

THE MINERAL INDUSTRY OF

ZIMBABWE

By Philip M. Mobbs

Zimbabwe's mineral industry was diverse, with a nucleus of asbestos, coal, chromite, copper, diamond, gold, granite, and nickel operations. Zimbabwe was a major contributor to the world supply of chrysotile asbestos, ferrochromium, and lithium minerals, and its mineral industry accounted for about 8% of the nation's \$9 billion gross domestic product (Financial Gazette, December 11, 1997, Bleak future for mining industry, accessed March 19, 1998 at URL <http://www.africaonline.co.zw/fingaz/stage/archive/971212/companies25583.html>). Gold again was the country's leading mineral sector, but gold output stagnated at 24 metric tons (t); this was the first time in several years that production did not increase. Mineral exports accounted for about 45% of Zimbabwe's foreign currency earnings (Reserve Bank of Zimbabwe, April 3, 1998, Quarterly economics and statistical review, accessed April 10, 1998 at URL <http://www.bizafrica.com/zimbabwe/busbul/reports.html>).

Most of the country's mineral companies were export-oriented and subject to world market fluctuations. In 1997, the industry was battered by declining international prices for base and precious metals, higher labor and power costs, prohibitive interest rates, and spiraling inflation. The industry's local income, however, was enhanced by the November 14 collapse of the Zimbabwe dollar against international currencies, which temporarily offset these economically adverse factors. At yearend, Zimbabwe's mining companies were adopting survival strategies at the expense of development and exploration. Operations were scaling down to cut costs and to remain economically viable.

All mining activities came under the Mines and Minerals Act (Chapter 165) (1961), its amendments, and associated regulations. All mineral rights were vested in the state through the President of Zimbabwe. Investment projects were sanctioned by the Zimbabwe Investment Center. The Gold Trade Act gave the Reserve Bank of Zimbabwe a monopoly on purchasing and exporting all gold produced in Zimbabwe. The Government's Minerals Marketing Corp. Zimbabwe handled most other mineral exports. In response to the collapse of the Zimbabwe dollar, the Ministry of Finance closed all corporate foreign currency accounts on November 18 (Chamber of Mines Journal, 1998). Companies were forced to use the devalued local currency to secure foreign exchange to pay for imported equipment and supplies.

During 1997, the Ministry of Mines and the Ministry of Environment and Tourism were merged to form the Ministry of Mining, Environment, and Tourism. The state-owned mining company, Zimbabwe Mining Development Corp. (ZMDC) had an interest in a number of mining operations, and the Government's Industrial Development Corp. of Zimbabwe Ltd. had several subsidiary companies operating in the industrial mineral sector. Partial privatization of both companies was underway.

Approximately 45,000 people, or nearly 3% of the formal national labor force, were employed in medium- and large-scale mining operations. At the beginning of the year, African Associated Mines (Pvt.) Ltd. alone accounted for about 7,200 of the mining employees. An estimated 10,000 people worked the nation's smaller mines, and between 100,000 and 300,000 people were estimated to be involved intermittently in informal gold panning or reworking abandoned mines (Michael Hartnack, December 10, 1997, Business Day, Hard-hit Zimbabwe mines sack 2 000, accessed June 28, 1998, at URL <http://www.bday.co.za/cgi-bin/post-query.perl>; Michael Hartnack, May 29, 1998, Business Day, Zimbabwe mines yoked by costly bureaucracy, accessed June 11, 1998, at URL <http://www.bday.co.za/98/0529/world/w24.htm>). Because of the adverse economic conditions, nearly 3,000 of Zimbabwe's miners were fired during 1997 (Platt's Metals Week, 1998).

Zimbabwe had a significant local mining industry. More than 500 gold mining operations were registered, many of which were small scale (S.T. Mombeshora, Minister of Mines of Zimbabwe, unpub. data, 1997). Multinationals, such as Anglo American Corp. Zimbabwe Ltd., Falcon Gold Zimbabwe Ltd. (Falgold), Lonrho Zimbabwe Ltd., and Rio Tinto Zimbabwe Ltd. (RTZ), historically have dominated the nation's mining industry. A number of African, American, Australian, Canadian, and European mining companies also were exploring for diamond and gold.

