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THE MINING INDUSTRY'S WEEKLY NEWSPAPER

March 11, 2005

Mining Journal

FREE with this issue – map of nickel exploration properties in Australia

BHP Billiton snatches WMC from Xstrata

THE world's largest fully diversified natural-resources group, BHP Billiton, flexed its financial muscles this week, with a surprise offer for WMC Resources Ltd of Australia.

The A$7.85/share all-cash offer, valuing WMC at US$7.3 billion, easily surpassed Xstrata plc's revised A$7.00/share offer which was due to close on March 24 (*MJ*, March 4, p1).

Outlining BHP Billiton's rationale for the offer this Tuesday (Comment, p2), BHP Billiton's chief executive, Chip Goodyear, described the offer as both "full and fair" for shareholders in WMC – it falls in the upper half of Grant Samuel's independent valuation of A$7.17-8.24/share – and "value enhancing for BHP Billiton shareholders".

In raising its earlier offer last month, London-listed Xstrata had declared its bid final only in the absence of a higher offer. Responding to BHP Billiton's announcement this Tuesday, Xstrata wasted no time in conceding defeat: "…Xstrata confirms that it will not be increasing its unconditional offer..."

The board of WMC was also quick to react, stating it "unanimously recommended that WMC shareholders accept the A$7.85 offer from BHP Billiton in the absence of a superior proposal". The directors also indicated that they will tender their own WMC shares to the offer, provided no higher bid is forthcoming.

WMC's chief executive, Andrew Michelmore, said: "We have consistently pursued all options to maximise value for WMC shareholders. We believe this … offer represents excellent value for WMC shareholders. We will work with BHP Billiton to put the offer to WMC shareholders as soon as is practicable."

Underlining this position, WMC has signed a 'deed of undertaking' with BHP Billiton under which it would pay a break fee of A$92 million under certain conditions, the most important of which are: if a competing offer secures more than 50% of the shares in WMC; if a director of WMC fails to recommend the BHP Billiton bid or recommends a competing offer; or if WMC causes any of BHP Billiton's bid conditions to be breached.

The key conditions of BHP Billiton's offer include a minimum acceptance level of 90%, the absence of any material change in WMC and the relevant regulatory approvals. Mr Goodyear said

Continued on page 15

The Raglan nickel mine in Québec: Falconbridge is Noranda's crown jewel

Noranda and Falconbridge to merge

CANADA'S largest diversified mining company, Noranda Inc, this week announced plans to merge with its 59%-owned subsidiary Falconbridge Ltd in an all-share deal, as a takeover of Noranda by China Minmetals Corp was finally confirmed as no longer under discussion.

Noranda also said it would offer to buy back up to 63.4 million of its common shares, representing 21% of the total on issue prior to the planned merger, in exchange for preference shares with a combined face value of US$1.25 billion. If more shares are tendered than 63.4 million, they will be bought back on a pro-rata basis. The company said the buy-back will provide its common shareholders with greater leverage to "the current strong commodity cycle".

Falconbridge holds the Noranda group's nickel assets and most of its most important copper interests, such as the stakes of 44% in Collahuasi and 100% in Lomas Bayas, both copper mines in Chile. Copper and nickel contributed the bulk of Noranda's record profits in 2004 (*MJ*, February 11, p13).

Rumours of a Noranda offer to the Falconbridge minori-

Continued on page 15

LEADING INDICATORS

	Last	% change on week	% change on year
Dow Jones Industrial Average	10,829	0.0	5.2
Nikkei 225	11,865	0.1	3.8
Hang Seng	13,856	-0.3	4.9
HSBC Global Mining	277	3.2	24.0
FTSE Gold Mines	1,745	5.3	5.1
FTSE/JSE Africa Gold	1,685	3.9	-26.1
S&P/ASX 300 Resources	2,878	2.2	47.5
S&P/TSX Diversified Metals/Mining	2,740	0.0	48.5
Commodities			
Gold (London am fix)	439.90	1.5	9.8
Silver (London am fix)	7.50	4.0	4.8
Aluminium c/lb (LME)	90.50	4.2	20.4
Copper c/lb (LME)	147.39	2.0	15.0
Crude Oil (European Brent Blend)	53.09	1.4	N/A

CURRENCIES

	Value per US$	% change on week	% change on year
A$	1.27	0.9	5.9
C$	1.20	3.4	10.1
Euro	0.75	2.3	9.7
Franc (Swiss)	1.15	2.3	11.5
Krona (Swedish)	6.77	2.0	11.0
Peso (Chilean)	587.35	0.7	2.3
Pound (British)	0.52	0.9	6.7
Rand	5.84	1.9	13.7
Real	2.73	-1.8	6.7
Yen	104.01	1.2	6.6
Yuan	8.28	0.0	0.0

PORTMAN EXTENSION
US iron-ore producer Cleveland-Cliffs Inc has extended its A$676 million all-cash takeover offer for Western Australian producer Portman Ltd. The bid, which had been due to expire next Friday, has been extended by four days to March 22. Last week, Cleveland-Cliffs raised the bid to A$3.85/share in cash in response to rises in international iron-ore contract prices (*MJ*, March 4, p13).

GOLD FIELDS EXTENSION
Harmony Gold Mining Co Ltd has extended its hostile takeover offer for fellow South African gold producer Gold Fields Ltd until May 20. The offer had been due to expire next Friday (March 18). As of this Wednesday (March 9), Harmony had acceptances representing 31.6% of Gold Fields' shares, including the 20.03% pledged to its offer by MMC Norilsk Nickel of Russia.

MOA BAY EXPANSION
Sherritt International Corp of Canada and its state-owned Cuban 50:50 partner in the Moa Bay nickel-mining operations have agreed to expand their facilities by 16,000 t/y of contained nickel, to raise capacity to 49,000 t/y. The partners will fund equal shares of the estimated US$450 million capital cost (p3).

SA TREMOR TRAPS 42
A seismic event measuring 5.3 on the Richter scale trapped 42 miners at DRDGold Ltd's North West Operations near Stilfontein this Wednesday, and cost the life of at least one of them (p3).

SISHEN EXPANSION
Kumba Resources Ltd has given the go-ahead for an expansion that will increase output at the company's Sishen iron-ore mine in South Africa's Northern Cape Province from 28 Mt/y to 38 Mt/y by 2009 (p7).

NORANDA EXPLORATION
Noranda Inc and Falconbridge Ltd (which announced this week that they are to merge – opposite) have released the results of exploration at their "most significant greenfields and brownfields" projects (p12).

Mining Journal

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Big brother

AS BHP Billiton's chief executive, Chip Goodyear, said this week: "Opportunities to acquire tier-one assets in low-risk regions, well positioned to serve the Asian markets, do not come around very often." The attractiveness of WMC's assets is not in doubt.

Nor is the buyer's ability to fund the deal: the US$7.3 billion price tag (p1) is less than 10% of BHP Billiton's market capitalisation, and the group expects to put into place the necessary acquisition credit lines for US$6.5 billion without any problem, and to refinance them on a long-term basis later.

Anti-competition clearance should not be a problem either. The main overlaps are in nickel and copper. Only the nickel industry could be said to be concentrated in few hands, and the deal will take BHP Billiton only as far as the world's number-three slot.

The big, perhaps the only, question is the price: is BHP Billiton overpaying? Certainly, the almost unique potential of the deal to propel Xstrata instantly upwards on its strategy to reach the top flight of diversified mining companies would suggest the latter had reason to pay more than any other bidder (*MJ*, March 4, p2), and thus its unwillingness to outbid BHP Billiton does suggest a more-than-full price is on the table.

The market's initial reaction was also 'yes'. Shares in BHP Billiton closed down by 1% on Monday (on a day when its main peers, Rio Tinto and Anglo American, both rose by just over 0.5%), as the group's intention to bid became apparent, and then dropped by a further 1.3% on Tuesday as the deal was absorbed by the market, taking a total of about US$2 billion from BHP Billiton's market value.

Shares in Xstrata also fell on Monday, by 3%, as BHP Billiton's intentions became clear, but recovered some ground on Tuesday, rising by 2% on the day. This pattern perhaps reflects the market's disappointment that Xstrata was about to miss a 'company transforming' opportunity, followed by relief that it had backed away from raising its bid yet further.

Mr Goodyear insisted that the offer price is value enhancing for BHP Billiton's shareholders, and said that BHP Billiton's normal valuation methodology had been used. Analysts at RBC Capital Markets calculate that the deal will boost BHP Billiton's earnings per share over the next couple of years by just 3%. Of course, the immediate financial effects of the acquisition will depend on the direction of commodity prices, and BHP Billiton is effectively backing its view of a prolonged rally with its cash.

Richard Morgan – editor

> "The big, perhaps the only, question is the price"

However, Mr Goodyear was keen to emphasise the long-term nature of the group's thinking. He said annual cost-savings of around A$115 million are expected, but he placed this benefit well down the list. This included the long-term expansion potential of WMC's assets, which fits BHP Billiton's aim to have the "options to respond to demand"; the complementary nature of the assets with BHP Billiton's existing businesses, particularly in copper and nickel – he pointed only to the fertiliser business as non-core; the strategic benefit of moving into uranium production (at Olympic Dam), making BHP Billiton the only group producing every non-renewable energy product (oil, piped gas, LNG, coal and uranium); and the potential synergies in product marketing.

And perhaps anticipating comparisons with the price at which the strategically-driven Xstrata had stopped bidding, Mr Goodyear suggested BHP Billiton's operating experience made the WMC assets "worth more in our hands". That BHP Billiton is a competent manager is not in question, but the veracity of that statement will be impossible to test.

So what next for the loser? At the release of Xstrata's annual results last week, chief executive Mick Davis said WMC was "only one of a number of options" to enhance the group's value, and his presentation included prominent news of greenfield projects (*MJ*, March 4, p13) to complement the company's brownfield project pipeline. Major acquisition opportunities – as Mr Goodyear correctly pointed out – are scarce, so Xstrata may be expected to focus on smaller takeovers and its existing projects.

And the real winners in any corporate bidding battle, apart from the armies of advisers? The shareholders in the target company.

**We welcome the opportunity to publish readers' views and comments.
Please write to: letters@mining-journal.com**

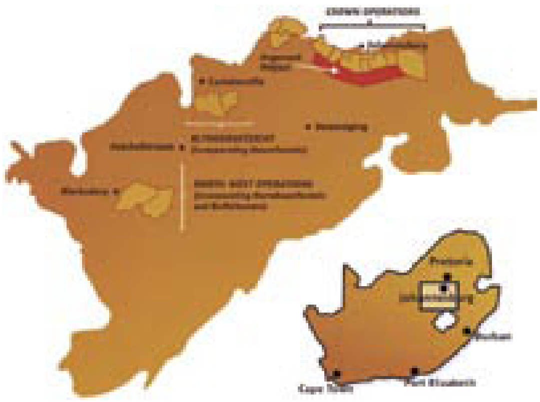
COMPANIES MENTIONED IN THIS ISSUE

Tremor at DRDGold mine traps 42 miners

A SEISMIC event measuring 5.3 on the Richter scale trapped 42 miners at DRDGold Ltd's North West Operations near Stilfontein this Wednesday (March 9).

The event, which, according to the US Geological Survey, had an epicentre some 15 km beneath the surface, also caused the collapse of several buildings in the town of Stilfontein and was felt in Johannesburg some 160 km to the northeast.

DRDGold's own measurements suggested an epicentre 2,000 m below the surface, on a fault that traverses the Stilfontein area, and some 3 km away from the nearest mining activity.



DRDGold's North West Operations were hit by a major seismic event this week

The North West Operations comprise eight shafts, and the company brought 3,158 miners to the surface in the aftermath of the tremor. However, the shock severely damaged underground roadways around the No 5 shaft, causing extensive falls of ground and trapping the 42 miners close to the working faces.

Rescue teams from DRDGold and other operations managed to locate the trapped miners some 6 km from the shaft and bring 40 of them, including three stretcher cases, to the surface. One miner died and the search continues for one other miner. Over 100 members of mine rescue teams were involved in the incident. Mining at the unaffected shafts has subsequently resumed.

According to DRDGold, its own seismic monitoring equipment detected four large events between 10:15 and 10:22 on Wednesday morning. Ian Saunders, a geotechnologist with South Africa's Council for Geoscience, said it is difficult to determine the cause of such events: "The magnitude tells us that it is most probably the reactivation of an old fault… a secondary effect of mining."

South Africa's National Union of Mineworkers urged the South African Government to revoke DRDGold's mining permit, alleging that the company does not comply with safety standards.

Beleaguered DRDGold had earlier suspended operations at North West Operations' No 10 shaft after two locomotive drivers were killed last Friday by an empty runaway ore wagon.

At that time, DRD's chief executive, Mark Wellesley-Wood, said: "We need to be absolutely sure that, in addressing the North West Operations' current serious operating and financial difficulties, safety is not being compromised."

Ironically, last month the Department of Minerals and Energy's principal mining inspector, Kennedy Moagi, presented Chris Vermeulenhim, general manager of the North West Operations, with the Council of Mining Safety's Millionaire Trophy in recognition of the complex's recent completion of one million fatality-free shifts. DRDGold is considering mothballing the entire North West Operations mining complex unless productivity can be improved by 34% and the current working costs of R71 million/mth are reduced to R40 million.

Last week, the company announced a 60-day review of the operations and issued a Section 189 notice which initiates formal discussions with unions and workers over potential job losses (*MJ*, March 4, p11).

The North West Operations currently employ 6,513 people. The complex, which comprises the Hartebeestfontein and Buffelsfontein mines, is losing around R20 million/mth. It accounts for 54% of DRDGold's South African gold output and 34% of its total production. In the six months to December 31, 2004, DRDGold's attributable production totalled 443,821 oz.

DRDGold says that an, as yet, unnamed company, has expressed an interest in buying some of its operations.

Moa Bay expansion deal signed

SHERRITT International Corp of Canada and the Government of Cuba have signed an agreement to expand the Moa Bay nickel operation.

Under the terms of the agreement, Sherritt and state-owned Cia General de Niquel will fund equal shares of the US$450 million investment required to increase the output of nickel and cobalt in sulphides by 16,000 t/y to 49,000 t/y.

Sherritt had originally planned to finance the expansion alone. However, according to Sherritt's chief executive, Jowdat Waheed, "the government decided on the strength of the economics to fund their share".

According to Mr Waheed, the expansion "offers the best economics of any nickel project that has been announced".

As part of the deal, the Cuban Government has agreed to ensure the granting of concessions covering sufficient ore reserves to provide for 25 years of production at the expanded rate.

Sherritt had originally hoped to sign the agreement by the end of the September quarter of 2004.

Nevertheless, it reports that basic engineering and a drilling programme to delineate ore reserves on the concession have already begun, and that construction at Moa Bay will start later this year, followed by plant commissioning in 2007.

The partners will also expand their jointly-owned nickel cobalt refinery at Fort Saskatchewan in Alberta.

The upgrade will include the replacement of the existing carbonyl-based nickel-refining technology with solvent-extraction and electrowinning technology. The operation produced a record 31,704 t of nickel and 3,317 t of cobalt in 2004.

The partners have also maintained their agreement in principle to investigate the possibility of expanding production by a further 32,000 t/y once the current expansion has been completed.

GOLD BREAKS US$440/OZ

A fresh slide in the value of the US dollar against the world's major currencies lifted the gold price to US$442.40/oz this Thursday, its highest level for ten weeks. The dollar started its latest descent in Asian markets after Japanese Prime Minister Junichiro Koizumi said his country needed to consider diversifying its foreign reserves. Analysts suggest that a test of gold's December high of US$445/oz now seems likely.

HARMONY DEATHS

Four miners have been killed at Harmony Gold Mining Co Ltd's Harmony No 2 shaft in South Africa's Free State Province. The miners were killed by a fall of ground triggered by a seismic event some 2,300 m underground. A fifth miner was rescued after suffering a leg injury. Harmony says it has halted operations at the shaft until the safety of employees can be assured. The company and South Africa's Department of Minerals and Energy have launched an investigation into the accident.

JAKARTA SEEKS DAMAGES

Indonesian Environment Minister Rachmat Witoelar says his government will seek around US$100 million in damages in a civil action against Newmont Mining Corp over arsenic and mercury pollution on the seabed of Buyat Bay. The Indonesian Government, local villagers and a number of NGOs have alleged that Newmont's now-closed Minahasa mine was the source of the pollution (*MJ*, December 9, 2004, p5). Newmont denies the allegations. Last month, an Indonesian doctor who alleged that Newmont's activities had harmed the health of local villagers withdrew her allegations, saying her conclusions that the illnesses were caused by tailings were premature. Newmont subsequently dropped a defamation suit against the doctor. The South Jakarta District Court ruled in December that the criminal investigation into the allegations was illegal. The Indonesian police have appealed in the Supreme Court; Newmont is awaiting a decision of this appeal. If the police are unsuccessful in their appeal, there will be no criminal trial against six Newmont employees. In the meantime, the employees are not allowed to leave the country.

