



ROCKtalk

A BI-ANNUAL NEWSLETTER WITH THE LATEST BUZZ AMONG ROCK ENGINEERS

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NOVEMBER 2015

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President Corner



We are yet again entering difficult times in the mining industry. The commodity prices are low, the Department of Mineral Resources are relentless at issuing stoppages for non-compliance and companies are forced to restructure. Nevertheless, we as a fraternity endeavour to promote safety and cost saving initiatives to ensure that companies are less vulnerable to these external factors.

SANIRE as an institute can however not function without its members. We require active participation at all levels. As practitioners we are seen as an integral part of ensuring safety on our mines, albeit as policing function. However, in the absence of research facilities, mining groups and support manufacturers have taken the initiative to develop new technologies, leading practices or design methodologies. Although we as a technical discipline are not always recognised for our contributions, the mining industry is dependent on our actions in the workplace as well as our safety interventions which lead to new best practice initiatives. In challenging times we have the ability to do extraordinary things. As SANIRE Members and as Rock Engineers we need to brand ourselves and our discipline so that we can create a legacy.

In July 2015 a new SANIRE council was elected in vision of our 2020 strategy. Several additional portfolios were added. Our 5-year vision caters for changes in the legislation, the future of the Rock Engineering Certification and the needs of our members. The detail of the various portfolios will be presented at the AGM on 27 November 2015.

"Life isn't about waiting for the storm to pass, it's about learning how to dance in the rain." – Vivian Greene

Michael du Plessis

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SANIRE Symposium 2015

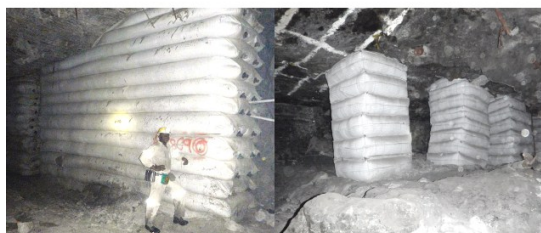
The SANIRE Symposium of 2015, “unpacking the aspects”, was organised and held by the Free State Branch at Glenburn Lodge in Muldersdrift on the 17th of September 2015. It was a one-day symposium which covered a wide range of topics from all over the industry. Included was a Key Note Address by Les Gardner on the “proposed changes to the Fall of Ground Regulations and how it will impact on Rock Engineering and Strata Control”.

The following topics were presented:

- Comments on ISRM suggested Method for the Complete Stress-Strain Curve for Intact Rock in Uniaxial Compression: **Uli Vogler – University of the Witwatersrand**
- The Use of Gem4D in the Representation of 3D Rock Engineering Data: **Quintin Enslin – Open House Management Solutions**
- Quantification of the Effects of Thin Spray-On Liner Application on Shotcrete Tensile Strength: **Richard Masethe – Sibanye Gold**
- Design of a Pit-highwall in Highly Weathered Igneous Material: **Franz Bruwer – Anglo Platinum**
- The Stress-strain Environment Around Massive Open Stopes and the Effect on Failure: **Jaco le Roux – Brentley, Lucas & Associates**
- A Method to Assess Pillar Stability in Rustenburg Platinum Mines: **Jacques Gerber & Richard Clark – Institute of Mine Seismology**
- The Potential to Use Mines for High Head Underground Pump Storage Schemes: **Trevor Rangasamy – Middindi Consulting, & T Govender – Eskom**
- Back Analysis of the Pillar Design Employed at Impala I4 Shaft Trackless Mining Section: **Buntu Tati – Impala Platinum**
- Introduction of the NEW Virtual Reality Centre at the University of Pretoria: **Jannie Maritz – University of Pretoria**
- Stability Analysis of Coal Pillar Sidewalls Using Three-Dimensional Numerical: **Joseph Muaka – SRK Consulting**
- The Influence of Regional Geology on UG2 Stope Stability: **Alida Hartzenberg – Lonmin**



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The day was divided into three sessions, which were chaired in turn by Paul Couto, Jaco le Roux and Michael du Plessis. The symposium was a great success, being well organized and well attended. A special note of thanks goes to the organizers, attendees, presenters and sponsors. The following sponsors made contributions in funding the symposium:

- **Brentley, Lucas and Associates**
- **Open House Management Solutions**
- **Groundwork**
- **New Concept Mining**
- **Bedrock**
- **Timrite**



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Eastern Bushveld Yearly Function

The yearly function was host on the 24 July 2015 at the Red Barn Farm in Dullstroom. The event was well attended with approximately 75 people arriving.

