THE CHANGING FACE OF MINING

CONVENTION PROGRAM & EXPO GUIDE
PROGRAMME DU CONGRÈS et GUIDE DE L’EXPO

LE VISAGE CHANGEANT DE L’INDUSTRIE MINIÈRE

CONVENTION.CIM.ORG

APRIL 28–MAY 1, 2019 | 28 AVRIL AU 1ER MAI 2019
PALAIS DES CONGRÈS DE MONTRÉAL | MONTRÉAL, QUÉBEC | CONVENTION.CIM.ORG
### AM (10:50)

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MONDAY, APRIL 29 | 10:50 - 12:30

**ROOM: 513A**

**OPTIMIZING VALUE**
INNOVATION, AUTOMATION AND DATA
Chair: Mark Richards, Teck Resources Limited

10:50 **PAPER 144**
Rocking the boat: Capturing existing value through pit-to-port optimization
Danielle Zyngier, Nooshin Nekoiemehr, and Hao Li, Hatch

11:15 **PAPER 190**
Vale's approach towards continuous mining: evaluating the application of mechanical rock cutters
Andy Charsley and Negar Saeidi, Vale; Trevor Courchesne and Samantha Espley, Vale, Technology & Innovation Centre

11:40 **PAPER 112**
The story of iROC, or how we optimized our business
Paul Bird, ArcelorMittal Mining Canada G.P.

12:05 **PAPER 52**
Deploying Smart IoT to support the performance of your digital mine
Maxime Guillaumot and Ron White, 3D-P

**ROOM: 513C**

**MANAGING INNOVATION**
INNOVATION, AUTOMATION AND DATA
Chair: Andrew Scott, Barrick Gold Corporation

10:50 **PAPER 247**
How to use new technologies to improve advanced control and advisory system?
Nicolas Lazare, XPS a Glencore Company

11:15 **PAPER 200**
But, where is the value? A mining engineer attempts to decipher technological buzzwords
Andrew Chapman, Peck Tech Consulting Ltd.

11:40 **PAPER 358**
Cyber threats to safe production
Rob Labbe and Cherie Burgett, Mining and Metals Information Sharing and Analysis Centre

12:05 **PAPER 383**
Amping up innovation to drive down the carbon intensity of surface mining fleets
Peter Wan, Teck Resources Limited
DATA DRIVEN OPTIMIZATION IN MINING
OPERATIONS: CASE STUDIES AND BEST PRACTICES
Chair: Julia Gartley, Gartley Consulting Corp.; Mike Samuels, TMAC

10:50 PAPER 46
Data-driven operations management and production optimization
Bill Tubbs, B. Tubbs & Associates Consulting; John Hedengren, Brigham Young University

11:15 PAPER 130
Defining, modeling and enabling a remote, autonomous mining operation through advanced techno-economic visioning, modeling and scanning
Kate McLaughlin, Stantec Consulting Ltd.; George Hemingway, The Stratalsis Group; Andrew Gibson, Stantec Consulting Ltd.

11:40 PAPER 20
Industry 4.0: Taking mining operations from Good to BAD? Go in with your eyes open!
Tracy Holmes, Jenike & Johanson Ltd.

12:05 PAPER 71
Case study: Accelerating business decisions and mine performance through operational data analysis at an Australian coal operation
Devon Wells and Simran Walia, Wenco International Mining Systems

MINING IN PERSPECTIVE AND LOOKING AHEAD
OPERATIONS: CASE STUDIES AND BEST PRACTICES
Chair: Peter Edmunds, Epiroc

10:50 PAPER 5
Mining Canada in time
Donna Beneteau, University of Saskatchewan

11:15 PAPER 59
The control room of the future – Technology and the workforce
Fiona Campbell, ABB AB

11:40 PAPER 175
From paper to production: A collaborative ‘full lifecycle’ model for operations
Adrian Churcher, Mining Plus; Zach Allwright, Mining Plus

12:05 PAPER 217
Operational readiness – A critical element of a successful project
Uday Shinde, Shindey Associates
**ROOM: 516A**

**SOCIAL LICENSE: FROM 101 TO COMPLEX STRATEGIES**  
PEOPLE AND COMMUNITIES  
Chair: Jenifer Hill, JLH Environmental

10:50 **PAPER 218**  
Community relations for Mining 101: Back to basics  
Sabrina Dias, SOOP Strategies Inc.

11:15 **PAPER 36**  
Lessons learned: Torex Gold's evolving CSR strategy in a complex operating environment  
Bernarda Elizalde-Andrews and Mark Thorpe, Torex Gold

11:40 **PAPER 191**  
Enhancing socio-economic sustainability of mining projects  
Krista Maydew and Brigitte Masella, Wood Environment & Infrastructure Solutions

12:05 **PAPER 261**  
Disaster sureties, risk management and the social license: A critical assessment  
Anne Johnson and Paul Semkowich, Queen's University; Laeeque Daneshamend, Robert M. Buchan Department of Mining, Queen's University

**ROOM: 516D**

**MINERAL PROPERTY VALUATION METHODS**  
FROM ROCKS TO RESOURCES  
Chair: Keith Spence, Global Mining Capital

10:50 **PAPER 427**  
Overview of mining valuation, preview of the updated Canadian Mining Valuation Standards and Guidelines (CIMVAL) and the International Valuation Standards (IMVAL)  
Keith Spence, Global Mining Capital

11:15 **PAPER 470**  
Stage Based Valuation Premia  
Peyvand Bayzae, Mining Valuation Research

11:40 **PAPER 469**  
Trends in Gold Property Transaction Values 2016-18  
William E. Roscoe, Paul Chamois and Grant Malensek, RPA Inc.

12:05 **PAPER 471**  
Mining Industry Corporate and Equity Valuations Parameters In The Next Decade  
Terence Ortslan, TSO & Associates
ROOM: 513E

HOLISTIC MINE WATER MANAGEMENT
SUSTAINABLE MINING
Chair: Resa Furey, Stantec

10:50  PAPER 157
What about too much water? Lessons learned in extreme environments
Henri Sangam, SNC-Lavalin

11:15  PAPER 198
Application of telemetric sensors in mining to holistically manage vulnerability and risk in watersheds
Gabriel Castillo, Aquatic Life Ltd.

11:40  PAPER 88
Smart sustainable and effective water management in active and closed mines
Uwe Seebacher, ANDRITZ

12:05  PAPER 329
Water and mine development, the impact and the pitfalls
Dirk Cornelis Grobler and Bea Moolman, Fluor South Africa

ROOM: 516B

EDUCATION AND RISK MANAGEMENT
HEALTH AND SAFETY
Chair: Shannon Campbell, Kameron Coal

10:50  PAPER 66
Mind the skills gap: The future of work and learning in mining
Don Duval, NORCAT

11:15  PAPER 129
Enhancing health and safety education in engineering and business schools opportunities for the mining sector
Vic Pakalnis, MIRARCO Mining Innovation; Anthony Pasteris, Minerva Canada Safety Management Education Inc.

11:40  PAPER 367
Professional certification for mine safety and health: recent international developments
Tom Hethmon, SSR Mining

12:05  PAPER 425
Unique training challenges in the Canadian mining sector
Dana Imbeault, Mining Industry Human Resources Council
IRON ORE RESOURCES
7TH NORTH AMERICAN IRON ORE SYMPOSIUM
Chairs: Serge Perreault, SOQUEM; Lyall Workman, Barr Engineering Company

10:50 PAPER 448
Les hauts et les bas des prix et de la production du minerai de fer
Serge Perreault, SOQUEM

11:15 PAPER 429
The Mesabi Iron Range: Past, present, and future
Rodney Johnson, Natural Resources Research Institute, University of Minnesota, Duluth

11:40 PAPER 311
De-commoditization of iron ore – now what?
Biswajit Chanda, Change Management and Mining Project Development

12:05 PAPER 390
Mineralogical variations within the Bloom Lake iron ore deposit
Hugues Longuépée, Champion Iron Mines

MONDAY, APRIL 29 | 14:00 - 16:05

AUTONOMOUS MINING
INNOVATION, AUTOMATION AND DATA
Chair: Glenn Johnson, Teck Resources Limited

14:00 PAPER 455
The pragmatic evaluation of AHS for Goldcorp’s Century Project
Gertjan Bekkers, Goldcorp, Mark Sawyer, Peck Tech Consulting Ltd.

