The Mineral Industry of Australia

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The Commonwealth of Australia is a continent that is part of Oceania, which is located between the Indian Ocean and the South Pacific Ocean. Australia's capital city is Canberra, which is located in the Australian Capital Territory. Other major cities include Adelaide, Brisbane, Darwin, Melbourne, Perth, and Sydney. Australia's total area is 7,686,850 square kilometers (km^2), which is slightly smaller than the contiguous 48 states of the United States. The country's land area is 7,617,930 km^2, and its water area is 68,920 km^2, which includes Lord Howe Island and Macquarie Island. The estimated population in midyear 2004 was 19,913,144 (U.S. Central Intelligence Agency, 2005§[1]).

Australia was one of the world's leading mineral-producing nations in 2004 owing to its large economic demonstrated resources (EDRs) (mineral resources for which profitable extraction or production is possible at current prices). The country was the world's leading producer of lead, nickel, mineral sands, tantalum, uranium, and zinc in 2004. Additionally, Australia's level of EDRs enabled the country to rank among the top six countries worldwide in the production of 12 more mineral commodities—bauxite, black coal, brown coal, cobalt, copper, gem and near-gem diamond, gold, iron ore, lithium, manganese ore, niobium, and rare-earth oxides (Geoscience Australia, p. 2005, p. 6).

Australia's real gross domestic product (GDP) grew at an estimated rate of 3.2% in 2004, and the GDP based on purchasing power parity was estimated to be $602.7 billion. The 2004 GDP per capita based on purchasing power parity was estimated to be $29,900 (U.S. Central Intelligence Agency, 2005§). Australia's mineral industry sector contributed about 4% of the GDP. The mineral industry included coal and metal mining, oil and gas extraction, and mining services. The bountiful mineral wealth of Australia enabled the country to be virtually self-sufficient in most mineral commodities. The only significant mineral resource in which Australia was not self-sufficient was petroleum. Australia nevertheless produced an estimated 70% of its crude oil requirements domestically in 2004. Australia also was endowed with abundant resources of other mineral fuels, which included coal, natural gas, liquefied petroleum gas, and uranium, and the country continued to be one of the few market economy countries that was a net exporter of mineral fuels (U.S. Energy Information Administration, 2004§).

The Australian mineral industry provided about 48,000 jobs directly; in total, the mineral industry provided some 240,000 jobs, including many in remote regional areas, such as in ports and towns that were built to support, or were built from the proceeds of, mineral exploration, discovery, and extraction.

Ownership of the mineral rights in Australia generally was vested in the government of the relevant State or Territory or the Commonwealth Government for Federal lands and waters, regardless of ownership or tenure of the surface. Mineral ownership was divided between State ownership in State onshore areas and Commonwealth ownership in Territories and in offshore areas beyond Australia's 4.8-kilometer (km) territorial limit. The Commonwealth's responsibility for minerals, except uranium, in the Northern Territory was, however, transferred to the Government of the Northern Territory. Thus, the individual States and Territories administered the mineral industries within their own borders, which included registering land titles; issuing exploration and development permits; overseeing mining operations, which included administration of inspections; assuring compliance with health, safety, and environmental regulations; and levying royalties and taxes. The Commonwealth may restrict mineral exports for the good of the country and, therefore, has actual control over most mineral production.

Commodity Review

Metals

Bauxite and Alumina and Aluminum.—Australia's aluminum industry was a large integrated sector of mining, refining, smelting, and semi-fabrication that was of major economic import both nationally and globally. The industry consisted of 5 bauxite mines, 7 alumina refineries, 6 primary aluminum smelters, 12 extrusion mills, and 2 rolled-product mills (Geoscience Australia, 2005, p. 17).

Vast resources of bauxite, which are located in the Gove and the Weipa regions adjacent to the Gulf of Carpentaria in the north of Australia and in the Darling Ranges south of Perth, underpin the industry. Bauxite deposits in these regions rank among the world's largest resources of bauxite. Bauxite deposits at Cape Bougainville and Mitchell Plateau in the north of Western Australia are presently uneconomic to develop but may be of potential significance in the future.

Expansion of the Weipa bauxite mining operation was completed and resulted in an increase of production capacity to 16.5 million metric tons per year (Mt/yr). The mining upgrade, which involved a move to simultaneous mining at Weipa's Andoom and east Weipa mines, also involved a change in ore characteristics (fine ore) from that previously being mined (Geoscience Australia, 2005, p. 18).

Alcan announced in late 2004 that it was to proceed with a US$1.3 billion expansion of its Gove alumina refinery in the Northern Territory. This expansion would lift the refinery's 2.1-Mt/yr capacity to about 3.8 Mt/yr (Geoscience Australia, 2005, p. 18).

Australia's aluminum industry was the country's second ranked commodity exporter behind the coal industry when bauxite, alumina, and aluminum are all taken into account. Australia remained the world's top ranking producer of bauxite and alumina for the 34th consecutive year (Plunkert, 2006).

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

Construction of Comalco Ltd.'s 1.4-Mt/yr alumina refinery at Gladstone, Queensland, was progressing well; the first stage was completed in late 2004 (Geoscience Australia, 2005, p. 18). The refinery was not expected to be completed until late 2006 (Resource Information Unit, 2004, p. 756).

Copper.—Australia continued as a major copper-producing country in 2004, with mining and smelting operations at Mount Isa in Queensland and Olympic Dam in South Australia. Other major copper mines included Northparkes and Tritton in New South Wales; Ernest Henry, Mt. Gordon, and Osborne in Queensland; Golden Grove and Nifty in Western Australia; and Mt. Lyell in Tasmania. Australia's mined copper production ranked fourth in the world following Chile, the United States, and Peru (Edelstein, 2006).

Copper and copper alloys were used in building and construction, in such electrical equipment as electrical cables, and in industrial machinery and equipment. The Mount Isa Mine at Mount Isa, Queensland, produced large tonnages of lead, silver, and zinc and remained the leading copper producer in Australia. It was Australia's largest underground operation (Resource Information Unit, 2004, p. 131).

Gold.—Australia again ranked second after the Republic of South Africa in gold production during 2004. Australia placed second in gold production in 2004 by mining one more metric ton (t) of gold than the United States for a total annual gold production of 259 t; the United States produced 258 t. Australia accounted for about 11% of world output in 2004, which was unchanged from 2003 (George, 2006).

Australia's gold resources occur and are mined in all States and in the Northern Territory. Western Australia, however, was by far the leading producer. Much of the gold mined in Australia in 2004 was from large open pit mines and was invisible to the unaided eye.

Iron Ore.—Although iron ore resources occurred in all six Australian States and the Northern Territory, Western Australia had almost all the country's EDR; about 92% of these resources occur in Western Australia's Pilbara District. The major iron ore producers in the Pilbara District were BHP Billiton Ltd., Hamersley Iron Pty. Ltd, Rio Tinto Ltd., and Robe River Iron Associates, which was a joint venture of Mitsui Iron Ore Development Pty., Nippon Steel Australia Pty., Rio Tinto Ltd., and Sumitomo Metals Australia Pty. Ltd. In 2004, Australia ranked third following China and Brazil in iron ore production and produced about 17% of world production (Jorgenson, 2006).

Onesteel Ltd., which was created when BHP Billiton divested some of its steel assets, operated the Whyalla Mines (formerly Middleback Range), which are located about 50 km west of Whyalla and 270 km northwest of the State capital, Adelaide, in South Australia. The Middleback Range mines (Iron Baron, Iron Duchess, Iron Duke, Iron Knob, and Iron Prince Mines), have been an important source of iron ore for Onesteel's domestic steel product requirements. Mining in the South Middleback ranges began first at Iron Duke in 1989 and was followed by mining at the Iron Duchess in 1998 and the Iron Prince in 1999. Mining operations were contracted out to Henry Walker Eltin Ltd. in 1997. Because of the near depletion of iron ore resources at Iron Knob and Iron Baron, Onesteel constructed a low-grade beneficiation plant to turn waste dump into ore; the plant began production early in 2004 (Resource Information Unit, 2004, p. 180).

Lead, Silver, and Zinc.—Australia's lead, silver, and zinc mines were predominantly based on zinc-rich ore bodies with zinc as the major component and lead and silver as byproducts. An exception was BHP Billiton's Cannington underground mine in Queensland. It was based on a lead-silver ore body with zinc as a byproduct. In 2004, following a major production expansion to 2.4 Mt/yr, the Cannington Mine remained the world's leading single producer of silver in the world and a leading producer of lead (Resource Information Unit, 2004, p. 154). In 2004, Australia was the second ranked producer of lead after China and the fourth ranked silver producer following Peru, Mexico, and China (Brooks, 2006; Gabby, 2006).

Mining for lead, which was the first metal mined in Australia, was begun in 1841 at Glen Osmond, South Australia. Lead-silver ore was discovered and mined near Broken Hill, New South Wales, in 1876 and, in 1883, the large lead-zinc-silver deposit at Broken Hill proper was discovered, which provided the basis for Australia's zinc mining industry up to the present.

Manganese.—Australia had two operating manganese mines in 2004: Groote Eylandt Mining Co. Pty. Ltd.'s mine on the 84-km^2 Groote Island in the Northern Territory and Woodie Woodie, which is located 400 km southeast of Port Hedland in Western Australia. A third mine, the Bootu Creek, began construction in October 2004 at Bootu Creek, which is located 130 km north of Tenant Creek in the Northern Territory. The project was scheduled to produce 415,000 metric tons per year (t/yr) of lump and 130,000 t/yr of fine products beginning in mid-2005 (Resource Information Unit, 2004, p. 108; Geoscience Australia, 2005, p. 46). The operations at Groote Island used excavators and 145-t end-dump trucks for removal of overburden and ore mining. The manganese ore mined at Groote Island was processed in plants at Bell Bay, Tasmania, and Newcastle, New South Wales. Australia produced 13% of the world's manganese ore in 2004 and ranked third behind China, and South Africa (16% each) (Geoscience Australia, 2005, p. 46).

Nickel.—Australia's main nickel ores were primary sulfides of nickel, which occur as lodes within mafic and ultramafic (iron- and magnesium-rich) igneous rocks that have a volcanic origin, although most of the world's identified resources are contained in nickel-bearing laterite and nickeliferous limonite. These secondary deposits are derived from the weathering of nickel-bearing mafic and ultramafic rocks in tropical and subtropical climates.

