

## Feature Selection for Production Schedule Optimization in Transition Mines

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**Abstract :** The use of underground mining methods have increased significantly over the past decades. This increase has also been spared on by several mines transitioning from surface to underground mining. However, determining the transition depth can be a challenging task, especially when coupled with production schedule optimization. Several researchers have simplified the problem by excluding operational features relevant to production schedule optimization. Our research objective is to investigate the extent to which operational features of transition mines accounted for affect the optimal production schedule. We also provide a framework for factors to consider in production schedule optimization for transition mines. An integrated mixed-integer linear programming (MILP) model is developed that maximizes the NPV as a function of production schedule and transition depth. A case study is performed to validate the model, with a comparative sensitivity analysis to obtain operational insights.

**Keywords :** underground mining, transition mines, mixed-integer linear programming, production schedule

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