SANIRE
SOUTH AFRICAN NATIONAL INSTITUTE OF ROCK ENGINEERING

ROCK talk

Volume 10, Issue 4 | December 2024

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EDITOR

Fezekile Mosiane

SANIRE would like to hear from you. If you have any information or content, you would like us to include in the next newsletter, please submit them via email to Fezekilem@Dwarsrivier.co.za and prudence@sanire.co.za. Remember to visit all our media platforms.

PRESIDENT'S CORNER

Dear Members

We have reached the end of 2024, which has been another successful year for SANIRE. Some of the highlights are listed below:

- **1 January 2024 - 31 March 2024**
  'Mayhem'
- **1 April 2024**
  Change of Administrator (MPAS to SAIMM)
- **5 April 2024**
  FOGAP Day of Learning
- **May 2024**
  MinCo SCC/RMC Examinations
- **13-14 June 2024**
  SANIRE Symposium & RockBowl
- **29 August 2024**
  SANIRE Annual General Meeting (AGM)
- **6 September 2024**
  SANIRE Coal Branch AGM
- **27 September 2024**
  SANIRE Eastern Bushveld Branch Golf Day
- **28 September 2024**
  SANIRE Banquet
- **October 2024**
  MinCo SCC/RMC Examinations
- **17 October 2024**
  SANIRE Technical evening – Gauteng Branch
- **3 December 2024**
  Western Bushveld Branch Golf Day
- **6 December 2024**
  SANIRE Freevaal/Gauteng Branches – Social Event- River Rafting

The SANIRE AGM was held at the Johannesburg Country Club, and for the first time an annual report was compiled for members.

The SANIRE banquet was held at Emperor's Palace and was very well attended. The formalities included the announcement of the winners of the SANIRE Awards for 2023-2024. The venue and dates for AFRIROCK 2025 have been announced – the first full international conference in rock mechanics since 2017. AFRIROCK 2025: Pioneering Progress – The Future of Rock Engineering (an ECSA-validated CPD activity) will provide a dynamic international forum for presenting and discussing the latest advancements in rock mechanics and geotechnical engineering. Don't miss this opportunity to engage with cutting-edge research and contribute to the future of the industry.

The key dates are:

- Abstract submission deadline – 27 January 2025
- Paper submission deadline – 3 March 2025

I would like to thank SANIRE members for their continued support, our sponsors, the examiners, the National Council members, International Society for Rock Mechanics (ISRM) Vice President for Africa, branch committees and chairpersons, and our administration team from SAIMM.

May 2025 be even better.

Kevin Le Bron
SANIRE President

SANIRE HONORARY TREASURER QUARTERLY UPDATE

Dear SANIRE Members

As we approach the end of the year, we would like to express our gratitude to all members who have diligently paid their membership fees for the 2024/2025 financial year. Your continued support and contributions are vital in sustaining the activities and operations of our Institute.

We would also like to take this opportunity to remind all members of the following extract from Section 7 of the SANIRE Constitution:

- Annual subscriptions are due on the 1st of July each year and are payable in advance.
- Members whose fees remain unpaid after the 31st of December cease to be in good standing and are not entitled to exercise membership rights, including receiving notices, publications, or awards.
- Members who fail to pay their subscription for one year may be excluded from the Institute unless reinstated under Council discretion upon settling all outstanding fees.

Current Membership Fees Status

As of November 2024:

- 143 members are in good standing, having settled their fees.
- 588 members remain outstanding.

Branch Progress

The table below highlights the improvements in membership fee payments by branch and areas needing attention. Your respective branch chairperson has an updated list of members with outstanding fees, feel free to contact them or Prudence Ntumelang, SANIRE administrator at prudence@sanire.co.za should you require any assistance.

