

SPOTLIGHT

on Duvha

by DORIS GARDNER*

On Friday, 6th June, 1986, an SAIMM party of 32 set out at 06h30 for a tour of Duvha Opencast Colliery, Lesedi Village, and Duvha Power Station—all situated just outside Witbank.

Duvha Colliery

On arrival at the mine, the party was met by Mr Colin Kolver, Assistant General Manager, and the guides for the morning. After refreshments had been served, Mr MacDonald, General Manager, welcomed the tour, and a series of slides on the opencast mine and Lesedi Village were shown.

There are four coal seams in the Duvha mining area—Four Upper, Four Lower, Two, and One, Two seam accounting for 60 per cent of the total tonnage mined.

The overburden is drilled by the use of rotary drills on an 8 m by 8 m pattern, and the 250 mm holes are then charged with a gelatinized ammonium nitrate slurry and blasted. The walking draglines remove the overburden in strips up to 60 m wide, exposing the uppermost coal seam. The coal is drilled, blasted, and then loaded by front-end loaders and electric shovels into 136 t coal haulers. Coal is removed from the pit; parting is also removed, but remains in the pit.

The coal is taken to the run-of-mine hopper, and from there it is broken down in three stages to 25 mm by means of feeder breakers, Bradford breakers, and roller ring crushers. The crushed coal is transported on a conveyor belt to the power station.

Of particular interest to the visitors was the gigantic walking dragline. They found it difficult to believe that such an enormous piece of machinery can 'walk' but, to their delight and fascination, they saw it do just that—at the 'great' speed of 3 kilometres per hour. Because of its size, the dragline was imported in parts and was assembled on site. This task took 10 to 12 months to complete. Now in operation, it works 362 days a year, 24 hours a day.

The visitors were also able to watch a blast, and the advice from the guide to 'watch carefully—we can't have a repeat performance for you' aroused much comment and laughter.

Lesedi Village

After the tour of the colliery, the party were driven to Lesedi Village, which accommodates 500 Black employees

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in single quarters and 126 in family homes. The elegant Sardinian-style homes are built round the Recreation Centre, which offers residents everything they require for their cultural and recreational well-being. As the houses were completed, landscape gardeners moved in to create colourful gardens and central green areas for recreation purposes.

Duvha Power Station

Duvha Power Station is operated by the Electricity Supply Commission (Escom), which generates about 90 per cent of all the electricity used in South Africa and 60 per cent of the electricity generated on the African continent. In December 1978, Escom had an installed capacity of 14 343 MW, making it one of the largest electricity utilities in the world. The demand for electricity is growing and, although South Africa is on the verge of the nuclear age, it will continue to depend largely on coal for its electricity until well into the next century. It is interesting to note that approximately half a kilogram of coal is required to generate one unit of electricity.

To generate electricity at Duvha, pulverized coal is blown under pressure into a Benson-type boiler and ignited. The steam that is generated is forced into a steam turbine, and the resultant energy drives the turbine blades that power the generator. Electrical power is produced, and this is transformed into high-tension power (400 000 V), which is linked into the high-tension network that supplies power to South Africa's national grid.

At full output, the station can supply a city four times the size of Johannesburg at peak demand on a cold winter's day, and its operation and maintenance involve considerable financial outlay. However, compared with electricity elsewhere in the world, South Africa's electricity is still cheap.

Gratitude

The Institute expresses its sincere thanks to the managements of the Opencast Colliery and the Power Station for hosting the visit, which was extremely informative and most enjoyable. Their hospitality was also much appreciated by all who participated in the tour, and included refreshments at the Colliery and a barbecue lunch at Clive's Dive.

The Colliery and Power Station are well named. *Duvha* is a Venda word meaning 'sun', and the energy in the coal and electricity of Duvha emulates the sun, which, as we all know, is an incomparable source of energy.