

THE MINERAL INDUSTRY OF NEW ZEALAND

By Travis Q. Lyday

The New Zealand mining industry is centered primarily on coal and gold, mineral commodities with long traditions in the country. The mineral industry in New Zealand began with the discovery of gold on the Coromandel Peninsula, North Island, in 1852. Coal mining also began in the 1850's. Since then, a wide range of minerals has been produced.

The existence of extensive iron sand deposits on the west coast of North Island has been known for more than a century, but not until the late 1960's was a steelmaking industry in New Zealand able to use successfully the iron sands and coal from an area near Waikato-North Head. Construction of the Glenbrook steelworks was completed in 1970.

Serious exploration for oil and gas began in the late 1950's, resulting in the discovery of several natural gas fields to date. The Kapuni Field was discovered in 1959 and began production in 1970, supplying gas to North Island Government distribution centers and industrial customers. The much larger Maui offshore gasfield, New Zealand's largest, was discovered in 1969. Its production has been used primarily for electricity generation and as a premium fuel.

New Zealand's extractive mineral industry constitutes only a small segment of the economy, contributing on the order of 1% to 2% to the country's gross domestic product (GDP). The mineral processing sector provides an estimated 4% to 5% to the GDP, based to a significant extent on imported alumina, crude oil, and fertilizer, increasing the value of the mineral industry output to about 5% to 6% of GDP.

Mining activities in New Zealand during 1995 continued to include coal extraction, both by underground and open cast methods; quarrying of raw materials for use primarily in domestic construction (clays, sand and gravel, and stone) and agricultural industries (limestone); and gold and titaniferous magnetite sand (iron sand) mining.

Gold production was from three large hardrock mining operations, the Golden Cross and Martha Hill Mines near Waihi at the base of the Coromandel Peninsula on North Island and the Macraes Flat Mine in the Eastern Otago region of South Island. A fourth mine was under consideration for development at Reefton, Westland, in South Island. Alluvial mining occurred at several sites, especially on South Island. Iron sand was mined by New Zealand Steel Ltd. (NZ Steel) at two sites on North Island, Waikato-North Head and Taharoa. Coal was produced from about 60 mines in both North Island and South Island. Mineral production also included natural gas, natural gas liquids, and petroleum condensate.

New Zealand's downstream mineral industry consisted of two steel mills; an aluminum smelter; aluminum, copper, and brass

extrusion plants; and an oil refinery, all of which primarily used imported raw materials.

New Zealand's mining industry was regulated by legislation passed in 1991 by Parliament, namely the Crown Minerals Act and the Resource Management Act. The former prescribes the granting of prospecting, exploration, and mining permits for Crown, i.e., Government-owned, minerals, ensuring that the Government receives a return when the mineral resources are developed. The latter applies to all industries, focusing on the effects of any activity on the environment.

Macraes Mining Co. Ltd. (MMC) announced in midyear that it will proceed with development of its Globe-Progress gold mine at Reefton in the Westland region of the west coast of South Island. Construction of the mine was to begin early in 1996. The first gold was expected to be poured in the first quarter of 1997, with full production by July 1998. The open pit operation has a targeted production of 3,000 kilograms per year (kg/yr) of gold from the mining and treatment of 1 million metric tons per year of ore. The expected life of the mine was a minimum of 6 years. Since the ore was known to extend at depth, MMC also was considering the possibility of subsequent underground development.

Titanomagnetite-bearing iron sand continued to be mined and concentrated at two unique projects along the western coast of North Island by NZ Steel, a wholly owned subsidiary of Australia's BHP Steel Mining Ltd. Titanomagnetite concentrate was produced by dry-mining (bulldozing and bucketwheel excavation) methods at Waikato-North Head, about 50 kilometers (km) south of Auckland, and pumped as a slurry through an 18-km pipeline to NZ Steel's integrated Glenbrook Steelworks. NZ Steel used both wet- (suction dredging) and dry-mining methods to produce an iron sand concentrate at its Taharoa project, about 100 km farther south. The Taharoa concentrate, averaging about 40% titanomagnetite by weight, was exported exclusively to Japan in specially fitted slurry ore carriers loaded at a mooring buoy connected to shore by a 3-km slurry pipeline. The product was used as a steelmaking additive and as a refractory in blast furnace operations.

