

Geometallurgical Study of a High-Grade Narrow-Vein Operation

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ABSTRACT

Sheeted vein gold deposits are often characterised by multiple sub-parallel and/or composite veins and free-milling coarse gold. Inherent mineralisation heterogeneity results in grade and process parameter variability, which increases project risk if not quantified. This contribution presents a South American case study that emphasises an early-stage strategic geometallurgical programme applied to a high-nugget effect gravity recoverable gold-dominated narrow-vein deposit. It exemplifies how data can be acquired from a well-designed and planned programme to support resource estimation, a pre-feasibility study, bulk sampling, trial mining and fast-track to production. A tactical geometallurgical programme is embedded into the on-going shrink-stoping operation. Twelve months plus of reconciliation data will be presented to validate the models produced. During the PFS, consideration was given to mining strategy with underground scenarios across: (1) a 300,000 tpa bulk-mine operation based on longhole stoping; and (2) a high-grade selective small-scale operation based on shrinkage stoping. The conclusion was that a selective 50,000 tpa operation was the best option allowing for acceptable project economics, a small footprint, fast production ramp-upless capital expenditure and aligned better with the expectations of local stakeholders. In addition, the mine site and infrastructure would be used as a base for regional exploration and for the evaluation of a number of other small historic mines within 2 km of the mine. The selective mining scenario is based on a narrow high-grade zone (HGZ) within the centre of the sheeted vein system. It is based on a consistent 2-3 m wide zone comprising a number of 10-35 cm wide veins that run in a parallel to anastomosing fashion. A resource estimate for the HGZ yielded an Indicated Mineral Resource of 155,000 t at 21.9 g/t Au, with a Proven Ore Reserve of 130,000 t at 20.3 g/t Au.

Theme: Maximising orebody value and driving productivity improvement