Western Australia had the largest nickel resources in Australia. Active mining of nickel was conducted at the sulfide mines of WMC Resources Ltd.'s Leinster and Mount Keith Mines; LionOre Mining International Ltd.'s Black Swan and Emily Ann Mines; Jubilee Mines NL's Cosmos Mine; and Mincor Resources NL's Miitel and Wannaway Mines. Production commenced at Mincor's Redross Mine in September and at Sally Malay Mining Ltd.'s Sally Malay Mine in August 2004 (Geoscience Australia, 2005, p. 52). Sulfide nickel production continued or commenced at eight other mostly small mines in 2004. Mining of lateritic nickel continued from Minara Resources Ltd.'s Murrin Murrin Mine and from Om Group Inc.'s Cawse Mine (Resource Information Unit, 2004, p. 352).

Tin.—Marlborough Resources NL's Ardlethan Mine in central New South Wales was Australia's only operating tin mine. The operation was an alluvial mine that used alluvial leads that emanate from the hard granite outcrops that contain separate ore horizons. Ardlethan shipped its concentrate to Malaysian Smelting Corp. in Penang, Malaysia, for processing (Resource Information Unit, 2004, p. 93).

Titanium.—Mineral sands deposits are concentrations of ilmenite, rutile, and zircon, which occur along the coast of eastern Australia from central New South Wales to Cape York in Queensland. Large relic beach deposits are found as far inland as Ouyen in Victoria, in southwestern New South Wales, and in South Australia in more than 300,000 km^2 of the Murray Basin. In Western Australia, deposits are distributed from the southern tip of the State to Geraldton and are located at the coastline or as relic deposits up to 35 km inland. The eastern deposits generally have a total heavy-mineral content of from 1% to 5%; ilmenite, rutile, and zircon each make up about one-third. In Western Australia, the deposits also have a total heavy-mineral content of about the same or slightly higher percentage, but the ilmenite portion of this content approaches about 70%. Australia had a substantial portion of world mineral sands resources—about 32% for ilmenite, 45% for rutile, and up to 45% for zircon (Geoscience Australia, 2005, p. 48).

Industrial Minerals

Diamond.—In 2004, only two diamond mines were operating in Australia: Rio Tinto's huge Argyle open cut in the Ellendale diamond province of the western Kimberley region of Western Australia and Kimberley Diamond Co.'s. Ellendale Mining Lease, which is located about 200 km to the southeast of the Argyle Mine. Mining at Argyle began in December 1985 from the AK1 lamproite pipe. Alluvial mining operations had begun in 1983 and continued through 2001. The life of the open cut at Argyle was thought to extend to 2007, but because the AK-1 pipe continued at depth, underground mining possibly could extend the mine life to 2020. Diamond recovered from the Argyle Mine was sorted in Perth, where it was prepared for international sale at Argyle's European sales office in Antwerp, Belgium (Resource Information Unit, 2004, p. 217).

Mineral Fuels

Coal.—In 2004, Australia again was the world's leading exporter of coal, as it has been since 1984, thus marking its 20th consecutive year.

Petroleum and Natural Gas.—In 2004, Western Australia and the adjacent Commonwealth offshore areas accounted for about 55% of Australia's total oil and condensate and all the country's liquefied natural gas (LNG) production. Apart from having the appropriate geology, the State's large output is owing to its enormous size onshore and offshore. Onshore Western Australia has a land area of more than 2.5 million square kilometers, which is nearly four times the size of Texas. Additionally, the State's offshore area encompasses an area that is nearly four times larger than Europe's North Sea and is larger than North America's entire Gulf of Mexico.

In 2004, Australia produced about 70% of its crude oil requirements. Australia's expanding oil deficit was primarily a result of demand steadily outpacing supply. The Australian Government has estimated that the country was using its crude petroleum about three times faster than exploration projects were discovering new production fields. By 2010, Australia was expected to slide downward to only 40% self-sufficiency (U.S. Energy Information Administration, 2004§).

Australia has 10 crude oil refineries with a total crude oil distillation capacity of 846,250 barrels per day (bbl/d). The country's three leading facilities were BP p.l.c.'s Kwinana Refinery in Western Australia with a capacity of 158,500 bbl/d of crude oil, Exxon Mobil Corp.'s Altona Refinery in Victoria with a capacity of 130,000 bbl/d of crude oil, and Chevron Texaco Corp.'s Kurnel Refinery in New South Wales with a capacity of 114,000 bbl/d of crude oil (U.S. Energy Information Administration, 2004§).

Uranium.—Australia had three active uranium mining operations in 2004—Energy Resources of Australia Ltd.'s (ERA) Ranger open pit mine in the Northern Territory, which was the oldest of the active mines; Heathgate Resources Pty. Ltd.'s Beverley in situ leach (ISL) operation in South Australia, which was the latest of the active uranium mines to come onstream; and WMC's Olympic Dam underground copper-silver-gold-uranium mine, also located in South Australia. Because Australia has no significant national demand for uranium, virtually all production was exported. Uranium oxide, or yellowcake, exports were made only under close supervision and in accordance with stringent international and bilateral regulations to ensure that it would be used only for peaceful purposes. The Beverley Mine, which was South Australia's second uranium mine, was opened in 2001, although it had begun production in 2000 after receiving all environmental approvals needed to proceed. The uranium was extracted by the ISL mining process, which enabled the resource to be recovered without major impact on the environment. The Beverley Mine was expected to produce about 1,000 t/yr of yellowcake for about 15 years, although ongoing exploration on surrounding leases was expected to extend the mine life. After being trucked to Port Adelaide, the yellowcake was shipped to the United States under sales agreements with nuclear power utilities. Heathgate Resources was a subsidiary of General Atomics, which was a uranium miner, processor, and nuclear power station designer headquartered in the United States.

The Olympic Dam uranium operation included a fully integrated metallurgical complex with a grinding/concentrating circuit and a hydrometallurgical plant that incorporated a solvent extraction circuit for the production of about 4,300 t/yr of yellowcake. The bulk of the uranium production was committed under long-term sales contracts with electricity-generating facilities in Belgium, Canada, Finland, France, Japan, the Republic of Korea, Sweden, the United Kingdom, and the United States. First production of yellowcake from the Ranger Mine was in August 1981, and the life of the mine was anticipated to end in 2007, with processing of Ranger ore expected to be completed during 2010. All ERA's yellowcake sales were to energy companies in France, Germany, Japan, the

Republic of Korea, Spain, Sweden, the United Kingdom, and the United States.

Infrastructure

The transportation infrastructure of Australia was well developed. Of the 913,000 km of roads, 353,331 km, which included 1,363 km of expressways, was paved, and 559,669 km was unpaved. Inland waterways, of which 8,368 km was usable mainly by small shallow-draft craft, were of little importance to the transportation industry. The public sector railway system consisted of 46,200 km of track, of which 23,648 km was standard (1.435-m) gauge, 15,456 km was narrow (1.067-m) gauge, 2,193 km was broad (1.600-m) gauge, and 291 km was dual gauge. Australia had 4,612 km of electrified rail. Additionally, a few hundred kilometers of rail were privately owned; most of this served the iron ore industry in Western Australia. Of the 444 airports in 2002, 294 were principal with permanent-surface runways. International shipping ports included Adelaide, Brisbane, Cairns, Darwin, Devonport (Tasmania), Esperance, Fremantle, Geelong, Hobart (Tasmania), Launceston (Tasmania), Mackay, Melbourne, Sydney, and Townsville. The merchant marine fleet included 7 petroleum-oil-lubricant tankers; 3 chemical tankers; 4 LNG tankers; 35 bulk roll-on/off cargo-container freighters; and 2 passenger vessels. Pipelines included 5,600 km for natural gas, 2,500 km for crude oil, and 500 km for refined petroleum products (U.S. Central Intelligence Agency, 2005§).

Electricity-generating capacity was 43 gigawatts, of which 84% was thermal (mostly coal) and 14% was hydroelectric power (U.S. Energy Information Administration, 2004§).

Outlook

Australia continued in its position as one of the world's leading mineral-producing nations in 2004. This position was expected to hold well into the future owing to the country's large EDRs, especially bauxite, gold, iron ore, lead, mineral sands, nickel, silver, tantalum, uranium, and zinc.

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Major Sources of Information

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TABLE 1
AUSTRALIA: PRODUCTION OF MINERAL COMMODITIES[1]

(Metric tons unless otherwise specified)

Commodity		2000	2001	2002	2003	2004[p]
METALS						
Aluminum:						
Bauxite, gross weight	thousand metric tons	53,802	53,799	54,135	55,602	43,993 [2]
Alumina	do.	15,680	16,313	16,382	16,529	16,525 [2]
Metal, refined:						
Primary	do.	1,769	1,798	1,817	1,857	1,900 [2]
Secondary[e]		110,000	127,000 [2]	127,000 [2]	127,000 [r]	127,000
Antimony, Sb content of ores and concentrates		1,511	1,380	1,200 [e]	900 [e]	120 [2]
Cadmium:						
Mine output, Cd content[e]		1,900	1,900	1,900	1,900	1,900
Metal, smelter, refined		552	378	370	350	469
Chromium, chromite, gross weight		90,000	11,800	132,665	138,826	140,000 [e]
Cobalt:						
Co content in laterite ore, Ni concentrate, and Zn concentrate		5,600	6,200	6,500	7,000	7,000 [e]
Metal, refined		2,610	3,470	3,500 [e]	3,840	3,900 [e]
Columbium (niobium) and tantalum, columbium-tantalum concentrate, gross weight		1,600	2,220	3,100	2,500 [r]	2,500 [e]
Copper:						
Mine output, Cu content	thousand metric tons	832	873	883	830	656 [2]
Metal:						
Smelter, primary	do.	387	456	469	435	443 [2]
Refined, primary	do.	484	558	543	484	383 [2]
Gold:						
Mine output, Au content	kilograms	296,410	285,030	273,010	282,000	259,000 [2]
Metal, refined:						
Primary	do.	349,000	304,770	300,000 [e]	252,000	230,000 [2]
Secondary	do.	7,640	68,310	68,000 [e]	100,000 [e]	54,000 [2]
Iron and steel:						
Iron ore:						
Gross weight	thousand metric tons	171,508	181,553 [r]	182,704	187,219	230,955 [2]
Fe content	do.	106,563	112,592	113,548	116,355	143,980 [2]
Metal:						
Pig iron	do.	7,000 [e]	7,200	8,574	9,660	9,700 [e]
Ferroalloys:[e]						
Ferromanganese		115,000	115,000	115,000	115,000	115,000
Silicomanganese		135,000	135,000	135,000	135,000	135,000
Total		250,000	250,000	250,000	250,000	250,000
Steel, crude	thousand metric tons	7,297	7,076	8,242	9,660	8,411 [2]
Semimanufactures[e]		5,000	5,000	5,000	5,000	5,000
Lead:						
Mine output, Pb content	thousand metric tons	739	714	683	688	678 [2]
Metal:						
Primary:						
Bullion	do.	139	195	181	169	--
Refined	do.	223	237	287	310 [r]	266 [2]
Total	do.	362	432	468	479 [r]	266 [2]
Secondary excluding remelt	do.	223 [r]	237 [r]	393 [r]	340 [r]	340 [2]
Manganese ore, metallurgical:						
Gross weight	do.	1,613	2,069	2,187	2,555	2,560 [e]
Mn content	do.	787	948	983	1,247	1,327 [2]
Nickel:						
Mine output, Ni content	do.	166	205	208	179	178 [2]
Metal, smelter, refined Ni and Ni content of oxide	do.	112	128	133	209	185 [2]
Platinum-group metals:						
Palladium, Pd content	kilograms	812	828	800 [e]	820 [e]	800 [e]
Platinum, Pt content	do.	171	174	200 [e]	225 [e]	200 [e]
Total	do.	983	1,002	1,000 [e]	1,050 [e]	1,000 [e]

See footnotes at end of table.

