport, Urban Railroads	55	0	55
Total	<u>17,300</u>	<u>1,020</u>	<u>18,320</u>
Briquette Plants <u>e/</u>	N.A.	N.A.	673
Czechoslovak State Railroads	N.A.	N.A.	2,958
Domestic Heating	4,801	325	5,126
Exports	N.A.	N.A.	1,220
Remaining Supplies	N.A.	N.A.	481
Total	<u>N.A.</u>	<u>N.A.</u>	<u>28,777</u>

a. This coal may be a stockpile at the Stalin Works.

b. Requirements for metallurgical plants in Slovakia are included in the requirements of the iron and metals industry for Slovakia.

c. Includes 554,000 tons of brown-coal coke.

d. Public utility plants; excludes power stations at mines and various industrial plants.

e. Includes coal for drying.

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APPENDIX C

MINES IN THE OSTRAVA-KARVINNA BASIN IN CZECHOSLOVAKIA

Mines in the Ostrava-Karvinna Basin in Czechoslovakia can be classified,* on the basis of the kind of coal produced, as follows 536/:

1. Anthracite. Masaryk I and Masaryk II mines.
2. Bituminous.
 - a. First-quality coking coal -- Jan Sverma, General Svoboda, Trojice, Petr Bezruc, Petr Cingr, Stalin I, and Stachanov mines.
 - b. Second-quality coking coal -- Alexandr, Zarubek, Jeremenko, and 1 Maj (May First) mines.
 - c. Gas coal (caking) -- Frantiska, President Benes, Doubrava, Hlubina-Karvinna, Jindrich, Mir, Michalka, Maria, Hlubina-Ostrava, Odra, Zapotocky, Barbora, and Vaclav mines.
 - d. Gas or steam coal (non-coking) - - Julius Fucik (Pokrok), Gottwald, Ludvik, Hedvika, Evzen, Dukla, and Zofie mines.

The Stalin II mine, which was not operating in June 1951, probably would be included with those producing first-quality coking coal. This mine has been producing recently and is believed to be new. There are reports of the Lausman, Pionir, and Stalin III mines; one of these may be the present name of the Evzen Mine. The Frantiska, Hlubina-Karvinna, and Jindrich mines have been combined into one operation, known as the Ceskoslovenske Armady Mine.

An analysis of the coals produced in the Ostrava-Karvinna Basin in Czechoslovakia is given in Table 59.**

* Classification as of June 1951.

** Table 59 follows on p. 168.

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Table 59

Analyses of Coals in the Ostrava-Karvinna Basin in Czechoslovakia 537/

Kind of Coal	Seam	Mine	Moisture- and Ash-Free Basis								Percent	
			As Received a/*		Ultimate					Proximate		
			Moisture	Ash	Carbon	Hydrogen	Oxygen	Nitrogen	Sulfur	Fixed Carbon	Volatile Matter	
Anthracite	Rothschild	Masaryk I	0.13	6.04	91.40	3.90	4.00	0.70	88.20	11.80		
Anthracite	Rothschild	Masaryk II	0.40	5.03	91.50	4.10	3.60	1.20	89.50	10.50		
Semibituminous	Rothschild	Odra	0.80	4.40	91.50	4.19	4.31	0.86	85.30	14.70		
Semibituminous	E	Jan Sverma	0.60	2.80	89.97	4.51	5.52	0.85	82.26	17.14		
Semibituminous	E (Upper Layer)	Jan Sverma	0.21	6.14	89.50	4.60	4.40	1.50	83.90	16.10		
Semibituminous	Pavla	Stalin	0.82	3.53	85.50	3.60	6.90	1.00	82.40	17.60		
Bituminous (Coking)	Oskar	Jan Sverma	0.16	8.95	89.80	4.70	1.40	1.40	79.90	20.10		
Bituminous (Coking)	Petronela	Stalin	0.70	7.12	86.80	4.10	1.50	0.80	78.50	21.50		
Bituminous (Coking)	Frantiska	Jindrich	1.00	3.77	87.92	4.85	1.65	0.78	78.50	21.50		
Bituminous (Gas)	No. 27	1 Maj (May First)	1.49	4.20	84.73	5.15	9.39	0.73	68.60	31.40		
Bituminous (Gas)	No. 5	Michalka	1.21	8.14	83.20	5.60	11.20	1.10	64.20	35.80		
Bituminous (Gas)	Gabriela	Michalka	1.20	5.40	83.33	4.61	8.45	1.53	64.10	35.90		
Bituminous (Gas)	Laura	Petr Bezruc	0.14	3.90	86.00	5.50	7.60	0.90	66.60	35.40		

* Footnote for Table 59 follows on p. 169.

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Table 59

Analyses of Coals in the Ostrava-Karvinna Basin in Czechoslovakia
(Continued)

Percent

Kind of Coal	Seam	Mine	Moisture- and Ash-Free Basis								
			As Received ^{a/}		Ultimate					Proximate	
			Moisture	Ash	Carbon	Hydrogen	Oxygen	Nitrogen	Sulfur	Fixed Carbon	Volatile Matter
Bituminous (Steam)	No. 8	Julius Fucik (Pokrok)	2.40	3.60	83.23	5.71	8.81	1.62	0.63	60.20	39.80
Bituminous (Steam)	No. 8 (Upper Layer)	Julius Fucik (Pokrok)	0.20	5.55	83.78	5.41	8.61	1.48	0.72	59.60	40.40
Bituminous (Steam)	Ferdinand	Evzen	2.96	5.26	85.01	7.15	6.71		1.13	Unverified	
Bituminous (Steam)	Gabriela	Evzen	2.38	8.93	84.44	6.22	6.23		3.11	Unverified	

a. It is improbable that the best grades of washed coals are generally as low in ash content as the values shown.

