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EXPLORATION AT THE RAZORBACK TIN MINE, WESTERN TASMANIA

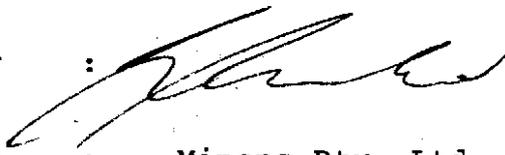
MARCH 1979 - SEPTEMBER 1980

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Date : September 26, 1980

Submitted to : R.L. Brunker

Accepted by :



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AMG REFERENCE POINTS ADDED

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*Comment by A.V. Brown (Geological Survey, Dept. Mines, Tasmania)  
inside back cover.*

*J.*

## 1. SUMMARY

The Razorback tin mine is located near Zeehan in Western Tasmania. The current lease holders, Minops Pty. Ltd., mined 180,000 tonnes of ore grading 0.6% Sn in a small open cut operation from 1975-78.

Following the signing of a Joint Venture agreement with Minops in March 1979, CRAE commenced an exploration programme aimed at locating further mineralisation at depth beneath the known ore body.

To date this work has mainly comprised the drilling of three diamond drillholes totalling 862 m, and the compilation of accurate geological sections following extensive reassaying and relogging of old drillcore.

In addition, the reserves of the known orebody and its possible extensions have been recalculated. The orebody is estimated at 365,000 tonnes of 0.72% Sn, with possible extensions of 130,000 tonnes at similar grade. The tailings from the Minops operation, estimated at 180,000 tonnes grading 0.35% Sn, have been added to give a total resource of approximately 675,000 tonnes at a grade around 0.6% Sn. The three CRAE drillholes intersected only weak mineralisation - the best result being 0.9 m true width of 0.83% Sn, 1.6% Cu and 75 g Ag/t in DD 80 RC 1. However, the extensive review of all data has shown that a deep "trough-like" feature within the talc-carbonate unit appears to be controlling the location of the known orebody. Prospective areas have been delineated at depth towards the southern end of the mine where this "trough" appears to be enlarging, giving it the potential to host a major body of mineralisation.

Further drilling is recommended to test this feature and other targets. In addition a programme of systematic exploration comprising mapping, geochemical sampling and an aerial geophysical survey, should be undertaken over the entire Razorback property.

## 2. INTRODUCTION

The Razorback tin mine is situated near the old township of Dundas, 7 km ENE of Zeehan in Western Tasmania.

The tin mineralisation was discovered in 1909, but systematic exploration did not take place until 1958-60 when the BMR and Tasmanian Mines Department carried out geological mapping, geophysical surveys and drilled three holes. Extensive drilling and underground exploratory development was undertaken by Placer Prospecting Pty. Ltd. in the period 1964-66. Placer withdrew after outlining reserves of 195,000 tonnes of 0.83% Sn (oxide ore) and 394,000 tonnes of 0.86% Sn (sulphide ore).

Minops Pty. Ltd. took over the property in 1972. After resampling the Placer adits and costeans, they redefined the ore reserves as 250,000 tonnes of 0.7% Sn (oxide ore) and 120,000 tonnes of 0.9% Sn (sulphide ore). In September 1975 Minops commenced a 180 tpd opencut mining operation in the oxide ore.

The mining operation ceased in February 1978 after extracting 180,000 tonnes of oxide ore grading 0.6% Sn. Mill recoveries averaged only 40% and the venture incurred a loss. From March to July 1978 Minops drilled 7 diamond drillholes to try and locate extensions of the ore to the south of the opencut, but only weak mineralisation was intersected.

In March 1979 a Joint Venture Agreement was signed with Minops over the Razorback property which comprises Mineral Leases 6M/77, 86M/77, 87M/77 and 11W/74, totalling 159 ha.

This report details the results of exploration undertaken at Razorback in the period March 1979-September 1980. A recommended programme of further exploration is outlined.

### 3. CONCLUSIONS

The potential of the Razorback property remains its similarity both in geological setting and style of mineralisation, to that at the Renison Bell mine 7 km to the north. The main thrust of the exploration programme should continue to be directed towards finding a significant new body of mineralisation, rather than to further defining the known orebody and its adjacent potential extensions as these are insufficient to support a mining operation.

The "trough-like" feature within the talc-carbonate which recent work has shown may be controlling ore location at Razorback, provides an important basis for further exploration. The apparent enlargement of this feature at depth is significant as it has the potential to contain a sizeable body of mineralisation.

Little attention has been paid in the past to those parts of the Razorback ML's outside the immediate vicinity of the mine. In particular, the area south of the Dundas Rivulet and the Hodge Slate warrant detailed examination.

### 4. RECOMMENDATIONS

The recommended programme of further exploration is as follows:

#### 1 Diamond Drilling

Five further diamond drillholes totalling 1400 m (see Longitudinal Plan for locations). The holes are (in suggested order of drilling):

<u>Drillhole</u>	<u>Section</u>	<u>Azimuth</u>	<u>Approx. Dip</u>	<u>Approx. Depth</u>	<u>Position of intersection on talc-carbonate/conglomerate contact</u>
D	4440 N	Grid west	50°	300 m	4440 N/ RL 30 m
E	4640 N	" "	55°	320 m	4640 N/ RL 20 m
F	4880 N	" "	45°	280 m	4880 N/ RL 100 m
G	4960 N ?	" "	50°	160 m	4960 N/ RL 200 m ?
H	4360 N ?	" "	55°	340 m	4360 N/ RL -20 m

Holes "D", "E" and "H" are designed to test the depth extensions of the "trough-like" feature within the talc-carbonate. The precise location of "H" would be dependant on the results in hole "D".

Hole "F" is aimed at a possible area of thickening in the talc-carbonate at depth at the northern end of the mine.

The remaining hole "G" is tentatively assigned to test an IP anomaly located at the northern end of the Razorback leases. However, the drilling of this anomaly will depend on its confirmation by further geophysical surveys yet to be carried out.

## 2. Surface Investigations

Geological mapping and rock sampling of the entire Razorback property, with particular attention (including soil sampling) to the area south of the Dundas Rivulet, and to areas of the Hodge Slate where there are SP and EM geophysical anomalies.

## 3. Geophysical Surveys

A low level aerial EM and aeromagnetic survey of the whole property on a flight line spacing of 200 m.

Ground geophysical surveys:

- (a) To refine the target IP anomaly of hole "G"
- (b) To examine geophysical anomalies detected within the Hodge Slate by the 1960 BMR work

(c) To follow up any anomalies detected by the aerial survey.

4. Compilation of Geological Sections

The continued compilation of geological sections is important in order to improve the understanding of the ore controls and to assist in the delineation of prospective areas at depth.

Relogging of old drillholes to be completed.

Comprehensive assaying of the Minops holes to be completed using the core grinder to provide replacement samples for those discarded.

The underground mapping, sampling and drilling, undertaken by Minops and Placer to be properly compiled on Level Plans.

5. General

Discussions should be held with geologists at Renison Bell, and with geologists of Comstaff Pty. Ltd., all of whom are dealing with the same type of mineralisation in a similar geological setting, a short distance north of Razorback. The aim of such discussions would be to increase the understanding of the controls and location of ore especially in relation to the morphology of the talc-carbonate rocks.

5. GEOLOGY5.1 Rock Types and Stratigraphy

The vertically-dipping north-striking rock sequence at Razorback is of approximate Upper Adelaidean - Lower Cambrian age, and facing is toward the west. The oldest rock unit is thought to be the SERPENTINITE which occupies all the low-lying ground east of the Razorback mine. The serpentinite is generally massive but occasional layers with indistinct clast shapes suggest a non-intrusive origin. Because of these features, plus its conformability with the dip and strike of the adjacent sediments and the lack of any definitive evidence of intrusive character, the serpentinite is believed to be an altered volcanic unit.

The TALC-CARBONATE or "dolomite" was deposited on top of the ultrabasic volcanics. Its variable nature suggests a complex origin. The presence of chromite and the high values for nickel and cobalt confirm that the talc-carbonate contains a proportion of ultrabasic material. In places towards its stratigraphic top the rock is more evenly textured and coloured, bedding is visible and dolomite-ankerite carbonate greatly predominates over talc. Although quartz is generally rare there are occasionally extensive zones of very hard quartz-talc-carbonate. There appears to be no pattern to the distribution of such zones. The talc-carbonate is ferruginous, with an average of 5-15% of hematite, magnetite and/or siderite. It is generally weakly to moderately magnetic.

The talc-carbonate is tentatively considered to be a combination of an altered ultrabasic tuff and an altered impure carbonate facies, with the proportion of ultrabasic component decreasing towards the top of the unit.

Overlying the talc-carbonate is a very thin BASIC TUFF\* (??) unit which varies in thickness from 0.1 m to 4 m. The tuff is dark green, chloritic and often comprises small clasts of basic volcanics in a sandy tuffaceous matrix. The tuff sometimes is sheared and schistose.

Above the tuff is the <sup>Red Lead</sup> ~~RAZORBACK~~ CONGLOMERATE - a poorly sorted and crudely stratified, massive unit. A cementing matrix of calcite and silica gives it a fair degree of hardness. The conglomerate is green in colour due to the predominance of clasts of basic volcanics, and green greywacke and siltstone. The basal 20 m is often marked by an abundance of basic volcanic material in both clasts and matrix, and where this is the case the matrix can be chloritic. This volcanic material is identical to that in the underlying basic tuff unit. Other clast types in the conglomerate are cherts (often black and pyritic) quartzite and black pyritic shale. Clasts of talc-carbonate or serpentinite are extremely rare. The clasts generally average less than 25 mm in size and soft-pebble features are common. The conglomerate is overlain by the well-bedded HODGE SLATE - a black, dolomitic carbonaceous shale containing several percent of syngenetic pyrite.

Although the rock types vary considerably, there is a recognisable association between the units which suggests they represent a sequence of fairly continuous deposition. Certainly no substantial time break has been identified within the sequence although the talc-carbonate is separated from the conglomerate by a minor parallel unconformity (disconformity).

← No

\* The "intraformational shale" of Placer

In the past this unconformity has been described as a major fault zone (the "Razorback Shear"), and the channel-way by which the mineralisation at Razorback was introduced into the talc-carbonate and conglomerate. Although there is substantial shearing on the upper part of this contact (as can be seen in the present open cut), elsewhere and particularly at depth, the drillholes show little or no sign of shearing.

Yes

Stabilization

In most drillholes the contact is irregular but sharp, and approximately parallels adjacent bedding in both the talc-carbonate and conglomerate. It appears to be a bedding surface on which there has been erosion in places.

The unconformity is sometimes difficult to distinguish. This can be due to the talc-carbonate becoming conglomeratic in character near the contact (this type of talc-carbonate is termed "transition zone" - see drill logs). Or more commonly, the conglomerate contains so much basic volcanic material as to be indistinguishable from the underlying basic tuff unit, especially where the tuff is very thin.

Clearly, the rock types on either side of the unconformity display an association with each other which suggests the time break involved is not great. Similar association is exhibited across the hazy contact between the serpentinite and the talc-carbonate which obviously contains a lot of ultrabasic material, and also in the change from the conglomerate to the black shale - where lenses of conglomerate occur within the shale for some distance above the contact.

## 5.2 Mineralisation

The tin mineralisation at Razorback is similar in style to that at Renison Bell. It comprises cassiterite and lesser stannite, occurring as microscopic grains associated with sulphides - predominantly pyrrhotite, with lesser pyrite, arsenopyrite, chalcopyrite, sphalerite and galena. Where the sulphides are particularly coarse grained, aggregates of cassiterite and stannite are sometimes visible. Significant silver and minor platinum values are also associated with the tin mineralisation (see drill logs for details).

The sulphides occur within the talc-carbonate, basic tuff and conglomerate. In the talc-carbonate they form conformable lenses of massive sulphide up to several metres thick. They are also present as thin conformable bands and stringers, and as heavy disseminations. The most common gangue minerals are quartz and wollastonite.

In the conglomerate the sulphides occur as heavy disseminations within both matrix and clasts, often particularly concentrated in the matrix along the clast margins. They also occur in thin quartz-carbonate-sulphide veins.

Rarely, cassiterite occurs along fractures in the Hodge Slate. In the area of the outlined ore reserves the mineralisation is essentially continuous from the talc-carbonate across the basic tuff into the conglomerate. This gave rise in the past to the theory that the mineralisation had ascended along the unconformity between the basic tuff and the conglomerate. However, in most drillholes outside the ore reserve blocks, the unconformity and basic tuff beneath it is completely unmineralised, even in areas where there are massive sulphide lenses in the talc-carbonate near the contact. In most drillholes the mineralisation in both the conglomerate and talc-carbonate tends to be separated from the contact by many metres of barren rock.

Although massive sulphide lenses can occur in the talc-carbonate up to 40 m or more stratigraphically below the unconformity, in overall distribution the mineralisation is concentrated towards the top of the talc-carbonate and the bottom of the conglomerate.

## 6. DISCUSSION OF RESULTS

### 6.1 General

For detailed results see the drill logs in Appendix 1 and the sections at the back of the report.

Three diamond drillholes were drilled by CRAE to test possible extensions of the Razorback mineralisation. The holes intersected only weak mineralisation, the best result being 0.9 m true width of near-massive sulphides grading 0.83% Sn, 1.6% Cu and 75 g Ag/t in DD 80 RC 1.

Holes DD 80 RC 1 and RC 3 were designed to test the talc-carbonate at depth. RC 1 was specifically located to intersect the extension of the massive sulphide lenses encountered in Minops hole RZS 6, but the hole steepened and passed through the talc-carbonate/conglomerate contact almost 100 m below the intended depth.

Hole DD 80 RC 2 was aimed at an IP anomaly located during a geophysical survey of sections 4900 N and 5000 N (see Appendix 4). This hole intersected only traces of mineralisation and it is now thought that the source of the IP anomaly is located between these two sections. It is hoped that planned additional geophysical work will provide the necessary refinement to this anomaly to enable further drilling to be attempted.

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Hole DD 80 RC 2 did show an unexpected thickening of the talc-carbonate unit at depth at the northern end of the Razorback deposit. This thickening could have important implications for the ore potential in this area and is discussed further in Section 6.2.

Apart from drilling the three holes, a comprehensive and extensive programme of relogging, sampling and further assaying was carried out on drillcore from the earlier Minops and Placer drilling programmes. Although this work was intended to test the mineralisation more comprehensively than had previously been undertaken (and particularly to determine the levels of silver, gold and platinum), it was also necessary for the drawing up of accurate geological sections.

This latter work is not yet complete and must be continued as part of the future programme. The Minops grid (the metric equivalent of the 1960 BMR grid), has been taken as the basis for the geological sections which are spaced at 20 m intervals. Only five sections have been drawn up to date (see plans).

Although the core from the seven holes put down by Minops in 1978 is in good condition, most of the pulps of samples taken from the best mineralised zones had been discarded. Such intervals will need to be sampled with the core grinder so that comprehensive assaying can be undertaken.

Of the 17 surface holes and 23 underground holes put down by Placer in 1964-66, core now exists for only 10 of the surface holes. Although it has now been reboxed, much of this core is in bad condition - disrupted due to previous rough handling, and incomplete with many of the main mineralised intervals missing. It is considered that the Placer assay results are unreliable as they had trouble sorting out a suitable analytical technique at their Zeehan laboratory.

For this reason the available core was resampled, which in places involved quartering intervals already split by Placer.

Almost no downhole survey data is available for the Placer drillholes. Experience at Razorback has shown that drillholes tend to deviate wildly unless controlled drilling is undertaken. In the absence of survey data it has been necessary when drawing up the geological sections to assume that the Placer holes went straight, although it is clear that almost all holes (especially the deeper ones) will have deviated from their plotted course. Consequently the positions of mineralised intersections and intersections on the talc-carbonate/conglomerate contact, are not accurately known for any of the Placer holes. For example, information from the Minops and CRAE drilling indicates that the positions of Placer holes R 6, R 9, R 13 and R 16 are not as plotted on the sections. R 6 in particular is one hole whose position and Placer drill log appear to be highly inaccurate, as it suggests the talc-carbonate is interfingering out into serpentinite at depth beneath the mine, whereas other available evidence suggests the talc-carbonate is fairly thick in this area. Unfortunately the core for this hole has been lost.

## 6.2 Morphology of the Talc-Carbonate

Contours of the thickness of the talc-carbonate unit are shown on the longitudinal section along with the outline of the ore remaining beneath the southern end of the Razorback open cut. Although there has evidently been some erosion of the top of the talc-carbonate this is not thought to be significant.

The known ore occurs in an area where there is a relatively abrupt local thickening of the talc-carbonate, and the shape of the main ore deposit approximates the shape of the area of thickening. Further, the most significantly mineralised drillholes beneath the ore reserve block appear to lie in the steeply southerly-plunging downward extension of this zone of thickening, whereas adjacent weakly mineralised or barren holes (e.g. RZS 7) are in areas of thin talc-carbonate.

It can be postulated that as the talc-carbonate is apparently a sedimentary unit, increases in thickness denote local "basins" where the original deposition and accumulation was greater than in surrounding areas. If this is the case then it appears that the sulphides at Razorback were preferentially deposited in such basins and that areas of thick talc-carbonate are more prospective than areas where the talc-carbonate is thin.

In this context the indications of a thickening of the talc-carbonate at depth to the north of the Razorback mine, detected in hole DD 80 RC 2, are significant and warrant drill testing. The apparent thick accumulation of talc-carbonate at depth directly beneath the ore deposit also needs testing despite (or because of), the unfavourable results the unreliable Placer hole R 6.

However, it is the substantial increase in talc-carbonate thickness at depth south of section 4500 N which merits the most attention, as this apparently indicates a much deeper and larger "basin" with the potential to host a much greater deposit of sulphides.

Although there is not yet enough data to contour the thickness of the overlying conglomerate, the little data there is indicates an abrupt change from along a "hinge line" extending through the ore deposit and plunging south at approximately  $40^{\circ}$ . Because of the lack of data on the conglomerate, an attempt has been made to define the shape of the upper surface of the talc-carbonate by contouring the talc-carbonate/conglomerate contact (see Longitudinal Plan). The contouring is complicated by probable warping along this contact due to differences in hardness between the rock types, and by changes in strike. However, it defines a southerly-plunging depression in the upper surface of the talc-carbonate coinciding almost exactly with the zone of thickening in which the known ore deposit and downward extension of the better mineralisation lies (see Longitudinal Plan).

At depth the shape of this depression is open to interpretation but the indications are that it maintains its coincidence with the thicker parts of the talc-carbonate. The depression in the upper surface of the talc-carbonate in the area of its greatest thickness, means that the known ore deposit lies within an extremely steep-sided narrow "trough" filled with talc-carbonate. This "trough" plunges south and possibly broadens with depth.

Future drilling should be directed at areas of thick talc-carbonate where the upper surface is depressed. Proposed drillholes "D", "E" and "H" satisfy these criteria, but hole "F" on section 4880 N which is aimed at an apparent thickening of the talc-carbonate at depth at the northern end of the mine, has no associated upper-surface depression indicated by the available data. Because of the sketchiness of this data the possibility of an upper-surface depression in this area cannot be ruled out.

### 6.3 Ore Reserves

Preliminary calculations have been made of the reserves in the known ore body at Razorback, using channel and bulk samples taken by Minops and Placer from crosscuts in the underground workings. No drillhole information has been used because the Placer drill holes significantly understate the width and to a lesser extent the grade, of the ore when compared to adjacent underground samples. The latter are considered much more reliable. A total of 365,000 tonnes grading 0.72% Sn is calculated to exist from surface down to 10 m below Placer 580' level (RL 202 m). This would predominantly comprise sulphide ore.

The ore contains erratically distributed silver, copper, lead and zinc values and traces of platinum. The average values for these metals is not known because of the lack of data, but all have the potential to be economically significant.

Below RL 200 m drillholes RZS 1 (4.1 m @ 0.7% Sn), R 1 (4 m @ 0.81% Sn), R 2 (3.7 m @ 0.73% Sn) and R 12 (2.9 m @ 0.26% Sn), indicate a possible significant extension of the ore down to approximately RL 120 m, particularly as the holes are probably understating the width and grade of the mineralisation. Assuming an average thickness of 5 m, approximately 100,000 tonnes of ore could be present in this extension.

A possible body of low grade ore, centered around RL 140 m on section 4580 N, could be present within the talc-carbonate approximately 25 m east of the contact with the conglomerate. This mineralisation is indicated by intersections in the upper parts of R 9 (2 m @ 0.35% Sn), R 16 (7.6 m @ 0.24% Sn), RZS 6 (1.9 m @ 0.27% Sn) and possibly R 5 (0.6 m @ 1.47% Sn). Assuming an average

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thickness of 4 m the potential is for approximately 30,000 tonnes of ore.

Minops mined 180,000 tonnes of ore with a head grade of 0.6% Sn. Recoveries in the mill averaged only 40% which means that 180,000 tonnes of treated ore grading 0.35% Sn was pumped to the tailings dam immediately east of the mine. This material has been included in the ore reserves.

Thus the total ore reserves are calculated at 545,000 tonnes @ 0.61% Sn, with indicated potential for a further 130,000 tonnes of ore at similar grade.

#### 7. REFERENCES

Purvis, J.G.            1978            The Razorback Tin Mine, Western Tasmania - A Project Proposal. Unpub. CRAE Rep.

#### 8. LOCATION

Queenstown 1:250 000 sheet SK 55-5

#### 9. KEYWORDS

Tin, silver, dolomite, conglomerate, ultrabasic, carbonate hosted type, pyrrhotite, drill-diamond, ore control-lithol, ore potential, ore reserve calcs.

J.G. PURVIS



10. LIST OF APPENDICES

Appendix 1	Drill Logs - CRAE Drillholes 1980
Appendix 2	Drill Logs - Minops Drillholes 1978
Appendix 3	Drill Logs - Placer Drillholes 1964-66
Appendix 4	Results of IP Survey on Sections 4900 N and 5000 N

11. LIST OF PLANS

Tv 303	Locality Plan - Zeehan Area	1:100 000
Tv 302	Locality Plan - Mineral Leases	1:15 840
Tv 99	Section 4500 N	1:1 000
TV 97	Section 4540 N	1:1 000
TV 100	Section 4600 N	1:1 000
Tv 101	Section 4760 N	1:1 000
Tv 98	Section 4880 N	1:1 000
Tv 94	Longitudinal Section 2800 E	1:1 000
Tv 306	Longitudinal Section Contours on Talc-Carbonate Conglomerate Contact	1:1 000
Tv 305	Longitudinal Section Contours of Talc-Carbonate Thickness	1:1 000
Tv 304	Longitudinal Section 2800 E Ore Reserves	1:500

APPENDIX 1

DRILL LOGS - CRAE DRILLHOLES 1980



C.R.A. EXPLORATION PTY. LIMITED  
DRILL CORE LOG

SHEET No. 2/4

TENEMENT NAME RAZORBACK No. ....

PLAN - MAP REFERENCE.....

CO-ORDINATES..... AZIMUTH..... DRILLERS..... COMMENCED..... DEPTH..... HOLE No. RC 1

RL COLLAR..... INCLINATION..... DRILL TYPE..... COMPLETED..... CASING LEFT..... DPO No(s) 25845, 25850

DEPTH		Core Rec. (M)	Core Size	Graphic Log	CORE DESCRIPTION	SPECIAL FEATURES Weath, Alteration, Fracturing, Veining, Mineralization	Sample No.	From (M)	To (M)	Rec (M)	ASSAY VALUES (Analysed by <u>ANAL</u> )										
From (M)	To (M)										Sn	W	Pb	Zn	Cu	Ag	Co	Ni	Cr	Ta	
						<i>Weak sedimentary banding @ 238m - 70% KCl</i>	795372*	220	223	3.00	<4	<10	<5	12	<2	<1	30	470	120		
						<i>20mm band po + magnetite @ 272.5m</i>	73*	237	240	3.00	32	<10	<5	28	<2	<1	35	450	200		
						<i>Disseminated po 276-286m</i>	74*	250	253	3.00	4	<10	<5	26	<2	<1	35	440	190		
						<i>Minor po, magnetite, + sphalerite @ 291.8m</i>	795375*	269	272	3.00	55	15	5	18	<2	<1	70	760	320		
							795336	272	273	1.00	48	<10	<5	12	45		70	1050	370		
							37	273	276	3.0	65	<10	10	20	20		55	960	270		
							38	276	278	2.0	12	<10	15	8	5		40	900	240		
						<i>Disseminated po 297-300m</i>	39	278	280	2.0	240	10	10	25	42		50	1100	280		
						<i>Disseminated pyrite + po 303-308m</i>	795340	280	283	3.0	460	<10	25	450	70		60	1300	270		
							41	283	286	3.0	740	<10	65	100	38		50	1150	320		
							795376*	286	290	4.0	70	10	140	540	16	<1	50	1000	380		
							795342	290	293	3.0	28	<10	30	160	15		55	980	260		
							43	293	295	2.0	28	<10	15	770	10		35	760	260		
							795377*	295	298	3.0	36	<10	5	20	<2	<1	45	770	250		
							795344	298	300	2.0	14	<10	5	15	5		40	710	240		
							795378*	300	303	3.0	14	<10	<5	20	2	<1	45	800	320		
							795345	303	306	3.0	70	<10	5	10	10		60	1050	140		
							46	306	308	2.0	18	<10	<5	12	28		45	730	210		
							795379*	308	314	6.0	6	<10	<5	16	2	<1	55	660	280		
							795347	314	316	2.0	24	<10	5	5	2		55	640	140		
							48	316	318	2.0	22	<10	5	5	18		60	840	150		
							49	318	320	2.0	6	<10	<5	5	130		50	740	140		
320	322.2	2.2	BQ		TALC CARBONATE WITH STRINGERS AND VEINLETS OF PYRRHOTITE. Also chalcopyrite, magnetite and minor sphalerite.	<i>Talc and quartz adjacent to mineralisation.</i>	795350	320	322.2	2.2	95	<10	20	18	260		45	810	200		
							51	322.2	322.5	0.3	400	<10	840	740	5300	48	180	1500	400	km	
							52	322.5	322.8	0.3	26	<10	20	50	45	<1	65	1300	200	cm	
							53	322.8	324.0	1.2	830	70	530	810	1670	75	70	1200	500	cm	
							54	324	325.4	1.4	170	<10	20	38	250	1	60	1600	640	cm	

C.R.A. EXPLORATION PTY. LIMITED  
DRILL CORE LOG

SHEET No. 3 of 4

TENEMENT NAME RAZORBACK No. ....