TABLE 1--Continued
AUSTRALIA: PRODUCTION OF MINERAL COMMODITIES[1]

(Metric tons unless otherwise specified)

Commodity		2000	2001	2002	2003	2004[p]
METALS--Continued						
Silver:						
Mine output, Ag content		2,060	1,970	2,077	1,868	2,237 [2]
Metal, refined		538	576	542	227	650 [2]
Tin:						
Mine output, Sn content		9,146	9,802	6,268	3,819	1,306 [2]
Metal, refined:						
Primary		733	1,094	611	597	467 [2]
Secondary[e]		300	400	400	400	400
Titanium concentrates, gross weight:						
Ilmenite	thousand metric tons	2,146	2,017	1,917	2,006	1,921 [2]
Leucoxene		27,000	30,000	39,000	57,000	44,000 [2]
Rutile		208,000	206,000	218,000	173,000	162,000 [2]
Zinc:						
Mine output, Zn content	thousand metric tons	1,420	1,519	1,469	1,479	1,334 [2]
Metal, smelter:						
Primary	do.	490	554	567	553	473 [2]
Secondary[e]		4,500	4,500	4,500	4,500	4,500
Zirconium concentrates, gross weight	thousand metric tons	374	394	412	462	439 [2]
INDUSTRIAL MINERALS						
Abrasives, natural:[e]						
Beach pebble		2,000	2,000	2,000	2,000	2,000
Garnet		25,000	25,000	25,000	25,000	25,000
Barite[e]		20,000	20,000	20,000	20,000	20,000
Cement, hydraulic[e]	thousand metric tons	7,500	7,500	7,550	8,000	8,000
Clays:[e]						
Bentonite and bentonitic clay		180,000	180,000	200,000	200,000	200,000
Brick clay and shale	thousand metric tons	8,000	8,000	8,000	8,000	8,000
Cement clay and shale	do.	500	500	500	500	500
Damourite clay		100	100	100	100	100
Fire clay		25,000	25,000	25,000	25,000	25,000
Fuller's earth, attapulgite		5,600	5,600	6,000	6,000	6,000
Kaolin and ball clay		220,000	220,000	230,000	240,000	240,000
Other	thousand metric tons	1,000	1,000	1,000	2,000	2,000
Diamond:						
Gem	thousand carats	14,656	14,397	15,136	13,981	20,602 [2]
Industrial	do.	11,992	11,779	18,500	17,087	22,709
Total	do.	26,648	26,176	33,636	31,068	43,311
Diatomite[e]		20,000	20,000	20,000	20,000	20,000
Feldspar, including nepheline syenite[e]		50,000	50,000	50,000	50,000	50,000
Gemstones, other than diamond:						
Opal	value, $million	60	53	47	50	36 [2]
Sapphire	do.	6	5	1	--	-- [2]
Total	do.	66	58	48	50	36 [2]
Gypsum[e]	thousand metric tons	2,500	3,800	3,800	4,000	4,500
Kyanite[e]		1,000	1,000	1,000	1,000	1,000
Lime[e]		1,500,000	1,500,000	1,500,000	1,500,000	1,500,000
Magnesite		349,783	605,314	484,314	472,668	473,983 [2]
Nitrogen, N content of ammonia		575,500	762,200	686,400	786,800 [r]	790,000
Perlite, crude[e]		5,000	5,000	5,000	5,000	5,000
Phosphate rock	thousand metric tons	2,108	977,100	2,024,580	2,100,000 [e]	2,200,000 [e]
Salt	do.	8,798	9,536	10,000 [e]	10,400 [e]	11,221 [2]
Sillimanite[e, 3]		300	300	300	300	300
Spodumene, concentrate		81,891	63,443	100,000 [e]	110,000 [e]	110,000 [e]
Stone and sand and gravel:[e]						
Construction sand	thousand metric tons	33,000	35,000	38,000	40,000	40,000
Gravel	do.	15,000	15,000	15,000	20,000	20,000
Dolomite	do.	10,000	10,000	10,000	10,000	10,000

See footnotes at end of table.

TABLE 1--Continued

AUSTRALIA: PRODUCTION OF MINERAL COMMODITIES[1]

(Metric tons unless otherwise specified)

Commodity		2000	2001	2002	2003	2004[p]
INDUSTRIAL MINERALS--Continued						
Stone and sand and gravel--Continued:[e]						
Limestone, for cement	do.	6,000	6,000	10,000	10,000	10,000
Limestone, for other uses	do.	6,000	6,000	10,000	10,000	10,000
Silica in the form of quartz, quartzite, glass sand	do.	4,266	4,500	4,500	5,000	5,000
Other:						
Crushed and broken stone	do.	80,000	80,000	80,000	80,000	80,000
Dimension stone	do.	120	120	120	120	120
Unspecified	do.	30,000	30,000	30,000	30,000	30,000
Sulfur, byproduct:						
Metallurgy	do.	654	817	899	900	900
Petroleum	do.	30	45	60	60	60
Total	do.	684	862	959	960	960
Talc, chlorite, pyrophyllite, steatite		180,272	174,946	172,241	174,000 e	174,000 e
MINERAL FUELS AND RELATED MATERIALS						
Coal:						
Bituminous and subbituminous	thousand metric tons	245,500	264,680	347,890	257,790	257,790
Lignite[e]	do.	67,000	70,000	73,000	67,000	67,000
Total[e]	do.	313,000 r	335,000 r	421,000 r	325,000	325,000
Coke, metallurgical[e]	do.	325	800 r	300	300	300
Fuel briquets[e]	do.	750	470 r	800	800	470
Gas, natural, marketed[e]	million cubic meters	30,794 2	30,000	31,000	30,000	30,000
Natural gas liquids[e]	thousand 42-gallon barrels	47,260 2	47,000	47,300	47,000	50,000
Peat[e]		5,000 r	5,000 r	5,000 r	5,000 r	6,000
Petroleum:						
Crude	thousand 42-gallon barrels	263,500	231,000	240,000 e	250,000 e	250,000 e
Refinery products:						
Gasoline:						
Aviation	do.	975	868	900 e	950 e	950 e
Motor	do.	113,228	112,767	113,000 e	115,000 e	115,000 e
Jet fuel	do.	35,585	362,138	363,000 e	365,000 e	365,000 e
Kerosene	do.	147	245	250 e	300 e	300 e
Distillate fuel oil	do.	80,222	84,862	85,000 e	85,000 e	85,000 e
Residual fuel oil	do.	12,442	12,132	12,100 e	12,000 e	12,000 e
Lubricants	do.	4,284	3,950	4,000 e	4,000 e	4,000 e
Liquefied petroleum gas	do.	10,536	11,145	11,200 e	115,000 e	115,000 e
Bitumen	do.	4,328	4,610	5,000 e	5,000 e	5,000 e
Unspecified	do.	7,574	4,654	5,000 e	5,000 e	5,000 e
Total[4]	do.	269,321	597,371	599,000 e	707,000 r, e	707,000 e
Uranium, mine output, U_3O_8 content		7,588 5	7,680 5	3,536	8,912	8,912

[e]Estimated; estimated data are rounded to no more than three significant digits; may not add to totals shown. [p]Preliminary. [r]Revised. -- Zero.

[1]Includes data available through October 14, 2005.

[2]Reported figure.

[3]In addition, about 7,000 metric tons per year of sillimanite clay (also known as kaolinized sillimanite) that contains from 40% to 48% aluminum oxide is produced.

[4]Excludes refinery fuel and losses.

[5]U content.

