

Managing Froth Tenacity 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 flotation circuit includes a fine regrind to below 20µm by 2 x 1.6MW Metso HIG mills and operates with hypersaline water drawn from local wellfields.

Since commissioning in 2020, Carrapateena has experienced operational issues from tenacious froth stability. Identified contributing factors include ultrafine particle size, flotation water quality and sulphide mineralogy mix of the ore. Froth stability has led to several challenges across the circuit, including froth transport in launders, hoppers; froth pumping performance; flotation cell control; concentrate thickener performance. Ultimately the need to manage froth in the flotation and thickening circuits often would constrain milling throughput.

Carrapateena has embarked on a multi-year journey to address these challenges involving the development of froth mitigation operating strategies; modifying and expanding plant equipment to better handle froth volumes, the design and installation of froth busting equipment; and partnering with the site principal reagent supplier to explore alternative and additional reagents to provide the options required for the operating teams to regain froth control.

This paper the successes (and failures) of the improvement journey and outlines plans for the future.