SOUTH AFRICA

By a Special Contributor

South Africa's mining industry is going through a period of fundamental change and of some significant difficulty, neither of which would appear likely to ease appreciably this year.

As the year 2003 progressed, and as 2004 got under way, the rand's continuing strength against the US dollar savaged the profits of all of the country's export mines. Export prices are set in dollars and operating costs are largely defined in rands. So while dollar prices of metals such as platinum and gold were climbing to new or recent highs, the dollar's decline against the rand left many mines with tumbling rand revenues.

As many mines or parts of mines slid into losses, the industry responded with closures and retrenchments. The intention was that retrenchments be decided only after tripartite talks between the state, the industry and the unions. But by February 2004 the National Union of Mineworkers (NUM) claimed that the Chamber of Mines and government had only paid lip service to the promise of limiting job losses.

The union threatened industrial action and mass demonstrations by its 300,000-odd members unless government did something to prevent the rand's strength from cutting mine revenues, profits and jobs. The NUM's threat was focussed on the rand. It ignored other potentially costly problems that the industry faces.

On the revenue and profits front, the mining industry faces the prospect of yet a further revenue drain if parliament votes and converts the country's new Mining Royalty Bill into an Act that is implemented.

The Bill remains simply a proposal for the present, but in its initial form it envisages a series of royalties on revenue ranging through 8% on diamonds, 4% on platinum, 3% on gold and between 1% and 2% for bulk minerals. The Bill is still open for comment from the mining industry and other interested parties, and may only be considered by parliament several months after the April 14, 2004 general election.

In the meantime, an industry that was for many years dominated by white owners and managers is getting to grips with new laws – the Minerals Resources and Development Act, and the associated Mining Charter and Scorecard – designed to bring about significant black ownership of the sector. The principal legal requirement is that 15% each of the country's mines be black-owned or controlled by the start of May 2009 and 26% five years after that.

This requirement has already been acted upon by several mining firms, leading to a radical re-structuring of the industry and even to the demise of a mining group such as Anglovaal Mining (Avmin), which has been subsumed indirectly into a black-controlled mining investment firm African Rainbow Minerals.

In addition, the government is putting together the Beneficiation Bill which, when agreed and voted into law, will compel South African minerals producers to beneficiate further their products within South Africa. Many in the mining industry point out that such requirements may place some South African minerals producers in direct competition with their customers.

Aluminium
South Africa does not produce any aluminium ores or feedstocks for aluminium smelters, but it has become an important smelter of imported alumina based on cheap bulk electrical power.

BHP Billiton's Hillside and Bayside smelters near Richards Bay on the KwaZulu-Natal coast were the first. Expansion of capacity at the Hillside smelter complex was completed in December 2003 at a budgeted cost of US$449 million. Hillside's annual capacity was increased by 132,000 t to 670,000 t of aluminium metal. The expansion project began in April 2002.

Alcan's 2003 acquisition of Pechiney put on ice the proposed development of a new US$2.2 billion smelter in the new Coega industrial zone in South Africa's impoverished Eastern Cape. By April 2004 the Canadian firm had still to confirm that South Africa remained the favoured location for its next smelter. This was despite the fact that Pechiney had all-but given Coega the green light before its acquisition by Alcan, and even though South Africa's state-owned electricity utility, Eskom, had been instructed to start laying in the power lines needed for a smelter. The South African Government, represented by trade minister Alec Erwin, put considerable pressure on the Canadians to confirm the project: but with little obvious effect.

Antimony
South Africa's only antimony producer is the Consolidated Murchison mine in the north-eastern corner of the country. Antimony operations on their own have been barely profitable for several years, and the mine remains afloat with the help of by-product gold. The mine provides about 8% of the world's antimony.

In the financial year to end-June 2003, Consolidated Murchison processed some 40,000 t/mth of ore at an average antimony head grade of 1.3% Sb and 2 g/t Au. In that period, the mine produced approximately 9,000 t of concentrate averaging 59% Sb, along with about 1,000 kg of gold.