14:25 PAPER 116
Toward an open standard in autonomous control system interfaces: Current issues and best practices
Devon Wells and Martin Politick, Wenco International Mining Systems

14:50 PAPER 357
Securing autonomous systems
Rob Labbe, Mining and Metals Information Sharing and Analysis Centre

15:15 PAPER 388
Functional safety + cybersecurity: A case for collaboration on safety and security
Kevin Connelly, CSA Group
ROOM: 513C

AI AND MINING
INNOVATION, AUTOMATION AND DATA
Chair: Mark O’Brien, CITIC Pacific Mining

14:00 PAPER 242
Truck payload optimization by IoT and machine learning
Matias Pinto and Ilija Miskovic, Norman B. Keevil Institute of Mining Engineering, University of British Columbia

14:25 PAPER 82
Artificial intelligence using real time data
Louis-Pierre Campeau and Michel Dubois, Newtrax

14:50 PAPER 277
Haul cycle truck productivity improvement utilizing advanced analytics
Chris Ison, Abra Gurnett, and Mohammad Babaei, Teck Resources Limited

15:15 PAPER 396
Implementing 3D ore control at Red Dog Mine
Brian Hall, Teck Alaska Red Dog Mine; Will Hunt, OreControl Blasting Consultants

15:40 PAPER 379
How a Chilean copper mine used an AI-based solution to prevent 144 hours of lost production
Shahram Tafazoli, Saeed Karimifard, Bahram Sameti, and Caitlin McKinnon, Motion Metrics International Corp.; Jose Oliva, Motion Metrics Latin America S.p.A.; Derek Cooper, Motion Metrics International Corp.

ROOM: 514B

ROCK ENGINEERING I (UNDERGROUND)
OPERATIONS: CASE STUDIES AND BEST PRACTICES
Chair: Doug Milne, University of Saskatchewan

14:00 PAPER 79
Numerical model for predicting rock bolt corrosion
Paul Lee and Ilija Miskovic, Norman B. Keevil Institute of Mining Engineering, University of British Columbia

14:25 PAPER 94
Reducing dilution at Pine Cove Mine by accounting for blast movement
Jordan Cramm and Gordana Slepcev, Anaconda Mining; Harrison Ingham, Blast Movement Technologies

14:50 PAPER 143
Installation of a thin spray-on liner ground support system at the Cote Blanche mine production shaft
John Larsen, Cementation Canada
15:15 **PAPER 326**
Blasting in soft rocks: Technical considerations and case studies in rock salt mines
Jonathan Aubertin, Morton Salt - Weeks Island Mine; D. Jean Hutchinson and Mark Diederichs, Geological Sciences and Geological Engineering, Queen's University

15:40 **PAPER 337**
Radius of influence in a potash mine
Darren Neely and Matthew Swerhone, Nutrien

**ROOM: 515A**

**PROCESSING**
OPERATIONS: CASE STUDIES AND BEST PRACTICES
Chair: Stefanie Vo, Hatch

14:00 **PAPER 16**
Online gold analysis using X-ray fluorescence
Erfan Sharifi, Outotec (Canada) Ltd.; Juha Timperi, Tommi Koskinen, and Antti Pelli, Outotec Finland Oy

14:25 **PAPER 19**
Start up, commissioning and optimization of the gravity circuit at Atlantic Gold's Moose River Project in eastern Canada
Alex Frey, Sepro Mineral Systems Corp.; Craig Hudson and Daniel Tremblay, Atlantic Gold Corporation

14:50 **PAPER 195**
Kibali Gold Mine ultrafine grinding circuit: Case study from commissioning to optimized operation
Thamsanqa Mahlangu, Randgold Resources, Kibali Gold Mine; Craig Brickhill, FLSmidth (Pty) Ltd.; Guy Ngombe Kalenga, Kibali Gold Mines; Byron Sirchia, FLSmidth South Africa, Process Department; Beddy Mukonkole Sindani, Patrick Mande, and Gustav Du Toit, Kibali Gold Mine

15:15 **PAPER 101**
Control of declassified particles in classification and their impact on the business
Debra Switzer and Eduardo Cepeda, Weir Minerals; Mark Schmidt, Weir Minerals Canada

15:40 **PAPER 208**
The amenability of the Jameson Cell for pre-rougher applications in base metals
Cesar Gomez, Rodrigo Araya and Virginia Lawson, Glencore Technology
ROOM: 516A

CANADIAN MINING EDUCATION FORUM: INTEGRATING SOCIAL RESPONSIBILITY
PEOPLE AND COMMUNITIES
Chair: Anne Johnson, Queen’s University

14:00 – 16:05
PANEL DISCUSSION ON SUSTAINABILITY EDUCATION
Speakers:
- Markus Timusk (Laurentian University)
- Hani Mitri (McGill University)
- Laeeque Daneshmend (Queen’s University)
- Scott Dunbar (University of British Columbia)

Followed by a panel discussion

ROOM: 516D

RISK MANAGEMENT FOR PRACTITIONERS
FROM ROCKS TO RESOURCES
Chair: Nathan Stubina, Sherritt International

14:00 Introduction and overview; reporting requirements
Nathan Stubina

14:25 PAPER 293
Resolving the impasse between operational risk and investor risk
Douglas Morrison, Centre for Excellence in Mining Innovation (CEMI)

14:50 PAPER 238
Integrating social factors into asset valuations
Carolyn Burns, NetPositive

15:15 PAPER 380
Red flags: A hit list of significant impact risks in mineral project evaluations
Lawrence Devon Smith, Lawrence Devon Smith & Associates

15:40 PAPER 384
Evaluating mining projects using Monte Carlo Simulation
Nathan Stubina, Sherritt International

ROOM: 513E

A FRESH TAKE ON MAXIMIZING VALUE
SUSTAINABLE MINING
Chair: Karen Chovan, Enviro Integration Strategies

14:00 PAPER 115
Changing the game: An environmentally, socially, and market sustainable approach to potash mining
Paul Neufeld, Gensource Potash Corporation
14:25 PAPER 221
Mining value from waste: Building a pan-Canadian effort
Bryan Tisch and Janice Zinck, Natural Resources Canada

14:50 PAPER 15
Maximizing Value and Minimizing Waste Through Ore Sorting
Brent Hilscher, DRA

15:15 PAPER 202
Developing a process to recover rare earth elements and scandium from coal fly ash
Rory Cameron, Yves Thibault, Rolando Lastra, Alain Bilodeau, and Jean-Michel Bondy, CanmetMining

15:40 PAPER 142
Recovery of residual silver bearing minerals from low grade tailings by froth flotation: The case of Zgounder Mine, Morocco
Drif Boujemaa, Laboratoire de Chimie des Matériaux et de l'Environnement, Université Cadi Ayyad

ROOM: 516B

J.T. RYAN AWARD WINNERS 2017
HEALTH AND SAFETY
Chair: Michael Winship, International Business Advisor

14:00-16:05
Presenters:

DeBeers Canada, Victor Mine
"Reinforcing and supporting Victor Mine Safety Culture during a time of dramatic change"
Karen Osadchuk, Health and Safety Manager DeBeers Canada Group

Mosaic Potash Esterhazy
"Mosaic’s Safety Journey"
Neil Hungle, P.Eng, Environmental, Health, Safety & Security Sr Manager, Mosaic Potash Esterhazy

Goldcorp, Eleonore Mine
"Integrating Innovation to the Safety Culture"
Suzanne Larouche, Directrice santé-sécurité-environnement, Goldcorp Inc.

