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Resistivity soundings, Monarch mine area.

D.E. Leaman

In an early attempt to evaluate the use of resistivity methods in the Tertiary lead and wash systems of north-east Tasmania a line of soundings was completed at the Monarch mine north of Mt Cameron. A comprehensive sampling programme had been completed a few months previously (Chesnut, 1965). The Monarch mine is an alluvial tin working where the tin is contained in Tertiary(?) sands overlying granite and slate.

EQUIPMENT AND RESULTS

A hand-cranked Yew resistivity meter was used and the maximum current electrode separation was 60 m. Some problems were experienced with poor surface contacts (H21, J21) over the piles of worked sand. The curves are shown in the Figure 1. Curves E21 and 15D/12E are typical three-layer curves for north-east Tasmania. Curves F21, G21 are typical Tertiary sediment curves.

INTERPRETATION

All interpretation has been by Schlumberger standard curves and is summarised below:

Probe	*Layer*	*Resistivity (Ω-m)*	*Depth (m)*	*Interpretation*
15D/12E	1	900	0.6	Sandy soils
	2	70	∿3.0	Tertiary sediment, weathered rock
	3	>200		?
E21	1	260	1.0	Sandy soil
	2	13	13.0	Clay, sediment (wet)
	3	>100		Weathered granite?
F21	1	150	1.0	Dry sand, soil
	2	40	15.0	Wet Tertiary sediment
	3	60		
G21	1	110	0.8	Sand, soil
	2	50	20.0	Wet Tertiary sediment
	3	60		
H21	1	2,000	1.0	Dry sand
	2	50	∿15.0	Wet sediment
	3	<4		?
J21	1	2,000	1.0	Dry sand
	2	40	6.0	Wet sediment
	3	∞		Granite

The reliability of these interpretations has never been established since the company drilling programme never exceeded depths of 6-8 m. In addition there is no indication of distinct gravel, sand or clay deposits within the line treated. It is therefore presumed that the sediment present is well mixed. The thickness of sediment probably exceeds 30 m in the region of F and G21. The difference in character between E21 and J21 suggests a weathered profile on the rock interface in the former case and an abrupt rock interface in the second.

CONCLUSIONS

Resistivity surveys do not provide unambiguous information on depth to, or type of, bedrock. Only information relating to the water table may be deduced from the character of the near surface portion of the soundings. This suggests that there are no well developed gravel or clay units.

REFERENCE

CHESNUT, W.S. 1965. *Final report on tin prospecting, Monarch tin prospect, S.P.L. 399.* Raw Materials & Exploration Department, Broken Hill Pty Co. Ltd : Melbourne.

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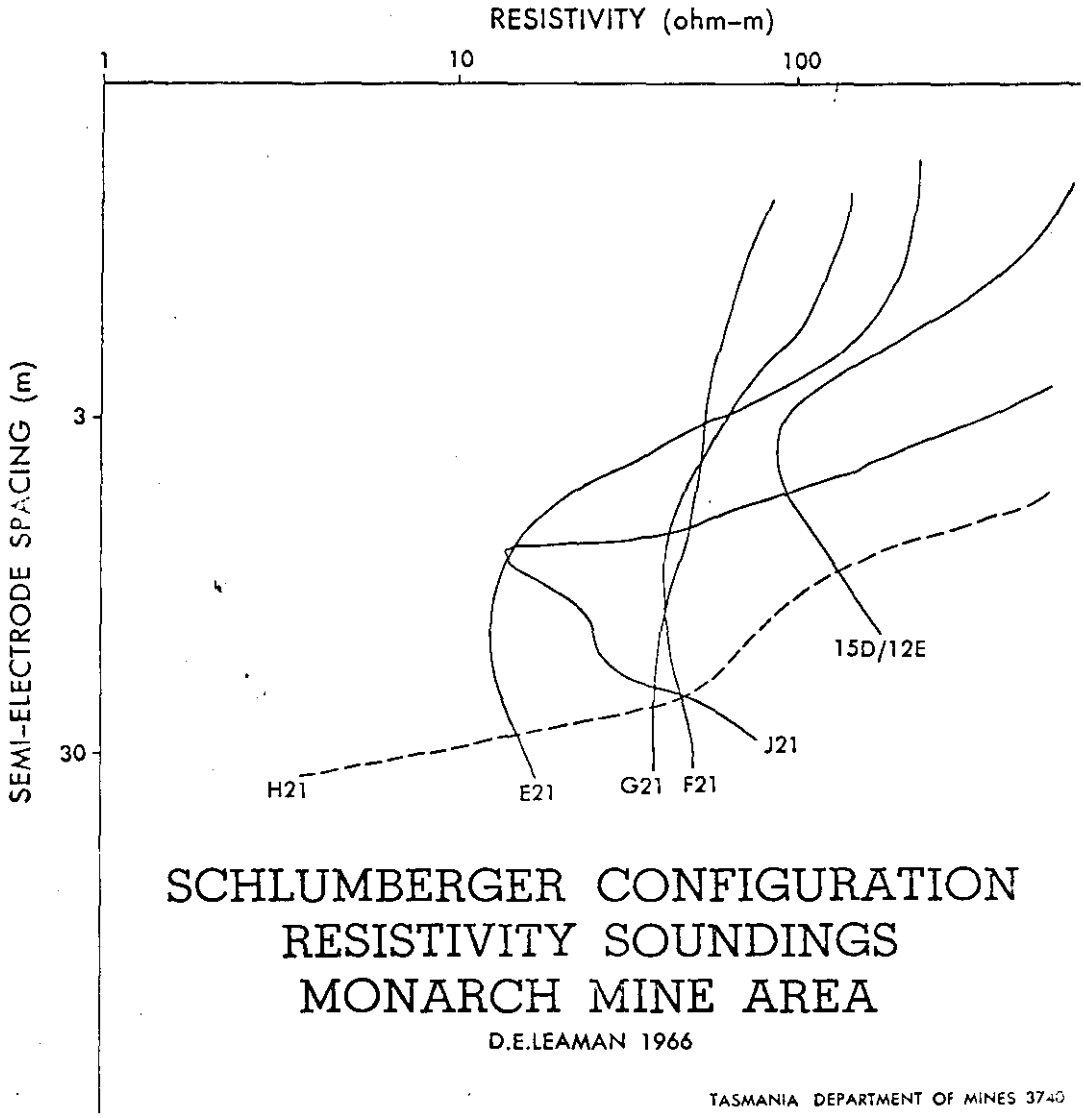

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5 cm

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Figure 1.