

## Section 1 - Ore Dressing Investigations

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### Sample

#### CONCENTRATION TEST ON THICKENED SLIMES

Field experiments were undertaken at the Storey's Creek mill on October 16th, 1961, with the three-inch hydraulic cyclone, pump, &c. Object of the work was to test the capacity of the unit to dewater and deslime the thickener underflow.

During the tests a sample of approximately 40 pounds dry weight of the cyclone underflow was collected for later concentration on the laboratory Deister table.

The sample contained 2.59 percent tungstic oxide and 0.08 percent tin.

### Investigation

The investigation involved a straight forward concentration test by tabling to determine the quantity of recoverable wolfram in the sample. The tungstic oxide content of the table tailings was much higher than expected, and the tailings were infrasized to determine the nature of the losses.

### Summary

A tabling test on dewatered and deslimed material was carried out from the Storey's Creek Mill thickener underflow. Some 31.4 percent of the tungstic oxide was recovered in a concentrate assaying 17.5 percent tungstic oxide. The concentrate contained appreciable sulphides. The tungstic oxide content of the table tailings was 1.83 percent. About 94 percent of the tungstic oxide in the tailings is finer than 20 microns, and would not be recoverable by normal gravity concentration.

### Research

Table concentration gave—

Product	Weight	Percent WO <sub>3</sub>	Sn	Percent Distribution WO <sub>3</sub>
Concentrate	4.64	17.5	0.42	31.4
Middling	1.05	4.9	....	2.0
Tailing	94.31	1.83	....	66.6
Composite feed	100.00	2.59	0.08	100.0

The concentrate contained considerable sulphides which effectively masked the wolfram during concentration. Virtually all of the sulphides were taken into the concentrate to ensure maximum recovery of the wolfram.

A narrow band of apparently siliceous material was collected as the table middling.

The tungstic oxide content of the tailings was 1.83 percent, and was considerably higher than expected. To determine the nature of these losses, portion of the tailings was infrasized and the fractions assayed for tungstic oxide.

**Infrasizer Analysis of Tailings**

Product	Theoretical grain sizes of Wolfram in microns	Weight	Percent WO <sub>3</sub>	Distribution WO <sub>3</sub>
Infrasizer fraction 1	76-45	0.7	0.15	0.06
	2 45-30	11.4	0.08	0.49
	3 30-20	41.9	0.24	5.40
	4 20-14	21.6	2.08	24.16
	5 14-10	10.0	6.70	36.05
	6 10- 8	5.7	6.39	19.58
	7 - 8	8.7	3.05	14.26
Composite tailing		100.0	1.86	100.00

The infrasizer analysis shows that approximately 95 per cent of the tungstic oxide in the tailings is finer than infrasizer fraction 3, i.e., is less than 20 microns. It would not be practicable to recover this wolfram by normal gravity concentration methods.