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DATA ON USSR EXTRACTIVE INDUSTRIES

Number 5

18 June 1958

Prepared by

Foreign Documents Division
CENTRAL INTELLIGENCE AGENCY
2430 E. St., N. W., Washington 25, D.C.

Approved For Release 1999/08/25 : CIA-RDP78-03107A000200020005-3

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I. CHEMICAL INDUSTRY

General

SHORTCOMINGS IN CHEMICAL INDUSTRY -- Moscow, Izvestiya, 2 Mar 58

The pace at which the USSR chemical industry is currently developing still lags behind the demands of the national economy. -- V. Ukhinov, Director, Chemical Industry Administration, Stalinskiy Economic Region.

[This article on shortcomings in the Donets Basin chemical industry appears in condensed form in The Current Digest of the Soviet Press, Vol X, No 9, 9 April 1958, pp 26-27.]

Basic Chemicals

PRODUCTION COSTS OF FOOD AND NONFOOD SYNTHESIS COMPARED -- Moscow, Nauka i Zhizn', No 3, Mar 58, p 14

In the Soviet Union the cost of producing one ton of ethyl alcohol from edible raw materials is 6,150 rubles, and from petroleum raw material, 2,000 rubles. The labor required for the production of one ton of ethyl alcohol from potatoes is 280 man-hours, from grain 160 man-hours, and from petroleum gases 10.3 man-hours.

NEW OXYGEN STATION -- Moscow, Komsomol'skaya Pravda, 5 Mar 58

A large oxygen station has put out its first industrial production in Novgorod. The station will supply oxygen to all the enterprises and business organizations of the city and oblast.

Coke Chemicals and Petrochemicals

USE OF UZBEK NATURAL GAS FOR CHEMICAL INDUSTRY -- Tashkent, Pravda Vostoka, 27 Feb 58

An important task before the chemical workers of the Uzbek SSR is the production and use of synthetic polymers from Bukhara and Fergana natural gases. Steps are being taken to organize the production, on the basis of natural gases, of such important polymers as polyvinyl chloride, polyethylene, and polypropylene, which have found wide use in industry and agriculture.

Together with these types of synthetic polymers, the production of polymers on the basis of furfural, formaldehyde, and other materials has great possibilities. However, mastery of the production of plastics on the basis of cellulose wastes, as well as synthetic polymers from natural gases, has still not been started and is only in its preliminary stages.

In future plans for the economic development of the republic, the Gosplan Uzbek SSR must also include development of the manufacture of the most important varieties of polymer materials.

Great opportunities have also opened for the sovnarkhozes (councils of national economy). In the Uzbek SSR are enterprises which produce and reprocess polymer compounds. These include the Tashkent Paint and Varnish, Leather, Cable, and Phonograph Record plants and the Namangan Acetate Silk Plant. In future years, many of these plants will be reconstructed.

Paint and Varnish Products

NEW PAINT PRODUCT DEVELOPED -- Moscow, Stroitel'naya Gazeta, 19 Mar 58

In 1955, production of oil-free paint "Sintol U" was organized at the Leningrad Paint and Varnish Plant. During the past 3 years, many structures in Leningrad have been coated with this paint. "Sintol U" may be used to paint wood (including floors) and metal structures.

Experiments have shown that coats of "Sintol U" on exterior surfaces are equal in quality to coats of oil paints. After a period of 2 years, synthol paint applied to walls, doors, window sashes, and radiators of heating systems has been found to be in good condition.

The product of the oxidation of white spirit (refined kerosene) has been used as a binder in synthol paints. It is a cheap product of the distillation of petroleum and is in plentiful supply. The paint costs 3,600 rubles per ton.

The use of "Sintol U" paints in place of oil paints saves 125 grams of edible oils and costs 80 kopecks less, per square meter of surface covered.

The experience in producing synthol paints, however, has not been disseminated in other cities, and the production of synthol paints which was begun in Odessa and Tashkent was discontinued although available raw material resources were quite sufficient for the organization of large-scale production of these paints.

In recent years, new water-emulsion (latex) paints based on synthetic resins, such as polyvinylacetate, butadiene-styrene, and acrylate, have been widely used abroad to paint exteriors of buildings, concrete, and wood. These paints are highly resistent to atmospheric conditions. In 1957, at Leningrad Plant No 1 of the Leningradskiy Sovnarkhoz the production of latex polyvinylacetate paints was mastered. The plant also produced an experimental consignment of latex butadiene-styrene paints. These paints were used to coat the exterior of the recently constructed house No 6 on Blokhin Ulitsa.

At Leningrad Plant No 1 it is planned to put out 200-300 tons of polyvinyl acetate paints. However, they will still be expensive; 14,000 rubles per ton of polyvinylacetate paints and 10,000 rubles per ton of butadiene-styrene paints.

Pharmaceutical Production

NEW PHARMACEUTICAL DEVELOPED -- Tbilisi, Zarya Vostoka, 30 Jan 58

The coke-chemical shop of the Transcaucasian Metallurgical Plant imeni I. V. Stalin honored the 18th Congress of the Communist Party of Georgia by mastering the output of a new product.

A pyridine installation has been constructed and put into operation here. By means of this installation, untreated light pyridine bases are collected from the coke gas. These serve as raw material for the pharmaceutical industry. The first hundreds of kilograms of the new product have already been produced.

Processing of the raw pyridine bases yields "ftivazid," an effective antitubercular drug.

Pyridine bases are also the raw material for the production of vitamins and other technical substances.

IODINE-BROMINE RESERVES IN KUBAN -- Moscow, Trud, 18 Feb 58

The existence of large gas deposits in the Kuban has been known for some time. Now geologists have discovered a series of new deposits with a large concentration of condensate. They appear to be equal to the Stavropol deposits in size.

Sometimes the searches of the prospectors have ended in failure. Instead of petroleum the boreholes have yielded water. Analysis of this water has revealed the presence of iodine and bromine, which could be used for medicinal purposes. On the basis of these waters a sanatorium has been built in Khadyshensk. Another source of these waters was discovered at the village of Akhtyrskiy, where a hydropathic hospital has also been constructed.

Synthetic and Artificial Fibers

CHEMICAL INDUSTRY FAILS TO DISSEMINATE NEW PROCESS -- Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 16 Feb 58

More than 6 years have passed since the discovery of the new chemical fiber "enant." The process of making aminoenanthylic and other acids has been tested for 4 years at an experimental-industrial installation of the Moscow Electrolysis Plant. However, the construction of a large industrial shop for manufacturing aminoenanthylic and other acids has been delayed by the Ministry of Chemical Industry. The plan for designing such a shop was entrusted by GIAP (State Institute for Nitrogen Industry) to its affiliate in Dzerzhinsk.

The basic raw materials employed in the production of aminoenanthylic acid are ethylene and carbon tetrachloride. Ethylene, which is contained in the waste gases of oil refineries, is available to USSR industry in large quantities. The technology of obtaining it has been fairly well mastered by Soviet synthetic alcohol plants. Carbon tetrachloride is being manufactured by an obsolete method, the chlorination of carbon bisulfide, and its production is insignificant.

A large aminoenanthylic acid shop requires tens of thousands of tons of carbon tetrachloride. It would be possible to produce it in large quantities. In 1954, Candidate of Technical Sciences Ya. P. Choporov worked out an original method for the production of this product directly from the natural gas methane by means of a thorough one-stage chlorination of the product. Despite the good results obtained by this new method, the Ministry of Chemical Industry has so far not passed it along to the enterprises.

Along with the construction of an experimental installation for aminoenanthylic acid, the ministry should set one up for the production of carbon tetrachloride. So far this has not been done.

CHEMICAL FIBER PRODUCTION INCREASES -- Moscow, Nauka i Zhizn', Mar 58, p 26

In the next few years, the production of chemical fibers in the USSR will be sharply increased. In 1956, it was 12 times as great as in 1940, and by 1960, it will be more than double the 1955 production.

Miscellaneous

FIRST SOVIET PORCELAIN ENTERPRISE IN FAR EAST -- Moscow, Gudok, 5 Jan 58

Large deposits of high-quality kaolin have been discovered in the vicinity of Uglovoye Settlement (Primorskiy Kray). On the basis of this, construction has begun on the first porcelain plant in the Far East. The production capacity planned for the new enterprise is up to 3 million items of various kinds of porcelain dishware.

CITRIC ACID PRODUCTION FROM COTTON PLANTS -- Ashkhabad, Turkmenskaya Iskra, 28 Feb 58

Up to now, a large number of products have been found for the production of citric acid: sugar in the US, lemons in Italy, and sugar and makhorkra tobacco in the USSR.

Scientific associates of the laboratory of cotton chemistry of the Academy of Sciences Uzbek SSR, as reported in Ogonek, decided to investigate what products could be extracted from a cotton plant in all stages of its development.

After a long search, they found that citric acid is contained in the leaves of the cotton plant, which are burned with the plant after de-emulsification. Experiments have been started at a nicotine plant in the city of Babushkin near Moscow. The result has exceeded all expectation. It has been demonstrated that the simple method for extracting acid can also be applied to cotton plants. In 1957, a shop at Babushkin was converted completely to production of the new raw material.

It has been decided to construct a plant in the Uzbek SSR which will extract citric acid from cotton plants.

II. PETROLEUM AND GAS INDUSTRIES

USSR in General

OFFICIAL 1957 PRODUCTION FIGURES RELEASED -- Moscow, Pravda, 27 Jan 58

The Central Statistical Administration USSR reports that 1957 oil output reached 98.3 million tons, 117 percent of 1956. Gas output reached 20.2 billion cubic meters, 148 percent of the 1956 output. Gross production of the refining industry was 117 percent of 1956.

Cargo turnover by oil pipelines increased 29 percent over 1956, whereas pumping of crude oil and petroleum products was 24 percent higher.

FORMER TOP OIL INDUSTRY OFFICIALS NOW HEAD REGIONAL SOVNARKHOZES -- Moscow, Sovetskaya Rossiya, 7 Feb 58

V. S. Fedorov is chairman of the Bashkirskiy Sovnarkhoz (Council of National Economy); V. R. Ryabchikov heads the Checheno-Ingushskiy Sovnarkhoz; A. T. Shmarev is chairman of the Tatarskiy Sovnarkhoz, and I. T. Borisov heads the Kuybyshevskiy Sovnarkhoz.

[Comment: Fedorov was reported in Komsomol'skaya Pravda of 20 January 1956 and Ryabchikov in Na Stroitel'stve Truboprovodov of 29 March 1957 as deputy ministers of the USSR petroleum industry.

Shmarev was reported in Pravda of 1 July 1954 as chief of the Tatar Petroleum Association. Pravda of 29 December 1956 reported that the Council of Ministers USSR appointed him chief of Glavgaz (Main Administration of the Gas Industry USSR) when this agency was set up. He was subsequently replaced by Andrey Kortunov, Minister of Construction of Petroleum Industry Enterprises USSR, when the ministry was abolished in 1957.

A person named Borisov was reported in Promyshlenno-Ekonomicheskaya Gazeta of 4 May 1956 as chief of the Main Administration of Petroleum Construction, under the former construction ministry.]

LONG-TERM EMPHASIS PLACED ON HIGHER OUTPUT OF DIESEL FUELS -- Moscow, Khimiya i Tekhnologiya Topliv i Masel, No 2, Feb 58, pp 3-7

In 1955, the demand for petroleum products was 92 percent higher than in 1950. The demand for diesel fuel, especially, rose sharply between these years. In 1955, it was nearly 3.5 times that of 1950.

From 1950 to 1955, the demand for motor gasoline rose from 18.8 percent to 21.5 percent of the demand for petroleum products in general. The relative demand for tractor kerosene declined, as the demand for diesel fuel rose from 10.7 percent to 25.6 percent of the demand for petroleum products. The demand for boiler mazut also declined from 30.5 percent to 26.8 percent of the demand for petroleum products.

By the end of 1955, basic changes occurred in the consumption of petroleum products. The relative demand for light products, especially diesel and jet fuels, increased, while the demand for boiler mazut declined.

The petroleum industry still fails to meet the demands of the national economy. Although distribution of production throughout the USSR has improved, petroleum supply in the USSR is still a great problem.

While there are excessive resources of light fuels in the areas of the Urals and along the Volga, the areas in Siberia, the Far East, and Central Asia must obtain these fuels by rail from long distances. The petroleum supply is not very favorable in some areas of Kazakhstan which are located far from the refining centers. Moreover, there is a great shortage of resources even in some of the consumption centers of the western, northwestern, and central areas of the USSR and in the Ukraine.

Transport and the large heavy industry enterprises which are distributed throughout the USSR are forced to obtain considerable quantities of turbine, transformer, cylinder, and other oils from Baku and other southern crude refining centers, overloading the railroads with long-distance hauls.

The supply of mazut is particularly complicated because of the locations of the producing centers. There are excessive long-distance and counter hauls resulting from the location of the producing centers and the use of low-sulfur and sulfur mazut for technological and fuel requirements of industry. For example, industry in the Urals obtains hundreds of thousands of tons of low-sulfur mazut from the south, while excessive supplies of sulfur mazut are hauled from the refineries in the Urals into consumption centers in an opposite direction.

Based on the projected expansion of the separate branches of the national economy, it is estimated that, in 1965, the demand for petroleum products in the USSR will be nearly three times as great as in 1955 and more than five times that of 1950.

The following table indicates the expected demand of the national economy in 1965 for the principal petroleum products (in coefficient of rising demand):

	1965 Demand in USSR		1965 Demand in European USSR		1965 Demand in Eastern USSR	
	Based on 1955	Based on 1950	Based on 1955	Based on 1950	Based on 1955	Based on 1950
Fuels						
Motor gasoline	2.89	6.36	2.66	5.90	3.37	7.28
Tractor kerosene	0.37	0.31	0.38	0.32	0.33	0.28
Diesel fuel	4.74	16.80	4.19	13.88	5.43	21.17
Total	3.22	6.97	2.88	6.09	3.68	8.76
Oils						
Motor	1.95	2.20	1.87	2.17	2.08	2.20
Diesel	4.51	23.30	3.95	19.00	5.24	30.06
Industrial	2.79	4.54	2.57	4.45	3.44	4.70
Others	4.01	5.29	4.01	5.09	4.01	5.70
Total	2.97	4.51	2.78	4.20	3.43	5.11
Nigrol	3.63	6.30	3.10	5.11	4.55	8.49
Graded mazuts	2.24	2.91	1.99	2.78	2.96	3.19

	1965 Demand in USSR		1965 Demand in European USSR		1965 Demand in Eastern USSR	
	Based on 1955	Based on 1950	Based on 1955	Based on 1950	Based on 1955	Based on 1950
Other dark products						
Fuel mazut	1.53	2.60	1.35	2.18	2.00	3.86
Petroleum asphalt	3.50	7.60	2.95	5.94	5.15	1.51
Coke	6.00	8.60	2.40	4.00	13.78	15.11
Total	1.75	3.07	1.54	2.54	2.40	4.88
Total for all petroleum products	2.71	5.38	2.39	4.44	3.44	7.09

The following table gives the consumption of petroleum products in 1955 and that expected in 1965 in the European and eastern USSR (in percent of total USSR consumption):

	1955		1965	
	European USSR	Eastern USSR	European USSR	Eastern USSR
Fuels				
Motor gasoline	66.7	33.3	61.5	38.5
Tractor kerosene	67.0	33.0	70.2	29.8
Diesel fuel	55.3	44.7	49.6	50.4
Other fuels	73.6	26.4	68.9	31.1
Total	65.3	34.7	58.6	41.4
Oils	66.0	34.0	60.5	39.5
Nigrol	62.4	37.6	52.0	48.0
Graded mazut	74.0	26.0	65.5	34.5

	1955		1965	
	European USSR	Eastern USSR	European USSR	Eastern USSR
Other dark products				
Boiler mazut	73.0	27.0	64.8	35.2
Petroleum asphalt	75.3	24.7	63.5	36.5
Coke	68.4	31.6	27.6	72.4
Total for all petroleum products	68.0	32.0	60.0	40.0

The percentage of demands of the different branches of the national economy will also be changed. The increasing number of automobiles and tractors in agriculture will require more than twice as much of the light products in 1965 as in 1955. Agriculture will continue to be the largest consumer of light fuels and lubricants. Of the over-all demand for petroleum products in the USSR, the demand for light products will increase to 71.4 percent in 1965, in contrast to 69.3 percent in 1960 and 60.2 percent in 1955.

Light products, especially motor gasoline and diesel fuel, will determine the level of production in the USSR and the principal direction in the technology of refining crude oil up to 1965.

The expansion of jet-propulsion engineering creates a considerable change in the demand for aircraft fuel. While demand for aviation gasoline will rise somewhat, its proportion in the over-all demand will decrease because of a considerably higher demand for aviation kerosene, especially in the civil air fleet.

