THE MINERAL INDUSTRY OF THE UNITED KINGDOM

By Harold R. Newman

The United Kingdom's mineral resources were historically important; most of these resources, however, were either exhausted or produced in small quantities in 2004. Most minerals used for industrial production were imported. Metal processing remained the basis of an important mineral industry sector. Smelting activities have been slowed or halted for such mineral commodities as cadmium, copper, and zinc owing to the shortage and cost of raw materials, inefficiencies of older plants, overcapacity, and stricter environmental requirements. Shortage of scrap and the higher cost of materials and energy have reduced secondary production of some recycled materials.

The industrial minerals sector was an important part of the extractive industries. Companies had a substantial interest in the production of industrial minerals, such as aggregates, ball clay, china clay (kaolin), and gypsum (table 1). The United Kingdom was the leading producer of natural gas and petroleum in the European Union (EU).

The United Kingdom, with a population of 60.4 million, has a land area of 244,800 square kilometers (km2), which includes Rockall Island, the Shetland Islands, and Northern Ireland. In 2004, the gross domestic product (GDP) based on purchasing power parity was $1.7 trillion, and per capita income, which is based on purchasing power parity, was $28,970. The inflation rate was 1.3%, and the unemployment rate was 4.8% (International Monetary Fund, 2005§[1]). The country had reserves valued at about $49 billion, which included foreign exchange and 300 metric tons (t) of gold (U.S. Central Intelligence Agency, 2004§).

The United Kingdom joined the EU in 1973, but had not decided at yearend 2004 whether to adopt the European Monetary Union's single currency, the euro (€).

Government Policies and Programs

In 2004, the 1971 Act, as amended over the years, continued as the statute that governs the development and working of mineral deposits. Minerals are defined in section 209 of the 1971 Act to include all minerals and materials in or under the land of a kind ordinarily worked for removal by underground or surface workings; it does not, however, include peat cut for purposes other than for sale. Mineral development is specifically addressed in the Town and Country Planning (Minerals) Regulations, 1971 and the Town and Country Planning (Minerals) Act, 1981. Mineral rights to mineral fuels, such as coal, petroleum, and uranium, belong to the State. The Coal Authority is authorized to license open pit and underground mines to the private sector subject to restrictions on their size and the payment of a royalty on the amount of coal produced.

Most other mineral rights in Great Britain are privately owned. The exceptions are gold and silver, the rights to which are vested in the Royal Family and are referred to as "Crown Rights." A different situation regarding mineral rights applies to Northern Ireland where, under the Mineral Development Act (Northern Ireland), 1969, the rights to work minerals and to license others to do so are vested in the State.

Environmental Issues

Environmental conditions in the United Kingdom continued to improve with the reduction of carbon dioxide and sulfur dioxide emissions. In 2004, the country met the Kyoto Protocol target of a 12.5% reduction in greenhouse gas emissions from 1990 levels and was moving in a two-stage plan towards the domestic goal of a 20% cut in emissions by 2010. By 2005, the Government intended to reduce the amount of industrial and commercial waste disposed in landfill sites to 85% of 1998 levels and to compost or recycle at least 25% of household waste; by 2015, this was to increase to 33% (U.S. Central Intelligence Agency, 2005§).

In the first stage of the plan, emissions were to fall by 16.5% by 2008. Heavy industries such as cement, electricity generation (of which 77% was conventional thermal; 15%, nuclear; 5%, hydropower; and 2%, other renewables), glass and paper production, oil refining, and steel accounted for about one-half of the country's carbon dioxide emissions. Penalties for exceeding emission limits will start at £28[2] ($49) per metric ton in Stage one and will rise to £69 ($126) per ton in Stage two. Transport and domestic emissions were not included (Alexander's Gas & Oil Connections, 2004b§).

Production

The Department of Trade and Industry (DTI) continued to ensure a supply of minerals for the country's industry and to oversee mineral activities. Its areas of responsibility were all nonfuel minerals, which included all metallic ores and such industrial minerals as barite, china, clay (kaolin), fluorspar, high-grade limestone, potash, salt, and silica sand. The industrial minerals sector also included aggregates, brick and brick clay, cement and its raw materials, dimension stone, gypsum for plaster, and sand and gravel used in the construction industry. The DTI was also responsible for mineral fuels, which included coal, natural gas, and petroleum, and for issuing licenses for the exploration, appraisal, and production of natural gas and petroleum. Primary energy production accounted for 10% of the GDP. The production of mineral commodities is listed in table 1.

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

[2]Where necessary, values have been converted from United Kingdom pounds (£) to U.S. dollars ($) at the rate of £1.00=$1.74.

State and privately owned corporations produced minerals and mineral-based products. State ownership was significantly reduced in the mineral industry (table 2).

