

THE MINERAL INDUSTRY OF

MONGOLIA

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Mongolia is a mineral-rich country. According to the Ministry of Energy, Geology, and Mining, about 80 different minerals had been discovered in Mongolia. Of these findings, about 500 deposits of 40 different minerals had been evaluated and about 150 deposits were being worked. In Mongolia, coal, copper, fluorspar, and molybdenum were mined by large-scale operations, while clay, gold, gypsum, limestone, sand and gravel, salt, silica, tin, tungsten, and uranium were mined by medium- and small-scale operations. Most of the mining operations were in the north-central and eastern parts of the country. In 1994, Mongolia remained the world's fifth largest fluorspar producer and was an important producer of copper and molybdenum in the North Asian region.

According to the State Statistical Office of Mongolia (SSOM), the Mongolian economy, as measured by real gross domestic product (GDP), grew 2.1% in 1994, the first increase since 1989. By 1994, Mongolia's GDP was \$633 million.² The mining industry, for the first time in 5 years, also registered a 3.7% growth in 1994 because of increased output of copper, gold, and silver. The output of the minerals industry accounted for more than 45% of Mongolia's gross industrial production and its minerals exports accounted for more than 65% of the country's total export earnings.

According to the Ministry of Trade and Industry, the two-way merchandise trade declined by 28.3% to \$546 million, with export earnings of \$324.3 million and import bills of \$221.7 million in 1994. Russia remained the top trading partner of Mongolia, accounting for 40% of overall two-way trade in 1994. According to SSOM, the major export mineral commodities in 1994 were copper concentrate, 406,900 metric tons (mt); fluorspar concentrate, 88,000 mt; and molybdenum concentrate, 5,200 mt. Mongolia exported 1,104 kilograms (kg) of gold in 1994. The major import commodities in 1994 were refined petroleum products, ferrous and nonferrous metal products, and fertilizer materials. Imports of petroleum products dropped by more than 30% in 1994 because of reduced consumption.

In March 1994, the central Government established the Ministry of Energy, Geology, and Mining by combining the Ministry of Fuel and Energy with the Ministry of Geology and Mineral Resources to manage and administer the country's mineral resources. Four departments comprised the Ministry: the Energy Department manages the country's energy resources, including power services and supply; the Geological Department conducts geological surveys, and

collects and maintains geological information; the Mining Department administers coal and metal resources; and the Cooperation Department oversees the Ministry's external affairs.

To govern exploration and mining of Mongolia's mineral resources, the Great People's Hural (national assembly) passed a new mining law in December 1994. The new mining law was scheduled to become effective on January 1, 1995. Some of the major provisions of the new mining law are as follows:³

- To apply for a mining license, feasibility studies, environmental impact statements, and plans for limiting adverse environmental effects are required.

- A single entity may receive up to five licenses for mining deposits, but may receive more than five, if the entity is involved only in mineral exploration.

- Exploration licenses are valid for 3 years, but may be extended twice for up to 4 additional years.

- The area of exploration blocks may not be smaller than 8 square kilometers (km²), but not be larger than 4,000 km².

- Exploration license holders may not mine, process, or sell resources without obtaining a separate license for that activity.

- The Government may freeze exploration work for up to 90 days if the license holder is found to be in violation of the terms of the license.

- The exploration license will provide for a fee of 1.5% to 12.5% of the proceeds of sale.

- The entity granted a license to mine may undertake necessary operations, extract, and own the resources in conformance with the terms of the law, and subcontract, as needed.

- The mining entity must start pre-exploration activities within 1 year of receiving the license and begin production within 5 years, although an extension may be permitted.

According to SSOM, production of copper and molybdenum concentrates by the Erdenet Combine from the Erdenet Mine in Bulgan Aymag of northern Mongolia was 343,300 mt and 4,396 mt, respectively, in 1994. The copper concentrate contained about 29% of copper and the molybdenum concentrate contained about 47% of molybdenum. The Erdenet Copper Corp., the Mongolian-Russian joint venture of the Erdenet Combine, was owned 51% by the Government of Mongolia and 49% by the Government of Russia.