The day started off at the crack of dawn with temperatures hovering around 10° C and slightly overcast. This was fantastic weather for fly fishing. After a couple of old brown sherries to warm everyone up all the attendees headed out to one of four dams. The dams were sponsored by suppliers at R 3 000 per dam. SANIRE then utilised this sponsorship to stock the dams to the value of R 3 000 per dam. The dams were stocked with Rainbow trout, Brown trout and Golden trout all ranging in sizes. This was done for competitive reasons.

The competition commenced at 06:00 whereby it ended just before lunch 13:00. The competition was based on a few categories.

- The largest fish of the day
- The smallest fish of the day
- Golden trout (each dam had one Golden trout in it. If the Golden trout was caught then the winner would get the main prize for the dam sponsored by the suppliers)
- Brown trout (each dam had five Brown trout in it. If the Brown trout was caught then the winner would get a prize for the dam sponsored by the suppliers)

The winners were as follows:

The largest fish of the day: Adam Cooper (RAINBOW TROUT, 2.3Kg)

The smallest fish of the day: Paul Couto (RAINBOW TROUT , 0.6Kg)

The golden trout: Boeta Fouche (GOLDEN TROUT, 1.5Kg) (Only one Golden trout from the 4 in total was caught)



The brown trout winners: There was a total of 20 brown trout in the 4 dams, therefore there was numerous winners on the day. Average sizes ranged between 1.2Kg and 1.8Kg.



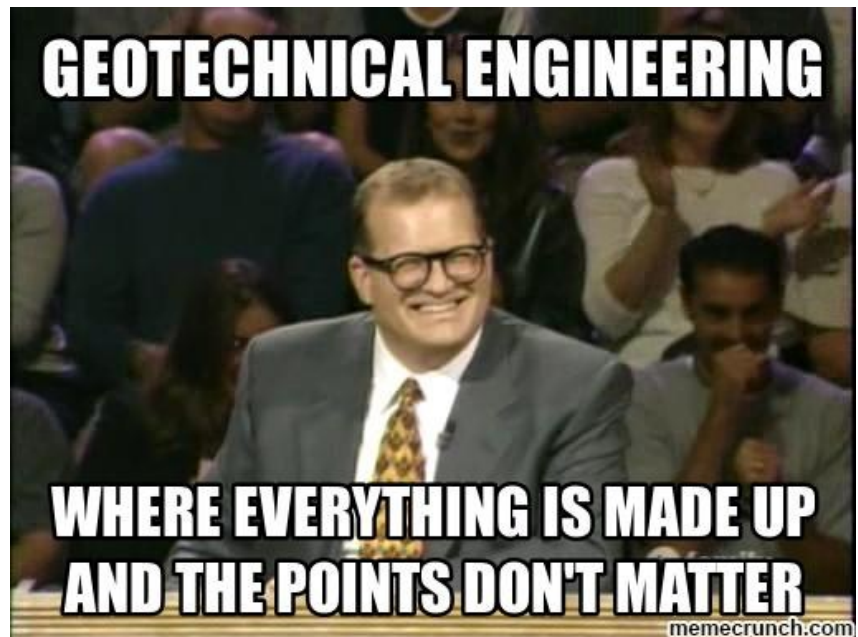
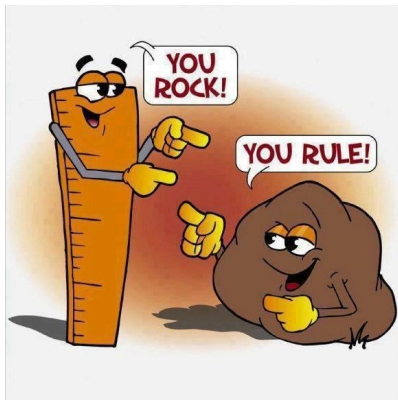
ROCKY JOKES



ENGINEER

n. [en-juh-neer]

An organism that thrives on caffeine and last minute work



Word Search

Monitoring and Auditing

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T L W S A A Q S A O A Z G C I
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INTERPRETATION



SANIRE

SOUTH AFRICAN NATIONAL INSTITUTE OF ROCK ENGINEERING

You are formally invited to the:

SANIRE AGM 2015

27 November 2015

Ruimsig Golf Club

8.30 am

This is a prestigious event that is attended by Rock Engineering Group heads, Rock Engineer Mangers, Rock Engineers and other members of the Rock Engineering fraternity from many different commodities and companies within South Africa. The AGM provides an overview of the SANIRE strategy for the next 2-5 years. We will also give recognition to outstanding commitment, contribution and achievement through the various award categories.