PLAN - MAP REFERENCE.....

CO-ORDINATES..... AZIMUTH..... DRILLERS..... COMMENCED..... DEPTH..... HOLE No. RC 1

RL COLLAR..... INCLINATION..... DRILL TYPE..... COMPLETED..... CASING LEFT..... DPD No(s) 25848, 25849, 25850

DEPTH		Core Rec. (M)	Core Size	Graphic Log	CORE DESCRIPTION	SPECIAL FEATURES Weath. Alteration, Fracturing, Veining, Mineralization	Sample No.	From (M)	To (M)	Rec. (M)	ASSAY VALUES (Analysed by... AMDEL...)										
From (M)	To (M)										Sn	W	Pb	Zn	Cu	Ag	Co	Ni	Cr	Ta	
322.2	322.5	0.3	BQ		MASSIVE PYRRHOTITE Also arsenopyrite, chalcopyrite, magnetite and cassiterite. Quartz and talc-carbonate gangue. Upper contact 50°/LCA, lower contact 60°/LCA (irregular).	Core very magnetic. Fine alteration of talc-carbonate near contact with mineralization.	795355	325.4	325.7	0.3	500	65	150	520	1000	3	50	1800	620	40	
							56	325.7	326.6	0.9	150	15	110	210	230	2	50	1050	390	10	
							57	326.6	330.2	3.6	34	<10	5	22	45	<1	55	1400	310	10	
							58	330.2	331	0.8	440	15	80	140	630		30	1200	410		
							795380	331	331.3	0.3	1200	<10	1200	4100	1500	29	65	1100	780		
							795359	331.3	334	2.7	44	<10	10	45	15		35	1000	340		
							60	334	336	2	6	<10	<5	10	5		30	770	240		
322.5	322.8	0.3	BQ		TALC-CARBONATE	Thin disseminated po + magnetite	61	336	338	2	14	<10	<5	30	<2		35	680	610		
							62	338	340	2	<4	<10	<5	15	<2		40	700	420		
322.8	324	1.2	BQ		PYRRHOTITE-CHALCOPYRITE-ARSENOPYRITE CASSITERITE, LOSE ZONE. Upper contact 65°/LCA. Lower contact 85°/LCA.	Sulphide approx 50%. Quartz gangue. Fine band of albite. Abundant wollastonite near contact with albite.	63	340	342	2	4	<10	<5	15	<2		40	710	430		
							64	342	345	3	4	<10	<5	15	<2		40	1000	290		
							65	345	345.9	0.9	2950	160	370	480	6000	55	130	1500	390	10	
							66	345.9	346.6	0.7	110	<10	40	70	8		50	220	50		
							67	346.6	348.35	1.75	22	15	30	90	12	1	45	90	70	10	
324	325.4	1.4	BQ		TALC-CARBONATE Small veinlets and patches of po. cp. mineralisation.	Quartz gangue associated with po + cp. Wollastonite along contact zones.	795368	348.35	352	3.65	12	<10	20	130	170	<1	35	140	90		
325.4	325.7	0.3	BQ		PYRRHOTITE-CHALCOPYRITE LOSE WITH TALC-CARBONATE 55°/LCA.	Abundant quartz and wollastonite and magnetite.		322.80	324	1.20	1300	70	530	810	1.6%	75	70	1200	500		
								345	345.90	0.90	2950	160	370	480	6000	55	130	1500	390		
325.7	326.6	0.9	BQ		TALC-CARBONATE WITH PYRRHOTITE- CHALCOPYRITE LOSE 326.4-326.6 mineralisation 55°/LCA.	Abundant quartz, wollastonite and magnetite.															
326.6	330.2	3.6	BQ		TALC-CARBONATE	Bands of magnetite 30°/LCA.															
330.2	331	0.8	BQ		TALC-CARBONATE WITH PO+CP VEINLETS	Abundant wollastonite.															
331	331.3	0.3	BQ		MASSIVE PO+CP WITH MAGNETITE-CASSITERITE	Abundant quartz + wollastonite. 45°/LCA															
331.3	345	13.7	BQ		TALC-CARBONATE, Lamination 45°/LCA.	Disseminated magnetite throughout.															

028

966023







C.R.A. EXPLORATION PTY. LIMITED  
DRILL CORE LOG

SHEET No. 184

TENEMENT NAME RAZORBACK No. \_\_\_\_\_  
LOGGED BY: G. PURVIS

CO-ORDINATES 4760N 299E & AZIMUTH 270° GD (250° MAG) DRILLERS K. PARRY COMMENCED 13-6-80  
RL COLLAR 273.5m approx. INCLINATION 4.8° DRILL TYPE BOYLES 37 COMPLETED 27-6-80

DEPTH 298m HOLE No. RC 3  
CASING LEFT 6m NW DPO No(s) 26454

DEPTH		Core Rec. (M)	Core Size	Graphic Log	CORE DESCRIPTION	SPECIAL FEATURES Weath, Alteration, Fracturing, Veining, Mineralization	Sample No.	From (M)	To (M)	Rec (M)	ASSAY VALUES (Analyzed by B.M. DEL., Z.C.)										
From (M)	To (M)										Sn	W	Pb	Zn	Cu	Ag	Pt				
0	6	NW			Truncated - no core.																
6	227.05	217	NW to 167.6m then 89		SERPENTINITE Examined in detail down to 123.2m - has core rejected after sampling Light and dark green fine to med of massive even-textured. Talus Main rock type is massive dark green serpentinite with blotchy lighter green zones. Occasionally dark green blotches in lighter green groundmass possibly after breccia? Med-strongly magnetic due to 5-15% magnetite - haematite, usually disseminated sometimes in carb. & sil. veins up to 15mm. Minor chromite. Some veinlets of asbestos over 1-2mm up to 10mm. Have trace py in carb-gr. - talc veins Some broken zones above 25m Magnetite veining common 6-27m (5-6/m > 2mm up to 10mm); 4.5-5/m - asbestos veins 2-3mm make up 5-10% of rock. Vein limitation at 55.5m 55°/LCA Breccia clast limitation 70m 45°/LCA 78.4-81.4m: luggy shear zone 91.3-91.7: clayey shear zone 30°/LCA Clast limitation 104m: 40°/LCA 121.9-123.2m: Numerous serpentinite - asbestos - magnetite, filled veins 40°/LCA	795454*	6	10													
							55*	10	15										<.04		
							56*	15	20												
							57*	20	25												
							58*	25	30												
							59*	30	35												
							795460*	35	40										<.04		
							61*	40	45												
							62*	45	50												
							63*	50	55												
							64*	55	60										<.04		
							65*	60	65												
							66*	65	70												
							67*	70	75												
							68*	75	80												
							795469*	80	85												
							795438*	85	90												
							39*	90	95												
							795440*	95	100										<.04		
							41*	100	105												
							42*	105	110												
							43*	110	115												
							44*	115	120												
							795445*	120	125.4										<.04		

020

966027



C.R.A. EXPLORATION PTY. LIMITED  
DRILL CORE LOG

TENEMENT NAME RAZORBACK SHEET No. 3 of 4  
 PLAN - MAP REFERENCE .....  
 DEPTH ..... HOLE No. RC 3  
 CASING LEFT ..... DPO No(s) .....

CO-ORDINATES ..... AZIMUTH ..... DRILLERS ..... COMMENCED .....  
 RL COLLAR ..... INCLINATION ..... DRILL TYPE ..... COMPLETED .....

DEPTH		Core Rec (M)	Core Size	Graphic Log	CORE DESCRIPTION	SPECIAL FEATURES Weath, Alteration, Fracturing, Veining, Mineralization	Sample No.	From (M)	To (M)	Rec (M)	ASSAY VALUES (Analysed by .....						
From (M)	To (M)										PPM						
						264.95-265.85: MASSIVE PYRROTTITE Upper contact 60° bedding in sulphides 50°/LCA, lower contact 45°/LCA. Matrix py > cp - arsenic > qz, sp, py Trace stannite? Some qtz - wollastonite on margins of band. Lower contact // to substantly (lineation) in tc.											
267.3	282.2	1A-9	30		<p><u>VARIABLE TALL CARBONATE</u>                      Pink, grey or black, variable bedded                      and thin with strong lineation.                      Very siliceous in black zones which are                      mostly above 271m. These zones contain                      carbonates in rounded aggregates up to                      50mm.                      Elsewhere rock appears 'sandy' with                      vague chert-like features (&lt; 20mm)                      below 271m - these possibly arranged                      in 'beds' at 282m. Rock is siliceous                      and hard below 281.6m.                      Lineation: 45°/LCA @ 273m                      50°/LCA @ 278.5m (bedding?)                      45°/LCA @ 282m (bedding?)                      Band contact 45°/LCA - approx                      // lineation. Sharp, clean break.</p>	<p>low non-magnetic - some magnetite,                      haematite + chromite.                      Trace py - py - cp - up to 1% in places                      below 276m. - minor sulphides near                      band contact                      275-279.3: Numerous strong carb-qtz                      veins 45°/LCA at rt LL to rock                      lineation. Barren. Have silicified                      surrounding rock for 10-20 cm.</p>											
282.2	282.3	0-1	30		<p><u>ALTERED BASIC TUFF</u>                      Dark green, strongly altered chloritic.                      Small clasts druse out by thinning - up                      to 10mm, or &lt; 4mm in sandy matrix                      Not siliceous. Lower contact bedding - 40°/LCA.</p>	1-2% py, cp.											

C.R.A. EXPLORATION PTY. LIMITED  
DRILL CORE LOG

SHEET No. 444

023

TENEMENT NAME RAZORBACK No. \_\_\_\_\_

PLAN - MAP REFERENCE \_\_\_\_\_

CO-ORDINATES \_\_\_\_\_ AZIMUTH \_\_\_\_\_ DRILLERS \_\_\_\_\_ COMMENCED \_\_\_\_\_ DEPTH \_\_\_\_\_ HOLE No. RC 3

RL COLLAR \_\_\_\_\_ INCLINATION \_\_\_\_\_ DRILL TYPE \_\_\_\_\_ COMPLETED \_\_\_\_\_ CASING LEFT \_\_\_\_\_ DPO No(s) \_\_\_\_\_

DEPTH		Core Rec. (M)	Core Size	Graphic Log	CORE DESCRIPTION	SPECIAL FEATURES Weath, Alteration, Fracturing, Veining, Mineralization	Sample No.	From (M)	To (M)	Rec (M)	ASSAY VALUES (Analysed by _____)											
From (M)	To (M)																					
282.3	298	15.7	70		<p>CONGLOMERATE</p> <p>Hand. Pale green, with matrix of quartz and carbonate.</p> <p>Clasts of basic volcanics, pale chert, black chert, green greywacke, &amp; white.</p> <p>Basic volcanics comprise flow rocks &amp; breccias, and tuff. Clasts up to 70mm average 20mm in sandy and gritty matrix cemented &amp; silica + carbonate.</p> <p>Matrix also contains much basic volcanic material - is chloritic.</p> <p>Bedding 285.5m: 40°/LCA.</p> <p>Bedding 286m: 55°/LCA.</p> <p>Some soft sediment fractures - irregular angular clasts - hard clasts. Bedding poor. Bedding 296m: 55°/LCA.</p>	<p>Occasional thin qb-carb veins.</p> <p>Some flange and deformation, bedding near contact &amp; basic tuff.</p> <p>Minor ps, py - cp down to 284m, then only trace sulphides.</p> <p>Minor pink coloration due to hematite below 292m.</p>																
END OF HOLE																						
Hole survey (Eastman Camera):																						
DEPTH		DIP		AZIMUTH																		
100m		47° 40'		248° 30'																		
145m		47° 45'		249° 40'																		
180m		47° 20'		250°																		
240m		46° 20'		243°																		
285m		46° 15'		240°																		

966030

APPENDIX 2

DRILL LOGS - MINOPS DRILLHOLES 1978

C.R.A. EXPLORATION PTY. LIMITED  
DRILL CORE LOG

SHEET No. 1 of 2

TENEMENT NAME RAZORBACK No. ....

LOGGED BY: G. PURVIS

CO-ORDINATES 46°31'N/283°E AZIMUTH 287° GRID (247 MAG) DRILLERS A.D.D. COMMENCED 7.3.78 DEPTH 128.40 m HOLE No. R251

RL COLLAR 272.4 m INCLINATION 70° DRILL TYPE F30 COMPLETED 13.3.78 CASING LEFT ..... DPO No(s) 05200, 25806, 25807

DEPTH		Core Rec. (M)	Core Size	Graphic Log	CORE DESCRIPTION	SPECIAL FEATURES Weather, Alteration, Fracturing, Veining, Mineralization	Sample No.	From (M)	To (M)	Rec (M)	ASSAY VALUES (Analysed by <u>ANAL</u> )										
From (M)	To (M)										PPM										
												Sn	W	Pb	Zn	Cu	Ag	Au	Bi	Ta	F
0	54	13.69	NQ		SEPIENTINITE. Pale green, badly broken and clayey. Fine grained. Weakly to moderately magnetic.		717201*	1	5			12	<10	55	330	15	<1				
							02*	5	10			26	<10	65	250	12	<1				
							03*	10	15			<4	<10	65	230	8	<1				
							04*	15	22			<4	<10	60	130	2	<1				
54	69.80	13.70	NQ to 57m Rm RQ		ALTERED ULTRABASIC Leucocratic carb. veining. Fine grained, dark grey, very falsely. Some mag. haematite below 68m and core has purplish clay.	1-3% chromite in grains up to 3mm.	05*	22	29			4	<10	55	170	5	<1				
							06*	29	36			10	<10	20	780	<2	<1				
							07*	36	43			<4	<10	70	1900	2	<1				
							08*	43	51			<4	<10	250	1700	10	<1				
							09*	51	54			<4	<10	120	1350	5	<1				
							717210*	54	58.50			16	<10	15	310	5	<1	<.05	<4	10	<100
69.80	92.50	22.30	BQ		TALC-CARBONATE Purplish-light grey talc-magnetite(?) rock, lined (after bedding?) in places. Fine grained, brecciated in places towards base. Veins of carbonate and qtz. Possible bedding 62°/Lch @ 85.7m Basal bedding contact 45°/LCA.	3-5% magnetite, haematite and chromite. Minor dispersed cp. First po noted at 82.4m in stringer 10-30mm wide approx ± qtz. 45°/LCA. - massive po ± minor qtz, cp - cassiterite? (2 veins) 83.8-84.1m: Two po > qtz, cp veins 10-30mm wide.	11*	56.50	59			18	10	12	230	5	<1				
							716976	57.75	57.90			<100	<10	30	540	5	<1				
							77	58.65	59.40			<100	10	85	580	<2	<1				
							78	59.40	60.71			<100	<10	85	420	2	<1				
							717212*	61.50	64			4	<10	5	130	2	<1				
							13*	64	66.50			8	<10	<5	140	5	<1				
							14*	66.50	70			6	15	5	200	15	<1				
							717215	70	72			<4	<10	<5	95	5	<1				
							16	72	74			<4	<10	<5	110	2	<1				
							17	74	76			30	<10	20	80	<2	<1				
92.50	95.90	3.40	BQ		BRECCIA-CONGLOMERATE (TRANSITION ZONE) Fragments and clasts up to 30mm, average <10mm, some clasts of serpentinite. Rock is highly altered - textures indistinct. Bedding 45°/LCA.	92.5-92.7: 10% disseminated po 92.7-93.25: 2-3% disseminated po 93.25-95.4: 7% po in irregular stringers, patches and small grains. 95.4-96.30: 10-15% po, cp, arsenic.	18	76	78			<4	<10	<5	80	2	<1				
							19	78	80			<4	<10	<5	35	<2	<1				
							717220	80	82			370	<10	150	330	330	3	<.05	<4	<10	300
							21	82	84			12	<10	35	70	25	<1				
							22	84	86			10	<10	20	190	2	<1				
							23	86	88			18	<10	8	60	<2	<1				
							24	88	90			28	10	5	80	30	<1				
							25	90	92			<4	<10	10	70	2	<1				

031

966032



C.R.A. EXPLORATION PTY. LIMITED  
DRILL CORE LOG

SHEET No. 1  
TENEMENT NAME RAZORBACK No. \_\_\_\_\_

CO-ORDINATES 412° 8' N / 285° 35' E AZIMUTH 270° GRID (250° MAG) DRILLERS ADD COMMENCED 14-3-78 DEPTH 121.40 m HOLE No. RZS 2  
RL COLLAR 225.3 m INCLINATION 34° DRILL TYPE F 30 COMPLETED 22-3-78 CASING LEFT \_\_\_\_\_ DPO No(s) R0200, 25806

DEPTH		Core Rec. (M)	Core Size	Graphic Log	CORE DESCRIPTION	SPECIAL FEATURES Weath, Alteration, Fracturing, Veining, Mineralization	Sample No.	From (M)	To (M)	Rec (M)	ASSAY VALUES (Analysed by <u>ANOR</u> )											
From (M)	To (M)										PPM											
											Sn	W	Pb	Zn	Cu	Ag	Au	Bi	Ta	F		
0	90	47.9	NQ		SERPENTINITE Weathered, yellow-green locally decomposed to clays. Much talc alteration below 81m - no core recovery 84-87 due to clay.	Abundant magnetic grains and breccia. esp 69-81m.	717239*	0	50		NOT SAMPLED											
							40*	60	70		16	<10	30	1350	10	<1	<.05	<4	<10			
							41*	70	80		6	<10	20	1800	5	<1						
							42*	80	90		<4	<10	100	2200	10	<1						
							43*	90	101.85		6	25	200	250	28	<1						
90	106.90	107.0			'CHERT' WITH PYRITE Very qtz with pyrite and Fe oxide.	103-103.71 - Massive pyrite. 106.55 - 70mm py fracture infilling	716984	101.85	103	*	500	<10	800	1250	100	2						
							85	103	104	*	200	10	2300	1600	1300	6						
							86	104	105	*	100	<10	800	770	900	4						
106.90	121.40	121.35			BLACK SHALE Fine grained, well bedded. 113m - bedding 48°/LCA. 119m - bedding 18°/LCA.	Pyritic.	87	105	106	*	<100	15	400	390	<100	<1						
							88	106	106.90	*	<100	45	1200	1650	200	2						
							717244*	106.90	109.50		4	30	410	640	75	<1						
							45*	109.50	112		4	20	160	530	70	<1						
							46*	112	114.50		18	20	300	530	75	<1						
							47*	114.50	117		6	30	60	340	55	<1						
							48*	117	121.40		<4	10	50	270	60	<1						
					Common assays: 40 m 35° 30' In casing 80 m 37° 20' " 121 m 37° 15' 243° mag (263° grid).																	
											* Tin and zinc assays by Test Dept. of Mines.											
											* Duplicate sample taken with core grinder											

966034

C.R.A. EXPLORATION PTY. LIMITED  
DRILL CORE LOG

TENEMENT NAME RAZORBACK SHEET No. 1 of 2  
No. 034

CO-ORDINATES 1365.3N / 244.4E AZIMUTH 270° 60' (250° MAG) DRILLERS ADD COMMENCED 28.3.78 DEPTH 120.20m HOLE No. RZS 3  
RL COLLAR 260.3m INCLINATION 50° DRILL TYPE F.30 COMPLETED 8.4.78 CASING LEFT 25806  
DPO No(s) D4200, 00192

DEPTH		Core Rec. (M)	Core Size	Graphic Log	CORE DESCRIPTION	SPECIAL FEATURES Weather, Alteration, Fracturing, Veining, Mineralization	Sample No.	From (M)	To (M)	Rec (M)	ASSAY VALUES (Analysed by <u>ANALYST</u> )										
From (M)	To (M)										PPM										
											Sn	W	Pb	Zn	Cu	Ag	Au	Bi	Ta	F	
0	62.2		NQ		SERPENTINITE	Numerous threads of magnetite.		0	30												
					Green, fine grained, becoming increasingly clayey with depth.		717249 <sup>+</sup>	30	40		NPT	SAMPLED									
							50 <sup>+</sup>	40	50			<4	<10	15	90	5	<1				
							51 <sup>+</sup>	50	60			4	<10	25	1400	5	<1	<.05	<4	<10 ppm	
62.20	72.50				TALC CARBONATE	Wealthy magnetic	717252	60	62			<4	<10	15	790	5	<1				
					Blue grey, very broken with clay bands.	71.20-71.70: Brown-black Fe gossan with minor qtz.	53	62	64			<4	<10	<5	190	<2	<1				
						71.70-72.50: Gossan bands in iron stained talc-carbonate.	54	64	66			<4	<10	<5	310	<2	<1				
							55	66	68			<4	10	<5	300	<2	<1				
							56	68	70			10	<10	12	470	<2	<1				
							716989	70	70.6			20	15	1400	1800	15	2				
72.50	92.10				'CHERT' OR QUARTZITE	72.50-74.30: MINERALISED ZONE		70.6	71.20		NO CORE										
					Highly siliceous rock, blue-grey, cherty-textured very hard.	60% py > 94 > cp. 40% LCA.	716990	71.20	72.40		*	500	15	1200	1200	40	2				
					Numerous veins of qtz.	72.75: 20mm sulphide vein 70% LCA	91	72.40	73.00		*	1100	15	6000	1750	830	13				
					77.50-79: Brown, micaceous shearing	79: minor py in fractures	92	73	73.70		*	1200	<10	520	940	760	8				
					Below 79m: Quartzite, fine grained with blocky texture - laminations at 25% LCA.	82.35-89.10: Minor py in fractures.	93	73.70	74.30		*	100	20	1400	2100	20	2				
						89.25: Py blebs.	717257 <sup>+</sup>	74.30	76.50			34	20	1400	2600	45	2				
						91-91.3: Py in fractures.	58 <sup>+</sup>	76.50	78.50			8	10	2300	450	18	2				
							59 <sup>+</sup>	78.50	80.50			14	45	180	350	32	<1				
							60 <sup>+</sup>	80.50	82.50			14	30	60	130	28	<1	<.05	4	<10 ppm	
92.10	120.20				BLACK SHALE	92.36: 80mm calcite-qtz vein 42% LCA.	61 <sup>+</sup>	82.50	84.50			12	20	210	850	18	<1				
					Fine grained, well bedded, with laminae of conglomerate.	95.15: Bedding 20°/LCA.	62 <sup>+</sup>	84.50	86.50			4	45	20	130	35	<1				
					Upper contact concordant with 30mm of irregularly laminated quartz (shar?)	101: Bedding 38°/LCA.	63 <sup>+</sup>	86.50	88.50			20	<10	30	150	65	<1				
					Shale much distorted with small fracture displacements.	106: Bedding 7°/LCA.	64 <sup>+</sup>	88.50	90.50			85	120	130	220	220	<1				
					Occasional qtz-calcite veins.	109.6: Minor bedded py.	65 <sup>+</sup>	90.50	92.50			440	130	120	250	90	<1				
						113: Bedding 16°/LCA.	66 <sup>+</sup>	92.50	95			34	25	170	420	70	<1				
						119: Bedding 46°/LCA.	67 <sup>+</sup>	95	97.50			10	25	120	430	55	<1				
							68 <sup>+</sup>	97.50	100			10	30	160	1300	90	<1				
							69 <sup>+</sup>	100	102.50			20	<10	170	290	45	<1				
					END OF HOLE	Camera average:	70 <sup>+</sup>	102.50	105			<4	<10	45	120	45	<1	<.05	<4	<10 ppm	
						31m: 49° 20' In casing.	71 <sup>+</sup>	105	107.50			6	<10	50	170	55	<1				
						63m: 51° In casing.	72 <sup>+</sup>	107.50	110			120	40	230	350	160	<1				
						98m: 51° 244° 48' mag.															

966035

C.R.A. EXPLORATION PTY. LIMITED  
DRILL CORE LOG

SHEET No. 282

TENEMENT NAME RAZORBACK No. ....

PLAN - MAP REFERENCE.....