Trade

In 2004, the United Kingdom was the world's sixth largest economy based on the GDP at purchasing power parity and was a trading nation with a generally free and open market. The country had surplus trade balances in chemicals, metal articles, and mineral products. Total exports were $347 billion, and total imports were $439 billion in 2004. Principal export destinations were the United States (15%), Germany (10.7%), France (9.2%), Ireland (6.8%) and the Netherlands (6.1%). Principal import sources were Germany (13%), United States (9.2%), France (7.5%), the Netherlands (6.6%), and Belgium (5%) (U.S. Central Intelligence Agency, 2005§). Tables 3 and 4 list the United Kingdom export-import trade in diamond.

Commodity Review

Metals

Aluminum.—Four primary aluminum smelters were in the United Kingdom; three were owned and operated by British Alcan Aluminium Ltd., and the fourth smelter was operated by Anglesey Aluminium Ltd. All the aluminum smelters depended on imported alumina for feedstock.

Alcan was completing its $28 million upgrading work to the Lynmouth smelter and the smaller Lochaber/Kinlochleven smelter, which will add 19,000 metric tons per year (t/yr) to production. The project to produce higher amperage anodes would allow Lynmouth to increase capacity to 175,000 t/yr from 160,000 t/yr, and Lochaber/Kinlochleven to increase capacity to 42,000 t/yr from 38,000 t/yr (Metal Bulletin, 2004a)

Bernhard Metals Ltd. announced that it would cut its aluminum production at its Derby plant in response to reduced demand for ingot. Automobile manufacturers were sourcing cheaper material from Eastern Europe and Asia. The Derby plant produced about 50,000 t/yr of secondary aluminum. Bernhard stated that some furnaces would be kept running and fully operational. The news of the cutback at Bernhard followed an announcement by Calder Industries Ltd. that it was forced to cut production by nearly one-quarter because of poor demand for secondary aluminum and the closing down of one of its furnaces because of crumbling brickwork. Production was shifted to another furnace at the same site (Metal Bulletin, 2004b).

Gold.—Cambridge Mineral Resources plc, Falkland Island Holding plc, and Global Petroleum Ltd. formed the joint-venture Falkland Islands-based company, Falkland Minerals Ltd. (FML), through which further exploration of onshore mineral potential would be performed. The Falkland Islands were practically unexplored for minerals. FML held an exploration license that covered most of the Falklands and initiated a 2-year work program in early 2004 that comprised an aeromagnetic survey, stream sampling, field work, and assaying. The main thrust of the exploration program was directed toward gold, although FML had expressed an interest in diamond exploration on its license area (Falkland Islands, 2004§).

Tournigan Gold Corp. of Canada was developing its Curraghinalt gold project in Northern Ireland. According to Tournigan, Curraghinalt was a high-grade underground deposit and consisted of a series of subparallel closely spaced mesothermal quartz-sulfide veins localized between a set of east-west striking shear zones. The Curraghinalt Trend was further defined by occurrences of veins and geochemical anomalies that had more than 8 kilometers (km) of strike length. At yearend, Tournigan reported inferred gold resources of 7,860 kilograms. Also, at yearend, Tournigan completed the acquisition of Ulster Minerals Ltd., which was the owner of the exploration license that covered the Curraghinalt project (Tournigan Gold Corp., 2004§).

Johnson Mathey plc announced that it would close its gold and silver refinery at Royston; the refinery primarily produced bullion. Johnson Mathey had been losing money for the past few years, and the closing was a response to the mass overcapacity in the gold refining sector. The company was planning to complete the closure by spring 2005. Despite the closure, an excess of 1 million kilograms of gold refining capacity was estimated to remain in Europe (Metal Bulletin, 2004c).

Iron and Steel.—The Corus Group plc announced that it had signed a 10-year contract with Companhia Vale do Rio Doce (CVRD) of Brazil for the supply of iron ore. Through the contract, CVRD would become Corus's leading iron ore supplier. According to the contract, either party had the right to terminate the contract after 5 years. Volumes would build up to about 10 million metric tons per year (Mt/yr) during the next 5 years from the starting quantity of 5 Mt/yr. The new contract replaced the existing 3-year contract (Corus Group plc, 2004a§).

Kumba Resources Ltd. of South Africa signed a contract with Corus for a 5-year supply of iron ore from its Sisheen Mine. Kumba will supply Sishen ore to Corus from April 1, 2004, to March 31, 2009. The tonnage supplied was set to increase from 2.6 Mt/yr during 2004-05 to 3.3 Mt/yr in 2008-09. The relationship between Corus and Kumba dates back to 1977 when Kumba's exports to Corus' United Kingdom operations began. Corus became Kumba's largest single export customer in terms of volume (Corus Group plc, 2004b§).

Corus planned to install a third ladle furnace to boost secondary steelmaking at its Scunthorpe plant. Production from the new ladle was expected to begin in early 2005. The £12 million ($22 million) project will enable the site to treat special bloom and rail steel grades by using enhanced secondary steelmaking facilities. Scunthorp had four blast furnaces, one of which was on standby but will be relit as part of Corus's overall restructuring of its plant operations. Three 300-t basic oxygen furnaces were onsite, of which only two normally operated at one time. These basic oxygen furnaces fed two ladle furnaces, which refined crude steel to produce alloy steel grades (Metal Bulletin, 2004d).

