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Coal Mining in the Kuznetsk Basin, USSR [redacted] 25X1
IA M 83-10088
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IMAGERY ANALYSIS MEMORANDUM

SUBJECT: Coal Mining in the Kuznetsk Basin, USSR

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Summary

The Kuznetsk Basin contains about 100 coal mines and is the second largest coal-producing area in the USSR. Along with Ekibastuz and Kansk-Achinsk, the Soviets view Kuznetsk as one of the coal basins that will eventually help compensate for the production decline in the Donets--the Soviet Union's largest coal-producing basin. However, there has been no modernization or renovation of Kuznetsk underground coal mines in over 15 years. Since 1978, there has been no observable increase in mining equipment, and high-capacity bucket-wheel excavators have not been introduced at the open-pit coal mines to increase output. Only two new coal mines have been identified within the Kuznetsk Basin since 1978. These two open pits were in an early stage of development in early 1983, and any production from them by 1985--coupled with expansion under way or planned at two other Kuznetsk surface mines--will probably only offset production declines at other mines within the basin. For the next several years, total coal production from the basin will probably remain constant or decrease slightly from its present level of 143 to 144 million tons annually, despite revised Soviet projections of extracting 158 million tons from the basin by 1985.

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Information available as of February 1983 was used in this report.

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Introduction

The Kuznetsk Basin, sometimes referred to as the Kuzbass, occupies an area of approximately 26,000 square kilometers (km) in central Siberia (figure 1). It is the second largest coal-producing basin in the USSR, following the Donets. The Kuznetsk Basin accounts for 20 percent of Soviet total coal production and 40 percent of its open-pit coal output. [References 1,2] The basin has about 60 billion tons of explored coal reserves. The coal seams are located relatively close to the surface, and one of every three tons is extracted by open-pit mining. [3,4] Development of the basin has been hindered, however, by limitations in railroad capacity, labor and capital shortages, delays in opening new coal mines, and a failure to improve the productivity of existing underground mines by modernizing and renovating them. [5,6]

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The bituminous coal in the Kuznetsk Basin is high quality compared to the lignite or brown coal found in the Ekibastuz and Kansk-Achinsk Coal Basins. About 45 percent of the USSR's prospected reserves of coking coal are concentrated in the Kuznetsk Basin, and it is also rich in high-quality power-plant (steam) coal. [7]

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Coal preparation plants are colocated with 57 of the 61 Kuznetsk underground mines and eight others are centrally located to serve the open-pit coal mines. These coal preparation plants remove noncombustible impurities such as sulfur or ash-forming material from the coal to produce a uniform, high-quality fuel.

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Rail lines provide the major method of transporting coal from the mines in the Kuznetsk Basin. At least 92 of the 100 coal mines are rail served. The Soviets report that in recent years there has been a heavy demand on the rail network, causing shortfalls in Kuznetsk coal shipments. [5] As production in the Donets Basin and other western coal-producing areas stagnates or declines, there will be an increasing demand for long hauls of coking coal and steam coal from the Kuznetsk Basin to the European USSR.

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This paper discusses coal mining operations in the Kuznetsk Basin. We have grouped the 100 coal mines within the basin according to the seven cities or areas where they are located (see table). Two new open-pit coal mines under development are discussed separately.

