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EXPLORATION LICENCE 12/72 BULGOBAC

**OPEN FILE**

FINAL REPORT ON THE RELINQUISHED AREA,  
COVERING PANCONTINENTAL'S EXPLORATION  
FROM OCTOBER 1986 TO DECEMBER 1987 AND  
A SUMMARY OF EXPLORATION IN THE 1976 -  
1987 PERIOD

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ELECTROLYTIC ZINC CO  
NOVEMBER 1987

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## 1 INTRODUCTION

This report covers exploration activity in the period 9 October 1986 to 25 December 1987 by Pancontinental Mining Ltd on behalf of the Pancontinental/EZ/Little River Goldfields Joint Venture in that part of EL 12/72 relinquished on 25 December 1987, as shown on Fig 1.

The report also provides a summary of all previous exploration undertaken in the relinquished portion in the 1976 to 1987 period.

Work undertaken by Pancontinental in the North Pinnacles area, over which an extension of tenure is sought, is reported in a separate document submitted to the Mines Dept by Pancontinental.

## 2 GROUND TENURE

Exploration Licence 12/72 (Bulgobac) of 94 km<sup>2</sup> (Figs 2, 3) was granted to Electrolytic Zinc Company of Australasia on 25 December 1972 and was renewed at one year intervals thereafter until its compulsory relinquishment on 25 December 1987.

During EZ's tenure the EL has been the subject of joint venture agreements with four other partners as follows:

- 3.11.76      Getty Oil Development Company farmed-in to form an EZ-Getty Joint Venture;
- 4.2.85      CSR Ltd farmed-in to form an EZ-Getty-CSR Joint Venture;
- 22.8.85     Getty sold its Australian interests to Little River Goldfields NL;
- 23.9.85     CSR retired from the EZ-CSR-Little River Goldfields Joint Venture without earning equity;

9.10.86 Pancontinental Mining Ltd entered the project to form the EZ-Little River Goldfields-Pancontinental Joint Venture. At 25 December 1987, Pancontinental was in the process of earning a 50% interest in the EL, while EZ (60%) and Little River Goldfields (40%) were respectively diluting to 30% and 20%.

### 3 SUMMARY OF EXPLORATION 1976-1987

A list of all reports covering exploration in the relinquished area in the 1976-1987 period is presented in Appendix 1.

In the 1976-1987 period regional exploration of the EL was designed to detect the following targets:

- \* massive volcanogenic Zn-Pb-Cu deposits of the Rosebery-Que River type associated with thin sedimentary lenses within Cambrian Volcanics;
- \* more distal Pb-Zn-Cu deposits associated with sediments of the Dundas Trough;
- \* tin deposits associated with calcareous sediments of the Dundas Trough in proximity to acid intrusives.

This regional work, comprising reconnaissance geological mapping, rock chip sampling, stream sediment sampling and photo interpretation, is reported in Hanson (1977), Mill (1978, 1979, 1981) and Sainty and McDonald (1982 a and b).

More detailed exploration has been conducted over the Que River, Silver Falls and Boco Grids (Fig 3) to investigate the potential for volcanogenic massive sulphides and, from 1984, for volcanic-hosted gold, by means of the following:

- \* Que River Grid - gridding, mapping, IP depth sounding, gradient array IP;
  
- \* Silver Falls Grid - gridding, mapping, soil sampling, litter geochemistry, stream sediment sampling, costeaning, dipole-dipole and gradient array IP to test the Pb-Zn potential: rock chip sampling in 1984 to investigate the gold potential;
  
- \* Boco Grid  
1976-1979 - airborne EM, gridding, gradient array IP, ground magnetics, soil sampling in areas of outcrop, mapping, 3 hole DD testing (475 m) of gradient array IP targets, follow-up dipole-dipole IP of these targets, then of remainder of grid;

1979-1984 - a consultant review of all geophysical data concluded that the gradient array IP coverage was ineffective; infill gridding, soil sampling, 60 m dipole-dipole IP, mapping were undertaken; integration of all previous work suggested that all IP testing had been ineffective and highlighted the presence of a prospective untested volcanogenic alteration zone. This was tested initially by a 10 hole percussion drilling programme, which proved unsuitable due to the thick glacial cover. Subsequent testing involved an 8 hole DD programme (3,589.2 m) on traverses 200-400 m apart and downhole SIROTEM.

1985 - CSR entered the JV and conducted a three hole DDH test (total 1,601 m) of the northern and eastern extensions and the central portion of the alteration zone, plus geological mapping and sulphur isotope studies, but retired from the JV without earning equity.

1986-1987 - Pancontinental farmed-in to the project to continue the investigation of the Boco area by means of

005

grid extensions, a UTEM survey, and geological reappraisal of core and outcrop, with negative results. In addition a regional review of the geology of the northeast portion of the EL was undertaken.

A summary of the exploration undertaken in the various grids is presented below.

Que River Grid (Fig 3)

The Que River Grid was established in 1978 to follow up two Barringer airborne Input EM anomalies detected in the EZ-Comstaff survey of 1975. Following cutting of an access track in 1978 (Hanson, 1977), gridding, gradient array IP and EIP depth sounding (to investigate the thickness of fluvioglacials) were undertaken (Mill, 1978). It was concluded that the Input anomalies were due to surficial effects associated with fluvioglacial deposits and swamps and no further work was undertaken.

Silver Falls Grid (Fig 3)

The Silver Falls Grid was established in 1979 to explore the vicinity of the known Pb-Zn vein and disseminated mineralization in pyroclastics at Silver Falls. Initially geological mapping, soil sampling and litter sampling detected significant Pb-Zn anomalism (Mill 1979), which was followed up in 1980 by further mapping and soil sampling of grid extensions, stream sediment sampling of the entire grid system and reconnaissance dipole-dipole IP over the western part of the grid (Mollison, 1980). In 1981 the best area of geochemical anomalism was accessed by a new track then tested by costeaning, chip sampling, plus dipole-dipole and gradient array IP surveys with negative results. Mineralization revealed in the track and costean consisted of weak quartz-galena veins within rhyolitic volcanics, the IP

006

indicated that the sources were weak, narrow and shallow, while petrological examination suggested a subaerial origin for the volcanics and thus low potential for volcanogenic massive sulphides (Mill, 1981).

No further work was undertaken in the area until 1984 when limited chip sampling was done to investigate the gold potential, with negative results (Sainty, 1984 c).

#### Boco Grid (Figs 3, 4)

Joint venture exploration in the Boco area from 1976 to 1987 was designed to detect volcanogenic Pb-Zn mineralization similar to the Que River and Rosebery deposits. The early work in 1976/77 involved ground investigation of Airborne EM (Input) anomalies, by gridding, geological mapping, gradient array IP and ground magnetics. The IP failed to locate the airborne anomalies (resistivity lows), which were then interpreted as surficial conductive effects within overburden, but it did outline a number of anomalies elsewhere. After soil sample screening of several of these anomalies in areas of residual soil, the three most promising geophysical/geochemical targets were tested by DDHs BBP 207, 208 and 209 (total 475 m, Fig 3) in December 1977. The drill results were disappointing, as only weak disseminated sulphides were intersected, but a subsequent 50 m dipole-dipole IP survey of the drill sites confirmed the existence of the gradient array IP anomalies (Hanson, 1977; Mill, 1978).

From 1979 to mid 1982 the programme comprised geological mapping, soil sampling of suitable areas and dipole-dipole IP, both on grid extensions and infill grid lines. Several anomalies were delineated, but these were discounted when a review report concluded that all the previous IP surveys had been ineffective due to the thick (up to 100 m) layer of conductive glacial overburden (Mill, 1979, 1981; McDonald and Sainty, 1982).

007

Instead, attention focussed on the hitherto unrecognized potential of the significant sericitized and pyritized volcanic alteration lithologies, which were intersected in BBP 207 and also found to be outcropping in two small hillocks, 850 m apart on strike. As similar alteration is a prominent feature of all the major volcanogenic deposits in the Mt Read Volcanics, the area was rated worthy of further investigation (Sainty and McDonald, 1982 a, b).

Initially, in late 1982, an attempt was made to drill through the glacials to obtain data on the extent and geological/geochemical nature of the alteration, by means of closely spaced vertical percussion holes. This, however, was abandoned early in 1983 after 12 holes (total 712.0 m), as the method was very slow and expensive, failed to penetrate the glacials in places and yielded only scattered data, which were difficult to interpret (Sainty, 1982, 1983 a).

In order to obtain more comprehensive information on the alteration zone, the area was then investigated by a series of angled diamond drill holes, drilled across the strike on traverses 250-350 m apart. From June, 1983 to May 1984, 8 holes (total 3,589.2 m) were completed, covering a strike length of 1 km, extending southwards from Boco Siding. In addition to Cu, Pb, Zn, Ag and Au, the core was also analysed for Fe, Mn, Co, Bi, Sr, Ba, S, Na<sub>2</sub>O, SiO<sub>2</sub>, CaO and Hg in an attempt to determine any systematic geochemical trends which could serve as an indicator towards mineralization (Sainty, 1983 b, 1984 a, 1984 b).

In the latter half of this drilling programme a UTEM survey was undertaken in an attempt to detect conductors beneath the thick conductive glacial cover. Three subtle weakly conductive anomalies were detected, two of which (labelled "A" and "B" in Fig 4) were tested with negative results by DDHS BBP 253 and BBP 251/254 respectively. For both of these anomalies the most plausible explanation appears to be discrete conductive zones within the glacial overburden (Sainty, 1984a, 1984b).

008

On completion of the drilling programme downhole SIROTEM surveys were conducted on all the drill holes, with the exception of BBP 246, which was blocked at 240 m. In these surveys no off-hole conductors were detected (Sainty, 1984b).

By late 1984 exploration of Boco Grid appeared to have delineated a significant very prospective zone of intense quartz-sericite-pyrite alteration within dacitic lavas, lava fragmentals and debris slide breccias over a strike length of at least 700 m. As hole BBP 253 on traverse 5 intersected unaltered volcanics, the southern limit of the alteration was placed between traverses 2 and 5, but the persistence of strong alteration in hole BBP 254 on the most northerly traverse indicated that it was still open to the north.

From south to north the zone of intense alteration increased in stratigraphic thickness from 100 m to 300 m and was flanked by up to 100 m of weaker silica-sericite alteration. In the southern half of the drilled off area this weaker alteration occurred on the eastern side of the strong alteration, but in the northern half it lay on the western side.

Geochemically the alteration was characterized overall by strong depletion in  $\text{Na}_2\text{O}$  and variable depletion in  $\text{CaO}$ , but in common with other major volcanogenic alteration zones no significant systematic variations along strike were apparent. There was, however, an across-strike enrichment of  $\text{CaO}$ ,  $\text{Pb}$  and  $\text{Zn}$  to the west, which suggested a west-facing zone, with potential for stratiform volcanogenic  $\text{Pb-Zn}$  at its western stratigraphic top.

Apart from the alteration, a noteworthy feature of the drilling programme was the intersection in BBP 251 of a 10 m thickness of laminated cherty pelitic ash with thin layers of syngenetic pyrite, near the western edge of the alteration zone. This was thought to be significant as it could represent a relatively quiescent period of subaqueous fumarolic-exhalative activity,

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suitable for the deposition and accumulation of any available exhalative Pb-Zn sulphides.

Although the intersected base and precious metal mineralization in the Boco alteration zone was of low tenor (maximum 3 m @ 4,300 ppm Zn), the resemblance of the alteration and lithological features to those of the Kuroko, Captains Flat and Que River etc volcanogenic deposits suggested good potential for economic mineralization in untested areas either down dip or along strike from the drilled area.

In late 1984 CSR farmed-in to the project to continue the investigation of the Boco alteration zone. From February 1985 to September 1985 the CSR work comprised the following (Williams, 1985):

- \* three diamond drill holes (BBP 278, 279 and 280) totalling 1,601 m (Fig 5);
- \* relogging of all previous drill core;
- \* analysis of all drill core for various major and trace elements;
- \* petrological examination of selected drill core;
- \* geological mapping of the Forestry Commission road west of Boco Siding;
- \* Sulphur isotope determinations on drill core.

The CSR results were negative as follows:

- \* all three holes failed to intersect significant mineralization;
- \* the northern extension of the alteration zone was closed off;
- \* interpretation of all the drilling and mapping data suggested that the alteration zone is fault bounded and probably genetically related to a major NE-trending fault;

- \* the isotope data indicated the sulphur to be light in comparison to that typical of base metal deposits in the Mt Read Volcanics, thus suggesting that the alteration was due to fluids derived from a magmatic rather than a sea water source.

Following CSR's retirement from the project in late 1985, Pancontinental farmed-in to the EL in October 1986, principally to conduct further, more detailed geological and geophysical investigations of the Boco alteration zone. This work is reported below.

#### 4 PANCONTINENTAL EXPLORATION ACTIVITY - 9.10.86 TO 25.12.87

Pancontinental's exploration of EL 12/72 in the period 9.10.86 to 31.10.87 comprised further detailed geological and geophysical investigations of the Boco alteration zone and a regional review of the mineralization potential of the area to the north of Boco known as East Bulgobac, as follows:

- \* a reappraisal of the geology of the Boco area by W Hermann based on examination of the available drill core and limited exposures on grid lines, creeks and tracks, plus a critical review of previous reports on the area. The report on this work (Hermann, 1987) is included as Appendix 2;
- \* a petrological and geochemical study of the various lithologies in the Boco area. The results are presented in Airas (1987), which is included as Appendix 3;
- \* cutting of a 59 km line grid at a line spacing of 200 m (Fig 6);
- \* a UTEM survey comprising 4 x 1,600 m square loops over a total of 43 line km in the extended Boco grid. Details of this survey, which detected no significant conductors worthy of follow-up, are given in Wilson (1987), which is included as Appendix 4;

- \* a literature review and reconnaissance mapping of the East Bulgobac area (Fig 6) to determine its prospectivity for volcanogenic base metal sulphides. The report on this work (Hermann, 1987 - included as Appendix 5) concludes that the East Bulgobac area is not an attractive exploration target.

5 EXPLORATION EXPENDITURE

Pancontinental's exploration expenditure in EL 12/72 from 9.10.86 to 31.10.87 is summarized in Table 1.

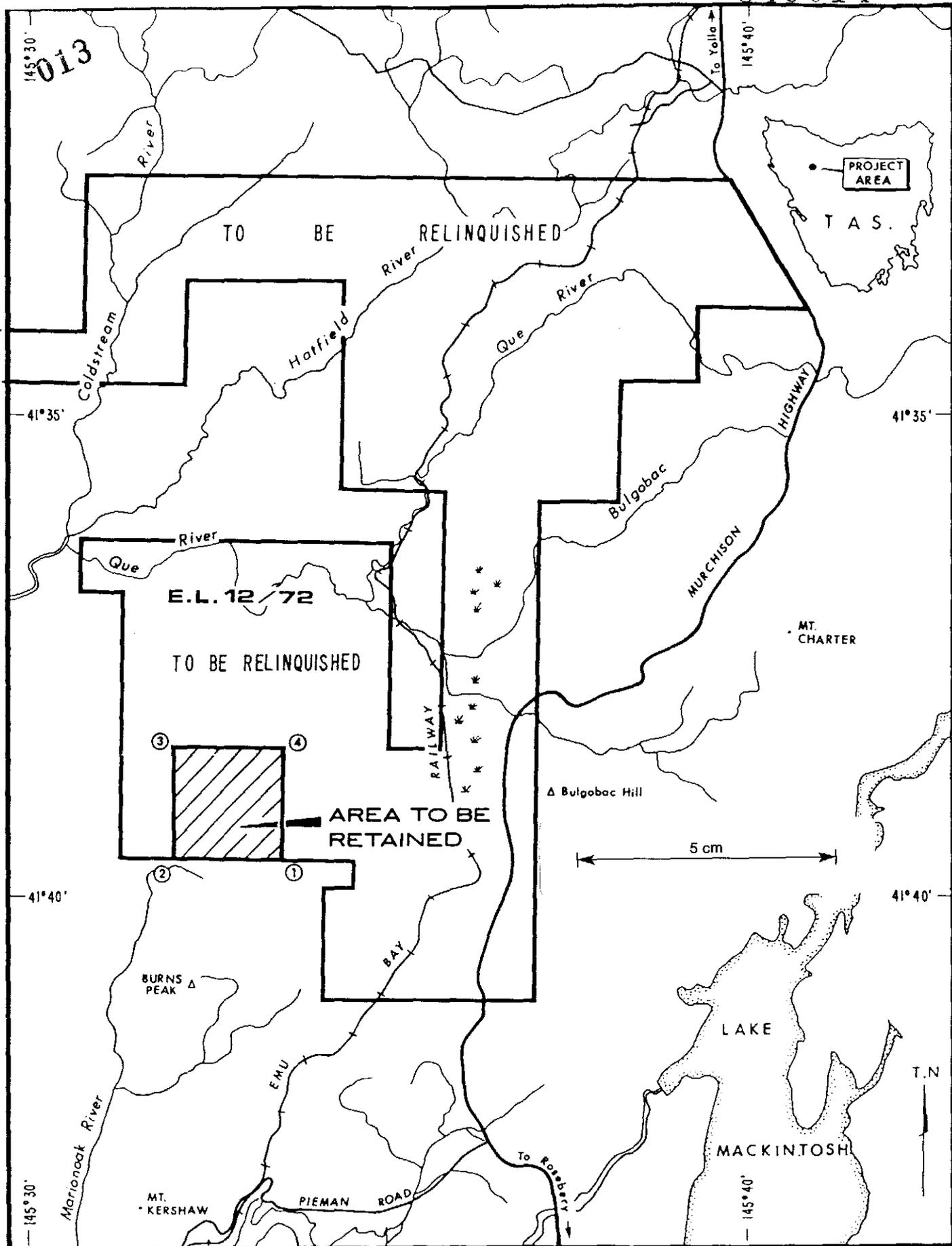
012

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BULGOBAC JOINT VENTUREEXPENDITURE STATEMENTAS AT 31.10.87

	<u>AT 31.12.86</u>	<u>AT 30.06.87</u>	<u>AT 31.10.87</u>
Manning	4,577	7,063	14,437.39
Materials & Supplies	67	67	416.38
Consultants & Outside Contractors			
- Geophysical		23,445	23,445.49
- Geological	4,354	13,103	15,274.89
- Aerial Photography	2,650	2,650	2,650.01
- Assaying			245.45
- Geophysical Ground Survey			20,968.35
- Drafting		925	925.00
- Petrographic Studies			490.00
- Gridding & Surveying	27,329	33,172	47,234.40
Travel, Freight, Equipment Hire	3,514	5,753	6,420.23
Administration Expenses	4,129	4,593	4,720.27
Overheads	<u>2,161</u>	<u>13,616</u>	<u>20,584.15</u>
	<u>48,781</u>	<u>104,389</u>	<u>157,812.01</u>

TABLE 1

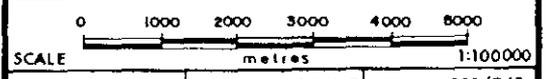


**RETAINED AREA CO-ORDINATES**

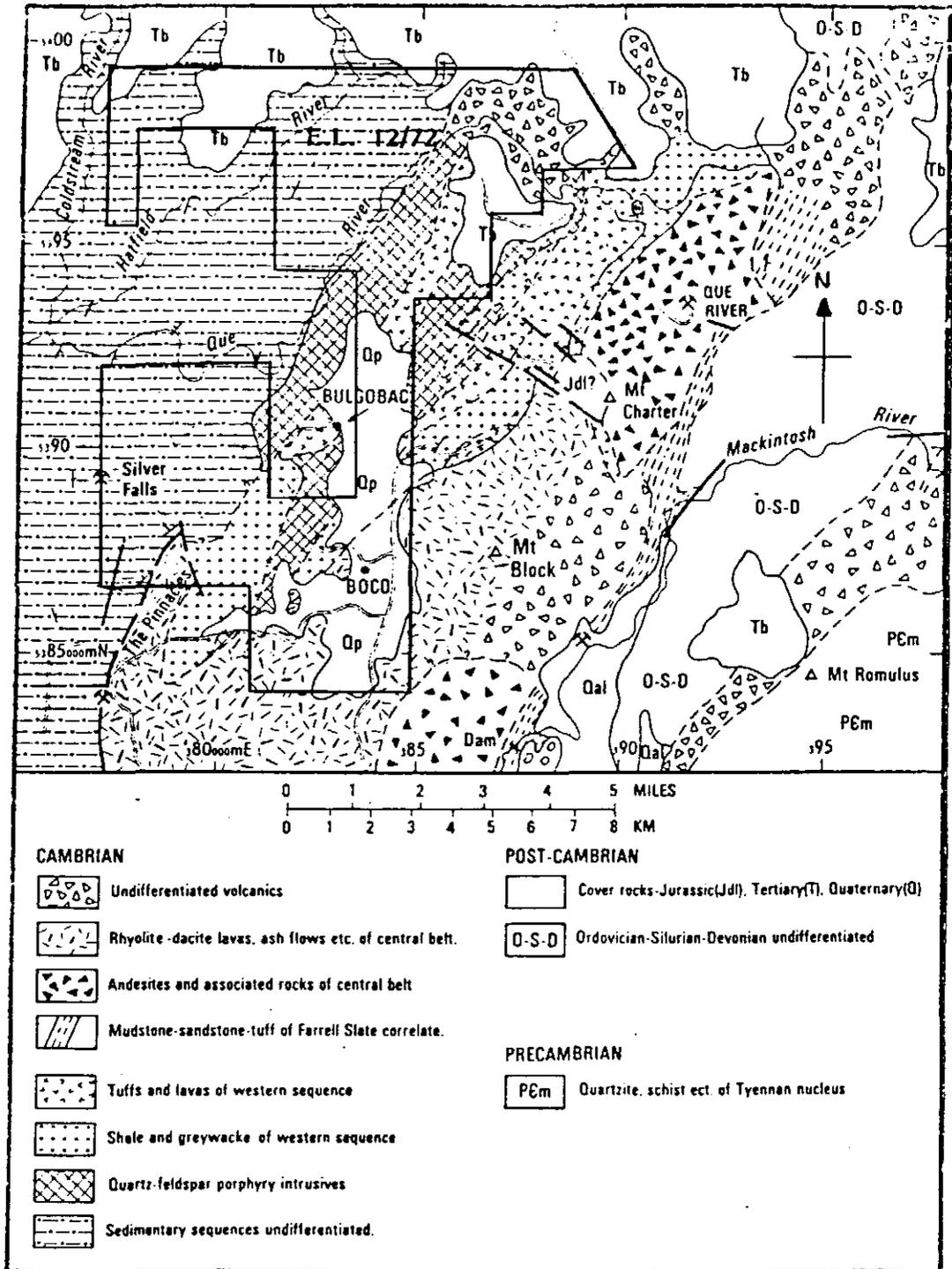
- ① 380 000mE , 5 386 903mN
- ② 378 000mE , 5 386 878 mN
- ③ 378 000mE , 5 389 000mN
- ④ 380 000mE , 5 389 000mN

**PANCONTINENTAL MINING LIMITED**  
 PANCON EXPLORATION DIVISION

**E.L. 12/72 - TASMANIA  
 TENEMENT PLAN**



Compiled K.O.A. Date November '87 Dwg No. 108/C/7  
 Report No. Map Ref. SK55-3 Figure 1



5 cm

PROJECT: BULGOBAC J.V.		
GEOLOGICAL SETTING OF E.L. 12/72 (Bulgobac)		
Compiled ST	Date 21/5/84	PLAN NO

015

390 000mE

5 cm

TO BURNIE TO BURNIE

BULGOBAC  
E.L. 12/72

Tb

Tb

Tb

MYFIELD

RIVER

RAILWAY

QUE

BAY

QUE RIVER GRID

RIVER

QUE

RIVER

BULGOBAC

RIVER

NORTHERN

ACCESS TRACK

SOCK CREEK

Pb, Zn.

MT. CHARTER

80.

QUE RIVER MINE  
Pb, Zn, Cu.

SILVER FALLS  
EXTENSION  
GRID

5 390 300mE

5 390 000mE

SILVER FALLS  
Pb, Zn.

NTH. PINNACLES  
GRID

Area covered by FIG. 4

BOCO SIDING

BBP 209

BBP 207

BBP 206

BOCO GRID

BURNS PEAK  
Pb, Zn.

BURNS PEAK

TO CHESTER MINE

PINNACLES  
Pb, Zn.

TO ROSEBERY

TO ROSEBERY  
18 km.



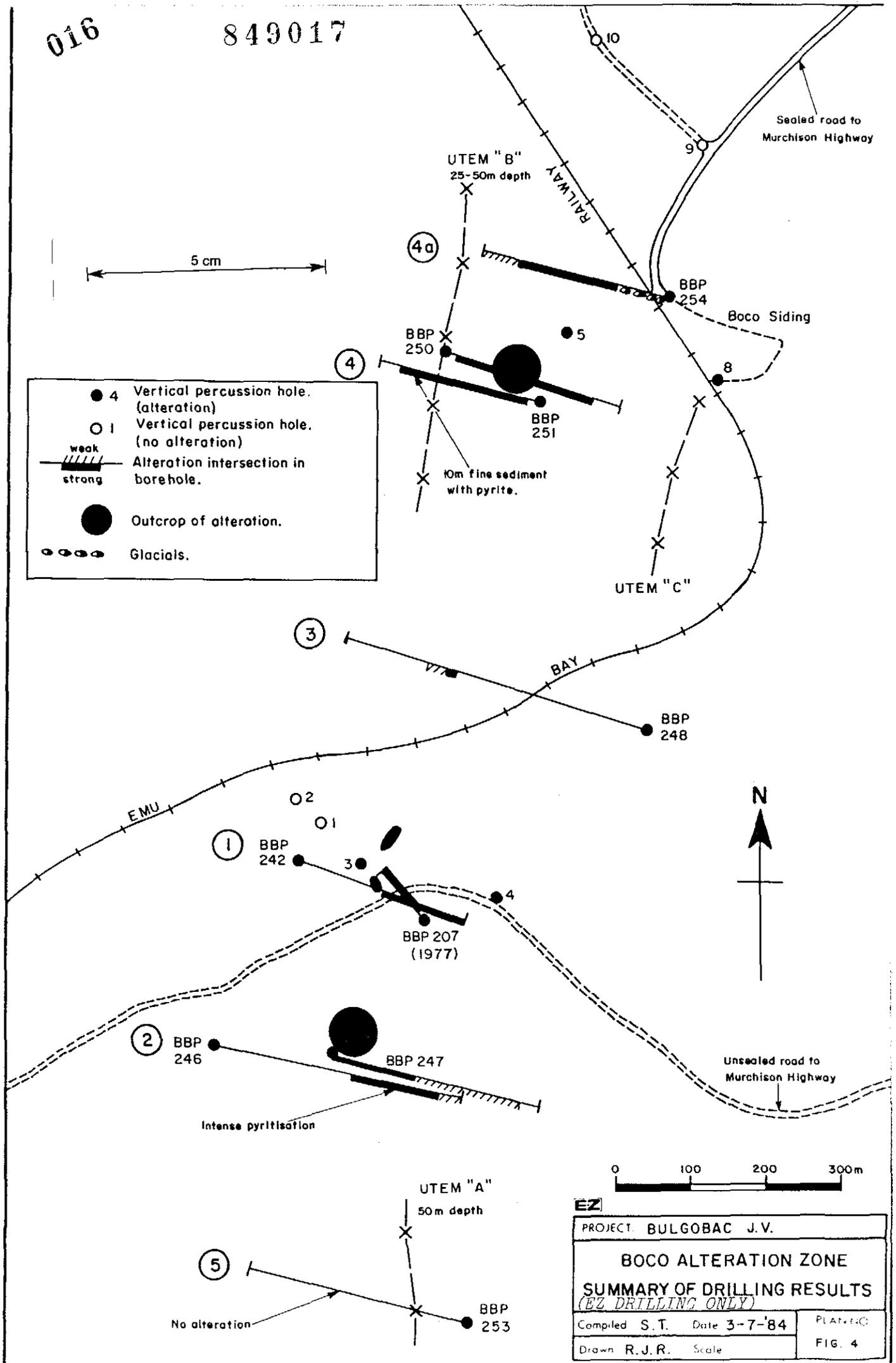
0 1 2 3 4 5 km

SCALE

PROJECT BULGOBAC J.V.	
E.L. 12/72 GRIDS	
Compiled S.T.	Date 9-7-84
Drawn R.I.R.	Scale
PLANNO FIG 3	

016

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017

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BOUNDARY OF

E.L. 12/72

E.L. 12/72

5 cm

RAILWAY

HIGHWAY

PROJECTED ZONE OF STRONG ALTERATION

- 4 Vertical percussion hole. (alteration)
- 1 Vertical percussion hole. (no alteration)
- weak  
strong  
Alteration intersection in borehole.
- Outcrop of alteration.
- Glacials.

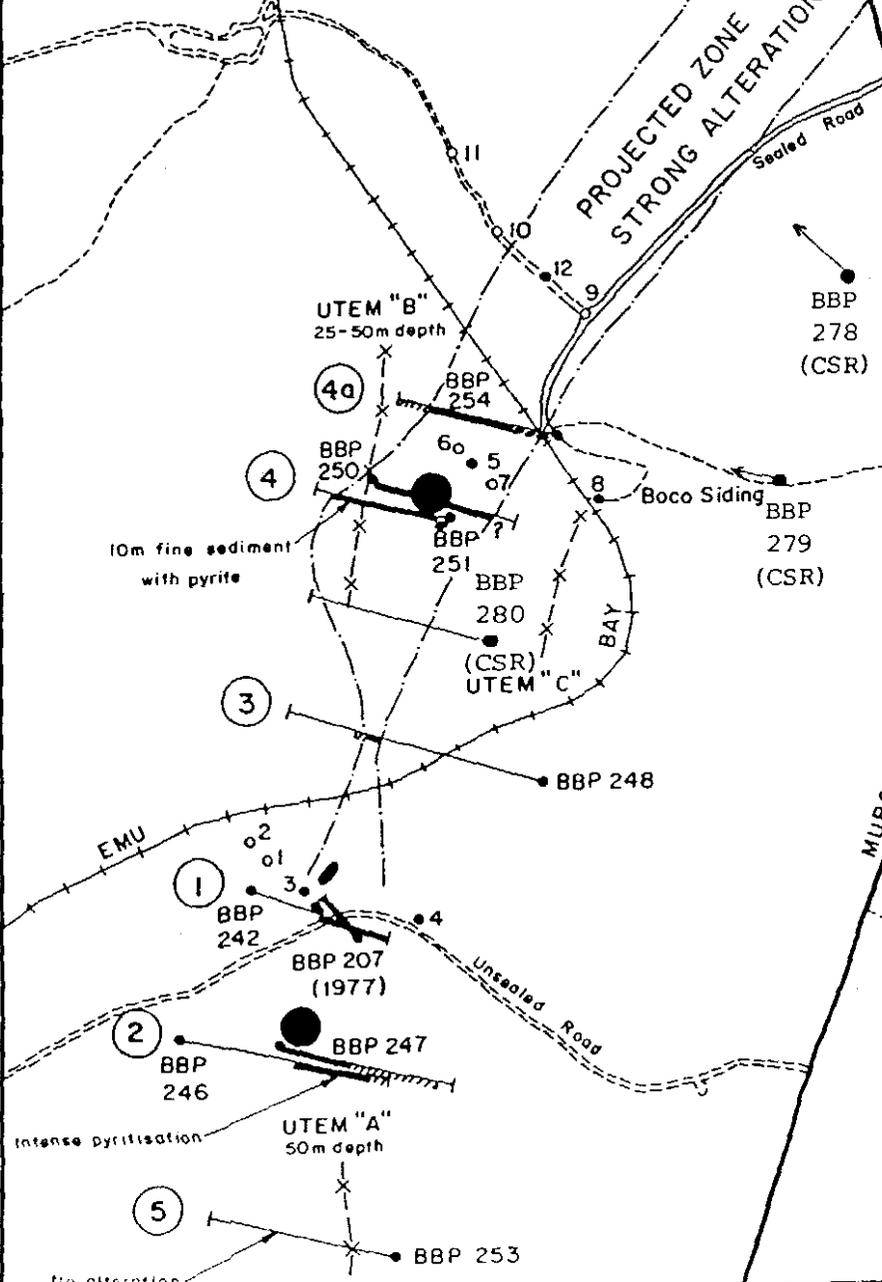
NOTES

Percussion holes 6 and 7 failed to penetrate the glacials.

Percussion hole 9 intersected weakly altered lavas, similar to lavas within the area of strong alteration to the south.

OF

BOUNDARY

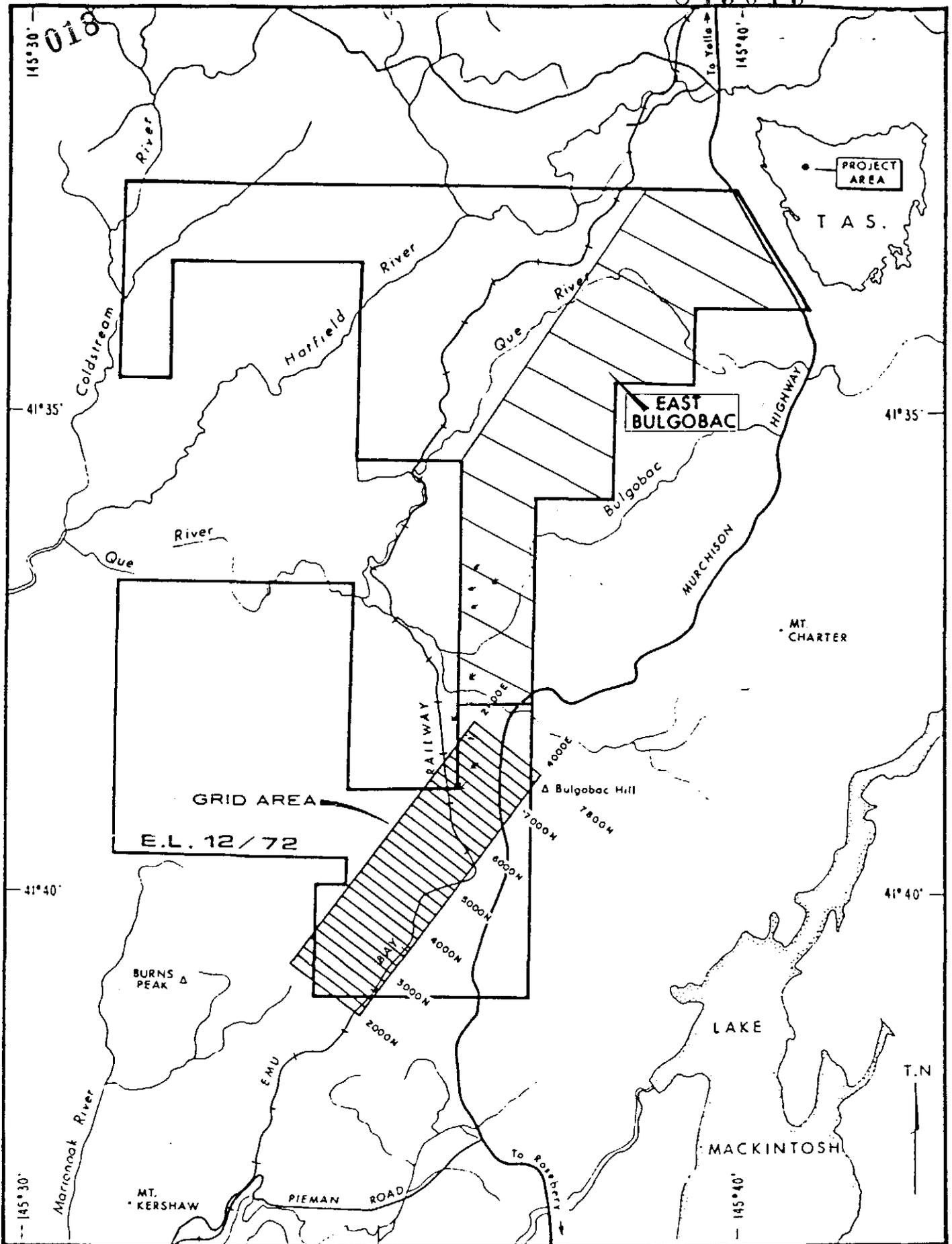


EZ

PROJECT BULGOBAC J.V., E.L. 12/72

**BOCO ALTERATION ZONE  
SUMMARY OF DRILLING RESULTS**

Compiled S.T. Date 17-7-84	PLANNED.
Drawn R.J.R. Scale	FIG. 5



**BULGOBAC PROJECT  
E.L. 12/72 - TASMANIA  
GEOPHYSICAL GRID**

FIG. 6

5 cm

SCALE 1:100000

0 1 2 3 4 5 Km

019 02  
/

APPENDIX 1

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EL 12/72 - BULGOBAC

## Chronological listing of Company Reports

Hanson, N H	1977	Report on Exploration Undertaken in the Bulgobac EL 12/72, EZ West Coast Mines Geological Department Report No 128
Mill, J H A	1978	Bulgobac EL 12/72, Progress Report on Activity, October 1977 - October 1978, EZ West Coast Mines Report No 129
Mill J H A	1979	Bulgobac EL 12/72, Report on work undertaken from October 1978 to October 1979, EZ West Coast Mines Geological Department Report No 130
Mollison, A J	1980	Bulgobac EL 12/72, Progress Report on Activity October 1979 - June 1980, EZ West Coast Mines Geological Department Report No 132
Mill, J H A	1981	Bulgobac EL 12/72, Progress Report on Activity July 1980 - June 1981, EZ West Coast Mines Report No 137
McDonald, I R and Sainty, R A	1982	Bulgobac EL 12/72, Progress Report on Activity 1 July 1981 - 15 December 1981, EZ West Coast Mines Geology Department Report No 145 MD

021

Sainty, R A and McDonald, I R	1982a	EL 12/72 Bulgobac, Progress Report on Exploration Activity 16 December 1981 to 4 May 1982, EZ West Coast Mines Geology Department Report No 149
Sainty, R A and McDonald, I R	1982b	EL 12/72 Bulgobac, Progress Report on Activity 5 May to 24 August 1982, EZ West Coast Geology Department Report No 153
Sainty, R A	1982	EL 12/72 Bulgobac, Progress Report on Exploration Activity 25 August 1982 to 20 November 1982, EZ West Coast Mines Geology Department Report No 159
Sainty, R A	1983a	EL 12/72 Bulgobac, Progress Report on Exploration Activity 21 November 1982 to 3 May 1983, EZ West Coast Mines Geology Department Report No 165
Sainty, R A	1983b	EL 12/72 Bulgobac, Progress Report on Exploration Activity 4 May to 15 November 1983, EZ West Coast Mines Geology Department Report No T174
Sainty, R A	1984a	EL 12/72 Bulgobac, Progress Report on Exploration Activity 16 November 1983 to 29 May 1984, EZ Mineral Resources Division Report No T179

Sainty, R A	1984b	Part of EL 12/72 Boco Area, Progress Report on Exploration Activity, 30 May to 13 November 1984, EZ Mineral Resources Division Report No T194
Sainty, R A	1984c	Part of EL 12/72, Silver Falls and North Pinnacles Areas, Progress Report on Exploration Activity 30 May to 13 November 1984, EZ Mineral Resources Division Report No T195
Williams, R E	1985	Diamond Drilling of the Boco Prospect, EL 12/72 (Bulgobac), Tasmania, CSR Ltd Mineral Exploration and Development Group, Report EMR 112/85
Taylor, S	1986	EL 12/72 Bulgobac, Annual Report on Exploration Activity 26 December 1985 to 18 November 1986, EZ Mineral Resources Division Report No T221

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## APPENDIX 2

Hermann, W  
^

1987

EL 12/72 - Bulgobac, Tasmania, A  
Re-examination of the Boco  
Prospect for Pancontinental  
Mining Ltd; Pancontinental  
Report No 87/25

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EXPLORATION LICENCE 12/72 - BULGOBAC, TAS

A RE-EXAMINATION OF THE BOCO PROSPECT

for

PANCONTINENTAL MINING LIMITED

(Exploration Division)

9-13 Young Street, Sydney NSW 2000

by

W HERRMANN (Contract Geologist)

RSD 1066 Devonport, TAS 7310

January 1987

Distribution

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Copy 5: Little River Resources  
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## LIST OF PLANS

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1.	E.L. 12/72 Bulgobac Project, Sheet 2 "Interpretative Geological Plan)	1:5000	108/D/1
	E.L. 12/72 Boco Prospect Geological Cross Sections		
2.	Drill Holes BBP 246, 247	1:1000	108/D/2
3.	Drill Holes BBP 207, 242	1:1000	108/D/3
4.	Drill Holes BBP 248	1:1000	108/D/4
5.	Drill Holes BBP 280	1:1000	108/D/5
6.	Drill Holes BBP 250, 251	1:1000	108/D/6
7.	Drill Holes BBP 254, 279	1:1000	108/D/7

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1. INTRODUCTION

The Boco Prospect lies within Exploration Licence 12/72, immediately west of Boco Railway Siding about 9km North of Tullah in Western Tasmania.

The prospect has been under investigation since about 1976 by Electrolytic Zinc Company of Australasia Co Ltd in joint venture with Getty Oil Development Co. Ltd and more recently in 1985 by CSR Limited in joint venture with EZ and Getty.

CSR withdrew from the project after completing three diamond drill holes (bringing the total number of diamond drill holes at Boco to fourteen).

Pancontinental Mining Limited entered the joint venture as operators in late 1986 with Boco as the main area of interest. Pancontinental required a reappraisal, and perhaps re-interpretation, of the geology of the Boco prospect and alteration zone based on examination of existing drill core and mapping of the limited outcrop exposure.

This report presents and discusses the results of an attempt at this task which I undertook on contract basis to Pancontinental during December 1986 and January 1987.

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2.

## SUMMARY AND CONCLUSIONS

A reappraisal of the geology of the Boco Prospect, based mainly on examination of existing diamond drill core, has not succeeded in adequately defining the local stratigraphy structure or younging direction of the area.

The favoured structural interpretation suggests the local volcano stratigraphy units strike approximately North with steep dips to West and East; that is semi vertical. Younging direction is unknown but on basis of regional structural setting younging to the West is implied.

Rock types at Boco are Rhyolitic-Rhyodacitic, volcanics dominated by glassy, quartz amygdaloidal or feldspar pyhric lavas variably massive, flow banded and flow brecciated. There are also significant proportions of acidic pumiceous lithic ash flow tuffs and minor, relatively localised sections of epiclastic mass debris flow lithic breccias and fine grained vitric ash tuffs some of which have been subaqueously deposited. These are all considered to belong to the "Central Volcanic Sequence" of the Mt Read Volcanics of Cambrian age.

The Boco alteration zone has a North-South oriented elongate "dumbbell" shape in (subsurface) plan of about 1300m strike length and 350m width. Alteration is typically intense and pervasive, essentially "sericitic" characterised by extreme depletion of  $\text{Na}_2\text{O}$ ,  $\text{CaO}$  and  $\text{Sr}$  and associated with introduction of disseminated pyrite averaging 2-5% per volume.

The alteration zone occurs within all volcanic rock types but appears to be particularly associated with, perhaps centered upon, a relatively restricted epiclastic breccia - vitric ash tuff association. In the northern part, at least, the alteration zone appears to be partly stratabound against a unit of pumiceous-lithic ash flow tuff. Presence of highly pyritic clasts as well as assemblages of intensely and slightly altered volcanolithic clasts, within epiclastic breccias is regarded as evidence for synvolcanic alteration and pyritisation.

The alteration zone sits astride a North trending steeply east dipping fault zone which in part forms the eastern alteration boundary in the northern sections and the western alteration boundary in the southern sections. It is apparent that major movement on the fault occurred after the alteration event.

It is suggested that the fault zone represents a wrench fault with a right lateral displacement of about 600m. It is implied that the pre-fault form of the alteration zone was a cylindrical "pipe" like zone approximately 500m in diameter and probably dipping steeply to the east.

Despite the uncertainty of facing it is considered that sufficient drilling has been carried out to test both the (stratigraphic) hanging wall and footwall (assuming a stratabound alteration zone). So far no indications of base metal massive sulphide mineralisation have been intersected.

Existing drill holes have closed off the alteration zone to the North, North East and South; narrow extensions to NNW and SSE may exist.

On the basis of uncertain structural understanding of the Boco prospect and the lack of a defined ore-host rock horizon I am unable to recommend further drilling targets in the absence of favourable geophysical anomalies.

030

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3. PREVIOUS WORK

3.1. Summary of E.Z. Co. Reports

Report Numbers: 128, 129, 130, 137, 153, 159, 165, T174,  
T179

031

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REPORT 128 - HANSON - OCTOBER 1977

Report on: Regional Mapping  
Grid Line Mapping over 57.5km grid

BBP 208: Unit tuffs and tuffaceous sst/slst with graded bedding facing and dipping to east.

Sediments on Murchison Hwy N of the Boco well laminated slst/shales dip and face west.

Geology, Structure, prospectivity still poorly understood.

#### Geophysics:

Barringer Input EM (1975)

No good anomalies, few fair to poor anomalies.

Initial gradient IP survey failed to confirm the best (CS27) Input anomaly.

Consequently decided to use gradient IP as reconnaissance tool.

#### Gradient Assay IP (55.4km)

Came up with numerous (22) significant IP responses.

(Mainly of "moderate" chargeability increase with "some" resistivity decrease.

#### Geochemical

"C" Horizon sampling over southern area to help evaluate IP results (on non glacial covered ridge) (Most sample depths 10-20cm).

No significant anomalies recorded. Samples over glacials generally below detection.

Some "anomalies" due to contamination on downslope side of E.B.R. (Railways)

#### Diamond Drilling

Designed to test IP gradient anomalies.

#### BBP      IP Gradient anomalies

207	XVI	12 millisec. Charg./Resist High
208	III	broad charge to 18 m.secs low Res.
209	XIII	broad charge to 18 m.secs moderate res.

- BBP 207: Siliceous tuffs, dissemination and fracture pyrite, up to 3% sulphur max 250 ppm Pb, 2500 ppm Zn.
- BBP 208: Pink porphyries and interbedded tuff/seds ending in ash flow tuffs.
- Patchy vein and dissem. pyrite max 2% sulphur, 1450 Pb, 2600 Zn.
- BBP 209: Ash flow tuffs, Auto Bx porphyries, sheared siliceous tuffs.
- Rare pyrite at depth but network fe/mn veinlets, max 150 Pb 4000 Zn, 3% sulphur (but patchy).

REPORT 129 - MILL / HANSON - OCTOBER 1978

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Northern Area: 20km (Que River Grid) cut over anomaly  
Input CS27A, 27B.

Geological mapping of grid indicated glacials.

Schlumberger sounding indicated glacials 90-120m deep  
with resistivities in range 20-27 ohm/metre  
chargeability background 3-4 mv/v.

Gradient array data (1 line only, ) also shows low  
charge and resistivity.

Concluded that Input anomalies almost certainly in  
surficial glacial materials. No further work except  
reconnaissance geol. of Que River recommended.

Boco Area: 17.5m grid extensions to west of Boco grid.

Geology: More reconnaissance to west but not much  
enlightenment at Boco area.

Geophysics: 15km gradient IP over grid extensions.

Six dipole-dipole setups over previous  
gradient anomalies.

Thus providing complete coverage of units 1  
and 2 with gradient IP.

Results: No good gradient anomalies found. Below  
average chargeability for Tas. (due to  
absence of ferromagnesian in fresh  
rocks?).

Dipole-dipole survey over gradient  
anomalies (1977) produced similar results  
to previous gradient though with  
significantly less resolution at depth.

Recommendations: Extension of line 13720N SE to cover  
SE corner of licence SE of Boco with  
follow up geol. geochem, mag. and IP  
to "complete" Boco work.

Conclusion that work to date had led  
to definition of best targets at  
Boco, these had been drilled, found  
lacking.

REPORT 130 - MILL - OCTOBER 1979

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Northern Area: 1:1000 mapping of , tracks of eastern part of East Bulgobac Plain Area.

Much of area is covered by Tb. but Mills has a good section down the Que River with numerous petrographic descriptions and also mapped the area around Bulgobac siding.

#### Western Rocks

He differentiates these rocks as being quartz rich ash flow pyroclastics, vesicular perlitic dacites, tuffaceous sediments and black slates intruded by distinctive quartz feldspar porphyry.

Suggests these are older than Que River volcanics but evidence is unconvincing.

#### The Que River Volcanics

Que River rocks SE of highway are reported (Mill) to be quartz poor acid-intermediate pyroclastics and lavas without sedimentary, lenses.

All sounds very hairy to me.

Western rocks thought to dip and face west, eastern limits of 030 trending synclinerium.

Que River volcanics represent caldera infill.

#### Notes Mineralisation

- 1) dissem. py in black slates
- 2) Epigenetic Pb/Zn veins (e.g. Sock Ck.) structurally located in shears and faults, genetically associated c qtz fs. porphyry.

#### Stream Sediment Results Not Received

#### Concludes

Correlation of Boco to Que River!

- .. Boco most prospective
- .. "Western" rocks not prospective.

Contact possibly caldera rim or faulted rift walley margin.

Postulates magnetic (aeromag.) granite dome beneath northern part of licence with potential for Sn/W.

## Boco Area

## Geology

SE corner grid extensions rhyodactic, lithic-vitric-crystal tuffs (ash flows) and porphyritic lavas: dacitic, rhyolitic and quartz trachyte affinities.

These are part of Hanson's Boco suite - said to run from Mt Black through Boco to Que River!

Soil geochemistry carried out on grid ext. SE - no success.

## Geophysics

100m dipole IP on extension line.

Three anomalies - western most was previously drilled in BBP 208.

All written off as probably representing "barren sulphide responses" of type intersected in 207, 208, 209.

Recommends no further work, pending review of all data and landsat images.

## Western Area:

Mt Pinnacles: 11 km. gridding.

## Geology

North trending ridge of massive quartz poor rhyolite lava and pyroclastics. (Burns Peak rhyolite). Contains "minor fine dissem. pyrite". Divides separate basins of sediments east and west of tongue.

Seds. to west form large synclinal (NNE plunging) trough i.e. dip west at contact and are considered to be younger than the rhyolite! Possible marine transgression.

## Geophysics

Entire grid coverage with 100m dipole IP.

Two encouraging anomalies:

- 1) Eastern zone 5386900 to 5387500N tending to cross volc./sed. contact (i.e. NW into volcanics to north).
- 2) Western zone in seds. 200m west of vol./sed. contact on lines 5386900N/5387100N.

**Geochem**

C horizon geochem on most lines except for local glacial cover.

Semi continuous Pb anomalies up to 2500 Pb Zn 1/2 to 1 order of magnitude below Pb, but broadly coincident. Mostly within rhyolite or along contacts.

Li geochem. a dismal failure (my opinion).

**Concludes**

That geochem and IP indicate two or more mineralised zones close to both contacts of rhyolite. Recommends further minor gridding, mapping, infill IP and drilling if warranted.

037  
REPORT 137 - MILL - AUGUST 1981

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J Bishop reviewed geophysics over Boco.

Significant Points:

- 1) Poor line cutting resulted in variable density data such that some anomalies are isolated on liners.
- 2) Gradient IP appears to have been susceptible to glacial responses, suspects that most "anomalies" are not bedrock responses.
- 3) Dipole IP carried out after drilling 207, 208, 209 suggests that holes may not have tested anomalies.
- 4) Holes were sited on one line anomalies rather than anomalous zones, this increases chance of spuriousness.

REPORT 153 - (SAINTY & McDONALD) - AUGUST 1982

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Much Arm waving discussions about presence of sedimentary subaqueous sediment lenses indicating favourable environment for Que-Rosebery type deposits. These are widespread!

Sounds OK but doesn't define prospect targets.

Implications of strike extensions of Que River host rock down to Boco (8km) - doesn't actually specify correlation but in any case is to be doubted.

Palaeogeographic basin theories probably bull. Likewise: Kuroko, domes, landsat rotational blocks and magma./hydrothermal conduits. None of this is substantiated by mapping. Merely inferred from magnetics, landsat etc.

Soil geochem. probably not working but there is room for orebodies between areas of real data - OK. IP probably not working - glacials masking bedrock and giving rise to spurious anomalies from within cover.

DDH BBP 207 with Q-Ser-Py alteration confirms altered rock (comparable to Rosebery host volcanics) beneath central glacial covered Boco Plain. - THAT'S RIGHT.

039

REPORT 159 - SAINTY - DECEMBER 1982

Grid mapping on western side of Railway/Boco Creek area, mainly green fs'phyric rhyoclastic lavas and ash flow tuffs. Dolerite o/c on ridge is thought to be cause of linear magnetic anomaly.

No structural enlightenment.

#### Overland (Scout) Percussion Drilling

7 holes, only first 5 reached bedrock, at depths ranging 20-42.5m.

4 holes on line 13880N help to define NW limit of alteration (2 holes barren rhydac) (2 holes altered, pyritic).

3 holes on line 14680 near Boco Siding inconclusive only hole 5 reached bedrock (+ altered rock).

Some weak Pb + Zn (115, 1600 ppm) in hole 3 on 13880N. Otherwise low, leaching.

#### Conclusions

Q-Ser-Py alteration zone appears to be "stratiform" with width 150-200m (on 13880N) and strike length 1km open to North, South.

Erratic base metals perhaps indicate preglacial leaching.

REPORT 165 - SAINTY - MAY 1983

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Continued percussion drilling programme to define limits etc. of alteration zone.

This time contractor ADD.

Hole 8: East of hole 5 in Boco siding area.  
Depth 103.5m. Sheared sericitised dacitic vitric ash flow tuff (no pyrite).

Holes 9 & 10: 400m north east of traverse 5,6,7,8 on NE side of railway.

Hole 9 Bedrock: amygdaloidal felsic lava  
Hole 10 Bedrock: green autobrecciated lava?

### Conclusions

Hole 8 gives eastern limit to north end of alteration zone.

Holes 9 & 10 fail to show strike extensions of alteration zone; various feeble excuses based on Q.R. section with weathered rocks in close proximity to Que River orebodies.

Recommendation to go for angle DD holes in future.

### CMS

Report suggests alteration predates mineralised mild shearing quartz veins. CMS report on 5 thin sections from holes 4, 5, 8, 9, but no depths or core logs given.

041

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REPORT T174 - SAINTY - NOVEMBER 1983

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Holes 11, 12 percussion in NE area completed but not mentioned in results.

Geochemistry of PDH 1-10 and BBP 207 shows altered rocks have depleted:

Na<sub>2</sub>O < 0.2% as against 2-4%; Sr. 7-15 ppm as against 140-220 ppm

SiO<sub>2</sub> slightly enriched.

There is also a consistent decrease westward in Na<sub>2</sub>O from Hole 4, through BBP 207 to Hole 3 -

Taken to indicate west facing with increase in alteration upwards through "footwall" (or orebody) rocks.

Drilling of BBP 242  
BBP 246  
BBP 247  
BBP 248 (not completed)

Geochem available for BBP 242

Pb, 60 max, Zn 345 max  
Au peak at 32 ppb  
Na<sub>2</sub>O < 0.1% but no systematic variation (Sainty expected increase down hole)?

UTEM survey; 2 loops commenced.

#### Conclusions

Principal host rock to alteration is dacitic glassy lava/fragmentals (bleached, silicified, sericitised, pyritised) about 100m in true width.

This is distinct from felsic leucoandesitic lavas to west and leuco andesitic lavas, rhyolitic fragmentals to east. Eastern rocks have weak sericite +/- pyrite (not much silica!) alteration giving a total alteration width of about 200m. (in BBP 247).

Interpreted as west facing footwall alteration zone with upper intense Si + Py conformable alteration zone and lower less altered ser +/- py diffuse "deep" footwall alteration.

Sainty expects potential ore horizon at top (west edge) of alteration zone based on western depletion of Na<sub>2</sub>O and "elevated" (Zn 345, Pb 60) metals in upper part of alteration zone of BBP 242. (This doesn't seem very apparent in geochem profiles on AO 521 - 0101).

042

Believed rocks face west, slightly overturned with 80° dip.

Alteration style similar to Que River (Si + Py) but potential ore horizon may be at Rosebery style location at top of alteration zone.

Evidence for subaqueous palaeoenvironment in:

- a) pelitic vitric ash (bedded) in BBP 242
- b) acid glassy lavas/fragmentals in BBP 246

BBP 242 drilled down dip? just overlaps

BBP 207 detailed logging needed

BBP 207 rocks resemble glassy lavas of BBP 246

BBP 248 only 43m of strongly altered lavas west of the diffuse "deep footwall style" alteration. Alteration lacks continuous intensity and distinctive "glassy" host lithology of holes 246, 247.

Could be some discontinuity, Rosebery type "gap" or structural unknowns.

#### Recommendations

Keep drilling.

UTEM might find targets?

REPORT T179 - SAINTY - MAY 1984

Downhole SIROTEM - no anomalies, noisy data.

UTEM III: No strong conductors.

3 (A, B, C) subtle conductive zones.  
A, B drill tested and found leaking.

Concluded to represent conductors in glacial cover rocks.

#### Geochemistry on additional drill holes

Na<sub>2</sub>O depletion not systematic but always low (Facing westward theory out the window).

CaO increase E to west (from 0.01 - + 1%). Attributed to post depletion addition of carbonate, later goes on to suggest support for west facing.

Pb + Zn concentrated to western margin of alteration zone (300-400 ppm) decreasing eastwards (100 ppm or less).

Ba no across strike trend but BBP 251 has consistently higher (1000 ppm Ba) levels than others - somehow related to these caldera fill deposits of lavas and mass debris flows??

BBP 250 Traverse 4; drilled west to east probably down dip.

Altered, pyritised glassy lava/lava fragmentals fault at 300m.

BBP 251 Traverse 4. E to W. Complex sequence of distinctive glassy lavas - coarse epiclastic - mud slide deposits of caldera fill type? 10m thick pelitic ash in part laminated + cherty with thin massive pyrite bands occurs near western margin of sequence rocks. Overlain? to west by altered ignimbrite

BBP 253 Targeted on UTEM anomaly A in southern area. No mineralisation found. Unaltered pink-brown felsic leucoandesite lavas + regionally silicified basaltic intrusives. Closes off alteration to south but possibility of SW swing in strike? 1982 dipole IP anomaly??

BBP 254      Designed to test for pyritic pelitic ash unit of BBP 251 200m along strike to north. 254 intersected totally different sequence to 251; altered pyritic grey lavas passing west into weakly altered brown massive and auto bx lavas. Suggests transition from caldera fill (251) to intracaldera lava dome or caldera floor rocks.

#### Conclusions

Traverse 4 (251, 250) results suggest dip of 45 - 50<sup>0</sup> to east! 250 along dip therefore eastern side of alteration zone not tested at this northing. (Subsequently achieved in part by CSR's BBP 279).

Facing still uncertain but favours west facing on basis of Pb + Zn and CaO zonation (even though CaO is remobilised carbonate ??) and weak evidence in pyroclastics

Palaeoenvironment - still convinced of subaqueous environment though some of the evidence is ambiguous. But fair enough, there are probably all types of subaqueous deep shallow, slope, subaerial, combination here - who knows!.

Goes on to suggest Kuroko style domes in caldera setting genetic link between Kuroko - Que River - Boco.

How does this find the orebody ??

Keep on drilling to North (CSR did!).

045

## 3.2. Summary of CSR Report No: EMB 112/85

(R.E. Williams, October 1985)

CSR's main exploration objective was to resolve the significance of the Boco quartz-sericite-pyrite alteration zone. Previous E.Z. Co. drilling had not "closed off" the alteration zone to the north east, had not adequately defined stratigraphy or structure and a down hole SIROTEM anomaly east of BBP 254 remained untested.

Three diamond drill holes, total 1601m, were completed.

## BBP 278 (501m)

To test possible NE extensions of Boco alteration zone. Penetrated variable pink to grey feldspar phyrlic and aphyric glassy, flow banded lavas without significant alteration or mineralisation.

## BBP 279 (700m)

To test for eastward continuation of alteration zone and a reported down hole SIROTEM anomaly east of BBP 254.

Intersected an unaltered sequence of rhyolitic ash flows and lavas in the upper part of the hole. Si-Ser-Py alteration without significant base metals in interval 587.3 - 648.8m.

A zone of pyrite stringers (5-20% Py) in interval 442.7 - 452.2 considered to be source of downhole SIROTEM anomaly reported east of BBP 254.

## BBP 280 (400m)

To test for southwards extensions of favourable (epiclastic) rock types intersected in BBP 251; also to cut postulated fault forming eastern boundary of alteration system. The hole intersected a complex sequence of acid lavas, vitric tuffs, epiclastics and ash flow tuffs which can in part be correlated with lithologies of BBP 251. Alteration and pyrite only mineralisation occurs to 350m.

## Geochemistry

Indicated no significant base metal mineralisation. Obvious strong depletion of Na<sub>2</sub>O, Sr in altered zones.

"Characterisation" of rock types based on analyses for "immobile" elements Zr, TiO<sub>2</sub>, Nb, Y show Boco rocks to be rhyodacites - Dacites (in contrast with Que River rocks which are Andesites - Dacites).

046

### Sulphur Isotopes

analyses of 5 altered samples (from BBP's 246, 247, 251, 254) showed the contained sulphur to be relatively "light" in comparison with known Mt Read Volcanic base metal deposits, suggesting that alteration/pyritisation was not produced by a sea water dominated hydrothermal system. Fluids derived from magmatic sources?

### Regional Geology

New outcrops on Boco (Forestry) Road indicate angular unconformity with NW striking SW dipping volcanics overlain by NE striking shallow NW dipping volcanics.

### Boco Prospect Geology

Eastern limit of alteration in BBP's 250, 279 possibly 248 interpreted as N striking vertical fault. Footwall (western limit) of alteration in BBP 254, 279 section appears to indicate moderate easterly dip or steep south easterly dip.

Correlation between BBP 251, 280 suggest stratigraphy is also North trending with vertical dip. Facing uncertain but weak (graded pyritic clasts in BBP 280) evidence for east facing.

Low Sulphide Isotope analyses, relatively high Fluorine (?) suggest a <sup>subvol</sup>magmatic source for alteration and pyritisation - regarded as powerful negative factor for VMS mineralisation.

### Recommendations

No Further drilling.

Additional, S, Pb, O isotope studies.

Downhole SIROTEM in BBP 279 to confirm that pyrite stringers are source of anomaly in BBP 254 SIROTEM.

Possibility that clay rich zones near base of glacial overburden could be "channelling" electrical geophysics preventing "prevention" into basement volcanics should be tested. Resistivity measurements on varved clays along Boco Road?

## 4. SCOPE AND METHOD OF THIS RE-EXAMINATION

Pancontinental Mining Limited's brief indicated that the objective of this re-examination was to obtain a new interpretation of the (structural) geology of the Boco prospect. This was to be achieved by additional or re-mapping of the greater Boco area and relogging of existing drill hole cores.

Since much of the Boco area is covered by fluvioglacial deposits, my initial approach has been a re-appraisal of available drill core. This has taken the form of systematic examination of the core, comparison with available analytical and micropetrographic data, relogging of core where considered necessary and attempting to subdivide the rocks into more or less distinctive lithotypes/lithofacies (see legend, Plate 1.). In general I have not bothered to re-log the core holes, having merely added my comments and impressions to the excellent logging of R.A. Sainty. (See Appendix 1.). The collected and collated information was plotted on Drill Hole sections at 1:1000 scale (see Plates 2 - 7).

In addition two days were spent in mapping outcrops to the west and north of the Boco prospect in the hope that this "peripheral" approach would lead to structural understanding. Outcrop information was plotted directly onto transparent overlays on 1:5000 scale air photo enlargements.

## 5. DESCRIPTION OF LITHOTYPES

## Og: Fluvioglacial Deposits

These are unconsolidated, non lithified fluvioglacial sediments varying from fine buff coloured varved clays through grits, gravels to coarse boulder conglomerate. There are numerous glacial "erratic" boulders on the plain west of Boco siding; these are upto 20m in diameter, siliceous Owen type conglomerate as well as Cambrian volcanic lithologies are prominent.

Eim: Rocks in this category are fine grained mafic igneous rocks, sometimes weakly amygdaloidal or feldspar phyrlic but usually composed of a fine meshwork of plagioclase and degraded ferromagnesian. They appear to be intrusive dykes, are common in all the Boco core drill holes usually as narrow intervals of a metre or less but occasionally upto a few tens of metres. They are also exposed along the Boco Road cuttings where the wall rock contacts show a strong tendency to NE strike and near vertical dips.

They are in general not altered and cut through the Si-Ser-Py zones in drill core (possible exceptions in BBP 246) suggesting post alteration emplacement.

The occurrence of a mafic dyke with in greywackes on the Boco Road at about 381050E (AMG) indicates a post Dundas sedimentary, perhaps post Devonian folding, age for the mafic intrusions.

Eip: These have been observed mainly in very weathered outcrops along the Boco Road. Consist of white equant phenocrysts of feldspar (1-4 mm, 15%) and subordinate rounded phenocrysts of clear quartz in a grey aphanitic? glassy ground mass.

The occurrence at 381080E (Boco Road) is possibly intrusive but further west (off the map) the feldspar-quartz porphyry looks more extrusive, has concordant relationships with bedding in enclosing sediments and often has a transitional zone of pale tuffaceous epiclastic siltstone between the porphyry and detailed greywacke-shale sediments.

Ess: Thin bedded grey shales and siltstones assigned to the Dundas Group.

Esg: Bedded to massive micaceous and or tuffaceous greywacke and siltstone, associated with Ess. Essentially similar in character to the rocks of the north eastern part of Lake Mackintosh EL 42/86.

**Ecs:** These are usually massive, not stratified, pale creamy buff tuffaceous siltstones, obviously of originally very "felsic" composition, sometimes with a faint fine (1mm) spotted or mottled appearance reminiscent of siliceous oolites.

I interpret these rocks as being epiclastic, of subaqueously deposited acidic volcanic ash; transitional between distal volcanic-pyroclastic and detrital (Dundas type) sedimentation.

**Eeb:** Epiclastic volcanolithic breccia

This rock type is virtually restricted to drill core from BBP 251 and 280 within the zone of strong alteration.

They are generally unsorted, unstratified, consisting of a jumble of partly rounded clasts of various silicified acidic lavas, vitric tuffs and occasional deformed pumice supported by a fine grained pale grey siliceous matrix presumably originally composed of fine volcanic detritus. Clast sizes are generally less than 50mm. I envisage these as being the products of mass debris flows and initiated by slumping and sliding on steep slopes within the volcanic environment. The common presence of more or less altered-pyritised clasts and indeed near massive pyrite clasts is strong evidence for pre slumping synvolcanic alteration and mineralisation.