Call to Action

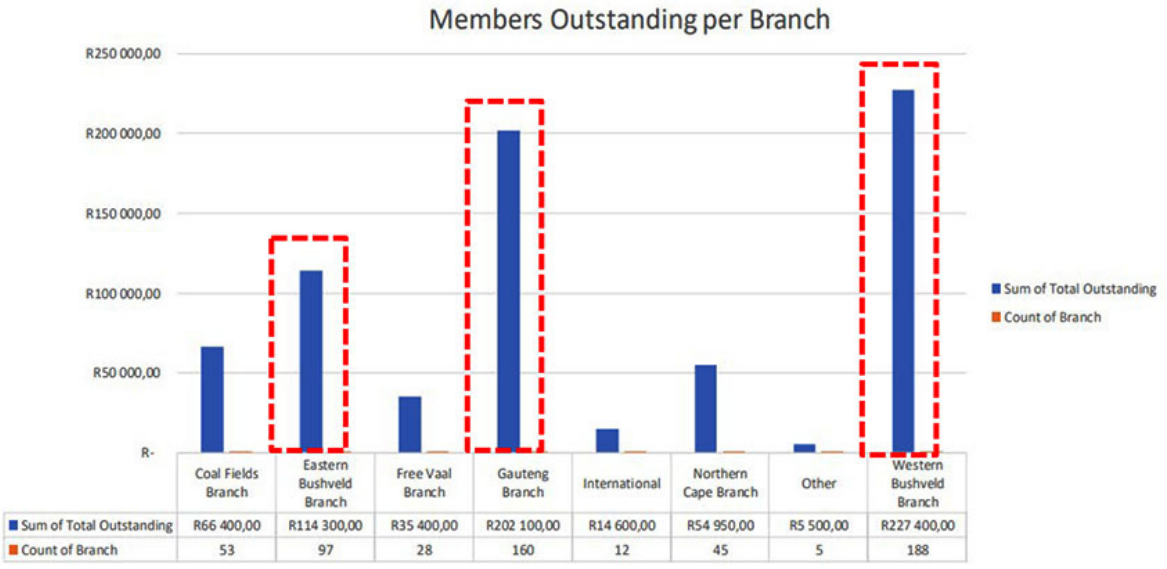
To members yet to settle their fees, please prioritise this before 31 December 2024 to maintain your good standing. Your support ensures SANIRE continues to uphold professional standards and provide valuable resources to the rock engineering community.

Thank you for being part of the SANIRE community. Should you have any questions or require assistance, feel free to reach out.

Wishing you a prosperous year ahead.

Best regards,

S Mashile
SANIRE Honorary Treasurer



	Coal Fields Branch	Eastern Bushveld Branch	Free Vaal Branch	Gauteng Branch	International	Northern Cape Branch	Other	Western Bushveld Branch
Sum of Total Outstanding	R66 400,00	R114 300,00	R35 400,00	R202 100,00	R14 600,00	R54 950,00	R5 500,00	R227 400,00
Count of Branch	53	97	28	160	12	45	5	188

EDUCATION BLOG

Dear SANIRE Members

We are excited to announce that our journey toward creating an immersive digital learning management ecosystem is gaining significant momentum with the recent launch of our platform on the SANIRE website. This collaborative initiative is designed to empower students and other interested individuals by providing electronic access to essential study and reference materials. To explore this valuable resource, simply navigate to the Education tab on the SANIRE website and scroll down to SANIRE Academy.

We strongly encourage all members to visit the site, familiarise themselves with the content, and share their thoughts and feedback.

If you have not yet paid your annual membership fee, now is an excellent time to do so. Please note that only members in good standing will have access to the content beyond 31 December 2024.

While many of you may be on leave throughout December, our dedicated examiners and moderators are hard at work finalising the results of the October COMRE examinations. I would like to extend my heartfelt gratitude to each examiner and moderator for their selfless dedication and tireless efforts. We anticipate that the results will be released by mid-January 2025.

As we wrap up 2024 on a positive note, I wish everyone a joyful holiday season filled with relaxation and rejuvenation. Let us look forward to the new year with optimism and determination to enhance our educational experiences together. Thank you for being a part of this journey!

Petrie Wessels
MincoSA Exams

SANIRE SOUTH AFRICAN NATIONAL INSTITUTE OF ROCK ENGINEERING

MINERALS COUNCIL SOUTH AFRICA

SANIRE FOGAP Skills Initiative

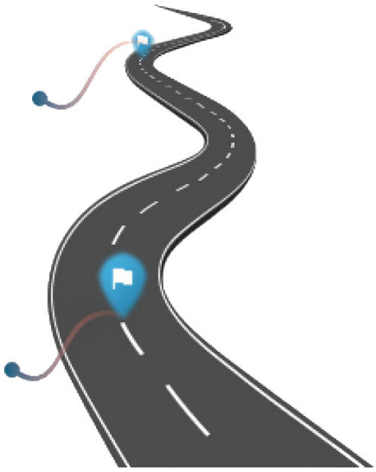
To curb fall-of-ground (FoG) fatalities, the FoG action plan is supported with a momentous skills development project that SANIRE and the Minerals Council are implementing to empower its members and practitioners within the Rock Engineering fraternity.