Outokumpu Technology, a subsidiary of Outokumpu Oy of

Finland, completed a \$6 million project for upgrading one line of the Erdenet copper concentrator using Outokumpu's equipment and technology in 1994. The Combine reportedly paid Outokumpu for its goods and services with molybdenum concentrate,⁴ and planned to negotiate with Outokumpu for further upgrading and expansion of the concentrator at a cost of about \$35 million.

In early 1994, the Combine signed an agreement with RCM Inc. of the United States to extract copper from a nearby mine dump and other material at the Erdenet Mine site. According to RCM, a joint-venture firm, called ERDMIN, was established to conduct a feasibility study in summer 1994. In fall 1994, ERDMIN decided to construct a solvent-extraction and electrowinning (SX-EW) plant. By yearend 1994, engineering design of the SX-EW plant having an initial capacity of 3,000 metric tons per year (mt/a) of high-purity refined copper was completed. Construction of the SX-EW plant was scheduled to begin in 1995. ERDMIN is owned 51% by the Erdenet Combine and 49% by RCM.

Exports of copper concentrate rose to 406,900 mt in 1994 from 394,500 mt in 1993. Exports of copper concentrate went mainly to Russia and Japan. Under an intergovernmental protocol agreement, Mongolia was to export about 138,000 mt/a to Russia. Under a separate trade agreement with Itochu Corp. of Japan, Mongolia was to export about 35,000 mt/a of copper concentrate to Japan. However, according to Russian and Japanese trade statistics, Russia received only 97,500 mt and Japan received 38,820 mt in 1994. Other important buyers of copper concentrate in 1994 included Norddeutsche Affinerie of Germany and Outokumpu Oy of Finland. Exports of molybdenum concentrate went to Russia and Finland.⁵

In prior years, statistics on production and trade of gold was classified as a state secret in Mongolia. However, according to a recent issue of the Monthly Bulletin of Statistics, published by SSOM, Mongolia's gold production was 1,117 kg and 1,975 kg, respectively, in 1993 and 1994; and gold exports in 1994 were 1,104 kg. Additionally, gold recovered as a byproduct from copper concentrate in 1994 was estimated at 170 kg.

In 1994, most gold mine production was by several State-owned mining companies and a large number of small-scale miners operating at about 20 placer deposits in north-central Mongolia. Major gold mining areas were Tolgoit (Tolgoit), Ikh Ulent, Sharin Gol, Havchuu, Ikh Uvuljuu, and Burhant, all in north-central Mongolia; Mukhar Ereg and Uvur Chuluut in the Bayakhongor area; and Hailaast, Tosongin Gol, and 13 other placer deposits along the Tuul River in Zaamar area of north-central Mongolia.

Morrison Knudsen Gold Co. (MK Gold), a majority-owned subsidiary of Morrison Knudsen Corp. (MK) of the United States, reportedly informed the Government in December 1994 that it was terminating its joint-venture project with Mongol Erdene Mining to develop and produce gold at the Boroo deposit in Tov Aymag. According to MK Gold, 62 mt of gold reserves, previously estimated by East German specialists, were overstated. MK Gold reduced the

estimated gold reserves to about 37 mt, after reportedly spending about \$1 million on exploration and feasibility studies. Of the 37 mt of gold reserves, MK Gold stated that only about 5.4 mt were easily recoverable. Meanwhile, the Government was preparing to issue a tender offer on the Boroo project to bring in another operator to participate in the project. According to Mongol Erdene, several companies had expressed interest in the project.⁶

In August 1994, a geological survey team of the Metal Mining Agency of Japan (MMAJ) reportedly discovered a quartz vein of gold in a drilling survey area of Oloon Ovoot in southern Gobi, about 450 kilometers (km) southeast of Ulaanbaatar. According to MMAJ, which had a 3-year joint exploration agreement with the Government, the ore reserves of the gold-bearing deposits in the area were estimated at 300,000 mt grading 3 to 7 grams of gold per mt of ore.⁷