One of my main criteria has been identification of rounded clasts but there is a "grey area" where these rocks merge into lapilli tuffs and pumiceous ash flow tuffs.

**Epp:** Pumiceous-Lithic Ash Flow Tuffs

These consist of angular to wispy fragments of various massive or often flow banded glassy acidic lavas and flattened pumice in a siliceous vitric ash matrix. There is often a strong planar preferred orientation of clasts and foliation of the matrix suggestive of viscous flow. They often have a mottled pink-green-grey appearance.

There is little to distinguish this category from the more fragmental parts of some flow brecciated lavas particularly type Evc prominently exposed along Boco Road.

I have attempted to make this distinction based upon presence of flattened pumice fragments and the relative proportion of fragments to matrix (i.e. brecciated lavas consist mainly of lava blocks and fragments with little interstitial matrix), but I envisage a continuum from fine lapilli and ash flow through coarse block and ash flow to semi-coherent auto brecciated lava.

050

**Epa: Fine grained crystal-vitric Ash Tuffs**

These are products of acidic pyroclastic volcanism not containing significant lapilli sized fragments. In the Boco drill cores they are prominent only in BBP 280 where they appear to be interlayered with coarser epiclastic breccias (Eeb) and feldsparphyric lava. They are massive, occasionally finely stratified, pale grey rocks of fine sandy to silty almost cherty texture probably composed largely of vitric shards and fine volcanic detritus.

The occasional fine stratification does not necessarily indicate subaqueous deposition. Probably both sub aerial and subaqueous types occur.

**Evg: Quartz Amygdaloidal Lava**

This is a fairly distinctive rock type varying from pink to pale grey in colour composed fundamentally of small sparse tabular phenocrysts of feldspar (1-2mm 5%) and very elongate/flattened ovoid/ellipsoidal amygdales of clear quartz in a glassy aphanitic groundmass. The amygdales may constitute 5-10% of the rock volume and have a distinct linear/planar preferred orientation of unlikely structural significance.

**Evf: Feldspar Phyric Lava**

Variable from pink to pale grey to dark greenish grey in colour consists of small tabular prismatic (sometimes weakly glomeroporphyritic) phenocrysts of plagioclase feldspar (1-3mm, 5% vol.) and very subordinate small wisps of altered ferromagnesian randomly oriented in a massive fine grained felsic matrix composed largely of a meshwork of fine feldspar crystals? Not magnetic.

The rock is usually massive without flow banding or brecciation.

Feldspar phenocrysts are commonly stained dark green or brown due to alteration to sericite/chlorite (?) assemblage.

**Eva: Sparsely Feldspar Phyric Lava**

This rock type is usually pink or pinkish grey in colour, contains less than 2 or 3% scattered small phenocrysts of feldspar in a nearly aphanitic felsic-glassy matrix which is sometimes flow banded. This is the dominant rock type in BBP 278 and upper part of BBP 279. It is closely related spatially to type Evb and I surmise is chemically identical and co-magmatic.

051

**Evb: Massive, Fine Grained Glassy Lavas**

In the unaltered sections of drill core rocks of this category usually have pale pink to grey colour and are massive, structureless aphyric, virtually aphanitic under the hand lens. In essence they resemble the matrix of the sparsely feldspar phyric rhyolitic lavas (Eva) and as noted above there is probably a close chemical and genetic association between the two types.

In parts of the Boco alteration system there are zones of massive grey siliceous rocks (e.g. upper part of BBP 280, middle part of BBP 251) and on basis of textureless appearance I would suggest that these represent altered Evb type lavas though there is a possibility of confusion with massive altered fine grained vitric tuffs as occur in BBP 280.

**Evc: Flow Banded and Flow Brecciated Glassy Lavas**

These are prominently exposed over about 700m of strike in cuttings of the Boco Road just west of the Boco railway siding.

They have a characteristic mottled blotchy pink-green-grey-white appearance and consist of small and large disordered fragments of flow banded glassy rhyolite or massive pink rhyolite lava closely packed with sparse glassy siliceous matrix which is also often flow structured. The brecciation is characteristic and appears to represent flow brecciation (auto brecciation) of semi rigid flow banded lava of type Eva and non banded type Evb.

In mapping and core logging there is some difficulty in distinguishing brecciated lavas (Evc) from block and ash flow pyroclastic deposits (Epp) and I would not expect very marked chemical differences between these categories.

**EvSi: Silica-Sericite-Pyrite Altered Rocks**

This category covers all the altered rocks in the Boco alteration zone.

In the various drill holes, rocks of every category (epiclastic, pyroclastic and extrusive) of the "Central Volcanic Sequence" group of my lithotype classification (see Plate 1 legend, Eeb to Evc) are affected by this hydrothermal alteration.

052

Petrographic descriptions of altered rocks by CMS (EZ Co. Reports) and J M Barron (CSR Report) report assemblages dominated by crypto-microcrystalline quartz, sericite, ? montmorillonite with remnant albite, chlorite and carbonate in the less intensely altered examples. Fine disseminated pyrite is a ubiquitous accessory usually in the range 2-5%. Pyrite usually occurs as fine disseminated blebs, often clustering in altered feldspar crystal sites in porphyritic rocks, or as ultra fine evenly disseminated specks in the more massive formerly glassy lavas or fine grained vitric tuff types. Pyrite in veinlets is generally not prominent.

Observations and extensive existing analyses of core suggest that pyrite is the only sulphide present in significant amounts.

The alteration type appears to be essentially sericitic-argillic. Major oxide/ minor element analyses of drill core (E.Z. Co. and C.S.R.) indicate extreme depletion of  $\text{Na}_2\text{O}$ ,  $\text{CaO}$  (usually to less than 0.2%) and Sr (usually in the range 10-30 ppm), slight addition of sulphur according to pyrite content, and probably no significant change to  $\text{SiO}_2$  and  $\text{K}_2\text{O}$ .

Within the sericitic alteration zone, alteration tends to be complete and pervasive though relict pyroclastic and extrusive textures are commonly quite well preserved.

Toward the outer limits of alteration, sericitisation becomes patchy and usually diminishes rapidly; in the more massive extrusive rock types, as near the end of BBP 242 there appears to be some association between patches of strong sericitisation and zones of quartz (+/- pyrite) veining.

In general, however, the alteration is pervasive and not dependent on fracture related permeability.

In the epiclastic breccias of BBP 251, 280, lithic clasts commonly have a greater or lesser content of pyrite than the matrix suggesting selective alteration/pyritisation of particular clasts. Some are composed of granular pyrite + silica + sericite with pyrite commonly in the range 20-40% or greater. They may have very sharp outlines and resemble clasts of reworked near massive pyrite.

In a few of the finely laminated vitric ash tuffs/sediments thin laminae of pyrite are observed to be concordant with bedding, (petrographic description of T.S. 44746, in E.Z. Co. Report T179) consistent with syndepositional mineralisation.

The observations suggests that the alteration and pyritisation process was synvolcanic and that some altered/mineralised rocks were reworked by epiclastic sedimentation.

053

## 6. STRUCTURE

## 6.1. Regional Scale Structure

Mapping by Corbett (1986) has indicated that sediments with intercalated tuffs and quartz feldspar porphyry of the Dundas Group are folded about a NNE trending synclinal axis which crosses the Boco Road at about 379600E (AMG).

My mapping of exposures along the Boco Road as far west as about 380000E (AMG) and along logging tracks north and west of the Boco prospect confirms that greywackes and associated tuffaceous siltstones strike consistently NE and dip moderately to the NW at about 30<sup>0</sup> to 60<sup>0</sup>.

Although contacts between sediments and volcanics are typically obscure they appear to be broadly conformable. In the vicinity of 380000 AMG on Boco Road, short intervals of laminated grey shales are transitional upwards (westwards) into the tuffaceous siltstone and medium grained bedded (epiclastic?) tuffs in turn sharply overlain by massive feldspar-quartz phytic extrusive (or intrusive?). I have a distinct impression of clastic sedimentation being transitionally replaced by pyro-epiclastic sedimentation immediately preceding overwhelming extrusion of massive lavas. In any case there does not seem to be major discordance between volcanics and bedded sediments. This "peripheral" information suggests that the volcano stratigraphy of the nearby Boco prospect should strike NE and dip and face to the NW.

Examination of the road cuttings immediately west of Boco siding have shown that the rocks are mainly flow banded and flow brecciated glassy rhyolitic lavas (with a small section of quartz amygdaloidal rhyolitic lava) intruded by numerous narrow mafic dykes.

Wall rock contacts of the dykes mainly trend NE with near vertical SE dips. These are clearly intrusive and are not considered to have much stratigraphic significance.

Flow banding foliations in the volcanic rocks here are quite variable in strike from NW to NE and also in dip from about 20<sup>0</sup> to 80<sup>0</sup> to SW and NW. However, a detailed examination of these outcrops led me to the conclusion that such measurements are practically meaningless in a gross structural sense. The flow banding and brecciation is quite chaotic and disordered. The relative regularity of orientations shown on Plate 1 probably reflects my subconscious leaning toward overall conformity with the overlying sediments.

Williams (1985) reports on an angular unconformity, at this locality, between NNW striking steeply SW dipping volcanics and overlying NE striking moderate NW dipping volcanics.

I made a careful inspection of this exposure, could not pinpoint the unconformity surface and remain sceptical of its presence on the basis of the following:

1. None of the volcanics are well cleaved; there is weak locally developed fracture cleavage but no consistent underlying cleaved/overlying non-cleaved relationship as mentioned by Williams.
2. In the north east most exposure, of perhaps 6m vertical extent, rocks in the upper and lower parts of the cutting are of similar lithological type.
3. Mafic dykes cut through entire vertical extent of face.
4. My conclusion that flow banding orientations are not representative of stratigraphic (So) surfaces in these viscous, auto brecciated extrusives.

BBP 208, situated near the Murchison Highway about 1.5km south of Boco siding cored an approximately 30m thick sequence of fairly well sorted, stratified (felsic volcanic) epiclastic sediment in the grain size range fine to coarse sand.

Bedding to core axis angles in this unit average about  $40^{\circ}$  to  $50^{\circ}$  but there is a range of about  $10^{\circ}$  to  $80^{\circ}$  indicating some soft sediment slump disturbance. (The hole was collared at inclination  $-60^{\circ}$  to an azimuth of approximately NW). There is reasonably convincing evidence in form of grain size grading indicating a younging up the hole.

The average bedding to core axis angle suggests a dip either steep to the SE or very shallow ( $15^{\circ}$ ) to the NW. Either orientation seems possible, there are dips (shown on Sainty's 1982 revised 1:5000 Geological Plan) in ash flows and porphyritic lava of  $20^{\circ}$  to N and  $85^{\circ}$  to S near the Highway about 500m and 700m (respectively) south of BBP 208.

## 6.2. Prospect Scale structure

Interpretation of the local structure at the Boco prospect is hampered by the predominance of massive extrusives and ash flows which seem to defy section to section correlation.

Perhaps the most persistent and recognizable volcanic unit is the pumiceous-lithic ash flow (Epp) which occurs at the bottom of holes BBP 248, 280 and 251.

A graphical solution to the plane defined by the up hole contacts of this unit in BBP's 248, 280 and 251 indicates a strike of about  $350^{\circ}$  (AMG) and dip of  $60^{\circ}$  to the west. This would be approximately consistent with some of the flow banding orientations observed in outcrop along Boco Road nearby to the NW.

Similar pumiceous-lithic ash flow tuffs occur at the ends of BBP 254 and 279. If this is the same unit as in BBP's 248, 280, 251 then a plane fitting the up hole contact in BBP's 251, 254, 279 would strike about  $010^{\circ}$  and dip  $70^{\circ}$  to the east, indicating a complex dip reversal in the vicinity of BBP 251.

055

Further around, the up hole contacts of the Epp unit in BBP's 254 and 279 only would be consistent with a plane striking  $070^0$  and dipping  $70^0$  to the south.

In this model the strongly altered epiclastic breccia/vitric ash flow sequence of BBP's 251 and 280 has petered out before reaching the section of BBP 254.

Alternatively if the Epp unit of BBP 248, 280, 251 does not correlate with that of BBP 254, 279 there is the possibility that the former unit (and the up hole but underlying Eeb/Epa sequence) continue on  $350^0$  from section of BBP 251 and sneak between the end of BBP 254 and the eastern most outcrops on Boco Road.

How do these interpretations fit with observed layering to core axis angles?

Equivocally, at best.

In the lavas and ash flows, most planar fabrics cut the core at about  $45^0$  to LAOC; since all the holes in this northern part are inclined at about  $45^0$  to  $55^0$  these imply near vertical or horizontal fabric orientations provided the strike is roughly normal to the drill sections. (If strike is oblique then moderate NE or SE dips are possible). However, as concluded above, these igneous planar fabrics are probably not indicative of gross structure.

What of the epiclastic/vitric ash sequence? In BBP 251 the epiclastic breccias are generally coarse and not well bedded, the principal vitric ash unit at 262.35 - 273.2m is partly finely laminated but bedding traces vary from near parallel to perpendicular to core axis indicating much soft sediment slumping. Possibly the best evidence exists at 341.6 - 342m where a fine grained ash tuff horizon (? or large block) within the pumiceous ash flow unit displays bedding at  $50^0$  to LAOC; again implying sub vertical or sub horizontal orientation.

In BBP 280 the best evidence occurs in the flinty vitric ash tuff unit at 302.6 - 319.6m in which fine bedding laminations seem quite regular cutting core at  $35-45^0$  (in 302.6 - 303.6m) and  $30^0$  (at 318.2m) implying a near vertical or near horizontal westerly dip.

BBP 250, the only hole in the northern part of the alteration zone inclined to the east, intersected a sequence of altered quartz amygdaloidal lava and glassy lava (pitchstones) resembling the upper section of BBP 251 and suggesting a moderate easterly dip. However, a very steep dip to east or west remains possible if the up dip extension of the epiclastic/vitric ash unit lies west of the overburden-bedrock contact in BBP 250.

Although planar fabric (bedding and laminar flow foliation) in these northern holes do not exactly coincide with the gross structure as suggested by the upper contact of the Epp unit, I prefer the steeply dipping model to the flat lying model.

056

Weak facing evidence in the form of graded lithic clasts and ambiguous scour and fill/load cast structures exist in the epiclastic breccias of BBP 251 and 280. Unfortunately, both up hole and down hole facings have been interpreted and no confident younging direction can be inferred here.

Lithotypes in the southern part of the Boco alteration zone are strongly dominated by massive lava units and I have found it almost impossible to make meaningful correlations. (This difficulty is not reduced by the fact that time did not permit me to examine core from BBP 247).

A possible correlation exists between the quartz amygdaloidal lava at the end of BBP 242 and in percussion/core Hole 4, again implying a near vertical dip. Weak flow banding orientations in BBP 242 (if meaningful?) support a semi vertical or shallow east dipping sequence.

A similar quartz amygdaloidal lava occurs at the end of BBP 246 but the E.Z. Co. core record of BBP 247 notes only a short interval at 182.5 - 185.7m.

The most readily correlatable structure in the Boco drill holes is in fact a fault zone. This is most obviously displayed in core of BBP's 207, 242 (in which it forms the western limit of sericitic alteration) and 246.

In the latter hole a sheared puggy zone (239.45 - 239.95m) marks the down hole contact of a 6m thick zone of massive silicification, with multiphase (tectonic) brecciation, resilicification and heavy veining of quartz carbonate and minor chlorite. Identical multiphase brecciation, silicification and veining occurs immediately up hole of puggy-sheared zones in BBP 242 (at 256.8 - 258m) and BBP 207 (156 - 157.5m). I interpret these features as representing a major fault plane.

A solution to the plane defined by three intersections in BBP's 207, 242, 246 indicates the fault has a strike of  $020^{\circ}$  (AMG) and dips at  $80^{\circ}$  to the east.

A shear zone at 337.8 - 339.4m in BBP 248 possibly represents a continuation of the same structure since a solution to the plane containing the intersections in BBP's 207, 242, and 248 gives a strike of  $022^{\circ}$  (AMG) and dip  $80^{\circ}$  E.

As mentioned, this fault forms the western limit of alteration in BBP's 207 and 242. In BBP 250 the eastern limit of alteration is sharply defined by a fault (at 298.4 - 298.6m). On this basis it is tempting to pursue the fault northward through the broad broken zone in BBP 280 (above 170m) to BBP 250 and beyond through BBP's 254 and 279. These intersections would require the fault plane dip to flatten slightly to about  $70^{\circ}$  E and strike to swing to about  $355^{\circ}$  north of BBP 250.

057

The displacement and sense of displacement cannot be readily estimated although the projected plan outline of the alteration zone hints at a right lateral strike-slip movement of some 600m. On the other hand identical feldspar phyrlic lava lithotype east and west of the fault in both BBP 242 and 246 suggest relatively minor vertical displacement if the (strata) dips are not steep.

The presence of barren quartz + carbonate + chlorite veining in the silicified zones adjacent to the fault in BBP's 207, 242, 246 and sheared/brecciated mafic dyke material in BBP 280 indicate that some movement has occurred later than the sericite-pyrite alteration episode; possibly as late as the Tasmanian wide Devonian deformation.

### 6.3. Form of the Alteration Zone

Subsurface information from diamond and percussion/ diamond drill hole limits the (projected to surface) size of the Boco alteration zone to about 1300m strike length and 350m width. The zone has been intersected at up to 400m below the surface in both the northern and southern parts and remains "open" beyond this depth.

On the southern most section (BBP 246, 247) the western limit of the alteration zone is very sharp (in BBP 246) whilst the eastern margin is quite gradational with gradually decreasing intensity of sericite alteration and pyrite content over approximately the lower 200m of BBP 247. The zone of strong alteration (greater than 3% Py) appears to be confined to a 100m wide zone dipping steeply to the east.

In BBP's 207, 242, 200m to the north, the western limit of alteration is again very sharp against a prominent steeply east dipping fault zone (described in Section 6.2.). This sharp contact is reflected in sulphur analyses; 0.05% S or less within the silicified and veined breccia zone west of the fault, 1.2% S and greater immediately east of the fault. BBP 242 did not penetrate sufficiently eastwards to pass through the alteration zone but its' width at (sub-glacial) surface is about 190m as indicated by the intersection of (weathered) weakly altered lava in Hole 4.

The western contact of the alteration zone appears to transgress across the fault not very far north of BBP 242 as Hole 3, approximately 20m west of the projected position of the fault, intersected strongly altered pyritic rock.

On the section of BBP 248, the alteration zone has pinched to only 15m width and is situated about 40m west of the postulated fault at R.L. 100m (300m below surface).

However there is strong local tectonic brecciation and quartz veining within this interval. Localised pyrite mineralisation occurs further down the hole (447 - 449m and 514.3 - 524.6m) associated with stringers and infilling of the sparse matrix in tectonically brecciated zones. In this hole pyritisation seems to be spatially related to fracture zones and pervasive alteration is poorly developed.

058

In BBP 280, 200m further north, the zone of strong alteration (~3% Pyrite) is at least 100m in width. The western contact is gradational with pyrite content and intensity of sericitisation decreasing and becoming patchy over a few tens of metres. The core from the upper part of the hole from 74.9 - 148.5m is strongly broken and appears to represent a broad zone of tectonic (fault ?) brecciation. Pervasive sericite alteration and finely disseminated pyrite occurs throughout (below limit of oxidation at 93m) and it is evident that pervasive alteration preceded much of the brecciation. It is inferred that this zone of brecciation represents the northward extension of the fault though the cause of its very different appearance is not apparent.

The eastern limit of alteration on this section is not really seen although pyrite in the estimated range 1-3% in the upper part of the hole suggests a gradual waning eastward. The significance of the fault breccia zone here is obscure.

On the section tested by BBP's 250, 251 (under the outcropping knoll of altered rock west of Boco Siding) we can observe both eastern and western alteration boundaries.

The western boundary is gradational over a few tens of metres of core and appears to be partly lithologically controlled as there is a sharp decrease in pyrite content (from 5-10% down to 3%) at the up hole contact of the pumiceous lithic ash flow unit (Epp). Alteration intensity wanes quite rapidly within this unit.

On the eastern side the alteration contact is very sharp, marked by a fault zone at 298.6m in BBP 250. There is no pyrite below the fault although there are several metres of highly fractured rather silicified core below the fault, in this respect resembling the fault zone which forms the western termination of alteration in BBP's 207, 242.

On the BBP 250, 251 section the zone of strong alteration has a horizontal dimension of about 240m at R.L. 180 (~220m below surface). The dips of alteration boundaries here are not defined but could both be steep to the east if the stratiform western boundary and fault controlled eastern boundary hypotheses are true.

The importance of the eastern boundary fault becomes dubious north of BBP 250 as Hole 5 (which intersected altered rocks) is located approximately 40m east of the projected surface trace of the fault.

On section of BBP 254 and 279 the form of the alteration zone in profile appears to have a wedge shape with a moderately east dipping western boundary and a possibly vertical eastern boundary. The western or footwall boundary is again slightly gradational into the pumiceous lithic ash flow tuff lithology (Epp) again suggesting a partly stratabound situation as in

BBP's 251 and 280 to the south. As noted by Williams (1985) the footwall dip may in fact be rather steeper than appears on the section as hole BBP 279 diverged considerably northwards and finished about 70m NNE of the section of BBP 254. The same applies to the upper contact of the Epp unit (Section 6.2.) which would be consistent with a plane dipping at  $70^{\circ}$  to the south between BBP's 254 and 279.

This model of a "turnaround" just north of BBP 279 is consistent with the absence of alteration in percussion holes 9, 10 and 11.

In BBP 254 the eastern contact of alteration is not seen (truncated by glacial overburden), but it would seem that the alteration zone is still some 200m wide on this section.

In BBP 279, however, alteration occurs over only about 55m of core near the end of the hole. The eastern contact is reasonably sharp perhaps related to a broad zone of faulting and brecciation in the interval 552.4 to 602.5m. This zone of brecciation has been correlated with evidence of faulting at about 200m down hole in BBP 254, which cuts through the alteration zone in that hole. This together with the evidence from Hole 5, suggests that the familiar fault does not influence the eastern alteration boundary in the northern parts.

On the other hand the observed fault zones in BBP 254 and 279 may be falsely correlated. If a fault exists somewhere in the vicinity of 383700E (AMG) on section of BBP 254 then a fault bounded near vertical eastern alteration boundary would be possible and furthermore would allow the boundary fault in BBP 250 to be projected north eastwards as illustrated by Williams (1985).

To summarise the form of the alteration zone:

- in the northern part the western alteration contact is gradational and approximately concordant with the up hole contacts of pumiceous lithic ash flow tuffs which may represent a single lithostratigraphic unit; i.e. the alteration boundary is stratabound.
- in the northern part there is good evidence in one drill hole (BBP 250) that the eastern alteration boundary is a fault which appears to be continuous with the important structure in the southern part of the alteration zone.
- on section BBP 207, 242 the above mentioned fault forms the western limit of alteration and there is clear evidence for post alteration displacement along the fault.

The same fault is recognised in BBP 246, 200m to the south, but here the once again very sharp western alteration boundary is not at the fault but occurs 30m to the east of it.

- in the southern part of the alteration zone (BBP 247) the eastern boundary appears to be gradational.
- in the central part, the alteration zone is severally pinched to 15m width and seems to be related to fracture permeability rather than pervasive rock alteration.

It is possible to interpret the original form of the Boco alteration zone as being originally roughly circular in plan, some 500m in diameter, partly stratabound with a steep ( $\sim 70^{\circ}$ ) easterly dip (i.e. cylindrical). This has been bisected by a NNE trending steeply east dipping ( $80^{\circ}$ ) wrench fault having a right lateral displacement of about 600m. Most of the sericite-pyrite alteration occurred prior to the lateral movement of the fault.

There is evidence, in epiclastic breccias, that the alteration process was synvolcanic. There is no evidence to indicate that the wrench fault was significant in providing a locus or focus for the alteration system. More likely is the concept that the alteration system was focused within and around a particular volcanic assemblage of epiclastic mass flow debris and fine vitric ash deposited in a partly subaqueous caldera as suggested by Sainty (1984).

Sainty's model, no doubt well founded, for mineralisation at Boco, expected the potential ore horizon to be located at the stratigraphic top of the alteration zone. The facing direction of the local volcanic stratigraphy is still uncertain. However, there are nine diamond drill holes which cut a substantial thickness of alteration.

In the northern part, BBP's 279, 251, 280 (and perhaps 248) all pass through the gradational western boundary of alteration into essentially unaltered unmineralised puniceous lithic ash flow tuffs without encountering mineralisation. Whatever the facing it seems safe to conclude that no ore horizon exists at the western alteration boundary.

On the eastern gradational boundary (presumably the opposite stratigraphic "wall" to the western boundary) BBP 247 passes eastwards into unaltered rock without encountering significant mineralisation. BBP's 242 and 246 probably came close to passing through.

So, despite wrench fault complexities, it would seem that both the stratigraphic footwall and hanging wall to the alteration zone have been tested without success, the western wall quite adequately. Some justification may exist for an additional hole through the eastern alteration boundary on section of BBP 242 but it seems like a very slim chance.

"Barren" holes BBP 253 to the south, BBP 278 to the northeast and percussion holes 9, 10, 11 appear to preclude lateral extensions of the alteration zone to the north, north-east or south. There is a slender possibility that extensions may exist to the NNW between H10, 11 and the first outcrop on Boco Road or SSE east of the collar of BBP 253.

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However, if the circular alteration zone bisected by a wrench fault interpretation is correct it indicates an originally cylindrical alteration "pipe" which would most likely have had a semi vertical original orientation. Since the present inclination seems to be steep this, if anything, suggests semi horizontal stratigraphy, presumably with the prospective ore horizon now removed by erosion.

With the present very uncertain structural understanding of the Boco Prospect I am unable to recommend any favourable drilling targets. Additional "stratigraphic" diamond drill holes (with provision for oriented core samples) on sections between BBP's 254 and 251, 251 and 280 and perhaps 280 and 248 would I think do much to resolve the local structural geology. Such drilling, however, in the absence of nearby geophysical targets or a recognizable ore-host horizon, may prove to be academic and I would not recommend it under these circumstances.

#### 7. REFERENCES

- CORBETT, K.D., 1986 "Excursion Notes: Pinnacles - Boco Road 23/11/86".  
G.S.A. Tas. Division. Symposium on Mt Read Volcanics and Associated Ore Deposits.
- E.Z. CO. LTD. REPORTS: (in Chronological Order)
- HANSON, N.H., 1977 E.Z. Co. Report No: 128
- HANSON, N.H. & MILL, J. 1978 E.Z. Co. Report No: 129
- MILL, J. 1979 E.Z. Co. Report No: 130
- MILL, J. 1981 E.Z. Co. Report No: 137
- SAINTY, R.A. & McDONALD, I.R., 1982 E.Z. Co. Report No: 153
- SAINTY, R.A. 1982 E.Z. Co. Report No: 159
- SAINTY, R.A. May 1983 E.Z. Co. Report No: 165
- SAINTY, R.A. Nov 1983 E.Z. Co. Report No: T174
- SAINTY, R.A. 1984 E.Z. Co. Report No: T179
- WILLIAMS, R.E. 1985 "Diamond Drilling of the Boco Prospect EL 12/72 Bulgobac, Tas.". C.S.R. Limited Report EMR 112/85

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8. APPENDICES

8.1. APPENDIX 1.

BOCO PROSPECT DIAMOND DRILL CORE RECORDS

(E.Z. CO. LTD.)

(For Appendix 1 refer file copy).

064

ELECTROLYTIC ZINC CO OF A'ASIA LTD  
ROSEBERY - TASMANIA

DIAMOND DRILL CORE RECORD

HOLE No. BEP 207

FOOTAGE		ROCK DESCRIPTION	MINERALISATION	SAMPLE NO.	FROM	TO	CORE REC'D	ASSAY DATA						CORE REC'D			
FROM	TO							Pb%	Zn%	Cu%	Ag - oz	Au - dwts	Fe%	RUN	SHORT		
71.9	72.2m	Densely leached and fractured rock (arsenitic siliceous buff)	71.2 - 81m only minor Py associated with fractures (<1%)														
72.4	74.2m	Grey fg very siliceous (buff) locally highly fractured.	81 - 91.2m local concentration of Py in stringer type mineralization. (Locally:- 2 - 5% throughout: - <1% Py).														
74.2	91.2m	Sheared notchy green - grey to buff - grey fg to lapilli size, buff with coarse fragments (up to 5cm) at 74 to 77m and 88.5 to 90.3m; patchily arsenitic throughout; locally chloritic; quartz veining throughout.	<b>CORE ANGLES</b>  71.5 m shearing 55° 76.6 m shearing 50° 79.5 m shearing 65° 82.5 m shearing 50° 88.2 m Quartz Vein 45° 92 m Shearing 60°														
	91.2m	Hole abandoned at 91.20m due to problems with fine sand. Hole was cemented and restarted at 49m.															

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ELECTROLYTIC ZINC CO OF ASIA LTD  
ROSEBERY - TASMANIA

DIAMOND DRILL CORE RECORD

HOLE No. BPP 207

065

FOOTAGE		ROCK DESCRIPTION	MINERALISATION	SAMPLE NO.	FROM	TO	CORE REC'D	ASSAY DATA						CORE REC'D	
FROM	TO							Pb%	Zn%	Cu%	Ag - oz	Au - dwts	Fe%		
49	50	Down to very siliceous rock	49 - 52 m Fr. infilling											10.0	0.3
		(siliceous) with numerous quartz	fractures and minor diss. Py											51.0	-
		veins and fractures showing	(2-5% Py)											53.3	-
		noticeable silicification and	52 - 92.3 m minor Py											56.3	-
		alteration around veins.	associated with fracturing.											59.3	-
52	56.7m	Sheared to gray/green siliceous	(4% Py).											62.3	-
		sericitic (buff) patchy zones of												65.3	-
		intense sericite; some quartz												68.3	-
		veins and silicification.	CORE ANGLES											71.3	-
			51.0 m Chz. Veining 55°											71.3	-
			53.5 m Shearing 45°											71.3	-
56.7	60.5m	(interbedded) sheared gray/green	54.8 m Shearing 55°											77.3	-
		siliceous sericitic buff and	58.8 m Arcuate Contact 20°											80.3	-
		(Pinkish) altered to buff;	(Sheared to buff/Alb. rt. Tuff)											83.3	-
		locally crystal rich; numerous	60.8m Shearing 55°											89.3	-
		quartz veins and associated	64.0 m Shearing 60°											92.3	-
		silicification.	67.2 m Shearing 60°											95.3	-
			70.5 m Shearing 50°											98.3	-
60.5	62m	Sheared to gray/green highly	73.8 m Shearing 45°											101.3	-
		siliceous sericitic buff; patchy	75.0 m Shearing 55°											104.3	-
		development of intense	78.2 m Shearing 50°											107.3	-
		sericite.	83.0 m Shearing 45°											110.3	-
			93.5 m Shearing 50°											113.3	-
62	74.2m	Sheared gray/green siliceous	98.3 m Shearing 45°											116.3	-
		sericitic fragmental (siliceous buff)	104.2 m Shearing 50°											119.3	-
		with fragments up to 6 cm;	12.3 m Shearing 55°											122.3	-
		patchy development of sericite												125.3	-
		(particularly in core sections).												128.3	-
														131.3	-
														134.3	-
														137.3	-
														140.3	-
														141.3	-

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ELECTROLYTIC ZINC CO OF ASIA LTD  
ROSEBERY - TASMANIA

DIAMOND DRILL CORE RECORD

HOLE No. BBP 207

067

FOOTAGE		ROCK DESCRIPTION	MINERALISATION	SAMPLE NO.	FROM	TO	CORE REC'D	ASSAY DATA						CORE REC'D			
FROM	TO							Pb%	Zn%	Cu%	Ag - cr	Au - dwts	Fe%	RUN	SHORT		
130.0	151.0	Sheared grey to grey/green fg to lacilli size (lithic crystal) tuff with some patches 'Albaritized' sections. Probably silicification in most sheared sections.	133.5 - 141.0m diss. Py and fracture infill (Py 2-5%)														
			141.0 - 159.5m only minor Py (usually in fractures) ( $< 1\%$ Py).														
151.0	157.2	Grey highly siliceous - sericitic (sheared) fg tuff with some crystal tuff sections; also obvious silicification along joints.	CORE ANGLES														
			129.6m contact $65^\circ$														
157.2	157.5m	Fig zone (probably a fault zone)	134.0m shearing $45^\circ$														
			146.0m shearing $50^\circ$														
157.5	159.5m	Green/grey highly siliceous sericitic rock (probably highly sheared) somewhat cherty in appearance.	147.8m shearing $65^\circ$														
159.5m		End of Hole.															

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069

ELECTROLYTIC ZINC CO. OF ASIA LTD  
ROSEBERY - TASMANIA

DIAMOND DRILL CORE RECORD

HOLE No. BBP 208

LOCATION	TRIP NO. 12/72 - 2000 AREA	Footage	Direction	Dip.	Footage	Direction	Dip.	COLLAR DIP.	-60°	TOTAL DEPTH	154M
OBJECTIVE	TO TEST THE SUTURE OF IP ANOMALY III	0	265°	-60°				DIRECTION	265°**	HOLE SIZE	130/130/BQ
		54.5M	(277°)	-63°				R.L.	3371	COMMENCED	19/01/77
RESULT		120M	(247°)	-62°				COORDINATES	13,720 N	COMPLETED	28/01/77
		154M	(359°)	-60°				(5000 GRID)	11,240 E	LOGGED BY	H.H.H.

FOGTAGE		ROCK DESCRIPTION	MINERALISATION	SAMPLE NO.	FROM	TO	CORE RECD	ASSAY DATA						CORE REC'D			
FROM	TO							Pb%	Zn%	Cu%	Ag-oz	Au-gram	Fe%	S%	RUN	SHOT	
0	9 M	Rock Fragments and Glacial rubble	0-26.90M No Obvious Sulphides.														
9	26.9 M	Ash Flow Tuff Locally Aplomericitic, Containing Plume and Lithic Fragments up to 10cm.		11160	32.3	37.2	4.9	100	125	X	X		1.2	0.3			5.3 2.1
																	8.0 3.8
																	14.3 0.6
																	15.2 -
																	16.0 -
26.9	67 M	2g Feldspar Porphyry Generally Grey in Colour; Locally Showing Pinkish Alteration (at 39.5 - 41.3%, 44.8 - 55.7 & 63 - 63.8M) Associated with Basic Intrusives (at 48.3 - 49.3', 55.7 - 57.2', 57.6 - 62.2' & 63.6 - 65.2M) Units Show Sharp Contacts	26.9 - 67M Minor Diss. Py (< 1% Py) Associated With Fracturing; Locally More intense at 32.2M to 37.2M (1-2%Py)														17.0 -
				11163	70	77.2	7.2	150	275	25	X		2.3	0.3			17.6 0.2
																	19.4 -
																	20.1 -
																	21.3 -
																	23.0 -
																	24.5 -
																	25.25 -
																	27.6 -
		Pinkish grey fr phytic, acc with Lake Mackintosh Evd. CORE ANCHORS	Mt Affinities														27.6 -
																	28.2 0.2
																	29.0 -
																	30.3 -
																	32.3 -
		26.9M Contact 55°															35.3 -
		55.6M Contact 55°															35.3 -
		57.2M Contact 50°															38.3 -
																	41.3 -
																	44.3 -
																	44.8 -
																	50.8 -
																	53.3 -
		CORE SIZES															
		0 - 11 M HQ															
		11 - 44.8M HQ															
		44.8 - 154 M HQ															

T = Trace

X = Below detection limit

849071

0.70

ELECTROLYTIC ZINC CO OF ASIA LTD  
ROSEBERY - TASMANIA

DIAMOND DRILL CORE RECORD

HOLE No. RBP 208

FOOTAGE		ROCK DESCRIPTION	MINERALISATION	SAMPLE NO.	FROM	TO	CORE REC'D	ASSAY DATA					CORE REC'D		
FROM	TO							Pb%	Zn%	Cu%	Ag - oz	Au - dwts	Fe%	S%	RUN
67	92.4	Interbedded fg Siliceous Tuffaceous Sediments (Showing well Developed Bedding) Coarse Ash (Weathered) Tuff Locally Showing Possible Graded Bedding (Younging in Hole); Also Locally Showing Intricate Fracture Pattern Infilled by Py. Some Areas Show Contortion (Intraformational Movement rather than Primary ash Flowage)	67-92.4 M Minor Diss. Py Throughout fg Units Locally More Intense and Associated With Fractures 1-2% Sulphides  69M Possible Sphaleritic (4%) & Py Associated with Bedding.  73.2 - 74M Infilling of Delicate Fracture Pattern											55.7	0.4
				11155	67	68.5	1.5	175	575	50	2.5	1.6	0.2	52.0	-
				11156	68.5	70	1.5	75	625	25	2.5	1.7	0.2	55.3	-
														58.3	-
														71.3	-
														77.3	-
														80.0	-
														83.1	-
														86.2	-
				11157	73.2	74	0.8	1450	2600	100	5.0	5.4	1.5	89.3	-
68-72		Bedding angles 10-30o (shrimped)	by Py (10-15%)	11173	74	77.2	3.2	75	125	100	X	2.1	0.3	92.3	-
69.3		Grade 40-50o		11158	77.2	80.7	3.5	475	2600	50	2.5	2.5	0.4	93.8	-
70.6		Grade 50o												94.2	-
71.3		Grade 45o												94.7	-
87-88		Grade 45o												95.1	-
		Grade 60o												97.4	-
See Over.														98.4	-
92.4	95.5	Vesicular Basic (Intrusive)	92.4 - 95.5 M No Obvious Sulphide											99.2	-
			95.5 - 105.5 Minor PY Assoc. With fg Units (4%) Locally Py Mineralization of Delicate Fracture Pattern.											100.5	-
95.5	105.5	As for 67M to 92.4M	105.2 - 105.8M (2-5% Py)	11159	105	106	1.0	100	175	T	X	1.3	0.05	101.0	-
														102.2	0.4
														103.1	-
		101.7 M Bedding 45o												104.3	-
		105 M Bedding 35o												107.3	-
		110.5 M Bedding 45o												110.0	-
			103.7 Fragments of Sulphides Mainly Py (Sp?)											113.7	-
														114.2	-
			114.4 - 116.5 Diss. Py (1-2%)											116.1	-
101.5	121.5	fg Basic Intrusive Showing Small Vesicular Structures Close to the Contacts.												117.0	-
														119.3	-
														122	-
														124.9	-

Bedding is not really tumbiditic but overall sets of beds over intervals of 10-100cm show gradual fining up hole.

Sharp contacts between fine beds and coarse overlying beds particularly prominent.

Below 72m. Bedding angles are fairly regular and likelihood of slumping/overturning is remote. I'm fairly convinced that these young up hole (to East?).

DDH indined 60o to west.

Indicating steep dip to east or very shallow dip to west.



0.12

ELECTROLYTIC ZINC CO OF ASIA LTD  
ROSEBERY - TASMANIA

DIAMOND DRILL CORE RECORD

HOLE No. BEP 208

FOOTAGE		ROCK DESCRIPTION	MINERALISATION	SAMPLE NO.	FROM	TO	CORE REC'D	ASSAY DATA						CORE RECD	
ROM	TO							Pb%	Zn%	Cu%	Ag - oz	Au - dwts	Fe%	RUN	SHORT
11.5	113.6'	mg to of Ash Flow Tuff (Crystal lithic) showing well developed flow structures & flow	116.5 - 154 M No Obvious Sulphides											126.9	0.2
														128.0	-
														131.3	-
														137.3	-
														140.3	-
15.6	152'	mg Intermediate Intrusive or Flow (Siderite) 40% Corroded Well-sorted Crystals 5-10mm Minor blotchy Dark Green Pyroxene in fg near matrix.												143.3	-
														146.3	-
														149.3	-
														152.3	-
														154.0	-
	154'	End of Hole.													

95

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013

ELECTROLYTIC ZINC CO. OF ASIA LTD  
ROSEBERY - TASMANIA

DIAMOND DRILL CORE RECORD

HOLE No. BEP 209

LOCATION <u>BEP CORES EL 12,72 - BCCO AREA</u>	Footage	Direction	Dip.	Footage	Direction	Dip.	COLLAR DIP. <u>-50°</u>	TOTAL DEPTH <u>162m</u>
OBJECTIVE TO TEST THE SCOPE OF IP ANOMALY XIII	0	270°	-50°				DIRECTION <u>270°**</u>	HOLE SIZE <u>HQ, NQ, BQ</u>
	50	(180°)*	-18°				R.L. <u>411m</u>	COMMENCED <u>11/03/77</u>
RESULT NO SIGNIFICANT MINERALIZATION HAS INTERSECTED	150	(199°)*	-14°				COORDINATES <u>13,720 N</u>	COMPLETED <u>28/03/77</u>
							(BCCO GRID) <u>9,140 E</u>	LOGGED BY <u>H.F.H.</u>

FOOTAGE		ROCK DESCRIPTION	MINERALISATION	SAMPLE NO.	FROM	TO	CORE RECD	PPM ASSAY DATA				Fe%	Cu%	CORE REC'D	
FROM	TO							Pb	Zn	Cu	Ag			RUN	SHORT
0	17 M	Bubble & Rock Fragments (Glacials)	CORE ANGLES	CEIP	SAMPLES										
17M	34.2M	Highly Leached mg. Crystal (Lithic) Tuff (Showing very Crystal Rich Beds) Some Swirly (Flouage) Textures Evident (31-34M); Locally Blotchy Development of Limonite and Manganese in Major Joints.	22.1 Jointing 52°	11104	17	27	6.5	175	225	X		1.33	0.24		
			25.8 Jointing 55°	11105	27	37	9.8	150	1350	T		1.89	1.06		
			46.8 Jointing 40°	11106	37	47	6.2	150	200	T		1.4	0.05		
			59.0 Quartz Vein 55°	11107	47	57	10.0	125	175	X		1.9	0.21		
			73.2 Cleavage 60°	11108	57	67	9.8	200	550	25		1.6	0.36		
			76.8 Cleavage 70°	11109	67	77	10.0	200	225	T		1.0	0.02		
				11110	77	81.6	4.6	150	200	X		0.67	0.02		
34.2	63.4M	Coarsely Interbedded eg-mg Fragmental (Lithic) (Tuff) - Brecciated Feldspar Porphyry - Numerous sections rich in Chloritic Feldspar Porphyry (Fragments) (? Auto-Brecciated Lava) Blotchy Pink Albitization Throughout.	17 - 34.2M No Obvious Sulphide Mineralization	11111	86.4	97	10.0	225	375	T		1.8	0.04		
			Limonite / (Manganese) on Major Joints	11112	97	107	10.0	200	425	25		3.1	0.05		
				11113	107	114.3	7.3	175	425	25		1.8	0.11		
				11114	114.3	119.3	5.0	125	4000	25		6.1	0.22		
			CORE ANGLES	11115	125.6	135	9.4	175	475	25		1.1	X		
			92.7 Intrusive Contact 65°	11116	135	145	10.0	75	150	X		2.3	X		
			93.5 Jointing 60°												
			109.3 Intrusive Contact 60°												
			122.1 Shearing/qtz. vn 55°												
			124.0 Shearing/qtz 60°												
63.4	114.3M	Weakly Sheared fg/(mg) Crystal Tuff Blotchy Albitization Throughout	81.6 - 86.4 Fractures Infilled With Limonite & Manganese	11100	81.6	83.5	1.9	200	225	75	25	0.76	0.13		
		81.6 - 86.4m. Intricately Fractured fg Rock - Albitized		11101	83.5	86.4	2.9	350	450	T	X	0.11	1.48		
		Footage	Hole Size												
		0 - 31	HQ												
		3 - 30M	HQ												
		14M	no												

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ELECTROLYTIC ZINC CO OF ASIA LTD  
ROSEBERY - TASMANIA

DIAMOND DRILL CORE RECORD

HOLE No. BSP 209

DATA

FOOTAGE		ROCK DESCRIPTION	MINERALISATION	SAMPLE NO.	FROM	TO	CORE RECD	PFC		ASSAY DATA					CORE RECD	
FROM	TO							Pt	Zn	Cu	Ag	Fe%	S%	RUN	SHORT	
63.4	111.3	fg Crystal Tuff (cont.)	CORE AXLES													
		92.7 - 93.1 fg Basic Intrusive	147.3 Jointing 65°													
		(Dark Green)	159 Jointing 60°													
		120.15 - 105.1 fg Basic Intrusive														
		109.1 - 110.1 fg Basic Intrusive														
117.3	119.3	fg Basic Intrusive (Dark Green)	116.2 - 119.3 Development													
		Highly Fractured Core 116.2 - 119.3	of a Pinkish Mauve and													
			Yellow Secondary Mineral													
			on Fracture Surfaces Also													
			Minor Hematite.													
119.3	147.3	Highly Sheared and Altered	119.3 - 125.6 Minor Diss.	11102	119.3	122.2	2.9	300	500	25	X	2.13	0.50			
		fg to mg (Vitic) Crystal Tuff,	By (1-2%) Associated with	11103	122.2	125.6	3.4	250	675	50	X	1.66	0.57			
		Blocky Altertization Throughout	Quartz Veining.													
		But Particularly Intense at														
		119.3 - 125.6 & 136.0 - 139.1M														
147.8	162.1	fg to mg (Dark Green) Crystal														
		Tuff Containing Bands of														
		Large Porphyry Fragments at														
		150 - 152.6M and 155.2 - 156.1M;														
		Minor Altertization.														
	152M	End of hole														

849075

ELECTROLYTIC ZINC COMPANY OF ASIA LTD.

## DIAMOND DRILL CORE RECORD

HOLE No. BHP 242

MINERAL RESOURCES DIVISION - TASMANIA

SHEET No. 1.

PROJECT	BURGONAC F.L. 12/72 BECO PROSPECT	GRID CO-ORDS:	HOLE SIZE:	1M B; HQ 52.0;	Depth (m)	Azimuth (° mg)	Dip°	Depth (m)	Azimuth (° mg)	Dip
LOCALITY	Traverse 1	A.M.G. CO-ORDS:	CASING:	NQ 84.7; BQ TD	67.5	112	59.5°			
OBJECTIVE	Across-strike traverse drilling of concealed quartz-sericite-pyrite alteration zone	COLLAR R.L.:	COMMENCED:	1.6.83	91.0	110	58.5°			
RESULT:	This hole did not lift as planned and drilled nearly down-dip. It did not cover the traverse width.	COLLAR DIP:	COMPLETED:	5.7.83	124.5	113	58.3°			
		AZIMUTH:	LOGGED BY:	R.A. Sainty	208	113	59°			
		TOTAL DEPTH:			298.5	118	59°			
					457.5	120	59°			

DEPTH		ROCK DESCRIPTION	MINERALISATION	CORE RECD	
From	To			Run	Short
	52.0	Glacial Cover			
52	256.8	Unaltered felsic-intermediate lavas (Icaco-andesites), regionally silicified.			
56.8	57.5	Fault (pug). Silicified zone up and down hole from fault - massive qtz 52.0-55.7, pale grn foliated sericite alteration 55.7-57.5, silicified and qtz-veined lava 57.5-69.3			
69.3	102.7	Green, grey-green to pale pink and orange pink massive silicic lava	Patchy grey variants of pink 102.7-B4.6		
102.7	134.6	Orange pink massive silicic lava 127.0-129.0 Green ?sericitic foliated alteration, no py	Locally resembles Qtz amygdaloidal type		
134.6	145.6	Grey-green porphyritic silicic lava, some minor orange	Texturally identical to 169.1-192.3		
145.6	161.5	Orange pink massive silicic lava			
161.5	161.9	Contact zone of two flow units? - marked by dark jade-green massive ?sericite zone			
161.9	169.1	Green weakly altered massive lava. Includes short sections of dark chlorite-stained sericitised feldspars. Abundant thin dark-green chlorite veinlets.			
169.1	192.3	Pink to pale brown porphyritic massive silicic lava. Abundant white feldspar phenocrysts. Abundant thin dark green chloritic veinlets.	Very massive comp/text uniform.		
192.3	195.7	Grey green to buff weakly altered porphyritic lava. In part dark chlorite-stained sericitised feldspars: more abundant than chloritic veinlets.			
195.7	213.35	Silicified lava: grey pink i.e. grey cloudy silicification overprint on pink porphyritic lava. Diffuse blotchy pink spots in grey silicified matrix.			
213.35	217.25	Basalt dyke Calcite rhombs to 10mm in veins adjacent to contacts.			
217.25	226.8	Green-pink-brown massive silicic lava.	Relief fs porphyritic fabric variant of 169.1 - 213.35 type.		
226.8	242.95	Silicified and qtz-veined (especially 238.4 on)			
242.95	256.8	Wholly intensely silicified and brecciated - largely massive white qtz (& calcite - above fault below)	Brecciated vein qtz; good evidence for multiphase fault brecciation and vesilicification. Approx 30m strong veining, increasing downwards to brecciation towards pug zone.		
256.8	258.0	Fault (pug)	Obviously a major fault/breccia structure.		

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DEPTH		ROCK DESCRIPTION	MINERALISATION	CORE REC'D	
From	To			Run	Short
258.0	257.5	Strongly silicified-sericitised-pyritised dacitic glassy lavas (obsidians)			
258.0	278.35	Green-grey, sericitised weakly silicified, pyritic zones of dark chlorite-stained sericitised feldspars with diss ultrafine py, py clumps and stringers. Py increases down-interval to include areas of veiling ultrafine py. Refer 44721 @ 291.5, CMS 83/9/20 264.0-265.75; 267.9-269.2; 272.4-273.0 basalt dykes.	<p>irregular mass of alteration and 1. (see 4. analysis) below fault py. No analogous alt/py mining above fault strongly suggests post mineralization fault displacement Chy shear related sericitization</p>		
278.35	300.0	Streaky yellow-grey sericitic-silicified, pyritic. Grey patches after sheared qtz amygdalae? Abundant py as diss crystals + clots small stringers.			
300.0	305.0	Zone of brecciation, mild shearing (flow-top breccia zone?). Relatively coarse-grained, granular appearance. Strongly pyritic-siliceous alteration. 309.0-301.1 high py zones 40% 301.1-305.0 high py zones 10-20% Py as fine diss stringers and veinlets. Refer 44722 @ 304.2, CMS 83/9/20	<p>Notable for intense silicification and strong pyrite mic analysis for short section at 301.3 looks like it could be broken. Luccia. Silicification unknown?</p>		
305.0	315.2	Brecciated and massive glassy lava. Sericitic-qtz-py alteration. Brecciated zones comprise sericitic sheared zones around massive domains. 309.5-309.8 basalt dyke. Pale yellow, entirely sericitised & pyritised, diffuse patches, veins of py on margins.	<p>General along alt. 2 1-3% by fresh like residual somewhat. alt. of phytic lava at 258-248.35</p>		
315.2	317.15	Basalt dyke. Green fg, non-pyritic. Irregular lower contact.			
317.15	318.7	Weakly laminated pelitic ash sediment: dense, yellow-grey sericitised and pyritised. Refer 44723 @ 318.5m, CMS 83/9/20	<p>Very strongly brecciated (broken) brecciated and sericitized. Breccia at 28.5 apparently, at about 28.5 in core, Elsewhere not visible.</p>		
318.7	326.2	Altered glassy lavas as per 305.0-315.2 320.2-321.1 basalt dyke 324.1-326.2 basalt dyke with FAULT (pug)			
326.2	334.8	Weakly sericitised. Vague patches of chlorite-stained sericitised feldspars. Increasing buff-coloured matrix down-interval, with sericite-carbonate after feldspars. Sparse diss py.	<p>to 340.35 mostly strongly altered to phytic type with strong sericitization except at intervals of white lava areas of dark chlorite. f. pseudomorph fine diss. by 1-2%</p>		
334.8	339.5	Sericite-py altered. Buff-coloured, abundant diss fine + clump py.			
339.5	349.35	As per 326.2-334.8			
349.35	355.3	Sericite-qtz-py altered streaky yellow-grey, but faint below 349.5. Refer 44724 @ 343.5 CMS 83/9/20	<p>Mostly featureless but grey like at 345.2 but the coming pyrites below 348 with some areas of del. f. pyrites and pale v. faintly f. phytic lava type as in</p>		
355.3	360.3	Sericitised: green-grey to brown with dark green chlorite-stained sericite after feldspars.			
360.3	366.8	Basalt (andesite) dyke green, mg.			
366.8	371.7	Sericite-qtz-py altered Yellow-grey, massive. Abundant fine to ultrafine py	<p>Very but in "breccia" f. - very strong alteration is about 25m. Considered part of unit below</p>		
371.7	375.4	Strongly sericitic-qtz-py altered: pale yellow, sheared.			
375.4	376.0	Basalt dyke - green, mg			

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DEPTH		ROCK DESCRIPTION	MINERALISATION	CORE REC'D	
From	To			Run	Short
376.0	377.7	Basalt dyke.			
380.7	391.4	Strong sericite-qtz-py alteration. Streaky yellow-grey. Abundant diss py. Short lengths of high py e.g. 383.0-386.2; 388.4-388.9 fine py zones: 40% Refer 44725 @ 384.5 CMS 83/9/20			
421.9	457.5	Basalt dykes: 416.6-416.9; 418.1-418.5; 419.35-421.1; 421.75-423.6; 424.6-426.5; 430.2-433.1. Purple tint (?fluorite) present within siliceous domains. 427.0-429.7; 433.5-435.0.	Below 385 m. pt amygdaloidal pinkish grey lava in recognizable, probably primary, some of it with intense sil. py vein cutting down to about 392. Alteration is occurring (based in normal) thereafter probably, but still of secondary. In this unit alteration seems related to presence of strong vein. Any qtz and chlorite - qtz veinlets. Locally abundant, possibly. Euh. copper mineral. Pyrite probably, but still strong locally at end of hole. weak flow branching type of mineralisation of pt amygdaloid around 400-402 m. at 20-40° LAOC.		
		ACKNOWLEDGEMENTS: I offer my appreciation to those responsible for the design of the core sampling system and the positive time and my commiseration to those who may have sacrificed to work on it.			

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ELECTROLYTIC ZINC COMPANY OF ASIA LTD.

MINERAL RESOURCES DIVISION -- TASMANIA

DIAMOND DRILL CORE RECORD

HOLE No. HRP 246

SHEET No. 1.

PROJECT **BURGHAC E.L. 12/72 BOCD PROSPECT**  
 LOCALITY **Traverse 2**  
 OBJECTIVE **Across-strike traverse drilling of concealed qtz-sericite-py alteration zone.**  
 RESULT **Intersected dacite obsidian fragmental, host to strongest alteration 302.35-479.6. Less altered rocks eastwards to 10**

GRID CO-ORDS:  
 A.M.G. CO-ORDS: **383,116.8mE**  
**5,385,952.7mN**  
 COLLAR R.L.: **363.2**  
 COLLAR DIP: **-50°**  
 AZIMUTH: **105°**  
 TOTAL DEPTH: **525.0m**

HOLE SIZE: **HM 4m; HQ 36.5m;**  
**NQ 43.0; BQ 10**  
 CASING: **PVC to 240m**  
 COMMENCED: **7.7.83**  
 COMPLETED: **11.8.83**  
 LOGGED BY: **R.A. Sainty**

Depth (m)	Azimuth (° m.g.)	Dip	Depth (m)	Azimuth (° m.g.)	Dip
76	102	51°			
135	102	51°			
300	102	50°			
360	104	48.5°			
426	104	46°			
525	104.5	42.5°			

DEPTH		ROCK DESCRIPTION	MINERALISATION	CORE REC'D	
From	To			Run	Short
0	36	Glacial cover			
36.5	307.35	Unaltered felsic intermediate lavas (leuco-andosites), regionally silicified, and basalt dykes			
36.5	37.25	Basalt dykes			
37.25	38.2				
36.75	37.25				
38.2	155.1	Pink brown and green massive silicic lavas 124.5-137.4 Buff, weakly sericitised. In part, chlorite-stained sericite after feldspars 137.4-155.1 Pink silicic lava. 143.6-150.0 brecciation and infilling silicification 150.0-155.1 Entire rock veined by thin chlorite-qtz veinlets.	to 124.5 fs. physis lens. Early part mainly 120-124.5 brecciation with silicite & feldspars 124.5-137.4 zone of strong massive silicification with fine disseminated py. 2-10%. Rock vesicular fine cherty buff? 126-155.1 f.g. massive aphyric buff-pink grey lava. Generally fresh minor ac. py		
155.1	187.9	Basalt dyke			
187.9	239.45	Porphyritic massive silicic lava			
239.45	239.45	Fault (pug). Upper contact @ 40° c.s. Same structure as 247/242. Extended fault brecciation.	Approx similar to above 124.5 variable from grey to pale pink-grey, below 20 patchy ch etc ch. of fs physis.		
239.45	259.1	Grey-green to buff massive silicic lava. Mostly dark chlorite-stained sericitised feldspars. Lower contact marked by a fine webbing of ultrafine py 258.4-259.7, and silicification 258.75-259.1	fs physis lens below fault essentially fresh & phenocrysts altered dark green grey or buff ch. etc.		
259.1	271.2	Basalt dyke: dark green, mg, massive. Chilled margins: 259.1-259.75 fg, v dk green to black small amygdalae, fracturing, diffuse veins and veiling of ultrafine py. 267.7-271.2 fg v. dk green, diffuse veinlets and veiling of ultrafine py.			
271.2	302.35	Pink and buff massive silicic lavas. Pink lava with zones of weak alteration (buff + dk chlorite-stained sericitised feldspars), as follows 271.2-273; 274.9-276; 277.4-278.8; 297.2-298.1. Refer 44727 @ 298.4m CMS 83/9/20 3.95m above alteration contact. 300.2-302.35 Strong chloritisation above contact with altered dacitic glassy lavas.	As described, variable from pink (py. & ch) to grey with "chlorite stained" altered feldspars. Physis lens below. This looks suspic. like brecciation to see where it comes in, possibly about 291.5 m. Analysis supports neph. dyle Contact with Altered rocks below is knife sharp at 2 to core. Altered rock in core fs physis lens. not substantially altered to above lavas despite p. description at 304.5		
302.35	479.6	Strongly silicified-sericitised-pyritised dacite obsidian lava & lava fragmentals A strongly bleached and altered sequence of grey moulded lava clast breccias and micobreccia (hyaloclastite) enveloping lobes of massive grey glassy lava. These grey lava fragmentals are typified by a selectively bleached obsidian framework and a selectively sericitised, sheared and ill-defined matrix. Pervasive fine to ultrafine py and pyritic qtz-sericite veinlets.			

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DEPTH		ROCK DESCRIPTION	MINERALISATION	CORE PECO	
From	To			Run	Short
		<p>Altered grey massive lava occurs in 0.1-0.5m lengths throughout unit and 356.0-361.0; 373.7-375.5 and 436.7-470.5 Refer in CMS 83/9/20 to 44728 @ 304.5, 44729 @ 328.5, 44731 @ 358.7; 44732 @ 377.2; 44733 @ 379.2; 44736 @ 459.4. Note: 44735 @ 427.3 misinterpreted as ignimbrite by CMS because it contains sheared pumice over a 5cm length in hole. Part of a 1.3m wide strongly sheared unit now interpreted as a sheared pumiceous flow margin between massive fragmental lavas.</p> <p>Interrupted by: Basalt dyke - green fg massive.</p>			
306.4	309.4				
316.55	319.45	<p>Altered basalt dykes commonly associated with narrow breccia zones. These are fine-grained sometimes amygdaloidal pale yellow-grey, entirely qtz-sericite-py with very abundant py as diffuse veinlets, clumps and bands, particularly near margins. Some have only their margins bleached and sericitised (418.3-420.07, 431.65-433.0, 434.75-435.9), dk green cores (basaltic) remain. Refer 44730 @ 341.9 in CMS 83/9/20 - misidentified.</p>			
324.75	325.9				
341.63	342.8				
343.06	343.75				
418.3	420.07				
428.35	428.55				
431.65	433.0				
434.75	435.9				
406.4	416.35	<p>Less strongly bleached and altered andesitic obsidian. Green-grey with dark green chlorite-stained sericitised feldspars. Py as diss blebs often nucleated on phenocrysts, as short veinlets and veiling ultrafine py. Refer 44734 @ 412.0 in CMS 83/9/20</p>			
479.6	525.0	<p>Sericite-altered sheared and brecciated lavas and rhyolitic ignimbrite.</p>			
479.6	482.1	<p>Less altered lava breccia. Flesh-pink-orange lava fragments within a grey sericitic pyritic matrix. Gradational to unit below.</p>			
482.1	488.6	<p>Altered strongly sheared andesitic lava. Dark greyish-yellow.</p>			
488.6	498.65	<p>Altered rhyolitic ignimbrite. Matrix supported pseudo-fragmental texture. Grey (to pink-orange) pyritic porphyritic lava? fragments to a few cm in size within a yellow sericitised matrix. Fragments have distinct to only diffuse edges, and sometimes fragment textures can be traced into the matrix. This suggests overprinting of a qtz-py alteration by a later <u>non-pyritic sericitic alteration phase</u>. Some of the coarse fragmental texture may be due only to this strong differential alteration effect. Refer 44737 @ 491.4 in CMS 83/9/20</p>	<p>More permineralised altered variant of above.</p> <p>looks pretty similar to those two units. Eventually degenerate into veined parts, altered Qtz amygd - of pyritic pink lava. Fragmental texture may be due to incomplete permineralisation.</p>		
498.6	525.0	<p>Altered, silicified, sheared lava or ignimbrite. Yellow-grey to pale green. FAULTS (broken-pulverised core); 503-507.9; 515.7-517.7; 523-525.0.</p>			

01-079

849080

080

DEPTH		ROCK DESCRIPTION	MINERALISATION		CORE REC'D	
From	To		Run	Start		
0	0.0	Glacial Cover				
0.0	153.55	Strongly silicified-sericitised-pyritised dacite obsidian lava fragmentals A strongly bleached and altered sequence of grey moulded lava clast breccias and microbreccia (hyaloclastite) enveloping lobes of massive grey glassy lavas. The lava fragmentals dominate and are typified by a selectively silicified felsitic obsidian framework and a selectively sericitised, sheared and ill-defined matrix. Pervasive fine to ultrafine py and pyritic qtz-sericite veinlets. Massive grey altered lavas occur as follows: 71.1-71.9 Grey altered massive flowbanded lava 78.2-80.2 Grey strongly altered relatively massive lava - veined and partially brecciated. Py veined.				
57.2	60.1	This sequence is interrupted by: Altered pyritic basalt dyke bleached to pale cream and yellow, diffuse pyrite vein webbing throughout.				
69.35	70.5	Altered basalt dyke bleached pale green to white, non-pyritic, small amygdaloids.				
88.2	101.3	Little-altered feldsparphyric leuco-andesite lava. Pale green to cream, flowbanded and flow brecciated. Sporadic strong massive py veining in narrow grey altered zones. Fine chlorite qtz webbing.				
101.1	108.5	Unaltered but pyritic pale pink-brown silicic massive lava. Very fg dk py within and halting fractures.				
108.5	110.1	Basalt dyke. Bleached margin.				
125.0	126.8	Basalt dyke. Amygdaloidal. Bleached margin.				
153.55	382.22	Moderately to weakly altered leuco-andesite lavas and lesser ignimbrites. Alteration dominated by sericitisation-pyritisation, decreasing down-hole.				
153.55	172.8	Grey-pink weakly altered but pyritic lava breccias and sheared lavas.				
157.95	159.0	Basalt dyke. Dark green to pale brown (bleached), amygdaloidal				
161.7	163.2	Porphyritic sheared flow margin or top.				
172.5	173.2	Basalt dyke				
173.8	176.2	Basalt dyke				

849081

ELECTROLYTIC ZINC COMPANY OF ASIA LTD.

## DIAMOND DRILL CORE RECORD

MOLE No. BHP 247

MINERAL RESOURCES DIVISION - TASMANIA

SHEET No. 1.

PROJECT BULGORA E.L. 12/72 BOCO PROSPECT

LOCALITY Inverse Z

OBJECTIVE Across-strike traverse drilling of concealed qtz-sericite-py alteration zone.

RESULT Extended coverage east of BOP 246 into weaker alteration.

Evidence for steep easterly dip and 100m thickness of dacite obsidian host.

GRID CO-ORDS:

A.M.G. CO-ORDS: 383,276.8mE

5,385,941.3mN

COLLAR R.L.: 374.4

COLLAR DIP: -45°

AZIMUTH: 105°

TOTAL DEPTH: 382.2m

MOLE SIZE: HQ 35m; NO 56m;

CASING: BQ 10

PVC to 10

COMMENCED: 15.8.83

COMPLETED: 1.9.83

LOGGED BY: R.A. Sainty

Depth (m)

100

220

382

Azimuth (° m.g.)

108°

106°

109°

Dip

42°

42°

40°

Depth (m)

Azimuth (° m.g.)

Dip

DEPTH		ROCK DESCRIPTION	MINERALISATION	CORE REC'D	
From	To			Run	Short
176.2	182.5	Grey-green moderate qtz-sericite altered, no py, in sheared lava breccia			
182.5	185.7	Pink unaltered but pyritic lava, tiny amygdalae			
185.7	192.8	Grey-green strong qtz-sericite alteration, no py, in lava breccia. Qtz veined			
192.8	259.5	Buff (bleached) - brown flow banded silicic lavas and lava breccias. Py veining and elsewhere qtz or chlorite veining is locally prominent. Unit is strongly silicified			
259.5	302.4	Green-grey moderate sericite-py altered andesitic ignimbrite. Crystal-tuff with occasional centimetric lava fragments.			
265.3	285.9	Basalt dyke			
302.4	308.9	Pink to buff unaltered feldsparphyric leuco-andesite lava. Qtz veined.			
308.9	310.6	Interflow contact zone. Sheared, brecciated, fragmental in part. Minor pumice.			
310.6	322.0	Green-grey moderate sericite-py altered to lesser buff feldsparphyric leuco-andesite lava. Abundant py as fine diss and veinlets. Feldspars visible throughout.			
322.0	324.4	Brown-grey highly pyritised fragmental. Abundant fine diss py in matrix-supported fragmental rock. Pink to buff clasts.			
324.4	342.0	Green-brown weakly altered leuco-andesite lava. Silica webbing, with py in dk green moderate sericite-altered intervals. I.e. as per 259.4-302.4 and 310.6-322.0 in sporadic intervals only. faintly flow banded, flow brecciated. Some intervals are strongly silicified.			
342.0	365.2	Pink unaltered silicic leuco-andesite lava. Narrow zones of yellow to green-grey moderate sericite, weakly pyritic alteration 364.4-365.2 Grey, pyritic-matrixed fragmental. Sericitised and strongly pyritised.			

