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DRIVING STAGEWISE DEVELOPMENT OF GOLD PROJECTS WITH THE JAMESON CONCENTRATOR AND ALBION PROCESS™

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ABSTRACT

As ore reserves of easily recoverable gold deplete, opportunities to treat and recover gold hosted in neighbouring sulphide deposits and tailings can extend the life of mining operations. Gold is often finely disseminated in iron sulphides within the mineral matrix, making dissolution via direct cyanidation ineffective. Processing this refractory ore yields poor gold recovery, therefore pre-treatment is required to concentrate and oxidise these iron sulphide minerals prior to cyanidation. This includes flotation to concentrate the sulphide mineral fraction, followed by sulphide oxidation and then gold dissolution and recovery.

Glencore Technology work closely with resource development organisations to evaluate a stagewise implementation of technologies to treat their sulphide ore reserves. This involvement begins early with collection of laboratory data to support the design and installation of a Jameson Concentrator™, followed by ultrafine grinding with the IsaMill™, and finally construction of an Albion Process™ plant utilising our OxiLeach™ Reactors (OLR). The Albion Process™ combines ultrafine mineral grinding and oxidative leaching at atmospheric pressure, a proven process for sulphide mineral oxidation.

Stagewise plant implementation allows for staggering equipment design and delivery schedules to expedite the path to establishing revenue. This is achieved by aiming for production of a saleable grade of flotation concentrate in the first stage of plant operation, with on-site dore production occurring after commissioning of subsequent plant stages. On-site sulphide oxidation allows the processing of a lower grade, higher recovery concentrate without the transport costs and penalties associated with concentrate trading terms. The design and delivery of these downstream stages can occur in parallel to construction of the Jameson Concentrator™ flotation circuit.

This approach inherently carries higher risks and rewards. Through real world examples, this paper reviews common challenges to be identified and overcome through dedicated testing programs that Glencore Technology lead for a client, environmental, social and governance (ESG) criteria that inform testing and design, and the impact of these factors prior to project implementation.

Keywords: Gold, Jameson, IsaMill, Albion, Testwork, Staged Implementation, Production