Lead and Silver.—Britannia Refined Metals Ltd. (BRM) (a subsidiary of MIM Holdings Ltd.) was the world's leading refiner of lead and alloys. BRM treated the lead and silver imported from MIM's Mount Isa Mine in Australia. Refined

leads were produced in various grades and ingot sizes to meet customer requirements. BRM also produced silver refined from the crude lead received from the Mount Isa Mine (Britannia Refined Metals Ltd., 2004§).

Platinum-Group Metals.—Agricola Resources plc was involved in platinum exploration and development. In February 2004, Agricola signed an option agreement with Beowulf Gold plc to acquire exclusive exploration rights for platinum-group elements on the Sandison property. The Sandison property covers about 21 km^2 (8 square miles) on the Island of Unst in the Shetland Islands off the coast of Scotland. Geochemical soil sampling was completed, and several strong anomalous platinum and palladium sites were reported along with minor gold anomalies. Trenching and bedrock sampling studies were continuing in the area, which was located south of Nikka Vord (Agricola Resources plc, 2004§).

Tin.—Redevelopment work was started at the mothballed South Crofty Mine of Baseresult Holdings Ltd. Blasting of a new tunnel, which was expected to take 6 months, was to be followed by pumping water out of the mine. Since its closure in 1998, the mine's 480 km of shafts and tunnels have flooded. The water, which was estimated to be 4.5 million gallons, was at a depth of 700 meters (m) and within 60 m of the surface. Production was scheduled to start in 2006, and the company believed that the mine would be able to produce 2,000 t/yr of tin in concentrate at a cash operating cost of $3,600 per ton (Metal Bulletin, 2004e).

Industrial Minerals

Barite.—The United Kingdom remained a major producer and consumer of barite to serve the North Sea drilling industry. The major producer of drilling-grade barite was M-I Drilling Fluids (UK) Ltd., which operated the underground Foss Mine near Aberfeldy in Perthshire. Production remained at about 50,000 t/yr, which represented about one-half of the North Sea's barite needs. Most of the remainder was supplied through imports from Morocco (Industrial Minerals, 2004a).

Cement.—Cement firms won approval to burn alternate fuels at sites in Wales. The Environment Agency granted Castle Cement Ltd.'s Padeswood kiln Number 4 a Pollution Prevention and Control permit after 3 years of consultation. Castle will replace its three existing kilns in 2005. Castle would produce 750,000 t/yr by using energy produced from shredded tires; Cemfuel made from solvents, paints, and waste oil; and Profuel made from paper, plastics, and textiles. Lafarge Cement UK started a 9-month trial to burn meat and bonemeal at its Aberthaw plant, which would derive 30% of its heat from animal remains (Contract Journal, 2005§).

Lafarge was the United Kingdom's leading cement manufacturer and supplied about 50% of the market. Lafarge faced the prospect of substantial compensation claims after discovering that it had supplied contaminated cement used in houses, roads, and small building projects across southwest England that could crumble and crack during the next 15 years as a result of an alkali silica reaction. Although none of the buildings was considered to be at risk of serious structural failure, they may have to be monitored for many years, and repairs, carried out if necessary. The cost of monitoring and repairs may have to be borne by Lafarge (Business Day, 2005§).

Clay and Shale.—WBB Minerals was the country's leading producer of ball clay. Their operations in Devon work the ball clay deposits of the Bovey and the Petrockstowe Basins. Devon ball clays have a reputation for purity and consistency throughout the ceramics industry. WBB also produces kaolin (china clay) from deposits southwest of Dartmoor (WBB Minerals, 2004§). Imerys Group was a leading producer of china clay in the United Kingdom and a major producer worldwide. Operation of its 12 open pits in the St. Austell area of Cornwall accounted for more than 85% of total sales (Industrial Minerals, 2004a).

Diamond.—The United Kingdom, which is a major diamond-trading country, continued to be actively involved in the Kimberley Process to end illegal trade in conflict diamond and to support the legitimate industry. The United Kingdom's trade in diamond, using the latest available data, is listed in tables 3 and 4. The United Kingdom was a major trade center for polished diamond after the Netherlands and Israel. The United Kingdom was an active participant in the Kimberley Process to curtail traffic in illegal diamonds.

Fluorspar.—Glebe Mines Ltd. was the only domestic producer of fluorspar and supplied the two United Kingdom fluorochemical producers with acidspar. Glebe operations were based around the surface extraction and processing of 250,000 t/yr of ore by Glebe and its subcontractors from the company's open pits. About 10 open pit sites and 6 subcontractors were active within the deposit in 2004. The life of any open pit was from 1 to 2 years. The two underground mines, Milldam and Sallet Hole, were on care and maintenance status and were expected to be brought onstream in the near future. Glebe stated that significant reserves were in two of the major vein systems under Hucklow Edge and Longstone Edge. The minerals are hosted by Carboniferous limestone in fissure-fill and replacement Mississippi Valley Type deposits (Glebe Mines Ltd., 2004§).

