

A Practical assessment of drill-hole spacing at Olympic Dam – Juggling cost vs. revenue

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ABSTRACT

The problem of juggling the cost of quantifying contained metal against the revenue gained by realising the contained metal is not unique to Olympic Dam. The pressure is always on Mine/Resource geologists to decrease drilling costs without considering the potential value destruction. The same old question continually haunts geologists, “How much drilling is required?”

Sampling of the Olympic Dam resource is via underground diamond drill fans on an approximate 20 m x 20 m spacing, derived empirically over 30 years of reconciled production. A drill spacing study was conducted to assess what the optimal sample spacing should be for the resource that will be mined by underground mining methods, and whether an immediate cost saving gained by widening the drill spacing provides a net benefit to Olympic Dam. The study taken has been used to provide an objective, quantifiable measure of the leverage drilling information has on the resource.

A simulation model was sampled at varying spacing's within a large closely-drill spaced test area. From this sampling, several block models were estimated using a simple interpolation method and unique support appropriate to each drill spacing dataset. By generating various estimates from a range of sample spacing an approximate revenue model can be calculated for each model.

The study has demonstrated that although cost savings are realised by widening the drill spacing, an unavoidable loss in revenue also occurs. The revenue generated via estimation is highly leveraged to the density of drilling information. This concept has been well-known in the industry for some time by virtue of the change of support and information effect principles, and the results are not surprising. The practical technique employed in the Olympic Dam case is applicable to other resources and yield outcomes that can be easily communicated to non-geoscientists