

# SPOTLIGHT

## on H.J. Joel Mine

by R.L.C. MAGGS\*

The following members of the Orange Free State Branch and visitors paid a mini-visit to the H.J. Joel Gold Mine on 23rd January, 1991:

<i>Members</i>		<i>Visitors</i>
E.N.D. Westgate	Organiser	C. Knight-Hassel
R.L.C. Maggs	Hon. Secretary	J. Campos
S.V. Stander		E.W. Booysen
S.P. van Wyk		J. Steyn
D.S. Minnie		P.I. Masseratte
O.W. Fourie		C.J. Higgins
		S. Guven
		F. Scof
		N. Hastings
		R. Hays

On arrival at the Mine, the visitors were welcomed by the General Manager, Mr Chris Naude, who introduced the staff who would be involved in the visit.

### *The H.J. Joel Mine*

The Mine has an excellent safety record despite problems with water and methane. The reportable injury rate moved from 31,90 in 1987 to 1,3 in 1990, which is the best in the industry. The safety record is clearly due to the commitment of all the personnel to safety, as well as to the high degree of motivation displayed by the employees.

The Mine is named after Mr H.J. Joel, who is the retired Chairman of the Johannesburg Consolidated Investment Co. Surface drilling started in 1981, and the first sod was turned in November 1985. Sinking started in February 1986.

The Mine is exploring and extracting the VS5, Beatrix Reef, which varies from 15 cm to 3 m in thickness. The reef dips at 16 degrees, but is mined on an apparent dip of 8 degrees to cater for trackless mining. The reef plane is eroded, and difficulty is experienced because of the erratic nature of the pay shoots. Water remains an issue, and fairly extensive de-watering is being done. The water is under pressure, with a high content of brine and dissolved gases, which in turn leads to a methane problem. An installed pump capacity of 60 Ml per day is available to cope with possible inflows.

The existing main shaft has a capacity of 156 kt per month, and the Mine has a complement of 1800 people. The vertical spacing of the top levels (60 and 70) is 100 m, and the bottom level (90) is 200 m. The proposed new shaft system will have a vertical level spacing of 160 m. Ore passes are raise-bored at 67 degrees, with a diameter of 2,4 m, and each has an inspection leg for the blasting down of possible hang-ups. The ventilation capacity is 600 m<sup>3</sup>/s, which is required for the operation of diesel machines. All the stores and materials are containerized, and the stores are drawn underground.

The two top levels are trackless, while the bottom level will be a rail-gathering haulage.

Water is handled in vertical settlers with horizontal dams.

Stoping is laid out on 40 m panels, which are on a minor dip of 8 degrees to cater for trackless machines. Efforts are being made to pre-develop gullies (3,1 by 3,0 m), and ledging is now being done using an Eimco-Secoma rig, which eliminates the need for platforms and the associated problems. Support is achieved with profile props, and with concrete packs in the gullies. Regional crush pillars are also used. Truckways are cut at 4,2 m by 3,7 m. The LHD units are planned to have a longest run of 150 m, while the trucks have an optimum of 600 m with a maximum of 1000 m. All the gullies and truckways are resin-bolted to stop bed separation.

The capital expenditure on the mine has been R611 million to date.

### *The Visit*

The visiting group was taken underground and shown the tip area of 60 level, as well as the mechanized development on 90 level. The efficiency of the operation was impressive, 600 t per man being obtained monthly in the development ends. The telemetering system was seen.

The group went through the CIP plant, and saw the computer monitoring system. A tour of the single quarters and tavern was then made.

After an excellent braai at the 'lapa', Mr Westgate thanked Mr Chris Naude and Mr Noel Williams for their hospitality and the arrangements made for the visit. Special thanks were conveyed to the guides and to all the mine personnel who had made the visit so interesting and enjoyable.

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