Gypsum.—British Gypsum Ltd. (a subsidiary of BPB Industries plc.) was the major producer of gypsum in the United Kingdom. The company had mines in Cumbria, Leicestershire, Nottinghamshire, Staffordshire, and Sussex that produced about 1.5 Mt/yr of gypsum. With few exceptions, this material went to supply the domestic market (British Gypsum Ltd., 2004§).

Potash.—Cleveland Potash Ltd. (CPL), which was the only potash producer in the United Kingdom, operated the Boulby Mine in Yorkshire. CPL also mined rock salt as a coproduct from an underlying seam in the Boulby Mine. The seam of potash extends out under the North Sea and occurs at depths of between 1,200 and 1,500 m in a seam that ranged up to 20 m but averaged 7 m in thickness. Within a Permian evaporate sequence, sylvinite ore comprises from 35% to 45% sylvite (potash) and 45% to 55% halite (salt) plus impurities (Israel Chemicals Ltd., 2004§).

Silica.—WBB Minerals was the leading United Kingdom silica sand company, and its operations accounted for more than one-half of the market. The flagship WBB silica sand quarry was at Chelford in Cheshire and supplied 500,000 t/yr of moist sand to Pilkington plc for flat glass production (Industrial Minerals, 2004b).

Mineral Fuels and Related Materials

Coal.—Most of the coal mining industry was owned by UK Coal plc (formerly RJB Mining plc), which was the largest coal mining company in the United Kingdom and the largest independent coal producer in the EU in terms of production. UK Coal had 20 deep and surface mine sites that produced about 18 Mt/yr. Coal provided about 39% of the country's raw energy needs. This equated to 54 Mt/yr of coal, which made coal the leading fuel source used for power generation. Coal production has been declining steadily for the past 10 years (U.S. Energy Information Agency, 2004§).

The Government proposed to implement a sulfur dioxide (SO_2) emissions-reduction program for the country's powerplants. The plan could force UK Coal to close one-half of its underground mines because the sulfur content from those mines is about 1.8% compared with that of internationally traded coals of about 1%. Other industries, such as power generation and steel, could also be affected. The emission plan followed a directive from the EU that limits the country's SO_2 emissions (Mining Engineer, 2004).

The Coal Investment Aid (CIA) Program announced a £52 million ($91 million) investment package for 12 mines in England and South Wales. The CIA Program was started in June 2003 to provide a substantial amount of the investment costs required for tapping the potential coal reserves that might otherwise remain unexploited. The mines would receive up to 30% of their total costs for development projects (Northern Miner, 2004).

Production ended in October at the Selby coalfield in North Yorkshire when the last of more than 260 faces that had been worked during the past 12 years ran out of coal. The Riccall Mine was the last of the original five mines to cease production. Production ended at the Wistow Mine in May and at the Stillingfleet Mine in July. It had taken a decade and £1.4 billion ($2.5 billion) to get the Selby Complex into full production. Only once in its 21-year history did it achieve the 12 Mt/yr output that it was designed to produce. More than 121 Mt of coal has been produced since production began in June 1983 (UK Coal plc, 2004).

Natural Gas and Petroleum.—The North Sea holds Europe's largest natural gas and petroleum reserves and was one of the world's key producing regions not in the Organization of the Petroleum Exporting Countries. As of January 2004, the United Kingdom's estimated proven crude oil reserves were 4.7 billion barrels (Gbbl), which was the largest within the EU, and were located mostly offshore on the United Kingdom Continent Shelf. Most of the country's production has come from basins east of Scotland in the central North Sea. The northern North Sea, east of the Shetland Islands, also contains considerable reserves, and smaller deposits are located in the North Atlantic Ocean, west of the Shetland Islands (U.S. Energy Information Agency, 2004§).

The offshore natural gas and petroleum industry saw renewed activity across the North Sea in 2004, and investment and exploration apparently were intensifying. Natural gas and petroleum production was valued at £23 billion ($40 billion) or about 2.5% of gross value added of the total economy. The industry was the largest single investor in the industrial sector, with capital and operational spending of £8.6 billion ($14.6 billion) in 2003 (the latest date for which data were available). The United Kingdom was the world's seventh ranked natural gas and petroleum producer in 2004. The United Kingdom was expected to be self-sufficient in natural gas until 2005-06, and petroleum until 2007-08. Indigenous production, however, was still expected to meet 60% of natural gas demand and 80% of petroleum demand through 2010. After that time, demands would be meet by imports to cover any shortfalls (Alexander's Gas & Oil Connections, 2004a§).

The Department of Trade and Industry awarded 97 offshore licenses in the North Sea region. Licenses were offered to 58 companies, which included 15 potential newcomers to the North Sea. The issuing of licenses was followed by news that a major obstacle to the development of new North Sea fields, particularly by smaller companies, had been eliminated by the introduction of measures to open up access to existing pipelines for small operators (Alexander's Gas & Oil Connections, 2004b§).

