

Society for Mining, Metallurgy & Exploration

SME Annual Meeting And Exhibit 2008

“New Horizons – New Challenges”

February 24-27, 2008
Salt Lake City, Utah, USA

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571
www.proceedings.com

ISBN: 978-1-60560-455-8

Some format issues inherent in the e-media version may also appear in this print version.

Copyright (2008) by the Society for Mining, Metallurgy & Exploration

All rights reserved.

For permission requests, please contact the Society for Mining, Metallurgy & Exploration at the address below.

Society for Mining, Metallurgy & Exploration
8307 Shaffer Parkway
Littleton, Colorado 80127

Phone: 303-973-9550
Fax: 303-973-3845

smenet.org

Society for Mining, Metallurgy & Exploration

SME Annual Meeting and Exhibit
2008

TABLE OF CONTENTS

Integrating Hydro-Fracturing Technology and Geophysics Into 3-D Mapping and Extraction of Metals in Heap Leaching; Hydro-Jex and High Resolution Resistivity™	1
<i>T. Seal, J. B. Fink</i>	
Mining Haul Truck Cab Noise: an Evaluation of Three Acoustical Environments	6
<i>S. B. Bealko</i>	
Pogo Mine Control System: A Hybrid of DCS and PLC	12
<i>X. Chen, A. W. Pruitt</i>	
Development of a Transponder-Based Tracer System for Evaluating Dense Medium Separator Performance	18
<i>C. Barbee, C. Wood, G. Luttrell</i>	
Factors Influencing Dust Suppressant Effectiveness	24
<i>C.R. Copeland, S. K. Kawatra</i>	
Laboratory and Field Evaluation of Dust Collector Bags for Reducing Dust Exposure of Roof Bolter Operators	33
<i>J. M. Listak, T. W. Beck</i>	
Building Human Resources Through Systematically Designed Instruction	39
<i>R. E. Mcivor</i>	
An Innovative Rotary Triboelectrostatic Separator for Fly Ash Purification	44
<i>D. Tao, M. Fan, X. Jiang</i>	
Analysis of Seismic Signatures from Gas and Dust Based Explosions at the Lake Lynn Experimental Mine	49
<i>M. M. Murphy, A. T. Iannacchione, E. C. Westman, M. C. Chapman</i>	
Reservoir Modeling-Based Prediction and Optimization of Ventilation Requirements During Development Mining in Underground Coal Mines	56
<i>C. Ö. Karacan, S. J. Schatzel</i>	
Optimisation of Single-Layer Cover Made of Desulphurized Tailings : Application to the Doyon Mine Tailings Impoundment	61
<i>I. Demers, B. Bussière, M. Benzaazoua, M. Mbonimpa, A. Blier</i>	
Field Testing of the High Resolution Target Movement Monitor for Convergence Monitoring at an Underground Mine	74
<i>T. H. Jones, D. B. Apel, S. E. Watkins, R. H. Moss</i>	
Summary of Niosh Research Completed on Dust Control Methods for Surface and Underground Drilling	79
<i>W. R. Reed, J. M. Listak, S. J. Page, J. A. Organiscak</i>	
A New Diatomite Resource in Egypt	88
<i>M. I. Al-Wakeel</i>	
Refractory Copper Ore from Nchanga, Zambia: A Materials Characterization Study	100
<i>O. N. Sikazwe, A. M. Hagni, R. D. Hagni</i>	

The Bond Standard for Comminution Efficiency.....	108
<i>C. A. Rowland, Jr., R. E. Mcivor</i>	
Overview of Coal Mine Ground Control Issues in the Illinois Basin	110
<i>G. M. Molinda, C. Mark, D. M. Pappas, T. M. Klemetti</i>	
A Snapshot of Noise and Worker Exposures in Sand & Gravel Operations	117
<i>E.R. Bauer, E.R. Spencer</i>	
Geotechnical Program at Bridger Coal Company	126
<i>H. Maleki, C. Pollastro</i>	
Long-Term Changes in Selected Spoil Characteristics on Reforested Surface-Mined Land	131
<i>P. Conrad, R. Sweigard, V. Badaker, K. Hunt, D. Graves, C. Barton</i>	
Mill Feed: by 8 m Ore Block Assay, or by 8 cm Rock Sensing? Sorting Technology Can Fill The Gap Between Mine And Mill.....	139
<i>G. Van Weert, M. Kowalczyk</i>	
Linear Behavior of Rock Joints in Uniaxial Joint Compression Tests.....	144
<i>D. Nutakor, J. Daemen</i>	
The Expansion of Tarkwa Cil Plant from 4.2mtpa to 12mtpa	150
<i>E. Barnard, S. De Kock</i>	
The Debate Over the Impact of Mining on the Environment and Sustainability in the Local Community.....	155
<i>G. A. Campbell, C. L. Walck</i>	
Paste Thickening of Fine Coal Refuse.....	161
<i>S. Slottee, J. Johnson</i>	
Improving Energy Efficiency in Copper Heap Leaching with the Use of Binders	164
<i>K. A. Lewandowski, S. K. Kawatra</i>	
The Effect of Particle Shape on the Filtration Rate in an Industrial Iron Ore Processing Plant.....	171
<i>J. J. Carlson, T. C. Eisele, S. K. Kawatra</i>	
Post-Closure Flooding of the Homestake Mine at Lead, SD	174
<i>A. D. Davis, W. M. Roggenthen, L. D. Stetler, Z. J. Hladysz, C. S. Johnson</i>	
Grindability Study of Steelmaking Slag for Size-By-Size Recovery of Free Metal.....	177
<i>Charles H Rawlins</i>	
Cyclonic Separation Mechanism of Cyclonic Static Micro-Bubble Column Flotation and Its Application.....	183
<i>X. Zhou, J. Liu, C. Zhao, X. Li, Y. Wang</i>	
Head Grade Effects on Gold Recovery	189
<i>Michael Brittan</i>	
Direct Measurement of Particle-Bubble Interaction Forces Using Atomic Force Microscopy	191
<i>S. Assemi, A. V. Nguyen, J. D. Miller</i>	
An Assessment of Engineering Noise Controls at a Talc Processing Plant	200
<i>E. R. Spencer, E. Reeves</i>	
Pumpable Roof Supports: An Evolution in Longwall Roof Support Technology.....	208
<i>T. M. Barczak, S. C. Tadolini</i>	

