



Supplies

Supplies, Mining and Exploration

South Africa

With several mine and plant expansions making good progress, production of pgm in South Africa is forecast to grow more rapidly in 2004 than the year before, notwithstanding several labour disputes. Supplies of platinum are expected to climb by more than 7 per cent from 4.63 million oz in 2003 to 4.98 million oz this year, while palladium output is projected to rise from 2.32 million oz to 2.57 million oz. Rhodium sales are on course to reach 565,000 oz.

Anglo Platinum

Anglo Platinum is set to meet its platinum production target of 2.45 million oz this year, an increase of 9 per cent, whilst output of palladium and rhodium is expected to rise slightly faster, reflecting the changing mix of ores and adjustments to the refining pipeline.

On the western limb of the Bushveld Igneous Complex the group's Rustenburg, Amandelbult and Union sections met expectations during the first half of the year, with the Rustenburg UG2 project delivering significantly higher volumes of ore, and the tailings retreatment plant near Waterval performing well. The Bafokeng-Rasimone Platinum Mine reached steady-state mining operations, and pgm output is expected to rise further as head grades improve.

The ramp up of mining at Modikwa on the eastern limb of the Bushveld is continuing, with the mine expected to reach full production during the first half of 2005. Trial mining is ongoing at Twickenham.

On the processing side, the new Anglo Platinum Converting Process (ACP) has operated to plan but the smelter at Polokwane was taken out of service in early September to enable repairs to be made to the cooling system. The group does not expect this to affect significantly its pgm output for the year, as concentrate has been diverted to the smelter at Waterval. The Polokwane smelter was expected to be recommissioned before the end of October.

In light of the strength of the South African rand, Anglo Platinum (in common with all the South African pgm producers) has intensified its efforts to minimise annual cost increases. This has led to tensions with the unions, and some members of the National Union of Mineworkers went on strike during the first two weeks of October. However, given that only a minority of the workforce walked out, the impact on the group's pgm output is expected to be limited.

Impala Platinum

Impala Platinum's core lease area is again on course to produce in excess of 1 million oz of platinum this year, with the company forecasting output of between 1.06 and 1.09 million oz. The short-term focus has been to maximise output of Merensky Reef ore (with its higher platinum content than UG2 ore), both from mechanised underground mining and from open pits.

At Impala's developing Marula mine on the eastern Bushveld, plant commissioning has progressed smoothly but mine output has been significantly below expectations due to unexpectedly difficult geological conditions. These have required a change in the mining plan and Impala is now implementing a move from fully mechanised mining to a mix of mechanised and conventional mining methods to improve grades.

Like Anglo Platinum, Impala has had labour difficulties as it attempts to limit the pace of wage increases. A strike in early October resulted in nine days of lost mine production.

Lonmin

Platinum output from Lonmin's mines in 2004 is forecast to exceed last year's record level of 933,000 oz (for the year ended September 2003). The company continues to expand towards its target of 1 million oz of refined platinum production.

In September 2004, details of the sale of Impala's 27 per cent shareholding in Lonmin's mining operations were finalised. Under the deal, Lonmin has increased its ownership of Lonplats (comprising Eastern Platinum and Western Platinum) by 9 per cent to 82 per cent, with a new Black Economic Empowerment (BEE) entity named Incwala acquiring the remaining 18 per cent stake.

Northam Platinum

Northam Platinum had a mixed first half of 2004 – mining of Merensky Reef was hampered by poor ground conditions, faulting and potholing, which constrained operational flexibility. However, the volume of UG2 ore mined increased and overall head grades also improved slightly. Sales of pgm were also up versus a year ago due to the release of metal from the processing pipeline.

Northam's mine production of pgm for the year as a whole will be affected by a fatal fire that occurred in the deepest level of the mine on the 20th of September. Mining operations were suspended for several weeks

PGM Supplies: South Africa '000 oz		
	2003	2004
Platinum	4,630	4,980
Palladium	2,320	2,570
Rhodium	545	565





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whilst the cause of the fire was investigated. Production resumed in mid-October but the loss of pgm output had not been quantified at that time.

Aquarius Platinum

In the first half of 2004, Aquarius Platinum's Kroondal operation produced 70,000 oz of platinum in concentrate, an increase of 13 per cent compared with the same period of 2003. Construction of a new 250,000 tonne per month concentrator, part of the expansion under the Pool and Share Agreement with Anglo Platinum, is reported to be running ahead of schedule, with commissioning due to start in early 2005.

At the Marikana mine, output of platinum in concentrate from January to June totalled 26,000 oz, up nearly 40 per cent on the previous year but behind expectations due to abnormally heavy rainfall during the first quarter of 2004. A continued improvement in recoveries is forecast as mining progresses into deeper, unweathered ore.

In October 2004, Aquarius Platinum's BEE deal was approved by the company's shareholders. The plan involves the injection of R860 million into the Aquarius Group by a group of BEE investors in return for a 29.5 per cent equity interest in the company's subsidiary Aquarius Platinum (South Africa) (Pty) Ltd. The funds raised through this transaction will be used to develop the Everest South project, with mine construction due to commence in the last quarter of 2004.

Southern Platinum

SouthernEra's platinum and diamond businesses were reorganised into two separate corporations, Southern Platinum Corp. and SouthernEra Diamonds Inc. in September 2004. Southern Platinum's Messina mine continues to ramp up gradually towards full production of 120,000 tonnes of ore per month. The build-up has fallen behind schedule, principally because of low productivity due to the inexperience of the workforce. The milling rate in the first half of 2004 averaged 55,000 tonnes per month, yielding around 38,000 oz of pgm in concentrate.

