

Section 1 — Ore Dressing Investigations

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EXAMINATION OF GOLD CONTENT OF ALLUVIAL SAMPLES FROM WODONGA, VICTORIA

Samples

Two samples of alluvial river sand were received from the above company for determination and recovery of gold. A secondary requirement was investigation of the heavy mineral content of the sand, including cassiterite.

The samples were numbered 12 and 23, and weighed approximately 550 lb and 290 lb respectively.

Preliminary investigation

Sample 12. Direct analysis of the head sample gave—

Au	Not detected.
Sn	500 p.p.m.
Zr	<100 p.p.m.
Ti	Not detected.

In a sizing analysis of the material gold was detected in the minus 60 to plus 100 mesh fractions, but was only of the order of a few grains per ton of the particular fractions. The figures obtained here were used to calculate an approximate gold head value for the sample.

The size fractions contained from 300 to 500 parts per million of tin, except the minus 200 mesh material which assayed 0.24 per cent tin.

Head Values: Sample 12

Au	Less than 0.4 grains/ton (Calc.)
Sn	500 parts per million.
Zr	Less than 100 parts per million.
Ti	Nil.

Sizing Analysis

Fraction	Per Cent		Grains/ton	Per Cent Distribution	
	Weight	Sn		Sn	Au
+ 10	19.7	0.05	N.D.	19.0	—
+ 22	28.1	0.04	N.D.	21.7	—
+ 44	25.9	0.04	N.D.	20.2	—
+ 60	12.4	0.03	N.D.	7.2	—
+100	5.1	0.04	<6	3.9	75
+200	3.5	0.05	<3	3.3	25
-200	5.3	0.24	N.D.	24.7	—
Composite	100.0	0.05	<0.4	100.0	100

N.D.—Not detected.

Sample 23

Direct analysis of the head sample gave the following results:—

Au	Not detected.
Sn	400 parts per million.
Zr	<100 parts per million.
Ti	Nil.

As these results were of the same order as Sample 12 no further work was done on this sample.

OTHER TESTS**A. Microscopic examination of screen fractions.**

No gold was observed in any fraction.

B. Superpanner Tests.

One Hundred gram portions of the minus 60 mesh screen fractions were concentrated by means of the laboratory superpanner.

Microscopic examinations of the concentrates produced did not detect gold in any fraction.

COMMENTS

The above results indicated that there was insufficient gold in these samples to justify further work. However, dependent on the size of the deposit, there could be sufficient tin present to warrant investigation of the recovery of this metal.

These comments were given to the company in the form of a summary of results. From this the company requested a cyanidation test be performed on the minus 60 mesh fraction of Sample No. 12.

Cyanidation Test—Sample 12.

Procedure. A 220 lb sample was sized by passing over a 0.6 mm aperture D.S.M. screen, giving a nominal undersize of minus 60 mesh.

The screen undersize was treated by cyanidation for gold recovery. The pregnant solution was recovered by decantation, and the total amount recovered was treated by the Denver (copper sulphate) method for total gold recovery and assay.

Results

Screening: D.S.M. oversize 63.6 per cent by weight
D.S.M. undersize 36.4 per cent by weight

Cyanidation

Conditions: Solids 80 lb
Solution 25 gallons
% Solids 24.2

Treatment time 24 hours

% NaCN 0.23 start

0.20 finish

% CaO 0.011 start

0.011 finish

pH 11.0 start

10.8 finish

NaCN extraction: 0.018 grains Au/Ton original sample
or 0.050 grains Au/Ton fraction treated.