Workshop - Part I
Ground Support in Cave Mining

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Jarek Jakubec
SRK Consulting | jjakubec@srk.com
Jarek is a corporate consultant with SRK and has over 30 years of operating and consulting experience in the mining industry. He has world-class expertise in mass mining including feasibility project management, due diligence reviews, mining method selection, and rock mechanics. His specializations also include cave mining risk assessment and accident investigation. Jarek has worked on more than 70 mining projects in 27 countries on 5 continents. He has published over 25 papers on geology, geotechnics, and mining and is a qualified person in terms of National Instrument 43-101.

Support in Weak Ground: Cassiar Case Study
Appropriate and effective ground support is one of the key requirements of successful cave mine design. If not satisfactorily addressed, it can present many challenges and result in poor performance. With caves venturing into more challenging environments with higher stresses and seismicity or very weak rock masses, traditional forms of ground support must be carefully reviewed and adjusted. New numerical modeling techniques provide tools to help evaluate and compare the effectiveness of different types of ground support.

Ground Support and Rehabilitation Methods at New Afton
This discussion will address the strategies employed to safely rehabilitate extraction drives and associated drawpoints that were subjected to high convergence loading. The presentation will focus on the convergence rates, ground support changes, rehabilitation sequencing, and future planning.

Corey Kamp
New Afton | corey.kamp@newgold.com
Corey is a geotechnical engineer with consulting and operations experience in underground mining and civil engineering projects. He has worked at New Afton since 2012, initially as a geotechnical instrumentation engineer and currently as a senior geotechnical engineer.
PTFI Ground Support Challenges and Solutions

Much has been learned through decades of supporting ground under a variety of rock mass and loading conditions at PTFI’s underground mines. Our approach continually evolves to handle complex rock mass heterogeneity and ever-increasing caving loads. This presentation provides a snapshot of recent ground support challenges and solutions at PTFI.

Update on Henderson’s Cable Arch Drawpoint

This presentation will provide a brief overview of the evolution of Henderson’s cable arch drawpoint brow design and its performance.

Lac des Iles Case Study: Open Stoping Past and Mass Mining Future

Maintaining open stope production targets while transitioning to a new mining method just one sublevel apart presents many challenges, but can be justified if the new extraction method will reduce costs. Safety, seismicity, and productivity have all played key roles in the decision to implement this relatively unknown mining method in Canada.

Seismicity: A Comparison of Open Stoping and SLC

This presentation provides an overview of seismic clusters, their relationships with geological features, stress redistribution, caving, and contrasts between the strength properties of rocks. It also addresses the seismic behaviour at Lac des Iles when the long hole open stoping mining method was used and the decreases in seismicity rates that occurred when the sub level shrinkage method was used instead.

Ryan Campbell
Freeport-McMoRan | rcampbel2@fmi.com
Ryan has over fourteen years’ experience in rock mechanics and structural geology and specializes in mass mining projects. Over the past decade, his career has been focused on developing caving projects from greenfield through to active operations. Ryan currently leads PT Freeport Indonesia’s underground geotechnical group in Phoenix, Arizona, which provides day-to-day and long-term support to the DOZ, DMLZ, GBC and Big Gossan mines.

Neil Shea
Freeport-McMoRan | nshea@fmi.com
Neil is a senior geomechanical engineer at Henderson Mine.

Steven Olson
North American Palladium | solson@nap.com
Steven is a senior mine engineer at Lac des Iles. He has 8 years of diverse experience from a variety of positions held in underground hard rock mines in Ontario and the Arctic. He recently worked on a two-year project involving the use of sublevel shrinkage as the primary mining method at Lac des Iles.

Cesar Ichillumpa
North American Palladium | cichillumpa@nap.com
Cesar is a rock mechanics engineer at the Lac des Iles mine. He has six years of experience working as a production geologist and conducting geotechnical tasks in tunnels and underground mines in Peru. He also spent ten years working in open pit mines in Peru, Honduras, and Guatemala, where he was involved in pit slope and waste dump stability analyses, leach pads expansions, pit lake studies, environmental monitoring procedures, and environmental data management. Cesar has worked as a rock mechanics engineer in underground mines in Canada for nine years.
The forum brings together mining professionals from industry, academia, and consulting to share knowledge and experiences from the field of cave mining. Together we identify challenges, find solutions, and promote an open exchange of ideas. We consider the entire mining cycle from mineral resource definition through mine design and operations to closure.

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