Russia

Sales of Russian palladium are forecast to total 3.3 million oz in 2004, up from 2.95 million oz the previous year. This total includes 375,000 oz of metal that will be sold from stocks held by Stillwater Mining in the USA. Norilsk Nickel



View of Aquarius Platinum's Kroondal plant at dusk. The operation produced 70,000 oz of platinum during the first half of 2004, a 13 per cent rise.

expects to sell its full production of palladium and significant sales are believed to have been made from state-owned stocks. Shipments of platinum and rhodium from Russia are projected to total 850,000 oz and 80,000 oz respectively.

In 2003 Norilsk Nickel transferred 877,169 oz of palladium to Stillwater Mining in part payment for a majority shareholding in the company. Although the metal was exported from Russia, none of it was sold during the year and so it was not included in our 2003 supply data. During the first quarter of this year, however, Stillwater began delivering palladium from the inventory to customers under contract, and expects to ship a total of around 375,000 oz in 2004. This has been incorporated into our 2004 Russian supply total of 3.3 million oz. The remainder of the inventory is scheduled to be sold during 2005 and the first quarter of 2006, and will again be accounted for as Russian supply.

Norilsk Nickel has stated that it will sell its full production of palladium during 2004, although the company remains unable to release any specific data as secrecy regulations governing pgm remain in force. A bill to declassify pgm data (other than state stocks) was passed in February this year but a further decree is required to amend the official list of state secrets. Individual ministries will then also have to amend their own regulations regarding classified information before any figures can be published. No indication has

PGM Supplies: Russia '000 oz		
	2003	2004
Platinum	1,050	850
Palladium	2,950	3,300
Rhodium	140	80





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PGM Supplies: North America '000 oz		
	2003	2004
Platinum	295	360
Palladium	945	1,025
Rhodium	30	30



been given as to when the full liberalisation of pgm data might proceed.

As the price of palladium climbed during the first four months of 2004, shipments from Russia increased markedly, suggesting that sales of metal were being made from inventories held by Gokhran and/or the Central Bank. Over the year as a whole, however, we expect sales from such stocks to fall behind the level seen in 2003.

Russian mine production of platinum is forecast to edge lower in 2004. By-product output from Norilsk and output from the alluvial mine operated by Koryakgeologodobycha at Koryak (Kamchatka) are expected to be stable. However, after a strong year of production in 2003, output from the Amur artef's mine at Kondyor (Khabarovsk) is likely to fall.

North America

North American supplies of pgm are forecast to rebound strongly this year. Platinum production is projected to rise to 360,000 oz, up from 295,000 oz, and palladium output is expected to exceed 1 million oz, 945,000 oz last year. The increase in pgm supplies will be almost entirely due to greater volumes of metal produced by Inco; the company's pgm production in 2003 was badly affected by a prolonged strike.

Sales of pgm by Inco are expected to total approximately 400,000 oz in 2004, close to double the previous year's totals of 90,000 oz of platinum and 108,000 oz of palladium. A three month strike in 2003 had a significant impact on precious and base metals production at the company's Sudbury operations. Refining of pgm that accumulated in process inventories during last year's disruption will contribute to higher output this year.

During the first half of 2004, Stillwater Mining reported production of 228,000 oz of palladium and 68,000 oz of platinum in concentrate, marginally up compared with the previous year. At the Stillwater mine, the mining rate and head grade improved slightly, whilst production at East Boulder continued to increase but more slowly than planned. The company had expected the mine to be producing 1,650 tons of ore per day by the end of this year but this target has been pushed back until 2006.

During the first quarter of 2004 Stillwater began shipments of metal from the stock of 877,169 oz of palladium that it received in 2003 as part of Norilsk's

acquisition of a majority shareholding. The company is now delivering metal to customers under contract at a rate of 110,000 oz per quarter and will ship a total of 376,000 oz this year (*Note: we account for this metal as Russian supply, not North American, in our data tables*).

North American Palladium's output of pgm is expected to increase in 2004 as a result of mining favourable ore grades and higher mill throughput. Palladium production for the full year is forecast to rise by at least 10 per cent from last year's total of 289,000 oz. Initial construction work to develop an underground mine at the company's Lac des Iles operation has begun, with first ore production scheduled for the third quarter of 2005.

Production of pgm by Falconbridge is expected to fall this year compared with 2003, when output was boosted by the release of significant volumes of metal from the refining pipeline. A strike at the company's Sudbury mining, milling and smelting operations during February 2004, coupled with a scheduled rebuild of its Sudbury smelter over the summer, are also likely to affect pgm output.

Zimbabwe

The rate of expansion of pgm production in Zimbabwe will slow this year as both of the existing mines have now reached their planned operating rates. Platinum output is forecast to rise by 10,000 oz to reach 150,000 oz.

Following an expansion last year, the Mimosa joint venture between Impala and Aquarius Platinum is now operating more or less at full production. In the first half of 2004, the operation milled 642,000 tonnes of ore, 33 per cent higher than the same period of 2003, producing some 29,000 oz of platinum in concentrate.

At Zimplats' Ngezi mine, mill throughput rose by 5 per cent in the first half of 2004, exceeding 1 million tonnes. This offset a fall in the average ore grade during the second quarter due to a zone of intensive faulting in the open pit and the effects of a strike by mining contractors. The company's smelter at Selous produced a total of 90,737 oz of pgm plus gold in matte during the first half of the year; platinum output for the full year is forecast to total around 85,000 oz.

The first phase of a planned underground expansion at Ngezi has been granted preliminary approval, following the completion of a feasibility study and the successful operation of a trial mine.

PGM Supplies: Zimbabwe & Others '000 oz		
	2003	2004
Platinum	225	240
Palladium	245	265
Rhodium	15	15