849082

181

082

DEPTH		ROCK DESCRIPTION	MINERALISATION			CORE REC'D	
From	To		Run	Shot	Run	Shot	
0	90.5	Glacial cover.					
90.5	189.2	Unaltered to weakly altered felsic intermediate lavas (leuco-andesites) regionally silicified and basalt intrusives Alteration (sericitic:chloritic) increasing down-hole.					
90.5	145.2	Basalt dyke					
145.2	221.0	Pale pink-orange, massive silicic lava					
221.0	228.4	Intensely silicified zone above fault, below					
228.4	228.5	FAULT (pug)					
228.5	248.0	Pale pink-orange, massive silicic lava					
248.0	288.0	As above 228.55-248.0, with much patchy green chloritic alteration.					
288.0	344.5	Weakly altered (sericite+chlorite). Green chlorite-stained sericitised feldspars.					
344.5	353.8	Basalt dyke					
353.8	376.5	Weakly altered (sericite+chlorite), as above, 288.0-344.5					
376.0	377.0	Strongly silicified + pyritised fragments.					
377.0	388.2	Grey-brown, weakly silicified, massive porphyritic lava.					
388.2	431.5	Moderately to strongly altered felsic intermediate lavas and fragmentals (leuco-andesites), with basalt intrusives.					
388.2	396.7	Moderately silicified-sericitised, strongly pyritised. Pale grey. Basalt dykes: 389.3-390.6; 391.5-391.8; 394.9-395.4.					
396.7	400.8	Weakly silicified massive porphyritic lava, brown with patchy green.					
400.8	402.0	Moderately sericitised+chloritised					
402.0	404.1	Strongly silicified, sericitised, pyritic, pale grey					
404.1	410.7	Moderately sericitised+pyritic; scattered wispy + dis py, grey-green, with chlorite-stained sericitised feldspars.					

*silicified zone with and, base py.*

849083

ELECTROLYTIC ZINC COMPANY OF ASIA LTD.

MINERAL RESOURCES DIVISION - TASMANIA

DIAMOND DRILL CORE RECORD

HOLE No. HQ 248

SHEET No. 1.

PROJECT: BUN GORJAC F.L. 12/72 - BOCO PROSPECT

LOCALITY: Traverse 3

OBJECTIVE: Across-strike traverse drilling of concealed quartz-sericite-pyrite alteration zone.

RESULT: Did not intersect the oxide obsidian fragmental host horizon. Saw weaker 'marginal' alteration.

GRID CO-ORDS:

A.M.G. CO-ORDS: 383,698.4mE

5,386,378.6mN

COLLAR R.L.: 376.3

COLLAR DIP: -50°

AZIMUTH: 285°

TOTAL DEPTH: 577.5m

HOLESIZE: HW 7.0; HQ 21.0;  
NQ 123.5; BQ 10.

CASING: PVC to 10

COMMENCED: 5. 9.83

COMPLETED: 24.11.83

LOGGED BY: R.A. Sainly

Depth (m)	Azimuth (° mag)	Dip (°)	Depth (m)	Azimuth (° mag)	Dip (°)
130	289	45°			
217	288°	45.5°			
325	289°	44°			
406	291°	40.5°			
490	294°	37°			
574	296°	31°			

DEPTH		ROCK DESCRIPTION	MINERALISATION	CORE REC'D	
From	To			Run	Short
410.7	431.35	Moderately sericitised+chloritised, some areas (eg 418.3-421.0) overprinted by grey silicification, producing a pseudo lithic texture			
431.35	577.5	Unaltered felsic intermediate lavas (leuco-andesites), regionally silicified, and basalt intrusives. Sporadic strong alteration.			
431.35	434.0	Basalt dyke.			
434.0	435.65	Pale brown massive silicic lava			
435.65	437.6	Basalt dyke (also 440.8-441.2; 442.7-443.2, intervening areas, as above)			
443.2	450.4	Strongly silicified and bleached massive lava. Minor py as narrow fracture fill and clots. 446.75-446.9: Intense py-filled breccia matrix - fluid channelway. 0.1m wide basalt dyke on down hole contact.			
450.4	453.55	Basalt dyke			
453.65	474.2	Pale (bleached) brown massive silicic lava. V little py.			
474.2	490.3	Blotchy pink massive silicic lavas.			
490.3	499.9	Weakly to strongly silicified pink massive lava.			
499.9	506.1	Strongly altered (sericitised+silicified, no py), pale green			
506.1	511.9	Massive silicic lava			
511.9	514.0	Basalt dyke			
514.0	517.5	Silicified+pyritised, fine py webbing in bleached, pale brown to pale pink lava - producing a pseudo fragmental texture.			
517.5	518.3	Sericitised+pyritised (diss py). Pale yellow-green and pink.			
518.3	519.3	Basalt dyke			
519.3	520.9	Sericitised+py-webbed (in breccia zones-fluid channelway). Bright green scattered ?fuchsite.			
520.9	526.1	Brown porphyritic massive silicic lava. Some diss py			
526.1	526.6	Basalt dyke			
526.6	577.5	Brown and green weakly to strongly silicified massive lava.			

849084

083

08A

PROJECT LOCALITY OBJECTIVE RESULT	HULGONAC E.L. 12/72 - WOCO PROSPECT Traverse # Across-strike traverse drilling of concealed qtz-sericite-pyrite alteration zone. Failure. Drilled entirely down-dip along the irregular contact between two altered lava units.	GRID CO-ORDS: 383,426.6mE A.M.G. CO-ORDS: 5,386,898.0mN COLLAR R.L.: 399.6m COLLAR DIP: -50° AZIMUTH: 105° AMG TOTAL DEPTH: 358.0m	HOLE SIZE: HW 6.0; HQ 27.0 NO. 58.5; BQ TD (NO 25.5-58.5) CASING: PVC to TD COMMENCED: 26.11.83 COMPLETED: 14.12.83 LOGGED BY: R.A. Sainy	Depth (m)	Azimuth (° m.g.)	Dip	Depth (m)	Azimuth (° m.g.)	Dip
				80		46°			
				170	108°	47°			
				230	109°	45.5°			
				290	108°	44°			
				350	108.5°	44°			

DEPTH		ROCK DESCRIPTION	MINERALISATION	CORE REC'D	
From	To			Run	Short
0	47.0	Glacial Cover			
47.0	298.4	Two adjacent altered lava units in a moderately east-dipping stratigraphy: one moderately to strongly pyritic-altered obsidian (hyaloclastite-brecciated in part), the other only weakly altered but pyritic lava. Drilled across-dip by BBP 251 at 97.85-109.9 and 109.9-137.2, respectively			
47.0	52.0	Yellow, Fe <sub>2</sub> O <sub>3</sub> stained and veined weathered ex-pyritic-altered rock			
52.0	57.0	FAULT: pug, and broken highly leached pyritic-altered fragmental with milli- to centimetric clasts.			
57.0	67.4	Green-grey massive flowbanded lava, hyaloclastite-brecciated in part. Thin py veinlets.			
67.4	72.7	FAULT: pug, broken highly leached pyritic-altered			
72.7	104.25	Leached weakly altered but abundantly pyritic massive lava. Ex-feldsparphyric textured, occasional resorbed centimetric xenoliths. Disseminated py Same unit as 109.9-137.2 in BBP 251	<p>OK. OK amygdaloidal flow fabric somewhat vertical (i.e. sub-parallel to strike) to the BBP Pyrite 2-3%.</p> <p>Textural (physical) affinity to dacite (109.9-104.25) but extensively leached pre alteration, especially toward lower contact. Pyrite 2-3%.</p> <p>Obsidian similarity to BBP 251 units but amygdaloid bodies rather rare and less well developed. Breccia dykes could be interbeds of BBP 251 graded turbidite. Pyrite variable 1-2%.</p> <p>OK Characteristic of amygdaloids Alteration silicification intensity variable (cf samples) Pyrite generally 2-3% disseminated sometimes forming amygdaloids.</p> <p>Tray 17 213.2-223 is MISSING.</p>		
104.25	110.8	Broken zone including fault (below) mostly pyritic massive to fragmental lava			
	107	FAULT: pug over 20cm within broad broken zone (above)			
110.8	122.4	Pale grey, pyritic massive to fragmental lava (hyaloclastite-brecciated)			
122.4	146.9	Cream, strongly altered but weakly pyritic massive lava. Intervals of abundant py. Incipiently net-veined. Grey altered zones sometimes appear to be shell-like, surrounding cores of cream massive lava. Same unit(s) as (56.5-109.9) in BBP 251. Sporadic multilitic breccia dykes, 125.4-125.8, 131.6-131.9 (grey pyritic-altered), 134.55-136.6 (grey pyritic-altered in part), at 143.0, 144.05-144.65 (grey pyritic-altered).			
146.9	199.0	Epiclastic multilitic breccia. Pale grey pyritic-altered matrix, milli- to centimetric clasts.			
199.0	208.4	Pale pink-orange, little-altered but abundantly pyritic massive lava. Abundant feldspars, amygdaloidal. Slightly sheared. Same unit as 109.9-137.2 in BBP 251.			
	154.2-154.35	Highly pyritic, grey altered breccia dyke.			
	159.6-169.7	Highly leached, above fault, below			
	169.7-173.0	FAULT: pug and granulated rock. Fault contains pale green weakly to moderately pyritic massive and brecciated lava.			
	179.2-187.0	FAULT: granulated rock, minor pug			
	195.2-195.65	Multilitic breccia dyke, milli- to centimetric clasts.			
208.4	215.35	Cream to grey altered massive dacite obsidian. Slightly sheared. Same unit at 97.85-109.9 in BBP 251			

849085

085

DEPTH		ROCK DESCRIPTION	MINERALISATION	CORE REC'D	
From	To			Run	Short
		208.4-209.1 Lava breccia 214.2-215.35 Multilithic breccia dyke			
215.35	279.1	Cream to pale grey pyritic altered lava, hyaloclastite-brecciated in part. Generally only weakly diss py but locally strongly pyritic (in veinlets and diss) in areas of hyaloclastite granulation. Much py replacing feldspars. Towards base of interval (269.0-276.0) there are sporadic intervals of strongly sheared 'quartz-eye' texture developed with sericite-wisping and more abundant pyrite. These intervals represent zones of hyaloclastite brecciation. The longest of these are 262.0-265.1 and 270.0-273.0. The intervening massive lava intervals display incipient 'crazy' veining (similar to that in 56.5-97.85 of BBP 251).	rather variable with types intermediate silicification also pyrite range 1-20%		
		227.75-227.9 FAULT? pug within zone of broken rock 226-231.7 239.1-239.6 Basalt dyke with 15cm-wide pug on upper contact. 276.0-279.1 Basalt dyke with 90cm wide pug on lower contact.			
279.1	286.0	Pale grey to grey pyritic altered massive obsidian. Diss py. Sporadic later-stage cream-haloed veinlets. Same unit as 97.35-109.9 in BBP 251.	Very siliceous, f.g. massive grey with irregular dissolution averaging 1-2%. Rounded ch. pyrite		
286.0	298.4	Greyish-brown very weakly altered but pyritic feldsparphyric lava. Same unit as 109.9-137.2 in BBP 251 293.0-293.1 FAULT (pug) within zone of broken rock 292.6-304.3	OK. Generally uniformly strongly silicified, grey. Sample 293.1 is relatively good at lower end with dissolution 1-2%. Py. Contact with above rather vague. Above unit could be more silicified equivalent?		
298.4	358.0	Pink to orange unaltered but silicified aphyric lava TD Strongly silicified 298.4-318.0 298.4-298.6 FAULT (pug) with zone of broken rock 292.6-304.3	Fault contact at 298.4-298.6 makes very sharp contact between intensely altered pyritic with above to essentially unaltered below. Edge of fault kerf is about 300m the core is highly fractured below kerf is relatively solid beyond 300. Strong evidence for post-alteration fault with of alt. zone. TRAYS 25+26 Pyrite in thin rock as dis. ch. generally not silicified		

weak flow banding at 296, 300 with at 298.4

849086

088

PROJECT: UIR GORAC E.L. 12/72 BOCU PROSPECT	GRID CO ORDS: 383,551.6mE 5,386,826.7mN	HOLE SIZE: HW 9.0; HQ 18.5; NQ 33.0; BQ 10	Depth (m): 50, 100, 200, 253, 303, 369	Azimuth (° mag): 280°, 281°, 283.5°, 281.5°, 283°, 285°	Dip: 55.5°, 55°, 54°, 53°, 50°, 48°
LOCALITY: Inverese 4	A.M.G. CO-ORDS: 399.0	CASING: PVC to 10	COMMENCED: 20.12.83	COMPLETED: 26.1.84	LOGGED BY: R.A. Sainty
OBJECTIVE: Across-strike traverse drilling of concealed quartz-sericite-py alteration zone.	COLLAR R.L.: -60°	AZIMUTH: 285°	TOTAL DEPTH: 379.5m		
RESULT: Altered intercalated lavas and epiclastic lithic breccias with an 11m pyritic ash sediment. True width 300m encountered.					

DEPTH		ROCK DESCRIPTION	MINERALISATION	CORE PEC D	
From	To			Run	Split
0	27	glacial cover.			
27.0	323.5	Moderately to strongly silicified - sericitised - pyritised sequence of dacite obsidian lavas, coarse epiclastic debris slide lithic breccias with pyritic pelitic ash, and ignimbrite.	Quartz "net" scales apparent, possibly when coarse clasts fragmented toward lower contact.		
37.0	56.5	Graded cream pumiceous lithic breccia. Strongly altered, no py. Angular to rounded silicified obsidian and angular sericitised shard-like compressed pumice fragments, milli-to centimetric; graded and well sorted, in fine qtz matrix. Crudely layered to poorly bedded. Multiple size graded intervals, some grading down-hole. Finer-grained, laminated 30.5-31.3. No py. Refer 44738 @ 50.8m C.M.S. 84/3/7	crude layering/compression - 50° WNW structure compressed generally 20-50° WNW		
56.5	97.85	White dacite obsidian, intensely veined. Strongly altered, pyritic. White massive obsidian dominated by intense development of thin (to 1mm) folded and stressed veins of clear quartz and pyrite. (Devitrification or quench-induced cracking?) Refer 44779 @ 92.5m C.M.S. 84/3/7 Intense pyritisation: 83.8-84.0 - two massive vns 3-5cm; 85.2-85.7 - massive-semi massive py vns and clumps; 87.45-89.25 - fine net veining; 91.15-92.0 - fine wispy to semi-massive clump and veinlet py; 93.5 3cm massive py vein; 95.5-95.9 strong net veining.  This unit is interrupted by thin multilithic/pumice intervals (?representing interflow or interlobe gravelly slide deposits and/or flow marginal breccias), as follows: 67.4-69.7 pumiceous lithic, possibly graded down hole Not quarried. compact - 50° WNW 67.45-67.6 gravelly multilithic 70.3-70.4 graded turbidite interval: coarse sand to laminated silt. Graded up hole (i.e. eastwards) 44749 @ 70.3 in CMS 84/3/45: "graded pumiceous lithic tuff" 75.1-87.45 pumiceous lithic 87.2-89.2 pumiceous lithic, possibly graded down hole (lithic rich base, finer pelitic ash-like top) No 44750 @ 89.2 in CMS 84/3/45 96.4-97.0 pumiceous multilithic This unit also features intervals of cream massive, non-veined lava towards the base, as follows 94.1-94.5; 94.75-95.0; 95.17-95.5, 95.9-96.4	94.0-80.2 Some of broken/milled/shredded ore (fault breccia?) unconsolidated. No change in lithology above/below.		
97.85	109.9	cream to grey massive dacite obsidian, disa py. This unit is probably continuous from that above. Interrupted by 100.4 0.5m thick pumiceous lithic 101.3-101.9 pumiceous multilithic, graded down hole (i.e. westwards) 44751 @ 101.5 in CMS 84/3/45 "reworked tuff" 103.8-103.9 pumiceous lithic, possibly graded down hole (lithic rich base, less-packed and matrix-rich top) 44752 @ 103.8 in CMS 84/3/45  (MISSING)	mining from tray? $\nabla \nabla \nabla \nabla$ CMS into up: megacrysts xenoliths & (graded pumiceous) lithic tuff.  OK, looks similar to "non-veined" lava intervals just above.  partly true band of finer sandy fill at lower end, remainder in same - less sized.		

849087

087

DEPTH		ROCK DESCRIPTION	MINERALISATION	CORE REC'D	
From	To			Run	Short
		107.7-108.7 white, veined obsidian, pyritic 108.2-108.5 multilithic, graded up hole (i.e eastwards) from coarse sand and pebbles to a 'cherty' grey pelitic ash at top. Sharp contacts at high angle to core.	Similar to... True contact at 65' interval		
102.9	137.2	Pale cream to pale orange-pink feldsparphyric lava (leuco-andesite). Weakly altered, sericitised, quartz-amygdaloidal. Leached in part. Contains occasional xenoliths of relatively pyritic grey rock with rounded (?resorbed) margins.	Mainly creamy, pink variety (faded) in core. Generally with faint planar fabric defined by flattened amygdalae, generally 40-50 to core.		
124.5	137.2	143.5 Grey pyritic epiclastic lithic breccia. Distinct semi-rounded multilithic fragments with some relict colours in a grey altered matrix. Matrix-supported. Most fragments are less than 2cm, (mean less than 1cm), but a few are 5-10cm, especially towards top of interval. Disseminated and small clump py. Lower contact is sharp. 152.0-152.9 Basalt dyke: pale green, oxidised, small vesicles. Traces fresh py on fracture.	Not necessarily epiclastic, contains some pumice frags. Not bedded.		
143.6	180.7	180.7-180.7 Pale grey massive dacite obsidian; sparsely pyritic 44740 @ 145.2 in CMS 84/3/7 This unit is interrupted by 149.65-149.8 Brecciated or granulated: round fragments in sheared matrix 153.3-153.4 Brecciated flow margin?; ?pumice present. 157.4-157.6 Fragmental: angular fragments less than 1 to 2 cm in grey silicified matrix. 166.7-167.3 167.85-168.05 170.6-171.3 Basalt dykes: pale green, oxidised, vesicular at contacts. Small areas of brecciation of surrounding rock are associated with these dykes e.g. 167.4-167.85; 168.05-168.2 and 171.3-171.8. 171.8-171.9 Moulded lava clast fragmental. 177.25-180.7 Basalt dyke: pale green, oxidised, vesicular	These zones of brecciation are volcanic, suggesting that magma which has selectively intruded along high pyroclastic neck or flow margin?		
180.7	219.9	180.7-219.9 Grey pyritic flow banded to flow brecciated dacite obsidian. Disseminated py and stringer py along flow bands and around moulded lava clasts. 44741 @ 196.0 and 44742 @ 209.0 in CMS 84/3/7 Autobrecciation well displayed at 181.6, 191.3 and 193.3 203.5-204.15; 204.55-205.95: multilithic breccia. Possible flow marginal breccia.			
219.9	227.0	219.9-227.0 Grey pyritic epiclastic lithic breccia. Multilithic lava and pumice fragments from less than 1 to 5cm, but occasional 10-12cm. Very large clast - 0.65m - of grey massive lava at 218.8-219.45. Some contained pumice fragments are flattened, others are not. At 222.7 and 222.9 white obsidian fragments feature thin platy vein style similar to, but less intense than, that in the white dacite brecciation unit 56.5-97.85, suggesting derivation from that unit.	Small dykes 238-240.3 240.4-242.5		
227.0	231.05	227.0-231.05 Grey-cream pyritic massive dacite obsidian. Feebly shear-laminated.	at 229m flow? laminated to 60' core		
231.05	242.55	231.05-242.55 Grey pyritic epiclastic, lithic breccia. Abundant multilithic fragments (different lavas of varying alteration and pyritisation, grey pelitic ash, and pyritised pumice in a range of collapse) from less than 1 to 5cm, but occasional to 7cm. Very large clast - 0.5m - of pink, pyritic brecciated lava at 256.75-257.25. At 257.8-260.8 there are abundant dark (sericitised pyritised) uncollapsed pumice fragments in addition to large lava and 'chert' fragments to 5cm. At 260.1 a 7cm fragment of faintly laminated pelitic ash contains pale up and lesser up in a 2cm-wide clear qtz microfracture vein. 44743 @ 251.7 and 44744 @ 259.0 in CMS 84/3/7	Broadly similar to 219.9-227.0 240-242.5 core partly broken, milled, possible fault breccia.		

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DEPTH		ROCK DESCRIPTION	MINERALISATION	CORE REC'D	
From	To			Run	Short
262.35	273.2	<p>Grey pyritic pelitic vitric ash sediment Massive to laminated silty to psammitic vitric ash; much soft-sediment slumping, producing a non-uniform bedding angle. Abundant py veining and contorted semi-massive py stringers. The pyrite stringers occur within narrow layers and bands of darkened cherty-silicified ash and contain locally abundant colloform textures. Sometimes disseminated by parallels these distinct thin layers. 44745 @ 266.7; 44746 @ 269.7 and 44747 @ 271.3 in CMS 84/3/7</p> <p>At the up hole contact at 262.35, a possible scour and fill structure provides tentative west facing evidence: a 2cm deep x 2.5cm wide V-shaped projection of pelitic ash into the uphole lithic breccia is consistent with the pelitic ash having been deposited on top. At 272.35 a 5mm quartz vein contains fine gn and is rimmed by diss py. The lower contact at 273.2 with the lithic breccia is sharp but indistinct because of the uniform grey pyritic alteration colour.</p>	<p>Much of the semi massive pyrite occurs in "disturbed" zones between more massive cherty ash "blocks", suggest 1. m. bedded pyrite slumped and fragmented.</p> <p>Bedding traces vary from near parallel to about 90° to LAD obviously very disturbed. Sp. schistosity.</p> <p>Not necessarily so, could be coal casting / intrusion by underlying unconsolidated py ash deposit.</p> <p>good description</p>		
273.2	276.1	<p>Grey pyritic epiclastic lithic breccia Epiclastic lithic breccia similar to 231.05-262.35. A few large grey and pink lava clasts 5, 10, 12cm and a large pelitic ash clast more than 11cm. This ash clast is irregularly shaped in a manner suggestive of fragmentation whilst only semi-consolidated. (275.1 m) At 276.1 contact between epiclastic breccia and pelitic ash is sharp, at 50° to core.</p>			
276.1	276.35	<p>Grey pyritic pelitic ash sediment → could be a large fragment also.</p>			
276.35	276.45	Grey pyritic epiclastic lithic breccia			
276.45	276.95	Grey pyritic pelitic ash sediment.			
276.95	323.5	<p>Grey pyritic ignimbrite, abundant pyritised pumice. Abundant pink to white and carbonated feldspars in pale grey fine pyritic groundmass with less common pyritised and sericitised collapsed pumice fragments. Alteration gradually lessens down interval. Pumice fragments within the final few metres of this ignimbrite flow unit are larger and less flattened than pumice throughout the remainder of the unit. This may define inverse grading of larger pumice towards the top of a flow unit, which is a common feature of ignimbrites. A down hole, west facing is suggested.</p>	<p>Not really apparent. Facing evidence weak. Compaction foliation generally - 50-60° LAD</p>		
323.5	379.5	<p>Weakly altered ignimbrite and lava; non pyritic. A separate flow unit to that above (276.95-323.5). Alteration decreases rapidly down-interval.</p>	<p>Fine grained ash/crystal rich horizon at 341.6 - 342.0 m with bedding ~ 50° LAD</p> <p>A later variable unit also includes Sphynit at magdalenite lava and ignimbrite varieties, but generally thin and with Co. pyrite through some patches (355) of quartz strong cherty</p>		

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ELECTROLYTIC ZINC COMPANY OF ASIA LTD.

**DIAMOND DRILL CORE RECORD**

HOLE No. BBP 253

MINERAL RESOURCES DIVISION - TASMANIA

SHEET No. 1.

PROJECT: BULGORAC F.L. 12/72 BOCO PROSPECT  
 LOCALITY: Traverse 5  
 OBJECTIVE: Across-strike traverse drilling of concealed qtz-sericite-py alteration zone and UIEM anomaly.  
 RESULT: No alteration or obsidian fragmental host intersected. Hole abandoned prematurely due to drill string jam.

GRID CO-ORDS: 383,459.8mE  
 A.M.G. CO-ORDS: 5,385,578.8mN  
 COLLAR H.L.: 309.8  
 COLLAR DIP: -55°  
 AZIMUTH: 282° AMG  
 TOTAL DEPTH: 470.0m

HOLE SIZE: HW 3; HQ 48;  
 nq 99; BQ TD  
 CASING: PVC to TD  
 COMMENCED: 2.2.84  
 COMPLETED: 17.2.84  
 LOGGED BY: R.A. Seinty

Depth (m)	Azimuth (°m.g.)	Dip	Depth (m)	Azimuth (°m.g.)	Dip
107	281	53°			
136	-	51°			
185	286°	50°			
264	287.5°	47.5°			
Surveys below 264 not done due to drill string failure.					

DEPTH		ROCK DESCRIPTION	MINERALISATION	CORE REC'D	
From	To			Run	Short
0	49.0	Glacial cover			
49.0	470.0	Unaltered pink to brown felsic intermediate (leuco-andesite) lavas and ignimbrites, regionally silicified. Uniform appearance. Basaltic intrusives: 133.8-180.8 (doleritic) and throughout 228.5-250.2.			
		ID			

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PROJECT: E.L. 12/72 BULGOBAC BOCO PROSPECT LOCALITY: Traverse 4A OBJECTIVE: To test the pyritic cherty ash sediment 200m N of BDP 251; to test the northern part of a UTEM anomaly. RESULT: An entirely different sequence to that in BDP 251. Sediment horizon not found. Strong alteration hosted by massive obsidian.	GRID CO-ORDS: 383,728.6mE A.M.G. CO-ORDS: 5,386,970.3mN COLLAR R.L.: 395.7 COLLAR DIP: 50° AZIMUTH: 285° AMG TOTAL DEPTH: 439.5m	HOLE SIZE: HW 13.5; HQ 53; CASING: NQ 117; HQ TD COMMENCED: 2.3.84 COMPLETED: 7.5.84 LOGGED BY: R.A. Sainty	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>Depth (m)</th> <th>Azimuth (° m.g.)</th> <th>Dip °</th> </tr> <tr> <td>236</td> <td>280</td> <td>40</td> </tr> <tr> <td>287</td> <td>278</td> <td>39</td> </tr> <tr> <td>338</td> <td>276</td> <td>37</td> </tr> <tr> <td>389</td> <td>275</td> <td>36</td> </tr> <tr> <td>439.5</td> <td>274</td> <td>34</td> </tr> </table>	Depth (m)	Azimuth (° m.g.)	Dip °	236	280	40	287	278	39	338	276	37	389	275	36	439.5	274	34	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>Depth (m)</th> <th>Azimuth (° m.g.)</th> <th>Dip</th> </tr> <tr> <td>0-236m</td> <td></td> <td>no surveys because camera jammed in rods</td> </tr> </table>	Depth (m)	Azimuth (° m.g.)	Dip	0-236m		no surveys because camera jammed in rods
Depth (m)	Azimuth (° m.g.)	Dip °																										
236	280	40																										
287	278	39																										
338	276	37																										
389	275	36																										
439.5	274	34																										
Depth (m)	Azimuth (° m.g.)	Dip																										
0-236m		no surveys because camera jammed in rods																										

DEPTH		ROCK DESCRIPTION	MINERALISATION	CORE REC'D	
From	To			Run	Short
0	117.0	Glacial cover			
117.0	333.3	Strongly silicified-sericitised-pyritised dacite obsidian lava and lava fragmentals.			
117.0	171.5	Pale grey pyritic massive obsidian. Faintly flow banded in part. Py concentrated in 1-3mm round spots (ex phenocrysts?) evenly disseminated throughout. Occasional distinct thin intervals of multilithic breccia (= ?explosion breccia dykes) e.g. 125.2-125.5 multilithic lava clasts, subangular to rounded 1-2cm max. 144.8 5cm thick multilithic breccia, 1-2cm max size 151.8-151.9 multilithic breccia			
171.5	181.5	Pale grey pyritic flow banded obsidian. Relatively chaotic appearance caused by patchy differential white silicification vs sericitisation along flow bands. Upper contact is sharp, lower contact obscured by fault below.	<p>Could this be incipient cleavage formation?          Seams about core not mineralised from angle 20-30° in 184.6m</p> <p>&gt; Very strongly developed in 181.2-189.4 which Sainty calls fault zone. OK, could be zone of ductile strain &amp; cleavage which eventually yielded along fault. Note overall sin. country and low angle shear planes in 184.6m.</p>		
177.4	177.4	Fault (pug) Minor bright green tuchsite.			
181.5	187.2	Fault (pug and broken core; includes sheared dark qtz+py veins)			
187.2	189.4	?Dyke of altered pale khaki to pale pink lava. Abundant py as elongate semi-massive clumps and veinlets. Final 0.2m is entirely bleached, to white fg quartz + dis py crystals.			
189.4	193.0	Pale grey, weakly pyritic massive obsidian. Similar to 117.0-171.5 above. Py as round clots. <span style="float: right;">OK</span>			
193.0	197	Fault (pug and pulverised core) <span style="float: right;">OK</span>			
197	196	Pale grey, weakly pyritic flow banded obsidian. Chaotic appearance due to differential strong silicification similar to 171.5-181.5, above. <span style="float: right;">OK</span>			
196	205.5	Pale grey weakly pyritic massive obsidian. Uniform textured. <span style="float: right;">OK</span>			
203.0	208.3	Fault zone: pug 205.5-208.3 <span style="float: right;">Very puggy!</span>			
208.3	286.2	Dark grey pyritic massive obsidian. Abundant diss py. Abundant pale yellow sericite wisps produce a variable but pervasive mesh texture. Sporadic distinct thin intervals of multilithic lava clast breccia (= ?explosion breccia dykes). Sharp contacts, millimetre to centimetric lava clasts. 209.3-209.4; 212.7-212.8; 216.5-217.0; 219.2 (5cm); 222.0-222.3 224.65-225.0 238.1-242.3 Bleached zone of uniform cream colour. No py. Gradational upper and lower contacts. This zone contains 239.2-239.4; multilithic breccia dyke, millimetre to 6cm max, with sharp contacts. However the bleaching alteration is not centred on this breccia dyke. Matrix is grey.		<p>This bleached zone without fine sericitised mesh texture. Some relic feldspar phenocryst sites. Interp of glassy lam in rock. Most of what more or less pyritic similar to 184.6m, 185.5 with incipient 40° mineralised zone</p>	

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This can be observed in breccia at 209.4

DEPTH		ROCK DESCRIPTION	MINERALISATION	CORE REC'D	
From	To			Run	Short
		Further multilithic (?explosion breccia) dykes at 243.5 (5cm width, millimetric to 2cm max. clasts) at 258.9 (3cm width, millimetric clasts) and at 265.1-265.9 (millimetric to 6cm max clasts, mean 1cm) All sharp contacts.			
286.2	286.2	270.0-286.2 A gradual increase in intensity of pervasive yellow sericite webbing through the dark grey pyritic obsidian. This possibly reflects the incipient development of a fragmental hyaloclastite texture present through this interval. Discrete monolithic lava fragments are distinguishable within a sheared and sericite-webbed matrix. Lower contact @ 286.2 is sharp, probably a flow margin.	<p>Observation correct but I think interpretation could be related to shearing / cleavage and retrograde sericitization. See sample at 276 m sericite in altered stage overprinting pyritic matrix.</p> <p>335.3 - 348.5: pumiceous feldspar looks granitic. Call this altered pumiceous vitric tuff. ? Rather resembles pumiceous lithic agglomerate and pumiceous ignimbrite in lower part of BSP 251. Lower contact rather transitional.</p> <p>essentially sim. 287.5 - 294.5</p> <p>335.3 - 348.5 Green to pinkish grey f. pyritic lava. Generally massive, flow banded near 345.5, 40-55° LAOL</p> <p>348.5 - 349.3 Multilithic lapilli tuff.</p> <p>349.35 - 349.4 Pinkish grey f. pyritic with amygdaloidal phossericite brecciation, lapilli structure above about 355m.</p> <p>349.4 - 426.35 Pumiceous f. pyritic ignimbrite flow. Somewhat resembles 287.5 - 294.5. Flow/compaction angles variable 20-80° to LAOL. Multilithic zones as cavity describes. Discrete pyritic silicified clasts within suggest younging downhole?</p>		
286.2	290.5	Grey pyritic, faintly flow banded obsidian. Semi-pervasive massive grey siliceous-pyritic overprint on earlier foliated dark green sericite-pyrite alteration phase, producing a pseudo-pumice appearance. Pink silicified feldspars are present within the relict foliated sericite-pyritic domains.			
292.5	315.45	Dark grey pyritic obsidian, hyaloclastite-fragmental in part. Similar to 208.3-270.0 (excluding 238.1-242.3). Abundant py as millimetric diss clumps and spots, probably after phenocrysts. 309.4-310.0 ? Fault: broken core (py. relict sericite matrix) 314.1-314.5 Multilithic (?explosion breccia) dyke. Millimetric clasts, sharp contacts.			
315.45	335.3	Grey pyritic altered obsidian with relict white to pink silicified feldspars in a grey pyritic matrix. Some pseudo-pumice texture-relict elongate foliated dark green sericite-pyrite domains after semi-pervasive overprint by massive grey siliceous-pyritic alteration. Upper contact is gradational, lower contact is sharp (=flow margin)			
335.3	439.5	Weakly altered leuco-andesite lavas. Alteration comprises either weak to strong pyritisation in otherwise unaltered brown lavas or a chloritic-sericitic alteration with no py.			
335.3	395.0	Brown to green pyritic feldsparphyric lava. Upper contact is sharp and marked by a broken, orange silicified zone 0.15m long. Brown colour is dominant over green and contacts are clearly diffuse. Contains occasional resorbed centimetric xenoliths of highly pyritic lava. Pyrite content ranges from sparse disseminated clumps after selected feldspars (esp so in green intervals) to moderate as disc clumps, haloes around most phenocrysts and irregular stringers along fractures. From 349.35-367.5 py content increases to include a semi-pervasive veiling ultrafine py centred on abundant microfractures, in addition to diss clumps and stringers.			
		348.25-349.35 Multilithic (explosion breccia?) dyke, millimetric to 3cm clasts of varying colours and lavas.			
		349.35-367.5 Increase in py content as semi-pervasive ultrafine py (see note above) Quartz-filled amygdaloes become abundant below 359.5 and especially conspicuous within 377-389 but decrease gradually towards the flow contact @ 395.0 without providing good facing evidence.			
395.0	426.35	Green-grey chloritic-sericitic-siliceous altered lavas, little to no py. Py confined to grey siliceous overprint zones. Prominent and abundant white to brown feldspar relicts.			
		396.6-397.1 Multilithic (?explosion breccia) dyke. Millimetric to 5cm max. clasts. Sharp contacts.			
		406.0-406.5 As above, millimetric to 3 cm max. clasts. Sharp contacts.			
		Pyrite-sphalerite is locally abundant as clots and stringers e.g. 424.15-424.35: py; 426.0-426.3: py-sp			
436.15	439.5	Basalt dyke.			
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## 8.2. APPENDIX 2.

BOCO PROSPECT DIAMOND DRILL CORE GEOCHEMICAL

ANALYSES RECORDS

(E.Z. CO. LTD.)

LABORATORY		ANALABS, Coocce											A.A.S. at Coocce, others at Perth			GRID CO-ORDS: 383,370mE A.M.G. CO-ORDS: 5,380,130mN		COLLAR R.L.: 360 COLLAR DIP: -60°		AZIMUTH: 318° approx TOTAL DEPTH: 159.5m		
		ANALYTICAL TECHNIQUE																				
		AAS	AAS	AAS	AAS	AAS	AAS	AAS	AAS	XRF	XRF	XRF	AAS	Wet	Fire AAS							
		103	103	103	103	103	103	103	103	408	408	402	122	408	309							
DETECTION LIMIT		5	5	5	0.5	5	5	5	5	0.1%	0.1%	0.003	0.005	0.1%	0.005							
		Sample No.	Sample Type	From	To	Core Rec'd	Sample Length	METAL CONTENT (ppm unless specified)													XRF 401 Sr	XRF 401 Ba
		Cu	Pb	Zn	Ag	Fe	Co	Ni	Mn	SiO <sub>2</sub> %	CaO%	S %	Hg	Na <sub>2</sub> O%	Au							
58477	All Split	49.0	51.0		2.0	25	30	65	X	1.75%	25	185	65	76.7	0.04	2.00	0.040	0.05	0.035	10	380	
478		51.0	54.0		3.0	20	35	75	X	1.35%	30	140	50	77.2	0.04	1.15	0.030	0.11	0.024	8	360	
479		59.0	57.0		3.0	20	160	270	2.5	1.70%	30	200	90	75.8	0.04	1.30	0.030	0.28	0.017	15	650	
58480		57.0	60.0		3.0	20	80	130	2.0	1.60%	30	160	150	75.9	0.06	1.20	0.020	0.98	X	25	870	
481		60.0	62.5		2.5	20	45	160	1.5	1.50%	30	260	115	76.4	0.02	0.84	0.030	0.98	0.017	6	880	
482		62.5	65.3		2.8	20	65	375	1.5	1.65%	25	130	165	76.3	0.05	1.25	0.120	0.55	X	15	810	
483		65.3	68.3		3.0	25	65	145	2.5	1.80%	30	230	75	75.2	0.02	1.60	0.030	0.09	X	X	760	
484		68.3	71.3		3.0	20	50	430	2.0	1.80%	30	150	65	73.5	0.02	1.90	0.040	0.10	X	15	560	
485		71.3	74.3		3.0	30	50	800	1.5	2.45%	30	320	50	71.4	0.03	2.55	0.075	0.11	X	15	300	
486		74.3	77.3		3.0	30	40	215	5.0	1.45%	30	170	65	79.4	0.03	1.45	0.030	0.10	X	10	200	
487		77.3	80.3		3.0	20	40	360	X	1.50%	30	115	35	79.1	0.01	1.60	0.040	0.11	X	10	500	
488		80.3	83.3		3.0	20	40	220	8.0	1.55%	30	100	25	75.4	0.07	2.05	0.040	0.12	0.017	10	610	
489		83.3	86.3		3.0	20	35	125	4.0	1.30%	30	140	35	75.5	0.05	2.20	0.020	0.10	X	10	250	
58490		86.3	89.3		3.0	20	35	170	2.0	1.60%	35	95	20	75.3	0.07	1.85	0.020	0.12	X	15	510	
491		89.3	92.3		3.0	25	40	240	11.5	1.85%	30	190	45	74.9	0.06	2.15	0.030	0.13	X	20	540	
492		92.3	95.3		3.0	20	30	260	X	1.95%	25	135	45	74.4	0.08	2.35	0.040	0.12	X	15	530	
493		95.3	98.3		3.0	20	45	310	0.5	2.05%	35	130	30	73.8	0.08	2.50	0.030	0.13	0.008	20	480	
494		98.3	101.3		3.0	40	50	300	4.5	1.90%	25	125	50	74.5	0.06	2.45	0.040	0.12	X	15	310	
495		101.3	104.3		3.0	35	50	190	4.0	2.50%	35	160	40	73.7	0.06	3.10	0.060	0.11	0.017	10	510	
496		104.3	107.3		3.0	20	40	440	2.5	2.00%	30	135	90	77.3	0.04	1.95	0.040	0.09	0.008	8	580	
497		107.3	110.3		3.0	20	35	280	X	1.45%	25	130	105	74.6	0.05	0.67	0.010	0.08	0.008	8	1050	
498		110.3	113.3		3.0	20	35	380	X	1.35%	30	120	140	75.8	0.03	0.33	0.020	0.07	X	8	1150	
499		113.3	116.3		3.0	25	60	335	X	2.80%	40	125	125	71.8	0.06	0.23	0.030	0.10	0.017	7	760	
500		116.3	119.3		3.0	20	90	790	X	3.86%	45	110	150	69.5	0.08	4.20	0.070	0.26	0.017	10	560	
501		119.3	122.3		3.0	20	60	335	X	3.00%	50	110	230	71.0	0.21	3.00	0.030	0.33	X	15	490	
502		122.3	125.3		3.0	30	75	250	1.5	3.55%	65	105	65	71.3	0.06	4.10	0.050	0.08	0.008	9	450	
503		125.3	128.3		3.0	20	50	405	X	2.20%	55	120	300	76.1	0.06	1.90	0.040	0.07	0.008	6	410	
504		128.3	131.3		3.0	20	35	350	X	4.05%	65	160	800	68.5	2.05	1.40	0.030	0.32	0.017	30	370	
505		131.3	134.3		3.0	20	90	485	X	2.75%	55	135	920	73.1	0.14	1.70	0.040	0.20	0.008	8	490	
506		134.3	137.3		3.0	20	85	260	X	3.35%	65	110	1200	70.0	0.25	2.15	0.050	0.16	0.008	7	520	
507		137.3	140.3		3.0	20	200	1300	X	2.80%	60	145	550	72.0	0.14	2.05	0.270	0.09	0.017	6	480	
508		140.3	144.8		4.5	20	190	610	0.5	2.40%	75	130	300	73.6	0.27	1.75	0.100	0.07	0.017	9	480	
509		144.8	147.8		3.0	25	95	515	3.5	2.60%	65	165	500	72.2	1.80	2.05	0.040	0.07	0.017	25	420	
58510	147.8	149.9		2.1	20	30	215	2.0	4.10%	60	175	660	70.6	0.71	1.70	0.030	0.05	0.017	15	370		
511	149.9	152.3		2.4	30	50	260	X	2.80%	55	140	75	74.1	0.06	2.40	0.030	0.09	0.008	5	400		
512	152.3	155.3		3.0	20	55	170	X	2.10%	45	160	70	77.1	0.07	1.65	0.010	0.11	0.017	7	410		
513	157.4	159.5		2.1	20	30	85	1.0	1.30%	40	170	130	90.4	0.07	0.54	0.030	0.03	0.017	X	160		

Samples were also assayed for Bi by AAS 103, but returned X for all samples.

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849094

LABORATORY					ANALYSIS, Cooree										AAS at Cooree, others at Perth					GRID CO-ORDS:			
ANALYTICAL TECHNIQUE					AAS	AAS	AAS	AAS	AAS	AAS	XRF	XRF	WtL	Fire AAS	XRF	XRF	XRF	AAS	A.M.G. CO-ORDS: 383, 226.7mE 5, 386, 203.1mN				
DETECTION LIMIT					103	103	103	103	103	103	408	408	408	309	401	401	402	122	COLLAR R.L.: 358.8				
					5	5	5	0.5	5	5	?	?	?	0.005	5	20	30	0.005	COLLAR DIP: -60°				
					METAL CONTENT (ppm unless specified)														AZIMUTH: 110°				
					TOTAL DEPTH: 457.5m																		
Sample No	Sample Type	From	To	Core Rec'd	Sample Length	Cu	Pb	Zn	Ag	Fe	Mn	SiO <sub>2</sub> %	CaO%	Na <sub>2</sub> O%	Au	Sr	Ba	S %	Hg	COMMENTS			
52724		243.0	246.0		3.0	10	10	25	X	1.20%	2500	65.6	18.1	0.05	X	75	X	.031	0.050	Zone of silicification above fault contact. In unaltered lavas (fault 256.8-258.0)			
925		246.0	249.0		3.0	5	10	15	X	4250	3000	58.6	23.7	0.05	X	85	X	.028	0.040				
926		249.0	252.0		3.0	10	10	15	X	6350	2600	58.6	22.9	0.13	X	95	X	.022	0.040				
927		252.0	254.0		2.0	10	15	10	X	7250	940	87.0	5.35	0.18	X	40	20	.025	0.050				
928		254.0	256.8		2.8	10	10	70	X	1.50%	2250	77.0	9.95	0.11	X	90	25	.050	0.050				
929		258.0	261.0		3.0	10	60	345	X	2.95%	1400	70.1	3.00	0.07	0.032	40	310	1.29	0.140				
52930		261.0	264.0		3.0	10	35	255	X	2.70%	420	72.6	1.50	0.07	0.008	25	400	1.52	0.080				
931		264.0	265.75		1.75	15	50	390	0.5	6.85%	2750	50.4	9.35	0.06	X	140	170	.303	0.060				
932		265.75	267.9		2.15	10	20	270	X	3.35%	1000	69.0	4.30	0.08	X	70	290	1.43	0.060				
933		267.9	269.2		1.30	10	5	500	X	6.15%	3300	49.0	11.9	0.06	X	180	170	.462	0.070				
934		269.2	272.4		3.2	10	25	270	X	3.50%	1900	62.8	5.95	0.07	X	90	290	1.19	0.060				
935		272.4	273.0		0.6	15	50	445	X	6.70%	4100	45.3	13.3	0.05	X	220	190	.411	0.060				
936		273.0	274.0		3.0	10	20	335	X	3.21%	730	66.3	2.35	0.08	X	40	430	1.54	0.090				
937		276.0	279.0		3.0	10	20	175	X	2.50%	420	71.8	1.40	0.08	X	30	440	1.37	0.070				
938		279.0	282.0		3.0	10	20	215	X	2.85%	620	70.5	2.30	0.08	0.008	40	380	1.33	0.110				
939		282.0	285.0		3.0	5	X	100	X	1.90%	585	70.0	2.45	0.27	X	50	370	.492	0.050				
52940		285.0	288.0		3.0	5	X	120	X	2.05%	970	67.3	3.90	0.08	X	55	330	.161	0.040				
941		289.0	291.0		3.0	10	10	215	X	2.40%	1000	66.0	3.80	0.08	X	65	380	.786	0.070				
942		291.0	294.0		3.0	15	40	250	X	2.60%	475	70.7	1.60	0.08	X	30	450	1.43	0.060				
943		294.0	296.0		2.0	15	25	190	X	2.60%	175	71.8	0.30	0.08	X	15	550	1.76	0.070				
944		296.0	298.35		2.35	10	45	195	X	2.40%	235	71.8	0.74	0.08	X	15	540	1.61	0.070				
945		298.35	300.0		1.65	10	15	135	X	1.95%	80	76.0	0.20	0.08	X	10	460	1.67	0.060				
946		300.0	303.0		3.0	85	105	310	X	6.90%	75	67.7	0.19	0.09	X	20	510	7.35	0.200				
947		303.0	305.0		2.0	85	60	155	0.5	4.70%	55	68.9	0.20	0.11	X	25	560	4.97	0.090				
948		305.0	308.0		3.0	15	25	120	X	2.10%	150	74.1	0.45	0.10	X	15	460	1.95	0.050				
949		308.0	311.0		3.0	20	10	90	X	1.95%	165	75.0	0.54	0.12	X	15	600	1.48	0.050				
52950		311.0	313.0		2.0	10	20	105	X	1.70%	280	74.0	1.00	0.10	X	20	640	1.17	0.030				
951		313.0	315.2		2.2	15	50	220	X	2.70%	365	71.2	2.40	0.08	X	50	510	2.06	0.060				
952		317.15	318.7		1.55	10	15	80	X	1.70%	185	76.0	0.43	0.07	X	10	510	1.13	0.040				
953		318.7	320.2		1.5	15	30	120	X	2.40%	400	73.5	1.40	0.08	0.008	30	520	1.55	0.050				
954		321.1	324.05		2.95	25	15	70	X	2.20%	180	73.9	0.59	0.08	X	20	510	1.52	0.040				
955		326.02	329.0		2.8	10	5	145	X	1.90	750	70.7	2.65	0.09	X	45	330	.256	0.030				
956		329.0	332.0		3.0	5	X	85	X	1.60%	855	71.9	3.50	0.16	X	75	280	.200	0.030				
52960		332.0	334.8		2.8	5	5	100	X	1.80%	735	67.0	2.60	0.11	0.008	50	410	1.68	0.040				
957		334.8	337.0		2.2	10	X	70	X	2.25%	365	73.0	1.30	0.09	X	35	440	.833	0.040				
958		337.0	339.5		2.5	5	X	75	X	1.95%	235	72.7	0.90	0.09	X	25	470	.890	0.040				
959		339.5	340.35		0.85	10	X	90	X	1.70%	540	71.3	2.10	0.11	X	55	380	.327	0.030				
960		340.35	343.0		2.65	10	15	70	X	1.90%	110	75.0	0.39	0.08	X	15	410	1.26	0.040				
961		343.0	346.0		3.0	15	X	90	X	1.90%	125	76.3	0.51	0.08	X	20	330	1.49	0.050				
962		346.0	349.0		3.0	15	75	235	X	1.90%	105	74.3	0.30	0.08	X	15	370	1.25	0.050				
963		349.0	352.0		3.0	10	25	90	X	2.05%	130	73.0	0.51	0.09	X	15	430	1.20	0.065				
964		352.0	355.4		3.4	10	5	40	X	2.55%	300	71.7	1.10	0.35	X	25	390	1.19	0.050				
965		355.4	358.0		2.6	5	10	60	X	1.55%	460	72.0	1.75	1.31	X	50	370	.050	0.040				
52970		358.0	360.3		2.3	10	10	45	X	1.50%	430	73.3	1.45	2.02	X	65	350	.046	0.040				

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849095

ELECTROLYTIC ZINC COMPANY OF ASIA LTD.

MINERAL RESOURCES DIVISION - TASMANIA

## DIAMOND DRILL CORE GEOCHEMICAL ANALYSES RECORD

HOLE No. DDP 242SHEET No. 2

Sample No.	Sample Type	From	To	Core Rec'd	Sample Length	METAL CONTENT (ppm unless specified)													COMMENTS	
						Cu	Pb	Zn	Ag	Fe	Mn	SiO <sub>2</sub> %	CaO%	Na <sub>2</sub> O%	Au	Sr	Ba	S %		Hg
52771		368.3	363.0		2.7	15	10	205	X	7.45%	2200	47.1	7.25	0.03	X	90	75	.375	0.050	basalt dyke basalt dyke
972		363.0	366.8		3.8	15	10	185	X	7.20%	3050	42.0	12.5	0.03	X	250	85	.196	0.040	
973		366.8	371.7		4.9	15	20	65	X	1.95%	135	75.0	0.35	0.07	X	10	430	1.03	0.030	
974		371.7	375.6		3.7	10	25	95	X	2.20%	250	72.9	1.05	0.07	X	20	450	1.25	0.040	
276		376.0	377.7		1.7	20	5	25	X	1.45%	325	75.3	1.40	0.07	X	40	520	.345	0.030	
978		380.7	383.0		3.3	15	10	25	X	2.90%	135	73.3	0.33	0.09	X	15	440	1.59	0.04	high py
979		384.0	386.2		2.2	20	10	15	X	2.60%	70	75.5	0.17	0.09	X	15	360	2.69	0.040	
52980		386.2	388.4		2.2	15	5	10	X	1.85%	75	77.0	0.10	0.08	X	10	400	1.66	0.030	high py
981		388.4	388.9		0.5	35	10	15	X	3.55%	25	71.0	0.05	0.08	X	8	450	3.29	0.040	
982		388.9	391.9		3.0	20	5	20	X	2.85%	95	73.2	0.26	0.08	X	15	420	2.23	0.030	
983		391.9	395.0		3.1	15	X	25	X	2.15	185	76.1	0.20	0.17	X	10	400	1.15	0.030	
984		395.0	398.0		3.0	15	5	20	X	1.60%	70	74.6	0.27	0.09	X	10	480	1.03	0.020	
985		398.0	401.0		3.0	10	10	20	X	2.30%	110	75.0	0.35	0.33	X	15	480	1.39	0.030	
986		401.0	404.0		3.0	10	5	20	X	1.70%	280	74.5	1.35	0.28	X	35	450	.628	0.030	
987		404.0	407.0		3.0	10	5	35	X	1.95%	135	76.3	0.35	0.19	X	20	420	1.15	0.030	
988		407.0	410.0		3.0	15	15	75	0.5	2.50%	455	71.3	2.30	0.09	X	50	410	1.32	0.040	
989		410.0	413.0		3.0	10	5	35	X	1.75%	90	75.5	0.46	0.09	X	20	550	1.35	0.040	
52990		413.0	416.6		3.6	15	5	40	X	2.00%	115	74.7	0.32	0.09	X	15	530	1.08	0.050	
991		416.6	418.1		1.2	20	5	25	X	1.80%	210	75.7	0.55	0.08	X	30	530	.844	0.050	
992		418.1	419.35		0.85	15	5	65	X	2.25%	375	77.9	0.27	0.12	0.008	15	610	.380	0.050	
993		421.1	421.75		0.65	20	5	65	X	2.20%	590	73.6	1.35	0.28	X	40	660	.062	0.040	
994		423.6	424.6		1.0	15	X	108	X	3.50%	675	71.5	0.55	0.11	X	25	580	.036	0.050	
995		424.6	428.0		3.4	45	10	50	X	2.00%	260	75.2	0.40	0.21	X	20	530	.347	0.030	
996		428.0	430.2		2.2	40	10	55	0.5	2.20%	390	73.1	0.98	0.11	X	40	660	.338	0.130	
997		433.1	436.0		2.9	45	10	50	X	1.85%	145	77.9	0.32	0.11	0.008	20	410	1.22	0.060	
998		436.0	439.0		3.0	20	15	35	X	2.25%	90	74.7	0.17	0.10	X	10	480	1.73	0.120	
999		439.0	442.0		3.0	10	15	35	X	1.50%	110	75.7	0.17	0.11	X	15	480	1.65	0.070	
53000		442.0	445.0		3.0	20	10	25	X	1.95%	60	76.1	0.35	0.10	X	20	530	1.13	0.095	
52802		445.0	448.0		3.0	15	10	20	X	1.65%	140	78.1	0.47	0.11	X	20	500	1.15	0.060	
810		448.0	451.0		3.0	10	15	40	X	2.35%	300	72.7	0.95	1.64	X	45	410	.96	0.050	
811		451.0	454.0		3.0	15	125	95	X	1.00%	320	73.5	1.20	0.39	X	55	470	1.00	0.060	
812		454.0	457.4		3.5	15	20	135	X	1.80%	360	75.5	0.94	0.13	X	35	470	1.13	0.060	

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849096

LABORATORY		ANALYSIS, Coocoe														ANALYSIS, Perth		GRID CO-ORDS:				
ANALYTICAL TECHNIQUE		AAS at Coocoe, others at Perth														A.M.G. CO-ORDS:						
DETECTION LIMIT		AAS	AAS	AAS	AAS	AAS	AAS	AAS	XRF	XRF	Fluor	Wet	XRF	XRF	XRF	COLLAR R.L.:						
		103	103	103	103	103	103	122	401	401	309	408	402	408	408	COLLAR DIP:						
		5	5	5	0.5	5	5	0.005	5	20	0.005	0.1%	30	0.1%	0.1%	AZIMUTH:						
																TOTAL DEPTH:						
Sample No.	Sample Type	From	To	Core Rec'd	Sample Length	METAL CONTENT (ppm unless specified)														AAS 103		COMMENTS
						Cu	Pb	Zn	Ag	Fe	Mn	Hg	Sr	Ba	Au	Ni	S	Co	Si	Co	Ni	
57897		298.0	300.0		2.0	10	10	50	0.5	2.00	580	0.020	230	460	X	3.84	1.44	1.90	69.7	15	15	Unaltered leuco-andesite lava
878		300.0	302.35		2.35	15	10	115	X	4.15	1650	0.020	220	300	X	3.91	0.79	5.30	59.9	15	20	
57813		302.35	308.4		2.05	20	40	70	X	2.60	80	0.060	20	850	0.033	0.11	1.95	0.16	72.0	20	10	
814		304.4	306.4		2.0	15	45	155	X	2.40	85	0.080	20	880	X	0.11	1.74	0.11	73.0	15	15	inglassy fragmental dacite
815		306.4	309.4		3.0	15	35	270	X	8.40	1550	0.070	75	340	X	1.21	0.522	2.30	52.5	40	30	Basalt dyke
816		309.4	311.8		2.8	25	40	185	0.5	5.15	480	0.090	55	830	X	0.86	2.27	0.80	61.7	45	30	
817		311.8	314.2		2.8	30	45	195	X	2.45	65	0.080	25	700	X	0.19	1.97	0.10	72.5	20	15	
818		314.2	316.9		2.7	25	35	190	0.5	2.50	95	0.090	30	780	X	0.18	2.56	0.37	71.9	20	15	
819		316.9	319.45		2.55	25	45	290	0.5	8.03	865	0.070	35	770	X	0.14	2.36	1.10	53.7	50	30	Py-altered basalt
57820		319.45	322.1		2.65	25	30	105	0.5	1.75	230	0.070	50	830	0.017	0.25	1.12	0.78	72.3	20	15	
821		322.1	324.75		2.65	30	40	100	0.5	2.85	65	0.060	45	780	X	0.29	2.02	0.15	71.7	25	20	
822		324.75	325.9		1.15	20	35	210	0.5	2.95	200	0.120	90	1950	X	0.43	2.09	1.67	54.9	45	35	Py-altered basalt dyke
823		325.9	329.0		3.1	25	85	335	0.5	3.25	190	0.080	60	720	X	0.21	2.53	0.77	70.7	15	15	
824		329.0	332.2		3.2	80	100	305	1.0	3.25	40	0.080	70	710	X	0.36	3.41	0.08	68.6	20	15	
825		332.2	335.4		3.2	110	120	340	1.0	3.45	65	1/5	60	530	X	0.35	3.52	0.27	69.5	20	15	
826		335.4	338.5		3.1	55	75	255	1.0	2.90	45	0.090	45	520	X	0.30	3.06	0.14	70.0	20	20	
827		338.5	341.65		3.15	40	35	120	0.5	2.85	80	0.080	65	620	X	0.47	2.82	0.12	71.5	20	15	
828		341.65	342.8		1.15	20	40	220	0.5	6.55	360	0.095	100	1350	X	0.34	3.71	1.60	50.8	50	20	Py-altered basalt dyke
829		342.8	343.05		0.25	35	35	370	1.0	4.80	445	0.085	140	1200	X	0.29	3.01	2.45	63.5	30	15	
57830		343.05	343.75		0.70	30	85	320	0.5	5.40	240	0.080	160	1650	X	0.51	4.13	1.85	48.3	50	25	Py-altered basalt dyke
831		343.75	347.0		3.25	25	50	220	0.5	2.90	140	0.090	85	740	X	0.36	2.60	0.52	70.1	20	15	
832		347.0	350.0		3.0	20	50	205	1.0	2.20	95	0.070	90	330	X	0.38	2.07	0.07	73.4	20	15	
833		350.0	353.0		3.0	20	30	165	1.0	2.75	75	0.060	50	250	X	0.30	2.56	0.12	72.2	20	15	
834		353.0	356.0		3.0	20	35	140	1.0	2.45	45	0.070	120	270	X	0.37	2.28	0.09	71.1	20	15	
835		356.0	358.5		2.5	15	20	110	1.0	1.85	50	0.060	70	150	X	0.34	1.98	0.08	74.2	15	15	Grey massive dacite 356.0-361.0
836		358.5	361.0		2.5	15	15	25	0.5	1.60	45	0.050	510	3200	X	0.21	1.67	0.06	75.5	10	5	
837		361.0	364.2		3.2	20	30	135	1.0	2.05	45	0.070	60	150	X	0.33	2.18	0.06	71.2	20	10	
838		364.2	367.4		3.2	20	35	110	1.0	1.95	125	0.110	65	200	X	0.36	2.30	0.07	73.5	15	10	
839		367.4	370.6		3.2	40	25	75	1.5	1.80	45	0.060	35	150	X	0.35	2.23	0.08	73.7	20	15	
57840		370.6	373.7		3.1	20	20	110	1.0	1.70	75	0.050	80	170	X	0.32	1.94	0.27	73.6	15	10	
841		373.7	375.5		1.8	5	15	45	0.5	1.40	40	0.040	210	710	X	0.27	1.56	0.02	75.7	15	10	Grey massive dacite Grey brecciated dacite 375.5-4604
842		375.5	378.6		3.1	15	25	100	1.0	2.05	60	0.050	35	340	X	0.46	2.14	0.06	72.7	25	15	
843		378.6	381.7		3.1	15	15	15	1.0	2.10	65	0.050	45	300	X	0.28	2.36	0.04	74.0	15	15	
844		381.7	384.8		3.1	15	10	10	1.0	1.80%	60	0.030	75	200	X	0.31	1.94	0.03	77.1	15	15	
845		384.8	387.9		3.1	20	40	110	1.0	2.15	40	0.050	55	300	X	0.20	2.62	0.09	75.3	15	10	
846		387.9	391.0		3.1	20	30	70	1.0	1.85	75	0.040	110	490	X	0.32	1.92	0.05	74.3	15	10	
847		391.0	394.1		3.1	10	20	40	1.0	1.95	40	0.040	150	330	X	0.27	2.36	0.03	72.7	25	10	
848		394.1	397.2		3.1	15	15	50	0.5	2.15	45	0.030	180	460	X	0.25	2.42	0.04	72.4	25	10	
849		397.2	400.3		3.1	10	20	10	0.5	1.75	35	0.040	220	600	X	0.27	2.16	0.04	73.0	10	10	
850		400.3	403.4		3.1	10	15	20	1.0	1.75	30	0.040	240	930	X	0.16	2.46	0.11	75.6	10	10	
851		403.4	406.4		3.0	20	15	20	1.0	1.90	45	0.050	50	690	X	0.35	2.30	0.15	72.6	15	10	
852		406.4	409.4		3.0	10	25	45	1.0	2.20	55	0.060	30	1100	X	0.28	2.31	0.13	69.7	15	10	less altered andesite lava 406.4-416.35
853		409.4	412.4		3.0	10	30	55	1.0	2.30	480	0.040	35	1050	X	0.21	1.62	0.36	72.7	10	10	
854		412.4	415.4		3.0	10	20	110	0.5	1.90	305	0.050	45	1100	X	0.27	1.92	0.94	69.5	15	10	

096

849097

ELECTROLYTIC ZINC COMPANY OF ASIA LTD.

MINERAL RESOURCES DIVISION - TASMANIA

DIAMOND DRILL CORE GEOCHEMICAL ANALYSES RECORD

HOLE No. BDP 266

SHEET No. 2

Sample No	Sample Type	From	To	Core Rec'd	Sample Length	METAL CONTENT (ppm unless specified)														Co	Ni	COMMENTS
						Cu	Pb	Zn	Ag	Fe	Mn	Hg	Sr	Ba	Au	Na, %	S %	CaO %	SiO <sub>2</sub> %			
57855		415.4	416.35		0.95	15	25	50	0.5	1.70	65	0.040	25	1100	X	0.23	1.65	0.09	75.3	15	10	Basalt intrusive py- altered margin
854		416.35	418.3		1.95	20	40	90	0.5	2.25	130	0.050	25	970	X	0.24	2.14	0.22	74.1	20	10	
857		418.3	420.1		1.8	15	30	335	0.5	6.55	855	0.050	35	1200	X	0.26	1.80	0.63	54.1	40	25	
858		420.1	423.1		3.0	10	25	65	1.0	2.10	70	0.040	30	1200	X	0.21	2.13	0.08	71.8	20	18	
859		423.1	425.3		2.2	15	45	65	1.0	2.95	45	0.050	30	1050	X	0.27	3.16	0.08	72.3	15	10	
57860		425.3	428.35		3.25	20	60	75	1.0	2.30	105	0.060	35	1550	X	0.24	2.16	0.20	70.7	25	18	
861		428.35	431.65		3.1	15	35	165	1.0	2.00	185	0.050	35	1150	X	0.18	1.68	0.32	72.8	20	15	
862		431.65	431.0		1.35	10	25	805	0.5	8.70	2200	0.060	55	900	X	0.29	0.70	1.70	47.1	40	20	
863		433.0	434.75		1.75	25	25	75	1.0	2.35	165	0.040	35	1050	X	0.38	1.82	0.23	72.9	20	10	
864		434.75	435.9		1.15	15	25	760	0.5	8.30	2300	0.030	120	400	X	2.69	0.192	2.20	47.7	40	25	
865		435.9	436.7		1.2	35	45	200	1.0	3.15	365	0.060	45	960	X	0.15	2.86	1.15	69.9	25	15	
866		436.7	439.8		3.1	30	55	215	1.0	2.50	60	0.105	25	890	X	0.25	2.44	0.10	72.0	15	10	
867		439.8	442.9		3.1	20	20	20	0.5	1.60	220	0.020	50	760	X	0.19	1.44	0.89	74.3	10	19	
868		442.9	446.0		3.1	15	15	15	0.5	1.35	55	0.030	25	720	X	0.31	1.32	0.06	76.5	15	10	
869		446.0	449.1		3.1	15	15	20	0.5	1.35	55	0.030	20	640	X	0.21	1.28	0.12	79.7	15	10	
57870		449.1	452.2		3.1	15	20	20	1.0	1.60	50	0.030	20	670	X	0.19	1.77	0.04	74.0	15	10	
871		452.2	455.3		3.1	20	25	130	0.5	1.45	190	0.040	25	550	X	0.16	1.24	0.54	77.2	15	15	
872		455.3	458.4		3.1	15	25	180	1.0	1.40	95	0.040	20	480	X	0.17	1.50	0.24	77.0	20	10	
873		458.4	461.5		3.1	15	30	105	0.5	1.50	50	0.040	75	420	X	0.25	1.50	0.07	77.8	15	10	
874		461.5	464.5		3.0	25	30	170	1.0	2.10	110	0.070	20	440	X	0.21	1.95	0.15	76.9	20	10	
875		464.5	467.5		3.0	25	40	105	1.0	2.15	135	0.100	15	430	X	0.17	2.16	0.16	76.3	20	10	
876		467.5	470.5		3.0	20	30	70	1.0	1.55	40	0.085	15	480	X	0.19	1.73	0.04	76.7	15	10	
877		470.5	473.5		3.0	20	25	35	1.0	1.85	105	0.040	20	500	X	0.23	1.77	0.41	71.5	20	10	
878		473.5	476.5		3.0	20	40	110	1.0	2.65	55	0.050	15	610	X	0.31	2.50	0.23	68.7	30	15	
879		476.5	479.6		3.1	25	40	90	1.0	2.50	160	0.040	15	1000	0.008	0.28	2.54	0.20	71.1	25	15	
57880		479.6	480.5		0.9	20	20	35	0.5	2.20	95	0.020	20	680	X	0.24	2.06	0.33	68.9	25	15	
881		480.5	482.9		2.4	25	30	55	1.0	3.00	115	0.040	35	1000	X	0.77	2.65	0.47	67.8	40	15	
882		482.9	485.3		2.4	15	50	40	1.0	1.90	155	0.030	20	660	X	0.17	1.48	0.26	74.4	15	15	
883		485.3	487.8		2.5	15	30	40	0.5	1.70	100	0.030	15	680	X	0.17	1.35	0.16	74.0	15	10	
884		487.8	488.6		0.8	20	95	40	1.0	2.70	140	0.040	30	570	X	0.13	2.4	0.72	68.8	30	10	
885		488.6	492.0		3.4	15	20	70	1.0	1.95	105	0.050	20	600	X	0.18	1.78	0.39	68.9	25	15	
886		492.0	495.3		3.3	20	20	30	X	1.90	140	0.030	25	570	X	0.84	1.10	0.48	71.8	20	15	
887		495.3	498.65		3.35	20	20	35	0.5	2.45	155	0.030	30	570	X	0.64	1.71	0.56	70.0	25	20	
888		498.65	500.8		2.15	30	25	30	1.0	3.10	75	0.030	20	550	X	0.37	2.52	0.24	68.4	30	15	
889		500.8	503.0		2.2	25	30	110	1.0	2.65	120	0.040	30	500	X	0.54	2.03	0.33	68.6	30	20	
57890		503.0	506.2		3.2	20	35	170	1.0	2.70	120	0.050	20	500	X	0.16	2.45	0.44	69.9	20	40	
891		506.2	509.4		3.2	20	55	75	1.0	2.10	130	0.040	15	530	X	0.84	1.70	0.36	70.3	25	15	
892		509.4	512.6		3.2	15	20	165	1.0	1.90	190	0.050	10	440	X	0.12	1.36	0.39	75.4	20	10	
893		512.6	515.7		3.1	10	20	180	0.5	1.75	140	0.060	20	450	X	0.13	1.50	0.35	75.8	25	10	
894		515.7	518.8		3.1	15	20	95	0.5	1.85	245	0.050	20	350	X	0.06	1.38	0.50	77.9	25	10	
895		518.8	521.9		3.1	15	20	80	1.0	1.80	130	0.030	20	400	X	0.10	1.42	0.42	76.2	25	15	
896		521.9	525.0		3.1	15	20	95	1.0	1.70	225	0.040	25	410	X	0.11	1.08	0.70	75.4	25	10	

NOTE

Bi was determined on all samples by AAS (103) but assayed X for all samples.

