

TR12-160-161 R. 542 PART 2

METALS EXPLORATION N.L.

**PRELIMINARY EXAMINATION OF GREAT ADVENTURE MINE
ORE—EXPLORATORY FLOTATION TESTS**

In discussions with representatives of the company it was proposed that preliminary flotation tests should aim at production of lead concentrates as well as total desulphidising of the ore. However, in view of the low lead content of the sample, it was decided not to investigate selective flotation of lead minerals at this stage.

Two bulk sulphide flotation tests were undertaken on ore ball mill ground to minus 60 mesh B.S.S., and results of these tests are detailed below.

FLOTATION CONDITIONS

<i>Reagent</i>	<i>Test A</i>	<i>Test B</i>
Copper Sulphate	0.5 lb/ton	0.5 lb/ton
Potassium Ethyl Xanthate	0.5 lb/ton	0.5 lb/ton
Methyl Isobutyl Carbinol (M.I.B.C.)	5 drops	5 drops
Sodium Sulphide	10 lb/ton to Ball Mill
pH	6.0	6.4
Flotation Time	10 minutes	9 minutes

FLOTATION TEST RESULTS

<i>Product</i>	<i>Per Cent</i>			<i>Per Cent Distribution</i>	
	<i>Weight</i>	<i>Sn</i>	<i>S</i>	<i>Sn</i>	<i>S</i>
<i>Test A</i> FC	22.8	0.94	19.3	8.6	87.7
FT	77.2	2.88	0.80	91.2	12.3
Head	100.0	2.44	5.02	100.0	100.0
<i>Test B</i> FC	27.0	1.10	14.7	11.7	77.4
FT	73.0	3.06	1.58	88.3	22.6
Head	100.0	2.53	5.11	100.0	100.0

Head Sample Assay: 5.14% Sulphur.

Discussion

The preliminary nature of these tests must be emphasised, and no attempt has been made to establish optimum flotation conditions.

Sodium sulphide was used in test B to indicate whether sulphur rejection could be improved by sulphidising the surfaces of oxidised or partly oxidised sulphides, thus making them more readily floatable. The result was somewhat unexpected, because as well as some loss of selectivity, overall rejection decreased.

However, the results do indicate that, with conventional reagent combinations, sulphide removal prior to gravity concentration of cassiterite does not present any problem.