

TR14-209-210

R.601. Heavy mineral concentration of sands from Eddystone Point

Several bags of sand from sand dunes and the beach at Eddystone Point were submitted by H. T. Reardon for heavy mineral concentration. Total weight of the moist sand was 725 lb. A sample of sand from each bag was taken and the moisture content was determined, and found to be 7.8%. The dryweight of the sample was calculated to be 668 lb.

NOTE: No responsibility will be accepted for the results shown in this report except in so far as they apply to the sample tested.

TEST WORK

The sample was concentrated on a half-size Holman table fitted with sand riffles.

The table concentrate was magnetically separated using the Rapid magnetic separator to give four magnetic fractions: M1, M2, M3 and M4.

The non-magnetic fraction was tabled on the Deister table to give a high grade tin concentrate and a zircon + rutile concentrate.

The tin concentrate was panned in a dish in order to detect gold or platinum, but none was observed.

The weakly magnetic fraction M4 was subject to screening and then tabling and magnetic separation of the closely sized screen fractions to concentrate any monazite present.

RESULTS

The results can be tabulated as follows:

	% Weight	% Ti	% Cr	% Sn	% Zr
M1 ilmenite	1.47	31.3	0.40		
M2 ilmenite + garnet	6.15	31.2			
M3 ilmenite + garnet	3.74	29.3			
M4 garnet + spinel	6.66				
N T/C 1 cassiterite	0.41			75.5	
N T/C 2 zircon + rutile	3.88	6.3		0.25	30.0
Total heavy mineral	24.41				
Feed (recovered grades)	100.0	0.24 (as rutile)		0.31	1.16

The mineral distribution of the magnetic fraction M4 was as follows:

Mineral	% Weight
Ilmenite	0.77
Ilmenite + garnet	0.69
Garnet	2.30
Garnet + spinel	1.16
Spinel + ferro-magnesian minerals	1.61
Monazite	0.11
Magnetic cassiterite	0.01
Non-magnetics	0.01
Total (M4)	6.66

Adding the ilmenite + garnet fractions in the above table to M1, M2 and M3 we have 12.8% of the feed as ilmenite assaying about 30% Ti. The chromium content was 0.40% in the cleanest ilmenite concentrate.

The magnetic cassiterite was passed over the magnetic separator several times and each time reported as a magnetic fraction. It assayed 53.8% Sn.

CONCLUSIONS

The heavy mineral content of the sample was 24.4%.

The main economic mineral is cassiterite, and this was readily concentrated to 75.5% Sn with a recovered grade of 0.31% in the feed. This tin concentrate contained only a trace of tungsten.

Other economic minerals present were rutile with a recovered grade of 0.24% Ti, zircon with a recovered grade of 1.16% zirconium, and monazite with a recovered grade of 0.11%.

12.8% of the sample is ilmenite assaying 30% Ti. However, the chromium content of the cleanest ilmenite concentrate was 0.40% Cr. This renders the ilmenite uneconomic.

No gold or platinum was detected.