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KEYNOTE SPEAKERS

Cave mining – 16 years after

G. Chitombo, *Sustainable Minerals Institute, The University of Queensland, Australia*

Some comments regarding development drifting practices with special emphasis on caving applications

W. Hustrulid, *Hustrulid Mining Services; and Spokane Research Laboratory, National Institute for Occupational Safety and Health, USA*

DRAW CONTROL/MATERIAL FLOW

Modelling fines movement at the Ridgeway sublevel caving operation I. Brunton, *Newcrest Mining Ltd, Australia*; M. Pierce, *Itasca Consulting Group, USA*

Full-scale sublevel caving optimisation marker trials at Newcrest's Telfer Mine N.A. Clark, M. Karlsson, *Newcrest Mining Ltd, Australia*

Numerical modelling material flow model in sublevel caving W. Gibson, J. Albrecht, A. Vakili, M. Sandy, *AMC Consultants Pty Ltd, Australia*; D. VanDoorselaere, *Chirano Gold Mines, Ghana*

Quantifying the effect of concurrent and non concurrent draw on extraction zone in block caving mines using a large-scale 3D physical model A. Halim, *Barrick Australia Pacific, and Western Australian School of Mines, Curtin University, Australia (formerly University of Queensland, Australia)*; R. Trueman, *Strata Engineering, Australia (formerly University of Queensland)*; R. Castro, *University of Chile, Chile (formerly University of Queensland)*

Large-scale simulations of gravity flow in block caving W.R. Hancock, D.K. Weatherley, G.P. Chitombo, *The University of Queensland, Australia*

Shear-strain assessments in block caving mines M.H.M. Hashim, G.B. Sharrock, *The University of New South Wales, Australia*

Understanding the flow of caved ore and its influence on ore recoveries and dilution in a block cave T.G. Heslop, *Mine Geotechnics (WA) Pty Ltd, Australia*

Considerations for drawpoint closure at the deep ore zone block cave mine C. Kurniawan, Hifzun, W. Yudanto, *PT. Freeport Indonesia, Indonesia*

Installing of smart markers to monitor Lift 2 North extension ore flow behaviour M. Pierce, *Itasca Consulting Group, USA*; D.K. Weatherley, *The University of Queensland, Australia*; T. Kojovic, *SimSAGE Pty Ltd, Australia*

A hybrid methodology for secondary fragmentation prediction in cave mines S. Talu, *Rio Tinto, Australia*; A. Van As, *Rio Tinto, Australia*; J. Hilton, D. Whiteman, *Elexon Electronics, Australia*; R. Henry, *Rio Tinto, Australia*

Modelling secondary fragmentation in cave mines using the discrete element method D.K. Weatherley, *The University of Queensland, Australia*; S. Abe, *RWTH Aachen Geologie-Endogene Dynamik, Germany*

The smart marker system – a new tool for flow investigation in mass mines D. Whiteman, *Elexon Electronics, Australia*

GEOMECHANICS OF CAVING MINES

Mechanisms of extraction level and undercut collapse in deep caves D. Beck, M. Pfitzner, *Beck Arndt Engineering Pty Ltd, Australia*

Strategic considerations in block caving R.J. Butcher, G. Smith, *Barrick Gold of Australia Ltd, Australia*

Rock mass and ground support response through different geotechnical domains on the undercut level at Newcrest's Ridgeway Deeps block cave mine G. Capes, T. Thornhill, *Newcrest Mining Ltd, Australia*

Rock mass geotechnical and structural characterisation at Cadia East underground project, New South Wales, Australia A. Catalan, *Newcrest Mining Ltd, Australia*; C. Suarez, *Suarez and Associates, Chile*

The role of geotechnical engineering during the prefeasibility studies and early works of Cadia East project, the largest and deepest panel caving in Australia A. Catalan, F. Sinaga, I.A. Qudraturrahman, *Newcrest Mining Ltd, Australia*

Interaction between a propagating cave and an active pit at Telfer Mine – Part II: monitoring the interaction R. Dixon, U. Singh, C. McArthur, *Newcrest Mining Ltd, Australia*

Design and implementation of a practical damage assessment in Argyle Diamond's block cave project F. Fernandez, P. Evans, R. Gelson, *Argyle Diamonds Pty Ltd, Australia*

Shotcrete thickness measuring using modern technology A. Loomes, *Underground Survey Services Pty Ltd, Australia*; A. Loncaric, *Stratacrete Pty Ltd, Australia*