During the second half of calendar 2003, Consolidated Murchison was hurt by the combination of orebody problems, a weaker dollar-denominated price for its concentrate and the significant strengthening of the rand against the US dollar. The world market for antimony is dominated by Chinese producers, whose products are generally of poorer quality and are less pure than those from South Africa.

Consolidated Murchison has never boasted significant proven reserves but has, nevertheless, been in operation as an antimony producer since the inter-war years. By June 2003, the mine had 92,800 t of proven reserves averaging 2.2% Sb and 3.1 g/t Au. Probable reserves were estimated at 1.58 Mt at 2.7% Sb and 3.3 g/t Au. Total mineral resources – measured, indicated and inferred – were put at 8.2 Mt averaging 2.5% Sb and 2.7 g/t Au.

Chrome

South Africa possesses some 70% of the world's chromite reserves and, over recent decades, the country has developed into the world's leading producer of ferrochrome. At present, South Africa supplies 75% of the world's ferrochrome, mostly for use in the manufacture of stainless steel.

Latest figures indicate that stainless steel production has been growing at an annual 4.5% compound over the past ten years, and production is expected to maintain or even exceed that rate over the next five years.

In February 2004, Xstrata plc and SA Chrome & Alloys (Pty) Ltd announced the combining of their ferrochrome production facilities to create the world's largest individual ferrochrome producer. The combined operations' capacity of 1.45 Mt/y represents some 26% of global capacity. The merger will give SA Chrome, a black empowerment company, an initial 11% of the venture and the option of buying additional shares to increase its holding to 20% over the next three years and to 26% thereafter.

All of the two companies' new African chrome ventures south of the equator will be offered to the joint venture. In the first instance this will mean participation in the first of three phases of Xstrata's newly-announced 1 Mt/y Lion ferrochrome project in South Africa's Mpumalanga Province. This first phase is budgeted to cost R1.25 billion and will lift Xstrata's ferrochrome capacity to 1.63 Mt/y. Lion will be developed in three equal phases of 330,000 t/y each, and its exclusive use of Xstrata's Premus Technology is expected to result in operating costs some 20% below those using alternative technologies.

Assmang Ltd is currently producing some 600,000 t/y of chromite ore from its Dwarsrivier open-pit mining operations. With the expansions at the company's Machadodorp ferrochrome works, this production has been increased and will rise to 1 Mt/y by mid-2004. Underground production should start during the 2003-04 financial year, with the open-pit areas mined out by June 2006. The Dwarsrivier mine is specifically geared to deliver quality metallurgical chromite to Machadodorp, although the beneficiation plant has also been designed to produce chemical- and foundry-grade products.

With expansion at the Machadodorp works, including the addition of a 350,000 t/y pelletising plant in 2001, Dwarsrivier is now able to deliver all of the chromite fines it produces to the smelter. Underground mining methods and equipment are currently being evaluated so that Dwarsrivier can continue to compete with the best mining operations in the world.

Samancor (a 60:40 JV between BHP Billiton and Anglo American plc) has its operations organised under two mining centres: Eastern Chrome Mines, based at Steelpoort; and Western Chrome Mines, with its mine office at Mooinooi, near Rustenburg. The total combined ore reserves exceed 450 Mt, calculated to a depth of 300 m, with an annual production capacity of more than 4 Mt.

Samancor's total chromite resources exceed 1,800 Mt and are expected to support current mining activity for well over 200 years at current extraction rates. Some ores and concentrates are exported, but the majority are destined for conversion into ferrochrome at the alloy plants.

Coal

During 2003 and the early part of 2004, dollar-denominated export coal prices strengthened and freight rates rose – largely because of sharp increases in Chinese demand for coal. However, the rand’s strength against the dollar resulted in sharp cuts in the revenues and rand profits of South Africa’s coal producers. Anglo American’s South African operations, for example, lifted their coal production to a record 52 Mt and, by year’s end, prices had risen by 72% over the twelve months. The result was that the profits of the group’s South African operations fell by 46% from the 2002 level, to US$133 million in 2003.