Falkland Oil and Gas Ltd. (FOGL) identified eight leads from a two-dimensional seismic program in its seven licenses off the southern coast of the Falkland Islands. The leads ranged from 211 million to 626 million barrels and could contain a total of 3.75 Gbbl. The seven licenses cover about 33,700 km^2. FOGL had a 77.5% interest in the licenses, and Hardman Resources of Australia had the remaining 25.5% (Rigzone.com, 2004§).

Renewable Energy.—Nearly three times as much wind-power capacity was installed in 2004 as in 2003, which spelled a record year for the rapidly expanding industry. The British Wind Energy Association was predicting a £7 billion ($12 billion) investment by 2010, and much of that would be in Scotland. In 2004, 18 wind projects were under construction and totaled more than 600 megawatts (MW) in energy. This new capacity was scheduled to come online in 2005 (Alexander's Gas & Oil Connections, 2004e§)

The Government announced £2.2 million ($4 million) in funding awards for 24 solar energy projects throughout the United Kingdom, which could result in about 650 kilowatts of direct funding in these projects. The Government had, up until 2004, awarded £15 million ($26 million) in grants to various projects. The goal was to achieve a renewable energy target of 10% of electricity by using solar energy by 2010 (Alexander's Gas and Oil Connections, 2004c§).

The Government announced the establishment of a £50 million ($88 million) Marine Research Development Fund to help ensure that the United Kingdom was a leader in harnessing waves and tidal streams as potential sources of renewable energy. The fund would support businesses that could undertake research and development and apply it in the marketplace (Alexander's Gas and Oil Connections, 2004d§).

Outlook

The United Kingdom will continue to be a significant player in the world mining and mineral-processing industries, in particular the industrial minerals sector. This is more the result of the extensive range of companies in the country that have

various interests in the international mineral industry than of the size of the domestic mineral industry.

Exploration for natural gas and petroleum is expected to continue onshore and offshore. Onshore exploration activities will be directed mainly toward gold. Interest in offshore natural gas and petroleum exploration will continue to be focused on North Sea areas, particularly in the areas west of the Shetland Islands, the central North Sea, and the Southern Gas Basin of the North Sea. The possible loss of 50% of coal production could be a problem; the Government, however, continued to supply financial support to the industry.

The DTI is expected to continue to be involved in efforts to raise the level of environmental management and to maximize the best use of natural resources, which will include use of recycled materials. Renewable energy sources will continue to be evaluated and developed.

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Major Sources of Information

British Geological Survey
Keyworth, Nottingham NG1 25GG
United Kingdom

Central Statistics Office
Great George St.
London SW1 P3AQ
United Kingdom

Department of Economic Development (Northern Ireland)
Belfast BT1 3AJ
Northern Ireland

Department of the Environment
Minerals Division
2 Marsham St.
London SW1 P3EB
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Department of Trade and Industry
123 Victoria St.
London SW1E 6RB
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Geological Survey of Northern Ireland
20 College Gardens
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TABLE 1
UNITED KINGDOM: PRODUCTION OF MINERAL COMMODITIES[1]

(Metric tons unless otherwise specified)

Commodity		2000	2001	2002	2003[e]	2004[e]
METALS						
Aluminum:						
Alumina from imported bauxite		88,500 [e]	83,900	73,800	72,000 [r]	72,000
Metal:						
Primary		305,100	340,778	344,318	342,748 [2]	359,631 [2]
Secondary		285,300	248,600	204,900	205,400 [2]	205,400 [2]
Total		590,400	589,378	549,218	548,148 [2]	565,031 [2]
Cadmium, metal including secondary		503	425	292	22 [2]	--
Copper, metal, refined, secondary		3,000	--	--	--	--
Iron and steel:						
Iron ore and concentrate, manganiferous:						
Gross weight		1,033	510	464	500	500
Fe content, 54% Fe		540	281	255	275	275
Metal:						
Pig iron	thousand metric tons	10,989	9,861	8,579	10,200	10,500
Steel:						
Crude	do.	15,306	13,610	11,718	12,900	13,766 [2]
Hot-rolled	do.	13,173	11,369	13,771 [r]	13,500	13,500
Lead:						
Mine output, Pb content[e]		1,000	800	700	700	600
Metal:						
Smelter:						
Bullion from imported concentrate		36,700	36,000	36,000	9,000	8,000
Secondary, refined[e, 3]		100,000	100,000	100,000	100,000	120,000
Total		136,700	136,000	136,000	109,000	128,000
Refined:						
Primary[4]		166,411	202,915	207,719	181,668 [2]	126,000
Secondary[3]		170,740	163,390	166,927	169,574 [2]	120,000
Total		337,151	366,305	374,646	351,242 [2]	246,000
Nickel, metal, refined[5]		37,976	33,817	33,790	26,788 [2]	38,600
Zinc, metal, smelter		99,600	100,000	99,600	16,600 [2]	--
INDUSTRIAL MINERALS						
Barite[e, 6]		55,000	66,000	59,000	57,000	56,000
Bromine[e]		50,000	50,000	24,500	25,000	25,000
Cement, hydraulic	thousand metric tons	12,702	11,854	11,089	11,215 [2]	11,250 [2]
Clays:[e]						
Fire clay	do.	595	600	491	450	450
Fuller's earth[7]	do.	66	52	44 [2]	34	35
Kaolin, china clay[8]	do.	2,420 [2]	2,204 [2]	2,163 [2]	2,097 [2]	2,100
Ball clay and pottery clay[7]	do.	1,000	998	921 [2]	885 [2]	900
Other, including shale	do.	12,000	10,100	10,306 [2]	10,400	10,500
Feldspar, china stone		2,000 [e]	2,995	1,896	2,000	2,000
Fluorspar, all grades[e, 9]		36,000	50,000	53,000	56,000	55,000
Gypsum and anhydrite[e]	thousand metric tons	1,500	1,600	1,700	1,700	1,600
Lime, hydrated and quicklime[e]	do.	2,000 [r]	2,000 [r]	1,500 [r]	1,500 [r]	1,500
Nitrogen, N content of ammonia	do.	814	850	837	1,044 [2]	1,071 [2]
Potash, K_2O equivalent		600,000	531,900	540,100	621,400 [2]	600,000
Salt:[e]						
Rock	thousand metric tons	1,700	1,900	1,500	1,500	1,500
From brine	do.	1,200	1,200	1,000	1,000	1,000
In brine, sold or used as such	do.	3,000	3,000	3,200	3,200	3,200
Sand and gravel:						
Common sand and gravel	do.	101,621	101,397	94,424	91,000	90,000
Industrial sand	do.	4,095	4,100 [e]	3,833	4,000	4,000
Sodium compounds, n.e.s., carbonate[e]	do.	1,000	1,000	1,000	1,000	1,000