CO-ORDINATES..... AZIMUTH..... DRILLERS..... COMMENCED..... DEPTH..... HOLE No. R25 3

RL COLLAR..... INCLINATION..... DRILL TYPE..... COMPLETED..... CASING LEFT..... DPO No(s) 00200, 25826

DEPTH		Core Rec. (M)	Core Size	Graphic Log	CORE DESCRIPTION	SPECIAL FEATURES Weath, Alteration, Fracturing, Veining, Mineralization	Sample No.	From (M)	To (M)	Rec (M)	ASSAY VALUES (Analysed by <u>ANAL. ALS</u> )							
From (M)	To (M)										Sn	W	Pb	Zn	Cu	Ag	U	
							71723 <sup>+</sup>	110	112.50		36	15	110	190	50	<1		
							72 <sup>+</sup>	112.50	115		6	<10	70	150	45	<1		
							75 <sup>+</sup>	115	117.50		160	<10	50	110	45	<1		
							795143	117.50	118.50		2900			290	30	2	<4	
							144	118.50	119.50		135			390	40	2	<4	
							145	119.50	120.20		<5			190	40	2	<4	
							<i>Best intersections:</i>											
								72.40	73.70	1.30	1150	10	3000	1500	790	10		
								117.50	118.50	1.00	2900			290	30	2		
							+ dense sample taken with core grinder											
							* Fin assay by Tas Dept. of Mines.											

C.R.A. EXPLORATION PTY. LIMITED  
DRILL CORE LOG

SHEET No. 1 of 3  
TENEMENT NAME RAZORBACK No. 25306  
LOGGED BY: G. PURVIS

CO-ORDINATES 45°55'N / 287°5'E AZIMUTH 280° GRD (260° MAG) DRILLERS ADD COMMENCED            DEPTH 116.30 m HOLE No. R25 4  
RL COLLAR 273.50 m INCLINATION 60° DRILL TYPE F 30 COMPLETED 23.4.78 CASING LEFT            DPO No(s) 00200, 00199

DEPTH		Core Rec. (M)	Core Size	Graphic Log	CORE DESCRIPTION	SPECIAL FEATURES Weath, Alteration, Fracturing, Veining, Mineralization	Sample No.	From (M)	To (M)	Rec (M)	ASSAY VALUES (Analyzed by <u>Andri</u> )											
From (M)	To (M)										Sn	W	Pb	Zn	Cu	Ag	Au	Bi	Ta	F		
0	54.50	36.7	0-8m		SERPENTINITE			0	20			NOT SAMPLED										
			HQ		Green, strongly magnetic due to		717277*	20	30	3.6	10	<10	85	510	5	<1						
			P-533		5-10% magnetite. Much carbonate		78*	30	40	7	4	<10	45	190	2	<1						
			N9		veining (magnetite > dolomite)		79*	40	47	7	14	<10	28	140	<2	<1						
							717280*	37.50	44.50	7	<4	<10	110	170	5	<1	<.05	4	<10			
54.50	70.30	15.8	BQ		QUARTZ-CARBONATE ROCK	5-10% magnetite, haematite. Below	81*	44.50	50	5.3	6	<10	200	160	2	<1						
					Pale creamy grey and pink, with	5% content decreases slowly to	82*	50	52	2	<4	<10	120	140	8	<1						
					milky texture. Pink colour due to	1-2% at 70m.	83*	52	54	2	<4	<10	85	90	2	1						
					iron content - rock is a ferro-	59-59.3: 1% py > cp.	84*	54	56	1.7	6	<10	8	80	<2	<1						
					dolomite. (Dolomite is the predominant	64-70.3: Minor py > cp. Trace po.	85*	56	58	1.9	3.4	40	8	110	18	<1						
					carbonate present.)	54.9-55.2: Slight oxidation	86*	58	60	2	10	50	10	130	22	<1						
					Minor talc in places below 61m	around fractures!	87*	60	62	2	8	40	8	70	15	<1						
					Occasional carb and qtz-carb	55-85: 75mm. 65% LCA. Carb-qtz vein.	88*	62	64	2	10	<10	5	55	5	<1						
					veins.		89*	64	66	2	6	20	5	80	12	1						
					63-2m: lineation 50°/LCA.		717290*	66	68	2	4	25	20	75	8	<1	<.05	<4	<10			
					Upper contact 25°/LCA.		91*	68	70	2	10	10	<5	55	8	<1						
					Lower contact 60°/LCA (bedding?)		717292	70	72	2	<4	<10	5	110	<2	<1						
							93	72	74	2	<4	<10	12	110	55	<1						
70.30	78.50	8.20	BQ		TALC-CARBONATE	1-2% chamoite (?) in aggregates	94	74	76	2	<4	<10	10	60	20	<1						
					Dark grey, becoming lighter in colour	and grains.	95	76	78.55	2.4	<4	<10	10	42	12	<1						
					Below 78.50m with much pink-red	75.2-76.6: Minor po.	716994	78.55	79.40	0.85	1100	<10	15	55	490	<1						
					chlorination due to Fe content	76.6-77.5: 1% po > py.	95	79.40	80.40	1	1.66	25	10	42	870	<1				30	25	
					Fine gritty texture (after sedimentary	77.5-78.5: Minor po > py.	96	80.40	81.40	1	8400	<10	5	38	950	<1				46	<10	
					features?) down to 75.50m, then		97	81.40	82.29	0.89	500*	<10	1200	390	550	5						
					Mottled and variably textured.	73.5-74.3: Core broken by several	R25 30	82.29	82.94	0.65	920			1750	930							
					Finely banded (bedding?) 50°/LCA	shear.	R25 31	82.94	83.56	0.62	620			1250	100							
					at 71m.		R25 32	83.56	83.94	0.38	20			230	Trace							
					Rock is soft - talc > carbonate		R25 33	83.94	84.70	0.76	50			3200	20							
					Carbonate and qtz-carb veining.		R25 34	84.70	85.46	0.76	100			2200	20							
					Trace blue qtz below 74-75m		716998	85.46	86.84	1.38	2500*	40	1200	4600	300	12						
							R25 35	86.84	87.84	1	340			1150	130							

030

966037





C.R.A. EXPLORATION PTY. LIMITED  
DRILL CORE LOG

SHEET No. 1 of 2  
TENEMENT NAME RAZDRBACK No. \_\_\_\_\_  
LOGGED BY: C.E. LAYDEN (MINDS)  
DEPTH 155.40m HOLE No. R25 5  
DPO No(s) 00200, 25801, 02

CO-ORDINATES 4354.5N / 280.25E ZIMUTH 270° GRID (250 MAG) DRILLERS A.D.P. COMMENCED 4.78  
RL COLLAR 253.7m INCLINATION 62° DRILL TYPE F.30 COMPLETED 5.78 CASING LEFT \_\_\_\_\_

DEPTH		Core Rec. (M)	Core Size	Graphic Log	CORE DESCRIPTION	SPECIAL FEATURES Weather, Alteration, Fracturing, Veining, Mineralization	Sample No.	From (M)	To (M)	Rec (M)	ASSAY VALUES (Analysed by AMDEL)											
From (M)	To (M)										Sn	W	Pb	Zn	Cu	Ag	Au	Bi	Ta	F		
0	88.13	83.8	NQ		SERPENTINITE Green, fine grained Occasional veins of calcite and asbestos 35.4-35.5: Asbestos 28%/LCA Gradational basal contact	Fine blocks and grains of magnetite - core moderately magnetic. 50-60: 40mm calcite-magnetite laminations at 37%/LCA 77.2m: 10mm magnetite vein 33%/LCA	717306 <sup>+</sup>	40	50		Not SAMPLED											
							07 <sup>+</sup>	50	60		6	<10	8	42	<2	<1						
							08 <sup>+</sup>	60	70		20	<10	12	50	<2	<1						
							09 <sup>+</sup>	70	80		10	<10	15	60	<2	<1						
							717310 <sup>+</sup>	80	88		12	<10	12	48	2	<1						
88.13	123.20	35.0	BQ		TALC-CARBONATE Grey-black, fine grained Non magnetic Occasional veinlets of calcite and minor qtz Gradational basal contact	Local minor disseminated pyrite 117-117.6: Minor irregular py veinlets	11 <sup>+</sup>	88	90		8	<10	10	48	2	<1	<.05	<.4	<10	mm		
							12 <sup>+</sup>	90	92		10	<10	15	310	<2	<1						
							13 <sup>+</sup>	92	94		<.4	<10	<.5	45	<2	<1						
							14 <sup>+</sup>	94	96		<.4	<10	<.5	90	<2	<1						
							15 <sup>+</sup>	96	98		<.4	<10	5	50	<2	<1						
							16 <sup>+</sup>	98	100		<.4	35	10	75	20	<1						
123.20	136.15	12.95	BQ		'CHERT' Dark grey, hard, non magnetic Occasional calcite veining, and calcite blotching 135.9-136.15: Moderate brecciation	129.3-129.5: Minor py. 134.3: Minor py. 135.3-136.15: Minor py.	17 <sup>+</sup>	100	102		8	<10	18	75	2	<1						
							18 <sup>+</sup>	102	104		<.4	<10	10	65	<2	<1						
							19 <sup>+</sup>	104	106		4	<10	18	90	2	<1						
							717320 <sup>+</sup>	106	108		<.4	<10	5	55	<2	<1	<.05	<.4	<10	mm		
							21 <sup>+</sup>	108	110		4	<10	<.5	28	2	<1						
							22 <sup>+</sup>	110	112		<.4	<10	<.5	40	10	<1						
136.15	155.40	19.25	BQ		BLACK SHALE Black, fine grained, well bedded. Occasional lenses of conglomerate Occasional veinlets of qtz + calcite	133.5-134.3: Conglomerate lens 54%/LCA Bedding in shale: 148.35m: 8%/LCA 154.6m: 10%/LCA	23 <sup>+</sup>	112	114		10	<10	8	65	2	<1						
							24 <sup>+</sup>	114	116		4	<10	<.5	35	2	<1						
							25 <sup>+</sup>	116	118		<.4	<10	5	40	12	<1						
							26 <sup>+</sup>	118	120		<.4	30	10	42	10	1						
							717327	120	122		<.4	<10	18	35	5	1						
						END OF HOLE	28	122	124		4	<10	22	42	12	1						
							29	124	126		<.4	<10	20	48	22	1						
						Camera survey:	717330	126	128		<.4	<10	15	28	10	1	<.05	<.4	<10	mm		
						48m: 61° in casing	31	128	130		<.4	<10	35	75	15	1						
						99m: 57° 45' 242° mag	32	130	132		6	<10	15	32	10	1						
						150m: 56° 45' 241° 20' mag	33	132	134		<.4	<10	22	45	15	1						
							34	134	136.20		<.4	<10	230	180	180	2						
							717335 <sup>+</sup>	136.20	138.70		14	25	100	150	20	<1						

039

966040

C.R.A. EXPLORATION PTY. LIMITED  
DRILL CORE LOG

SHEET No. 292

TENEMENT NAME RAZORBACK No. ....

PLAN - MAP REFERENCE .....

CO-ORDINATES..... AZIMUTH..... DRILLERS..... COMMENCED..... DEPTH..... HOLE No. R25 5

RL COLLAR..... INCLINATION..... DRILL TYPE..... COMPLETED..... CASING LEFT..... DPO No(s) 25802

DEPTH		Core Rec. (M)	Core Size	Graphic Log	CORE DESCRIPTION	SPECIAL FEATURES Weath, Alteration, Fracturing, Veining, Mineralization	Sample No.	From (M)	To (M)	Rec (M)	ASSAY VALUES (Analysed by... AMDEL...)											
From (M)	To (M)										Sn	W	Pb	Zn	Cu	Ag	Au	Bi	Ta	F		
							717336 <sup>+</sup>	138.7	141.2		4	15	60	120	25	<1						
							37 <sup>+</sup>	141.2	143.7		16	<10	40	230	40	<1						
							38 <sup>+</sup>	143.7	146.2		6	15	100	250	28	<1						
							39 <sup>+</sup>	146.2	148.7		6	20	25	85	18	<1						
							717340 <sup>+</sup>	148.7	151.2		4	25	35	95	35	<1	<.05	<.4	<.10	AM		
							41 <sup>+</sup>	151.2	153.7		4	35	30	95	55	<1						
							42 <sup>+</sup>	153.7	155.4		24	15	35	120	75	<1						

*+ denotes sample taken with core grinder.*

966041

C.R.A. EXPLORATION PTY. LIMITED  
DRILL CORE LOG

SHEET No. 185

TENEMENT NAME RAZORBACK No. ....

LOGGED BY: G. P. JAVIS

CO-ORDINATES 4528.2 N 2902.3 E AZIMUTH 293° 30' GRID DRILLERS ADD COMMENCED 22.6.78 DEPTH 287m HOLE No. RZ5 6  
RL COLLAR 257.64 INCLINATION 68° DRILL TYPE F 30 COMPLETED 12.7.78 CASING LEFT DPO No(s) 25802

DEPTH		Core Rec. (M)	Core Size	Graphic Log	CORE DESCRIPTION	SPECIAL FEATURES Weath, Alteration, Fracturing, Veining, Mineralization	Sample No.	From (M)	To (M)	Rec (M)	ASSAY VALUES (Analysed by AMDEL,.....)										
From (M)	To (M)										PPM										
												Sn	W	Pb	Zn	Cu	Ag	Au	Bi	Ta	F
0	113.5		N9		SERPENTINITE - Not logged in detail.			0	50			NOT SAMPLED									
							717343 <sup>+</sup>	50	60			10	10	22	80	2	<1				
							44 <sup>+</sup>	60	70			10	<10	30	90	2	<1				
							45 <sup>+</sup>	70	80			10	15	45	100	<2	<1				
							46 <sup>+</sup>	80	90			6	<10	28	100	2	<1				
							47 <sup>+</sup>	90	100			<4	<10	40	120	<2	<1				
							48 <sup>+</sup>	100	110			6	<10	120	130	2	<1				
							49 <sup>+</sup>	110	112			8	<10	210	110	<2	<1				
							717350 <sup>+</sup>	112	114			<4	<10	70	100	<2	<1	<.05	<4	<10	100 <sup>+</sup>
113.50	124		N9		TALC-CARBONATE Pale grey often slightly pink or green. Highly altered rock, variably textured. Abundant talc and carbonate ± minor serpentine and quartz. Sharp upper contact 50°/LCA. Schistosity 112-120m 25°/LCA. Numerous patches + veins of carbonate up to 5mm.	5% mag-haematite + chromite. Disseminated, some veins of magnetite <1mm, blebs of chromite 1-2mm. Trace fine pyrite assoc ± magnetite. 2% fine pyrite 122.5-122.85.	717351 <sup>+</sup>	114	116			<4	20	65	90	<2	<1				
							52 <sup>+</sup>	116	118			8	15	10	65	<2	<1				
							58 <sup>+</sup>	118	120			<4	<10	<5	65	2	<1				
							54 <sup>+</sup>	120	122			4	<10	<5	90	2	<1				
							55 <sup>+</sup>	122	124			30	<10	15	70	2	<1				
							717356 <sup>+</sup>	124	126			<4	10	20	70	2	<1				
							57 <sup>+</sup>	126	128			22	10	10	65	5	<1				
							58 <sup>+</sup>	128	130			16	30	<5	85	10	<1				
							59 <sup>+</sup>	130	132			14	10	<5	90	8	<1				
							60 <sup>+</sup>	132	134			4	10	<5	70	2	<1	<.05	<4	<10	100 <sup>+</sup>
124	124.50		B9		CARBONATED SERPENTINITE Green, partly weathered, broken. Upper irregular contact 80°/LCA. Lower contact 55°/LCA.	Modestly magnetic	61 <sup>+</sup>	134	136			100	15	5	80	2	<1				
							62 <sup>+</sup>	136	138			34	20	<5	80	10	<1				
							63 <sup>+</sup>	138	140			360	15	<5	65	8	<1				
							64 <sup>+</sup>	140	142			6	20	40	100	2	<1				
							65 <sup>+</sup>	142	144			4	10	<5	160	2	<1				
124.50	173.9		B9		TALC-CARBONATE An altered ferro-dolomite ± minor quartz. Multihued and variably textured. Generally grey or greenish-grey	1-10% magnetite, haematite and lesser chromite; average 5-7% slight increase with depth. In disseminations, aggregates, thin bands	66 <sup>+</sup>	144	146			4	15	<5	60	<2	<1				
							67 <sup>+</sup>	146	148			<4	<10	<5	50	<2	<1				
							68 <sup>+</sup>	148	150			4	15	<5	20	<2	<1				
							69 <sup>+</sup>	150	152			8	20	<5	40	2	<1				
							70 <sup>+</sup>	152	154			<4	15	<5	25	<2	<1	<.05	<4	<10	100 <sup>+</sup>

C.R.A. EXPLORATION PTY. LIMITED  
DRILL CORE LOG

SHEET No. 2 of 5

TENEMENT NAME RAZORBACK No. ....  
PLAN - MAP REFERENCE .....

CO-ORDINATES..... AZIMUTH..... DRILLERS..... COMMENCED..... DEPTH..... HOLE No. RZS 6  
RL COLLAR..... INCLINATION..... DRILL TYPE..... COMPLETED..... CASING LEFT..... DPO No(s) ZSR1, R2

DEPTH		Core Rec. (M)	Core Size	Graphic Log	CORE DESCRIPTION	SPECIAL FEATURES Weather, Alteration, Fracturing, Veining, Mineralization	Sample No.	From (M)	To (M)	Rec (M)	ASSAY VALUES (Analysed by <u>ANAL</u> )											
From (M)	To (M)										Sn	W	Pb	Zn	Cu	Ag	Au	Bi	Ta	F		
					or pink, fine grained or spotted. (loc. moderately magnetic throughout)	Minor py 127-128m	717371*	154	156		14	15	10	35	2	<1						
					Protonically carbonate (dolomite)	Minor py 127-128m	72*	156	158		4	25	<5	30	<2	<1						
					and tab. Minor serpentine (esp 140.2-141.6)	1% py trace cp, 138.8-140.20m	73*	158	160		8	15	<5	40	<2	<1						
					Qz in bands, patches and as halos around mag-haematite aggregates	2% py trace cp 154.6-155.2m	717374	160	162		4	<10	18	25	2	1						
					up to 10mm. Qz common in zones: 135-140.2 (25%/LCA); 155-157.8; 157.65-157.85	1% py 161.4-163.5m in blebs to 8mm	75	162	164		36	<10	22	28	2	1						
					172.85-173.10: 5% po, trace stannite? + cassiterite?	167.75-172.85: 1-2% py > po	76	164	166		<4	<10	15	15	2	1						
					173.10-173.90: Minor po + py.	(170.45 2mm po veinlet 20%/LCA)	77	166	168		<4	<10	15	18	<2	1						
					Minor irregular calcite ± qtz veins, patches up to 20mm 45%/LCA. Elsewhere only rare traces	172.85-173.10 (45%/LCA)	78	168	170		<4	<10	15	12	2	1						
					Rock informally brecciated below 170m. Fracture / LCA 126.2-127m	173.10-173.90: Minor po + py.	80	172	173.87		70	<10	80	140	12	1	<.05	<4	<10			
					dike 128-154.5m. Limestone + banding: 129m 40%/LCA; 136m 55%/LCA	Minor irregular calcite ± qtz veins, patches up to 20mm 45%/LCA. Elsewhere only rare traces	RZS249	173.87	174.87		2150			1600	1100							
					152.5m 30%/LCA; 157.5m 35%/LCA	Rock informally brecciated below 170m. Fracture / LCA 126.2-127m	RZS25D	174.87	175.87		1350			150	1800							
					173-90 177-20 BQ	with mag-haematite aggregates or siliceous zones.	RZS26D	175.87	176.87		5200			1.32	5800							
					MASSIVE PYRRHOTITE	or siliceous zones.	RZS27D	176.87	177.24		1300			380	1700							
					50-90% po in qtz gangue. Top contact 35%/LCA ± 40mm silic recrystallized carb selvage. Bottom contact 90%/LCA ± 150mm selvage. Contact 177-35m 35%/LCA.	or siliceous zones.	717381	177.24	178.74		26	<10	42	45	5	1						
					50-90% po, minor cp, trace py and sp.	or siliceous zones.	82	178.74	180.17		22	<10	38	180	5	1						
					175-177.2m visible stannite, locally 1-2%.	or siliceous zones.	RZS40	180.17	180.55		520			120	150							
					177.20-177.35 as above. 176m bands to 7mm gn > sp-py	or siliceous zones.	717383	180.55	182.99		24	<10	28	40	10	1						
					50%/LCA.	or siliceous zones.	RZS28D	182.99	183.60		2350			100	1000							
					177-90 177-20 BQ	or siliceous zones.	RZS29D	183.60	184.27		2500			150	2300							
					50-90% po in qtz gangue. Top contact 35%/LCA ± 40mm silic recrystallized carb selvage. Bottom contact 90%/LCA ± 150mm selvage. Contact 177-35m 35%/LCA.	50-90% po, minor cp, trace py and sp.	717384	184.27	186		90	<10	22	32	15	<1						
					175-177.2m visible stannite, locally 1-2%.	50-90% po, minor cp, trace py and sp.	85	186	188		42	<10	25	38	15	1						
					177.20-177.35 as above. 176m bands to 7mm gn > sp-py	175-177.2m visible stannite, locally 1-2%.	86	188	190		32	<10	20	32	5	<1						
					50%/LCA.	177.20-177.35 as above. 176m bands to 7mm gn > sp-py	87	190	192		55	<10	15	22	2	<1						
					177-35m 35%/LCA.	176m bands to 7mm gn > sp-py	88	192	194		20	<10	15	25	5	1						
					TALC CARBONATE.	50%/LCA.	89	194	196		12	<10	18	22	2	<1						
					As before	50%/LCA.	90	196	198		20	<10	18	20	8	<1	<.05	<4	<10			
					Grey, mottled talc-carbonate ± minor qtz - 87m around mag-haematite	1% po, py decreasing ± depth. Trace stannite	91	198	200		600	<10	20	18	18	<1						
					180.3 po-qtz carb vein. 12mm	1% po, py decreasing ± depth. Trace stannite	92	200	202		840	<10	20	32	15	<1						
						2% magnetite-haematite + chaozite	93	202	204		250	<10	15	28	8	<1						
						180.3 po-qtz carb vein. 12mm	94	204	206		38	<10	100	450	15	1						

C.R.A. EXPLORATION PTY. LIMITED  
DRILL CORE LOG

SHEET No. 395

TENEMENT NAME RAZORBACK No. ....

PLAN - MAP REFERENCE .....

CO-ORDINATES..... AZIMUTH..... DRILLERS..... COMMENCED..... DEPTH..... HOLE No. RZS 6

RL COLLAR..... INCLINATION..... DRILL TYPE..... COMPLETED..... CASING LEFT..... DPO No(s) 2580, 02

DEPTH		Core Rec. (M)	Core Size	Graphic Log	CORE DESCRIPTION	SPECIAL FEATURES Weather, Alteration, Fracturing, Veining, Mineralization	Sample No.	From (M)	To (M)	Rec (M)	ASSAY VALUES (Analysed by <u>ANAL</u> )										
From (M)	To (M)										PPM										
											Sn	W	Pb	Zn	Cu	Ag	Au	Bi	Ta	F	
					aggregates, and in diffuse spots arranging 1mm.	60°/LCA. Minor cp + stannite.	717395	206	207.34		100	<10	160	4900	110	4					
					Numerous thin veins of calcite ± qtz.	180-4m: Po-qtz-carb vein 50mm	96	207.34	209		8	<10	30	110	70	2					
					Internal brecciation below 182m.	60°/LCA. Minor cp + stannite.	97	209	211		8	10	30	130	45	1					
							98	211	213		<4	<10	20	80	55	1					
							99	213	215		<4	<10	20	80	85	1					
183.10	184.30		BQ		<b>MASSIVE PYRRHOTITE</b>	50-90% po in qtz gangue with conspicuous aggregates of stannite - locally 2% MnHcp cp and sp.	717400 <sup>+</sup>	215	217.50		<4	15	5	95	50	<1	<.05	<4	<10	300	
					Top contact 60°/LCA. Sharp ± 10mm irregular siliceous margin.		01 <sup>+</sup>	217.50	220		270	10	970	1950	75	1					
					Lower contact 20°/LCA. Sharp		02 <sup>+</sup>	220	222.50		110	20	85	330	65	<1					
							03 <sup>+</sup>	222.50	225		12	30	50	150	50	<1					
							04 <sup>+</sup>	225	227.50		4	10	10	130	80	<1					
184.30	207.10		BQ		<b>TALC-CARBONATE</b>	fine magnetite ± lesser hematite	05 <sup>+</sup>	227.50	230		<4	20	5	95	75	<1					
					Grey green talc carbonate with minor qtz down to 200m. Ferruginous.	and Fe-carbonate + chromite 2-3% at top, increasing to 15% below 200m.	06 <sup>+</sup>	230	232.50		<4	20	10	100	55	<1					
					A sometimes banded, mottled, variably textured rock. Some semis?	184.3-197.6: up to 1% py + po, trace cp.	07 <sup>+</sup>	232.50	235		8	30	15	130	180	<1					
					± qtz around magnetite aggregates and also around carb ± qtz veins.	197.6-198.8: 3% po - associated with the magnetite.	08 <sup>+</sup>	235	237.50		14	15	10	150	190	<1					
					Lamination + banding becoming stronger with depth (after banding?)	198.8-199.85: 1-2% py + po.	09 <sup>+</sup>	237.50	240		4	25	15	140	60	<1					
					Some possible cherts? below 193m.	199.85-200.2: 5-7% po. Trace py, cp.	10 <sup>+</sup>	240	242.50		<4	25	15	100	95	<1	<.05	<4	<10	300	
					Internal brecciation in places below 204m.	200.2-207.10: Minor py + po, decrease with depth.	11 <sup>+</sup>	242.50	245		4	20	40	220	950	<1					
					206.1-206.35 Pale talc-carbonate with abundant qtz.	185-75: 30mm po-qtz vein 60°/LCA.	12 <sup>+</sup>	245	247.50		4	20	35	190	1550	<1					
					Lamination: 184.5m 70°/LCA; 192m 45°/LCA; 206m 55°/LCA.	Trace stannite + cp. 50mm silic selvages either side.	13 <sup>+</sup>	247.50	250		<4	30	15	100	60	<1					
					Possible bedding: 195.5m 20°/LCA; 198.8m 40°/LCA	186.35: Qtz-po band 20mm. 50°/LCA.	14 <sup>+</sup>	250	252.50		12	<10	10	95	38	<1					
					Numerous carb ± qtz veins // or sub // to lamination. Thin chalcidonic qtz veins <1mm at 204.5m.	Silic selvages.	15 <sup>+</sup>	252.50	255		<4	15	25	100	30	<1					
						Silic selvages.	16 <sup>+</sup>	255	257.50		12	<10	15	95	42	<1					
						Several thin po stringers 55°/LCA at 206.3.	17 <sup>+</sup>	257.50	260		8	20	10	100	130	<1					
							18 <sup>+</sup>	260	262.50		20	10	220	160	42	<1					
							19 <sup>+</sup>	262.50	265		12	20	25	140	80	<1					
							20 <sup>+</sup>	265	267.50		<4	40	5	110	200	<1	<.05	<4	<10	100	
							21 <sup>+</sup>	267.50	270		<4	15	5	130	18	<1					
							22 <sup>+</sup>	270	272.50		8	20	15	140	40	<1					
							23 <sup>+</sup>	272.50	275		6	20	5	130	18	<1					
							24 <sup>+</sup>	275	277.50		6	<10	10	120	18	<1					
							717425 <sup>+</sup>	277.9	280		8	15	5	95	35	<1					

11 043

966044

C.R.A. EXPLORATION PTY. LIMITED  
DRILL CORE LOG

SHEET No. 495

TENEMENT NAME RAZORBACK No. ....