As a member you are invited to attend this event.

We will also be arranging a golfing event which will take place immediately after the AGM. For the interested “pro” or social golfers , please make sure you are included in the companies who will be participating in the various 4-balls.

Please RSVP to Carol Hunter

info@sanire.co.za

Before 10 November 2015 for catering purposes

PERSONALITY OF THE FIRST QUARTER



Philosophy of Life:

*“What we do in life
echoes in eternity”*

Full Name: Daniel Francois Malan

Position: Senior Rock Engineering Consultant, Part-time Professor

Company/Organisations: Sibanye Gold, University of Pretoria, University of the Witwatersrand

Date and Place of Birth: 4 November 1968, Bethlehem, Free State

Education: PhD (Mining), COM Rock Engineering Certificate

First Job: Chamber of Mines Research Organisation (COMRO)

Personal Best Achievement/s: ISRM Rocha Medal, Surviving a Fish River Canyon hike!

Philosophy of Life: Best summarised in the Gladiator movie: “What we do in life echoes in eternity”

Favourite Food/Drink: Red Wine, Roasted leg of lamb

Favourite Sport: Lifting weights in the gym

*“Every career
has its ups
and downs”*

*“Your family
and fun
activities are
the treasures
of life.”*

1. How did your career in the mining industry begin and where are you now?

COMRO gave me a bursary to study engineering and I joined them on a full-time basis in 1993. I am currently the Senior Rock Engineering Consultant at Sibanye Gold, but I also do part-time work at both Tuks and Wits where I supervise a number of postgraduate students.

2. Why did you choose Rock Engineering?

It was not really my choice, as the Chamber of Mines gave me a bursary to study electronic engineering, provided that I moved into rock engineering after completion of my studies. Of course, my plan at Varsity was never to move into rock engineering! Luckily, I started at COMRO when famous rock engineers, such as John Ryder, Tony Jager, John Napier and Steve Spottiswoode, were still walking the corridors. I immensely enjoyed interacting with these gentlemen and the rock engineering research we did. As a result, I have never looked back.

3. Please tell us a bit more about your career journey?

COMRO (it later became CSIR Miningtek) provided a good introduction to rock engineering and it gave me the opportunity to do a PhD. I eventually also became Programme Manager of the Rock Engineering Division there. The drawback of this academic environment was that the youngsters who started there never got enough experience “on the face”. Our ability to do research was also questioned by industry practitioners, as many of us never attempted the COM Rock Engineering Ticket examinations. This started to worry me and I joined Groundwork Consulting in 2004. There, I eventually passed my ticket (it took two attempts to pass the practical!). Groundwork taught me much about surviving as a consultant (not easy) and gave me wonderful exposure to platinum rock engineering. Gold Fields approached me in 2011 to join their ranks and this is how I ended up at Sibanye.

4. In your opinion, what are some of the challenges that the fraternity is currently facing?

A huge challenge we currently face is caused by the limitations of some of our design criteria. An example I can mention is the difficulty of designing bord and pillar layouts in areas where weak layers intersect the pillars. This has led to spectacular collapses in the recent past. Some of the criteria we use to design deep layouts in seismic areas can also be questioned. It is very disconcerting that no organised research is currently being conducted to improve these criteria. When Prof Nielen van der Merwe wrote his SAIMM paper on Coalbrook in 2006, he asked the question: “Is it conceivable that the most important lesson from Coalbrook, namely that in order to be effective at all, knowledge has to be generated before it is needed, was not learnt?”

A further challenge we face is the loss of expertise needed to write our own boundary element codes for solving tabular mining problems. South Africa was a leader in this field in the 1970s and 1980s. Sadly, we are now relying on imported codes.

5. What are some areas that you believe will become of increasing importance in the near future of the rock engineering discipline?

We are currently experiencing a low in the commodity cycle and the mines will probably struggle to remain profitable for the next few years. Our role to assist with the profitability of marginal mines will become much more important in future. Unfortunately, this will make our lives more difficult, as safety cannot be compromised in the process.

6. What advice would you offer people aspiring to be in your position?

Every career has its ups and downs. It is important to have a vision and then to persevere if things do not always go your way. Something that is also becoming increasingly important in modern society (and I still struggle with this) is to maintain balance in your life. Your family and fun activities are the treasures of life.

