A SIMULATION-BASED APPROACH TO RESOURCE CLASSIFICATION

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Conditional simulation is a technique which, when implemented correctly, has the ability to delineate the space of uncertainty associated with a given geological and continuity model. Unlike the use of the kriging variance in most circumstances, simulation can generate actual confidence intervals which do not rely on any parametric assumptions. These confidence intervals relate to the error in the grade estimate, and are a function of (among other things) the scale of mining represented in a resource block model. Conditional simulation can be used to assist in defining categories for resource classification by relating confidence intervals to the expected grade of a block. The advantages over purely qualitative and semi-quantitative methods of resource classification are described, including the ability to recognise areas of consistent grade and thus higher confidence, which would not be recognised by an approach such as the use of the grade-independent kriging variance. The importance of considering the scale of extraction in resource classification is emphasised. The use of a numeric approach such as simulation in resource classification is presented in the context of a clear geological understanding of mineralisation, and is designed to supplement the judgement of the Competent Person.

A case study demonstrates the advantages of this technique and its relevance to the scale of mining.