Objective

- **Improve access** to relevant knowledge and learning experiences for industry practitioners.
- **Improve the quality** and level of engagement of learning experiences so that practitioners become enthusiastic about learning.
- Produce **competent Rock Engineering practitioners** that can add additional value to all stakeholders in the mining industry.
- Increasingly provide **digital tools** for learning, examination and mentoring.

Our Progress and Journey Ahead…

- **Enabled world-class Education Technology**
  - Covers all elements of content, assessment and accredited workflow capabilities.
- **Phase 1.0 training content developed**
  - Revision & re-work of Rock Engineering Technical Papers.
  - Developed and deployed on Learning Platform.
- **Launch of Learning Platform to SANIRE Members**
  - Launch and access to paid-up members – November 2024.
- **Enhanced Learning Experiences**
  - Development of advanced digital learning content, including extended reality.
- **Enhanced Assessments**
  - Transition to digital assessments that increases scalability and reduced turn-around-times.
- **Broadening of Scope**
  - Increased training coverage of various industry disciplines.



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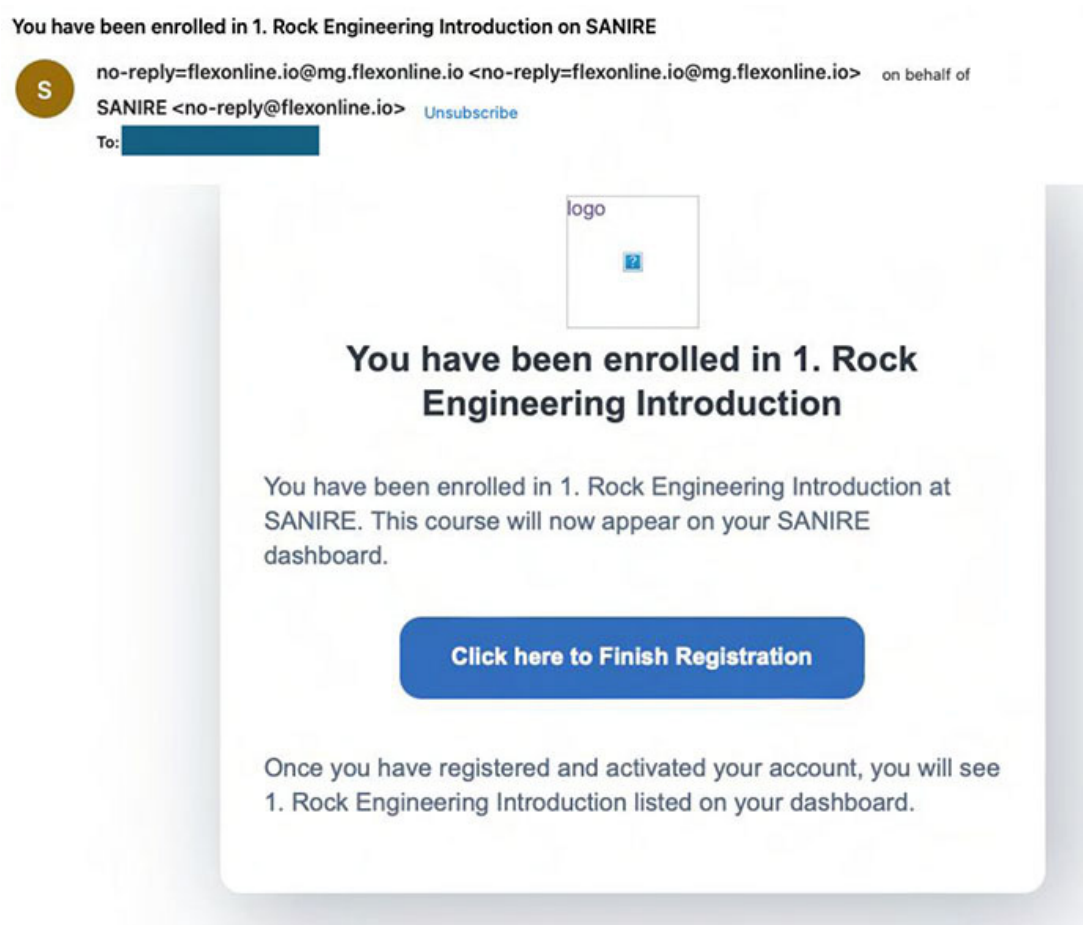
Getting Started

