



2005 Minerals Yearbook

CONGO (KINSHASA)

THE MINERAL INDUSTRY OF CONGO (KINSHASA)

By Thomas R. Yager

The Democratic Republic of the Congo [Congo (Kinshasa)] was a producer of cobalt, columbium (niobium) and tantalum, copper, germanium, gold, tin, and zinc ores, and small amounts of steel and refined cobalt. The country also produced cement, crushed stone, diamond and colored gemstones, coal, and crude petroleum.

In 2005, the nominal gross domestic product (GDP) based on purchasing power parity of Congo (Kinshasa) amounted to about \$46.5 billion; the per capita GDP was about \$770. The real GDP increased by 6.5% in 2005 compared with 6.9% in 2004. The mining sector accounted for 10% of the GDP; manufacturing, 5%; construction and public works, 4%; and electricity and water, 3%. In 2004, the mining sector grew by an estimated 16% compared with 13% in 2003 and 10% in 2002 (International Monetary Fund, 2005, p. 60, 62; 2006^{§1}).

In spite of the signing of a peace agreement and the formation of a transitional Government in 2003, civil unrest continued in eastern and southern Congo (Kinshasa) in 2005. The Government was engaged in conflict with the Forces Démocratiques de Libération du Rwanda and the Mayi-Mayi militia in South Kivu, which was located in the eastern part of the country. Conflict between the Government and the Mayi-Mayi militia also took place in Katanga Province in eastern Congo (Kinshasa) (Global Witness, 2005, p. 8, 16; United Nations Integrated Regional Information Networks, 2005a, b).

Commodity Review

Metals

Cobalt and Copper.—Congo (Kinshasa) was the world's leading cobalt mine producer. Mine production of cobalt increased to an estimated 22,000 metric tons (t) in 2005 from 20,500 t in 2004, and refined cobalt production declined to 600 t in 2005 from 735 t in 2004. In 2005, mine production of copper increased to an estimated 92,000 t from 73,300 t in 2004 (table 1).

In 2005, Chemaf SPRL produced copper at a rate of 2,500 metric tons per year (t/yr), and cobalt, at a rate of 500 t/yr. In October, the company completed a new processing plant with a capacity of 4,000 t/yr of cobalt. Chemaf planned to produce 10,000 t/yr of copper and 3,000 t/yr of cobalt. By the end of 2006, Chemaf planned to complete a bankable feasibility study on mining the Etoile deposit. If the feasibility study were to yield favorable results, the company planned to have finances in place in the first quarter of 2007 and to start mining by the first quarter of 2009. Production was expected to be 24,000 t/yr of copper and 4,000 t/yr of cobalt; Chemaf planned to build a concentrator plant and a solvent extraction/electrowinning facility at a cost of \$64 million (Chemaf SPRL, undated[§]).

¹References that include a section mark (§) are found in the Internet References Cited section.

First Quantum Minerals Ltd. of Canada produced copper ore from the Lonshi Mine; the company shipped its ore across the border with Zambia to the Bwana Mkubwa solvent extraction/electrowinning facility. In 2005, the Lonshi Mine produced 980,000 t of ore at a grade of 5.1% copper compared with 669,000 t of ore at a grade of 5.5% copper in 2004. Bwana Mkubwa produced 49,538 t of copper in 2005 compared with 41,546 t in 2004. Production at Bwana Mkubwa was expected to be between 45,000 t and 50,000 t in 2006 (First Quantum Minerals Ltd., 2006, p. 9, 14).

Anvil Mining Ltd. of Australia operated the Dikilushi copper mine, which is located near Lake Mweru in Katanga Province. The company exported copper concentrates from the Dikilushi Mine to Namibia for smelting. In 2005, Anvil produced 17,816 t of copper compared with 12,074 t in 2004. In June 2005, Anvil completed a 50% expansion that raised the production capacity to 20,000 metric tons per year (t/yr) of copper (Anvil Mining Ltd., 2005; 2006, p. 6-7).