Production of tin and tungsten remained at a low level in 1994. Tin mining operations were at the Bain-Mod (Modot) and Khujkhan deposits in Hentiy. According to the Mongolian Embassy in Washington, DC, the State-owned Mongol Erdene Mining had reopened the Burentsogt Mine in Dornod Aymag in southeastern Mongolia. The two tungsten mines operated at the Ulaan Uul and Khovd Gol in Bayan Olgiy in Western Mongolia, and at Tsagaan Davaa in Tov Ayamg in north-central Mongolia, near Ulaanbaatar, were closed in 1994. The Government continued to promote further exploration and development of the Undur Tsagaan tungsten deposit in Hentiy, where ore reserves had been estimated at 141 million metric tons (Mmt) grading 0.124% tungsten trioxide.

During 1993 and 1994, cement production remained at a very low level reportedly because of the continued low level of construction activities in the national capital and other industrial areas. Hutol Cement and Lime Combine, about 65 km southwest of Darhan, operated a limestone quarry with a capacity of 750,000-mt/a, a 500,000-mt/a cement plant, and a 65,000-mt/a hydrated lime plant. The status of the 150,000-mt/a cement plant operated by Darhan Cement Co. in Darhan was unknown.

Production of direct-shipping metallurgical-grade fluorspar was estimated at about 80,000 mt, while production of acid-grade calcium fluoride was 88,000 mt in 1994. Exports of both metallurgical-grade fluorspar and acid-grade calcium fluorite (fluorspar concentrate) went principally to Russia. Mongolsovtvetmet, a joint-venture firm owned 51% by Mongolia and 49% by Russia, operated an underground mine and an open pit mine as well as a fluorspar concentrator at Bor Ondor in Hentiy Aymag. It also operated open pit mines at Khar-Airag, Khajuu (Khazhu) Ulaan, and Urgon (Orgon) in Dornogovi Aymag, and an underground mine at Berh in Hentiy Aymag. Because of reduced Russian demand, Mongolsovtvetmet was planning to export its high-grade calcium fluorite to Western World countries.

Coal production dropped to an 8-year low in 1994 because of the continued shortage of fuel for power, spare parts for mining equipment, and tires for dump trucks. The Baga Nuur Mine and the Shariyn Gol Mine were the two major

producing mines with a monthly output of 250,000 mt and 140,000 mt, respectively, in 1994. The Shivee Ovvo Mine, which had an average monthly production of 54,000 mt in 1993, was not operating most of 1994.

Major development of the Tavan-tolgoyt coal deposit had reportedly not been carried out because of its remote location and lack of nearby water resources and infrastructure. The Government reportedly was seeking Japanese financial assistance for construction of a 400-km railway and for the development of a large-scale coal mine. Coal reserves at the Tavan-tolgoyt in the southern Gobi were estimated by the Government at 5,000 Mmt, of which about 2,000 Mmt were high-quality bituminous coal of metallurgical-grade.

Mongolia had not produced oil and gas from its Zuun Bayan Oilfield in Donogovi Aymag since 1970. All of Mongolia's requirements for refined petroleum products were met by imports principally from Russia. To seek technical and financial assistance from the Western World to explore and develop oil and gas in Mongolia, the Government, through Mongol Gazryn Tos (MGT), the Mongolian state-owned petroleum company, signed agreements with three Texas-based U.S. oil companies, SOCO International Oil Corp. of Fort Worth, Nescor Energy Co. of Austin, and Medallion Petroleum of Houston. Medallion Petroleum's interests in Block XIX were reportedly assigned by Medallion Petroleum to SOCO, with Medallion Petroleum retaining revenue interests in the venture.