Despite the Government's current policy of partial divestment of its interests in state-owned companies, it was concurrently pursuing an indigenization policy to increase black Zimbabwean's equity interest in multinational mining operations. A memorandum of understanding was signed in August allowing the Government to purchase shares in Bindura Nickel Corp. Ltd. from Anglo American Corp. Zimbabwe Ltd. In December, the Government's investment company, Africa Resources Investments (Pvt.) Ltd., secured 20% of Bindura for eventual resale to local black investors. The Government strongly suggested that Zimasco Consolidated Enterprises Ltd., Zimbabwe Mining and Smelting Co. (Pvt.) Ltd.'s (Zimasco) Mauritius-registered holding company, transfer 50% of its interest in Zimasco to the Government for subsequent resale. The Government's negotiations were upset when Nyika Investments, a local black-owned company acquired 27% equity interest in Zimasco (Sguazzin, 1997b). The Government complained of the sale's lack of transparency and subsequently threatened to expropriate Zimasco (Hawkins, 1997). The issue was under negotiation through yearend. Lonrho also was notified of the Government's intent to foster local equity interest in the company's Zimbabwean mining operations.

Falconbridge Exploration Zimbabwe (Pvt.) Ltd. and NAR Resources Ltd. of Canada began exploring the Maramba massive sulfide prospect 125 kilometers (km) northeast of Harare and a tungsten prospect 140 km northeast of Harare near the former Kakonde tungsten mine.

Zimasco and Zimbabwe Alloys Ltd. (Zimalloys) suffered from declining international ferrochrome prices and increasing operational expenses (Financial Gazette, March 26, 1998, Low prices hit Zim Alloys hard, accessed March 27, 1998 at URL <http://www.africaonline.co.zw/fingaz/stage/archive/980326/companies7086.html>). Zimalloys completed modifications of the ferroalloy plant in July. Economic constraints, however, forced Zimalloys to suspend mining at the Great Dyke II and the Inyala chromite mines in November and to cease other operations in December (Metal Bulletin, 1997, Financial Gazette, December 11, 1997, Bleak future for mining industry, accessed March 19, 1998, at URL <http://www.africaonline.co.zw/fingaz/stage/archive/971212/companies25583.html>). Despite the difficulties encountered by Zimasco and Zimalloys, construction of a 20,000-metric-ton-per-year (t/yr) capacity high-carbon ferrochrome plant at Eiffel Flats was proposed by Maranatha Holdings Ltd. of Zimbabwe.

The Government assisted with a \$21 million loan to rehabilitate operations at Mhangura Copper Mines Ltd. and Lomagundi Smelting and Mining (Pvt.) Ltd., thus saving 2,200 jobs. Munyati Mining Co. Ltd., the copper-oxide-leach operations company owned by Reunion Mining plc of the United Kingdom and ZMDC, completed a study of the Sanyati heap-leach chemistry and modified ore-treatment procedures. Munyati continued to have sulfuric acid leachate supply problems.

Although the large mines of Ashanti Goldfields Co. Ltd. of Ghana, Falgold, Lonrho, and RTZ dominated the gold sector, the numerous medium- and small-scale producers contributed about 10% to the nation's formal gold production and alluvial gold panning was Zimbabwe's rural alternative to subsistence farming. The Mining (Alluvial Gold) (Public Streams) Regulations (1991) authorized selective alluvial gold mining, but extensive riverbank erosion and stream siltation resulted from rampant unauthorized mining activity. Up to 2 t/yr of gold were estimated to be smuggled out of the country from illegal mining operations (Michael Hartnack, May 29, 1998, Business Day, Zimbabwe mines yoked by costly bureaucracy, accessed June 11, 1998 at URL <http://www.bday.co.za/98/0529/world/d24.htm>).

Ashanti produced a record 3,311 kilograms (kg) (106,447 troy ounces) at the Freda Rebecca Mine in 1997 from 738,000 t of ore produced from the underground workings grading 3.07 grams per ton (g/t) of gold and 374,000 t of ore from the Freda open-pit grading 4.1 g/t of gold. Ashanti was developing the Freda underground mine to replace the open pit. Beringer Gold Corp. of Canada (formerly Guyana Gold) divested its interest in the Sabi gold mine. Casmyn Corp. of the United States was processing tailings dump material and ore from the open-pit Turk Mine. The ownership of the Connemara Joint Venture changed in December when First Quantum Minerals Ltd. of Canada acquitted International Ballater Resources Inc. of Australia and its subsidiary Sumtech (Pvt.) Ltd. Ore throughput at Connemara had been tripled to 750,000 t/yr during 1997.