In 2006, Anvil planned to start development of an underground mine at Dikilushi. The open pit reserves were expected to be depleted in the second half of 2007. After the shutdown of the open pit mine, the processing plant was expected to process ore from stockpiles for 7 months as the underground mine was phased in (Anvil Mining Ltd., 2006, p. 7).

Anvil was engaged in a joint-venture agreement with state-owned Generale Des Carriers Et Des Mines (Gecaminés) and DeMoura Enterprises to mine the Kulu deposit. Mining started at Kulu in December 2005; production amounted to 2,493 t of concentrate that contained 711 t of copper. In 2006, copper production was expected to be 16,500 t. Anvil planned to complete a feasibility study on building a solvent extraction/electrowinning facility at Kulu with a capacity of 30,000 t/yr. If the study were to yield favorable results, the plant was expected to be completed in the first quarter of 2008 (Anvil Mining Ltd., 2006, p. 9).

In the fourth quarter of 2005, Anvil finalized negotiations with Gecaminés and Mining Company Katanga s.p.r.l. (MCK) to acquire a 70% interest in the mining rights for the Kinsevere and the Nambulwa deposits in Katanga. Anvil and MCK completed exploration at Kinsevere in 2005 that established a resource of 8.4 million metric tons (Mt) at a grade of 4.1% copper. Anvil and MCK planned additional exploration after March 2006 (Anvil Mining Ltd., 2006, p. 11).

Gecaminés and its joint-venture partners produced 19,700 t of copper in 2004 compared with 16,400 t in 2003. The company's production has been inhibited by aging equipment; a lack of investment, fuel, and spare parts; and poor infrastructure. In 2006, Gecaminés expected its copper production to be 25,000 t; cobalt, 2,000 t; and zinc, 5,000 t (International Monetary Fund, 2005, p. 66).

Adastra Minerals Inc. of the United Kingdom and Gecaminés planned to complete a feasibility study of the development of the Kolwezi Tailings Project in the first quarter of 2006. If the

study were to yield favorable results, construction was expected to start by the end of 2006; production was likely to start in the first quarter of 2008. The initial production level was planned to be 30,000 t/yr of copper and 5,000 t/yr of cobalt. Resources were estimated to be nearly 113 Mt at grades of 1.49% copper and 0.32% cobalt (Adastra Minerals Inc., 2005b).

In the fourth quarter of 2005, the Government approved the Tenke Fungurume joint-venture project between Phelps Dodge Corp. of the United States (57.75%), Tenke Mining Corp. of Canada (24.75%), and Gecaminés (17.5%). The companies planned to complete a feasibility study by mid-2006. If the study were to yield favorable results, production was expected to begin at a rate of 50,000 t/yr of copper and 4,000 t/yr of cobalt in early 2008. Copper production was expected to be 130,000 t/yr by 2013 and 400,000 t/yr by 2018. Resources at Tenke Fungurume were estimated to be 547 Mt at grades of 3.5% copper and 0.27% cobalt (Tenke Mining Corp., 2005).

Ruashi Mining SPRL (Metorex Ltd. of South Africa, 80%, and Gecaminés, 20%) planned to produce cobalt and copper from tailings near the Ruashi Mine. The company planned to commission a processing plant in April 2006 that was expected to reach full capacity in June 2006. Production was expected to be 10,000 t/yr of copper and 1,000 t/yr of cobalt. Resources in the tailings stockpile amounted to 3.2 Mt at grades of 1.86% copper and 0.35% cobalt. The life of the first phase of the project was likely to be about 4 years. The second phase of the project involved mining the Ruashi ore body, which had resources of 32.5 Mt at grades of 3.75% copper and 0.46% cobalt. The feasibility study of the second phase was expected to be completed in 2006. If the study were to yield favorable results, construction could start in January 2007 and mining of the Ruashi ore body, in July 2008. Production was expected to be between 40,000 and 45,000 t/yr of copper and 3,500 and 7,000 t/yr of cobalt (Metorex Ltd., 2005, p. 18; Miningmx, 2005).