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849098

ELECTROLYTIC ZINC COMPANY OF ASIA LTD.  
MINERAL RESOURCES DIVISION - TASMANIA

D'AMOND DRILL CORE GEOCHEMICAL ANALYSES RECORD

HOLE No. DRP 297

SHEET No. 1

LABORATORY  
ANALYTICAL TECHNIQUE

ANALYSIS, Coocce AAS at Coocce, other at Perth.

GRID CO-ORDS: 383, 276.8mE  
A.M.G. CO-ORDS: 5, 385, 941.3mN  
COLLAR R.L.: 374.4'  
COLLAR DIP: -45°  
AZIMUTH: 105° AMG  
TOTAL DEPTH: 382.2m

DETECTION LIMIT

AAS	XRF	XRF	Wet	XRF	XRF	XRF	AAS						
103	103	103	103	103	103	122	401	401	408	408	408	402	103
5	5	5	0.5	5	5	0.005	5	20	0.1%	0.1%	0.1%	30	5

Sample No	Sample Type	From	To	Core Rec'd	Sample Length	METAL CONTENT (ppm unless specified)														AAS 103		COMMENTS
						Cu	Pb	Zn	Ag	Fe	Mn	Hg	Sr	Ba	Na <sub>2</sub> O	SiO <sub>2</sub>	CaO	S	Co	Ni	Bi	
0040		4.0	7.0		3.0	20	95	75	1.5	1.35	60	0.070	25	950	0.09	84.5	0.03	0.52	10	15	50	4.0-88.2: Grey Pyrite altered dacite obsidian fragmental
041		7.0	10.0		3.0	20	50	60	0.5	1.50	65	0.040	25	1250	0.11	77.1	0.02	0.324	10	15	10	
042		10.0	13.0		3.0	15	60	80	0.5	1.35	45	0.070	20	940	0.13	78.9	X	0.952	10	15	40	
043		13.0	16.0		3.0	15	70	60	1.0	1.40	35	0.070	25	980	0.13	76.5	0.01	1.42	15	20	30	
044		16.0	19.0		3.0	15	65	70	0.5	1.35	30	0.050	25	940	0.13	75.1	X	1.21	15	15	20	
045		19.0	22.0		3.0	15	75	65	1.5	1.50	75	0.060	25	710	0.11	80.0	X	1.26	15	15	20	
046		22.0	25.0		3.0	15	50	145	1.5	1.65	55	0.110	20	620	0.11	79.2	X	1.74	10	15	20	
046		25.0	28.0		3.0	10	50	80	1.0	1.45	50	0.060	20	840	0.14	76.4	X	1.64	15	15	30	
047		28.0	31.0		3.0	15	50	55	1.5	1.30	50	0.050	25	800	0.13	78.5	X	1.46	10	15	20	
048		31.0	34.0		3.0	15	50	155	1.0	1.40	50	0.080	15	700	0.13	81.3	X	1.66	15	15	30	
049		34.0	37.0		3.0	15	55	85	1.5	1.3	35	0.060	15	960	0.15	74.2	X	1.72	15	20	20	
049		37.0	40.0		3.0	15	95	80	1.5	1.45	35	0.060	15	900	0.12	76.8	X	1.70	15	15	20	
050		40.0	43.0		3.0	15	90	120	2.0	1.65	35	0.070	15	640	0.11	78.3	X	2.13	15	15	10	
052		43.0	46.0		3.0	20	710	2350	4.0	2.45	30	0.700	10	860	0.09	73.5	X	2.66	20	15	20	
053		46.0	49.0		3.0	20	90	135	2.0	2.90	45	0.100	20	1100	0.09	73.9	X	2.56	20	15	30	
054		49.0	52.0		3.0	20	145	160	2.0	3.35	40	0.100	15	1150	0.10	70.6	X	3.40	30	15	40	
055		52.0	55.0		3.0	15	85	130	2.0	1.90	35	0.090	20	1200	0.11	74.3	X	2.14	20	15	20	
056		55.0	58.0		3.0	20	95	90	2.0	3.10	60	0.060	20	1450	0.11	70.4	X	2.83	35	20	30	
057		58.0	61.0		3.0	15	90	100	1.5	2.15	40	0.040	95	2450	0.15	62.8	0.01	2.10	45	20	20	
058		61.0	64.0		3.0	25	110	105	2.0	2.35	45	0.080	25	1100	0.11	76.8	X	2.16	15	10	10	
059		64.0	67.0		3.0	20	60	65	2.0	1.60	45	0.050	25	870	0.14	76.0	X	1.70	10	15	20	
060		67.0	70.0		2.5	20	65	525	1.5	1.55	35	0.100	25	930	0.12	74.1	X	1.75	15	15	40	
061		70.0	73.0		2.5	15	105	180	2.5	2.30	110	0.090	20	360	0.57	81.4	0.04	0.828	30	20	30	
062		73.0	76.0		3.0	15	85	45	1.5	1.70	60	0.050	20	1050	0.07	78.8	X	1.65	20	15	20	
063		76.0	79.0		2.3	15	55	45	2.0	2.10	40	0.040	15	1100	0.08	75.0	X	2.14	35	15	20	
064		79.0	82.0		3.7	15	70	105	1.5	2.00	40	0.070	20	1100	0.10	75.1	0.03	2.32	30	15	10	
065		82.0	85.0		3.0	15	45	60	1.5	2.10	35	0.040	15	1050	0.10	74.4	0.02	2.30	20	15	20	
066		85.0	88.0		3.2	15	60	65	1.5	2.60	35	0.030	15	1100	0.18	73.0	0.04	2.92	45	20	10	
067		88.0	91.0		2.8	10	30	50	1.5	1.70	70	0.030	30	1350	0.56	74.3	0.04	1.30	30	15	10	
068		91.0	94.0		3.0	20	25	55	1.5	2.45	75	0.040	25	1150	0.37	73.7	0.02	1.96	45	15	20	
069		94.0	97.0		3.0	10	25	80	1.5	1.75	95	0.040	15	1250	0.10	68.7	X	1.04	35	20	20	
070		97.0	100.0		3.0	20	45	465	1.5	1.20	80	0.070	55	830	0.75	76.6	0.03	0.544	15	15	20	
071		100.0	103.0		3.0	10	35	95	1.0	1.75	35	0.030	50	630	1.29	78.2	0.02	0.732	5	5	10	
072		103.0	106.0		3.0	15	40	260	0.5	1.90	75	0.050	60	620	2.22	75.8	0.04	0.844	15	5	X	
073		106.0	109.0		2.1	10	40	970	0.5	1.10	75	0.115	70	530	2.31	77.8	0.05	1.20	15	10	20	
074		110.0	112.0		1.7	10	40	270	1.0	2.20	255	0.060	55	680	1.45	71.9	0.10	0.936	20	10	10	
075		112.0	115.0		3.0	10	275	235	1.5	1.30	45	0.090	10	590	0.06	77.9	0.02	1.58	30	10	20	
076		115.0	118.0		3.0	10	45	40	1.0	1.30	45	0.060	15	390	0.07	77.8	0.02	1.38	40	10	10	
077		118.0	121.0		3.0	10	35	55	1.0	1.50	50	0.070	20	320	0.07	77.7	0.04	1.89	30	10	10	
079		121.0	124.0		3.0	10	55	110	1.0	1.40	55	0.070	15	400	0.07	78.3	0.03	1.68	20	10	20	
079		124.0	127.0		3.0	20	210	4300	1.5	2.30	205	2.7	20	1200	0.10	62.5	0.86	1.22	40	20	10	
080		127.0	130.0		3.0	15	30	25	1.0	1.60	55	0.040	20	650	0.08	76.3	0.03	1.96	15	10	20	
081		130.0	133.0		3.0	15	20	570	1.0	1.50	40	0.060	25	440	0.07	76.7	0.03	1.82	15	20	X	
082		133.0	136.0		3.0	20	25	25	1.0	1.85	60	0.070	45	650	0.11	76.8	0.03	2.09	40	10	X	
083		136.0	139.0		3.0	20	30	25	1.0	1.85	65	0.050	30	480	0.10	74.5	0.03	2.03	30	40	10	

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849099

Sample No.	Sample Type	From	To	Core Rec'd	Sample Length	METAL CONTENT (ppm unless specified)														Ni	Bi	COMMENTS
						Cu	Pb	Zn	Ag	Fe	Mn	Hg	Sr	Ba	Na <sub>2</sub> O%	SiO <sub>2</sub> %	CaO%	S %	Co			
50084		139.0	142.2		3.2	15	15	15	0.5	1.60	50	0.040	30	620	0.07	77.5	0.02	1.87	30	10	20	
085		142.2	145.2		3.0	15	25	15	1.0	1.80	65	0.060	20	670	0.06	77.2	0.11	1.92	35	15	X	
086		145.2	148.2		3.0	20	40	15	2.5	2.00	90	0.070	20	580	0.05	74.9	0.25	2.39	20	15	60	
087		148.2	151.2		3.0	15	50	55	1.0	2.10	100	0.070	15	530	0.04	76.6	0.06	2.33	45	10	10	
088		151.2	154.2		3.0	15	50	30	1.0	1.70	55	0.070	20	770	0.36	73.7	0.08	1.98	10	10	10	
089		154.2	157.2		3.0	15	25	70	1.0	1.65	265	0.050	70	720	1.99	71.6	0.95	1.27	30	15	10	
50090		157.2	160.2		3.0	10	35	125	1.0	1.75	555	0.050	75	510	2.09	68.8	1.61	0.696	30	10	20	157.95-159: basalt dyk
091		160.2	163.2		3.0	10	35	160	1.0	1.55	165	0.135	15	660	0.58	71.3	0.16	1.70	40	10	20	Moderated to weakly
092		163.2	166.2		3.0	10	35	200	1.0	1.80	165	0.105	30	520	0.96	74.0	0.09	1.94	40	10	40	altered leuco-andesite
093		166.2	169.2		3.0	10	50	170	1.0	1.90	270	0.100	45	480	1.27	77.1	0.56	2.01	30	20	10	and ignimbrites
094		169.2	172.2		3.0	10	30	170	1.0	2.75	395	0.080	45	620	1.02	66.3	1.25	1.54	30	15	10	
095		172.2	175.2		3.0	15	30	115	1.0	3.70	680	0.040	45	540	1.73	66.6	0.49	1.57	40	20	20	
096		175.2	178.2		3.0	10	20	130	1.0	4.25	1350	0.040	50	498	2.00	64.2	0.63	0.752	30	25	40	
097		178.2	181.2		3.0	10	25	30	1.0	1.30	40	0.040	8	690	1.99	72.4	0.04	1.27	20	10	10	
098		181.2	184.2		3.0	15	30	120	1.0	.875	45	0.050	10	480	0.24	78.3	0.04	.760	10	10	X	
099		184.2	185.7		1.5	10	35	230	1.0	.865	40	0.050	70	1550	0.12	68.5	0.01	1.63	10	10	X	
50100		185.7	187.2		1.5	10	45	355	1.5	1.20	60	0.145	8	360	0.02	80.3	0.04	1.01	20	15	20	
53378		187.2	190.2		3.0	15	40	195	1.5	1.40	90	0.100	8	420	0.02	72.7	0.05	1.26	25	20	30	
379		190.2	193.2		3.0	15	50	185	1.5	1.35	80	0.080	25	400	0.88	78.8	0.04	0.924	20	20	10	
53380		193.2	196.2		3.0	10	55	110	2.0	1.20	65	0.040	45	700	1.65	80.3	0.04	0.888	25	20	20	
381		196.2	199.2		3.0	10	40	05	1.5	1.45	85	0.040	55	970	1.70	76.5	0.05	1.29	35	20	X	
382		199.2	202.2		3.0	10	45	120	2.0	1.90	70	0.060	60	1000	1.15	75.3	0.04	1.80	35	15	20	?
383		202.2	205.2		3.0	10	30	40	1.0	1.40	55	0.040	70	1600	2.23	76.2	0.05	1.42	30	15	20	
384		205.2	208.2		3.0	10	25	85	2.0	2.80	240	0.030	100	1400	2.55	71.1	0.12	0.892	35	20	20	207.1-214.2: basalt dyke
385		208.2	211.2		3.0	5	25	180	1.0	7.20	755	0.030	140	930	2.90	60.1	0.37	0.036	25	25	30	
386		211.2	214.2		3.0	10	20	165	2.5	6.45	740	0.030	110	780	2.61	61.5	0.40	0.068	25	25	30	
387		214.2	217.2		3.0	10	20	40	1.0	1.40	120	0.020	65	650	2.57	78.1	0.09	0.684	20	15	10	
388		217.2	220.2		3.0	10	20	45	1.5	1.80	150	0.020	65	760	2.24	75.8	0.09	0.744	20	20	40	
389		220.2	223.2		3.0	10	40	110	1.5	2.35	320	0.040	45	510	1.78	73.9	0.23	1.11	40	20	30	
53390		223.2	226.2		3.0	10	20	20	2.0	1.55	150	0.030	70	700	3.21	77.3	0.08	1.11	35	15	10	
391		226.2	229.2		3.0	10	20	25	1.0	1.35	145	0.020	70	770	2.97	77.0	0.09	0.868	30	20	20	
392		229.2	232.2		3.0	10	25	25	1.5	1.25	300	0.030	85	750	3.68	76.7	0.12	0.520	15	20	10	
393		232.2	235.2		3.0	10	25	25	1.5	1.30	175	0.020	80	690	3.33	76.6	0.54	0.724	20	25	10	
50111		235.2	238.2		3.0	15	20	25	1.0	1.25	90	0.030	20	630	0.05	79.1	0.07	0.26	10	20	10	
912		238.2	241.2		3.0	20	30	50	2.0	2.55	200	0.030	25	790	0.32	71.7	0.29	1.17	20	20	X	
913		241.2	244.2		3.0	15	30	45	1.0	2.25	245	0.030	40	710	0.66	71.0	0.82	1.04	25	20	20	
914		244.2	247.2		3.0	15	25	60	2.0	2.50	270	0.020	70	720	1.10	67.6	0.62	0.988	20	20	30	
915		247.2	250.2		3.0	20	25	45	1.5	2.75	165	0.030	80	670	1.16	69.1	0.42	1.32	20	20	20	
916		250.2	253.2		3.0	20	25	20	1.5	1.30	45	0.030	130	570	2.34	68.2	0.95	1.54	35	20	20	
917		253.2	256.2		3.0	25	35	20	1.5	1.60	40	0.040	170	520	3.33	69.8	1.68	1.32	40	20	20	
918		256.2	259.2		3.0	30	40	20	2.0	1.80	40	0.030	110	700	2.45	70.1	1.55	0.876	25	20	30	
919		259.2	262.2		3.0	30	30	70	2.0	2.30	235	0.020	160	770	3.29	67.5	1.33	1.76	35	20	10	
58920		262.2	265.2		3.0	15	20	100	1.5	2.45	380	0.030	210	860	3.73	66.3	2.26	2.12	40	20	20	
921		265.2	268.2		3.0	125	25	150	2.0	2.00	775	0.030	200	760	3.41	67.2	4.05	1.45	25	20	20	
922		268.2	271.2		3.0	20	40	40	1.5	3.50	205	0.030	150	850	3.04	64.5	1.12	2.86	35	25	10	
923		271.2	274.2		3.0	15	40	190	1.5	1.90	165	0.050	80	660	2.23	64.4	1.01	2.84	50	20	10	
924		274.2	277.2		3.0	15	20	120	1.5	2.05	560	0.020	90	630	1.86	68.4	2.66	0.352	20	15	10	
925		277.2	280.2		3.0	10	15	50	2.0	1.95	675	0.020	90	600	1.51	70.0	2.88	0.172	15	15	10	

099

849100

ELECTROLYTIC ZINC COMPANY OF ASIA LTD.  
MINERAL RESOURCES DIVISION - TASMANIA

DIAMOND DRILL CORE GEOCHEMICAL ANALYSES RECORD

HOLE No. DGP 240  
SHEET No. 1

LABORATORY  
ANALYTICAL TECHNIQUE  
DETECTION LIMIT

ANALABS, Coocoo

A.A.S. at Coocoo, others at Perth

AMG CO-ORDS: 383,698.8mE  
A.M.G. CO-ORDS: 5,386,378.6mN  
COLLAR R.L.: 376.3'  
COLLAR DIP: -50°  
AZIMUTH: 285° AMG  
TOTAL DEPTH: 577.5m

AAS	Wet	XRF	XRF	XRF	XRF								
103	103	103	103	103	103	103	103	103	408	408	408	401	401
5	5	5	0.5	5	5	5	10	5	0.1%	0.1%	0.1%	5	20

Sample No	Sample Type	From	To	Core Rec'd	Sample Length	METAL CONTENT (ppm unless specified)																AAS	XRF	COMMENTS
						Cu	Pb	Zn	Ag	Fe%	Mn	Co	Bi	Ni	Na,0%	SiO, %	CaO%	Sr	Ba	Hg	S%			
462		376.5	377.0		0.5	20	110	130	1.5	2.30	600	20	50	160	0.66	73.4	1.87	45	460	0.030	1.20			
463		388.2	389.2		1.0	25	20	40	1.0	2.70	125	25	X	110	0.48	66.9	0.69	50	900	0.030	2.55			
464		390.6	391.5		0.9	35	30	90	1.0	4.40	870	30	20	225	1.72	63.5	3.47	130	510	0.030	2.00			
465		391.8	394.9		3.1	25	45	125	0.5	2.45	150	20	20	185	0.21	69.2	0.65	30	700	0.055	2.60			
476		395.4	396.7		1.3	35	30	255	X	2.55	585	20	10	260	0.05	77.0	1.23	35	460	0.060	1.55			
466		402.1	403.1		2.0	20	55	220	1.0	2.35	730	15	20	180	0.05	76.1	1.95	30	420	0.050	1.40			
467A		404.1	407.4		3.3	10	15	70	0.5	1.55	390	15	10	105	0.30	70.8	1.47	40	660	0.030	0.56			
467B		404.1	407.4		3.3	25	25	75	X	1.65	370	15	30	165	0.38	72.1	1.13	40	620	0.035	0.70			
468		407.4	410.7		3.3	15	50	150	0.5	1.80	685	15	X	145	0.19	71.8	1.99	50	550	0.030	0.46			
469		446.75	446.9		0.15	75	25	45	0.5	3.55	155	30	20	350	0.67	67.2	0.48	70	750	0.045	3.10			
470		472.9	503.0		3.1	20	20	65	X	1.60	250	15	20	190	0.20	74.4	0.24	20	840	0.020	0.28			
471		503.0	506.1		3.1	25	25	125	0.5	1.70	600	10	X	155	0.21	74.8	1.34	40	670	0.030	0.27			
472		514.0	516.8		2.8	25	25	40	0.5	2.05	255	15	20	320	3.67	73.6	0.77	130	1,100	0.030	1.40			
473		516.8	518.4		1.6	20	15	55	0.5	2.50	1,050	20	30	120	2.16	66.0	3.49	190	410	0.040	0.95			
474		518.4	520.9		2.5	20	35	220	0.5	4.40	2,450	25	10	100	1.99	54.0	6.21	220	290	0.050	0.49			
475		520.9	523.0		2.1	20	20	90	0.5	2.00	690	20	40	205	3.33	71.0	2.37	110	840	0.050	0.71			

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849101

ELECTROLYTIC ZINC COMPANY OF ASIA LTD.  
MINERAL RESOURCES DIVISION - TASMANIA

DIAMOND DRILL CORE GEOCHEMICAL ANALYSES RECORD

HOLE No. BBP 250

SHEET No. 1

LABORATORY  ANALYTICAL TECHNIQUE  DETECTION LIMIT						ANALABS, Coocce										AAS at Coocce, others at Perth					GRID COORDS: 383,426.6mE A.M.G. CO-ORDS: 5,386,898.5mN COLLAR R.L.: 399.6 COLLAR DIP: -30° AZIMUTH: 105° ANG TOTAL DEPTH: 358.0m		
						AAS	AAS	AAS	AAS	AAS	AAS	AAS	AAS	AAS	XRF	XRF	Wet	XRF	XRF	XRF	XRF	XRF	
						103	103	103	103	103	103	103	103	122	401	401	408	408	408	402	402	402	
						5	5	5	0.5	5	5	5	5	0.005	5	20	0.1%	0.1%	0.1%	5 %	5 %	5 %	
Sample No	Sample Type	From	To	Core Rec'd	Sample Length	METAL CONTENT (ppm unless specified)															XRF 402 402 402	COMMENTS	
						Cu	Pb	Zn	Ag	Fe	Mn	Co	Ni	Hg	Sr	Ba	Na,0%	Si,0%	Ca,0%				
58944		46.0	49.0		3.0	15	120	125	X	1.20%	120	10	10	0.050	10	460	0.05	32.9	0.04	0.01			
945		49.0	52.0		3.0	15	140	160	X	3700	130	10	10	0.040	5	590	0.04	77.9	X	0.015			
946		52.0	58.0		6.0	15	65	100	X	2.00%	120	20	10	0.020	15	610	0.03	75.2	0.04	1.95			
947		58.0	61.0		3.0	10	25	70	X	1.60%	115	15	15	0.030	7	580	0.04	72.5	X	1.45			
948		61.0	64.0		3.0	10	25	35	X	1.40%	70	15	10	0.020	15	490	0.03	76.9	X	0.95			
949		64.0	67.0		3.0	25	25	100	X	1.65%	45	20	10	0.040	30	550	0.05	75.1	X	1.45			
58950		67.0	70.0		3.0	15	35	115	X	2.00%	75	20	15	0.030	10	720	0.04	72.4	X	1.60			
951		70.0	73.0		3.0	25	25	135	X	2.35%	70	25	20	0.020	20	870	0.010	69.7	X	2.30			
952		73.0	76.0		3.0	10	10	120	X	2.00%	100	25	15	0.020	23	960	0.07	71.5	X	1.75			
953		76.0	79.0		3.0	10	35	195	X	2.30%	80	25	15	0.040	15	830	0.06	69.5	X	3.35			
954		79.0	82.0		3.0	15	25	150	X	2.50%	80	20	15	0.030	15	730	0.03	71.0	X	2.50			
955		82.0	85.0		3.0	15	35	185	X	2.60%	60	25	15	0.020	25	780	0.04	69.8	0.02	2.10			
956		85.0	88.0		3.0	15	25	170	X	2.35%	90	20	15	0.020	40	1100	0.51	68.4	0.02	2.40			
957		88.0	91.0		3.0	10	15	85	X	2.20%	200	20	15	0.010	70	1100	1.37	69.5	0.02	1.50			
958		91.0	94.0		3.0	50	250	125	X	4.65%	370	40	1150	0.020	50	970	1.36	71.1	0.03	1.35			
959		94.0	97.0		3.0	10	15	60	X	2.70%	90	20	10	0.030	50	1150	1.22	69.5	0.01	3.00			
58960		97.0	100.0		3.0	10	20	95	X	2.55%	80	20	15	0.030	35	1250	0.84	69.7	X	2.95			
961		100.0	103.0		3.0	10	15	115	X	2.10%	90	20	10	0.030	40	930	0.97	73.0	0.02	2.10			
962		103.0	106.0		3.0	10	10	110	X	4.10%	195	40	15	0.020	30	820	0.55	69.0	0.02	2.90			
963		106.0	109.0		3.0	15	20	105	X	2.70%	50	35	15	0.030	10	760	0.07	71.0	X	2.90			
964		109.0	112.0		3.0	10	10	40	X	2.65%	30	20	10	0.020	10	650	0.07	75.4	X	2.10			
965		112.0	115.0		3.0	20	15	95	X	3.70%	165	35	15	0.020	20	720	0.07	67.5	X	3.40			
966		115.0	118.0		3.0	25	15	30	X	2.65%	40	20	10	0.030	10	800	0.08	73.2	X	2.90			
967		118.0	121.0		3.0	20	10	45	X	2.70%	55	25	10	0.030	9	1000	0.07	70.9	X	2.60			
968		121.0	124.0		3.0	15	10	95	X	3.95%	60	40	20	0.040	35	1100	0.09	67.5	X	4.55			
969		124.0	127.0		3.0	10	15	35	X	1.00%	55	15	10	0.020	20	560	0.13	78.9	X	0.67			
58970		127.0	130.0		3.0	40	10	40	X	1.50%	30	15	10	0.020	15	550	0.13	80.3	0.01	1.50			
971		130.0	133.0		3.0	10	10	25	X	1.35%	35	15	10	0.010	25	260	0.14	78.2	X	1.55			
972		133.0	136.0		3.0	10	10	40	X	1.45%	60	20	10	0.020	25	680	0.11	77.4	X	1.45			
973		136.0	139.0		3.0	10	10	35	X	2.80%	50	25	10	0.030	10	740	0.08	72.3	0.02	2.90			
974		139.0	142.0		3.0	10	10	25	X	1.9%	55	20	10	0.020	10	560	0.09	75.8	0.01	2.05			
975		142.0	145.0		3.0	15	10	35	X	1.5%	40	15	10	0.020	15	450	0.10	81.5	X	1.55			
976		145.0	148.0		3.0	15	15	40	X	1.70%	60	15	10	0.020	15	500	0.09	78.9	0.01	1.50			
977		148.0	151.0		3.0	5	15	45	X	2.65%	80	20	10	0.030	20	700	0.59	72.3	0.09	2.60			
978		151.0	154.0		3.0	10	15	45	X	2.90%	170	20	10	0.020	40	400	1.05	70.7	0.14	2.90			
979		154.0	157.0		3.0	10	10	55	X	2.75%	170	20	10	0.030	30	710	1.06	70.7	0.14	1.45			
58980		157.0	160.0		3.0	45	10	75	X	2.45%	270	20	15	0.040	40	790	1.16	72.2	0.13	0.71			
981		160.0	163.0		3.0	5	15	70	X	2.60%	175	20	10	0.020	15	780	0.09	69.8	0.03	1.35			
982		163.0	166.0		3.0	35	15	100	X	1.60%	70	25	15	0.010	9	740	0.08	74.0	0.01	0.98			
983		166.0	169.0		3.0	10	15	95	X	1.30%	60	25	15	0.010	10	810	0.07	74.3	X	0.84			
984		169.0	172.0		3.0	5	20	110	X	1.90%	45	30	20	0.020	10	730	0.07	72.0	X	1.95			
985		172.0	175.0		3.0	15	15	85	X	1.95%	50	25	20	0.020	10	760	0.06	75.0	0.01	1.80			
986		175.0	178.0		3.0	20	20	65	X	1.85%	35	30	15	0.010	15	590	0.09	76.0	X	1.10			
987		178.0	181.0		3.0	15	20	135	X	1.45%	25	20	10	0.030	10	480	0.08	77.5	X	1.70			
988		181.0	184.0		3.0	10	25	145	X	2.15%	25	25	15	0.030	10	640	0.06	79.2	X	2.35			

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849102

Sample No	Sample Type	From	To	Core Rec'd	Sample Length	METAL CONTENT (ppm unless specified)														COMMENTS	
						Cu	Pb	Zn	Ag	Fe	Mn	Co	Ni	Hg	Sr	Ba	Na,0%	SiO, %	CaO%		S %
58989		184.0	187.0		3.0	5	25	220	X	6750	45	25	30	0.020	10	330	0.03	68.8	0.31	0.25	
58990		187.0	190.0		3.0	10	10	55	X	2.45%	30	20	10	0.030	15	680	0.07	71.9	X	2.90	
991		190.0	193.0		3.0	10	15	30	X	2.65%	35	20	10	0.020	20	700	0.09	72.7	X	3.30	
992		193.0	196.0		3.0	10	10	35	X	2.50%	30	25	10	0.030	15	480	0.11	72.0	0.02	2.90	
993		196.0	199.0		3.0	15	5	30	X	2.45%	30	20	10	0.020	15	460	0.13	70.7	0.06	3.15	
994		199.0	202.0		3.0	10	10	25	X	2.70%	30	20	10	0.020	10	510	0.10	70.7	0.06	3.05	
995		202.0	205.0		3.0	10	10	20	X	2.80%	30	20	10	0.030	15	560	0.23	71.5	0.08	3.55	
996		205.0	208.0		3.0	10	10	20	X	2.20%	35	15	10	0.020	10	540	0.12	72.1	X	2.70	
997		208.0	211.0		3.0	10	10	30	X	5300	40	20	10	0.010	20	410	0.32	77.4	0.01	0.41	
998		211.0	214.0		3.0	30	15	30	X	1.70%	30	20	10	0.020	15	340	0.21	72.2	X	1.90	
999		214.0	217.0		3.0	25	10	30	X	2.55%	30	25	10	0.030	15	400	0.24	71.9	0.04	3.10	
59000		217.0	220.0		3.0	20	15	40	X	2.40%	40	15	10	0.020	15	400	0.16	75.3	X	2.55	
58301		220.0	223.0		3.0	15	20	40	X	2.45%	40	20	10	0.020	15	410	0.16	74.6	0.01	2.75	
302		223.0	226.0		3.0	20	15	45	X	1.95%	30	15	10	0.020	15	390	0.16	74.0	0.05	2.45	
303		226.0	229.0		3.0	20	10	45	X	1.45	45	20	10	0.010	15	300	0.15	76.1	0.09	1.45	
304		229.0	232.0		3.0	20	15	30	X	1.20%	30	20	10	0.010	15	310	0.18	77.1	X	1.05	
305		232.0	235.0		3.0	20	10	35	X	8000	40	15	10	0.020	15	350	0.12	77.6	X	0.70	
306		235.0	238.0		3.0	30	10	25	X	1.25%	35	15	10	0.020	15	380	0.09	77.2	X	1.45	
307		238.0	241.0		3.0	40	10	20	X	1.87%	60	15	10	0.010	15	450	0.12	74.6	X	2.00	
308		241.0	244.0		3.0	15	5	25	X	1.55%	50	10	5	0.020	20	250	0.15	76.5	X	1.35	
309		244.0	247.0		3.0	10	10	35	X	6600	40	15	5	0.020	10	220	0.12	76.9	0.01	0.60	
58310		247.0	250.0		3.0	20	10	25	X	1.45%	40	20	15	0.020	20	210	0.09	75.6	X	1.25	
311		250.0	253.0		3.0	10	5	35	X	6650	45	20	10	0.010	9	300	0.10	77.9	X	0.50	
312		253.0	256.0		3.0	15	10	15	X	2.05%	40	20	10	0.020	15	430	0.11	76.3	X	2.50	
313		256.0	259.0		3.0	15	5	65	X	1.65%	25	15	5	0.060	20	400	0.11	76.5	X	2.05	
314		259.0	262.0		3.0	15	10	75	X	2.20%	35	20	10	0.040	15	500	0.07	74.8	X	2.65	
315		262.0	265.0		3.0	30	15	40	X	2.15%	40	55	15	0.030	15	470	0.06	76.3	X	2.55	
316		265.0	268.0		3.0	25	10	80	X	1.65%	55	25	10	0.030	15	340	0.05	75.6	X	1.75	
317		268.0	271.0		3.0	15	15	90	X	1.45%	40	15	10	0.030	7	450	0.05	79.3	X	1.48	
318		271.0	274.0		3.0	10	20	75	X	1.55%	55	15	5	0.020	5	670	0.03	74.7	X	1.50	
319		274.0	277.0		3.0	15	20	80	X	2.15%	40	25	20	0.030	15	530	0.05	71.8	0.02	2.25	
58320		277.0	280.0		3.0	115	460	1650	1.0	1.75%	40	20	10	0.150	7	360	0.02	79.7	0.03	1.85	
321		280.0	283.0		3.0	15	15	105	X	1.35%	50	15	10	0.035	9	390	0.02	76.7	0.03	1.20	
322		283.0	286.0		3.0	10	15	70	X	1.30%	65	15	10	0.030	8	600	0.02	80.0	X	1.05	
323		286.0	289.0		3.0	10	30	150	X	1.25%	85	15	10	0.040	20	560	0.03	79.2	0.01	0.84	
324		289.0	292.0		3.0	10	35	180	X	1.20%	50	15	10	0.060	10	480	0.02	78.7	0.03	0.99	
325		292.0	295.0		3.0	10	35	155	X	2.00%	80	20	10	0.050	8	610	0.02	75.4	X	1.65	
326		295.0	298.0		3.0	10	30	275	X	1.50%	80	15	10	0.070	9	450	0.05	76.6	0.02	1.00	
327		298.0	301.0		3.0	5	15	120	X	2.25%	800	10	20	0.030	25	300	0.05	77.3	0.16	0.30	
328		301.0	304.0		3.0	5	20	70	X	4.30%	1850	15	15	0.020	9	280	0.05	72.7	0.19	0.005	
329		304.0	307.0		3.0	5	5	105	X	2.95%	1400	15	15	0.010	40	290	0.05	67.8	2.95	X	

All samples were also assayed for Bi by AAS 103 and for Au by AAS after 30g fire assay fusion.

Bi: All Bi assayed below the limit of detection (10 ppm)  
 Au: All Au assayed below the limit of detection (0.005 ppm) except 58944 (46-49.0) @ 0.017 ppm and 58319 (0.008) <sup>0.020</sup> (0.024), 321 (0.017), 324 (0.008) and 326 (0.008) between 274.0- and 298.0m.

102

849103

LABORATORY		ANALABS, Cooco											AAS at Cooc, others at Perth				GRID CO-ORDS:			
ANALYTICAL TECHNIQUE		AAS	AAS	AAS	ASS	AAS	AAS	AAS	Hct	XRF	XRF	XRF	XRF	XRF	AAS	A.M.G. CO ORDS:				
DETECTION LIMIT		5	5	5	0.5	5	5	5	0.1%	0.1%	0.1%	5	20	0.005	0.005	COLLAR R.L.: 399.0				
Sample No.	Sample Type	From	To	Core Rec'd	Sample Length	METAL CONTENT (ppm unless specified)											COMMENTS			
						Cu	Pb	Zn	Ag	Fe	M	Co	Na <sub>2</sub> O%	SiO <sub>2</sub> %	CaO%	Sr		Ba	S %	Hg
330	All	27.0	28.5		1.5	95	10	25	0.5	9150	90	10	0.09	78.9	0.01	10	110	0.700	0.160	
331A	Split	28.5	31.5		3.0	25	15	20	0.5	8000	80	10	0.12	80.5	X	15	120	0.460	0.080	
331B		28.5	31.5		3.0	15	10	20	0.5	5650	75	10	0.11	79.8	X	15	120	0.290	0.030	
332		31.5	33.0		1.5	15	5	15	X	3500	80	15	0.09	79.5	X	20	120	0.150	0.010	
333		33.0	34.5		1.5	20	5	10	0.5	4300	90	10	0.08	80.3	X	20	150	0.025	0.020	
334		34.5	37.5		3.0	15	5	10	X	4300	105	10	0.09	77.8	X	20	140	0.015	0.050	
335		37.5	40.5		3.0	125	15	20	0.5	4500	100	10	0.11	78.6	X	20	140	X	0.040	
336		40.5	43.5		3.0	15	5	10	0.5	4200	95	5	0.09	79.5	0.01	20	130	0.015	0.030	
337		43.5	46.5		3.0	15	10	20	X	5500	125	10	0.11	78.9	0.01	25	130	0.025	0.180	
338		46.5	49.5		3.0	10	5	20	0.5	3400	90	10	0.09	81.3	X	25	170	0.015	0.050	
339		49.5	52.5		3.0	15	5	20	X	1750	110	15	0.09	79.8	X	35	180	X	0.020	
340		52.5	55.5		3.0	20	X	20	X	4950	85	10	0.09	80.8	X	25	250	0.200	0.105	
341		55.5	58.5		3.0	15	5	40	X	9950	60	25	0.22	66.2	X	20	320	1.100	0.120	
342		58.5	61.5		3.0	15	15	30	0.5	1.60%	70	20	0.09	79.7	X	50	290	1.600	0.090	
343		61.5	64.5		3.0	10	5	20	0.5	1.15%	70	5	0.09	82.6	X	55	190	1.100	0.080	
344		64.5	67.5		3.0	10	5	10	0.5	1.25%	60	10	0.05	79.4	X	70	140	1.400	0.055	
345		67.5	70.5		3.0	15	10	10	0.5	1.05%	55	5	0.03	76.0	X	80	130	1.250	0.060	
346		70.5	73.5		3.0	20	5	20	0.5	1.00%	85	10	0.15	77.1	X	55	240	1.150	0.060	
347		73.5	76.5		3.0	20	15	40	0.5	1.35%	100	10	0.12	78.8	X	35	260	1.350	0.020	
348		76.5	79.5		3.0	20	10	30	0.5	1.40%	40	10	0.08	77.4	X	45	280	1.600	0.050	
349		79.5	82.5		3.0	15	10	115	0.5	9100	50	15	0.11	79.9	X	55	330	0.940	0.060	
350		82.5	85.5	23.8?	2.7	60	15	55	0.5	1.80%	75	15	0.12	74.9	X	400	370	2.350	0.060	
351		83.8	84.0		0.20	600	20	80	3.5	20.0%	105	40	0.07	36.9	X	10	320	27.0	0.520	
352		85.2	85.7		0.50	890	35	45	4.0	20.5	30	40	0.06	32.6	X	25	210	28.9	5.600	
353		85.7	88.5		2.8	35	25	100	X	2.15%	95	15	0.11	77.9	X	35	320	2.500	0.130	
354		88.5	91.5		3.0	30	25	45	X	2.70%	85	15	0.11	76.0	X	55	270	3.200	0.100	
355		91.5	91.5		3.0	60	15	105	X	3.05%	60	15	0.12	72.9	X	35	230	4.000	0.140	
356		94.5	95.6		1.1	40	10	15	0.5	2.50%	60	10	0.15	75.8	X	35	270	2.950	0.090	
357		95.6	97.0		1.6	45	25	195	X	2.20%	50	15	0.14	71.4	X	40	390	2.550	0.195	
358		97.0	97.8		0.8	65	25	155	0.5	2.80%	60	15	0.15	69.8	X	40	270	2.650	0.125	
359		97.8	100.5		2.7	15	10	70	X	1.50%	65	5	0.16	77.5	X	35	310	1.900	0.065	
360		100.5	103.5		3.0	10	10	35	X	9950	80	10	0.11	76.0	X	30	350	1.000	0.030	
361		103.5	106.5		3.0	10	10	30	X	8050	55	15	0.08	78.6	X	25	360	0.900	0.020	
362		106.5	109.5		3.0	10	5	15	X	1.20%	35	15	0.11	75.9	X	20	400	1.350	0.045	
363		109.5	112.5		3.0	10	5	50	X	1.80%	115	15	0.71	70.4	0.01	40	960	1.950	0.040	
364		112.5	115.5		3.0	10	15	85	X	2.00%	70	10	1.65	70.5	0.04	50	830	2.100	0.058	
365		115.5	118.5		3.0	10	35	85	0.5	2.10%	80	15	1.11	69.6	0.01	30	930	2.500	0.050	
366		118.5	121.5		3.0	15	35	100	X	2.45%	90	15	0.66	69.1	0.01	30	960	2.750	0.055	
367		121.5	124.5		3.0	10	15	55	X	2.45%	95	15	1.40	69.3	0.04	55	940	2.750	0.050	
368		124.5	127.5		3.0	15	15	130	X	2.85%	105	20	0.11	69.1	X	15	960	3.150	0.080	
369		127.5	130.5		3.0	15	15	60	0.5	2.35%	90	15	1.42	70.0	0.09	60	820	2.650	0.055	
370		130.5	133.5		3.0	10	15	40	0.5	2.55%	100	15	2.39	72.2	0.14	110	950	2.750	0.065	
371		133.5	136.5		3.0	15	10	40	0.5	2.40%	70	15	0.08	69.8	0.04	15	600	2.750	0.065	
372		136.5	139.5		3.0	15	15	55	0.5	2.25%	90	10	1.50	71.5	0.10	60	810	2.550	0.060	
373		139.5	142.5		3.0	20	20	40	0.5	2.15%	70	15	0.22	71.9	0.04	15	840	2.400	0.075	

GRID CO-ORDS: 383,551.6mE  
A.M.G. CO ORDS: 5,386,826.7mN  
COLLAR R.L.: 399.0  
COLLAR DIP: -60°  
AZIMUTH: 285° AMC  
TOTAL DEPTH: 379.5m

*Pumiceous thin Ash flows.*

*Pdchstone with minor  
and thin breccia  
interbeds.*

*City Anhyd. lava.*

*epidastite breccia lens*

403

849104

ELECTROLYTIC ZINC COMPANY OF ASIA LTD.

MINERAL RESOURCES DIVISION - TASMANIA

DIAMOND DRILL CORE GEOCHEMICAL ANALYSES RECORD

HOLE No. BNP 251

SHEET No. 2

Sample No.	Sample Type	From	To	Core Rec'd	Sample Length	METAL CONTENT (ppm unless specified)													COMMENTS	
						Cu	Pb	Zn	Ag	Fe	Mn	Co	Mo, U	SiO <sub>2</sub>	CaO	Sr	Ba	S %		Hg
374		142.5	145.5		3.0	20	15	20	0.5	1.70%	75	10	0.12	74.2	X	10	630	1.750	0.045	
375		145.5	148.5		3.0	15	10	40	X	1.25%	65	10	0.11	77.1	X	15	500	1.450	0.040	
376		148.5	151.5		3.0	10	10	60	0.5	1.45%	90	10	0.15	77.6	0.01	10	370	1.450	0.170	
377		151.5	154.5		3.0	15	10	15	0.5	1.50%	65	10	0.14	75.9	0.01	10	380	1.750	0.100	
378		154.5	157.5		3.0	30	5	25	0.5	1.55%	65	10	0.11	76.7	0.02	15	460	1.600	0.090	
379		157.5	160.5		3.0	10	5	10	0.5	1.55%	65	10	0.12	75.2	0.02	10	480	1.550	0.115	
380		160.5	163.5		3.0	15	10	15	X	1.55%	65	5	0.05	76.9	0.02	16	670	1.600	0.060	
381		163.5	165.0		1.5	10	10	15	0.5	1.35%	95	10	0.11	77.7	0.02	15	790	1.450	0.095	massive pyrite
382		165.0	166.5		1.5	10	10	20	0.5	1.80%	105	5	0.08	76.1	0.04	15	1050	1.710	0.090	
383		166.5	169.5		3.0	15	10	20	0.5	2.10%	185	5	0.08	73.9	0.06	9	730	1.850	0.120	
384		169.5	172.5		3.0	15	10	25	0.5	1.65%	225	10	0.88	77.4	0.07	35	700	1.300	0.080	
385		172.5	175.5		3.0	15	20	25	0.5	1.40%	175	5	0.45	76.5	0.04	35	730	1.250	0.080	
386		175.5	178.5		3.0	10	15	30	0.5	1.55%	150	5	0.32	78.7	0.02	25	1150	1.100	0.070	
387		178.5	181.5		3.0	30	10	90	0.5	3.75%	1000	20	0.90	67.4	1.35	50	660	1.050	0.150	
388		181.5	184.5		3.0	10	10	20	X	1.35%	165	5	0.18	77.2	0.06	20	540	1.300	0.055	
389		184.5	187.5		3.0	15	30	60	0.5	1.40%	195	5	1.35	74.7	0.13	65	880	1.550	0.070	
390		187.5	190.5		3.0	10	40	65	0.5	1.35%	235	5	2.21	74.9	0.25	75	1100	1.350	0.080	
391		190.5	193.5		3.0	15	30	50	0.5	1.35%	210	5	1.29	74.2	0.15	80	1050	1.350	0.070	Pyrite / sphalerite
392		193.5	196.5		3.0	10	15	90	X	1.70%	300	15	2.38	77.6	0.41	90	880	1.100	0.030	
393		196.5	199.5		3.0	20	25	90	X	2.30%	175	15	1.03	76.2	0.12	50	1000	1.800	0.050	pyrite
394		199.5	202.5		3.0	15	30	65	X	1.55%	175	10	1.10	78.0	0.14	65	1050	1.350	0.050	
395		202.5	205.5		3.0	15	20	50	X	1.75%	165	10	0.85	76.1	0.20	65	1050	1.500	X	
396		205.5	208.5		3.0	30	375	395	0.5	2.10%	285	20	2.39	75.9	0.28	130	1050	1.350	0.090	
397		208.5	211.5		3.0	20	40	70	X	1.50%	295	10	2.66	76.2	0.52	160	1350	1.150	0.035	
398		211.5	214.5		3.0	25	40	90	X	1.80%	280	10	1.67	76.2	0.30	100	1500	1.050	0.040	
399		214.5	217.5		3.0	20	15	40	X	1.90%	70	10	0.09	76.0	0.06	25	1050	1.750	0.035	
400		217.5	220.5		3.0	15	15	20	X	2.15%	50	10	0.11	75.7	0.05	95	440	2.550	0.030	Sphalerite with pyrite
401		220.5	223.5		3.0	15	10	50	X	1.90%	70	10	0.09	76.9	0.05	30	620	1.800	X	
402		223.5	226.5		3.0	15	15	20	X	2.20%	75	10	0.12	76.1	0.04	190	1250	2.300	X	
403		226.5	229.5		3.0	20	5	35	X	1.95%	50	15	0.11	76.8	0.03	150	2150	2.100	0.040	
404		229.5	232.5		3.0	15	10	25	X	1.90%	50	10	0.13	74.4	0.05	30	620	1.850	X	Pyrite
405		232.5	235.5		3.0	20	15	45	X	2.40%	120	15	0.09	73.6	0.14	25	860	2.300	0.035	
406		235.5	238.5		3.0	25	15	85	X	2.95%	390	15	0.10	70.9	1.60	40	1250	1.900	0.030	
407		238.5	241.5		3.0	30	20	150	X	4.00%	1100	75	0.07	67.9	3.70	90	1200	0.600	0.035	Epithermal? with pyrite
408		241.5	244.5		3.0	35	20	85	X	2.40%	180	15	0.08	74.3	0.50	20	1250	2.100	0.030	
409		244.5	247.5		3.0	35	20	60	X	2.80%	200	20	0.09	72.2	0.40	20	1200	2.350	0.040	
410		247.5	250.5		3.0	45	25	80	X	2.65%	205	20	0.32	72.6	0.21	15	1050	2.350	0.035	
411		250.5	253.5		3.0	35	20	60	X	2.50%	110	20	0.09	73.7	0.10	15	1150	2.650	0.030	
412		253.5	256.5		3.0	35	20	60	X	2.50%	110	20	0.09	73.7	0.10	15	1150	2.650	0.030	
413		256.5	259.5		3.0	45	160	200	X	2.75%	420	20	1.12	71.5	0.70	40	1200	2.600	0.050	
414		259.5	262.5		3.0	20	45	105	0.5	2.85%	140	15	0.09	72.7	0.07	15	940	2.850	0.050	
415		262.5	265.5		1.0	30	35	20	1.0	2.85%	55	20	0.07	72.1	0.05	20	420	3.1	0.245	
416		263.5	264.5		1.0	45	55	25	1.5	7.65%	65	25	0.07	65.1	0.05	10	320	3.1	0.240	
417		264.5	265.5		1.0	35	25	20	1.5	4.95%	90	15	0.08	66.5	0.07	20	370	5.3	0.200	Ash seeds
418		265.5	266.5		1.0	35	25	15	1.0	3.55%	55	20	0.07	70.6	0.03	10	320	3.7	0.155	
419		266.5	267.5		1.0	45	80	30	3.0	10.5%	95	20	0.06	57.5	0.04	10	360	11.9	0.270	
420		267.5	268.5		1.0	20	100	235	1.5	4.40%	400	15	0.06	70.0	0.60	15	450	4.8	0.125	
421		268.5	269.5		1.0	45	185	1650	2.5	10.5%	70	30	0.05	56.4	0.02	X	500	12.5	0.220	
422		269.5	270.5		1.0	25	35	30	1.0	6.10%	75	15	0.05	68.2	0.02	8	660	6.9	0.125	
423		270.5	271.5		1.0	15	25	40	0.5	3.75%	105	20	0.06	71.2	0.02	8	950	3.8	0.090	
424		271.5	272.4		1.0	20	830	900	1.0	3.15%	140	15	0.06	71.5	0.03	30	1750	3.3	0.163	
425		272.4	274.5		2.0	20	115	250	X	1.95%	310	15	0.07	73.9	0.21	15	1250	1.850	0.090	Pyrite
426		274.5	277.5		3.0	20	65	95	X	2.10%	405	15	0.23	72.7	0.37	20	1050	2.550	0.045	
427		277.5	280.5		3.0	75	105	230	0.5	1.45%	1100	15	0.21	73.3	1.40	30	860	1.350	0.055	

10A

849105

Sample No	Sample Type	From	To	Core Rec'd	Sample Length	METAL CONTENT (ppm unless specified)													COMMENTS	
						Cu	Pb	Zn	Ag	Fe	Mn	Co	Na <sub>2</sub> O%	SiO <sub>2</sub> %	CuO%	Sr	Ba	S%		Hg
428		280.5	283.5		3.0	25	100	235	X	1.45	1350	10.	0.30	72.3	1.50	30	850	1.300	0.060	
429		283.5	286.5		3.0	10	85	280	X	1.40	1200	15	0.21	73.2	1.20	25	810	1.300	0.050	
58400		286.5	289.5		3.0	45	40	80	X	1.40	640	15	0.09	74.5	0.56	15	800	1.300	0.030	
431		287.5	292.5		3.0	15	30	85	X	1.50	1200	15	0.09	73.6	0.96	20	860	1.400	X	
432		292.5	295.5		3.0	135	45	95	X	1.70	380	15	0.06	74.2	0.20	15	770	1.650	X	
433		295.5	298.5		3.0	15	65	170	X	1.45	1250	10	0.06	74.1	1.18	20	790	1.400	0.030	
434		298.5	301.5		3.0	15	35	165	X	1.40	1350	15	0.06	74.0	0.97	25	800	1.400	X	
435		301.5	303.5		1.5	15	35	165	X	1.40	1350	15	0.06	74.0	0.97	25	800	1.400	X	
436		303.5	304.5		1.5	20	25	220	X	1.40	2050	10	0.04	74.4	1.05	20	690	1.250	0.030	
437		304.5	307.5		3.0	25	20	130	X	1.60	2100	15	0.05	73.8	0.98	15	740	1.250	X	
438		307.5	310.5		3.0	10	30	95	X	1.35	1050	10	0.05	73.9	0.65	20	740	1.300	X	
439		310.5	313.5		3.0	20	85	510	X	1.45	2900	15	0.05	73.4	2.25	25	650	1.100	0.060	
58440		313.5	316.5		3.0	20	70	720	X	1.45	2150	10	0.05	74.8	1.42	15	530	1.400	0.090	
441		316.5	319.5		3.0	20	55	85	X	1.75	1800	15	0.06	73.1	1.62	20	560	1.600	0.030	
442		319.5	322.5		3.0	25	170	300	X	1.60	2450	15	0.67	72.2	2.03	40	650	1.650	0.050	
443		322.5	325.5		3.0	20	145	450	X	1.80	2200	15	0.59	72.4	1.57	40	700	1.250	0.070	
444		325.5	328.5		3.0								1.06	73.7	2.08	50	630	1.300	X	
445		328.5	331.5		3.0	25	45	70	X	1.95	2400	15	0.84	73.5	1.79	50	980	1.200	0.030	
446		331.5	334.5		3.0	15	65	240	X	1.75	2150	15	0.79	73.7	1.69	50	890	0.740	0.030	
447		334.5	337.5		3.0	15	15	225	0.5	1.5	2000	15	0.40	71.5	1.27	35	980	1.000	0.040	
448		337.5	340.5		3.0	25	20	380	X	2.70	2700	20	0.03	68.9	2.54	40	540	2.000	0.075	
449		340.5	343.5		3.0	30	20	140	X	3.35	5100	15	0.02	65.3	4.94	110	370	2.550	0.040	
58450		343.5	346.5		3.0	65	65	130	X	5.10	8150	15	0.01	57.2	7.38	150	240	4.550	0.160	
451		346.5	349.5		3.0	30	30	325	X	3.20	8000	15	0.26	65.3	4.40	75	460	2.100	0.080	
452		349.5	352.5		3.0	30	50	1450	X	2.75	5150	20	0.05	69.5	2.72	45	370	2.150	0.170	
453		352.5	355.5		3.0	25	55	120	X	3.10	1450	25	0.69	69.3	2.02	50	420	2.400	0.050	
454		355.5	358.5		3.0	15	20	95	X	1.90	1900	15	0.79	72.5	3.30	80	450	0.710	0.030	
455		358.5	361.5		3.0	10	5	80	0.5	1.50	1200	15	1.85	72.5	2.30	95	710	0.005	0.030	
456		361.5	364.5		3.0	10	10	80	X	1.30	1450	10	1.01	70.6	3.69	100	500	0.100	0.030	
457		364.5	367.5		3.0	10	35	560	0.5	2.95	4300	20	0.30	62.0	8.20	160	290	0.620	0.120	
458		367.5	370.5		3.0	15	145	455	0.5	1.90	2150	15	0.44	69.2	2.75	55	410	1.200	0.100	
459		370.5	373.5		3.0	15	00	660	X	1.95	2050	15	1.14	69.0	2.15	55	610	1.000	0.090	
58460		373.5	376.5		3.0	25	250	1750	X	2.05	2450	15	0.71	70.1	2.59	55	420	0.910	0.190	
461		376.5	379.5		3.0	15	45	370	X	1.85	2750	15	0.61	71.9	3.40	60	410	0.830	0.070	

All samples were also assayed for Ni and Bi by AAS 103 and for As by AAS after 30g fire assay fusion.

Ni Ni assayed 5-10 ppm for all samples 58330-58391 and 10-30 ppm for a second batch 58351-58352 and 58414-58424. But assays from the third batch of 58392-58461 mostly assayed 35-220ppm. This suggests Ni contamination has occurred during sample preparation.

Bi All Bi assayed below the limit of detection (10 ppm) except 58351-58352 and 58416-58424 where Bi assayed 10-80 ppm.

Au All Au assayed below the limit of detection (0.005 ppm) except 58352 @ 0.050 ppm and 58403, -411, -425, -426, -440, -451 and -453 which all recorded 0.008 ppm.

*Pumiceous Igr.*

*Pumiceous Lithic*

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849106

DIAMOND DRILL CORE GEOCHEMICAL ANALYSES RECORD

LABORATORY  ANALYTICAL TECHNIQUE  DETECTION LIMIT						ANALABS, Coocce													A.A.S. at Coocce, others at Perth					GRID CO-ORDS: 383,728.6mE A.M.G. CO-ORDS: 5,386,970.3mN COLLAR R.L.: 395.7 COLLAR DIP: 50° AZIMUTH: 285° A.M.G. TOTAL DEPTH: 439.3m		
						AAS	AAS	AAS	AAS	AAS	AAS	AAS	AAS	AAS	XRF	XRF	XRF	AAS	Wet	XRF	XRF	Fire AAS				
						103	103	103	103	103	103	103	103	114	402	401	401	122	408	408	408	0.005				
						5	5	5	0.5	5	5	5	5	5	0.003	5	20	0.005	0.1%	0.005	0.1%	0.005				
Sample No	Sample Type	From	To	Core Rec'd	Sample Length	METAL CONTENT (ppm unless specified)													XRF	XRF	Fire AAS					
						Cu	Pb	Zn	Ag	Fe	Mn	Co	Ni	As	S %	Sr	Ba	Hg	Na, O%	SiO <sub>2</sub> %	CaO %	Au				
61401	All	117.0	118.5		1.3	10	50	80	X	2.10%	125	15	35	24	1.33	8	380	0.010	0.13	76.4	0.02	0.042				
402		118.5	121.5		3.0	10	40	100	X	1.55%	30	20	40	22	1.26	10	420	0.030	0.21	74.0	X	0.017				
403		121.5	124.5		3.0	15	45	65	X	1.40%	30	20	30	10	1.13	10	390	X	0.17	74.2	0.03	0.017				
404		124.5	127.5		3.0	10	30	35	X	1.55%	30	20	55	2	1.27	10	350	X	0.20	78.4	0.01	0.017				
405		127.5	130.5		3.0	5	30	40	X	1.30%	25	20	55	7	1.18	9	290	X	0.20	80.0	X	0.017				
406		130.5	133.5		3.0	5	20	20	X	1.30%	30	20	40	3	1.03	10	340	X	0.19	80.0	X	0.008				
407		133.5	136.5		3.0	10	40	25	X	1.60%	25	20	40	5	1.32	15	460	X	0.15	79.2	X	X				
408		136.5	139.5		3.0	5	25	20	X	1.75%	30	20	30	9	1.49	6	510	X	0.09	79.0	X	0.008				
409		139.5	142.5		3.0	20	35	25	X	2.20%	30	20	35	10	1.99	10	470	X	0.13	73.8	X	X				
61410		142.5	145.5		3.0	5	25	25	X	1.40%	30	15	30	11	1.10	7	450	X	0.14	77.5	X	0.067				
411		145.5	148.5		3.0	5	25	20	X	1.35%	35	15	35	8	1.01	7	440	X	0.14	73.2	0.01	0.017				
412		148.5	151.5		3.0	5	25	40	X	1.30%	25	15	45	6	1.26	9	360	0.010	0.11	78.3	0.03	0.008				
413		151.5	154.5		3.0	40	40	80	X	1.95%	25	20	50	4	2.17	9	330	0.030	0.14	75.8	0.04	0.008				
414		154.5	157.5		3.0	20	35	25	X	1.80%	25	15	35	8	1.94	9	390	0.020	0.16	73.4	0.04	0.017				
415		157.5	160.5		3.0	15	30	20	X	1.70%	20	15	35	5	1.67	10	390	X	0.16	74.9	0.05	0.017				
416		160.5	163.5		3.0	10	30	20	X	1.60%	25	15	45	8	1.41	8	360	X	0.11	76.0	0.03	0.008				
417		163.5	166.5		3.0	5	30	45	X	1.40%	50	15	40	8	1.19	7	410	X	0.10	75.6	0.05	X				
418		166.5	169.5		3.0	5	25	25	X	6800	25	10	25	7	1.22	9	400	X	0.14	75.8	0.05	X				
419		169.5	172.5		3.0	5	30	55	X	1.50%	55	15	40	6	1.18	10	440	X	0.11	73.7	0.03	0.008				
61420		172.5	175.5		3.0	10	40	110	X	2.10%	50	20	45	6	1.74	15	440	0.010	0.31	72.0	0.16	0.008				
421		175.5	178.5		3.0	10	40	100	X	2.25%	55	20	45	7	1.63	10	410	X	0.12	74.0	0.08	0.008				
422		178.5	181.5		3.0	10	45	125	X	1.70%	55	20	45	2	1.26	6	470	X	0.13	74.9	0.05	X				
423		181.5	184.5		3.0	10	35	100	X	1.75%	90	20	45	7	1.16	10	580	0.010	0.15	70.0	0.04	X				
424		184.5	187.5		3.0	10	35	70	X	4.00%	120	35	55	24	2.13	25	350	0.020	0.85	63.2	0.56	0.008				
425		187.5	190.5		3.0	15	55	60	X	4.05%	80	30	35	15	2.95	30	410	X	0.91	63.4	0.47	X				
426		190.5	193.5		3.0	5	30	25	X	1.80%	40	20	45	22	1.53	6	450	X	0.10	74.0	0.02	X				
427		193.5	196.5		3.0	10	30	30	X	1.70%	50	20	40	21	1.25	8	500	X	0.09	74.8	0.04	0.008				
428		196.5	199.5		3.0	10	25	25	X	1.65%	45	15	80	8	1.10	7	430	X	0.07	73.9	0.03	0.008				
429		199.5	202.5		3.0	5	25	25	X	1.50%	35	15	35	8	1.03	8	430	X	0.07	76.7	0.03	0.024				
61430		202.5	205.5		3.0	10	55	65	X	1.85%	45	15	145	5	1.25	8	330	X	0.07	76.8	0.04	0.008				
431		205.5	208.5		3.0	10	35	95	X	1.50%	15	15	40	6	1.26	10	240	X	0.12	77.0	0.05	0.008				
432		208.5	211.5		3.0	15	60	80	X	2.05%	140	20	210	4	1.58	9	400	X	0.13	73.6	0.07	X				
433		211.5	214.5		3.0	5	40	50	X	1.60%	80	15	55	4	1.39	10	410	X	0.12	72.3	0.05	0.032				
434		214.5	217.5		3.0	15	45	100	X	2.00%	610	20	185	19	1.34	15	390	X	0.09	73.6	0.11	0.017				
435		217.5	220.5		3.0	15	35	65	X	1.90%	35	20	50	5	2.00	10	470	X	0.14	72.5	0.05	0.017				
436		220.5	223.5		3.0	10	40	80	X	1.80%	35	20	55	19	1.40	10	570	X	0.11	73.4	0.05	0.008				
437		223.5	226.5		3.0	15	30	25	X	2.00%	90	15	235	5	1.48	15	630	X	0.07	74.0	0.06	X				
438		226.5	229.5		3.0	10	30	20	X	1.85%	65	15	65	6	2.00	15	640	X	0.11	74.2	0.17	0.025				
439		229.5	232.5		3.0	15	20	20	X	2.20%	45	15	210	21	2.33	45	1700	0.010	0.11	74.4	0.06	0.017				
61440		232.5	235.5		3.0	10	20	20	X	2.55%	75	15	150	4	1.77	25	810	X	0.13	72.9	0.03	0.008				
441		235.5	238.5		3.0	10	30	85	X	1.70%	145	15	70	5	1.35	30	400	X	0.10	74.2	0.38	0.032				
442		238.5	241.5		3.0	5	15	15	X	5100	25	15	135	3	0.24	90	220	0.010	0.12	78.9	0.06	0.008				
443		241.5	244.5		3.0	5	20	15	X	1.45%	25	15	95	4	1.26	55	430	0.010	0.16	74.5	0.03	0.008				
444		244.5	247.5		3.0	5	20	15	X	1.55%	20	10	75	2	1.50	30	520	X	0.18	72.6	0.03	0.008				
445		247.5	250.5		3.0	5	20	20	X	1.50%	30	10	70	4	1.42	50	570	X	0.21	73.9	0.05	X				

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849107

ELECTROLYTIC ZINC COMPANY OF ASIA LTD.  
MINERAL RESOURCES DIVISION - TASMANIA

DIAMOND DRILL CORE GEOCHEMICAL ANALYSES RECORD

HOLE No. BBP 254  
SHEET No. 2

Sample No.	Sample Type	From	To	Core Rec'd	Sample Length	METAL CONTENT (ppm unless specified)																
						Cu	Pb	Zn	Ag	Fe	Mn	Co	Ni	As	S %	Sr	Ba	Hg	Na <sub>2</sub> O	SiO <sub>2</sub> %	CaO %	Au
61444		250.5	253.5		3.0	15	25	165	X	1.75%	20	15	195	3	1.50	35	570	X	0.17	73.8	0.05	X
447		253.5	256.5		3.0	10	25	20	X	1.80%	25	15	165	1	1.68	20	650	0.040	0.18	72.6	0.05	X
448		256.5	259.5		3.0	10	30	30	X	1.55%	25	15	145	4	1.50	20	690	0.030	0.20	74.9	0.04	X
449		259.5	262.5		3.0	10	35	70	X	1.90%	60	20	65	2	1.72	20	770	X	0.20	69.7	0.21	X
61450		262.5	265.5		3.0	10	25	55	X	2.05	50	20	125	6	1.68	15	610	0.010	0.17	73.1	0.15	X
451		265.5	268.5		3.0	10	30	100	X	1.95%	40	25	65	3	1.20	15	650	X	0.17	71.6	0.13	X
452		268.5	271.5		3.0	5	50	220	X	1.85%	75	20	130	6	1.90	15	620	0.020	0.15	72.6	0.25	X
453		271.5	274.5		3.0	10	55	320	X	1.70%	195	20	120	4	1.46	20	600	0.030	0.19	72.4	0.74	X
454		274.5	277.5		3.0	5	25	145	X	1.75%	45	20	70	5	1.80	10	660	0.040	0.18	71.5	0.11	0.008
455		277.5	280.5		3.0	10	25	25	X	1.80%	35	15	175	4	1.81	10	620	X	0.21	70.8	0.06	X
456		280.5	283.5		3.0	10	25	60	X	1.65%	45	15	110	3	1.75	14	560	0.040	0.11	74.2	0.04	0.025
457		283.5	286.5		3.0	5	20	30	X	1.40%	40	15	60	5	1.72	34	1290	X	0.11	76.9	0.04	0.017
458		286.5	289.5		3.0	10	25	30	X	1.70%	100	20	150	5	1.82	85	1650	0.020	1.09	73.1	0.21	0.008
459		289.5	292.5		3.0	5	25	25	X	1.20%	130	15	55	4	1.65	35	960	X	1.17	71.7	0.32	0.008
61460		292.5	295.5		3.0	10	25	200	X	1.70%	90	15	170	3	1.73	15	860	0.030	0.16	72.5	0.23	0.017
461		295.5	298.5		3.0	10	20	25	X	1.60%	400	15	55	4	1.55	35	770	X	0.16	69.0	2.15	0.082
462		298.5	301.5		3.0	10	20	40	X	2.05%	400	20	145	6	1.66	20	720	X	0.24	71.5	0.42	X
463		301.5	304.5		3.0	10	20	35	X	1.60%	85	20	80	6	1.49	10	830	X	0.14	73.2	0.16	X
464		304.5	307.5		3.0	10	20	35	X	1.65%	60	15	140	5	1.62	15	770	X	0.16	72.2	0.10	0.008
465		307.5	310.5		3.0	10	40	270	X	2.05%	525	20	60	7	1.80	45	750	0.020	0.13	67.9	2.32	X
466		310.5	313.5		3.0	10	35	165	X	1.70%	170	15	95	7	1.63	20	770	0.030	0.14	73.2	0.41	X
467		313.5	316.5		3.0	5	30	70	X	1.60%	125	20	70	7	1.47	20	790	0.010	0.25	72.1	0.24	X
468		316.5	319.5		3.0	5	25	45	X	1.55%	130	15	130	24	1.80	25	870	X	0.69	72.9	0.17	X
469		319.5	322.5		3.0	5	30	75	X	1.40%	125	15	75	21	1.50	30	780	X	0.89	73.6	0.17	X
61470		322.5	325.5		3.0	5	20	45	X	1.70%	195	15	145	25	1.64	95	820	X	2.29	70.7	0.30	X
471		325.5	328.5		3.0	5	30	35	X	1.70%	100	20	85	23	1.74	85	850	X	2.09	68.9	0.29	X
472		328.5	331.5		3.0	10	30	60	X	1.75%	120	20	75	22	1.73	70	610	X	2.16	71.0	0.20	0.008
473		331.5	334.5		3.0	15	25	60	X	2.15%	160	20	405	10	1.74	55	610	0.010	1.39	71.5	0.19	0.017
474		334.5	337.5		3.0	10	20	50	X	2.15%	300	20	140	22	1.23	190	1100	X	4.83	68.1	0.61	0.017
475		337.5	340.5		3.0	10	20	85	X	2.15%	435	15	165	20	0.32	220	1100	0.010	4.85	69.3	0.82	0.008
476		340.5	343.5		3.0	5	15	85	X	2.10%	500	15	105	3	0.08	210	1050	X	4.85	68.4	0.65	0.017
477		343.5	346.5		3.0	5	20	80	X	1.95%	420	20	95	11	0.32	190	1250	X	5.00	68.1	0.50	0.017
478		346.5	349.5		3.0	10	35	110	X	2.55%	585	20	110	18	0.77	150	1000	X	3.86	68.4	0.57	0.080
479		349.5	352.5		3.0	20	25	75	X	3.85%	555	35	185	54	3.25	160	1000	X	3.95	62.8	0.98	0.017
61480		352.5	355.5		3.0	15	30	55	X	3.15%	265	30	135	56	2.71	140	920	X	3.55	67.0	0.60	0.017
481		355.5	358.5		3.0	15	35	40	X	2.35%	255	25	185	37	2.39	160	940	X	3.15	65.8	0.97	0.017
482		358.5	361.5		3.0	10	35	45	X	2.40%	380	20	110	44	2.64	190	940	0.010	2.80	64.1	1.75	0.017
483		361.5	364.5		3.0	10	30	45	X	2.25%	455	20	15	44	2.27	180	1050	X	2.85	63.3	2.20	0.008
484		364.5	367.5		3.0	15	30	35	X	2.70%	890	20	115	860	2.57	170	990	0.010	2.83	62.6	2.50	0.017
485		367.5	370.5		3.0	10	30	25	0.5	2.50%	925	15	135	8	2.37	150	830	X	2.43	61.8	3.65	0.024
486		370.5	373.5		3.0	15	25	45	X	2.25%	575	20	275	69	1.17	120	860	X	1.85	64.2	2.60	0.017
487		373.5	376.5		3.0	10	30	45	X	1.80%	380	20	75	60	1.16	110	860	X	2.46	67.0	1.85	0.017
488		376.5	379.5		3.0	10	30	60	X	1.95%	675	20	85	20	1.14	110	770	X	2.28	64.1	3.20	0.008
489		379.5	382.5		3.0	10	25	50	0.5	2.05%	990	20	70	22	1.23	95	770	X	1.57	63.1	4.10	0.008
61490		382.5	385.5		3.0	10	90	175	0.5	2.05%	880	15	85	22	1.59	85	780	X	1.95	63.5	3.15	0.008
491		385.5	388.5		3.0	10	50	150	X	1.90%	805	20	55	27	0.98	100	800	X	2.01	65.3	2.40	0.008
492		388.5	391.5		3.0	15	35	160	X	2.35%	1250	20	135	21	1.31	120	690	X	2.27	62.0	4.20	X
493		391.5	394.5		3.0	15	20	125	X	2.00%	740	20	70	16	0.81	120	750	X	2.67	65.3	3.05	X
494		394.5	397.5		3.0	10	35	125	X	2.05%	460	15	70	16	2.01	75	750	0.040	1.43	63.1	2.15	X
495		397.5	400.5		3.0	5	40	185	X	2.05%	920	20	60	12	1.56	70	400	0.030	2.64	67.6	2.95	X
496		400.5	403.5		3.0	5	30	160	X	1.70%	485	15	70	22	1.61	60	950	0.040	0.43	70.3	1.25	0.008
497		403.5	406.5		3.0	10	20	105	X	1.55%	275	15	70	15	1.75	140	2200	0.020	1.21	69.5	1.35	X
498		406.5	409.5		3.0	10	25	90	X	1.30%	275	15	80	16	1.01	130	940	0.010	1.79	71.8	1.35	X

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849108

ELECTROLYTIC ZINC COMPANY OF ASIA LTD.  
MINERAL RESOURCES DIVISION - TASMANIA

DIAMOND DRILL CORE GEOCHEMICAL ANALYSES RECORD

HOLE No. DDP 254

SHEET No. 3

Sample No	Sample Type	From	To	Core Rec'd	Sample Length	METAL CONTENT (ppm unless specified)																
						Cu	Pb	Zn	Ag	Fe	Mn	Co	Ni	As	S %	Sr	Ba	Hg	Na <sub>2</sub> O	SiO <sub>2</sub> %	CaO %	Au
61499		409.5	412.5		3.0	5	25	40	X	1.25%	305	15	75	17	0.60	140	750	X	2.06	71.6	1.75	X
61550		412.5	415.5		3.0	5	20	40	X	1.30%	420	15	60	24	0.34	160	740	X	1.91	71.3	2.05	X
501		415.5	418.5		3.0	5	20	45	X	1.25%	535	15	80	21	0.34	130	740	X	1.59	71.3	2.75	0.008
502		418.5	421.5		3.0	5	20	45	X	1.25%	605	10	85	10	0.48	110	840	X	1.24	71.2	2.65	X
503		421.5	424.5		3.0	10	25	60	X	2.10%	495	15	65	7	1.61	50	820	X	0.72	66.4	1.90	0.008
504		424.5	427.5		3.0	30	45	1300	X	2.30%	655	15	380	10	1.40	130	810	0.110	2.49	67.7	2.25	X
505		427.5	430.5		3.0	15	40	1350	X	2.00%	325	15	90	38	1.60	140	1050	0.115	2.84	72.1	1.25	X
506		430.5	433.5		3.0	15	70	175	X	2.05%	415	20	385	32	0.61	140	1200	X	1.41	68.0	1.25	X
507		433.5	436.5		3.0	10	210	550	X	2.25%	615	15	110	79	0.84	130	980	0.050	1.44	66.2	1.60	X
508		436.5	439.5		3.0	20	40	360	X	6.10%	3150	40	70	18	0.45	280	290	0.030	3.89	50.2	6.00	0.008
			TD																			

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8.3. APPENDIX *2A*

GEOLOGICAL NOTES ON BBP 279

BBP 280

BBP 248

BBP 207

GEOLOGICAL LOG BBP 279

EL 12/72 TAS.