Anglo American echoed the complaints of others in saying that transport constraints affected its ability to ship coal outside South Africa. However, these difficulties are likely to be only temporary as expansion of the principal coal export rail line and loading terminal is in progress.

In January 2004, privately-owned Richards Bay Coal Terminal (RBCT) reached agreement with South Africa’s National Ports Authority and Spoornet (the state-owned railway operator) for a R1.75 billion expansion of the coal terminal. Expansion will lift the annual handling capacity of the terminal, and the rail infrastructure that links it with the coalfields of Mpumalanga province, from its current 72 Mt to 86 Mt. This compares with the record 68.3 Mt that were loaded through the terminal in 2003.

Some R750 million is planned for RBCT’s stockyard expansion, while Spoornet will spend R450 million on extending the facility’s loading quay. The expansion will take place over three years and is contingent upon black-owned coal companies being allowed access to the RBCT facility. In calendar 2004, black-owned collieries are expected to load some 2 Mt through RBCT, and this is set to double by 2006.

On the domestic front, Anglo American's coal sales to Eskom, the state-owned electricity utility, increased by 9% in 2004, and there is little early likelihood that the country's reliance on coal for its power stations will decline or even level off. The group is in the midst of major expansions at its Kriel South, Kleinkopje and Greenside collieries, all of which largely supply the domestic thermal coal market.

Xstrata Coal has interests in more than ten operations in South Africa, most of which are located within the two major coalfields – Witbank and Ermelo. Of these operations, 75% are underground bord-and-pillar mines. They are complemented by efficient open-pit operations such as Atcom, the largest of the South African operations, and able to produce almost 2.5 Mt/y of coal.

The most recent addition to Xstrata's South African portfolio is Goedgevonden. This open-pit mine will be expanded to 1.5 Mt/y by 2008 to fuel the company's export growth from South Africa. In total, the Xstrata group spent US$60.1 million in 2003 on developing its properties in South Africa, including development of the Goedgevonden colliery and production expansion at the Tavistock and WitCons properties.

Copper/lead/zinc

South Africa's principal copper mine, Palabora, had virtually completed its total conversion from open-pit to underground mining as 2003 drew to a close. By the year's fourth quarter, the mine managed to hit daily ore-processing levels of 30,000 t as it ramped up to its full design capacity.

However, the conversion was not without cost. By the year's end, Palabora was carrying a net debt of R1.82 billion on its balance sheet and was seeking US$56 million in short-term debt finance from its chief shareholder, Rio Tinto. The debt will be repaid from the proceeds of a recapitalisation later in 2004.

Production of lead at Anglo American's Black Mountain lead-zinc-copper mine fell by 12% to 39,600 t in 2003, and zinc output dropped by 6% to 25,900 t as a result of lower grades. Black Mountain is shifting the focus of mining operations to the so-called Deeps project, and the company is exploring for additional zinc reserves in the vicinity of the existing mining operations. The Deeps expansion is on schedule and ore deliveries are expected to be under way by the end of 2004.

Diamonds

De Beers is gradually moving all of its non-mining assets currently located in South Africa out of the country in anticipation of implementation of the Minerals and Petroleum Resources Development Act. This Act states that 15% of all mining operations shall be owned by 'previously-disadvantaged' South Africans within five years of May 1, 2004, and 26% five years later.
As a result, ownership of all exploration and research activities currently owned by the South African arm of the international group will be relocated

outside the country and transferred to the global holding company. The move involves only the ownership of intellectual capital. In any event, exploration is largely focussed outside South Africa where political considerations have less influence on corporate decisions.

During 2003, the progressive strengthening of the rand against the dollar led to a sharp reduction in operating margins. The Kimberley and Koffiefontein underground mines were particularly badly affected and De Beers responded by laying off staff across the local group and its mines.