S-E-C-R-E-T

APPENDIX D

LOCATIONS AND RAIL SHIPPING POINTS OF COAL MINES
IN CZECHOSLOVAKIA*

Table 60

Locations and Rail Shipping Points of Coal Mines
in the Ostrava-Karvinna Basin in Czechoslovakia a/*

<u>Present Mine Name</u>	<u>Location</u>	<u>Railroad Freight Station</u>
Alexandr	Moravska Ostrava	Moravska Ostrava
Barbora	Karvinna	Karvinna
Ceskoslovenska Armada <u>b</u> /	Karvinna	Karvinna
Petr Bezruc	Slezska Ostrava	Moravska Ostrava
Petr Cingr	Michalkovice	Jama Michal
Doubrava	Doubrava	Frystat
Dukla	Dolni Sucha	Prostredni Sucha
Frantiska <u>b</u> /	Karvinna	Karvinna and Doubrava
Julius Fucik <u>c</u> /	Petrvald	Petrvald
Klement Gottwald	Horni Sucha	Prostredni Sucha
Hedvika	Petrvald	Petrvald
Hlubina-Ostrava	Moravska Ostrava	Moravska Ostrava
Hlubina-Karvinna <u>b</u> /	Karvinna	Karvinna and Doubrava
Jan Maria	Slezska Ostrava	Hranocnik
General Jeremenko	Moravska Ostrava Vitkovice	Svinov-Vitkovice
Jindrich <u>d</u> /	Moravska Ostrava	Moravska Ostrava-Privoz
Lausman	Moravska Ostrava	Moravska Ostrava
Ludvik	Radvanice	Radvanice
1 Maj (May First)	Karvinna	Karvinna
Masaryk I	Petrkovice	Moravska Ostrava-Privoz
Masaryk II	Petrkovice	Moravska Ostrava-Privoz
Michalka	Slezska Ostrava	Hrusov
Mir	Karvinna	Karvinna (Main Station)
Nova	Lazy	Doubrava

* Footnotes for Table 60 follow on p. 172.

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Table 60

Locations and Rail Shipping Points of Coal Mines
in the Ostrava-Karvinna Basin in Czechoslovakia a/
(Continued)

<u>Present Mine Name</u>	<u>Location</u>	<u>Railroad Freight Station</u>
Odra	Privoz	Privoz
Pionir	Petrvald	Petrvald
Stachanov	Hrusov nad Orlici	Hrusov nad Orlici
Stalin I	Hrusov nad Orlici	Hrusov nad Orlici
Stalin II	Hrusov nad Orlici	Hrusov nad Orlici
Stalin III	N.A.	N.A.
Sverma (Jan Sverma)	Marianske Hory	Moravska Ostrava-Privoz
General Svoboda	Privoz	Moravska Ostrava
Trojice	Slezska Ostrava	Slezska Ostrava
Vaclav	Poruba	Orlova
Zapotocky	Lazy	Doubrava
Zarubek	Slezska Ostrava	Slezska Ostrava, the Vilem Mine
Zofie	Poruba	Orlova

a. Bituminous coal with the exception of the Masaryk I and Masaryk II mines, which produce anthracite.

b. [redacted] the Ceskoslovenskiya Armada (Karvinna II), Frantiska, Hlubina, and Jindrich mines were combined into one enterprise in 1949, and all coal was to be raised at one shaft at the Karvinna II mine, when a new hoisting tower was completed about 1952. This mine was to be the most modern in Europe, with a daily output of 5,000 tons and with 10,000 employees. 538/ [redacted] the Czechoslovak Army Mine is the former President Benes Mine and merger with other mines was to be completed by April 1953. The mine was to be known as the Large Czechoslovak Army Mine. 539/

c. [redacted] the name of the Pokrok Mine was changed to Julius Fucik.

d. Apparently not the same Jindrich Mine referred to in footnote b, above.

* [redacted] Information is based on the known status in 1948.

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Table 61

Locations and Rail Shipping Points of Coal Mines
in the Kladno-Rakovnik-Slany Basin in Czechoslovakia a/*

<u>Present Mine Name</u>	<u>Location</u>	<u>Railroad Freight Station</u>
Anna <u>b/</u>	Hresice	Klobouky
Belsanka	Luzna	Luzna-Lisany
Bohemia <u>b/</u>	Minice	Minkovice
Fierlinger I	Vinarice	Vinarice (near Slan)
Fierlinger II <u>c/</u>	Libusin	Libusin
Frantisek	Lhota pod Dzbanem	Mutejovice
Frantisek	Otvovice	Otvovice (near Kralupy)
Frantiska <u>b/</u>	Jedomelice	Slany
Klement Gottwald	Hnidousy	Dubi (near Kladno)
Herkules <u>b/</u>	Bdin	Slany
Humboldt	Prerubenice	Slany
Jindrich	Jedomelice	Slany
Jiri	Hurviny	Rakovnik
Jirina	Libkovice	Revnicev
Karel	Luzna	
Lausman	Rynholec	Lany
Lorenc <u>b/</u>	Hresice	Slany
Luzna	Luzna	Luzna-Lisany
Mila <u>b/</u>	Ostrov u Jedomelic	Slany
Nejedly I	Libusin	Libusin
Nejedly II	Libusin	Libusin
Vaclav Nosek	Tuchlovice	Libusin
Perun	Lhota pod Dzbanem	Mutejovice
Petrovice	Rakovnik	Petrovice
Rako	Lubna Krcelak	Rakovnik
General Svoboda	Libusin, Kamenne Zehrovice	Libusin
Svornost	Bdin	Slany
Union <u>b/</u>	Srbec	Slany
Vaclav <u>b/</u>	Prerubenice	Slany
Vojtech <u>b/</u>	Hresice	Slany
Antonin Zapotocky	Dubi	Dubi (near Kladno)
Zbrasin	Opcno	Opcno u Loun

* Footnotes for Table 61 follow on p. 174.

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Table 61

Locations and Rail Shipping Points of Coal Mines
in the Kladno-Rakovnik-Slany Basin in Czechoslovakia a/
(Continued)

-
- a. Bituminous coal, except black chalk coal, at Zbrasin mine. The list includes the Frantiska mine at Jedomelice, the Svornost mine at Bdin, the Vojtech mine at Hresice, and the Zbrasin mine at Opcno, which are not shown on an official map of the Czechoslovak mines in 1948. The map, however, shows the Eva mine at Mutejovice, the Jirina mine at Pochvalov, and the Richard mine at Hredle. The Eva mine was not operating. The list does not include the Armady mine, which was mentioned in October 1953. 542/
- b. Not operating in 1948.
- c. Former President Benes mine. The name was changed in January 1952. 543/

Table 62

Locations and Rail Shipping Points of Coal Mines
in the Plzen-Radnice Basin in Czechoslovakia a/*

<u>Present Mine Name</u>	<u>Location</u>	<u>Railroad Freight Station</u>
Anna <u>b/</u>	Senec	N.A.
Antonin	Mirosov	Mirosov
Barbora	Radnice, Vranov	Radnice
Dobre Stesti	Dobransy	Dobransy
Eliska	Chlumcany	Dobransy
Ferdinand	Chomle	Radnice
Jiri	Privetice	Radnice
Josef <u>b/</u>	Chrast'ovice	Mladotice
Josefa <u>b/</u>	Obora	Kaznejov
Karel <u>c/</u>	Kamenny Ujezd	Nyrany
Krejjsa II <u>b/</u>	Bukova	Mestys Stankov
Krimich I	Tlucna	Nyrany

* Footnotes for Table 62 follow on p. 175.