Falgold, which was restructuring its Zimbabwe operations, cut

back on mining operations and reduced staffing at the Dalny and the Venice Mines and in December agreed to sell the Globe & Phoenix, the Bell-Riverlea, and the Dalling Mines to Delta Gold NL of Australia. At the Blanket Mine, Kinross Gold Corp. of Canada changed the carbon-in-leach process to an oxygen accelerated leaching system. Kinross also sold its 250-kilogram per year (kg/yr) Golden Kopje Mine.

Lonrho's subsidiaries, Independence Mining (Pvt.) Ltd. and Corsyn Consolidated Mines (Pvt.) Ltd., laid off workers as part of the restructuring of the group's mining activities. The companies undertook a comprehensive operational review and reduced operations at all nine mines. RTZ closed the Brompton Mine in August. After this closure, feed for the mill at the Patchway Mine was augmented with material from the surface stockpile.

Oliver Gold Corp. of Canada increased its interest in Maple Leaf Mining (Pvt.) Ltd. of Zimbabwe, operator of the C and the Camp Mines, to 100%. Trillion Resources Ltd. of Canada and ZMDC completed the realignment and deepening of the Stump Incline shaft at the Jena Mine. Mining and milling operations at the Indarama Mine were expanded. Trillion subsequently acquired the remaining 80% interest in the Indarama Mine and rename the 450-kg/yr operation the Ndarama Mine.

In September, African Gold plc of the United Kingdom started gold production from the Beehive Mine, and Anglo American Corp. Zimbabwe Ltd. began operations at the Bubi Mine. Delta Gold was developing gold mines on the Chaka property near Kwekwe, where the mill was under construction, and on the Eureka prospect near Guruve, following a positive feasibility study. The Chaka Mine was expected to be onstream in 1998, followed by the Eureka Mine in 1999.

In February 1997, Cambrian Resources NL of Australia obtained an option to acquire 55% interest in an exclusive prospecting order (EPO) near the former Giant Mine from Canyon Resources Africa Ltd. In September, Prospecting Ventures Ltd., an exploration subsidiary of Anglo American Corp. Zimbabwe, bought into the project. Reunion started a feasibility study at the Maligreen gold prospect. Reunion and Prospecting Ventures were drilling on the Magondi project and Rift Resources Ltd. of Canada and Reunion were working on the Silobena Project.

Also exploring for gold in Zimbabwe were Afrimin SA (Pty.) Ltd. of South Africa, a subsidiary of Afrimin Holdings Ltd. of the British Virgin Islands and Indomin Resources Ltd.; Ashanti; Barrock Mine (Pvt.) Ltd., a subsidiary of Mandarin Goldfields Inc. of Canada; Casmyn; Clear Creek Resources Ltd. of Canada; Commonwealth Gold Ltd. of the United Kingdom, a subsidiary of Amalia Gold Mining & Exploration Co. of South Africa; Forbes and Thompson Ltd. of Zimbabwe; Inmet Mining Corp. and Altavista Mines Inc. of Canada; Kinvara Ventures Inc. of Canada; Masasa Mines (Pvt.) Ltd. of Zimbabwe; North Rand NL of Australia; RTZ; Oliver Gold; Royalstar Resources Ltd. of Canada; Trillion; and Westley Mines International Inc. of Canada.

The Government initiated a partial privatization of its 89% interest in Zimbabwe Iron and Steel Co. (Pvt.) Ltd. (Zisco) at the beginning of 1997; in May, however, it declared the submitted bids to be unsatisfactory (Sguazzin, 1997a). The long-awaited rehabilitation and relining of Zisco's No. 4 blast furnace was begun by China's Shougang International in June. In August, the

Government announced that Ferrostaal AG of Germany had agreed to rehabilitate Zisco's casting plant. The contract for the renovation of Zisco's billet and rod mills was under negotiation.

Zisco commissioned a 1.8-million metric-ton-per-year sinter plant in Redcliff. Iron ore was delivered to the plant from the Ripple Creek iron mine on a 15.6-km curved conveyor. The conveyor was rated at a capacity of 500 metric tons per hour (t/hr). At midyear, JCI Ltd. announced that Campanhia Vale de Rio Doce of Brazil would supply iron ore for JCI's iron project at Beira, Mozambique, instead of Buchwa Iron Mining Co. of Zimbabwe. Steelmakers Ltd. of Kenya built a 18,000-t/yr rolling mill near Zisco's plant. Steelmakers also started construction of a 45,000-t/yr melting shop for alloy and stainless steel production.