COMMODITY LOSSES

Japanese trading house Sojitz Holdings Corp has disclosed losses equivalent to US$153.1 million owing to a "serious violation" of its internal rules in executing deals in its minerals and energy resources division.

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Precious metals monthly monitor February 2005

Palladium idol

"I was the only two garbage can man in the neighbourhood, but then, they say, everybody's good at something"
– Charles Bukowski, 'Nut ward just east of Hollywood', ca 1968

FOUR years of market surplus, lease rates under 1%, 55 t of inventory (equivalent to three months of global supply) lodged in Zurich in just November-December, the equivalent of 30 t (more than annual Russian supply) held in futures speculators' hands on Tocom and Nymex, Chinese demand lower from last May to January than in March 2004 alone, the last thing anyone would think of securitising as an 'exchange traded fund'; palladium is clearly overqualified to lead precious-metal performance this year.

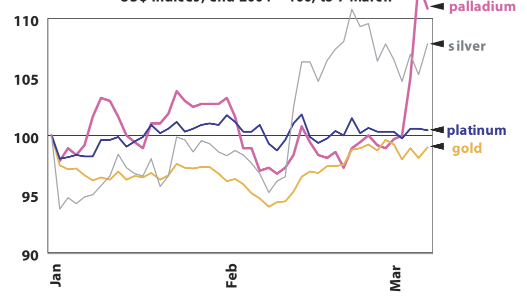
In an age when everything must have its moment in the sun, when celebrity is commoner currency, it is not so surprising the idle can be an idol. When absolute standards count for less, palladium's couch-potato-ing since 2001 – while everything else with a shine rose 50-100% – at some point was going to look relatively less bad.

For, at some point, everything horizontal meets. So when palladium rubbed against its 50-day average on March 2, it was the computers' cue to buy; a technical itch speculators scratched harder on March 4 when the 200-day average was caressed. Mr Putin's announcement on March 3 that (some unspecified definition of) Russian PGM reserves data would be declassified was old meat in the technical sandwich.

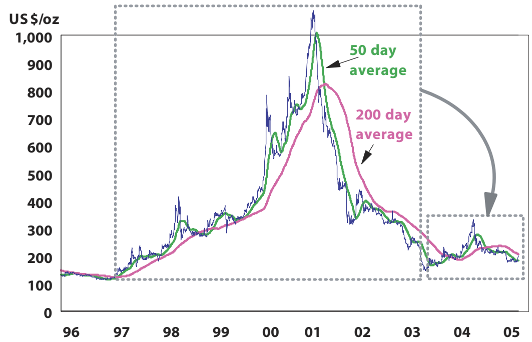
All in all, not so much a twist in the tale as the final rotation in the entire commodities story?

Palladium premier

US$ indices, end 2004 = 100, to 7 March



The cloning of palladium: hero to zero



			GOLD						SILVER					
			February 2005			2005 Q1			February 2005			2005 Q1		
			Average	High	Low	Average	High	Low	Average	High	Low	Average	High	Low
London fixing price		US$/oz	**423.3**	435.5	411.1	**423.6**	435.5	411.1	**7.03**	7.55	6.49	**6.82**	7.55	6.39
London lease rates	1 month	%	**0.10**	0.14	0.09	**0.10**	0.14	0.04	**0.20**	0.38	0.12	**0.23**	0.38	0.12
	3 month	%	**0.12**	0.16	0.09	**0.11**	0.16	0.08	**0.40**	0.54	0.33	**0.42**	0.54	0.28
	12 month	%	**0.18**	0.22	0.15	**0.18**	0.22	0.15	**0.97**	1.12	0.82	**1.05**	1.12	0.82
Price volatilities	1 month	%	**10.3**	10.9	9.7	**10.4**	10.9	8.6	**26.8**	30.7	19.3	**29.3**	30.7	19.3
	12 month	%	**14.3**	14.4	14.0	**14.4**	14.4	14.0	**37.7**	37.9	37.2	**38.0**	37.9	37.2
Nymex/Comex	Open interest	contracts	**263,221**	287,801	251,852	**270,345**	287,801	251,852	**98,633**	107,350	93,408	**98,177**	107,350	93,408
	Volume	contracts	**49,705**	74,190	24,057	**62,737**	74,190	24,057	**27,032**	61,199	9,184	**20,489**	61,199	8,700
	Philadelphia Gold Share index	Jan 1979 = 100	**94.5**	99.9	88.6	**94.0**	99.9	88.6						

			PLATINUM						PALLADIUM					
			February 2005			2005 Q1			February 2005			2005 Q1		
			Average	High	Low	Average	High	Low	Average	High	Low	Average	High	Low
London fixing price		US$/oz	**864.3**	877.0	850.0	**861.7**	877.0	844.0	**182.0**	190.0	178.0	**184.1**	190.0	178.0
London lease rates	1 month	%	**4.0**	4.7	3.7	**4.1**	4.7	3.7	**1.0**	1.1	0.9	**0.9**	1.1	0.8
	3 month	%	**4.2**	4.7	4.0	**4.3**	4.7	4.0	**1.1**	1.2	1.1	**1.0**	1.2	0.9
	6 month	%	**4.4**	4.9	4.2	**4.6**	4.9	4.2	**1.2**	1.4	1.2	**1.2**	1.4	1.0
Price volatilities	1 month	%	**12.3**	14.5	9.4	**13.4**	14.5	9.4	**19.7**	21.2	18.2	**21.9**	21.2	18.2
	12 month	%	**22.2**	22.3	22.1	**22.2**	22.3	22.1	**37.5**	37.7	36.8	**38.2**	37.7	36.8
Nymex/Comex	Open interest	contracts	**7,486**	7,946	7,117	**7,135**	7,946	6,158	**13,821**	14,906	13,236	**13,288**	14,906	12,105
	Volume	contracts	**1,100**	2,420	394	**929**	2,420	278	**2,349**	6,572	665	**1,313**	6,572	92
Tocom	Open interest	contracts	**158,533**	163,121	152,381	**162,362**	163,121	152,381	**18,608**	19,368	17,401	**18,801**	19,368	17,401
	Volume	contracts	**38,466**	73,698	20,970	**35,131**	73,698	20,970	**802**	1,647	367	**798**	1,647	367

Fixing prices: London pm – gold, platinum, palladium; London midday – silver.
London lease rates: Gold – US$LIBOR minus GOFO rates; Silver – US$LIBOR minus SIFO rates; Platinum: Mitsui indicative quotes; Palladium – Mitsui indicative quotes.
Price volatilities: 20-day and 261-day standard deviations of daily percentage changes in price series.
Philadelphia Gold Share Index: Index of North American gold mining stocks (XAU).
Tocom: Platinum – contract = 0.5 kg; Palladium – contract = 1.5 kg (from end-October 2002 = 0.5 kg).
Nymex/Comex (data supplied by New York Mercantile Exchange): Gold – contract = 100 oz; Silver – contract = 5,000 oz; Platinum – contract = 50 oz; Palladium – contract = 100 oz.

PDAC celebrates exploration boom

CLOSE to 11,000 delegates attended this week's 73rd annual convention in Toronto of the Prospectors and Developers Association of Canada (PDAC). Some 85 countries were represented, including 24 official delegations.

Fittingly for the host nation, Canada became the number-one country target for exploration last year on a regional basis, accounting for 20% of the total global budget for exploration.

Almost 11,000 delegates attended PDAC in Toronto this week

According to the Metals Economics Group, the global total amounted to almost US$3.8 billion, and budgeting by the junior sector – the lifeblood of the PDAC – accounted for about 60% of the overall increase from 2003 to 2004 in exploration budgets worldwide.

The enthusiasm in the junior sector was evident from the popularity of the Investors' Exchange, where 362 companies were represented. A sign of the times, perhaps, is that no specific region is dominating exploration activity at the present time, and the number of commodities being sought is more varied than for many years.

With commodity prices across the board higher than for many years, and funding for exploration now much more freely available, the most important consideration for many companies is the dearth of experienced field geologists, a legacy of a number of lean years for exploration when other professions have offered far better job opportunities.

One desperate project manager was heard to say that he was prepared to "hire anyone who could show that they have a pulse".

In a keynote session of the PDAC's technical programme, independent consultant Noel White urged the industry to abandon its traditional silence and reply rationally to its critics – attacks unanswered are attacks proved and become conventional wisdom.

Bob Horne, executive adviser to Inco Ltd, examined mining in terms of its social costs. He argued that mining has a far smaller footprint than some other human activities, and cited the Trans Canada Highway as an example.

The road has affected 1,600 km^2 of ground compared with 10,000 km^2 affected by Canada's mines. However, fatalities are far higher than in Canada's mines and the CO_2 emissions emitted by the traffic using the highway equate to the total emissions for the whole of Denmark.

Chinese power shortages to ease, coal demand to rise

THE shortfall between Chinese electricity demand and production is forecast to fall to 23,000 MW this year compared with 40,000 MW in 2004.

According to Zhao Xizheng, president of the China Electricity Council, the country's installed electricity-generating capacity had climbed by 13% to 440,700 MW by the end of 2004. This year, it is forecast to grow by nearly 20%.

According to Mr Zhao, most growth will come from coal-fired power stations, as drought is hindering the expansion of hydroelectric capacity. The growth will help boost coal demand to 1,100 Mt, some 100 Mt more than in 2004. He noted that the combination of increased demand and continued transportation bottlenecks for coal are likely to cause a sharp jump in the price of Chinese coal.

China produced 1,900 Mt of coal in 2004. Last week, Ma Kai, head of the State Development and Reform Commission, pledged the support of the Chinese Government in developing large coal mines and in expanding rail and port capacity.

Endiama doubles output

ANGOLA'S state-owned diamond producer, Endiama, expects to double diamond production from its current level of 6 Mct/y within the next 12 months.

According to the company's spokesman, Sebastio Panzo, the increase will come from the coming-on-stream of the second phase of the Catoca diamond mine in which Endiama has a 32.8% interest. This will increase the mine's production to 6 Mct/y.

Additional diamonds will be produced from Endiama's wholly-owned Camuanzanza project. Mr Panzo also cited Angola's Operation Brilliant as helpful to Endiama's plans. The operation has resulted in 250,000 illegal foreign miners and their families being expelled from Angola. Mr Panzo said that the operation will allow the development of new projects and exploration in areas such as Muanga and Cacuilo in Luanda Norte Province.

However, a report released this week by three NGOs claims that the activities of the Angolan Government in Luanda Norte and Luanda Sul Provinces have turned the region into an "immense concentration camp". The report alleges that mining concessions have turned some 180,000 km^2 of the region into "no-go" areas for the region's 1.1 million inhabitants. The report alleges that Angolan police have systematically abused and killed artisanal miners in the region. It calls for the Kimberley Process, which aims to prevent the trade of 'blood diamonds' sourced from conflict areas, to be broadened to include diamonds produced in regions where human rights are systematically violated.

Coincidentally, this week De Beers released news of the first Diamond Development Initiative (DDI) meeting, held on January 24 and 25. The DDI is designed to build on the Kimberley Process with a view to "establishing a development and regulatory environment in which alluvial rough diamonds can be mined and distributed for the greater benefit of artisanal miners, local communities, and local governments and the wider international diamond industry".

According to De Beers, the initial focus of the DDI will be central and western Africa, with the primary objective of: "Creating a multilateral partnership framework that will allow interested parties to pool their resources, experience and knowledge." Various government, diamond-industry and NGO representatives were involved in the meeting, and further discussions are planned for the near future.

COPPER DEFICIT

According to the International Copper Study Group (ICSG), global copper demand outstripped production by 706,000 t in 2004. The copper market deficit in 2003 was 386,000 t. However, according to the ICSG, in December 2004, the market moved into surplus at 107,000 t compared with a deficit of 67,000 t in the previous month.

PINGGUO EXPANSION

Aluminum Corp of China Ltd (Chalco) plans to double alumina-refining capacity at its Pinguuo plant to 1.65 Mt/y over the next four years. The expansion project requires final approval from the Chinese authorities; this is expected next month. The 850,000 t/y refinery is a joint venture with Alcoa Inc. The operation surpassed its nameplate capacity last year, producing 910,000 t of alumina.

PGM DATA DISCLOSURE

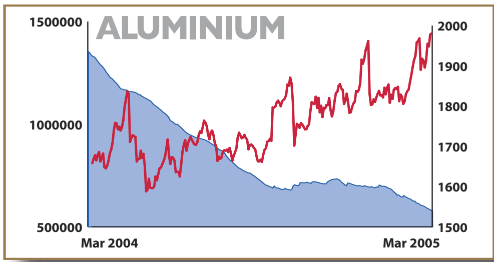
Russian President Vladimir Putin has signed a decree that should allow PGM and diamond producers to disclose data on reserves and production. Such data has hitherto been classified a state secret. The law allowing disclosure of this data became effective in February 2004. However, President Putin had to sign this latest decree to amend the list of state secrets, thus allowing the ministries of economy, natural resources and finance to amend their own lists of state secrets and authorise the disclosure. In the wake of the development, MMC Norilsk Nickel said it may disclose PGM production, sales and inventory data in May, but expects that it will not be in a position to disclose its reserves and resources data for some time as it has only just begun an audit of the information.

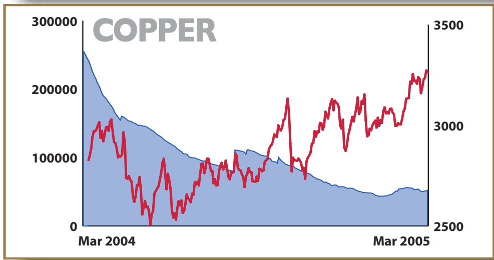
CSN'S INVESTMENT PLANS

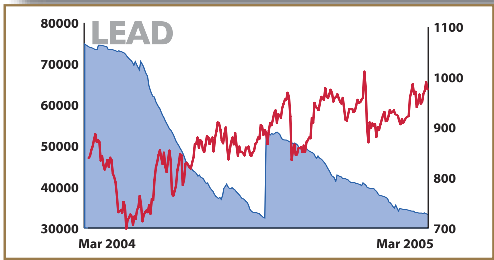
Brazilian steel maker and iron-ore producer Cia Siderurgica Nacional (CSN) plans to invest US$520 million in expanding its operations in 2005. The funds will help expand output at its Casa de Pedra iron-ore mine from 15 Mt/y to 40 Mt/y. CSN will also invest in the construction of an iron-ore pellet plant and in the expansion of its Sepetiba port.
In a separate development, Brazil's Rabinovich family said it is to sell its approximate 50% interest in Vicunha Steel to the Steinbruch family. The deal will give the Steinbruch family close to 100% of the voting capital of Vicunha Steel, the holding company that controls CSN. The deal has been valued at around US$2 billion.