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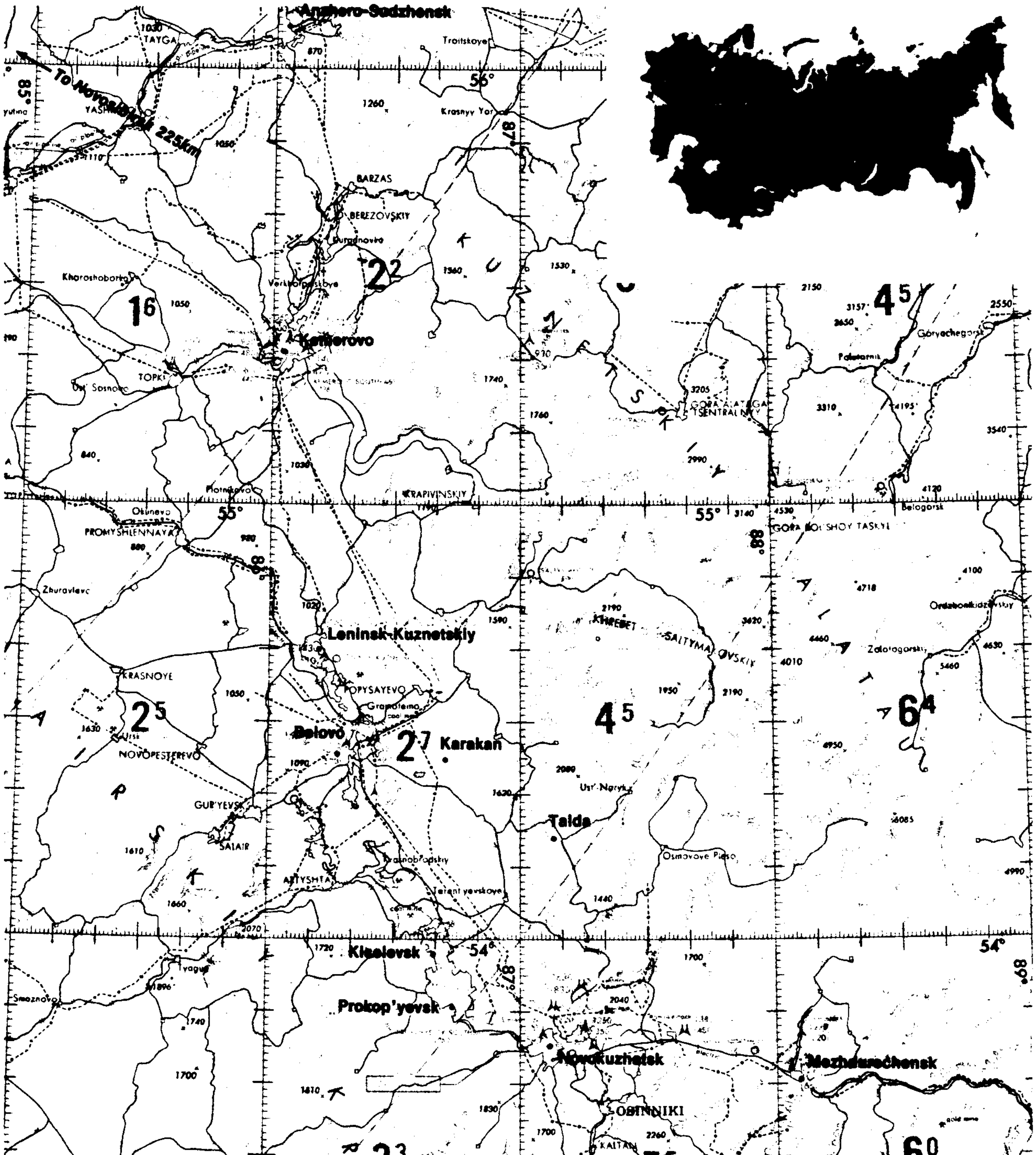
Figure 1

Kuznetsk Coal Basin, USSR



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Mining of the Kuznetsk Deposit

There were approximately 100 coal mines--61 underground and 39 open pits--in the Kuznetsk Basin during 1978 and 1979. Imagery acquired during January and February 1983 revealed that except for two new open-pit mines under development, there has been little expansion of coal mining activity at 74 of those mines since 1979.[1] The 26 remaining coal mines in the basin were last observed between 1978 and 1979. The Soviets have stated that no new underground mines have been constructed in the basin during the past 15 years, and there has been no attempt to modernize or renovate any of the existing underground mines to increase production. [6] 25X1

Despite stated Soviet goals of expanding the strip or open-pit mining capacity in the Kuznetsk Basin, its coal production peaked at 149 million tons in 1978 and has remained at about 143 to 144 million tons annually between 1980 and 1982. [6] The revised Soviet production goal for Kuznetsk is 158 million tons of coal annually by 1985. [8] The Soviets have reported that this planned production increase will depend entirely upon output from two new open pits at Karakan and Talda and expansion of the Bachatskiy open-pit mine near Belovo. [2] Between January and February 1983 the two new mines were in early stages of development, but there was no evidence of expansion under way at the Bachatskiy open pit coal mine. We believe any production from the two new mines, coupled with planned expansion at the Bachatskiy mine and at one other open pit near Leninsk, will probably only offset production declines at other Kuznetsk mines between now and 1985. 25X1