Diamond production in 2003 totalled 11.9 Mct, 15% higher than the level achieved in 2002. However this advance was not achieved evenly across the group. Lower recovery grades at the Cullinan mine (formerly called the Premier mine) resulted in a drop in carats recovered to 1.27 Mct from 2002's 1.47 Mct. The same occurred at Finsch, where recovery fell to 1.94 Mct from 2.38 Mct.

In contrast, Venetia lifted its grades, and its production rose to 6.60 Mct in 2003, from 5.08 Mct in 2002. The Kimberley operations were helped by a significant contribution from dump reprocessing and the number of carats recovered rose to 1.05 Mct from 470,000 ct. Output from the Namaqualand operations increased to 830,000 ct from 770,000 ct.

At the Venetia mine the 'quick wins' project is expected to add 25% to the tonnage treated each year, and the effect was first felt only in the final quarter of 2003.

De Beers' managing director Gary Ralfe said in March 2004 that the company remained committed to spending R2 billion on development of the Finsch underground mine. The new operation the C-Cut project, would proceed if it were to be economically viable. But at rand:dollar exchange rates in March 2004, this was not the case.

Trans Hex Group Ltd, South Africa's second-largest diamond miner, operates a series of alluvial deposits along the Orange River near the country's border with Namibia. It also operates offshore dredging operations adjacent to South Africa's west coast. Annual production is in the region of 205,000 ct from the land and marine operations.

Gold

South Africa's gold industry has been the principal focus of black economic empowerment, resulting in a fast-changing ownership structure. However, the gold industry is in a state of steady decline. According to Chamber of Mines statistics, gold production totalled 12.08 Moz (375.8 t) in 2003 against 12.71 Moz (395.17 t) in 2002. Given that total production peaked at just over 1,000 t in 1970 and fractionally exceeded 1,000 t, the steady state of decline is obvious.

Leading the gold-mining pack in the black empowerment movement has been Harmony, which has merged with the black-owned African Rainbow Minerals Gold Ltd (ARMgold), itself owned by African Rainbow Minerals & Exploration Investments Ltd (ARMI). The merger is an early compliance with the legal requirements on black ownership of the mining industry. As a result, and following the subsequent acquisition of Avgold Ltd, ARMI's shareholding in Harmony has risen to 20%.

Avgold is one of the old mining houses and was still controlled by a member of the founding family, had over-extended itself with development of its new Target gold mine in the northern part of the Free State goldfield. In acquiring control of Avgold, Harmony claims to have become the world's fifth-largest gold producer, with an annual production of about 4 Moz.

Target's planned annual gold production exceeds 300,000 oz and the mine's life is put at 18 years or more. To the north of Target, further prospecting has indicated significant mineable reserves that are amenable to development. The developments north of Target are likely to represent the last major gold development in South Africa. Harmony's South African production base is largely founded on ageing mines in the Free State and to the west of Johannesburg, and the company is actively seeking and acquiring gold assets outside South Africa, principally in Australasia.

The year 2003 was one of mixed fortunes for AngloGold Ltd, the world's second-largest gold producer. Although the average received price of gold of US$363/oz during the year was 16% higher than in 2002, the average rand price was 18% lower at R88,058/kg. The dollar's decline against the rand and other major currencies was solely responsibility for the rand revenue decline.

At the same time, production depletion and revision of mine planning parameters due to exchange rate shifts resulted in a 15% decline in reserves to 63 Moz and a 26% decline in resources to 213 Moz.

In South Africa itself, AngloGold's seven underground mines and its single dump reprocessing operation produced 3.28 Moz of gold in 2003 against 3.41 Moz in 2002. The decline was a result of lower grades at the group's Great Noligwa mine, lower volumes at Savuka and dwindling reserve tonnages at the Ergo dump reprocessing facility.

The company predicts a further production decline from its existing operations for calendar 2004, when South African production is expected to slip below 3.12 Moz. As a whole, the group expects a decline in its global gold production to 5.32 Moz in 2004, from 5.62 Moz in 2003.