The rate and scale at which the demand for autotractor fuel will increase depends on how economically different types of fuels will be used and on the basic tendencies contemplated in expanding motor vehicle production in the USSR and abroad.

Any expansion in the production of diesel motor vehicle, including trucks, is very unlikely in the US, which has an enormous fleet of personal passenger cars and a great capacity for producing motor gasoline. During 1954 and 1955, the output of diesel trucks and buses was only 1-2 percent of the total produced. There is a tendency in the US to make gasoline-powered motor vehicles with carrying capacities up to 21 tons more economical in operation.

Any expansion of diesel-powered freight motor transport in the US would require retooling of the motor vehicle plants and would lead to a sharp reduction in refining because of lower demands for motor gasoline. It seems likely that the introduction of diesel drive in US freight motor transport has been held up by a collusion between the automotive and the refining industries.

In Western Europe, which depends on oil imports, dieselization on motor vehicles, especially trucks, is developing at a fast pace and on a large scale, despite present shortcomings in the construction of diesel-drive vehicles as compared with the carburetor-type. These shortcomings are: more labor and metal required to build a diesel engine, starting and operational difficulties, higher repair costs, smoke, noise, etc.

The motor vehicle fleet in the USSR is expanding for different reasons: prevailing importance of trucks in the over-all motor vehicle fleet, cheaper transport and economy in the use of different types of light products, and the accumulating reserves of different light products.

According to NAMI (Automotive Research and Development Institute), dieselization of the USSR motor vehicle fleet within the next 10-15 years will follow approximately this pattern: all trucks of more than 4 tons will operate on diesel fuel; the 4-ton trucks will be equipped to operate on motor gasoline and diesel fuel, depending on the accumulated petroleum supply; trucks below 4 tons and all passenger cars will operate on motor gasoline.

The haulage of cargo by diesel-drive trucks will increase approximately three times as fast as haulage by the gasoline-powered vehicles.

The octane ratings of the present motor gasolines A-66 and A-70 must be improved because both of these gasolines fail to meet the operating requirements in the north and northwest regions during the cold winter period and in the south during the hot summer period.

While there will be almost no demand for tractor kerosene in 1965, the demand for diesel fuel will increase to 42 percent of the over-all demand for light products.

Of the over-all demand for diesel fuel, the demand in agriculture will decline from 45.3 percent in 1955 and 53.9 percent in 1950 to 38.9 percent in 1965. Meanwhile, the demand in transport will rise sharply. In 1965, it is expected to be 24.3 percent of the over-all demand, in contrast to 16.3 percent in 1960 and 9 percent in 1955. Diesel traction is replacing steam traction on the railroads and will account for 40.2 percent of the traction in 1965 in contrast to 18.6 percent in 1960 and 4.1 percent in 1955.

The satisfaction of increasing demands for diesel fuel by the economy is closely connected with the quality of the product. Since more and more sulfurbase crude oil is being refined, steps must be taken to remove the sulfur from the fuel produced from the sulfured crude. Moreover, winter and other special grades of diesel fuels must be produced in the eastern regions, thus relieving the economy of being dependent on the long-distance hauls of this fuel from the southern regions.

Difficulties in production and transport are foreseen in meeting the demands for particular fuels because of the present technological processes in production and the specifications set for the use of petroleum products, especially diesel fuel.

Preliminary estimates of the Institute on the Volume and Structure of Production indicate that, if the present technological processes and specifications are used, in 1965 there will be a shortage of diesel fuel and an excessive oversupply of motor gasoline and tractor kerosene.

A larger volume of refining of crude oil to meet completely the demand for diesel fuel, a product to which first importance has been attached in the over-all petroleum supply plan, and an excessive oversupply of motor gasoline and tractor kerosene and the accompanying long-distance and counter hauls can be prevented if the fractional composition of diesel fuel is extended from the end fractions (180°-200° range) of motor gasoline. Moreover, the gap between the production and consumption of these petroleum products would be eliminated and the quality of the products (higher octane rating of motor gasoline and lower content of sulfur and paraffin in diesel fuel) would be improved. Commercial extraction of diesel fuel should also be increased from the tractor kerosene bottoms by means of hydrogenation, a process which would improve the quality of kerosene as a component of diesel fuel.

At the same time, the extended-range diesel fuel should undergo wide-scale operating tests, and a new GOST specification should be set up. The fraction-separating fixtures on the AVT unit should be rebuilt to allow an increased output of commercial diesel fuel; deparaffination of fractions at 300°-350° should be organized; and some of the diesel locomotives should be converted to use heavier diesel fuel, while the diesel-electric marine engines should be converted to operate on standard mazut.

Moreover, some proper ratio should be set up between the number of engines using motor gasoline and those using diesel fuel, dependent on the capability of the petroleum industry to produce diesel fuel in 1965.

In 1965, the national economy will require nearly three times as much lubricants as in 1955. The proportion of these lubricants required by the various branches of the economy will be changed. While the proportion of lubricants used in the economy will decline somewhat in agriculture, it will increase to 53.3 percent in industry in general. Transport will consume 13.5 percent, in contrast to 11.8 percent in 1960 and 8.1 percent in 1955.

Preliminary estimates of the output of lubricants in 1965 indicate that the remote areas of the east, particularly in Kazakhstan and the Far East, will still depend to a great extent on lubricants being hauled in from great distances. It is also unlikely that there will be a sufficient supply of lubricants in the European USSR. For this reason, construction of lube oil units at the oil refineries in the interior of the country must be speeded up.

Serious attention must be devoted to improving the stability of oils, as well as to producing additive oils. Since there are to be more high-speed marine engines in operation and more sulfurous fuel is to be used, detergent additives must be developed to prevent corrosion and wear.

TOP OIL INDUSTRY OFFICIAL SURVEYS LONG-TERM OUTLOOK OF INDUSTRY -- Moscow, Neftyanoye Khozyaystvo, No 1, Jan 58, pp 1-8

[Comment: The following is from an article by V. A. Kalamkarov and D. I. Notkin of Gosplan USSR. Kalamkarov has been identified in Bakinskiy Rabochiy of 11 January 1958 as chief of the Department of Petroleum and Gas Industry of Gosplan USSR. He was previously identified, in Izvestiya of 2 March 1955, as Deputy Minister of Petroleum Industry USSR. No earlier information has been noted about Notkin.]

In approximately the next 15 years, petroleum production in the USSR will reach 350-400 million tons a year, whereas the extraction and production of gas will reach 270-320 billion cubic meters. Coal extraction in the same period will reach 650-750 million tons. This means that approximately 13-15 times as much gas, 3.5-4 times as much crude oil, and 1.4-1.6 times as much coal as at present must be produced.

It is expected that the increase in these basic fuels in the next 15 years, in terms of conventional fuel, should be 300-360 million tons of gas, 360-430 million tons of crude oil, and 135-210 million tons of coal.

The following table indicates the present and expected breakdown of the fuel balance (in percent):

	1950	1957	1972
Coal	76.8	67.2	26.5-36.4
Petroleum	20.6	27.9	38.5-38.0
Gas	2.6	4.9	25.0-25.6

While coal will continue its predominant position in the fuel balance for some time, the percentage of coal in 1972 will be reduced to less than half that of 1950, whereas the percentage of petroleum and gas combined will be nearly tripled.

The US increased its petroleum output from 98 million to 352 million tons per year over a period of 32 years. The USSR expects to do the same thing in less than half the time. The gap between the US and the USSR has declined sharply since 1946. Petroleum output in the US was 11 times that of the USSR in 1946, 7 times in 1950, and 4.8 times in 1955. US output was 4.2 times as high in 1956 and approximately 3.7 times as high in 1957. The USSR plans to reduce this gap so that US output will be 2.8 times as high in 1960.

From 1952 to 1956, the US increased its output by 41.6 million tons, whereas the USSR, over a similar period (1953-1957), increased its output by 45.4 million tons.

While there has been 10-12 times as much drilling in the US as in the USSR since 1946, the present explored petroleum reserves in the US are less than twice as large as in 1946.

Drilling in the USSR is much more effective than in the US. The amount of petroleum extracted by the US for every 100 meters drilled declined from 590 tons in 1949 to 480 tons in 1955 and 1956. Meanwhile, for every 100 meters that the USSR drilled, it produced 930 tons of petroleum in 1949, 1,380 tons in 1955, and 1,590 tons in 1957.

To maintain its high rate of extraction for many years, the US explored and has been developing a significant part of its deposits. The USSR, on the other hand, is only beginning to do this.

The USSR is developing its petroleum deposits by means of outer and inner water flooding. The latter method, first used at the Romashkino deposit in the Tatarskaya ASSR, one of the largest deposits in the world, made it possible to develop the deposit at lower drilling costs. In 3 1/2 years, inner water flooding at this deposit saved 7-8 billion rubles in capital investments and nearly 1.5 billion rubles in operating expenses.

The turbodrill has greatly speeded up drilling. Although average depths of wells are five times as great as before the Soviet regime, the speed of drilling is nearly 20 times as fast.

Great changes have also occurred in the refining branch. Refining capacity has become several times as great through the construction of refining centers along the Volga River, in the Bashkirskaya ASSR, and in West Siberia and the reconstruction and expansion of the former oil refineries. Moreover, the refining branch has been using catalytic cracking of heavy distillates and catalytic reforming, producing lube oils and paraffin from the eastern crudes and producing multifunction oil additives, synthetic fat acids, detergents, etc.

Although refining capacity lagged behind the rapid pace of extraction of crude oil, the refining branch today has a better base than at any time before on which it can improve quantity and quality.

Great strides were also made in the production of petroleum equipment, apparatus, and fixtures.

If the USSR is to increase its petroleum extraction from 98 million to 400 million tons per year within the next 15 years, it must increase its annual extraction an average of approximately 20 million tons per year. This contrasts with average yearly increases of 6.6 million tons during the period 1951-1955. The industry forged ahead considerably in 1955, when its yearly increase amounted to 11.5 million tons. It achieved yearly increases of 13 million tons in 1956 and more than 14 million tons in 1957.

It is likely that the goal of 135 million tons set by the 20th Party Congress for 1960 will be surpassed by approximately 6-7 million tons, which indicates that the yearly increase by the end of the Sixth Five-Year Plan will reach at least 15 million tons.

Preliminary estimates, based on developing the known reserves primarily, indicate that average yearly increases of 17-18 million tons can be planned for during the Seventh Five-Year Plan.

In addition, the experience which has been gained in searching for petroleum and the large number of structures which have been prepared for deep exploration make it possible not only to increase considerably the volume of exploration but also to look forward to the discovery of large new petroleum deposits and to further rapid increases in petroleum reserves.

Development of known and newly discovered petroleum reserves will make it possible, after 1965, to bring average yearly increases to 23-24 million tons and thus ensure that the projected goal of 400 million tons in 1972 will be reached. This is very likely, since production in the Fifth Five-Year Plan rose 87 percent, whereas in the Sixth Five-Year Plan, it will be approximately doubled. To reach 350 million tons in 1970, extraction must increase 62-65 percent in the Sixth Five-Year Plan and 50-52 percent in the Seventh Five-Year Plan.

According to the plan for expanding the petroleum industry during the period 1959-1965, a period which should become an integral part of the over-all plan for the next 15 years, the enterprises, national economic councils, republic councils of ministers, and planning agencies will concentrate on ensuring a high rate of extraction and refining of crude oil and gas and production of petroleum products and charging stock for organic synthesis, and on expanding the assortment and improving the quality of petroleum products to meet the demand of the expanding motor building industry and the demand of the enormous fleet of machinery and mechanisms operating in industry, agriculture, and transportation. They must also step up the search for new oil and gas deposits, especially in the eastern regions, so that the petroleum industry can expand more rapidly and improve geographically in subsequent years. In addition, they must intensify the pace, as well as reduce the cost, of drilling operations and of construction of new oil fields, refineries, and major pipelines.

Geological-survey and exploratory operations will require an expansion of seismographic exploration, aerial photography, geochemistry, and radioactive methods, the establishment and introduction of highly productive facilities for the geophysical services, and the re-equipment of structure and core drilling.

Drilling operations, where the volume in the Seventh Five-Year Plan is scheduled to become 2.0-2.5 times as great, must convert to the large-scale drilling of narrower wells and the use of bits 190 and 214 millimeters in diameter, instead of the widely used bits of 269 and 295 millimeters. The structure of a well can be simplified by reducing the width at the bottom of the well. More 4 3/4 inch and 5 3/4 inch casing must be used, instead of 6 5/8 inch casing.

So that the narrower wells can be drilled with electric or turbodrills, there must be more portable and semiportable drilling units powered by diesel or electric motors of different capacity and design.

Self-propelling units of type A-40 must be introduced for testing, mastering, and performing capital repairs on wells in order to get the most effective use of the heavy drilling units.

The idle time in drilling can be reduced by widely introducing special tamping cements and pulverized clay and a chemical agen' (carboxymethylcellulose) for preparing flushing solution.

When water is pressured into the strata, it forces out the petroleum. The industry could speed up this flow if it had higher-pressure water pumps. The machine building plants must start the production of pumps capable of developing a pressure of 120-150 atmospheres and more. These plants must also start series production of special aggregates for hydraulic fracturing, which is not being used on a wide scale because of the shortage of these units.

A very important problem faced by the extraction branch is to extract the maximum amount of crude oil from the strata. At present, only 60-70 percent of the initial reserves in the strata are brought to the surface even with the most modern methods now in use. The remaining crude oil is enveloped in the grain of the sand and cannot be washed out with ordinary water. The addition of various detergents to the water would probably help extract more crude oil from the strata, but the present reagents are still costly and fail to possess the proper sand grain absorption properties, which only increases the consumption of these reagents.

Another means that might be used to force out the crude oil from the strata would be to use petroleum gas compressed to 250-300 atmospheres. At these high pressures, the gas almost becomes a liquid and would be able to dissolve the crude left in the strata and thus increase the yield from the strata. This method is not used, however, because of the lack of high-pressure gas compressors.

Higher labor productivity at the oil fields cannot be achieved under the new method of development without the large-scale use of remote control, automation, and mechanization. This problem could be solved by the large-scale introduction of wireless, ultrahigh-frequency facilities, mechanization of lowering and pulling operations, and automatic regulation of the pumping of oil and gas.

The most important problem in oil refining is to end quickly the failure to increase refining capacity and to build up a necessary reserve of this capacity. This problem can be solved by improving the organization

and decreasing the time of construction, as well as by removing the defects in planning. Plans for refineries should provide for consolidated units and a combination of processes and for a reduction in work at the power base and over-all plant facilities, so that capital investments and production costs can be reduced and labor productivity improved.

The existing refineries and units must be rebuilt and enlarged to increase their capacity of crude and finished goods and to improve the quality of motor fuels, lubricants, and other petroleum products. Not only should the technological units be consolidated more, but also construction of oil refineries with capacities of 10-12 million tons should be started during the Seventh Five-Year Plan.

OVER 500 MORE CITIES, SETTLEMENTS TO GET GAS -- Moscow, Gazovaya Promyshlennost', No 11, Nov 57, pp 1-3

During the period 1951-1955, the output of gas by extraction and production increased 4 billion cubic meters over the preceding 5-year period. Output through extraction increased by 3 billion cubic meters in 1956 and is scheduled to increase by approximately 7 billion in 1957.

Capital investments in the gas industry rose sharply and, as a result, gas line capacity rose to nearly four times that of 1955.

Great strides were made in the production of coal and shale gas. After World War II, a large coal-processing plant was built at Shchekino in Tul'skaya Oblast, and shale-processing plants were built at Kokhtla-Yarve in the Estonian SSR and at Slantsy in Leningradskaya Oblast to produce synthetic gas, which is supplied to Leningrad, Tallin, and other cities.

The construction of large gas plants will be continued, particularly in the areas with large reserves of coal, as, for example, Siberia.

Since it was first started 25 years ago, underground coal gasification has been expanded considerably. The Moscow Basin Underground Coal Gasification Station and the Lisichansk and Yuzhno-Abinsk pilot stations are already in operation, whereas the Shatskaya (Moscow Basin), Kamenskaya (Don Basin), and Angrenskaya (Uzbekistan) underground coal gasification stations are in the construction stage.

It was first planned that gas output through extraction and production should be increased to 40 billion cubic meters in 1960, in contrast to an output of 10.3 billion in 1955. Subsequently, the projected goals were increased to 60 billion in 1960 and to 135 billion in 1965.

According to modest estimates, over a 10-year period gas output should be increased to 12.5 times that of 1955. Beginning in 1959, 33 percent of the annual increase in fuel resources, the equivalent of 20-22 million tons of coal, will be obtained from increased extraction of natural gas.

During the 1956-1960 period, 200 cities and workers' settlements with a population of 40 million are to obtain gas. According to preliminary estimates, 350-400 more cities and workers' settlements with a population of 65-70 million are to obtain gas during the period 1961-1965.

