

Optimisation Of Jameson Cells to Improve Concentrate Quality at BHP Carrapateena

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ABSTRACT

Carrapateena is an iron ore copper–gold (IOCG) deposit hosted in a brecciated granite complex located in the Gawler Craton, South Australia. The ore is processed by a conventional sulphide flotation concentrator, producing a copper gold silver (Cu-Au-Ag) concentrate with chalcopyrite and bornite as the main copper-bearing minerals. The concentrate from two Jameson cells, one in cleaner scalper duty, the other as a third cleaner, combine to produce the final concentrate.

Since commissioning in 2020, Carrapateena has engaged Glencore Technology to assist with an optimisation program of the two Jameson cells in the Carrapateena concentrator with a focus on concentrate quality. The goal was to collaboratively develop operating and control strategies that aimed to increase copper concentrate grade and reduce non-sulphide gangue recovery by entrainment.

This collaboration continued over the course of the following three years, considering many differing operating parameters including, but not limited to, air addition, froth depth, wash water flow rate, wash water quality and feed density. The work culminated in 2023 with a rapid sprint of improvement activities, cell modifications, challenging of prevailing operating strategies, and installation of alternative instrumentation to improve the reliability of readings and methods of Jameson cell control.

This paper outlines the numerous stages of Jameson cell optimisation conducted, the differing strategies implemented, their success or failure and the future plans for ongoing improvement.