Vale, Voisey’s Bay Mine
"Voisey’s Bay - Our journey toward Zero harm"
Ian Coles, Manager, Maintenance, Vale Labrador Operations

Westmoreland Coal – Genesee Mine
Wesley Meyerink, CRSP
Safety Manager, Westmoreland Mining Holdings LLC. - Genesee Mine
PROJECTS OVERVIEW
7TH NORTH AMERICAN IRON ORE SYMPOSIUM
Chairs: Guy Saucier, Consultant; George Hudak III, University of Minnesota

14:00 PAPER 449
Integrated operations – Leveraging value from mine to market
Chantal Lavoie, Iron Ore Company of Canada

14:25 PAPER 391
Bloom Lake restart: Capitalizing on opportunities
Alexandre Belleau, Minerai de Fer Québec

14:50 PAPER 366
Les technologies au service du chemin de fer
José Riopel, Rio Tinto IOC

15:15 PAPER 410
Lessons learned along three decades of iron ore projects
Angel Pelegry Cuesta and Alejandro Lopez Ferrer, Duro Felguera

15:40 PAPER 405
BlackRock Metals: A future vanadium and high quality pig iron producer
Jean Rainville, BlackRock Metals

16:05 PAPER 313
Valuation of iron ore with vanadium but low titanium
Pierre-Jean Lafleur, PJ Lafleur Geo-Conseil Inc.

#CIMTL19

Keep up-to-date
Consult our Technical Program LIVE Schedule
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TUESDAY, APRIL 30 | 08:30 - 10:30

ROOM: 710

KEYNOTE TUESDAY | CONFÉRENCIERS D'HONNEUR DU MARDI

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Resources Matter!
Resource management, whether natural, human or financial, is at the heart of sustainability and top-of-mind in the changing mining world. Tuesday’s general keynote speakers are striking chords at every level. Diversity, inclusion, innovation, technology and sustainability are top triggers in planning for the next generation and the future of mining. Two industry leaders will have the audience “digging deeper” to marry social and environmental values with industry practices. Kick off your morning with fresh and thought-provoking solutions to today’s resource industry challenges and opportunities.

Crushing the Consumption Conundrum
Janice Zinck
Director, Green Mining Innovation, base/precious metals, rare earths, chromite CANMET, Natural Resources Canada CIM President 2018-2019.

Harness diversity dividend and mitigate diversity debt: the business case for diversity in mining
Cathy Gallagher-Louisy
Senior Director, Consulting and Partnerships Canadian Centre for Diversity and Inclusion
ROOM: 513A

UNDERGROUND INNOVATION, AUTOMATION AND DATA
Chair: George Darling, Sandstorm Gold

10:50 PAPER 117
Improving scenario analysis capabilities at Agnico Eagle
Pierre Matte, Agnico Eagle

11:15 PAPER 121
Underground truck dispatching using real-time data analytics
Sihong Peng and Greg Yuriy, Vale

11:40 PAPER 375
Raglan ConnectedMine project – Change management through 72 easy steps
Kenny Cheong, Glencore - Mine Raglan

12:05 PAPER 33
Kidd operations: Challenges and advantages of Wi-Fi at the face
Ryan Roberts and Kyle Buckoll, Kidd Operations, A Glencore Company

ROOM: 513C

GEOLOGY AND TECHNOLOGY
INNOVATION, AUTOMATION AND DATA
Chair: Michelle Levesque, CanmetMINING

10:50 PAPER 273
Geological modelling using a recursive convolutional neural networks approach
Sebastian Avalos and Julian Ortiz, The Robert M. Buchan Department of Mining, Queen's University

11:15 PAPER 393
Why geometallurgy matters to Teck
Anelda Van Staden, Teck

11:40 PAPER 137
Improving multivariate geostatistical modelling with data transformations
Maria Bolgkoranou, and Julian Ortiz, The Robert M. Buchan Department of Mining, Queen’s University

12:05 PAPER 240
A portable LIBS analyzer for in-situ measurement of low gold grade in ore
Paul Bouchard, Christian Padioleau, Francis Boismenu, André Beauchesne, Mohamad Sabsabi, and Alain Blouin, National Research Council Canada
**ROOM: 514B**

**ROCK ENGINEERING II (SURFACE)**  
OPERATIONS: CASE STUDIES AND BEST PRACTICES  
Chair: Ferri Hassani, McGill University

**10:50 PAPER 1**  
Design and operating practices of the waste rock stockpile: Part I – optimization and safe operation guidance  
Colin Hardie and Vahid Marefat, BBA

**11:15 PAPER 2**  
Design and operating practices of the waste rock stockpile: Part II – risk assessment  
Antonio Vides, Colin Hardie and Luciano Piciacchia, BBA

**11:40 PAPER 300**  
Mining beneath arctic lakes – The journey from development to commercial production of the A21 kimberlite pipe at Diavik Diamond Mine  

**12:05 PAPER 302**  
Providing practical geotechnical and geomatics solutions for small mine operators – Slope failure and successful remediation at the Enchanted Designs ammolite mine in Alberta  
Lucy Philip and Alex Amies, Stantec; Tom Chant and Connor Emigh, Enchanted Designs Ltd.

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**ROOM: 515A**

**WATER TREATMENT TECHNOLOGIES**  
OPERATIONS: CASE STUDIES AND BEST PRACTICES  
Chair: Luciano Piciacchia, BBA

**10:50 PAPER 122**  
Application of SAGR bioreactors for ammonia treatment in mining effluents  
Tanner Devlin and Francis Bordeleau, Nexom

**11:15 PAPER 168**  
Evaluation of different membrane separation processes for treatment of acid mine drainage and mine effluents  
Saviz Mortazavi, Natural Resources Canada, CanmetMINING; Sanaz Mosadeghsedghi and Lucie Morin, Natural Resources Canada

**11:40 PAPER 255**  
In-situ application of batch treatment for water management at closed mine sites  
Sarah Barabash and Ron Nicholson, EcoMetrix Incorporated; Mike Aziz, Goldcorp Inc.; Tyler Provencal, Goldcorp - Porcupine Gold Mines
12:05 PAPER 309
Bioelectrochemical systems for metal removal and recovery from mining effluents: Technology overview and a case study
Boris Tartakovsky, Dominic Manno, and Louis-B. Jugnia, National Research Council Canada

ROOM: 516A

TRAINING FOR NOW & FUTURE
PEOPLE AND COMMUNITIES
Chair: Holly Gardner, Ontario Centres of Excellence

10:50 PAPER 27
Preparing front-line supervisors for success: Getting them up to speed and off to a great start
Joseph White, AEU LEAD

11:15 PAPER 38
Managing operational conflicts under uncertainty
Biswa Chanda, Change Management and Mining Project Development

11:40 PAPER 266
Mining through the digital divide
Sharon Marshall, Cree8iv Collaboration

12:05 PAPER 275
Continuous soft skill development in the mining industry
Theresa Nyabeze, Women In Science and Engineering; Samantha Espley, Vale, Technology & Innovation Centre; Miranda Rocca-Circelli, Creative eLearning Design

ROOM: 516D

DESIGNING SUSTAINABLE PROSPERITY
FROM ROCKS TO RESOURCES
Chair: Doris Hiam-Galvez, Hatch

10:50 PAPER 234
Designing sustainable prosperity
Doris Hiam-Galvez, Hatch

11:10 PAPER 401
Building technology ecosystems
Helge Seetzen, TandemLaunch

11:30 PAPER 402
Rio Tinto: A catalyst for regional development
Alexandra Guaqueta, Rio Tinto