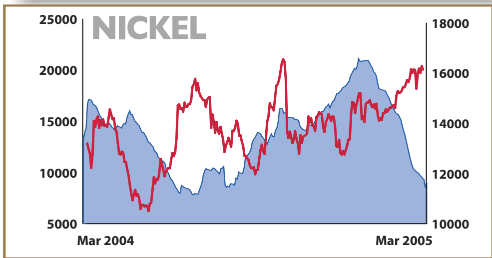
LME METAL STOCKS AND PRICES

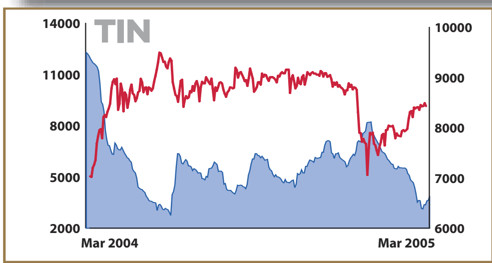
Stocks (t) — Three-months price US$/t (rhs)

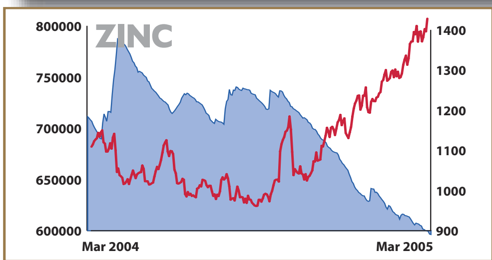












LME PRICES

	US$/t	% change on week	% change on year
Aluminium			
Cash	2,021.5	5.0	23.4
Three-months	1,995.3	4.2	20.4
Aluminium-alloy			
Cash	1,727.5	2.7	11.6
Three-months	1,742.5	2.6	10.4
Copper			
Cash	3,374.3	1.4	17.7
Three-months	3,249.0	2.0	15.0
Lead			
Cash	1,017.5	3.6	16.4
Three-months	970.5	2.2	15.7
Nickel			
Cash	16,037.5	0.0	21.0
Three-months	15,885.0	-0.5	20.5
Tin			
Cash	8,532.5	0.4	20.0
Three-months	8,475.0	0.6	20.9
Zinc			
Cash	1,415.8	3.2	29.6
Three-months	1,428.5	3.4	28.9

Source: Bloomberg, LME

LME OFFICIAL AVERAGES

Feb (US$/t)

	Settlement	Cash	3-mths
Aluminium	1,882.85	1,882.39	1,872.01
Alum-alloy	1,679.23	1,675.24	1,688.75
Copper	3,253.70	3,252.79	3,113.23
Lead	977.55	977.03	934.59
Nickel	15,349.50	15,344.63	15,278.00
Tin	8,088.75	8,083.25	8,050.13
Zinc	1,326.18	1,325.81	1,334.61
Settlement	**£/US$**	**US$/¥**	**€/US$**
exchange rates	1.8872	104.9215	1.3016

Settlement is the average of the cash sellers' price. Cash and three-months are the average of the buyers' and sellers' price.
Source: LME

EXCHANGE STOCKS

	t	% change on week	% change on year
LME aluminium	567,475	-3.9	-58.1
Comex aluminium	29,604	-0.5	-65.1
Comex aluminium pieces*	24,479	4.1	
Total aluminium	621,558	-3.6	
LME aluminium-alloy	42,180	0.0	-30.2
LME copper	51,725	2.3	-79.8
Comex copper	41,811	-1.3	-80.4
Total copper	93,536	0.7	-80.0
LME lead	33,200	-0.9	-55.6
LME nickel	9,174	-4.3	-30.6
LME tin	3,560	5.5	-71.0
LME zinc	595,500	-0.8	-16.3

* Assuming 0.75 t per Comex aluminium piece
Source: Bloomberg, LME, Comex

COMEX PRICES

	Copper (US$ c/lb)	Aluminium (US$ c/lb)
March (spot)	149.3	96.2
April	149.0	96.2
May	148.8	96.0
June	149.0	96.0

Source: Bloomberg, Comex

COPPER CONCENTRATES

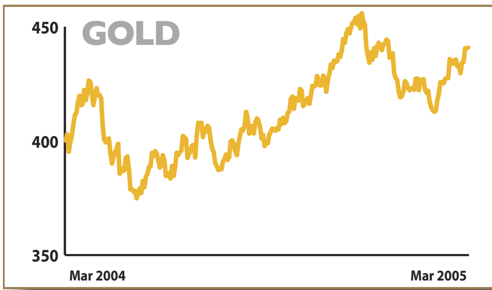
Spot TC/RCs, clean 30% copper concentrates, cif Shanghai
Payable copper 96.7%, recovered 97.0%, free to smelter 0.3%

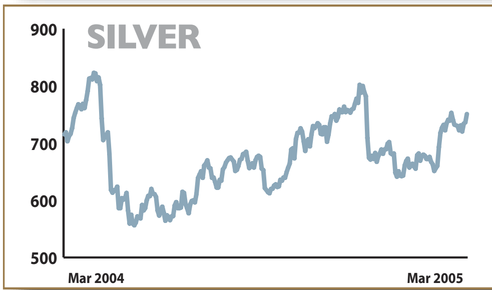
	Current	Last month	Year ago
Mine spot sales			
TC ($/dmt)	140-150	125-135	7.5
TC (c/lb equiv.)	21.9-23.5	19.6-21.1	1.2
RC (c/lb)	14.0-15.0	12.5-13.5	0.8
TC/RC (c/lb)*	35.9-38.5	32.1-34.6	1.9
Smelter spot purchases (Shanghai)			
TC/RC (c/lb)**	41	37.2-38.5	5.1
Unpaid Cu (c/lb)	0.4	0.4	0.4
Cu Premium (c/lb)	5	5.7	5.4
Total (c/lb)	46.4	43.3-44.6	10.9
Cu Premium cif Shanghai ($/t)	110	125	120

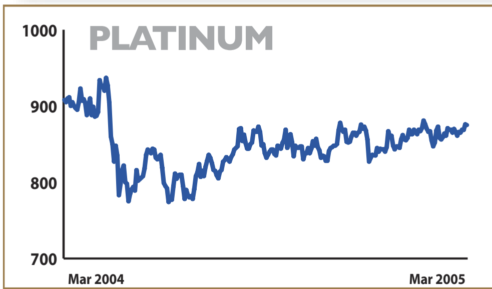
* Late quotational period **Early quotational period

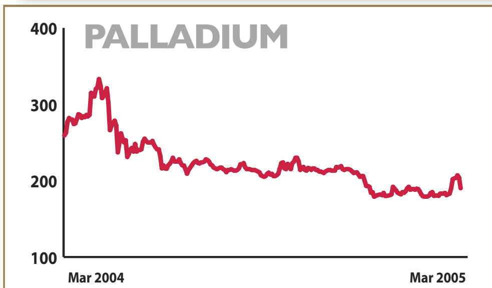
PRECIOUS METALS

	US$/oz	% change on week	% change on year
Gold (last fix)	439.90	1.5	9.8
Silver (spot)	7.51	4.2	5.0
Platinum (last fix)	875	1.0	-3.6
Platinum (J Matthey)	878	0.9	-3.4
Palladium (last fix)	204	7.4	-21.2
Palladium (J Matthey)	203	2.0	-25.6
Iridium (J Matthey)	145	0.0	-34.1
Osmium (free market indication)	425	0.0	0.0
Rhodium (J Matthey)	1,600	4.9	93.9
Ruthenium (J Matthey)	58	5.5	-19.4









ORES & OXIDES

		% change on week	% change on year
Molybdenum oxide (conc 55-57%) US$/lb	31.0	0.0	320.1
Tantalum oxide (60% N Euro port) US$/lb cif	40.0	0.0	0.0
Vanadium (98% V_2O_5) US$/lb cif	12.5	0.0	163.2
Wolfamite US$/mtu	75.5	0.0	58.9

SHIPPING RATES

Representative dry cargo single voyage rates (Feb 25)

Route/Size ('000 dwt)	US$/t	% change on week	% change on year
Coal			
Richards Bay-ARA (100-150)	23.0	-5.1	11.2
E Aus-South Korea (120-160)	25.1	0.0	13.9
E Aus-ARA (100-150)	30.4	-4.3	-10.7
Puerto Bolivar-ARA (100-150)	18.5	-11.7	-15.9
Iron Ore			
Narvik-ARA (100-150)	7.7	-6.7	-3.8
Brazil-ARA (100-150)	18.3	-10.7	-16.0
Brazil-China (100-150)	34.9	-5.7	-8.8
W Aus-China (120-160)	16.8	-3.9	3.7
W Aus-ARA (120-160)	22.6	0.7	16.8
Saldanha Bay-China (100-150)	32.0	0.0	10.2

Source: Drewry Shipping Consultants Ltd

BULK MINERALS

		% change on week	% change on year
Alumina fob US$/t	425	0.0	28.8
Rutile Aus export fob US$/t†	455	0.0	5.8
Ilmenite export fob US$/t†	84.00	0.0	-3.5
Zircon export fob US$/t†	545.00	0.0	19.8
globalCOAL RB™ Index US$/t (Feb 25)‡	43.40	-3.3	0.7
globalCOAL NEWC™ Index US$/t (Feb 25)‡	49.32	-1.6	12.7
	2005	**2004**	**2003**
Thermal coal annual contract US$/t	TBA	45	26.5
Coking coal annual contract US$/t	125	58	46
Iron ore fines annual contract US$ c/dmtu	61.72	35.99	31.32
Iron ore lump annual contract US$ c/dmtu	78.77	45.93	39.98

Source: † TZ Minerals International Ltd, ‡ Global Coal Ltd (www.globalcoal.com)

LEAD CONCENTRATES

Spot TC, clean 55/65% lead concentrate, cif main port China/Japan/Europe
Payable lead, 95% recovered (minimum deduction of 3% from concentrate grade)

Mine/smelter terms	Spot terms: Current	Last month	Year ago
Price basis: US$/t	800/800	800/800	500
TC (US$/dmt)	95/115	95/115	60/70
Price basis: actual	1,008	978	886
TC (US$/dmt) (adjusted for escalator/descalator)	126/146	122/142	99/109

Contract terms	Current	2004	2003	Average last 5yrs
Price basis: US$/t	500	500	475	500
TC (US$/dmt)	125	125	122	143
Price basis: actual	1,008	886.5	514	557
TC (US$/dmt) (adjusted for escalator/descalator)	176	164	128	143

ZINC CONCENTRATES

Spot TC, clean 50/53% zinc concentrate, cif main port China/Japan/Europe
Payable zinc, 85% recovered (minimum deduction 8%)[1]

Mine/smelter terms	Spot terms: Current	Last month	Year ago
Price basis: US$1,000/t			
TC (US$/dmt)	75	75	110/115
Price basis: actual	1,386	1,326	1,105
TC (US$/dmt) (adjusted for escalator/descalator)	145	134	127/132

Contract terms	2005	2004	Average last 5yrs	Average last 10yrs
Price basis : US$1,000/t				
TC (US$/dmt)	126	142	167	171
Price basis: actual	1,386	1,047	N/A	N/A
TC (US$/dmt) (adjusted for escalator/descalator)[2]	188	150	N/A	N/A

1 Zinc smelters generally achieve recovery rates of mid to upper 90%s, but many modern plants are at the top end of this range and some may be above 98%. However, miners are paid assuming an 85% recovery but with a minimum deduction of 8% from the concentrate grade – ie, if a concentrate has a zinc content of 50%, payment will be made on the basis of a zinc content of 42% (instead of 42.5%). If the zinc content is 53.33% or above, payment is made on the basis of an 85% recovery.
2 The average escalator in 2003 term contracts was +16/-14%, price basis US$1,000/t

SPECIALITY METALS

	Bid / Ask	% change on week	% change on year
Antimony US$/t cif	3,000 / 3,100	3.4	10.9
Arsenic (Rotterdam 99%) US$ c/lb cif	0.40 / 0.50	0.0	12.5
Bismuth US$ c/lb cif	3.20 / 3.40	0.0	17.9
Cadmium (99.99%) US$ c/lb cif	0.85 / 0.95	12.5	80.0
(99.95%) US$ c/lb cif	0.75 / 0.85	14.3	77.8
Cobalt (cut cathodes 99.8%) US$/lb*	15.35	-10.5	-46.1
Germanium dioxide US$/kg cif	400	0.0	45.5
Indium US$/kg	1,000 / 1,050	0.1	105.0
Manganese metal (99.7%) US$/t	1,675	0.0	-1.5
Mercury (99.99%) US$/flask	850 / 950	20.0	221.4
Selenium US$ c/lb cif	48 / 53	6.3	248.3
Tellurium (UK lump and powder 99.95%) US$/lb net	36 / 41	18.5	234.8

**Source: WMC Resources Ltd (www.wmc-cobalt.com)*

Kumba expansion gets the go-ahead

KUMBA Resources Ltd has given the go-ahead for an expansion which will increase output at the company's Sishen iron-ore mine in South Africa's Northern Cape Province from 28 Mt/y to 38 Mt/y by 2009. The decision follows the signing of a definitive agreement with South Africa's state-owned transport group Transnet Ltd (*MJ*, February 4, p4).

The Transnet agreement covers a new pricing tariff for the transport and handling of iron ore via the Sishen-Saldanha export route. Unlike the previous tariff, the new one will be rand-based and not linked to the US dollar price of iron ore. The new tariff structure is backdated effective from January 1, and will be applicable for 23 years, with formal reviews every five years.

In a joint statement, the companies said: "The new tariff structure will ensure the continued success of iron-ore exports from the Northern Cape, and is mutually beneficial to both companies. The contract justifies the R4.4 billion investment over the next five years that Transnet will make to expand rail and port infrastructure." The companies added that the agreement also keeps in line with Transnet's plan to turn itself around and strengthen its balance sheet.

In addition to undertaking the work for the Sishen expansion, Transnet will look into the possibility of adding a further 17 Mt/y of rail and port capacity for Kumba and other producers routed either through Saldanha or the port of Coega.

Kumba will begin work on the Sishen expansion by mid-year. The mining, plant and associated infrastructure expansions will cost R2.96 billion – funded from cash flow and lending facilities. Part of the increased output will come from the use of new beneficiation technology, which will upgrade a portion of mined material previously discarded as waste. According to Matie Von Wielligh, general manager of Kumba's iron-ore business, the product range from the expansion will have an iron content of 63-64% and will supplement Sishen's current products.

Meanwhile, Assmang Ltd, South Africa's second-largest iron-ore producer is said to be considering launching a legal challenge to the accord between Kumba and Transnet. According to *Business Day*, the company had expected its capacity allocation on the Sishen-Saldanha export route to be doubled to 10 Mt. However, the agreement appears to point to an increase of just 500,000 t.

Alcasa abandons AP35 as it branches out

THE Venezuelan Government has committed to expanding the Alcasa aluminium smelter.

However, despite the signing of engineering contracts with Alcan Inc's Pechiney subsidiary for the supply of AP35 alumina reduction technology (*MJ*, February 4, p7), Alcasa's recently-appointed chief executive, Carlos Lanz, said the expansion will use the domestically-developed V-350 technology. (The existing plant uses P-20 and P-23 reduction cells developed by Reynolds Metals.)

Mr Lanz said using Venezuelan-developed technology will cut the project cost by US$100 million. Last month, Venezuela announced a review of all mining and metals-related projects that aims to ensure added value and technology transfer for minerals and metals projects involving foreign companies.

Glencore has recently proposed providing US$525 million of the previously estimated US$900 million estimated capital cost of the Alcasa project (*MJ*, February 18, p3). The expansion would boost the smelter's nameplate capacity by 240,000 t/y from 210,000 t/y currently.

■WGI *FORCE MAJEURE*

Industrial-minerals producer WGI Heavy Minerals Inc has been forced to declare *force majeure* after the Indian Government withdrew the ilmenite export licence for its Indian affiliate Earth Minerals Resources Ltd. As a result, the company cannot meet the commitments of a three-year contract signed in August 2003, whereby it would supply a major pigment producer with a minimum of 40,000 t/y of ilmenite. Meanwhile, the company has been granted a new mining permit at its Emerald Creek garnet-mining operation on the St Joe River in Idaho. The permit will enable the company to extend the operation's life by ten years.

■PERUVIAN ROYALTIES

Peru's Constitutional Court has decided to postpone its ruling on the legality of mining royalty legislation after a key public hearing (*MJ*, March 4, p1) was postponed. The hearing will be the last opportunity for the court to hear arguments for and against the proposed royalty legislation. The new date for the hearing has been set for April 14, and the court's ruling will be made within 30 working days of the hearing.

■EXCEL BMC JV

Excel Coal Ltd and BHP Mitsui Coal Pty Ltd (BMC) have formed a joint venture to share coal preparation and transport infrastructure. Excel is currently developing a new coking-coal mine adjacent to BMC's Poitrel project. As a result of the agreement, the parties will upgrade the infrastructure now under construction to a capacity of 6 Mt/y. BMC, with a 50% interest in the JV, will manage the operation. In return, Excel will receive certain of BMC's coal tenements.

■OVACIK SOLD

Newmont Mining Corp has completed the sale of the closed Ovacik gold mine to a subsidiary of Turkish conglomerate Koza Davetiye (*MJ*, February 11, p5). The mine was sold for a consideration of US$20 million, and up to a further US$24.5 million in contingent payments could be made at a later date. The mine produced 75,000 oz of gold in the first half of 2004 but a ruling by a Turkish court forced its closure (*MJ*, August 27, 2004, p4). Before the closure, Newmont had agreed to sell the operation to Frontier Pacific Mining Corp for a consideration of US$30 million and up to US$14 million in contingent payments.

Mines and Money

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Placer Dome funds seabed survey for gold

VANCOUVER-BASED gold producer Placer Dome Inc is spending US$3 million on a programme of geophysical surveying of tenements held by Sydney-based Nautilus Minerals Ltd on the sea floor off the coast of Papua New Guinea. The interest is in gold-rich volcanic massive sulphide (VMS) deposits.

Under the terms of a farm-in agreement with Nautilus, Placer Dome has the right to earn 40% in any gold deposits by spending an additional US$4 million on drilling over the next 13 months, which would bring its total expenditure to US$7 million by April 2006.

Under the agreement, Nautilus will retain the exclusive right to all copper/zinc-rich deposits containing less than 3 g/t Au.

Speaking ahead of the PDAC annual convention in Toronto this week, the chief executive of Nautilus, David Heydon, described the use of geophysics to locate VMS deposits on the sea floor (and at a water depth of 1,800 m) as "a world first for exploration".

Papua New Guinea was the first country in the world to grant exploration licences for sea floor volcanic deposits, and Nautilus has been exploring since 1997 (*MJ*, February 13, 1998, p123).

It has seven tenements either granted or under application totalling some 15,000 km^2.

To date, most sea floor mineral exploration has focused on the discovery of active sulphide vents – 'black smokers' – using techniques that locate the venting 'smoke' or plume.