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Table 62

Locations and Rail Shipping Points of Coal Mines
in the Plzen-Radnice Basin in Czechoslovakia a/
(Continued)

<u>Present Mine Name</u>	<u>Location</u>	<u>Railroad Freight Station</u>
Krimich II	Tlucna	Nyrany
Svate Kriz	Radnice	Radnice
Marie c/	Doubrava	Nyrany
Masaryk	Tynec	Stod
Masaryk Jubilee	Zbuch	Nyrany
Matylda	Brasy	Stupno-Brasy
Prokop	Vejvanov	Radnice
Teresie b/	Vranovice	N.A.
Vaclav c/	Kamenny Ujedz	Nyrany
Zdenek b/	Mostiste	Radnice

a. Bituminous coal.

b. Possibly not in operation. The Anna, Josefa, Teresie, and Zdenek mines were not operating in 1948.

c. Attached mines.

Table 63

Locations and Rail Shipping Points of Coal Mines
in the Trutnov (Zacler-Svatonovice) Basin in Czechoslovakia a/*

<u>Present Mine Name</u>	<u>Location</u>	<u>Railroad Freight Station</u>
Chlivecky	Chlivec	Rtyne v Podkrkonosi
Eliska b/	Zacler	Lampertice
Ida c/	Rtyne v Podkrkonosi	Svatonovice-Upice
Julie d/	Lampertice	Lampertice
Katerina	Radvanice	Radvanice

* Footnotes for Table 63 follow on p. 176.

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Table 63

Locations and Rail Shipping Points of Coal Mines
in the Trutnov (Zacler-Svatonovice) Basin in Czechoslovakia a/
(Continued)

<u>Present Mine Name</u>	<u>Location</u>	<u>Railroad Freight Station</u>
Marie <u>d/</u>	Lampertice	Lampertice
Petiletka <u>b/</u>	N.A.	N.A.
Slepy <u>c/</u>	Rtyne v Podkrkonosi	Svatonovice-Upice
Jan Sverma <u>b/</u>	N.A.	N.A.
Tmavy	Rtyne v Podkrkonosi	Svatonovice-Upice
N.A.	Kralovec-Cerna Voda <u>e/</u>	N.A.

- a. Bituminous coal.
 b. Not shown on official mine map of 1948 and need confirmation. 544/
 c. Ida and Slepy mines are operated together.
 d. Julie and Marie mines are operated together.
 e. A report of 30 June 1953 mentions that a new coal mine was being built near this village. 545/

Table 64

Locations and Rail Shipping Points of Coal Mines
in the Rosice-Oslavany Basin in Czechoslovakia a/*

<u>Present Mine Name</u>	<u>Location</u>	<u>Railroad Freight Station</u>
Anna	Zbysov	<u>b/</u>
Antonin <u>c/</u>	Zbysov	<u>b/</u>
Ferdinand	Ferdinand	Zastavka u Brna
Jindrich	Zbysov	<u>b/</u>
Julius	Zastavka	Zastavka u Brna
Pionir	<u>d/</u>	<u>d/</u>
Vaclav Nosek <u>e/</u>	Oslavany	Oslavany

* Footnotes for Table 64 follow on p. 177.

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Table 64

Locations and Rail Shipping Points of Coal Mines
in the Rosice-Oslavany Basin in Czechoslovakia a/
(Continued)

- a. Bituminous coal. 546/
 b. Zbysov is a few kilometers south of Zastavka, with which it is apparently connected by a spur line.
 c. Formerly the Laska Bozi mine.
 d. Assumed to be near the Ferdinand and Julius mines and reopened according to 1951-52 information. 547/
 e. Formerly the Kukla mine.

Table 65

Locations and Rail Shipping Points of Coal Mines
in the North Bohemian Basin in Czechoslovakia a/*

<u>Present Mine Name</u>	<u>Type</u>	<u>Location</u>	<u>Railroad Freight Station</u>
Alexandr	Deep	Hrdlovka	Osek
Arnost	Strip	Zichlice	Rtyne v Podkrkonosi
Barbora	Deep	Kocourkov	Oldrichov
Barbora	Deep and Strip	Krizanov	Kost'any
Beta	Deep	Vrksman	Strupcice
Brittania VI	Deep	Probostov	Bohosudov
Centrum	Deep and Strip	b/	b/
Joseph David <u>c/</u>	Deep	Most	Most
Emanuel <u>c/</u>	Deep	Srbice	Bohosudov
Evzen	Deep and Strip	Most	Most
Fortuna	Strip	Komorany	Trebusice
Frantiska II	Deep	Radonice	Radonice and Kadan
Julius Fucik	Strip	Zelenky	Svetec
Gallus <u>c/</u>	Deep	Prédlice	Trmice
Gustav	Strip	Varvazov	Telnice
Hana	Deep	Haj	Osek

* Footnotes for Table 65 follow on p. 179.

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Table 65

Locations and Rail Shipping Points of Coal Mines
in the North Bohemian Basin in Czechoslovakia a/
(Continued)

<u>Present Mine Name</u>	<u>Type</u>	<u>Location</u>	<u>Railroad Freight Station</u>
Herkules	Deep	Zaluzi	Most
Prokop Holy	Deep	Tuchomysl	Tuchomysl
Hrabak	Deep	Cepirohy	Most
Julius I, II	Deep and Strip	<u>d/</u>	<u>d/</u>
Julius III	Deep	Kopisty	Most
Karel	Strip	Cukmantl	Teplice-Lesni Brana
Karolina I, II	Strip	Kremyz, Bzany	Ohnic
Katerina	Deep	Modlany	Bohosudov
Kohinoor I	Deep	Lom	Lom u Mostu
Kohinoor II	Deep	Marianske Radcice	Marianske Radcice
Kolumbus	Deep	Zaluzi	Most
Marshal Konev	Deep	Drinov	Jezeri
5 Kveten	Deep	Trnice	Trnice
Leontyna	Deep and Strip	Duchcov	Duchcov
Lezaky	Strip	Most	Most
Libuse (Satra)	Strip	Prunerov	Kadan, Prunerov
Libkovic I <u>e/</u>		<u>e/</u>	<u>e/</u>
Lota-Marie	Strip	Svetec	Svetec-Chotejovice
Ludmila	Deep	Ceske Kralupy	Ceske Kralupy
Mariana	Strip	Skyrice	Zidovice
Mariana Lezaky <u>e/</u>		<u>e/</u>	<u>e/</u>
Marie <u>c/</u>	Deep	Kvitkov	Teplice
Marie	Deep and Strip	Lom	Louka-Horni Litvinov
Marketa III <u>c/</u>	Deep	Srbice	Bohosudov
Maxim Gorkiy <u>f/</u>	Strip	Bilina	Bilina
President Masaryk	Deep	Brestany	Brestany
Milada II	Deep	Chabarovice	Chabarovice
Minerva		<u>e/</u>	<u>e/</u>
Zdenek Nejedly	Deep	Sous	Most
Nelson <u>g/</u>	Deep	Nova Ves	osek
Obrance Miru <u>h/</u>	Strip	Horni Jiretin	Trebusice, Most
Osvobozeni	Deep and Strip	Rednice	Rednice