Central African Mining and Exploration Company plc (CAMEC) of the United Kingdom and Enterprises Swanepoel were engaged in a joint venture to build cobalt and copper processing plants at Kambove. The cobalt plant was expected to start production in early 2006; initial capacity was expected to be more than 1,400 t/yr of cobalt in concentrates. By the end of the first quarter of 2006, an electric arc furnace with a capacity of 2,800 t/yr of blister copper was expected to be completed. The furnace was also capable of producing tin (Central African Mining and Exploration Company plc, 2005a, b).

Columbium (Niobium) and Tantalum.—The production of columbium (niobium) and tantalum in Congo (Kinshasa) has declined sharply in recent years. In 2005, production of columbium (niobium) declined to an estimated 10 t from nearly 390 t in 2003 and 700 t in 2002.

In July 2000, the Lueshe pyrochlore mine in Rutshuru District reopened; the mine had closed in July 1993 because of civil war in North Kivu. Production of pyrochlore from the Lueshe Mine was 733 t in 2003 compared with 1,346 t in 2002, 691 t in 2001, and 274 t in 2000 (table 1). Historically, the mine produced a pyrochlore concentrate with a content of between 69% and 73% Nb₂O₅. The mine shut down again in October 2003. In March 2005, the Government announced that it was seeking investors to reopen the Lueshe Mine. The costs required to rehabilitate the

mine and establish a production rate of 1,800 t/yr of Nb₂O₅ were estimated to be \$11.5 million. The reopening of the mine was likely to be inhibited by disputes over mining rights (Heydari, 1993; Johnson and Tegera, 2005, p. 76-81).

Artisanal and small-scale miners produced columbium (niobium) and tantalum in eastern Congo (Kinshasa). In 2004, reported exports of columbite-tantalite from North Kivu were 42 t compared with 71 t in 2003. The decline in tantalum prices and the increase in tin prices led to artisanal miners abandoning columbite-tantalite mining in favor of cassiterite. In March 2005, the Government announced that it was seeking investors to produce 380 t/yr of columbite-tantalite from the Manono Mines (Johnson and Tegera, 2005, p. 30, 35-36, 49).

Gold.—Artisanal and small-scale miners produced gold in Ituri Province in eastern Congo (Kinshasa). National gold production was estimated to be 4,200 kilograms (kg) of gold in 2005 compared with 5,700 kg in 2004 and 6,100 kg in 2001 (table 1).

Moto Goldmines Ltd. of Australia explored for gold in the Kilo Moto goldfield in Ituri Province. The Moto Project included the Gorumbwa, the Karagba, the Kibali, the Kombokolo, the Marakeke, the Megi, the Mengu Hill, the Mengu Village, the Ndala, the Pakaka, the Pamao, and the Sessenge deposits. Moto reported that a new resource estimate completed in November 2005 increased combined resources of these deposits to more than 340 t of contained gold from 250 t. Resources at Karagba were reported to be 113 t of contained gold; Gorumbwa, 54 t; Pakaka, 47 t; and Kibali, 44 t (African Mining, 2006b).

Moto planned to finish prefeasibility work on the Moto project by mid-2006 and to complete a bankable feasibility study on mining in 2007. If the feasibility study were to yield favorable results, the mine was expected to produce about 7,500 kilograms per year (kg/yr) of gold at an average cash operating cost of \$220 per troy ounce of gold. The life of the potential mine was expected to be 12 years (African Mining, 2006c).

Banro Corp. of Canada owned the Kamituga, the Lugushwa, the Namoya, and the Twangiza properties in eastern Congo. The company began exploration at Namoya in December 2004 and at Lugushwa in January 2005. Resources at Twangiza were estimated to be 99 t of contained gold; Lugushwa, 85 t; Namoya, 34 t; and Kamituga, 28 t (African Mining, 2006a).

CAMEC explored for gold at its Moba project, which comprised nine exploration permits that covered 3,250 square kilometers (km²). The Moba project focused on the Lufuka River Valley, which was in the Tanganyika District of Katanga Province (Central African Mining and Exploration Company plc, 2005a).