7. Who is your role model/mentor?

Prof John Napier has been my mentor since I joined COMRO as a student in 1987. I am fortunate to still interact with him, and his mathematical abilities and insight into rock engineering problems are simply awesome. In spite of his brilliance, he has always been a humble man. I have always admired this.

8. What is the best advice you have ever been given?

Dr Guner Gürtunca, Director of Miningtek, came into my office in 1995 and all he said was: “Tomorrow I want you to go to Wits and register for a PhD”. Up to that point, I was unsure whether I could successfully complete a PhD. The important lesson is not to fear failure if these opportunities come your way. I am still grateful to Guner for giving me this unsolicited “advice”.

ROCK STAR OF THE FIRST QUARTER



“Take every challenge in your stride. If you think you have it bad, someone else has it worse.”

Full Name: Matthew Gary Barnard

Position: Shaft Rock Engineer

Company/Organisations: Anglo American Platinum, Union Mine (Spud Shaft)

Date and Place of Birth: 30th of March 1987, Johannesburg

Education: BSc Geology & Geography (UJ); Honours Geology (UJ); COMSCC; COMRMC

First Job: Rock Engineering Trainee (Anglo American Platinum)

Personal Best Achievement/s: Firstly, my recent marriage to my incredible wife; thereafter comes the various awards that I received during University, most notably achieving Cum Laude, one of the ‘Top 10 Students in the Faculty of Science’ and the ‘Best 4th Year Student Award’ from the GSSA during my Honours Year.

Philosophy of Life: “Take every challenge in your stride. If you think you have it bad, someone else has it worse.”

Favourite Food/Drink: Sushi and red meat.

Favourite Sport: Love watching all sports; golf when it comes to playing a sport.

'A wise man once taught me the premise of 'stop', which is vital as an operational Rock Engineer. "(1) Is it to standard? If not, stop; if so, proceed to (2), is it safe? If not, stop; if so, continue." It may seem obvious, but this advice has aided me in staying firm on health and safety decisions.

1. How did your career in the mining industry begin and where are you now?

It all started with getting a bursary from Anglo American Platinum at the end of my matric year. Did an exposure year in 2006, and here we are now, almost a decade later; honours degree in Geology and Rock Engineering ticket under the belt; Shaft Rock Engineer at AAP Union Mine, Spud Shaft.

2. Why did you choose Rock Engineering?

Funny story there, actually. Second round of bursary interviews in 2005, the first question that the panel asked me was "Why did you choose Rock Engineering?"; fair question, although I was under the impression that I was there for a Geology Bursary. During the exposure year, my passion developed for the Rock Engineering discipline, and has just grown since then; although I will always be a keen Geologist at heart.

3. Please tell us a bit more about your career journey?

Well to summarise, I have been with Anglo American Platinum for the past decade. My entire post-matric life started with receiving the bursary at the end of 2005, with the condition of first completing the practical exposure year prior to commencing with tertiary studies. Completed my Geology Bachelors and Honours at the University of Johannesburg from 2007 to 2010. From there, I've gone from a Rock Engineering Trainee to Shaft Rock Engineer in the past four-and-a-half years. During this time I have worked at a number of the mines within the group, both conventional and trackless.

4. In your opinion, what are some of the challenges that the fraternity is currently facing?

To be honest, operationally, I think that the biggest problem we are facing as the Rock Engineering fraternity is the poor compliance with standards and procedures; and the associated shift from a design to more of a policing function, resulting from the pressure from the DMR.

5. What are some areas that you believe will become of increasing importance in the near future of the rock engineering discipline?

With the ever-increasing depth of platinum mining, I believe that understanding the seismic nature of the rock mass and the associated design process will become more important than possibly it has been in the past. And personally I believe that the development systems and support units that are less operator-dependant will be required in order to combat non-compliance.

6. What advice would you offer people aspiring to be in your position?

Both the journey and the destination are tough, but the reward of knowing that you make a difference in preserving health and safety is well worth it. It is not an easy career, but nothing worth doing ever is; so persevere and do it.

7. Who is your role model/mentor?

Personally, my father has always been my role model and mentor. In my professional life, Graham Priest and Linden Skorpen have been great mentors to me; assisting me to grow within the industry and Rock Engineering discipline.

8. What is the best advice you have ever been given?

A wise man once taught me the premise of 'stop', which is vital as an operational Rock Engineer. "(1) Is it to standard? If not, stop; if so, proceed to (2), is it safe? If not, stop; if so, continue." It may seem obvious, but this advice has aided me in staying firm on health and safety decisions.