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Table 65

Locations and Rail Shipping Points of Coal Mines
in the North Bohemian Basin in Czechoslovakia a/
(Continued)

<u>Present Mine Name</u>	<u>Type</u>	<u>Location</u>	<u>Railroad Freight Station</u>
Otaker II	Strip	Kost'any	Kost'any
Pansky Les	Deep	Probostov	Bohosudov, Teplice
Patria I-III	Deep and Strip	Svetec	Svetec-Chotejovice
Pavel II	Deep	Horni Litvinov	Louka-Horni Litvinov
Petr a Pavel	Deep	Nechvalice	Uporiny
Pluto	Deep	Louka	Louka-Horni Litvinov
Premysl	Deep	Zalany	Zalany
President Roosevelt <u>l/</u>	Strip	Ervenice	Holesice-Ervenice
Quido I-III	Deep	Dolni Jiretin	Most
Rudiy II	Strip	Bilina	Bilina
Partyzan Slansky <u>j/</u>	Deep	Hamry	Horni Litvinov
Partyzan II		<u>k/</u>	<u>k/</u>
General Svoboda	Strip	Branany	Marianske Radcice
Svornost	Deep	Ohnic	Ohnic
Jan Sverma <u>l/</u>	Strip	Ervenice	Ervenice
Vaclav	Deep	Krbice	Chomutov
Vaclav	Strip	Lahost	Duchcov
Venuse	Deep	Konobrze	Marianske Radcice
Vitezny Unor <u>m/</u>	Deep	Litvinov	N.A.
Vrbensky	Strip	Sous	Most, Sous
Washington	Deep	Trebusice	Trebusice
Jan Zizka	Deep	Michanice-Chomutov	Chomutov

a. Brown coal. An official map of Czechoslovak mines shows the Florian III mine near Srbice (not operating in 1948) and the Hugo mine at Rednice, which may be included in the list under other names.

b. The Centrum mine is near Zaluzi and probably uses the Most freight station.

c. Mine was not operating in 1948.

d. Probably located near Kopisty and ships from Most freight station.

e. There is no information about the type of mine, location, or shipping point.

f. Formerly the Rudiy I mine.

g. Nelson I, II, III, IV have been reported.

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S-E-C-R-E-T

Table 65

Locations and Rail Shipping Points of Coal Mines
in the North Bohemian Basin in Czechoslovakia a/
(Continued)

-
- h. Formerly the President Benes mine.
 - i. Formerly the Hedvika mine.
 - j. The name may have been changed to Partyzan I or Partyzan II.
 - k. Possibly near Partyzan Slansky mine and uses the same shipping point.
 - l. Formerly the Robert mine.
 - m. Formerly the Herkules mine.

Table 66

Locations and Rail Shipping Points of Coal Mines
in the Sokolov Basin in Czechoslovakia a/*

<u>Present Mine Name</u>	<u>Type</u>	<u>Location</u>	<u>Railroad Freight Station</u>
Adolf-Zofie	Deep	Bukovany	Citice/Dasnice-Chlum Svate Mari
Anezka	Deep	Haselbach	Svatava
Anna	Deep	Nove Sedlo	Nove Sedlo
Anna	Deep	Otovice	Karlovy Vary
Antonin	Strip	Dolni Rychnov	Citice
Antonin-Eleonora b/	Deep and Strip	Sedlec	Karlovy Vary
Arnost-Ludmila	Deep	Libavske udoli	Kynsperk nad Ohri
Bedrich	Deep	Litrbachy Ves	Svatava-Davidov
Bohemia	Strip	Sokolov nad Ohri	Sokolov nad Ohri
Bozi Pozehnnani	Strip	Pochlovice-Kynsperk	Kynsperk nad Ohri
Erika II	Strip	Tyn	Sokolov nad Ohri
Felician II, III	Deep	Citice	Citice
Gustav	Strip	Habertov	Chlum Svate Mari
Ilsa	Strip	Pocerny	Karlovy Vary (Upper Station)
Jindrich	Deep	Chodov, Bozicany	Chodov, Bozicany

* Footnotes for Table 66 follow on p. 181.

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Table 66

Locations and Rail Shipping Points of Coal Mines
in the Sokolov Basin in Czechoslovakia a/
(Continued)

<u>Present Mine Name</u>	<u>Type</u>	<u>Location</u>	<u>Railroad Freight Station</u>
Jiri	Deep	Lomnice	Sokolov nad Ohri
Josef-Jan b/	Deep	Pila	Karlovy Vary (Lower Station)
Karoli	Deep	Otovice	Karlovy Vary
Leopold b/	Deep	Sadov	Sadov
Libik	Strip	Habertov	Dasnice
Lidice	Deep	Citice	Citice
Marie	Deep	Konigswarth	Sokolov nad Ohri
Marta	Strip	Pocerny	Dvory u Karlovy Vary
Medard	Strip	Haselbach	Svatava
Michael	Deep	Stare Sedlo	Nove Sedlo
Rudolf	Deep	Habertov	Chlum Svate Mari
Silvestr	Strip	Dolni Rychnov	Citice
Marshal Tito c/	Deep	Nove Sedlo	Nove Sedlo
H.S. Truman c/	Deep and Strip	Nove Sedlo	Nove Sedlo
Tynsky	Strip	Lomnice	Sokolov nad Ohri
Zofie	Deep	Bukovany	Dasnice-Chlum Svate Mari

a. Brown coal. The Erika II mine produces so-called lignite wax. The list does not include the Jednota mine, which was mentioned in a report of December 1952.

b. [redacted] the Antonin-Eleonora, Josef-Jan, and Leopold mines had recently closed down. [redacted] the Anezka mine had also been closed, but apparently is not the Anezka mine located at Haselbach. 548/

c. The name of this mine is believed to have been changed. There has been reference to the Nove Sedlo mine, which may be either the former Tito or H.S. Truman mine.

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S-E-C-R-E-T

Table 67

Location and Rail Shipping Point of the Coal Mine
in North Bohemia in Czechoslovakia a/

<u>Present Mine Name</u>	<u>Location</u>	<u>Railroad Freight Station</u>
Kristina <u>b/</u>	Hradek nad Nisou	Hradek nad Nisou

- a. Not to be confused with North Bohemian Basin.
b. Deep and surface mine, extracting both lignite and brown coal.