The possibilities of using gas in the chemical industry are greater. For example, it costs 50 percent less to produce formalin and acetylene from gas than by present methods. The cost of producing ammonia from natural gas is 45 percent lower than from coke.

Natural gas can be used also to great advantage in other industries. For example, its use in place of coke gas or blast furnace gas increases the efficiency of metallurgical furnaces up to 10 percent. In the cement industry, the rotary kilns operating on natural gas increase their efficiency up to 10-12 percent. The use of natural gas as a power fuel will improve considerably the structure of the fuel balance in those areas into which fuel must be hauled from long distances.

The first 1.5 billion cubic meters of gas to be supplied to Gor'kiy will reduce the amount of coal hauled into the area by 8.1 billion ton-kilometers, the average distance that fuel is hauled by 32 percent, and the average cost per ton of standard fuel by 26 percent.

In view of the rapid expansion of the petroleum industry, the resources of petroleum gas and liquefied gas rose immensely. These gases are valuable raw materials for the chemical industry and can be used in the production of nitrogen fertilizer, plastics, synthetic alcohol, rubber, and other chemical products.

Liquefied gas is now supplied widely to cities and settlements. In 1956, about 22,000 tons of it was supplied to 32,700 apartments in the RSFSR and 53,800 apartments in the Ukraine. Both liquefied and compressed gases are beginning to be used widely in place of liquid fuel in motor transport.

The projected program for expanding the gas industry will solve the problem of supplying gas to the central and northwest areas of the USSR, the Baltic region, Belorussia, Transcaucasus, southern Urals, and Central Asia. The immediate task in the central area of the USSR is to provide enough gas to Moscow and the Moscow industrial area by constructing the second and third gas lines from Stavropol' and by increasing significantly the capacities of the compressor stations, so as to supply up to 10 billion

cubic meters to Moscow by 1960. In addition to this, gas must be supplied to places outside of Moscow and to those which are located along the route of the Stavropol'-Moscow gas line, such as Rostov, Novocherkassk, Taganrog, Zhdanov, Voroshilovgrad, and Stalinogorsk.

By increasing the capacities of the lines running from the extracting areas in the south to the consumption area in the center, it will be possible, within the next 2 years, to release some of this gas to Leningrad, Kalinin, and Novgorod. If this goal is accomplished, gas will constitute 40 percent of the fuel balance of Leningrad in 1960, compared with 6 percent in 1956. Moreover, the hauling of fuel from a long distance will be reduced considerably. Subsequently, the construction of a gas line from Bryansk will provide more gas to Leningrad.

To supply natural gas to cities in Belorussia, Lithuania, and Latvia, a major gas line is to be built from Dashava to Minsk with offsets to Vil'nyus and Riga.

The natural gas reserves which were found at Shebelinka ensure a supply to the areas near Khar'kov and along the Dnepr River, whereas the explored reserves in Krasnodarskiy Kray and the expected increase from the Saratov-Stalingrad deposits make it possible to plan immediately for the construction of a large gas line from Saratov to Gor'kiy to provide gas to Gor'kiy, Dzerzhinsk, and subsequently to Yaroslavl', Shcherbakov, and other cities to which fuel must be hauled from long distances.

Sverdlovsk, Solikamsk, Berezniki, Chelyabinsk, and other places in the central and southern Urals should obtain natural gas from the Dzhebol', Berezovo, and Trans-Volga deposits and petroleum gas from the oil fields in Bashkirskaya ASSR.

Since a large gas-condensate deposit in Azerbaydzhan has started operations, the structure of the fuel and power balance of the industrial areas of the republic has changed sharply. Moreover, it will be possible to provide gas to Tbilisi and Yerevan by the construction, in 1958, of a gas line from Karadag to Tbilisi by way of Kirovabad and Akstafa and from Akstaf to Yerevan.

New gas deposits are to be put on stream soon in Bukharskaya Oblast of Central Asia to provide gas to Bukhara, Samarkand, Tashkent, and other cities.

Ural-Volga Region

RSFSR GOSPLAN REFUSES TO AID KUYBYSHEV AREA WITH MACHINERY -- Moscow, Sovetskaya Rossiya, 28 Jan 58

During recent years, several large oil deposits -- Dmitriyevskoye, Mikhaylovskoye, Kokhanskoye, Krasnyy Yar, Nikol'skoye, and Sosnovo-Deryuzhevskoye -- were opened in Kuybyshevskaya Oblast. These are the largest existing oil deposits in the eastern regions.

Oblast oil workers have estimated that present oil and gas extraction could be more than tripled by 1965.

The industry is short 200-ton drilling units, twin-well drilling crownblocks, pumps, and compensators. The oblast oil industry and the Kuybyshevskiy Sovnarkhoz have proposed that this machinery be built at a local machine plant which could handle the additional assignment, but this proposal was turned down by the Council of Ministers RSFSR and Gosplan RSFSR. The council and Gosplan did decide, however, to set up an oil research and development institute and an exploratory drilling trust in Kuybyshev.

Although there is a Department of Petroleum under Gosplan RSFSR, it has no jurisdiction over material and technical supply for the industry. Supply is under the jurisdiction of other departments.

Azerbaydzhan

SHORTAGES, SUBSTANDARD EQUIPMENT HAMPERS OIL WELL REPAIRS -- Baku, Bakinskiy Rabochiy, 9 Jan 57

About 30 percent of the Azerbaydzhan oil-field workers are engaged in underground repairs. An average of 510 wells with a total yield of 1,700 tons per day are repaired each day in the republic.

During the last 3-4 years, new equipment and tools were introduced into the industry to ease the repair work. New technology has accelerated lowering and pulling operations 30-40 percent, and the AD-25 automatic used in these operations has increased labor productivity 13-15 percent. At present, 30 percent of the repair jobs are performed with the help of the AD-25 and MSPD automatics. New machinery resulted in a reduction of 20 repair crews in 1957.

Although new machinery has been introduced and new units are being tested at the fields, underground repairs are far from being completely mechanized. Manual labor is still used in much of the work. Pump rods and 4-inch pump compressor pipe are coupled and uncoupled by hand because a large number of wells lack the necessary equipment.

In 1957, the petroleum machine building plants sharply curtailed their output of the MSPD units. A considerable amount of MSPD equipment is lying idle in a disassembled state at the oil fields. Only 25 percent of the wells are equipped with these units.

Since the number of pulling and lowering operations depends on the premature wear of the deep-well pumps and the condition of the pipe rods, the Machine Building Plant imeni Leutnant Schmidt should step up the production of heavy-duty milled-thread rods tempered with high-voltage current. Although tests have proved the advantage of these rods, the plant is meeting only 20 percent of the demands of the oil fields.

The quality of AD automatics produced by the Baku Fixture Plant must be improved. This plant has been producing substandard automatics for the last 2 years. The electric equipment in the automatics is particularly faulty. Of the 263 automatics found in the fields, 45 percent are constantly awaiting repairs.

At present, the Azerbaydzhan oil fields do not have automatics to couple and uncouple the compressor pipe in deep wells, and this work must be done manually. Despite this, the Azerbaydzhan Petroleum Machine Building Research Institute and the Baku Fixture Plant are delaying the manufacture and field tests of the two sample automatics, AD-50 and APR-2, both with a rated lifting capacity of 50-70 tons and designed for use with pipes of all widths.

An important problem in the industry is to repair wells at the new sites by means of universal portable units. The plan for such a unit, with complex mechanization of all the preparatory and finishing operations, has been developed by the above institute, but the tests have not yet been started.

1960 OIL EXTRACTION GOAL MET IN 1957 -- Baku, Bakinskiy Rabochiy, 29 Jan 58

In 1957, the Azerbaydzhan oil industry extracted 15,952,000 tons of crude oil and thus surpassed its planned output of 15.7 million tons. In 2 years, the industry reached the level that had been planned for 1960. Extraction in the 2-year period increased by 667,600 tons, and the increase in refining was even greater.

Gas extraction reached 3.4 billion cubic meters in contrast to the 1,494,000 billion extracted in 1955.

All 11 oil-field administrations of the Ministry of Petroleum Industry Azerbaydzhan SSR either met or surpassed their 1957 goals for crude oil extraction. Leading the group in competition were Gyurgyanneft', Karadagneft', Artemneft', Lenineft', and Kirovneft'. However, extraction in the old oil-field administrations, such as Stalinneft', Ordzhonikidzeneft', Buzovnyneft', and Azizbekovneft', has been declining each year, and a considerable portion of the crude oil extracted at the new sites compensates for the decline in the old areas.

Since most of the operating wells in Azerbaydzhan are deep pumpers, the quality and efficiency of deep pumps is of great importance, but the type of pumps produced by the Plant imeni Dzerzhinskiy fails to meet the demands of the oil fields.

During the year, the republic's refining industry fulfilled the quotas for only 66 of the 87 types of petroleum products. Losses of petroleum products at the refineries are heavy, reaching hundreds of thousands of tons a year, especially at the refineries imeni Andreyev and imeni Stalin.

One of the main problems in the republic's oil industry is to increase labor efficiency and reduce petroleum production costs, inasmuch as these costs are very high in Azerbaydzhan. These costs have been reduced considerably in the Karadagneft' and Siazanneft' oil-field administrations and maintained at the same level in the Gyurganneft' Oil Field Administration, but have risen in the other field administrations.

In 1958, the industry is expected to extract 16,415,000 tons of crude oil and 4.5 billion cubic meters of gas. This is approximately 450,000 tons more crude oil and 1.1 billion cubic meters, or 34 percent, more gas than was extracted in 1957. To meet these goals, drilling volume must reach 905,000 meters, in contrast to 750,000 meters in 1957.

By 1965, Azerbaydzhan is expected to increase its crude oil extraction to 22 million tons per year, and its gas extraction to 10-11 billion cubic meters to stay in line with the projected goal of the USSR, which is, in the next 10-15 years, to raise crude oil extraction to 3.5-4.0 times and gas output to 13-15 times their present levels.

III. FERROUS METALLURGY

General

STATISTICAL ADMINISTRATION REPORTS ON METALLURGIAL INDUSTRY: RESULTS OF WORK OF MINING AND ORE INDUSTRY FOR 1957 -- Moscow, Gornyy Zhurnal, No 3, Mar 58, p 3

The Central Statistical Administration under the Council of Ministers USSR has reported that, during 1957 (the second year of the Sixth Five-Year Plan), enterprises of the ferrous metallurgical industry produced 7 percent more than in 1956 and enterprises of the nonferrous metallurgical industry produced 10 percent more.

The mining-ore industry delivered considerably more raw materials for the production of ferrous and nonferrous metals in 1957. Extraction of iron ore reached 84.2 million tons as against 78.1 million tons in 1956. Extraction of copper ore increased 8.3 percent, lead-zinc ore 12.1 percent, nickel 5.1 percent, and bauxite 6.7 percent.

The 1957 plan for copper, lead-zinc ores, and bauxite was considerably exceeded. The miners of the Kazakh SSR worked particularly well. They exceeded the plan for extraction of copper and lead-zinc ores and assured an approximately 9-percent growth in the production of these branches of the industry during the year.

Among ferrous metallurgy mines which delivered a considerable amount of above-plan ore were the Magnitogorskiy, Atasuyskiy, Olenegorskiy, and Dashkesanskiy. The Leninruda and Nikopol-Marganets trusts exceeded the state plan.

In the nonferrous metallurgical industry, the best work indexes for extracting copper were achieved by the Kounrad and Dzhezkazgan mine administrations and the Sibayevskiy and Blyavinskiy mines. The miners of Altyn-Topkan, Leninogorsk, Zyryanovsk, and Mirgalimsay had the best indexes for lead-zinc ores.

During 1957, production capacities of the mining-ore industry increased. New mines and pits were put in operation in connection with operating mines.

The Sokolovsk Mine of the Sokolovsk-Sarbay Ore Concentrating Combine in the region of Kustanay and the Abakanskiy Pit in Krasnoyarskiy Kray delivered their first ore. The Krivoy Rog Iron Ore Basin was extended by new mines, including such large ones as Saksagan' Mine of the Ore Administration imeni Dzerzhinsk of the Dzerzhinskruda Trust with a planned

capacity of 3.5 million tons, and the Yuzhnaya Mine of the Ore Administration imeni 20th Congress of the CPSU of the Leninruda Trust with a planned capacity of 1,850,000 tons. The production capacities of mines of the Central Ore Administration Ingulets rose considerably, as did that of the Mine imeni Kirov of the Ore Administration imeni Kirov, Mine Magnetitovaya of the Vysokogorskoye Ore Administration in the Urals, and others.

In 1957, construction was begun on new facilities to increase the capacities of ore-concentrating combines for extracting iron quartzite by the open-pit method and processing the ore into high-grade concentrate. The Krivoy Rog Basin has started the construction of the Novokrivorozhskiy Combine with a planned capacity of 9 million tons for raw ores, and the Central and Second Yuzhnyy mining and concentrating combines with capacities of 15 million and 9 million tons, respectively. The Kachkanarskiy Mining and Concentrating Combine with a capacity of 15 million tons has been started in the Urals. In the region of the KMA (Kursk Magnetic Anomaly) construction has started on a large pit in the Mikhaylovskoye deposit of rich ores.

Extraction of ores by the open-pit method and by highly effective systems of underground mining continued to increase in operating mines. The use of the system of sublevel automatic caving has increased in mines of the Krivoy Rog Basin, and a system of sublevel caving has been successfully adopted in copper mines of the Urals, Kirovgrad, Krasnouralsk, and others.

In the Degtyarskiy Mine an experimental block was worked out by a system with mass caving of pillars into unfilled rooms, with simultaneous caving of the overlying rock; this cost approximately 4.3 million less than the system of layer caving.

In 1957, the use of new, more productive mining machinery increased in ore pits and mines. In a number of pits (the Sibayevskiy and Kounrad mines, the Noril'skiy Combine), EKG-8 excavators were in operation with a bucket capacity of 6 cubic meters. Their productivity some months reached 130,000 cubic meters. The Sokolovsk-Sarbay Combine utilized draglines with a bucket capacity of 14 cubic meters in overburden removal work. The Kounrad, Sokolovsk, and other mines had at their disposal 100-ton and 150-ton electric locomotives.

Production

USSR IRON AND STEEL PRODUCTION -- Leningradskaya Pravda, 11 Feb 58

Smelting of pig iron in the USSR has increased from 27 million tons in 1953 to 37 million tons in 1957; smelting of steel, from 38 million tons to 51 million tons; and production of rolled stock, from 29 million tons to 40 million tons.

1957 PRODUCTION IN UKRAINE -- Kiev, Pravda Ukrainy, 11 Feb 58

In 1957, the Ukraine produced 18.5 million tons of pig iron, 19.6 million tons of steel, and 16.1 million tons of rolled stock.

UKRAINIAN METALLURGICAL STATISTICS FOR JANUARY 1958 -- Kiev, Pravda Ukrainy, 2 Feb 58

The following table gives plan fulfillment by Ukrainian SSR metallurgists for January 1958 (in percent):

	Pig Iron	Steel	Rolled Stock
Ukrainian SSR	97.8	101.1	101.2
Stalinskiy Sovnarkhoz	100.2	101.5	101.3
Voroshilovgradskiy Sovnarkhoz	97.8	101.0	102.4
Dnepropetrovskiy Sovnarkhoz	96.4	100.1	102.1
Zaporozhskiy Sovnarkhoz	93.6	101.9	94.5

The plan for the entire metallurgical cycle was fulfilled by workers of the following plants: Yenakiyevo, imeni Kirov, imeni Il'ich, Azovstal', Kramatorsk imeni Kuybyshev, imeni Frunz, and imeni Dzerzhinsk. Other groups of workers who also met their quotas were blast furnace workers of the Almaznaya Plant and steel smelters of the plants imeni Voroshilov, imeni Lenin, imeni Karl Libknekht, imeni Komintern, Novo-Moskovskiy, and Dneprospetsstal'.

The plan for extracting iron ore was exceeded by almost 29,000 tons. More than 15,000 tons of this amount were delivered by the ore administration of the Dzerzhinskruda Trust. Workers of the Nikopol' Trust are still operating well.

The plan for roasting coke was successfully fulfilled.

Construction

MINING ENTERPRISES REPORT CONSTRUCTION STATUS -- Moscow, Stroitel'naya Gazeta, 21 Mar 58

In 1958, the USSR is investing 12.1 billion rubles in the development of the iron-ore base for the ferrous metallurgical industry. This is 35 percent more than in 1957. With these funds constructers are to put in operation new facilities to account for 10,140,000 tons of raw iron ore. Of this amount more than 5 million tons is assigned to the Ukraine, more than 3 million tons to the RSFSR, and about 2 million tons to the Kazakh SSR.

The largest increase in capacity, 2.5 million tons, is to be the responsibility of the Kamyshburunskiy Iron Ore Combine. Unfortunately, the Khersonskiy Sovnarkhoz, which is directing this construction, has been unable to report on the course of the construction assembly work.

