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Discussion:

1. Scheelite - (a) An overall recovery of 33.2 percent of the tungstic oxide at a grade of 22.7 percent WO₃ was obtained in 0.25 percent of the original mass as table concentrate, flotation tailing. High intensity dry magnetic separation of this product did enable the production of a non magnetic concentrate containing 30.9 percent WO₃ at an overall recovery of only 9.0 percent. The magnetics from these separations contained 20.8 percent WO₃ with an overall distribution of 24.2 percent. The presence of wolframite producing the above result is not totally discounted, but, the result is thought to be due totally to the presence of scheelite magnetite composites.

(b) A WO₃ distribution of the -53µm final tailing (T4T) indicated that 39.5 percent of the overall WO₃ present was finer than 16µm in particle size and as such, unrecoverable by gravity concentration methods. Further, 25.6 percent of the overall WO₃ was finer than 9 µm in particle size.

(c) The final -53µm cleaner magnetics (M/S 10 M/A) contained 14.9 percent of the overall tungstic oxide at a grade of 0.05 percent WO₃.

2. Cassiterite - (a) Table concentrate flotation tailings were found to contain 6.6 percent of the overall tin at a grade of 6.8 percent. High intensity dry magnetic separation raised this grade to 21 percent with a subsequent drop in recovery to 3.8 percent overall.

(b) The very fine cassiterite particle size is shown in the tin distribution of the final tailing product (T4T) where 52.8 percent of the overall tin in the sample is smaller than 16µm in particle size, with some of this possibly even being of a composite nature.

(c) 18.8 percent of the overall tin was found to be locked in the -53µm cleaner magnetics (M/S 10 M/A) at a concentration of 0.17 percent.

3. Magnetite: A magnetite concentrate was produced that contained 82.5 percent magnetics (Davis Tube determination) in 30 percent of the overall mass and also contained 54.3 percent HCl soluble iron. The Davis tube magnetics had an HCl soluble iron content of 62.9 percent, a ferrous iron content of 19.8 percent, and hence an Fe⁺⁺ to Fe ratio of 0.31.

4. Fluorite: (a) 86.5 percent of the original fluorine was contained in the -53µm final gravity tailings (T4T). The fluorine grade was increased slightly from the original value of 9.8 percent to 11.1 percent. 9.7 percent of the original fluorine was contained in the -53µm cleaner magnetics (M/S 10 M/A) at a grade of 3.0 percent fluorine.