Open-pit mining of the Kuznetsk coal deposits is done with power shovels, and draglines are employed for overburden stripping and disposal. Trucks--all under 100 tons in capacity--are used to haul the coal out of most of the open pits, although in some instances this is done by rail. The waste burden is dumped in sections of the mine that have already been depleted or is hauled to nearby disposal areas. No belt conveyor systems have been installed at any of the Kuznetsk open-pit coal mines for hauling coal or disposing of waste. 25X1

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[1] There was no usable imagery of the Kuznetsk coal mines between 1979 and January and February 1983. 25X1

Kuznetsk Coal Mining Areas

Between June 1978 and May 1979, approximately 230 power shovels and 70 draglines were observed at the 39 operational open-pit coal mines. In early 1983, 29 of the 39 open pits were imaged and contained 183 power shovels and 53 draglines. Approximately the same amount of equipment--179 power shovels and 49 draglines--was at these 29 mines between 1978 and 1979. An additional six power shovels and two draglines were observed in early 1983 at the two new open pits under development. The lack of additional mining equipment and the absence of high-capacity (rotary) bucket-wheel excavators operating at the open-pit mines as of February 1983 suggest that the Soviets have not significantly improved the coal mining operations in the Kuznetsk Basin since 1978. 25X1

Leninsk-Kuznetskiy Coal Mining Area

There were 17 coal mines--10 underground and seven open-pit--operating in the vicinity of the city of Leninsk-Kuznetskiy in early 1983. A new section had opened at one of the open pits, 25 km east of Leninsk. It consisted of a trench some 2 km long and had two draglines operating within it. Based on the size of this new section, it will probably only offset production losses from depleted sections of the mine. 25X1

Coal mines in the area, except for one underground mine, are rail served. The rail lines, however, extend into only one of the seven open pits. The coal is hauled out of the other six open pits by trucks. A total of 19 power shovels and 20 draglines were operating at the seven open-pit coal mines. Coal preparation plants were colocated at nine of the 10 underground mines, but none were near the seven open-pit coal mines. 25X1

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Belovo-Gur'yevsk-Trudarmeysky Coal Mining Area

There were 13 coal mines--10 underground and three open-pit--operating in the vicinity of the cities of Belovo, Gur'yevsk, and Trudarmeysky in early 1983. All the coal mines in the area are rail served, including the three open pits. A total of 95 power shovels and seven draglines were operating at the three large open pits. 25X1

By using continuous mining equipment at one of the open-pit mines in the Belovo area--Bachatskiy--the Soviets plan to increase its production from 4.5 million tons in 1981 to 20 million tons annually in the 1990s. [2] As of February 1983, however, there had been no change in mining equipment--five draglines and 40 power shovels--operating at this open pit and no new sections had been opened. No renovation of the mine has been observed since

1978 (figures 2, 3). Coal preparation plants are colocated with all 10 underground mines and one coal preparation plant is near the three open-pit mines (figure 4). 25X1

Kiselevsk-Prokop'yevsk Coal Mining Area

There were 35 coal mines--23 underground and 12 open-pit--operating in the vicinity of the cities of Kiselevsk and Prokop'yevsk in early 1983. All of the coal mines in the area are rail served. The rail lines, however, do not extend into nine of the 12 open pits. A total of 55 power shovels and 18 draglines were operating at the 12 open pits. Coal preparation plants are colocated at 20 of the 23 underground mines, but only two coal preparation plants are near the 12 open-pit mines. 25X1

Novokuznetsk Coal Mining Area

There were nine coal mines--two underground and seven open-pit--in the vicinity of the city of Novokuznetsk in early 1983. Only the two underground mines are rail served. Coal is hauled out of the seven open-pit coal mines by truck. Fourteen power shovels and 13 draglines in the open-pit mines remove overburden and extract coal. Coal preparation plants are colocated with both underground mines, but only one coal preparation plant is near the seven open-pit mines. 25X1