Constructers of the Sokolovsk-Sarbay Combine are to be responsible for 1.5 million tons of the 1958 growth in capacity, constructers of Krivoy Rog, 1.2 million tons, the Kursk Magnetic Anomaly Ore Enterprise constructers, 1.1 million tons; and the Kuznetsk Ore Enterprise Construction in Gornaya Shoriya, 580,000 tons.

The following table gives data as of 1 March 1958 on construction costs and construction plan fulfillment for a number of mining and ore enterprises now under construction.

Enterprise	Total Estimated Cost (million rubles)	Cost in 1958 (million rubles)	Plan Fulfillment (%) 1958 Plan	Feb 58 Plan	No of Days Before Start of Operation
Shalym Mine, Kuznetsk Metallurgical Combine	--	11.1	23.7	262.5	306
Abakanskiy Mine, Kuznetsk Metallurgical Combine	--	17.6	23.8	132.8	306
Sokolovsk-Sarbay Combine, Kustanayskiy Sovnarkhoz	116.3	110.1	19.0	110.6	280
Krivoy Rog Mine Kamenistaya, Dnepropetrovskiy Sovnarkhoz	19.0	9.8	16.1	--	306
Sheregeshskiy Mine, of Kuznetsk Metallurgical Combine	--	13.0	12.5	101.5	306
Yuzhno-Korobkovskiy Mine, Kursk Magnetic Anomaly, Belgorodskiy Sovnarkhoz	84.7	39.7	10.8	72.5	262
Atasuyskiy Mine, Karagandinskiy Sovnarkhoz	11.3	3.5	8.3	93.0	214
Krivoy Rog Mine "Yuzhnaya," Dnepropetrovskiy Sovnarkhoz	23.0	12.8	5.4	58.0	306
Tashtagol Mine, Kuznetskiy Metallurgical Combine	--	2.0	4.0	48.8	306

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Enterprise	Total Estimated Cost (million rubles)	Cost in 1958 (million rubles)	Plan Fulfillment (%) 1958 Plan	Plan Fulfillment (%) Feb 58 Plan	No of Days Before Start of Operation
Pit "3-ya Magnitka," Sverdlovskiy Sovnarkhoz	1.35	--	--	88.0	--
Chernomorskiy Mine of Azov-stal' Plant, Khersonskiy Sovnarkhoz	--	--	--	--	--

Approved For Release 1999/08/25 : CIA-RDP78-03107A000200020005-3

METALLURGICAL INSTALLATIONS UNDER CONSTRUCTION -- Moscow, Stroitel'naya Gazeta, 16 Mar 58

Constructers of enterprises of the ferrous metallurgical industry are to put 20 smelting furnaces in operation during 1958. The table below gives data as of 1 March 1958 on construction costs and construction plan fulfillment.

	Total Estimated Cost (million rubles)	Cost in 1958 (million rubles)	Plan Fulfillment (%) 1958 Plan	Feb 58 Plan	No of Days Before Start of Operation
Orsk-Khalilovo open-hearth furnace	38.0	0.4	100	100	31
Cherepovets open-hearth furnace No 1	122.4	22.7	59	86	60
Zlatoust steel-smelting shop No 3 (5 electric furnaces)	89.0	30.0	23.5	76	199
Krivoy Rog converter No 3	--	2.65	43.4	--	214
Krivoy Rog converter No 4	--	2.65	43.4	--	306
Chelyabinsk steel-smelting shop No 8 (6 electric furnaces)	91.8	32.0	21.5	100	300
Novolipetsk steel-smelting shop (2 electric furnaces)	102.8	102.2	3.9	2.9	306
Cherepovets open-hearth furnace No 2	24.65	0.65	2.2	0	306

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	Total Estimated Cost (million rubles)	Cost in 1958 (million rubles)	Plan Fulfillment (%) 1958 Plan	Feb 58 Plan	No of Days Before Start of Operation
Alchevskiy open-hearth furnace No 10	56.3	28.5	0.62	0.46	257
Dnepropetrovsk electric furnace No 6	--	16.2	0.	0	306

The open-hearth furnace at the Orsk-Khalilovo Metallurgical Plant has already been completed. It will be put in operation in March. The furnace is expected to deliver the first melt of steel about 26 March.

According to the plan, the Zlatoust furnaces were to start operating during the third quarter of 1958. However, Komsomol workers pledged to complete the work 15 days ahead of schedule, that is, by 15 September 1958.

Approved For Release 1999/08/25 : CIA-RDP78-03107A000200020005-3

COKE BATTERY CONSTRUCTION -- Moscow, Stroitel'naya Gazeta, 26 Mar 58

The 1958 plan calls for the introduction of nine new coke batteries. This would make almost 5 million extra tons of coke available to the ferrous metallurgical industry and thus considerably increase its capacity. The following table gives information as of 1 March 1958 on construction costs and construction plan fulfillment of these batteries:

Coke Battery	Total Estimated Cost (million rubles)	Cost in 1958 (million rubles)	Plan Fulfillment (%) 1958 Plan	Plan Fulfillment (%) Feb 58 Plan	No of Days Before Start of Operation
Voroshilovskaya No 3, Luganskiy Sovnarkhoz	33.8	24.4	27.3	15.4	102
Yasinovka No 5, Stalinskiy Sovnarkhoz	51.1	15.0	23.3	61.4	25
Bagleyskiy No 7, Dnepropetrovskiy Sovnarkhoz	79.5	48.3	14.9	--	184
Magnitogorsk No 11, Chelyabinskiy Sovnarkhoz	100.0	77.1	10.8	96.0	251
Bagleyskiy No 8, Dnepropetrovskiy Sovnarkhoz	39.2	39.0	4.4	--	275
Voroshilovskaya No 4, Luganskiy Sovnarkhoz	18.7	18.7	3.7	1.2	181
Novo-Lipetsk No 4, Lipetskiy Sovnarkhoz	122.5	112.5	1.6	1.0	306

Approved For Release 1999/08/25 : CIA-RDP78-03107A000200020005-3

Coke Battery	Total Estimated Cost (million rubles)	Cost in 1958 (million rubles)	Plan Fulfillment (%) 1958 Plan	Feb 58 Plan	No of Days Before Start of Operation
Cherepovets No 4, Vologodskiy Sovnarkhoz	29.5	17.2	1.0	--	306
Yasinovka No 6, Stalinskiy Sovnarkhoz	66.3	30.0	0	0	300

Yasinovka battery No 5 should already be in operation, but there has been a lag in construction and as a result the battery is not yet working. Voroshilovskaya No 3, which will be put in operation in the second quarter of 1958, will be the first of the new batteries to get into production. Workers of the Voroshilovskstroy Trust have determined to put the battery in operation 20 days before the end of the quarter.

Approved For Release 1999/08/25 : CIA-RDP78-03107A000200020005-3

KARAGANDA PLANT LARGEST IN USSR -- Moscow, Komsomol'skaya Pravda, 1 Feb 58

In the city of Temir-Tau, near Karaganda, an enormous new structure is located. Here the Karaganda Metallurgical Plant, the largest in the USSR, called the Kazakhstanskaya Magnitka, is being built. In capacity this enterprise will surpass the Kuznetsk Metallurgical Combine. Its pig iron and rolled stock will be the cheapest in the country because Atasuyskiy iron ore, Toparskiy limestone deposits, and the Karaganda coking coal are located nearby.

The plant will have four enormous blast furnaces, larger than those of the Ural Magnitka. Open-hearth furnaces will be assembled, as well as highly productive converters, the largest slab mill in the country, a continuous rolling mill extending almost a kilometer, and high-capacity coke-chemical batteries.

The construction of the Kazakhstanskaya Magnitka has already been started. The foundation of the first blast furnace has been laid. Its constructers have pledged to blow in the furnace by 7 November 1959. At the same time, two coking batteries with a complex of chemical shops are to be put in operation. By 15 September 1958, the powerful plant thermal electric power central should be delivering industrial current.

METALLURGICAL PLANT CONSTRUCTION LAGS -- Moscow, Voprosy Ekonomiki, No 2, Feb 58, p 39

Construction of the Transcaucasian Metallurgical Plant in Rustavi, Georgian SSR, was started in 1945 and is to be finished in 1958. The first smelting of steel took place in 1950, that is, 5 years after the start of construction of the plant. The plant began the production of semifinished pipe in 1951 and the first consignment of the basic type of production of this plant -- seamless steel pipe for the petroleum industry -- was issued in 1952. Not until 1954, 9 years after the start of construction of the plant, did it begin roasting coke and smelting pig iron.

The construction of the Cherepovets Metallurgical Plant was started in 1948, but its first products were issued only 7 years later. Up to now, the open-hearth furnace and rolling mill shops have not been put in operation, although production of considerable quantities of commercial pig iron in the Cherepovets Plant would clearly be inexpedient.

Construction of the Orsk-Khalilovo Metallurgical Plant is also being prolonged too long.

Technology

NEW TECHNOLOGY INTRODUCED IN STEEL SMELTING -- Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 16 Feb 58

Production of steel in the USSR should be increased in the near future, not only by putting new open-hearth furnaces in operation but also by intensifying the work of the existing furnaces and by the introduction of outstanding technology in steel smelting.

In this connection, the method developed in 1952 by Academician N. Dobrokhotov of the Academy of Sciences Ukrainian SSR should be mentioned. The essence of the method is as follows: The ferroalloys which are generally added to the molten metal in the furnace to deoxidize and adjust the chemical composition, are now added to the ladle of molten metal. Uniform composition of the metal is obtained through the stirring action of a stream falling from the runner.

In 1953 the new technology was introduced in the Stalingrad Plant "Krasnyy Oktyabr'." They smelted chrome and chrome-nickel steels. Solid ferrochrome was introduced in the ladle. A careful analysis of the smelted metal indicated that it satisfied all necessary requirements and was equal in quality to steels deoxidized in the furnace.

During 1955-1956, the Izhevsk Metallurgical Plant smelted more than 10,000 tons of alloyed and carbon steel by this technology. A saving of 5-10 rubles per ton was effected and the productivity of the furnaces was 3-5 percent higher than usual.

The experience of work of the open-hearth furnaces and shops indicated that in smelting carbon, chrome, manganese, and other types of steels, the total content of the alloying element in the metal should not be more than 2.5 percent except for nickel, molybdenum, and copper.

OPEN-HEARTH FURNACE SHOP INTRODUCES NEW TECHNIQUES IN USE OF OXYGEN -- Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 26 Feb 58

In November 1957, workers of the first open-hearth furnace shop of the Nizhne-Tagil Metallurgical Combine in cooperation with scientists of the Central Scientific Research Institute performed experimental smeltings, feeding oxygen through the crown of the furnace. The blast of oxygen directly on the bath permitted cutting in half the time required for finishing the metal.

Now a more effective way of using oxygen has been found. In open-hearth furnace No 14 a so-called "end" installation has been installed. A current of oxygen is fed into the nozzle of this installation at an angle of 35 degrees to the surface of the bath at a speed of 500 meters per second.

The current of oxygen reaches a large surface and penetrates deeply into the metal. Through this process of smelting, the burning out of the carbon and the oxidation of the metal proceeds much more rapidly than in furnaces without such an installation.

Experimental smeltings done with the help of the new technique were completed in 7 hours although at least 9 hours was necessary for this under ordinary conditions.

Such an effective method of using oxygen permits increasing the smelting of steel without increasing the capacities, and it is finding extensive use. During 1958, such installations will be installed in the four large open-hearth furnaces of the combine.

PIG-IRON CASTING FURNACES CONVERTED TO GAS FUEL -- Moscow, Trud, 5 Feb 58

Baku engineers M. Ye. Dolginova, heat technician (teplotekhnik) of the Plant imeni Parizhskaya Kommuna, and P. M. Aleksenko, chief of the Technological Office of the foundry of the Kishlinskiy Machine-Building Plant, have solved the important problem of the use of natural gas in pig iron casting. They have created a new shape of original design for the pig-iron smelting furnace and gas jet. The new gas furnace is a combination form, uniting the principles of the shaft and reverberatory furnaces.

Work on converting pig-iron casting furnaces to gas has been directed by K. V. Pokrovskiy, Doctor of Technical Sciences.

Now two furnaces of the new design are operating in the Kishlinskiy Machine-Building Plant. Such furnaces have been created in the Plant imeni Parizhskaya Kommuna and in the Plant imeni Montin.

It was stated in the Administration of Machine Building of the Azerbaydzhan Sovnarkhoz that pig iron casting in all Baku plants will be converted to gas fuel in 1958. This will permit raising the production of pig iron smelting to 1.5 times its present level at a relatively small cost of reconstructing the pig-iron casting furnaces, and will mean a saving of up to 5 million rubles as a result of reducing the amount of fuel.

It is very important that the gas extracted in Karadag approach in physical properties the gas of Stavropol', Tashauz, Shebilinskiy, and other deposits. Therefore calculations made by Baku engineers may be used in other areas of the USSR in the conversion of the pig iron smelting industry to gas fuel. Representatives of the Kharkov Planning Institute Giprostanok State Institute for Planning Machine Tool Building, Tool and Abrasive Plants, and Press and Forging Machine Building Plants), the All-Union Scientific Research Institute of Technology and Machine Building, and the Khar'kov Machine-Building Plant went to Baku to study the experiment of the Baku engineers.

OPEN-HEARTH FURNACES USE NATURAL GAS -- Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 2 Feb 58

Two years ago, the Krasnyy Oktyabr' Plant converted one of its open-hearth furnaces to the use of natural gas, the first time for such a procedure in the USSR. At present, eight open-hearth furnaces and 85 soaking pits and heat furnaces are operating on natural gas. During 1958, it is intended to convert all open-hearth furnaces and all heating installations to natural gas to permit a saving of thousands of tons of mazut, coal, and coke.

FLUXED AGGLOMERATE FOR OPEN-HEARTH FURNACES -- Kiev, Pravda Ukrainy, 4 Feb 58

The Metallurgical Plant imeni Dzerzhinsk has started to use a fluxed agglomerate in its open-hearth furnaces instead of fine iron ore and limestone fed separately to the furnaces. This agglomerate is produced in the agglomerating factory of the plant. Scientists of the Khar'kov Institute of Metals assisted engineers of the enterprise in its production.

TRACTOR PLANT DEVELOPS METHOD TO SAVE TUNGSTEN -- Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 21 Feb 58

The Chelyabinsk Tractor Plant has been regularly consuming an excessive amount of ferrotungsten in smelting pig iron by a duplex process in the DChM-10 electric furnace because the ferrotungsten is difficult to smelt and is of high specific gravity, and when added to the molten pig iron, it settles in lumps on the bottom of the furnace where part of it, during further smelting, is absorbed by the lining. To assure the technologically fixed content of alloy material, particularly in the first ladles of molten metal, considerably more tungsten must be added than called for by the norm.

A proposal was made to use shavings of metal-containing tungsten, obtained from the tool shop. A chemical analysis by the senior engineer of the central plant laboratory indicated that shavings of high-speed steel contain 18 percent of tungsten, and their substitutes, 9 percent. Starting from this data it was determined how much shavings had to be added to a metal charge.

Then laboratory experiments were begun. The central plant laboratory tried alloying molten pig iron by the addition of shavings of high-speed steel and substitutes for it in induction furnaces. The experiments had good results; however, some specialists of the cast iron foundry shop No 2 feared that shavings added to the charge of an electric furnace would get into the slag and that would cause losses of tungsten.

Nevertheless, after experiments carried out under laboratory and industrial conditions, it was proved to be expedient to use shavings of high-speed steel and its substitutes in place of ferrotungsten. The advantage of such a method of alloying liquid pig iron is that the shavings have a large surface and, compared with ferrotungsten, a small tungsten content. In 3-5 minutes after they have been added to the surface of the liquid metal they dissolve completely and do not have time to settle on the bottom of the furnace. Thus losses of tungsten are eliminated and the finishing of the pig iron is accelerated, and the content of the tungsten is more uniform in the pig iron.

The new method of alloying pig iron has now been introduced into mass production in the plant. More than 10,000 crankshafts of tractor starting motors have been cast with the use of shavings instead of ferrotungsten. The use of shavings as an alloying material in casting crankshafts has reduced the cost of this casting more than 600,000 rubles per year.

The experiment of the Chelyabinsk Tractor Plant in the secondary use of tungsten contained in shavings of high-speed steel has great interest for machine builders. Because of this, losses of tungsten will be reduced about 20 percent and tens of millions of rubles will be saved annually for the national economy.

POWDER METALLURGY ASSUMES IMPORTANCE -- Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 14 Feb 58

Powder metallurgy is a progressive method for preparing parts. It has developed into an independent industry and has acquired great importance for the national economy.

Production of metal-ceramic parts by the method of powder metallurgy permits almost completely giving up their mechanical processing, considerably reduces the labor required to make products, and saves hundreds and thousands of tons of nonferrous and ferrous rolled products. It permits creation of new technical materials with particular physical properties which are impossible to obtain by ordinary methods -- casting, forging, rolling, etc.

