

An investigation into the molybdenite recovery in plant No. 2 at Sarcheshmeh copper complex

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ABSTRACT

At Sarcheshmeh, the expansion plant (No. Two) was established with large mechanical cells and flotation columns. Molybdenum grading 0.025 plays a significant role in the economy of Sarcheshmeh. While both plants treating the same ore, comparing with the old plant, Mo recovery in the expansion plant was found to be 7-10% lower. Thus an investigation was conducted to analyze the reasons of this difference. Samples were collected from 11 points of the flotation circuit of the plant 2, and Mo grades and solids concentration of the samples were balanced. In this work the effects of mineralogy, feed grade, flotation reagents, grinding and degree of liberation on molybdenite recovery is investigated. Results indicated that, Mo grade in feed and Mo recovery are positively correlated and rougher cells are responsible for most of the Mo losses which is due to locked molybdenite particles. Additionally, a reverse relationship between Mo recovery and existence of an isomorphous mineral (CuFe_2S_7) was observed.

Keywords: Molybdenite, recovery, flotation circuit, rougher bank, bulk flotation.

INTRODUCTION

as being far more variable. With the Copper recovery being usually between 80% and 90%, Molybdenum recovery may range between 25 and 85%.

At Sarcheshmeh, to compensate for the lower grade ore encountered as the open pit deepened; the expansion plant (No. 2) was developed. The flotation circuit of this plant consists of 8 mechanical RCS 130 m³ cells being used as rougher bulk flotation, 3 mechanical RCS 50 m³ as cleaner cells, 5 mechanical RCS 50 m³ as scavenger and a 4.9 m diameter, 12 m height column as recleaner (figure 1). As is shown, both rougher and scavenger tailings are rejected.

In the Copper, Molybdenite bulk flotation circuit, Mo recovery is consistently lower than that of the Cu sulphides as well

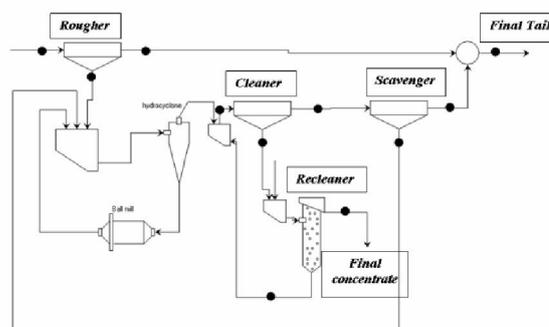


Figure 1- Flotation circuit flowsheet of the plant No. 2.
Sampling points are marked with an asterisk.

The flotation circuit of the old plant (No. 1) is shown in figure 2. Each of the four parallel lines in flotation circuit consists of 14 cells as rougher bank, 10 cells as scavenger, 8 cells as