Followed by a panel discussion
### BEST PRACTICES & STANDARDS IN CLOSURE

**SUSTAINABLE MINING**  
Chair: Gabriel Castillo, Aquatic Life Ltd.

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<tr>
<th>Time</th>
<th>Paper</th>
<th>Title</th>
<th>Authors</th>
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<tr>
<td>10:50</td>
<td>PAPER 100</td>
<td>Adoption of mining standards: An ounce of prevention is worth a tonne of regulatory pain</td>
<td>Richard Butler and Victoria Chai, Willms &amp; Shier Environmental Lawyers LLP</td>
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<td>11:15</td>
<td>PAPER 209</td>
<td>Mining standards roadmap for the Canadian mining sector</td>
<td>Paul Steenhof, CSA Group</td>
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<td>11:40</td>
<td>PAPER 356</td>
<td>Progressive mine closure – Define this sustainable development practice for your mine rock storage facilities</td>
<td>Michael O’Kane and Phil Garneau, O’Kane Consultants</td>
</tr>
<tr>
<td>12:05</td>
<td>PAPER 318</td>
<td>Remediation of legacy uranium mines in northern Saskatchewan</td>
<td>Patty Ogilvie-Evans, Saskatchewan Research Council</td>
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### OCCUPATIONAL HEALTH

**HEALTH AND SAFETY**  
Chair: Guillaume Lachapelle, Agnico Eagle Mines

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<th>Time</th>
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<tr>
<td>10:50</td>
<td>PAPER 315</td>
<td>Laboratory evaluation of diesel oxidation catalysts for NO2 formation potential in mining applications</td>
<td>Brent Rubeli, Natural Resources Canada</td>
</tr>
<tr>
<td>11:15</td>
<td>PAPER 389</td>
<td>Embracing ergonomics in mining: A look back and forward at the positive impact ergonomics has and can have on health, safety, and productivity</td>
<td>Tammy Eger, Centre for Research in Occupational Safety and Health, Laurentian University</td>
</tr>
<tr>
<td>11:40</td>
<td>PAPER 343</td>
<td>Managing occupational hygiene hazards across multiple sites</td>
<td>Bryan Wilson, Golder Associates Ltd.</td>
</tr>
<tr>
<td>12:05</td>
<td>PAPER 408</td>
<td>How does adopting Industry 4.0 automation strengthen mining’s health and safety record?</td>
<td>Winnie Chu, Nanozen Industries Inc.</td>
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</table>
MINING OPERATIONS
7TH NORTH AMERICAN IRON ORE SYMPOSIUM
Chairs: Daniel Gagnon, DRA Americas; Dennis Murr, Barr Engineering Company

10:50 PAPER 363
Cost sensitivity analysis of operating cost versus production tonnages in mining and milling
Ryan Cunningham and Nalini Singh, DRA Met-Chem

11:15 PAPER 236
Blast fragmentation impact on crushing & grinding energy consumption
Lyall Workman, Barr Engineering Company; Jack Eloranta, Eloranta & Associates; Boyd Eisenbraun and Dennis Murr, Barr Engineering Company

11:40 PAPER 54
Implementation of new technologies to control the iron ore grades at Peña Colorada Mine
Christian Calderon-Arteaga, Hexagon Mining; Jose Portugal, Peña Colorada Mine; Maria Rocha, Rocha Blast Engineers SL; Hector Hernandez and Mariel Marin, Peña Colorada Mine

12:05 PAPER 381
KPI Tree – A tool for empowerment of managers
Arnab De, Resurgent Montreal Inc.

INTEROPERABILITY AND INTEGRATION
14:00 PAPER 362
Rubber tired trains – Digital future mass transport in mining
Christoph Mueller, MineTronics GmbH

14:25 PAPER 55
Data-driven autonomous haulage systems simulation
Hooman Askari, University of Alberta; Mohammad Tabesh, Teck Resources Limited; Shiv Prakash Upadhyay, Canadian Natural Resources Limited; Mohammad Mahdi Badiozamani, University of Alberta

14:50 PAPER 283
Interoperability of mining systems – An Industry 4.0 approach
Christopher Doran, Mitacom Pty Ltd.
How can resource companies use spatial business intelligence to unlock data interoperability to improve productivity, speed up growth and lead Industry 4.0
Nevin Thompson, Charles Lavigne, and Kevin Oke, LlamaZOO Interactive Inc.

Gains in mucking efficiency by using short interval control at Hudbay 777 Mine
Mike Jankowski, Hudbay Minerals; Ken Schroeder, Epiroc; Asim Khan, Analyze and Improve

SMART MINERAL VALUE CHAINS
INNOVATION, AUTOMATION AND DATA
Chair: Roussos Dimitrakopoulos, McGill University

Smart optimization of mining complexes: Developing dynamic models for long- and short-term plans
Fernanda Del Castillo, Ashish Kumar, and Roussos Dimitrakopoulos, McGill University

Behind the mining productivity upswing: Technology-enabled transformation
Jeremy Marston, McKinsey & Company

Optimization of capacities under supply uncertainty
Iain Farmer, Osisko Gold Royalties

Mine planning optimization under uncertainty: Implementation in a multipit gold operation
Luis Montiel Petro, Promine

Incorporating geological and equipment performance uncertainty when optimizing short-term mine production schedules
Matthew Quigley, Osisko Gold Royalties

#CIMTL19
ROOM: 514B

OPERATIONAL AND PROJECT UPDATES
OPERATIONS: CASE STUDIES AND BEST PRACTICES
Chair: Adam Hesse, Ausenco

14:00 PAPER 278
Hecla Greens Creek filtered tailings disposal
Aaron Marsh, Hecla Greens Creek Mining Company; Mary-Jane Piggott, Klohn Crippen Berger Ltd.; Sturgis George, Hecla Mining Company; Margaret Smith, Klohn Crippen Berger Ltd.

14:25 PAPER 361
The Clean AER Project – An environmental and project execution success story
Patrick Sikka and Benjamin Rankin, SNC-Lavalin

14:50 PAPER 186
Fire Lake Mine: Expanding from 7 to 16.8 mtpa using an operation integrated approach in project execution
Marc-Olivier Vachon, ArcelorMittal; Félix Gravel Gaumond, ArcelorMittal Exploitation minière Canada

15:15 PAPER 248
Operational and technical update on Goldcorp – Éléonore Mine
Luc St-Arnaud, Goldcorp - Éléonore

15:40 PAPER 339
Glencore Mine Raglan Phase 2 : Génèse de la phase 2, après 20 ans d'activités, 25 autres années exemplaires en vue
Jean-Francois Verret, Glencore Raglan Mine

ROOM: 515A

SOME ASPECTS OF MORE EFFECTIVE AND SAFER MINING
OPERATIONS: CASE STUDIES AND BEST PRACTICES
Chair: Peter Edmunds, Epiroc

14:00 PAPER 77
Artificial intelligence applied to the control of the underground mining dilution
Luis Montiel Petro, Promine; Kilian Bao, DT Solutions Services; Yvan Dionne, Promine

14:25 PAPER 53
Cut-off grade – The impact of getting it right!
Gary Poxleitner and Joe Rowland, SRK Consulting

14:50 PAPER 85
Hydrostatic pressure resisting steel liners for mine shaft rehabilitation projects
Suresh Sivanantham, Cementation Canada Inc.
15:15  **PAPER 67**  
SIC – As Safe Informed Crews vs Short Interval Control  
Sean McCarthy and Neha Singh, PACE – Partners in Achieving Change Excellence

15:40  **PAPER 303**  
Mapping the way to Zero-Emission-Vehicle (ZEV) implementation  
Travis Battley, Andre Barriault Franck Boudreault and Anders Lindkvist, Epiroc

**ROOM: 516A**

**ADVANCING DIVERSITY & INCLUSION**  
**PEOPLE AND COMMUNITIES**  
Chair: Mohammed Ali, Kirkland Lake Gold

14:00  **PAPER 351**  
Striving to attain a diverse and inclusive workforce  
Tammy Van Lambalgen, Orano Canada Inc.