RTZ's nickel toll refining operations at the Empress Refinery continued to be constrained by limited nickel matte from Botswana. A report prepared for the Government's acquisition of Bindura Nickel Corp. proposed closing Bindura's Madziwa and Epoch Mines and developing the Hunters Road nickel property (Financial Gazette, September 18, 1997, Bindura Nickel threatened with collapse?, accessed September 24, 1997, at URL <http://www.africaonline.com/fingaz/national1.html>).

In the platinum sector, BHP Minerals Zimbabwe, a subsidiary of Broken Hill Proprietary Co. Ltd. of Australia and Delta Gold opened the base metals refinery at the Hartley platinum complex in June. BHP shipped the first platinum-group metals concentrate to Johnson Matthey in the United Kingdom in October. Operations had been delayed by heavy rains early in the year and problems with faulted ground in the South portal. The mine's staff of 2,800 was producing 60,000 metric tons per month of ore. Delta Gold retained a 9.9% interest in net cash flow of the Hartley Mine in lieu of paying a lump-sum 33% share of the about \$289 million capital expenditure for the development of the Hartley project to BHP (Delta Gold NL, 1997). Anglo American Corp. completed a prefeasibility study on the Unki platinum prospect, and JCI began a feasibility study Delta Gold's Ngezi platinum prospect.

Asbestos production in Zimbabwe was adversely affected by the economic crisis in Asia, a major market, and the associated reduced asbestos demand (Financial Gazette, March 19, 1998, Changing market demands force African Associated Mines reduce asbestos output, accessed March 19, 1998, at URL <http://www.africaonline.co.zw/fingaz/stage/archive/980319/national1042.html>). African Associated Mines was forced to lay off nearly 1,000 employees during 1997.

Unicem Manufacturing, a subsidiary of Portland Holdings Ltd., commissioned a 100-t/hr cement mill in Bulawayo in November 1997. At the Colleen Bawn works, about 120 km southeast of Bulawayo, Unicem increased limestone production and was upgrading the cement kiln as part of the company's \$36 million expansion program. Cement production capacity was to be increased from 660,000 to 1 million t/yr. Harare-based Circle Cement Ltd. began a 3-year, \$69 million expansion to increase production to 750,000 t/yr. Production was reduced as a result of heavy rains at the beginning of 1997 and the electricity price hike near the end of the year.

In May 1997, partners in the River Ranch Diamond Mine, Redaurum Ltd. of Canada and Auridam Consolidated NL of Australia, restructured their joint venture. The operating

company, Auridam Zimbabwe (Pty) Ltd., became River Ranch (Pvt.) Ltd. The company added a third 100-t/hr scrubbing unit in June. As prices for the diamond produced at River Ranch continued to fall through the year, Redaurum announced its intention to reorganize and divest its diamond properties (Redaurum Ltd., December 10, 1997, press release, accessed December 11, 1997, at URL http://biz.yahoo.com/bw/971210/redaurum_limited_1.html).

About 90% of the country was under EPO's for diamond. Companies exploring for diamond included Auridam, Kimberlite Searches Ltd. of Bulawayo, RTZ, and the Trillion-Nickelodeon Minerals Inc. joint venture. During 1997, Cratonic NL of Australia acquired the exploration interests of Delta Gold's diamond group, and Reunion terminated its diamond exploration program in Zimbabwe.

Zimbabwe Phosphate Industries' 16,000-t/yr phosphoric acid plant was subject to a \$2.8 million upgrade to increase its annual capacity to 40,000 t. The Harare plant also began building a \$1.8 million gypsum tailings dam to replace the old tailings dam that was filled in December 1997.

JCI completed a feasibility study for Wankie Collieries Co. Ltd. concerning the opening of a new coal mine to supply the future fuel demand of the Government's Zimbabwe Electricity Supply Authority's (ZESA) Hwange power station. In 1997, Wankie's coal production remained constrained by lack of local demand. Shagani Energy (Pvt.) Ltd. and Discovery Exploration (Pvt.) Ltd. were developing coal bed methane resources in Lupane.