Nautilus believes there are potentially numerous inactive deposits that await discovery, and contends that exploration dollars are likely to yield a higher return than on land.

Hydrothermal mineralisation on the sea floor off Papua New Guinea was originally discovered in the course of a number of international marine scientific research cruises.

It was believed that the southwest Pacific Ocean sea floor provides the most relevant modern analogue of VMS ore-formation.

Nautilus hopes to list on the TSX Venture Exchange or the London AIM market in mid-2005 in order to raise funding to explore the non-gold resources outside the JV with Placer Dome.

The company says independent engineering studies have concluded that mining 2 Mt/y in 2,000 m of water is "both feasible and economic".

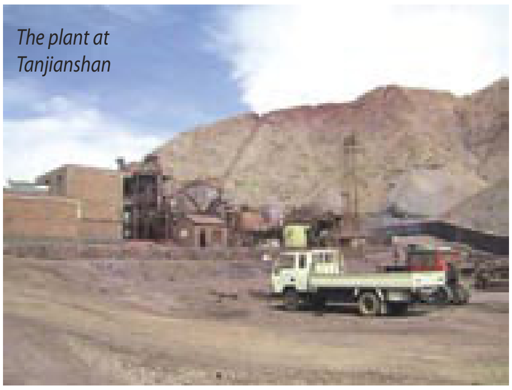
Afcan outlines TJS operation

AFCAN Mining Corp has received from its consultants a feasibility study of the development of its 85%-owned Tanjianshan gold project in China.

The study envisages an open-pit operation exploiting reserves estimated at 1.52 Mt at 426 g/t Au (proven) and 4.47 Mt at 5.12 g/t Au (probable) contained within two pit outlines, at Qinlongtan and Jinlonggou.

Mining licences for both deposits were granted recently (*MJ*, February 4, p9). The pits will be developed simultaneously, using a Chinese contract mining company, and Qinlongtan material will be processed first, in a plant located 19 km away at Jinlonggou.

Mineralisation at Tanjianshan occurs in two main types, with mostly oxide ore in the Qinlongtan deposit, and predominantly sulphide ore in the Jinlonggou deposit.



The plant at Tanjianshan

Consequently, the processing plant will be designed to be able to handle both types, and gold recoveries are expected to be 92.6% for Qinlongtan ore, using a carbon-in-pulp circuit, and 90% for the sulphide Jinlonggou ore, using a float-roast circuit.

The processing plant will be designed to handle a throughput of 800,000 t/y.

Tanjianshan is located at 3,300 m elevation in a barren, unpopulated area, although infrastructure includes a paved road 12 km away and water is available within 2 km.

Additionally, grid power will be installed 50 km away by the end of the year, and a new power station is being commissioned 35 km away.

Capital costs are estimated at US$47.7 million to build a mine capable of producing a total of 845,000 oz of gold over eight years, with 140,000 oz during the first year of operation.

Detailed design work will begin immediately, and construction will start next month. If financing can be secured, the target for first production will be the June quarter of 2006.

Northern Dynasty's new Pebble estimate

NORTHERN Dynasty Minerals Ltd has received a new resource estimate for its 80%-owned Pebble copper-gold deposit in Alaska (*MJ*, December 3, 2004, p9).

The estimate was prepared by Roscoe Postle and Associates, based on assay results from 70,719 m of drilling.

The consultant estimates that measured resources, using a 0.3% copper-equivalent cut-off grade, are 711 Mt at 0.33% Cu, 0.36 g/t Au and 0.016% Mo. Indicated resources are estimated at 2,320 Mt at 0.27% Cu, 0.31 g/t Au and 0.014% Mo.

Additional, inferred resources are estimated at 1,130 Mt at 0.24% Cu, 0.30 g/t Au and 0.014% Mo.

Using a 0.70% Cu-equivalent cut-off grade, measured resources are estimated at 214 Mt at 0.47% Cu, 0.47 g/t Au, and 0.021% Mo.

Indicated resources are estimated at 356 Mt at 0.46% Cu, 0.51 g/t Au and 0.021% Mo, and inferred resources at 143 Mt at 0.40% Cu, 0.56 g/t Au and 0.020% Mo. Copper-equivalent calculations use price assumptions of US$1.00/lb copper, US$400/oz gold and US$6.00/lb molybdenum.

MERCATOR'S RESOURCE

Mercator Minerals Ltd has received an independently-estimated resource figure for its Mineral Park copper-molybdenum deposit in Arizona. The property contains an estimated 345.6 Mt at 0.41% Cu and 0.037% Mo in measured resources, 101.2 Mt at 0.39% Cu and 0.038% Mo in indicated resources, and 62 Mt at 0.38% Cu and 0.038% Mo in inferred resources, using a 0.3% copper-equivalent cut-off grade. The cut-off grade assumes prices of US$1/lb copper and US$7/lb molybdenum.

KAARESSELKÄ ASSAYS

Tertiary Minerals plc has completed the second phase of drilling at its Kaaresselkä gold property in Finland. The holes were designed to investigate extensions of mineralisation at several zones. The better of the recent results are as follows:

Hole	From (m)	Intercept (m)	Au (g/t)
04KD011	163.40	2.70	3.8
04KD013	130.00	8.25	4.9
05KD002	152.55	6.20	3.2

BURBANKS RESULTS

Barra Resources Ltd has intersected high-grade gold mineralisation during shallow exploratory reverse-circulation drilling at its Burbanks former gold mine property in Western Australia. The drilling tested the potential for new gold zones beneath the historical open pits, particularly below the Lady Robinson pit. The better results, shown below, come from a complex intersection of several historically-productive structures.

Hole	From (m)	Intercept (m)	Au (g/t)
BBRC009	28	12	21.86
BBRC010	19	25	16.97
BBRC011	8	13	4.52
and	23	17	4.59
BBRC017	8	16	6.75

MERLIN DIAMONDS

Striker Resources NL has recovered its first diamonds from the Merlin project in Australia's Northern Territory. The stones come from previously-sorted material sourced from the sort-house tailings stockpile of the former mine. A sample of 196 kg of tailings yielded 52 diamonds weighing a total of 3.4 ct. Striker regards the recovery of the stones as supporting evidence for its view that previous mining achieved poor recoveries owing to an unrecognised presence of non-fluorescing and poorly-fluorescing diamonds. A larger sample of the tailings has been sent to the company's laboratory for testing.

Clarified BEE rules foil Namaqualand deal

ARGOSY Minerals Inc has terminated its agreement with Albetros Inland Diamond Exploration Pty Ltd concerning exploration rights to the Albetros diamond property in Namaqualand, South Africa.

The agreement and its amendments gave Argosy until August 13, 2004 to evaluate Albetros, but the original prospecting permit expired on March 15, 2004.

Argosy's application for a new permit – submitted 18 months ago – has not yet been granted, so no work has been completed.

Argosy notes that it had agreed with a 'black economic empowerment' (BEE) company, Umnotho weSizwe Diamond Co Pty Ltd, that the latter would be able to acquire a 15% interest in Albetros, fulfilling the requirements at the time of the Mineral and Petroleum Resources Development Act.

According to Argosy, a recent clarification of the act by the Department of Minerals and Energy of South Africa concerning pending applications for prospecting rights for formerly state-owned properties requires BEE participation to be at least 51% within a one-year transitional period (*MJ*, July 16, 2004, p16).

Argosy states that, given the exploration permit has not been granted after 15 months, and that the original agreement with Umnotho assumed a 15% BEE participation, it cannot comply with the clarification, which is a requirement for the granting of the permit. Argosy has therefore terminated its agreement with Albetros.

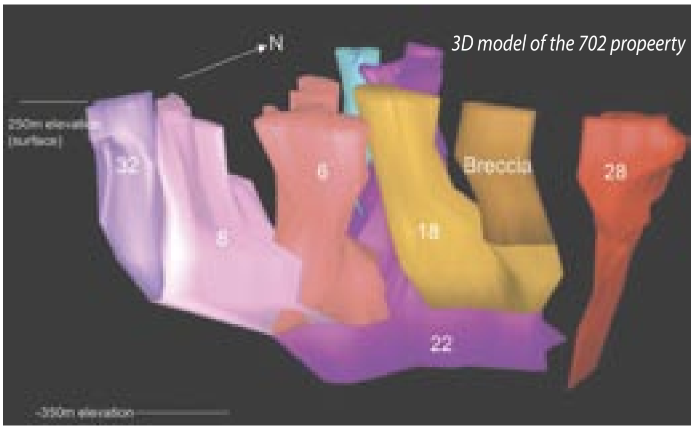
CDC's diamond development plans

CHINA'S largest diamond producer, Toronto-listed China Diamond Corp (CDC), plans a bulk-sampling programme for its 702 project in Mengyin County, 150 km southeast of Jinan, Shandong Province.

The 50,000 t programme is designed to build on a feasibility study completed last year by an independent Chinese engineering company.

The project, a joint venture with Shandong's Seventh Geological Brigade, comprises a large number of kimberlite pipes, some of which have been defined to a depth of 600 m below surface.

Based on the findings of earlier Chinese work, SRK Consulting (Canada) Inc has estimated a measured resource of 5.02 Mt at a grade of 0.05 ct/t, an indicated resource of 4.65 Mt at 0.061 ct/t and an inferred resource of 27.66 Mt at a grade of 0.121 ct/t (based on a 1.0 mm lower stone size cut-off).



3D model of the 702 propeerty

In addition, CDC has another project on the same regional lineament as the 702 project and its existing Changma mine.

The 703 project, also a joint venture with the Seventh Geological Brigade, is based on the Dajingtou licence, which is less advanced than the 702 project. Nevertheless, over 2,000 diamonds have already been recovered from the project area by surface-sampling.

A programme of core drilling and bulk surface-sampling will start in March 2005.

Meanwhile, CDC is increasing production at the Changma mine. The mine is a joint venture with Chinese company Sinoma. The partners have already increased production from the underground mine since the start of CDC's involvement, with over 46% more diamonds being recovered in 2004 compared with the previous year.

The company plans to double output at the mine by increasing hoisting capacity and replacing the ball mill and grease tables with a modern dense-media separation plant and X-ray sorter.

CDC is currently arranging the financing for this capital development programme.

Langer Heinrich set for 2006 start-up

PERTH-BASED Paladin Resources has released the preliminary findings from its feasibility study (BFS) for the Langer Heinrich uranium project in Namibia, which it says confirm that a profitable, long-term uranium mining operation is achievable (*MJ*, February 25, p12).

Output of uranium oxide (U_3O_8) during the first ten years' mining is now projected at 1,150 t/y, about 10% higher than previously indicated, with a production start-up provisionally scheduled for September 2006.

Paladin managing director John Borshoff says the BFS is on schedule and due to be signed off by the study engineers, GRD Minproc, in mid-April 2005.

Mining of the main section of the Langer Heinrich deposit is now planned for up to 15 years, based on an average U_3O_8 price of US$25/lb. Production in years 11-15 will reduce as low-grade stocks are used.

However, the potential exists for further exploration and for expansion of the operation.

The BFS indicates the optimal processing rate to be 1.5 Mt/y of ore at an average grade of 0.085% U_3O_8 producing 1,150 t/y over the first ten years.

The project's capital cost is now estimated at US$80 million, higher than that envisaged two years ago, owing to a 40% increase in the throughput capacity of the plant design, the impact of the strength of the Namibia dollar, and the worldwide increase in steel prices and other construction materials.

EAST CHUARVI ASSAYS

Consolidated Puma Minerals Corp, a 55%-owned subsidiary of Bema Gold Corp, has completed further assays on holes completed at the East Chuarvi target, part of its East Pansky platinum group metals (PGM) property on the Kola Peninsula of Russia (*MJ*, February 4, p9). The better of the recent results are shown in the table:

Hole	From (m)	Int (m)	Au (g/t)	Pt (g/t)	Pd (g/t)
P-430	21.0	2.6	0.28	1.71	4.25
P-431	33.4	1.3	0.19	3.21	6.33
P-438	119.0	6.8	0.43	4.51	8.57
P-441	21.0	7.5	0.24	2.18	5.15

ÇÖPLER ASSAYS

Anatolia Minerals Development Ltd has received results from a drilling programme at its Çöpler gold-copper-silver property in Turkey (*MJ*, December 10, 2004, p10). The recent holes targeted the Manganese Mine zone, and Richard Moore, the company's president, is "optimistic that these holes will upgrade the quality of the … resource". The better of the recent results are as follows:

Hole	From (m)	Intercept (m)	Au (g/t)
CRC-249	56.0	57.0	4.3
CRC-253	78.0	34.0	3.4
CRC-255	12.0	36.0	7.4
CRC-261	0.0	63.0	3.4

MCFINLEY ASSAYS

Rubicon Minerals Corp has intersected further gold mineralisation during drilling at its McFinley gold property in the Red Lake region of Ontario. The holes tested the Phoenix zone, discovered last year (*MJ*, August 13, 2004, p9), and intersected a complex carbonate replacement zone featuring a number of colloform-banded veins up to 5 m thick. The better of the recent results are shown in the table:

Hole	From (m)	Intercept (m)	Au (g/t)
PZ-57	50.00	6.05	2.65
PZ-59	44.10	8.50	6.02
PZ-60	83.70	7.60	2.21

GEOFERRET UNVEILED

WMC Resources Ltd, in conjunction with Electromagnetic Imaging Technology Pty Ltd, has developed a new geophysical data acquisition system, named Geoferret. WMC explains that the system uses highly-sensitive electromagnetic techniques to identify electrically-conductive mineralisation at greater depths than before, and with greater clarity. Bart Suchomel, WMC's general manager – exploration, says the system has identified mineralisation at depths of 500 m below very conductive cover.

Noranda-Falconbridge update exploration

NORANDA Inc and Falconbridge Ltd (which announced this week that they are to merge – p1) have released the results of exploration at their "most significant greenfields and brownfields" projects.

Included in this category is the Fraser-Morgan nickel-copper property in Sudbury, operated by Falconbridge, where a continuing surface-drilling programme intersected new mineralisation about 350 m from resources in zones 8 and 9.

The new zone –11 – represents new-found contact-hosted mineralisation between 1,000-1150 m below surface. The better of the recent results are as follows:

Hole	From (m)	Intercept (m)	Ni (%)	Cu (%)
NRD-063A	1,199.50	28.15	2.06	0.54
NRD-076	1,257.30	36.60	2.33	0.71
NRD-076C	1,250.05	4.80	2.54	0.86
NRD-081	1,205.75	17.10	2.77	1.09

At Espedalen in Norway, a joint venture between Falconbridge and Blackstone Ventures Inc (*MJ*, July 18, 2003, p46), a drilling programme tested geophysical anomalies identified by airborne and ground surveys. The holes intersected a new zone of sulphide mineralisation, named Stormyra.

Hole	From (m)	Intercept (m)	Ni (%)	Cu (%)	Co (%)
ES04-08	56.30	2.70	2.07	1.20	0.07
ES04-09	93.10	1.90	6.91	2.05	0.21

The Renaissance discovery in northern Québec was made by Noranda geologists during the latter part of 2004, about 7 km from the company's Matagami mill.

The Renaissance follow-up drilling programme limited the extent of the zone, but Noranda notes that deposits in the Matagami area typically have satellite lenses.

Hole	From (m)	Intercept (m)	Zn (%)	Cu (%)	Ag (g/t)	Au (g/t)
MC-04-07	527.25	9.50	14.81	1.65	36.4	0.68
MC-04-09	581.95	0.50	12.65	1.39	19.3	0.57

Noranda holds an option to earn a 72% interest in the Frieda River copper-gold project in Papua New Guinea, and another option to acquire a 72% interest in the nearby Nena deposit. The company is funding the exploration of the deposits by the owner, Highlands Pacific Ltd.

The Frieda River intrusive complex hosts at least seven mineralised porphyry systems, and the Nena deposit is associated with epithermal alteration in volcanic pyroclastics over about 10 km of strike. The Horse-Ivaal-Trukai deposit is located within the most significant porphyry system, and is estimated to contain indicated resources of 74.6 Mt at 0.63% Cu and 0.37 g/t Au. Additional, inferred resources are estimated at 360.0 Mt at 0.6% Cu and 0.4 g/t Au.

At Nena, measured and indicated oxide resources are estimated at 17.2 Mt at 0.1% Cu and 1.4 g/t Au, and primary mineralisation is estimated at 42.2 Mt at 2.3% Cu and 0.6 g/t Au (measured), plus 7.6 Mt at 1.7% Cu and 0.6 g/t Au (indicated). Inferred resources are estimated at 800,000 t at 0.1% Cu and 1.5 g/t Au (oxide), and 1.2 Mt at 1.8% Cu and 0.4 g/t Au (primary).