14:25  **PAPER 376**  
Perceptions in the Canadian mining industry  
Jocelyn Peltier-Huntley, University of Saskatchewan

14:50  **PAPER 91**  
Enhancing mining operations by embracing diversity & inclusion  
Laura Methot and Jamile Cruz, I&D 101; Jocelyn Peltier-Huntley, University of Saskatchewan

15:15  **PAPER 140**  
Opening new doors – IMII’s Diversity & Inclusion Challenge Program and Projects  
Al Shpyth, IMII

15:40  **PAPER 244**  
Culture shifts required for success: Breaking silos, inclusivity & collaboration  
Karen Chovan, Enviro Integration Strategies

**ROOM: 516D**

**DESIGNING SUSTAINABLE PROSPERITY CONTINUE**  
**FROM ROCKS TO RESOURCES**  
Chair: Doris Hiam-Galvez, Hatch

14:00  **PAPER 399**  
Challenges in education for sustainable mining  
Michel Jébrak, Université du Québec à Montréal

14:20  **PAPER 403**  
Serving tomorrow’s economy by valuing today’s natural resources  
Éric Desaulniers, Nouveau Monde Graphite
14:40  PAPER 251  
Leveraging impact investing tools to support community economic development in mining  
Ka-Hay Law, Lundin Foundation

15:00  PAPER 395  
Developing integrated natural resource models  
John Thompson, PetraScience Consultants

Followed by a panel discussion

ROOM: 513E  
TAILINGS MANAGEMENT  
SUSTAINABLE MINING  
Chair: Alistair Kent, Merit Consultants International

14:00  PAPER 323  
Expanding tailings stewardship to include towards sustainable mining verification  
Jason Cumbers, Stantec

14:25  PAPER 330  
Public guidelines and tailings dam stewardship  
David Bleiker, Wood Environment & Infrastructure Solutions

14:50  PAPER 147  
Tailings management – Strategy and site selection process in the context of an urban mine, the example of Horne-5 Mine Feasibility Level Design  
Mayana Kissiova, Osisko Gold Royalties, Hélène Cartier, Falco Resources Ltd.

15:15  PAPER 297  
Designing waste rock inclusions to improve the global behavior of tailings impoundments  
Michel Aubertin, Polytechnique Montréal

15:40  PAPER 132  
PASS: A new technology solution for oil sands tailings management  
Dipo Omotoso, Suncor Energy Inc.

ROOM: 516B  
STRATEGIC RISK MANAGEMENT  
HEALTH AND SAFETY  
Chair: Roy Slack, Cementation Americas

14:00  PAPER 411  
Anglo American's taskforce for the elimination of fatalities  
Brian Maynard, Anglo American
14:25 PAPER 224
Application of digital risk management technology in safety critical control management
Michael Hartley, Minetell; Sean Dessureault, MST Global; Glenn Lyle, MIRARCO

14:50 PAPER 58
Challenges and success factors when deploying tablet and IoT based fleet management systems and digital forms
Sean Dessureault, MST Global

15:15 PAPER 295
Implementation of a critical controls management program – A mining contractor’s journey
Steve Wrixon, Cementation Canada Inc.

15:40 PAPER 84
Safe choice: Understanding how human performance impacts decision making
Jason Weibel and Larry Belik, Imperial Oil

**ROOM: 516C**

**CONCENTRATION & PELLETIZING 1**

**7TH NORTH AMERICAN IRON ORE SYMPOSIUM**

Chair: Maxime Couillard, BBA; Nick Sosalla, Barr Engineering

14:00 PAPER 282
Recent developments in spiral testing facilities for iron particles recovery
Simon Goudreau and Marilène Renaud, COREM

14:25 PAPER 108
Balling circuit modifications to improve pellet sizing
Erik Lacksonen, US Steel

14:50 PAPER 119
The use of a simulator to improve the performance of an iron ore gravity concentration circuit
Maryam Sadeghi and Claude Bazin, Université Laval

15:15 PAPER 177
High-efficiency flotation collectors for magnetite ores
Peter Zhou, Nouryon; Shashi Rao, University of Minnesota–Natural Resources Research Institute; Joseph Zachwieja, Jan-Olof Gustafsson, and Henrik Nordberg, Nouryon

15:40 PAPER 387
Bloom Lake flowsheet assessment, one year into operations
François Lavoie, Quebec Iron Ore
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<td>AM1 (08:30)</td>
<td><strong>Innovation, Automation and Data</strong></td>
<td>Mineral Processing 1</td>
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<td>Advances in Drilling</td>
<td>513C</td>
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<td><strong>Operations: Case Studies and Best Practices</strong></td>
<td>Underground - Access, Recovery and Haulage</td>
<td>514B</td>
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<td>Maintenance and Reliability</td>
<td>515A</td>
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<td><strong>People and Communities</strong></td>
<td>Innovation in Social Responsibility</td>
<td>516A</td>
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<td><strong>Sustainable Mining</strong></td>
<td>Adapting with Climate Change: A Panel Discussion</td>
<td>513E</td>
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<td><strong>From Rocks to Resources</strong></td>
<td>Mineral Exploration Best Practices</td>
<td>516D</td>
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<td><strong>Health and Safety</strong></td>
<td>New Trends in Employee Care</td>
<td>516B</td>
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<td><strong>7th North American Iron Ore Symposium</strong></td>
<td>Perspectives: Moving Forward</td>
<td>516C</td>
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<td>AM2 (10:30)</td>
<td><strong>Innovation, Automation and Data</strong></td>
<td>Mineral Processing 2</td>
<td>513A</td>
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<td>Water, Tailings and Technology</td>
<td>513C</td>
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<td><strong>Operations: Case Studies and Best Practices</strong></td>
<td>Rock Engineering III</td>
<td>514B</td>
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<td>Surface Mining</td>
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<td><strong>People and Communities</strong></td>
<td>Economic Opportunities Beyond the Mine</td>
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<td><strong>Sustainable Mining</strong></td>
<td>Renewable Energy Integration</td>
<td>513E</td>
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<td><strong>From Rocks to Resources</strong></td>
<td>CIM's Draft Guidance for Environmental and Social Disclosure under NI-43-101 Reporting</td>
<td>516D</td>
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<td><strong>Health and Safety</strong></td>
<td>Employing New Technology</td>
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<td><strong>7th North American Iron Ore Symposium</strong></td>
<td>Environment and Water Management</td>
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<td>PM (14:00)</td>
<td><strong>Operations: Case Studies and Best Practices</strong></td>
<td>Mine Electrification</td>
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<td>Maintenance Management Best Practices</td>
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<td><strong>People and Communities</strong></td>
<td>ESRS: Stakeholder Dialogue</td>
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<td><strong>Sustainable Mining</strong></td>
<td>Nature's Resilience &amp; Footprint Reductions</td>
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<td><strong>From Rocks to Resources</strong></td>
<td>Sustainable Innovations in Energy Metals</td>
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<td><strong>Health and Safety</strong></td>
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<td><strong>7th North American Iron Ore Symposium</strong></td>
<td>Concentration &amp; Pelletizing 2</td>
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**WEDNESDAY, MAY 1 | 08:30 - 10:10**