Silver.—Anvil produced silver as a coproduct at the Dikilushi copper mine. In 2005, silver production increased to 53,553 kg from 32,953 kg in 2004. Production increased because of a 50% expansion of the mine that was completed in June 2005 and that raised production capacity to 50,000 kilograms per year of silver (Anvil Mining Ltd., 2005; 2006, p. 6-7).

Tin.—Artisanal miners produced cassiterite at the Manono mine in Katanga Province; at Kalima and Punia in Maniema Province; at the Bisuru Bibatama Mine near Masisi and the Bisie Mine near Walikale in North Kivu Province; and at Nyabibwe in South Kivu Province. National tin mine production

increased to an estimated 3,200 t in 2004 from 800 t in 2003 and 300 t in 2002 (table 1) because of rising global demand for tin. The increase in tin demand was partially attributable to environmental regulations in Europe and Japan that mandated the reduction of lead use in printed circuit boards. In 2005, tin production declined to an estimated 2,800 t because of lower tin prices (Global Witness, 2005, p. 4, 14; Johnson and Tegera, 2005, p. 49-50, 53).

The reported production of cassiterite in North Kivu amounted to 550 t in 2001 and 497 t in 2002. In 2003, 938 t of cassiterite was exported from North Kivu and 488 t from South Kivu. Exports of cassiterite from North Kivu amounted to 4,672 t in 2004, of which between 85% and 90% was produced in North Kivu; exports from South Kivu amounted to 715 t. In the first 6 months of 2005, reported exports of cassiterite from Goma in North Kivu were 2,191 t, and from Buakavu in South Kivu, nearly 179 t (Johnson and Tegera, 2005, p. 49-52).

Most of the companies that exported cassiterite from Congo (Kinshasa) shipped concentrates with a tin content of between 55% and 60%. Metal Processing Association (MPA) exported cassiterite to Rwanda for further processing; the company produced about 200 t/yr at its tin smelter. Sodex Mines reportedly processed cassiterite concentrates to a tin content of 78% prior to export. In the first half of 2005, Sodex accounted for 23% of exports compared with 11% in 2004; MPA's share declined to 15% from 31% (Johnson and Tegera, 2005, p. 50-52).

In December 2004, MPA was awarded 37 concessions in eastern Congo (Kinshasa) that it planned to bring into production in 2005 or 2006. The company planned to spend \$30 million to build a new smelter with a capacity of 5,000 t/yr. MPA expected to export 400 t/yr of tin to South Africa and substantial amounts to China (Global Witness, 2005, p. 20).

In March 2005, the Government announced that it was seeking investors to produce 6,000 t/yr of cassiterite from the Manono Mines. The cost of developing the proposed columbite-tantalite and cassiterite mining projects at Manono was estimated to be \$155 million (Johnson and Tegera, 2005, p. 35-36).

Zinc and Germanium.—In September 2005, Adastra renewed its joint-venture agreement with Kumba Base Metals (a subsidiary of Kumba Resources Ltd. of South Africa) to reopen the Kipushi zinc-copper mine. The companies were engaged in a reassessment of the project's viability. Measured and indicated resources at the Kipushi mine were 16.9 Mt at grades of 16.7% zinc and 2.32% copper (Adastra Minerals Inc., 2005a).

Gecaminés and Enterprises Swanepoel SARL were in a joint venture to develop a project to reprocess zinc and germanium tailings near the Kolwezi mine. Resources were estimated to be 1 Mt at grades of 20% zinc, 500 g/t germanium, and 200 g/t silver. Following the completion of a metallurgical process study, the company planned to make a decision by mid-2006 (Central African Mining and Exploration Company plc, 2005a).

Industrial Minerals

Diamond.—National diamond production amounted to an estimated 30.3 million carats in 2005 compared with nearly 30.9

million carats in 2004 and 16 million carats in 2000. Diamond exports were \$679 million for the first 9 months of 2005 (International Monetary Fund, 2005, p. 86; Johnson and Tegera, 2005, p. 96).