Most of landlocked Zimbabwe's bulk commodities were moved by rail. All major cities and industrial centers were linked to Botswana, Mozambique, South Africa, and Zambia by the National Railways of Zimbabwe's 2,745 km of track. Petroleum products were piped through Mozambique via the Beira pipeline to Feruka, near Mutare, and then moved west via the Mutare-Harare pipeline or trucked on Zimbabwe's 85,784-km road network. Additional petroleum products were imported via railroad tanker cars through South Africa.

ZESA, which generated and supplied electric power to the country, had an installed electricity-generating capacity of 1,786 megawatts (MW). As a member of the southern African electrical power pool, Zimbabwe imported about 40% of power needs from the Democratic Republic of Congo, South Africa, and Zambia (Sidney Masamvy, November 20, 1997, Financial Gazette, YTL-ZESA Hwange deal collapses?, accessed March 19, 1998, at URL <http://www.africaonline.co.zw/fingaz/stage/archive/971121/national11467.html>). Power from the Cahora Bassa dam in Mozambique became available near yearend with the completion of a 420-kilovolt line connecting the Zimbabwe and the Mozambique electricity grids.

In August, ZESA began a \$3.2 billion expansion program. The first of three proposed electricity rate increases became effective in October 1997 to fund the 15-year project, which included adding 660 MW of electricity-generating capacity to the Hwange thermal power station. ZESA and Yeoh Tiong Lay Power International Bhd. (YTL) of Malaysia were negotiating terms of the Hwange expansion. YTL was also negotiating a controversial deal to partially privatize the Hwange thermal power station.

ZESA and National Power International of the United Kingdom completed the feasibility study for the proposed 1,320-MW

capacity Gokwe North coal-fired plant near the inactive mine of Sengwa Colliery (Pvt.) Ltd., a subsidiary of RTZ. Also part of ZESA's expansion program was a proposed 1,600-MW hydroelectric plant at the Batoka Gorge, about 70 km downstream from Victoria Falls.

Asbestos, coal, ferroalloys, gold, and nickel were expected to remain the mainstays of the Zimbabwean economy through the turn of the century, and the significance of copper, diamond, granite, and PGM mining to the national economy was expected to increase. The continued high cost of domestic capital, potential negative international perception of governmental actions, costs associated with the widespread HIV infection of the workforce, and any continued depression of international metal prices could be detrimental to the industry (Financial Times, 1997; Nqobile Nyathi, April 30, 1998, Financial Gazette, Private sector lacks clear-cut AIDS policy, accessed May 1, 1998 at URL <http://www.africaonline.co.zw/fingaz/stage/archive/980430/national147.html>). The devaluation of the Zimbabwe dollar will manifest itself in increased costs of imports, including electric power, mineral fuels, and mining equipment and supplies. The Government was leery of the potential negative political and social repercussions if ZESA and the state-run National Oil Co. of Zimbabwe were allowed to pass on the full cost of increased expenses of imports (Financial Gazette, August 7, 1998, Petrol, diesel prices hiked by up to 20%, accessed August 7, 1998 at URL <http://www.africaonline.co.zw/fingaz/stage/archive/980808/national21991.html>). The investment regulations, the nation's well-developed and well-maintained infrastructure, new exploration techniques, and accessible mineral resources, however, were expected to encourage further local and foreign participation in the mineral industry.

References Cited

Chamber of Mines Journal, 1998, Chamber of Mines' report to members for November: Chamber of Mines Journal, v. 40, no. 1, p. 3.
Delta Gold NL, 1997, Delta's platinum sunrise: Delta Gold NL, 11 p.
Financial Times, 1997, Investors shun Zimbabwe: Financial Times [London],

December 12, p. 34.

Hawkins, Tony, 1997, Business fears Mugabe threat to mining group: Financial Times [London], June 17, p. 9.
Metal Bulletin, 1997, Price sees Zimalloys restructure: Metal Bulletin, no. 8232, November 27, p. 9.
Platt's Metals Week, 1998, Zimbabwe mining industry faces an uncertain future: Platt's Metals Week, v. 69, no. 6, February 9, p. 9.
Sguazzin, Antony, 1997a, Government rejects bids for ZiscoSteel: Metal Bulletin, no. 8179, May 19, p. 29.
———1997b, Zimasco ownership changes causes disquiet: Metal Bulletin, no. 8182, May 29, p. 9.