Below is a step-by-step guide to access the platform and set up your learning journey

Register

1. You will receive an email to your address as registered on the SANIRE database, notifying you of your enrolment into courses on the SANIRE learning platform. Please monitor your "spam" folder if you don't see this email in your inbox. An example of this email below:



2. Click on the "Click here to Finish Registration" button to complete your profile on the platform and activate your account with a second email to be sent by the platform.

3. Once you have activated your account, you will be able to log into the platform and view all the courses that you have been enrolled in on the "Dashboard" menu.

4. Set up the SANIRE Academy on your phone/tablet so that you can learn on the go! Turn the page for detailed instructions.

Flex

Learn on any device!

The SANIRE Academy platform is available on the web, or mobile application. Follow the steps below based on your selection:

Internet Browser

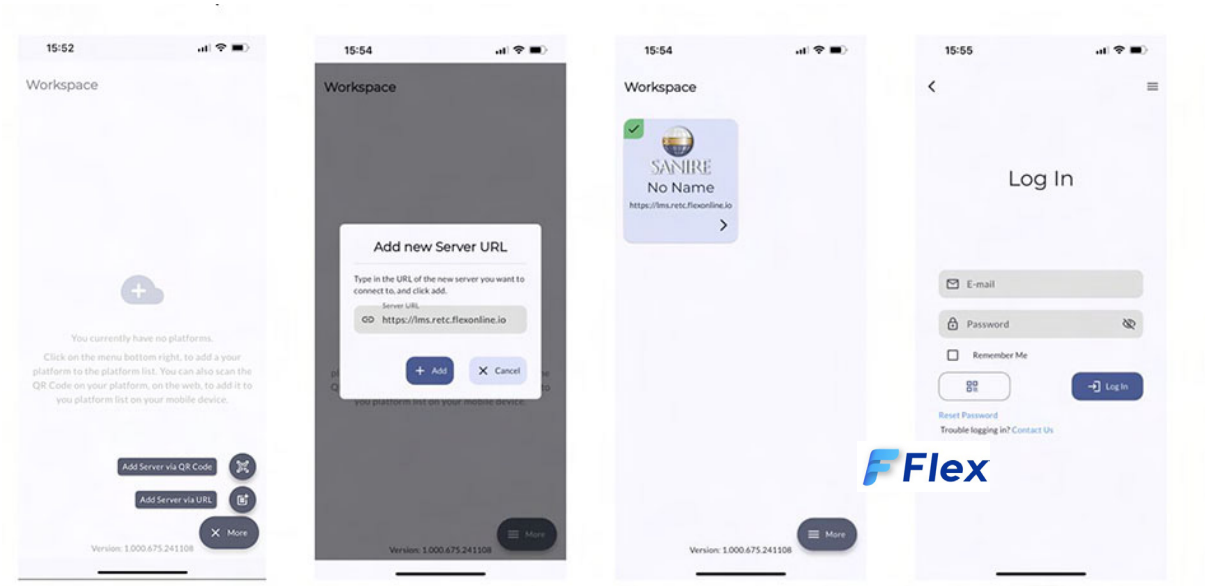
1. On your preferred internet browser (Google Chrome, Microsoft Edge etc.), enter the following link - https://lms.retc.flexonline.io

2. Enter your login details and enjoy your learning experience!

Mobile Application Setup

1. Download the Flex Mobile App from the Google Play Store and Apple App Store.

2. Once downloaded, open the Flex LMS app, and on the bottom right menu, click on ”Add server via URL”. Type the following URL – “https://lms.retc.flexonline.io” and click on “Add”. Click on the SANIRE platform, enter your login details and enjoy your learning experience!