Preparation of a number of new types of industrial products has recently been mastered by the method of powder metallurgy. This has permitted solving important technological problems of the new techniques in a number of branches. For example, the production of special heat-resisting alloys has become possible for dependable parts used in jet engines; powerful high-temperature furnaces; nuclear reactors, consisting of metals and nonmetals not reacting on one another; materials with very high magnetic properties; highly productive cutting tools made of hard alloys; frictional materials with a high coefficient of friction and low abrasion at a high braking temperature; porous metal-ceramic antifriction materials in place of cast bronze; babbits; etc.

With the help of powder metallurgy, the electrical industry prepares various contact materials consisting of powders of tungsten-silver, tungsten-copper, and other components in which the melting point of the parts differs 1,500-2,000 degrees and also bronze-graphite and copper-graphite brushes for electric machines.

USSR EXPERIMENTS WITH NEW COKING CHARGES -- Moscow, Koks i Khimiya, No 3, Mar 58, p 3

In the ordinary method of preparing a coal charge, it is impossible to increase substantially the proportion of gas and slightly-caking coal in it without impairing the quality of the coke. However, if the charge is prepared by the method of selective crushing, the proportion of these coals in the charge may be increased considerably. In this connection research has been carried out in two directions: (a) Increase in the proportion of gas and slightly caking coal in industrial charges of plants in the east; and (b) selection of prospective charges with a predominating proportion of gas and slightly caking coals (40-60 percent).

Charges with a proportion of gas coal were prepared by a method of selective crushing. The charges for coking were prepared in a semiplant installation of VUKhIN (All-Union Scientific Research Coal-Chemistry Institute). As is evident, gas coal was introduced into the charges at the expense of short-supply fat coal and of K2 coal and of highly caking coal from the Novyy seam.

Here and everywhere else designations of coal are given according to GOST 1280-48.

Approved For Release 1999/08/25 : CIA-RDP78-03107A000200020005-3

The following table gives the content of experimental and industrial coal charges (in percent):

Designation of Coal (Mine Type, Group)	Charge 1		Charge 2		Charge 3	
	Experimental	Industrial	Experimental	Industrial	Experimental	Industrial
Imeni Kirov G2, (gas)	15	--	20	--	--	--
Polysayevskaya, G3*	--	--	--	--	10	--
Osinovskiye, Zh1 (fat)	27	36	--	--	--	18
Baydayevskiye, Zh2	--	--	20	27	20	10
KZh (coking-fat)	--	--	35	43	40	42
K2	23	29	--	20	30	30
SS (slightly caking)	--	--	25	10	--	--

Designation of Coal (Mine, Type, Group)	Charge 1		Charge 2		Charge 3	
	Experimental	Industrial	Experimental	Industrial	Experimental	Industrial
Concentrate of Karaganda Coal-Cleaning Plant	35	17.5	--	--	--	--
Karaganda coal, Novyy seam	--	17.5	--	--	--	--

*According to classification of VUKhIN

The charge consisted of run-of-the-mine coal and it was screened on a screen with openings 12 millimeters in diameter. The class above 12 millimeters was crushed to size 12-0 millimeters and then mixed with class 12-0 millimeters obtained by screening the run-of-the-mine charge. After this, class 12-0 millimeters was screened on screens with openings 6 x 6 millimeters and 3 x 3 millimeters (charges 1 and 3) or on screens with openings 4 x 4 millimeters and 2 x 2 millimeters (charge 2). In this process, classes 12-6, 6-3, and 3-0 millimeters were separated out, or classes 12-4, 4-2, and 2-0 millimeters. Class 12-6 millimeters (or 12-4 millimeters) was crushed to the size 6-0 millimeters (or 4-0 millimeters) and screened on a screen with openings 3 x 3 millimeters (2 x 2 millimeters). Class 6-3 millimeters, obtained in screening the charge and after additional crushing of class 12-6 millimeters, was crushed to the size 1-0 millimeters and class 4-2 millimeters to the size 2-0 millimeters.

Charges 1 and 3 are subjected to coking with coal in the size 3-0 millimeters and charge 2 with coal size 2-0 millimeters.

Results of experimental coking in a semiplant installation have indicated that use of the method of selective crushing opens up the possibility of increasing the proportion of gas coal to 15-20 percent in some plants of the east and the proportion of slightly caking coal up to 15 percent mainly by reducing amounts of short-supply caking coal.

Charges with predominating proportions of gas coal and slightly caking coal were also coked. The contents of these charges are given in the following table (in percent):

Designation of Coal (Mine, Type, Group)	Charges				
	4	5	6	7	8
Zyryanovskaya, G1	--	--	--	--	20
Imeni Kirov, G2	40	40	--	60	20
Polysayevskaya, G3	--	--	40	--	20
Zh2	25	25	20	15	10
K2	35	--	20	15	30
SS	--	35	20	10	--

The charge for coking is prepared both by the usual method and by the method of selective crushing, and the results are compared. The drum test indicates that the mechanical toughness of the coke is improved for the charges with selective crushing. The residue in the drum is from 12 to 28 kilograms greater than coke produced by the usual method, with the exception of charge 6. This charge was made up of low-caking components and the effect of selective crushing was only slight. The drum test showed that only 4 kilograms more was contained in the drum residue than in the residue from coking by the usual method. However, if charge 6 is subjected to ramming and there is a compression of up to 900 kilograms exerted per cubic meter, coke will be obtained that will leave a 324-kilogram residue in the drum (instead of the 288 without ramming) and only 43 kilograms of the class 10-0 will go through the drum.

GOST HAMPERS PIPE CONSTRUCTION -- Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 17 Jan 58

The annual requirement for cast iron water and drain pipe will increase to approximately 1,450,000 tons by 1960. With this in view, the production of cast iron pipe must be doubled.

If existing standards for cast iron pipe for a number of European countries and the US, as well as recommendations of the International Organization for Standards (ISO) are compared with GOST 5525-50, it will be clear that deviations occur in two main directions. USSR pipe with a diameter of 75-200 millimeters is considerably shorter in length; the country does not make pipe 6 and 7 meters long at all. Such a restricted assortment complicates and makes more difficult the assembly of pipelines and increases their production costs. The walls of the pipe are always extra thick, and this leads to inexcusable losses of metal.

As comparisons indicate, USSR pipe 500 millimeters in diameter and 5 meters long weighs 114 kilograms more than pipe of the International Standard ISO of the same diameter and length.

Another great difference noted between USSR pipe and that following the ISO is this: pipe 800 millimeters in diameter and 5 meters in length (that is, one meter shorter than the length set by standard ISO) is still 43 kilograms heavier; and pipe 1,000 millimeters in diameter and 5 meters in length is 980 kilograms heavier. Thus enormous inexcusable losses in metal are protected by an outmoded GOST.

The length of pipes is not limited as far as industry is concerned; on the contrary, production of longer pipe is an advantage to plants. In preparing pipe by a combination method of operations in conveyer machines,

one operation, the pouring of metal, is lengthened by a few seconds only, and this does not have any actual effect on the total length of the technological process. The advantage is that the output of pipe is considerably increased in linear meters and, consequently, in tons, and the performance of the machine is stepped up more than 50 percent.

It has become necessary to revise the GOST for water pipes with the goal of normalizing these products so that it (the GOST) will have meaning both for the USSR production and for international trade.

The practical solution of this problem depends directly on the technical level of the pipe casting industry. If the most progressive method of centrifugal pipe casting based on an improved technological process and the construction of a conveyer machine is adopted, the increase in the production of pipe, particularly with a diameter up to 500 millimeters, and its greater length with a simultaneous decrease in the thickness of the walls can be achieved at a given time.

The transition to the centrifugal method of pipe casting in a number of countries has invariably been accompanied by a regular decrease in the thickness of the walls of the products and a drop in their weight.

Plants, Deposits, Mines

MEASURES TO STEP UP PRODUCTIVITY OF TRANSCAUCASIAN PLANT -- Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 7 Feb 58

The Transcaucasian Metallurgical Plant is a young enterprise. Its workers have quickly overcome the difficulties involved in mastering new shops and aggregates, and have achieved a considerable increase in production for the entire metallurgical cycle. However, there are still many unexploited reserves for increasing further the production output and decreasing the cost of production which is still high.

One of the main reserves is growth in labor productivity. This would stop the high degree of idleness of the rolling mills. The reject rate is high. The consumption of raw materials and basic materials per weight unit of production is unsatisfactory in the coke-chemical, blast furnace, and open-hearth furnace shops and in the rolling mill and pipe rolling mill. During 1957, the blast furnace shop consumed an average of up to 60 kilograms of charge per ton of pig iron more than planned, and the open-hearth furnace shop used 5 kilograms more metal scrap per ton of steel than provided for by the norms. High cost of repair and services has also increased the expenditures of production.

But there are also other reasons which have a negative effect on production costs of the plant.

To enable the Transcaucasian Metallurgical Plant to supply pig iron for steel not only to its own steel-smelting shops but also to the Baku Pipe Rolling Mill, it would be expedient to raise the production of pig iron to 1.5 times its present level in the metallurgical plant and to master there the smelting of blast furnace ferromanganese, using a blast enriched by oxygen. It will be possible to achieve this more quickly and with less outlay of capital than if blast furnaces were constructed at a new place since there are large construction organizations at the Transcaucasian plant which have accumulated a great deal of experience in constructing metallurgical shops.

The planned assignment of Gipromez (State Institute for Planning Metallurgical Plants) for the Transcaucasian plant provides for the construction of a third blast furnace. It seems advisable to build the new blast furnace with average volume and to reconstruct the second blast furnace with capital repair to have the same volume, but to convert blast furnace No 1 to smelting carbonic ferromanganese. The new blast furnaces of the plant will be adequately supplied with limestone, dolomite, and manganese ore extracted right in the area.

It is even more expedient to carry out these measures since the Transcaucasus does not have adequate pig iron for steel and it must be brought in from the Donbass.

Expansion of blast furnace production will lead to a decrease in cost prices both for pig iron and other products put out by the plant.

TRANSCAUCASIAN PLANT EXPANDS -- Tbilisi, Zarya Vostoka, 1 Feb 58

In 1957, the Transcaucasian Metallurgical Plant imeni I. V. Stalin put in operation open-hearth furnaces No 7 and No 8. In the fourth quarter of 1957, the plant converted to the 7-hour workday.

CHELYABINSK TO HAVE LARGEST USSR BLAST FURNACE -- Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 5 Feb 58

Blast furnace No 5, which is to be built and put in operation in 1958 in the Chelyabinsk Metallurgical Plant, will be the largest and most highly productive blast furnace in the USSR. Constructers of the furnace have pledged to complete it ahead of schedule by 7 November 1958.

LARGE SLAB MILL UNDER CONSTRUCTION FOR MAGNITOGORSK COMBINE -- Moscow, Stroitel'naya Gazeta, 14 Feb 58

Slab Mill "1150," the largest in the USSR, is being constructed in the Magnitogorsk Metallurgical Combine. The great mill will roll steel ingots weighing up to 25 tons into slabs (intermediate products for rolling sheet steel) up to 1,700 millimeters wide. The main drive of the horizontal stand consists of two engines of 6,500 horsepower each, which is twice the capacity of modern blooming mills.

The slab mill is the head part of a new block of sheet rolling mills of the combine. Next to it will be a strip mill "2500" which is intended to roll the intermediate products to sheet 2-4 millimeters thick and up to 2.3 meters wide in the form of a roll weighing up to 15 tons.

VOROSHILOVSK PLANT TO ACQUIRE LARGE OPEN-HEARTH FURNACE -- Leningradskaya Pravda, 8 Feb 58

The construction of a large new open-hearth furnace has been started in the Voroshilovsk Metallurgical Plant imeni Voroshilov. This is a gigantic structure to be completed in one year. However, the young people who are constructing it have determined to complete it ahead of schedule as a gift to the country in honor of the 40th anniversary of the Komsomol.

This will be open-hearth furnace No 10 in the Plant imeni Voroshilov. In one melt it will be able to deliver hundreds of tons of steel.

NIZHNE-TAGIL PLANT RECEIVES LOW-GRADE RAW MATERIALS -- Moscow, Pravda, 30 Jan 58

Deputy V. Ye. Privalov spoke on the work of industry of the Sverdlovskiy Sovnarkhoz at the Fifth Congress of the Supreme Soviet RSFSR. He brought up the question of the slow development of the ore base in the Central Urals. He stated that the quality of raw materials for blast furnaces of the Nizhne-Tagil Metallurgical Plant was unsatisfactory and that the ash content of coking coal supplied by the Kuzbass was increasing each year. As a result, he continued, the quality of the coke was deteriorating and every superfluous percent of ash in the coke reduces the productivity of the blast furnaces almost 3 percent.

This situation was complicated, he added, by the lag in the construction of new mines and new coal-cleaning plants in the Kuzbass, and the Council of Ministers RSFSR had to extend surveying for the development of new fat and coking coal mine fields and to take measures for the very rapid construction of new mines.

STALINO PLANT ACQUIRES LARGE NEW SMELTING INSTALLATION -- Kiev, Pravda Ukrainy, 6 Feb 58

Construction of an installation for the continuous smelting of steel has been started in the Stalino Metallurgical Plant. In dimensions and capacity this is the largest such installation in the world.

All processes in smelting steel will be mechanized and automatized. When the installation starts operating, the time required to complete the production cycle in the plant will be considerably decreased and less metals will be wasted.

LENINRUDA TRUST ACQUIRES NEW MINE -- Moscow, Pravda, 17 Feb 58

The Krivbassrudstroy Trust (Krivoy Rog Trust for the Construction of Ore Enterprises) has completed building the Oktyabr'skaya Mine which belongs to the Leninruda Trust. The mine has been put in operation and will have a planned capacity of 3.5 million tons of ore per year. The enterprise is provided with two 25-ton skips and underground transport is equipped with powerful 10-ton mine cars and centralized electric control. The first tons of iron ore have already been brought above ground.

SOKOLOVSK-SARBAY COMBINE EXPECTS HIGH PRODUCTION -- Alma-Ata, Kazakhstanskaya Pravda, 6 Feb 58

At present, Kustanayskaya Oblast is called the "Bol'shoy Turgay" since geologists have discovered enormous wealth in iron ore, bituminous coal, titanium, and zirconium there. The Sokolovsk-Sarbay Mining and Concentrating Combine has been established there. Scientists came to the mine field and studied samples of the iron ore. At that time, no ore was yet being delivered to the country, but now trainload after trainload is being sent every day to Chelyabinsk and Nizhniy Tagil. The January plan was fulfilled ahead of schedule. The goal of the workers is to give the motherland the first million tons of ore by the end of 1958.

This is only the beginning. Next year, the Sokolovsk mine should deliver 2.5 million tons of ore. Then when the Sarbay Mine is put in operation, the country will receive 10 million tons of ore per year.

At a recent session of the Kustanayskiy Sovnarkhoz, the important decision was reached to raise the capacity of the Sokolovsk-Sarbay Mining and Concentrating Combine to 22.5 million tons per year, by 1965.

SOKOLOVSK MINE STARTS PRODUCING -- Alma-Ata, Kazakhstanskaya Pravda, 1 Feb 58

Constructers and miners of the young city of Rudnyy have fulfilled the 1957 state plan for putting in operation the complex of the first unit of the Sokolovsk-Sarbay Mining and Concentrating Combine, which has a capacity of one million tons of ore per year. In a short time, 16 million cubic meters of earth was removed from the pit which uncovered the ore body. In 1957, the Sokolovsk Mine shipped 120,000 tons of ore for blast furnaces of the Urals. In 1960, the combine will deliver ten times as much.

NEW MINES OPERATE IN KRIVOY ROG BASIN -- Moscow, Trud, 5 Feb 58

Recently, the following mines were put in operation in the Krivoy Rog Basin: "Yuzhnaya" Mine of the Mine Administration imeni 20th Congress of the CPSU, "Pioner" Mine of the Mine Administration imeni Roza Lyuksemburg, and "Bol'shoy Kar'yer" of the Mine Administration imeni Dzerzhinsk.

In the Nikopol' Manganese Basin the following open pits have been constructed: "Novoselovskiy" Pit, "Shevchenkovskiy" Pit, and "Aleksandrovskiy" Pit. These pits will enable miners to extract almost twice as much manganese by the open-pit method as in 1956.

SIZE OF IRON DEPOSITS IN KMA -- Moscow, Vechernyaya Moskva, 27 Feb 58

The Kursk Magnetic Anomaly appears at the surface in the form of belts which extend at least 1,000 kilometers. The Krivoy Rog iron deposit also appears as a narrow belt but this extends only 100 kilometers. The part of the Kursk Magnetic Anomaly which is located in Belgorodskiy Rayon alone contains at least 15 billion tons of rich iron ore.