Rock mass response and long-term monitoring plan for the extraction level at Newcrest's Ridgeway Deeps block cave mine R. Lowther, *The University of New South Wales; and Newcrest Mining Ltd, Australia*; G. Capes, *Newcrest Mining Ltd, Australia*; G.B. Sharrock, *The University of New South Wales; and Newcrest Mining Ltd, Australia*

Block 4 geotechnics, past present and future – the geotechnical history of a mechanised block cave C.A. Preece, *De Beers Finsch Mine, South Africa*

Interaction between a propagating cave and an active pit at Telfer Mine – Part I: interaction management U. Singh, R. Dixon, C. McArthur, *Newcrest Mining Ltd, Australia*

Lift 2 North extension cave performance S. Talu, W. Seloka, *Rio Tinto, Australia*; A. Van As, *Rio Tinto, Australia*; R. Gillinder, *Helimetrex Pty Ltd, Australia*

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NUMERICAL MODELLING

Application of advanced numerical modelling techniques for assessment of cavability, subsidence and airblast hazard in a sublevel caving mine J. Albrecht, W. Gibson, A. Vakili, M. Sandy, *AMC Consultants Pty Ltd, Australia*; K. Ross, *Redback Mining Inc., Canada*

An analytical process for estimating primary fragmentation for complete cave columns using discontinuum Finite Element models S. Arndt, D. Beck, B. Fillery, *Beck Arndt Engineering Pty Ltd, Australia*

Multi-scale simulation of ground support designs for extreme tunnel closure D. Beck, *Beck Arndt Engineering Pty Ltd, Australia*; E. Villaescusa, C. Windsor, *Western Australian School of Mines, Curtin University, Australia*; S. Arndt, *Beck Arndt Engineering Pty Ltd, Australia*

A finite element approach to caving in stratified, jointed rock masses W.G. Pariseau, *Department of Mining Engineering, University of Utah, USA*

A discrete fracture network based approach to defining in situ, primary and secondary fragmentation distributions for the Cadia East panel cave S. Rogers, D. Elmo, G. Webb, *Golder Associates Ltd, Canada*; A. Catalan, *Newcrest Mining Ltd, Australia*

Advances in numerical simulation of caving B. Sainsbury, *Itasca Australia Pty Ltd*; and *The University of New South Wales, Australia*

3D numerical modelling of surface subsidence caused by open pit block cave interactions J. Severin, K.S. Woo, E. Eberhardt, *University of British Columbia, Canada*

Estimating cave loads in block and sublevel caving G.B. Sharrock, M.H.M. Hashim, *The University of New South Wales, Australia*

Use of InSAR to constrain 3D numerical models of block caving induced surface subsidence K.S. Woo, E. Eberhardt, *University of British Columbia, Canada*; B. Rabus, *MDA Systems Ltd, Canada*; D. Stead, *Simon Fraser University, Canada*; A. Van As, *Rio Tinto, Australia*

PLANNING AND DESIGN OF CAVING MINES

Considerations in planning and scheduling a massive underground mining operation at depth P. Bartlett, *South Africa*

Developing a block cave under a sublevel cave – transition challenges and learnings at Ridgeway Deeps S. Duffield, G. Dunstan, *Newcrest Mining Ltd, Australia*

New approach for rapid preparation on block caving mines V. Encina, D. Méndez, C. Caballero, H. Osorio, *JRI Ingeniería S.A., Chile*

The Goldex Mine mining method P. Frenette, *Agnico-Eagle Mines Ltd, Canada*

The Shaft Boring System for mechanical excavation of deep shafts C. Frenzel, W. Burger, *Herrenknecht AG, Germany*; F. Delabbio, *Rio Tinto, Australia*

Geomechanical assessment of macroblocks options using 3D numerical modelling at Chuquicamata underground project E. Hormazabal, *SRK Consulting, Chile*; F. Villegas, *Codelco, Chile*; F. Rovira, *SRK Consulting, Chile*; C. Carranza-Torres, *University of Minnesota Duluth, USA*

Alternative mining method at Kvannevan Mine S. Nævermo Sand, *Rana Gruber AS, Norway*; and *Skaland Graphite AS, Norway*

Impact of poor fragmentation on cave management S. Ngidi, D. Pretorius, *Palabora Mining Company Ltd, South Africa*

Lift and production limits for hoists and belt conveyors in underground mass mining operations J. Spreadborough, *Parsons Brinckerhoff Pty Ltd, Australia*

Block cave optimisation – a value driven approach C. Stewart, A. Allman, B. Hall, *AMC Consultants Pty Ltd, Australia*