The merger of AngloGold and Ashanti was set to be completed in April 2004, and that merger should lift the group's combined output to 6.47 Moz in 2004. Inside South Africa, expansion projects that should yield some 12 Moz over their lives are in progress at the Mponeng, Moab Khotsong and TauTona mines. The company has said that other developments could yield a further 7.5 Moz.

Heavy minerals

South Africa is the world's second-largest producer of heavy minerals, largely from deposits in the east on the KwaZulu-Natal coast, and in the west on the Namaqualand coast. However, the miners are notoriously secretive, in part because of their particularly high profit margins, and in part because of pressure from environmentalists.

An environmental case in point was the proposed mining of heavy minerals in dunes on the coast of Eastern Cape Province. Early in 2004, following a widespread media and environmental campaign, parts of the area were declared a national park, although Mineral Commodities (the Australian miner planning to exploit the property) said that its proposal to extract 16.9 Mt of sands would be unaffected by the declaration. The deposit as a whole was initially estimated to contain 88 Mt of ore averaging 10% heavy minerals.

Richards Bay Minerals, which is controlled by Rio Tinto and BHP Billiton, operates the world's largest mineral sands operation, extracting ilmenite and rutile on the environmentally-sensitive east coast. Annual titanium slag production runs at some 1 Mt, and remaining reserves are said to be sufficient to sustain operations until 2020.

In the same area, iron-ore miner Kumba Resources Ltd operates a heavy minerals mine and smelter facilities near the town of Empangeni. In fiscal 2003, Kumba's subsidiary Ticor Ltd produced 91,000 t of ilmenite, 53,000 t of zircon and 20,000 t of rutile. The company has completed construction of its second smelter.

On the west coast Anglo American's Namakwa Sands operation produces an annual 250,000 t of titanium slag plus rutile and ilmenite from reserves of about 500 Mt, sufficient to sustain operations for half a century or so. The Namakwa operations were affected by poor operating efficiencies in the first half of 2003 and, just as they were being sorted out, the operation's minerals separation operations were affected by an electrical fire. Repair work is under way, but full production is not expected to be resumed until mid-2004. The production problems, coupled with the rand's strength, cut Namakwa's profit to US$3 million in 2003 from US$38 million in 2002.

Iron ore

Control of South Africa's principal iron-ore producer, Kumba Resources, was a contentious issue during most of 2003 and into the first months of 2004. By early-2004, Anglo American had acquired almost two-thirds of Kumba's equity, way beyond the 49% shareholding Anglo had assured government that it would not exceed, as a result of an offer to minority shareholders it was legally bound to make.

Anglo has said that it will reduce its shareholding, and the South African Government is keen that ownership of a significant part of Kumba's equity capital should be transferred to black investors. On the other hand, analysts, prompted by Anglo, have said that Kumba needs to be part of an international group if it is to hope to retain or even increase its share of the iron-ore export market.

Kumba owns half of the Hope Downs iron-ore property in Australia and has stated that it wants Anglo as its partner in the project's development. But South Africa's stringent exchange control regulations prevent Kumba from separating its Australian and South African interests, and this needs to be resolved as part of the Anglo group's international iron-ore ambitions.

Efforts to rationalise South Africa's iron-ore industry have faltered. There proposals to merge or swap the Northern Cape reserves owned by Kumba and Assmang but progress has been slow.

Fundamental to the rationalisation was the concept that loaded ore trains will not cross each other in opposite directions delivering ore to the Saldanha Bay export terminal or to domestic steel-makers.

Manganese

Neither of South Africa's two major manganese producers – Samancor and Assmang -- provide much detail on their operations. Analysts believe that this is due to the highly-competitive nature of the market, as well as to the likelihood that South Africa's market dominance allows the two companies to operate at attractive profit margins.

