CEMI
Centre for Excellence in Mining Innovation

LECTURE SERIES

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March 31, 2011 at 4:00pm Willet Green Miller Centre
Auditorium (Main Floor)

Impacts of Underground Mass Mining on Surface: Lessons Learned from the Palabora Cave-Pit Interaction Study

Abstract Although the economic benefits of block caving are appealing, it often leads to significant ground deformations that if not properly accounted for may threaten the safety of overlying mine infrastructure. To better manage this risk, sophisticated 3-D numerical modelling has been turned to as a means of predicting the extent and magnitudes of surface subsidence. However, the complexity of the rock mass interactions involved coupled with geological uncertainty results in the need for models to be constrained and calibrated.

This presentation will share experiences from a large multidisciplinary study, focussing on Rio Tinto's Palabora block cave mine in South Africa. Block caving at Palabora unexpectedly triggered a large pit wall failure on surface, disrupting mine operations, damaging surface infrastructure and creating a dilution problem. The integrated use of geology and geotechnical data, InSAR monitoring and advanced numerical modelling will be discussed with respect to the development of a calibrated predictive model and the benefits gained towards the management of block caving associated subsidence hazards.

CEMI offers an advantage of live-streaming video for a global internet audience. Video of previous lectures are available for online viewing.

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Dr. Erik Eberhardt

Dr. Erik Eberhardt is a Professor of Rock Engineering in the Geological Engineering program at the University of British Columbia, and a registered professional engineer in British Columbia. His research work is focussed on the advancement and integration of geological and geotechnical field measurements in conjunction with state-of-the-art numerical modelling techniques to better understand complex rock engineering problems. Erik's work experience includes time at the Quintette Coal Mine in Tumbler Ridge and Trout Lake Mine in Flin Flon, together with 6 years working in Switzerland at the ETH Zurich and numerous consulting projects for the tunnelling and mining industries. He has published over 100 technical papers and was named the 29th Canadian Geotechnical Society's Colloquium speaker. He has also served as chair of the Canadian Rock Mechanics Association and co-chair for the 2007 Canada-U.S. Rock Mechanics Symposium and 2011 International Symposium on Rock Slope Stability.