Table 68

Location and Rail Shipping Point of the Coal Mine
in the Central Bohemian Basin in Czechoslovakia

<u>Present Mine Name</u>	<u>Location</u>	<u>Railroad Freight Station</u>
Lisek <u>a/</u>	Stradonice	Beroun

- a. Mining black (bituminous) coal.

Table 69

Location and Rail Shipping Point of the Coal Mine
in the Slezsko Basin in Czechoslovakia

<u>Present Mine Name</u>	<u>Location</u>	<u>Railroad Freight Station</u>
Bedrich <u>a/</u>	Serksdorf	Serksdorf

- a. Mining lignite and brown coal. This is a strip mine which discontinued operation on 1 October 1946. 549/ There is no information to indicate that mining has been resumed.

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Table 70

Locations and Rail Shipping Points of Coal Mines
in the South Bohemian Basin in Czechoslovakia

<u>Present Mine Name</u>	<u>Location</u>	<u>Railroad Freight Station</u>
Etna a/	Lhotice	Chotycany
Jaroslav b/	Ujezdec	Ciconice
Svatopluk b/	Mydlovary	Zliv

a. Anthracite.
b. Lignite.

Table 71

Locations and Rail Shipping Points of Coal Mines
in the South Moravian Lignite Basins in Czechoslovakia

<u>Present Mine Name</u>	<u>Location</u>	<u>Railroad Freight Station</u>
Albert	Dubnany	Rohatec
Barbora I	Kelcany, Zeravice	Kelcany
Barbora II	Kelcany, Zeravice	Kelcany
Bedrich	Milotice	Vlcos-Kelcany
Elektra	Bzenec	N.A.
Frantisek	Kyjov	Kyjov
Frantiska de Paula	Milotice	Vlcos-Kelcany
Julius	Sardice	Cejc, Kyjov
Littner	Bzenec	Liderovice
Ludmila	Dubnany	Dubnany
Pomoc Bozi	Dubnany	Dubnany
Tomas	Ratiskovice	Rohatec
Vlasta	Ratiskovice	Hodonin
Vsemoc Bozi	Horovany	Cejc

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Table 72

Locations and Rail Shipping Points of Coal Mines
in the Moravian Chalk Basins in Czechoslovakia a/

<u>Present Mine Name</u>	<u>Location</u>	<u>Railroad Freight Station</u>
Hugo-Karel	Nova Ves	Kuncice
Werner	Januvky	Moravska Trebova
Zdar Buh	Bela	Velke Opatovice

a. So-called "kridove cerne" (black-chalk) type coal.

Table 73

Locations and Rail Shipping Points of Coal Mines
in the Slovakian Province of Czechoslovakia a/

<u>Present Mine Name</u>	<u>Location</u>	<u>Railroad Freight Station</u>
Vychodna (East) <u>b/</u>	Handlova	Handlova
Nova Juzna (New South) <u>b/</u>	Handlova	Handlova
Stara Juzna (Old South) <u>b/</u>	Handlova	Handlova
Zapadna (West) <u>b/</u>	Handlova	Handlova
Nova Zapadna (New West) <u>b/</u>	Handlova	Handlova
Severna (North) <u>b/</u>	Handlova	Handlova
Stara Severna (Old North) <u>b/</u>	Handlova	Handlova
Novaky No. 1 <u>c/</u>	Novaky	Novaky
Novaky No. 2 <u>c/</u>	Novaky	Novaky
Novaky No. 3 <u>c/</u>	Novaky	Novaky
Novaky No. 4 <u>c/</u>	Novaky	Novaky
Obyce <u>d/</u>	Obyce	Topol'cianky
Velka Torona <u>d/</u>	Velka Torona	Cergov
General Stefanik <u>e/</u>	Rad'ovce	Fil'akovo

a. List does not include several mines opened in the Modry Kamen deposits since 1948.



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d. Lignite mines.

e. Hard- (bituminous) coal mine.

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APPENDIX E

LABOR AND PRODUCTIVITY AT COAL MINES IN CZECHOSLOVAKIA

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Table 74

Estimated Average Number of Wage Earners Employed a/*552/
at Coal Mines in Czechoslovakia
1929-49

Year	Hard-Coal Mines			Brown-Coal and Lignite Mines		
	Underground	Surface <u>b/</u>	Over-All	Underground	Surface <u>c/</u>	Over-All
1929	46,181	12,465	58,646	27,053	13,709	40,762
1930	46,459	12,392	58,851	26,017	13,152	39,169
1931	43,252	11,995	55,247	23,552	12,032	35,584
1932	40,425	11,384	51,809	21,945	11,087	33,032
1933	37,145	10,332	47,477	20,797	10,176	30,973
1934	34,429	9,817	44,246	19,597	9,678	29,275
1935	33,087	9,580	42,667	19,407	9,549	28,956
1936	32,033	9,370	41,403	19,475	9,568	29,043
1937	33,897	9,495	43,392	19,831	9,930	29,761
1938	N.A.	N.A.	46,828	N.A.	N.A.	26,485
1939	N.A.	N.A.	55,081	N.A.	N.A.	32,069
1940	N.A.	N.A.	60,116	N.A.	N.A.	36,756
1941	N.A.	N.A.	63,022	N.A.	N.A.	37,521
1942	N.A.	N.A.	69,275	N.A.	N.A.	44,017
1943	N.A.	N.A.	76,980	N.A.	N.A.	47,746
1944	N.A.	N.A.	75,929	N.A.	N.A.	44,200
1945	40,536	20,140	60,676	24,242	16,170	40,412
1946 (Dec)	41,476	14,266	55,742	25,050	11,631	36,681
1947 (Jun)	44,621	14,742	59,363	18,757	22,035	40,792
1947 (Dec)	48,854	14,953	63,807	20,740	21,960	42,700
1948 (Mar)	49,535	15,015	64,545	20,375	21,199	41,574
1948 (Jun)	50,341	14,911	65,252	18,002	19,943	37,945
1948 (Dec)	48,615	14,588	63,203	18,141	19,301	37,442
1949 (Mar)	48,021	14,197	62,218	18,680	19,674	38,354
1949 (May)	N.A.	N.A.	57,027	N.A.	N.A.	N.A.

* Footnotes for Table 74 follow on p. 187.

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Table 74

Estimated Average Number of Wage Earners Employed a/
at Coal Mines in Czechoslovakia
1929-49

-
- a. Figures exclude technical personnel, persons employed at ancillary works, and office workers. For the years 1929-37, the figures are yearly averages calculated from total number of shifts worked plus involuntary absenteeism minus shifts worked on Sundays divided by the number of normal working days. For the years 1938-45 figures relate to the number on the books at the end of the year in the present territory.
- b. Surface workers at deep mines. There are no strip mines producing hard coal.
- c. Surface workers at deep and strip mines.

