

CONCLUSIONS

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## 6. DRILLING FOR TIN IN THE UPPER BOOBYALLA AREA

by D. J. Jennings

### ABSTRACT

The result from the completion to bedrock of a programme of 5 drill holes in the Boobyalla area, designed to complement a similar drilling programme by Broken Hill Pty Ltd to locate and assess the tin-bearing potential of the inferred northern extension of the Ringarooma deep-lead, suggests that little tin was carried this far N and that further test drilling should be directed at targets further upstream, preferably along the northern margin of the basalt near Winnaleah.

### INTRODUCTION

The tin-bearing deep leads of the Branxholm-Derby area represent Tertiary sediment fill in ancient valleys of a river system draining granite hills to the S. The leads have been worked-out in their exposed southern reaches and are lost towards the N beneath an increasing depth of barren Tertiary sediments and a thick protective basalt capping which constitutes the Winnaleah plateau.

The possibility that these leads may combine to form a single "main Ringarooma lead" and emerge from beneath the basalt covering to the N of Winnaleah has long been recognized (Nye, 1925). The undulating scrub-covered terrain of low hills and swamps of poorly exposed Tertiary sediments gives no surface indication of the course of such a lead, nor has any tin deposit been worked which can be related unequivocally to this source.

The Department of Mines drilling programme N of Winnaleah is the most recent attempt to define a buried river channel, which may represent the ancient course of the Ringarooma River, and to assess its potential as a depository for tin carried downstream beyond the major concentrations along the granite foothills in the Derby-Branxholm district.

### HISTORY OF INVESTIGATION

The selection of the country between the Boobyalla and Little Boobyalla rivers for drilling was originally made by Keid (1953) but due to the extensive area and anticipated depth of sediments involved no immediate action was taken. Interest was resumed in the northern part in 1957 when the Bureau of Mineral Resources made a brief geophysical survey over traverses chosen by Rio Tinto Australian Exploration Pty Ltd (Rowston, 1961), and 4 scout-bores were put down by this company at Dead Horse Creek and at the confluence of the Boobyalla and Little Boobyalla rivers, 3 miles and 5 miles respectively N of the drilling under discussion. All holes are reported to have proved between 75 and 90 feet of barren Tertiary clay and pebble beds and bottomed in granite (Rattigan, 1958).

Further geophysical work over a broader area was recommended by Jack (1961) and a programme using both gravity and seismic methods was carried out by the Bureau of Mineral Resources in the summer of 1961-62 (Sedmik, 1964). The results of the geophysical survey allowed the delineation of a system of broad but well defined channels in bedrock beneath the Tertiary sediment cover, possibly related to the ancient course of the Ringarooma River. The site for a line of test boreholes was selected to confirm the channel profile and assess its tin potential. Subsequently during the summer of 1964-65, the Broken Hill Pty Co. Ltd sank a series of 7 drill holes in an E-W line across the inferred course of the ancient Ringarooma River channel. Thicknesses of from 50 to over 200 feet of Tertiary sediments were encountered and only one hole failed to reach the granite basement. The bedrock profile derived from the drilling results indicated a marked depression, but occasional beds carrying traces of tin proved impersistant, and no stanniferous basal wash was found (Chesnut, 1965).

### MINES DEPARTMENT DRILLING PROGRAMME

Early in 1965 the Mines Department embarked on a programme of test drilling, starting close to the most westerly of the Broken Hill test bores and extending to the SE. The line of some 10 holes was envisaged to cut at right angles the channel located



during the geophysical survey. Holes Nos. 1, 2, and 3 were drilled at 300 feet intervals with a percussion rig, and bottomed in granite after penetrating 190, 153 and 142 feet of sediment respectively. Hole No. 4, sunk with a diamond drill was abandoned at 103 feet while still in sediment. Hole No. 5 was not drilled. Hole No. 6, 600 feet to the SE of No. 4, was drilled with a percussion rig in September 1966 and penetrated 195 feet of sediments to bottom in granite.

The bedrock levels obtained confirm the existence of a buried channel predicted by the geophysical survey, and the profile compares with the western part of the section as indicated by the Broken Hill drilling results. Only traces of tin were obtained, dispersed throughout the sediments, and no basal wash was found.

### RECOMMENDATIONS

The three westerly bores of the B.H.P. programme and all the Mines Department holes were sunk in the deep part of the buried channel, with the Mines Department bore hole No. 6 apparently penetrating the sediments near the channel centre. The absence of any worthwhile tin values suggests that little tin was transported this far N.

It is recommended that an attempt be made by detailed surface mapping of granite outcrops to locate the position of emergence of the buried river channel from the basalt plateau and the site to be confirmed by scout drilling. A programme of test drilling to indicate the channel profile and assess the tin potential should then be instituted.