TABLE 2
AUSTRALIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2004

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities[1,2,3]	Annual capacity[e]
Alumina	Queensland Alumina Ltd., operator [Rio Tinto Ltd., 30.3%; Kaiser Aluminum and Chemical Corp. (Australia) Ltd., 28.3%; Alcan South Pacific Pty. Ltd., 21.4%; Pechiney Australia Pty. Ltd., 20%]	Gladstone alumina refinery, QLD	3,800
Do.	Alcan Northern Territory Pty. Ltd., 70%, and Alcan South Pacific Pty. Ltd., 30%	Gove alumina refinery, NT	1,900
Do.	Alcoa World Alumina Australia, 100%	Kwinana alumina refinery, WA	2,100
Do.	do.	Pinjarra alumina refinery, WA	3,400
Do.	Alcoa World Alumina Australia, 60%, and Western Mining Corp., 40%	Wagerup alumina refinery near Waroona, WA	2,200
Do.	Worsley Alumina Pty. Ltd., manager [Billiton Aluminium Australia Pty. Ltd., 86%; Billiton Plc, 30%; Kobe Alumina Associates (Australia) Pty. BHP Ltd., 10%; Nissho Iwai Alumina Pty. Ltd., 4%]	Worsley alumina refinery, 20 km NW of Collie, WA	3,200
Aluminum	Comalco Aluminium (Bell Bay) Ltd., 100%	Bell Bay aluminum smelter, TAS	142
Do.	VAW Kurri Kurri Pty. Ltd., 100%	Kurri Kurri aluminum smelter, NSW	150
Do.	Boyne Smelters Ltd., operator (Rio Tinto Ltd., 64%; Sumitomo Light Metal Industries Ltd., 17%; Ryowa Development Pty. Ltd., 12%, Kobe Steel Ltd., 5%; Sumitomo Chemical Co. Ltd., 2%)	Boyne Island aluminum smelter, QLD	490
Do.	Alcoa of Australia, 100%	Point Henry aluminum smelter, VIC	185
Do.	Alcoa of Australia, 45% and manager; China International Trust Investment Co. (a Chinese Government agency), 2.5%; Marubeni Australia Pty. Ltd., 22.5%; Eastern Aluminum Ltd., 10%	Portland aluminum smelter, VIC	345
Do.	Tomago Aluminium Co. Pty. Ltd., operator (Gove Aluminium Finance Ltd., 36%; Pechiney Australia Pty. Ltd., 36%; Australian Mutual Provident Society, 16%; VAW Australia Pty. Ltd., 12%)	Tomago aluminum smelter, NSW	444
Antimony	New England Antimony Mines NL, 100%	Hillgrove underground antimony-gold mine, 25 km E of Armidale, NSW	4
Bauxite	Alcan Inc., 100%	Gove open pit bauxite mine, Gove Peninsula, NT	7,000
Do.	Alcoa World Alumina Australia, 100%	Huntly open pit bauxite mine, 80 km S of Perth, WA	20,000
Do.	Comalco Ltd., operator (Rio Tinto Plc, 100%)	Weipa-Andoom open pit bauxite mine, Weipa, QLD	12,000
Do.	do.	Willowdale open pit bauxite mine, 130 km S of Perth, WA	8,600
Do.	Worsley Alumina Pty. Ltd., manager [BHP Billiton Ltd., 86%; Kobe Alumina Associates (Australia) Pty. Ltd., 10%; Nissho Iwai Alumina Pty. Ltd., 4%]	Worsley open pit bauxite mine, 50 km NE of Collie, WA	11,000
Bentonite	Arumpo Bentonite Pty. Ltd., 100%	Arumpo open pit bentonite mine, 95 km NE of Mildura, NSW	10
Do.	Unimin Australia Ltd., 100%	Cressfield open pit bentonite mine, 20 km N of Scone, NSW	12
Do.	do.	Miles open pit bentonite mine, 350 km W of Brisbane, QLD	100
Cement	Blue Circle Southern Cement Ltd., 100%	Berrima Cement Plant, NSW	1,200
Do.	Adelaide Brighton Cement Ltd., 100%	Birkenhead Cement Plant, SA	1,000
Do.	Queensland Cement Ltd., 100%	Darra Cement Plant, QLD	700
Do.	Adelaide Brighton Cement Ltd., 100%	Geelong Cement Plant, VIC	800
Do.	Goliath Cement Holdings Ltd., 100%	Railton Cement Plant, TAS	1,000
Do.	Cockburn Cement Ltd., 100%	South Coogee Cement Plant, WA	1,000
Chromite	Sylvania Resources Ltd., 100%	Coobina open pit chromite mine, 56 km ESE of Newman, WA	100
Coal, black	Powercoal Pty. Ltd., 100%	Angus Place longwall coal mine, 16 km NW of Lithgow, NSW	2,200

See footnotes at end of table.

TABLE 2--Continued
AUSTRALIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2004

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities[1,2,3]	Annual capacity[e]
Coal, black--Continued:	BHP Steel (AIS) Pty. Ltd., 100%	Appin longwall coal mine, 40 NW of Wollongong, NSW	3,300
Do.	Powercoal Pty. Ltd., 100%	Awaba underground coal mine, 30 km SW of Newcastle, NSW	2,000
Do.	Oakbridge Pty. Ltd., 95%, and Sumitomo Corp., 5%	Baal Bone longwall coal mine, 24 km NW of Lithgow, NSW	3,500
Do.	BHP Billiton Hunter Valley Energy Coal, 100%	Bayswater open pit coal mine, 33 km NW of Singleton, 13 km SSW of Muswellbrok, NSW	5,500
Do.	Coal and Allied Industries Ltd., 40% and manager (Wesfarmers Bengalla Ltd., 40%; MCDA Bengalla Investment Pty. Ltd., 10%; Taipower Bengalla Pty. Ltd., 10%)	Bengalla open pit coal mine, 5 km W of Muswellbrook, NSW	5,000
Do.	Berrima Coal Pty. Ltd., 100%	Berrima underground coal mine, 60 km NE of Goulburn, NSW	2,000
Do.	BHP Billiton Mitsubishi Alliance, manager (BHP Billiton Ltd., 50%, and Mitsubishi Development Pty. Ltd., 50%)	Blackwater open pit coal mine (includes South Blackwater), 195 km W of Rockhamton, QLD	13,500
Do.	Xstrata Coal Australia Pty. Ltd., manager (Oakbridge Pty. Ltd., 87.5%, and Nippon Steel Australia Pty. Ltd., 12.5%)	Bulga open pit/longwall coal mine, 16 km SW of Singleton, NSW	11,000
Do.	Pacific Coal Pty. Ltd., 57.195% and manager [Leichhardt Coal Pty. Ltd., 31.419%; EPDC (Australia) Pty. Ltd., 7.9723%; and Japan Coal Development Co. Ltd., 3.416%]	Blair Athol open pit coal mine, 110 km NW of Emerald, 25 km NW of Clermont, QLD	11,000
Do.	Bloomfield Collieries Pty. Ltd., 100%	Bloomfield open pit coal mine, 20 km NW of Newcastle, 5 km SE of Maitland, NSW	1,300
Do.	Anglo Coal Holdings Australia Ltd., 100%	Boundary Hill open pit coal mine (includes Callide), 115 km to 140 km W of Gladstone, QLD	7,250
Do.	RAG Australia Pty. Ltd., manager (Burton Coal Pty. Ltd., 95%, and Thiess Pty. Ltd., 5%)	Burton open pit coal mine, 150 km SW of Mackay, QLD	5,800
Do.	Camberwell Coal Pty. Ltd., manager [Toyota Tsusho Mining (Australia) Pty. Ltd., 90%, and Dia Coal Mining (Australia) Pty. Ltd., 10%]	Camberwell open pit coal mine, 10 km NW of Singleton, NSW	4,000
Do.	LakeCoal Pty. Ltd., 80%, manager; Catherine Hill Resources Pty. Ltd., 20%	Chain Valley underground coal mine, 48 km S of Newcastle, NSW	3,000
Do.	Centennial Coal Co. Ltd., 85%, manager; SK Australia Pty. Ltd., 15%	Clarence underground coal mine, 10 km E of Lithgow, NSW	2,200
Do.	Roche Mining Pty. Ltd., operator (Millmerran Power Partners, 100%)	Commodore open pit coal mine, 80 km S of Toowoomba, QLD	3,600
Do.	Xstrata Coal Australia Pty. Ltd., 50%; Centennial Coal Co. Ltd., 45%; Tokyo Boeki Ltd., 5%	Cook underground coal mine, near Blackwater, QLD	1,000
Do.	Powercoal Pty. Ltd., 100%, manager	Cooranbong underground coal mine, 35 km SW of Newcastle, NSW	1,600
Do.	Australian Premium Coals Pty. Ltd., manager (Macarthur Coal Ltd., 45%; QCR No. 2 Pty. Ltd., 20%; CPB Coals Pty., 10%; Marubeni Coal Pty. Ltd., 7.5%; Nissho Iwai Australia Ltd., 7.5%; Citic Australia Coal Ltd., 5%; Kawasho Group, 3%; Nittetsu Shoji, 2%)	Coppabella open pit coal mine, 150 km SW of Mackay, QLD	4,700
Do.	BHP Billiton Mitsubishi Alliance, manager (BHP Billiton Ltd., 50%, and Mitsubishi Development Pty. Ltd., 50%)	Crinum longwall coal mine, 45 km NE of Emerald, QLD	4,000
Do.	Cumnock No. 1 Colliery Pty. Ltd., 100%	Cumnock No. 1 open pit/longwall coal, 28 km NW of Singleton, NSW	2,750
Do.	Curragh Queensland Mining Ltd., 100%	Curragh open pit coal mine, 70 km E of Emerald, QLD	5,000
Do.	Anglo Coal Holdings Australia Ltd., 93%, and Ssangyong Resources Ltd., 7%	Dartbrook longwall coal mine, 70 km N of Singleton, NSW	3,750
Do.	BHP Billiton Ltd., 100%	Dendrobium longwall coal mine, 15 km SW of Wollongong, NSW	5,200
Do.	Anglo Coal Holdings Australia Ltd., 88.2% and manager; Mitsui Coal Development Australia Pty. Ltd., 3.8%; Mitsui Mining (Australia) Pty. Ltd., 3%; Daesung Australia Pty. Ltd., 2.5%; and Hyundai (Australia) Pty. Ltd., 2.5%	Drayton open pit coal mine, 35 km NW of Singleton, NSW	5,000

See footnotes at end of table.

TABLE 2--Continued
AUSTRALIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2004