PLAN - MAP REFERENCE.....

CO-ORDINATES..... AZIMUTH..... DRILLERS..... COMMENCED..... DEPTH..... HOLE No. R256

RL COLLAR..... INCLINATION..... DRILL TYPE..... COMPLETED..... CASING LEFT..... DPO No(s) 25802

DEPTH		Core Rec. (M)	Core Size	Graphic Log	CORE DESCRIPTION	SPECIAL FEATURES Weath, Alteration, Fracturing, Veining, Mineralization	Sample No.	From (M)	To (M)	Rec (M)	ASSAY VALUES (Analysed by <u>AMEL</u> )												
From (M)	To (M)										PPM												
												Sn	W	Pb	Zn	Cu	Ag	Au	Bi	Ta	F		
207.10	207.45		3Q		TRANSITION ZONE It strongly altered + deformed carbonate breccio-conglomerate? Numerous angular and rounded clasts of green basic tuff(?) & leucotene, up to 50mm. Overall rock is green and chloritic Matrix contains much carbonate and chlorite, possibly after a sandy grit. Much leucotene in matrix. Bedding 60°/LCA Upper contact 70°/LCA - irregular bit sharp. Lower contact 50°/LCA - diffuse and irregular (bedding contact). Bedding deformed on 100mm above this contact.	No sulphides, and only minor traces of magnetite.	717426 <sup>+</sup>	280	282.50			10	20	5	100	200	<1						
							27 <sup>+</sup>	282.50	285			<4	<10	<5	100	15	<1						
							28 <sup>+</sup>	285	287			4	15	5	100	12	<1						
							Best Intersections:																
								173.87	177.24	3.37	2720				4420	2770							
								182.99	184.27	1.28	2430				125	1680							
207.45	287		3Q		CONGLOMERATE Green, massive + hard Partly solid with rounded to subrounded clasts up to 100 mm, av. 10-20 mm Clasts down to 220m are mostly chloritic basic tuff & leucotene, and basic volcanics; & lesser sediments. Below 220m almost all clasts are sediments & minor carbonate - siltstone, sandstone, chert, black shale and impure quartzite. Basic tuff + volcanics still present but minor. Rare clasts of ferro-dillanite and ultrabasic rocks, also acid siltstone clasts.	207.45 - 220.5m: Trace py + cp + sp in matrix, also magnetite-haematite. 217.55 - 217.75: Trace po assoc & calcite vein @ 217.65m. 220.4: Calcite vein & minor po-py -cp-sp-gr // bedding. 30mm thick 220.1 - 220.5: 3-5% po in matrix. 220.5 - 223.2: 1-2% py, trace po. 223.2 - 224.3: 3-5% po > py - as pi or dissemination in matrix and as heavy dissemination in some siltstone clasts.																	

966045

C.R.A. EXPLORATION PTY. LIMITED  
DRILL CORE LOG

SHEET No. 5 of 5

045

TENEMENT NAME RAZORBACK No. \_\_\_\_\_

PLAN - MAP REFERENCE \_\_\_\_\_

CO-ORDINATES \_\_\_\_\_ AZIMUTH \_\_\_\_\_ DRILLERS \_\_\_\_\_ COMMENCED \_\_\_\_\_ DEPTH \_\_\_\_\_ HOLE No. RZS 6

RL COLLAR \_\_\_\_\_ INCLINATION \_\_\_\_\_ DRILL TYPE \_\_\_\_\_ COMPLETED \_\_\_\_\_ CASING LEFT \_\_\_\_\_ DPO No(s) \_\_\_\_\_

DEPTH		Core Rec. (M)	Core Size	Graphic Log	CORE DESCRIPTION	SPECIAL FEATURES Weath, Alteration, Fracturing, Veining, Mineralization	Sample No.	From (M)	To (M)	Rec (M)	ASSAY VALUES (Analysed by _____)											
From (M)	To (M)										Sn	W	Pb	Zn	Cu	Ag	Au	Bi	Ta	F		
					and intermediate volcanics. Many clasts esp black shale, show classic soft pebble textures (bent) Others are partly fractured and invaded by calcite.	22A-3 - 230m: 1% py+po at top decreasing to nil at 230m. Below 240m <sup>juv</sup> minor py-cp-po-sp-quartzose ± calcite veinlets.																
					Matrix highly calcareous esp above 220m and below 267m. Contains coarse sand and grit of similar material to clasts cemented by white calcite. Matrix rarely haematitic.	244.9-245.9m: Cp in calcite vein // LCA.																
					Rare beds of black shale and haematitic grit. Numerous veins of calcite ± grt. up to 10mm.	Sulphides rare below 250m.																
					Bedding 212m 40°/LCA, 220.5m 50°/LCA, 234m 50°/LCA, 246.5m 50°/LCA, 259m 40°/LCA, 280.5m 50°/LCA.																	
					261.4-261.8 - shear zone centred at 261.8 - 45°/LCA.																	
						Camera surveys:																
					Below 267m reduction in size and abundance of clasts - basic volcanics again abundant, with green chert. Also green siltstone.	96m 69° 40' 255° 30' MAG 150m 69° 30' 260° MAG 179m 69° 20' 298° MAG (near sulphides) 233m 69° 252° 30' MAG 286m 68° 45' 255° 20' MAG																
					Overall similar to 207 - 220m.																	
					END OF HOLE																	

Note: + - denotes sampled with core grinder

966046

C.R.A. EXPLORATION PTY. LIMITED  
DRILL CORE LOG

SHEET No. 1 of 2

TENEMENT NAME: RAZORBACK No. \_\_\_\_\_

LOGGED BY: C.E. LAYDEN (MINOPS)

CO-ORDINATES 4528.2N / 2902.5E AZIMUTH 276 GRD (256 MAG)

DRILLERS: ADD COMMENCED 13.7.78

DEPTH 203m HOLE No. RZ57

RL COLLAR 257.6m INCLINATION 46°

DRILL TYPE F 30 COMPLETED 26.7.78

CASING LEFT DPO No(s) 25802, 25801

DEPTH		Core Rec. (M)	Core Size	Graphic Log	CORE DESCRIPTION	SPECIAL FEATURES Weather, Alteration, Fracturing, Veining, Mineralization	Sample No.	From (M)	To (M)	Rec (M)	ASSAY VALUES (Analysed by: <u>ANDEL</u> )											
From (M)	To (M)										Sn	W	Pb	Zn	Cu	Ag	Au	Bi	Ta	F		
0	121.8		NQ		SERPENTINITE	Several broken zones - esp: 23-50; 34-50; 55-62.80; 72.80; 96-30; 97-15; 97-70; 99-9: minor asbestos + ga in shear.		0	70		NOT SAMPLED											
					Dark green, occasional bands of calcite and threads of magnetite.		717A29 <sup>+</sup>	70	80		4	<10	30	80	<2	<1						
					Some asbestos, usually as shear fillings. Most clems 50-40°/LCA.		30 <sup>+</sup>	80	90		6	<10	50	80	<2	<1	<.05	<4	<10	<100		
							31 <sup>+</sup>	90	100		4	<10	55	85	<2	<1						
							32 <sup>+</sup>	100	110		4	15	15	100	<2	<1						
							33 <sup>+</sup>	110	120		4	<10	10	110	<2	<1						
121.80	168.95				TALC CARBONATE.	Minor pyrite below 136m.	34 <sup>+</sup>	120	122		8	<10	<5	120	2	<1						
					Dark blue-black down to 155.6	Below 155.6: 3% chromite, some associated anatexis. Chromite content decreases with depth.	35 <sup>+</sup>	122	124		4	<10	5	230	<2	<1						
					Thin light grey, much pink coloration of carbonate.		36 <sup>+</sup>	124	126		12	15	25	100	2	<1						
					Occasional calcite veinlets, intense below 162m. 40-50°/LCA.	168.5-168.65: 3% po > sp in laminated calcite + sil. carb 72°/LCA.	37 <sup>+</sup>	126	128		6	<10	<5	100	<2	<1						
					Minor serpythine below 162m.		38 <sup>+</sup>	128	130		4	10	10	120	<2	<1						
					166.5m: shear ± qtz-carb infilling.	168.70 - 20mm intense calcite	39 <sup>+</sup>	130	132		4	<10	<5	100	<2	<1						
					167m: 10mm qtz-carb vein 50°/LCA	laminations 49°/LCA, ± 3% po.	717A40 <sup>+</sup>	132	134		4	15	<5	70	2	<1						
					167.75: 20mm qtz vein 60°/LCA.		41 <sup>+</sup>	134	136		4	<10	<5	48	2	<1						
					168.16-168.22: Irregular qtz-carb vein 55°/LCA.		42 <sup>+</sup>	136	138		4	10	5	55	2	<1						
					Basal contact irregular 53°/LCA.		43 <sup>+</sup>	138	140		8	<10	<5	50	<2	<1						
							44 <sup>+</sup>	140	142		10	<10	<5	70	2	<1						
							45 <sup>+</sup>	142	144		4	<10	<5	70	<2	<1						
							46 <sup>+</sup>	144	146		4	<10	<5	85	<2	<1						
							47 <sup>+</sup>	146	148		4	<10	10	75	2	<1						
168.95	182.10				CONGLOMERATE	169.10m: 50mm qtz-calcite vein 53°/LCA.	48 <sup>+</sup>	148	150		10	10	<5	55	2	<1						
					168.95-169.50: Middle conglomerate with carbonate matrix and threads of calcite ('Transition Zone'?)	171.22m: 4.5mm Calcite-qtz vein 35°/LCA ± v. minor po, py + sp.	49 <sup>+</sup>	150	152		6	15	10	55	2	<1						
					169.50-169.65: Finely bedded black shale 50°/LCA (clast?)	175.1-175.4: Breccia zone ± calcite-qtz matrix 45°/LCA.	717A50 <sup>+</sup>	152	154		4	10	<5	30	<2	<1	<.05	<4	<10	<100		
					Conglomerate: Clasts of grey siltstone and chert < 20mm, within fine pebble and greywacke matrix.		51 <sup>+</sup>	154	156		6	15	5	55	<2	<1						
					Bedding: 169.9m: 56°/LCA		52 <sup>+</sup>	156	158		4	15	5	75	<2	<1						
					174.8m: 42°/LCA		53 <sup>+</sup>	158	160		4	10	<5	60	<2	<1						
						176.9-177m: minor po.	717A54	160	162		4	<10	18	45	8	<1						
							55	162	164		4	<10	20	50	5	<1						
							56	164	166		4	<10	15	40	5	<1						
							57	166	168		4	<10	38	70	5	1						
							58	168	168.75		250	<10	30	65	60	1						

046

966047

C.R.A. EXPLORATION PTY. LIMITED  
DRILL CORE LOG

SHEET No. 282

047

TENEMENT NAME RAZORBACK No. ....  
PLAN - MAP REFERENCE.....

CO-ORDINATES..... AZIMUTH..... DRILLERS..... COMMENCED..... DEPTH..... HOLE No. RZS 7  
RL COLLAR..... INCLINATION..... DRILL TYPE..... COMPLETED..... CASING LEFT..... DPO No(s) 25801, 25802

DEPTH		Core Rec. (M)	Core Size	Graphic Log	CORE DESCRIPTION	SPECIAL FEATURES Weath, Alteration, Fracturing, Veining, Mineralization	Sample No.	From (M)	To (M)	Rec (M)	ASSAY VALUES (Analysed by <u>AMDEL</u> )										
From (M)	To (M)										Sn	W	Pb	Zn	Cu	Ag	Au	Bi	Ta	F	
					Bedding: 177-5m: 59°/LCA.		RZS 43	168.75	168.95	#	860			120	1800						
					Occasional calcite and calcite-qtz veins 5-20mm @ 45° to bedding.		717459	168.95	170		140	<10	90	320	85	2					
					176.05-177.6m: finely bedded black shale with conglomerate inclusions. Facing in conglomerate indicates facing down hole.		60	170	172		6	<10	22	90	38	1	<.05	<.4	<10	200	
							61	172	174		<.4	<10	25	95	50	1					
							62	174	176		<.4	<10	25	55	42	1					
							63	176	178		<.4	<10	25	60	75	1					
							64	178	180		<.4	<10	35	75	70	1					
							65	180	182.10		<.4	<10	22	150	65	1					
182.10	203				BLACK SHALE	183.7: 0.5mm po veinlet 40°/LCA. oblique to bedding.	717466 <sup>+</sup>	182.10	184.50		6	<10	20	100	35	<1					
					Finely bedded, with included conglomerate lenses and local bedded syngenetic pyrite.		67 <sup>+</sup>	184.50	187		10	20	15	85	32	<1					
					Occasional calcite and calcite-qtz veins	192.7: Conglomerate lens 8mm thick ± 25% py. 43°/LCA	717470 <sup>+</sup>	189.50	192		4	15	30	150	35	<1					
							69 <sup>+</sup>	189.50	192		8	<10	20	100	30	<1					
							71 <sup>+</sup>	194.50	197		6	<10	25	90	35	<1	<.05	<.4	<10	300	
					Bedding: 182-2m: 74°/LCA.	196.8: 3mm po-calcite-qtz veinlet -35°/LCA oblique to bedding.	72 <sup>+</sup>	197	199.50		8	20	30	120	30	<1					
					189.1m: 39°/LCA.		73 <sup>+</sup>	199.50	203		<.4	15	20	170	32	<1					
					176m: 30°/LCA.	197.3: 1mm po-py-calcite veinlet at 43°/LCA. oblique to bedding.					4	10	25	140	45	<1					
					202m: 36°/LCA.	197.4: Dibo. 55°/LCA.															
						198.8: 3mm dibo 46°/LCA.															
						199.1-199.4: Several fine (<.1mm) po-calcite veins 50°/LCA - oblique to bedding at 40°/LCA.															
						202.6: 1mm po-calcite veinlet 33°/LCA.															
					END OF HOLE																
						Camera surveys:															
						90m: 45° 30' In casing															
						150m: 44° 238° 30' mag															
						201m: 39° 45' 244° 30' mag															

\* Tin, zinc and copper assays by Tas. Dept. of Mines.

+ - dentite sample taken with core grinder

966048

APPENDIX 3

DRILL LOGS - PLACER DRILLHOLES 1964-66

C.R.A. EXPLORATION PTY. LIMITED  
DRILL CORE LOG

SHEET No. 111

TENEMENT NAME RAZORBACK No. \_\_\_\_\_

LOGGED BY: A.B. CLARKE (PLACER)

CO-ORDINATES 4640N/2847SE AZIMUTH 232° MAG

DRILLERS ADD

COMMENCED 20.1.64

DEPTH 490'

HOLE No. R1

RL COLLAR 272m

INCLINATION 60°

DRILL TYPE \_\_\_\_\_

COMPLETED 12.2.64

CASING LEFT \_\_\_\_\_

DPO No(s) 21861

DEPTH		Core Rec. Ft	Core Size	Graphic Log	CORE DESCRIPTION	SPECIAL FEATURES Weath, Alteration, Fracturing, Veining, Mineralization	Sample No.	From (M) Ft	To (M) Ft	Rec (M) Ft	ASSAY VALUES (Analysed by <u>ALS</u> )											
From Ft	To Ft										PPM											
											Sn	W	Pb	Zn	Cu	Ag	Au	Pl	Pd	Mo		
0	2'	12'			SERPENTINE																	
							795425	235'6"	238'6"	2'5"	155	<10	50	80	10	1						
132'	177'	45'			CRYSTALLINE DOLOMITE		26	238'6"	239'6"	10"	660	20	9000	2.1%	490	21						
							27	239'6"	243'5"	4'4"	85	<10	45	65	20	1						
177'	238'	61'			LIGHT GREY-PINK DOLOMITE		28	243'5"	252'	7'4"	20	<10	30	65	5	1						
								252'	272'	CORE MISSING												
238'	239'	1'			SULPHIDE MINERALISATION With quartz and calcite		795429	272'	278'	10"	10	<10	20	250	2	1	<0.04	<0.04	<0.01	<2		
							30	278'	289'	10'8"	955		1670	1070	1030	5	<0.04	<0.04	<0.01	<2		
							31	289'	293'11"	4'9"	850		380	1180	380	6	<0.04	<0.04	<0.01	<2		
239'	279'6"	40'6"			CRYSTALLINE DOLOMITE Some disseminated sulphide mineralisation.		32	293'11"	299'	6'5"	7.7%		470	1120	2800	25	<0.04	<0.04	<0.01	<2		
							795433	299'	304'	CORE MISSING												
								304'	310'	5'10"	1100		580	1070	810	8	<0.04	<0.04	<0.01	<2		
279'6"	286'9"	7'3"			SULPHIDE MINERALISATION Typical 50% WITH SOME INTRAFORMATIONAL SHALE BANDS AND DOLOMITE.		PLACER PROTECTING SAMPLING:															
										% Sn												
							CR 45	279'	281'	Tr												
							CR 46	281'	284'	Tr												
							CR 47	284'	287'	0.1%												
286'9"	293'	6'3"			BLUE INTRAFORMATIONAL BRECCIA Some sulphides - < 15%		CR 48	287'	289'	0.1%												
							CR 49	289'	291'	0.1%												
							CR 50	291'	293'	Tr												
293'	295'	2'			TRACE MINERALISATION IN BRECCIA		CR 51	293'	295'	Tr												
							CR 52	295'	298'	0.9%												
295'	303'6"	8'6"			INTENSE SULPHIDE IN BRECCIA With calcite.		CR 53	298'	301'	1.7%												
							CR 54	301'	304'	0.6%												
							CR 55	304'	307'	0.5%												
303'6"	309'	5'6"			WEAK MINERALISATION IN BRECCIO- CONGLOMERATE		CR 56	307'	310'	0.8%												
							Best intersec.:			Int												
309'	490'	15'4"			BRECCIO- CONGLOMERATE E.O.H.			295'	310'		0.8%											

C.R.A. EXPLORATION PTY. LIMITED  
DRILL CORE LOG

TENEMENT NAME RAZORBACK SHEET No. 112  
No. \_\_\_\_\_

CO-ORDINATES 4564 N 2936 E AZIMUTH 310° GRID (290 MAG) DRILLERS ADD COMMENCED 7.5.64 DEPTH 607' HOLE No. R5  
RL COLLAR 244M INCLINATION 40° DRILL TYPE \_\_\_\_\_ COMPLETED 25.5.64 CASING LEFT \_\_\_\_\_ DPO No(s) 25829, 25838

DEPTH		Core Rec. Ft	Core Size	Graphic Log	CORE DESCRIPTION	SPECIAL FEATURES Weath, Alteration, Fracturing, Veining, Mineralization	Sample No.	From Ft	To Ft	Rec Ft	ASSAY VALUES (Analysed by <u>ALS</u> )								
From Ft	To Ft										PPM								
											Sn	Pb	Zn	Cu	Ag	Ni	Co	Cr	
0	324'	320'			SERPENTINITE		795310 <sup>+</sup>	0	320'			NOT SAMPLED							
324'	565'	241'			TALC CARBONATE	493'-495'6": Sulphide mineralization	11 <sup>+</sup>	330	330	7'10"	<5	25	300	5	1	880	55	500	
						495'6"-498'3": Disseminated sulphide	12 <sup>+</sup>	340	350	8'5"	45	20	250	5	1	680	50	440	
						530'-539": Disseminated sulphide	13 <sup>+</sup>	350	360	8'1"	<5	20	270	2	1	920	65	440	
						(5-7% po+cp)	14 <sup>+</sup>	360	370	8'5"	<5	15	290	5	1	560	50	380	
							15 <sup>+</sup>	37	380	8'8"	<5	20	210	2	1	600	55	330	
565'	568'	3'			INTRAFORMATIONAL GRIT (TRANSITION ZONE?)	6" sulphide	16 <sup>+</sup>	380	390	10'	115	20	220	5	1	1300	80	620	
							17 <sup>+</sup>	390	400	10'	55	20	350	5	1	1200	90	490	
							18 <sup>+</sup>	400	410	9'5"	10	25	260	5	1	1200	80	500	
568'	607'	39'			CONGLOMERATE		19 <sup>+</sup>	410	420	9'8"	15	15	250	2	1	1000	65	620	
							795320 <sup>+</sup>	420	436	12'8"	<5	15	230	2	1	800	65	310	
							21 <sup>+</sup>	436	446	9'6"	<5	20	230	2	1	600	50	410	
					END OF HOLE		22 <sup>+</sup>	446	461	9'8"	<5	20	220	2	1	1000	70	500	
							23 <sup>+</sup>	461	470	8'4"	135	25	125	2	1	920	60	350	
								470	474		CORE MISSING								
							* CR 88	474	476	2'	520					Trace			
								476	493		CORE MISSING								
							* CR 89	493	495'6"	2'6"	1472				28	93			
								495'6"	498		CORE MISSING								
							795324	498	505	6'7"	830	50	130	20	<1	960	60	240	
							25	505	513	6'11"	230	30	80	165	<1	680	50	160	
							26	513	518'6"	4'8"	10	25	880	<2	<1	640	80	125	
							27	518'6"	524'1"	4'10"	10	50	640	<2	1	960	50	145	
							28	524'1"	529'1"	5'	<5	25	185	<2	1	1000	50	115	
							29	529'1"	535'9"	6'8"	55	25	90	760	2	960	55	95	
							795330	535'9"	541'3"	5'6"	205	60	150	480	2	800	40	70	
							31	541'3"	553	3'9"	<5	90	380	<2	1	600	30	340	
							32	553	565	4'5"	<5	25	75	<2	1	220	4	440	
							* CR 95	565	568	3'	2300					2400			
								568	572		CORE MISSING								

\* Samples by Placer Prop.