Scrap Metal

STALINGRAD PLANT ORGANIZES SCRAP METAL COLLECTION -- Moscow, Sovetskaya Rossiya, 25 Feb 58

The collection of metal shavings has been organized in the Stalingrad Plant in all shops where there are metal-cutting machines. Special bins have been set up in every bay for steel and pig-iron waste products. The collected metal is loaded into trucks and is then delivered by motor truck

to railroad cars. Persons who are engaged in putting the working areas in order observe the appeal which is hung up in some shops: "Save every gram of metal!" They take care that not a single lump of metal is lost or missing.

One abundant source for supplementing the steel balance would consist in resmelting scrap obtained from outmoded and unsuitable equipment. Old and worn-out equipment is expensive to operate. Its productivity is very low. It gets out of order often and restoring and repairing it is very expensive. It would be better to replace the worn-out equipment with new models and turn the old machines and equipment into scrap for resmelting.

IV. NONFERROUS METALLURGY

Technology

SCIENTIFIC INSTITUTE ASSISTS LEAD-ZINC ENTERPRISE IN DEVELOPING NEW TECHNIQUES -- Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 21 Feb 58

For almost 7 years, the All-Union Scientific Research Mining and Metallurgical Institute of Nonferrous Metals (VNIITsvetmet) has been in existence. It is located on a square with a very large enterprise -- the Ust'-Kamenogorsk Lead-Zinc Combine. Not far away are the mines, concentrating factories, and plants of Altay. Fifteen laboratories, equipped with modern apparatus, are in operation in the institute. There is an experimental flotation concentrating factory. During 1958, construction of mining and experimental machine shops will be started.

The scientific personnel of VNIITsvetmet is increasing. Expert engineers with great industrial experience have entered the institute.

Fulfilling the requirements of the rapidly growing industry of Kazakhstan, the institute has been able to solve a number of serious problems in a short time. It has developed a method of drilling deep boreholes in hard rock. For this purpose it designed suitable equipment, with the help of which 36,000 linear meters were drilled in the mines of Kazakhstan in 1957 and more than 2.5 million rubles was saved.

Associates of the institutes, in collaboration with workers of the Leninogorsk Lead Plant, have developed and studied a new process of electrosmelting of lead agglomerate. The Vostochno-Kazakhstanskiy Sovnarkhoz (Council of National Economy) and the Gosplan of the republic examined the recommendations of the institute and plant and decided to introduce the new method of smelting in the two largest plants of the Rudnyy Altay.

In 1923, Professor Makovetskiy proposed a sulfating (sul'fatizatsiya) method for processing complex polymetallic ores and concentrates. Gintsvetmet (State Institute of Nonferrous Metals) was also working in the same direction. As a result there developed a method of both Professor Makovetskiy and Gintsvetmet which is now attracting much attention.

The majority of nonferrous ores are polymetallic. Concentrates obtained as a result of flotation concentration contain several metals in varying proportions. Industry is greatly in need of a method for processing such raw material for the complex extraction of all metals. The Makovetskiy-Gintsvetmet method solved this task theoretically for copper-zinc concentrates. However, serious difficulties involving technology and apparatus were encountered when the plant put the method in practice.

Associates of VNIITsvetmet developed a new sulfating method suitable for powder-form materials in which not only lead and zinc but also cadmium, thallium, indium, germanium, selenium, and other rare metals were concentrated. They put to creative use their latest achievements in metallurgy (cold granulation with strong sulfuric acid, roasting in a fluidized bed) and developed the technology for extracting all the metals as well as suitable apparatus for carrying out the process. The Ust'-Kamenogorsk Lead-Zinc Combine is completing the construction of a special experimental industrial shop.

NEW METHOD FOR OBTAINING METALLIC TELLURIUM -- Alma-Ata, Kazakhstanskaya Pravda, 28 Feb 58

Tellurium is the true metal of modern techniques. In 1958, it has been obtained for the first time in industrial conditions of the Rudnyy Altay in the Ust'-Kamenogorsk Lead-Zinc Combine. The combine constructed and tried out an original installation for obtaining metallic tellurium from solutions of the department for processing caustic melts, products obtained in cleaning harmful admixtures from lead.

Plants, Mines, Deposits

BALKASH PLANT TO BE RECONSTRUCTED -- Alma-Ata, Kazakhstanskaya Pravda, 5 Feb 58

During the past 6 years, the Balkhash Plant for Processing Nonferrous Metals has almost doubled its output. At present, shops of the plant have achieved their maximum capacity. The equipment is operating with an overload and part of it is out-of-date. The rolling mill operators have planned, in connection with the 1959-1965 program, to do extensive work on the reconstruction of their enterprise. After this has been accomplished, the output of nonferrous rolled stock will increase in 1963 to more than 1.5 times the 1958 level. The program plans for the putting in operation of a shop for the production of phosphorus-tin wire.

The production area of shop No 2 is being increased 50 percent. New rolling mills will be installed with a capacity three times that of existing mills. Improvement of the technological process will shorten the production cycle considerably. The use of multidisk cutters will permit the cutting of metal belts of varying thickness and width.

The foundry is being significantly expanded. It is planned to build a plant laboratory, storage compartments, and repair-service installations.

ALUMINUM PLANTS TO RECEIVE TRAIN LOADS OF RAW MATERIALS -- Moscow, Gudok, 18 Jan 58

The production areas of an alumina plant stretch out in the desert borderlands of Kirovabad. Soon heavy consists will go from here with raw materials for the Sumgait and Transcaucasus Aluminum plants.

Dump trucks, filled with iron ore and alunite, fundamental raw material for aluminum, run to Dashkesan and Zaklik. Heavily laden consists filled with ore depart one after another from the Kushchinskiy Bridge Station. Soon electric locomotives will pull them to their destination.

NEW ROLLING MILL FOR ALUMINUM STRIP IN OPERATION -- Leningradskaya Pravda, 28 Feb 58

In the plant for processing nonferrous metals [probably Leningrad Nonferrous Metals Finishing Plant] a large new four-high rolling mill for rolling fine aluminum strip has been put in operation. This highly productive aggregate develops a speed in rolling of up to 150 meters per minute, five times as fast as equipment used until recently. The given thickness of the rolled strip -- up to 0.5 millimeter -- is achieved by passing the strip three to four times through the rollers.

Two workers control all the mechanized and automatized processes in the new rolling mill.

NEW ENTERPRISES ATTACHED TO CHIATURMARGANETS TRUST -- Tbilizi, Zarya Vostoka, 4 Feb 58

In August 1957, the Chiaturmarganets Trust received two new structures of industrial significance. The Itkhvisi-Novyy Mine and a new central concentrating factory were put in operation. Both these enterprises have a large planned production capacity, which is very important for further development of the manganese industry. However, both enterprises are very slow in the achievement of their planned capacities, as is indicated by their regular failure to fulfill their planned assignments. The Itkhvisi-Novyy Mine fulfilled the plan for manganese extraction 46.4 percent from the day it was put in operation to the end of 1957 and the new concentrating factory fulfilled its quota only 43.8 percent.

The mine administration did particularly bad work in preparation of first-grade manganese, fulfilling its quota only 36.2 percent for this product.

CHIATURMARGANETS TRUST EXPANDS -- Moscow, Trud, 27 Feb 58

A new mine and flotation shops for the concentrating factory of the Chiaturmarganets Trust are being constructed in Chiatura. When these enterprises are put in operation in 1958, the manganese output from the Chiaturskoye deposit will increase one million tons per year.

NEW TUNGSTEN DEPOSITS DISCOVERED -- Kiev, Pravda Ukrainy, 26 Feb 58

Geological exploratory crews of the Ingichka Group explore mineral deposits all year round. During the past 2 years, they have discovered supplies of tungsten ore more than six times as large as those previously explored.

CENTRAL KAZAKHSTAN LEADS IN SUPPLIES OF BASIC MINERALS -- Alma-Ata, Khabarshysy Vestnik, No 1, Jan 58, p 22

Central Kazakhstan holds first place among all economic regions of the USSR for supplies of the basic types of minerals which determine the level of development of the national economy and of the defense of the country. Here are concentrated more than 60 percent of the USSR iron reserves; about 50 percent of the copper, molybdenum, tungsten, and titanium; and 30-50 percent of the coal, lead, zinc, and bauxite.

DZHEZKAZGAN COPPER ORE EXTRACTION TO EXPAND -- Alma-Ata, Kazakhstanskaya Pravda, 1 Feb 58

Kazakhstan takes a leading place in the extraction of ore and in the smelting of nonferrous metals. During 1958, over-all production of the nonferrous metallurgical industry will rise 3.4 percent above 1957.

The chief attention is being paid to the Dzhezkazgan copper ore deposit, which is one of the largest in the world. By 1965, extraction of ore will rise to 2.5 times its present level. A mining and metallurgical combine, the "Kazakhstan Magnitka" of nonferrous metallurgy, will be put in operation.

SHAMLUGSKOYE COPPER DEPOSIT EXPLORED AND EXPLOITED -- Moscow, Razvedka i Okhrana Nedr, No 1, Jan 58, p 8-11

The Shamlugskoye copper deposit is located in the Somkhetskiy Mountains of Northern Armenia, one of the mountain ranges of the Malyy Caucasus, along the left side of the Uch-Kilis River, near the village of Shamlug. The contour of the region of the deposit is sharply broken; the difference in elevation is 500-800 meters and the absolute altitude is 1,200-1,300 meters.

The history of exploring and exploiting the deposit may be divided into two parts: the first period lasted for nearly 200 years, during which time exploration and exploitation were carried out only in the upper levels of the deposit of a depth of 150 meters; the second period, embracing the past 10-12 years, continued operations in the upper levels but also carried out intensive exploration and exploitation in the lower levels.

In 1943, boreholes No 111 and 113 cut through mineralization in the tuff-brecciated porphyrite to a depth of 180-200 meters from the surface. This marked the beginning of the second period. During this period, most boreholes were drilled to a depth of 350-400 meters, cutting the entire tuff sedimentary layer and so reaching the lower porphyrites.

The contours, dimensions, and the lay of the ore bodies in the lower horizontal deposits differ sharply from ore bodies in the upper levels. However, the manner of exploring them by drilling boreholes from the surface continued, the only difference being that now they were drilled to a greater depth. Meanwhile, the authenticity of surveying data and the effectiveness of drilling deep holes from the surface were greatly reduced. More than this, in most cases, data on intersected ore obtained through boreholes were not verified during detailed exploration by mining operations.

In drilling deep boreholes the negative influence of their deflection is sharply apparent. For example, in 1950-1952, a number of boreholes drilled from the surface in the southern part of the deposit resulted in a large number of ore intersections. Specific boreholes intersected the ore at several intervals. Borehole No 168 intersected ore 12 times; in the case of borehole No 169, ore from 0.2 meter to 5-6 meters thick and with a high copper content was intersected ten times.

Fifteen boreholes totaling 5,800 linear meters were drilled from the surface to make a detailed exploration of this section of the deposit. A great part of these also intersected ore with industrial content and thickness. On the basis of data received, the southern part of the deposit was believed to contain 12 veins which were estimated to contain

considerable supplies of ore. Later mining operations indicated that the majority of the ore cuts were not of industrial value in view of their slight thickness and small dimensions along the strike and dip. In this connection the variability in the angles of dip or displacement of veins by tectonic disturbances caused some veins to be intersected by one borehole three to four times.

Boreholes No 115 and 114, starting at the surface at a distance of 55 meters from one another, were only one meter apart at a depth of 240 meters. At this point both holes cut through ore, but later mining operations revealed that the ore body here was only a small pocket, 1.5 by 2 meters.

Detailed exploration of the deposit by mining operations in connection with underground horizontal boreholes indicated that only two thin veins, of the 12 established by drilling data, had industrial significance, and the resources amounted to 50,000 tons instead of the formerly estimated 900,000 tons. On the other hand, detailed exploration revealed large bodies of ore that had not been cut by the boreholes from the surface because the deflection in these boreholes made them run parallel to the dip of the ore bodies.

Detailed exploration of ore occurrences by expensive boreholes from the surface is not very effective and does not give reliable data for estimating resources. In all cases, even in sections where boreholes did not give positive results, mining operations in combination with horizontal underground boreholes were necessary.

It is expedient to explore sections of the deposit which adjoin the explored section by mining operations and horizontal boreholes, without drilling deep holes from the surface. This procedure will yield the most reliable data, but the expenditures will not exceed the costs of drilling four 100-meter boreholes from the surface along the corner points of a 100-meter network. If it is taken into account that later detailed mining and exploratory work is not required, then expenses for exploration are decreased about 30-40 percent.

Sixty-five boreholes are required for exploring a section by boreholes from the surface going to a depth of 400 meters. This makes a total of 26,000 meters. The average cost per linear meter is 250 rubles, according to the estimate of the Shamlug Geological Exploration Group. This makes a total of 6.5 million rubles.

This same section may be explored by mining workings and underground horizontal boreholes at three levels. For exploration on one level, 3,150 linear meters of mine workings and 5,300 linear meters of underground exploratory boreholes are required. One linear meter of mine exploratory

workings costs 480 rubles and one linear meter of underground borehole drilled by the GP-1 machine costs 118 rubles. This makes the total cost for exploratory work on one level 2,137,000 rubles. The total costs for three levels would come to 6,411,000 rubles.

Thus the cost of exploring a section by mining operations with underground drilling of boreholes does not exceed the expense for preliminary drilling of boreholes from the surface. Actually the drilling of deep boreholes from the surface should be retained but it should take on a prospecting character and serve to reveal favorable geological structures and prospective ore occurrences in the sides of the deposit. If the expenditure for drilling boreholes from the surface were curtailed 50 percent, costs for exploration would be decreased at least 25 percent.

DATA ON SAMOTKAN TITANIUM DEPOSIT -- Moscow, Gornyy Zhurnal, No 3, Mar 58, p 12

Recently, a number of large titanium ore deposits have been discovered in the USSR. Among these the Samotkan deposit takes a leading place for its explored and prospective resources and for its content of useful ores. A complex plan was drawn up in 1957 by the GSPI-1 (State Union Design), Institute for working this deposit. The plan was reviewed and approved by the Dnepropetrovskiy Sovnarkhoz.

The Samotkan deposit is an old buried Tertiary deposit associated with the sandy sedimentation of the Sarmatian stage of the Poltavskaya formation. Deposits of the Sarmatian stage lie under Quarternary deposits 6-60 meters thick. This thick layer is loess-like and red-brown clayey soil, red-brown and greenish-gray clays of the Upper Sarmatian stage. The lower part, 1-2 meters thick, often contains industrial minerals. The average thickness of the overlying rock is 31.2 meters.

Industrial sands of the deposit are divided into two layers one under the other. The top seam is made up of small-grained sands of the Sarmatian stage, the lower of fine-grained sands of the Poltavskaya formation which lie under the glauconite sands of the Khar-kov stage. In mineralogical content they differ radically from the sands of the Poltavskaya formation, since pyrite, with 60-70 percent, predominates. The interstratification, in some places reaching a thickness of 5 meters but at times completely missing, is made up of residual sands of the Sarmatian stage.

The average thickness of the top seam is 14.3 meters and of the lower 6.1 meters. Both the upper and lower seams extend for several kilometers. The width of the deposit is 300 meters. The seams lie in an almost horizontal position. The sands of the Sarmatian stage are slightly cemented

by clayey materials. They are friable when wet but become condensed when dried. The sands of the Poltavskaya formation stage are slightly clayey, friable when wet, and quick in drying. The sands belong to category I as regards friability. The proportion of overburden is 1.9-2.0 tons per cubic meter.

The average coefficient of friability of the sands is 1.19. The average moisture content of the Sarmatian sands is 10.88 percent and of the Poltavskaya 14.1 percent.

DIAMOND DEPOSITS SOUGHT FROM AIR -- Tbilisi, Zarya Vostoka, 6 Feb 58

The complex air-geophysical station ASG-38 is one of the most ideal installations for seeking deposits of useful minerals from an airplane. It is intended to discover minerals connected with rocks having radioactive, slightly magnetic, and magnetic properties. One flight operator services the installation.

The ASG-38 station is being successfully used by geologists also for seeking diamond deposits (kimberlite pipes). This is possible because kimberlite has high magnetic susceptibility and low radioactivity but the rocks around it have opposite properties. The cost of air searches for diamonds is only about 3 percent that of ground searches. Use of this method has led to the discovery of a number of pipe deposits of diamonds in the region of the deposits in the Yakutskaya ASSR.

SIBERIAN DIAMONDS PREPARED FOR UTILIZATION -- Yerevan, Kommunist, 12 Feb 58

Diamonds are acquiring more and more significance in the national economy of the country. They are used for preparing abrasive powders, polishing disks, some parts for precision instruments, special drills, cutters, and other instruments.