**ROOM: 513A**

**MINERAL PROCESSING 1**
INNOVATION, AUTOMATION AND DATA
Chair: Rob Stephens, Teck Metals Ltd.

08:30  **PAPER 106**
Mineral quantification by laser-induced breakdown spectroscopy: towards on-stream mineral characterization
Francis Vanier, Elton Soares de Lima Filho, Josette El Haddad, Aïssa Harhira, Christian Padioleau, and Mohamed Sabsabi, National Research Council Canada; Greg Wilkie, CRC ORE; Alain Blouin, National Research Council Canada

08:55  **PAPER 288**
Online conveyor belt moisture analyzer at Barrick Cortez
Pamela Moyo and Ceren Bozbay, Barrick Cortez

09:20  **PAPER 151**
Evaluating uncertainty of laboratory-scale particle sorting amenability tests
Christopher Baxter, Andriy Plugatyr, Francis Vanier, and Sevan Bedrossian, National Research Council Canada

09:45  **PAPER 245**
Selection and implementation of a modern model predictive controller for furnace slag composition control
Philip Nelson and Napoleon Reata, XPS Expert Process Solutions, A Glencore Company

**ROOM: 513C**

**ADVANCES IN DRILLING**
INNOVATION, AUTOMATION AND DATA
Chair: Jonathan Peck, Peck Tech Consulting Ltd.

08:30  **PAPER 44**
Automation in blasthole drills: Enabling optimization
Tyler Berens, Epiroc Drilling Solutions

08:55  **PAPER 152**
Optimizing while drilling – Autonomous control of drilling parameters
Peter Johansson and Tim Peco, LKAB Wassara AB
09:20 PAPER 160
Results from advanced measurements while drilling technologies on blasthole drill at a Canadian iron ore mine

09:45 PAPER 183
Improvements to fracture detection from monitoring while drilling data
Curtis Watson, Peck Tech Consulting Ltd.

ROOM: 514B
UNDERGROUND – ACCESS, RECOVERY AND HAULAGE
OPERATIONS: CASE STUDIES AND BEST PRACTICES
Chair: Peter Cain, DMT Geosciences Limited

08:30 PAPER 158
Pillar recovery at Excellon Resource's Platosa Mine
Samuel Freitag, Denis Flood, and Francisco Rodriguez, Excellon Resources Inc. (TSX:EXN; OTC:EXLLF)

08:55 PAPER 197
Soft ground tunnelling techniques for mine access development
Joe Anderson and Ben Ablett, Golder Associates; Ed Gillard, Alan Auld Engineering; Jack Nolan and Gabino Preciado, Golder Associates

09:20 PAPER 135
Optimizing underground mining transport in Sweden with three vehicles capacity alternatives: A discrete-event simulation based approach
Mathieu Gosselin, Gosselin Mining

09:45 PAPER 30
Optimized payloads and increased trucking factors with volume scanning
Carey West, Loadscan

ROOM: 515A
MAINTENANCE AND RELIABILITY
OPERATIONS: CASE STUDIES AND BEST PRACTICES
Chair: Jean Vavrek, American Biltrite

08:30 PAPER 34
Kidd Operations: Automation LHD journey and its effects on scheduling, design & operation
Ryan Roberts, Kidd Operations, A Glencore Company
08:55 | PAPER 145
FLSmidth – Cage brake system for use on steel guides – Development update
David Strong, FLSmidth Ltd. Mine Shaft Systems

09:20 | PAPER 192
Reduced cycle times with electro-mechanical skip dump mechanism
Mark Dunseith, FLSmidth Ltd Mine Shaft Systems

09:45 | PAPER 454
Leak prevention: Benefits, current technologies and state of the industry
Jeff Fuller, ACR Fuller Group

ROOM: 516A

INNOVATION IN SOCIAL RESPONSIBILITY
PEOPLE AND COMMUNITIES
Chair: Simon Thibault, Nemaska Lithium Inc.

08:30 | PAPER 205
Cree Nation of Nemaska’s community dialogue and planning project
Carolyn Burns, NetPositive

08:55 | PAPER 292
Boréalis: Developing purpose-built software to help mining companies comply with TSM protocols
Patrick Grégoire, Boréalis

09:20 | PAPER 48
Improving stakeholder partnerships with the help of 3D visual tools
Janeth Pizarro, Stantec

09:45 | PAPER 113
Recent innovations to maximize Cree employment in Eeyou Istchee James Bay Region, QC
Chantal Francoeur, Nemaska Lithium

ROOM: 516D

MINERAL EXPLORATION BEST PRACTICES
FROM ROCKS TO RESOURCES
Chair: Serge Perreault, SOQUEM

08:30 | PAPER 176
A case study on the use of geostatistical simulation to support drill hole spacing decisions
Felipe Cabral Pinto and Clayton V. Deutsch, Centre for Computational Geostatistics, University of Alberta
08:55 PAPER 95
Recent advances and integration of automated mineralogy for ore characterization
Tassos Grammatikopoulos, SGS Canada

09:20 PAPER 232
New era in regional geological mapping: Multispectral satellites and advanced data processing
Ludovic Bigot, Michel Rheault, and Ludovic Legros, Effigis Geo-Solutions

09:45 PAPER 188
Reno Pressacco, RPA Inc.

ROOM: 513E
ADAPTING WITH CLIMATE CHANGE: A PANEL DISCUSSION
SUSTAINABLE MINING
Chair: John Stewart, Natural Resources Canada

08:30 PAPER 215
Mining Climate Change Case Studies and Planning for a Changing Climate
Rachel Wyles and Sean Capstick, Golder Associates

08:40 PAPER 359
Small modular reactors: Powering the future of mining
Diane Cameron, Natural Resources Canada

Panel discussion with invited speakers

ROOM: 516B
NEW TRENDS IN EMPLOYEE CARE
HEALTH AND SAFETY
Chair: Tammy Eger, Centre for Research in Occupational Safety and Health, Laurentian University

08:30 PAPER 26
Improving safety at work for everyone: Me too mining association
Susan Lomas, Lions Gate Geological Consulting and Me Too Mining Association

08:55 PAPER 340
The mental health and wellbeing of mining workers: Results and insights from Vale/USW's Mining Mental Health Study (2014-2019)
Michel Larivière, Laurentian University

09:20 PAPER 369
Mental health: The importance of effective management in the workplace
Don Langlois, DMC Mining Services, KGHM Group
09:45  PAPER 51
Zero harm: Critical insights for a safer contactor workplace
Meg Shannon, Global Public Affairs; Anne-Sophie Tetréault, Cognibox

ROOM: 516C
PERSPECTIVES: MOVING FORWARD
7TH NORTH AMERICAN IRON ORE SYMPOSIUM
Chair: Daniel Gagnon, DRA Americas

08:30-10:10
Panelists:
• Armand Mackenzie - Tata Steel Minerals Canada
• David Cataford - Champion Iron Mines
• Tayfun Eldem - Alderon Iron Ore Corp.
• Clayton Walker – Iron Ore Company of Canada

Followed by a panel discussion

WEDNESDAY, MAY 1 | 10:30 - 12:10

ROOM: 513A
MINERAL PROCESSING 2
INNOVATION, AUTOMATION AND DATA
Chair: Neha Singh, PACE-Partners in Achieving Change Excellence

10:30  PAPER 267
Wear monitoring in lined mine equipment
Silvio Kruger, Zhigang Sun, Jimmy Jiang, Sevan Bedrossian, National Research Council Canada

10:55  PAPER 268
The use of a dynamic simulation models in process plant design
Juliana Parreira, Ausenco

11:20  PAPER 258
Uncertainty assessment in an arbitrary volume without the use of geostatistical simulation
Alvaro Riquelme and Julian Ortiz, The Robert M. Buchan Department of Mining, Queen's University

11:45  PAPER 285
Near face solutions for oil sands mining and processing
Mike Carniato, Syncrude R&D
ROOM: 513C