SANIRE BRANCH Contributions

Gauteng Branch

Greetings from the Gauteng Branch

The SANIRE Gauteng Branch held its quarterly meeting on 24 October 2024 at the Mandela Mining Precinct. This event featured a diverse lineup of presentations, starting with an enlightening visit to the Rock Mechanics Laboratory hosted by Dr. Halil Yilmaz which set a strong educational tone for the day.

The proceedings thereafter began with a welcome from Mr. Ross van Heerden, followed by the presentations. Andile Mkandla from Tre Altamira opened with insights on 'Strategic Mine Geotechnical Monitoring using InSAR and Optical Data,' exploring advanced approaches to mine safety.

Dr. Halil Yilmaz, then delivered an avid presentation on 'Rock and Support Testing - Rock Engineering Applications'. His presentation captivated the audience with in-depth insights into the practical applications of rock and support testing, underscoring its critical role in rock engineering. Attendees gained valuable knowledge that is directly applicable to our work in the field.

Following Dr. Yilmaz, Mr. Chris Schalkwyk presented Strocam's latest offerings while David Makumbila of Optron shared advanced techniques in 'Deformation Monitoring Solutions'. To conclude the technical talks, Jaco Meiring from Groundwork discussed 'Transforming Geotechnical Decision-Making using the Internet of Things', providing a forward-thinking perspective on IoT applications.

The event wrapped up with snacks and networking, fostering connections and sparking discussions on the day's topics. We thank all attendees and speakers, for making this event a success.

Ohveshlan Pillay
SANIRE Gauteng Chairperson

TECHNICAL CONTRIBUTION

R. Masethe and G. Wienand, *Sibanye-Stillwater Limited, Carletonville, South Africa*
A.C. Adoko, *School of Mining & Geosciences, Nazarbayev University, Astana, Kazakhstan*

ABSTRACT (1): Rockburst risk can often be reduced by selecting appropriate mining or excavation methods, sequences, strategically placing developments, and other infrastructure. However, owing to the uncertainties in rock mass properties and boundary conditions, rock engineering design necessitates dependence on ground control measures reinforced with burst-resistant rock support to ensure safety at the workplace. High horizontal stress at depth aids the rockmass to be self-supporting by clamping the rockmass. It reduces the gravity-driven damages that could be experienced at the excavation, as stress-induced damages might become significant when mining goes deeper. Significant seismic events (ML≥0.9) are usually associated with large damages near any excavation in the underground workings. We analyzed the damage mechanisms of large mining-related seismic events (0.9 ≤ ML 0 ≤ 3.0) located within the shaft. The study indicates that with the large energy release, damages were only observed with fewer stopes. This is not only influenced by the high horizontal stresses but also by the rockmass mineralogical and contrasting geomechanical properties. The rockburst analysis within active mine infrastructure indicates that 63% large seismic events did not cause any damage to the mine infrastructure or cause injuries within the WAF.

Geotechnical Hazards in Deep Mines: Case Studies of Seismicity and Boundaries Changes

R.T. Masethe, S*ibanye-Stillwater Limited, Johannesburg, South Africa*
A.R.S. Leite and D. Landry, *Vale Base Metals, North Atlantic Operations, Canada*

ABSTRACT (2): Seismic events and rockbursts are recurrent geotechnical hazards in deep underground mines with significant levels of stress and extraction. These hazards can be manageable if adequately addressed during the design and monitoring phase. However, changes in the geological boundaries can trigger a series of seismic events. Temperature fluctuations and the presence of water can alter the stress conditions, mechanical properties of rock mass and affect geological discontinuities. Two case studies are presented. The first case study focuses on seismicity induced by an underground fire in a deep-level gold mine in South Africa. The second case study investigates seismic events caused by water from backfill pouring in a deep-level copper/nickel mine in Canada. An analysis of the source mechanisms of these induced seismic events revealed that they vary from burst-type to slip-type seismic events. The significant seismic activity during sand fill pouring in the Canadian mine confirmed the high stress predicted by the numerical model (Deviatory Stress Ratio > 0.5). The stress and past seismic events influenced ground support selection for rock burst-prone areas.