Hilti Powder Actuated Tool Technology and Applications in Us Underground Gassy Mines	221
<i>J. Pinkley, C. Huff, H. Whittam</i>	
Recreating a Headwater Stream System on a Head-of-Hollow Fill	228
<i>C. T. Agouridis, R. C. Warner, C. D. Barton, D. A. Bidelsbach, G. D. Jennings, R. Osborne, J. W. Merchant</i>	
Revamp and Modernization of Gearless Mill Drives	234
<i>M. Ahrens</i>	
Expansion and Modernization of an Iron Ore Pelletizing Plant in Northern Sweden	239
<i>M. Ahrens</i>	
Novel Passive Technology for Entrained Air Measurement in Pipes and Gas Holdup Measurements in Column Cells	247
<i>C. O'keefe, R. Maron, P. Rothman, J. Poplawski</i>	
Field Evaluation of the Coal Dust Explosibility Meter	253
<i>M. L. Harris, M. J. Sapko, K. L. Cashdollar, H. C. Verakis</i>	
A Model for Froth-Phase Recovery	258
<i>H. Do, I. Sherrell, R.-H. Yoon</i>	
An Application of the Topsis Method to Solve Hydraulic Excavator Selection Problem in Mining	263
<i>Mahmut Yavuz</i>	
Simulation of Spontaneous Heating in Longwall Gob Area with a Bleederless Ventilation System	266
<i>A. C. Smith, L. Yuan</i>	
Clay Binders for Enhanced Potash Mineral Beneficiation Using Froth Flotation	272
<i>D. Tao, X. Zhou, C. Zhao, M. Aron, J. Wright</i>	
Application of Passive Sonar Technology to Minerals Processing Flow Measurement Situations	277
<i>C. O'keefe, R. Maron, P. Rothman, J. Poplawski</i>	
Simulation Assisted Performance Improvements in Iron Ore Processing Plants	285
<i>S. Ersayin, W.M. Bond, J. Arola, R.S. Strukel, B. Kettunen</i>	
The Utilization of Coarse Pre-Concentration Rejects in the Preparation of Underground Backfills at Xstrata Nickel's Ontario Operations	291
<i>T. Weatherwax, A. Bamber, B. Klein, R. Pakalnis</i>	
Laboratory Investigation of Enclosed Cab Filtration System Design Parameters	298
<i>J. A. Organiscak, A. B. Cecala</i>	
Increasing Kaltim Prima Coal Overland Conveyor Speed to 8.5 mps	303
<i>Poltak Sinaga</i>	
Utilization of Belt Air to Ventilate Working Sections in Underground Coal Mines	313
<i>F. Calizaya, J. C. Tien</i>	
Mine Safety Applications of a Geographic Information System	318
<i>S.E. Phillipson</i>	
The Design, Commissioning and Operation of the Castle Valley Plant in Wellington, UT	329
<i>P. J. Bethell, M. Kelley</i>	
In-Mine Evaluation of Smart Mine Fire Sensor	332
<i>R. A. Franks, G. F. Friel, J. C. Edwards, A. C. Smith</i>	

Evaluation of a Virtual Reality Simulator Developed for Training New Miners to Install Rock Bolts Using a Jackleg Drill.....	339
<i>D. Nutakor, D. Apel, L. Grayson, M. Hilgers, R. Hall, J. Warmbrodt</i>	
Performance Monitoring of Block Cave Mines Using Signal Processing and Waveform Analysis of Gps Data.....	343
<i>D. Rutledge, M. Ness, M. Allen, J. Purcell, N. Brown, Cory Baldwin</i>	
Ore Waste Classification of a Lead Zinc Deposit Using Support Vector Machine	349
<i>S. Chatterjee, S. Bandopadhyay, D. Machuca</i>	
Analyzing and Allocating Environmental Risks in Acquisitions	357
<i>S. Hammer</i>	
Mining and Marketing Altered Volcanic Tuff at the Heart of Nature's Alum/Sulfur Mine	359
<i>J.C. Heter</i>	
Process Controlling, Understanding, and Optimization in a Solution Salt Mine Through the Data Acquisition System.....	363
<i>V. De Ruiter, R. Te Gussinklo Ohmann, T. Bakker, H. De Ruiter</i>	
Using Mine Planning and Other Techniques to Improve Ventilation in Large-Opening Mines	366
<i>R. H. Grau, Iii, R. Krog</i>	
Multi-Tool-Miner for All Rock Conditions	370
<i>W.J.Kogelmann</i>	

Author Index