WATER, TAILINGS AND TECHNOLOGY
INNOVATION, AUTOMATION AND DATA
Chair: Kristie Tarr, CanmetMINING

10:30  PAPER 187
Deployment of large-area radio-enabled tailings monitoring systems in open-pit mines
Vincent Le Borgne, Alexandre Cosentino, Jean-Marie Bréhé, and Stéphane-Éric Thivierge, GKM Consultants

10:55  PAPER 219
Environmental intelligence in mine closure and reclamation
Elizabeth Haack and Sarah Barabash, EcoMetrix Incorporated

11:20  PAPER 239
Smart water management for mines
Veronique Bourgier, Veolia Water Technologies

11:45  PAPER 256
New sensor and portable technologies developed at NRC for measuring water contaminants
Guy Lamouche, Patrick Mercier, Jun Shen, Wei Qu, Boris Tartakovsky, Ademola Adekunle, Bussaraporn Patarachao, Elton Soares de Lima Filho, and Aïssa Harhira, National Research Council Canada

ROOM: 514B

ROCK ENGINEERING III
OPERATIONS: CASE STUDIES AND BEST PRACTICES
Chair: John Unrau, Mosaic Potash

10:30  PAPER 194
Investigations on the interaction between welded wire mesh and rock bolts
Estratios Karampinos, Université Laval; John Hadjigeorgiou, University of Toronto

10:55  PAPER 307
One-step installation of rock bolts, a joint venture to improve productivity and safety in rock bolting
Michael Hosp, Minova MAI GmbH

11:20  PAPER 336
Moving towards mechanized rock bolting
Ryan Lyle, Eric Smith, and Alex MacInnes, Cementation Canada Inc.
ROOM: 515A

SURFACE MINING
OPERATIONS: CASE STUDIES AND BEST PRACTICES
Chairs: Allan Boddy, Consultant; Gene Tucker, Conuma Coal Resources Limited

10:30 PAPER 458
Conuma Coal – Reinventing northeast British Columbia coal
Gene Tucker, Conuma Coal

10:55 PAPER 456
Operating surface mine haulage systems autonomously
Allan Boddy, Mark Sawyer, and Jonathon Peck, Peck Tech Consulting Ltd.

11:20 PAPER 457
Evolution of an open digital architecture for mining
Dean Tanaka, Teck Resources Limited

11:45 PAPER 163
Load-cycle optimization opportunities through operator assist technology
Braden Weisheit, Modular Mining Systems

ROOM: 516A

ECONOMIC OPPORTUNITIES BEYOND THE MINE
PEOPLE AND COMMUNITIES
Chair: Lana Eagle, Lana Eagle Consulting

10:30 PAPER 287
The risk of assuming you know best
Marie Hélène Turgeon, Independent

10:55 PAPER 193
Economic benefits from Kirkland Lake Gold operations
Mohammed Ali and Natasha Dombrowski, Kirkland Lake Gold

11:20 PAPER 237
Sustainable partnering with Kiewit – A long-term perspective
Philippe Jünger, Petr Kiewit Sons / Construction Kiewit Cie

11:45 PAPER 265
Empowering local contractors in the construction of hydropower plant:
A case study in DR Congo
Mutonkole Kabila Arthur, Bombiti Nzanza, and Jannie Bekker, Kibali Gold Mine; Mike Newmann, Knight Piesold; Armand Salon, Kibali Gold Mine
CIM’S DRAFT GUIDANCE FOR ENVIRONMENTAL AND SOCIAL DISCLOSURE UNDER NI-43-101 REPORTING
FROM ROCKS TO RESOURCES
Chairs: Karola Tóth, SNC-Lavalin; Derek Riehm, Lundin Mining

10:30-12:10
Overview of CIM’s Draft Guidance for Environmental and Social Disclosure under NI-43-101 Reporting
The Environmental and Social Responsibility Society (ESRS) of the CIM undertook the development of a draft guidance document for Environmental and Social Disclosure of mining projects under National Instrument (NI-43-101), following a report by the Ontario Securities Commission, which indicated significant disclosure deficiencies in this area. This session will feature a presentation from the working group and will discuss the key areas that have been highlighted in discussions as needing improvement and will provide a suggested framework for future disclosure documents. An overview of key elements of environmental and social aspects of a mining project will be reviewed during the different phases of the project. This will be followed by a more detailed discussion of disclosure needs around environmental studies and management, permitting and approval requirements, social and community aspects, and closure planning. This session will kick off the consultation process that ESRS is planning to undertake on the draft guidelines for disclosure.
Speakers include: Derek Riehm, Lundin Mining; Jenifer Hill, JLH Environmental; David Brown, Golder Associates; Alistair Kent, Merit Consultants; Richard Cook, Knight Piesold; Edith Garneau, Independent

RENEWABLE ENERGY INTEGRATION
SUSTAINABLE MINING
Chair: Laurel Acacia, University of British Columbia

10:30  PAPER 146
Sustainable energy roadmaps for remote mines in Canada
Durjoy Baidya, Ali Madiseh, and Malcolm Scoble, University of British Columbia

10:55  PAPER 169
Incorporating the use of renewable energy in the mining industry
Camila Beltran and Roberto Belmar, University of Bio Bio; Nathalie Risso, The University of Arizona; Fabricio Salgado, University of Bio Bio

11:20  PAPER 182
Solar power in the North: A bright future
Ross Phillips, Michel Carreau, and Joel Guilbaud, Hatch
11:45  **PAPER 104**  
Results from prototype testing and feasibility studies of a cryogenic energy storage system with the capacity to provide co-generation of electrical power and chilling, compressed air and refrigeration and motive force with chilling  
Daniel Cluff, CanMIND Associates; Douglas Morrison, Centre for Excellence in Mining Innovation (CEMI)

**EMPLOYING NEW TECHNOLOGY**  
**HEALTH AND SAFETY**  
Chair: George Darling, Sandstorm Gold

10:30  **PAPER 185**  
The digital tagboard – Solving tagboard incidents  
Yvan Brulé, TopVu (K4 Integration)

10:55  **PAPER 213**  
Deployment of FLIR thermal imaging cameras on heavy equipment  
Karly Winfield, Provix Inc

11:20  **PAPER 298**  
How can we deliver on safety for equipment repair trades?  
Peter Larsen, Kal Tire

11:45  **PAPER 407**  
Zero harm: A review of underlying principles, application, advantages and disadvantages  
Tom Hethmon, SSR Mining

**ENVIRONMENT AND WATER MANAGEMENT**  
**7TH NORTH AMERICAN IRON ORE SYMPOSIUM**  
Chairs: François Séguin, Envitech H2O Inc.; Ryan D. Siats, Barr Engineering

10:30  **PAPER 392**  
Surface water management: The new challenge of Labrador Trough  
François Lafrenière, Minerai de Fer Québec

10:55  **PAPER 400**  
Fast track waste water treatment Design-Build-Operate (DBO) project: An example of reducing the owner's risk by using collaboration and innovation between mining suppliers  
Denis Cadoret, AXOR Expert-Conseils; Eric Lannegrace, H2Flow Equipment Inc.
**WEDNESDAY, MAY 1 | 14:00 - 16:05**

**ROOM: 514B**

**MINE ELECTRIFICATION**
OPERATIONS: CASE STUDIES AND BEST PRACTICES  
Chair: Mohammed Ali, Kirkland Lake Gold

14:00 **PAPER 201**  
**Leading the charge in converting an existing mine to electric**  
Mohammed Ali and Natasha Dombrowski, Kirkland Lake Gold

14:25 **PAPER 229**  
**Fleet electrification – Vale Base Metals**  
Alex Mulloy, Samantha Espley, and Trevor Courchesne, Vale, Technology & Innovation Centre

14:50 **PAPER 32**  
**Critical enabling role of overland conveying in electrification initiatives in mining**  
Tony Barr, BEUMER Corporation, Conveying & Loading Division

15:15 **PAPER 105**  
**European Union's sustainable intelligent mining systems – Battery powered mining equipment**  
Adrian Halim, Luleå University of Technology

15:40 **PAPER 148**  
**Measuring the energy efficiency of battery electric vehicles in underground mining**  
Stuart Lister, Anthony Griffiths, and Jeff Anderson, MacLean Engineering

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11:20 **PAPER 417**  
**Water treatment and sludge dewatering: The use of the Geotube® in the mining industry**  
Pascal Marcotte, ASDR Canada Inc.