See footnotes at end of table.

TABLE 1--Continued
UNITED KINGDOM: PRODUCTION OF MINERAL COMMODITIES[1]

(Metric tons unless otherwise specified)

Commodity		2000	2001	2002	2003[e]	2004[e]
INDUSTRIAL MINERALS--Continued						
Stone:						
Crushed:						
Calcite[e]	thousand metric tons	12	12	10	10	10
Chalk[e]	do.	10,000	10,000	8,587 [2]	8,500	8,500
Dolomite[e]	do.	14,000	14,000	12,937 [2]	12,950 [2]	13,000
Igneous rock	do.	54,113	53,190	51,008	50,400	50,000
Limestone[e]	do.	86,000	86,000	80,497 [2]	82,000	82,000
Sandstone	do.	15,000 [e]	19,967	18,362	18,100	18,000
Slate including fill	do.	350 [e]	467	622	900	900
Total	do.	179,475	183,636	172,023	173,000	172,000
Dimension:[e]						
Igneous	do.	125	497 [2]	500	500	500
Limestone	do.	300	250	217 [2]	225	250
Sandstone	do.	300	250	250	250	250
Slate	do.	70	84 [2]	120	100	100
Total	do.	795	1,080	1,090	1,080	1,100
Sulfur, byproduct:[e]						
Of metallurgy		51,400 [2]	69,000 [2]	33,000 [2]	13,000	15,000
Of petroleum refining		140,000	111,000	125,000	115,000	120,000
Total		191,000	180,000	158,000	128,000	135,000
Talc, soapstone, pyrophyllite		5,000 [e]	4,937	6,194	6,000	6,000
Titania[e, 10]		200	200	200	200	200
MINERAL FUELS AND RELATED MATERIALS						
Coal:						
Anthracite		797	616	2,000 [e]	1,500	1,200
Bituminous including slurries, fines, etc.		31,175	31,512	28,000	26,700	26,000
Total		31,972	32,128	30,000 [e]	28,200	27,200
Coke:						
Metallurgical		6,058	5,306	4,335	4,286 [2]	4,300
Breeze, all types		370	210	221	314 [2]	300
Fuel briquets, all grades		537	550	431	393 [2]	400
Gas, natural:						
Marketable[11]	million cubic meters	95,854	96,000 [e]	109,050	100,000	100,000
Marketed[e, 12]	do.	70,000	70,000	70,000	70,000	70,000
Natural gas liquids[e, 13]	thousand 42-gallon barrels	62,000	62,000	62,000	60,000	60,000
Peat[e]	cubic meters	1,000	1,000	973 [2]	900	900
Petroleum:						
Crude[14]	thousand 42-gallon barrels	884,115	821,220	810,158	815,000	812,000
Refinery products:[e]						
Liquefied petroleum gas	do.	25,000	25,000	24,963 [2]	25,000	25,000
Naphtha including white spirit	do.	22,000	22,000	27,480 [2]	28,000	28,000
Gasoline	do.	230,000	230,000	198,458 [2]	200,000	200,000
Jet fuel and kerosene	do.	80,000	80,000	71,952 [2]	72,000	72,000
Distillate fuel oil	do.	195,000	195,000	210,536 [2]	200,000	200,000
Residual fuel oil	do.	68,000	68,000	57,768 [2]	58,000	58,000
Lubricants	do.	6,500	6,500	6,500	6,500	6,500
Bitumen	do.	10,000	10,000	10,000	10,000	10,000
Petroleum coke	do.	5,000	5,000	5,000	5,000	5,000
Petroleum wax	do.	400	400	400	400	400
Unspecified	do.	30,000	30,000	30,000	30,000	30,000
Refinery fuel and losses	do.	25,000	25,000	25,000	25,000	25,000
Total	do.	697,000	697,000	668,000	660,000	660,000

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

[1]Table includes data available through September 2005.