A US$3 million drilling programme completed last year targeted additional 'Nena-style' copper-rich mineralisation, with the following better results:

Hole	From (m)	Intercept (m)	Cu (%)	Au (g/t)
015NOR04	12	214	2.23	0.11
017NOR04	156	22	5.59	0.03
019NOR04	106	46	9.69	0.02
040NOR04	72	134	2.38	0.02

Pilot-mining at the 217 gold project in Mongolia

Jinshan's 217 resource rises

JINSHAN Gold Mines Inc, formerly Pacific Minerals Inc, has received a new independent resource estimate for the 217 gold deposit in Inner Mongolia, China (*MJ*, March 28, 2003, p221).

Jinshan holds the right to acquire a 96.5% interest in the 217 property, and Ivanhoe Mines Ltd holds the right to participate with Jinshan on a 50:50 basis.

The deposit occurs within a ductile shear zone in phyllites and andalusite schists, and three mineralised zones have been recognised.

Using a 0.5 g/t Au cut-off grade, measured resources are estimated at 17.6 Mt at 0.84 g/t Au, indicated resources are estimated at 65.0 Mt at 0.81 g/t Au, and inferred resources are estimated at 36.5 Mt at 0.89 g/t Au. The deposits remain open in certain areas.

A pilot-mining programme was completed late last year, producing 100,000 t of oxide material for heap-leaching trials expected to begin by May this year.

The pilot programme will test a production rate of 100,000 oz/y of gold.

Hambledon plans Sekisovskoye mine

HAMBLEDON Mining plc is to develop an open-pit gold mine at its Sekisovskoye gold-silver property in Kazakhstan.

The decision has been taken after the current feasibility study of the development of both open-pit and underground operations at the project returned "excellent results" for the open-pit portion, according to the company.

The resources estimated to be contained within the open-pit outline are 3.6 Mt at 1.6 g/t Au, an increase in contained gold of 83% compared with that outlined at the time of Hambledon's flotation on AIM (*MJ*, June 11, 2004, p12). This represents about 7% of the total estimated contained gold at Sekisovskoye, according to the company.

The study envisages a mining rate of 600,000 t/y, producing 30,000-35,000 oz/y of gold, assuming a gold recovery of 95%. The open-pit mine could begin production during early 2006, with a life of six years. The feasibility study will continue to evaluate the economics of the development of the underground operation.

DYNASTY DRILLS PAPAYAL

Dynasty Metals & Mining Inc has intersected "significant" gold and silver mineralisation during initial drilling at the Papayal prospect, part of its Dynasty copper-gold property in Ecuador. The Papayal prospect hosts porphyries and stockworks over an area 4 x 3 km, and individual stockworks are up to 1 km long and 40 m wide. The better of the recent results are as follows:

Hole	From (m)	Intercept (m)	Au (g/t)	Ag (g/t)
05DDH05	7.05	3.33	17.38	723
05DDH06	31.45	1.20	5.67	21
05DDH04	19.61	3.39	9.18	101

MOTO UPDATE

Moto Gold Mines Ltd has completed drilling programmes at a number of its prospects in the Democratic Republic of Congo. The zones tested include Mengu Hill (MRCD), Pakaka (PDD) and Karagba (DRC). The better of the recent results are shown in the table:

Hole	From (m)	Intercept (m)	Au (g/t)
MRCD136	88	18	3.69
MDD001	98	6	4.21
PDD014	118	8	9.59
DRC075	110	6	18.06
DRC079	0	120	3.63

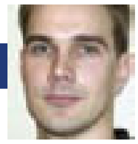
ASSAYS AT ESSAKAN

Orezone Resources Inc has received further assay results from continuing drilling at the Essakan gold joint venture in Burkina Faso. Gold Fields Ltd is earning up to a 60% interest in the property, which is its highest-priority gold project (*MJ*, February 4, p8). The holes tested footwall mineralisation beneath the Main zone at Essakan, and intersected a number of zones. The better of the recent results are as follows:

Hole	From (m)	Intercept (m)	Au (g/t)
ERC990	3.0	12.0	3.77
and	51.0	19.0	9.12
ERC862	149.0	5.0	25.11
ERC858D	156.5	7.5	14.44
ERC860D	55.0	37.0	12.57
ERC707D	144.0	36.0	3.71
ERC708D	171.0	23.5	16.11

MIYABI ESTIMATE

African Eagle Resources plc has received a resource estimate from SRK Consulting for its Miyabi gold deposit in Tanzania. The total estimated resources at Miyabi are 8.3 Mt at 1.5 g/t Au, 75% of which is in the indicated category (6.23 Mt at 1.5 g/t Au). Miyabi mineralisation occurs within several lenses in a structural corridor, each of which is believed to be a shear zone.



BOLIDEN SHARES SOLD
Finnish copper products and technology group Outokumpu Oyj has sold 30 million shares in Swedish-based copper and zinc producer Boliden AB, at SK34.50/share, to raise €115 million. The sale was managed by ABN Amro and JP Morgan. The shares represent a 10.4% shareholding in Boliden, and the sale reduces Outokumpu's interest in the latter to 16.1%. Outokumpu acquired a 49% holding in Boliden in a major asset exchange agreed in late 2003, and has already disposed of a significant tranche (*MJ*, December 3, 2004, p11).

BOLIDEN SELLS LUNDIN
Meanwhile, Boliden AB has sold its entire 6.7% shareholding in growing zinc producer Lundin Mining Corp for an undisclosed price. At Lundin's market price this Tuesday, the day the deal was announced, the 2.18 million shares were worth C$28.5 million. Boliden said it would book a profit of SK20 million on the sale in its March quarter results.

CML EXTENDS BID
Perth-based ferrous-metals producer Consolidated Minerals Ltd has extended its A$55 million cash-and-shares bid for nickel producer Reliance Mining Ltd until next Friday (March 18). Last week, CML declared the bid unconditional, dropping the condition of minimum acceptance representing a 90% shareholding (*MJ*, March 4, p13). By this Tuesday (March 8), CML had raised its interest in Reliance to 86%.

OVOCA INTO RUSSIA
London-listed Ovoca Resources plc, a Dublin-based company with base-metals exploration properties in Ireland, has agreed to buy a 78% interest in unlisted Norplat Ltd. The latter is exploring for gold in Russia. Ovoca will issue 39.5 million shares as payment for the Norplat stake, worth around £4 million based on Ovoca's price immediately following the announcement. The deal includes the right for Ovoca to buy the balance of ownership in Norplat for two years.

GFL UPS COMAPLEX STAKE
Gold Fields Ltd of South Africa has agreed to buy a further 2.43 million shares in Toronto-listed Comaplex Minerals Corp, at C$3.50/share, raising its shareholding from 13.5% to 19.8%. Comaplex will use the proceeds of C$8.5 million to advance its Meliadine gold project in Canada's Nunavut Territory (*MJ*, September 24, 2004, p9).

Sentient takes profit on two investments

THE Sentient Global Resources Fund has disposed of two investments for undisclosed prices.

The fund has sold its shares in Toronto-listed Ivernia West Inc, acquired from a financial restructuring of the latter company (*MJ*, June 27, 2003, p444).

Sentient reports that the recent commissioning of Ivernia's 51%-owned Magellan lead project in Western Australia (*MJ*, January 28, p11) has boosted the latter's share price, providing Sentient with the opportunity to exit at 4.75 times the cost of acquiring the shares. The fund retains its 49% direct interest in Magellan.

Sentient has also sold its 18.4% interest in South African anthracite producer Riversdale Mining Ltd, acquired last year (*MJ*, September 17, 2004, p15), as it had become apparent that "co-investment opportunities would not eventuate". The fund received 3.48 times the cost of acquisition.

Last month, Australian-listed Riversdale agreed to buy the Zululand anthracite mine from BHP Billiton (*MJ*, February 11, p12).

Record annual earnings for Sherritt International

TORONTO-BASED Sherritt International Corp made a net profit of C$24.4 million in the three months to December 31, 2004, to bring the total for the year to C$160.0 million – an annual record for the company.

Sherritt achieved new records for its production of coal, nickel, cobalt and electricity, which combined with higher nickel and cobalt prices to help drive the company's annual turnover above the C$1 billion level for the first time.

Turnover of C$1.09 billion in 2004 was 20% higher than that recorded in 2003.

Furthermore, late last week, Sherritt and its state-owned Cuban 50:50 partner in the Moa Bay nickel-mining operations agreed to expand their facilities by 16,000 t/y of contained nickel, to raise capacity to 49,000 t/y (p3).

The partners will fund equal shares of the estimated US$450 million capital cost, of which US$50 million is budgeted for this year and the balance is to be spent over 2006-07.

Sherritt's 50% stake in the Cuban nickel operations yielded attributable production in 2004 of 34.92 Mlb (15,835 t) of nickel and 3.65 Mlb of cobalt contained in mixed-sulphide material, an intermediate product which Sherritt refines in Canada.

The company realised average prices of C$8.05/lb and C$30.53/lb, respectively.

Sherritt's metals business (which also includes its fertiliser operation) was the company's largest source of turnover in 2004, accounting for 42% of the total; followed by the company's coal business, comprising its 50% interest in the Luscar Energy Partnership, with 23%.

The Luscar stake yielded attributable production of 19.27 Mt of thermal coal, which realised a price of C$13/t. Oil and gas contributed 18% of turnover, and electricity sales 9.6%.

Shore Gold financing

SASKATOON-BASED diamond explorer Shore Gold Inc has secured agreements to raise at least C$100 million through the sale of 18.2 million common shares, at C$5.50/share.

The world's largest gold producer, Newmont Mining Corp, has committed to buy 8.95 million of the shares, representing an investment of US$49.2 million.

The underwriters have an option to buy a further 3 million shares at the issue price, and if this is exercised to the full Newmont will take a further 297,000 shares.

Shore is developing its wholly-owned Star diamond project in Saskatchewan. The company recently received a valuation for a 3,050 ct parcel of diamonds from a 22,000 t kimberlite bulk sample (*MJ*, February 25, p11).

Mitsui coke buy-out

ACCORDING to the newspaper *Nihon Keizai*, a consortium led by Nippon Steel Corp has agreed to buy a one-third interest in Japanese coke producer Mitsui Mining Co Ltd for ¥10-20 billion. The other members of the consortium are reported to be Sumitomo Corp and Daiwa Securities.

The state-owned Industrial Revitalisation Corp acquired a 52% shareholding in Mitsui Mining in late 2003, and the possible involvement of Nippon Steel and Sumitomo in taking over the rehabilitation of the troubled company was rumoured late last year (*MJ*, December 23, 2004, p12).

According to *Nihon Keizai*, US steel entrepreneur Wilbur Ross has also been bidding for the stake in Mitsui Mining via his company WL Ross & Co.

Financial diary

WEEK ENDING MARCH 18
Tues: Antofagasta annual results. Kimberley Diamond interim results.
Wed: PT Antam, Grupo México quarterly and annual results.
Fri: Closing date for Consolidated Minerals' cash-and-shares offer for Reliance Mining.

WEEK ENDING MARCH 25
Tues: Bema Gold, Miramar Mining quarterly and annual results. Closing date for Cleveland-Cliffs' all-cash offer for Portman.
Thurs: CVRD quarterly and annual results. Closing date of Xstrata's cash offer for WMC (now outbid by BHP Billiton).

WEEK ENDING APRIL 1
Mon: Shareholders in Grupo México to vote on plan to merge mining unit with Southern Peru Copper Corp.
Wed: Aluminum Corp of China, PT Timah quarterly and annual results.
Thu: Bumi Resources quarterly and annual results.
Fri: First Quantum quarterly and annual results. CopperCo's takeover offer for Universal Resources closes.

WEEK ENDING APRIL 8
Wed: Alcoa March quarter results, Zijin Mining December quarter and annual results.
Thu: Gabriel Resources December quarterly and annual results.

SHARE PRICES

	Local	Change 5-day %	Local hi-lo %	Mkt cap US$m
Diversified				
Anglo American (£)	12.67	-3.4	69	36,196
African Rainbow Minerals (R)	32.00	3.2	32	1,119
BHP Billiton Ltd (A$)	19.14	1.1	96	54,325
BHP Billiton plc (£)	7.46	-0.3	89	35,477
Noranda (C$)	22.99	1.0	65	5,682
Outokumpu (€)	14.05	1.3	85	3,418
Rio Tinto Ltd (A$)	47.30	0.3	96	18,712
Rio Tinto plc (£)	18.15	-0.9	93	37,224
Teck Cominco 'B' (C$)	45.60	1.8	91	7,574
Vedanta Resources (£)	4.89	0.7	86	2,693
Xstrata plc (£)	10.59	-0.7	92	12,886
Gold				
Agnico-Eagle (C$)	18.55	5.7	72	1,329
AngloGold Ashanti (R)	228.20	5.2	44	10,327
Barrick Gold (C$)	31.16	0.8	91	13,819
Bema Gold (C$)	3.79	3.6	46	1,263
Buenaventura (PS)	63.00	0.0	60	3,339
Cambior (C$)	3.12	-1.6	21	712
Centerra Gold (C$)	22.90	12.0	78	1,374
Coeur d'Alene Mines (US$)	4.32	10.8	30	921
Eldorado Gold (C$)	4.03	3.1	82	927
Glamis Gold (C$)	21.04	1.3	41	2,292
Gold Fields Ltd (R)	74.70	4.5	43	6,289
Goldcorp (C$)	18.47	9.9	78	2,920
Golden Star Resources (C$)	3.95	8.5	10	468
Harmony Gold (R)	51.50	4.5	7	3,465
Hecla Mining (US$)	6.08	11.8	34	719
Highland Gold (£)	2.25	0.9	31	639
Iamgold (C$)	8.64	-0.6	58	1,048
Kinross Gold (C$)	8.61	4.4	58	2,484
Lihir Gold (A$)	1.18	5.4	65	1,200
Meridian Gold (C$)	22.30	-1.5	73	1,849
Mvelaphanda Resources (R)	15.50	12.3	24	441
Newcrest Mining (A$)	18.51	4.9	98	4,841
Newmont Mining (US$)	46.24	6.3	76	20,744
Pan American Silver (C$)	21.07	5.7	53	1,169
Peter Hambro Mining (£)	6.76	9.9	96	964
Placer Dome (C$)	21.45	2.1	34	7,790
Randgold Resources (£)	7.15	4.2	95	813
Western Areas (R)	30.00	0.0	59	541
Wheaton River (C$)	4.59	10.3	95	2,185
Zijin Mining 'H' (H$)	3.53	0.7	81	1,188
Platinum Group Metals				
Anglo Platinum (R)	227.97	2.5	30	8,480
Aquarius Platinum (A$)	6.45	10.1	43	423
Impala Platinum (R)	496.00	0.0	50	5,654
Lonmin plc (£)	10.37	2.5	47	2,826
Northam Platinum (R)	9.15	2.8	34	363
Southern Platinum (C$)	2.60	0.0	69	185
Stillwater Mining (US$)	12.01	11.2	29	1,085
Zimbabwe Platinum (A$)	3.07	-1.0	7	226

SHARE PRICES

	Local	Change 5-day %	Local hi-lo %	Mkt cap US$m
Aluminium				
Alcan (C$)	49.08	0.2	39	15,072
Alcoa (US$)	30.92	-1.2	34	26,947
Alumina Ltd (A$)	6.23	4.9	96	5,740
Aluminum Corp of China 'H' (H$)	4.95	1.0	45	7,013
Hindalco (Rs)	1,433.55	4.3	93	3,041
Norsk Hydro (NK)	528.50	0.3	88	22,487
Copper				
Antofagasta (£)	13.53	1.3	89	5,140
Aur Resources (C$)	7.54	1.3	93	592
Boliden (C$)	6.10	5.2	75	1,281
First Quantum Minerals (C$)	26.30	11.9	100	1,340
Freeport-McMoRan (US$)	42.40	2.4	91	7,570
Grupo México (MP)	62.02	-0.5	90	4,862
Inmet Mining (C$)	19.85	4.2	64	679
Jiangxi Copper (Yu)	5.91	2.2	25	1,777
KGHM (Zt)	31.00	-0.3	40	2,104
Mitsui Min & Smlt (¥)	501.00	1.6	91	2,762
Phelps Dodge (US$)	104.27	-0.3	90	10,079
Southern Peru (US$)	60.76	1.4	86	4,862
Sumitomo Met Min (¥)	866.00	7.6	91	4,766
Nickel				
PT Antam (Rp)	2,425.00	4.3	95	494
Canico Resources (C$)	17.17	-1.2	94	591
Falconbridge (C$)	40.40	13.2	98	6,045
Inco (C$)	50.50	-2.4	78	7,888
LionOre Mining (C$)	7.80	3.3	92	1,407
Minara Resources (A$)	2.24	21.1	60	822
MMC Norilsk Nickel (US$)	64.00	-0.8	55	13,690
WMC Resources (A$)	8.02	7.7	99	7,447
Zinc/Lead/Tin				
Breakwater Resources (C$)	0.69	-4.2	80	210
Hindustan Zinc (Rs)	186.45	2.6	96	1,807
Industrias Peñoles (MP)	58.71	-0.3	72	2,115
Minsur (PS)	9.10	0.0	73	1,657
PT Timah (Rp)	2,075.00	0.0	48	112
Zinifex (A$)	3.29	-0.3	91	1,303
Ferrous				
Assmang (R)	2,299.00	27.7	100	1,396
Caemi Mineração (BR)	2.75	4.6	95	3,954
Cleveland-Cliffs (US$)	73.35	-11.4	78	1,584
Consolidated Minerals (A$)	3.94	12.3	100	570
CVRD (BR)	93.01	0.0	93	37,507
Eramet (€)	89.20	6.4	93	3,062
Highveld S&V (R)	50.50	-3.6	81	853
Ispat Iscor (R)	64.50	-0.4	90	4,919
Kumba Resources (R)	71.20	7.1	95	3,690
Merafe Resources (R)	0.69	-5.5	10	146
Portman (A$)	3.83	-1.3	96	533