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities[1,2,3]	Annual capacity[e]
Coal, black--Continued:	Ebenezer Mining Co., 100%	Ebenezer open pit coal mine, 40 km SW of Brisbane, QLD	1,500
Do.	BHP Steel (AIS) Pty. Ltd.	Elouera longwall coal mine, 15 km SW of Wollongong, NSW	2,000
Do.	Idemitsu Kosan Co. Ltd., 85%; EPDC (Australia) Pty. Ltd., 10%; LG International (Australia) Pty. Ltd., 5%	Ensham-Yongala open pit coal mine, 40 km NE of Emerald, QLD	5,500
Do.	Griffin Coal Mining Co. Pty. Ltd., 100%	Ewington II open pit coal mine, 8 km E of Collie, WA	1,000
Do.	CAML Resources Pty. Ltd., 63%; Itochu Corp., 20.6%; Bowen Basin Investments Pty. Ltd., 16.4%	Foxleigh open pit coal mine, Bowen Basin, QLD	2,300
Do.	Anglo Coal Holdings Australia Ltd., 100% of German Creek and 75.04% of German Creek East; Marubeni Coal Pty. Ltd., 24.96% of German Creek East	German Creek and German Creek East open pit/longwall coal mines, 275 km WNW of Rockhampton, QLD	6,000
Do.	Console Energy Inc., 50% and Namoi Hunter Pty. Ltd., 50%	Glennies Creek longwall coal mine, 12 km N of Singleton, NSW	2,500
Do.	BHP Billiton Ltd., 80% at Riverside and 50% at Goonyella; Mitsubishi Corp., 50% at Goonyella; BHP Mitsui Coal Pty. Ltd., 20% at Riverside	Goonyella-Riverside open pit coal mines, 140 km SW of Mackay, QLD	11,000
Do.	BHP Billiton Mitsubishi Alliance, manager (BHP Billiton Ltd., 50%, and Mitsubishi Development Pty. Ltd., 50%)	Gregory open pit coal mine, 60 km N of Emerald, QLD	5,500
Do.	Coal and Allied Industries Ltd., 100%, manager	Hunter Valley Operations (includes Carrington Chestnut, Howick, Hunter Valley No. 1, Lemington, Riverview open pit coal mines), 10 km W to 25 km N of Singleton, NSW	15,000
Do.	New Hope Corp. Ltd., 100%	Jeebropilly open pit coal mine, 35 km SW of Brisbane, QLD	1,500
Do.	Queensland Coal Mine Management Pty. Ltd., 70%; Winnin Pty. Ltd., 15%; Marubeni Coal Pty. Ltd., 15%	Jellinbah East open pit coal mine, 90 km E of Emerald, QLD	3,000
Do.	Pacific Coal Pty. Ltd., 80%, and Kestrel Coal Investment Pty. Ltd., 20%	Kestrel longwall coal mine, 40 km NNE of Emerald, QLD	3,300
Do.	Xstrata Coal Australia Pty. Ltd., 67%, and Mitsui Matushima Australia Pty. Ltd., 32.5%	Liddell open pit coal mine, 25 km NW of Singleton, NSW	4,000
Do.	Burragorang Valley Coal Pty. Ltd., 100%	Metropolitan longwall coal mine, 30 km N of Wollongong, NSW	1,400
Do.	LakeCoal Pty. Ltd., 80%, and Catherine Hill Resources Pty. Ltd., 20%	Moonee longwall coal mine, 37 km S of Newcastle, NSW	1,200
Do.	Anglo Coal Holdings Australia Ltd., 88%; Nippon Steel Australia Pty. Ltd., 5%; Tomen Coal Resources Pty. Ltd., 3.75%; private interests, 3.25%	Moranbah North longwall coal mine, 150 km SW of Mackay, QLD	5,700
Do.	Hunter Valley Coal Corp., 100%	Mount Owen open pit coal mine, 20 km NW of Singleton, near Ravensworth, NSW	8,000
Do.	Coal and Allied Industries Ltd., 80%, and Pohang Steel Australia Pty. Ltd., 20%	Mount Thorley open pit coal mine, 14 km SW of Singleton, NSW	6,500
Do.	Mitsui & Co. (Australia) Ltd., 100%	Moura open pit coal mine, 185 km W of Gladstone, QLD	4,400
Do.	The Griffin Coal Mining Co. Pty. Ltd., 100%	Muja open pit coal mine, 18 km SE of Collie, WA	2,000
Do.	Powercoal Pty. Ltd., 100%	Munmorah underground coal mine, 55 km S of Newcastle, NSW	7,000
Do.	Muswellbrook Coal Co., 100%	Muswellbrook No. 2 open pit coal mine, 4 km NE of Muswellbrook, Hunter Valley NSW	1,700
Do.	Powercoal Pty. Ltd., 100%	Myuna underground coal mine, 35 km S of Newcastle, NSW	1,500
Do.	Nardell Coal Corp., 100%	Nardell underground coal mine, 18 km NW of Singleton, NSW	1,200
Do.	MIM Holdings Ltd., manager (Collinsville Coal Co. Pty. Ltd., 75%, and Itochu Coal Resources Australia Pty. Ltd., 25%)	Newlands-Collinsville-Abbot Point open pit/longwall coal mine, 130 km west of Mackay, QLD	7,000
Do.	Powercoal Pty. Ltd., 100%, manager	Newstan longwall coal mine, 30 km SW of Newcastle, NSW	2,700

See footnotes at end of table.

TABLE 2--Continued
AUSTRALIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2004

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities[1,2,3]	Annual capacity[e]
Coal, black--Continued:	Rag Coal International AG, 40%, and Thiess Pty. Ltd., 40%	North Goonyella longwall coal mine, 180 km W of Mackay, QLD	3,000
Do.	BHP Billiton Ltd., 50%, and Mitsubishi Corp., 50%	Norwich Park open pit coal mine, 85 km NNE of Emerald, QLD	4,000
Do.	Oaky Creek Coal Pty. Ltd., 75%; Sumitomo Coal Australia Pty. Ltd., 15%; Itocho Coal Resources Australia Pty. Ltd., 10%, of Oaky Creek; Namoi Highwall Pty. Ltd., 50%, and Sumitomo Coal Australia Pty. Ltd., 50%, of Alliance	Oaky Creek longwall and Alliance open pit coal mines, 300 km WNW of Rockhampton, QLD	9,500
Do.	BHP Billiton Ltd., 50%, and Mitsubishi Development Pty. Ltd., 50%	Peak Downs open pit coal mine, 145 km N of Emerald, QLD	7,500
Do.	Wesfarmers Premier Coal Ltd., 100%	Premier open pit coal mine, 10 km SE of Collie, WA	4,000
Do.	Xstrata Coal Australia Pty. Ltd., 100% of Ravensworth and 50% at Narama; Iluka Resources Ltd., 50% at Narama	Ravensworth-Narama open pit coal mine (includes Ravensworth East), at Lemington, 20 km NW of Singleton, NSW	6,200
Do.	Bloomfield Colliers Pty. Ltd., 100%	Rixs Creek open pit coal mine, 5 km NW of Singleton, NSW	2,000
Do.	BHP Mitsui Coal Pty. Ltd., 100%	South Walker Creek open pit-underground coal mine, 90 km SW of Mackay, 20 km W of Nebo, QLD	3,500
Do.	BHP Billiton Ltd., 50%, and Mitsubishi Development Pty. Ltd., 50%	Saraji open pit coal mine, 125 km N of Emerald, QLD	5,000
Do.	Southland Coal Pty. Ltd., 90%, and Thiess Pty. Ltd., 10%	Southland longwall coal mine, 40 km W of Newcastle, NSW	2,000
Do.	G.C. Springvale Pty. Ltd., 50%, and Samsung Development (Australia) Pty. Ltd., 50%	Springvale longwall coal mine, 16 km NW of Lithgow, NSW	2,000
Do.	Austral Coal Ltd., 100%	Tahmoor longwall coal mine (includes Tahmoor North and Bargo), near Picton, about 70 km SW of Sydney, NSW	2,000
Do.	Pacific Coal Pty. Ltd., 100%	Tarong-Meandu open pit coal mine, 85 km N of Toowoomba, QLD	5,500
Do.	BHP Steel (AIS) Pty. Ltd., 100%	Tower longwall coal mine, 32 km NW of Wollongong, NSW	2,000
Do.	Ulan Coal Mines Ltd., 10%, and Mitsubishi Development Pty. Ltd., 10%	Ulan open pit-longwall coal mine, 45 km NW of Mudgee, NSW	12,000
Do.	Xstrata Coal Australia Pty. Ltd., 95%, and United Mine Workers, 5%	United Collieries underground coal mine, 15 km W of Singleton, NSW	1,600
Do.	Wambo Coal Pty. Ltd., 100%	Wambo longwall coal mine, 15 km W of Singleton, NSW	3,100
Do.	Coal and Allied Industries, Ltd., 55.574%; Mitsubishi Coal Development Pty. Ltd., 28.898%; Nippon Steel Australia Pty. Ltd., 9.528%; Mitsubishi Corp., 6%	Warkworth open pit coal mine, 11 km SW of Singleton, NSW	6,400
Do.	BHP Steel (AIS) Pty. Ltd., 100%	West Cliff longwall coal mine, 43 km NW of Wollongong, NSW	3,000
Do.	Oceanic Coal Australia Ltd., 70%; Marubeni Coal Pty. Ltd., 17%; Ocal Macquarie Pty. Ltd., 10%; Kokan Kogyo (Australia) Pty. Ltd., 3%	West Wallsend longwall coal mine, 25 km SW of Newcastle, NSW	3,000
Do.	Powercoal Pty. Ltd., 100%	Wyee longwall coal mine, 40 km S of Newcastle, NSW	1,200
Coal, brown	Alcoa World Alumina Australia, 100%	Anglesea open pit lignite mine, 97 km SW of Melbourne, near Geelong, VIC	1,200
Do.	Hazelwood Power, 100%	Hazelwood open pit lignite mine at Morwell, 150 km SE of Melbourne, VIC	19,500
Do.	Loy Yang Power Ltd., 100%	Loy Yang open pit lignite mine at Traralgon, 165 km E of Melbourne, VIC	32,000
Do.	Auspower Pty. Ltd., 73.6%; Powergen Plc., 18.4%; Deutsche Asset Management, 8%	Yallourn open pit lignite mine, 140 km SE of Melbourne, VIC	18,500
Cobalt	Preston Resources Ltd., 100%	Bulong open pit nickel-cobalt mine, 30 km E of Kalgoorlie, WA	0.1

See footnotes at end of table.

TABLE 2--Continued
AUSTRALIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2004

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities[1,2,3]	Annual capacity[e]
Cobalt--Continued:	OM Group Inc., 100%	Cawse open pit nickel-cobalt mine, 50 km NW of Kalgoorlie, WA	0.2
Do.	Anaconda Nickel Ltd., 60%, manager; Glencore Australia Pty. Ltd. International AG, 40%	Murrin Murrin open pit nickel-cobalt mine, 60 km E of Leonora, WA	0.1
Do.	Australian Nickel Mines NL, 100%	Radio Hill underground nickel-cobalt mine, 100 km ESE of Karratha, WA	0.2
Do.	QNI Pty. Ltd., 100%	Yabulu nickel-cobalt refinery, Townsville, QLD	2
Copper	Newcrest Mining Ltd., 100%	Cadia Hill open pit gold-copper mine, 21 km SSW of Orange, NSW	25
Do.	Glencore Australia Pty. Ltd., 100%	Cobar underground copper mine, 10 km NW of Cobar, NSW	30
Do.	Amalg Resources NL, 100%	Eloise underground copper mine, 60 km SE of Cloncurry, QLD	70
Do.	MIM Holdings Ltd., 51%, and Westpac Banking Corp., 49%	Ernest Henry open pit copper-gold mine, 35 km NE of Cloncurry, QLD	105
Do.	Murchison Zinc Co. Pty. Ltd., 100%	Golden Grove underground zinc-copper mine (includes Gossan Hill and Scuddles), 225 km E of Geraldton, WA	6
Do.	Thalanga Copper Mines Pty. Ltd., 70%, and BML Holdings Pty. Ltd., 30%	Highway-Reward open pit and underground copper mine, 37 km S of Charters Towers	185
Do.	Western Metals Ltd., 100%	Hellyer underground zinc-lead-copper-silver mine, 80 km SSW of Burnie, TAS	1
Do.	Copper Refineries Pty. Ltd., operator (MIM Holdings Ltd., 100%)	MIM copper refinery, Townsville, QLD	270
Do.	MIM Holdings Ltd., 100%	MIM copper smelter, QLD	250
Do.	Matrix Metals Ltd., 100%	Mount pithbert open pit mine (includes Mount Watson), 90 km NW of Cloncurry, QLD	8
Do.	Western Metals Ltd., 100%	Mount Gordon open pit copper mine (includes Esperanza and Mammoth), 125 kilometers N of Mount Isa	46
Do.	MIM Holdings Ltd., 100%	Mount Isa underground copper-lead-zinc-silver mine (also includes Enterprise, George Fisher, and Hilton mines) at Mount Isa, QLD	275
Do.	Copper Mines of Tasmania Pty. Ltd., 100%	Mount Lyell underground copper-gold mine, 2 km NE of Queenstown, TAS	35
Do.	Straits (Nifty) Pty. Ltd., 100%	Nifty open pit copper mine, 200 km SE of Marble Bar, WA	22
Do.	Rio Tinto Ltd., 80%; Sumitomo Metal Mining Oceania Pty. Ltd., 13.3%; SC Mineral Resources Pty. Ltd., 6.7%	Northparkes open pit/underground copper-gold mine, 27 km N of Parkes, NSW	55
Do.	WMC Olympic Dam Operations Pty. Ltd., 100%	Olympic Dam underground copper-silver-gold-uranium mine at Roxby Downs. 80 km N of Woomera, SA	220
Do.	do.	Olympic Dam copper refinery, SA	220
Do.	do.	Olympic Dam copper smelter, SA	70
Do.	Placer Dome Asia Pacific Ltd., 100%	Osborne underground copper-gold mine, 195 km SE of Mount Isa, QLD	50
Do.	Peak Gold Mines Pty. Ltd., 100%	Peak underground gold-zinc-lead-copper-silver underground mine (includes New Cobar, New Occidental, and Perseverance), 8 km S of Cobar, NSW	3
Do.	Furukawa Co. Ltd., 52.5%; Nittetsu Mining Co., 20%; Nissho Iwai Corp., 17.5%; Itochu Corp., 10%	Port Kembla copper refinery, NSW	120
Do.	do.	Port Kembla copper smelter, NSW	120
Do.	Newcrest Mining Ltd., 100%	Ridgeway underground gold-copper mine, 25 km S of Orange, NSW	30
Do.	Pasminco Ltd., 100%	Rosebery underground zinc-lead-silver-copper-gold mine, 35 km N of Queenstown, TAS	1

