

Onto Copper-Gold Deposit, Indonesia: evaluation of geological and grade uncertainty in a cave operation.

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ABSTRACT

The Onto Copper-Gold deposit is a 3 Bt hybrid porphyry/high sulfidation deposit located in the Hu'u Contract of Work, Sumbawa Island, Indonesia. Drilling has defined a large tabular mineralised volume measuring at least 1.5 x 1 km with a vertical thickness of ≥ 1 km located 400-700 m below surface. The prefeasibility study was completed in December 2024 incorporating drilling results and various geological, mineral resource, geometallurgical, geotechnical, hydrothermal and mine engineering studies. Given the size, location and grade distribution, a large cave mining operation feeding a conventional ball mill - SAG - flotation circuit is being considered. The current resource estimate is 3.0 Bt @ 0.72 % Cu and 0.39 g/t Au in a combination of Indicated and Inferred resource categories defined by drilling on nominal 200 x 200 and 400 x 400 m drilling densities respectively.

Simulation methods were used to provide a probabilistic framework to determine uncertainty in the estimated grades and the effect that this has upon resource classification within the planned cave operation due to uncertainty inherent in the current drill hole spacing – volumes within the deposit that are defined by low drilling densities contribute higher risk to the project's economic assessment than volumes defined by closer spaced drilling densities.

Resource estimation domains, representing underlying rock-type/alteration combinations, were simulated into the block model to capture geological variability. For each geological model, a set of Cu grades was simulated. Each simulated grade model captures both geological and grade variability that contribute to the overall uncertainty in the estimated grades due to drilling density. These simulations were subsequently used to objectively investigate uncertainty in the following items:

- Resource classification.
- Production RoM grade predictions throughout the mine schedule.
- Overall project economic metrics.
- Positioning of extraction levels.

These data will provide objective measures of risk, in terms of uncertainty, being carried by the project due to drilling density. A decision can be made whether the risk level is acceptable or if further drilling is warranted to reduce the risk. Simulation studies involving planned drilling programs to reduce geological and grade estimation variation will provide trade-off study information of drilling costs against risk reduction.