

THE MINERAL INDUSTRY OF PAPUA NEW GUINEA

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The mineral industry remained the cornerstone of the country's economy in 1996, as it has since 1972 when the world-class Panguna porphyry copper-gold deposit on Bougainville Island in North Solomons Province concluded its first full year of production. Mining in the country consisted of large, modern, mechanized operations, such as the Ok Tedi copper mine in Western Province and the Misima opencast and Porgera underground-open pit gold-silver operations in Milne Bay and Enga Provinces, respectively, as well as panning and crude sluicing activity by individuals and small gold mining companies. Papua New Guinea's (PNG) petroleum industry began in 1991 with commencement of production from the Iagifu-Hedinia Oilfield, discovered in 1987, in Southern Highlands Province.

At yearend, there were five metal mines (Misima, Ok Tedi, Porgera, the Tolukuma gold-silver mine in Central Province, and the Wapolu gold mine, Milne Bay Province), one gas project (Hides, Southern Highlands Province), and two petroleum fields (Agogo, Gulf Province, and Iagifu-Hedinia). These produced virtually all of the country's mineral production, excluding minor amounts of alluvial gold by individual panners and clays, sand and gravel, and stone for construction purposes. A sixth mine, the Panguna, remained closed throughout the year owing to civil unrest by Bougainville Revolutionary Army militants.

PNG's state-owned resources company, Mineral Resources Development Corp. (MRDC), floated 49% of its assets on the Australian stock exchange, transforming itself into a new company, Orogen Minerals Ltd. Orogen was to retain various ownership percentages in the Misima, Ok Tedi, and Porgera Mines, as well as in the developing Lihir gold mine on Lihir Island in New Ireland Province. It was also to retain shares in the Gobe and Katubu Oilfields. Orogen may also reacquire MRDC's stake in the Panguna Mine, when and if this mine is recommissioned. Orogen additionally was to have an automatic option to acquire, for the next 25 years, up to a 25% interest in any new mineral project within the country (Metal Bulletin, 1996).

Minerals and petroleum exports represented about 70% of the country's total exports and an estimated 25% of the gross domestic product in 1996. Papua New Guinea remained the sixth largest exporter of gold in the world in 1996, primarily shipping to the Perth, Western Australia, refinery and mint. Gold from the Porgera Mine continued to account for about 40% of all export revenues and 10% of the Government's income. Virtually all nonfuel mineral production was exported in the form of doré, bullion, and copper-gold-silver concentrates. All

petroleum production also was exported.

Australia's Victoria State Supreme Court in Melbourne granted in April BHP Minerals Holdings Pty. Ltd.'s application for the adjournment of all compensation applications against it. BHP Minerals was the managing shareholder of the Ok Tedi Mine. The court's ruling followed the law enacted by the PNG Government that banned any legal action, such as the lawsuit filed in Australia in 1994 on behalf of a group of Papua New Guinean landowners seeking compensation for alleged environmental damage resulting from mining operations at the Ok Tedi Mine, being pursued in foreign court (Mining Journal, 1996b). BHP Minerals announced later in the year that it had achieved an out-of-court settlement with the Ok Tedi and Fly River communities that ended all litigation against the company concerning mining operations and alleged environmental damage at the Ok Tedi Mine. Partial terms of the settlement included continued commitment by BHP Minerals and Ok Tedi Mining Ltd. (OTML), operator of the mine, to support the independent inquiry formed by the Government in 1995; continued technical evaluations of tailings disposal to find a long-term solution to reduce the amount entering into local river systems; and providing a monetary compensation package to the affected river communities of about US\$85 million per year over the remaining 15-year life of the mine, as well as pay all legal costs the villagers incurred in their environmental damage lawsuits (Engineering and Mining Journal, 1996).

OTML announced plans to begin by June 1997 a 2-year trial dredging project to overcome the environmental problems created by the discharge of tailings from the mine into the Ok Tedi and Fly River systems. The project was estimated to cost about US\$47 million. The project included dredging the lower reaches of the Ok Tedi River and leasing up to 1,000 hectares of the riverbank to store the dredged material (South Sea Digest, 1996c).