050

966051

C.R.A. EXPLORATION PTY. LIMITED  
DRILL CORE LOG

SHEET No. 292

TENEMENT NAME RAZORBACK No. \_\_\_\_\_

PLAN - MAP REFERENCE \_\_\_\_\_

CO-ORDINATES \_\_\_\_\_ AZIMUTH \_\_\_\_\_ DRILLERS \_\_\_\_\_ COMMENCED \_\_\_\_\_ DEPTH \_\_\_\_\_ HOLE No. R5

RL COLLAR \_\_\_\_\_ INCLINATION \_\_\_\_\_ DRILL TYPE \_\_\_\_\_ COMPLETED \_\_\_\_\_ CASING LEFT \_\_\_\_\_ DPO No(s) 25838

DEPTH		Core Rec. (M)	Core Size	Graphic Log	CORE DESCRIPTION	SPECIAL FEATURES Weath, Alteration, Fracturing, Veining, Mineralization	Sample No.	From Ft	To Ft	Rec Ft	ASSAY VALUES (Analysed by <u>ALS</u> )							
From (M)	To (M)										Sr	Pb	Zn	Cu	Ag	Ni	Co	Cr
							795333 <sup>+</sup>	572	584	9'6"	<5	30	600	100	2	290	55	400
							34 <sup>+</sup>	584	594	10'	<5	30	1400	40	2	260	65	370
							35 <sup>+</sup>	594	607	12'3"	<5	35	1100	70	2	370	65	840
							<i>Best intersections:</i>				NT							
							493	495'6"	2'6"	1478			28	93				
							565	568	3'	2300			2400					
							<i>+ densite sample taken with core grinder. Other samples either half split or quartered drill core.</i>											

00 001

966052

C.R.A. EXPLORATION PTY. LIMITED  
DRILL CORE LOG

SHEET No. 1-13

TENEMENT NAME RAZORBACK No. \_\_\_\_\_

LOGGED BY: V. ROBERTS (CRAE)

CO-ORDINATES 4576N / 285E AZIMUTH 290° MAG (310° GRD)

DRILLERS: ADD

COMMENCED 17.9.64

DEPTH: 670'

HOLE No. R9

RL COLLAR: 272 m

INCLINATION: 7.5°

DRILL TYPE: DIAMOND

COMPLETED: 20.10.64

CASING LEFT: \_\_\_\_\_

DPO No(s) 25828, 30

DEPTH		Core Rec. Ft	Core Size	Graphic Log	CORE DESCRIPTION	SPECIAL FEATURES Weather, Alteration, Fracturing, Veining, Mineralization	Sample No.	From Ft	To Ft	Rec Ft	ASSAY VALUES (Analyzed by <u>MS</u> )									
From Ft	To Ft										Sn	Pb	Zn	Cu	Ag	Ni	Co	Cr		
0	262'4"			EXT	SERPENTINITE															
					0-234' Ngt unspctd		795148	308	315	6'6"	5	10	60	<2	2					
					234-262'4": Ft gr, weakly schistose		49	315	322	6'7"	15	90	115	20	2					
					(50% LCA) ± minor carbonate grains		795150	322	328'7"	6'7"	55	105	85	10	2					
					Dark green.		57	328'7"	338'10"	7'4"	3580	360	520	430	9					
							52	338'10"	346'6"	7'	105	55	115	<2	2					
262'4"	352			EXT	TALC CARBONATE	262'4" - 313'10": minor magnetite	53	346'6"	352'6"	4'2"	860	260	360	210	5					
				to 281'	Ft gr - med gr, massive, pale grey, and/or haematite (or siderite?)		54	352'6"	357'6"	4'4"	5	15	70	<2	2					
				than	some replacement of carbonate grains, possibly some weathered sulphides;		55	357'6"	361'	3'2"	115	230	185	70	3					
				AXT	by Qtz (over short sections) in fractures or assoc. to Qtz grains		CORE MISSING													
					Most weathered to 263'4". Weak	(= 1% overall)	56	389	396	7'	15	40	125	<2	1					
					brown colour to 313'10" may be		57	396	403'6"	7'6"	15	20	45	<2	1					
					due to slight weathering.	313'10" - 352': Trace py as blebs	58	403'6"	409	5'4"	910	70	105	15	2					
					281' - 281'4": sandy dolomite band	and v. ft gr disseminations in	59	409	413	4'	5	65	300	5	2					
					(core misplaced?)	fractures; also small blebs of	795160	413	423	8'2"	605	125	1300	500	6					
					262'4" - 281': very common fracturing	magnetite and po with Qtz-carb	61	423	431'3"	7'6"	440	85	70	45	2					
					filled with carbonate-Qtz veins.	halves.	62	431'3"	436'6"	5'3"	335	290	310	35	2					
					281' - 313'10": med. common fracturing	at 325'2": 6" carb-Qtz vein ±	63	436'6"	445	7'11"	200	40	80	10	1					
					-veins as above (40% LCA)	20% Po + 20% Gr	64	445	453	8'	190	175	230	20	2					
					313'10" - 352': v. weakly fractured	at 330'5": 7" massive sulphides	65	453	462	8'1"	55	110	105	<2	1					
						as above.	66	462	466'6"	4'4"	85	65	70	<2	<1	1300	65	720		
					Note: 281' - 307' - core disrupted -	at 336': 8" 20% sulphides as above	67	466'6"	474	7'6"	40	60	1200	40	1	1000	60	1100		
					depths unreliable.	in carb-Qtz vein.	68	474	481'6"	7'6"	30	115	230	<2	1	960	40	620		
						at 346'4": 2" of 20% po + py + sp	69	481'6"	484	2'6"	15	580	620	15	3	85	45	65		
						in carb-Qtz vein.	CORE MISSING													
						at 349'2": 4" of 30% po + py + sp	425	485	487	2'	5600									
						in Qtz vein.	131	487	492	5'	800									
							426	492	498'6"	6'6"	2600									
352	413			AXT	CARBONATE - CHLORITE ROCK	Placer Prospecting	132	498'6"	504'6"	6'	1900									
					Ft gr - med gr, massive, pale grey,	Sampling	CORE MISSING													
					some replacement of carbonate		133	523	527	4'	9100									

052

966053





C.R.A. EXPLORATION PTY. LIMITED  
DRILL CORE LOG

TENEMENT NAME RAZORBACK SHEET No. 1 of 2  
No. ....

LOGGED BY: A. B. CLARKE (PLACER)  
CO-ORDINATES 4528 LN/2872 4E AZIMUTH 309° 52'D (281 MAG) DRILLERS ADD COMMENCED 28-10-64 DEPTH 1066' HOLE No. R 10  
RL COLLAR 266m INCLINATION 71° DRILL TYPE ..... COMPLETED 20-11-64 CASING LEFT ..... DPO No(s) 25873 25874 26452

DEPTH		Core Rec. Ft	Core Size	Graphic Log	CORE DESCRIPTION	SPECIAL FEATURES Weath. Alteration, Fracturing, Veining, Mineralization	Sample No.	From Ft	To Ft	Rec Ft	ASSAY VALUES (Analysed by <u>ALS ANDERSON</u> )								
From Ft	To Ft										PPM								
											Sn	Pb	Zn	Cu	Ag	Ni	Co	Cr	
0	258'	236'	By lg		SERPENTINITE			0	250'2"			NOT SAMPLED							
			28 1/2"				795249 <sup>+</sup>	250'2"	265'	10'7"	20	25	200	50	1	1000	60	720	
258'	467'	209'	Man		TALC CARBONATE		50 <sup>+</sup>	265'	280'	11'11"	110	20	160	35	1	1400	75	860	
			EX				51 <sup>+</sup>	280'	288'2"	6'7"	275	25	200	50	<1	1400	80	580	
467'	529'	63'			SERPENTINITE		52 <sup>+</sup>	288'2"	301'	11'6"	1900	25	120	30	2	2600	65	980	
							53 <sup>+</sup>	301'	311'	7'11"	330	20	100	30	1	1400	65	1200	
529'	880'	349'			TALC CARBONATE		52 <sup>+</sup>	311'	325'	10'2"	390	20	120	40	<1	1400	75	840	
							55 <sup>+</sup>	325'	336'	6'2"	100	15	160	55	<1	980	75	480	
880'	1066'	186'			SERPENTINITE		56 <sup>+</sup>	336'	347'	8'6"	<5	15	140	20	<1	840	60	400	
							57 <sup>+</sup>	347'	357'	9'1"	<5	15	140	15	<1	800	60	370	
							58 <sup>+</sup>	357'	367'	9'2"	<5	20	120	10	<1	940	70	520	
					END OF HOLE.		59 <sup>+</sup>	367'	377'	9'3"	20	20	100	15	<1	1200	75	540	
							795260 <sup>+</sup>	377'	387'	9'10"	85	20	100	15	<1	1200	75	620	
							61 <sup>+</sup>	387'	400'2"	11'6"	205	20	110	15	<1	1200	65	640	
							62 <sup>+</sup>	400'2"	415'	12'8"	25	10	85	10	1	440	50	405	
					11 1/2 steepened to 84° at bottom		63 <sup>+</sup>	415'	427'	9'	<5	10	85	2	1	520	55	410	
							64 <sup>+</sup>	427'	437'	8'8"	<5	10	70	2	1	600	65	640	
							65 <sup>+</sup>	437'	447'	5'1"	<5	15	80	2	1	400	50	520	
							66 <sup>+</sup>	447'	457'	3'8"	<5	15	100	<2	1	520	55	560	
							67 <sup>+</sup>	457'	467'	9'6"	<5	15	105	10	1	520	50	330	
							68 <sup>+</sup>	467'	480'	9'1"	<5	20	340	<2	1	1600	80	410	
							795248 <sup>+</sup>	480'	497'	5'1"	<5	25	800	<2	1	1500	75	330	
							795200 <sup>+</sup>	497'	515'	10'	<5	25	520	2	1	1200	75	220	
							795263 <sup>+</sup>	515'	524'	7'	<5	20	150	5	1	1600	75	310	
							70 <sup>+</sup>	524'	534'	10'	<5	20	240	10	1	1000	60	270	
							71 <sup>+</sup>	534'	544'	1'8"	<5	10	50	<2	1	640	50	350	
							72 <sup>+</sup>	544'	557'	12'11"	<5	15	70	<2	1	640	65	540	
							73 <sup>+</sup>	557'	567'	9'7"	<5	10	70	<2	1	480	60	650	
							74 <sup>+</sup>	567'	584'	13'6"	<5	15	50	<2	1	680	65	580	
							75 <sup>+</sup>	584'	594'	10'	<5	15	40	<2	1	720	85	640	
							76 <sup>+</sup>	594'	605'	4'	<5	20	40	<2	1	480	65	420	

055

966056

C.R.A. EXPLORATION PTY. LIMITED  
DRILL CORE LOG

SHEET No. 2 of 2

TENEMENT NAME RAZORBACK No. ....  
PLAN - MAP REFERENCE .....

CO-ORDINATES..... AZIMUTH..... DRILLERS..... COMMENCED..... DEPTH..... HOLE No. R 10 25839  
RL COLLAR..... INCLINATION..... DRILL TYPE..... COMPLETED..... CASING LEFT..... DPO No(s) 25836, 25838

DEPTH		Core Rec. (M)	Core Size	Graphic Log	CORE DESCRIPTION	SPECIAL FEATURES Weath, Alteration, Fracturing, Veining, Mineralization	Sample No.	From Fe	To Fe	Rec Fe	ASSAY VALUES (Analysed by <u>M.S.</u> ) PPM									
From (M)	To (M)										Sn	Pb	Zn	Cu	Ag	Ni	Co	Cy		
							795277*	605'	615'	8'6"	<5	15	40	<2	1	560	75	380		
							78*	615'	624'	8'10"	<5	15	40	<2	1	520	60	590		
							79*	624'	637'	12'8"	<5	15	80	<2	1	560	50	310		
							795280*	637'	650'2"	11'3"	<5	10	30	<2	1	480	55	530		
							81*	650'2"	665'	14'6"	<5	15	70	5	1	440	60	680		
							82*	665'	686'	6'10"	<5	15	70	<2	1	440	65	530		
							83*	686'	695'	9'	<5	10	60	<2	1	480	60	500		
							84*	695'	707'	12'	<5	15	60	<2	1	480	60	430		
							85*	707'	723'	13'3"	5	15	40	<2	1	460	60	700		
							86*	723'	737'	11'10"	15	10	80	<2	1	600	60	540		
							87*	737'	750'	4'5"	<5	10	80	<2	1	400	50	480		
							88*	750'	763'	11'8"	<5	10	100	<2	1	340	50	300		
							89*	763'	773'	10'	<5	10	80	<2	1	320	45	370		
							795290*	773'	783'	9'6"	5	10	90	5	1	400	75	490		
							91*	783'	793'	10'	<5	10	55	<2	1	560	65	450		
							92*	793'	804'	9'10"	<5	10	35	<2	1	720	55	570		
							93*	804'	814'	9'9"	<5	10	55	<2	1	560	55	640		
							94*	814'	825'	8'11"	30	10	40	2	1	800	75	400		
							95*	825'	833'	7'4"	5	10	35	<2	1	560	65	420		
							96*	833'	850'	15'10"	<5	10	65	<2	1	640	60	490		
							97*	850'	867'	13'1"	<5	35	105	<2	1	1100	70	240		
							98*	867'	880'	12'5"	5	20	80	<2	1	1200	60	190		
							795299*	880'	896'	16'	<5	15	90	5	2	1500	85	290		
							795305*	896'	906'	9'10"	<5	25	190	10	2	2000	105	300		
							795306	906'	919'	13'	10	20	125	<2	1	1600	75	170		
							07	919'	931'	10'2"	5	10	65	<2	1	800	120	95		
							795308*	931'	946'	7'3"	<5	20	150	5	2	2000	110	210		
							09*	946'	953'	12'	<5	20	190	5	1	1200	70	170		

\* - denotes sample taken with core grinder. All other samples split core.

056

966057

C.R.A. EXPLORATION PTY. LIMITED  
DRILL CORE LOG

SHEET No. 1 of 1  
TENEMENT NAME RAZORBACK No. \_\_\_\_\_  
LOGGED BY: A.B. CLARKE (PLACER)  
DEPTH 382' HOLE No. R12  
COMPLETED 13.1.65 DPO No(s) 26452

CO-ORDINATES 4671N/2868E AZIMUTH 272° MAG DRILLERS ADD COMMENCED 7.1.65  
RL COLLAR 291m INCLINATION 60° DRILL TYPE \_\_\_\_\_

DEPTH		Core Rec. Ft	Core Size	Graphic Log	CORE DESCRIPTION	SPECIAL FEATURES Weath, Alteration, Fracturing, Veining, Mineralization	Sample No.	From FE	To FE	Rec FE	ASSAY VALUES (Analysed by <u>MDEL</u> )									
From Ft	To Ft										Sn	W	Pb	Zn	Cu	Ag				
D	142'	6'			WEATHERED BROWN SERPENTINE															
	142'	365'	210'		DOLomite		795419	150	157	6'1"	200	<10	1600	260	20	<1				
							20	157	167	9'4"	380	<10	190	140	2	1				
							21	167	177	10'5"	75	<10	630	160	30	2				
	355'	363'	7'3"		LEDE IN DOLomite		22	177	187'4"	8'	42	<10	30	110	4	<1				
							23	187'4"	197'8"	8'	75	<10	1000	300	20	3				
	363'	369'	6'		DOLomite		795424	197'8"	208'	8'	22	<10	25	75	4	<1				
	369'	374'	5'		LEDE IN DOLomite - GRIT (TRANSITION ZONE?)															
	374'	382'	8'		DISSEMINATED PYRRHOTITE IN GRIT (CONGLOMERATE)															
<p>Note: Core badly disrupted prior to rebaring and sampling. All samples represent split core.</p> <p>All core apart from 150-208' now missing.</p>																				
							Placed Prospecting Sampling:													
							149	355'	360'3"	4'6"	0.1%									
							150	360'3"	363'	2'9"	0.1%									
							151	369'	374'	5'	0.32%									
								374'	382'		0.22%									

057

966058

C.R.A. EXPLORATION PTY. LIMITED  
DRILL CORE LOG

SHEET No. 1

TENEMENT NAME RAZORBACK No. ....

LOGGED BY: A.B. CLARKE (RACER)

CO-ORDINATES 4852.5N/2886 E AZIMUTH 250° GRID (270° MAG) DRILLERS ATLANTIC COMMENCED 22.1.65

DEPTH 501' HOLE No. R 13

RL COLLAR 292 m INCLINATION 43° DRILL TYPE ..... COMPLETED 5.2.65

CASING LEFT ..... DPO No(s) 25931, 32

DEPTH		Core Rec. Ft	Core Size	Graphic Log	CORE DESCRIPTION	SPECIAL FEATURES Weath, Alteration, Fracturing, Veining, Mineralization	Sample No.	From Ft	To Ft	Rec Ft	ASSAY VALUES (Analysed by <u>ALS</u> )							
From Ft	To Ft										Sr	Pb	Zn	Cu	Ag	Ni	Co	Cr
0	316'				<u>SERPENTINE</u>		795182*	316'	326'	10'	200	35	270	85	2	640	50	350
316'	474'		AX		<u>DOLOMITE</u>		83*	326'	336'	92"	155	20	250	120	3	1000	70	640
							84*	336	346	10'	80	15	220	75	2	1100	70	960
474'	481'				<u>GRIT (CONGLOMERATE)</u> <u>Trace sulphide 1/2" thick at 474'</u>		85*	346	356	97"	35	10	190	75	2	1400	80	1000
							86*	356	366	910"	85	10	200	65	2	1200	70	720
							87*	366	376	81"	20	5	230	30	1	960	80	800
481'	489'		AQ		<u>GRIT (CONGLOMERATE)</u> <u>Trace copper stain.</u>		88*	376	383	67"	40	5	390	20	1	580	65	480
								383	410									
							89*	410	426	1111"	25	5	270	10	1	600	50	560
489'	496'				<u>GREEN GRIT (CONGLOMERATE)</u> <u>Chert fragments</u>		795190*	426	436	411"	90	55	480	10	1	760	55	480
							91*	436	446	10'	90	10	185	10	1	760	45	520
							92*	446	456	810"	70	10	540	10	1	720	40	640
496'	501'				<u>GRIT (CONGLOMERATE)</u>		93*	456	466	10'	35	40	290	10	1	760	50	550
							94	466	469	3'	150	1100	2400	30	3	920	60	520
					<u>E.O.H.</u>		95	469	474	29"	50	250	480	20	2	440	55	220
							96	474	481	69"	10	115	540	30	2	270	45	520
							97	481	501	3'	<5	20	100	180	2	230	50	500

\* Dense, sample taken with core grinder  
All other samples are quartered core

078  
966059

C.R.A. EXPLORATION PTY. LIMITED  
DRILL CORE LOG

TENEMENT NAME RAZORBACK SHEET No. 1 of 2  
No.

LOGGED BY: R.W. LEWIS (PLACER)

CO-ORDINATES 457.4N/287.6E AZIMUTH 325° GRD (305° MAG) DRILLERS ADD COMMENCED 10.12.65 DEPTH 612' 5" HOLE No. R16  
RL COLLAR 266m INCLINATION 70° DRILL TYPE                      COMPLETED 4.2.66 CASING LEFT                      DPO No(s) 25833, 25834

DEPTH		Core Rec. Ft.	Core Size	Graphic Log	CORE DESCRIPTION	SPECIAL FEATURES Weath, Alteration, Fracturing, Veining, Mineralization	Sample No.	From Ft.	To Ft.	Rec Ft.	ASSAY VALUES (Analysed by <u>ALS</u> )										
From Ft.	To Ft.										PPM										
												Sn	Pb	Zn	Cu	Ag	Ni	Co	Cr		
0	235' 6"	12' 6"	1 1/2"	AX to 6' 6", then 10'	SERPENTINITE			0	230' 6"			NOT SAMPLED									
		12' 6"			Rather broken in places.		795198	230' 6"	241' 6"	7' 8"	15	30	880	40	1	840	55	320			
		6' 6"			Some magnetite veins, and asbestos.		99	241' 6"	254'	7' 7"	15	30	120	90	2	1100	65	440			
							795200	254'	264' 6"	10'	5	20	400	20	1	680	55	400			
							01	264' 6"	277' 9"	12' 9"	<5	20	560	5	<1	620	50	420			
235' 6"	384'	123'	AX		TALC-CARBONATE	Frequent veins of magnetite.	02	277' 9"	291'	11' 2"	<5	15	940	2	1	560	50	440			
					Grey, weathers in place. Very broken near 384'.		03	291'	301'	8' 2"	<5	25	900	5	<1	720	50	380			
							04	301'	311' 6"	8' 8"	10	20	480	10	1	700	60	500			
							05	311' 6"	325' 6"	13' 3"	<5	20	600	5	<1	820	55	360			
384'	594' 9"	204' 5"	AX		MINERALISED TALC-CARBONATE.	384-404': disseminated cp, po, py. Po + sp occur: 453' 5" - 453' 9"; 462' 3" - 462' 6"; 463' - 464'; 473' - 473' 6"; 481' 5" - 481' 10"; 482' 3" - 483' 10"; 492' 10" - 493' 1"; 520' - 520' 2" 5" of po + carbite at 579' 6" - 575' 1"	06	325' 6"	339' 6"	9' 6"	<5	25	700	5	1	740	45	480			
							07	339' 6"	349' 6"	9' 11"	15	50	740	5	<1	720	35	520			
							08	349' 6"	361'	9' 10"	<5	15	400	5	<1	1000	65	420			
							09	361'	375'	13' 4"	450	25	600	10	<1	1000	70	440			
							795210	375'	384' 6"	3' 8"	<5	20	210	2	<1	720	55	280			
							11	384' 6"	389' 6"	1' 11"	55	30	230	10	1	1800	110	720			
							12	389' 6"	394' 6"	5'	95	190	190	35	2	1400	75	1100			
							13	394' 6"	399' 6"	5'	50	55	145	25	<1	1100	70	370			
594' 9"	605' 2"				GRITS - (TRANSITION ZONE)	595' 10": 2" po. 598': po veins over 6" length.	14	399' 6"	404' 6"	5'	55	65	120	10	<1	1300	75	420			
					Five dolomitic sediments with occasional grit sized fragments. Dark grey.			404' 6"	427'												
							795215	427'	432'	4' 3"	45	55	140	15	<1	1900	75	270			
							16	432'	437' 6"	4' 5"	195	350	560	20	1	1200	65	400			
605' 2"	612' 5"				CONGLOMERATE		17	437' 6"	442' 6"	4' 8"	360	135	4000	95	2	1600	70	420			
							18	442' 6"	448' 6"	5' 7"	55	110	600	35	1	1200	70	370			
							19	448' 6"	454' 6"	5'	85	145	260	20	<1	1300	60	400			
							795220	454' 6"	460' 6"	5'	4100	720	700	260	4	960	55	460			
							21	460' 6"	466' 6"	5'	1400	210	310	270	4	1200	75	640			
							22	466' 6"	472' 6"	5' 6"	80	85	180	10	<1	1200	90	440			
							23	472' 6"	477' 6"	5'	1600	600	760	1500	21	940	160	480			
							24	477' 6"	482' 6"	5'	2500	190	320	90	3	1200	90	480			
							25	482' 6"	487' 6"	4' 11"	5000	100	260	1400	17	1100	70	680			

966060

053

C.R.A. EXPLORATION PTY. LIMITED  
DRILL CORE LOG

SHEET No. 2 of 2

TENEMENT NAME RAZORBACK No. ....

PLAN - MAP REFERENCE .....

CO-ORDINATES..... AZIMUTH..... DRILLERS..... COMMENCED..... DEPTH..... HOLE No. R16

RL COLLAR..... INCLINATION..... DRILL TYPE..... COMPLETED..... CASING LEFT..... DPO No(s) 25834, 25835

DEPTH		Core Rec. (M)	Core Size	Graphic Log	CORE DESCRIPTION	SPECIAL FEATURES Weath, Alteration, Fracturing, Veining, Mineralization	Sample No.	From	To	Rec	ASSAY VALUES (Analysed by <u>MS</u> )														
From (M)	To (M)										ppm														
												Sn	Pb	Zn	Cu	Ag	Ni	Co	Cr						
							795226	487'6"	493'	4'11"	180	30	80	30	<1	1100	65	420							
							27	493'	498'	5'	350	30	85	60	<1	1400	75	420							
							28	498'	503'	5'	255	20	40	60	<1	1300	80	290							
							29	503'	508'	4'9"	290	25	65	80	2	1000	60	330							
							795230	508'	513'6"	4'11"	265	310	150	180	3	1100	60	560							
							31	513'6"	518'6"	5'	205	30	115	40	1	960	65	460							
							32	518'6"	523'10"	5'4"	675	230	190	115	4	1300	70	640							
							33	523'10"	528'10"	5'	265	30	170	30	<1	920	60	380							
							34	528'10"	533'10"	5'	235	15	75	25	1	900	55	430							
							35	533'10"	538'10"	5'	225	30	115	30	1	1100	55	750							
							36	538'10"	544'	5'2"	360	15	120	40	1	1000	70	750							
							37	544'	549'	5'	1200	20	70	70	1	1300	95	660							
							38	549'	554'	5'	30	10	55	10	1	720	55	1000							
							39	554'	559'	5'	45	20	60	15	1	720	70	920							
							795240	559'	564'6"	5'	15	10	55	5	1	680	60	960							
							41	564'6"	569'6"	5'	80	190	540	20	1	880	70	1400							
							42	569'6"	574'6"	5'	<5	15	55	<2	1	1000	80	490							
							43	574'6"	579'6"	5'	35	55	155	20	1	1000	80	780							
							44	579'6"	584'6"	5'	90	30	70	15	1	920	60	620							
							45	584'6"	589'6"	4'9"	170	20	40	10	1	920	70	800							
							46	589'6"	594'6"	4'9"	30	40	140	10	1	640	60	1300							
							795247	594'6"	600'	5'	1400	250	620	320	5	320	70	360							
								600	612'5"		CORE MISSING														
							Best intersections:			201															
							454'6"	487'6"	33'	2390	320	420	550	8											
							594'6"	600'	5'6"	1400	250	620	320	5											

\* - denotes sample taken with core grinder.  
All other samples are quartered AX core.

060

966061

APPENDIX 4

RESULTS OF IP SURVEY ON SECTIONS 4900 N & 5000 N



C.R.A. EXPLORATION PTY. LIMITED

(INC. IN N.S.W.)

