

Professional development workshop

**Rock engineering design principles, practice
and case studies with reference
to underground mining**

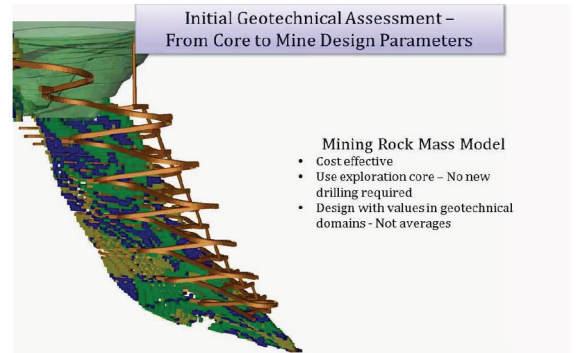
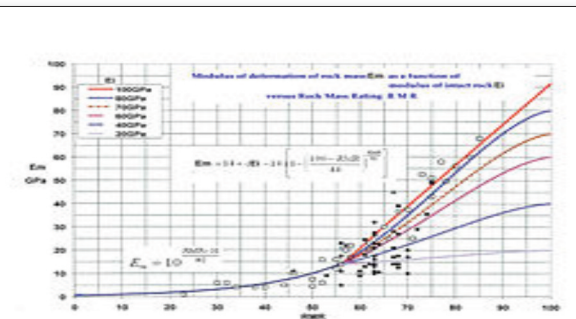
17–18 August 2018 | Karavia Hotel, Lubumbashi | Haut Katanga Province

Description

Even though most mines across the Katanga province in the DRC are currently operating in open pit, as most of them are getting deep there is a prospect of transitioning to underground mining in a foreseeable future. Such large scale transition from open pit to underground mining presents enormous challenges that include the geotechnical aspects relevant for mine design and mine planning. Other challenges include defining the proper surface and underground infrastructure and also the fulfilment of project deadlines and achievement of production targets. A sound understanding of rock mechanics design principles pertaining to underground mining and to the evaluation of the risk associated with such projects will be the defining factor between successful and less successful operations. The proposed course is intended to equip the attendees with knowledge of underground mining design principles, risk evaluation and numerical modelling to meet the challenges lying ahead. Case studies of projects that SRK was involved with will be presented and an underground visit to Kipushi mine has been arranged to connect theory to practice.)

Course venue and dates

17 August 2018— Theory and case studies — Karavia Hotel
18 August 2018— Site visit and practical — Kipushi underground mine



Who should attend

This course is aimed at geotechnical engineers, geologists, engineer geologists, mining engineers and technicians and any other professionals involved in the process of data collection, design and monitoring of rock structures who wish to expand their understanding of the fundamentals and considerations in underground mining design. While the course is targeted primarily to professionals directly involved in the field of mining geotechnics, those in position of management or any other capacities may equally benefit from the advantages that the course offers. It is also envisaged that academics (lecturers and students) in the above-mentioned fields may also benefit from this short course.

Learning outcomes

This short course will cover various aspects of mining insofar as they are related to geotechnics. It provides mine staff the tools required to effectively conduct data collection for rock mass classification and rock mechanics design calculations and monitoring to promote safe mining environments. Emphasis will be placed on designing underground layout. The design of crown pillars between the pit and the underground workings will be discussed and relevant case-studies conducted by SRK will also be presented.

Some practical usage of the advanced numerical simulation programs in geotechnical design including MAP3D, PHASE2 (RS2), FLAC3D and UDEC will be presented.

A probabilistic and financial risk based approach to underground design will also be discussed.

Attendees will gain:

Geotechnics and mining engineering

An overview of the different mining methods in use and the corresponding geotechnical challenges

- Geotechnical and rock characterisation for design of underground mine layouts and how to implement a baseline strategy for collection of relevant geotechnical data.
- Creation of a Geotechnical models (domains and districts)
- Crown pillar design calculations
- Access and stope design

Use of Advanced numerical simulation programs (Software)

Examples of efficient use of advanced modelling programs to assist in underground design including MAP3D, RS2, FLAC3D and UDEC.