See footnotes at end of table.

TABLE 2--Continued
AUSTRALIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2004

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities[1,2,3]	Annual capacity[e]
Copper--Continued:		Selwyn Mines Ltd., 100%	Selwyn underground copper-gold mine, 150 km SE of Mount Isa, QLD	17
Diamond	thousand carats	Rio Tinto Ltd., 100%	Argyle Mine (AK-1 lamproite pipe and alluvial diamond mines), 120 km SW of Kununurra, WA	26,000
Do.	do.	do.	Merlin open pit diamond mine, 80 km S of Borroloola, NT	55
Diatomite		Australian Diatomite Mining Pty. Ltd., 100%	Barraba open pit diatomite mine, 85 km km NNW of Tamworth, NSW	25
Dolomite		OneSteel Ltd., 100%	Ardrossan metallurgical dolomite quarry, Northern York Peninsula, SA	650
Feldspar		Minerals Corp. Ltd., 100%	Triple Chance open pit feldspar mine (includes Lady Beryl, Bakers, and Spar Ridge), 42 km SW of Broken Hill, NSW	15
Garnet		GMA Garnet Pty. Ltd., 100%	Port Gregory open pit industrial garnet mine, 100 km N of Geraldton, WA	200
Gas:				
Condensate	thousand 42-gallon barrels per day	Woodside Petroleum Pty. Ltd., manager [BHP Petroleum Pty. Ltd., BP Australia Holdings Ltd., Chevron Asiatic Ltd., Japan Australia LNG (MIMI) Pty. Ltd., Shell Development (Australia) Pty. Ltd., and Woodside Petroleum Ltd., 16.67% each]	North West Shelf gas operations, 130 km offshore from Dampier, WA	60
Natural	million cubic meters per day	Woodside Petroleum Pty. Ltd., manager [BHP Petroleum Pty. Ltd., BP Australia Holdings Ltd., Chevron Asiatic Ltd., Japan Australia LNG (MIMI) Pty. Ltd., Shell Development (Australia) Pty. Ltd., and Woodside Petroleum Ltd., 16.67% each]	North West Shelf gas operations, 130 km offshore from Dampier, WA	20
Liquefied natural	million metric tons	do.	Three-train liquefaction plant, Burrup Peninsula, WA	8
Gold	kilograms	Gold Fields Ltd. (South Africa), 100%	Agnew open pit-underground gold mine, 23 km W of Leinster, WA	5,600
Do.	do.	New Hampton Goldfields Ltd., 100%	Big Bell Consolidated open pit/underground gold mine (includes Big Bell, Black Swan, Cuddingwarra, Great Fingall, Golden Crown, and Tuckabianna): Big Bell, 30 km WNW of Cue; Cuddingwarra, 10 km WNW of Cue; Golden Crown, 7 km S of Cue, WA	7,000
Do.	do.	Worsley Alumina Pty. Ltd., operator (Newmont Mining Corp., 44.45%; AngloGold Ltd., 33.33%; Newcrest Mining Ltd., 22.22%)	Boddington open pit/underground gold mine (includes Wandoo and Hedges), 150 km SE of Perth, WA[4]	12,000
Do.	do.	Normandy Yandal Operations Ltd., 100%	Bronzewing underground gold mine (includes Mount McClure), 65 km NE of Leinster, WA	9,000
Do.	do.	Newcrest Mining Ltd., 100%	Cadia Hill open pit gold-copper mine, 21 km SSW of Orange, NSW	11,000
Do.	do.	MIM Holdings Ltd., 51%, and Westpac Banking Corp., 49%	Ernest Henry open pit copper-gold mine, 35 km NE of Cloncurry, QLD	3,000
Do.	do.	Kalgoorlie Consolidated Gold Mines Pty. Ltd., 100%	Gidji Roaster gold smelter, Kalgoorlie, WA	24,250
Do.	do.	Normandy NFM Ltd., 100%	Granites-Dead Bullock Soak open pit/ underground gold mine, 550 km NW of Alice Springs, in the Tanami Desert, NT	7,000
Do.	do.	Placer Dome Asia Pacific Ltd., manager (Placer Dome Inc., 60%, and Delta Gold Ltd., 40%)	Granny Smith open pit gold mine (includes Sunrise and Wallaby), 20 km S of Laverton, WA	16,000
Do.	do.	AuironGold Ltd., 100%	Henty underground gold-silver mine, 30 km N of Queenstown, TAS	3,700
Do.	do.	Thalanga Copper Mines Pty. Ltd., 70%, and BML Holdings Pty. Ltd., 30%	Highway-Reward open pit and underground copper mine, 37 km S of Charters Towers, QLD	1,000
Do.	do.	New England Antimony Mines NL, 100%	Hillgrove underground antimony-gold mine, 25 km E of Armidale, NSW	1,000

See footnotes at end of table.

TABLE 2--Continued
AUSTRALIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2004

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities[1,2,3]	Annual capacity[e]
Gold--Continued:	kilograms	Newmont Yandal Operations Ltd., 100%	Jundee-Nimary open pit/underground gold mine, 45 km NE of Wiluna, WA	12,000
Do.	do.	AuironGold Ltd., 100%	Kanowna Belle underground gold mine, 18 km NE of Kalgoorlie, WA	7,000
Do.	do.	Barrack Gold Corp., 100%	Lawlers underground gold mine, 30 km SW of Leinster, WA	3,000
Do.	do.	Sons of Gwalia Ltd., 100%	Marvel Loch Operations open pit-underground gold mines approximately 30 km SE of Southern Cross, WA	10,000
Do.	do.	Saint Barbara Mines Ltd., 100%	Meekatharra open pit mine-underground gold mine, 20 km S of Meekatharra, WA	4,000
Do.	do.	Copper Mines of Tasmania Pty. Ltd., 100%	Mount Lyell underground copper-gold mine, 2 km NE of Queenstown, TAS	1,000
Do.	do.	Harmony Gold Mining Co. Ltd., 100%	Mount Magnet open pit/underground gold mine (includes Hill 50 and Star), 2 km from Mount Magnet, WA	8,500
Do.	do.	Australian Gold Refineries, 100% (State of WA agency)	Newburn gold refinery, WA	246,000
Do.	do.	Croesus Mining NL, 100%	Norseman underground gold mine at Norseman, WA	3,700
Do.	do.	Rio Tinto Ltd., 80%; Sumitomo Metal Mining Oceania Pty. Ltd., 13.3%; SC Mineral Resources Pty. Ltd., 6.7%	Northparkes open pit/underground copper-gold mine, 27 km N of Parkes, NSW	155,000
Do.	do.	Placer Dome Asia Pacific Ltd., 100%	Osborne underground copper-gold mine,	1,500
Do.	do.	WMC Olympic Dam Operations Pty. Ltd., 100%	Olympic Dam underground copper-silver-gold-uranium mine at Roxby Downs, 80 km N of Woomera, SA	1,500
Do.	do.	MIM Holdings Ltd., 100%	Pacific precious metals refinery, NSW	1,900
Do.	do.	Paddington Gold Pty. Ltd., 100%	Paddington open pit gold-silver mine, 35 km NW of Kalgoorlie, WA	2,800
Do.	do.	Newmont Pajingo Pty. Ltd., 100%	Pajingo underground gold mine (includes Vera-Nancy), 60 km SSE of Charters Towers, QLD	6,400
Do.	do.	Peak Gold Mines Pty. Ltd., 100%	Peak underground gold-zinc-lead-copper-silver underground mine (includes New Cobar, New Occidental, and Perseverance), 8 km S of Cobar, NSW	350,000
Do.	do.	Alkane Exploration Ltd., 100%	Peak Hill open pit gold mine, 50 km N of Parkes, NSW	700,000
Do.	do.	Australian Gold Refineries, 100% (State of WA agency)	Perth Refinery (Newburn), WA	95,000
Do.	do.	Homestake Mining Co., 100%	Plutonic open pit/underground gold mine, (includes Freshwater), 180 km NE of Meekatharra, WA	8,000
Do.	do.	Carpentaria Gold Pty. Ltd., 50.1%, and Haoma Mining NL, 49.9%	Ravenswood open pit mine (includes Nolans, Sarsfield, and Mount Wright), 100 km S of Townsville, QLD	3,000
Do.	do.	Newcrest Mining Ltd., 100%	Ridgeway underground gold-copper mine, 25 km S of Orange, NSW	10,800
Do.	do.	Pasminco Ltd., 100%	Rosebery underground zinc-lead-silver-copper-gold mine, 35 km N of Queenstown, TAS	1,000
Do.	do.	Gold Fields Ltd., 100%	Saint Ives open pit/underground gold mine, 75 km SSE of Kalgoorlie, WA	15,000
Do.	do.	Selwyn Mines Ltd., 100%	Selwyn underground copper-gold mine, 150 km SE of Mount Isa, QLD	700
Do.	do.	Sons of Gwalia Ltd., 100%	Sons of Gwalia open pit/underground gold mine (includes Red October, Harlech, McGraths, Kailis, and Anchor), 5 km W of Leonora, WA	6,000
Do.	do.	MPI Gold Pty. Ltd., 50%, and Pittston Mineral Ventures of Australia Pty. Ltd., 50%	Stawell underground gold mine, 240 km W of Melbourne, VIC	3,000
Do.	do.	AngloGold Ltd., 100%	Sunrise Dam open pit mine gold (includes	8,000