The Government again was considering the feasibility of establishing a copper smelter in the country. It first considered the possibility in the 1970's when it commissioned a study on a similar project (South Sea Digest, 1996a).

Since the closure of Bougainville Copper Ltd.'s Panguna Mine on Bougainville Island in North Solomons Province in 1989, all of the country's copper production continued to be from the Ok Tedi Mine on Mount Fubilan in the Star Mountains of Western Province, 18 kilometers (km) east of the border with the Indonesian Province of Irian Jaya.

Lihir Gold Ltd., manager of the Lihir gold project on Lihir Island, 600 km northeast of the PNG mainland in the Bismarck Sea, New Ireland Province, announced that development of the

project was ahead of schedule and that treatment of the oxide ore from the deposit was expected to begin in May 1997, about 8 months earlier than originally planned. In addition, the date for the start of treatment of the high grade sulfide ore was advanced to early October 1997. As a result, Lihir was forecast to produce about 5,400 kilograms (kg) of gold in 1997, as opposed to the previous projection of 3,700 kg. The forecast for 1998 production also was increased, from 14,600 kg to more than 17,000 kg. Both oxide and sulfide ores were being stockpiled during the development phase for later treatment (South-East Asia Mining Journal, 1996).

The Lihir gold project was being designed for a mine life of 37 years, with open pit operations scheduled for the first 15 years. Ore production from the open pit was to be split into higher-grade direct process ore sent to the process plant as mined; the lower-grade stockpile ore would be treated at the end of the 15 years. Annual production during the first 15 years was to average about 19,000 kg of gold, decreasing to an annual rate of about 7,000 kg of gold for the remaining 22 years of operation when the stockpile material was to be processed.

Auridiam Consolidated NL of Perth, Western Australia, planned to develop its gold deposit on Woodlark Island in Milne Bay Province, 600 km east of Port Moresby in the Solomon Sea, after its most recent drilling program upgraded the resource estimate from 6,000 kg of gold to almost 11,000 kg of gold. Construction of the open pit mine was to begin in 1997, subject to the final feasibility study and receipt of necessary Government approvals. Auridiam acquired the Woodlark deposit from Highlands Gold NL (South Sea Digest, 1996d).

Nord Pacific Ltd.'s wholly owned subsidiary Simberi Gold Co. received a special mining lease from the Government to develop and operate a gold mine on Simberi Island, one of the islands in the Tabar Islands group off the northeast coast of New Ireland. Construction of the mine was to begin early in 1997, with initial gold production later that same year. The operation was expected to produce about 1,250 kilograms per year of gold from near-surface oxide ores. Reportedly, there are sufficient reserves for a 5-year operation based on approximately 13,500 kg of gold. However, Nord Pacific was planning to conduct exploration drilling to increase the project's resource, focusing on the primary sulfide gold that underlies the oxide ores (Mining Journal, 1996a).

Although exploration drilling was expected to resume in 1996 at the Mount Kare hardrock gold project, 18 km southwest of the Porgera Mine in Enga Province, following the National Court's ruling of ownership, Matu Mining Pty. Ltd. and its new partner Madison Enterprises Corp. of Canada were unable to begin due to continuing disputes with local landowners' representatives (South Sea Digest, 1996b). The National Court had ruled in 1995 that Matu Mining, a wholly owned subsidiary of Carpenter Pacific Resources Ltd., held the hardrock mining rights in the Mount Kare exploration license area, with the local landowner-owned Kare-Puga Development Corp. having the alluvial-colluvial rights.

The country's only cement factory was a clinker grinding plant in Lae, Morobe Province, owned by PNG-Halla Cement Pty. Ltd.