SHARE PRICES

	Local	Change 5-day %	Local hi-lo %	Mkt cap US$m
Energy Minerals				
Arch Coal (US$)	44.08	-2.1	85	2,748
PT Bumi Resources (Rp)	900.00	5.9	90	1,865
Cameco (C$)	54.00	-1.4	83	7,777
Centennial Coal (A$)	5.03	11.0	98	784
Coal & Allied Ind (A$)	38.00	5.6	100	2,607
Consol Energy (US$)	45.64	0.8	93	4,158
Fording CCT (C$)	118.64	-4.7	85	4,837
Foundation Coal (US$)	24.80	-4.8	66	1,101
Massey Energy (US$)	43.09	-0.3	87	3,277
Peabody Energy (US$)	96.47	-0.2	91	6,233
Sherritt Intl (C$)	10.75	0.9	97	1,169
UK Coal plc (£)	1.11	-5.1	2	312
Yanzhou Coal (Yu)	12.80	-4.5	34	4,752
Industrial Minerals & Diamonds				
Aber Diamond (C$)	40.25	-4.2	30	1,932
Iluka (A$)	5.95	4.2	75	1,098
Kimberley Diamond (A$)	1.02	10.9	23	203
Mosaic (US$)	16.86	0.4	57	6,466
Potash Corp of Sask (C$)	107.55	-1.0	90	9,975
Ticor (A$)	1.53	-5.0	60	298
Trans Hex (R)	17.85	0.3	15	272

THIS WEEK'S MAIN MOVERS

	Price	Change (%)
Top 6 rises		
Assmang (R)	2299.00	27.7
Minara Resources (A$)	2.24	21.1
Falconbridge (C$)	40.40	13.2
Mvelaphanda Resources (R)	15.50	12.3
Consolidated Minerals (A$)	3.94	12.3
Centerra Gold (C$)	22.90	12.0
Top 6 falls		
Cleveland-Cliffs (US$)	73.35	-11.4
Merafe Resources (R)	0.69	-5.5
UK Coal plc (£)	1.11	-5.1
Ticor (A$)	1.53	-5.0
Foundation Coal (US$)	24.80	-4.8
Fording CCT (C$)	118.64	-4.7

HSBC INDICES

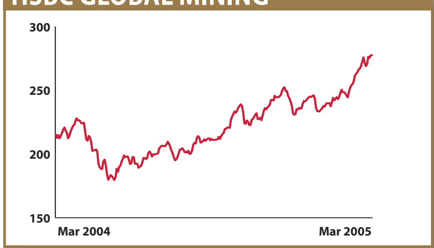
100 on 31.12.88		Change on week (%)	Hi-Lo (%)	52-week max	52-week low
Global Mining	277	3.2	100	277	180
Global Diversified Mining	414	1.0	99	416	241
Smaller Mining Companies	205	0.5	100	205	157
Global Base Metals	266	2.2	97	269	184
North American Base Metal†	531	1.8	91	543	404
Global Gold Index	125	6.2	74	135	96
Global Gold Ex South Africa	143	6.2	80	153	105
North American Gold	151	6.4	76	163	110
Global Coal Mining†	713	2.3	97	723	393
Other Metals/Minerals†	550	2.2	99	551	379
Latin American Mining*	853	1.4	91	899	392
Latin American (Ex CVRD)*	390	1.6	96	396	231

* 100 on 31.12.89 † 100 on 31.12.85

Mining Journal's share constituents are reviewed on a quarterly basis. The companies in the gold section comprise the top 30 stocks by market capitalisation. The constituent companies in all other commodity sections are chosen on a subjective basis to include the major producers, and are allocated to sections based on revenue. Fast-track entry into the share table will apply in the case of significant flotations or company-transforming mergers.

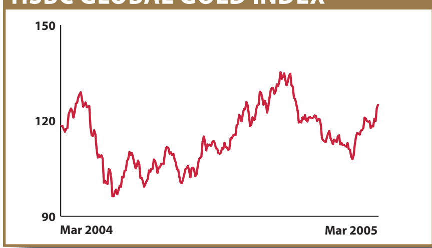
All data on this page sourced from Bloomberg unless otherwise stated

HSBC GLOBAL MINING



HSBC SMALLER MINING COMPANIES

HSBC GLOBAL GOLD INDEX



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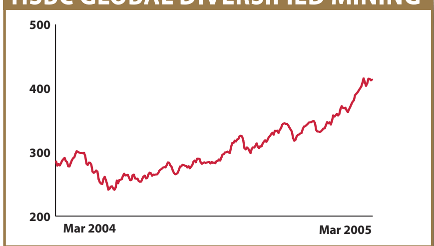

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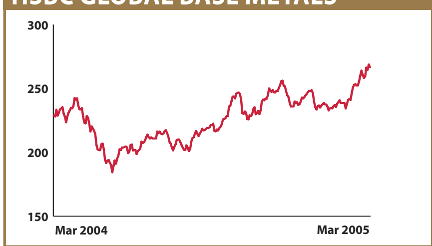

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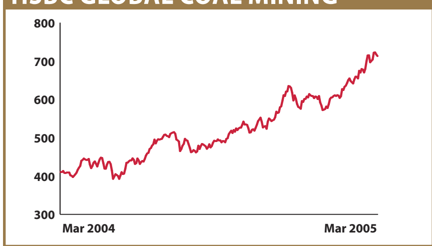


BHP Billiton snatches WMC from Xstrata

Continued from page 1

the deal would require anti-competition clearance from the authorities in the US, the European Union and Australia, and also from the Australian Foreign Investment Review Board, but he added that he saw "no significant issue with any of these".

BHP Billiton also confirmed that it currently holds no shares in WMC. On Monday, in response to market speculation, the group had revealed that it had appointed Deutsche Bank "to assess the feasibility of acquiring a stake in WMC", and later that day admitted that it had "economic exposure to 50.6 million (4.3%) WMC Resources shares through cash-settled derivative contracts".

On Tuesday, Mr Goodyear was free to explain that BHP Billiton had "mandated Deutsche Bank to look at buying shares", and that this had been consistent with an agreement between the two companies. He said this action was designed partly "to sound out the market". In the event, BHP Billiton chose not to buy, but the move "gave us an idea of what would be the appropriate level for a transaction".

Proposed deal is "value enhancing for BHP Billiton shareholders" – *Chip Goodyear*

Mr Goodyear also explained that the derivative position gives BHP Billiton exposure only to the price movement in the equivalent of 50.6 million WMC shares, and does not include any mechanism to buy such a tranche of shares nor any voting rights.

He said it is a cash transaction with a counterparty, and BHP Billiton does not know how the counterparty is hedging its own exposure.

Noranda and Falconbridge to merge

Continued from page 1

ties has been a perennial feature of the Canadian market for some time. Unveiling the deal this Wednesday, Noranda's chief executive, Derek Pannell, said: "We are very pleased that this lengthy process is concluding with such a positive outcome for our shareholders."

Among the benefits outlined by Noranda are the direct access to cash flow from Falconbridge, which will increase both its credit rating and its financial flexibility. Noranda also expects its larger market capitalisation (which should be around C$9.6 billion compared with C$6.7 billion, excluding the effects of the buy-back) to enhance its financing power, and the company believes that the greater trading liquidity in its shares will attract additional institutional shareholders.

Finally, Noranda expects a "favourable impact" from the merger on the group's exploration and development programmes, with greater operational and financial flexibility. This week, the two companies announced results from a series of group exploration projects (p12).

The merger will be effected by an offer to the minority shareholders in Falconbridge of 1.77 shares in Noranda for each share held. If all of the minority shareholders accept, this will involve the issue of 130.5 million new shares in Noranda, boosting the total issued to about 364 million, assuming the full buy-back of 63.4 million is completed. The new company will be called Noranda-Falconbridge.

The merger ratio represents a 15% premium for the Falconbridge minorities, compared with the average price of the company's shares for the 20 days to March 7 (the deal was announced on March 9).

The deal is conditional on a majority of the minority shareholders in Falconbridge accepting. It has been unanimously recommended by the boards of both companies. A special committee of Noranda's board commissioned CIBC World Markets to assess the offer, and the latter has declared it "fair from a financial point of view to Noranda".

Noranda's largest shareholder, Brascan with 41%, has said that it will tender its shares to the buy-back offer to the fullest amount. Depending on the degree to which other Noranda shareholders tender their shares, and assuming completion of the Falconbridge merger, Brascan's resulting shareholding in Noranda will be 16-26%.

The chief executive of Brascan, Bruce Flatt, said that "after reviewing a number of alternatives for our shares of Noranda in the context of an extremely positive outlook for base metals, we have decided to reduce our investment by up to 50% and ride the expected future upside of the base metals business…" Brascan also confirmed it has no plans to reduce its investments in NorandaFalconbridge after the deal.

Last year, Brascan had indicated it was seeking to sell its shareholding in Noranda, prompting interest from potential buyers, the most prominent of which were Cia Vale Do Rio Doce of Brazil and China Minmetals. The latter entered into an exclusive negotiation period which expired without a deal (*MJ*, November 19, 2004, p13), although discussions were reported only last month to be continuing.

This week, Noranda said that discussions with China Minmetals are now under way regarding a "strategic alliance, which may involve commercial arrangements regarding the off-take from certain development projects". It could also include "assistance with procurement and supply of equipment, and other products and services in regard to certain greenfield projects, joint exploration initiatives in China and other matters".

Meanwhile, David Weiner, a spokesman for China Minmetals, confirmed that "the transaction as was contemplated is not on the cards". Mr Weiner added: "We have developed a good relationship with Noranda over the months, and we hope to build on that momentum and goodwill."

The preference shares to be issued to buy back the 63.4 million common shares will comprise three tranches: 20 million Series 1 with a face value of US$500 million, 20 million Series 2 with a value of US$500 million and 10 million Series 3 at US$250 million. They will be redeemable for cash or common shares in Noranda, and must be redeemed within five years of issue with respect to Series 1; by June 30, 2012 for Series 2; and by June 30, 2015 for Series 3.

The shares will pay cumulative cash dividends each quarter, as and when declared by Noranda's board, as follows: Series 1, at US$1.50/share in total annually (representing a 6% coupon); Series 2, at US$1.5625/share (a 6.25% coupon) until June 30, 2010, and thereafter at the higher of 6.25% or 2.05% over the prevailing seven-year US Treasury bond yield at the start of each two-year period; Series 3, at US$1.625/share (a 6.5% coupon) until June 30, 2010, and thereafter at the higher of 6.5% or 2.35% over the ten-year US Treasury bond yield.

■GRAVITY TO JOIN AIM

Melbourne-based diamond explorer Gravity Diamonds Ltd has applied for its shares to be listed on London's AIM market, in addition to its existing listing in Australia. Gravity's nominated adviser will be RFC Corporate Finance and its broker will be WH Ireland. Trading in the shares is expected to start early next month. Gravity said the move is designed in part "to reflect the shifting shareholder base of the company".

■JUNIORS TO MERGE

Two Toronto-based exploration companies, Ventures Resource Corp and Resource Holdings & Investments Inc, have agreed a reverse takeover. Resource Holdings is currently exploring for gold on the 10,000 ha Sao Jorge property in Brazil's Pará State. The deal will be effected in the ratio of one share in Resource Holdings for every 0.02 shares in Ventures Resource, and the merged company will be called BrazMin Corp. A private placing is also planned, of up to 4.0 million subscription receipts at C$1.25/receipt. The placing agents, Haywood Securities and Loewen, Ondaatje, McCutcheon, have been granted an over-allotment option of up to a further 1.6 million units. Each receipt will entitle the holder to receive, at no extra charge, one share in Resource Holdings and half a share-purchase warrant. Assuming the full placing is made and the over-allotment option is fully exercised, BrazMin will be owned 4.85% by the current shareholders in Ventures Resource, 64.38% by the shareholders in Resource Holdings and 30.77% by subscribers to the placing. BrazMin's chief executive will be Anthony Ransom, formerly of AfriOre Ltd.

■RAMBLER FOR AIM

A newly-formed explorer, Rambler Metals & Mining plc, plans to join London's AIM market, and to raise equity funding of up to £8 million. The company has bought the Rambler copper-gold project in the Baie Verte area of Newfoundland from St John's-based Altius Minerals Corp for shares in Rambler. Altius will hold approximately one third of Rambler's total issued shares after taking into account the new shares to be issued in the fund-raising. Following its admission to AIM, Rambler plans an exploration programme including 28,000 m of drilling, with two rigs, which will be managed in the field by Altius. Rambler was founded by Harry Dobson and Brian Hinchcliffe, who also founded Kirkland Lake Gold Inc, which is listed in Toronto and also on AIM.

CODELCO BOND ISSUE

The Chilean state-owned copper producer Codelco plans to issue US$400 million in bonds to fund its purchase of the Ventanas copper smelter-refinery from state-owned Empresa Nacional de Mineria. Codelco agreed to buy the 330,000 t/y facility around 18 months ago (*MJ*, October 3, 2003, p253).

EGL STEPS UP

Shares in London-based European Goldfields Ltd have been listed on the Toronto Stock Exchange, moving up from the TSX Venture Exchange. The company, which is developing gold and polymetallic properties in Romania (*MJ*, March 4, p8) and Greece, is also listed on London's AIM market.

GALAHAD PLACINGS

AIM-listed Galahad Gold plc has placed 41.67 million new shares, at £0.12/share, with RIT Capital Partners and the J Rothschild family. Lord Rothschild is chairman of RIT, and the two investments represent a combined 7.43% shareholding in Galahad Gold. Last week, TSX Venture-listed Northern Dynasty Minerals Ltd placed 7.25 million units at C$4.25/unit for gross proceeds of C$30.8 million. 1.18 million of the units were placed with Galahad Gold, which now owns a 31.7% interest in Northern Dynasty, diluted from 34.1%. Each unit comprises one common share in Northern Dynasty and one share-purchase warrant exercisable at C$5.00/share for 18 months. The net proceeds will be used to fund drilling of the new East Zone discovery at the company's Pebble polymetallic property in Alaska (p10). Meanwhile, Galahad Gold has transferred its Malmbjerg and Flammefjeld molybdenum deposits in Greenland into a new, wholly-owned subsidiary, International Molybdenum Ltd.

SKYE OFFERING

Vancouver-based Skye Resources Inc has secured agreement for TD Securities to buy 7.32 million units and to sell them to the public at C$4.10/unit for gross proceeds of C$30 million. The broker's commission will be 6%. Each unit comprises one common share and half a share-purchase warrant. A whole warrant is exercisable at C$5.75/share for two years. Nickel major Inco Ltd will buy 500,000 units, reducing its shareholding in Skye from 12.33% to 10.3%. Skye will use the funds to develop its Fenix (Exmibal) nickel project in Guatemala, acquired from Inco last year (*MJ*, October 1, 2004, p11).

Rio Tinto extends legal scholarships

ADDITIONAL scholarships have been announced for study at the Centre for Energy, Petroleum and Mineral Law and Policy (CEPMLP) at the University of Dundee.

Rio Tinto plc is funding six scholarships in conjunction with the Foreign and Commonwealth Office for the LLM in mineral law and policy. Applications are encouraged from China and India in particular.

The aim of the one-year programme is to train industry professionals who will contribute to the sustainable development of mineral resources in their home countries to the advantage of local communities and economies.

Dr Elizabeth Bastida, director of CEPMLP's mining programme, said: "To date, over 40 scholars from 12 countries have benefited from a Rio Tinto scholarship. This has allowed us to welcome students who would otherwise not have been able to undertake postgraduate study due to financial constraints."