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Table 75

Estimated Average Output Per Man-Shift in Coal Mines
in Czechoslovakia a/ 553/
1929-49

Year	Metric Tons			
	Hard-Coal Mines		Brown-Coal and Lignite Mines	
	Underground	Over-All	Underground	Over-All
1929	1.316	1.009	3.027	1.938
1930	1.312	0.995	3.040	1.911
1931	1.372	1.028	3.230	2.030
1932	1.406	1.037	3.350	2.097
1933	1.537	1.130	3.408	2.178
1934	1.589	1.166	3.512	2.253
1935	1.654	1.213	3.483	2.225
1936	1.772	1.311	3.517	2.260
1937	1.837	1.404	3.571	2.293
1938	1.460	1.116	2.548	1.793
1939	1.399	1.094	2.226	1.551
1940	1.334	1.047	2.166	1.428
1941	1.293	0.987	2.106	1.362
1942	1.198	0.933	2.047	1.326
1943	1.138	0.881	1.800	1.203
1944	1.076	0.802	1.762	1.203
1945 b/	1.080	0.701	2.528	1.446
1946 b/	1.349	0.928	2.645	1.739
1946 (Dec)	1.391	0.977	2.686	1.792
1947 (Jun)	1.485	1.085	2.177	2.103
1947 (Dec)	1.453	1.077	2.024	1.965
1948	1.451	1.086	2.348	2.229
1948 (Mar)	1.432	1.075	2.145	2.129
1948 (Jun)	1.489	1.119	2.342	2.155
1948 (Dec)	1.496	1.121	2.392	2.491
1949 (Mar)	1.468	1.148	2.512	2.663
1949 (May)	1.482	1.150	N.A.	N.A.

a. From 1938 to 1944, inclusive, the figures relate only to the Protectorate of Bohemia and Moravia.

b. Provisional figures.

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Table 76

Estimated Average Number of Days Worked at Coal Mines
in Czechoslovakia a/ 554/
1929-46

<u>Year</u>	<u>Hard-Coal Mines</u>	<u>Brown-Coal and Lignite Mines</u>
1929	280	284
1930	248	255
1931	232	246
1932	205	227
1933	198	220
1934	209	235
1935	210	235
1936	225	243
1937	252	262
1938	295	278
1939	294	290
1940	302	296
1941	302	288
1942	297	284
1943	284	280
1944	287	267
1945 b/	293	292
1946 <u>b/</u>	309	304

a. From 1938 through 1944, the figures relate only to mines in Bohemia and Moravia.

b. Provisional figures.

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APPENDIX F

PLANNED SUPPLY AND REQUIREMENTS OF OVEN COKE, GAS COKE,
AND BROWN-COAL COKE IN CZECHOSLOVAKIA

Table 77

Planned Supply and Requirements of Oven Coke and Gas Coke
in Czechoslovakia 555/
1949 Plan

	Thousand Metric Tons		
	<u>Bohemia and Moravia</u>	<u>Slovakia</u>	<u>Quantity</u>
Supply			
Reserves as of 31 December 1948			19
Production at Mine-Coke Ovens			3,230
Production at Metallurgical Coke Ovens			1,480
Production of Gas Coke			423
Total			<u>5,152</u>
Requirements			
Mining	40.3	25.0	65.3
Sugar	24.0	6.0	30.0
Distilling	2.5	0.5	3.0
Brewing, Malting	6.5	1.5	8.0
Milling	15.0	3.0	18.0
Food	27.0	3.5	30.5
Metallurgical	2,047.0	a/*	2,047.0
Iron, Metals	205.0	59.0	264.0
Wood	4.5	0.5	5.0
Paper	24.0	1.0	25.0
Chemical Industry	71.0	16.0	87.0

* Footnote for Table 77 follows on p. 192.

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Table 77

Planned Supply and Requirements of Oven Coke and Gas Coke
 in Czechoslovakia 555/
 1949 Plan
 (Continued)

	Thousand Metric Tons		
	<u>Bohemia and Moravia</u>	<u>Slovakia</u>	<u>Quantity</u>
Requirements (Continued)			
Ceramics	95.0	100.0	195.0
Construction	1.5	1.0	2.5
Glass	6.6	0.5	7.1
Textiles, Clothing	26.0	4.0	30.0
Leather, Rubber	5.6	10.0	15.6
Ministry of Information	4.0	1.0	5.0
Waterworks	1.0	0.5	1.5
Electric Power Plants	1.0	1.0	2.0
Gasworks	127.0	8.0	135.0
Water Transport, Urban Railroads	2.0	0.5	2.5
Total	<u>2,736.5</u>	<u>242.5</u>	<u>2,979.0</u>
Czechoslovak State Railroads			36.0
Domestic Heating	770.5	149.0	919.5
Exports			1,217.5
Remaining Supplies			0.0
Total			<u>5,152.0</u>

a. The requirements for metallurgical plants in Slovakia are included in the requirements of the iron and metals industry in Slovakia.

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Table 78

Carbonization of Coal in Mine-Coke Ovens
in Czechoslovakia a/ 556/
1949 Plan

Raw Material Input	Metric Tons Quantity
Bituminous Coal (from Ostrava)	5,075,000
Bituminous Coal (from Rosice)	60,000
Total	5,135,000
Sulfuric Acid	21,000
Total	5,156,000
Product Yield	Requirements
Coke	3,230,000
Gas (Thousand Cubic Meters)	(1,275,000)
Gas	765,000
Ammonium Sulfate	20,520
Raw Tar	109,700
Benzene	27,306
Naphthalene	1,724
Sulfuric Acid	2,400
Water Vapor	232,350
Sludge b/	767,000
Total	5,156,000

- a. Ovens located near coal mines.
b. Assumed to be the wet breeze.

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Table 79

Carbonization of Coal in Metallurgical-Coke Ovens
in Czechoslovakia a/ 557/
1949 Plan

Thousand Metric Tons				
<u>Raw Material Inputs</u>	<u>Kladno</u>	<u>Vitkovice</u>	<u>Trinec</u>	<u>Total</u>
Bituminous Coal (from Ostrava and Kladno)	470.0	820.0	1,013.0	2,303.0
Sulfuric Acid	4.1	6.1	6.5	16.7
Total	<u>474.1</u>	<u>826.1</u>	<u>1,019.5</u>	<u>2,319.7</u>
<u>Product Yield</u>				
Coke	350.0	480.0	650.0	1,480.0
Gas (Million Cubic Meters)	(140.0)	(200.0)	(323.0)	(603.0)
Gas	84.0	120.0	157.0	361.0
Ammonium Sulfate	4.1	6.1	6.5	16.7
Benzene	5.2	6.9	9.4	21.5
Tar	16.0	25.0	33.0	74.0
Naphthalene	0.3	0.4	0.5	1.2
Waste, Water b/	14.5	187.7	163.1	365.3
Total	<u>474.1</u>	<u>826.1</u>	<u>1,019.5</u>	<u>2,319.7</u>

a. Ovens located at steel works.

b. Assumed to be the wet breeze.