Anzhero-Sudzhensk Coal Mining Area

There were six coal mines--all underground--located in the vicinity of the cities of Anzhero and Sudzhensk when this area was last imaged in June 1978. All six underground coal mines were rail served and had coal preparation plants colocated with them. One additional coal preparation plant was located in the vicinity of the underground mines. 25X1

Kemerovo-Berezovskiy Coal Mining Area

There were 12 coal mines--five underground and seven open-pit--operating in the vicinity of the cities of Kemerovo and Berezovskiy One 25X1 additional open-pit mine near Berezovskiy was reported under development by the Soviets in 1981. [9] All 12 mines are rail served. The rail lines extended inside the open pits at four of the seven surface mines. A total of 40 power shovels and seven draglines were removing overburden and extracting the coal in 1978. Trucks were used to haul the coal out of the remaining three surface mines. Coal preparation plants were colocated with all five underground mines. Two coal preparation plants were located near the seven open-pit coal mines. 25X1

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Mezhdurechensk Coal Mining Area

There were eight coal mines--five underground and three open-pit--operating in the vicinity of the city of Mezhdurechensk when this area was last observed in May 1979. All eight coal mines were rail served. The rail lines, however, did not extend inside the open pits where nine power shovels and six draglines were removing the overburden and extracting coal. Coal was hauled out of the three open pits by trucks to the nearby rail lines. Coal preparation plants were colocated with all eight underground mines and one coal preparation plant was near the three open-pit coal mines.

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New Coal Mining Areas

In addition to the eventual expansion of the existing Bachatskiy mine near Belovo, the Soviets claim that coal mining expansion in the Kuznetsk Basin during the 1980s and 1990s will take place at two new areas--Karakan and Talda. [2] 25X1

open-pit coal mines under 25X1
development at Karakan and Talda, both of which represent mining of previously unexploited deposits (figures 5, 6). Because of the early stage of development of these mines, we believe they will produce less than 1 million tons in 1983. Both the Talda and Karakan mines are road served. There are no indications of a rail system under construction, but we anticipate both mines will eventually be rail served. No coal preparation plants were observed in the vicinity of either the Talda or Karakan mines.

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Karakan Coal Mining Area

The Karakan deposit is 30 km east of Belovo, and in February 1983 it had one open pit under development. At that time an excavation about 2 km long had one dragline and one power shovel operating in it. An additional power shovel was nearby. The Karakan mine is scheduled to produce between 1.5 million tons and 2.0 million tons annually by 1985. [2] 25X1

Talda Coal Mining Area

The Talda mine was observed in January 1983, 40 km north of Novokuznetsk. The mine consists of a narrow trench, 2 km long, and one dragline and four power shovels were operating at the mine. The Soviets estimate that this mine will have an initial capacity of 2 million tons per year and an ultimate capacity of 24 to 30 million tons annually, probably sometime in the 1990s. [2] 25X1

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Distribution of Kuznetsk Coal Mines, January-February 1983

Area	Underground	Open-Pit
Total	61	39[b]
Anzhero-Sudzhensk[a]	6	0
Kemerovo-Berezovskiy[a]	5	7
Mezhdurechensk[a]	5	3
Leninsk-Kuznetskiy	10	7
Belovo-Gur'yevsk-Trudarmeysky	10	3
Kiselevsk-Prokop'yevsk	23	12
Novokuznetsk	2	7

[a] The Anzhero-Sudzhensk, Kemerovo-Berezovskiy, and Mezhdurechensk coal mining areas [redacted] 25X1
[redacted] These 25X1
three areas may still have the same number of coal mines operating there, since there is no collateral evidence to the contrary. [redacted] 25X1

[b] Two additional open pits are under construction. One is east of Belovo at Karakan and the other is north of Novokuznetsk at Talda. The Soviets have stated that a third open-pit mine is under development near Berezovskiy, but [redacted] 25X1
[4] [redacted] 25X1

[redacted] 25X1