The Maui gas-condensate field off the coast of North Island remained the country's largest, supplying about one-third of the country's total energy needs. Gas production from the Maui operation was piped to the onshore Oaonui gas treatment plant where it was sold to the Crown under a long-term contract effective until 2009. The Government, in turn, sold the gas to the Electricity Corp. of New Zealand, which burned a substantial amount in the generation of electricity; Methanex NZ Ltd., which owned the synthetic gasoline and methanol

manufacturing plants; and the Natural Gas Corp. Ltd., which operated the wholesale natural gas distribution system. These interests each received about one-third of Maui's gas production. Condensate production also was piped to the Oaonui plant, where it was stabilized before shipment to Port Taranaki for export to Australian refineries.

¹Text prepared Apr. 1996.

Major Sources of Information

Ministry of Commerce

P.O. Box 1473
Wellington, New Zealand
Telephone: +64 4 472 0030
Fax: +64 4 499 0968
New Zealand Minerals Industry Association
P.O. Box 27314
Wellington, New Zealand
Telephone: +64 6 385 1141
Fax: +64 6 385 1155

TABLE 1
NEW ZEALAND: PRODUCTION OF MINERAL COMMODITIES 1/

(Metric tons unless otherwise specified)

Commodity	1991	1992	1993	1994 e/	1995 e/	
METALS						
Aluminum metal, smelter:						
Primary	258,500	242,900	277,400	270,752 2/	273,296 2/	
Secondary	4,700	6,700	6,700	6,700 2/	7,000	
Total	263,200	249,600	284,100	277,452 2/	280,296	
Gold, mine output, Au content	kilograms	6,758	10,531	11,161	12,000	13,000
Iron and steel:						
Iron ore, gross weight e/ 3/	2,060	2,000	2,000	2,000	2,000	
Iron sand (titaniferous magnetite):						
Gross weight	thousand tons	2,265	2,934	2,389	1,100	2,000
Fe content e/	do.	1,300	1,300	1,300	600	900
Direct-reduced iron	do.	594	384	406	563 2/	500
Steel, crude	do.	806	759	853	766 2/	800
Lead, refinery output, secondary e/	5,000	5,000	3,000	6,000 r/	6,000	
Silver, mine output, Ag content	kilograms	11,370	22,413	25,797	30,000	32,000
INDUSTRIAL MINERALS						
Cement, hydraulic	thousand tons	576	579	600 e/	700	700
Clays:						
Bentonite	--	--	1,613	1,500	1,500	
Kaolin (pottery)	21,338	27,520	26,543	28,000	30,000	
For brick and tile	121,030	55,871	130,004	120,000	125,000	
Lime e/	90,000	100,000	100,000	100,000	100,000	
Nitrogen: N content of ammonia	70,000	68,200	77,800	78,000	80,000	
Perlite	1,674	2,000	814	1,500	1,500	
Pumice	52,644	112,476	69,179	70,000	70,000	
Salt e/	80,000	80,000	80,000	80,000	50,000	
Sand and gravel:						
Silica sand (glass sand)	99,132	71,940	48,635	50,000	50,000	
Other industrial sand	494,428	427,714	671,212	700,000	700,000	
For roads and ballast	thousand tons	10,460	12,520	13,502	14,000	15,000
For building aggregate	do.	3,486	3,838	4,942	5,000	5,000
Stone:						
Dolomite	11,636	12,943	9,671	10,000	10,000	
Greenstone e/	kilograms	1,000	1,000	1,000	1,000	
Limestone and marl:						
For agriculture	thousand tons	946	1,310	1,689	1,500	1,500
For cement	do.	1,390	1,459	1,577	1,500	1,500
For other industrial uses	do.	364	399	379	400	400
For roads	do.	407	523	597	600	600
Serpentine	do.	13,647	23,786	22,386	23,000	25,000
Dimension	17,898	23,722	40,060	35,000	35,000	
Rock for harbor work	thousand tons	5,238	1,514	1,680	2,000	3,000
Sulfur	451	--	6,600	6,000	6,000	
MINERAL FUELS AND RELATED MATERIALS						
Carbon dioxide, liquefied e/	10,000	10,000	10,000	10,000	10,000	
Coal:						
Bituminous	thousand tons	734	907	975	1,000	1,000
Subbituminous	do.	1,780	1,897	1,932	1,900	2,000
Lignite	do.	170	180	184	200	200
Total	do.	2,684	2,984	3,091	3,100	3,200
Coke: e/						
Coke oven	2,000	1,000	1,000	1,000	1,000	
Gashouse	7,000	7,000	7,000	7,000	8,000	
Total	9,000	8,000	8,000	8,000	9,000	
Gas:						
Manufactured (from gasworks) e/	thousand cubic meters	11,350	11,350	11,350	11,350	11,500
Natural:						
Gross production	do.	6,290	6,707	6,030	6,000	6,000
Marketed production	do.	5,800	5,100	4,900	4,900	4,900

See footnotes at end of table.