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Table 80

Carbonization of Coal in the Gasworks of the CEZ
in Czechoslovakia a/ 558/
1949 Plan

	Metric Tons		
	<u>Bohemia and Moravia Provinces</u>	<u>Slovakia</u>	<u>Entire Country</u>
Source of Supply			
Bituminous Coal	526,000	44,000	570,000
Sulfuric Acid	1,200		1,200
Washing Oil	500	50	550
Water for Quenching	610,000	60,000	670,000
Total	<u>1,137,700</u>	<u>104,050</u>	<u>1,241,750</u>
To Produce			
Coke	412,000	34,300	446,300
Gas (Thousand Cubic Meters)	(221,562)	(17,000)	(238,562)
Gas	137,235	10,500	147,135
Raw Tar	19,400	1,600	21,000
Raw Benzene	1,400	140	1,540
Ammonia	600	96	696
Ammonium Sulfate	1,200		1,200
Naphthalene	90		90
Water Vapor	200,300	22,366	222,666
Water for Quenching	365,000	35,000	400,000
Water Washing Oil	475	48	523
Total	<u>1,137,700</u>	<u>104,050</u>	<u>1,241,750</u>

a. The original goal for 1949 established at the inception of the Five Year Plan was 423,000 tons. Production is estimated at 405,000 tons

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Table 81

Consumption and Use of Brown Coal
and Output of Carbonization Products
at the Stalin Plant in Czechoslovakia 560/
1949 Plan

	Metric Tons
	<u>Quantity</u>
<u>Source of Supply a/</u>	
Brown Pit Coal	3,304,000
Graded Brown Coal	763,000
Total	<u>4,067,000</u>
<u>Grading of Coal</u>	
Graded Coal	2,999,500
Powdered Coal	1,067,500
Total	<u>4,067,000</u>
<u>Use of Graded Coal</u>	
For Carbonization	2,894,000
To Produce Gas	105,500
Total	<u>2,999,500</u>
<u>Carbonization Products</u>	
Brown-Coal Coke (Dry)	1,163,000
Pure Tar b/	303,800
Tar Residues	9,000
Carbonization Water	515,000
Waste-Water Vapor	600,000
Gas	170,000
Losses	133,200
Total	<u>2,894,000</u>

a. The brown pit coal would give 30 percent powder and the graded coal 10 percent.

b. 10.5 percent of graded coal supplied.

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APPENDIX G

STATISTICAL ANALYSIS OF THE PRODUCTION OF COAL GAS
IN CZECHOSLOVAKIA

Table 82

Location of Plants and Production of Coal Gas at Gasworks
in Czechoslovakia ^{561/}
1934 and 1936

<u>City or Town</u>	<u>Annual Output</u> 1934 (Thousand Cubic Meters)	<u>Annual Output</u> 1936 (Thousand Cubic Meters)	<u>Calorific Value</u> (Kilogram Calories per Cubic Meter)
As	593	669	4,500
Bilovec	219	232	5,000
Bratislava	4,257	4,257	5,000
Brno	13,131	14,628	4,450
Cukmantl	80	80	4,400
Caslav	110	110	5,000
Ceska Lipa	404	395	4,700
Ceske Budejovice	1,141	1,141	5,000
Cesky Brod	145	135	5,000
Cesky Tesin	700	580	5,100
Decin	674	600	4,800
Duchcov	214 a/*	225 a/	4,100
Dvur Kralove	372	N.A.	5,000
Falknov nad Ohri (Sokolov)	114	109	N.A.
Frantiskove Lazne	200	200	N.A.
Fryvaldov	290	413	N.A.
Havlickuv Brod (Nemecky Brod)	200	200	4,500
Hostinne	120	120	5,400
Hranice	458	458	4,350
Cheb	799	812	5,200
Chomutov	500	500	5,200
Chrudim	249	225	4,500
Jablonec nad Nisou	3,440	N.A.	5,400

* Footnote for Table 82 follows on p. 199.

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Table 82

Location of Plants and Production of Coal Gas at Gasworks
in Czechoslovakia
1934 and 1936
(Continued)

<u>City or Town</u>	<u>Annual Output 1934 (Thousand Cubic Meters)</u>	<u>Annual Output 1936 (Thousand Cubic Meters)</u>	<u>Calorific Value (Kilogram Calories per Cubic Meter)</u>
Javornik	128	127	4,770
Jicin	240	240	4,800
Jihlava	773	773	4,800
Jirkov	110 a/	90 a/	4,500
Karlovy Vary	2,355	2,334	4,500
Klatovy	501	501	5,200
Kokonin	293	293	5,200
Kolin	270	270	4,800
Komarno	563	663	N.A.
Kosica	1,196	1,196	4,800
Kraliky	100	100	5,000
Kraslice	264	169	N.A.
Krnov	706	650	4,800
Kromeriz	600	600	4,600
Kutna Hora	206	206	5,000
Lanskroun	182	157	5,000
Liberec	2,690	2,928	4,300
Lipnik nad Bečvou	183	183	4,500
Litomerice	593	500	5,000
Lovosice	98	130	4,500
Mistek	315	306	4,800
Mlada Boleslav	1,600	1,600	4,300
Moravska Ostrava	2,389	2,245	4,500
Most	550	520	4,400
Nové Mesto nad Vlatovou	80	90	4,800
Nové Zamky	254	254	4,000
Nový Jicin	525	535	4,500

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Table 82

Location of Plants and Production of Coal Gas at Gasworks
in Czechoslovakia
1934 and 1936
(Continued)

City or Town	Annual Output 1934 (Thousand Cubic Meters)	Annual Output 1936 (Thousand Cubic Meters)	Calorific Value (Kilogram Calories Per Cubic Meter)
Nymburk	185	165	4,500
Olomouc	1,400	1,600	4,500
Opava	2,215	2,162	4,600
Osoblaha	55	55	N.A.
Plzen	5,081	5,081	4,200
Podmokly	560	560	4,800
Praha-Michle	48,029	53,998	4,200
Gottwaldov (Zlin)	1,400	1,450	N.A.
Prostejov	918	850	5,000
Pribram	402	402	5,000
Rakovnik	200	200	5,000
Rokycany	130	130	4,100
Roudnice nad Labem	196	196	N.A.
Rumburk	174	170	4,500
Slany	164	164	4,600
Svitavy	500	840	4,800
Sumperk	373	373	4,500
Teplice-Sanov	1,902 a/	1,418 a/	4,000
Trnava	402	402	N.A.
Trovaný	592	618	4,000
Uherske Hradiste	55	55	3,500
Unicov	190	156	3,800
Usti nad Labem	700) b/	700) b/	4,000
	1,200)	1,200)	
Varnsdorf	456	522	4,500
Vidnava	100	90	4,500
Vitkovice-Moravska Ostrava	2,150	2,330	4,500
Vrchlabi	144	135	4,500
Vyskov	181	168	4,200
Total	<u>116,228</u>	<u>119,939</u>	

a. Gas made from brown coal.

b. Doppelgas. (This gas is produced in the complete gasification of coal and in heat value is intermediate between coal gas and water gas.)