Plans for the Kopi oil refinery on Motukea Island in Fairfax Harbour, Gulf Province, was officially approved by the Department of Commerce and Industry. Construction of the refinery, the first in the country, was expected to take 8 months, cost about US\$303 million, and be in production by 1999. The plant was to have a processing capacity of 40,000 barrels of oil per day, using crude from the Gobe and Kutuba Oilfields operated by Chevron Niugini Pty. Ltd. Approximately 75% of output was planned to be exported, mainly to Brisbane, Australia, with the balance sold locally. The project manager, PNG Oil Refinery Pty. Ltd., was to arrange for the construction of three tankers, two of 40,000 tons, and one of 20,000 tons at a total cost of about US\$63 million. The project was expected to provide direct employment for 600 people (South Sea Digest, 1997).

All of the country's petroleum production was exported from the marine export terminal in the Gulf of Papua and sold to refineries in Australia, Japan, and Southeast Asia. Natural gas production from the Hides Gasfield was flared, except for a small amount used at the Porgera Mine. The country's only refinery, the small topping Iagifu Ridge Refinery 200 meters above Lake Kutubu in Southern Highlands Province, produced a small quantity of aviation and diesel fuels from condensate both for sale within the country and in conjunction with the Kutubu project itself.

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Major Sources of Information

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TABLE 1
PAPUA NEW GUINEA: PRODUCTION OF MINERAL COMMODITIES 1/

Commodity 2/		1992	1993	1994	1995	1996 p/
Copper, mine output, Cu content	metric tons	193,359	203,945	209,329 r/	212,737	186,715
Gold, mine output, Au content	kilograms	71,190	60,587	58,654 r/	51,701 r/	51,573
Gas, natural	million cubic meters	542	1,471	1,757	1,832	1,990
Natural gas liquids	42-gallon barrels	53,700	63,200	73,100	77,000	110,800
Petroleum, crude	thousand 42-gallon barrels	19,313	45,884	44,008	36,344	38,641
Silver, mine output, Ag content	kilograms	95,498	96,094	65,695 r/	65,153 r/	59,036

p/ Preliminary. r/ Revised.

1/ Table includes data available through Mar. 28, 1997.

2/ In addition to the commodities listed, cement and crude construction materials (common clays, sand and gravel, and stone) are produced, but output is not reported quantitatively, and available general information is inadequate to make reliable estimates.

