

Evaluation of the impact of commodity price change on mine plan of underground mining

abstract

Fluctuations in commodity prices should influence mining operations to continually update and adjust their mine plans in order to capture additional value under new market conditions. One of the adjustments is the change in production sequencing. This paper seeks to present a method for quantifying the net present value (NPV) that may be directly attributed to the change in commodity prices. The evaluation is conducted across ten copper price scenarios. Discrete event simulation combined with mixed integer programming was used to attain a viable production strategy and to generate optimal mine plans. The analysis indicates that an increase in prices results in an increased in the NPV from \$96.57M to \$755.65M. In an environment where mining operations must be striving to gain as much value as possible from the rights to exploit a finite resource, it is not appropriate to keep operating under the same mine plan if commodity prices alter during the course of operations.