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APPENDIX H

METHODOLOGY

Czechoslovakia has published very few absolute figures relative to the solid fuels industries since 1950, and statistics have not been satisfactory since 1948. There have been available, however, the annual objectives of the Five Year Plan for production of most solid fuels -- briquettes and peat being notable exceptions. Sufficient data have been available to furnish reasonably good estimates of coal and coke production by application of reported percentages to base figures.

The figures for planned distribution of coal, coke, and briquettes in 1949 served as a basis for estimating consumption of these fuels during the 1949-53 period. Because the figures combined various fuels, they had to be adjusted, but partial data on actual consumption in 1948 and 1949 were available. These data made it possible to determine the approximate 1949 consumption of each fuel for various large categories of uses. On this base, estimates were made for following years, using whatever information was available. It was possible, for example, to estimate requirements of coal for coking purposes and for gasworks on the basis of estimated production of coke. Estimates of requirements of coal for electric power stations are based roughly on the estimated increases in production of power and on approximately 1 kilogram of coal is used to produce a kilowatt-hour of electricity. It has been assumed that the production of power at the CEZ (public utility) plants has increased more rapidly than at the industrial and mine plants.

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The principal difficulty in estimating consumption of coal for production of power is lack of a satisfactory power-output breakdown among the CEZ plants, industries, and mining. The 1949 pattern can have changed considerably. The railroads have been forced to use lower quality fuel, and estimates of consumption have been predicted not only on the factor of lower efficiency but also on the trend of increase in ton-kilometers of freight movement. Other than approximations of coal requirements for ferrous metallurgy, no detailed study was made of industrial use, but claims of considerable industrial growth lead to the conclusion that the fuel requirements for

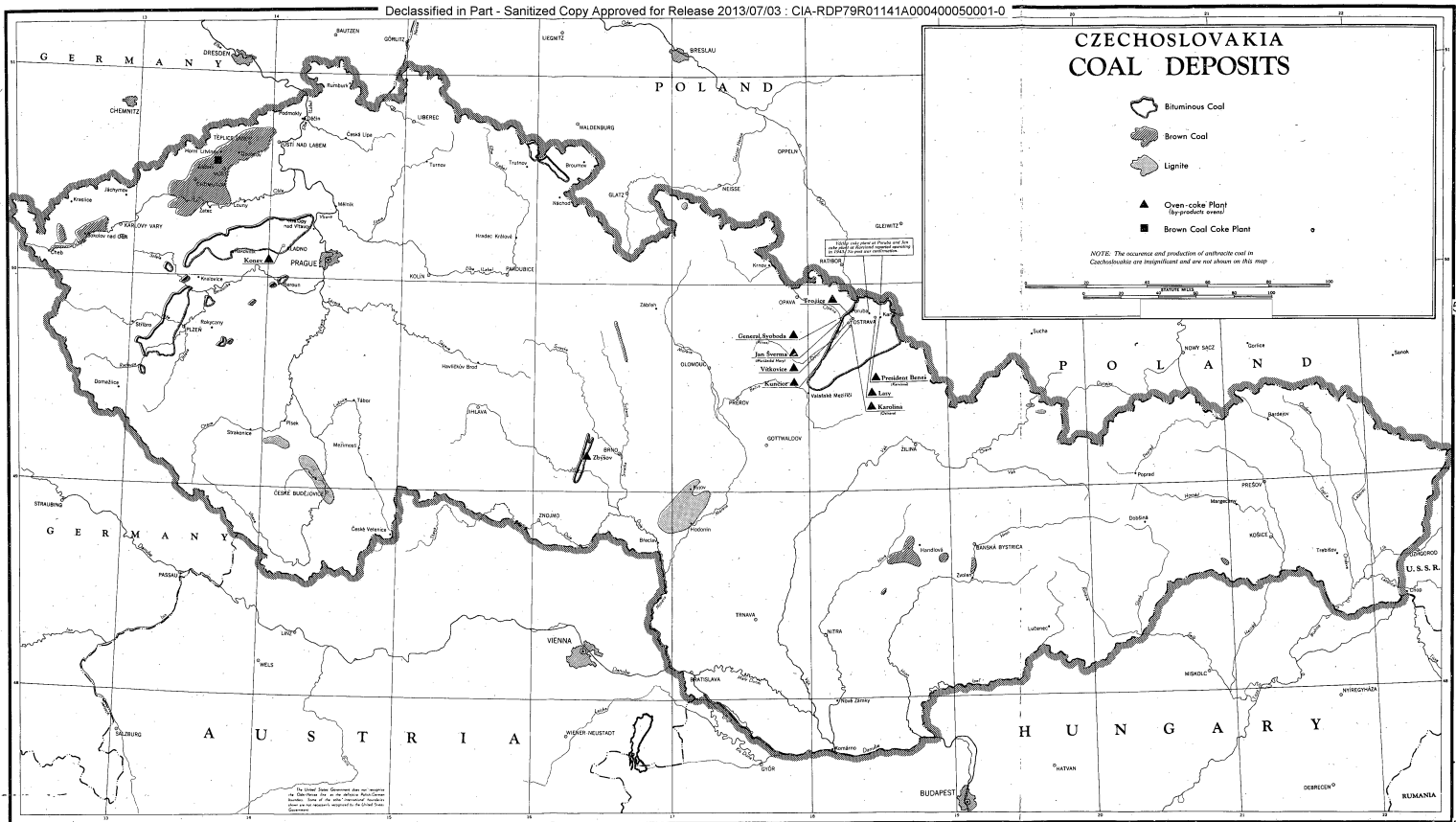
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industry have increased substantially, much of the fuel going for production of power. A few figures on planned consumption of fuel for domestic heating, as well as the reported increase in 1953 as compared with the past, give an approximation of the quantities being consumed.

It has been the intent of this report to furnish as comprehensive a report on the solid fuel industries as possible, but lack of information allowed for little more than superficial discussion of some aspects. Although much of the available information could not be confirmed, it is believed that, on the whole, it is fairly reliable.

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