

***THE USE OF CONDITIONAL SIMULATIONS TO QUANTIFY MINING RISK – A  
REALITY CHECK FOR RESOURCE ESTIMATES***

***W J Shaw and S Khosrowshahi***

Resource estimation has been beset by two issues over the past ten years: the difficulty of using distribution based methods to adjust for the volume-variance relationship when quasi-point sample assays are used to estimate attributes of volumes, and

the conversion of in situ estimates to recoverable (or mineable) resources by the incorporation of realistic estimates for ore loss and dilution, as a preparatory step to mine planning studies (such as pit optimisation).

A number of resource estimates for multi-element deposits have been recently carried out using conditional simulation. These provide the opportunity to fully characterise the deposit and develop empirical estimates of the resource as various SMU sizes.

A process has also been developed that models the grade control and mining process in which sampling, mining selectivity and other issues that impact on the final recoverable grade are incorporated. The impact of various scenarios on tonnes, grade and contained metal in expected products can be quantified and incorporated into feasibility studies. This provides a definitive way of demonstrating the expected risk of various alternative strategies and the optimum strategy based on a cost-benefit analysis.