Almost 95% of the world's production of manganese is applied in the desulphurisation and strengthening of steel. About 80% of the world's known economically mineable high-grade manganese ore reserves occur near Hotazel in the Northern Cape.

Samancor Manganese exports ore to ferroalloy producers worldwide and a small tonnage is sold into the local market. The ore is converted into alloys at the company's Metalloys plant at Meyerton in South Africa's Gauteng Province and Temco in Australia. Close to 85% of alloy production is exported. Ore is converted into manganese metal by Manganese Metal Co. in Nelspruit and Krugersdorp. Samancor also manages the production of dense-media ferrosilicon.

Assmang's Nchwaning mine was established in 1972, and its No. 2 shaft came into production in 1981. Ore from underground is crushed and hoisted up the 450 m vertical shaft, where further crushing, screening and washing takes place. The Nchwaning deposit consists of a gently dipping and regular strata-bound body of high-grade ore (+48% Mn). The combined high metal content and low impurities make it exceptional smelting ore. The existing mine has a production capacity of 1 Mt/y.

A new R601 million shaft complex at the Nchwaning No. 3 manganese mine has been developed as part of Assmang's capital investment programme and will access decades of reserves of high-quality manganese ore. The facility introduces a high level of mechanisation to the operation that will significantly reduce production costs. The shaft complex was commissioned in the final quarter of 2003 and has a run-of-mine capacity of about 2 Mt/y. The life of the Nchwaning operation is thus extended by over 30 years. The existing plant at the Nchwaning mine has been upgraded and will process the manganese ore from the new mine via a conveyor system that will be located inside a 2.2 km inclined shaft, one of the largest of its kind in South Africa

Platinum
As 2003 was drawing to a close, platinum markets were shaken by an unexpected announcement by Anglo American Platinum Corp Ltd (Angloplat) that its proposal to increase production to 3.5 Moz/y of platinum would be cut back.

Angloplat is the world’s largest platinum producer and although its production of refined platinum is now only planned to reach 2.9 Moz in 2006, this is clearly less than the company’s actual annual capacity. Expected production levels for 2007, the first full year following completion of the expansion, have yet to be announced. Refined platinum production is slated to reach 2.45 Moz in 2004.

By way of comparison, in 2003 Angloplat produced 2.31 Moz of platinum, 1.19 Moz of palladium and a total 4.16 Moz of platinum group metals. The slow-down will delay the full expansion by between one and three years and affect the Twickenham, Der Brochen, Pandora and Western Limb Tailings Retreatment projects. However, the slow-down is not expected to restrict Angloplat’s compliance with its mandatory black economic empowerment commitments, as it has transferred various direct mining interests to black hands or has linked with black partners in new ventures.

Angloplat’s decision to curb its expansion plans was prompted by the rand’s strength: whereas dollar-denominated platinum prices had been rising to record levels in 2003 and in the early part of 2004, the dollar’s weakness against the rand meant that Angloplat’s gross sales revenue fell to R16.5 billion in 2003 from R20.3 billion in 2002.

Angloplat’s chairman Barry Davison has taken a robust approach to government proposals for the mining industry, and is particularly concerned about the effect on the industry of the new proposed royalty on sales. Mr Davison has also expressed concern about the content of the proposed Beneficiation Bill, which would compel South African minerals producers to beneficiate or fabricate greater proportions of their output at home.

Impala Platinum Holdings Ltd, the world’s second largest producer, produced 1.04 Moz of refined platinum in the financial year to end-June 2003. Impala has fewer expansion opportunities than Angloplat inside South Africa, but it is planning an expansion at its Zimplats operation in Zimbabwe. The investment represents a vote of confidence in Zimbabwe's ability to return to economic and political stability. The company expects the Zimbabwean operation to contribute to the overall target of producing an annual 2.0 Moz of platinum from 2006.

Impala's revenues and profits were badly affected by the rand's strength against the dollar and, during the second half of calendar 2003, by weaker palladium prices.

