

REGISTRATION DEADLINE

June 22, 2010

Please register online at
www.rca.co.za
Or contact:

Robbie Cameron or Jann Otto

RCA Conference Organisers
Tel +27 11 728 8173 / 4511

Fax 086 653 7108 / +27 11 728 1675

robbie@rca.co.za or events@rca.co.za

3 CPD Credits

SAIMM, AusIMM, SME,
and CIM

■ Members: R 10,500

■ Non-members: R 11,000

For more information:

Deborah Frankland

Canada Research Chair and Laboratory Administrator

COSMO - Stochastic Mine Planning Laboratory

Department of Mining and Materials Engineering
McGill University

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An invoice will be issued on receipt of a completed registration form. Attendance is subject to prior payment, a deposit slip or transfer form with the invoice number as a reference is required as proof of payment please.

Title: _____ Surname: _____

First Name: _____

Company or Organisation: _____

Job Title: _____

Purchase Order Number (if applicable): _____

Postal Address: _____

City: _____ Prov/State: _____

Postal/Zip Code: _____ Country: _____

Phone: _____ Fax: _____

Email: _____

Accounts contact person: _____

Accounts Telephone number: _____

Accounts email address: _____

SAIMM, AusIMM, SME or CIM Member #: _____

I will attend optional

Whittle software refresher Yes No

I will bring a laptop: Yes No

SPECTRUM SERIES VOL. 17: CD or BOOK

Registration includes course notes, lunch, and morning and afternoon tea, and Spectrum Series Vol. 17.

Participation in this course may be a valid activity towards continuing professional development with up to 26 contact hours. Participants receive a Certificate of Completion.

Notification of Cancellation received in writing up to June 22, 2010 (minimum of 10 working days before the course) will incur a 20% cancellation fee. No refund will be made after this time. Registrations are transferable.

Who should attend

Mine managers, mining engineers and mine geologists.

Instructors

ROUSSOS DIMITRAKOPOULOS is currently the Canada Research Chair in Sustainable Mineral Resource Development and Optimisation Under Uncertainty and Director of the COSMO Laboratory, McGill University, Montreal, Canada. Previously he was Professor and Director of the Bryan Research Centre, Univ. of Queensland, Australia. He holds a PhD in Stochastic Modelling from École Polytechnique, Montreal, and a MSc from the University of Alberta, Edmonton. He has been working on risk analysis, risk-based optimisation in open pit mine design and production scheduling. Roussos has been Senior Geostatistician with Newmont Mining Co., Denver, and Senior Consultant with Geostat Systems International. He has taught short courses and worked in Australia, North America, South America, Europe, the Middle East, South Africa and Japan.

GELSON BATISTA is currently Principal Mining Engineer with AMEC in Vancouver, responsible for leading mining studies and auditing processes for clients. He has 13 years of consulting and operations experience at a wide variety of open-pit mines and development properties. Until recently he was working with Rio Tinto Iron Ore, managing the mining study component of the multi-billion dollar Simandou project in Guinea, and leading life-of-mine plans for large Australian operations. He also spent several years with Gemcom in Canada and Brazil, helping to find solutions to clients' complex mining problems, and providing consulting and onsite training services in strategic mine planning. Gelson holds a BAsC in Mining Engineering from Brazil's Ouro Preto School of Mines.

GERALD WHITTLE is Managing Director of Whittle Consulting Pty Ltd, who specialise in Global Optimisation of mining business, especially complex portfolios involving multiple mines, alternative processing paths and multiple products. He has 30 years experience in business planning and analysis in a range of industries both Australian and international. The last 11 years he has worked in partnership with Jeff Whittle in strategic mine planning using specialised optimisation tools and techniques. He has undertaken major optimisation studies for a number of mining and mineral processing companies involving a range of commodities and issues. He holds a BEcon from Monash University and a GradDipFin.

Venue Details

Glen Hove Conferencing
Executive Meeting Facilities
52 Glenhove Road, Melrose Estate, Johannesburg, 2196
South Africa

Logistics

Lectures are given from 9 AM (refreshments at 8:30 AM) to 5 PM with two 15 minute coffee breaks and a 1 hour lunch break. With exception to July 6th, 2010 (1/2 Day Whittle refresher) from 2:30 PM to 5:30 PM.



COSMO – Stochastic Mine Planning Laboratory
Mining Engineering
<http://cosmo.mcgill.ca>

COSMO – Stochastic Mine Planning Laboratory, a global centre for leading-edge research and graduate education in "orebody modelling and strategic mine planning with uncertainty", is supported by AngloGold Ashanti, Barrick, BHP Billiton, De Beers, Newmont, Vale, Vale Inco, and The Canada Research Chairs Program, NSERC, CFI.