Rock Engineering History

In December 1866, on a farm close to the Orange River to the northwest of Hopetown, the Jacobs children were playing a game of 'klip-klip' with pebbles, when one pebble caught the eye of a visiting neighbour, Schalk van Niekerk. At the behest of his mother, the young finder, Erasmus Jacobs, gave the stone to van Niekerk who was an amateur collector of semi-precious stones. The stone was sent to the nearest geologist, Dr William Atherstone in Grahamstown, who identified it as a twenty-one carat diamond. From South Africa it was sent to London where it was valued at £500 and named the 'Eureka'.

Despite the assertions of two very learned and eminently distinguished London geologists, one of whom actually visited the region, that the geological character of the area was not conducive for the presence of diamonds, two years later in March 1869, van Niekerk swapped some livestock with a local shepherd in exchange for an eighty-three carat stone. It was a white diamond, which he immediately sold to traders, Lilienfeld Brothers, in Hopetown for £11 000. Once again, the stone was sent to London for cutting where it was named the 'Star of Africa' and sold for £30 000.

This opened the flood-gates, and the initial influx of Boer diggers was soon swelled by others who poured into the country from around the world. At first, diggings were concentrated in the gravels on the banks of the Orange and Vaal rivers and on the slopes of adjacent koppies. Despite the fact that diamonds had been shown in 1813 to be comprised of carbon by Humphry Davy (the same English scientist who invented the miner's safety lamp), the sources of diamonds worldwide (predominantly India and Brazil before the South African discovery) were exclusively alluvial, and their igneous genesis was not fully appreciated until the weathered diamond-bearing detritus on South African koppies gave way to the underlying blue ground, which was only then also found to contain, and in fact to be the source of, diamonds.

The hard Kimberlites of the volcanic pipes were, of course, much less amenable to being worked by individuals or groups of individuals with picks and shovels, and led to the formation of syndicates and companies to raise the necessary capital for their increasingly expensive exploitation. This in turn gave rise to the emergence of the first South African entrepreneurs. Only a handful of the many thousands of hopeful people who flooded to the diamond fields in search of fortune rose to the top of the competitive pile, and only some of those went on to become household names in the South African lexicon: Joseph Benjamin Robinson, Charles Dannel Rudd, Barnett Isaacs Barnato, and Cecil John Rhodes, to name a few. These men made their names and initial fortunes on the diamond fields, and in the process gained the expertise, generated the wealth and accumulated or gained access to much of the capital that was later required to acquire and develop deep level mining properties when gold was discovered on the Witwatersrand. Many of them went on to become leading lights in the development of the Rand, and indeed in the development of South and Southern Africa as a whole, earning themselves the nickname of 'Randlords'.

Much of the more recent development of rock mechanics in the South Africa is usually traced to the aftermath of the Coalbrook disaster in 1961. While this was undoubtedly a watershed event which heralded the very beginnings of our Institute, and lent much impetus to the modern, structured variety of rock mechanics that we are so familiar with in the country today, it was by no means the start of people applying their minds to problems associated with the stability of mining excavations and the safety of workmen. Nobody who has seen photographs of the early diamond diggings on the Colesburg Koppie can fail to be struck by the precariousness of the vertical shear faces cut into weathered kimberlite, sometimes to enormous heights, representing the boundaries of individual rectangular claim holdings. And nobody who has experienced and been frightened by the surface manifestations of strong mine tremors can be

unaware that something untoward is happening in the ground beneath their feet.

The name Gardner Williams crops up often in the story of both the diamond fields and the gold fields. He was an American mining engineer who advised Rhodes on the need to amalgamate all of the diamond claims on the Colesburg Kopie at Kimberley so that the individual mines could be worked, managed and coherently planned as single entities to put an end to and prevent instability and the hugely unsafe practices associated with individual claims undercutting each other. In a sense, Gardner Williams may be considered as South Africa's very first far-sighted rock mechanics engineer. Rhodes wisely employed him to manage De Beers.



