

OPERATIONAL PERFORMANCE AT DE BEERS VOORSPOED MINE

- **Material impact on performance**
- **Continuous and sustainable improvement**
- **Synergy between management and teams**

Business objective

Voorspoed mine's principal objective was to ramp up production by 2014 to approximately 750,000 carats per year by:

- Implementing improved efficiencies using the Rapid Results approach;
- Optimising its new equipment to boost the tonnage hauled; and
- Implementing measures that will position the plant to treat up to 4 million tonnes per annum.

Management set out to improve the mine's production, plant throughput, waste management system and material receipt system using the Rapid Results methodology.

Operation

De Beers Voorspoed mine is an open-pit kimberlite mine that is situated 30 kilometres north-east of Kroonstad in the Free State, South Africa. It currently mines at a depth of 150 metres.

The mine was expected to produce over ten million carats during the life of the mine using standard drill and blast techniques. As is the case with mines such projections are continuously reviewed and Voorspoed is no exception.



Team

The composition of the team is critical to the success of Rapid Results.

The project team comprised site management representatives, multidisciplinary and multilevel members.

Team members from Research visiting Voorspoed mine and team members from Team Ferrari, one of the six participating project teams at Voorspoed mine



OPERATIONAL PERFORMANCE AT DE BEERS VOORSPOED MINE continued

- **Eliminates silos**
- **Develops a culture of innovation**
- **Addresses and responds to the real status quo**

1 Improvement results: Project wave 1

The first wave of projects started in the second half of 2012 and contributed to the mine achieving record production during 2012, including:

- Increased production by mining 12% more waste out of the pit;
- Plant throughput improved by 9%; and
- A waste management system cleared redundant scrap to reduce rehabilitation liabilities.

Once the first wave of projects is completed, monitoring and tracking results continues as the second wave of improvement projects commences.

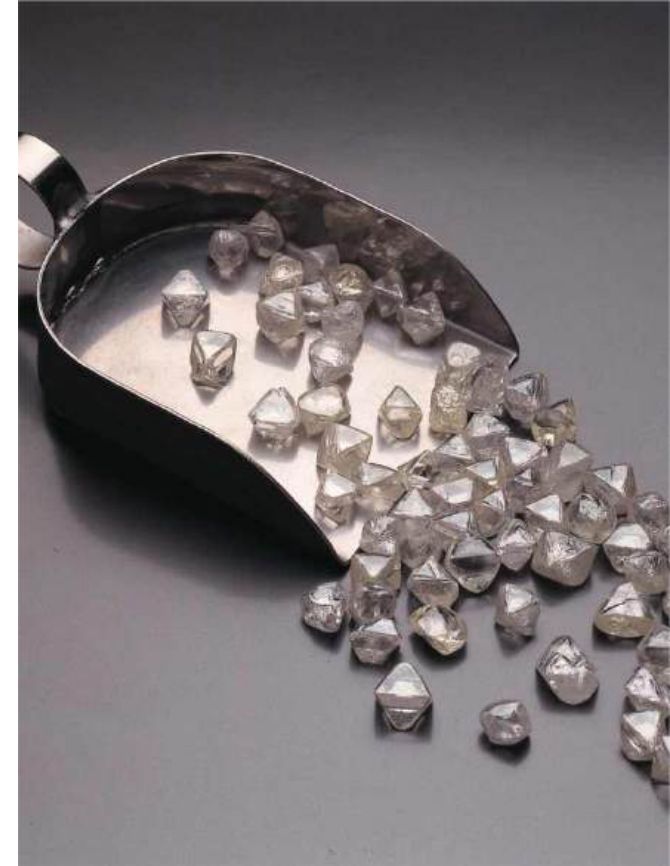
2 Successive improvement projects: Project wave 2

Voorspoed mine's critical production challenge for 2013 was the unexpected change in the geology of the resource, the nett effect being the unavailability of kimberlite to mine. The overall effect was approximately a 31,000 carats deficit incurred year to date.

Three improvement projects were identified, making up the second cycle of projects that started in March 2013 including:

- Increasing the shovel rate from 997 tonnes per hour to 1,150 tonnes per hour;
- Reducing the plant headfeed downtime by decreasing engineering and operational delays, as well as implementing measures that would allow the plant to treat alternative ore sources to supplement the ore from the pit; and
- Optimising the receiving yard activities.

These set of projects were completed by mid-2013, at which time management would identify and decide upon the next set of opportunities – a logical spinoff from the previous project waves. This continuous cycle of short-term projects drives the maturity of the overall system.



Rapid Results develops synergy between management and the teams, eliminating silos and ensuring that the solutions address and respond to the real situation at the mine.

Partnership and collaboration becomes the blueprint for on-going improvement successes, creating sustainable, measurable value and a proven approach to facing and overcoming the challenges of mining.



The results are tangible:

- big chunks of continuous and sustainable improvement occur;
- a material impact on performance is made;
- a culture of innovation and continuous improvement becomes part of everyday mining for the teams involved.

Who do I contact?

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