State-owned Société Minière de Bakwanga (MIBA) produced mostly industrial and near-gem-quality diamond at Mbuji-Mayi in Kasai-Oriental Province. The company mined about 7.24 million carats of diamond in 2004. MIBA planned to increase production to 8.5 million carats in 2006 and 10 million carats in 2008 and to raise the percentage of gem-quality diamond mined to 6% in 2008 from less than 4% in 2003. In May 2005, a new kimberlite-processing plant was commissioned at Mbuji-Mayi (Tshofu, 2004; Arenson, 2005; Northwest Territories Department of Industry, Tourism and Investment, 2005, p. 11).

Sengamines (Oryx Natural Resources Ltd., 80%, and MIBA, 20%) operated a diamond mine that was located 40 kilometers southwest of Mbuji-Mayi in Kasai Oriental Province. The company produced 302,033 carats in 2005 compared with 618,059 carats in 2004 and 1.09 million carats in 2003. Sengamines planned to produce between 2.4 million and 4 million carats per year and to increase production subsequently to at least 4.8 million carats per year. The mine was shut down in May 2005 because of fuel delivery problems (Tassell, 2004; Arenson, 2005).

In early 2005, the privately owned Congolese company Midamines SPRL started diamond production. The company planned to mine 200,000 carats per year of diamond from alluvial deposits in the riverbeds of the Dinini, the Gombe, the Kwango, and the Tungila Rivers and their tributaries in Bandundu and Kasai Occidental Provinces. Resources at these deposits were estimated to be at least 7.2 million carats of diamond; about 75% of the diamond was estimated to be gem quality (Arenson, 2005; Midamines SPRL, undated\$).

An estimated 700,000 artisanal miners produced diamond at Luozi in Bas-Congo Province; at Gbadolite, Kota-Koli, and Yakoma in Equateur Province; at Bafwasende and Kisangani in Haut-Congo Province; at Lubutu in Maniema Province; and at various operations in Bandundu, Kasai-Occidental, and Nord Kivu Provinces. Artisanal diamond production was estimated to be 22 million carats in 2005 (International Monetary Fund, 2005, p. 48-49, 66).

Gravity Diamonds Ltd. of Australia and BHP Billiton Ltd. of Australia signed a joint-venture agreement in 2004 to explore for diamond at Gravity's Gunge, Luebo, Maniamuna, and Penge concessions on the Kasai Craton. Between April and October 2005, Gravity explored at Gunge, Maniamuna, and Penge; the company started a drilling program at Luebo in November. Gravity spent \$5 million on exploration in 2004 and 2005; the company planned to spend an additional \$3 million to \$4 million in 2006 (Mining Review Africa, 2006).

SouthernEra Diamonds Inc. of Canada held 41 exploration permits near Mbuji-Mayi that covered about 13,600 km²; these properties were thought to contain primary and alluvial deposits. The company explored at its properties in the Tshikapa/Kasai/Luebo alluvial diamond field in Kasai-Occidental Province and at its Nyota project in Kasai-Oriental Province. CAMEC held exploration licenses for properties that covered nearly 4,900 km² in the Sankuru District of Kasai Province. The company

explored for diamond at these properties, which have alluvial deposits that have been mined by artisanal miners. BRC Diamond Corp. of Canada started diamond exploration in Kasai-Oriental Province at the end of 2004 (Arenson, 2005; Central African Mining and Exploration Company plc, 2005a).

Stone, Crushed.—National production of crushed stone amounted to 213,000 t in 2004 compared with 203,000 t in 2003. In late 2005, Adastra was awarded quarry exploration rights for eight limestone concessions and two aggregates concessions near the Kolwezi Tailings Project. The project's processing plant was expected to consume 30,000 t/yr of lime and limestone (Adastra Minerals Inc., 2005b).