11:45 **PAPER 416**  
**Challenges in conducting a hydrogeological study and results on a potential iron deposit located in a remote site within the Labrador Trough**  
Vincent Mlakar and Rich Schmidt, BluMetric Environmental Inc.

12:10 **PAPER 428**  
**Densadeg clarifier for metals removal of contaminated mine water**  
Evan Claytor, Suez
MAINTENANCE MANAGEMENT BEST PRACTICES
OPERATIONS: CASE STUDIES AND BEST PRACTICES
Chair: Ted Knight, Hatch

14:00  PAPER 257
Asset Reliability 4.0: A practical approach to making asset management more data-driven
Adi Dhora and Fouad Habib, Spectris Advance; Adam Mettas, HBM Prenscia

14:25  PAPER 281
The value of sustainable maintenance programs
Roger Collard, Calumet Specialty Products Partners

14:50  PAPER 291
Automated interactive inspection and conditional maintenance system
Metso
Guadalupe Rodriguez, Metso Minerals

15:15  PAPER 316
Maintenance planning and scheduling to overcome the manpower shortage in the industry
Michel Cote, Norda Stelo

15:40  PAPER 321
Reliable and cost-effective means for inspecting underground pipes in mines
Pawel Gebski, Denis Boudreau, and Ian Moore, Acuren Group Inc.

ESRS: STAKEHOLDER DIALOGUE
PEOPLE AND COMMUNITIES
Chairs: Andres Recalde, Peruvian Canadian Chamber of Commerce; Lana Eagle, Lana Eagle Consulting; Holly Gardner, Ontario Centres of Excellence

14:00 – 16:05
Special registration is needed for this session.

Ixtaca Mine: Advancing community relations within the planning cycle
The Ixtaca Gold-Silver Deposit is one of Mexico’s premier precious metal discoveries. The deposit was discovered by Almaden in 2010 and acquired by staking has outlined a multi-million ounce deposit. The project is located 120 kilometres southeast of the Pachuca Mine, one of the largest gold and silver deposits in Mexico with a historic production of 1.4 billion ounces of silver and 7 million ounces of gold. The deposit is also well-located in the industrial heart of Puebla State. It is easily accessible from Mexico City Ixtaca, and 95 kilometres north of Puebla city. A rail-serviced industrial park is 25 kilometres away, and regional power is provided by the Laguna Verde nuclear power station, located 200 kilometres to the east on a deep sea port.
Almaden Minerals has made a commitment to community relations throughout the planning and development of this mining operation, representatives from the company, community and consulting services will participate in this year’s multi-stakeholder dialogue. Daniel Santamaria, VP Operations from Almaden Minerals, will lead an overview of their experience with early exploration through to the pre-construction phase with an emphasis on the using best management practices related to community relations and violence prevention. In particular, they will discuss their ongoing employee training program, community health and social welfare, community construction projects, and more.

Breakout sessions will be divided by different phases of the project, past and future, as the company approaches the construction phase. Based on the presentation provided, the participants will have an opportunity to discuss the legacy of community engagement that has been carried out to date and the foundation that has been built to maintain the social license, and potential future issues and challenges that may arise as the project advances.

Agenda:
5 minutes: Opening Remarks (Andres Recalde)
25 minutes: Presentation Daniel Santamaria, VP Operations, Almaden Minerals
30 minutes: Breakout Sessions based on project phase
25 minutes: Sharing Results (moderators)
15 minutes: Results/Discussion
5 minutes: Closing Remarks & 10th Anniversary Cake! (Holly Gardner)
NATURE’S RESILIENCE & FOOTPRINT REDUCTIONS
SUSTAINABLE MINING
Chair: Julie Champagne, National Research Council Canada

14:00 PAPER 120
Constructed floating wetlands to treat sulfate-dominated mine drainage
Varun Gupta, John Gunn, and Nadia Mykytczuk, Laurentian University

14:25 PAPER 385
An evaluation of silica-Bacillus microencapsulation for reducing acid mine drainage from sulfur waste rock in cold climates
Katie Mitchell, Laurentian University

14:50 PAPER 212
A promising approach to accelerate rehabilitation and generate value from sulfidic tailings
Bryan Tisch, Suzanne Beauchemin, Sean Langley, and Juha Metsaranta, Natural Resources Canada

15:15 PAPER 354
Genomics-driven optimization of the bio-recovery of refractory gold from arsenic-rich materials
Madiha Khan, Laurentian University; Julie Champagne, National Research Council Canada; Paul Miller, BacTech Environmental Corporation; Nadia Mykytczuk, Laurentian University

15:40 PAPER 331
Characterization of rhizosphere, soil and endophytic microbial communities of native vegetation on a disturbed alpine/tundra mine site
Katrina Callender, Charles Greer, and Jessica Wasserscheid, National Research Council Canada; Sabine Martin, Laboratoire de Recherche en Sciences Végétales; Charlotte Begouen-Dumeaux, Marius Poulain, Qinhong Cai, and Stephanie Messina-Pacheco, National Research Council Canada; Martin Nadeau, Viridis Terra Innovations; Hugo Thibaudeau Robitaille, Tata Steel Minerals Canada; Loic Didillon; Stephane Boudreau and Damase Khasa, Université Laval

PRACTICAL HAZARD CONTROL
HEALTH AND SAFETY
Chair: Steven Bowles, IAMGOLD

14:00 PAPER 173
Operator fatigue monitoring – Case studies & best practice
Daniel Bongers, SmartCap
14:25 PAPER 225
Advancement of safety technology drives innovation and cost savings for the mining industry
Sean Martell, PRECO Electronics

14:50 PAPER 270
How to improve effectively serious injury and fatality prevention? Feedback from mining sector field projects
Christian Roche and Alanna Aqui, DuPont Sustainable Solutions

15:15 PAPER 304
Mining tire recycling technology overview
Scott Farnham, Kal Tire

15:40 PAPER 170
Guidance on developing sound security management plans to implement international security standards and the voluntary principles
Charles Dumbrille, Mining Security Working Group

ROOM: 516C

CONCENTRATION & PELLETIZING 2
7TH NORTH AMERICAN IRON ORE SYMPOSIUM
Chairs: Michel Garant, COREM; Shashi Rao, University of Minnesota–Natural Resources Research Institute

14:00 PAPER 246
Efficient downstream processing of iron ores applying new analytical monitoring methods
Uwe Koenig and Nicholas Norberg, Malvern Panalytical

14:25 PAPER 231
A Canadian perspective on the use of biochar in iron ore pelletizing
Olivier Lacroix and Mathieu Dubé, COREM

14:50 PAPER 165
Use of small scale magnetized channels for high recovery separation of small diameter iron particles
Sebastian Cline, Sanja Miskovic, and Utkan Caliskan, University of British Columbia

15:15 PAPER 102
Triple deck roller feeder – From scratch to results
Steve Beaudin, Metal7; Patrick Malenfant, ArcelorMittal Mines Canada

15:40 PAPER 11
The challenges of beneficiation of low grade iron ores
Damian Connelly, Midas Engineering Group Pty Ltd.

16:05 PAPER 199
Meeting the demand for DR-grade pellets in North America
Anton Bochkov, Legacy Hill Resources Ltd.