54 RAGLAN STREET, PRESTON, VICTORIA 3072, AUSTRALIA

P.O. BOX 94  
NORTHLAND CENTRE 3072  
TELEGRAMS: CRAEA  
TELEX: 330747  
TELEPHONE: 480 896  
AREA CODE: 031

IN REPLY PLEASE QUOTE

February 7, 1980

MEMORANDUM TO : J.G. PURVIS  
COPY : P.J. LEGGE  
R.J. SMITH  
V. ROBERTS  
FROM : M.F. FLIS

RAZORBACK I.P.

1. INTRODUCTION

Two 50 metre dipole-dipole I.P. lines were run in February over the Razorback E.L. to test, and provide a target for a mineralised dolomite horizon which is to be drilled. A Hunttec 2.5 kw transmitter and IPR-7 receiver were used. Pseudosections are attached. As I have had no first-hand knowledge of the local geology or the carrying out of this survey the following observations are purely interpretive.

2. LINE 4900 N

The location of lithological contacts along this line are best reflected by the resistivity section and, although ambiguity is caused by the presence of cultural noise (dumps), the following contacts have been recognised.

- (a) Shale/conglomerate contact at 130 W. This is coincident with a resistivity high which may be due to a chert band lying along the contact. The shales exhibit an increase in both resistivity and chargeability to the west - indicative of their carbonaceous and pyritic content.
- (b) Conglomerate/dolomite contact at 80 W. A dump at around 50 w complicates the effect of this contact; however, a general decrease in resistivity to the east is here interpreted as a dolomite.
- (c) Dolomite/ultra basic contact at 25 E defined by a general decrease in resistivity and chargeability to the east. A dump and, perhaps, scree also interfere and cause a shallow resistivity high.

- 2 -

A major anomalous zone occurs at 50 W, N=5, where the chargeability rises to twice that of background and the resistivity drops to six times less than background. A width of 30 to 40 metres is interpreted. There is no control on maximum depth as the anomaly continues below penetration depth.

### 3. LINE 5000 N

In general, this line reflects the features of 4900 N - coherency being good between the two. The contacts are, once again, most obvious on the resistivity pseudosection and occur at:

- (a) Shale/conglomerate at 140 W
- (b) Conglomerate/dolomite at 50 W
- (c) Dolomite/ultra basics at 35 E

These lithologies have the same electrical characteristics as were found on line 4900 N.

The anomalous zone found in the previous line continues on this line and is situated at 40 W, N=5. Here it has a chargeability of twice background and a resistivity of one fifth background.

### 4. GENERAL

The main anomaly occurs within the dolomite sequence. These two lines suggest that the lithologies are steeply westward dipping, although they appear near vertical in outcrop.

The major low resistivity trend situated at about 125 E, N=5 on both lines has no immediate explanation; however, it is probably due to the ultra basics as the contours flatten out to the east. No chargeability anomaly is coincident with the low.

The only other anomaly worth mentioning is the chargeability high at 175 W on 5000 N. Although this has no matching resistivity low it would do no harm checking it out on the ground.

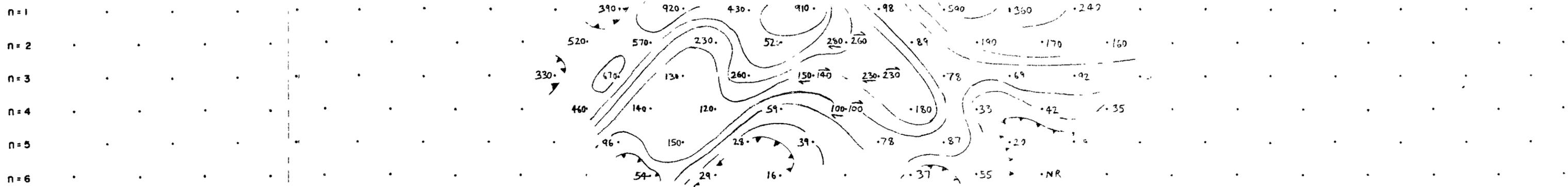
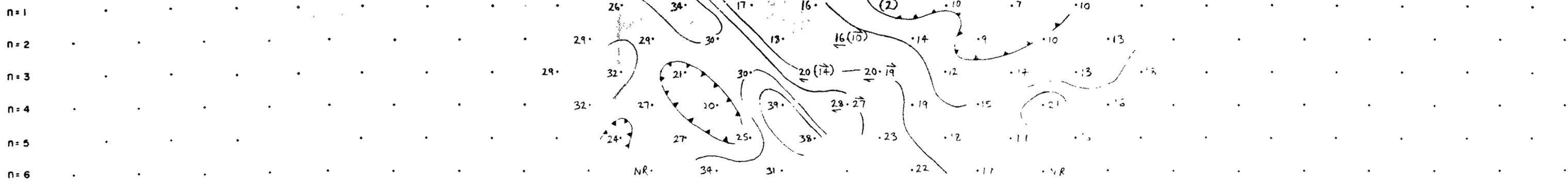
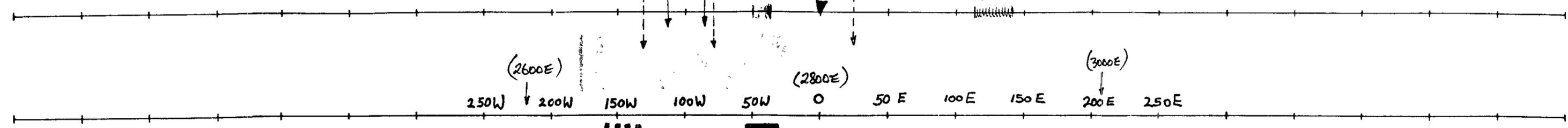
5. RECOMMENDATIONS

The main anomaly should be tested by drilling. It would be desirable to drill the target between these two lines, say 4950 N but, as I understand it, there are structural complications between the two lines - even though the lines are coherent! The hole should be made to intersect a target at 50 W at a depth of 130 m on line 4900 N. Ideally, a few more I.P. lines would be desirable to map out this anomalous zone more precisely but as the hole is to be commenced soon, the above must suffice.

MARCUS F. FLIS

Black carbonaceous shales with pyrite

CONTRACT (?) CREEK  
DOLomite  
DUMPS  
upbasies with magnetite  
DUMPS



Transmitter type HUNTEC 2.5 KW.  
 Timing sequence 2 sec on / 2 sec off  
 Receiver type IPR-7  
 Integration 450-1100 msec  
 IP measured over one current pulse



5 cm

C.R.A.E	
INDUCED POLARIZATION and RESISTIVITY SURVEY	
RAZORBACK AREA.	
LINE : 4900 N	
Area Done Done	Scale 1:2500
3/2/80	85-1183

Culture Plan

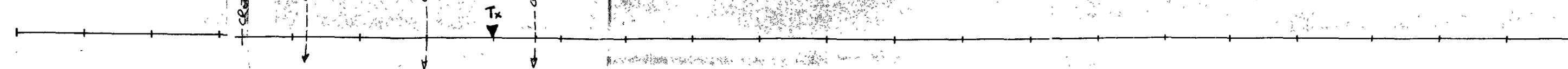
Apparent Chargeability (msecs)

Apparent Resistivity (ohm m)

Shale with pyrite

longmenan

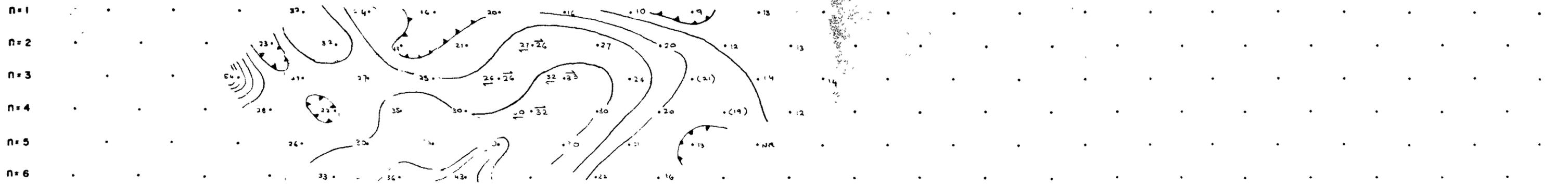
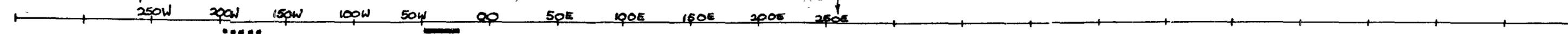
asymmetric



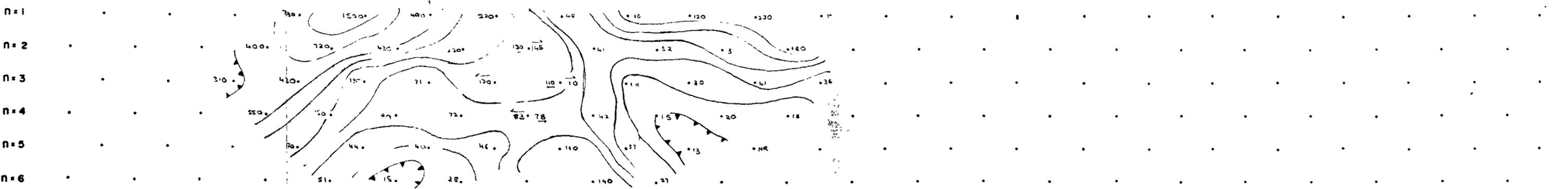
(2500E)

(2740E)

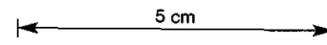
(3000E)



Contour Interval 5, 10, 15, 20, 25, 30, 35, 40, 45, 50



Contour Interval 15, 25, 40, 65, 100, 150, 250, 400, 650, 1000, 1300



Transmitter type	huntec 2.5kW
Timing sequence	2 sec on / 2 sec off
Receiver type	IPR-7
Integration	450mS - 1100 mS
IP measured over one current	pulse



C.R.A.E.		
INDUCED POLARIZATION and RESISTIVITY SURVEY		
RAZORBACK		
LINE : 5000N		
Array	Dipole - Dipole	Dipole length 50m
Date	4-2-80	Job No 85-1183 Scale 1:2500

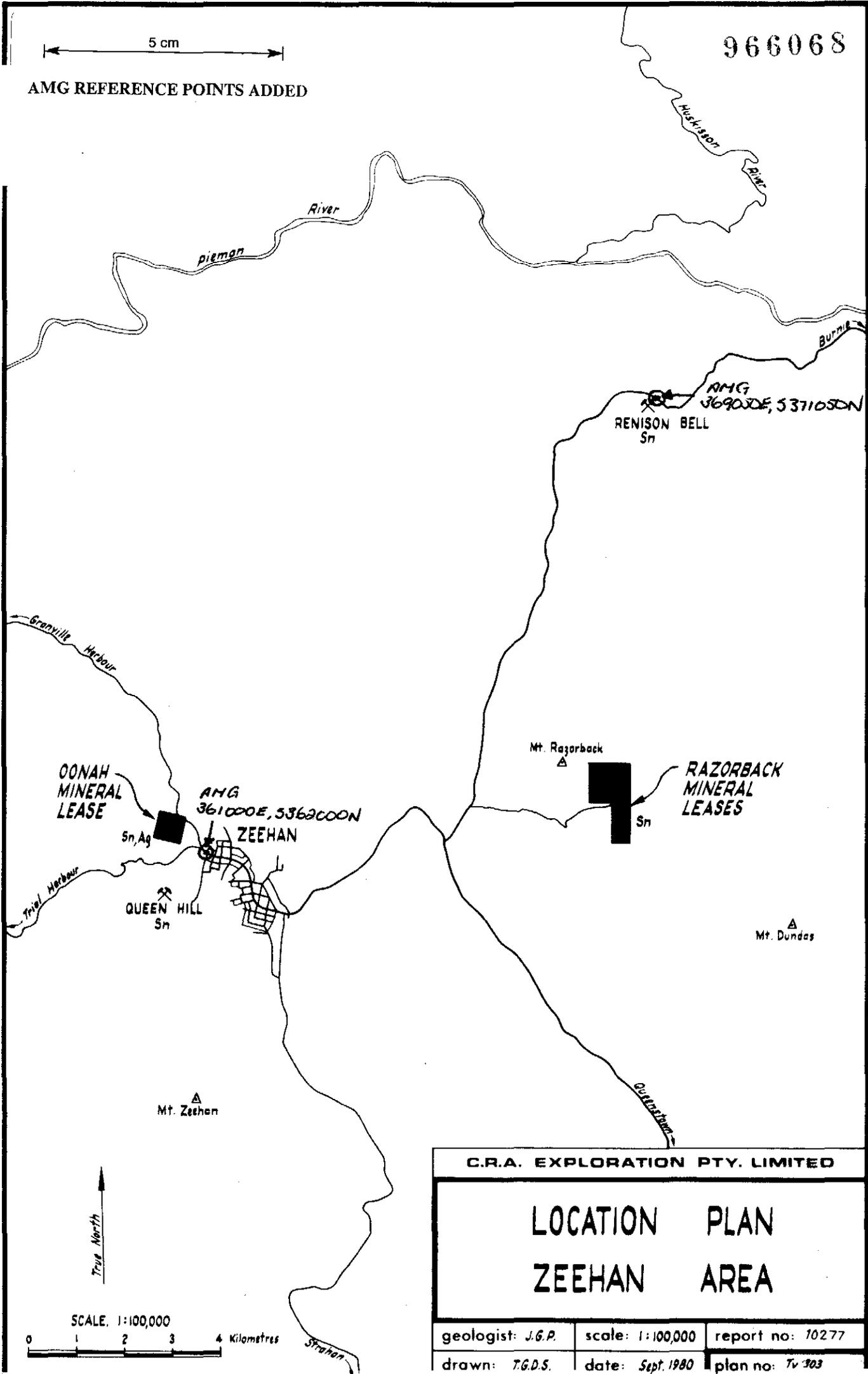
Culture Plan

Apparent Chargeability (msecs)

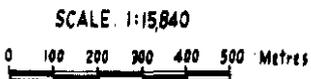
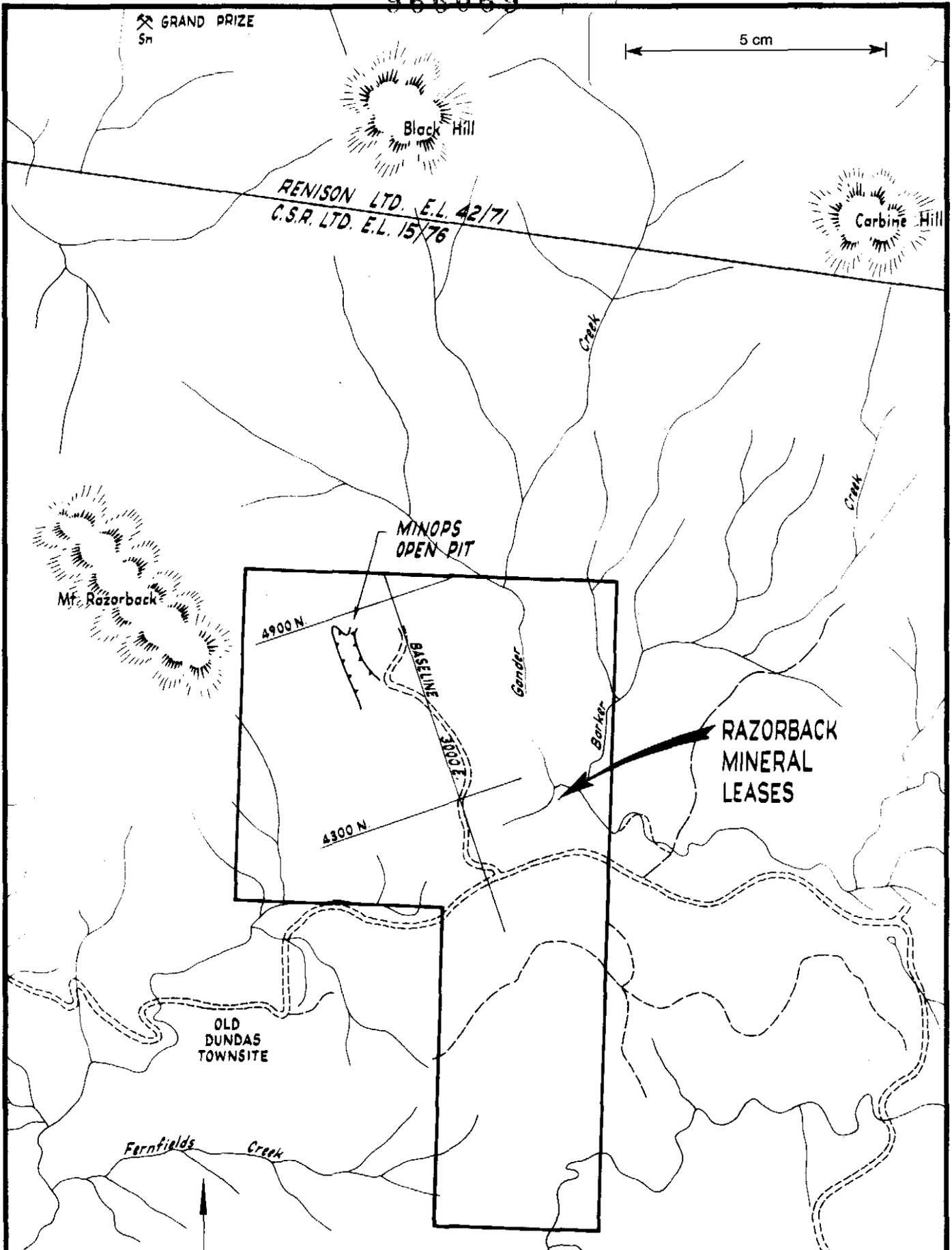
Apparent Resistivity (ohm m)

5 cm

AMG REFERENCE POINTS ADDED



C.R.A. EXPLORATION PTY. LIMITED		
<b>LOCATION PLAN ZEEHAN AREA</b>		
geologist: J.G.P.	scale: 1:100,000	report no: 10277
drawn: T.G.D.S.	date: Sept. 1980	plan no: Tv 303



C.R.A. EXPLORATION PTY. LIMITED

**LOCALITY PLAN**

**RAZORBACK MINERAL LEASES**

geologist: J.G.P.	scale: 1:15,840	report no: 10277
drawn: T.G.D.S.	date: Sept. 1980	plan no: Tv 302



TASMANIA

## DEPARTMENT OF MINES

PHONE: 30 8033

G.P.O. BOX 124 B

HOBART

TASMANIA 7001

D of M	A.O.	SR.	E.O.	D.S.M.E.
				Director
Received	26 MAY 1981			E & IL
Answered				
DEPT. OF MINES				
REF. No. 4340/81				

26 MAY 1981

Chief Geologist,  
HOBART.

Re: Purvis, J.G., 1980. Exploration at the Razorback  
Tin Mine, Western Tasmania. March 1979 -  
September 1980. C.R.A. Exploration Pty Ltd  
Report 10277

I submit the following geological summary which differs greatly from the confused version of the geology of the Razorback tin mine given in the above report from p. 6-8.

#### Summary

Fossiliferous Middle to Upper Cambrian turbidite sequences of the Dundas Group (Elliston 1954, Banks 1956, Blissett 1962) were subjected to block faulting during a Mid-Devonian deformation. Faulting was followed by re-emplacment of serpentized peridotite through its Dundas Group cover. Faulting and re-emplacment of the ultramafic rocks occurred before steatitization of the serpentinite which formed talc-carbonate rocks. The talc-carbonate rocks acted as a host to later tin mineralization which accompanied granitic magma emplacement towards the end of the Devonian deformation.

#### Litho-stratigraphic units

Three formations of the lower Dundas Group; the Red Lead Conglomerate, Hodge Slate and Razorback Conglomerate occur as northerly striking, westerly dipping fault blocks that form Mt Razorback. These formations have a bio-stratigraphic age of upper Middle Cambrian (Elliston, 1954; Blissett, 1962; Jago, 1973; etc.)

Regionally, the basal sedimentary rock successions of the Dundas Group overlie with structural conformity, but a landscape unconformity, the Crimson Creek Formation and numerous areas of dissected ultramafic-mafic complexes (Brown et al. 1980).

070

In the area of the Razorback mine the first sedimentary rock west of the serpentinite mass is the Red Lead Conglomerate. This formation has been called 'greywacke conglomerate' by some writers. The Red Lead Conglomerate is a mass flow mixtite deposit containing material from local and distant sources. Mudstone, siltstone, lithic wacke and basic volcanic clasts, derived from the Crimson Creek Formation, are intermixed with ultramafic-mafic detritus and well-rounded boulders of Precambrian quartzite and chert clasts. Irregular talc-carbonate bodies occur in this conglomerate and are considered to be altered serpentinite stringers fault emplaced within the conglomerate during Mid-Devonian re-emplacment of the ultramafic complex.

Hodge Slate conformably overlies the Red Lead Conglomerate. It consists of black, pyritic, laminated mudstone-siltstone and interbedded fine- to medium-grained sandstone.

Razorback Conglomerate then conformably overlies the Hodge Slate. This conglomerate is a turbidite sequence of pebble-grade chert conglomerate, pebbly sandstone and sandstone dominated by grains of chert.

#### Ultramafic Complex

The Dundas Ultramafic Complex occurs to the east of the Dundas Group sequences near the Razorback mine. This complex is dominantly composed of serpentinite, but areas of residual, partially serpentinitized, layered orthopyroxenite and peridotite occur. The main areas of residual peridotite occur on the knoll at the northern end of Mt Razorback (CP 681644) and at Stichtite Hill (CP 704620).

The boundary between the ultramafic complex and the sedimentary succession is a fault zone, in some places represented by highly sheared and weathered serpentinite and in other places by talc-carbonate rock after serpentinite.

The earliest proven emplacement of dissected, serpentinitized ultramafic cumulate bodies into basins of deposition happened before the beginning of Dundas Group sedimentation. Ultramafic-mafic detritus occurs in the Red Lead Conglomerate and its correlates at the Razorback mine (Padmasiri, 1974); at Confidence Saddle (CP 710676) and in the Ring River (CP 719691 (Rubenach, 1974) as well as in the Pieman River (CP 720738, unpub. data).

East of Mt Razorback, the western margin of the ultramafic mass is formed of foliated and sheared serpentinite and talc-carbonate rock. The talc-carbonate rock lies along the fault zone and in places acts as host to tin mineralization. The zone of mineralization can be easily followed as outcrops of chert-sulphide rock southwards from the Razorback mine, down the western margin of the ultramafic body, to just north of the old Adelaide mine (CP 699619).

The formation of talc-carbonate rock is typical of early steatitization of serpentinite by carbon dioxide metasomatism. It is a characteristic alteration of serpentinite bodies along boundaries between serpentinite and country rock of different composition. This type of alteration is common in many ultramafic bodies throughout the world, a classic example is found in the Roxbury district of Vermont, U.S.A. (Jahns in Wyllie 1967). The process of steatitization begins with the talc-carbonate replacement of serpentinite from the fault margin.

Continuation of the process forms steatite along the fault margin at the expense of talc-carbonate. The talc-carbonate and steatite zones are thus autochthonous, whereas the serpentinite body is allochthonous, therefore the talc-carbonate does not show any of the structures present within the serpentinite.

Any suggestion that the serpentinite at Dundas was formed in situ from the alteration of volcanic rocks is unsubstantiated by field, thin section or chemical evidence. The presence of 1 - 2% disseminated subhedral to euhedral chrome spinel within the serpentinite having Cr/Cr + Al ratios compatible with those obtained from chrome spinel from peridotite as compared with the ratios obtained for this mineral from 'ultrabasic' and basic lavas also precludes a volcanic parent for the serpentinite.

Similarly, field, thin section and chemical data rule out the formation of the talc-carbonate rocks from hypothetical 'ultrabasic tuff' and 'impure carbonate facies'.

#### Conclusion

The Razorback tin mine is located in an area where serpentinitized layered peridotite has been brought into juxtaposition with lower Dundas Group sequences by faulting. The age of the Dundas Group sequences is upper Middle Cambrian. Alteration of serpentinite by metasomatic processes produced a zone of talc-carbonate rock that later hosted tin mineralization.

The above geological setting is markedly different to the setting of tin mineralization at Renison Bell, where the host rocks are stratiform carbonate units within the highest formation of the Success Creek Group (Newnham, 1976).

#### Comment

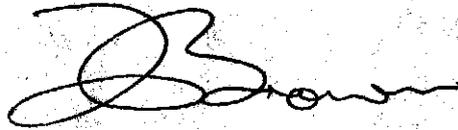
The source of tin mineralization at the Razorback mine is considered to be the same as that for Renison Bell and the potential of the talc-carbonate zone as an exploration target remains unchanged from that suggested in the report, because the mineralized zone remains the talc-carbonate host rock, as defined by drilling, irrespective of the interpretation of the geology.

If an independent review of the geology of the Razorback tin is warranted I suggest Mr Carl Layden, Minerals Geologist, Apollo International Minerals N.L., BHP House, Melbourne. Mr Layden was the mine geologist of Razorback for Minops in the mid-1970s.

#### References

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C.L. Knight) *Aust.Inst.Min. & Metall.*, p. 581-583.
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*Unpubl.Hons.Thesis Uni. of Tasm.*
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complex, western Tasmania. *J.geol.Soc.Aust.*, 21:91-106.