Northparkes E48 block cave project – geotechnical update A. Van As, *Rio Tinto, Australia*; S. Talu, *Rio Tinto, Australia*

A new mine planning tool for sublevel caving mines D. Villa, *Gemcom Software International, Canada*

PRECONDITIONING

Measurement of hydraulic fracture growth in a naturally fractured orebody for application to preconditioning R.G. Jeffrey, *CSIRO Petroleum, Australia*; A. van As, *Rio Tinto, Australia*; X. Zhang, A.P. Bungler, Z.R. Chen, *CSIRO Petroleum, Australia*

Microseismic monitoring of hydraulic fractures in block cave mining P. Joubert, *ISS International, South Africa*

Mapping of hydraulic fracture planes – Ridgeway Deeps block cave M.J. Morgan, *Newcrest Mining Ltd, Australia*

Simulating the impacts of hydro fracture preconditioning on cavability and fragmentation at the planned Cadia East panel cave S. Rogers, D. Elmo, G. Webb, *Golder Associates Ltd, Canada*; A. Catalan, *Newcrest Mining Ltd, Australia*

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SEISMIC MONITORING AND CAVING MINES

Double difference passive tomography to estimate rock mass changes induced by hydraulic fracturing and cave mining D. Beck, Beck Arndt Engineering Pty Ltd, Australia; E. Westman, Mining and Minerals Engineering, Virginia Tech, USA; M. Morgan, D. Finn, Newcrest Mining Ltd, Australia

Instrumentation and monitoring of cave initiation at Telfer Mine M. Di Giovinazzo, U. Singh, Newcrest Mining Ltd, Australia

Bulk caving technology for deep level ore mining A. Eremenko, V. Eremenko, Institute of Mining, Siberian Branch, Russian Academy of Sciences, Russia; Ya. Baiborodov, Evrazruda Joint-Stock Co., Russia

Monitoring open stope caving at Goldex Mine P. Frenette, Agnico-Eagle Mines Ltd, Canada; M. Hudyma, Laurentian University, Canada

Initial and east cave breakthroughs at Palabora Mining Company S.N. Glazer, South Africa; P. Townsend, Palabora Mining Company Ltd, South Africa

Seismic monitoring system design for caving mines M. Hudyma, Laurentian University, Canada

Establishing confidence in the interpretation of seismic data to quantify cave propagation on a routine basis R. Lachenicht, M. Di Giovinazzo, U. Singh, Newcrest Mining Ltd, Australia

Automated cave tracking using seismic monitoring M. Marina, The University of Western Australia, Australia; J. Wesseloo, Australian Centre for Geomechanics, Australia

Interpretation of seismic data and numerical modelling of fault reactivation at El Teniente, Reserva Norte Sector (Reno) Y. Potvin, Australian Centre for Geomechanics, Australia; J. Jarufe, Codelco, Chile; J. Wesseloo, Australian Centre for Geomechanics, Australia

Microseismic tools for the analysis of the interaction between open pit and underground developments J.M. Reyes-Montes, Applied Seismology Consultants, UK; B. Sainsbury, Itasca Australia Pty Ltd; and The University of New South Wales, Australia; W.S. Pettitt, Applied Seismology Consultants, UK; R.P. Young, University of Toronto, Canada

Microseismic monitoring of caving at Goldex Mine A. Ringeri, ESG Canada Inc., Canada; P. Frenette, Agnico-Eagle Mines Ltd, Canada; D. Collins, I. Leslie, ESG Canada Inc., Canada

The critical earthquake concept applied to block caving – evidence for cooperative behaviour during failure H. White, Coffey Geotechnics (NZ) Ltd, New Zealand; A. van As, Rio Tinto, Australia; B. O'Keefe, Coffey Geotechnics (NZ) Ltd, New Zealand

SUBSIDENCE

An integrated FEM/DEM – discrete fracture network synthetic rock mass approach for the modelling of surface subsidence associated with panel cave mining at the Cadia East underground project D. Elmo, S. Rogers, R. Beddoes, Golder Associates Ltd, Canada; A. Catalan, Newcrest Mining Ltd, Australia

Investigation of caving-induced subsidence at the abandoned Grace Mine D. Sainsbury, Itasca Australia Pty Ltd, Australia; L. Lorig, Itasca Consulting Group, Inc., USA

Investigation of surface subsidence due to sublevel caving T. Villegas, Luleå University of Technology, Sweden; and Universidad de Sonora, Mexico; E. Nordlund, Luleå University of Technology, Sweden

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