W. HERRMANN, DECEMBER 1986

(m)

385-416.0 Pink sparsely feldspar phyric rhyolitic lava, pink albitised phenocrysts <2% in pink-red fine grained felsic matrix.

Commonly finely flow banded with low angle to LAOC, surprisingly consistent orientation over one metre or so. Banding locally frequently obscured by alteration? associated with crosscutting unmineralised fractures.

Measured flow laminations:

386.6m	20 <sup>0</sup> to LAOC
388.4m	15 <sup>0</sup> to LAOC
390	10 <sup>0</sup> to LAOC
396	20 <sup>0</sup> to LAOC
398.2	22 <sup>0</sup> to LAOC
407.7	25 <sup>0</sup> to LAOC

416-416.6 Dark grey fine grained (Mafic)?

Sparsely feldspar phyric intrusive? rock, intrusion breccia contact against pink lava - apparently intruding breccia zone.

416.6-417.0 Pink flow banded brecciated rhyolite.

417.0-417.4 Dark grey mafic dyke?

Upper contact intrusive breccia. Lower contact diffuse, planar at 45<sup>0</sup> to LAOC.

417.4-427.4 Feldspar porphyritic lava.

Pink to greyish pink, greyer below 423m. Suspect pinkish colour related to Albitisation?

427.4-467.4 Sparsely feldspar phyric flow banded lava.

Similar to unit at above 416m but generally to grey colour. Irregular pink alteration around 437-443.

439.4-440.5 Mafic kyke.

From 442.8-451 and in short segments thereafter core is distinctly silicified/sericitised, grey colour with small irregular pyrite stringers.

Strong pyrite to 25% at 442.8-445 but thereafter diminishing to 2-5% pyrite.

Flow banding orientation seem perfectly consistent, section from 445.3-446.9m peiced to gether and showed perfect consistency.

Measured angles of flow laminations:

435.3m	35 <sup>0</sup> to LAOC
439.0	35 <sup>0</sup> to LAOC
445.3	40 <sup>0</sup> to LAOC

In places, as at 425m pyrite stringers occur in unaltered rock.

457.4-469 Pumiceous lithic ash flow tuff

Core at 457.4-458.3 is broken, minor fault? but litho contact is not faulted. Pumiceous tuff is moulded around angular lava fragments at upper contact, suggesting either sole brecciated lava flow onto unconsolidated pumiceous ash deposit or pumiceous ash deposited onto blocky lava surface.

Compaction/flow foliations in ash flow tuffs!:

460.3	40 <sup>0</sup> to LAOC
463.5	45 <sup>0</sup> to LAOC
468.1	55 <sup>0</sup> to LAOC

469-491 Pink lithic ash tuff with minor pumice clasts.

Generally rather variable includes some sections upto several metres (e.g. 480.6-485) which are near massive pink-grey feldspar phyric lava containing scattered mafic? accidental lithic xenoliths - these are considered to be large bombs rather than separate flows.

Unit becomes more ashy pumiceous below 488m where composition/flow foliation can be observed at angles varying from 65<sup>0</sup> to 25<sup>0</sup> to LAOC.

491-491.8 Mafic dyke.

491.8-492.2 Pumiceous lithic ash tuff.

Lower contact appears to be a minor fault, sharp contact with slight brecciation.

492.2-587.3 Pink rhyolitic lava.

Mainly fine grained, aphyric, sometimes weakly feldspar phyric. Locally autobrecciated as at 572.8m specimen.

Extensive local faulting shearing and associated mafic intrusions - (See Ingram's Logs in Williams 1985).

587.3-603.7 Altered fg rhyolitic lava.

Rock is essentially a fine mosaic of silica sericite even pale grey colour with occasional darker blebs ex feldspar phenocrysts?

No recognisable fragmental fabric suggests altered silicified/sericitised/pyritised equivalent of fg rhyolitic unit above.

Localised strong shearing/faulting especially in 589-590 and 599.5-602.5m

603.7-617.8 Altered lithic-xtal-vitric tuff.

Medium grey colour, totally altered to silica sericite pyrite assemblage. Pyrite as fine dissemination in range 2-3%. Generally fine fragmental lithic fabric, sometimes murky nearly obscured grading very suddenly to fine (cherty) ash tuff without fragmental component.

617.8-619.8 Intensely Altered pyritic rock.

10-20% blebby pyrite gradually decreasing down hole. Original rock type uncertain, appears to retain relict feldspar, generally fine granular appearance, could have been fine rhyolitic lava or xtal-vitric tuff?

619.8-637.2 Altered pumiceous-lithic-crystal-vitric tuff. Hyaloclastite - Ash flow?

Variable, fine granular to coarse pumiceous or pumiceous lithic fragmental; pumice and banded lithic fragments, strongly disoriented. Generally strong alteration, fine disseminated to blebby pyrite in range 2-4%.

637.2-604.8 Mafic dyke.

640.8-700 Pumiceous lithic ash flow.

Alteration and pyritisation persist to 643m thence becoming patchy and diminishing rapidly down hole. Pyrite virtually absent below 645m.

Composition and fabric similar to lower part of BBP 280.

GEOLOGICAL LOG BBP 280

EL 12/72 TAS

W HERRMANN, DECEMBER 1987

(m)

0-17 No Core.

17-74.9 Glacials.

74.9-148.5 Brecciated Altered Acid Volcanic(?).

Fabric is dominated by tectonic (fault?) brecciation and milling of formerly acid Volcanic rock, now thoroughly altered and containing near ubiquitous fine disseminated pyrite.

Several periods or events of tectonic brecciation are evident in following sequence:

- 1) pervasive sericitic alteration and pyritisation; this may have been associated with earliest tectonic brecciation but could be partly selective in coarse permeable lithic pyroclastic breccias (?).
- 2) tectonic brecciation and milling of altered rocks, associated with considerable irregular quartz veining and re-silicification of milled matrix.
- 3) latest brecciation overprints above with cross cutting quartz veins and extensive pervasive to very localised shearing and fine brecciation with associated strong argillic alteration.

The bulk of the original rock type is obscure but probably largely fine vitric ash and lithic ash flow (as below). Some sections are more massive, appear to have escaped both strong alteration and subsequent shearing - these could have been coherent unassailable lavas. Notable in intervals 104.9-108.3, 120.2-129, 131.7-139.6 but there are minor zones of latest stage brecciation quartz veining and strong matrix argillic alteration even in these formerly resistant zones. Above 93m core is quite strongly fractured with minor pinkish limonite staining on joints etc and in milled breccia matrix. Pretty well oxidised for 93m. At 93m first appearance of fresh pyrite. Fine disseminated. Zones of strongest latest stage shearing/argillic alteration are as follows:

- 87.2-88 20<sup>0</sup> to LAOC.
- 93-100.5 Completely milled, suggestion of shearing subparallel to LAOC.
- 106.4-110.1 40-50<sup>0</sup> LAOC.
- 139.6-140.7 Some heavy chlorite alteration of breccia matrix could suggest influence of mafic dykes but could be a variation on argillic alteration.
- 144.7-147.4 Heavy chlorite infilling of fault breccia matrix, suggests intrusion of mafic dyke then reactivation of fault movement. Large and small fragments of siliceous country rock incorporated but no signs of alteration selvages. Mafic material in breccia overprinted by vughy quartz veins/
- 148.5-158.8 Brecciated lithic/vitric ash flow tuff.  
Generally brecciated sericitically altered and unrecognisable as above but some short sections of core at 150.3-151.3 relatively fresh unaltered shows weakly flow foliated vitric (welded) ash with abundant small fragments of grey silica (possibly similar to altered rock?) rather locally brecciated and re-silicified with minor pyrite. Seems to grade down into massive not banded exporphyritic rock - perhaps a lava.
- 158.8-159.9 Mafic dyke (core broken).
- 159.9-163.5 Feldspar phyrlic - quartz amygdaloidal rhyolite.  
Rather massive, pale creamy grey colour, sparse pink feldspar phenocrysts and very fine linear/flattened quartz amygdales in fine creamy coloured felsic ground mass. Relatively unaltered, very minor pyrite.
- 163.5-164.2 Mafic dyke.
- 164.2-165 Altered acid volcanic?  
Faintly exporphyritic, possible similar to 159.9-163.5. No pyrite.
- 165-171.1 Mafic dyke.
- 171.1-183.0 Fine grained, grey altered vitric tuff.  
Generally massive, average 2-3% fine disseminated pyrite, weak banding at 180-183 could be bedding but probably alteration effect as there seems to be more pyrite in the darker siliceous "bands". Generally these cut core at 50-60<sup>0</sup> to LAOC and apparently quite regular in trend.

- 183-184.5 Mafic dyke.
- 184.2-244.2 Fg - Mg grey altered vitric tuff.  
Generally similar to above 183m but perhaps on average somewhat coarser grain size. Crude irregular banding relates to fine stringers of silica-pyrite alteration. Pervasive strong sericitic alteration, 2-3% disseminated pyrite.
- 244.2-244.6 Pale green streaky sericitic zone.  
Strong foliation at 30<sup>0</sup> LAOC. Small greyish phenocrysts in streaky sericitic base; could be chilled margin of flow unit or strong shearing along contact.
- 244.6-246.6 Feldspar phytic - quartz amygdaloidal lava.  
Strong alteration of plagioclase phenocrysts to dark chlorite + etc. Matrix grey, siliceous-sericitic with 5% disseminated and stringer pyrite down to 245.6m. Then mainly pinkish, less altered (remnant albite?) less than 2% pyrite.  
Lower contact marked by narrow 10cm breccia zone with chlorite-quartz infilling, possibly minor fault or fault movement along contact. (, post pyritisation).
- 246.6-248.6 Fg grey stratified altered vitric tuff.  
3% pyrite.
- 248.6-250.6 Amygdaloidal mafic dyke.  
Contains minor cubic pyrite within 50mm of lower contact, otherwise none. Lower contact against alteration vitric tuff is sharp with narrow 5mm zone of coarse re-crystallised pyrite in ash tuff. Evidence of mafic intrusive post dating alteration and pyritisation.
- 250.6-253.6 Grey altered vitric tuff.  
3% pyrite. has faint altered relicts of feldspar prisms, possibly some altered feldspar phytic fragments?
- 253.6-255.4 Feldspar porphyritic lava.  
Pinkish-grey colour, upper part is autobrecciated and selectively altered. 1% pyrite. (Upper contact missing from tray).
- 255.4-255.7 Mafic dyke.

- 255.7-256.8 Feldspar phyric/quartz amygdaloidal lava.  
1-2% pyrite.
- 256.8-257.8 Mafic dyke.
- 257.8-258.8 Feldspar porphyritic lava.  
Virtually fresh, no pyrite.
- 258.8-258.9 Pale greenish foliation sericitic contact zone.  
Foliation at 50<sup>0</sup> to LAOC.
- 258.9-261.5 Fg vitric (lithic) ash tuff.  
Variable pale grey fg vitric tuff and lithic vitric tuff; upper part noticeably lithic, lower down finer, sandy. Contains overall much pyrite, around 5% pyrite, some in quite massive irregular stringers.
- 261.5-261.6 Pale greenish sericitic contact zone.
- 261.6-263.6 Feldspar porphyritic lava.  
Dark grey, nearly fresh, very minor pyrite.
- 263.6-264.5 Mafic dyke.
- 264.5-268.7 Feldspar porphyritic lava.  
Typical chilled glassy (sericitic) contact at lower contact against.
- 268.7-269.5 Lithic vitric tuff.  
Unsorted, grey lithic ash tuff, includes fine grained siliceous tuff clasts upto 40mm and also a large 100mm block of fs. porph (rhyolitic) lava with wispy ends probably represents semi molten juvenile lava clast. Unit could be block/ash flow. Definatly not epiclastic, however contact missing. Upper contact sharp against chilled fs. proh. lava.
- 269.5-270.7 Fragmental lapilli tuff.  
Dominated by feldspar phyric lava clasts.
- 270.7-274.5 Feldspar phyric rhyodacite lava.  
Pale pinkish grey. Nearly fresh. Pyrite <2%.

## 274.2-278.5 Banded vitric tuff.

Fine grained vitric ash tuff, pyrite largely concentrated in conspicuous dark siliceous bands giving pseudo bedded appearance. These may have replaced original beds but reconstruction of core above 276m shows that banding orientations are inconsistent indicating it is probably not original bedding or if so indicating considerable slumping. Layering/banding orientations therefore not useful in structural interpretation. Pyrite overall 2% with scattered 5mm wide massive pyrite stringers.

## 278.5-287.5 Fs. porph/quartz amygdaloidal lava.

Variably altered, grey with chloritised plagioclase phenocrysts or pink with pinkish plagioclase phenocrysts (remnant albite?). Pyrite mainly disseminated, average 2-5%. Upper contact sharp, marked by 40mm fine fault breccia zone healed by chlorite-quartz-carbonate assemblage, about 45<sup>0</sup> LAOC. Lower contact rather less sharp but appears to be faintly banded porphyry sitting on lithic ash tuff with abundant pink feldspar crystals.

## 287.5-287.9 Lapilli-crystal vitric tuff.

This unit, basically weakly layered/banded vitric tuff with abundant pinkish feldspar crystals and/or pink rhyodacitic fragments; some small siliceous vitric tuff lithics. Also one 10mm well rounded clast of very pyritic (20% pyrite) silicified-sericitised rock.

Impression is that pyritisation was synvolcanic and partly reworked. This unit could represent "sputtering" lapilli/ash pyroclastic eruption preceding lava extrusion? Banding not very regular approximately 50-60<sup>0</sup> LAOC.

## 278.9-290.4 Fg pale grey vitric tuff. (Strongly Altered)

Pyrite 3%. Some obvious slump brecciation at lower part.

## 290.4-302.6 Lithic-vitric-crystal tuff. (epiclastic?)

Variable unsorted fragmental, SCR log reports it as epiclastic but glassy flow banded nature in lower part suggests pyroclastic ash flow.

The more lithic sections contain a variety of acid volcanic fragments and some very pyritic (20-30% pyrite) well rounded fragments suggesting that near massive pyrite deposits have been reworked.

Complex turbulent flow banding in glassy types (resembling obsidians of BBP 250, 251) and selective pyritisation of bands. Pyrite overall about 3%.

302.6-319.6 Fg Flinty vitric Tuff.

Generally pale - medium grey, rather massive but distinctly bedded in upper part. Bedding seems quite regular at 35-45<sup>0</sup> LAOC deformed by small shears and reverse faults. Bedding to LAOC angles:

302.6m	35-45 <sup>0</sup>
318.2m	30 <sup>0</sup>

Pyrite very fine disseminated, also locally in stringers. Averaging 1% pyrite.

319.6-327.2 Lithic-vitric tuff.

Variable clasts, some well rounded, fine grained glassy lavas to feldspar porphyritic lava contained in fine grained pale grey vitric ash wispy irregular outines molten state of deposition. Crude planar fabric - compaction or flow? generally at about 50-55<sup>0</sup> LAOC. Pyrite variable about 1-2%.

327.2-344.8 Fine grained lithic-vitric tuff.

Varies from very fine grey ash tuff to fine (5mm) lithic tuff with fragments largely composed of similar fine vitric tuff. Could be slump brecciated? Hyaloclastite? Uniform strong s-sericitic alteration, pyrite disseminated and occasional stringers. Generally 1-2%.

344.8-347.4 Mafic dyke.

Contacts not sharp.

347.4-349.8 Fine grained lithic vitric tuff as for 327.2-344.8m. Pyrite 1%.

349.8-E.O.H. Pumiceous Ignimbritic tuff.

Mainly mottled pinkish-greenish-grey. Fiamme like pumice clasts, colour olive-grey, are abundant in welded glassy pink feldspar phyric matrix sometimes with distinct flow layering. Occasional large clasts (to 100mm) of grey feldspar phyric vitric crystal tuff.

Alteration silicification is patchy, pyrite very minor generally 0.5-1%.

359.7-361.6 Mafic Dyke.

## GEOLOGICAL LOG BBP 248

EL 12/72 TAS

W HERRMANN, JANUARY 1987

(from 330m onwards)

- 330.0-337.8 Pinkish grey to pale greenish grey weakly feldspar phyrlic massive lava. Patchy blebby chlorite? alteration of feldspar phenoxsts.
- 337.8-339.4 Zone of strong shearing possibly coincident with flow boundary, lower part has blotchy cumulate lapilli character.
- 339.4-334.5 Pinkish grey to greenish grey massive lava. Blotchy "chlorite" alteration ex feldspars, seems to occur in diffuse zones adjacent to quartz-carbonate veinlets. Minor, 0.5% blebs disseminated pyrite.
- 334.5-353.8 Mafic dyke.
- 353.8-388.1 Pale pinkish grey to grey feldspar phyrlic lava. Blebby dark green alteration due to chloritisation of feldspars. Freshest rock at 384m.

At 361m there is 150mm section of multilithic fragmental rock which could be silicified fault breccia but also resembles lithic epiclastic sediment lode cast structure suggest younging up the hole i.e. to the EAST?

Feldspar phyrlic rock generally not banded, quite massive; however, notable banding and cumulate lapilli structure at 361m suggest flow boundary? Bulk of unit essentially fresh, very minor accessory pyrite <0.5% pyrite.

- 388.1-396.7 Moderately (sericitised altered-pyritic).

Feldspar phyrlic lava. Relict cumulate lapilli? or strong amygdaloidal fabric possibly allowing higher permeability for alteration solutions.

Mafic dykes at 389.3-390.6  
391.5-391.8  
394.9-395.4

Altered section mainly pale grey siliceous, locally remnants of pink, original composition similar to overlying lava. Pyrite ~ 2% as disseminated specks + blebs, mainly interstitial or in irregular tails/ stingers. Upper? section 376-396.7 marked by strong quartz-carbonate veining at 70-80° to LAOC, possibly fault breccia re-healed zone.

- 396.7-401.4 Feldspar phyric lava as in 353.8-388.1.  
Essentially fresh.
- 401.4-404.1 Intense quartz veining and brecciation associated with strong alteration and pyritisation. Fine dissemination. Pyrite ~2%.
- 404.1-411 Pink-greenish grey feldspar porph. lava as before.  
  
Strong in situ crackle brecciation below 404.6 suggests alteration with permeable zones, fault breccias and associated veins as above? This section not pyritic.
- 411-417 Flow banded partly autobrecciated glassy lava.  
  
Local patchy si-ser alteration and weak pyritisation in inter fragment breccia spaces. These are not pseudo fragmental features.
- 417-417.7 Mafic dyke.
- 417.7-423.4 Pale grey feldspar phyric lava essentially similar to above unit. Feldspar phenocrysts altered to dark greenish brown chlorite-carbonate-clay assemblage. Faint preferred orientation in plane about 50<sup>0</sup> LAOC. Local close spaced carbonate veining tending to weak fracture cleavage has rotationally consistent orientation about 60<sup>0</sup> LAOC but not same strike as banding/preferred orientation of feldspars. Only traces of pyrite.
- 423.4-431.4 Pale pinkish greenish grey flow banded feldspar phyric lava.  
  
Feldspar phenocrysts essentially fresh, pink. Glassy matrix pale pink-green, flow banding not regular. Locally contorted flow brecciated.
- 431.4-431.9 Mafic dyke; sharp parallel contacts at 60<sup>0</sup> LAOC.
- 431.9-432.5 Flow banded lava as above.
- 432.5-434 Mafic amygdaloidal dyke.
- 434-435.6 Flow banded pink feldspar phyric lava as above with short (100nm) interflow?/inter auto brecciation fragments section of fine volcanic breccia. Essentially fresh. No pyrite.
- 435.6-437.3 Mafic dyke.

- 437.3-440.9 Pink-pale green flow banded partly auto brecciated glassy rhyolite lava.
- 440.9-441.2 Mafic dyke.
- 441.2-442.8 Flow banded rhyolite.
- 442.8-443.3 Mafic dyke.  
Upper and lower contacts are intrusion breccia.
- 443.3-450.4 Pale grey-pink massive fg glassy lava.  
Sparse pale feldspar phenocrysts look fresh. 1-1.5% fine disseminated pyrite, also some stringer pyrite especially in zone 447-449.
- 450.4-453.7 Mafic dyke.
- 453.7-480.9 Pale pink grey massive fg glassy sparsely feldspar phyric lava similar to 443.3-450.4.  
Essentially fresh unmineralised except for late stage quartz-carbonate fracture veins.
- 480.9-514.3 Variable pink-grey-green blotchy partly flow banded partly autobrecciated lava. Hyaloclastite?  
Generally insignificant pyrite though there is strong silicification? and Na<sub>2</sub>O depletion.  
Mafic dykes at 507.5-508.5  
511.9-514
- 514.3-525.6 Breccia.  
Strongly brecciated and partly altered pink feldspar phyric rhyolite. This appears to be in situ mechanical brecciation (not flow brecciation) of rock with selective alteration and pyritisation of interfragment mill rock. Pyrite locally to 5%. Generally about 1-2%. Clearly precedes barren quartz-carbonate veining.  
Mafic dyke at 518.3-519.
- 525.6-539.5 Green grey pink flow banded lava, banding not consistent 40-70<sup>0</sup> to LAOC. Fresh, not mineralised.
- 539.5-577 Blotchy dark green grey to pale green pink fragmental/flow banded lithic ash flow tuff.  
Block and ash flow type. Unmineralised, unaltered.  
Mafic dyke at 565.8-567.1

## GEOLOGICAL LOG BBP 207

EL 12/72 TAS

W HERRMANN, JANUARY 1987

(m)

49-67 Mostly pale buff grey totally altered (scr-sil) with vein and disseminated pyrite. Original rock obscure but some zones, 58-60, 64-65 are pinkish perhaps less altered ex glassy lava with faint quartz-amygdaloidal character.

67-108.5 Altered glassy pitchstones.

Rather variable, often with "crazy" pyritic veining and creamy yellowish sericitic wispy zones; sometimes locally fragmental both tectonic breccia and altered pyroclastic fragmental. Less abundant massive pale grey sections with scattered blebs of pyrite and vague relict feldspar phyric fabric.

Pyrite generally averages about 2% locally upto 5%.

108.5-115.8 Altered and pyrite veined lava?

Relict fabric suggestive of massive glassy perhaps spherulitic or feldspar phyric lava. Rock not totally altered; strong intense network of fine pyritic veinlets. Pyrite averages 3-4% mainly in veinlets. Diminishing pyrite below 113m.

115.8-116.5 Lapilli tuff.

Strong alteration, 2% disseminated pyrite.

116.5-130.2 Altered feldspar phyric lava.

Mostly strongly altered, grey, 2-4% disseminated pyrite. Some patches near 117-120 show relict pink colour and feldspar phyric fabrics. Local stringer pyrite.

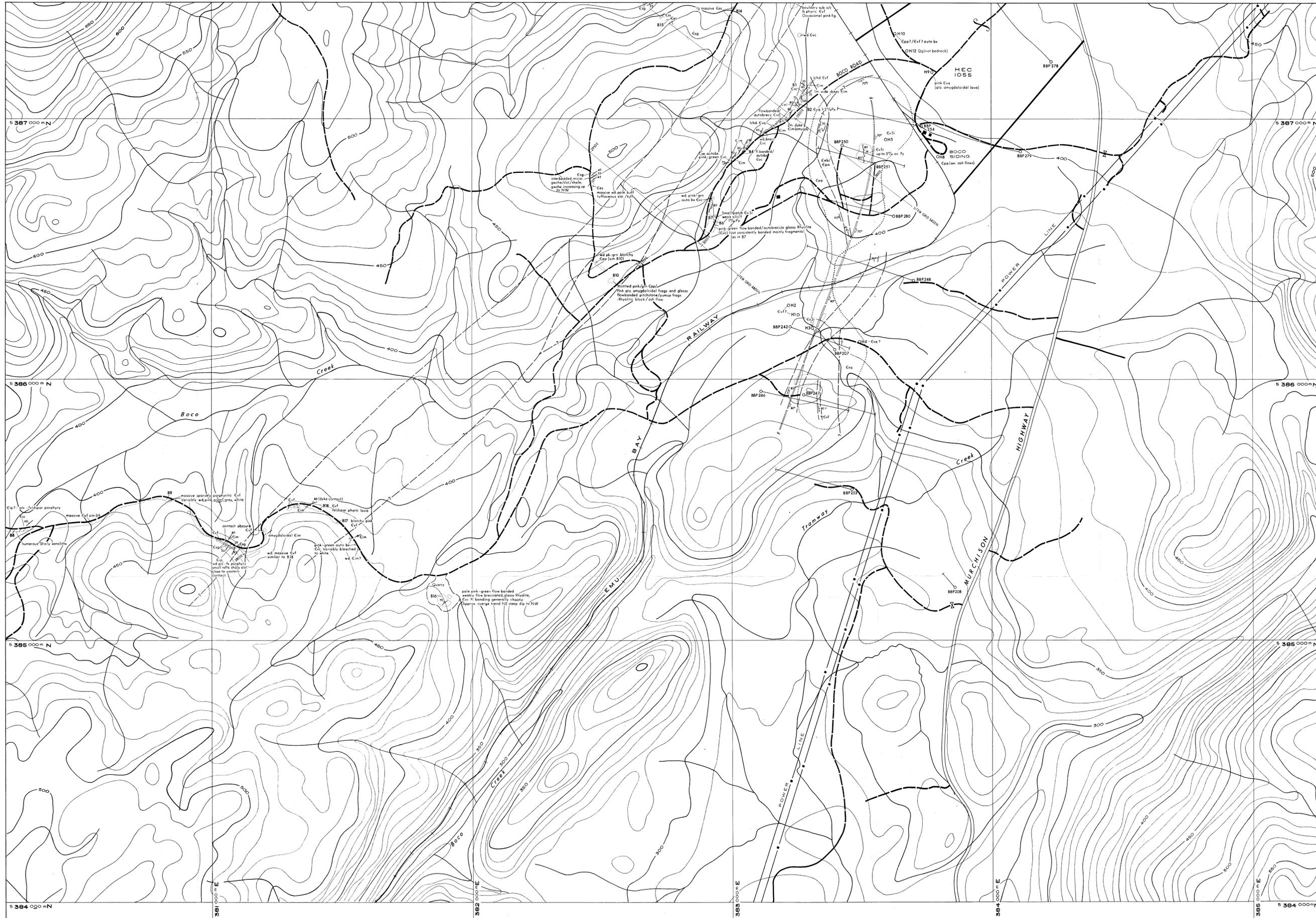
130.2-130.8 Mafic dyke.

130.8-148.4 Altered feldspar phyric lava.

Mainly disseminated pyrite especially in former feldspar phenocryst sites, averages 2% pyrite. This rock type essentially similar to rock immediately east of fault in BBP 242.

148.4-149 Mafic dyke.

- 149-156 Strongly altered pyritised massive, grey rock probably as above. (130.8-148.4).  
Disseminated pyrite ~3%. Increasing fracturing and broken core.
- 156-157.5 Intensely fractured/milled rock leading to foliated fault pug zone at 157.4-157.5.
- 157.5-159.5 Pale greenish grey intensely silicified quartz veined rock. This is identical to zone immediately west of fault in BBP 242. Note complete absence of pyrite. Alteration zone probably truncated by this fault.

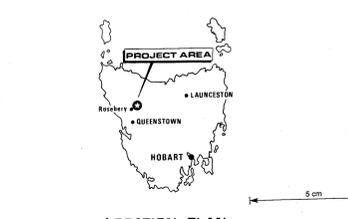
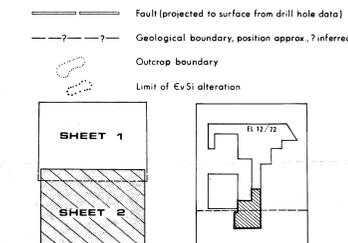


LEGEND

- 5 387 000 m N A.M.G co-ordinates
- Creek
- Track
- Highway
- Power Transmission Line and Pylon Positions
- Topographic contours in metres

REFERENCE

- QUATERNARY Fluvio-glacial gravels, clays. (Unlithified)
- CAMBRIAN
- Post "Dundas" Intrusives? Mafic Intrusive Dykes. Sometimes fs phyric, amygdaloidal
- Feldspar Quartz porphyry: Intrusive? / extrusive?
- "Dundas Group" sediments Thin bedded gray shale, siltstone.
- Massive or thin bedded micaceous/tuffaceous greywacke and siltstone
- Massive creamy coloured tuffaceous siltstone.
- Epiclastic volcanolithic breccias (rounded, reworked)
- Pumiceous - lithic Ashflow tuffs (Ignimbrites)
- "Mt. Read Volcanics" Fine grained Crystal-vitric ash tuffs (massive or stratified)
- "Central Volc. Seq." Pink-grey quartz amygdaloidal lava
- of Rhyolitic to Dacitic Composition Pink-grey feldspar (ferromagnesian) phyric lava.
- Pink (sparsely feldspar phyric) lavas. (Sometimes flow banded)
- Massive fine grained/glassy lavas (aphyric, not banded)
- Flow banded/flow brecciated glassy lavas
- Synvolcanic Alteration Silica - Sericite - Pyrite rocks. Commonly 2-5% diss. Py.



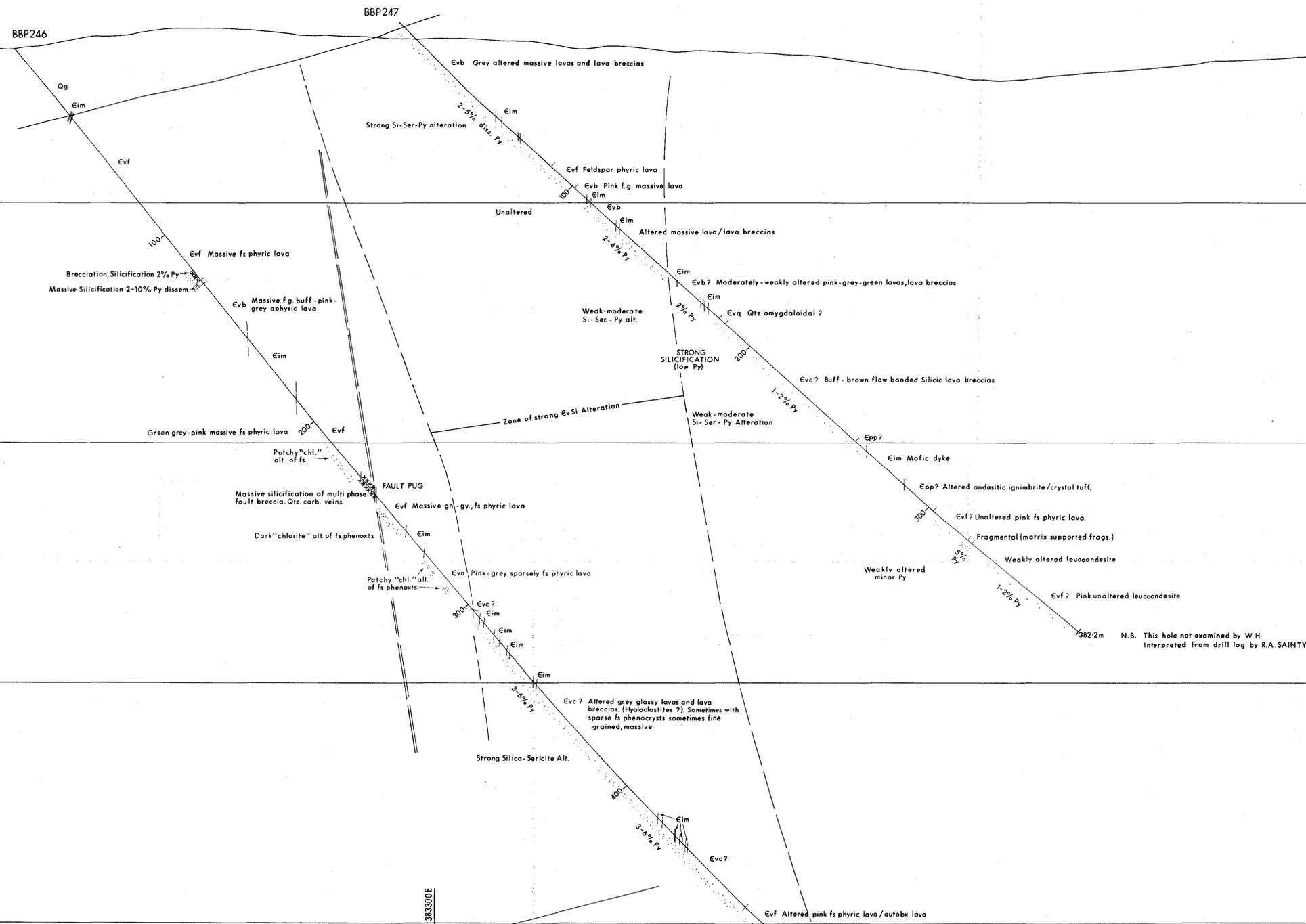
849125

**PANCONTINENTAL MINING LIMITED**  
EXPLORATION DIVISION

**BULGOBAC PROJECT**  
EL 12 / 72 - TASMANIA  
87-2740 Vol 1/2  
**INTERPRETATIVE**  
**GEOLOGICAL PLAN**

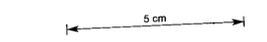
SCALE 1:5000  
0 100 200 300 400 500 METRES

Compiled W. HERRMANN Date JANUARY, 1987 Dwg. No 108/D/1  
Report No 87/25 Map Ref. SK 55-3 **PLATE 1**



**REFERENCE**

<b>QUATERNARY</b>	<b>Qg</b>	Fluvioglacial gravels, clays. (Unlithified)
<b>CAMBRIAN</b> Past "Dundas" Intrusives?	<b>Eim</b>	Mafic Intrusive Dykes. Sometimes fs phyrlic, amygdaloidal.
	<b>Eip</b>	Feldspar Quartz porphyry: Intrusive ?/ extrusive?
	<b>Ees</b>	Thin bedded gray shale, siltstone.
"Dundas Group" sediments	<b>Esg</b>	Massive or thin bedded micaceous/tuffaceous greywacke and siltstone.
	<b>Ees</b>	Massive creamy coloured tuffaceous siltstone.
"Mt. Read Volcanics" "Central Volc. Seq." of Rhyolitic to Dacitic Composition	<b>Eeb</b>	Epiclastic volcanolithic breccias (rounded, reworked)
	<b>Epp</b>	Pumiceous - lithic Ashflow tuffs (Ignimbrites)
	<b>Epa</b>	Fine grained Crystal-vitric - ash tuffs (massive or stratified)
	<b>Eva</b>	Pink-grey quartz amygdaloidal lava
	<b>Evf</b>	Pink-grey feldspar (ferromagnesian) phyrlic lava.
	<b>Eva</b>	Pink (sparsely feldspar phyrlic) lavas. (Sometimes flow banded)
	<b>Evb</b>	Mass. fine grained/glassy lavas (aphyrlic, not banded)
Synvolcanic Alteration	<b>Evc</b>	Flow banded / flow brecciated glassy lavas.
	<b>EvSi</b>	Silica - Sericite - Pyrite rocks. Commonly 2-5% diss. Py.



Disseminated Pyrite  
xxxxx Tectonic brecciation, shearing

849126  
87-2740 Vol 112

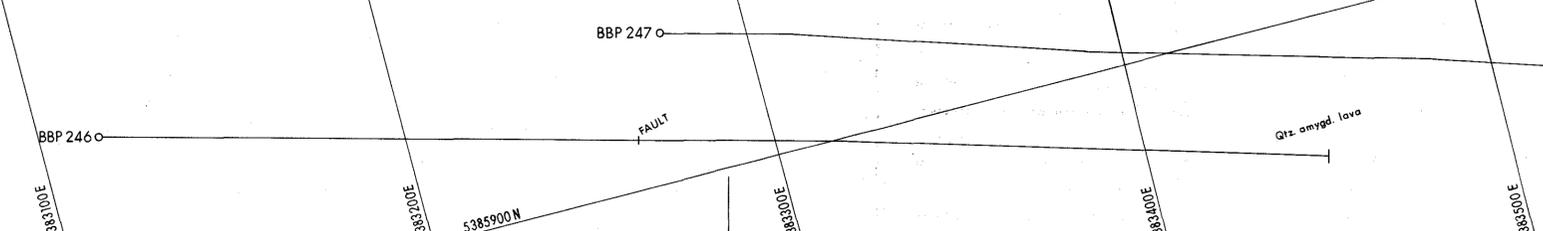
**PANCONTINENTAL MINING LIMITED**  
EXPLORATION DIVISION

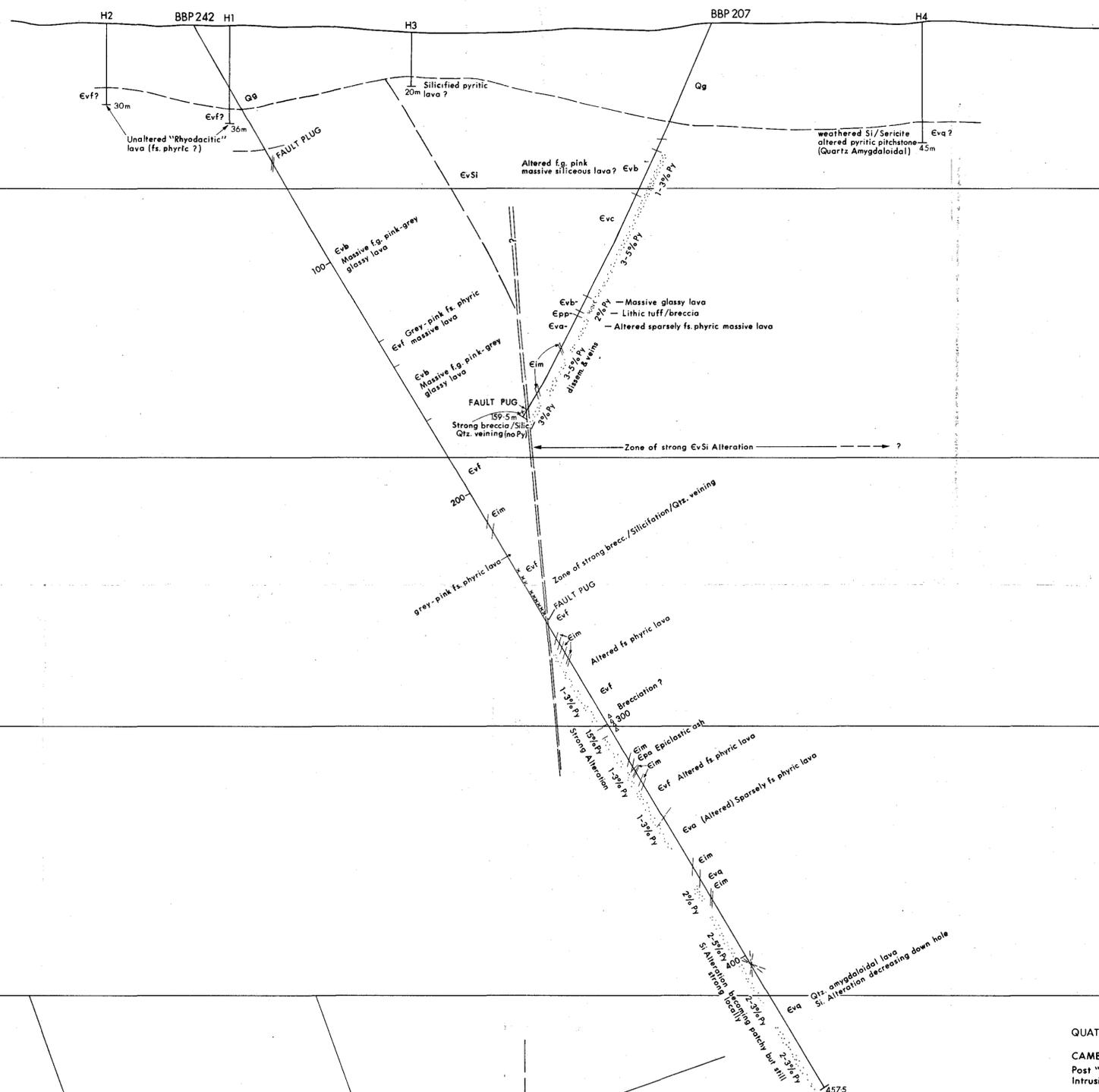
**EL 12/72 BOCO PROSPECT  
TASMANIA**

**GEOLOGICAL CROSS SECTION  
DIAMOND DRILL HOLES  
BBP246 AND BBP247**

SCALE 1:1000  
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metres

Compiled W.Herrmann Date January, 1987 Dwg No 108/D/2  
Report No 87/25 Map Ref SK55-3 **PLATE 2**



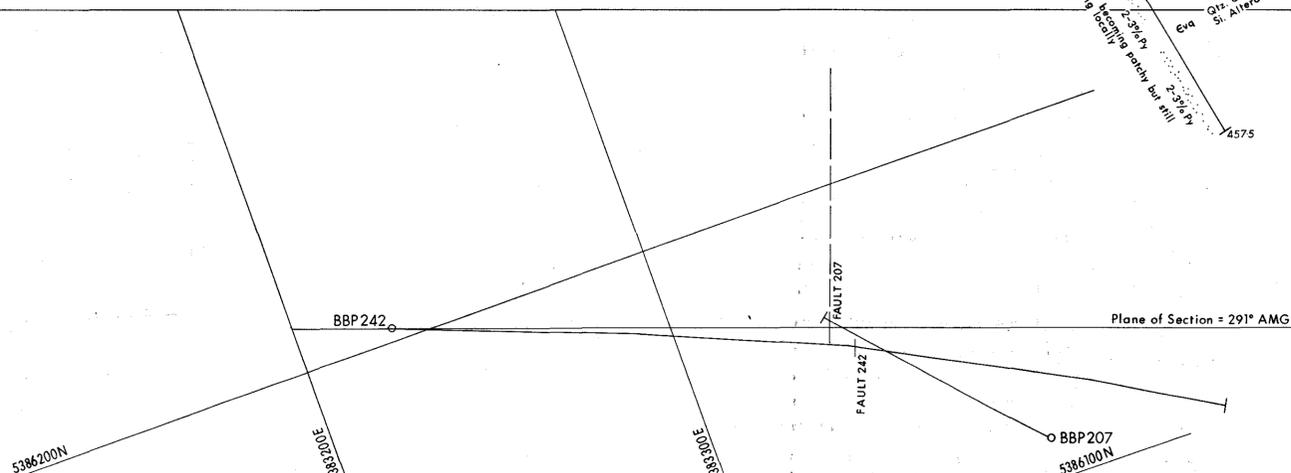


RL 300

RL 200

RL 100

RL 00



**REFERENCE**

QUATERNARY	<b>Qg</b>	Fluvioglacial gravels, clays. (Unlithified)
CAMBRIAN	<b>Eim</b>	Mafic Intrusive Dykes. Sometimes fs phytic, amygdaloidal.
Post "Dundas" Intrusives ?	<b>Eip</b>	Feldspar Quartz porphyry: Intrusive ??/ extrusive?
"Dundas Group" sediments	<b>Ess</b>	Thin bedded gray shale, siltstone.
	<b>Esg</b>	Massive or thin bedded micaceous/tuffaceous greywacke and siltstone.
	<b>Ees</b>	Massive creamy coloured tuffaceous siltstone.
	<b>Eeb</b>	Epiclastic volcanolithic breccias (rounded, reworked)
	<b>Epp</b>	Pumiceous - lithic Ashflow tuffs (Ignimbrites)
"Mt. Read Volcanics" of Rhyolitic to Dacitic Composition	<b>Epa</b>	Fine grained Crystal-vitric-ash tuffs (massive or stratified)
	<b>Eva</b>	Pink-grey quartz amygdaloidal lava
	<b>Evf</b>	Pink-grey feldspar (ferromagnesian) phytic lava.
	<b>Eva</b>	Pink (sparsely feldspar phytic) lavas. (Sometimes flow banded)
	<b>Evb</b>	Mass. fine grained/glassy lavas (aphytic, not banded)
	<b>Evc</b>	Flow banded/flow brecciated glassy lavas.
Synvolcanic Alteration	<b>EvSi</b>	Silica - Sericite - Pyrite rocks. Commonly 2-5% diss. Py.

5 cm

849127  
87-2740 Vol 1/2

**PANCONTINENTAL MINING LIMITED**  
EXPLORATION DIVISION

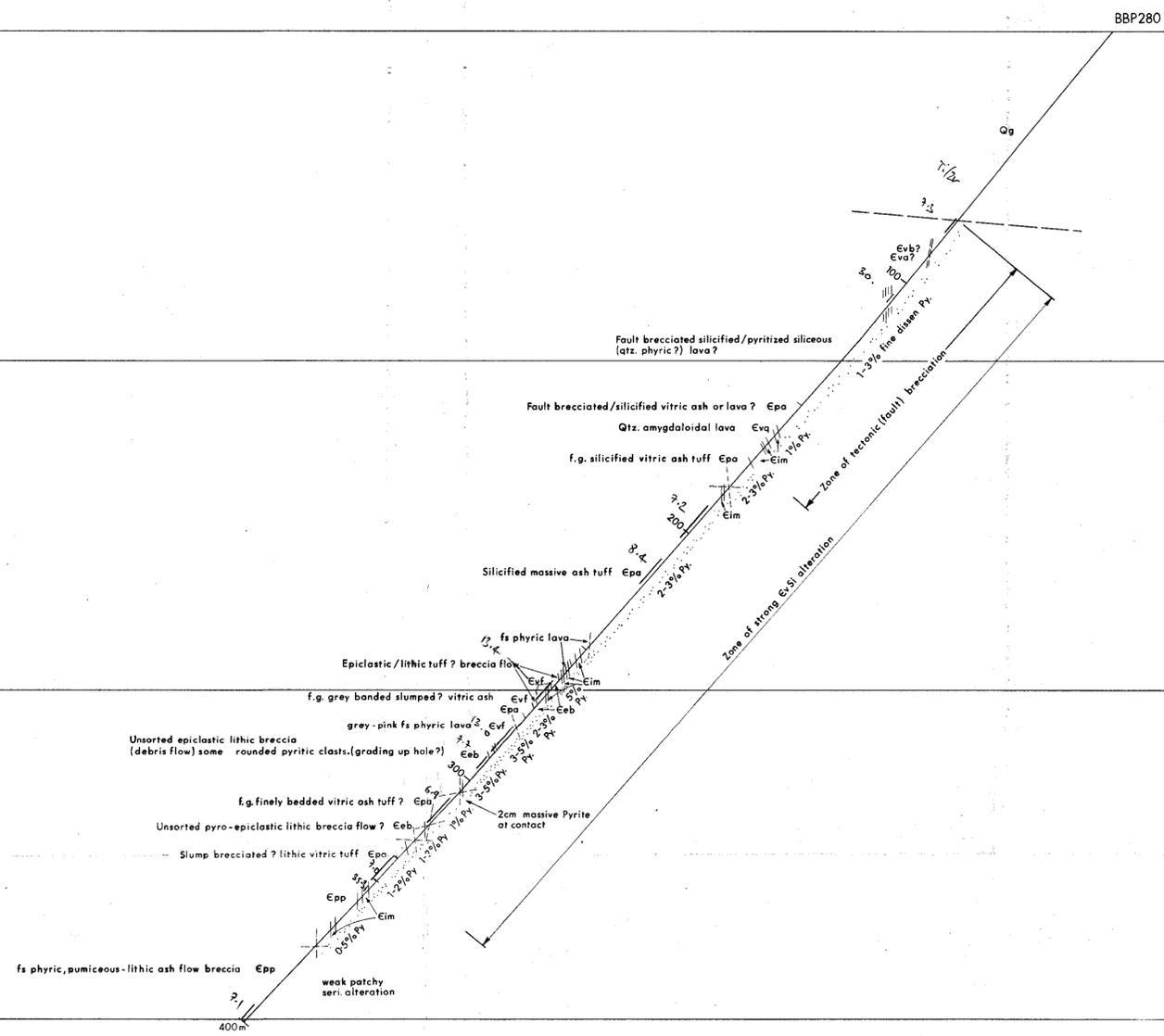
EL 12/72 BOCO PROSPECT  
TASMANIA

**GEOLOGICAL CROSS SECTION**  
DIAMOND DRILL HOLES  
BBP207 AND BBP242

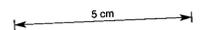
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Compiled W.Herrmann Date January, 1987 Dwg No. 108/D/3  
Report No. 87/25 Map Ref. SK 55-3 **PLATE 3**





849129



REFERENCE	
QUATERNARY	<b>Qg</b> Fluvio-glacial gravels, clays. (Unlithified)
CAMBRIAN Post "Dundas" Intrusives?	<b>Eim</b> Mafic Intrusive Dykes. Sometimes fs phyruc, amygdaloidal.
	<b>Eip</b> Feldspar Quartz porphyry: Intrusive ?? extrusive?
	<b>Ess</b> Thin bedded gray shale, siltstone.
"Dundas Group" sediments	<b>Esg</b> Massive or thin bedded micaceous/tuffaceous greywacke and siltstone.
	<b>Ees</b> Massive creamy coloured tuffaceous siltstone.
	<b>Eeb</b> Epiclastic volcanolithic breccias (rounded, reworked)
"Mt. Read Volcanics" "Central Volc. Seq." of Rhyolitic to Dacitic Composition	<b>Epp</b> Pumiceous - lithic Ashflow tuffs (Ignimbrites)
	<b>Epa</b> Fine grained Crystal-vitric-ash tuffs (massive or stratified)
	<b>Eva</b> Pink-grey quartz amygdaloidal lava
	<b>Evf</b> Pink-grey feldspar (ferromagnesian) phyruc lava.
	<b>Eva</b> Pink (sparsely feldspar phyruc) lavas. (Sometimes flow banded)
	<b>Evb</b> Mass. fine grained/glassy lavas (aphyruc, not banded)
	<b>Evc</b> Flow banded/flow brecciated glassy lavas.
Synvolcanic Alteration	<b>Evs</b> Silica - Sericite - Pyrite rocks. Commonly 2-5% diss. Py.
	<b>Disseminated Pyrite</b>
	xxxxx Tectonic brecciation, shearing

87-2740 Vol 1/2

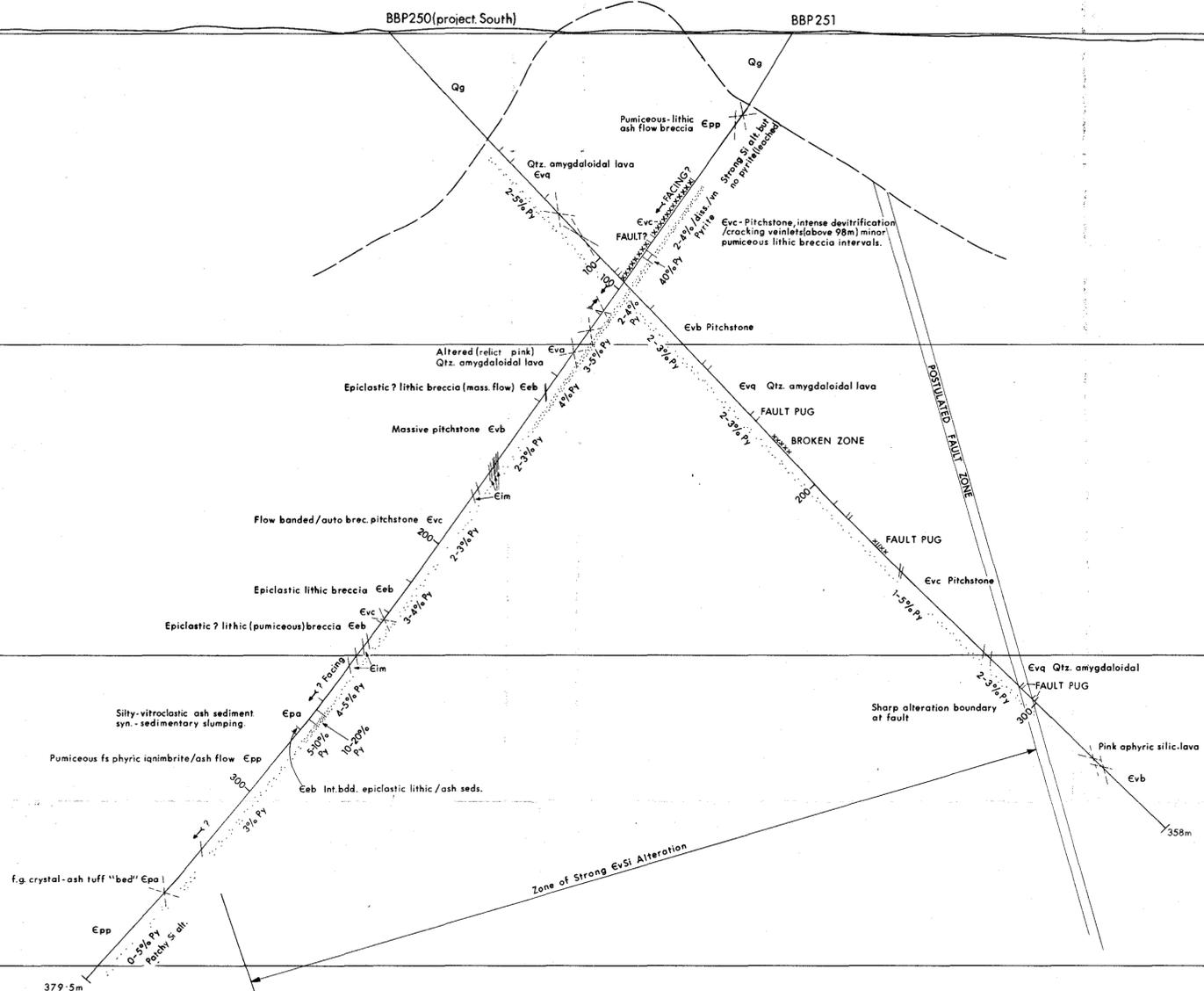
**PANCONTINENTAL MINING LIMITED**  
EXPLORATION DIVISION

**EL 12/72 BOCO PROSPECT  
TASMANIA**

**GEOLOGICAL CROSS SECTION  
DIAMOND DRILL HOLE  
BBP280**

SCALE 1:1000  
0 40 80  
metres

Compiled: W.Herrmann	Date: January, 1987	Dwg No: 108 / D / 5
Report No: 87 / 25	Map Ref: SK 55 - 3	<b>PLATE 5</b>



SECTION BEARING APPROX. 283° AMG

metres  
RL 400

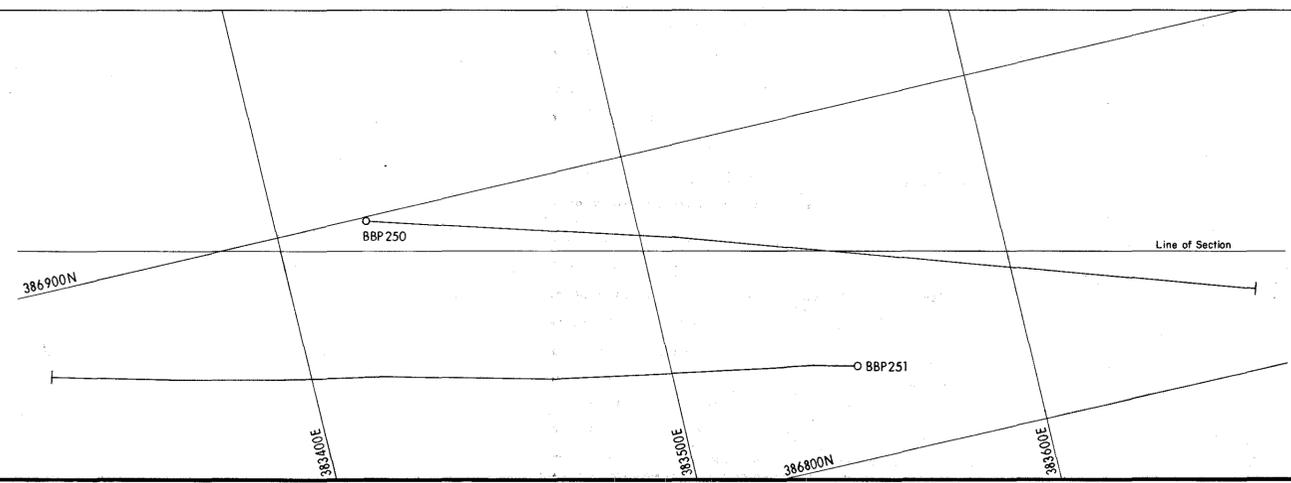
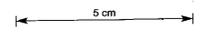
RL 300

RL 200

RL 100

RL 00

849130



REFERENCE	
QUATERNARY	<b>Qg</b> Fluviglacial gravels, clays. (Unlithified)
CAMBRIAN Post "Dundas" Intrusives ?	<b>Eim</b> Mafic Intrusive Dykes. Sometimes fs phyrlic, amygdaloidal.
	<b>Eip</b> Feldspar Quartz porphyry: Intrusive ?/extrusive?
	<b>Ess</b> Thin bedded gray shale, siltstone.
"Dundas Group" sediments	<b>Esg</b> Massive or thin bedded micaceous/tuffaceous greywacke and siltstone.
	<b>Ees</b> Massive creamy coloured tuffaceous siltstone.
	<b>Eeb</b> Epiclastic volcanolithic breccias (rounded, reworked)
"Mt. Read Volcanics" "Central Volc. Seq." of Rhyolitic to Dacitic Composition	<b>Epp</b> Pumiceous - lithic Ashflow tuffs (Ignimbrites)
	<b>Epa</b> Fine grained Crystal-vitric-ash tuffs (massive or stratified)
	<b>Eva</b> Pink-grey quartz amygdaloidal lava
	<b>Evf</b> Pink-grey feldspar (ferromagnesian) phyrlic lava.
	<b>Eva</b> Pink (sparsely feldspar phyrlic) lavas. (Sometimes flow banded)
	<b>Evb</b> Mass. fine grained/glassy lavas (aphyrlic, not banded)
	<b>Evc</b> Flow banded/flow brecciated glassy lavas.
Synvolcanic Alteration	<b>EvSi</b> Silica - Sericite - Pyrite rocks. Commonly 2-5% diss. Py.