TABLE 2--Continued
AUSTRALIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2004

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities[1,2,3]	Annual capacity[e]
Gold--Continued:	kilograms	Kalgoorlie Consolidated Gold Mines Pty. Ltd., manager (Barrick Gold Corp., 50%, and Newmont Mining Ltd., 50%)	Super Pit open pit gold mine (includes Fimiston), SE corner of the Kalgoorlie-Boulder Township, WA	20,000
Do.	do.	Otter Gold Mines Ltd., 60%, and AngloGold Ltd., 40%	Tanami open pit gold mine (includes Central Desert Joint Venture), 650 km NW of Alice Springs, NT	2,800
Do.	do.	PacMin Mining Corp., 100%	Tarmoola open pit gold mine, 29 km NW of Leonora, WA	6,500
Do.	do.	AngloGold Ltd., 100%	Union Reefs open pit gold mine, 12 km N of Pine Creek, NT	3,000
Do.	do.	Wiluna Mines Ltd., 100%	Wiluna open pit/underground gold mine, 7 km S of Wiluna, WA	3,300
Gypsum		Gypsum Resources Australia Pty. Ltd., 100%	Lake MacDonnell open pit gypsum mine, near Point Thevenard, SA	1,400
Do.		Dampier Salt Ltd., 100%	Lake MacLeod salt and gypsum solar evaporation ponds, 65 km N of Carnarvon, WA	900
Iron ore		Hamersley Iron Pty. Ltd., 60%, and China Iron and Steel Industry & Trade Group Corp. (a Chinese Government agency), 40%	Channar open pit iron ore mine, 70 km S of Tom Price, WA	11,000
Do.		BHP Billiton Ltd., 100%	Cockatoo Island open pit iron ore mine, 130 km NNE of Derby, WA	1,050
Do.		Hamersley Iron Pty. Ltd., 100%	Hamersley Operations (includes Brockman No. 2, Marandoo, Mount Tom Price, Nammuldi, Paraburdoo, and Yandicoogina open pit iron ore mines), 30 km to 85 km NE, NW, and S of Tom Price, WA	60,000
Do.		BHP Minerals Pty. Ltd., 100%	Jimblebar open pit iron ore mine, 40 km E of Newman, WA	6,000
Do.		Portman Ltd., 100%	Koolyanobbing Central open pit iron ore mine, 50 km NNE of Southern Cross, WA	3,000
Do.		BHP Iron Ore Pty. Ltd., 85%, manager; CI Minerals Australia Pty. Ltd., 8%; Mitsui Iron Ore Corp. Pty. Ltd., 7%	Mount Goldsworthy open pit iron ore mine (includes Yarrie), 180 km E of Port Hedland, WA	8,000
Do.		Imdex Ltd., 100%	Mount Gould open pit iron ore mine, 160 km W of Meekatharra, WA	6,000
Do.		BHP Iron Ore Pty. Ltd., 85%; Mitsui Itochu Iron Pty. Ltd., 10%; CI Minerals Australia Pty. Ltd., 5%	Mount Newman (includes Mount Whaleback, Orebody 23-25, Orebody 29, and Orebody 30-35) open pit iron ore mines, within 13 km of Newman, WA	25,000
Do.		Robe River Iron Associates, manager (Rio Tinto Ltd., 53%; Mitsui & Co. (Australia). Ltd., 33%; Nippon Steel Australia Pty. Ltd., 10.5%; Sumitomo Metal Australia Pty. Ltd., 3.5%)	Pannawonica (includes Mesa J) open pit iron ore mine, 130 km SSW of Dampier WA	31,000
Do.		ABM Mining Ltd., 100%	Savage River open pit iron ore mine (includes Long Plains), 100 km SW of Burnie, TAS	2,400
Do.		OneSteel Ltd., 100%	Whyalla open pit iron ore mines, 270 km NW of Adelaide, SA	2,600
Do.		BHP Minerals Pty. Ltd., 55%; Pilbara Iron Pty. Ltd., 30%; CI Minerals Australia Pty. Ltd., 8%; Mitsui Iron Ore Corp. Pty. Ltd., 7%	Yandi open pit iron ore mine, 92 km N of Newman, WA	35,000
Kaolin		Osterfield Pty. Ltd., 100%	Axedale Clays open pit kaolin mine, 18 km E of Bendigo, VIC	50
Do.		Queensland Kaolin Pty. Ltd., 96.6%, and private interests, 3.4%	Skardon River open pit kaolin mine, 85 km N of Weipa, QLD	150

See footnotes at end of table.

TABLE 2--Continued
AUSTRALIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2004

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities[1,2,3]	Annual capacity[e]
Lead	Perilya Ltd., 100%	Broken Hill underground silver-zinc-lead mine at Broken Hill, NSW	90
Do.	BHP Minerals Ltd., 100%	Cannington underground silver-lead-zinc mine, 200 km SE of Mount Isa, QLD	265
Do.	Pasminco Century Mine Ltd., 100%	Century open pit zinc-silver-lead mine, 250 km NW of Mount Isa, QLD	70
Do.	Pasminco Ltd., 100%	Cockle Creek lead smelter, NSW	35
Do.	do.	Elura underground zinc-silver-lead mine, 40 km NW of Cobar, NSW	45
Do.	Western Metals Ltd., 100%	Hellyer underground zinc-lead-copper-silver mine, 80 km SSW of Burnie, TAS	44
Do.	do.	MIM lead smelter, QLD	160
Do.	MIM Holdings Ltd., 100%	Mount Isa underground copper-lead-zinc-silver mine (also includes enterprise, George Fisher, and Hilton mines) at Mount Isa, QLD	150
Do.	do.	Mount Isa Smelter, QLD	240
Do.	Peak Gold Mines Pty. Ltd., 100%	Peak underground gold-zinc-lead-copper-silver underground mine (includes New Cobar, New Occidental, and Perseverance), 8 km S of Cobar, NSW	5
Do.	Pasminco Ltd., 100%	Port Pirie lead smelter, SA	250
Do.	do.	Rosebery underground zinc-lead-silver-copper-gold mine, 35 km N of Queenstown, TAS	23
Magnesite	Australian Magnesium Corp. Ltd., 100%	Kunwarara open pit magnesite mine (includes Marlborough), 70 km NW of Rockhampton, QLD	3,000
Manganese	Groote Eylandt Mining Co. Pty. Ltd., 100%	Groote Eylandt open pit manganese mine at Groote Eylandt, NT	2,400
Do.	Pilbara Manganese Pty. Ltd., 100%	Woodie Woodie open pit manganese mine (includes Bells and East Pilbara leases), 400 SE of Port Hedland, WA	350
Manganese alloys	Tasmanian Electro Metallurgical Co. Pty. Ltd., 100%	Bell Bay Smelter near Launceton, TAS	260
Mineral sands	Iluka Resources Ltd., 100%	Eneabba open pit heavy-mineral sands mine, 260 km N of Perth, WA	NA
Do.	Mineral Deposits Ltd., 100%	Hawks Nest heavy-mineral sands dredge, 50 km NE of Newcastle, NSW	NA
Do.	Cable Sands (WA) Pty. Ltd., 100%	Jangardup heavy-mineral sands dredge, 50 km S of Nannup, WA	NA
Do.	Iluka Resources Ltd., 100%	North Capel open pit heavy-mineral sands mine, 7 km N of Capel, WA	NA
Do.	Stradbroke Rutile Pty. Ltd., 100%	North Stradbroke Island heavy-mineral sands dredge, 35 km E of Brisbane, QLD	NA
Do.	KMCC Western Australia Pty. Ltd., 50%, and Ticor Resources Pty. Ltd., 50%	Tiwest Joint Venture heavy-mineral sands dredge, 180 km N of Perth, WA	NA
Do.	Murray Basin Titanium Pty. Ltd., 100%	Wemen heavy-mineral sands dredge, 80 km SE of Mildura, VIC	NA
Nickel	Outokumpu Exploration Ventures Pty. Ltd., 100%	Black Swan underground nickel mine (includes Silver Swan), 53 km NE of Kalgoorlie, WA	22
Do.	Preston Resources Ltd., 100%	Bulong open pit nickel-cobalt mine, 30 km E of Kalgoorlie, WA	9
Do.	OM Group Inc., 100%	Cawse open pit nickel-cobalt mine, 50 km NW of Kalgoorlie, WA	9
Do.	Jubilee Mines NL, 100%	Cosmos open pit nickel mine, 50 km N of Leinster, WA	80
Do.	WMC Ltd., 100%	Kalgoorlie nickel smelter, Kalgoorlie, WA	100

See footnotes at end of table.