The closing date for applications for 2005 entry is May 31, and further information can be found on www.cepmlp.org or by e-mailing Kathleen Shortt at: k.a.shortt@dundee.ac.uk

BDI share offer aims to raise £4.5 million

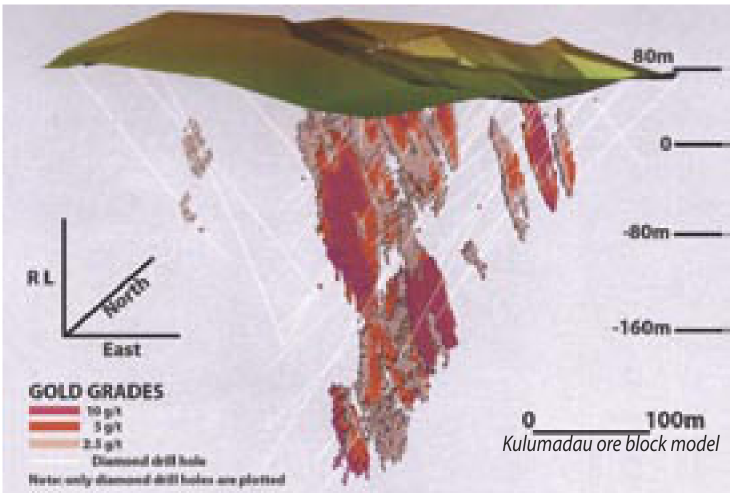
BDI Mining Corp has appointed Loeb Aron & Co to arrange a private placing to institutional investors of up to 15 million shares, to raise £4.5 million (gross).

BDI's managing director, Lee Spencer, told *Mining Journal* the funds will be used to pay for an accelerated drilling programme at the company's Woodlark Island gold property on the island of the same name, 300 km northeast of the Papua New Guinean mainland.

Drilling at Woodlark last year intersected high-grade gold mineralisation in the Kulumadau zone (*MJ*, November 19, 2004, p10). An induced polarisation geophysical survey at the same time identified six high-priority targets with a similar intensity to that at Kulumadau.

BDI has appointed Barclays Capital as adviser for the Woodlark property, issuing the latter 2.5 million warrants to purchase common shares in BDI for a five-year period.

Meanwhile, BDI's Cempaka diamond mine in Indonesia is about six to eight weeks behind schedule in the first stage of its redevelopment of the former mine site, owing to adverse weather conditions. The Phase 1 target output for the new operation is 5,000 ct/mth, using dry mining and a rotary pan plant recovery treating 34,000 bank m^3/mth of diamond-bearing gravel.



Kulumadau ore block model

Current output is at about 50% of full capacity, but is increasing. The second phase envisages the use of the existing production dredge and dense-media separation plant to double the target output to 10,000 ct/mth. Previous mining of Cempaka yielded a parcel of 4,656 ct of diamonds, which realised values of US$193/ct and US$178/ct, respectively, for two separate sub-parcels.

The original plan was to use the cash flow from the Cempaka operation to supply funds for the exploration of Woodlark Island, but Mr Spencer said that the potential at the latter property is such that an accelerated exploration effort is justified, requiring more funds than would be generated from Cempaka.

Desert Sun plans exploration boost

TORONTO-BASED Desert Sun Mining Corp has secured agreement for a syndicate of underwriters led by Sprott Securities to buy, on a 'bought deal' basis, 8.58 million units, at C$2.33/unit.

The underwriters have the option to buy a further 2.15 million units at the same price up to the closing of the deal, raising the gross proceeds to up to C$25 million.

Each unit comprises one common share and a quarter of a share-purchase warrant. A whole warrant is exercisable at C$2.50/share until November 20, 2008.

Desert Sun intends to use the net proceeds to expand the exploration programme at its Pindabacu, Morro do Vento, Canavieras and Jacobina projects in Bahia State, Brazil, and to fund prefeasibility and other development work at Morro do Vento and Canavieras.

Meanwhile, Desert Sun has also announced it has bought forward Brazilian real, at BR3.00/US$, at the rate of US$1 million/mth for the whole of 2006. This will cover around 60% of the capital and operating budget of the Jacobina gold mine. The hedging agreement is with BankBoston.

Last week, Desert Sun released a new reserve statement for Jacobina, with a total across all of the mine's zones of 14.38 Mt proven and probable, at an average grade of 2.12 g/t Au.

This compares with 10.75 Mt at 2.20 g/t as contained in the feasibility study of September 2003 completed by consultants SNC Lavalin.

The increase, prolonging mine life by more than two years, was predominantly in the Joao Belo zone.

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"Arcon was once involved in bitter and vitriolic corporate manoeuvres"

An Irish story

WHAT a cast of characters is involved in the Arcon saga! There's Sir Tony O'Reilly, probably Ireland's best-known business personality, who seems to have lost a packet on his investment in the zinc producer. There's Prof Richard Conroy, a multi-faceted personality if ever there was one. Ned Goodman, the Toronto financier, figured briefly in the story. And now Adolf Lundin seems ready to bring the saga to an end with a takeover that will see the Arcon name disappear (*MJ*, March 4, p11).

A saga? Well, Arcon was once involved in bitter and vitriolic corporate manoeuvres that matched anything the current Harmony-Gold Fields or the recent Goldcorp-Wheaton-Glamis battles have thrown at us.

Let's start with Prof Conroy. It was his company, Conroy Petroleum and Natural Resources, that in 1986 discovered the Galmoy zinc deposit in Ireland's County Kilkenny. Previously, in 1974, he had established Trans-International Oil. This Irish offshore oil exploration company merged with Aran Energy in 1979.

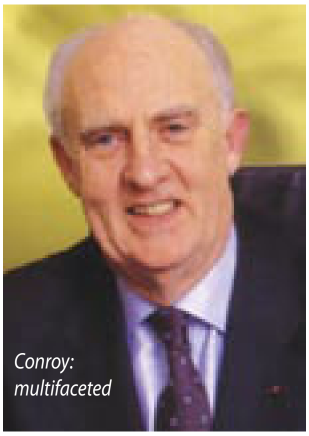
His entrepreneurial spirit emerged before that. While doing his post-graduate medical studies, he and his brother spotted a gap in the market and set up, in Manchester, what he believes was the first medical deputising business, providing doctors on a short-term basis when required.

Prof Conroy became professor of physiology at the Royal College of Surgeons in Dublin, and is now Emeritus Professor. His research included pioneering work on the effects of circadian rhythms, including jet lag, shift working and decision-taking in business after intercontinental flights.

And he had a political career as well. He served for two terms in the Irish Parliament as a member of the Senate. As senator, he was at various times front-bench spokesman for the government party in the upper house, on energy, industry and commerce, foreign affairs and Northern Ireland.

When it became obvious that the Galmoy discovery was significant, Prof Conroy brought in Outokumpu of Finland as partner. Not only would Outokumpu bring mining and technical expertise, but it also needed zinc concentrate to feed its downstream operations.

But the early 1990s brought upheaval. Ned Goodman's Dundee Bancorp built up a stake in Conroy Petroleum. Prof Conroy turned to Tony O'Reilly as a potential 'white knight', and a merger between the then Mr O'Reilly's Atlantic Resources, an oil exploration company, and Conroy Petroleum was mooted. To prevent this, Dundee Bancorp called an extraordinary meeting to oust most of the Conroy Petroleum board, including Prof Conroy, then chairman and chief executive. And it persuaded Outokumpu to support the move.



Conroy: multifaceted

That extraordinary meeting, in 1992, lasted most of the day. Prof Conroy and his supporters on the board were booted out. Temporarily.

Less than a month later, they were back. Mr O'Reilly bought the Dundee Bancorp stake in Conroy, on terms that gave Mr Goodman some profit. The ousted directors were reinstated. And Atlantic Resources and Conroy Petroleum merged into a company called Arcon.

But they didn't live happily ever after. In 1994, Prof Conroy resigned and walked out, taking with him his right-hand people, Maureen Jones, an executive director, and her brother, James, the finance director.

It wasn't long before Prof Conroy was back in the business. He founded Conroy Diamonds and Gold, now listed on London's AIM market, with Ms Jones – who qualified as a radiographer and specialised in nuclear medicine before getting involved in exploration – as managing director, and Mr Jones, once more as finance director.

According to Prof Conroy, the break-up with Mr O'Reilly resulted mainly from differences of opinion about the Pogo gold project in Alaska. Conroy Petroleum was a founding member of the Stoneboy consortium, an exploration group put together by Watts, Griffis and McOuat which discovered Pogo in 1994. When the time came for Conroy Petroleum to put up the final payment for its share in the project, Mr O'Reilly argued that the company should instead focus entirely on Galmoy. Prof Conroy wanted to continue the interest in Pogo.

It's worth speculating about what might have happened if Prof Conroy had had his way. Pogo turned out to be a world-class gold deposit. Today it has a probable resource of 7 Mt at a grade of 16.12 g/t. Teck Cominco, now project operator, says the mine should start up in the March quarter of 2006 and produce 400,000 oz/y over a ten-year mine life.

Prof Conroy seems to have no hard feelings about events at Conroy Petroleum. But he says: "If I regret anything, it is losing Pogo."

After Prof Conroy's departure, one of Mr O'Reilly's sons, Tony O'Reilly Jnr, took over as chief executive, and later chairman, of Arcon. The Galmoy mine started production in 1997. The early years were extremely difficult. Not only was the zinc price at an all-time low, but in 1998 the management had to tough out a 14-week strike.

By 2002, Arcon was in serious financial difficulties. Then Sir Tony O'Reilly's negotiating skills were put into good effect. Internationally known as chief executive of Heinz, the baked beans and 57 varieties group, for many years, his family interests include listed companies such as Independent newspapers, Waterford Wedgwood (fancy china), and Fitzwilton (food retailing). Sir Tony persuaded Arcon's banks to write off €60 million of loans in exchange for 10% of the enlarged equity.

In return, Arcon had to have a rights issue which the O'Reilly family underwrote. Consequently, the O'Reilly stake in Arcon jumped from 44% to 72%. This cost Sir Tony €21 million.

Some estimates suggest he has put about €90 million of family money into Arcon. But his spokesman says it was more like €60 million. The Lundin takeover terms will bring back €31.3 million in cash. And, instead of his present 65% shareholding in Arcon, Sir Tony will have a 9% stake in the enlarged Lundin Mining group.

Meanwhile, Prof Conroy has been focusing his new company's attention on a major geological structure in Ireland known as the Longford-Down Massif, which he suggests might support a new gold province.

Learning from the Conroy Petroleum days – he had failed to grab the area near to Galmoy where the Lisheen zinc mine was later developed by someone else – his new company has prospecting licences covering 1,300 km^2.

He says: "What we are doing now could have greater implications [than the Galmoy discovery] if we have found a new gold province. It would be very exciting for Ireland, and bring greater financial benefit to Ireland."

Uncharacteristically low-profile

TALKING of industry characters, not many people seem to remember that Mohamed al-Fayed is in the mining business.

Outside the UK he is best known as the father of Egyptian playboy, Dodi, who courted Princess Diana during the final days of her life.

In Britain, he was already a controversial figure – owner of retail and leisure interests that, apart from the Harrods department store in London, include Fulham soccer club and the Ritz Hotel in Paris.

Initially he called his exploration outfit Harrods Minerals but it has been renamed Gallant Minerals. Although this is a private company, we have a recent snapshot of its operations, courtesy of Keith Laskowski who "for the past eight years created and directed Gallant Resources".

A geologist who graduated from the Colorado School of Mines, Mr Laskowski has joined Solomon Resources as president, and the above quote comes from Solomon's announcement.

It adds: "With a yearly exploration budget of US$2-3 million, Gallant has focused on developing exploration targets in Mongolia and Peru.

"Since 2000, Gallant, under Mr Laskowski's direction, has ventured [sic] over 60 projects and attracted over US$7 million in third-party investment."

Modelling the nickel price

The price of nickel is generally considered to be much more volatile than the prices of the other base metals and it has the reputation of being the hardest to forecast

BY PETER HOLLANDS, ADAM SOTOWICZ, MIRE ZLOH AND LEON WESTGATE

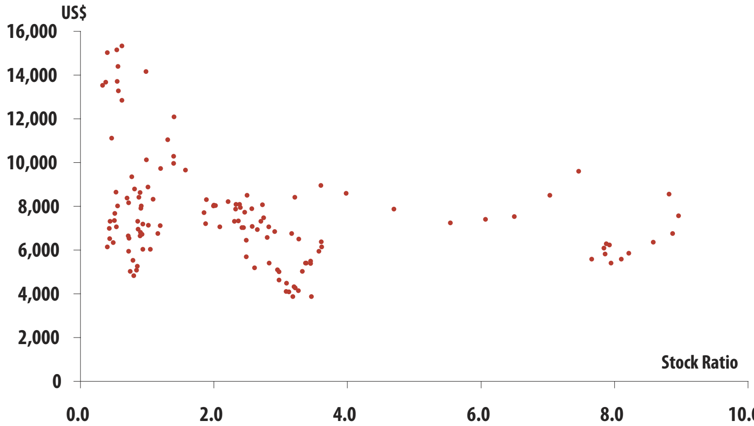


Figure 1: a scatter diagram linking prices to LME stock ratios

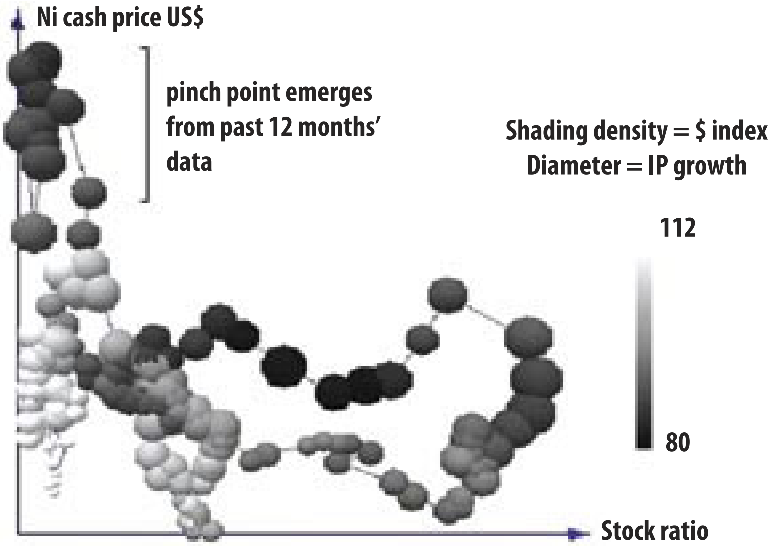


Figure 2: BME shaded the bubbles from figure 1. A strong dollar is shown as pale and a weak dollar dark

RESEARCH by London-based consultancy Bloomsbury Minerals Economics (BME) has confirmed the extreme volatility of the nickel price (see table 1, below), but BME's research suggests people find nickel prices so difficult to forecast mainly because they focus on the wrong price drivers.

For all base metals, the traditional methodology of forecasting prices runs as follows. Production and consumption are forecast, then the production-consumption difference (or 'market balance') is calculated and this is used to predict stock levels. Price forecasts are then prepared on the basis of historical stock-to-price relationships, often set out as scatter diagrams.

The trouble with this methodology is that while the stock-to-price relationship is strong for some metals, it is poor for nickel. BME has compared the degree of statistical fit of base-metals prices with their main influences (drivers): stocks, the rate of industrial production (IP) growth (as an indicator of metals demand growth) and the strength or weakness of the US dollar (using the Federal Reserve's major currencies index). The relationship between stocks and prices is only half as good for nickel as that for copper (see table 2).

A scatter diagram linking prices to LME stock ratios is shown as figure 1. While there is some relationship, it is a poor one. For example, when inventories are low, a single stock level can be associated with prices as low as US$5,000/t or as high as US$15,000/t: not a lot of help in forecasting. Analysts have traditionally worked their way around this by drawing a trend line through the distribution and calling it the 'fundamentally justified price' for a given stock level.

That approach would be justified if the scatter around the trend were 'noise', but would be unjustified if it were 'signal'. BME delved deeper into this relationship, and established that the scatter is indeed signal rather than noise.

BME examined the situation by switching from a simple scatter diagram to a bubble chart in which the diameter of the bubble is proportional to global IP growth. This established that at any given stock level, prices would vary depending on the rate of IP growth. BME then shaded the bubbles, with a strong dollar shown as pale and a weak dollar dark (see figure 2).

