Risk indexing tool for mine planning

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Abstract:

The purpose of this paper is to establish a qualitative method to estimate the risk level (e.g. rating and ranking) resulting from mining activity. Risk is the product of two factors: probability of failure and cost of consequences. A resultant assessment scale matrix is then used to assign a risk index value which is directly proportional to the potential for excavation instability. A case study, the #1 Shear East orebody at Vale's Garson Mine in Sudbury Ontario will be examined in this paper. A three-dimensional, elastoplastic, finite difference model (FLAC 3D) is presented for a mine development intersection situated 1.5 km below ground surface. The developed assessment scale matrix is used to estimate risk index for intersection (2981) located on 5000 level. The results are presented and categorized with respect to risk-index value, probability of instability, cost of consequence, and mining stage.

Keywords:

Risk-index tool, Cost of consequence, Probability of instability, Numerical modelling, Case study and Underground mine developments.

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