Information on ECSA Registration Process

K. le Bron and J. Walls

Any person who desires to be registered as a Professional Engineer may lodge an application form with ECSA, which must be complete in all respects to obviate unnecessary delays in the processing of the application. An application is administratively checked for completeness. If incomplete the applicant is advised of the deficiency which must be rectified as soon as possible. ECSA's experience shows that incomplete and badly prepared applications cause serious delays in the processing and finalisation of applications. It is strongly advised that applicants carefully read the information sheets in the application form and meticulously follow the instructions. Applicants will be expected to have consulted Policy Statement R2/1A and the relevant Discipline Specific Guidelines Documents for the Legacy System Application and the ECSA Competency Standards for Professional Engineers R-02-PE for the New Registration System, and to have completed their application forms strictly in accordance with the requirements. Applications that do not comply with all the requirements will no doubt cause a delay and will reduce an applicant's chances of being registered. It should be noted that the quality of persons' applications reflect on their professionalism.

Applications from persons holding accredited qualifications or qualifications recognised by ECSA in terms of the Washington Accord, will not be subjected to a detailed evaluation of their qualifications. It is a prerequisite, however, that they should at least have had three years of post-qualification training and experience before their applications will be considered. For more information about ECSA's requirements refer to Policy Statement R2/1A and the relevant Discipline Specific guidelines documents for applying using the Legacy System Application (old registration system) or assessment against ECSA Competency Standards for Professional Engineers Document R-02-PE (New Registration System application).

Applicants who do not hold accredited or recognised qualifications should consult the Criteria and Processes for recognition of Educational Qualifications for Professional Categories document form E-17-P. Applicants with educational qualifications, that are neither accredited nor recognised by ECSA, who intend applying for registration with the Council in one of the professional categories, are required to have their educational qualifications evaluated. This process will determine the equivalency or otherwise of their qualification in relation to the South African educational qualifications specified for each professional category of registration. Please provide the following documentation in regard to your examinations and qualifications:

1. Information on the programmes as requested in Annexure A Information Sheet (Sheet K1.3).
2. As much detail as possible of your syllabi (course content), courses (subjects) grouped in semesters or terms for each year of study, including reference text books.
3. Information on the course curriculum as requested in Annexure B (Sheet K1.4) that specifies the time (in hours) you spent for each course on attending lectures, attending tutorial classes, doing laboratories, doing projects, writing tests and/ exams, experiential training and /or industrial exposure, knowledge content, etc.
4. A copy of your final year investigation and design project report(s). Should the project be in a foreign language, a detailed summary in English, must accompany the copy of the project.
5. Provide ECSA with certified copies of your qualification(s)/ degree certificate (original copies to be brought with you when submitting an application, for verification purposes only. ECSA will not retain your original copies).
6. Provide ECSA with a certified detailed academic record/transcript, of all courses completed during the degree, from the institution.
7. MIE verification certificate for authenticity.

Assuming that an applicant's qualification is recognised, the process of evaluating the applicant's training and experience starts. Copies are distributed amongst the members of the relevant Professional Advisory Committees (PACs). ECSA has established nine PACs, one for each discipline of engineering, and their members are drawn from the various professional engineering institutes. The application is scheduled for the next PAC meeting. The PACs meet at regular intervals depending on the number of applications being received for each discipline. This ranges between bi-monthly meetings to once every six months. Since January 2001, all applicants are required to sit for a compulsory 'Professional Review'. This entails an interview with the applicant, which is done in collaboration with the Voluntary Associations. The process for Civil Engineering differs from the other disciplines in that all applicants are required to write two essays under examination conditions.

Applying for Registration as a Professional Engineer

Decide whether you wish to be assessed against:

- Requirements of ECSA Policy R2/1A, Section 5 and relevant Discipline Specific Guidelines (Legacy Sys-tem) or
- ECSA Competency Standards for Professional Engineers, document R-02-PE (New Registration System)

If you have selected Legacy System, download the Legacy System Application form and the relevant Discipline Specific Guideline Document and ensure that the following documents are completed using the templates indicated are included with the application:

1. First two pages of the application form A 1.1 and A1.2 fully completed, signed by yourself and commis-sioned by the commissioner of oaths
2. Be sure to Nominate two Referees, at least one of which should be a Professional Engineer registered with ECSA and the second another registered Professional.
3. Request the nominated referees to fully complete the referee report forms A 4.1 and A 4.2 and submit same directly to ECSA.
4. Include Certified Copies of the original B.Sc. (Eng) / B.Eng degree / M.Sc. Eng. Degree / M.Eng. Degree. Considering the Qualification(s) you entered, please verify whether:
    i. The qualification is listed on ECSA Document E-20-PE as an accredited programme or appears in list B as a recognised programme and that the year in which you were last registered falls into the period of accreditation; or
    ii. Your qualification is recognised under the Washington Accord. Please consult the list or database of accredits qualification of the relevant Washington Accord signatory for the country in which you ob-tained the qualification. If you do not qualify under (a) or (b), please change your application type to Educational Evaluation.
5. Include the following documents in your application:
    a. Proof of Voluntary Association Membership or Application for Membership (Letter, certificate, In-voice or Receipt.
    b. Proof of Identity: Original Copy of RSA ID or Passport on plain paper, certified by Commissioner of Oaths.
6. Ensure that the following documents are completed using the templates indicated are included with the application:
    a. Summary of Training and Experience report form A2.2. From first instance of experience after ob-taining the first degree till date of submission in a chronological date order (please see application form information sheet A2).
    b. Training and Experience Report for each Period using form A2.1 From first instance of experience after obtaining the first degree until the date of submission in the same chronological date order as listed on form A2.2. Each period on a separate form A2.1 signed by yourself and the relevant supervisor if registered or not (please see application form information sheet A2), complete the organograms.
7. Report According to Discipline Requirement:
    a. Aeronautical: None
    b. Agricultural: 2000-4000 Words Project Report
    c. Chemical: None
    d. Civil: Form AC 7.1 & AC7.2, AC7 Evidence of Continuing Learning, 4000 word Project Report
    e. Electrical: Complete: Form AD7, AD8, AD9
    f. Industrial: Key Assessment Form AK7
    g. Mechanical: Design Report, Form AE7
    h. Metallurgical: None
    i. Mining: Project Report

If you have selected the New Registration System application ensure that the following documents are completed using the templates indicated are included with the application:

1. First two pages of the application form AN 1.1 and AN1.2 fully completed, signed by yourself and commis-sioned by the commissioner of oaths

2. Be sure to Nominate two Referees, at least one of which should be a Professional Engineer registered with ECSA and the second another registered Professional.
3. Request the nominated referees to fully complete the referee report forms AN 6.1 and AN 6.2 (R-03RR-PE) and submit same directly to ECSA.
4. Include Certified Copies of the original B.Sc. (Eng) / B.Eng degree / M.Sc. Eng. Degree / M.Eng Degree. Considering the Qualification(s) you entered, please verify whether:
    i. The qualification is listed on ECSA Document E-20-PE as an accredited programme or ap-pears in list B as a recognised programme and that the year in which you were last registered falls into the period of accreditation; or
    ii. Your qualification is recognised under the Washington Accord. Please consult the list or data-base of accredits qualification of the relevant Washington Accord signatory for the country in which you obtained the qualification. If you do not qualify under (a) or (b), please change your application type to Educational Evaluation.

Include the following documents in your application:

5. Proof of Voluntary Association Membership or Application for Membership (Letter, certificate, Invoice or Receipt.
6. Ensure that the following documents are completed using the templates indicated are included with the application:
    a. Summary of Training and Experience report AN 2.2(R-O3-TES-PE). From first instance of experi-ence after obtaining the first degree till date of submission in a chronological date order (please see application form information sheet A2).
    b. Training and Experience Report for each Period using form AN 2.1(R-03-TER-PE). From first in-stance of experience after obtaining the first degree till date of submission in the same chronolog-ical date order as listed on form AN 2.2. Each period on a separate form AN 2.1 signed by yourself and the relevant supervisor if registered or not (please see application form information sheet A2).
    c. Mature Applicants may submit Training and Experience Outlines (TEO). Refer to section 4.3 and Table 3 of R-03-PE.
    d. Organograms
    e. Fully completed Engineering Report form R-03-ER-PE
    f. Pre-registration CPD-type Activity report (IPD) on form R-03-IPD-PE.

The whole process takes approximately 6 months, however it may be longer or shorter depending on the availability of the PACs. SANIRE would like to encourage our members to register with ECSA, should they meet the qualifications.