Outlook

Production of cobalt, copper, diamond, germanium, gold, and tin in Congo (Kinshasa) could rise and zinc production could restart in the near future. Cobalt and copper production could increase because of the Kambove, the Kolwezi tailings, the Mutoshi, the Ruashi, and the Tenke Fungurume projects; diamond, because of the expansion of MIBA's operations; gold, because of the Moto project; tin, because of a new smelter proposed by MPA; and zinc and germanium, because of the Kipushi and the Kolwezi projects. The development of these projects depends heavily upon political and economic stability and favorable conditions in world markets. The outlook for gold and tin is particularly dependent upon political stability because of continued civil unrest in eastern Congo (Kinshasa).

References Cited

- Adastra Minerals Inc., 2005a, Adastra renews Kipushi joint venture with Kumba and commissions a technical and economic reassessment: London, United Kingdom, Adastra Minerals Inc. press release, September 9, 1 p.
- Adastra Minerals Inc., 2005b, Adastra secures rights for quarry products near Kolwezi: London, United Kingdom, Adastra Minerals Inc. press release, November 1, 2 p.
- African Mining, 2006a, Banro continues to expand Twangiza Namoya gold field: *African Mining*, v. 11, no. 1, January/February, p. 58-62.
- African Mining, 2006b, Congo dawning—Moto Goldmines pushes its envelope: *African Mining*, v. 11, no. 1, January/February, p. 76-82.
- African Mining, 2006c, Huge potential at Moto: *African Mining*, v. 11, no. 1, January/February, p. 39-40.
- Anvil Mining Ltd., 2005, Report for quarter ended December 31, 2004: West Perth, Australia, Anvil Mining Ltd. press release, January 28, 5 p.
- Anvil Mining Ltd., 2006, Annual report 2005: West Perth, Australia, Anvil Mining Ltd., 74 p.
- Arenson, Gaelle, 2005, Democratic Republic of Congo, in *Mining annual review 2005*: Mining Journal Ltd., CD-ROM.
- Central African Mining and Exploration Company plc, 2005a, Final results for year ended 31 March 2005: London, United Kingdom, Central African Mining and Exploration Company plc, 33 p.
- Central African Mining and Exploration Company plc, 2005b, Interim results for the six months ended 30 September 2005: London, United Kingdom, Central African Mining and Exploration Company plc press release, December 23, 8 p.
- First Quantum Minerals Ltd., 2006, First Quantum Minerals reports operational and financial results for three months and twelve months ended December 31, 2005: Vancouver, British Columbia, Canada, First Quantum Minerals Ltd. press release, March 9, 17 p.
- Global Witness, 2005, Under-mining peace—The explosive trade in cassiterite in eastern DRC: Washington, DC, Global Witness Publishing Inc., 39 p.
- Heydari, M.M., 1993, The mineral industry of Zaire, in *Area reports—International—Africa*: U.S. Geological Survey Minerals Yearbook 1991, v. III, p. 328-337.
- International Monetary Fund, 2005, Democratic Republic of the Congo—Selected issues and statistical appendix: Washington, DC, International Monetary Fund, October 14, Country Report No. 05/373, 97 p.
- Johnson, Dominic, and Tegera, Aloys, 2005, Digging deeper—How the DR Congo's mining policy is failing the country: Goma, Democratic Republic of the Congo, Pole Institute, 111 p.
- Metorex Ltd., 2005, Annual report 2005: Rosebank, South Africa, Metorex Ltd., 64 p.
- Mining Review Africa, 2006, Exploring the DRC's Kasai Craton for diamonds: *Mining Review Africa*, no. 2, p. 10-15.
- Northwest Territories Department of Industry, Tourism and Investment, 2005, 2005 Diamond industry report—Diamond facts: Yellowknife, Northwest Territories, Canada, Northwest Territories Department of Industry, Tourism and Investment, 36 p.
- Tassell, Arthur, 2004, The DRC gets a new diamond mine: *African Mining*, v. 9, no. 4, July/August, p. 30-34.
- Tenke Mining Corp., 2005, DRC approves Tenke Fungurume Project: Vancouver, British Columbia, Tenke Mining Corp. press release, November 2, 2 p.
- Tshofu, C.S., 2004, Société Minière de Bakwanga (MIBA), 2004, Presentation at Indaba 2004: Africa Mining Investment Conference, Cape Town, South Africa, February 10-12, 2004, Presentation, 19 p.
- United Nations Integrated Regional Information Networks, 2005a, DRC—Army recaptures Nyamilima village, North Kivu: New York, New York, United Nations Integrated Regional Information Networks press release, July 13, 2 p.
- United Nations Integrated Regional Information Networks, 2005b, DRC—Relief efforts blocked in northern Katanga as fighting continues: New York, New York, United Nations Integrated Regional Information Networks press release, December 6, 2 p.