In South Africa, Impala negotiated the sale of its 83% interest in Barplats, the listed company that owns the Crocodile River mine. The sale, announced early in 2004, is to Salene Platinum which, in turn, is controlled by mining entrepreneur Loucas Pouroulis, the person who initiated what is now Crocodile River some 20 years ago. Barplats placed Crocodile River on care-and-maintenance in November 2003.

On the expansion front, Impala began plant commissioning at its Marula mine in January 2004, although by that stage underground development had slipped behind schedule. The planned production programme was being revised as 2004 started.

In Zimbabwe, the company brought its 65,000 oz/y 50%-owned Mimosa mine to full capacity in 2003. A feasibility study into Mimosa's further expansion was completed in March 2004 and a decision on this is expected by July 2004.

Other, smaller operators are also entering the market. London-listed Aquarius Platinum Ltd says that it is on track to meet its annual 600,000 oz/y PGM target by 2005. Its primary operation is the Kroondal mine which, the company says, is one of the lowest cost and most efficient PGM producers in the world. Also on the Bushveld, the Marikana mine is ramping up production and the Everest South project is due to commence construction in 2005.

Mvelaphanda Resources Ltd, a black empowerment company controlled by ANC stalwart Tokyo Sexwale, is considering the consolidation of all its platinum assets into a separately-traded platinum empowerment vehicle, which would remain under its control. The plan, which is to be evaluated by the firm's advisors, would result in the first black-owned, black-managed platinum company to be listed on the JSE Securities Exchange, were it successful. In 2003, Mvelaphanda struck a deal with the Khumama empowerment consortium to acquire a stake in Angloplat's Booysensdal project.

Messina Platinum Ltd, controlled by Canadian-based SouthernEra Resources Ltd, has completed the commissioning of the main shaft at its Messina Platinum Phase 1 mine, although further development remains to be done. Nevertheless, the company has met its intermediate monthly production target of 40,000 t of ore.

Vanadium

Although demand for vanadium alloys was strong during 2003, in line with the world's steel industry, South African producer, Highveld Steel & Vanadium Corp Ltd struggled with falling dollar-denominated prices and the rand's strength against the US dollar. The apparent demand/price paradox that Highveld reported, was due to the re-opening of previously-mothballed capacity in Russia.

By the end of 2003, dollar prices of vanadium alloys strengthened significantly as a result of increased enquiries for product from Chinese steelmakers, and as traders responded to Xstrata's decision to close its Vantech alloy plant in South Africa. Nevertheless, the rand's strength against the dollar cut into the rand prices commanded by Highveld and, as a result, the company's vanadium operations remained unprofitable.

Xstrata's plant closure and the final closure at the start of 2003 of an Australian ferrovanadium facility have helped remove excess capacity. At the start of 2004, Highveld believe that demand would continue to strengthen during the year and that this increased demand would have to be met from existing capacity. The company also believes that continued dollar-weakness will lead to a rise in dollar-denominated prices for vanadium alloys as the year progresses.

Highveld, itself, has sought to tie production to contracts with its customer partners. In July 2004 the company opened a joint-venture ferrovanadium facility with Japanese partners, Mitsui and Nippon Denko.

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South African Minerals Production 2003

Gold (kg)	373,074
Silver (kg)	79,706
Diamonds (ct)	12,665,685
Platinum (kg)	148,348
Palladium (kg)	70,946
Ruthenium(kg)	23,537
Rhodium (kg)	16,816
Iridium (kg)	6,444
Chromite (t)	7,417,329
Cobalt (kg)	271,382
Copper (t)	120,920
Iron ore	
Haematite (t)	35,778,633
Magnetite (t)	2,307,222
Lead metal in concentrates (t)	39,941
Manganese ore (t)	3,500,638
Titanium	N/A
Uranium oxide (kg)	900,765
Zinc metal in concentrates (t)	41,239
Coal	
Bituminous (t)	237,544,908
Anthracite (t)	1,206,105

Source: Dept of Minerals & Energy.