

Analysing material inflow and outflow of the ore pass systems under different conditions in Malmberget mine

B Skawina^{1,2}

1.

Researcher, Department of Civil, Environmental and Natural Resources Engineering,
Division of Mining and Geotechnical Engineering, Luleå University of Technology, Luleå, Sweden.
Email: bart.skawina@ltu.se

2.

Senior Research Engineer, LKAB – R&D, Malmberget, Sweden.
Email: bartlomiej.skawina@lkab.com

ABSTRACT

Continuous improvement of the mines generates the need for further studying of the current and new underground transportation systems. The aim of the transportation system in an underground mine is to move the rock masses from one location to another in the most preferable manner by minimizing the long or short-term operational costs. In the mines, an ore pass is a common system used to transfer the material to the lower levels. If this system loses the ability to convey or store the necessary material capacities, it could result in unwanted disturbances in production. Therefore, in this paper discrete event simulation (DES) was utilized to analyse the material inflow and outflow of the ore pass systems when subjected to the different conditions. The study presented in this paper is based on the Malmberget sublevel caving (SLC) mine located in the northern part of Sweden.

Keywords: transportation system, production disturbances, underground metal mine, material handling, discrete event simulation.