Disseminated Pyrite  
xxxxx Tectonic brecciation, shearing

87-2740 Vol 1/2

**PANCONTINENTAL MINING LIMITED**  
EXPLORATION DIVISION

EL 12/72 BOCO PROSPECT  
TASMANIA

**GEOLOGICAL CROSS SECTION  
DIAMOND DRILL HOLES  
BBP 250 AND BBP 251**

SCALE 1:1000  
0 40 80 metres

Compiled W.Herrmann Date January, 1987 Dwg No. 108/D/6  
Report No. 87/25 Map Ref. SK 55-3 **PLATE 6**



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849132

APPENDIX 3

Airas, K O

1987

On the Petrology and Chemistry  
of Some Handspecimens from the  
Bulgobac EL 12/72;  
Pancontinental Report No 87/47

**OPEN FILE**

87/47

MINES	
File Ref.	
26 NOV 1987	
Doc. Ref.	
Action Officer	Initials
REFER TO	
LETTER 3511.87	
Resubmit to	Date

ON THE PETROLOGY AND CHEMISTRY OF SOME  
HANDSPECIMENS FROM THE BULGOBAC EL. 12/72

By K.O. Airas

Contents

1. Introduction
2. Samples, chemical analysis and petrological study
3. Discussion

Appendices

1. Geochemical database and diagrams.
2. Petrological Examination of ten rock samples from Bulgobac, Tasmania.  
Barron, B.J., 1987, Report No: P6/82/433a.

Distribution

Original

1. PML - Archives
2. PML - File 5303
3. Outokumpu
4. EZ, Rosebery
5. Little River Resources, Sydney

Department of Mines, Tasmania

1. INTRODUCTION

This report describes results of a petrological study and geochemical analysis, which are related to the reconnaissance mapping and to the review of previous results of the exploration in the North Pinnacles and East Bulgobac sub-areas in the Bulgobac EL 12/72 area. This report forms an addendum to the Report No: 87/33: "Exploration potential of North Pinnacles and East Bulgobac Areas, E.L. 12/72 Tasmania", by W. Herrmann. Descriptions and a map attached to Herrmann's report are not repeated here.

The objective of these additional studies has been to collect information for lithological comparison of bedrock units within the Bulgobac area to the rocks in the other areas of Mt Read Volcanics including Que River-Hellyer and Rosebery.

2. SAMPLES, CHEMICAL ANALYSIS AND PETROLOGICAL STUDY

Samples assayed and petrologically examined are described in Herrmann's report. A map (plate 1) attached in his report shows the sample localities and general rock types they represent. The samples included to this report are:

Table 1: List of samples for whole rock analysis and petrological study.

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TABLE 1

## LIST OF SAMPLES FOR WHOLE ROCK ANALYSIS AND PETROLOGICAL STUDY

SAMPLE NO.	LOCATION	DESCRIPTION	LITHOLOGY USED IN PLATE 1	PETROLOGICAL DESCRIPTION	GEOCHEMICAL ROCK NAME, MOBILE ELEMENTS
19837 387300 5392700	Sock Creek Rd	Pale grey/felsic lava? "Dacite". Small tabular phenocrysts feldspar, rare qtz, in pale grey siliceous-felsic matrix. Some feldspars altered to pale gm-grey-bm mineral resembling chlorite especially in oxidised portion. Possible minor biotite? Pyrite dissem. specks < 0.1%.	Bf	-	Rhyodacite
19838 385850 5392800	Sock Creek Rd	Sample of grey felsic volcanic. Sparse angular pinkish feldspar phenocrysts, flattened qtz amygdalae, shadow perlitic/hyaloclastite? fragmental fabric.	Bf	-	Rhyolite
19839 383280 5388350	Rhu Bay Railway	Creamy pink-grey finely amygdaloidal fs-phyric Dacite (?) Amygdalae filled chlorite-cath.-zeolites, flattened into weak parallelism probably a flow fabric. Feldspar creamy tabular 2-3mm/10-15/ in fine felsic matrix.	Bf	Partly altered porphyritic and amygdaloidal alkali? rhyolite (or quartz-rich trachytic type.	Rhyodacite

SAMPLE NO.	LOCATION	DESCRIPTION	LITHOLOGY USED IN HAIR 1	MINERALOGICAL DESCRIPTION	GEOCHEMICAL ROCK NAME, IMMOBILE ELEMENTS
1980 383250 5388650	Enu Bay Railway	Fresh grey, feldspar phyric glossy Rhyolite. Part perlitic or qtz amygdaloidal fabric in fine flinty matrix. Trace accessory Pyrite.	Elf	Porphyritic and amygdaloidal quartz-rich volcanic rock of rhyolitic (or trachytic) affinity.	Rhyolite
1981 382950 5389100	Enu Bay Railway	Sample of fresh grey Qtz-Feldspar Rhyolite. Massive in o/c. Blocky rectangular jointing. Essentially fresh. Feldspars still glassy clear.	Ep	Partly altered ? vitric/crystal tuff of rhyolitic composition.	Rhyolite
1982 383050 5389850	Enu Bay Railway	Fresh sample of massive pink Qtz-Feldspar Rhyolite.	Ep	Partly altered vitric/crystal tuff, containing coarse phero-crystic and once-glassy debris mainly from an acidic (rhyolitic/volcanic source).	Rhyolite
1983 382950 5390550	Bulgbac Siding	Fresh sample of massive pale pink-greenish grey fine feldspar qtz phyric Rhyolite. Herocrysts 1-2 mm, sparsely distributed in aphanitic matrix.	Eq	Partly auto brecciated strongly porphyritic volcanic flow rock of rhyolitic primary composition.	Rhyolite
1984 382700 5391000	Bulgbac Siding BR.	Fresh sample of qtz-feldspar porphyritic Rhyolite (or Rhyolite) with finely granular felsic matrix. Massive in o/c. Sometimes weakly flow structured in hand specimen.	Eq	Altered and coarsely devitrified strongly porphyritic rhyolite, with perlitic cracks indicating a once-glassy groundmass fraction.	Rhyolite

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HIGBOC EL. 12/72, IC 5309

## LIST OF SAMPLES FOR WHOLE ROCK ANALYSIS

SAMPLE NO.	LOCATION	DESCRIPTION	LITHOLOGY USED IN HATE 1	PETROLOGICAL DESCRIPTION	GEOCHEMICAL ROCK NAME, MOBILE ELEMENTS
19845 382 300 5391 350	Knu Bay Railway	Fresh sample of pinkish grey Qtz-Feldspar Porphyry with accessory magnetite. Mt. ubiquitous this side of Bulgoac Siding.	Ep	Partly altered and devitrified, distinctly porphyritic once finely vesicular rhyolitic volcanic rock with minor zones of partial brecciation.	Rhyodacite
19846 384 550 5390 250	Animal Creek Tramway.	Feldspar phyric amygdaloidal Dacite. Similar lithology to 19839 but somewhat fresher. Float/ subcrop in situ.	Buf	-	Rhyodacite
19847 384 500 5390 500	Animal Creek Tramway.	Pinkish-grey feldspar phyric quartz amygdaloidal Rhyolite. More or less similar 19840.	Buf	-	Rhyodacite
19848 379 007 5387 078 D.L. No 15370	North Pirracles D.H. N.P. 215/ 50.6m	Selected sample, a single fragment of weakly flow banded fs phyric Rhyolite. Hs dissem. blebs py, gal, Sp total sulphide 0.5-1%.	Eq	Partly altered veined and weakly mineralised, sparsely porphyritic acidic volcanic rock most likely of rhyolitic primary composition.	Rhyodacite
19849	North Pirracles D.H. N.P. 215/ 72.8m	Pale grey feldspar phyric massive Rhyolite. Minor disseminated specks of galena, pyrite and stibnite.	Eq	Partly altered sparsely porphyritic feldspar-rich volcanic rock most likely of rhyolitic affinity.	Rhyodacite

## FIGURE 12/72, FC 509

## LIST OF SAMPLES FOR WILE ROCK ANALYSIS

SAMPLE NO.	LOCATION	DESCRIPTION	LITHOLOGY USED IN PLATE 1	PETROLOGICAL DESCRIPTION	GEOCHEMICAL ROCK NAME, TRACE ELEMENTS
19850	North Pinnacles Dih: NEP 215/ 125.4m.	Pink feldspar phyric Nephelinite. About 5% sample is of milled auto br matrix. Very minor traces dissem. py-galena. Appears essentially fresh and unmineralised - a good comparison to 19849.	Bq	Substantially altered, strongly porphyritic and partly fragmental (? authrecciated or tuffaceous) volcanic rock of feldspar - rich fairly acidic primary composition.	Nephelinite

A routine whole rock analysis in AMDEL's laboratory in Adelaide has comprised:

1. SiO<sub>2</sub>, TiO<sub>2</sub>, Al<sub>2</sub>O<sub>3</sub>, Fe<sub>2</sub>O<sub>3</sub>, (Total Fe), MgO, CaO, Na<sub>2</sub>O, K<sub>2</sub>O, MnO, P<sub>2</sub>O<sub>5</sub>, LOI, determined by Inductively Coupled Plasma-Optical Emission Spectrometry (ICP-OES) with 0.01% D.L. and + 3% accuracy for all elements.
2. As, Ba, Bi, Cr, Mo, Nb, Pb, Rb, Sb, Se, Sr, V, W, Y, Zr determined by x-ray fluorescence analysis with + 10% accuracy.
3. Ag, Co, Cu, Ni, Zn determined by atomic absorption spectrometry and digestion in perchloric/hydrochloric acid.

A list of results is attached in Appendix 1.

A series of diagrams has been prepared to describe the geochemical character of the samples and to make comparisons to rocks analysed from other parts of Mt Read Volcanics. Diagrams are attached in Appendix 1.

A petrological study by consulting petrologist, Dr B.J. Barron included 10 of the samples. The report of this study is attached in Appendix 2.

### 3. DISCUSSION

The samples represent the major lithological units of the volcanics of the Bulgobac area. They are too few to draw any statistical conclusions or to compare them statistically to the other areas. However, some general conclusions can be drawn.

One of the questions of interest has been the "equivalence" of Sock Creek felsic lavas to the host rocks of Que River - Hellyer mine sequence. The variation diagrams for different elements vs Ti/Zr compared to those presented in Large, Crawford, and Adrichem (1) for Rosebery, Que River and Mt Read Volcanics (MRV) areas show that all the samples included in this report are more felsic than those from Que River, but resemble generally those analyses from Rosebery HW and FW volcanics. Although there are felsic lava units and epiclastics in the ore horizon of the Que River-Hellyer area, they are intimately associated with more basic units. The latter are absent from the Bulgobac area. The cross-cutting felsic dykes at Que River are chemically more alike to the rocks described in this report. Samples from felsic lavas in the Sock Creek area at Bulgobac are high in TiO<sub>2</sub> compared to the other samples and to the other volcanics from MRV.

- 1) [Large, R. Crawford A, Adrichem S, 1987, Primary and alteration chemistry of the Mount Read Volcanics, in unpublished (restricted distribution) AMIRA progress report "Controls on Gold and Silver Grades in Volcanogenic Sulphide Deposits (84/P210)].

They also show increased Fe and Na<sub>2</sub>O and decreased K<sub>2</sub>O compared to those presented in Large et al. and therefore show distinct uniform compositional similarity to Herrmann in his report suggests (page 30). The other similarity which Herrmann suggests in his report (page 31) is between the intrusive quartz-feldspar porphyry and feldspar-phyric rhyolite (extrusive) at Bulgobac Siding. This is not supported by the geochemical results, but the extrusives seem to be more felsic and are located in slightly different areas of the diagrams than the porphyries, although otherwise showing a similarity in a broad sense.

In summary, the whole rock geochemical analyses do not support the suggestion that volcanics in the Boco-Sock Creek area are equivalents to the volcanics in Que River - Hellyer mine sequence, mainly because of the felsic character of the rocks at Bulgobac and the total absence of intermediate and more basic variants with them. There is a closer correlation between intrusive porphyries at Bulgobac and those at the Que River - Hellyer areas.

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B.J. BARRON, B.Sc., Ph.D., (Sydney)

PETROLOGIST

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St. Ives,  
SYDNEY NSW 2075  
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Our ref: P6/82/433a

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PETROLOGICAL EXAMINATION OF TEN  
ROCK SAMPLES FROM BULGOBAC,  
TASMANIA.

Report No: P6/82/433a

10th July, 1987.

For: PANCONTINENTAL MINING LIMITED.

  
Dr. B.J. Barron,  
Consulting Petrologist.

EAST BULGOBAC

Sample No. 19839

Rock Type. Partly altered porphyritic and amygdaloidal alkali ?rhyolite (or quartz-rich trachytic type).

Hand Specimen A pale pink-grey very fine grained sample enclosing abundant subparallel almond shaped ?vesicle sites and sparse very pale brown felsic crystal sites. K-feldspar staining gave very strong positive results for the voluminous fine grained fraction.

Thin Section. Phenocrysts account for approximately 10% of the thin section area in this fine grained once vesicular felsic volcanic rock. They occur as stout prismatic crystals and glomeroporphyritic aggregates ranging up to about 3 mm across. Most lie within the range 0.5 mm and 1.5 mm, and comprise clouded and albitised plagioclase with abundant inclusions of wispy sericite + clusters of green "biotite". The larger crystals show relict compositional zoning now reflected by variations in proportions of dusty argillic inclusions and sparse sites of mafic microphenocrysts now are selectively filled with fine grained secondary assemblages including patchy "sericite", chlorite, green "biotite", and patches of red-brown hematite. The latter also replaces previous opaque oxides. Small cognate inclusions include intermediate igneous types comprising medium grained clusters of plagioclase, altered mafic phases and altered opaque oxides.

The phenocrysts are scattered throughout an exceptionally fine grained microlitic but once-glassy groundmass fraction in which poorly defined wispy decussate to flow oriented ?albite microlites are set in a mottled devitrified felsic mosaic including very abundant K-feldspar (see staining) and quartz. The common vesicle sites are now filled with subradiating granular secondary quartz and clusters of fine grained olive green biotite.

It is very difficult to ascertain accurately the proportion of groundmass quartz in this very fine grained rock, but

it is most likely more than 20%. Thus the sample may be somewhat tentatively described as a partly altered porphyritic and amygdaloidal alkali rhyolite (or quartz-rich trachytic type).

Sample No. 19840

Rock Type. Porphyritic and amygdaloidal quartz-rich volcanic rock of rhyolitic (or trachytic) affinity.

Hand Specimen A mid-grey fine grained siliceous sample enclosing medium to coarse grained pale grey patches (?felsic crystal sites) and mottled pale grey vesicle sites. K-feldspar staining gave positive results for the fine grained groundmass fraction.

Thin Section. Conspicuous porphyritic texture is clearly marked in this fine grained once-glassy and vesicular volcanic rock. The phenocrysts and glomeroporphyritic aggregates include stumpy prismatic crystals of albitised and weakly sericitised plagioclase, and sparse small micro-phenocrysts of mafic phases now converted to chlorite<sup>and</sup>/carbonate, while scattered small oxide microphenocrysts are degraded to clouded sphene.

The exceptionally fine grained groundmass fraction is feathery and trachytic, comprising a dense mat of very fine grained mottled and poorly defined felsic microlites, most likely including significant K-feldspar (see stained off-cut), throughout which are located clouds of dusty chlorite marking curved traces of perlitic structures.

Narrow and elongate irregular to branching patches that now contain granular secondary quartz ± traces of sphene, carbonate and chlorite almost certainly represent vesicle sites. These also retain rare traces of fine grained sulphides.

It is not clear whether the abundant quartz in vesicle sites should be included in the silica estimate for this sample. If it is introduced silica, then the rock has a trachytic parent type.

If the quartz is part of the original lithology then the sample is rhyolitic. It may be tentatively identified as a porphyritic and amygdaloidal quartz-rich volcanic rock of rhyolitic (or trachytic) affinity.

Sample No. 19841

Rock Type. Partly altered ?vitric/crystal tuff of rhyolitic composition.

Hand Specimen A pale grey fine grained massive sample that contains scattered coarse phenocrysts of pale grey quartz and pale brown feldspar. K-feldspar staining gave very strong staining results for the fine grained groundmass fraction.

Thin Section. Conspicuous large magmatically rounded and deeply embayed phenocrysts of quartz are characteristic of this rock and comprise about 5% of the thin section area. These range in size up to more than 4 mm across, but generally are less than 2 mm across. Rare quartz microphenocrysts have doubly terminated shapes indicating a high temperature origin. Several of the phenocrysts appear to be broken or else shattered in situ. Also present are strongly altered feldspar phenocrysts, that retain stout prismatic shapes but are converted to albite clouded by patches of chlorite and "sericite". Several feldspar crystals also appear to be shattered, or else show broken angular outlines. No primary magmatic mafic crystals are preserved, and possible sites of previous mafic phases now are pseudomorphed by subradiating aggregates of chlorite, intergrown with wispy "sericite", dusty sphene and patches of secondary (relocated) K-feldspar. Well preserved crystal outlines in several parts of the sample suggest the presence of amphibole.

In the abundant matrix fraction are located poorly defined outlines of possible small cusped and angular glass shards, as well as rare angular quartz chips, wispy biotite and feldspar cleavage fragments. By far the majority of this fraction, however, consists of K-feldspar (see stained offcut), small patches of chlorite, sericite, and sparse small patches of pale brown opaline silica.

The sample most likely had a fine grained ?vitric tuffaceous parent with scattered quartz and feldspar phenocrystic debris. It may be described as a partly altered vitric/crystal tuff of rhyolitic composition.

Sample No. 19842

Rock Type. Partly altered vitric/crystal tuff, containing coarse phenocrystic and once-glassy debris mainly from an acidic (rhyolitic) volcanic source.

Hand Specimen A fine grained mid brown-grey sample enclosing abundant coarse pink (feldspathic) crystal sites, as well as sparse large pale grey (?quartz) crystal sites. K-feldspar staining gave very strong positive results for the fine grained rock matrix.

Thin Section. Coarse phenocrystic debris has a somewhat uneven distribution throughout this sample, but accounts for approximately 15% of the total thin section area. Crystals and aggregates up to 4 mm across are quite common, and feldspars predominate slightly over quartz. The feldspars include albitised and "sericite"-carbonate clouded cleavage fragments, as well as subhedral crystals and glomeroporphyritic aggregates of this phase. On the other hand the quartz crystals show magmatic rounding and deep embayment as well as broken and angular chips. Small aggregates of medium grained phases comprise clouded and albitised plagioclase, carbonated amphibole crystal sites and partly degraded opaque oxide crystal sites. These fragments suggest an intrusive intermediate source for at least some material.

Relict textures are rather poorly preserved in the fine grained matrix fraction of this sample, but vague outlines suggest the presence of sparse angular crystal debris, and once ?glassy fragments that now form a finely polygonised K-feldspar-rich mosaic intergrown with small quartz patches, minor chlorite, degraded opaque oxide dust and traces of carbonate. Small irregular patches of microgranular

quartz could represent sites of previous gas cavities.

Fragmental texture is not very obvious in this sample, but sparse broken crystal debris and its somewhat uneven distribution suggests a pyroclastic origin for this rock. It may be described as a partly altered vitric/crystal tuff containing coarse phenocrystic and fine grained once vitric debris, mainly from an acidic (rhyolitic) volcanic source.

Sample No. 19843

Rock Type. Partly autobrecciated strongly porphyritic volcanic flow rock of rhyolitic primary composition.

Hand Specimen A pale brown fine grained rather massive sample enclosing scattered medium grained mid grey (?quartz) and pale grey (feldspar) crystal sites. K-feldspar staining gave very strong positive results.

Thin Section. Scattered phenocrysts in this sample account for about 10% to 15% of the total thin section area, and variation in size is from less than 0.5 mm up to more than 3.5 mm, with an average size of about 2 mm. Feldspar phenocrysts slightly predominate over quartz, and minor phenocrystic phases include degraded biotite, with accessory zircon and opaque oxides. The feldspar crystals include sparse small broken cleavage fragments but mostly this phase occurs as euhedral or subhedral prismatic crystals and glomeroporphyritic aggregates of albitised, weakly sericitised and clouded plagioclase. Crystals of quartz also show euhedral outlines, or else they are magmatically embayed, while smaller quartz chips have highly angular and broken shapes. Degraded wispy biotite flakes largely are converted to pale green chlorite and clusters of secondary sphene.

In the matrix fraction mottled outlines suggest a fine vesicular K-feldspar-rich parent type, but now this fraction consists of a mosaic of intergrown clouded K-feldspar and quartz. Radial clusters of K-feldspar clouded with pale brown dusty oxides fill small well rounded

?vesicle sites. Lensed wavy ?flow bands are marked by distinct changes in relative proportions of clouded microgranular K-feldspar and quartz in the fine grained matrix fraction. Also present are vein-like bands of cherty material which occupy zones that show partial fragmental textures.

Although fragmental texture is characterisitc in part of this sample, the majority shows coarse unbroken phenocrysts. It may be rather tentatively identified as a partly autobrecciated strongly porphyritic volcanic flow rock of rhyolitic primary composition.

Sample No. 19844

Rock Type. Altered and coarsely devitrified strongly porphyritic rhyolite, with perlitic cracks indicating a once-glassy groundmass fraction.

Hand Specimen A fine grained pale grey massive sample enclosing numerous medium grained white (feldspar) and mid-grey (quartz) crystals. No K-feldspar was detected by staining.

Thin Section. As in the previous sample 19843, strongly porphyritic texture is defined by about 15% of phenocrysts. Once again quartz and albitised plagioclase are almost evenly represented and grain size lies mostly within the range 0.5 mm up to 1.5 mm across. Glomeroporphyritic aggregates of stout albitised and sericitised plagioclase crystals are common and crystal shapes of this phase tend to be subhedral to euhedral. Quartz phenocrysts retain euhedral to embayed and magmatically well rounded shapes while both quartz and feldspar phenocrysts are associated with partly degraded biotite flakes. The latter are mostly converted to chlorite, sphene, and microgranular felsic patches. The very abundant groundmass fraction is now rather coarsely devitrified into a granular mosaic of intergrown quartz and albite throughout which are patches of olive green chlorite, and curving trails of dense wispy "sericite" (or ?illite, pyrophyllite etc.) that define previous perlitic cracks. Clouded patches of fine grained epidote are accessory.

A once-glassy groundmass fraction is evident in this sample in which distinct curving perlitic cracks are marked by wispy birefringent clay ("sericite"). Also present are abundant quartz and albitised feldspar phenocrysts, and K-feldspar is generally lacking since abundant secondary albite forms the dominant groundmass alkali feldspar. The sample may be described as an altered and coarsely devitrified, strongly porphyritic rhyolite, with perlitic cracks indicating a once-glassy groundmass fraction.

Sample No.

19845

Rock Type.

Partly altered and devitrified, distinctly porphyritic once finely vesicular rhyolitic volcanic rock with minor zones of partial brecciation.

Hand Specimen

A dark purple-grey fine grained sample throughout which are scattered numerous medium to coarse grained pink to pale grey phenocrysts. K-feldspar staining gave very strong positive results and defines a uniform finely vesicular texture.

Thin Section.

Phenocrysts, in this strongly porphyritic volcanic rock, account for about 25% to 30% of the total thin section area. They are rather coarse grained, generally greater than 1.6 mm ranging up to about 4.5 mm across. Albitised plagioclase slightly predominates over quartz, with sparse microphenocrysts of chlorite-altered mafic phases and opaque oxides. The albitised plagioclase contains abundant pale red-brown dusty hematite as well as abundant wispy sericite, and occurs as stout euhedral crystals and aggregates as well as somewhat magmatically rounded grains. The large quartz phenocrysts show deeply embayed and magmatically corroded shapes, while in one part of the rock angular quartz chips and broken albite cleavage fragments suggest at least some brecciation, or inclusion of similar pyroclastic material. Sphene and apatite grains are accessory.

The voluminous groundmass of this rock is fine grained and most likely it was once glassy with small rounded to irregular shaped vesicle sites comprising at least half of the groundmass fraction. The previous vesicle sites now are filled with clear granular secondary quartz ± albite while the exceptionally fine grained K-feldspar-rich groundmass now is lightly dusted with hematite, small chlorite flakes, oxide granules and clusters of minute radioactive zircon grains.

The sample may be described as a partly altered and devitrified, distinctly porphyritic once finely vesicular rhyolitic volcanic rock, with minor zones of partial brecciation.

#### NORTH PINNACLES

Sample No. 19848 NPP 215 50.6 m

Rock Type. Partly altered, veined and weakly mineralised, sparsely porphyritic acidic volcanic rock most likely of rhyolitic primary composition.

Hand Specimen A pale grey massive fine grained sample which is cut by sparse narrow pale grey to white veins. The sample contains minor fine grained sulphides. K-feldspar staining gives very strong positive results outlining poorly defined prismatic shaped sites of microphenocrysts. Narrow veinlets give a positive reaction with cold dilute HCl indicating the presence of calcite.

Thin Section. Strong selective alteration has affected this fine grained rock and only vague outlines of previous sparse prismatic shaped microphenocryst sites up to 1.5 mm long are preserved to indicate its volcanic origin. A single phenocryst now consists of clouded perthitic K-feldspar crowded with inclusions of secondary quartz. No original igneous mineralogy is preserved in most phenocryst sites, however, and these are now filled with fine grained granular secondary quartz intergrown with rather variable proportions of carbonate, sphalerite, fine grained opaque

sulphides and sphene. The voluminous groundmass fraction is extremely fine grained and comprises a dense mosaic of K-feldspar clouded with dusty ?argillic inclusions intergrown with abundant small patches of quartz. Dusty sulphides (mostly cubic ?pyrite), sphene and traces of carbonate are accessory.

The rock is cut by a network of narrow branching veins and patches, many of which have central zones of rather coarse grained carbonate (grains up to 1 mm across) with outer margins of granular to prismatic fine grained quartz crystals. The central zones in certain of these domains contain anhedral patches of dark red-brown sphalerite and opaque sulphides, while others contain small subhedral crystals of opaque sulphides. In certain veins, wispy sericite and rutile are accessory secondary phases. Discontinuous very narrow veinlets filled with almost monomineralic microgranular quartz appear to predate the carbonate-bearing mineralised veins.

The exact primary composition of this rock is partly masked by its alteration, veining and weak sulphide mineralisation. However the dominant presence of fine grained K-feldspar located in a recognisable groundmass fraction, and the presence of a partly degraded K-feldspar phenocryst, suggests a sparsely porphyritic acidic volcanic parent type.

<u>Sample No.</u>	19849
<u>Rock Type.</u>	Partly altered sparsely porphyritic feldspar-rich volcanic rock most likely of rhyolitic affinity.
<u>Hand Specimen</u>	A pale grey fine grained massive drill core sample with sparse pale grey ?feldspar crystal sites. K-feldspar staining gave strong positive results for the abundant matrix fraction, except for ubiquitous more or less evenly distributed very small rounded patches.

Thin Section. Sparse scattered phenocrysts and glomeroporphyritic aggregates of albitised plagioclase define porphyritic texture in this fine grained volcanic rock, with rare barely recognisable mafic crystal sites now converted to a fine grained granular secondary assemblage. The phenocrysts occupy only about 5% of the total thin section area, and by far the majority of these are albitised plagioclase enclosing only minor wispy sericite and traces of dusty carbonate. The plagioclase phenocrysts rarely exceed 0.8 mm long. On the other hand, the sparse altered crystal sites of possible mafic phases now are converted to irregular aggregates of fine grained secondary phases including granular quartz, chlorite, wispy sericite, granular sphene, rutile, dusty opaque ?sulphides and traces of red-brown sphalerite. Irregular shaped patches of carbonate are an accessory late stage alteration phase.

The extremely fine grained groundmass fraction of this rock comprises largely K-feldspar (see stained offcut), enclosing recognisable unoriented wispy albite microlites and wispy sericite. Ubiquitous small rounded to irregular shaped patches of granular quartz, could represent patchy segregations or else fill previous vesicle sites which generally do not exceed 0.2 mm across. Small needles of apatite and similarly small zircon crystals are accessory. Narrow veinlets (or even microfractures) are filled with wispy sericite, sphene and traces of carbonate.

Quartz phenocrysts are lacking in this sparsely porphyritic feldspar-rich volcanic rock. However in the groundmass fraction more than 20% of quartz is present in patches (or vesicle sites). The sample thus may be only tentatively identified in terms of its primary igneous composition as a partly altered, sparsely porphyritic K-feldspar and albite-rich volcanic rock most likely of rhyolitic affinity.

Sample No.

19850

Rock Type.

Substantially altered, strongly porphyritic and partly fragmental (?autobrecciated or tuffaceous) volcanic rock of feldspar-rich fairly acidic primary composition.

Hand Specimen

A pale pink-grey massive drill core sample that contains scattered medium grained pale pink feldspar crystals. It appears to be partly fragmental. Several narrow crosscutting pale grey veins react strongly with cold dilute HCl indicating the presence of calcite. No K-feldspar was detected by staining.

Thin Section.

Conspicuous plagioclase phenocrysts and glomeroporphyritic aggregates comprise about 10% of this sample. Individual prismatic shaped crystals range up to 2 mm long and comprise albite which is now lightly dusted with inclusions of sericite and carbonate. In part of the rock the albite crystals show angular and broken shapes, and glomeroporphyritic aggregates appear to be disaggregated. Elsewhere are rare crystal sites that now contain water-clear secondary albite and minor granular barytes with traces of opaque sulphides ± carbonate and sphene.

In the fine grained rock matrix somewhat poorly defined wavy compositional layers are defined by relative proportion variation of microgranular to almost cryptocrystalline felsic material and wispy pale green birefringent clay which could be montmorillonite. The latter defines somewhat rounded patches of the felsic material and could represent curving sites of perlitic cracks. There are no clearly recognisable relict textural features in this fraction. In the partly fragmental fraction of this sample, the wispy clay defines a weak wavy foliation.

The sample is cut by several sets of irregular branching veins. Firstly are those that contain very dominant granular quartz intergrown with minor carbonate, albite and rutile, while later veins and patches contain dense granular carbonate.

The composition of this sample is masked by its strong alteration to wispy birefringent clay and abundant development of albite. It may be identified only tentatively as a substantially altered, strongly porphyritic and partly fragmental (?autobrecciated or tuffaceous) volcanic rock of feldspar-rich fairly acidic primary composition.

## APPENDIX 2

## Geochemical Database and Diagrams

- List of Analytical Results
- Alteration Indexes
- Zr/TiO<sub>2</sub> vs Nb/y - Diagram
- Variation diagrams for alteration and differentiation

Ti/Z vs SiO<sub>2</sub>  
vs TiO<sub>2</sub>  
vs Fe<sub>2</sub>O<sub>3</sub>  
vs MgO  
vs Na<sub>2</sub>O  
vs K<sub>2</sub>O

- Harker Diagrams

SiO<sub>2</sub> vs TiO<sub>2</sub>  
CaO  
MgO  
Na<sub>2</sub>O  
K<sub>2</sub>O  
Ba  
Cr  
Sr

Geological 12001

	RNY		RNY		RNY		RNY		RNY	
	19837	19838	19839	19840	19841	19842	19843	19844	19845	19846
- Elements assayed in percent -										
SiO2	71.80	65.90	68.70	72.90	73.50	73.90	76.30	71.60	72.30	68.20
TiO2	0.37	0.64	0.50	0.38	0.25	0.25	0.10	0.13	0.27	0.46
Al2O3	12.80	14.60	15.90	14.30	12.60	12.30	10.60	13.70	12.30	14.40
Fe2O3	2.94	4.56	2.06	2.26	1.84	1.65	0.88	3.14	3.32	3.62
MnO	0.05	0.14	0.05	0.08	0.06	0.08	0.04	0.19	0.12	0.12
MgO	0.83	1.33	0.26	0.44	0.36	0.14	0.10	0.56	0.40	0.37
CaO	0.23	2.40	0.34	0.52	0.06	0.68	0.06	0.60	0.20	1.26
Na2O	3.84	4.38	4.22	6.60	0.45	3.64	1.15	3.94	4.42	4.06
K2O	3.42	1.84	5.05	1.61	10.20	5.45	6.15	2.10	3.34	4.40
P2O5	0.09	0.14	0.09	0.13	0.08	0.06	0.01	0.04	0.05	0.10
LOI	1.64	2.06	2.48	0.84	1.14	1.02	2.56	2.52	1.41	1.42

- Elements assayed in PPM -										
Ag	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
As	3.00	5.00	6.00	4.00	2.00	2.00	2.00	2.00	2.00	2.00
Ba	1240.00	1280.00	1360.00	1160.00	3360.00	1900.00	2040.00	300.00	940.00	1240.00
Bi	4.00	4.00	4.00	4.00	4.00	4.00	4.00	6.00	4.00	4.00
Co	50.00	89.00	50.00	93.00	79.00	82.00	55.00	61.00	69.00	56.00
Cr	20.00	14.00	40.00	16.00	16.00	8.00	24.00	14.00	5.00	24.00
Cu	6.00	34.00	38.00	12.00	34.00	6.00	6.00	42.00	24.00	13.00
Md	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
Nb	12.00	14.00	12.00	16.00	6.00	8.00	10.00	14.00	12.00	14.00
Ni	2.00	2.00	2.00	6.00	2.00	2.00	3.00	2.00	2.00	2.00
Pb	4.00	28.00	4.00	6.00	8.00	8.00	22.00	4.00	4.00	4.00
Rb	68.00	44.00	125.00	19.00	140.00	96.00	120.00	130.00	80.00	94.00
Sb	4.00	6.00	6.00	6.00	4.00	6.00	4.00	4.00	6.00	6.00
Se	2.00	3.00	2.00	3.00	2.00	2.00	3.00	2.00	2.00	2.00
Br	205.00	660.00	275.00	260.00	47.00	135.00	78.00	390.00	135.00	365.00
V	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00
W	10.00	10.00	110.00	10.00	130.00	10.00	10.00	10.00	10.00	10.00
Y	54.00	48.00	38.00	38.00	24.00	36.00	22.00	48.00	28.00	40.00
Zn	59.00	200.00	210.00	73.00	120.00	34.00	44.00	280.00	155.00	125.00
Zr	180.00	760.00	465.00	435.00	160.00	150.00	110.00	140.00	160.00	445.00

TiO2 12.3 5.0 6.4 5.2 9.4 10.0 5.4 5.6 10.1 6.2

are these real?

150

849155

151

	UPPLIS 50.6 mm	UPPLIS 72.8 mm	UPPLIS 125.4 mm
19847	19848	19849	19850

NORTH PINNACLES

- Elements assayed in percent -

SiO2	67.50	74.20	75.90	60.40
TiO2	0.52	0.19	0.23	0.34
Al2O3	15.70	10.50	12.70	20.10
Fe2O3	1.82	0.88	0.52	1.10
MnO	0.03	0.03	0.04	0.05
MgO	0.17	0.05	0.11	0.66
CaO	0.82	1.37	0.78	1.69
Na2O	3.24	0.37	5.50	6.40
K2O	5.35	9.10	3.08	4.14
P2O5	0.08	0.10	0.10	0.08
LOI	2.78	1.81	1.07	3.12

- Elements assayed in PPM -

As	0.10	0.50	0.10	0.10
AS	2.00	100.00	2.00	2.00
BA	1160.00	4200.00	1180.00	670.00
BI	4.00	4.00	4.00	4.00
CO	40.00	80.00	90.00	59.00
CR	5.00	5.00	14.00	22.00
CU	23.00	12.00	6.00	36.00
MO	4.00	14.00	4.00	10.00
NB	14.00	8.00	10.00	12.00
NI	2.00	2.00	2.00	2.00
PB	4.00	125.00	140.00	245.00
RB	115.00	145.00	49.00	145.00
SB	4.00	10.00	4.00	8.00
SE	4.00	2.00	2.00	2.00
SR	345.00	70.00	145.00	150.00
V	10.00	15.00	10.00	10.00
W	10.00	10.00	10.00	10.00
Y	34.00	26.00	32.00	44.00
ZN	78.00	1440.00	235.00	600.00
ZR	475.00	135.00	180.00	250.00

T/2 6.6 8.4 7.7 8.2

849156

$$\frac{\text{MgO} + \text{K}_2\text{O}}{\text{Na}_2\text{O} + \text{K}_2\text{O} + \text{CaO} + \text{MgO}} \times 100$$

Bulgozac

## Project BULGOBAC RECONNAISSANCE MAPPING

Sample No. 19837

Element value for MgO = 0.830  
 Element value for K2O = 3.420  
 Element value for NA2O = 3.840  
 Element value for CaO = 0.230  
 Alteration index = 51.082

## Project BULGOBAC RECONNAISSANCE MAPPING

Sample No. 19838

Element value for MgO = 1.330  
 Element value for K2O = 1.840  
 Element value for NA2O = 4.380  
 Element value for CaO = 2.400  
 Alteration index = 31.859

## Project BULGOBAC RECONNAISSANCE MAPPING

Sample No. 19839

Element value for MgO = 0.260  
 Element value for K2O = 5.050  
 Element value for NA2O = 4.220  
 Element value for CaO = 0.340  
 Alteration index = 53.799

## Project BULGOBAC RECONNAISSANCE MAPPING

Sample No. 19840

Element value for MgO = 0.440  
 Element value for K2O = 1.610  
 Element value for NA2O = 6.600  
 Element value for CaO = 0.520  
 Alteration index = 22.356

## Project BULGOBAC RECONNAISSANCE MAPPING

Sample No. 19841

Element value for MgO = 0.360  
 Element value for K2O = 10.200  
 Element value for NA2O = 0.450  
 Element value for CaO = 0.060  
 Alteration index = 95.393

## Project BULGOBAC RECONNAISSANCE MAPPING

Sample No. 19842

Element value for MgO = 0.140  
 Element value for K2O = 5.450  
 Element value for NA2O = 3.640  
 Element value for CaO = 0.680  
 Alteration index = 56.408

(ref. Ishikawa, Y. et al  
 (1976), Delineation of  
 prospecting targets for  
 Kuroko deposits based  
 on modes of volcanism  
 of underlying dacite  
 and alteration haloes.  
 Mining Geology, V. 26  
 p. 105-117 (in Japanese  
 with English abs.)

## Project BULGOBAC RECONNAISSANCE MAPPING

Sample No. 19843

Element value for MGD	=	0.100
Element value for K20	=	6.150
Element value for NA20	=	1.150
Element value for CAD	=	0.060
Alteration index =		83.780

## Project BULGOBAC RECONNAISSANCE MAPPING

Sample No. 19844

Element value for MGD	=	0.560
Element value for K20	=	2.100
Element value for NA20	=	3.940
Element value for CAD	=	0.600
Alteration index =		36.944

## Project BULGOBAC RECONNAISSANCE MAPPING

Sample No. 19845

Element value for MGD	=	0.400
Element value for K20	=	3.340
Element value for NA20	=	4.420
Element value for CAD	=	0.200
Alteration index =		44.737

## Project BULGOBAC RECONNAISSANCE MAPPING

Sample No. 19846

Element value for MGD	=	0.370
Element value for K20	=	4.400
Element value for NA20	=	4.060
Element value for CAD	=	1.260
Alteration index =		47.275

## Project BULGOBAC RECONNAISSANCE MAPPING

Sample No. 19847

Element value for MGD	=	0.170
Element value for K20	=	5.350
Element value for NA20	=	3.240
Element value for CAD	=	0.820
Alteration index =		57.620

## Project BULGOBAC RECONNAISSANCE MAPPING

Sample No. 19848

Element value for MGD	=	0.050
Element value for K20	=	9.100
Element value for NA20	=	0.370
Element value for CAD	=	1.370
Alteration index =		84.022

## Project BULGOBAC RECONNAISSANCE MAPPING

Sample No. 19849

Element value for MGD	=	0.110
Element value for K20	=	3.080
Element value for NA20	=	5.500
Element value for CAD	=	0.780
Alteration index =		33.685

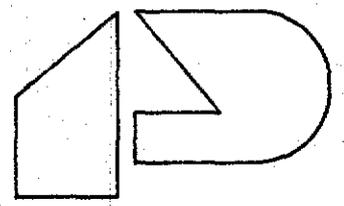
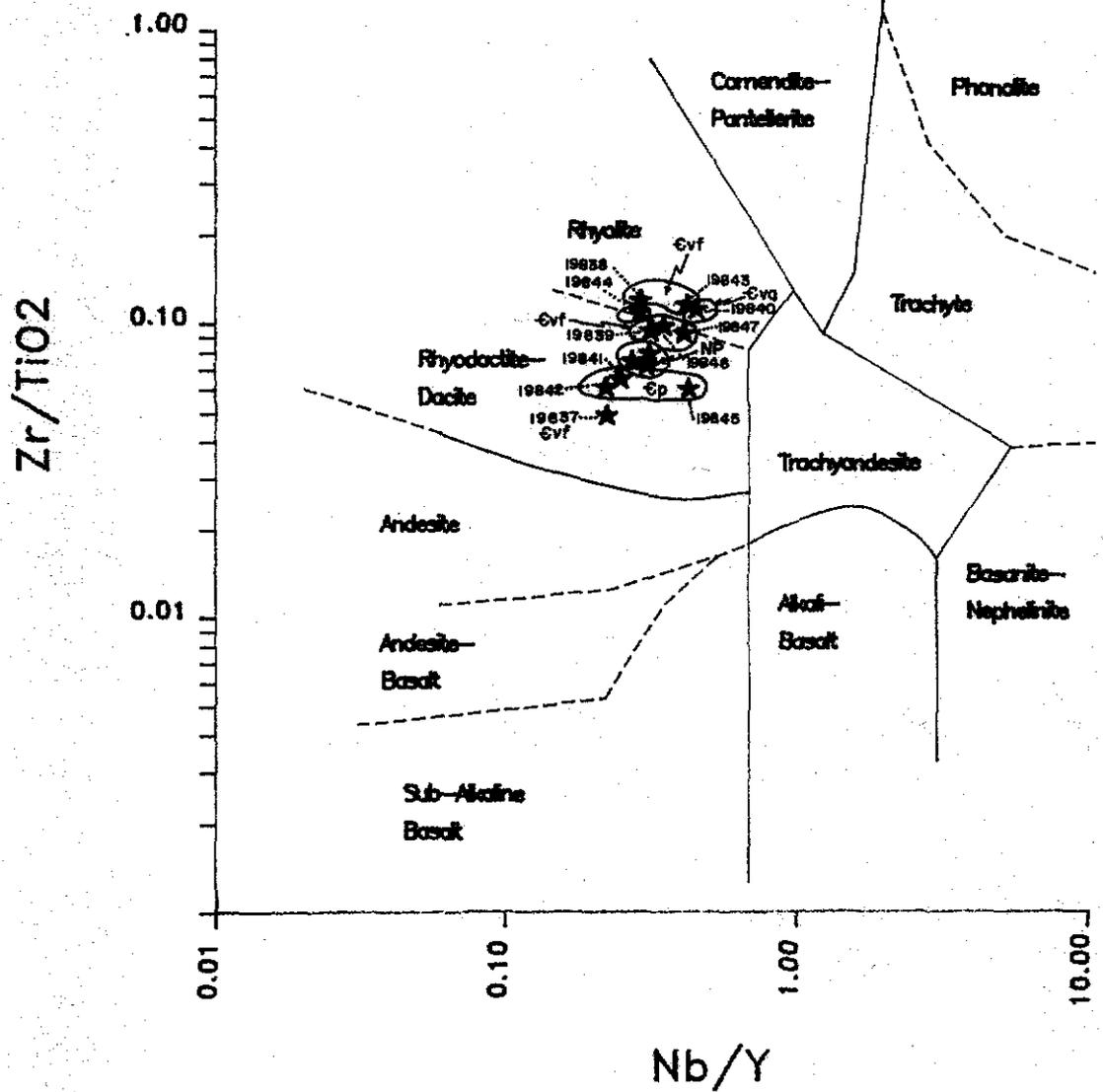
Project BULGOBAC RECONNAISSANCE MAPPING

Sample No. 19850

Element value for MgO	=	0.660
Element value for K <sub>2</sub> O	=	4.140
Element value for Na <sub>2</sub> O	=	6.400
Element value for CaO	=	1.690
Alteration index =		37.238

Element value for CaO	=	0.680
Alteration index =		56.408

# Host volcanic rocks - BULGOBAC WH-4-87



150

## PANCONTINENTAL

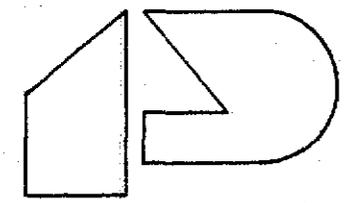
### Sample list

19837	Cvf	Feldspar phytic (rhyolitic) lavas and pyroclastics
19838	Cvf	
19839	Cvf	
19840	Cvf	Quartz-feldspar porphyry (intrusive)
19841	Cp	
19842	Cp	Quartz-feldspar phytic pyroclastics and lavas
19843	Cva	
19844	Cva	North Pinnacles
19845	Cp	
19846	Cvf	DDH NPD 215 (Cva)
19847	Cvf	
19848	NP	
19849	NP	
19850	NP	

849160

23-JUL-1987

# Variation diagram - BULGOBAC WH-4-87

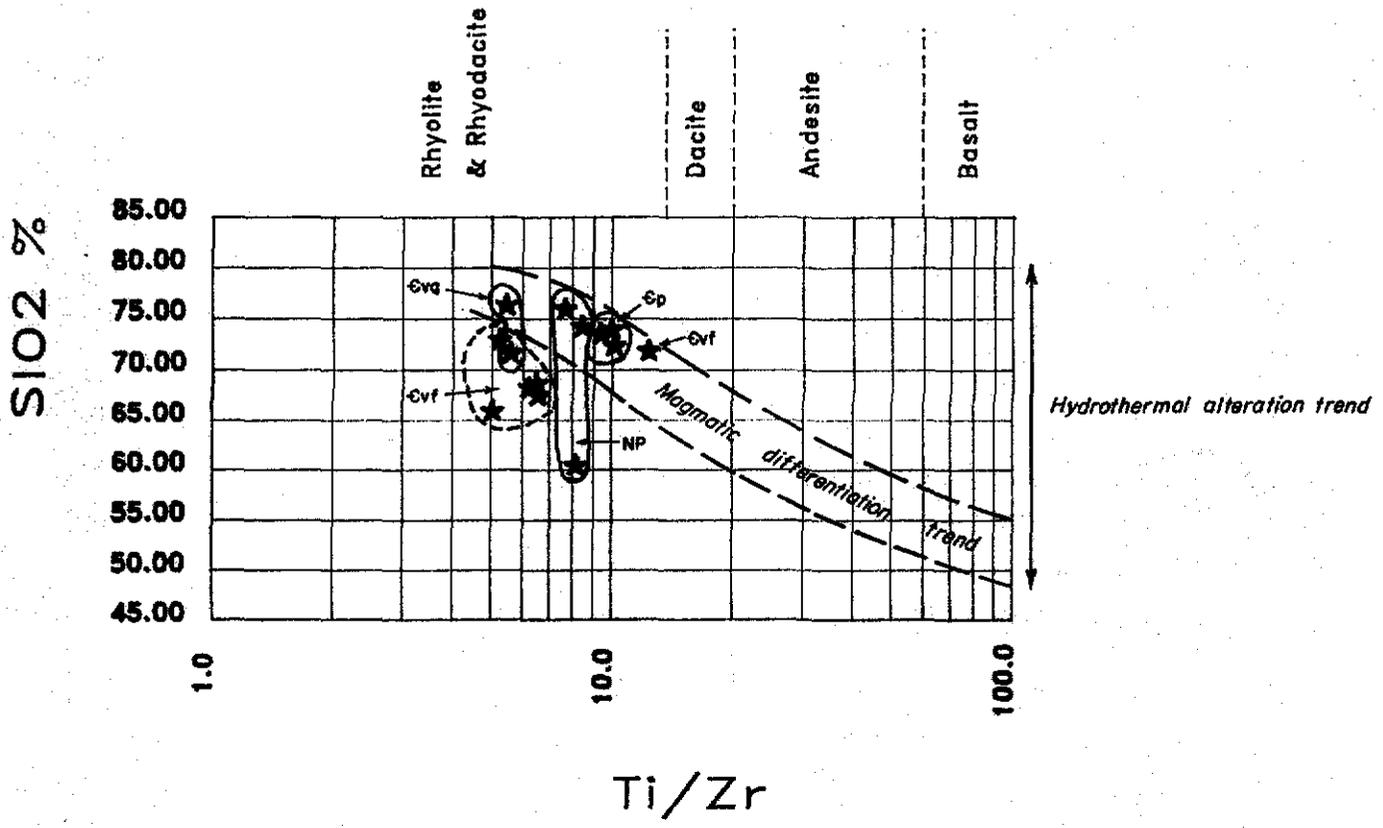


156

PANCONTINENTAL

## Sample list

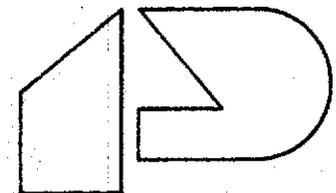
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849161

23-JUL-1987

# Variation diagram - BULGOBAC WH-4-87

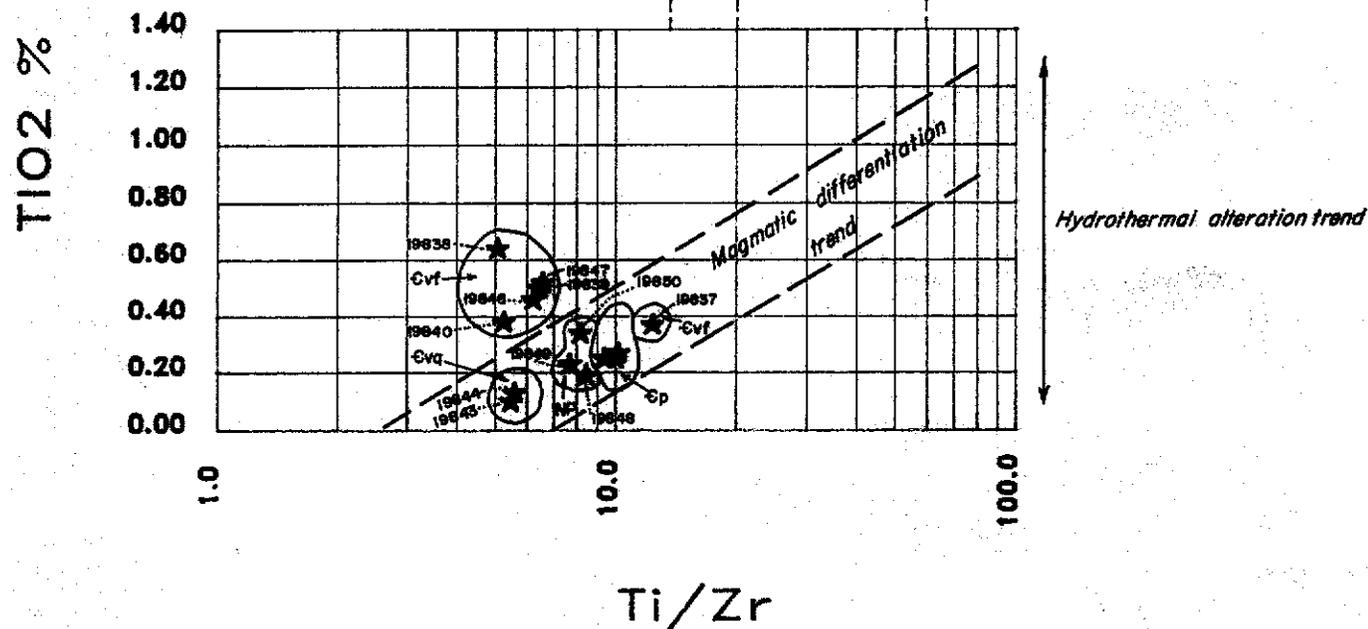


157

PANCONTINENTAL

## Sample list

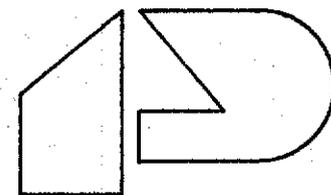
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849162

23-JUL-1987

# Variation diagram - BULGOBAC WH-4-87

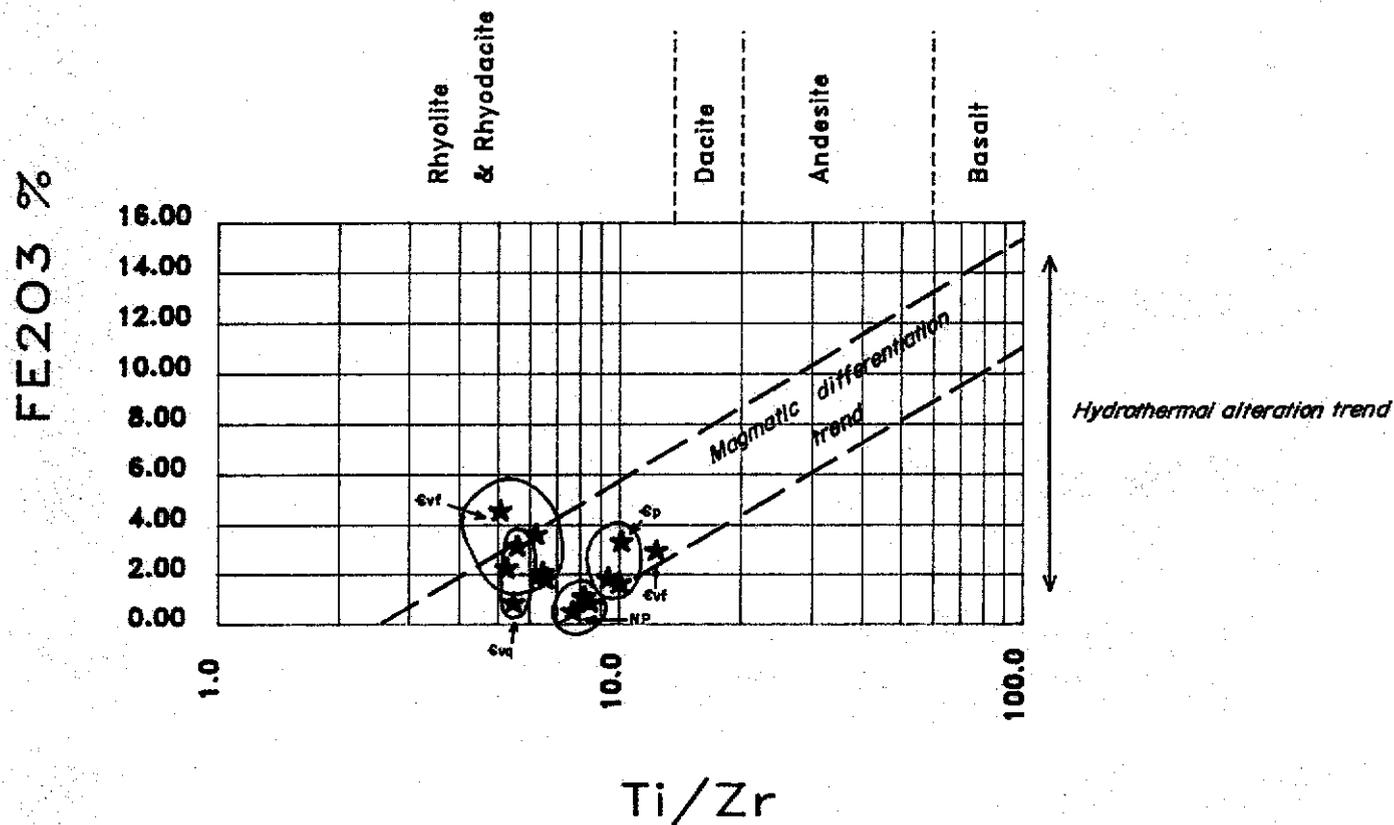


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PANCONTINENTAL

## Sample list

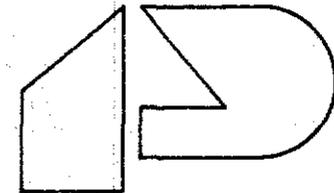
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849163

23-JUL-1987

# Variation diagram - BULGOBAC WH-4-87

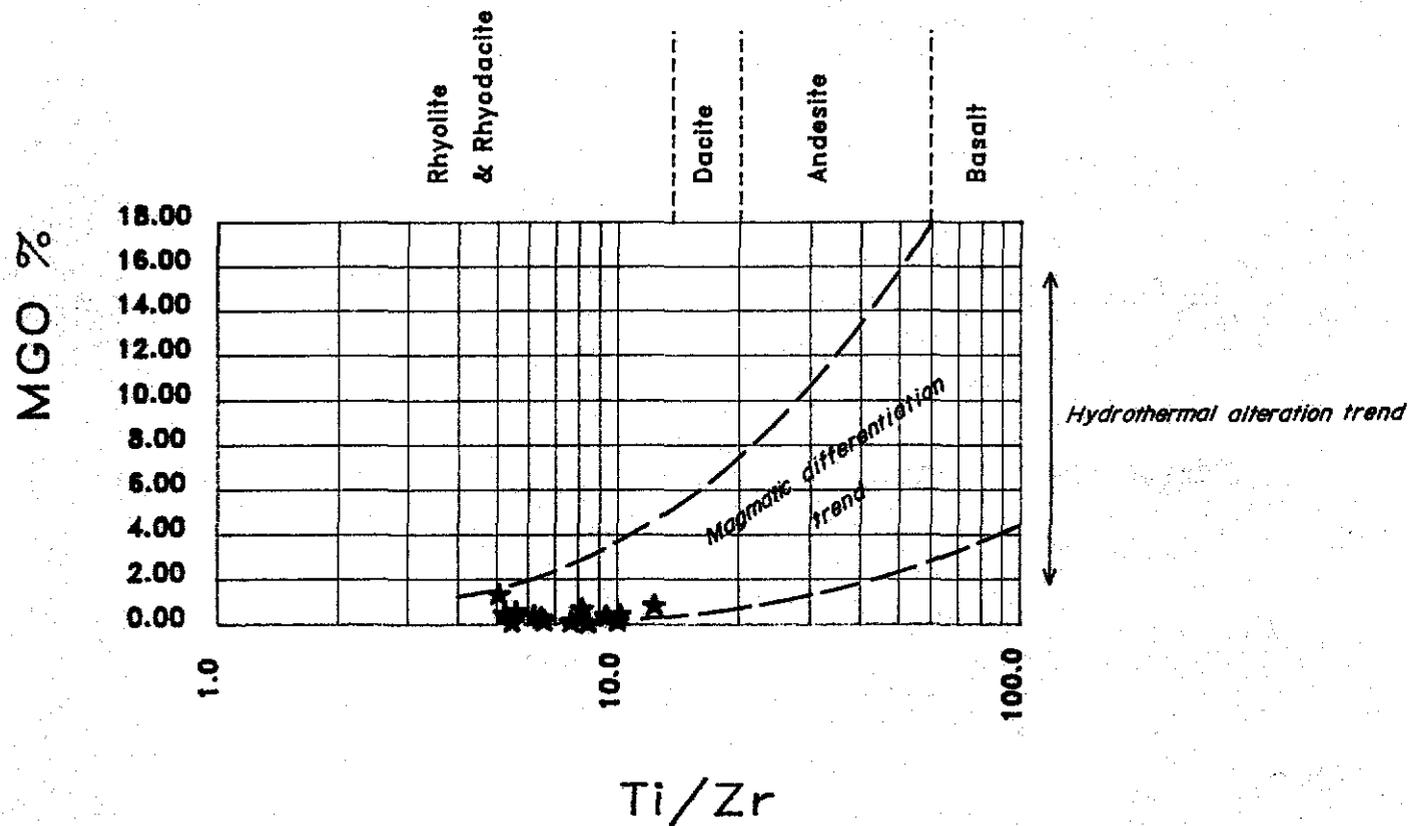


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PANCONTINENTAL

## Sample list

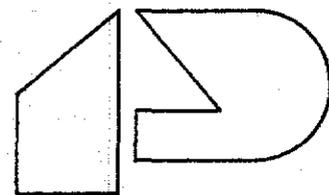
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849164

23-JUL-1987

# Variation diagram - BULGOBAC WH-4-87

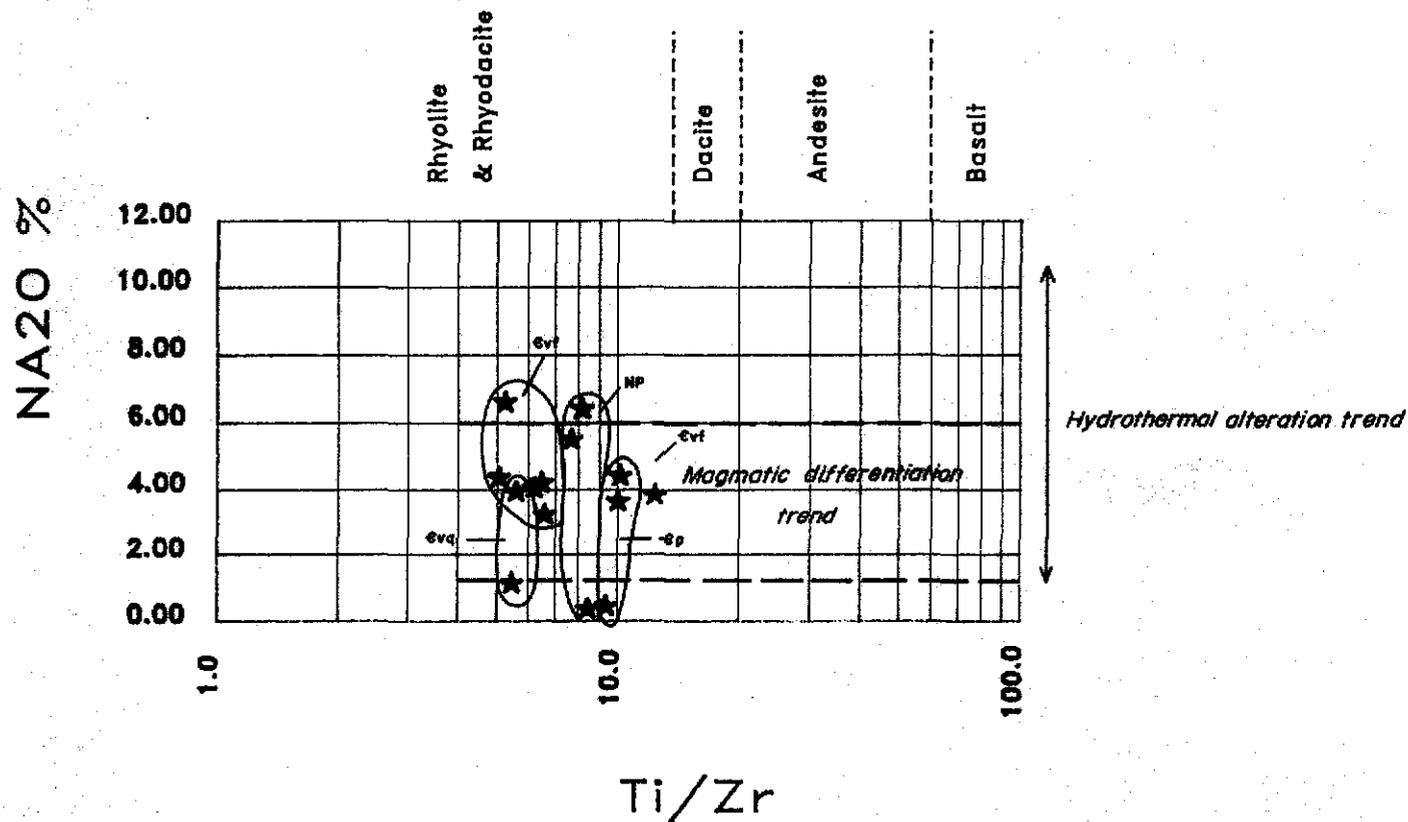


160

PANCONTINENTAL

## Sample list

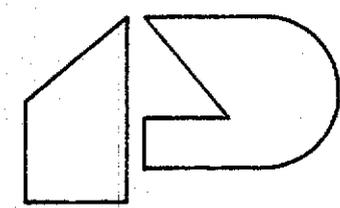
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849165

23-JUL-1987

# Variation diagram - BULGOBAC WH-4-87

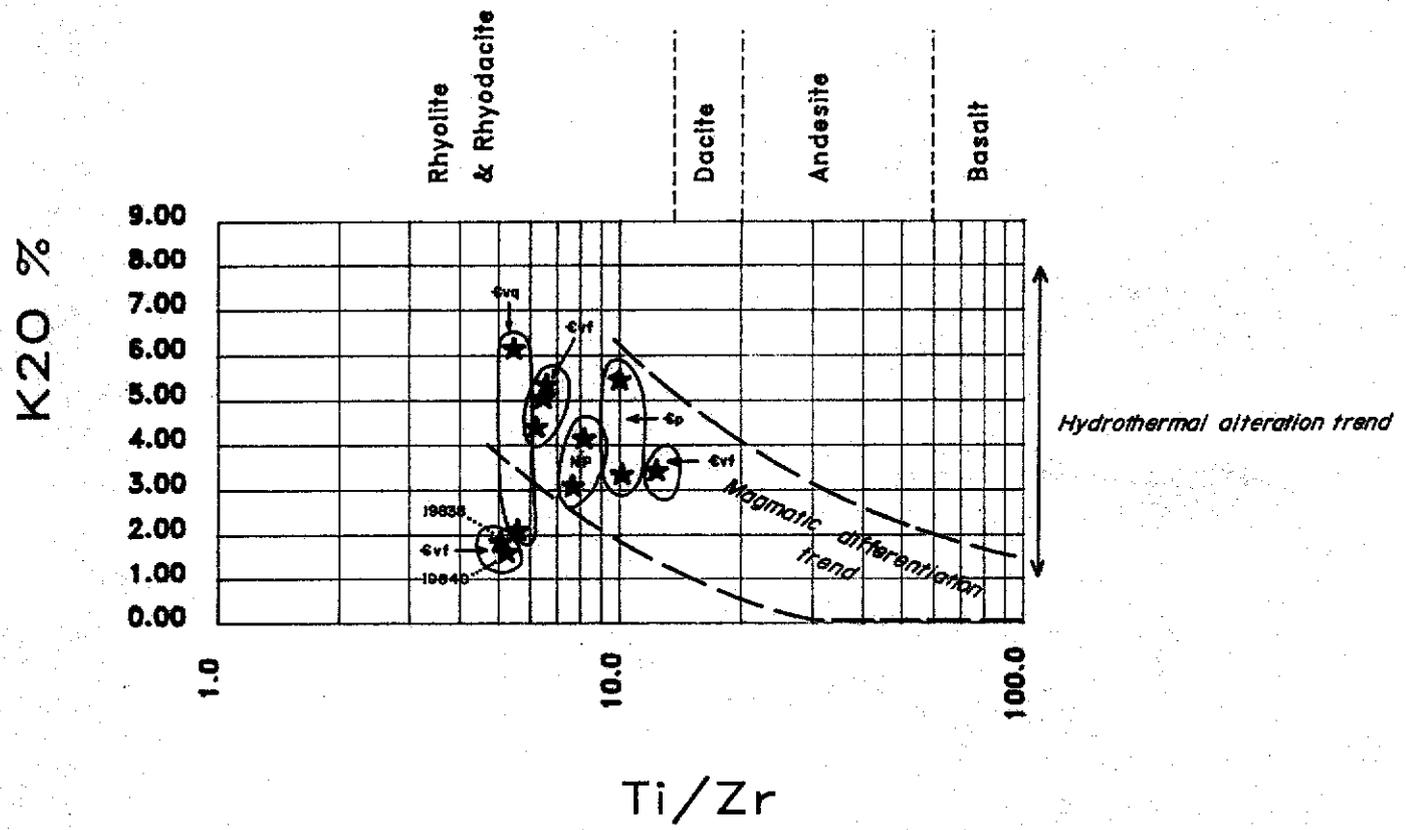


161

PANCONTINENTAL

## Sample list

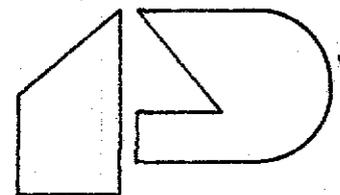
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849166