Major Sources of Information

Ministry of Mines, Environment, and Tourism

Private Bag 7753, Causeway
Harare, Zimbabwe

Chamber of Mines

4 Central Ave.

P.O. Box 712

Harare, Zimbabwe

Telephone: (263) (4) 707-992

Fax: (263) (4) 707-983

Zimbabwe Geological Survey

Mafue Bldg., 5th and Selous

P.O. Box CY210, Causeway

Harare, Zimbabwe

Telephone: (263) (4) 726-342

Fax: (263) (4) 733-696

Major Publications

Bartholomew, D.S., 1990, Base metal and industrial mineral deposits of Zimbabwe. Zimbabwe Geological Survey Mineral Resources Series No. 22, Harare, 154 p.

———1990, Gold deposits of Zimbabwe. Zimbabwe Geological Survey Mineral Resources Series No. 23, Harare, 75 p.

The Chamber of Mines Journal, Harare, monthly.

Mining in Zimbabwe, Thomson Publications, Harare, annual.

TABLE 1
ZIMBABWE: PRODUCTION OF MINERAL COMMODITIES 1/

(Metric tons unless otherwise specified)

Commodity		1993	1994	1995	1996	1997 e/
METALS						
Antimony, mine output, concentrate, Sb content		95	65	37	5	5
Beryllium, beryl concentrate, gross weight		23	-- r/ e/	-- r/ e/	-- r/ e/	--
Chromium, chromite, gross weight	thousand tons	252	517	707	697	670
Cobalt: 2/						
Mine output, Co content e/		90	100	80	95	100
Metal (hydroxide)		113	126	109	106 r/ 3/	132
Columbium and tantalum, tantalite concentrate, gross weight		48	7	1 e/	-- e/	--
Copper:						
Mine output, concentrate, Cu content e/	thousand tons	9	9	9	10	9
Metal:						
Smelter output, blister/anode, primary e/		8,200	10,000	8,000	7,600	4,000
Refinery output, refined/cathode, primary		8,187	9,350	6,875	10,900	8,800
Gold	kilograms	18,916	20,512	23,959	24,699	24,244 3/
Iron and steel:						
Mine output, iron ore:						
Gross weight	thousand tons	375	4	311	324	479
Fe content e/	do.	225	3	160	160	240
Metal:						
Pig iron e/	do.	211	100	209 3/	210	210
Steel, crude	do.	221	187	210	212	240
Ferrous alloys:						
Ferrosilicon	do.	124	183	254	243 r/ 3/	235
Ferrosilicon chromium	do.	30	36	47	33 r/	41
Ferromanganese		2,151	--	--	--	--
Nickel:						
Mine output, concentrate, Ni content		12,769	13,836	11,721	11,561	12,000
Refinery output, refined metal		11,097	13,516	10,864	9,694	9,923 3/ 4/
Platinum-group metals:						
Palladium	kilograms	11	17	17 e/	120 e/	345
Platinum	do.	4	7	7 e/	100 e/	245
Selenium	do.	1,113	2,009	2,000 e/	2,000 e/	2,000
Silver	do.	12,004	10,942	15,640	9,982	5,923 3/
Tin:						
Mine output, Sn content e/		800	100	10	10 e/	10
Smelter output, metal		657	82	--	--	--
INDUSTRIAL MINERALS						
Asbestos	thousand tons	157	152	169	165	145
Barite		120	--	--	-- e/	--
Cement, hydraulic e/	thousand tons	1,000	1,070	905 r/	962 r/	965
Clays:						
Bentonite (montmorillonite)		113,470	169,097	169,823	185,953	186,000
Fire clay		9,257	13,997	12,743	14,479	14,000
Kaolin		90	462	57	--	--
Diamond	carats	43,850	173,588	204,416	437,266	421,307 3/
Emerald	kilograms	635	276	2,209	1,080	1,000
Feldspar		1,553	1,617	3,920	3,248	3,500
Graphite		7,142	7,890	11,381	7,691	12,779 3/
Kyanite		878	567	875	141	150
Lithium minerals, gross weight		18,064	25,279	33,498	30,929	49,833 3/
Magnesite		6,276	1,588	5,597	10,659	10,000
Mica		510	213	1,040	1,500	1,000
Nitrogen, N content of ammonia e/		70,000	70,000	70,000	70,000	70,000
Phosphate rock, marketable concentrate	thousand tons	153	151	154	123	125
Pigments, iron oxide		390	438	400	400 e/	400
Stone, sand and gravel:						
Granite		40,032	106,605	121,685	109,268	109,000
Limestone	thousand tons	1,036	1,658	1,499	1,425	1,500
Quartz 5/	do.	61	131	172	96	100

See footnotes at end of table.