Eureka diamond

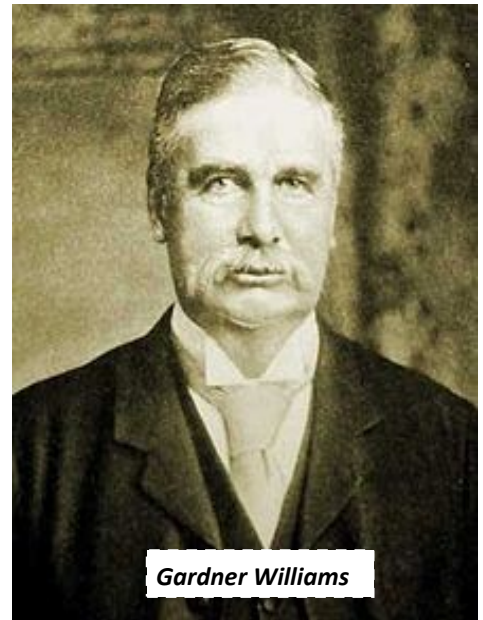


*This story was written by Dave Arnold.
Please feel free to contact Dave with any
historical stories for the next edition.*

davmae@iafrica.com



Kimberley hole



Gardner Williams



Diamond miners in Kimberley



Cecil John Rhodes

STUDY HARD.
DO GOOD
AND THE
GOOD LIFE
WILL FOLLOW.

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For any queries and assistance in
regard to CoM Strata Control
and Rock Engineering Exams
please follow the website
www.sanire.co.za

or alternatively contact
Yolande Jooste.

Yolande.Jooste@Harmony.co.za

"EDUCATION
IS THE MOST POWERFUL
WEAPON
WHICH YOU CAN USE TO
CHANGE
THE WORLD."

Nelson Mandela

ROCK Ed

Calculator policy:

As of the October 2015 exam no programmable calculators will be allowed. Please ensure beforehand that your calculator is allowed. If in doubt please mail Yolande Jooste as soon as possible.

Programmable calculators would have the IF Conditional button because 'IF' is fundamental to programming as part of Decision making. Further, you can find the PRGM button or buttons like P1, P2, P3, P4 indicating Program 1, Program2, Program3, etc.

One thing notable, CASIO has their programmable calculators indicated by a 'P' (eg: FX-700P etc.)



Newsletter Advertising

Due to a request by one of the Readers of The Rocktalk, the SANIRE Committee has decided to increase the advertising opportunities for suppliers who would like to market there business and products in the Rock Talk.

The table below indicates the prices for different size advertisements.

Please contact Paul Couto for more details

Paul.couto@harmony.co.za / paul.coutopm@gmail.com

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			January 2016	April 2016
Square (Not front page)	R 2 000	6		
Skyscraper (Front page)	R 4 000	1		
Full page (Middle)	R 8 000	2		

STRATA CONTROL OFFICER PRACTICAL EXAM

The SCO practical for the SANIRE Eastern Bushveld Branch was hosted by Atlatsa's Bokoni Mine on the 26th August 2015. The exam set by Bertus van der Kevie and Louis Bronkhorst was conducted at Brakfontein Shaft with conventional underground platinum, narrow stoping conditions exploiting the Merensky Reef. The pass rate for the examination was 38 % with 5 of 13 candidates being successful. In general, there was an improvement in candidates plan reading and cross-sections versus the previous SCO practical exam. Candidates who had the most difficulty during the examination tended to have a lack of experience in narrow tabular conditions.

Congratulations to the following candidates who passed and all the best with your future Rock Engineering studies:

- *Johannes Mokona – Northam*
- *Gain Baloyi – Twickenham*
- *Karabo Rapolo – Northam*
- *Kenneth Baji – Modikwa*
- *Nelson Lekgau - Samancor*

ADAM COOPER





SANIRE

SOUTH AFRICAN NATIONAL INSTITUTE OF ROCK ENGINEERING

Vision: To promote the interests of a vibrant South African Rock Engineering Fraternity

Mission: SANIRE promotes the advancement of the Rock Engineering discipline through the following objectives:

- ◆ Encouraging interest and the advancement of education in Rock Engineering
- ◆ Maintaining professional practice and high standards of ethics
- ◆ Encouraging networking; Collaboration and information exchange
- ◆ Identifying, promoting and facilitating rock engineering related research

Values:

- ◆ **Honesty**
- ◆ **Integrity**
- ◆ **Professionalism**
- ◆ **Accountability**
- ◆ **Transparency**

Contact Information:

Phone: 555-555-5555

Fax: 555-555-5555

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www.sanire.co.za

EDITORS CORNER

This is your newsletter and I would like to hear from you.

If you have any information or stories that we can use, please submit them via email to

paul.couto@harmony.co.za or paul.coutopm@gmail.com

Your feedback will be highly appreciated.

Paul Couto