23-JUL-1987

# Harker diagram - BULGOBAC WH-4-87



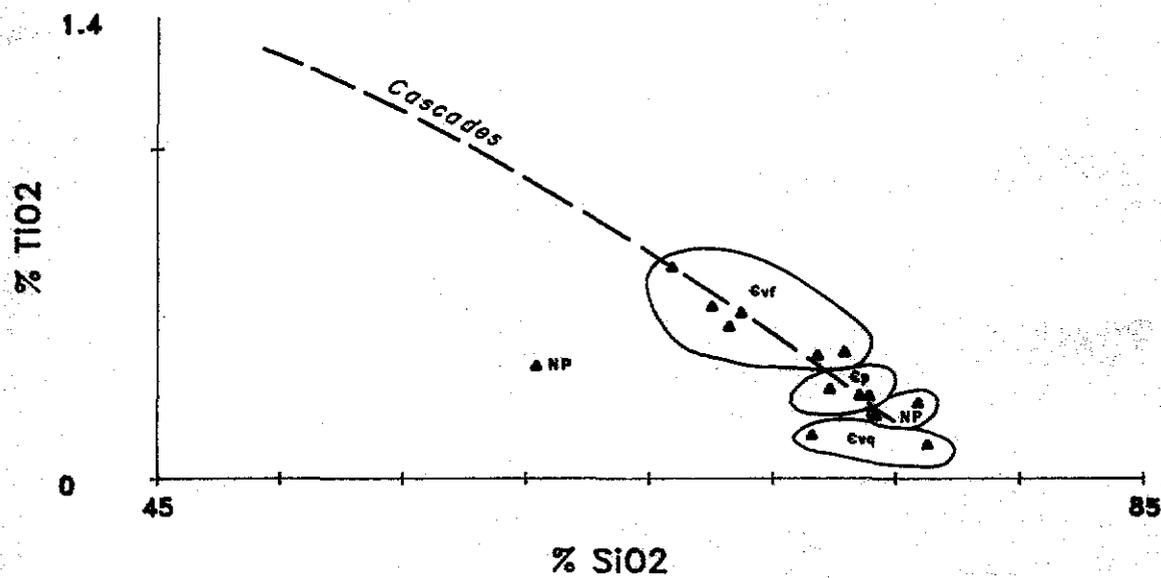
1987

PANCONTINENTAL

## Sample list

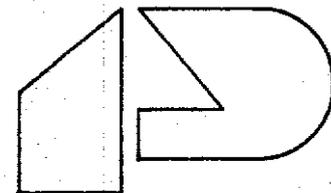
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849167



27-JUL-1987

# Harker diagram - BULGOBAC WH-4-87

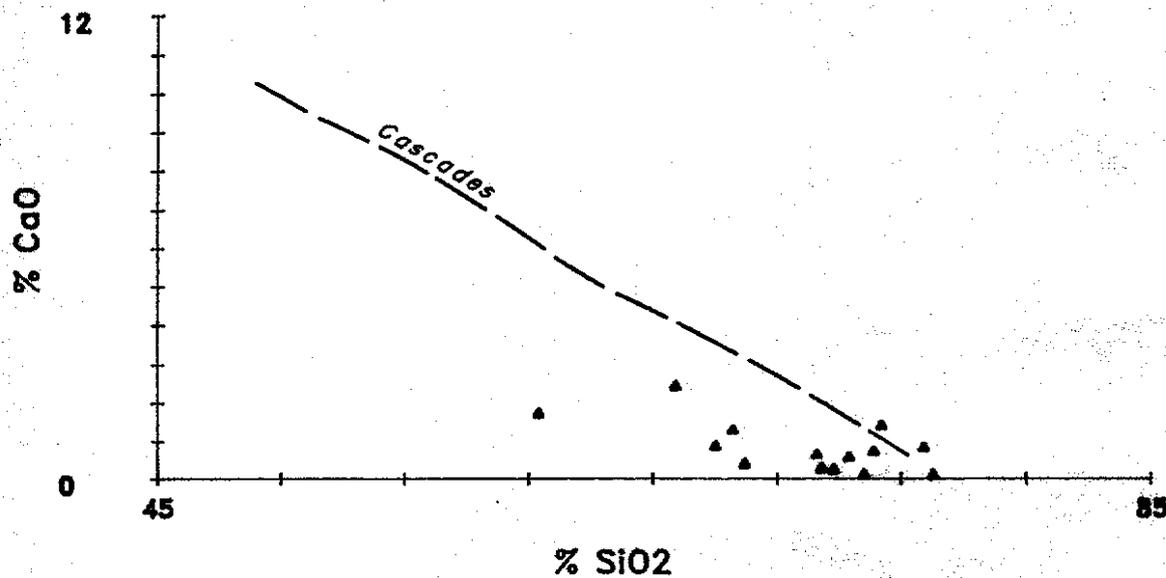


163

PANCONTINENTAL

## Sample list

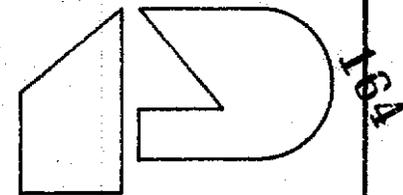
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849168

27-JUL-1987

# Harker diagram - BULGOBAC WH-4-87



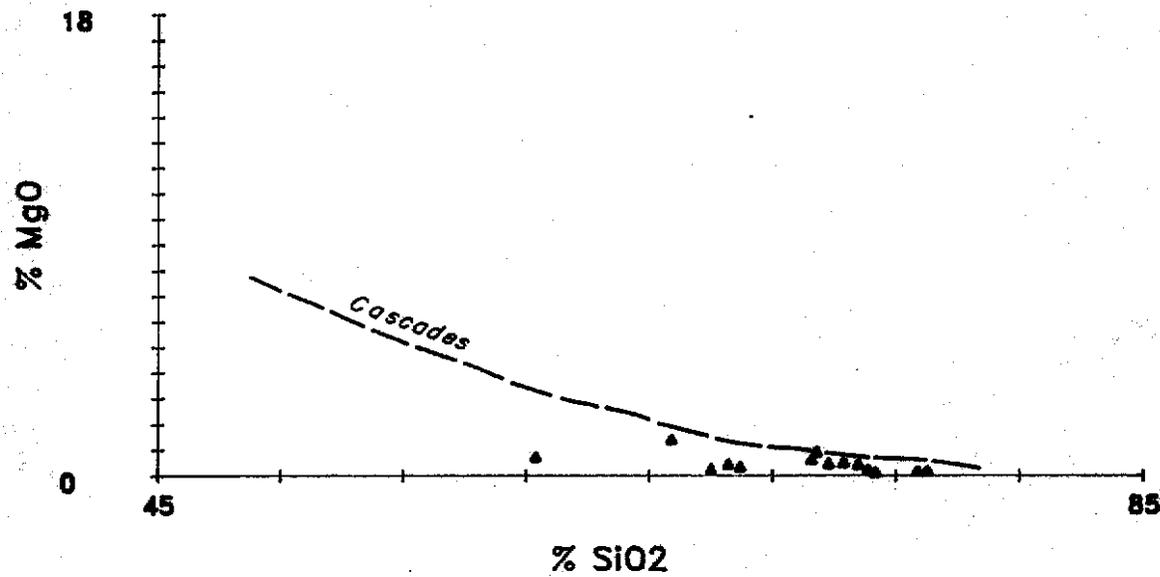
164

PANCONTINENTAL

## Sample list

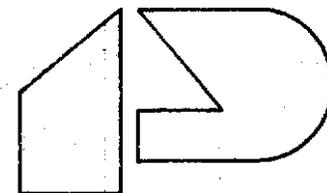
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849169



27-JUL-1987

# Harker diagram - BULGOBAC WH-4-87

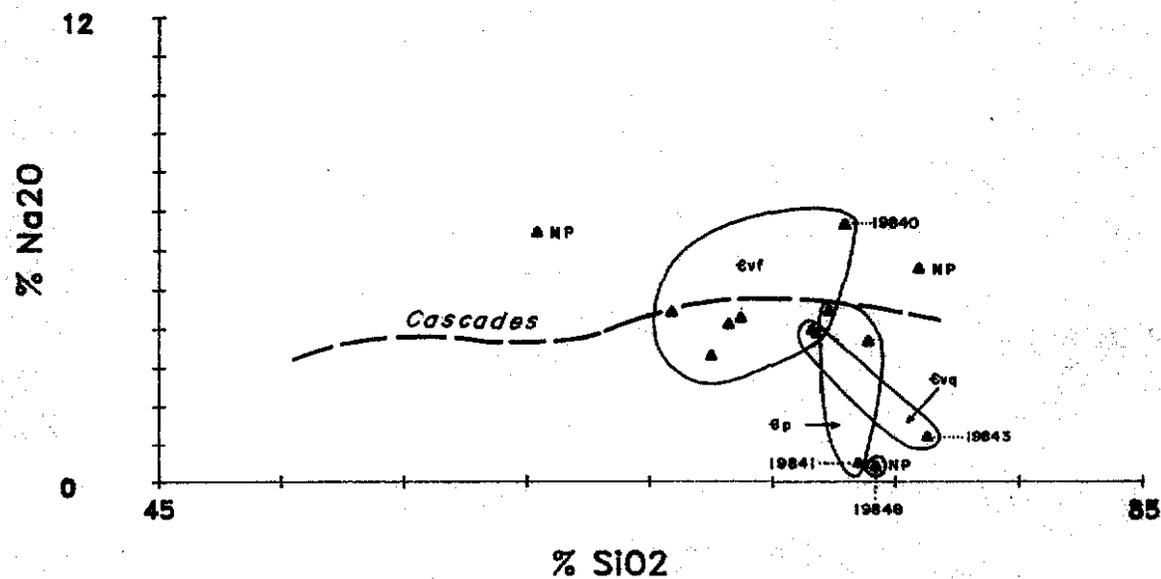


165

PANCONTINENTAL

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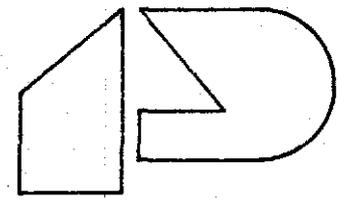
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849170

27-JUL-1987

# Harker diagram - BULGOBAC WH-4-87

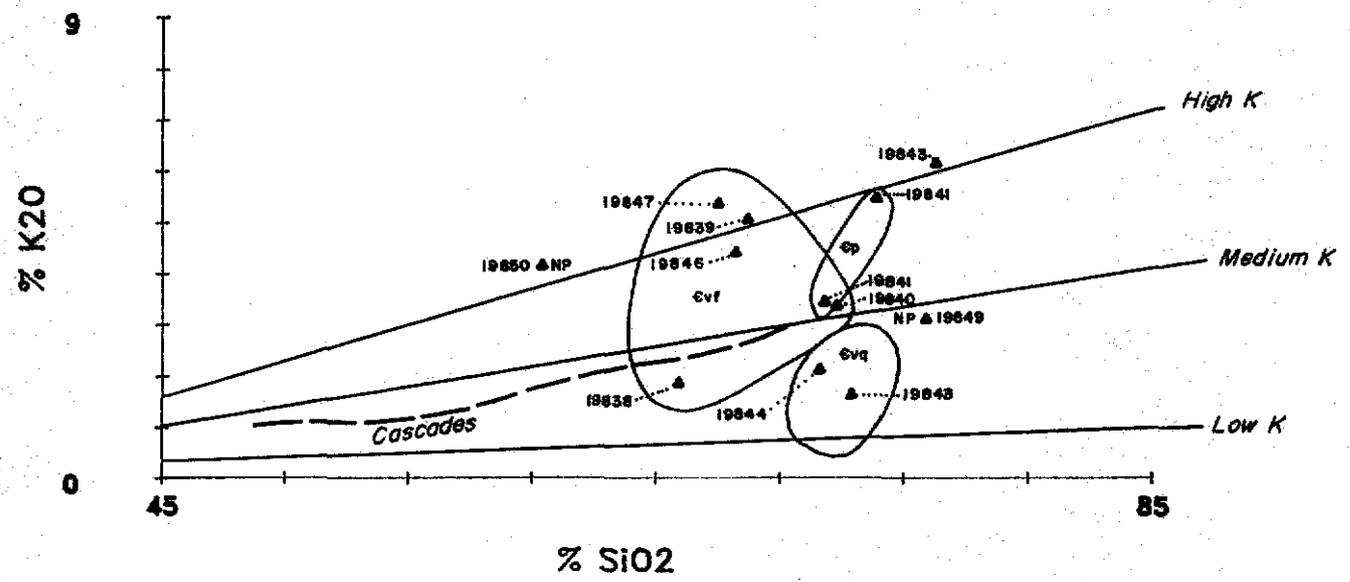


166

PANCONTINENTAL

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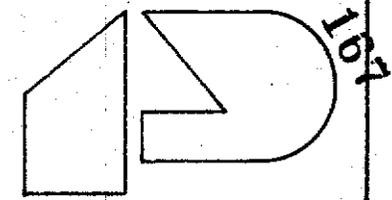
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849171

27-JUL-1987

# Harker diagram - BULGOBAC WH-4-87

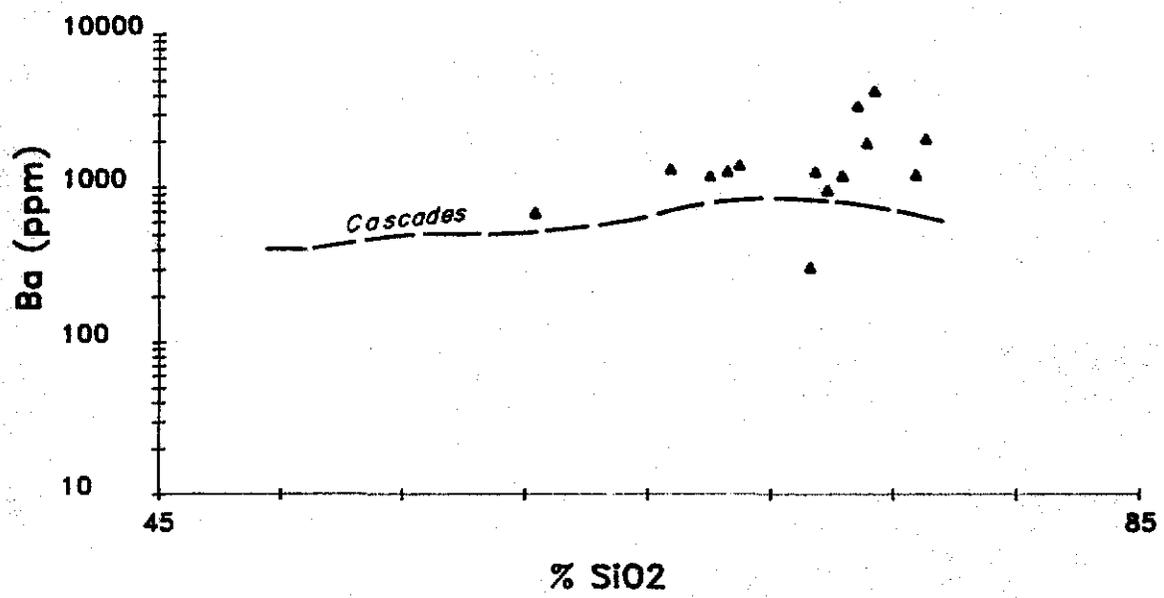


PANCONTINENTAL

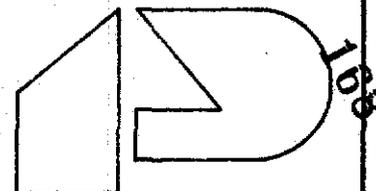
## Sample list

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849172



# Harker diagram - BULGOBAC WH-4-87

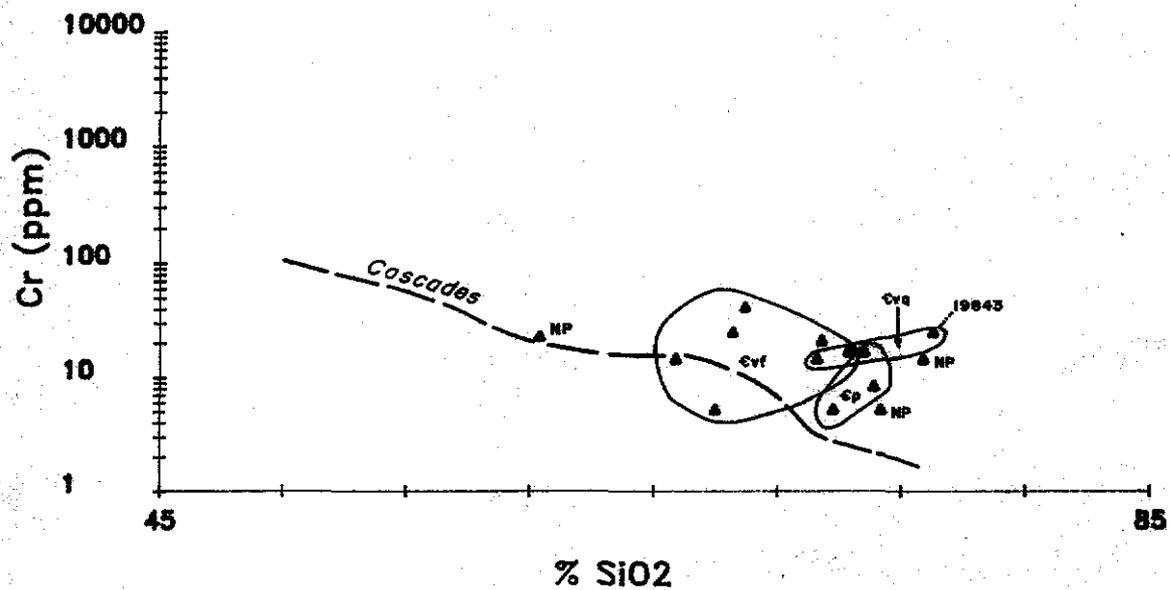


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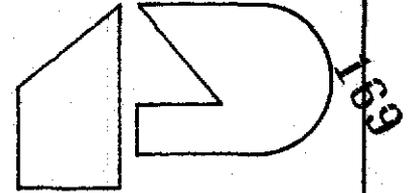
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849173



27-JUL-1987

# Harker diagram - BULGOBAC WH-4-87

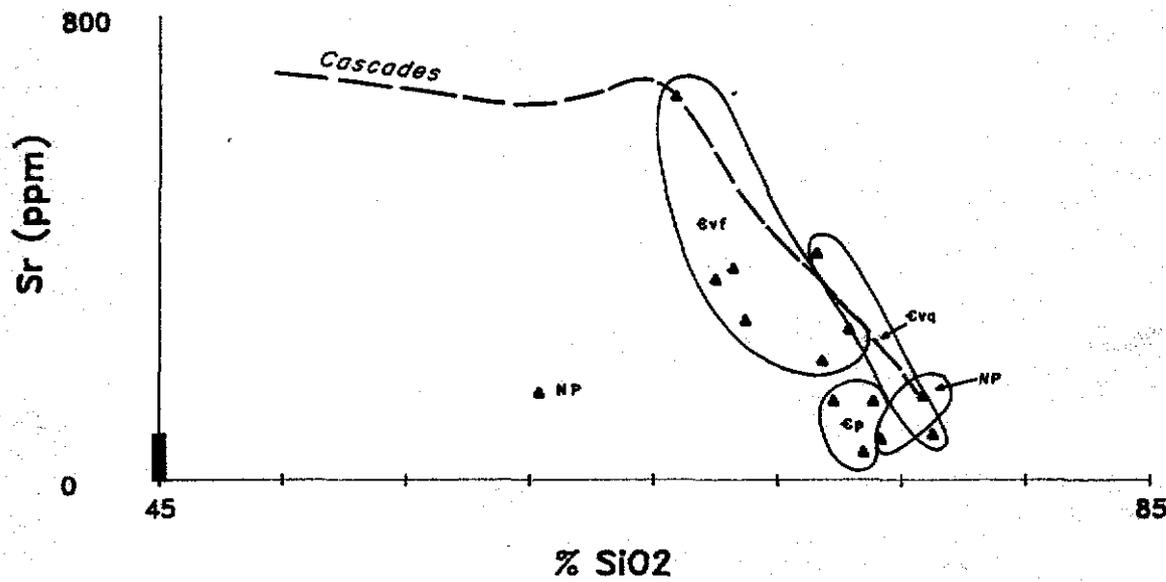


PANCONTINENTAL

## Sample list

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849174



29-JUL-1987

## APPENDIX 4

Wilson, D R

1987

Boco Siding UTEM Survey December  
1986, EL 12/72, Bulgobac  
Tasmania, Pancontinental Report  
No 87/49

Report No: 87/49

BOCO SIDING UTEM SURVEY, DECEMBER 1986  
E.L. 12/72 "BULGOBAC" TASMANIA

By David R. Wilson  
29.1.87

Distribution

Original

- Copy 1: PML - Archives
- Copy 2: PML - File 5309.7
- Copy 3: Outokumpu Oy
- Copy 4: Electrolytic Zinc Co.
- Copy 5: Little River Resources

Copy 6: Department of Mines, Tasmania

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MEMORANDUM

To: KOA, RMDM File: 5309.7  
From: DRW Date: 29.1.1987

---

Subject: BOCO SIDING UTEM SURVEY

---

1. Introduction

Lamontagne Geophysics Ltd have completed a UTEM survey over Pancontinental's Boco Siding grid on the Bulgobac E.L. 12/72 in NW Tasmania (Figure 1.). The survey commenced on December 14th and finished on December 27th 1986.

The target was a volcanogenic type, gold rich, basemetal massive sulphide orebody of at least 2 Mt. This target was expected to be a weak to moderate conductor within very resistive Mt Reid Volcanics. Previous exploration by Electrolytic Zinc and C.S.R. indicated alteration and weak mineralisation near Boco siding. Their exploration suggested that a target could lie at depth within a fold repetition of the altered sequence to the west. The orebody was expected to be relatively flat lying although there was little reliable dip information. Glacial till of unknown thickness covers the northern part of the area. The southern area is covered in rain forest with thick horizontal scrub. These factors indicated that the large loop T.E.M. was the most effective geophysical exploration approach. Accordingly the UTEM system was selected for this survey.

2. Survey Details

Geological evidence indicated that orebody dips were most likely to be shallow to flat lying. As a result inloop surveying using 4 x 1600m square loops was chosen to maximise any conductive response at depth. Twenty eight lines x 1500m totalling 43km were surveyed.

Constant rain throughout the survey caused many delays and several repeat lines.

All data was reduced and plotted in the field. The data for each plot was normalised via both "continuous" and "point" methods. Continuous normalisation preserves the amplitude of responses but distorts the shape. Point normalisation preserves the shape but distorts the amplitude. These presentations have different advantages and disadvantages for interpretation. In-loop conductive responses are expected to be single peaks showing a slower rate of decay (evidenced by an increase in the number of channels above the background). Continuous normalisation (i.e. at each station channels 10 to 2 are divided by the local primary field, channel 1) is most likely to give the most recognisable anomalies providing the decay rate is not so long that it also affects channel 1.

The continuous normalised plots are Appended.

### 3. Discussion of Results

The data is of good quality despite the weather and equipment problems. The southern part of the grid was not as well gridded as the northern two loops. However the station spacings were consistent so that the profiles are generally smooth.

Plates 1 and 2 outline the survey area and significant conductors.

#### 3.1. Loop 1 Results

All lines show a uniform increase in conductivity from very resistive in the west to less resistive in the east. This indicates a gradual change in rock type. At station 2750E on 2800N there is a single reading with a slow decay indicating a good conductor very near to the measuring coil. This conductor is not seen on adjacent stations or adjacent lines. It probably represents some scrap iron or similar metal very close to the coil.

There are no other significant conductors evident in the data.

#### 3.2. Loop 2 Results

The increasing conductivity from west to east continues from loop 1 through loop 2. The loop 2 background resistivities are slightly higher than loop 1 as evidenced by generally lower channel values. From 4000N to 4800N a strong positive-negative response near 3800E on each survey line is caused by the railway line. The positive-negative response is seen, instead of a single positive response, because the induced currents are very strong and at the surface.

There are no other significant conductors evident in the data.

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### 3.3. Loop 3 Results

The southern most line in loop 3, 5000N, still shows a minor increase in conductivity from west to east. The railway line is also just evident at the eastern end of this line as sharp positive and negative trending responses on different late time channels.

All other lines show a remarkably uniform response. There is a slight increase in surface conductivity towards the north evidenced by slightly higher values in the early time channels towards the north. On 5800N at 3350E the weak response is due to the railway line. There are no other significant conductors evident in the data.

### 3.4. Loop 4 Results

From 6400N through 7400N the early channel (10-5) responses rise from line to line indicating a flat lying, surficial, poor conductor that probably also deepens to the north. Along the eastern edge of the loop the response are much lower indicating more resistive, probably outcropping volcanics. The resistive /conductive boundary lies near 3700E on 6400N and moves uniformly westwards to 3400E on 7600N. The surficial conductive sheet corresponds with a flat buttongrass area and probably indicates clay rich glacial fill overlying the prospective volcanics.

A sharp positive-negative response at 2700E, 6400N is due to the railway line.

There are no other significant conductors evident in the data.

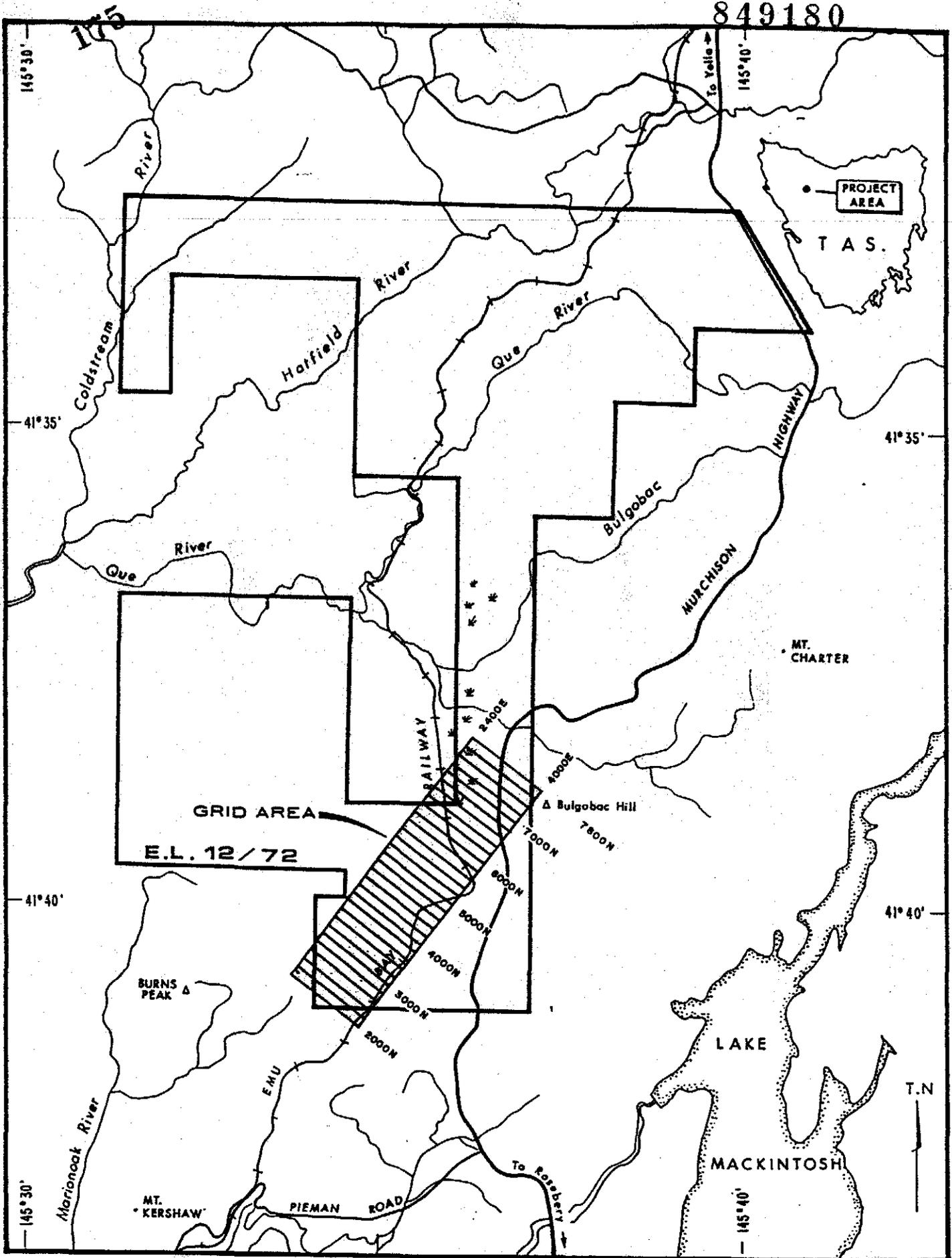
## 4. Conclusions and Recommendations

The UTEM survey over our Bulgobac EL has not located any conductors that might represent massive sulphides.

A broad, flat lying, surficial, poor conductor detected in loop 4 is attributed to water logged glacial clays.

This survey should have detected any economic size massive sulphide body at depths of at least 300m.

I recommend that no further geophysical exploration for massive sulphides be carried out on this grid.



**BULGOBAC PROJECT  
E.L. 12/72 - TASMANIA  
GEOPHYSICAL GRID**

5 cm

SCALE 1:100000

0 1 2 3 4 5 Km

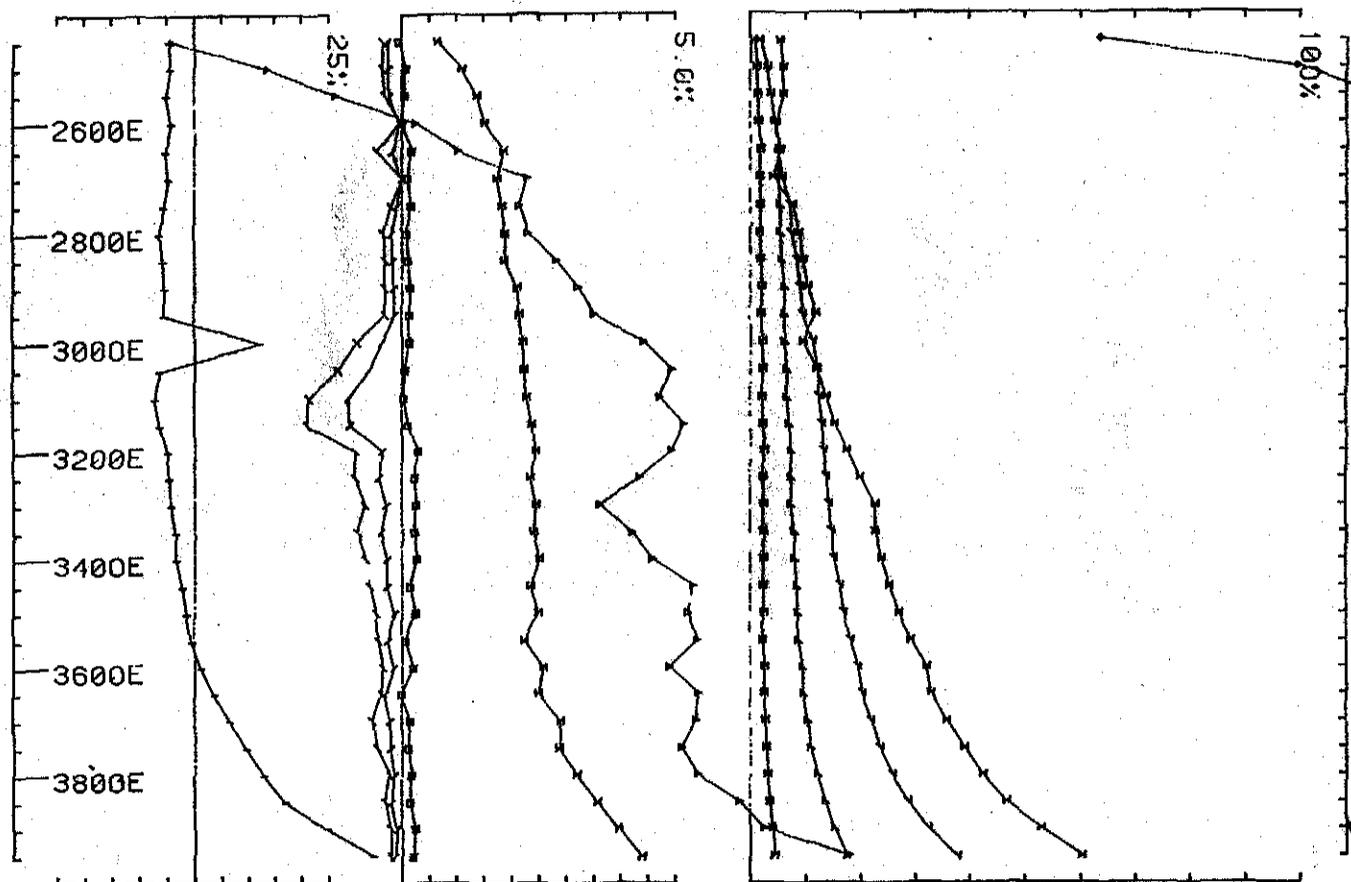
**APPENDIX**

177

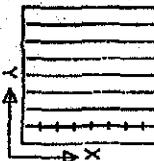
UTEM PLOTTING SYMBOLS

<u>Channel</u>	<u>Symbol</u>	<u>Mean Delay (msec)</u>
		<u>26.23Hz</u>
1		19.06
2	/	9.53
3	\	4.77
4	□	2.38
5	Σ	1.19
6	△	0.60
7	7	0.30
8	⊗	0.15
9	△	0.07
10	◇	0.04

178

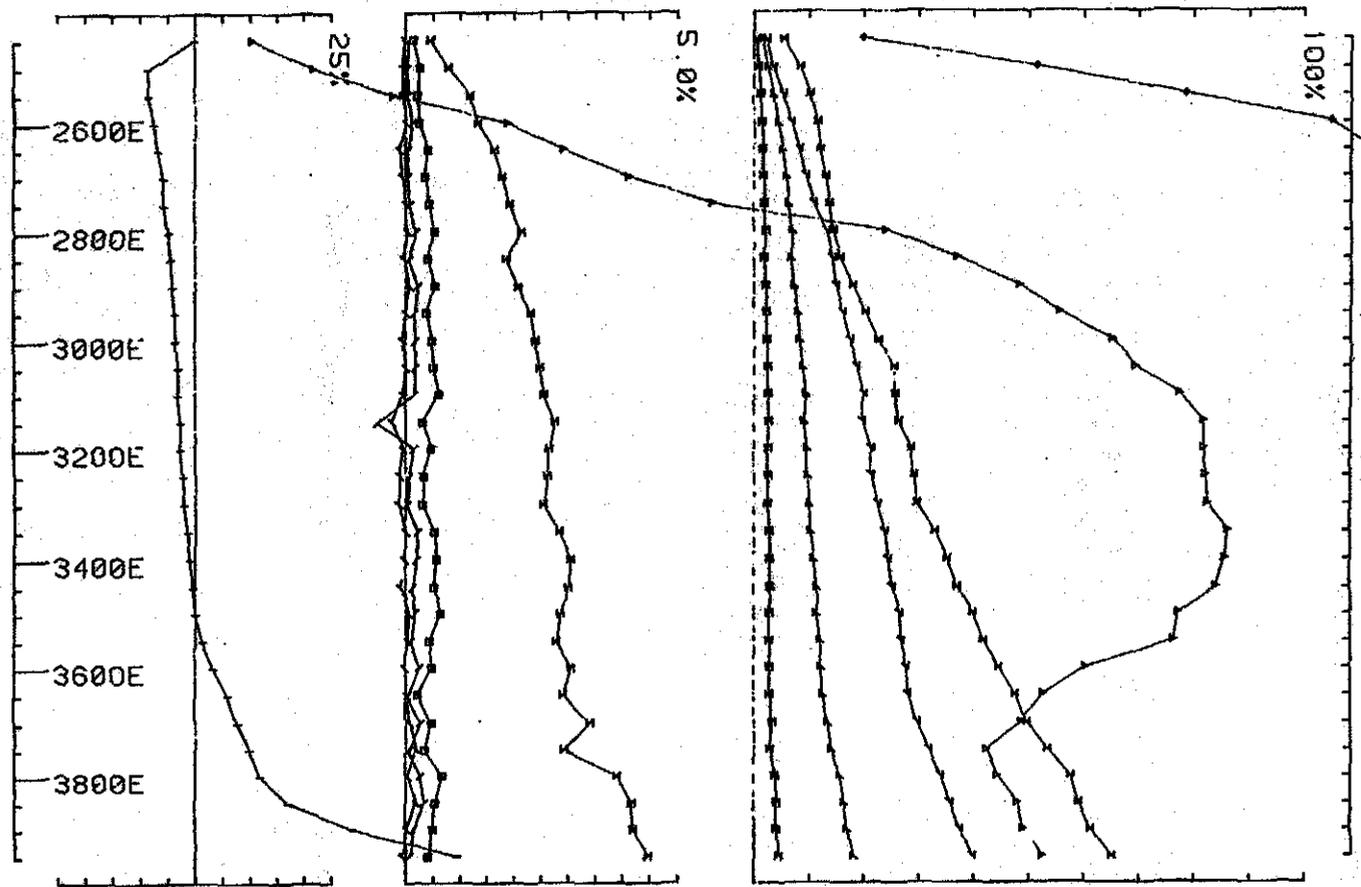


LAMONTAGNE GEOPHYSICS UTEM SURVEY JOB 8656  
 AREA :- Boco Siding  
 CLIENT :- Pancon Min. Ltd. CREW :- RH Rx8  
 Line 2200N Hz COMPONENT BASE FREQ :- 26.230HERTZ  
 SECONDARY FIELD CONTINUOUS CH 1 NORMALIZATION

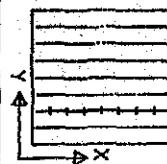


Boco Siding  
 LOOP 0001  
 LINE 2200  
 Hz

179

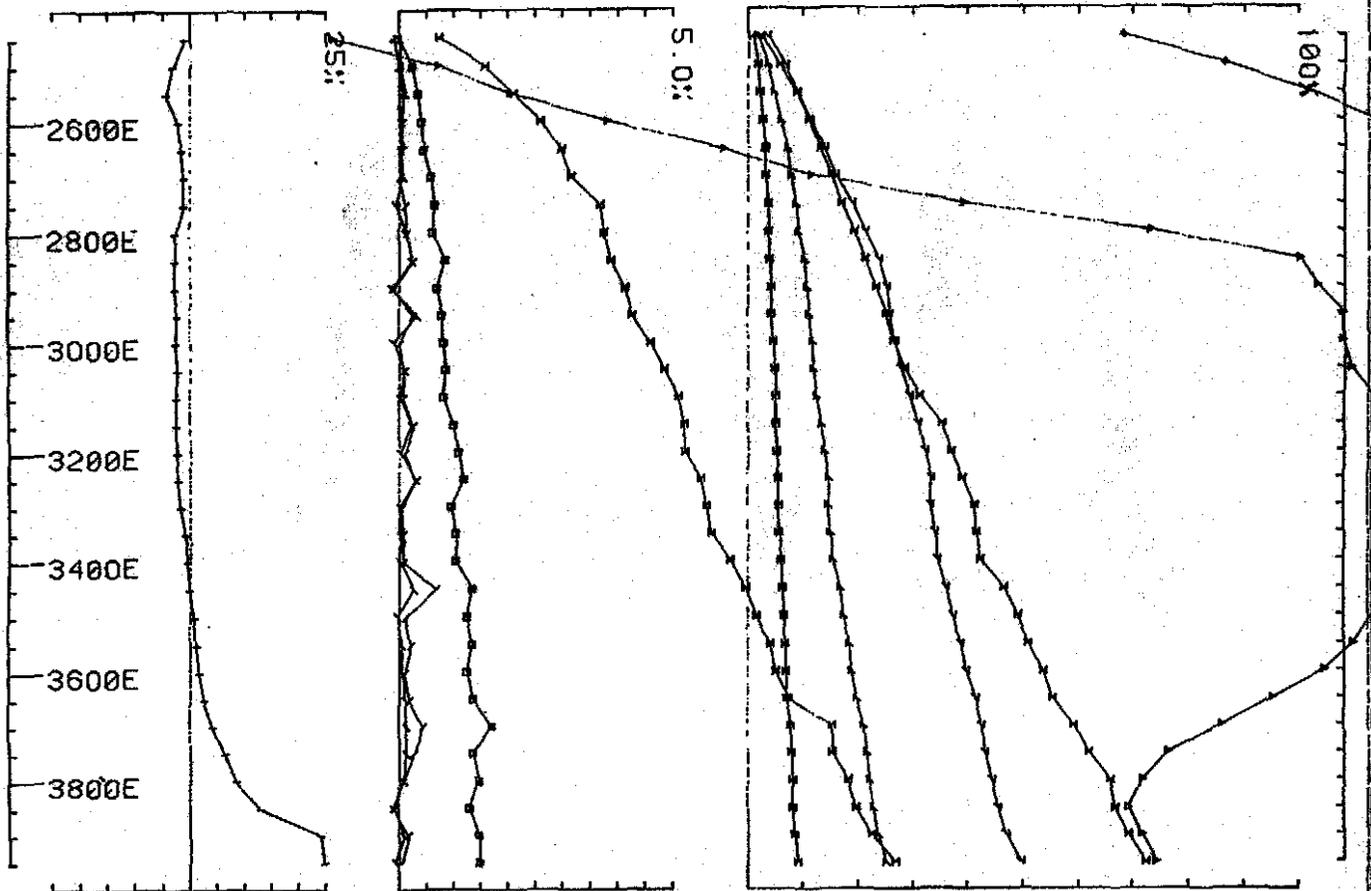


LAMONTAGNE GEOPHYSICS UTEM SURVEY JOB 8656  
 AREA :- Boco Siding  
 CLIENT :- Pancon Min. Ltd. CREW :- RH Rx8  
 Line 2400N Hz COMPONENT BASE FREQ :- 26.230HERTZ  
 SECONDARY FIELD CONTINUOUS CH 1 NORMALIZATION

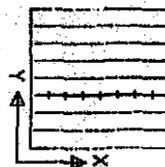


Boco Siding  
 LOOP 8801  
 LINE 2400  
 Hz

180

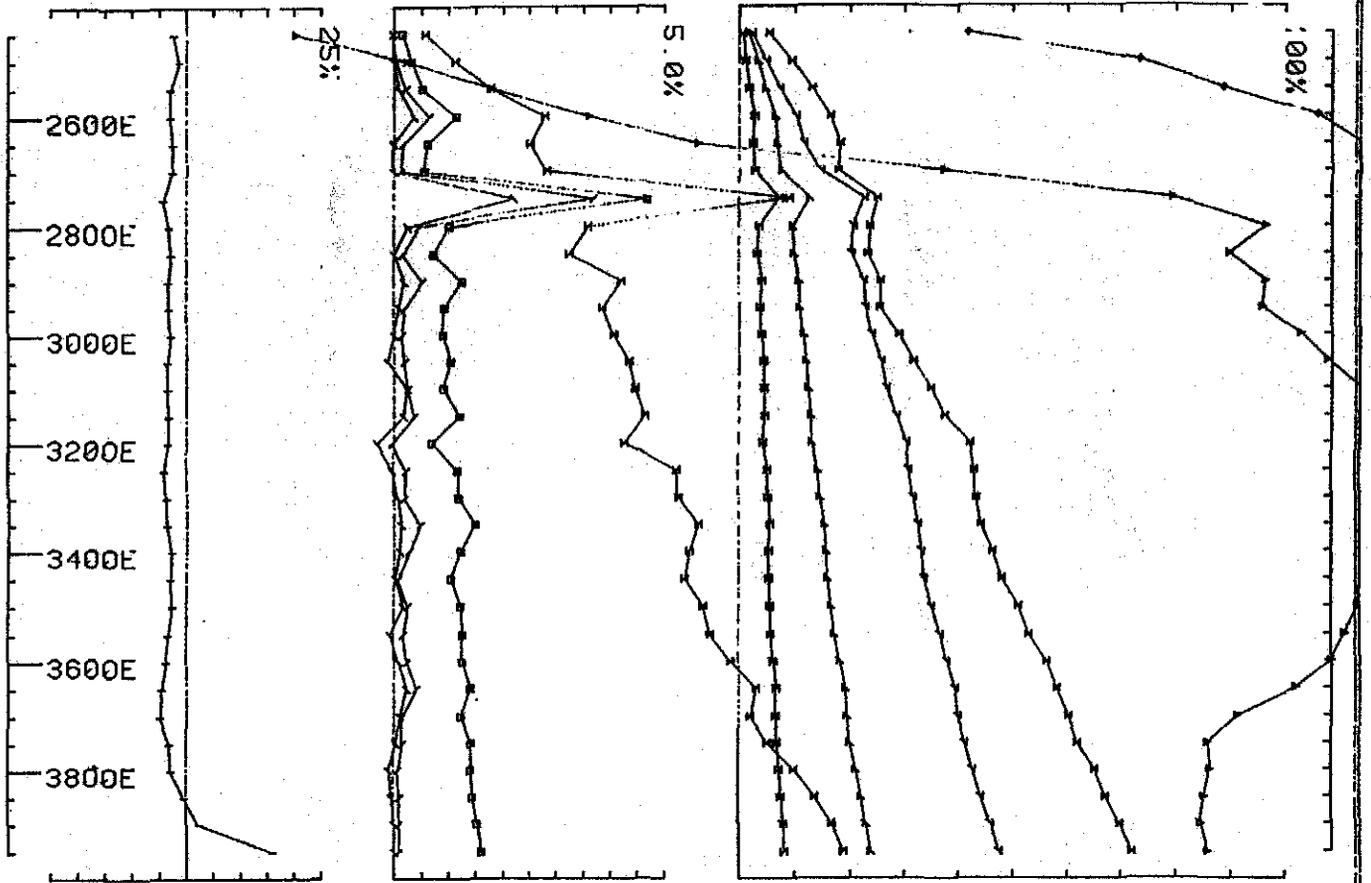


LAMONTAGNE GEOPHYSICS UTEM SURVEY Job 8656  
 AREA :- Boco Siding  
 CLIENT :- Pancon Min. Ltd. CREW :- RH Rx8  
 Line 2600N Hz COMPONENT BASE FREQ :- 26.230HERTZ  
 SECONDARY FIELD CONTINUOUS Ch 1 NORMALIZATION

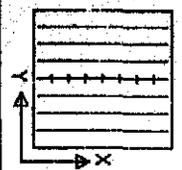


Boco Siding  
 LOOP 0001  
 LINE 2600  
 Hz

181

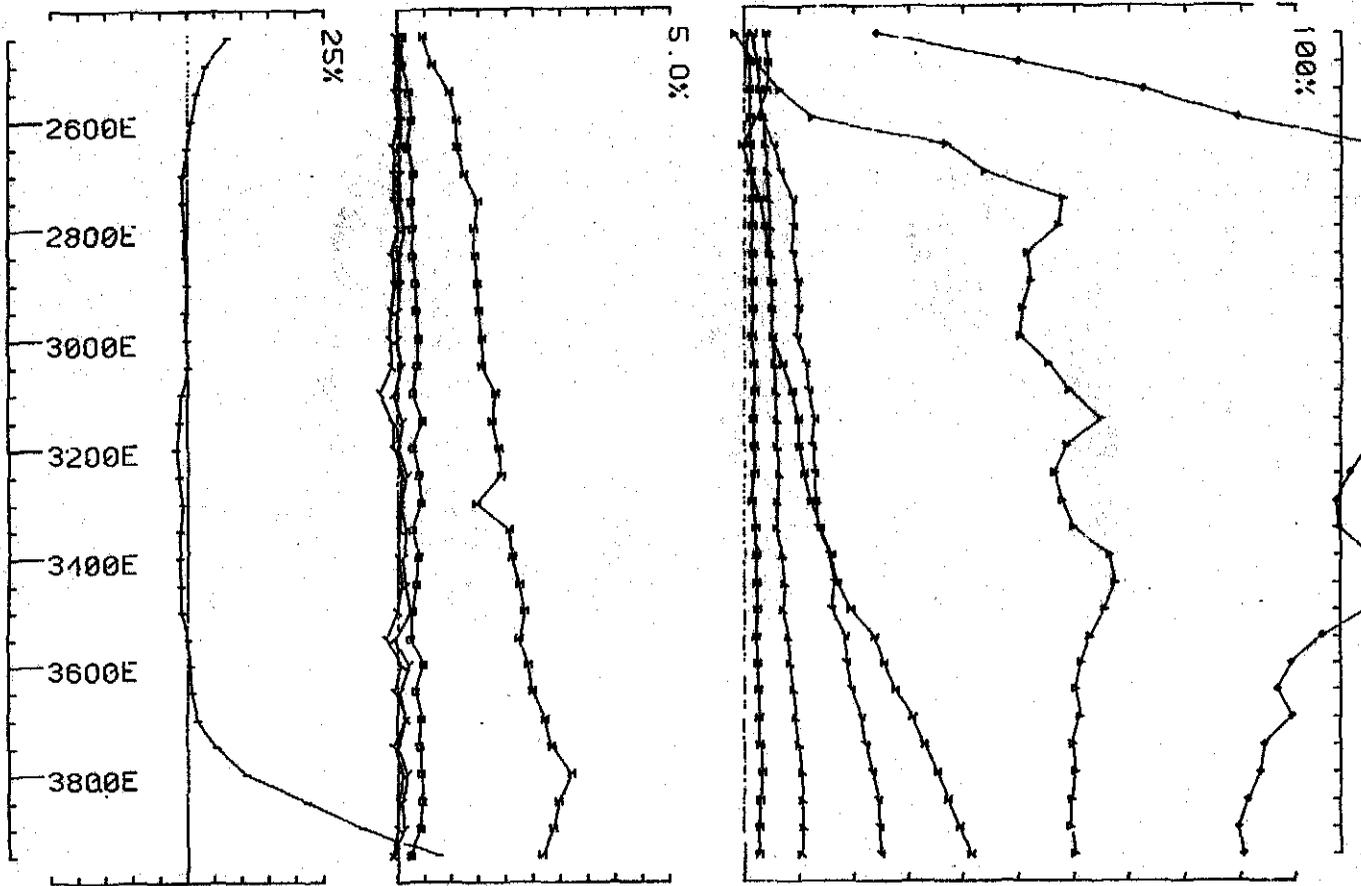


LAMONTAGNE GEOPHYSICS UTEM SURVEY JOB 8656  
 AREA :- Boco Siding  
 CLIENT :- Pancon Min. Ltd. CREW :- RH Rx8  
 Line, 2800N Hz COMPONENT BASE FREQ :- 26.230HERTZ  
 SECONDARY FIELD CONTINUOUS Ch 1 NORMALIZATION

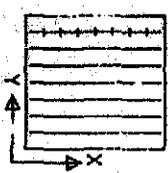


Boco Siding  
 LOOP 0001  
 LINE 2800  
 Hz

182

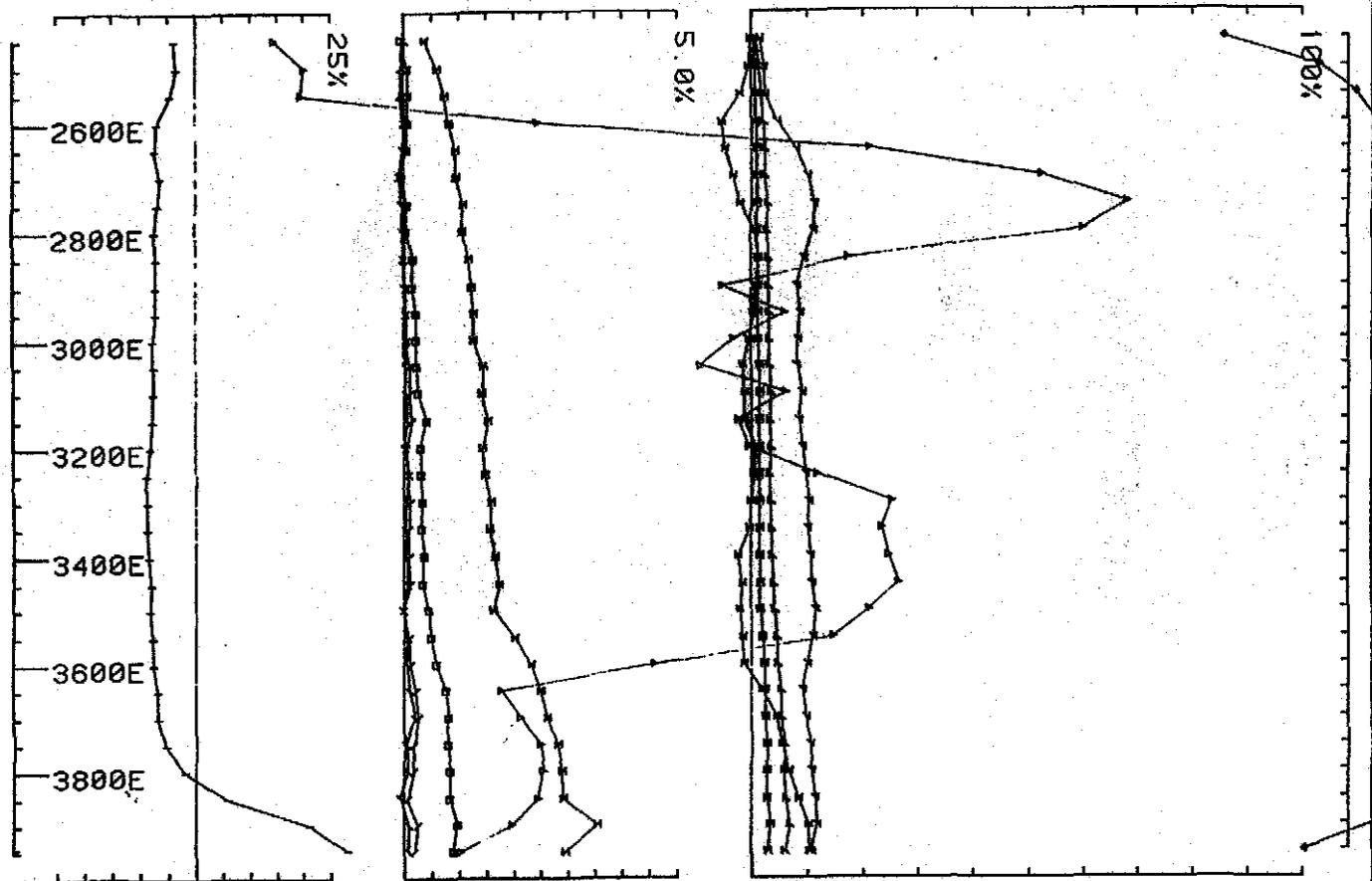


LAMONTAGNE GEOPHYSICS UTEM SURVEY JOB 8656  
 AREA :- Boca Siding  
 CLIENT :- Pancon Min. Ltd. CREW :- ART Rx10  
 Line 3400N Hz COMPONENT BASE FREQ :- 26.230HERTZ  
 SECONDARY FIELD CONTINUOUS Ch 1 NORMALIZATION

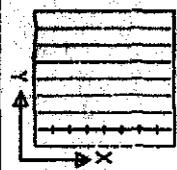


Boca Siding  
 Loop 0001  
 LINE 3400  
 Hz

183

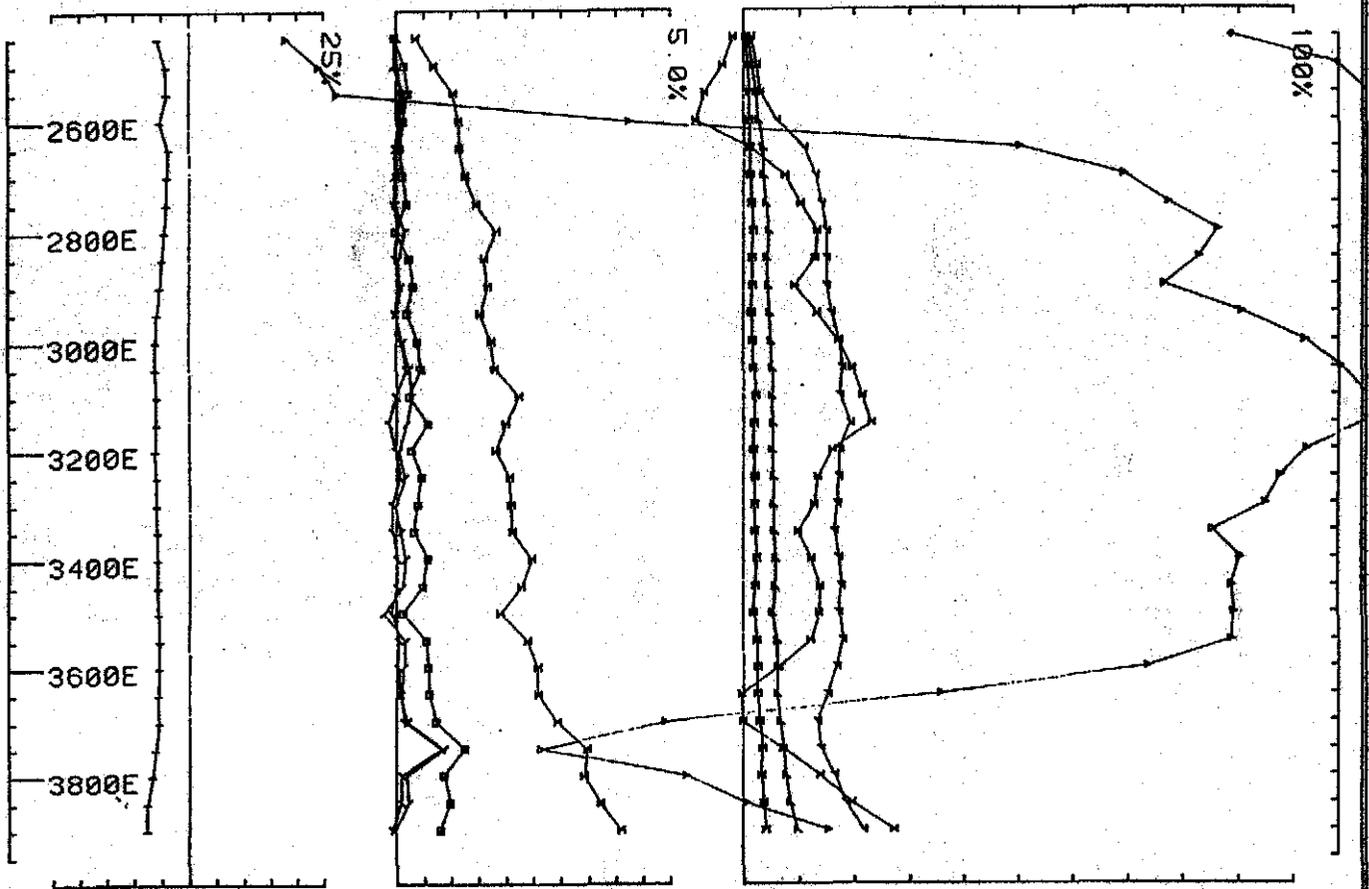


LAMONTAGNE GEOPHYSICS UTEM SURVEY Job 8656  
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 CLIENT :- Pancon Min. Ltd CREW :- RH ART R×8  
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 SECONDARY FIELD CONTINUOUS Ch 1 NORMALIZATION

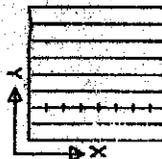


Boco Siding  
 LOOP 0002  
 LINE 3600  
 Hz

184

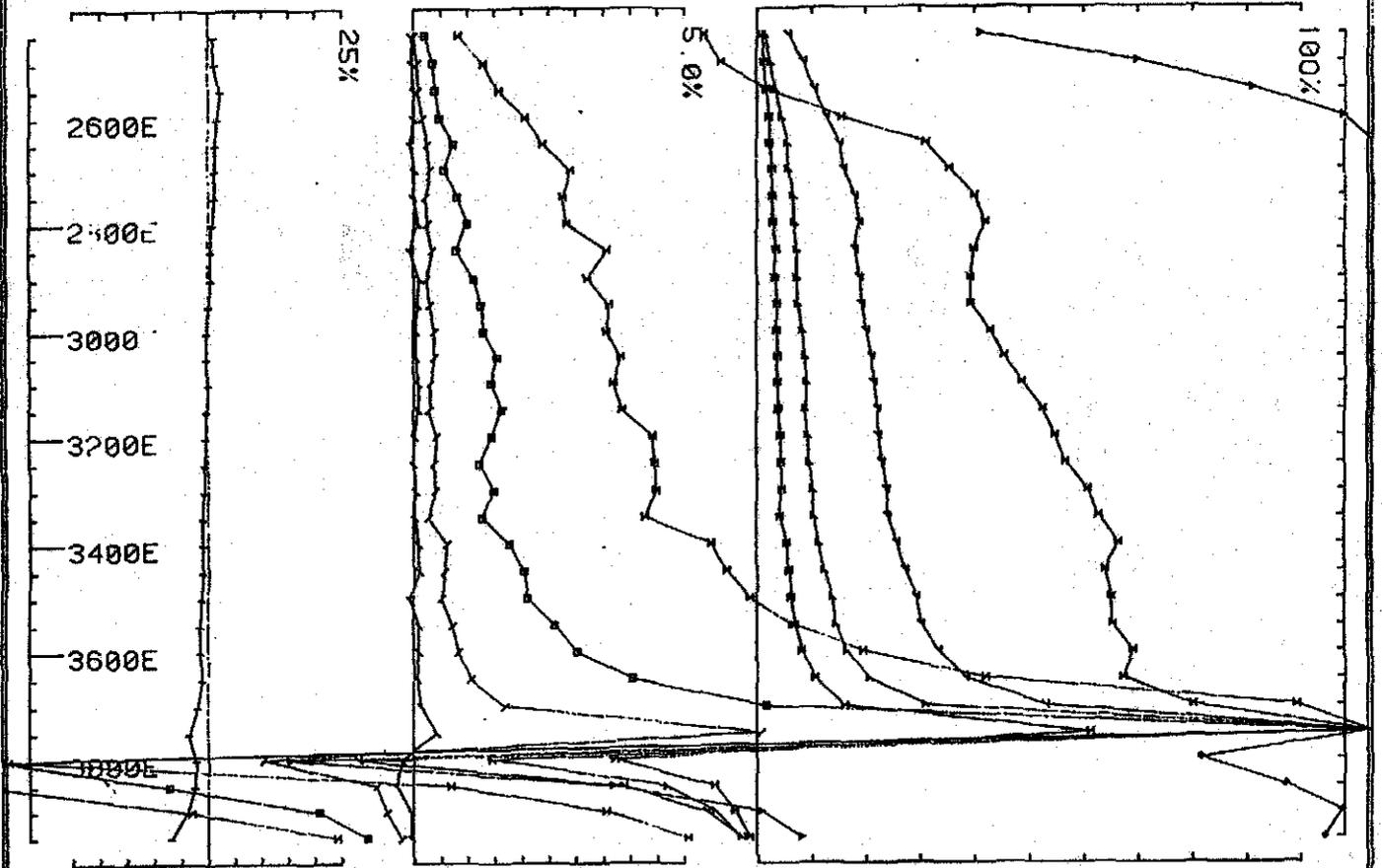


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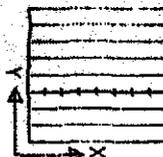


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 Hz

185

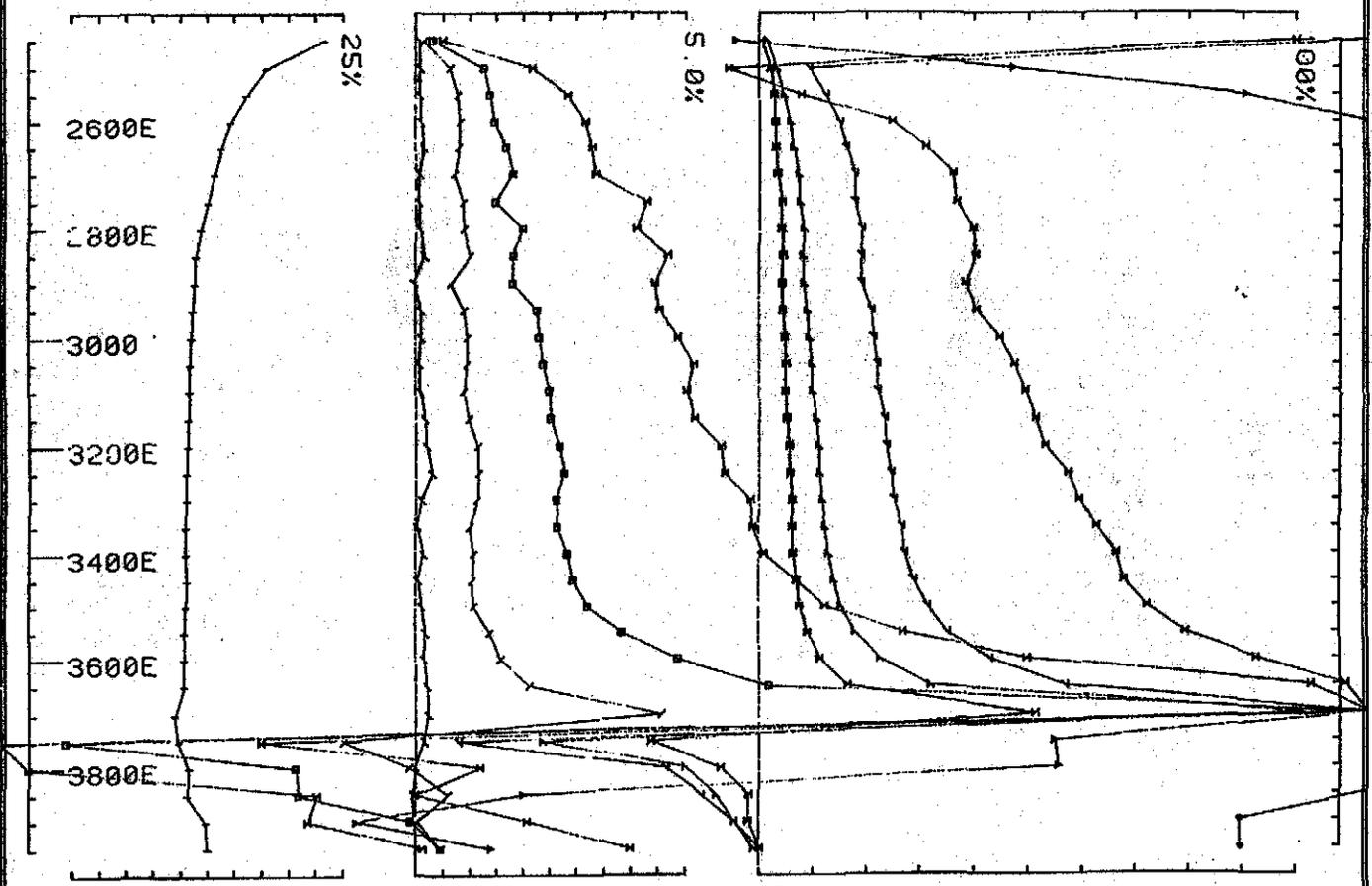


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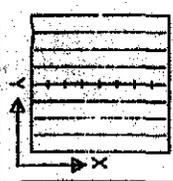