(A.V. Brown)  
REGIONAL GEOLOGIST

Forwarded through: Supervising Geologist, Regional Section

*Williams*

WEST

2700E

2800E

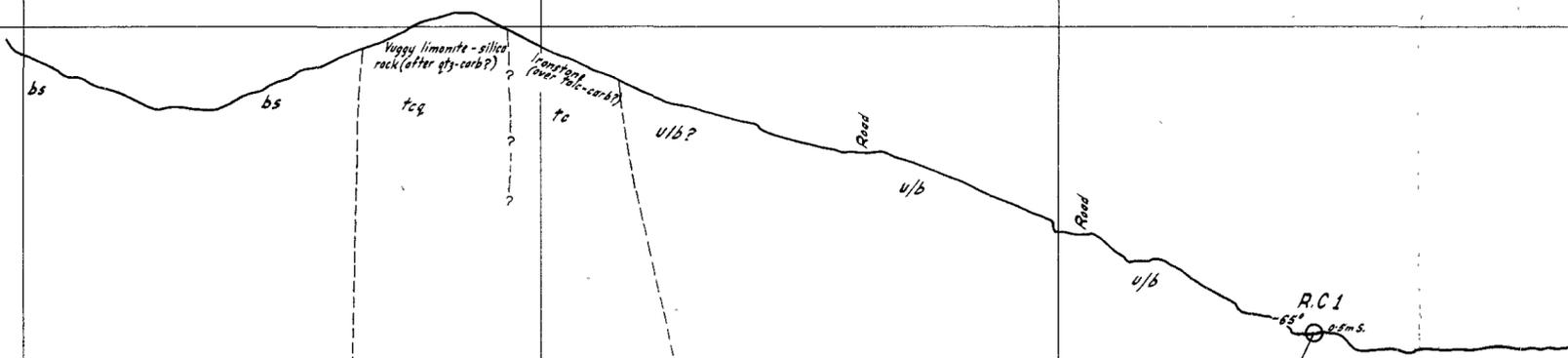
2900E

3000E

966074

EAST

R.L. 300 m



GEOLOGICAL LEGEND

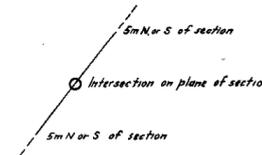
- bs DOLOMITIC BLACK SHALE ('HODGE SLATE') Pyritic.
- rc CONGLOMERATE ('RAZORBACK CONGLOMERATE')
- bv TUFFACEOUS BASIC VOLCANIC
- tc TALC CARBONATE ('DOLOMITE')
- tcg Ferruginous. tcg = quartz-talc-carbonate sub unit. tz = Transition Zone, usually a talc-carbonate breccia-conglomerate
- u/b SERPENTINITE

M-U-E  
Wrong  
LOWER  
UPPER  
DS

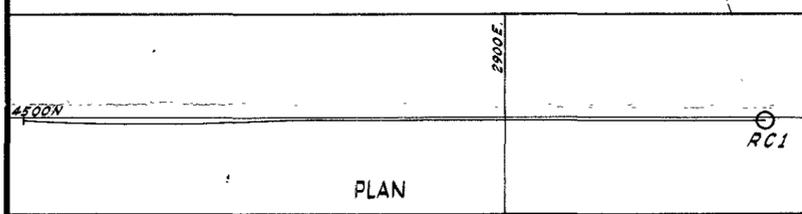
- MASSIVE SULPHIDES
- >1% DISSEMINATED & VEIN SULPHIDES
- Sulphide vein 50mm or greater
- Contact
- Inferred contact
- Bedding
- Lincization - possibly after bedding
- Shear zone or fault

R.L. 100 m

Key



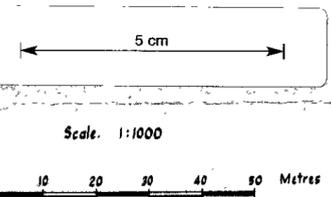
00



322-324  
0.82% Sn  
1.60% Cu

345-349  
0.29% Sn  
0.60% Cu

0.5m.s. 80 N 367.5m



6784

C.R.A. EXPLORATION PTY. LIMITED

**RAZORBACK TIN MINE**  
WESTERN TASMANIA  
SECTION 4500 N.  
LOOKING GRID NORTH (340° Mag. approx.)

geologist: G.R./A.D.M.K.	scale: 1:1000	report no: 10277
drawn: T.G.D.S.	date: Jan 1980	plan no. TV 99

WEST

2700E

2800E

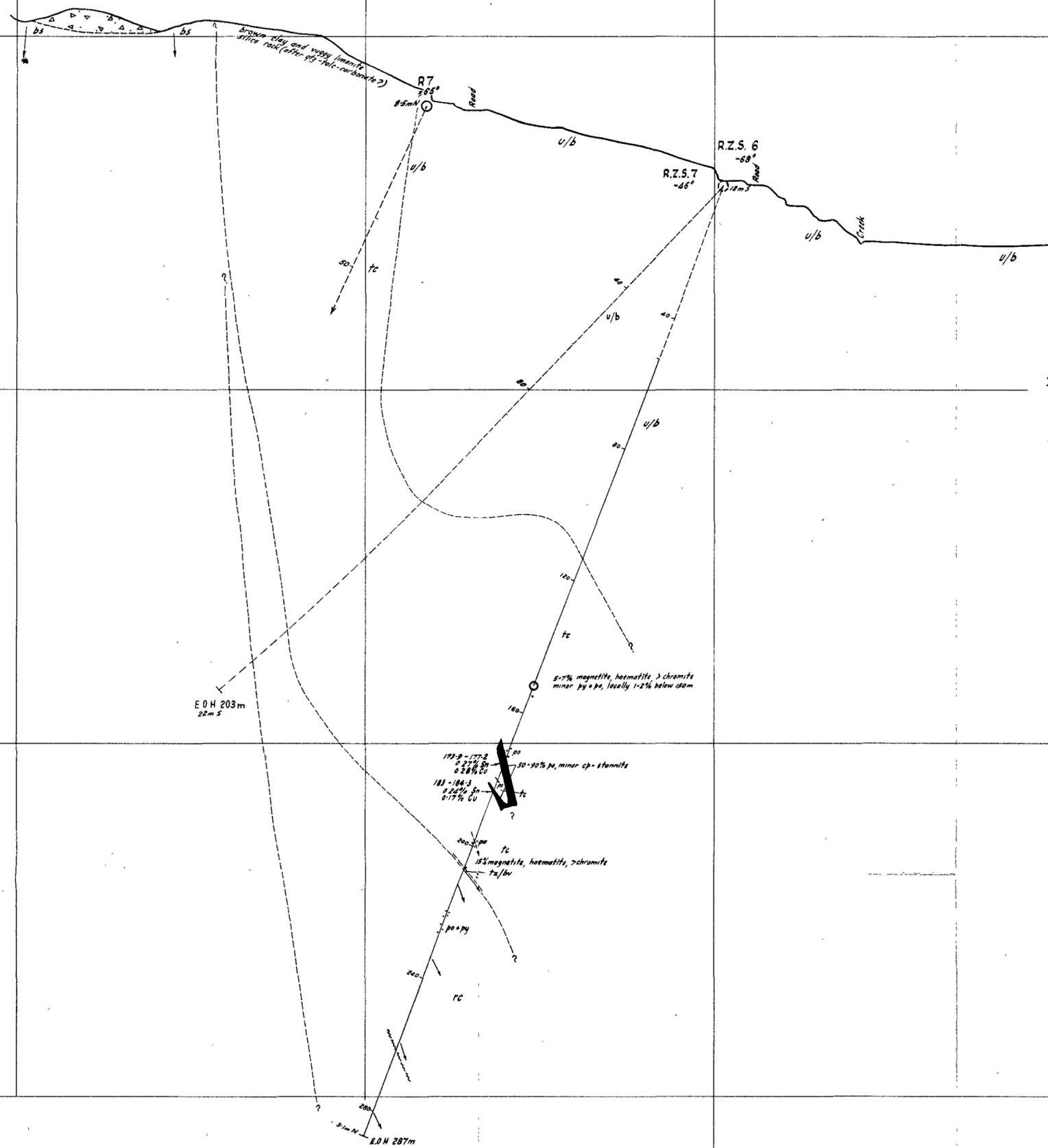
2900E

3000E

960075

EAST

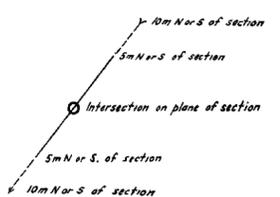
R.L. 300m



GEOLOGICAL LEGEND

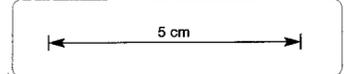
- bs DOLOMITIC BLACK SHALE ('HODGE SLATE') Pyritic
- rc CONGLOMERATE ('RAZORBACK CONGLOMERATE') R.L. 200m
- bv TUFFACEOUS BASIC VOLCANIC
- tc TALC CARBONATE ('DOLOMITE') Ferruginous tcq = quartz-talc-carbonate sub unit. tz = 'Transition Zone' usually a talc-carbonate breccia-conglomerate
- u/b SERPENTINITE
- Mine Dumps
- MASSIVE SULPHIDES
- >1% DISSEMINATED & VEIN SULPHIDES
- Sulphide vein 50mm or greater
- Contact
- Inferred contact
- Bedding
- Limeation - possibly after bedding
- Shear zone or fault

Key

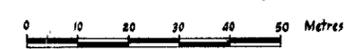


R.L. 100m

00



Scale: 1:1000

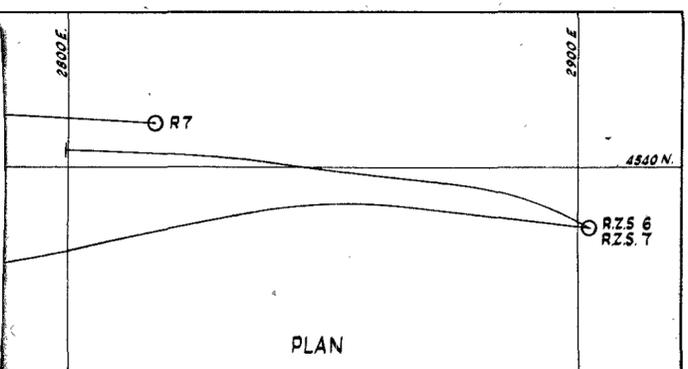


6785

C.R.A. EXPLORATION PTY. LIMITED

RAZORBACK TIN MINE  
 WESTERN TASMANIA  
 SECTION 4540 N.  
 LOOKING GRID NORTH (340° Mag. approx.)

geologist: G.R.	scale: 1:1000	report no: 10277
drawn: T.G.D.S.	date: Jan 1980	plan no: TV 97



WEST

966076  
EAST

2700E

2800E

2900E

3000E

300m R.L.

300m R.L.

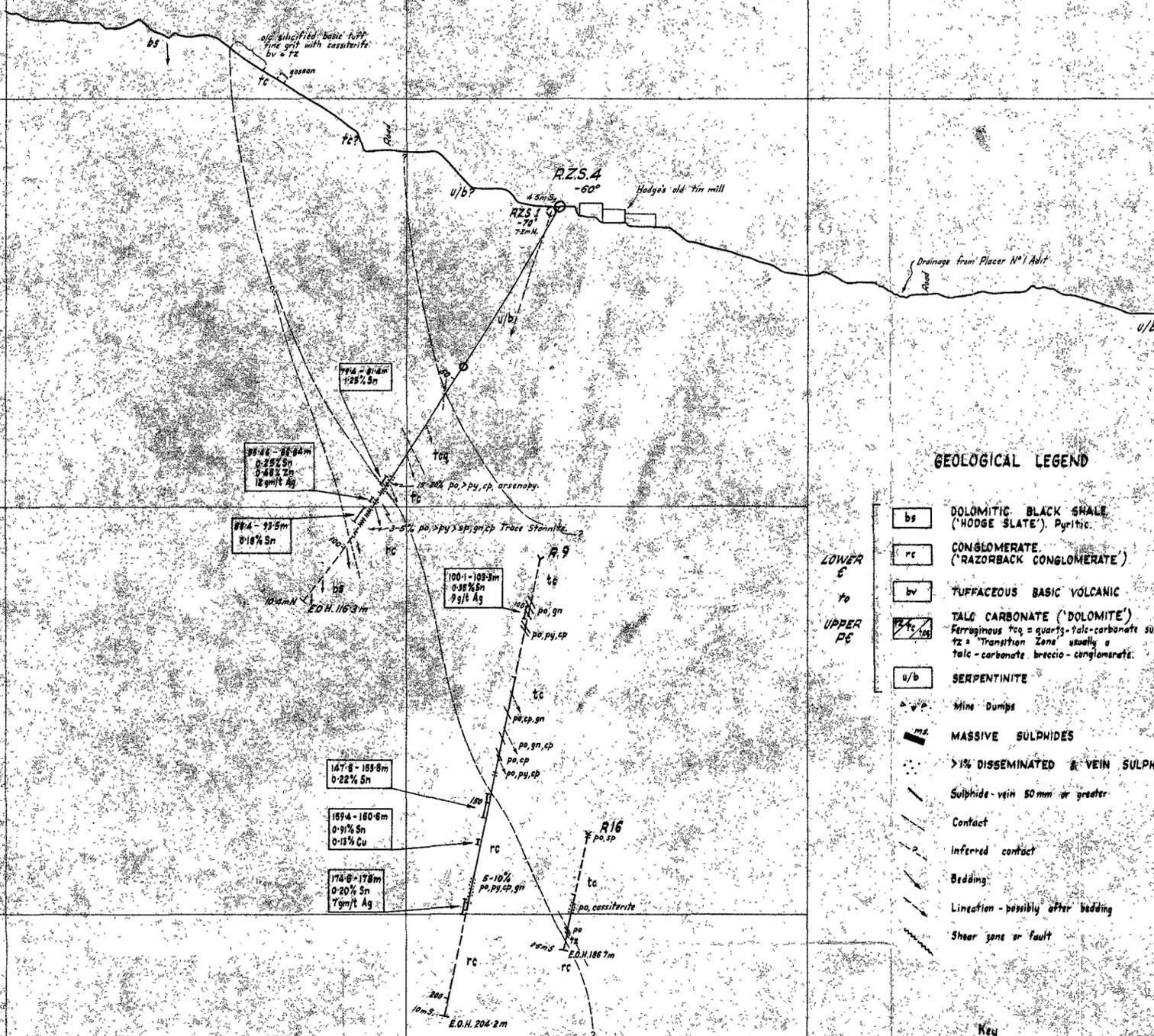
200m R.L.

200m R.L.

100m R.L.

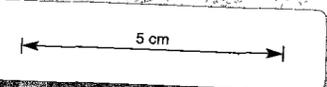
100m R.L.

00

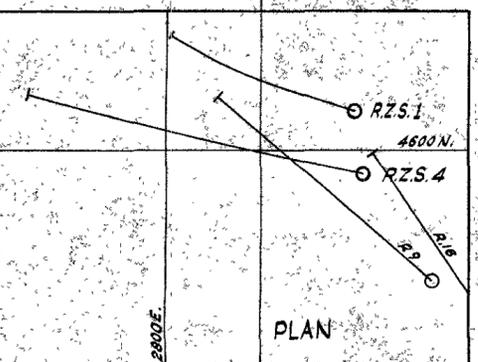


### GEOLOGICAL LEGEND

- bs** DOLOMITIC BLACK SHALE ('HODGE SLATE') Pyritic.
- rc** CONGLOMERATE ('RAZORBACK CONGLOMERATE')
- bv** TUFFACEOUS BASIC VOLCANIC
- tc** TALC CARBONATE ('DOLOMITE')  
Ferruginous tcg = quartz-talc-carbonate sub unit  
tz = 'Transition Zone' usually a talc-carbonate breccio-conglomerate.
- u/b** SERPENTINITE
- mine dumps**
- ms** MASSIVE SULPHIDES
- >1% disseminated & vein sulphides**  
Sulphide-vein 50mm or greater
- Contact
- Inferred contact
- Bedding
- Lineation - possibly after bedding
- Shear zone or fault



Scale: 1:1000



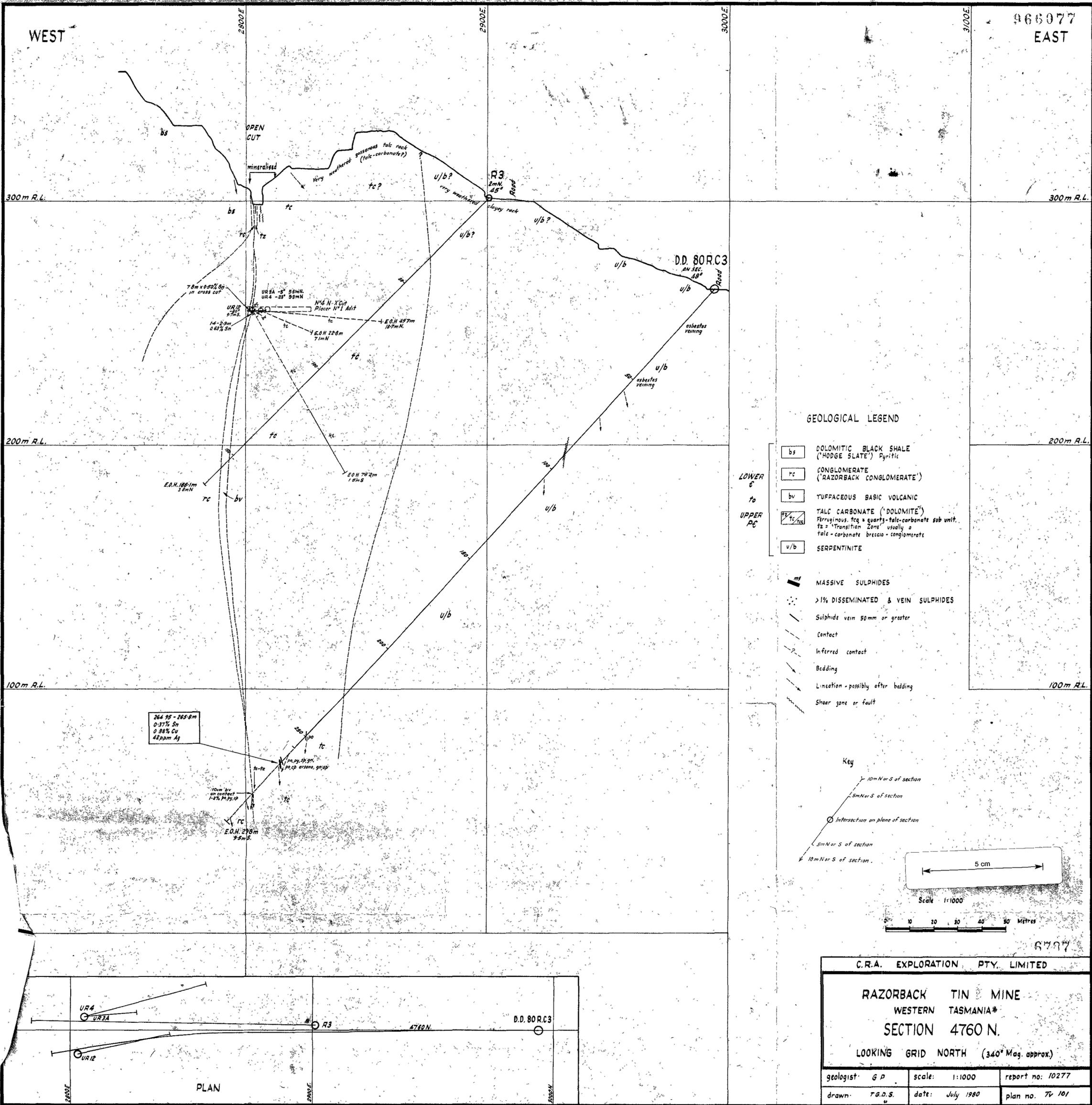
6786

C.R.A. EXPLORATION PTY. LIMITED

RAZORBACK TIN MINE  
WESTERN TASMANIA  
SECTION 4600 N.

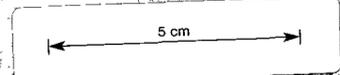
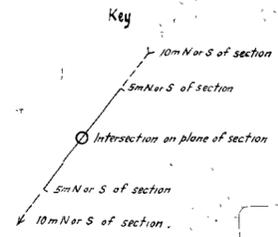
LOOKING GRID NORTH (340° Mag. approx.)

geologist: G.P.	scale: 1:1000	report no: 10277
drawn: T.G.D.S.	date: April 1980	plan no: TV 100



GEOLOGICAL LEGEND

- |     |                                                                                                                                                     |
|-----|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| bs  | DOLOMITIC BLACK SHALE ('HODGE SLATE') Pyritic                                                                                                       |
| tc  | CONGLOMERATE ('RAZORBACK CONGLOMERATE')                                                                                                             |
| bv  | TUFFACEOUS BASIC VOLCANIC                                                                                                                           |
| u/b | TALC CARBONATE ('DOLOMITE') Ferruginous, tcg + quartz-talc-carbonate sub unit. fz = 'Transition Zone' usually a talc-carbonate breccia-conglomerate |
| u/b | SERPENTINITE                                                                                                                                        |
- 
- |     |                                    |
|-----|------------------------------------|
| mt  | MASSIVE SULPHIDES                  |
| ... | >1% DISSEMINATED & VEIN SULPHIDES  |
| --- | Sulphide vein 50mm or greater      |
| --- | Contact                            |
| --- | Inferred contact                   |
| --- | Bedding                            |
| --- | Lineation - possibly after bedding |
| --- | Shear zone or fault                |



Scale 1:1000



C.R.A. EXPLORATION PTY. LIMITED

RAZORBACK TIN MINE  
WESTERN TASMANIA\*  
SECTION 4760 N.

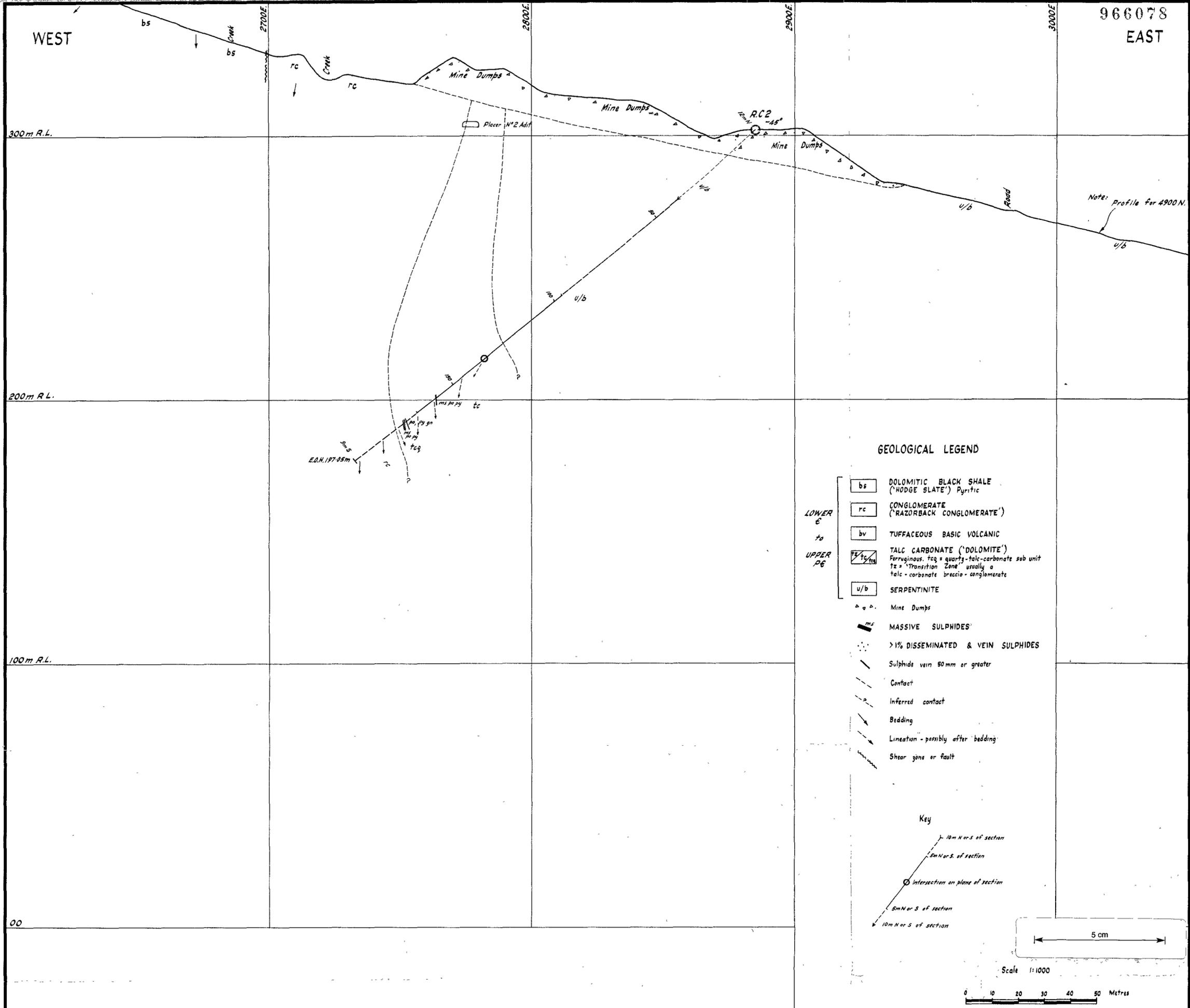
LOOKING GRID NORTH (340° Mag. approx.)

geologist: G.P.	scale: 1:1000	report no: 10277
drawn: T.G.D.S.	date: July 1980	plan no: TV 101

PLAN

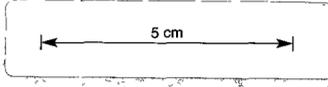
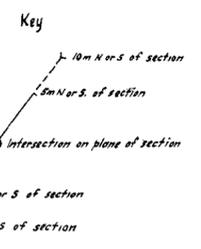
966078  
EAST

WEST



**GEOLOGICAL LEGEND**

- LOWER E**
- UPPER PG**
- bs** DOLOMITIC BLACK SHALE ('HODGE SLATE') Pyritic
- rc** CONGLOMERATE ('RAZORBACK CONGLOMERATE')
- bv** TUFFACEOUS BASIC VOLCANIC
- tc** TALC CARBONATE ('DOLOMITE')  
Ferruginous, fq + quartz - talc-carbonate sub unit  
tz = 'Transition Zone' usually a talc-carbonate breccia-conglomerate
- u/b** SERPENTINITE
- △ △ △** Mine Dumps
- MASSIVE SULPHIDES
- ⋯** >1% DISSEMINATED & VEIN SULPHIDES
- Sulphide vein 80mm or greater
- Contact
- - -** Inferred contact
- Bedding
- Lamination - possibly after bedding
- Shear zone or fault



Scale 1:1000

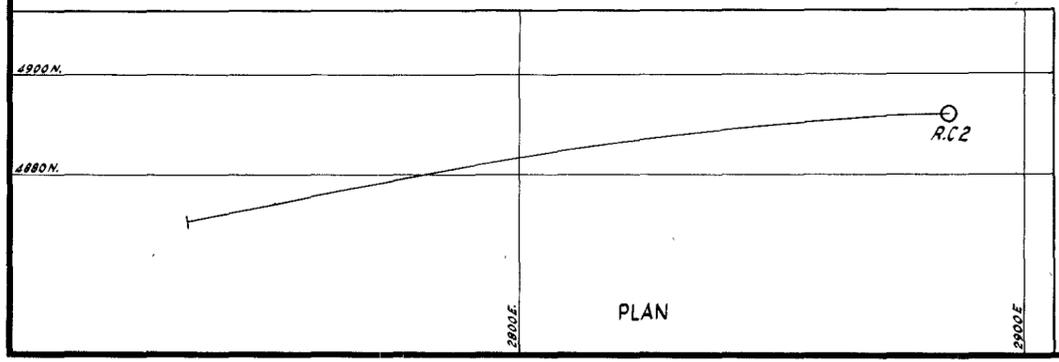
6788

C.R.A. EXPLORATION PTY. LIMITED

**RAZORBACK TIN MINE**  
WESTERN TASMANIA  
**SECTION 4880 N.**

LOOKING GRID NORTH (340° Mag. approx.)