ROCK talk

THE NEXT ROCK Star

Full Names: Senzo Ngwenya

Company: Dwarsrivier Chrome Mine

Designation: Acting Rock Engineer/Strata Control Officer

Date of Birth: 29 June 1988

Educational Qualification: Qualifications: Bachelor of Technology (Geology, Tshwane University of Technology), COM Strata Control Certificate, COM Rock Mechanics Certificate

First Job: Geology/Rock Engineering Intern

1. **What would you consider as your biggest career faux pas to date and what lesson/s have you learned from it?**
   I was stubborn as an intern. Later on when I progressed in my career I learnt that it was beneficial to build good working relationship with colleagues.
2. **What motivates you to get out of bed in the morning?**
   Taking care of the family that I started.
3. **What is your favourite quote (why)?**
   'Your time is limited, so don't waste it living someone else's life. Don't be trapped by dogma – which is living with the results of other people's thinking.' – *Steve Jobs*
4. **What is your personal song (why)?**
   'Good Morning'-*Kanye West*: A joyful and energetic song to start a the day. Used to play it a lot in my varsity days, the whole album as well.
5. **What is your favourite movie?**
   Lord of the Rings. With the right people on your side, you can achieve anything. You still need to be careful whose advice/counsel you keep.
6. **If the story of your life were to become a biopic, what would the title be?**
   'Gogo's kids can be successful as well'.
7. **If the story of your life were to become a biopic, which famous actor or actress would play you?**
   Idris Elba, the guy just portrays himself very well on movies, very confident.
8. **What is the best vacation you've been to or plan on going to?**
   I would like to visit Nepal, it is adventurous with good scenery. I know the geologist in me would very much enjoy the mountainous rocky terrain.
9. **Do you have a favourite newspaper, blog?**
   Mining Weekly, I don't remember when I subscribed for this one. But it has been popping up on my emails since early on in my career.
10. **How do you unwind?**
    Challenging my two sons on FIFA or any other games.
11. **What is your greatest fear?**
    My greatest fear would be for my kids to grow up without me in the picture.
12. **What is your hidden talent?**
    I used to sing at church in a group. (our group was called Invocation, and I was not bad).
13. **What is the one thing that very few people know about you?**
    Perhaps they would have to know me a little bit better to get to that detail.
14. **If you could interview one person (dead or alive) who would that be (why)?**
    Eve from the Bible, what really happened there.
15. **If you could only drink one beer/cocktail for the rest of your life, what would it be?**
    Castle Lite.
16. **If you were an animal what would you be (why)?**
    Crocodile, meaning of my surname.
17. **If you were on death row, what would your last meal be?**
    Anything cooked by my wife (Nikiwe).
18. **What do you want to be remembered for?**
    A better father.
19. **If you were stuck on an island what three things would you bring?**
    Machete, fishing net and matches.
20. **If you were a rockstar, what would your stage name be?**
    "Alex" my middle name is not bad.

21. **Growing up, what was your dream career?**
Electrical Engineer, just like my uncle.

22. **Why did you choose Rock Engineering as a career?**
It kept me studying. I was tired of face mapping in geology.

23. **What are 3 words to describe Rock Engineering?**
Challenging the status quo.

24. **What do you find the most challenging in Rock Engineering?**
Designs have to be practical, safe and be economical. There must be a balance without compromising on safety.

25. **What do you like most about Rock Engineering?**
It's very broad, I am still learning.

26. **What are some areas that you believe will become of increasing importance in the near future of the rock engineering discipline?**
AI evolution taking over. Numerical modelling will be a critical skill, shifting from empirical designs.

27. **What is your view on the continued loss of critical Rock Engineering skill in South Africa?**
The focus should be about skill transfer. Mentoring the candidates instead of taking all that experience and skills to the grave.

28. **What solutions would you propose to abate this looming problem?**
Individual development programmes (IDP) should not just be a paper exercise to comply. They must be actioned.

29. **Who is your role model/mentor? What is the best advice you have ever been given?**
Industry mentors: George Louw. Learn numerical modelling, the industry is going towards that, it's going to be a critical skill to have. Presentation is very important, not just on your reports and actual presentations, but the way you carry yourself in public and in the working space.

30. **What advice would you give to someone who wants to choose Rock Engineering as a career?**
Hard work pay off in this field. It's a growing and dynamic field.

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