TABLE 2
PAPUA NEW GUINEA: STRUCTURE OF THE MINERAL INDUSTRY FOR 1996

(Metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity e/
Cement	thousand tons	PNG-Halla Cement Pty. Ltd. (Halla Cement Corp. of South Korea, 50%, and State of Papua New Guinea, 50%)	Lae, Morobe Province	500
Copper	do.	Ok Tedi Mining Ltd., operator. [BHP Minerals Holdings Pty. Ltd., managing shareholder, 52%; Mineral Resources Development Co. (State of Papua New Guinea), 30%; and Metall Mining Corp. of Canada, 18%] 1/	Ok Tedi Mine, Mount Fubilan, Western Province	145
Do.	do.	Bougainville Copper Ltd., operator and manager. [CRA Ltd., 53.6%; public shareholders, 27.3%; and Mineral Resources Development Co. (State of Papua New Guinea), 19.1%] 1/	Panguna Mine, Bougainville Island, North Solomons Province 2/	180
Gold		Lihir Gold Corp., developer and manager. [Southern Gold (Bahamas) Ltd., a 75:25 joint venture between RTZ Corp. Plc. and Vengold Inc., 22.8%; Mineral Resources Lihir Pty. Ltd. (State of Papua New Guinea), 17.15%; Niugini Mining Ltd., 17.15%; and public shares, 42.9%]	Lihir project, Lihir Island, New Ireland Province 3/	18
Do.		Misima Mines Pty. Ltd., operator and manager. [Placer Niugini Pty. Ltd., 80%; and Mineral Resources Development Co. (State of Papua New Guinea), 20%] 1/	Misima Mine, Misima Island, Milne Bay Province	6
Do.		Oakland Pty. Ltd., operator and manager, 90%, and Kare-Puga Development Corp. (local landowner group), 10%	Mount Kare deposit, 18 kilometers southwest of the Porgera Mine, Southern Highland Province	5
Do.		Ok Tedi Mining Ltd., operator. [BHP Minerals Holdings Pty. Ltd., managing shareholder, 52%; Mineral Resources Development Co. (State of Papua New Guinea), 30%; and Metall Mining Corp. of Canada, 18%] 1/	Ok Tedi Mine, Mount Fubilan, Western Province	15
Do.		Bougainville Copper Ltd., operator and manager. [CRA Ltd., 53.6%; public shareholders, 27.3%; and Mineral Resources Development Co. (State of Papua New Guinea), 19.1%] 1/	Panguna Mine, Bougainville Island, North Solomons Province 2/	10
Do.		Placer (PNG) Pty. Ltd., manager, 25%; Highland Gold Properties Pty. Ltd., 25%; RGC (Papua New Guinea) Pty. Ltd., 25%; and Mineral Resources Porgera Pty. Ltd. (State of Papua New Guinea), 25%	Porgera Mine, 130 kilometers west of Mount Hagen, Enga Province	30
Do.		Clayfield Pty. Ltd., operator and manager. (Dome Resources NL, 100%)	Tolukuma Mine, 100 kilometers north of Port Moresby, Central Province	2
Do.		Union Mining NL, operator and manager, 51% and Macmin NL, 49%	Wapulu Mine, Fergusson Island, Milne Bay Province	1
Silver		Misima Mines Pty. Ltd., operator and manager. [Placer Niugini Pty. Ltd., 80%; and Mineral Resources Development Co. (State of Papua New Guinea), 20%] 1/	Misima Mine, Misima Island, Milne Bay Province	100
Do.		Ok Tedi Mining Ltd., operator. [BHP Minerals Holdings Pty. Ltd., managing shareholder, 52%; Mineral Resources Development Co. (State of Papua New Guinea), 30%; and Metall Mining Corp., 18%] 1/	Ok Tedi Mine, Mount Fubilan, Western Province	30
Do.		Placer (PNG) Pty. Ltd., manager, 25%; Highland Gold Properties Pty. Ltd., 25%; RGC (Papua New Guinea) Pty. Ltd., 25%; and Mineral Resources Development Co. (State of Papua New Guinea), 25% 1/	Porgera Mine, 130 kilometers west of Mount Hagen, Enga Province	5
Do.		Clayfield Pty. Ltd., operator and manager. (Dome Resources NL, 100%)	Tolukuma Mine, 100 kilometers north of Port Moresby, Central Province	4

See footnotes at end of table.

TABLE 2--Continued
 PAPUA NEW GUINEA: STRUCTURE OF THE MINERAL INDUSTRY FOR 1996

(Metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity e/
Natural gas thousand cubic meters per day	BP Petroleum Development Ltd., operator and manager, 92.5%, and Oil Search Ltd., 7.5%	Hides Gasfield, Southern Highlands Province	425
Petroleum thousand 42-gallon barrels per day	Chevron Niugini Pty. Ltd., operator and manager, 19.375%; BP Petroleum Development, 19.375%; Ampol Exploration Ltd., 16.46%; BHP Petroleum (PNG) Inc., 9.69%; Oil Search Ltd., 7.76%; Merlin Pacific Petroleum Co., 4.84%; and Petroleum Resources Kutubu Pty. Ltd. (State of Papua New Guinea), 22.5%	Kutubu Project (Agogo and Iagifu-Hedinia Oilfields), Gulf and Southern Highlands Provinces	140
Do.	do. Barracuda Pty. Ltd., operator and manager, 20%. Southern Highlands Petroleum, 50%; Oil Search Ltd., 20%; Nomenco PNG Oil Co., 7%; and Mountains West Exploration Inc., 3%	South East Gobe Oilfield, Gulf Province	40

e/ Estimated.

1/ Reflects ownership in 1996 with state-owned Mineral Resources Development Co., prior to its floating 49% of its assets on the Australian stock exchange and forming the new state-owned company Orogen Minerals Ltd.

2/ Closed since May 1989 because of civil unrest.

3/ Under development for probable 1997 commissioning.