The search for diamonds in the USSR is under way. Soviet scientists have shown that a number of areas in Siberia and Africa have much in common. During the past several years, search and survey operations have been conducted in the Yakutskaya ASSR and diamond placer deposits have been found. In 1954, the first basic diamond deposit was discovered, a pipe deposit which was named Zarnitsa. Later Mir, Udachnaya, and other pipe deposits were found. The extracted diamond rock, kimberlite, goes to the concentrating factory. The concentrate obtained as a result of ore-dressing is submitted to exposure in an X-ray apparatus. During this process, it is easy to spot the diamond crystals under the activity of

the X rays. Then the diamonds are sent to a laboratory located in Nyurba, the rayon center. Hundreds of crystals of different shape, color, and size pass through the hands of the laboratory workers daily. The diamonds are carefully inspected and sorted. The most nearly perfect, with the shape of an octahedron, are subjected to further sorting.

DIAMOND DEPOSITS IN YAKUTSKAYA ASSR -- Moscow, Planovoye Khozyaystvo, No 2, Feb 58, p 75

Important diamond deposits have been discovered in the western part of the Yakutskaya ASSR. In 1949, the first diamonds were found in the basin of the Vilyuy River. Recently, six large diamond areas have been opened up as the result of geological prospecting and exploration. These include Malo-Botuobinskiy, Daldyno-Alakitskiy, Sredne-Markhinskiy, Tyungskiy, and Munskiy. At present, the most explored deposits are in the Malo-Botuobinskiy area ("Mir" pipe and alluvial deposits in the valley of the Ierelyakh) and in Daldyno-Alakitskiy Rayon ("Udachnaya" pipe deposit). The resources in these two areas alone are sufficient to supply the needs of USSR industry for industrial diamonds for a number of years. The geological supplies of diamonds in explored deposits of the western part of the Yakutskaya ASSR are so large that they can serve as a steady raw material base for a large diamond-mining industry. The scope of mining in the Urals only partly satisfied requirements of USSR industry for technical diamonds, and import from capitalist countries has become most difficult recently in view of the US ban on the sale of so-called strategic materials to the USSR and countries of the Soviet bloc.

The 20th Congress of the CPSU proposed doing preparatory work for creating a diamond-mining industry in the Yakutskaya ASSR. The 1958 plan calls for capital investment 2.5 times its former level in the diamond mining industry of the Yakutskaya ASSR. The high-speed development of the diamond-mining industry will permit the country in a short time to overtake the US in the level of utilization of diamonds in industry.

One of the basic prerequisites for developing the diamond-mining industry in regions of the western part of the Yakutskaya ASSR is the solution of the transport problem. These areas are at a considerable distance not only from the chief economic centers of the USSR, but also from the main industrial areas of the Yakutskaya ASSR. The areas are unpopulated, difficult of access, and completely lacking in roads.

Shipments to the main diamond regions of the western Yakutskaya ASSR are at present sent along the Lena River (port of entry is Osetrovo, connected with the railroad network by the Tayshet-Lena Station section of the Krasnoyarsk Railroad), its left tributary, the Vilyuy River, and also

the latter's tributaries. In view of the extremely unfavorable conditions for navigation on the upper part of the Vilyuy River and on its tributaries and the great distance of the diamond deposits from the navigable parts of the rivers, the shipment of freight to the diamond-bearing regions of western Yakutskaya ASSR presents great difficulties and involves quite large transport expenditures. However, the total prospective volume of freight delivery to ensure the operation of diamond mining and to service its enterprises is relatively small and is estimated at several tens of thousands of tons.

LARGE GOLD NUGGETS FOUND IN YAKUTSKAYA ASSR -- Moscow, Sovetskaya Rossiya, 9 Feb 58

Miner F. I. Korshikov found a nugget of gold weighing 3 kilograms 513 grams in the Yubileynyy Placer Mine in the Yakutskaya ASSR. This is one of the largest nuggets to be found in placer gold mines in the Yakutskaya ASSR during the last two decades. In December, Korshikov found another nugget weighing 730 grams.

V. COAL INDUSTRY

General

USSR COAL PRODUCTION IN SIXTH FIVE-YEAR PLAN -- Ugol'naya Promyshlennost' SSSR v Shestoy Pyatiletke (The USSR Coal Industry in the Sixth Five-Year Plan), Moscow, Ugletekhizdat, 1956 (book by D. T. Onika), pp 5-41

The USSR coal industry exceeded its Fifth Five-Year Plan goals 4.4 percent, extracting 376.5 million tons instead of the planned 360.8 million tons. Fifth Five-Year Plan goals and actual production, of the Ministry of Coal Industry USSR are shown below.

	1955 Goals (million tons)	1955 Production (million tons)	Plan Fulfillment (%)
Donbass	130.0	135.5	104.1
Ministry of Coal Industry Ukrainian SSR	116.7	120.8	103.5
Rostovugol' Combine	20.8	23.5	113.0
Moskvougol' Combine	20.0	21.6	108.0
Kuzbassugol' Combine	50.3	56.5	112.3
Intaugol' Combine	3.9	4.0	102.6
Chelyabinskugol' Combine	15.6	17.6	112.8
Sverdlovskugol' Combine	13.7	16.4	119.7
Karagandaugol' Combine	24.5	26.8	109.4
Sredazugol' Combine	6.1	6.3	103.8
Vostsibugol' Combine	20.9	23.2	111.0
Primorskugol' Combine	5.2	5.4	104.6

	1955 Goals (million tons)	1955 Production (million tons)	Plan Fulfillment (%)
Tulaugol' Combine	19.45	17.74	91.2
Vorkutugol' Combine	11.1	10.1	91.0
Molotovugol' Combine	12.2	11.0	90.2
Baskhirugol' Combine	5.5	1.83	33.3
Dal'vostokugol' Combine	7.1	6.99	98.5
Sakhalinugol' Combine	4.0	3.62	90.5
Gruzugol' Combine	3.5	2.7	77.4
Ministry of Coal Industry USSR (total)	360.8	376.5	104.4

During the Fifth Five-Year Plan, USSR coal output rose 51.3 percent, including 50.9 percent in the Donbass, 53.6 percent in the Kuzbass, 62.9 percent in the Pechora Basin, 64.4 percent in Karaganda, 45.6 in the Ural Basins, 49.5 in Central Asia, and 53.8 percent in East Siberia.

A particular characteristic of the coal industry development during the Fifth Five-Year Plan was the expansion of the open-pit method of coal extraction and the rise in the production of coal mined by this method. Output by this method rose at a faster rate than output by the underground method, amounting, in 1955, to 10.3 times the 1940 level. During the Fifth Five-Year Plan, the use of this method increased to 2.4 times the previous level; it was 7.6 times as great in the Kuzbass, 1.7 times as great in the Urals, twice as great in Karaganda, and 4.8 times as great in East Siberia. The table below indicates the proportion of coal produced by the open-pit method by the various basins and/or combines.

Ministries, Basins, and Combines	Output (% of Total) 1945	1950	1951	1952	1953	1954	1955	1955 Output (% of 1950)
Ministry of Coal Industry USSR	100.0	100.0	100.0	100.0	100.0	100.0	100.0	239.2
Ministry of Coal Industry Ukrainian SSR	--	0.4	0.9	4.1	7.7	10.5	11.0	72 times
Kuzbass	--	2.7	2.9	2.9	4.0	5.3	8.7	7.6 times
Urals (total)	70.9	51.9	51.8	48.5	43.5	39.0	36.4	168.1
Chelyabinskugol' Combine	38.7	18.5	17.2	15.7	13.8	11.5	10.0	129.7
Sverdlovskugol' Combine	32.2	33.4	34.5	32.2	28.6	26.1	23.6	169.0
Karaganda Basin	10.4	15.5	15.7	14.6	12.7	11.4	12.8	197.9
Sredazugol' Combine	--	4.0	3.4	3.9	4.0	3.6	3.3	197.4
Vostsibugol Combine	3.3	8.3	9.4	10.7	13.7	16.7	16.8	484.2
Far East (total)	15.4	17.2	15.9	15.3	14.4	13.5	11.0	152.3
Dal'vostokugol' Combine	15.4	16.0	14.8	14.2	13.2	12.4	10.1	150.1
Sakhalinugol' Combine	--	1.2	1.1	1.1	1.2	1.1	0.9	182.1

By 1960, coal production by the Ministry of Coal Industry USSR must rise 52.2 percent over 1955. The planned output for the various basins is shown in the table below (in percent of 1955):

Ministry, Basins, and Combines	1956 Plan	1960 Plan
Ministry of Coal Industry USSR	110.3	152.2
Donbass (total)	112.6	156.6
Ukraine Donbass	112.6	160.5
Rostovugol' Combine	112.7	153.5
Moscow Basin	104.6	134.9
Kuznetsk Basin	112.3	148.6
Pechora Basin	110.9	134.2
Urals	109.7	137.0
Molotovugol' Combine	103.0	119.8
Chelyabinskugol' Combine	106.3	121.9
Sverdlovskugol' Combine	110.0	119.2
Bashkirugol' Combine	179.8	5.5 times
Karagandaugol' Combine	114.5	153.3
Karaganda	108.0	122.7
Ekibastuz	184.0	481.9
Sredazugol' Combine	105.8	181.6
Vostsibugol' Combine	105.7	172.8
Far East	100.4	125.5
Primorskugol' Combine	98.7	113.0
Dal'vostokugol' Combine	100.8	121.6
Sakhalinugol' Combine	102.1	151.8
Gruzugol' Combine	110.8	135.6

Coal output in the USSR will be developed by increasing the production capacities of existing mines as well as constructing new ones.

In the Sixth Five-Year Plan, 35 percent of the total increase in coal output must be attained through more complete utilization of existing mine capacities, improved development work, modernization and replacement of outdated equipment, and further improvement of techniques and organization of production. In 1960, those mines and pits which had begun operations by 1951 must increase their capacities 10 percent, instead of utilizing their present capacities only 96 percent, as in 1955. The absolute increase in the coal output of these mines and pits must reach about 70 million tons during the 5-year plan period.

During the 5-year period, new facilities to be constructed at mines and open pits will increase their capacity by a total of 254.4 million tons. In 1960, almost 122 million tons of coal, 87.8 percent more than in 1955, will be extracted by the open-pit method. Moreover, by the end of the 5-year period, 20.6 percent of the coal extracted in the USSR will be extracted by this method. New open-pit mines are planned for Kushmurun, Itat, Irtysh, the Kazakh SSR, the Bashkirskaya ASSR, Kuzbass, and Moscow Basin. Capital investment in new production facilities in the coal industry during the Sixth Five-Year Plan is shown in the following table.

Ministry, Basin, and Combine	Capital Investment (% of Fifth Five-Year Plan)	Increase in Annual Capacity of Operating Mines (After Reconstruction) (million tons)	Housing To Be Put Into Use	
			1,000 sq m	% of Fifth Five-Year Plan
Donbass	210	91.0	7,000	275
Mosbass	160	26.7	1,350	142
Kuzbass	185	33.3	1,850	319
Pechora	286	7.0	910	390
Urals	142	21.8	940	168
Molotovugol' Combine	126	4.1	350	168
Chelyabinskugol' Combine	190	6.6	360	188
Sverdlovskugol' Combine	135	3.6	130	127

Ministry, Basin, and Combine	Capital Investment (% of Fifth Five-Year Plan)	Increase in Annual Capacity of Operating Mines (After Reconstruction) (million tons)	Housing To Be Put Into Use	
			1,000 sq m	% of Fifth Five-Year Plan
Bashkirugol' Combine	108	7.5	100	176
Karaganda	310	27.9	1,000	322
Sredazugol' Combine	420	8.1	170	240
Vostsibugol' Combine	284	19.2	400	240
Far East	181	3.5	530	177
Gruzugol' Combine	132	0.4	110	100
Ministry of Coal Industry USSR (total)	208	254.4	15,650	252

The total facilities to be constructed and put into operation at mines and pits during the period 1956-1960 will increase the annual capacity by 254.4 million tons, in contrast to the 112.4-million-ton increase during the 1951-1955 period.

To guarantee increased production, it has been decided to eliminate the disproportion in production altogether and to do considerable work on reconstruction and construction of plants. Work will begin with the construction of six plants -- for mechanized supports, in the Donbass; coal and tunneling combines, in the Kuzbass; equipment for mechanized mines, in the eastern part of the USSR; equipment to be used in mine safety, in the Donbass; and others.

It is also planned to construct scientific research institutes; 15.6 million square meters of housing; kindergartens for 55,000 children; general education schools for 250,000 children; technical schools for 6,200 pupils; mining schools for 20,000 pupils; hospitals, maternity wards, and dispensaries with a total capacity of 14,000 beds; and nurseries for 27,000 children. Water lines and sewer systems, highways, and tram and trolley-bus lines will be built. In addition, electricity and gas will be supplied to 25 miners' settlements and towns.

During the last 10-15 years, the Moscow, Karaganda, and other coal basins of the nation have been greatly developed. The following table gives the 1955 output of the various coal basins in the USSR.

	Donets Basin						
	Total	Ministry of Coal Industry SSR Ukrainian	Rostovugol' Combine	Moscow Basin	Kuznetsk Basin	Karaganda Basin	Pechora Basin
Output (% of USSR output)	35.9	29.7	6.2	10.4	15.0	7.1	3.8
No of seams being worked	1,159	1,034	125	137	466	60	101
Distribution of coal output (%)							
According to seam thickness							
Less than 1 m	55.0	58.3	39.5	0.3	4.6	2.8	15.7
From 1 to 3.5 m	45.0	41.7	60.5	89.8	55.8	54.6	73.7
More than 3.5 m	--	--	--	9.9	39.6	42.6	10.6
According to seam dip							
Flat dipping	70.7	67.2	87.4	100.0	36.1	96.9	66.7
Inclined	12.1	12.8	9.0	--	19.3	2.4	29.3
Steeply dipping	17.2	20.0	3.6	--	44.6	0.7	4.0
No of mines	532	453	79	114	72	36	28
Category 1 (for gas)	130	120	10	--	31	3	13
Category 2 (for gas)	50	50	--	--	18	6	3
Category 3 (for gas)	31	31	--	--	4	4	6

[adjoins page 68 here]

Approved For Release 1999/08/25 : CIA-RDP78-03107A000200020005-3

	Urals Basins						Far East				
	Total	Kizel Basin	Chelyabinsk Basin	Sverdlovsk Basin	Sredazugol' Combine	Vostsibugol' Combine	Total	Primorskugol' Combine	Dal'vostokugol' Combine	Sakhalinugol' Combine	Gruzugol' Combine
	12.4	2.9	4.7	4.3	1.7	6.2	4.3	1.4	1.9	1.0	0.7
	211	78	105	28	32	61	138	60	4	74	20
	11.3	21.7	1.6	6.4	1.4	0.6	8.1	6.8	--	11.9	7.7
	57.6	74.7	37.7	92.2	26.9	61.5	81.1	84.7	100.0	71.5	42.6
	31.1	3.6	60.7	1.4	71.7	37.9	10.8	8.5	--	16.6	49.7
	44.0	27.2	59.2	59.1	61.6	99.3	69.9	78.7	100.0	48.5	41.6
	29.8	34.6	25.2	28.1	27.8	--	21.5	12.8	--	41.3	55.5
	26.2	38.2	15.6	12.8	10.6	0.7	8.6	8.5	--	10.2	2.9
	77	34	36	7	19	31	34	18	1	15	12
	30	8	22	--	--	2	12	9	1	2	4
	3	2	1	--	1	--	3	1	--	2	1
	1	--	1	--	--	1	4	1	--	3	1

[adjoins page 67 here]

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	Donets Basin						
	Total	Ministry of Coal Industry SSR Ukrainian	Rostovugol' Combine	Moscow Basin	Kuznetsk Basin	Karaganda Basin	Pechora Basin
Subject to sudden coal ejections	55	52	3	--	8	2	2
No of open-pit mines (at end of 1955)	--	--	--	--	12	2	--
Open-pit output (% of total)	--	--	--	--	10.0	31.1	--
Avg monthly labor productivity during extraction (% of avg for Ministry of Coal Industry USSR)	68.3	65.3	85.7	111.1	123.5	165.1	99.7
Cost per ton of coal (% of avg for Ministry of Coal Industry USSR)	130.0	--	107.5	81.6* 92.5**	84.5	65.4	--
Avg ash content	14.5	14.6	14.0	29.4	10.5	21.0	19.2

* Moskvougol' Combine

** Tulaugol' Combine

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Urals Basins						Far East				
Total	Kizel Basin	Chelyabinsk Basin	Sverdlovsk Basin	Sredazugol' Combine	Vostsibugol' Combine	Total	Primorskugol' Combine	Dal'vostokugol' Combine	Sakhalinugol' Combine	Gruzugol' Combine
4	1	--	3	--	--	6	3	--	3	--
12	--	4	6	1	7	7	--	6	1	--
50.5	--	36.9	93.6	33.5	47.0	44.4	--	93.5	16.3	--
161.6	87.8	149.2	390.3	92.1	203.7	128.0	89.7	408.2	76.2	88.4
--	129.1	70.8	33.4	109.5	54.7	--	120.5	40.8	244.0	133.7
24.8	24.7	28.3	20.9	14.1	15.3	15.5	22.4	10.6	14.2	30.3

At the beginning of the Sixth Five-Year Plan, there was a great difference between coal output and demand in the European economic regions of the USSR. This led to annual imports of about 14 million tons of coal from the eastern regions at an unnecessary expenditure of almost 800 million rubles.