In 1994, SOCO reportedly completed its seismic surveys of Blocks XXII and XIX. The first exploratory drilling in the southeastern part of Block XIX was scheduled to start in the

second quarter of 1995 by a new partner of SOCO, P.T. BIP Energimas of Indonesia, which was to use a Chinese rig owned by Huabei Petroleum Administration Bureau of Hebei to drill the exploratory wells.⁸

In the Zuunbayan/Tsagaan Els Oilfields, Nescor, was scheduled to redevelop the oil production facilities previously worked by the former Soviet Union and to explore for oil and gas in Block XIII in the East Gobi basin of southeastern Mongolia. Nescor also planned to drill its first test well there in fall 1995 and later move to the Tsagaan Els Oilfield. Nescor reportedly had received a \$500,000 grant from the U.S. Trade Development Agency in connection with its concession.⁹

¹Text prepared June 1995.

²Where necessary, values have been converted from Mongolian tugriks (Tug) to U.S. dollars at the rate of Tug415=U.S.\$1.00 in 1994.

³U.S. Embassy in Ulaanbaatar, Mongolia. State Dep. Telegram 00009, Dec. 17, 1994, p. 1.

⁴Metals Finance. "Mongolia Pays by Counterpurchase." No. 1, May 1994, p. 6.

⁵Interfax News Agency. "Russia and Mongolia Have Decided to Maintain Cooperation in the Mining Industry." Mining and Metal Report. Feb. 17-24 1995, p. 2. The Mongolia Business Newsletter (Washington, DC). "Coppe Mining Update." July-Aug. 1994, p. 3.

⁶U.S. Embassy in Ulaanbaatar, Mongolia. State Dep. Telegram 002592, p. 1.

⁷Nihon Kogyo Shimbun (Tokyo). "Discovery of Gold in Mongolia." Aug. 16, 1994, p. 5.

⁸Oil and Gas Journal. "Wildcats Slated During 1995 in Eastern Mongolia." V. 92, No. 52, Dec. 26, 1994, p. 32.

⁹U.S. Embassy in Ulaanbaatar, Mongolia. State Dep. Telegram 001773, Aug. 2, 1994, p. 1.

TABLE 1
MONGOLIA: ESTIMATED PRODUCTION OF MINERAL COMMODITIES 1/ 2/

(Metric tons unless otherwise specified)

Commodity 3/	1990	1991	1992	1993 p/	1994 e/
Cement, hydraulic 4/	441	227	133	82	86
Coal: 4/					
Anthracite and bituminous	591	587 r/	570	520 r/	500
Lignite and brown	6,570 r/	6,450	5,680 r/	5,090 r/	4,500
Total	7,160 r/	7,040 r/	6,250 r/	5,610 r/	5,000
Copper, mine output, Cu content 4/	124,000	90,100	105,000	96,900 r/	99,600
Fluorspar: 4/					
Acid grade	119	120	97	80 e/	90
Metallurgical grade	495	250	180	100 e/	80
Total	614	370	277	180	170
Gold, mine output, Au content 5/	1,000	800	900	1,200	2,000
Gypsum	30	25	25	25	25
Lime, hydrated and quicklime 4/	103	76	68	51	66
Molybdenum, mine output, Mo content 4/	1,580	1,720	1,610 r/	2,050 r/	2,100
Salt	17,000	17,000	17,000	18,000	18,000
Silver, mine output, Ag content 6/	21,200	15,500	18,000	17,500	20,000
Tin, mine output, Sn content	320	250	190	150	150
Tungsten, mine output, W content	500	300	260	250	150
Uranium, mine output, U content	200	130	120	100	100

e/ Estimated. r/ Revised. p/ Preliminary.

1/ Previously published and 1994 data are rounded by the U.S. Bureau of Mines to three significant digits; may not add to totals shown.

2/ Table includes data available through June 30, 1995.

3/ In addition to the commodities listed, crude construction materials such as sand and gravel, varieties of stone such as limestone, and silica are produced, but available information is inadequate to make reliable estimate of output levels.

4/ Report.

5/ Included gold contained in copper concentrate.

6/ Silver contained in copper concentrate.

Source: Statistical Office of Mongolia (Ulaanbaatar). Monthly Bulletin of Statistics, Jan. 7, 1995, p. V - 2.