[2]Reported figure.

[3]Includes a small quantity of primary lead from domestic concentrate.

TABLE 1--Continued
UNITED KINGDOM: PRODUCTION OF MINERAL COMMODITIES[1]

[4]Produced entirely from imported bullion and includes the lead content of alloys.
[5]Refined nickel and nickel content of ferronickel.
[6]Includes witherite.
[7]Salable product.
[8]Sales, dry weight.
[9]Proportions of grades not available; probably about two-thirds acid grade.
[10]Sales.
[11]Methane, excluding gas flared or reinjected.
[12]Marketable methane, excluding that used for drilling, production, and pumping operations.
[13]Includes ethane, propane, butane, and condensates, respectively.
[14]Excludes gases and condensates.

TABLE 2
UNITED KINGDOM: 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	Annual capacity
Alumina	Alcan Inc.	Burntisland, Scotland (closed)	100,000
Aluminum:			
Primary	British Alcan Aluminium Ltd.	Fort William, Kinlochleven, and Lynemouth	196
Do.	Anglesy Aluminium Ltd. (Rio Tinto Corp., 51%, and Kaiser Aluminum and Chemical Corp., 49%)	Holyhead, Wales	113
Secondary	Bernhard Metals Ltd.	Derby	50
Do.	Calder Industries Ltd.	do.	35
Do.	Deeside Aluminium Ltd.	Clwyd, Wales	55
Do.	Hydro Aluminium Alupres Ltd.	Caerphilly, Wales	38
Barite	Laporte Industries plc	Mines in Derbyshire	25
Do.	M-I Drilling Fluids (UK) Ltd.	Aberfeldy	50
Celestite	Bristol Minerals Co. Ltd.	Yate, Avon	30
Cement	Aberthaw and Bristol Channel Portland Cement Co. Ltd.	East Aberthaw and Rhoose, Glamorgan, Scotland	1,000
Do.	Lafarge Cement UK (Lafarge Group)	Plants at Aberthaw, Cauldon, Dunbar, Hope, Masons, Northfleet, Plymstock, and Weardale	7,300
Do.	Castle Cement Ltd. (Heidelberg Cement AG, 100%)	Plants at Ketton, Ribblesdale, Padeswood, and Pitstone	3,400
Do.	Rugby Group	Plants at Barrington, Chinnor, Rochester, Rugby, and South Ferriby	2,700
Clay:			
Ball clay	WBB Minerals (SCR Sibelco NV)	Various operations in northern and southern Devon	500
China clay (kaolin)	Imerys Group	Mines and plants in Cornwall and Devon	3,000
Do.	Goonvean plc	Mines and plants in Cornwall	250
Coal million metric tons	UK Coal plc	19 mines in various locations	30
Copper	IMI Refiners Ltd.	Refinery at Walsall, west Midlands	80
Ferroalloys	Corus Group	Teesside, Cleveland	80
Do.	Murex Ltd.	Rainham, Essex	25
Do.	London and Scandinavian Metallurgical Co. Ltd.	Rotherham, South Yorkshire	30
Do.	Eastlink Ferroalloys Ltd.	Glossop	1
Fluorspar	Glebe Mines Ltd.	Mill at Stoney Middleton, mines in Derbyshire	250
Gypsum	British Gypsum Ltd.	Mines in Cumbria, Nottinghamshire, and Sussex	3,500