### REFERENCES

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## APPENDIX

by G. Everard

Four samples of concentrates from Boobyalla No. 6 Bore have been examined with the following results:—

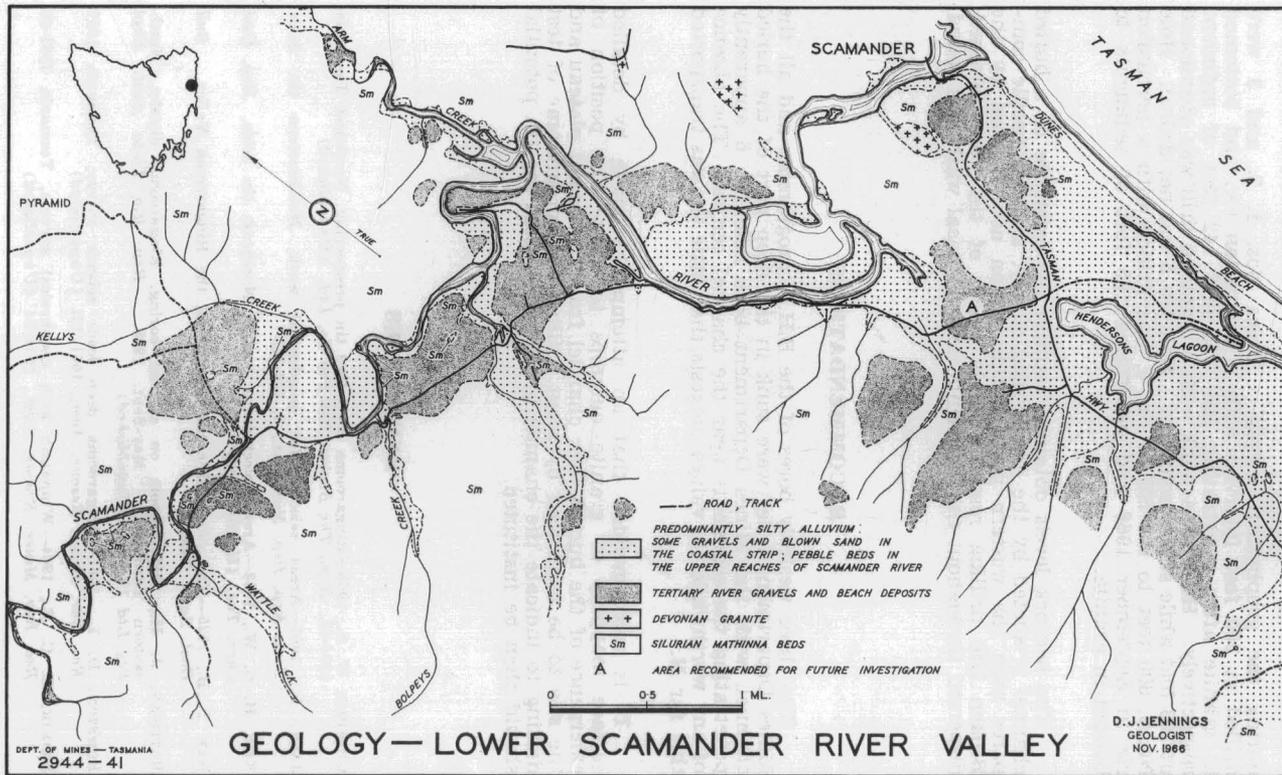
Sample No. 6	25'-30'	15 gm	55% Marcasite 45% Quartz tr. Topaz tr. Tourmaline tr. Cassiterite
Sample No. 7	30'-35'	9.4 gm 0.3 gm residue	Marcasite 60% Quartz 35% Zircon 5% Tourmaline tr. Garnet tr. Cassiterite
Sample No. 8	35'-40'	11.6 gm 0.6 gm residue	Marcasite 90% Quartz 8% Zircon 2% Cassiterite
Sample 120'		0.2 gm total	60% Quartz 20% Zircon 15% Ilmenite 5% Augite tr. Cassiterite

Sand samples from Boobyalla No. 6 borehole have been examined under the microscope and the contents estimated as follows:—

Depth	Quartz	Ilmenite	Zircon	Pyrite	Cassiterite
	%	%	%	%	%
125'-130'	80	15	5	....	tr.
130'-135'	70	7	20	....	3
135'-140'	95	....	5	....	....
145'-150'	85	10	3	....	2
150'-155'	80	18	2	....	....
155'-160'	80	20	tr.	....	....
160'-165'	78	20	....	....	2
165'-170'	75	24	1	....	tr.
170'-175'	75	25	tr.	....	tr.
175'-180'	72	15	10	....	3
180'-185'	95	5	....	....	....
185'-190'	97	2	1	....	....
190'-195'	50	2	1	47	tr.

Traces of rutile, topaz and spinel were also found.

FIGURE 10



## GEOLOGY — LOWER SCAMANDER RIVER VALLEY