Risk based approach to ground support

- To cater for the inherent variability in the rock mass conditions
- Address uncertainty either epistemic or aleatory
- To apply engineering judgement in presence of uncertainty
- To provide a sound decision making platform based on the level of risk to the operation
- Present powerful probabilistic methods available to quantify probability of failure and reliability

Pre-requisites for this course

- Basic understanding of rock mechanics
- Basic understanding of mining methods.

Course Content

Day One: 17 August, 2018

- Underground mine method selection
- Basic concepts of rock mechanics and mining geotechnics
- Geotechnical investigation and rock characterisation: core logging, joint mapping, laboratory testing, rock mass classifications
- Rock mass and Geotechnical model and its purpose of representing the engineering properties of the rock mass for use in design calculations.
- Analytical and empirical design. This will include inter alia: crown pillar, in panel, sill and barrier pillars, access drive and stope design including supports.
- Use of numerical modelling approaches to underground mine design

Day two: 18 August, 2018

- Case studies
- Innovation in mining
- Open discussion

Day two: 18 August, 2018

- Underground visit at Kipushi Mine

ABOUT THE FACILITATORS

WILLIAM JOUGHIN



Profession

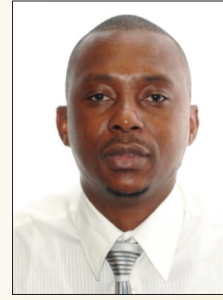
Mining Geotechnical Engineer

Expertise

William Joughin has been involved in the field of Underground Rock Engineering for the past 25 years. His expertise includes:

- geotechnical investigations
- mining method selection
- design of mining layouts, backfill, support and monitoring systems
- investigation of shaft stability and support design
- numerical modelling (Map3D, Phase2, Flac3D, JBlock, Unwedge)
- seismic risk investigations
- probability and risk based design
- rockfall / rockburst investigations, reviews and audits
- pre-feasibility, feasibility studies, due diligence projects
- Applied research projects.

JOSEPH JUSTIN MBENZA MUAKA



Profession

Mining Geotechnical Engineer

Expertise

Joseph Muaka has been involved in the field of mining engineering for the past 10 years and in the field of geotechnical engineering for the past 7 years. His expertise includes:

- numerical modelling using a large variety of codes
- design of support of underground excavations
- probabilistic design methods in rock mechanics.

PHILANI MPUNZI



Profession

Mining Geotechnical Engineer

Expertise

Philani has been in the field of Mining Rock Engineering for the past 2 years. His expertise includes:

- geotechnical core logging for feasibility studies
- core sampling, data capturing, interpretation of the results and determination of applicable rock mass ratings
- rock engineering design of support systems
- rock engineering audits and support mapping
- numerical modeling (Map3D, Phase2, GEMCOM, Datamine, FLAC3D)
- rock engineering research projects.

CONTACT AND REGISTRATION

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17–18 August 2018 / Karavia Hotel, Lubumbashi, Haut Katanga Province

PROFESSIONAL DETAILS

Title.....First Name.....Surname.....
Preferred Name (for use on name badge)
Company.....
Invoice Address.....
Tell/Cell.....Email.....

REGISTRATION FEES

\$US 1000 for 2 days

Registration fees include: attendance at the sessions, all refreshments, lunches. The fees exclude the underground mine visit.

PAYMENT

Full payment is due on Application for registration. Registration will be confirmed ONLY after payment is received.
PROOF OF PAYMENT with your invoice number reflected must be sent via email to the workshop co-ordinator.

OUR BANKING DETAILS

Bank: RAWBANK (05100)
Branch Code 05130
Account Number 01025968101
Account Name SRK Consulting Congo SPRL

OUR CONTACTS PERSONS AND DETAILS

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Full payment due no later than 1 week prior to course commencement.
Please complete the registration form and send it to: dtshibanda@srk.co.za