TABLE 1--Continued
ZIMBABWE: PRODUCTION OF MINERAL COMMODITIES 1/

(Metric tons unless otherwise specified)

Commodity	1993	1994	1995	1996	1997	e/
INDUSTRIAL MINERALS--Continued						
Sulfur						
Pyrite:						
Gross weight	72,588	71,026	70,706	59,831	48,101	3/
S content e/	32,000	31,000	31,000	26,000	21,000	
Byproduct acid, metallurgical and coal process gas e/	4,000	4,500	4,500	5,000	5,000	
Talc	1,349	2,049	2,080	1,076	1,000	
Vermiculite	5,032	8,184	13,742	10,249	10,000	
MINERAL FUELS AND RELATED MATERIALS						
Coal, bituminous	thousand tons	5,285	5,515	5,538	5,175	5,301 3/
Coke, metallurgical e/	do.	500	550	300 r/	600	600

e/ Estimated. r/ Revised.

1/ Table includes data available through August 4, 1998.

2/ "Mine output" figures are estimated from "metal" figures. "Metal" may include metal content of compounds/salts and may include cobalt recovered from nickel-copper matte imported from Botswana for toll refining.

3/ Reported figure.

4/ Excludes toll refined nickel.

5/ Includes rough and ground quartz, as well as silica sand.

TABLE 2
ZIMBABWE: STRUCTURE OF THE MINERAL INDUSTRY IN 1997

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity
Asbestos		Shabanie and Mashaba Mines (Pvt.) Ltd. [African Associated Mines (Pvt.) Ltd., 100%]	Shabanie Mine, Zvishavane; Gaths and King Mines, Mashava	300
Chromite, gross weight		Zimbabwe Mining and Smelting Co. (Pvt.) Ltd. (Zimasco) (Zimasco Consolidated Enterprises, 100%)	Peak Mine and Railway Block Mine at Shurugui and mines at Mutorshanga and Lalapanzi	500
Do.		Zimbabwe Alloys Ltd. (Zimalloys) (Anglo American Corp., 100%)	Great Dyke Mine, Mutoroshanga; Netherburn Mine at Lalapanzi; and Inyala Mine at Mberengwa	50
Do.		Local cooperatives	North Dyke	50
Coal		Wankie Colliery Co. (Pvt.) Ltd. (Private investors, 60%; Government, 40%)	Hwange	5,500
Cobalt	tons	Bindura Nickel Corp. Ltd. (Anglo American Corp., 65%; Government, 20%)	Shangani Mine, northwest of Shangani; Madziwa Mine, 50 kilometers northeast of Bindura; Trojan Mine, Bindura; Epoch Mine, Filabusi	150
Copper		Mhangura Copper Mines Ltd. (Zimbabwe Mining Development Corp., 55%)	Mhangura	16
Do.		Munyati Mining Ltd. Co. (Reunion Mining PLC, 75%; Zimbabwe Mining Development Corp., 25%)	Sanyati Mine, Sanyati	5
Do.		Bindura Smelter & Refinery Ltd. (Bindura Nickel Corp., 100%)	Solvent extraction-electrowinning plant at Bindura	2
Do.		Rio Tinto Zimbabwe Ltd.	Solvent extraction-electrowinning plant at Eiffel Flats	6 1/
Do.		Lomagundi Smelting & Mining (Pvt.) Ltd. (Merits Ltd., 100%)	Smelter at Alaska	35
Do.		do.	Refinery at Alaska	28
Diamond	carats	Auridam Zimbabwe (Pvt.) Ltd. (Auridam Consolidated NL, 50%; Redaurum Red Lake Mines Ltd., 50%)	River Ranch Mine, near Beitbridge	440,000
Gold	kilograms	Independence Mining (Pvt.) Ltd. (Lonhro PLC, 100%)	How Mine, Bulawayo; Athens Mine, Mvuma; Tiger Reef Mine, Kwekwe; Redwing Mine, Penhalonga; Shamva Mine, Shamva; Legion Dump, Kezi	3,800
Do.	do.	Ashanti Goldfields Zimbabwe (Pvt.) Ltd. (Ashanti Goldfields Co. Ltd., 82.4%, private investors, 17.6%)	Freda Rebecca Mine, Bindura	3,300
Do.	do.	Rio Tinto Zimbabwe Ltd. (RTZ Corp. PLC, 56%)	Renco Mine, 75 kilometers southeast of Masvingo; Patchway Mine, Kadoma; Brompton Mine, 2/ Kadoma; and Cam and Motor dump, Kadoma	2,800
Do.	do.	Falcon Gold Zimbabwe Ltd. (Falcon Investments S.A., 71.7%)	Dalhy Mine, Chegutu; Venice Mine, Kadoma; Golden Quarry Mine, Shurugui; Old Nic Mine, Bulawayo	2,000
Do.	do.	Corsyn Consolidated Mines (Pvt.) Ltd. (Lonrho PLC, 100%)	Anzac Mine, Kwekwe; Arcturus Mine, Arcturus; Mazowe Mine, Mazowe; Muriel Mine, Mutorashanga	1,700
Do.	do.	Kinross Gold Corp.	Blanket Mine	1,100
Do.	do.	Zimbabwe Mining Development Corp. (Government, 100%)	Lexington Mine and Elvington Gold Mine, near Chegutu	1,000
Do.	do.	Anglo American Zimbabwe (Anglo American Corp. of South Africa)	Bubi Mine	900
Do.	do.	Connemara joint venture (First Quantum Minerals Ltd., 95%; Chase Minerals (Pvt.), 5%)	Connemara Mine, north of Gweru	800
Do.	do.	Casmyn Mining Zimbabwe (Pvt.) Ltd.	Turk Mine, north of Bulawayo	500
Do.	do.	Jena Mines (Pvt.) Ltd. [Zimbabwe Mining Development Corp., 50%; Trillion Resources (Pvt.) Ltd. Zimbabwe, 50%]	Jena Group, Kwekwe area	400
Iron and steel:				
Crude steel		Zimbabwe Iron and Steel Co. (Pvt.) Ltd. (Government, 89%)	Redcliff, near Gweru	240 3/