The distribution, according to economic region, of the coal imported from the various basins of the USSR is indicated in the following table (in percent).

Consuming Regions	1940	1950	1951	1952	1953	1954	1955	1956 (plan)	1960 (plan)
	Donbass Coal (Including Anthracite)								
South (including Crimea and Stalinskaya and Voroshilovgradskaya oblasts)	59.97	58.56	58.61	58.51	59.41	63.71	61.47	59.18	69.94
Center	21.30	20.67	20.53	21.39	20.71	18.00	22.52	21.40	16.27
North Caucasus (including Rostovskaya and Kamenskaya oblasts)	5.18	8.16	8.33	7.97	8.09	8.37	7.54	6.66	5.30
Volga Region	3.48	8.15	7.57	6.90	5.97	4.73	3.93	3.95	3.34
West	1.56	1.24	1.95	2.04	2.59	2.69	3.43	3.47	2.42
Northwest	7.69	2.13	1.93	2.21	2.25	1.13	2.15	3.60	2.11
Transcaucasus	0.09	1.02	1.01	0.91	0.93	1.33	1.45	1.59	0.57
North	0.71	0.02	0.01	0.03	0.01	0.01	0.04	0.14	0.05
Remaining areas	0.02	0.05	0.06	0.04	0.04	0.03	0.01	0.01	--

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Consuming Regions	1940	1950	1951	1952	1953	1954	1955	1956 (plan)	1960 (plan)
				Kuzbass Coal					
West Siberia	51.98	48.24	48.57	47.82	47.37	42.52	41.95	46.59	53.83
Urals	27.78	39.40	37.74	38.97	39.41	38.11	37.82	37.34	36.58
Central Asia and Kazakhstan (including areas south of Alma-Ata)	11.87	10.34	12.60	11.79	7.56	4.82	5.53	7.14	6.33
Volga Region	5.52	1.52	0.89	1.05	3.62	5.30	6.74	7.01	3.13
Center	2.72	0.50	0.09	0.26	1.89	9.02	7.81	6.79	--
Remaining areas	0.13	--	0.12	0.11	0.06	0.23	0.15	0.13	0.13
				Karaganda Coal					
Urals	54.92	49.97	50.11	50.17	46.08	43.84	44.48	43.70	45.00
Kazakhstan and Central Asia (including areas south of Alma-Ata)	32.59	37.42	36.29	34.90	35.96	35.93	40.11	45.55	50.72
Volga Region	7.63	10.08	12.10	12.48	12.14	12.77	10.66	8.85	3.29
Center	4.86	0.33	0.32	--	4.78	6.70	3.52	0.72	--
West Siberia	--	2.20	1.18	2.45	1.04	1.00	1.23	1.18	0.99

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Consuming Regions	1940	1950	1951	1952	1953	1954	1955	1956 (plan)	1960 (plan)
				Kizel Basin Coal					
Urals	87.87	80.69	79.26	79.39	75.14	70.78	74.82	78.86	96.03
Center	11.92	17.63	18.91	18.73	23.86	26.40	21.90	18.66	3.97
Volga Region	--	1.39	1.83	1.23	0.43	0.32	0.48	--	--
Remaining areas	0.21	0.29	--	0.65	0.57	2.50	2.80	2.48	--

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During the Sixth Five-Year Plan, the margin between output and demand in the various economic regions will be narrowed through more rapid development of coal output in the new coal regions. In addition, to eliminate shortcomings in the fuel supply of the European USSR, the output of the Donbass, which is the basic supplier of coking coal to the southern metallurgical industries, will be built up. Donbass coal output will constitute 37 percent of the total USSR output in 1960, in contrast to 36 percent in 1955.

There will be a considerable development of coal output in the Dnepr region and in the L'vov-Volyn Basin of the western Ukraine. In 1960, about 6 million tons of coal will be extracted in the L'vov-Volyn Basin.

In addition to completing construction on the Kuybyshev and Gor'kiy hydroelectric power stations and putting the Stalingrad and Votkinsk hydroelectric power stations into operation, the Sixth Five-Year Plan also provides for the construction of a number of large thermal electric power stations to operate on the base of local fuel. This will require a considerable increase in the coal ouput of the Moscow and Pechora basins as well as the coal regions of the Ural Mountains.

Heavy industry is already being established in West and East Siberia and Kazakhstan. Coal output in Karaganda will increase 53.3 percent and Kuzbass output will rise by 37 million tons. In 1960, Ekibastuz will produce 4.8 times the 1955 output. The 1960 output in East Siberia will exceed the 1955 level by 73 percent.

KUZBASS COKING COAL POORLY USED -- Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 29 Jan 58

The present output of coking-quality coal in the USSR fails to meet the demands of the ferrous metallurgical industry, particularly in the eastern regions. The shortage is not due to low extraction levels of coking coal, but to frequent failure to prepare the coal for coking through concentration. Thus, some coking-quality coal is used instead as power-generating fuel.

According to official inspection data of Kuzbassinskoksugol', almost 2 million tons of PZh, K2, PS, and G grades of coking coal was shipped from Kuzbass mines for power-generating purposes. This amount of coal is equal to the consumption of a large metallurgical combine. Of course, the coal is predominantly high in ash content and can be used only after concentration. The Anzherugol' Trust gives an example of the state of affairs. The trust has two wet-wash concentration plants; one, at Mine No 9/15, is operated at 50 percent of capacity and one, at Mine No 5/7,

has been kept from beginning operations. At the same time, the trust is shipping 10,000 tons of good coking coal from Mine Fizkul'turnik and mines No 2 and 3 Andreyevskiy to power producers. The coal is not being concentrated even at the operating concentrating plant, which is only 5 kilometers from the Fizkul'turnik mine.

Strangely, the prices on coal with increased ash content have risen approximately 20 percent. Gosplan RSFSR and the Committee on Standards, Measures, and Measuring Instruments are with great willingness changing the technical specifications of coking coal, allowing it to become worse. This happens several times a year. And the management of the Kuzbassugol' Combine is permitting the mine managers to escape inspection controls of coking coal quality instead of stopping these antistate tendencies completely.

In October 1957, the Kemerovo Coke-Chemical Plant experienced a serious shortage because Mine imeni Kirov was 4,388 tons short in its delivery of gas coal to the plant. At the same time, this very mine shipped 8,600 tons of good concentrate to power producers for power-generating purposes. The Kuzbassugol' Combine had agreed with Gosplan RSFSR to make up the deficit to the Kemerovo plant with poorly caking power-generating coal from Mine No 1 Polysayevskaya. Mine imeni Kirov continued to send the coal to power producers.

These occurrences are not infrequent. The Kemerovskiy Sovnarkhoz (Council of National Economy) must put a stop to the wasteful use of Kuzbass coking coal. Also, it would seem advisable to establish various prices on coal destined for coking or power generation, even though it may be of the same quality [priced according to end use].

Production

COKING COAL PRODUCTION -- Kiev, Pravda Ukrainy, 28 Jan 58

In 1957, the USSR produced 88 million tons of coking coal.

1958 GOALS -- Kiev, Pravda Ukrainy, 29 Jan 58

The coal production goals for 1958 in the Ukrainian SSR call for the extraction of 162.8 million tons of coal. This is 11 million tons higher than the 1957 goals.

KARAGANDA PRODUCTION -- Alma-Ata, Kazakhstanskaya Pravda, 1 Feb 58

A total of 30.7 million tons of coal was produced in Karaganda in 1957.

KIRGIZ SSR PRODUCTION -- Frunze, Sovetskaya Kirgiziya, 21 Feb 58

The miners of the Kirgiz coal basin fulfilled their 1957 plan goals.

BUYEYN BASIN PRODUCTION -- Moscow, Pravda, 24 Feb 58

The Urgal Mine Administration in the Bureya Basin is extracting 500,000 tons of coal a year.

GEORGIAN PRODUCTION -- Tbilisi, Zarya Vostoka, 1 Feb 58

The Tkibulugol' Trust in Georgia exceeded its 1957 plan goals by 1,000 tons, a 7-percent rise over 1956 production. The four mines of the trust successfully fulfilled their plan goals.

The trust would have experienced greater success if more attention had been given to the introduction of advanced work methods and the use of new mining mechanisms. The management of the trust still does not give sufficient attention to the mechanization of labor-consuming processes; as a result, coal cost is extremely high. Furthermore, the miners of the trust are still not acquainted with a number of machines which are being used at present in other basins of the USSR.

It was established long ago that the hydraulic method of extraction is the most profitable in the Tkibuli Basin. This method ensures work safety and decrease of waste. Despite this, the volume of hydraulic mining work decreases from year to year. Not only the management of the former Gruzugol' Combine but also the present Administration for Coal, Petroleum, and Ore Mining Industry of the Georgian Sovnarkhoz are aware of this fact. The administration should also give serious attention to the renewed introduction of the cyclic operations graph, which had been introduced in Tkibuli mines but is often forgotten.

Technology

NEW DRIER IN PRODUCTION -- Moscow, Byulleten' Tekhniko-Ekonomicheskoy Informatsii, No 12, Dec 57, p 6

The Voroshilovgrad Coal Machine Building Plant imeni Parkhomenko has begun producing the SU-1 drier for coal of class 0-13 and 0-100 millimeters. The drier was designed by the Leningrad affiliate of Giprougleobogashcheniye (State Planning and Construction Institute for Coal Concentration).

NEW TUNNELING COMBINE -- Alma-Ata, Kazakhstanskaya Pravda, 7 Feb 57

A new tunneling combine, specifically designed for mining conditions in Karaganda, has been developed by the Karaganda Scientific Research Coal Institute. The combine's average productivity is 400-500 linear meters of tunnel per month. The first test model of the machine was built by the machine shop of the institute.

There are about 200 different machines used for tunneling in Karaganda. These machines are constructed in Donbass and Urals machine building plants and have construction shortcomings, the most important of which is the lack of sufficient power for operation in Karaganda mines.

CHAIN FEEDER FOR CONCENTRATION OF COAL -- Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 29 Jan 58

A chain feeder, developed by the Voroshilovgrad affiliate of the Coal Concentration (Ugleobogashcheniye) Institute, is undergoing industrial testing at the Bryanskiy Coal Concentration Plant prior to going into industrial use. The feeder breaks up and uniformly supplies damp coal fines to a tube drier, uniformly distributing the material along the tube and creating conditions for more complete utilization of flue gas heat.

At present, test models of the feeder, which have been installed in concentration plants in the Donets, Kuznetsk, and Karaganda basins, indicate that the feeder decreases the moisture content of coal fines up to 5-5.5 percent. The tube drier processes 75-80 tons of fines an hour.

The Voroshilovgrad affiliate of the Coal Concentration Institute is also working on the improvement of flue gas blowers and fines-collecting apparatus.

Construction and Investment

FAILURE TO DEVELOP ITAT DEPOSIT -- Moscow, Promyshlenno Ekonomicheskaya Gazeta, 12 Feb 58

The Itat deposit, which is part of the Kansk-Achinsk Basin, is located in the northeastern part of Kemerovskaya Oblast. The seams average 55 meters in thickness, with the maximum ranging up to 80 meters. The seams are covered by a flocculent layer of sediment from 4-5 to 50 meters thick, and can thus be exploited by the open-pit method.

The coal is brown and has an ash content of 10-13 percent and a moisture content of 30-40 percent. Its calorific value ranges from 3,200 to 4,500 calories per kilogram. The coal, which can be considered the best variety of brown coal in the USSR, can be shipped in briquettes as far as the Urals. In its natural state it must be burned locally.

Capital investments for the construction of open pits in Itat, per ton of coal, are at least half those for mines and approximately two thirds those for open pits in the Kuzbass. However, plans for the development of the basin were stopped by orders of the former Ministry of Coal Industry USSR. Furthermore, the 1959-1965 plans of the Kemerovskiy Sovnarkhoz do not provide for the development of the deposit. The sovnarkhoz has sufficient reasons for its decision; the chief reason is the scarcity of funds released to the sovnarkhoz for capital investment. However, it is difficult to understand why there are sufficient funds for the construction of more expensive mines and pits.

The Gosplans USSR and RSFSR should provide for rapid exploitation of the Itat deposit. It will yield great savings in investment and in the cost of electric power in Central Siberia, not to mention the impetus to industrial development in this rich area.

DONBASS CONSTRUCTION -- Moscow, Trud, 21 Feb 58

Mine Makeyevskaya-Komosol'skaya, which is under construction at present, will begin operations on Miners Day, 1958. The mine will have daily production capacity of 450,000 tons of coal.

Kiev, Pravda Ukrainy, 11 Feb 58

In the Ukrainian SSR, 67 coal mines were constructed and began operations in 1957. Of these, 37 were built with Komsomol aid.

Moscow, Trud, 19 Feb 58

Mine No 3 Voroshilovgradskaya began mining operations in December 1957.

Moscow, Trud, 6 Feb 58

Mine No 1 Sevost'yanovskaya, built by Construction Administration No 2 of the Shakhterskshakhtostroy [Shakhtersk Mine Construction] Trust, has begun mining operations. The mine has a planned production capacity of 600,000 tons a year.

Kiev, Pravda Ukrainy, 6 Feb 58

Construction of an open pit with a planned production capacity of 3.3 million tons a year is under way in the Kievskiy Economic Region. The construction of three new pits in Kirovogradskaya and Zhitomirskaya oblasts will cost almost 350 million rubles.

CONCENTRATION PLANT IN URALS -- Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 23 Feb 58

The second level of a coal concentration plant is nearing completion in Volchansk. The plant, which will serve the Volchanskugol' Trust, is one of the largest in the USSR. Its various processes will be completely automatic.

NEW MINE IN BURYAT-MONGOLIA -- Moscow, Master Uglya, No 2, Feb 58, p 5

Mine No 7-8 has begun operations on the Gusinoozersk coal deposit in the Buryat-Mongol'skaya ASSR.

Prospecting

SURVEYING OF KAMA RIVER BASIN -- Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 31 Jan 58

The Kizel Coal Basin has been completely surveyed. The production plan for the basin calls for a maximum annual output of 13.7 million tons, which will be attained in 1962. After that, production will begin to drop, and it is therefore important to begin surveying for new coal-bearing regions.

The Kama River Basin deserves serious attention. The basin, which has reserves estimated at one billion tons, is located on the boundaries of Perm'skaya Oblast and the Bashkirskaya, Udmurtskaya, and Tatarskaya ASSRs. Its geographic and economic condition is very favorable. Borings of prospectors searching for oil revealed a horizontal coal seam extending through the area with a thickness of 45-120 meters, at a depth of 960-1,450 meters.

An analysis of the coal reveals that it averages 3.6 percent moisture content, 4.3 percent sulfur, 14.6 percent ash, and 44 percent volatile materials; the calorific value of the combustible portion is 7,400 and of the dry mass, 6,100. The coal is of the long-flame type and is similar to the Gremyachinsk gas coal of the Kizel basin.

Studies conducted in 1957 by the Central State Planning Institute for Mine Development (Tsentrogiproshakht) on seams of the Suleyev (Tatarskaya ASSR) type indicate that exploitation of the deposit is both advantageous and profitable. The construction of a mine at a depth of 1,100 meters with a planned production capacity of 1.5 million tons a year and a production life of 75-100 years would cost about 450 million rubles. The expenditures per ton of annual planned capacity would not exceed 300 rubles, in comparison with 313 for Kizel Basin, while the per-ton expenditure for industrial reserves would be 5 rubles, or 3.5 times those for the Kizel Basin.

However, these natural resources are still not receiving sufficient attention and surveying work has been continuing on the Kama River area at an extremely slow pace.

PROSPECTING OF ITAT SEAM -- Moscow, Master Uglya, No 3, Mar 58, p 17

The thickness of the Itat coal seam averages 55 meters; in some sections it reaches 100 meters. The stripping coefficient is 0.5 cubic meter of overburden to one ton of coal. Location of the deposit makes possible a cheap coal supply for power-generating purposes and gas-chemical purposes for the Kemerovskiy, Novosibirskiy, Tom'skiy, and Krasnoyarskiy sovnarkhozes.

Technical data indicate that gasification of Itat coal under a high pressure of 20-30 atmospheres with simultaneous synthesis of ammonia is practical. Phenol, sulfate, ammonia, resol resins, and other chemicals would also be obtained.

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