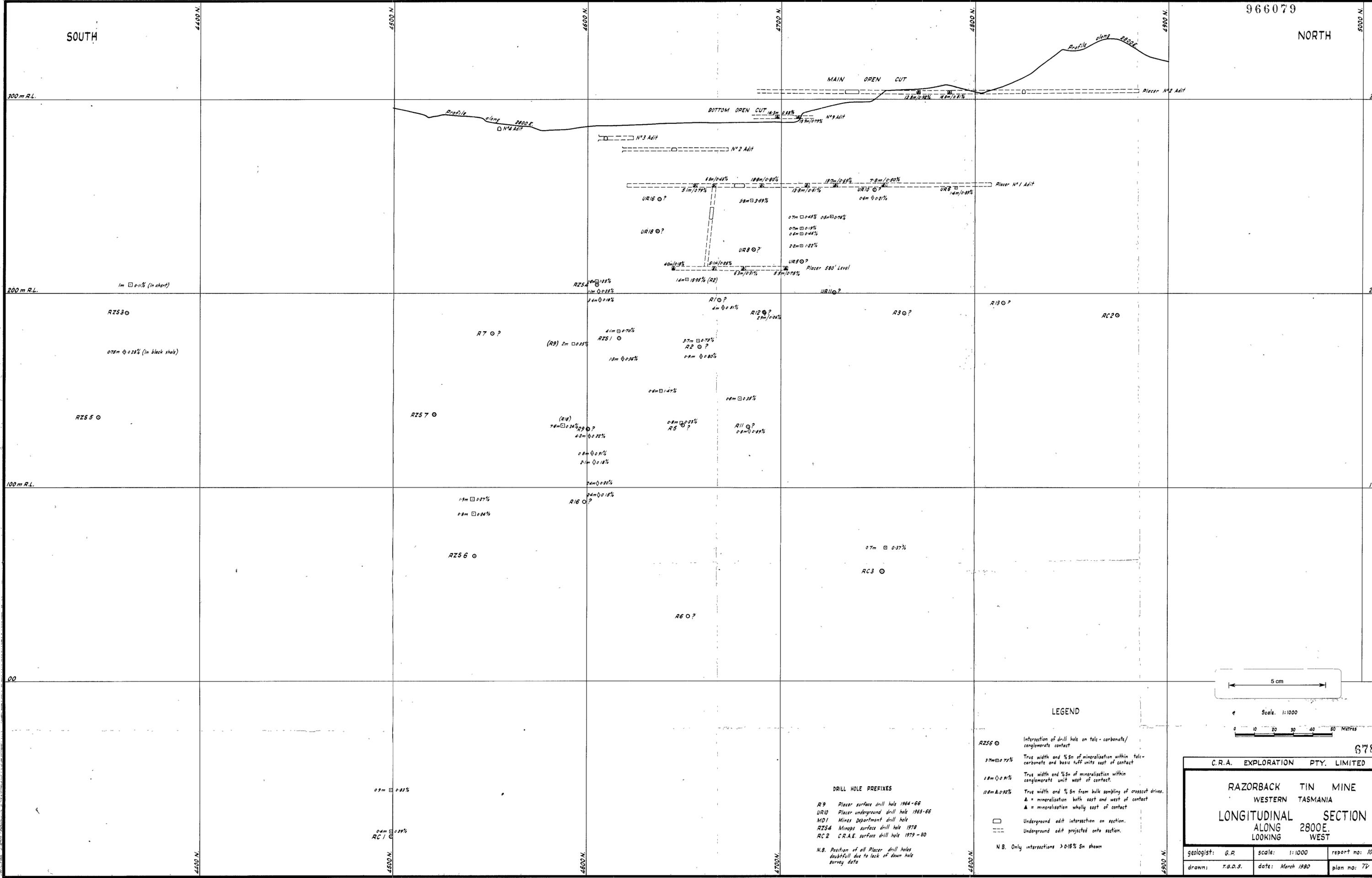
geologist: G.P.	scale: 1:1000	report no: 10277
drawn: T.G.D.S.	date: Feb. 1980	plan no: TV 98



PLAN

SOUTH

NORTH



1m □ 0.11% (in chert)

0.75m □ 0.18% (in black shale)

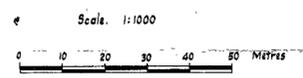
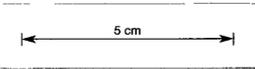
LEGEND

- RZ56 ○ Intersection of drill hole on talc-carbonate/conglomerate contact
- 3.7m □ 0.73% True width and %Sn of mineralisation within talc-carbonate and basic tuff units east of contact
- 1.8m □ 0.91% True width and %Sn of mineralisation within conglomerate unit west of contact
- 1.8m △ 0.92% True width and %Sn from bulk sampling of crosscut drives.
- △ = mineralisation both east and west of contact
- ▲ = mineralisation wholly east of contact
- Underground adit intersection on section.
- Underground adit projected onto section.
- N.B. Only intersections > 0.15% Sn shown

DRILL HOLE PREFIXES

- R 9 Placer surface drill hole 1964-66
- UR 10 Placer underground drill hole 1965-66
- MD 1 Mines Department drill hole
- RZ 54 Minops surface drill hole 1978
- RC 2 C.R.A.E. surface drill hole 1979-80

N.B. Position of all Placer drill holes doubtful due to lack of down hole survey data



6789

C.R.A. EXPLORATION PTY. LIMITED

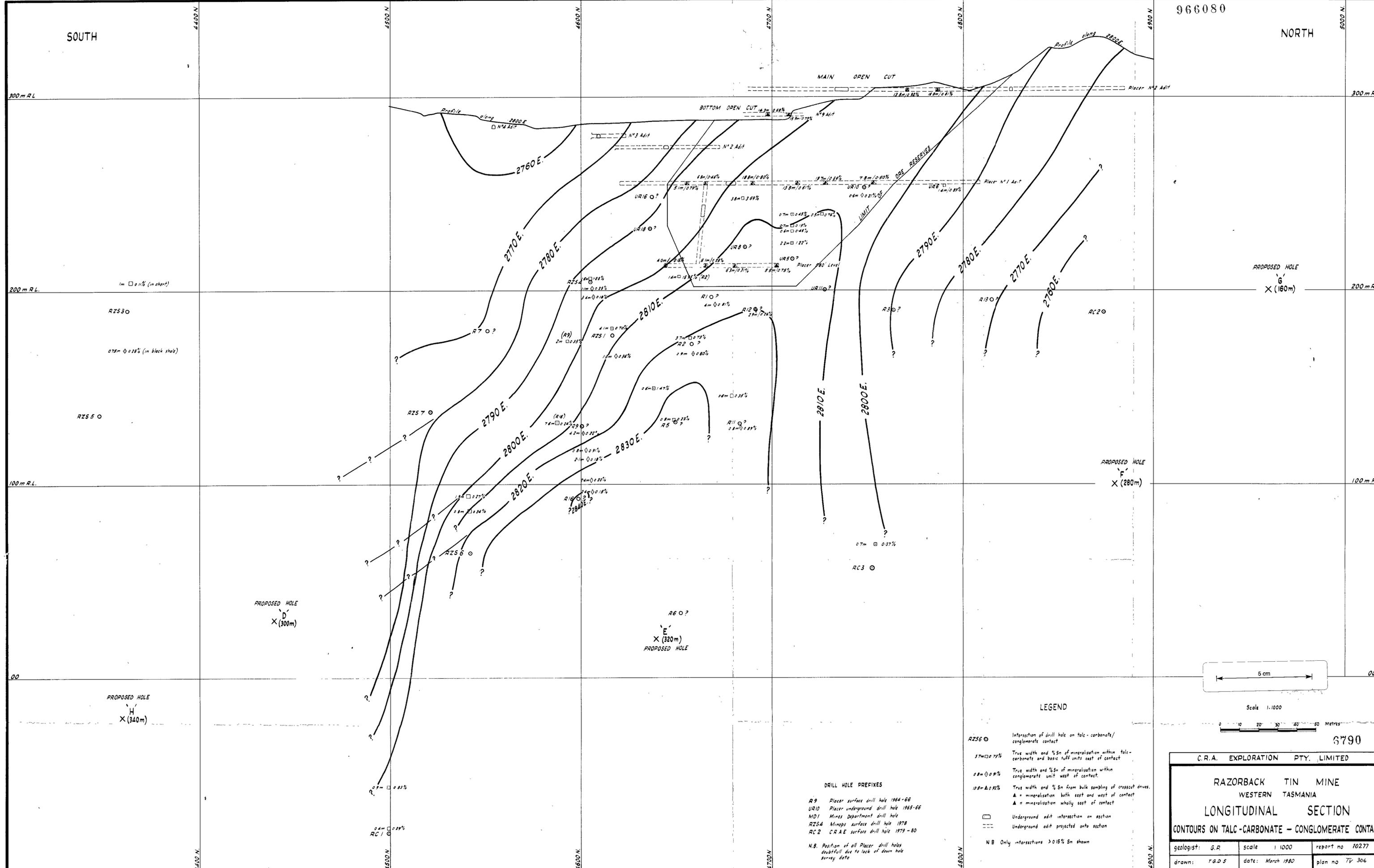
**RAZORBACK TIN MINE**  
WESTERN TASMANIA

**LONGITUDINAL SECTION**  
ALONG 2800 E.  
LOOKING WEST

geologist: G.R.	scale: 1:1000	report no: 10277
drawn: T.B.D.S.	date: March 1980	plan no: TV 94

SOUTH

NORTH



300 m R.L.

300 m R.L.

200 m R.L.

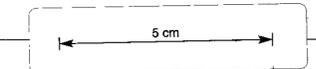
200 m R.L.

100 m R.L.

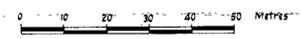
100 m R.L.

00

00



Scale 1:1000



6790

C.R.A. EXPLORATION PTY. LIMITED

**RAZORBACK TIN MINE**  
WESTERN TASMANIA

**LONGITUDINAL SECTION**  
CONTOURS ON TALC-CARBONATE - CONGLOMERATE CONTACT

geologist: G.R.	scale: 1:1000	report no: 10277
drawn: T.G.D.S.	date: March 1980	plan no: TV 306

LEGEND

- RZ50 Intersection of drill hole on talc-carbonate/conglomerate contact
- 37m @ 0.71% True width and 1/2 Sn of mineralisation within talc-carbonate and basic tuff units east of contact
- 10m @ 0.91% True width and 1/2 Sn of mineralisation within conglomerate unit west of contact
- 120m @ 0.91% True width and 1/2 Sn from bulk sampling of crosscut drives.
- ▲ = mineralisation both east and west of contact
- △ = mineralisation wholly east of contact
- Undergrnd adit intersection on section
- Undergrnd adit projected onto section
- N.B. Only intersections > 0.15% Sn shown

DRILL HOLE PREFIXES

- R9 Placer surface drill hole 1964-66
- UR10 Placer underground drill hole 1965-66
- MD1 Mines Department drill hole
- RZ54 Minops surface drill hole 1978
- RC2 CRAE surface drill hole 1979-80

N.B. Position of all Placer drill holes doubtful due to lack of down hole survey data

SOUTH

NORTH

300 m R.L.

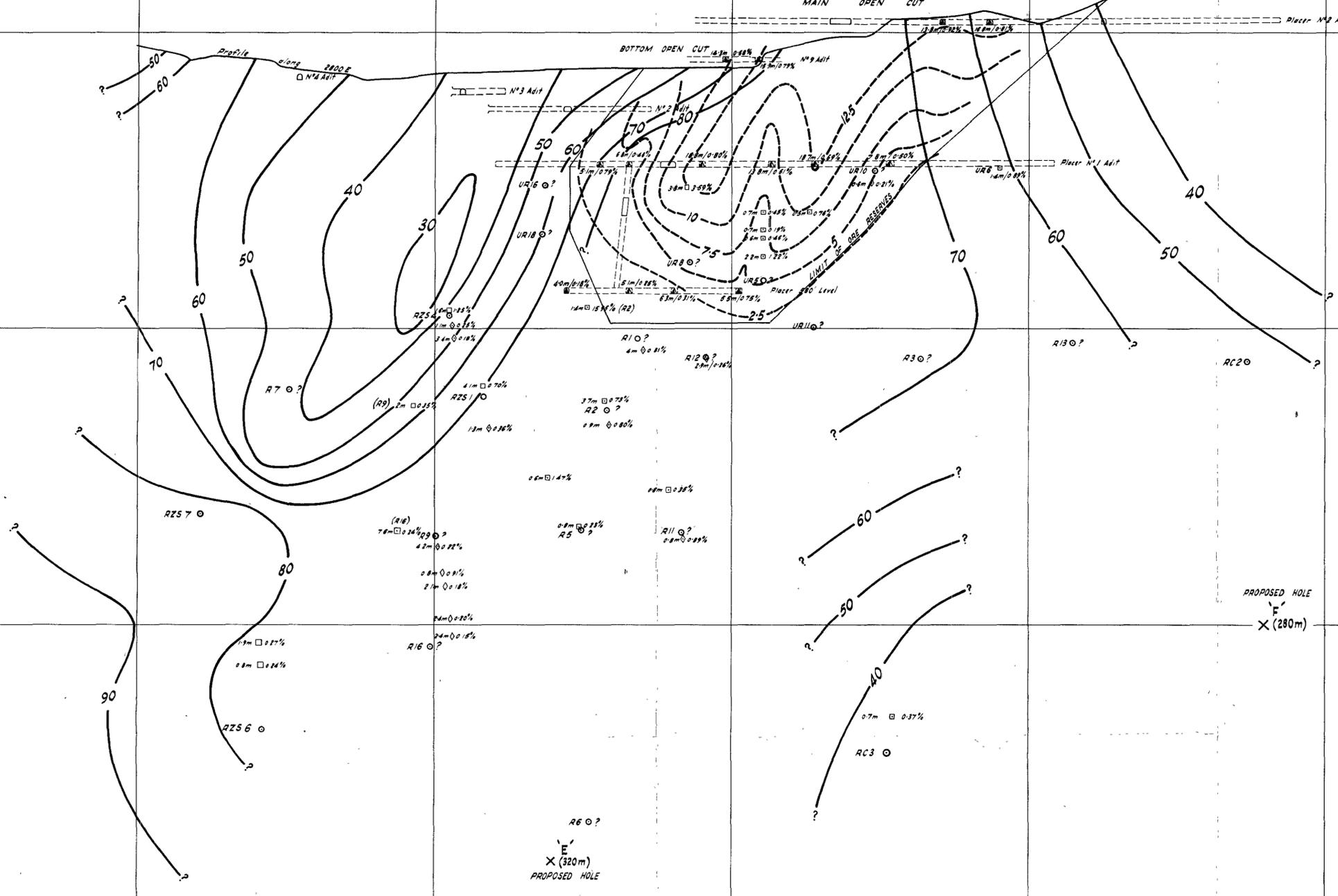
200 m R.L.

100 m R.L.

00

4400 N  
4500 N  
4600 N  
4700 N  
4800 N  
4900 N

5000 N



RZ53 0  
1m □ 0.11% (in chert)  
0.78m □ 0.28% (in black shale)

RZ55 0

PROPOSED HOLE  
D  
X (300m)

PROPOSED HOLE  
E  
X (320m)

PROPOSED HOLE  
F  
X (280m)

PROPOSED HOLE  
H  
X (340m)

**RELIABILITY OF DATA**

Contours drawn from sections 4500 N  
4540 N  
4600 N  
4700 N  
4800 N

and from mapping in Placer adits and on surface by Minops.

70 True width of dolomite in metres.

Contours of %Sn x true width of mineralisation in metres (Note, the mineralisation is in both the conglomerate and the talc-carbonate)

**DRILL HOLE PREFIXES**

R9 Placer surface drill hole 1964-66  
UR10 Placer underground drill hole 1965-66  
MD1 Mines department drill hole  
RZ54 Minops surface drill hole 1978  
RC2 C.R.A.E surface drill hole 1979-80

N.B. Position of all Placer drill holes doubtful due to lack of down hole survey data

**LEGEND**

- RZ56 0 Intersection of drill hole on talc-carbonate/conglomerate contact
  - 37m □ 0.73% True width and %Sn of mineralization within talc-carbonate and basic tuff units east of contact
  - 0.8m □ 0.8% True width and %Sn of mineralization within conglomerate unit west of contact.
  - 17.8m □ 0.92% True width and %Sn from bulk sampling of crosscut drives.
  - △ = mineralisation both east and west of contact
  - ▲ = mineralisation wholly east of contact
  - Underground adit intersection on section
  - Underground adit projected onto section
- N.B. Only intersections >0.15% Sn shown



Scale: 1:1000



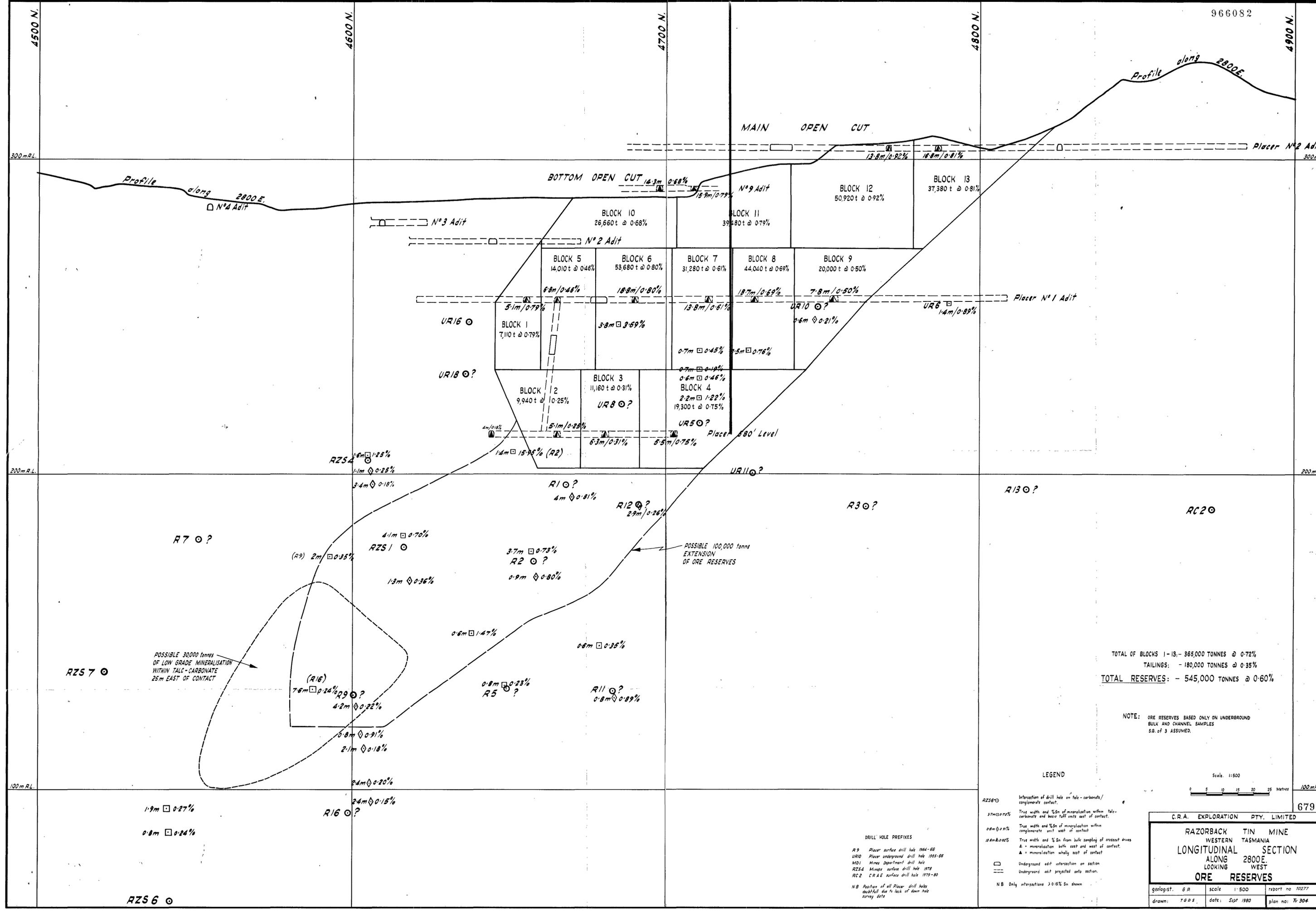
6791

C.R.A. EXPLORATION PTY. LIMITED

RAZORBACK TIN MINE  
WESTERN TASMANIA

LONGITUDINAL SECTION  
CONTOURS OF TALC-CARBONATE THICKNESS

geologist: G.R.	scale: 1:1000	report no. 10277
drawn: T.G.D.S.	date: March 1980	plan no. T.305



TOTAL OF BLOCKS 1-13 - 365,000 TONNES @ 0.72%  
 TAILINGS - 180,000 TONNES @ 0.35%  
**TOTAL RESERVES - 545,000 TONNES @ 0.60%**

NOTE: ORE RESERVES BASED ONLY ON UNDERGROUND BULK AND CHANNEL SAMPLES S.G. OF 3 ASSUMED.

LEGEND

Scale: 1:500

0 5 10 15 20 25 Metres

100m R.L.

6792

C.R.A. EXPLORATION PTY. LIMITED

RAZORBACK TIN MINE  
 WESTERN TASMANIA  
**LONGITUDINAL SECTION**  
 ALONG 2800 E.  
 LOOKING WEST  
**ORE RESERVES**

geologist: G.R.	scale: 1:500	report no: 10277
drawn: T.O.S.	date: Sept 1980	plan no: T-304

DRILL HOLE PREFIXES

- R9 Placer surface drill hole 1964-66
  - UR10 Placer underground drill hole 1965-66
  - MD1 Mines Department drill hole
  - RZS4 Mings surface drill hole 1978
  - RC2 CRAE surface drill hole 1979-80
- NB Position of all Placer drill holes doubtful due to lack of down hole survey data

- RZS6 Intersection of drill hole on talc-carbonate/conglomerate contact.
- 37m @ 0.71% True width and %Sn of mineralisation within talc-carbonate and basic tuff units east of contact.
- 0.8m @ 0.91% True width and %Sn of mineralisation within conglomerate unit west of contact.
- 13.8m @ 0.92% True width and %Sn from bulk sampling of crosscut drives
- ▲ = mineralisation both east and west of contact.
- ▲ = mineralisation wholly east of contact.
- = Underground adit intersection on section.
- Underground adit projected onto section.
- NB Only intersections > 0.15% Sn shown