TABLE 2--Continued
UNITED KINGDOM: 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	Annual capacity
Lead:				
Primary		Britannia Refined Metals Ltd. (MIM Holdinga Ltd.)	Northfleet, Kent	225
Secondary		do.	do.	50
Do.		H.J. Enthoven and Son Ltd. [Billiton (U.K.) Ltd., 100%]	Darley Dale, Derbyshire	60
Smelter		MIM Holdings (U.K) Ltd.	Avonmouth, Avon	55
Natural gas	billion cubic feet per year	Amoco Ltd., British Petroleum Ltd. Esso (U.K.) Ltd., Phillips Petroleum Co. plc, Shell (U.K.) Ltd.	North Sea gasfields	1,250
Nickel, refined		INCO Europe Ltd. (INCO Ltd., Canada)	Clydach, Wales	30
Nitrogen, N content of ammonia		Terra Nitrogen Ltd.	Billingham	550
Petroleum:				
Crude	million 42-gallon barrels per day	Amoco Ltd., British Petroleum Ltd., Chevron Ltd., Esso (U.K.) Ltd., Occidental Petroleum Co. Ltd., Shell (U.K.) Ltd., Texaco Ltd., Unocal, Inc.	North Sea oilfields	2
Refined	do.	British Petroleum Ltd., Conoco Ltd., Mobil Oil Co. Ltd., and others	11 refineries in various locations	2
Platinum-group metals		Johnson Matthey plc	Refineries at Enfield (London) and Royston	20
Potash		Cleveland Potash Ltd. (Israel Chemicals Ltd., 100%)	Boulby Mine, Yorkshire	1,000
Salt:				
Road		Cleveland Potash Ltd. (Israel Chemicals Ltd., 100%)	Boulby Mine, Yorkshire	600
Rock		British Salt Ltd.	Middlewich	800
Do.		Irish Salt Mining and Exploration Co.	Mine at Carrick Fergus, Northern Ireland	300
Sand and gravel		TMC Pioneer Aggregates Ltd.	Chelmsford, Essex	1,000
Silica sand		WBB Minerals (SCR Sibelco NV)	Various operations in Chesire, Humberside, and Norfolk	5,000
Slate, natural		Alfred McAlpine Slate Ltd.	Penrhyn quarry, Bethesda, Wales	25
Steel		Corus Group plc	4 steelworks in Gwent, Humberside, Lanark, and Scunthorpe	18,000
Do.		ASW Holdings plc	Integrated steelworks at Cardiff, Wales	600
Stone, crushed		ARC Ltd. (Hanson plc, 100%)	50 quarries in various locations	50,000
Do.		do.	Glensanda quarry at Oban, Scotland	15,000
Talc		Alex Sandison and Son Ltd.	Unst, Shetland Islands	15
Do.		Shetland Talc Ltd. (Anglo European Minerals Ltd., 50%, and Dalriada Mineral Ventures Ltd., 50%)	Cunningsburg, Shetland Islands	35
Tin, ore		Baseresult Holdings Ltd.	South Crofty Mine, Cornwall (closed March 1998)	1,800
Titanium, sponge		Deeside Titanium Ltd.	Plant at Deeside, Clyde	5
Zinc, smelter		Britannia Zinc Ltd. (Xstrata plc, 100%)	Avonmouth, Avon (closed 2003)	120

TABLE 3
UNITED KINGDOM: EXPORTS OF DIAMOND[1]

Grade	1999		2000		2001		2002		2003	
	Quantity (thousand carats)	Value (thousand dollars)	Quantity (thousand carats)	Value (thousand dollars)	Quantity (thousand carats)	Value (thousand dollars)	Quantity (thousand carats)	Value (thousand dollars)	Quantity (thousand carats)	Value (thousand dollars)
Unsorted	2,784	242,843	8,616	626,155	4,031	447,882	NA	430,678	9,744	944,021
Gem:										
Rough	63,338	4,517,638	61,757	5,576,720	89,543	5,894,276	86,681	5,877,830	104,323	6,537,180
Cut	1,706	619,601	795	563,486	900	644,169	395	748	828	836
Industrial	29,979	36,309	27,031	43,803	11,861	29,904	7,837	27,002	12,178	70,414
Dust	49,035	17,989	NA	22,533	88,613	21,457	NA	18,882	75,402	20,431
Total	146,842	5,434,380	98,199	6,823,697	194,948	6,590,253	94,913	6,355,140	202,475	7,572,882

NA Not available.

[1]Where necessary, values have been converted from United Kingdom pounds (£) to U.S. dollars ($) at the rate of £1.00=US$1.74.

Source: British Geological Survey, United Kingdom Minerals Yearbook 2004, May 2005, p. 46.

TABLE 4
UNITED KINGDOM: IMPORTS OF DIAMOND[1]

Grade	1999		2000		2001		2002		2003	
	Quantity (thousand carats)	Value (thousand dollars)	Quantity (thousand carats)	Value (thousand dollars)	Quantity (thousand carats)	Value (thousand dollars)	Quantity (thousand carats)	Value (thousand dollars)	Quantity (thousand carats)	Value (thousand dollars)
Unsorted	4,677	239,180	5,561	340,249	587	49,708	1,795	126,264	5,210	315,088
Gem:										
Rough	151,651	5,738,628	79,692	6,531,685	81,303	6,612,276	70,336	4,858,323	77,715	5,586,769
Cut	4,810	989,282	6,423	1,086,032	4,396	975,125	5,132	1,246,848	4,520	1,098,813
Industrial	8,406	17,994	16,209	28,029	7,345	19,364	7,802	18,360	21,518	58,937
Dust	64,954	20,007	98,133	23,804	74,756	22,398	68,359	17,116	92,290	16,641
Total	234,498	7,035,091	206,018	8,009,799	168,387	7,678,871	153,424	6,266,911	201,253	7,076,248

NA Not available.

[1]Where necessary, values have been converted from United Kingdom pounds (£) to U.S. dollars ($) at the rate of £1.00=US$1.74.

Source: British Geological Survey, United Kingdom Minerals Yearbook 2004, May 2005, p. 46.