The implication of BME's shaded bubble charts (in effect, two-dimensional representations of a four-dimensional relationship) is that the trend-line approach and its supposed 'fundamentally justified price' are quite incorrect. The trend line is just show-

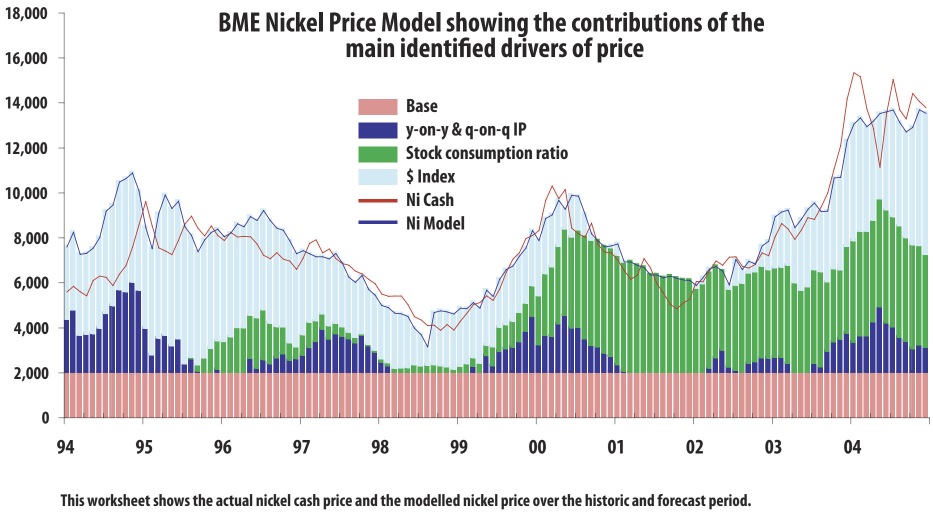


Figure 3: modelling makes it very much easier to establish a precise relationship between forecast nickel market conditions and the prices that go with them

TABLE 1: COEFFICIENTS OF VARIATION* OF MONTHLY AVERAGE LME METALS PRICES IN VARIOUS CURRENCIES

January 1996 - December 2004

	US$	€	C$	A$
Nickel	35.5	30.5	30.2	30.4
Lead	26.3	17.0	20.2	16.4
Copper	23.8	17.2	17.9	15.4
Zinc	17.5	19.3	16.0	16.0
Aluminium	9.6	13.4	6.9	12.9

* standard deviation divided by the mean

TABLE 2: DEGREE OF FIT* BETWEEN THE THREE MAIN PRICE DRIVERS AND MONTHLY AVERAGE PRICES IN US$

January 1996 - December 2004

	Stocks	$	IP	All 3**
Nickel	0.29	0.35	0.35	0.85
Lead	0.59	0.66	0.13	0.93
Copper	0.58	0.58	0.31	0.84
Zinc	0.13	0.11	0.32	0.75
Aluminium	0.01	0.27	0.37	0.73

* R2 (perfect fit = 1.0, no fit = 0.0)
** Combined in the BME Nickel Price Model

ing what the price would be at a given stock level if global IP growth and the strength of the dollar were at their long-term trend values. Hence the difficulties experienced by anyone trying to forecast from the trend relationship over the course of a demand cycle, especially if exchange rates are shifting.

BME went from using shaded-bubble charts to assess these relationships to using mathematical models. The result has been a degree of fit between nickel prices and price drivers (measured by R^2, where 1.0 represents a perfect fit and 0.0 indicates no fit) of 0.85 (or 85%). This compares with an R^2 of just 0.29 (or 29%) between stocks and prices, an R^2 of 0.35 between the dollar index and prices, and likewise 0.35 between IP growth and prices, when each of the price drivers is considered in isolation.

From its research, BME has concluded that modelling makes it very much easier to establish a precise relationship between forecast nickel market conditions and the prices that go with them. Results of this modelling are set out in a layer diagram in figure 3. The traditional analytical approach, using just the stock-to-price relationship for guidance, emerges as a very poor second best.

Peter Hollands, Adam Sotowicz, Mire Zloh and Leon Westgate work for Bloomsbury Minerals Economics Ltd (www.bloomsburyminerals.com), a member of the Metallicarum International Ltd forecasting and consultancy alliance (www.metallicarum.com).
This article is an updated version of the presentation by BME Price Models Ltd made at Mining Journal*'s Nickel Day seminar on November 30, 2004.*

THE nickel price has the highest coefficient of variation of all the LME metals: double that of aluminium, for instance. One of the reasons for this is that the nickel market is rather thin and, as a result, the impact of speculative activity can be much greater than in aluminium or copper. But nickel also differs from the other base metals in that demand is highly price-elastic in the short term. Nickel shares with lead the problem of being strongly influenced by scrap-market dynamics – in nickel's case, stainless-steel scrap.

Australian nickel: a new beginning

To compare the Australian nickel industry of today with that of the mid to late 1990s is like comparing the Western world before and after September 11. In many ways it is the same, but the fine details of 'how things are done' have changed dramatically

BY MICKEY THOMPSON

AUSTRALIA is still the world's third-largest producer of mined nickel ore (after Russia and Canada), with 2004 production totalling 182,000 t of contained nickel, compared with only 120,000 t in 1997.

WMC Resources Ltd is still the largest producer, and controls the only locally-sourced smelter and refinery; and sulphide sources still account for the lion's share of production (80% in 2004, compared with 100% in 1997). Resources are still huge, and many projects are on the drawing boards. That, however, is where the similarity with the late-1990s ends.

Like most nickel-producing countries, exploration in Australia is at an all-time high, riding on the back of almost non-existent metal inventories and skyrocketing prices. In 1997, some 90 companies had an interest in nickel exploration projects. Within the past few years this has surged, and now stands at about 195. The number of Australian projects with defined resources has gone from 38 to 60, although much of this increase is artificial (most of WMC's projects in the Kambalda area of Western Australia have been sold to juniors).

This week's issue of *Mining Journal* includes a map of nickel exploration properties in Australia, published by Intierra Ltd in association with *Mining Journal*

Nickel laterites have come and largely gone, following various cost blow-outs and technical problems with the new (to Australia) pressure-acid-leach process: of the three major Western Australian operations, which all started production in 1999, only Murrin Murrin remains relatively untouched. Cawse is supplying intermediate products to OM Group Inc refineries in Finland, while the mothballed plant at Bulong has been sold to LionOre Mining International Ltd.

However, a 'second coming' is near, with BHP Billiton on track to start production from Ravensthorpe in 2007, with concentrate to go to the Yabulu refinery in Townsville, which has existed on imported ore since the closure of the local Greenvale operations. Yabulu produced 31,600 t of nickel in 2004. The other significant development has been the amalgamation by

Continued on page 20

BHP Billiton's Ravensthorpe site, Western Australia. The company is on target to start production in two years

Photo: Bloomberg

Photo: WMC Resources Ltd

WMC has strong links with China. Jinchuan Group takes nickel as matte from the Australian company

Continued from page 19

Heron Resources Ltd of many disparate laterite projects to form the Kalgoorlie Laterite Project, which has reached the feasibility stage.

With the sale of its Kambalda mines, WMC is left with the huge low-grade sulphide operation at Mt Keith and the high-grade operation at Leinster-Perseverence. Together, these two operations produced 87,650 t of nickel in 2004 (48% of Australian mine production), while the Kambalda concentrator produced 22,330 t from the various ex-WMC mines.

Other sulphide operators now have a choice, which, combined with high prices, is why so many have been able to get on the producer list. The low-capital-cost route is to sell their ore to Kambalda or one of the other existing concentrators, for ultimate export as matte or metal; or they build their own concentrators and enter into off-take agreements with overseas refineries.

Probably the only way any new smelter or refinery would eventuate would be if a new, isolated nickel province were to be found, as could happen in the West Musgrave district if initial exploration success by WMC proves to be more than a modern-day 'Poseidon' boom.

Currently the major off-take deals are with Inco Ltd, Outokumpu Oyj and Jinchuan Group Ltd. This Chinese connection is significant, with the Chinese hunger for metal largely propelling the current Australian multi-metals boom. Jinchuan has had nickel contacts in Australia since 1984, when it co-operated with WMC to build the company's first Chinese flash smelter. Jinchuan currently takes matte from WMC, and concentrate from the Sally Malay and Radio Hill mines, as well as having an exploration alliance in China, again with WMC.

This foreign ownership of the Australian nickel process, from exploration to metal production, has surged over recent years, with the major players being Glencore International AG, LionOre, Inco, OM Group, Outokumpu and Jinchuan. There are very few exploration or production joint ventures between local junior companies without either an overseas connection, again due to the need to provide for product off-take, or the otherwise cheap alternative of selling to WMC.

The main exception has been the rash of commodity-specific joint ventures, whereby junior nickel explorers have been gaining access to ground held by other companies that continue to explore for commodities other than nickel, mainly gold. Some agreements even separate the nickel rights between companies interested solely in sulphide or lateritic nickel.

What will the next five years hold for Australian nickel? All indications are that nickel production will continue to increase strongly, with growth continuing to be driven by strong international demand and underproduction. Small sulphide producers will continue to thrive, a couple of new large, low-grade sulphide operations are possible and one, perhaps two, new large-scale lateritic operations are likely, with total Australian mine production by the end of the decade likely to be around 250,000 t/y.

Mickey Thompson works for Intierra Ltd, Perth, Australia

Remuneration trends and dollar weakness

Mining is currently experiencing a boom, and salary levels have reacted accordingly. The weakness of the US dollar is also driving up international compensation rates

BY BRIAN HOSKING

PRICES of almost all major commodities have been buoyant for the past three years and this situation is to be welcomed, none more so than by the mining community at large, which is now enjoying a period of relative prosperity. How long this trend will last, however, is a matter of conjecture, and there are those of us who assert we have entered a new mega-cycle, as the world adjusts to a new commodity consumption paradigm.

There is, though, a contrarian view held by many who say current commodity prices are more a reflection of US dollar weakness, and that a resurgent dollar will bring this period of relative commodity prosperity to a rapid end. Whichever current wisdom prevails, it is clear that compensation levels have been affected not only by a boom in demand for skills but most definitely by the prevailing weakness of the US dollar.

Today we see clear evidence of the demand for skills. A direct consequence of the strength in the commodity cycle has been an increased level of development and exploration activity, which has cascaded directly into a demand for skilled professionals. This has continued unabated for the past three years and even shows some sign of increasing.

There is no doubt that the growth in demand is a global phenomenon. As mining and exploration companies seek to develop properties throughout Europe, the former Soviet Union, Southeast Asia, China, Africa, Latin America, North America and Australia, we have seen the need for increased mobility of people to work on international assignments.

While needing to pay relevant local salaries to these executives, companies have increasingly had to source manpower from a global, rather than local, talent pool. The impact has been an overall increase in compensation levels. From this perspective, the fortunes of the dollar clearly have not only had an impact, but can also be viewed as an example of the 'law of unintended consequences'.

TABLE 1: EXPECTED AVERAGE BASE COMPENSATION CURRENTLY PAID TO EXECUTIVES AT THE GENERAL MANAGEMENT/VICE PRESIDENT OF OPERATIONS LEVEL (US$)

Region	2003 base compensation	2004 base compensation	Difference %
N America	176,044	193,913	10
Europe	141,250	151,302	7
Australia	143,926	173,276	20
South Africa	147,550	187,754	27
Total	**156,851**	**176,561**	**13**

SEARCH ASSIGNMENT

The following example better illustrates this point. Meyer Hosking & Associates recently undertook an executive search assignment to find a senior executive (general management/vice president of operations level). Given the nature of the position, we needed to undertake a thorough global search. The search went well and suitable candidates were identified to the satisfaction of our client. When we came to negotiating the successful candidate's compensation package, however, we began to encounter new challenges. Happily the negotiations proved successful and the matter was satisfactorily resolved, albeit at a higher level of compensation than the one originally budgeted by the client.

In successfully resolving this case, we were confronted by the changes that have taken place in respect of executive compensation levels over the past two years. As background to this, Meyer, Hosking & Associates regularly undertakes compensation surveys to assist and guide our clients. The problem is that benchmarks, while useful in providing general guidance, are seldom more than statistical averages and do not necessarily take account of any geographic differences.

These geographic differences can be significant and have changed over the past two years. This is highlighted in table 1.

These data are self-explanatory, and the numbers serve to highlight that significant regional differences exist. They also serve to demonstrate that between 2003 and 2004, the big winners in terms of compensation have been the South African and Australian executives. These executives, however, will argue strongly that they have not really seen the benefit in local terms. But, when considering international mobility, the impact of dollar weakness becomes significant and serves to highlight my earlier reference to 'unintended consequences'.

When moving an executive from one geographical region to another, one has to translate the individual's existing local compensation at the prevailing exchange rate, and here the continuing weakness of the dollar has served to increase compensation costs significantly. To illustrate this, one needs to recognise that in compiling the above data we have had to translate local salaries into US dollars. This was done at the ruling exchange rates when each survey was undertaken. A comparison of the exchange rates unmistakably reflects dollar weakness:

COMPARISON OF EXCHANGE RATES

Currency	2003 rate	2004 rate	% appreciation against US$
US$/euro	1.153	1.242	8
US$/£ sterling	1.668	1.794	7
US$/Canadian $	0.735	0.799	9
US$/Australian $	0.665	0.737	11
US$/SA rand	0.129	0.153	19

It further explains, for example, that 19% of the increase in remuneration for South African executives is due solely to the strengthening of the rand against the US dollar. Therefore, we would estimate that in South Africa, salaries in local terms have increased by around 8% and not the 27% indicated in our survey. Similarly, in the case of compensation packages paid to Australian executives at this level, 11% of the increase can be directly ascribed to gains in the Australian dollar.

If we try to extract these exchange-rate gains (which is in this case an inexact science), we see that at the general management level there has, on average, been a real growth in compensation levels of around 7-8%.

Our conclusion is that, in real terms, compensation levels have indeed increased in response to growing demand. What is more significant, however, is the impact of exchange-rate-driven factors. A weakening US dollar has undoubtedly added to compensation levels, particularly on international assignments. This effect is significant and has, in our opinion, translated into further upward pressure on overall salary levels.

Brian Hosking is a partner in executive search consultancy Meyer, Hosking & Associates, based in London

Forthcoming features/ supplements in *MJ*

THIS MONTH

- Later in March, *Mining Journal* will report back from the PDAC conference in Toronto, and there will also be a Focus on London's AIM market.

APRIL

- April will start a round of in-depth reviews of the major mining countries of the world, kicking off with India and Mexico.
- Other highlights for April will include a Focus on the TSX Venture Exchange, the latest in *Mining Journal*'s quarterly 'On the ground' series on both the diamond industry and Canada, and a look back at the tin and steel markets over the past year.

US President George Bush has nominated Steve Johnson as head of the US **Environmental Protection Agency**. Mr Johnson, currently acting administrator of the EPA, has worked at the agency for the past 24 years, and is the first career-employee to be made head.

The **BHP Billiton** group has appointed Eliphus Monkoe as president and chief operating officer of Ingwe Collieries Ltd, its wholly-owned South African coal-mining subsidiary, with effect from the start of next month. Mr Monkoe will replace Mahomed Seedat, who has been promoted to the post of president of BHP Billiton's energy coal customer sector group (*MJ*, February 4, p21). He joins from oil-from-coal producer Sasol Ltd, where he is currently general manager of the Sasol Mining Board.

Anglo-Canadian engineering group **Amec plc** has recruited four mining consultants for its UK office, in Ashford, Kent. Fergus Anckorn, Miguel Diaz, Pier Chiti and Ciaran Molloy joined last month from Scott Wilson. Peter Lighthall, mining sector leader for Amec's earth

Continued on page 22

Continued from page 21
and environmental operations, said the new recruits will "provide important access to UK-based mining companies with operations in Europe, parts of Asia and Africa".

■Vancouver-based **Spur Ventures Inc** has made Robert Rennie its chief executive. Dr Rennie retired recently from the fertiliser producer Agrium Inc. Spur plans to develop a phosphate deposit located near Yichang City, in China, to produce fertiliser for the agricultural market in the Province of Hubei.

■Jerry Perkins has been made vice president – development and operations by **Exeter Resource Corp** of Vancouver. Exeter is developing La Cabeza, a gold project in Argentina's Mendoza Province (*MJ*, November 26, 2004, p11).

■Toronto-based **Odyssey Resources Ltd** has appointed Gregory Maynard as vice president of exploration, Odyssey says it is expanding its technical team in anticipation of further work at its Tavsan gold property in Turkey (*MJ*, January 28, p8) and at its copper-silver exploration programme in Morocco.

■Australian-based engineering group **Sinclair Knight Merz** has appointed David Moore (pictured) as commercial manager of its resources business. Mr Moore has 15 years' experience of the resources sector, with Carter Holt Harvey, Machinemonitor, P&H Minepro Services and Brambles Coal Services. He will report to Mark Read, SKM's general manager – resources.

■The Hon Alan Carpenter has been appointed Minister for State Development and Energy of **Western Australia**. Mr Carpenter was Minister for Education and Training in a previous state government.

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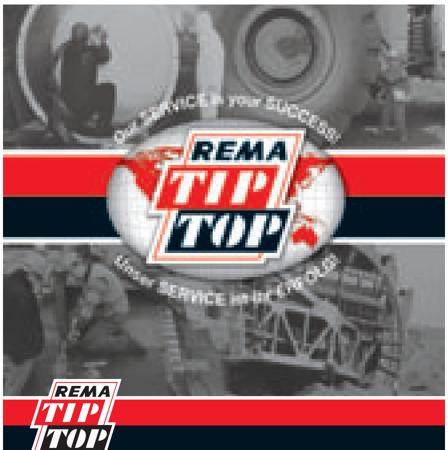

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