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The application of mechanised technology to South Africa's bushveld UG2 tabular orebody

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ABSTRACT

Platinum is important to South Africa. For South Africa to remain a relevant global player, mechanisation is the future.

Mechanisation in South Africa's Bushveld narrow, tabular UG2 orebody has not always delivered as per expectations. This has retarded modernisation of the platinum mining industry. Mining companies have considered reverting back to conventional mining methods.

This report investigates, through a series of interviews with key industry players the reasons for the failures.

By comparing practice with the recommendations in seven areas: - orebody characteristics, mine design and layout, mine logistics, mining machine size, machine utilisation, labour force structure and change management issues, gaps holding back mechanisation are identified.

These are;

- Applied technology and Orebody – the ore body and its characteristics are not always compatible with the mining method and technology applied.
- Mine design & layout and Mining – Mining layout is informed by extraction strategy and should support safe, effective and economic mining. This has not always been the case.
- Move and Mining – Movement of ore and people has not always been seamless. This is a logistical issue which if not addressed adequately in the design phase will cripple a mechanised operation.
- Maintain and Mining – Plant and machinery must be available in - shift to support mining activities. Effectiveness of planned maintenance must be applied, measured and quantified. This is not always the case.
- Skills and Mining - Selection, training and placement of personnel is essential in the successful operation of a machanised operation. This is true for the entire hierarchy of the organisation. A trackless operation cannot be successfull if run by people with no appreciation and respect the machines they operate and manage.

- Health & Safety – Mining.There is a reduction in injuries when mechanised operations are compared to conventional operations. Mechanisation however brings its own sets of safety and health issues. Examples are: -
    - Injuries in mechanisation are more severe.
    - There are no current interventions to health disorders caused by machine vibrations and diesel emission.
- Ethics and Mining – It is the responsibility of all to eliminate the wilful damage to plant and machinery.
  Machinery must work at all times that it is planned to be utilised. The culture of reporting for work when scheduled to do so is paramount.

Future reseach should be directed at addressing each of these gaps.