See footnotes at end of table.

TABLE 2--Continued
ZIMBABWE: STRUCTURE OF THE MINERAL INDUSTRY IN 1997

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity
Iron and steel--Continued:			
Iron ore, gross weight	Buchwa Iron Mining Co. [Zimbabwe Iron and Steel Co. (Pvt.) Ltd., 100%]	Buchwa West Mine, Buchwa; Ripple Creek Mine, near Redcliff	1,400
Ferroalloys:			
Ferrochromium, high-carbon	Zimbabwe Mining and Smelting Co. (Pvt.) Ltd. (Zimasco) (Zimasco Consolidated Enterprises, 73%)	Smelter at Kwekwe	220
Ferrochromium, low-carbon	Zimbabwe Alloys Ltd. (Zimalloys) (Anglo American Corp., 100%)	Smelter at Gweru	40
Ferrochromium-silicon	do.	do.	55
Lithium	Bikita Minerals (Pvt.) Ltd. (Private, 100%)	Bikita Mine, 60 kilometers east of Masvingo	33
Nickel	Trojan Nickel Mines Ltd. (Bindura Nickel Corp., 100%)	Shangani, Madziwa, Trojan, and Epoch Mines	17
Do.	Bindura Smelter & Refinery Ltd. (Bindura Nickel Corp., 100%)	Smelter and refinery at Bindura	16
Do.	Rio Tinto Zimbabwe Ltd.	Empress Nickel Refinery, Eiffel Flats, northeast of Kadoma	11
Platinum-group metals	kilograms Zimbabwe Mining and Smelting Co. (Pvt.) Ltd. (Zimasco) (Zimasco Consolidated Enterprises, 100%)	Mimosa Mines, east of Zvishavane	300
Phosphate	Dorowa Minerals (Pvt.) Ltd. (Chemplex Corp. Ltd., 100%)	Dorowa Mine, 90 kilometers west of Mutare	155
Vermiculite	Shawa Vermiculite (Pvt.) Ltd. (Private, 100%)	Shawa Mine, near Dorowa	39
Do.	Dinidza Vermiculite Mining Co. (Pvt.) Ltd. (Private, 100%)	Dinidza Mine, near Dorowa	10

1/ Empress Refinery toll refines nickel-copper matte for BCL Ltd. of Botswana.

2/ Brompton Mine closed in August 1997.

3/ Blast furnace No. 4 (capacity: 780,000 metric tons per year) remained shut in 1996.