Internet References Cited

- Chemaf SPRL, [undated], Process plant, accessed November 1, 2006, at URL <http://www.chemaf.com/plant.htm>.
- International Monetary Fund, 2006 (April), Congo, Democratic Republic of, World Economic Outlook Database, accessed August 16, 2006, via URL <http://www.imf.org/external/pubs/ft/weo/2006/01/data/index.htm>.
- Midamines SPRL, [undated], Rapports, accessed November 3, 2006, at URL http://www.midamines.info/rapports_eng.html.
- Miningmx, 2005 (August 7), Metorex unearths more DRC copper, accessed March 9, 2007, at URL http://www.miningmx.com/mining_fin/470328.htm.

TABLE 1
CONGO (KINSHASA): PRODUCTION OF MINERAL COMMODITIES¹

(Metric tons unless otherwise specified)

Commodity	2001	2002	2003	2004	2005 ^c
METALS					
Cobalt:					
Mine output, Co content ^{e, 2}	11,600	14,500 ^r	14,500 ^r	20,500 ^r	22,000
Metal, Co content ³	3,199	2,149	1,200	735	600
Columbium (niobium) and tantalum:					
Columbite-tantalite concentrate:					
Gross weight	200 ^c	110 ^r	71 ^r	42 ^r	45
Nb content ^c	60	25 ^r	15 ^r	10 ^r	10
Ta content ^c	60	30	20 ^r	10 ^r	10
Pyrochlore concentrate:					
Gross weight	691	1,346	733	--	-- ⁴
Nb content ^c	340	670	360	-- ⁴	-- ⁴
Copper:					
Mine output, Cu content	37,800	34,000 ^e	59,800	73,300	92,000
Smelter, electrowon (low grade)	25,000	10,000	8,000	20,000	20,000
Germanium kilograms	--	3,500	2,500	2,500	2,500
Gold, mine output, Au content ^c do.	6,100	7,600	4,100	5,700	4,200
Silver, mine output, Ag content do.	--	2,108	35,501	32,953	53,553 ⁴
Steel	307,000	150,000	140,000	130,000	130,000
Tin, mine output, Sn content ^c	300 ^r	300 ^r	800	3,200 ^r	2,800
Zinc, mine output, Zn content	1,014	828 ^r	--	5,067 ^r	15,000
INDUSTRIAL MINERALS					
Cement, hydraulic	201,000	265,000	331,000	402,500	410,000
Diamond:⁵					
Artisanal thousand carats	11,843	15,629	19,142	22,128	22,000
Large-scale do.	6,355	6,050	7,839	8,752	8,300
Total do.	18,198	21,679	26,981	30,880	30,300
Lime ^c	25,000	25,000	25,000	25,000	25,000
Stone, crushed	185,000	194,000	203,000	213,000	220,000
Sulfuric acid ^c	80,000	80,000	80,000	15,000	15,000
MINERAL FUELS AND RELATED MATERIALS					
Coal, bituminous ^c	1,000	1,000	1,000	1,000	1,000
Petroleum, crude thousand 42-gallon barrels	9,400	8,400	9,200	10,100	10,000

^cEstimated; estimated data are rounded to no more than three significant digits; may not add to totals shown. ^rRevised. -- Zero.

¹Table includes data available through November 3, 2006.

²Includes mine production and reprocessed tailings.

³Salable refined production only; excludes white alloy and matte.

⁴Reported data.

⁵An estimated 20% of total diamond is gem quality; the majority of production is from artisanal mining.