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Professional Development Series 2010

STRATEGIC RISK QUANTIFICATION AND MANAGEMENT FOR ORE RESERVES AND MINE PLANNING

Strategic Risk Management in Mine Design:

From life-of-mine to global optimisation

3 CPD Credits



Gelson Batista, AMEC, Vancouver;
Roussos Dimitrakopoulos, McGill University, Canada;
and
Gerald Whittle, Whittle Consulting, Australia

JULY 6-9, 2010

Johannesburg, South Africa



Strategic Risk Management in Mine Design: From life-of-mine to global optimisation

The 2010 AusIMM Spectrum Series Vol. 17: "Advances in Orebody Modeling and Strategic Mine Planning I: Old and New Dimensions in a Changing World" is included with the course materials

Content and Objectives

At a time of growing uncertainty in global markets, learn how to add substantial value and significantly impact your company's projects and bottom line by utilising strategic mine planning under uncertain conditions and global optimisation methods:

- Find out how to minimise risks and produce optimal pit designs with: Strategic mine planning processes, next generation optimisation methods, and Whittle software
- Discover how new developments will help you capture the "upside potential" in mine designs and minimise "downside risks" as well as increase cash flows through the effect of the mining sequence and "risk blending"
- Explore real-world examples and participate in hands-on computer sessions that show how to increase project value by employing new risk-based (stochastic) optimisation models
- Understand the critical effects of global asset optimisation

LEARN HOW YOU CAN IMPROVE OPERATIONAL PERFORMANCE BY:

- Linking the art of strategic planning with the science of optimisation and mining engineering
- Applying optimisation to open pit mine design and long-term sequencing
- Improving stockpiles, buffers, blending and grade of stockpiles
- Incorporating jointly market (demand) and grade (supply) uncertainties into optimisation
- Maximising mining and mineral process asset portfolios

OPTIONAL 1/2 DAY WHITTLE REFRESHER SKILLS WORKSHOP – (at no extra cost) July 6th, 2010

The half day refresher workshop is offered to course participants who have not been exposed to Whittle software before, or who desire a refresher in their Whittle software skill.

The computer workshops that form part of the three day seminar are based on intermediate level Whittle skills. The refresher workshop is offered (free of charge) to all participants as an opportunity to provide basic skills that will facilitate the learning's offered during the three day seminar. At the completion of the workshop, participants will be familiar with the user interface for Whittle software. Participants will be able to create a project, run an

optimisation and analyze the results. The completion of the refresher workshop will enable the participant to concentrate on advanced concepts and techniques introduced during the three day seminar.

Course Outline

INTRODUCTION: RISK IN MINING

- Recent examples of risk in mining: Australasia, Canada and the United States
- Risk quantification creates value and opportunities
- Optimisation in mine design and risk quantification: Higher value with less risk!

STRATEGIC PLANNING IN THE CORPORATE ENVIRONMENT

- Relating mine planning to business planning
- Decision-making behaviour models
- Examining the relationship between uncertainty and risk with an influence diagram

OPTIMISATION TECHNIQUES

- Optimisation models for mine design and planning
- Pit optimisation defined
- Calculating block values
- Schedule optimisation – the big picture model

SCHEDULING WITH WHITTLE

- Using pit shells for mining simulation
- Choice and adjustment of pushback designs
- Benchmark schedules and optimised schedules
- Implementing and evaluating mining direction

RISK MANAGING AND DEMAND-DRIVEN PRODUCTION SCHEDULING

- Managing ore and waste production and mining rate optimisation
- Attainable, physical life-of-mine production schedules with grade uncertainty
- Application at the Fimiston Pit, WA
- Traditional vs. risk-based schedules – higher NPV and lower risk

RISK-BASED BLOCK VALUES AND OPTIMISATION

- Introduction to Monte Carlo simulation
- Sequential simulation
- Linking orebody uncertainty to mining decision-making and profitability

MOVING FORWARD FROM TRADITIONAL OPTIMISATION

- Geological uncertainty and risk management in traditional optimisation and mine design – concepts, limits and examples
- Risk-based pit optimisation with Whittle: better designs and more decision options
- Hybrid pits method of dealing with conditionally simulated models in Whittle
- Risk analysis on the effects of grade uncertainty to pit optimisation and design at a large open pit gold mine

ORE/WASTE DISCRIMINATION

- Cut-off grade theory
- The profit method for ore/waste discrimination

ECONOMIC EVALUATION WITH UNCERTAIN SUPPLY AND DEMAND

- Choosing mine designs with real options and simulated orebodies

GLOBAL OPTIMISATION

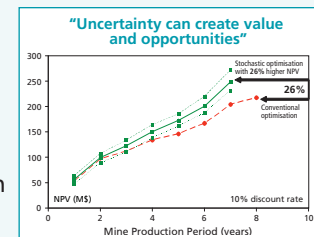
- Maximising the value of mining and mineral processing asset portfolios
- Approaches and techniques for global asset optimisation
- Unlocking value that is often overlooked in simple cases, and can be completely elusive in complex cases

OTHER TOPICS - TIME PERMITTING

- Iron ore: Production scheduling with quality control through jointly simulated quality parameters
- Stochastic scheduling integrating long and short production schedules – Application in a gold deposit

COMPUTER WORKSHOPS

- **Computer Workshop I:** Discrete probability analysis
- **Computer Workshop II:** Part 1 – Sensitivity analysis under uncertainty
Part 2 – Risk quantification and choosing risk robust designs
- **Computer Workshop III:** Stochastic production scheduling in a copper deposit and higher value



PLEASE NOTE it is strongly recommended that participants bring a laptop.