TABLE 2--Continued
AUSTRALIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2004

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities[1,2,3]	Annual capacity[e]
Nickel--Continued:		do.	Kambalda underground nickel mines, 25 km N of Kambalda to 10 km S of Widgiemooltha, WA	35
Do.		do.	Kwinana nickel refinery, Kwinana, WA	67
Do.		do.	Leinster open pit-underground nickel mines, 10 km N of Leinster, WA	44
Do.		Mincor Resources NL, 76%; Clough Mining Pty. Ltd., 12%; and Donegal Resources Pty. Ltd., 12%	Miitel underground nickel mine (includes Redross and Mariners), 70 km S of Kambalda, WA	10
Do.		WMC Ltd., 100%	Mount Keith open pit nickel mine (includes Cliffs and Yakabindie), 70 km SSE of Wiluna, WA	50
Do.		Anaconda Nickel Ltd., 60%, and Glencore International AG, 40%	Murrin Murrin nickel refinery, Murrin Murrin, WA	45
Do.		do.	Murrin Murrin open pit nickel-cobalt mine, 60 km E of Leonora, WA	100
Do.		Australian Nickel Mines NL, 100%	Radio Hill underground nickel-cobalt mine, 100 km ESE of Karratha, WA	4
Do.		QNI Pty. Ltd., 100%	Yabulu nickel-cobalt refinery, Townsville, QLD	30
Opal		Many small producers	Andamooka and Coober Pedy areas, SA; Lightning Ridge area, NSW	NA
Petroleum	thousand 42-gallon barrels per day	Exxon Mobil Corporation, 100%	Altona Refinery, VIC	120
Do.	do.	BP Amoco Refinery (Bulwer Island) Pty. Ltd., 100%	Bulwer Island Refinery, QLD	69.3
Do.	do.	Shell Refining (Australia) Pty. Ltd., 100%	Clyde Refinery, NSW	85
Do.	do.	do.	Geelong Refinery, VIC	110
Do.	do.	ChevronTexaco Corp., 100%	Kurnell Refinery, NSW	114
Do.	do.	BP Amoco Refinery (Kwinana) Pty. Ltd., 100%	Kwinana Refinery, WA	138
Do.	do.	ChevronTexaco Corp., 100%	Lytton Refinery, QLD	105.5
Do.	do.	Exxon Mobil Corporation, 100%	Port Stanvac Refinery, SA	69
Phosphate rock		WMC Fertilizers Ltd., 100%	Phosphate Hill-Duchess open pit phosphate mine, 140 km NW of Mount Isa, QLD	2,200
Salt		Dampier Salt Ltd., 100%	Dampier solar evaporation salt pans, 65 km N of Carnarvon, WA	5,000
Do.		do.	Lake MacLeod solar salt and gypsum evaporation pans, 65 km N of Carnarvon, WA	900
Do.		do.	Port Hedland solar salt fields, at Port Hedland, WA	3,000
Silica		Itochu Corp., 50%, and Tochu Corp., 50%	Kemerton silica sands dredge, 25 km NE of Bunbury, WA	450
Silver	kilograms	Perilya Ltd., 100%	Broken Hill underground silver-zinc-lead mine at Broken Hill, NSW	81,200
Do.	do.	BHP Minerals Ltd., 100%	Cannington underground silver-lead-zinc mine, 200 km SE of Mount Isa, QLD	700,000
Do.	do.	Pasminco Century Mine Ltd., 100%	Century open pit zinc-silver-lead mine, 250 km NW of Mount Isa, QLD	3,000
Do.	do.	Pasminco Ltd., 100%	Cockle Creek silver smelter, NSW	85,000
Do.	do.	do.	Elura underground zinc-silver-lead mine, 40 km NW of Cobar, NSW	35,000
Do.	do.	Western Metals Ltd., 100%	Hellyer underground zinc-lead-copper-silver mine, 80 km SSW of Burnie, TAS	60,000
Do.	do.	AuironGold Ltd., 100%	Henty underground gold-silver mine, 30 km N of Queenstown, TAS	1,100
Do.	do.	Thalanga Copper Mines Pty. Ltd., 70%, and BML Holdings Pty. Ltd., 30%	Highway-Reward open pit and underground copper mine, 37 km S of Charters Towers, QLD	1,000

See footnotes at end of table.

TABLE 2--Continued
AUSTRALIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2004

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities[1,2,3]	Annual capacity[e]
Silver--Continued:	kilograms	MIM Holdings Ltd., 100%	Mount Isa underground copper-lead-zinc-silver mine (also includes enterprise, George Fisher, and Hilton mines) at Mount Isa, QLD	375,000
Do.	do.	Australian Gold Refineries, 100% (State of WA agency)	Newburn silver refinery, WA	81,000
Do.	do.	WMC Olympic Dam Operations Pty. Ltd., 100%	Olympic Dam underground copper-silver-gold-uranium mine at Roxby Downs, 80 km N of Woomera, SA	12,900
Do.	do.	Paddington Gold Pty. Ltd., 100%	Paddington open pit gold-silver mine, 35 km NW of Kalgoorlie, WA	500
Do.	do.	Peak Gold Mines Pty. Ltd., 100%	Peak underground gold-zinc-lead-copper-silver underground mine (includes New Cobar, New Occidental, and Perseverance), 8 km S of Cobar, NSW	6,000
Do.	do.	Pasminco Ltd., 100%	Port Pirie silver smelter, SA	450,000
Do.	do.	do.	Rosebery underground zinc-lead-silver-copper-gold mine, 35 km N of Queenstown, TAS	35,000
Spodumene	do.	Gwalia Consolidated Ltd., 100%	Greenbushes open pit/underground tantalite-spodumene mine, 70 km SE of Bunbury, WA	100
Steel		BHP Steel Pty. Ltd., 100%	Newcastle steelworks, NSW	1,800
Do.		do.	Port Kembla steelworks, NSW	4,000
Do.		do.	Sydney (Rooty Hill) minimill, NSW	250
Do.		do.	Whyalla steelworks, SA	1,200
Talc		Luzenac Australia Pty. Ltd., 100%	Three Springs open pit talc mine, 330 km N of Perth, WA	200
Tantalum, tantalite, Ta_2O_5	pounds	Gwalia Consolidated Ltd., 100%	Greenbushes open pit/underground tantalite-spodumene mine, 70 km SE of Bunbury, WA	600,000
Do.	do.	do.	Wodgina open pit tantalite mine, 100 km S of Port Hedland, WA	500,000
Tin (in situ)	cubic meters	Telminex NL, 100%	Ardlethan alluvial tin mine, 90 km NW of Wagga Wagga, NSW	500,000
Do.		Sons of Gwalia Ltd., 100%	Greenbushes Smelter, WA	1
Do.		Renison Bell Ltd., 100%	Renison Bell underground tin mine, 136 km S of Burnie, TAS	13
Uranium, U_3O_8	metric tons	Heathgate Resources Pty. Ltd., 100%	Beverley in situ leach uranium operation, 300 km NE of Port Augusta, SA	900
Do.	do.	WMC Olympic Dam Operations Pty. Ltd., 100%	Olympic Dam underground copper-silver-gold-uranium mine at Roxby Downs, 80 km N of Woomera, SA	1,500
Do.	do.	Energy Resources of Australia Ltd., 100%	Ranger open pit uranium mine, 230 km E of Darwin, NT	4,500
Vanadium, V_2O_5	do.	Xstrata Windimurra Pty. Ltd., 100%	Windimurra open pit mine vanadium, 100 km ESE of Mount Magnet, WA	8
Zinc		Perilya Ltd., 100%	Broken Hill underground silver-zinc-lead mine at Broken Hill, NSW	360
Do.		BHP Minerals Ltd., 100%	Cannington underground silver-lead-zinc mine, 200 km SE of Mount Isa, QLD	100
Do.		Pasminco Century Mine Ltd., 100%	Century open pit zinc-silver-lead mine, 250 km NW of Mount Isa, QLD	500
Do.		Pasminco Ltd., 100%	Cockle Creek zinc smelter, NSW	90
Do.		do.	Elura underground zinc-silver-lead mine, 40 km NW of Cobar, NSW	125
Do.		Murchison Zinc Co. Pty. Ltd., 100%	Golden Grove underground zinc-copper mine (includes Gossan Hill and Scuddles), 225 km E of Geraldton, WA	150

See footnotes at end of table.

TABLE 2--Continued
AUSTRALIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2004

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities[1,2,3]	Annual capacity[e]
Zinc--Continued:	Western Metals Ltd., 100%	Hellyer underground zinc-lead-copper-silver mine, 80 km SSW of Burnie, TAS	130
Do.	MIM Holdings Ltd., 100%	Mount Isa underground copper-lead-zinc-silver mine (also includes enterprise, George Fisher, and Hilton mines) at Mount Isa, QLD	175
Do.	Peak Gold Mines Pty. Ltd., 100%	Peak underground gold-zinc-lead-copper-silver underground mine (includes New Cobar, New Occidental, and Perseverance), 8 km S of Cobar, NSW	8
Do.	Pasminco Ltd., 100%	Port Pirie zinc smelter, SA	40
Do.	do.	Ridson zinc refinery, Hobart, TAS	230
Do.	do.	Rosebery underground zinc-lead-silver-copper-gold mine, 35 km N of Queenstown, TAS	100
Do.	Sun Metals Corp. Pty. Ltd., 100%	Sun Metals zinc refinery, Stuart, QLD	170

[e]Estimated. NA Not available.
[1]Australian State and Territory abbreviations: NSW--New South Wales; NT--Northern Territory; QLD--Queensland; SA--South Australia; TAS--Tasmania; VIC--Victoria; WA--Western Australia.
[2]Bearing abbreviations: N north; NNE north-northeast; NE northeast; E east; SE southeast; SSE south-southeast; S south; SSW south-southwest; SW southwest; WSW west-southwest; W west; WNW west-northwest; NW Northwest; NNW north-northwest.
[3]Abbreviation(s) used for unit(s) of measure in this table include the following: km--kilometer.
[4]Care and maintenance; expansion project development decision pending.

TABLE 3
AUSTRALIA: RESERVES OF MAJOR MINERAL COMMODITIES IN 2004

Commodity[1]		Reserves
Bauxite	million metric tons	5,500
Cadmium	thousand metric tons	844
Coal:		
Black:		
In situ	billion metric tons	55
Recoverable	do.	39
Brown:		
In situ	do.	42
Recoverable	do.	38
Cobalt	thousand metric tons	1,450
Columbium (niobium) and tantalum:		
Columbium (niobium)	do.	29
Tantalum	do.	41
Copper	million metric tons	40
Diamond:		
Gem and near gem	million carats	73
Industrial	do.	75
Gold	metric tons	5,380
Iron ore	billion metric tons	12
Lead	million metric tons	19
Lithium	thousand metric tons	167
Magnesite ($MgCO_3$)	million metric tons	344
Manganese ore	do.	124
Mineral sands:		
Ilmenite	do.	209
Rutile	do.	21
Zircon	do.	32
Nickel	do.	23
Petroleum, recoverable:		
Condensate	billion liters	282
Crude	do.	227
Liquefied petroleum gas	do.	262
Natural gas	billion cubic meters	2,220
Platinum-group metals (Pd, Pt)	metric tons	23
Rare earths (REO plus Y_2O_3)	million metric tons	1
Silver	thousand metric tons	43
Tin	do.	146
Tungsten	do.	9
Uranium, recoverable	do.	675
Vanadium	do.	--
Zinc	million metric tons	35

-- Zero.
[1]Abbreviations used for commodities in this table are as follows: $MgCO_3$--magnesium carbonate; Pd--palladium; Pt--platinum; REO--rare-earth oxides; Y_2O_3--yttrium oxide.

Source: Geoscience Australia, 2004, Australia's Identified Mineral Resources 2004: Canberra, Australia, Geoscience Australia, p. 9. (Modified to no more than three significant digits.)