Beco Siding  
 LOOP 0002  
 LINE 4000  
 Hz

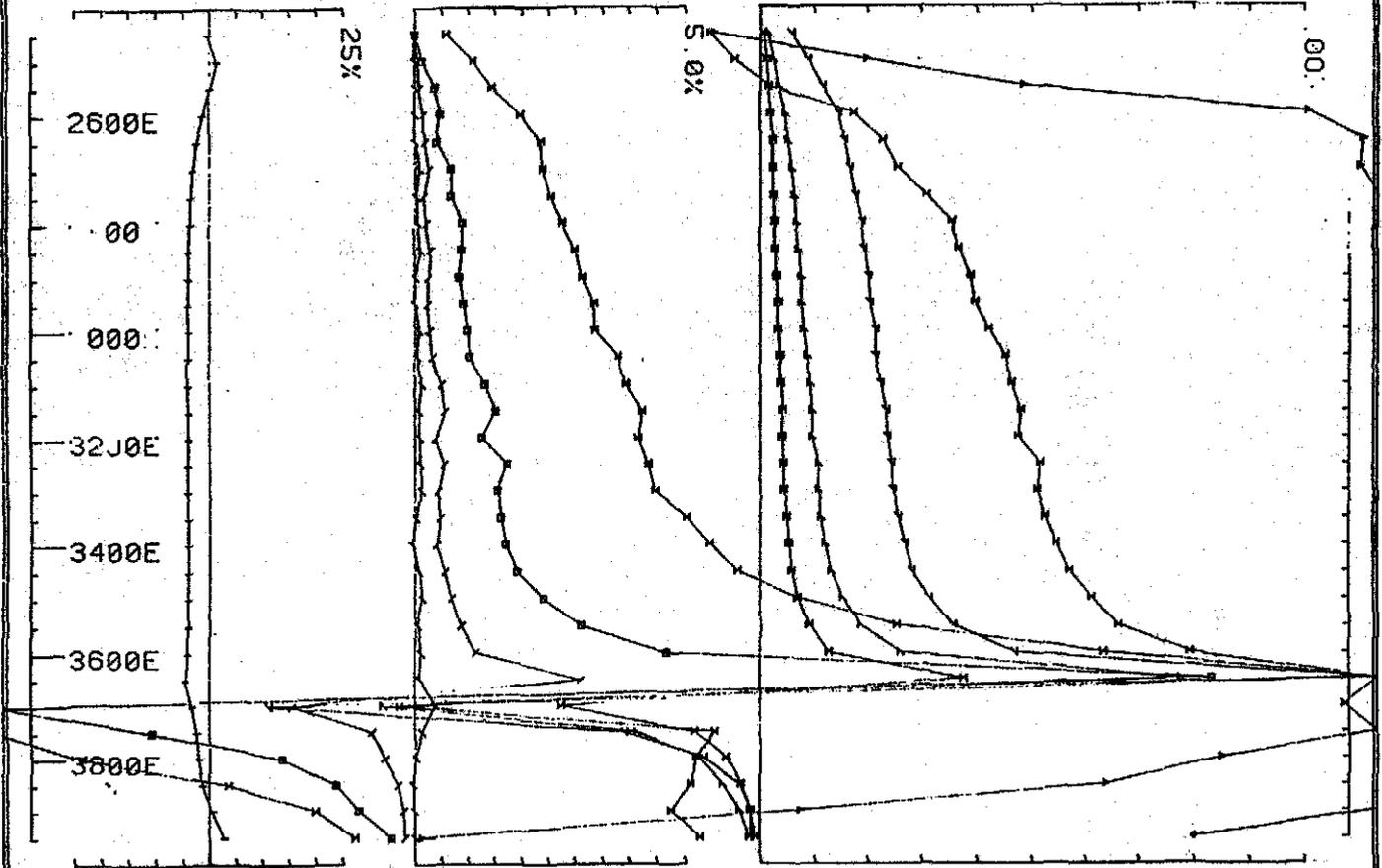
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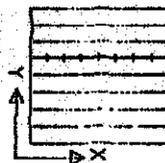
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 Line 4200N Hz COMPONENT BASE FREQ :- 26.230HERTZ  
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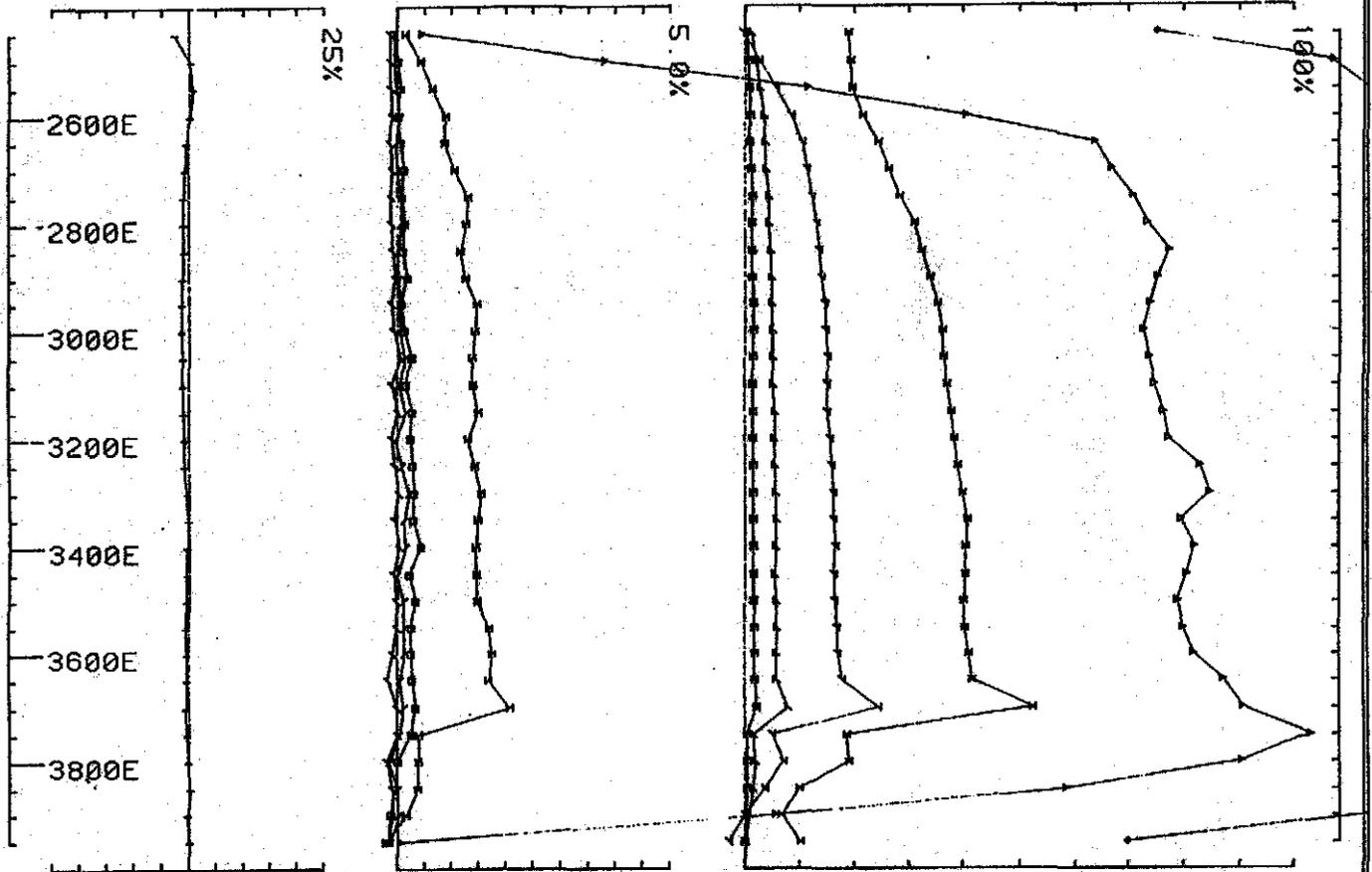
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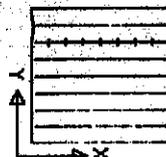
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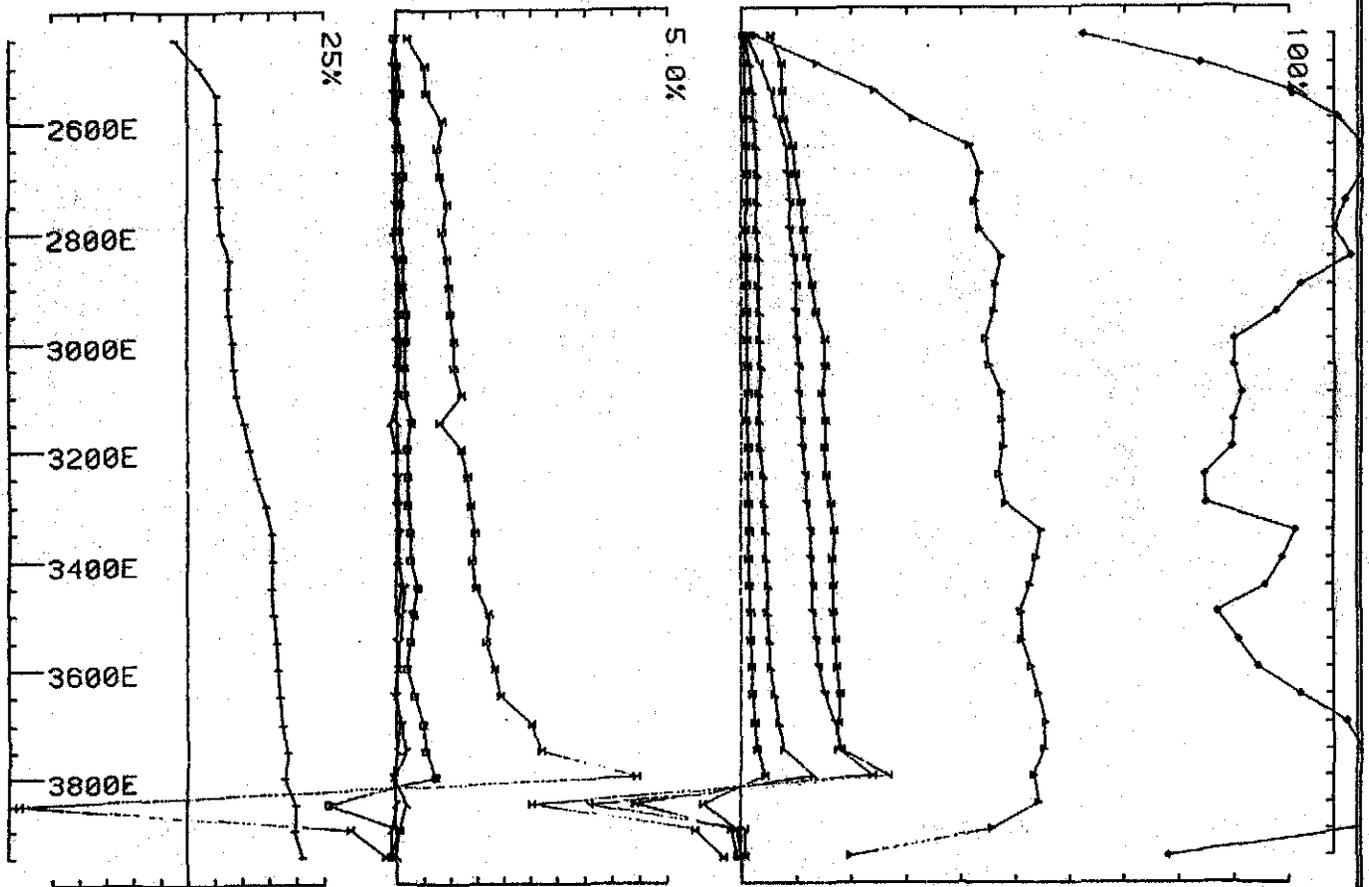
Beco Siding  
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 LINE 4400  
 Hz



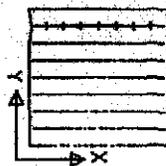
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Boco Siding  
 LOOP 0002  
 LINE 4600  
 Hz



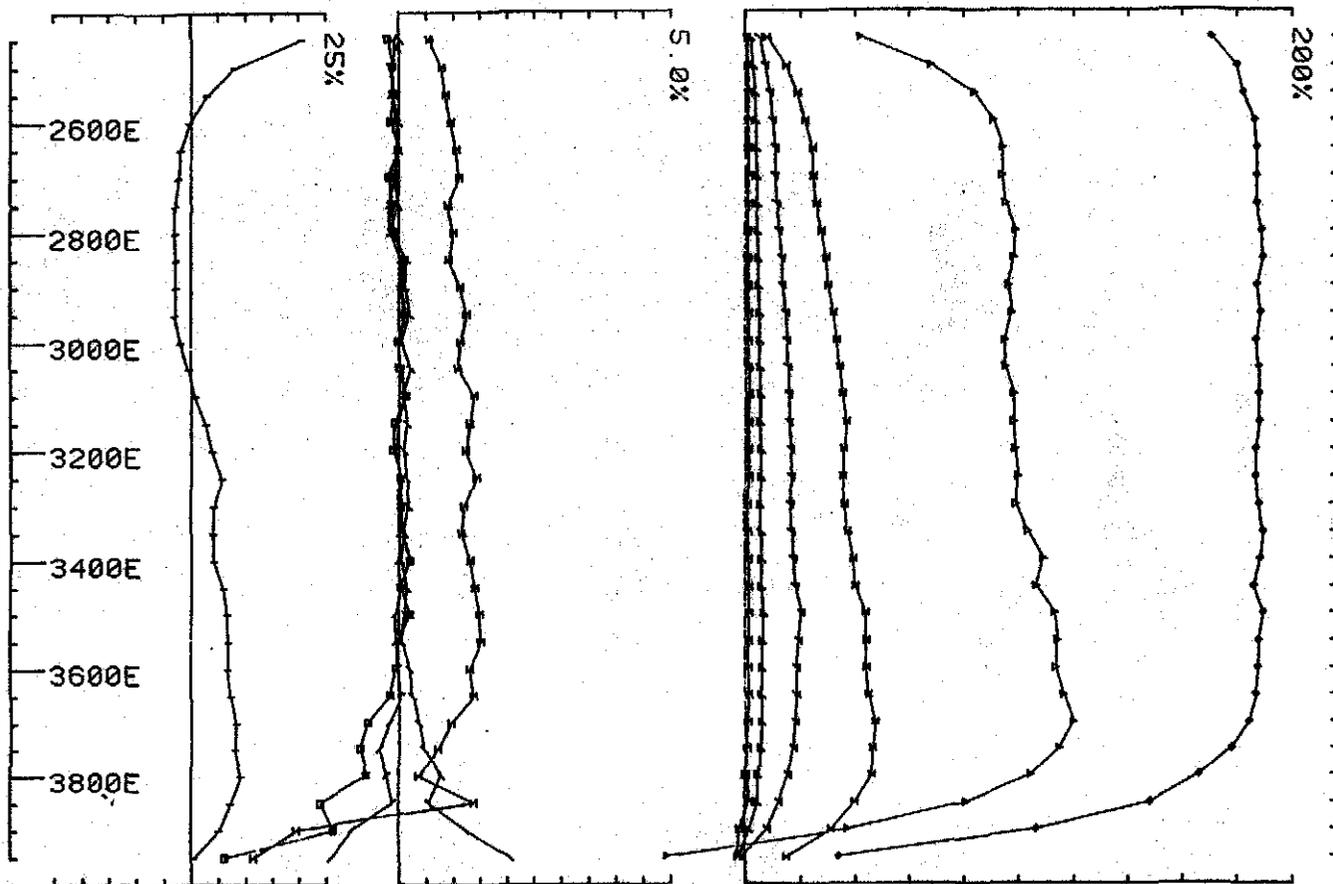
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 SECONDARY FIELD CONTINUOUS Ch 1 NORMALIZATION



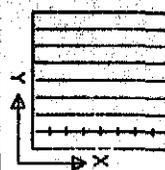
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 Hz

190

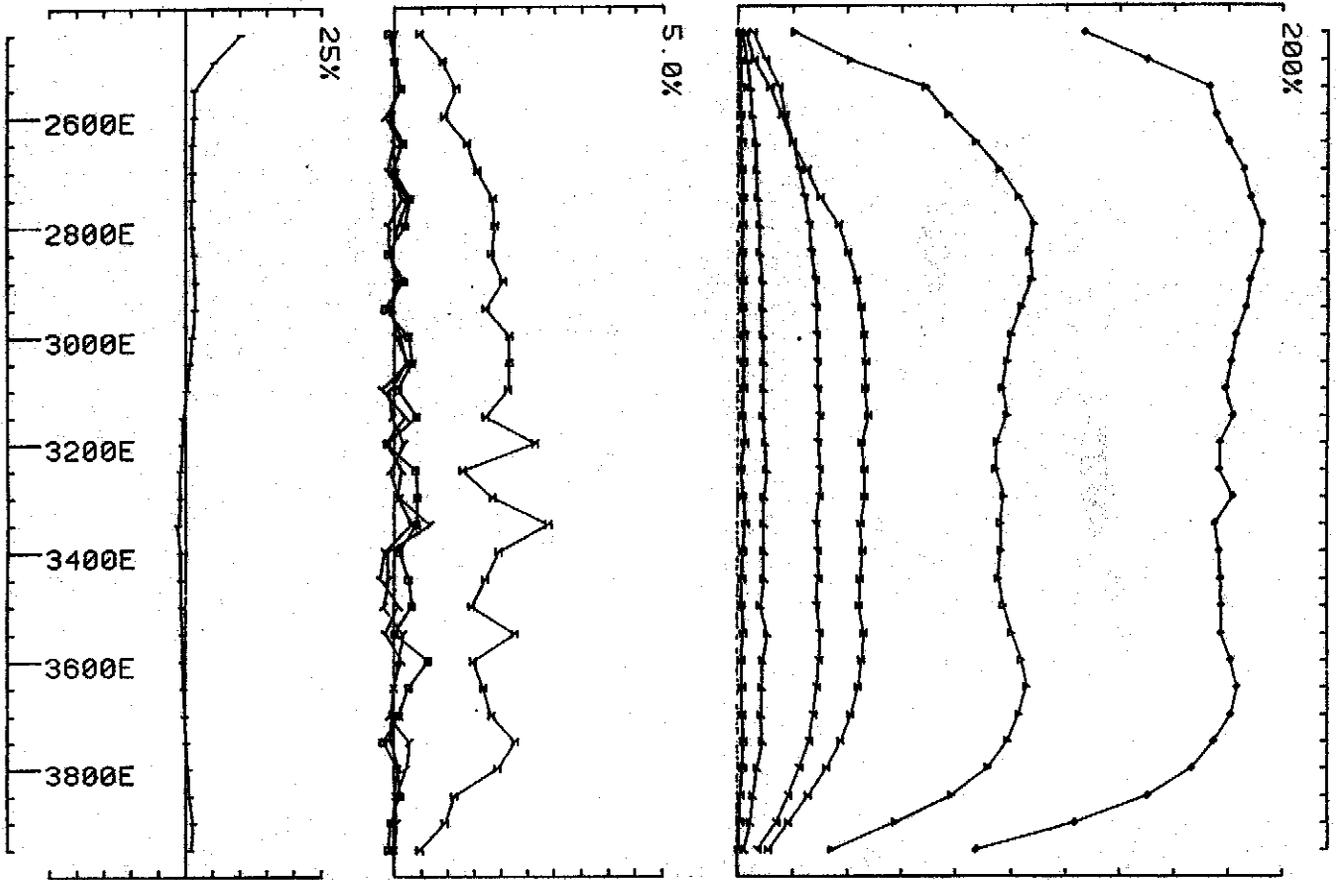
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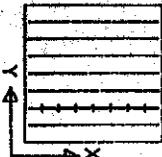
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 AREA :- Boco Sliding  
 CLIENT :- Pancon Min. Ltd. CREW :- BM ART Rxl0  
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 SECONDARY FIELD CONTINUOUS Ch 1 NORMALIZATION



Boco Sliding  
 LOOP 0003  
 LINE 5000  
 Hz

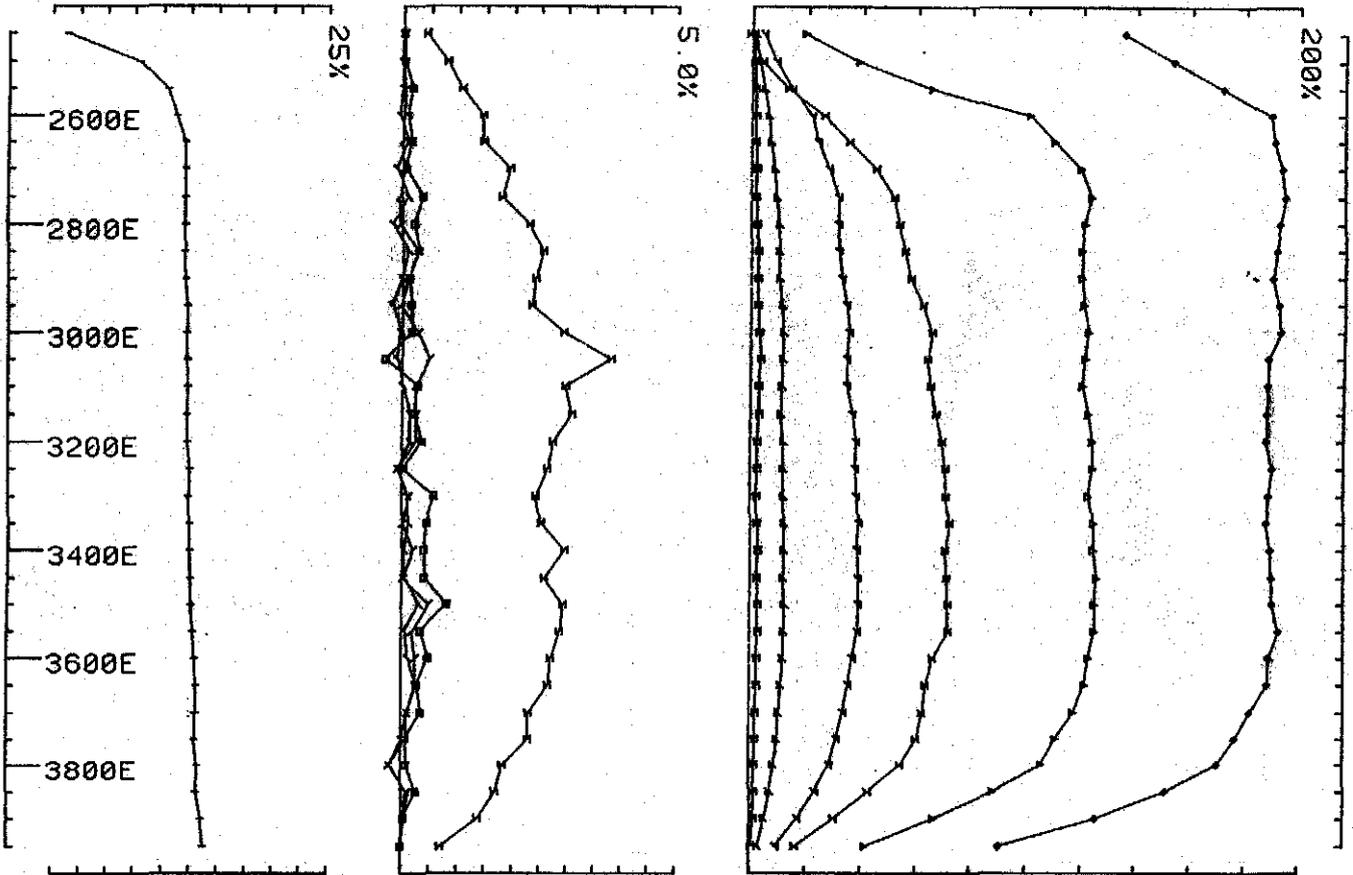


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 CLIENT :- Pancon Min. Ltd. CREW :- BM ART R x 10  
 Line 5200N Hz COMPONENT BASE FREQ :- 26.230HERTZ  
 SECONDARY FIELD CONTINUOUS CH 1 NORMALIZATION



Boco Siding  
 LOOP 0903  
 LINE 5200  
 Hz

192



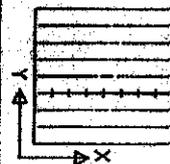
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AREA :- Boco Siding

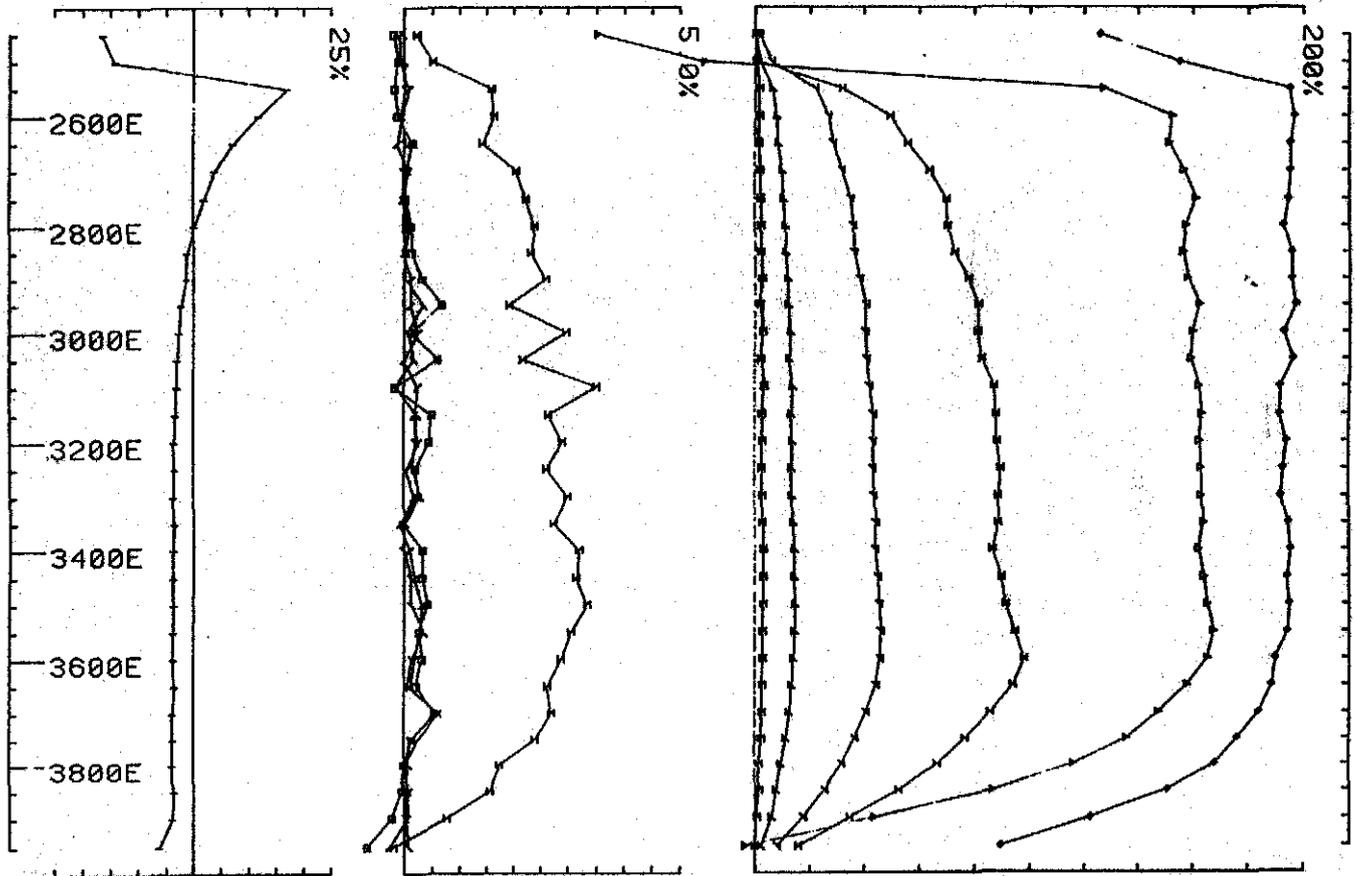
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Line 5400N Hz COMPONENT BASE FREQ :- 26.230HERTZ

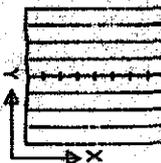
SECONDARY FIELD CONTINUOUS Ch 1 NORMALIZATION



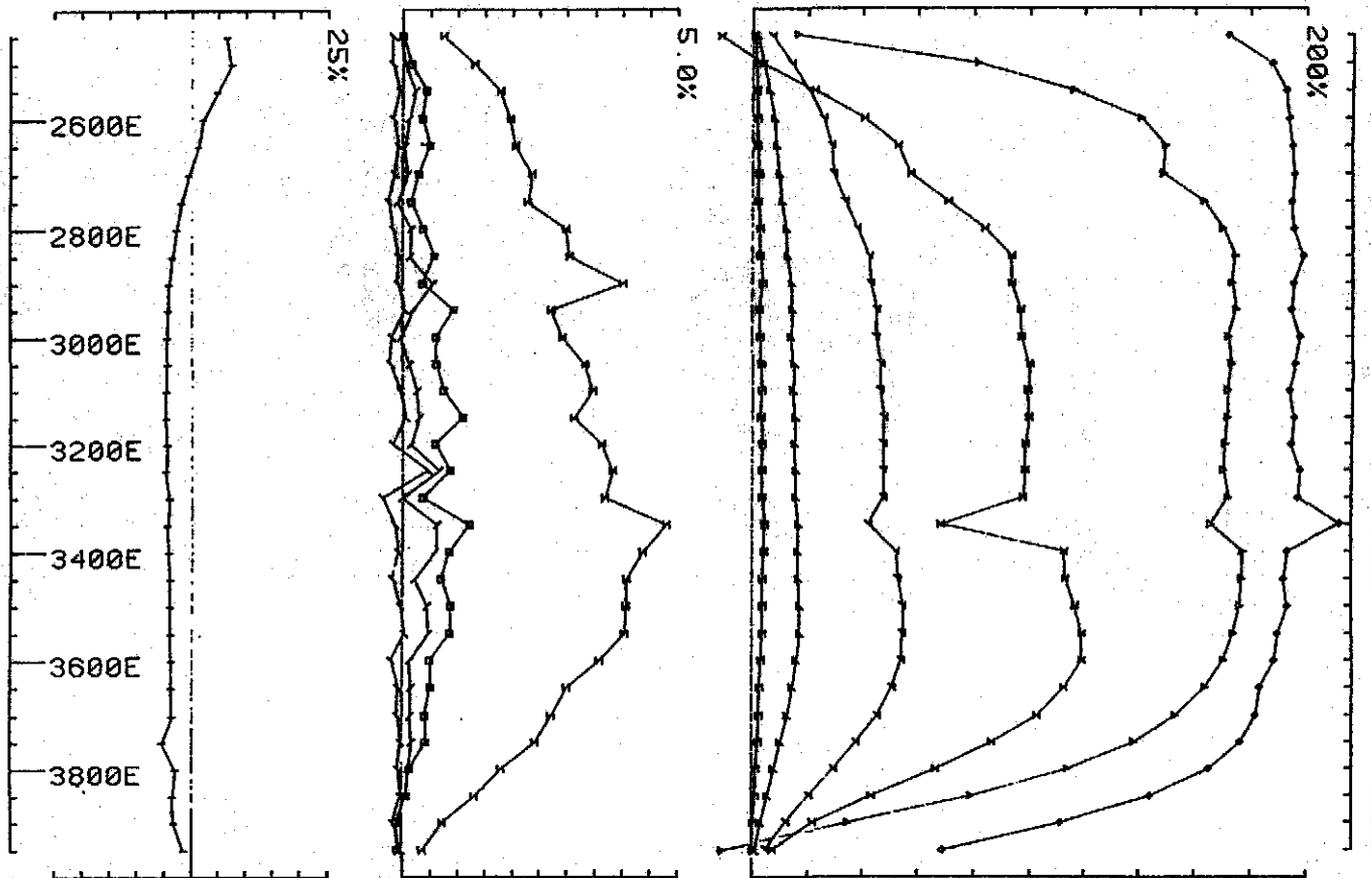
Boco Siding  
LOOP 0003  
LINE 5400  
Hz



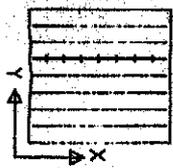
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 CLIENT :- Pancon Min. Ltd. CREW :- RH ART Rx10  
 Line 5600N Hz COMPONENT BASE FREQ :- 26.230HERTZ  
 SECONDARY FIELD CONTINUOUS CH 1 NORMALIZATION



Baco Siding  
 LOOP 0003  
 LINE 5600  
 Hz



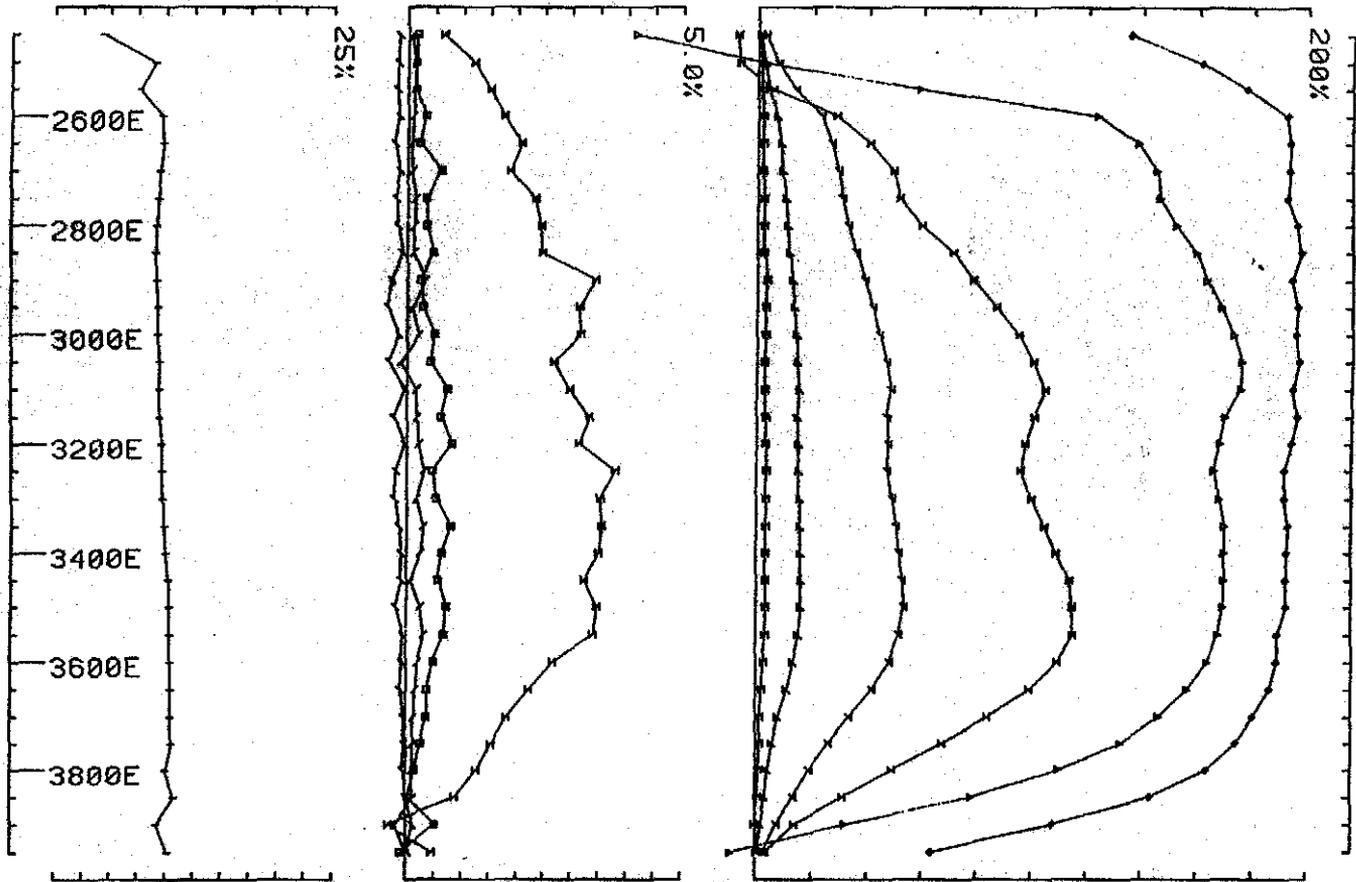
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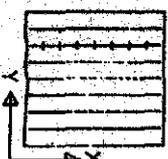
Boco Siding  
 Loop 0003  
 LINE 5800  
 Hz

849200

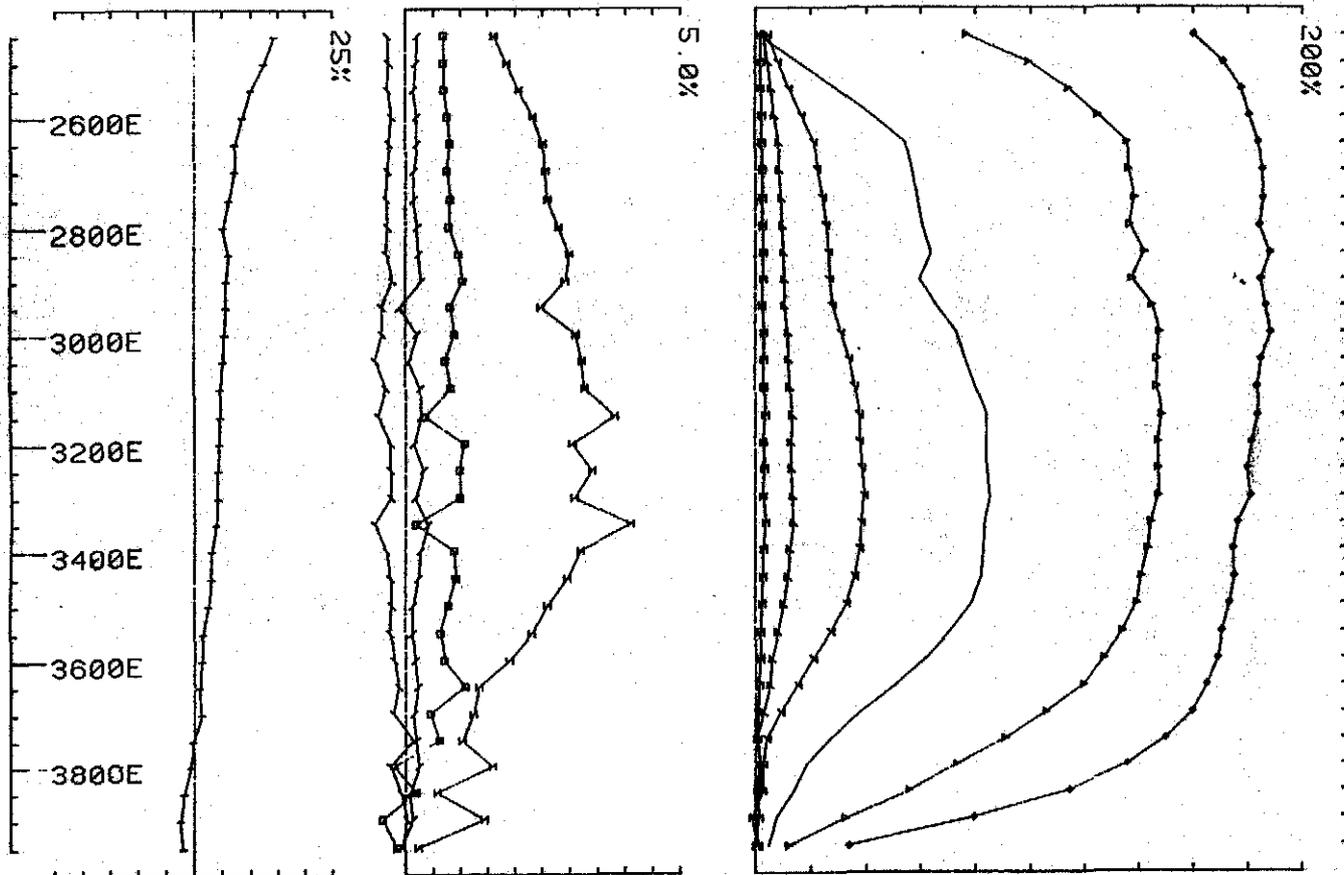
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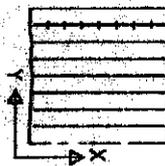
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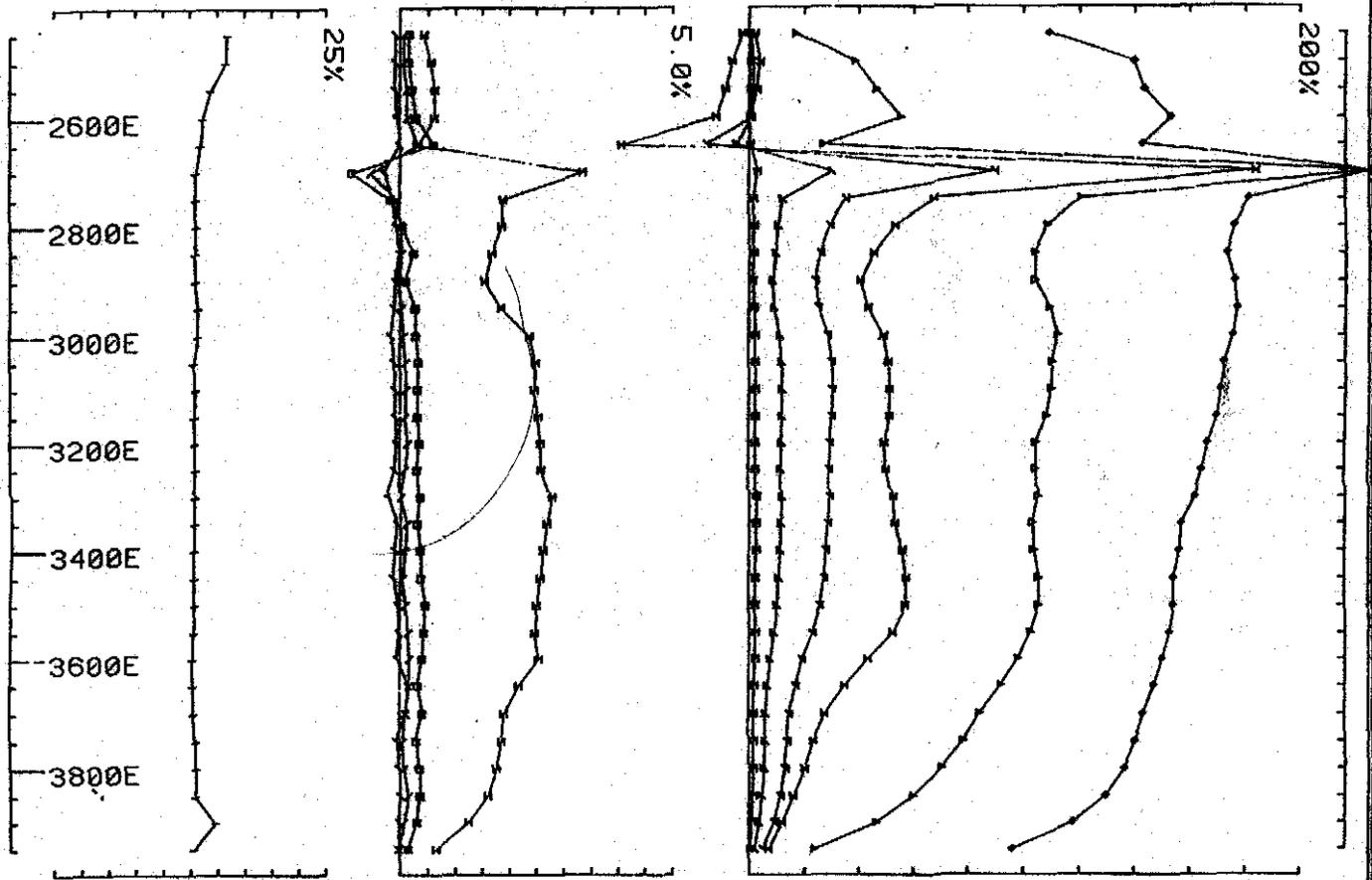
Boco Siding  
 LOOP 0003  
 LINE 6000  
 Hz



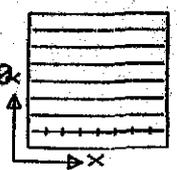
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 SECONDARY FIELD CONTINUOUS Ch 1 NORMALIZATION



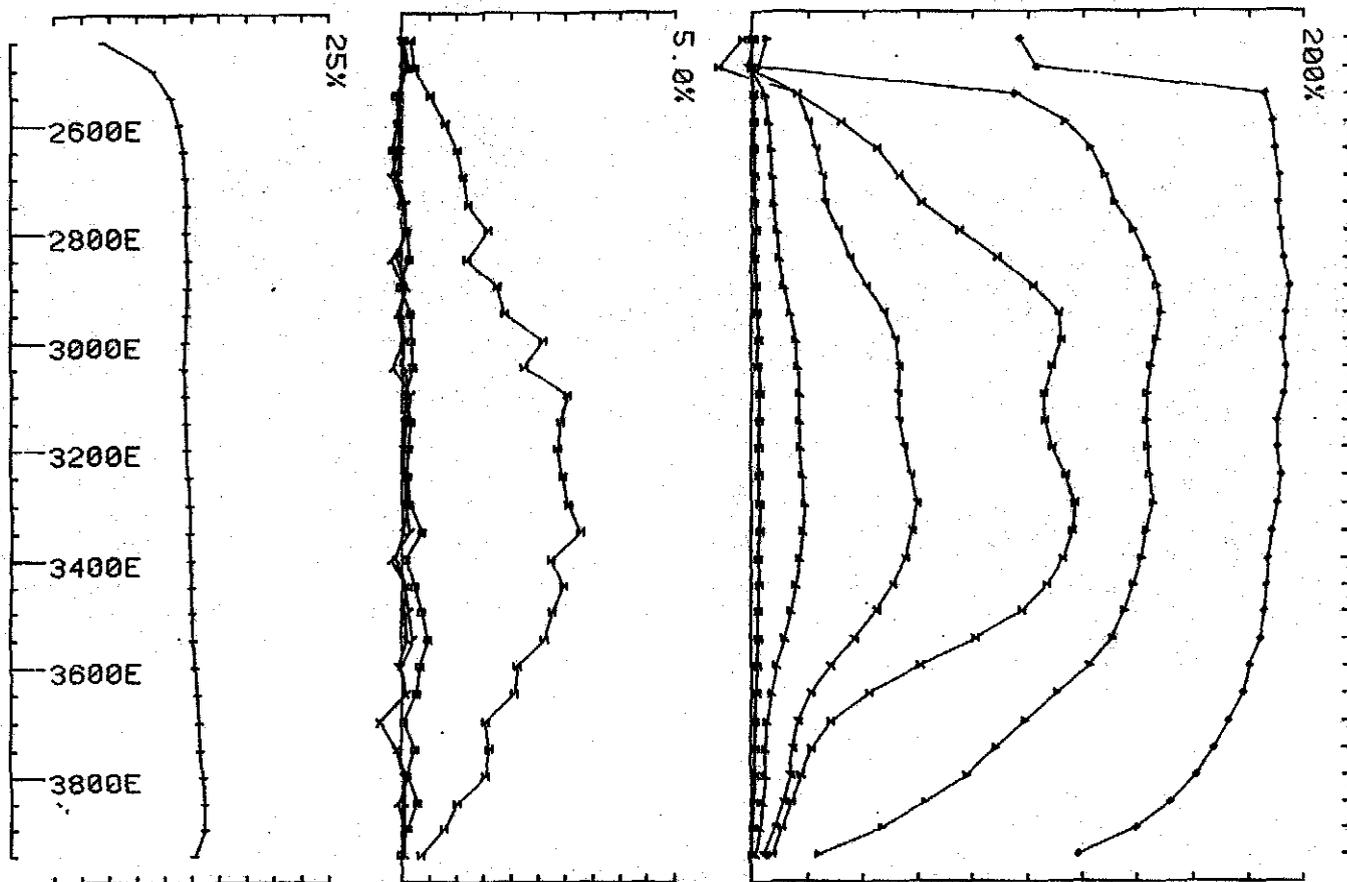
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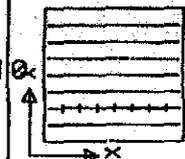
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 AREA :- Boco Sliding  
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 SECONDARY FIELD CONTINUOUS CH 1 NORMALIZATION



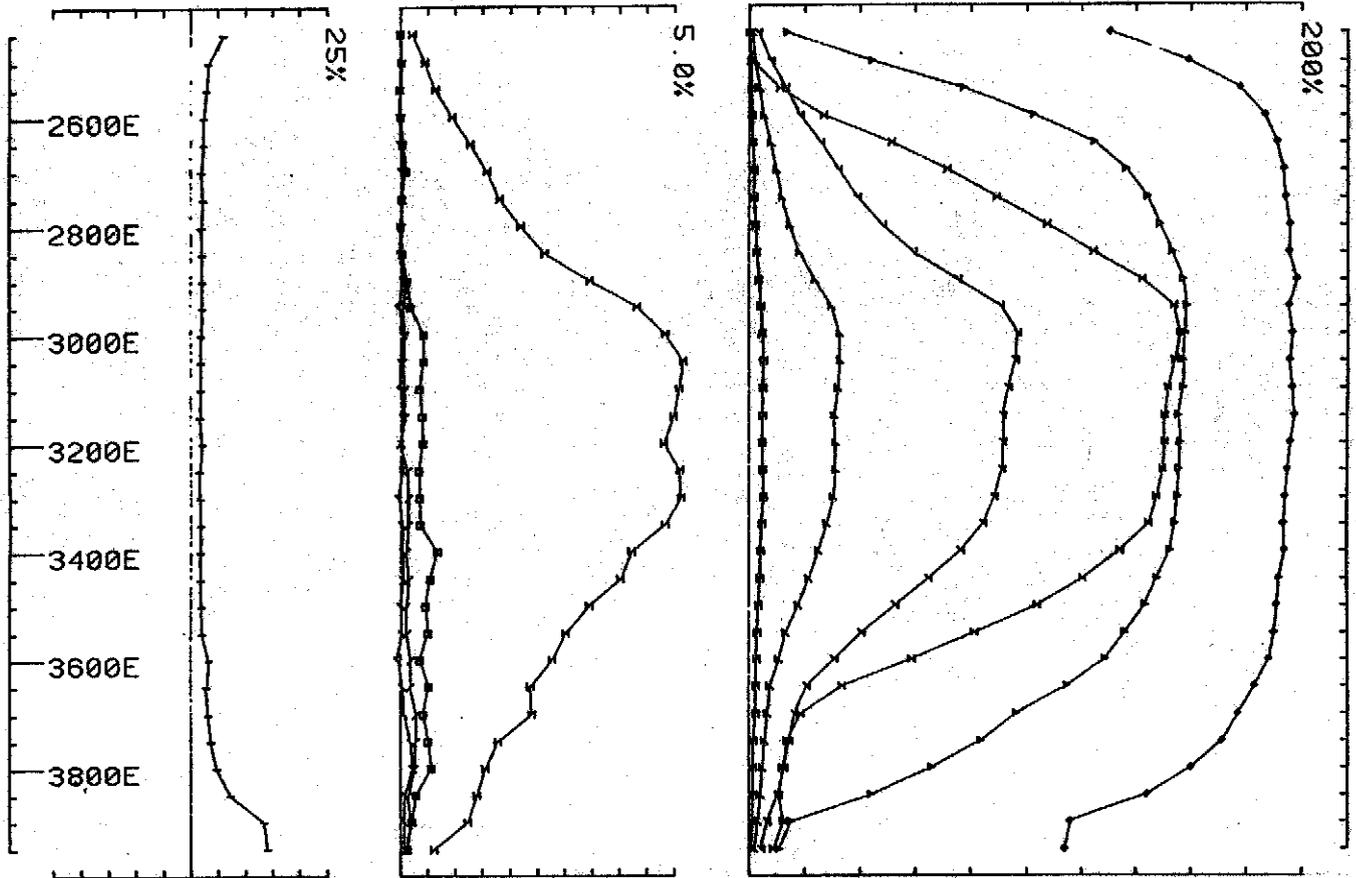
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 LINE 6400  
 Hz



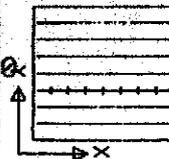
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 SECONDARY FIELD CONTINUOUS Ch 1 NORMALIZATION



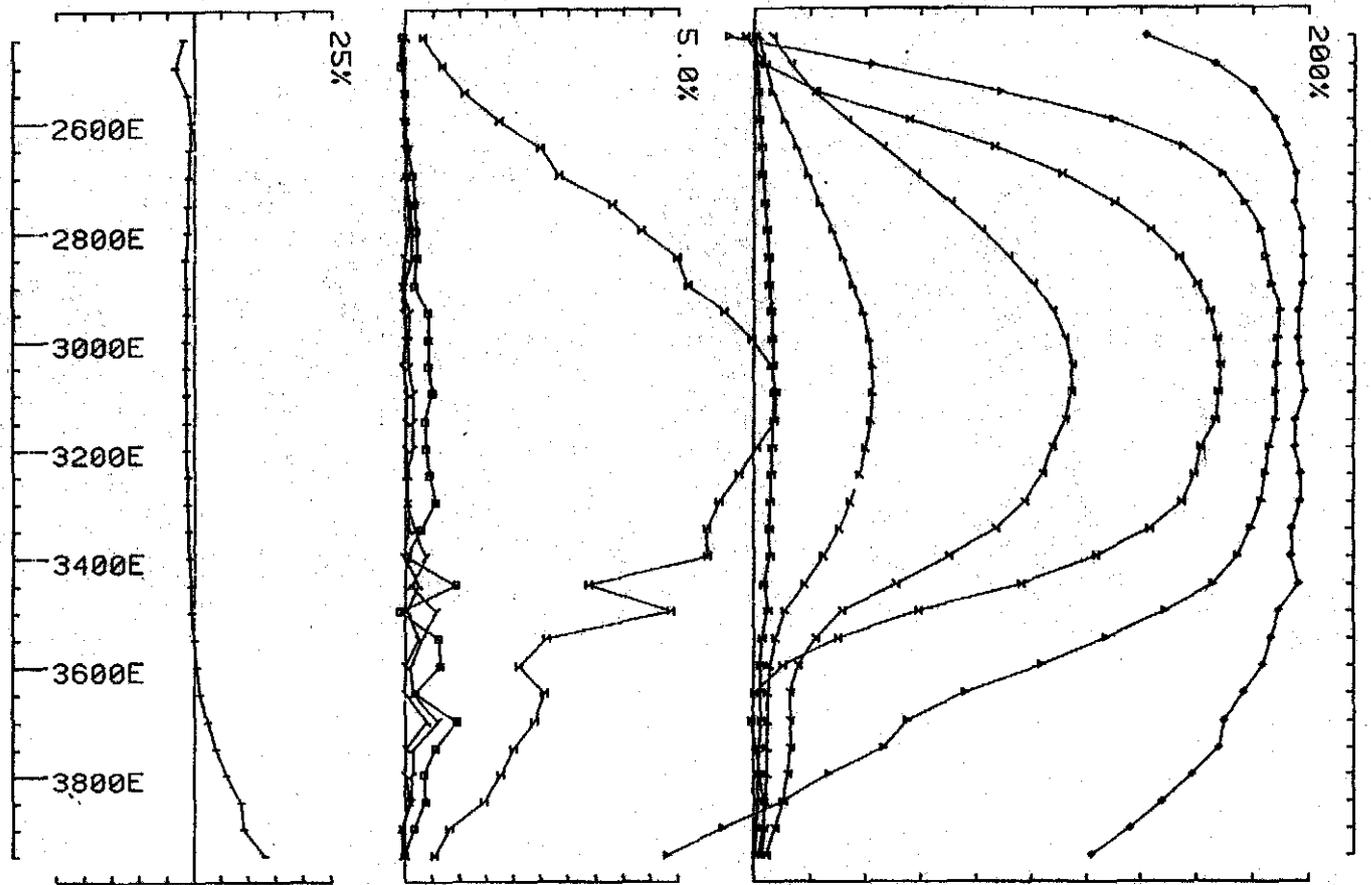
Boco Siding  
 LOOP 0004  
 LINE 6600  
 Hz



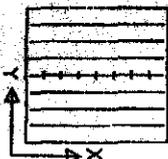
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 CLIENT :- Pancon Min. Ltd. CREW :- BM ART Rx  
 Line 6800N Hz COMPONENT BASE FREQ :- 26.230HERTZ  
 SECONDARY FIELD CONTINUOUS Ch 1 NORMALIZATION



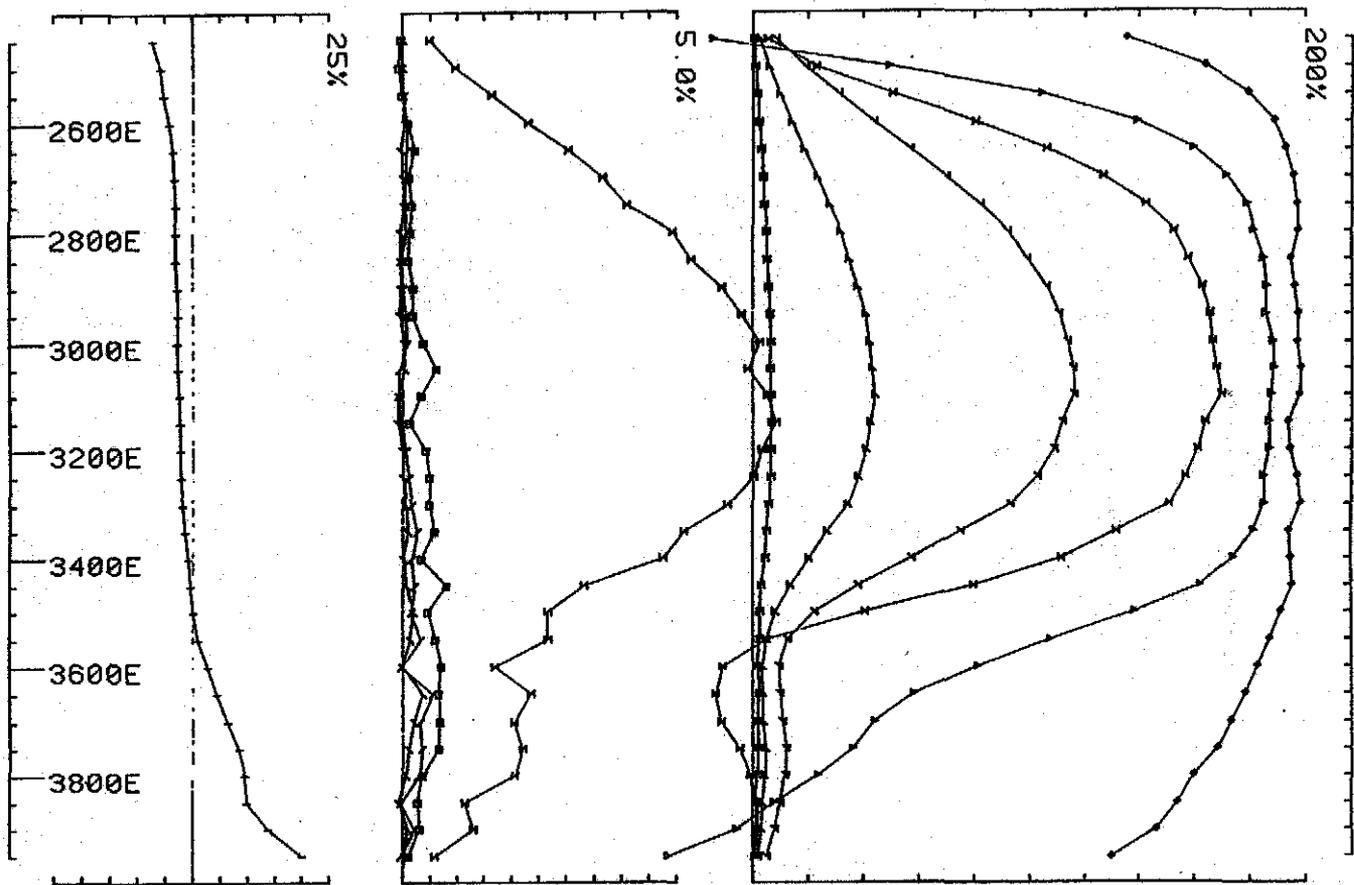
Boco Siding  
 LOOP 0004  
 LINE 6800  
 Hz



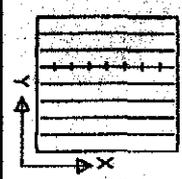
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 SECONDARY FIELD CONTINUOUS Ch 1 NORMALIZATION



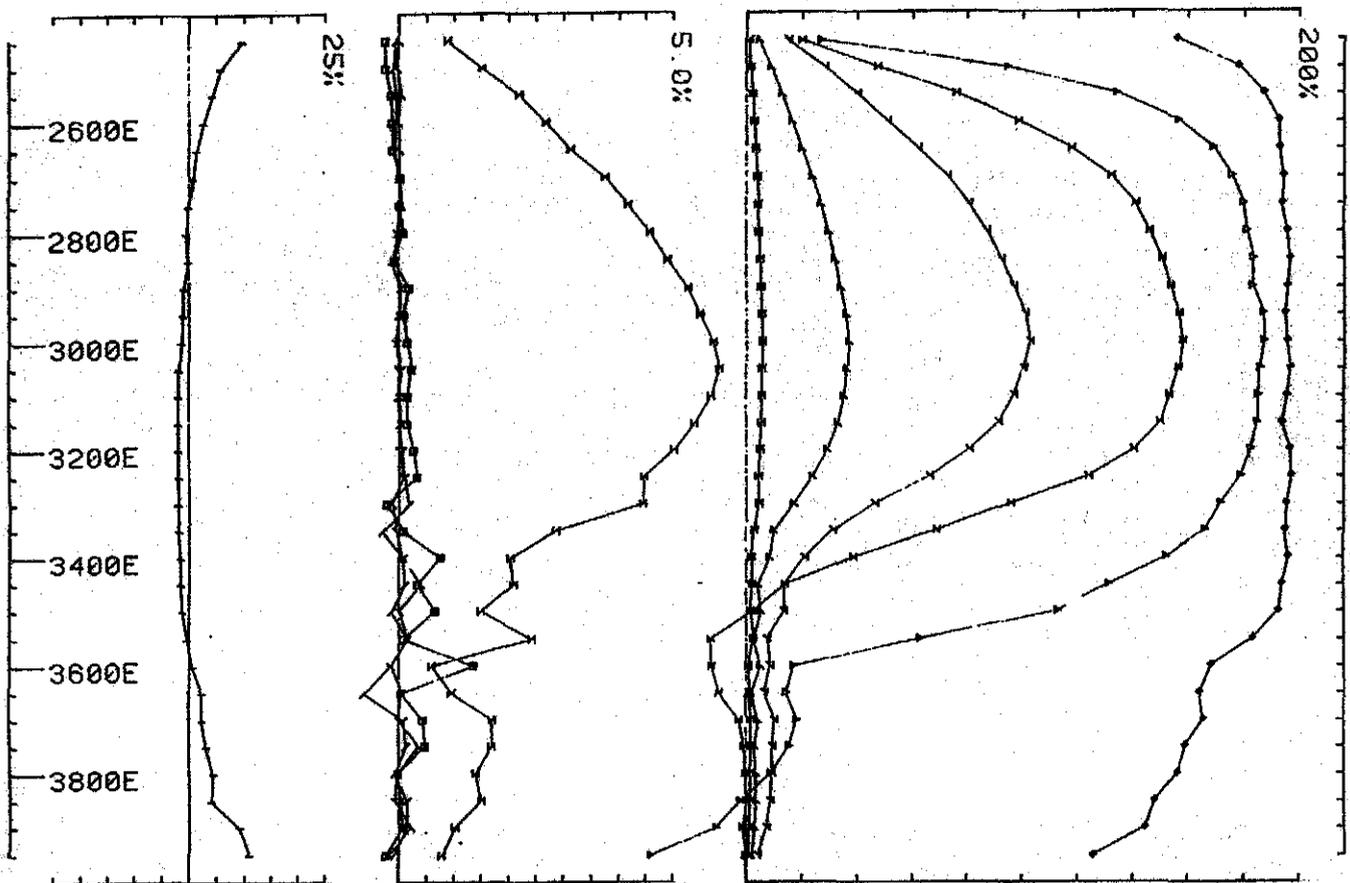
Boco Siding  
 LOOP 0004  
 LINE 7000  
 Hz



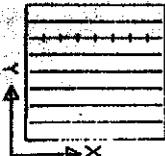
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 CLIENT :- Pancon Min. Ltd. CREW :- RH ART R x 8  
 Line 7200N Hz COMPONENT BASE FREQ :- 26.230HERTZ  
 SECONDARY FIELD CONTINUOUS Ch 1 NORMALIZATION



Boco Siding  
 Logp 0004  
 LINE 7200  
 Hz



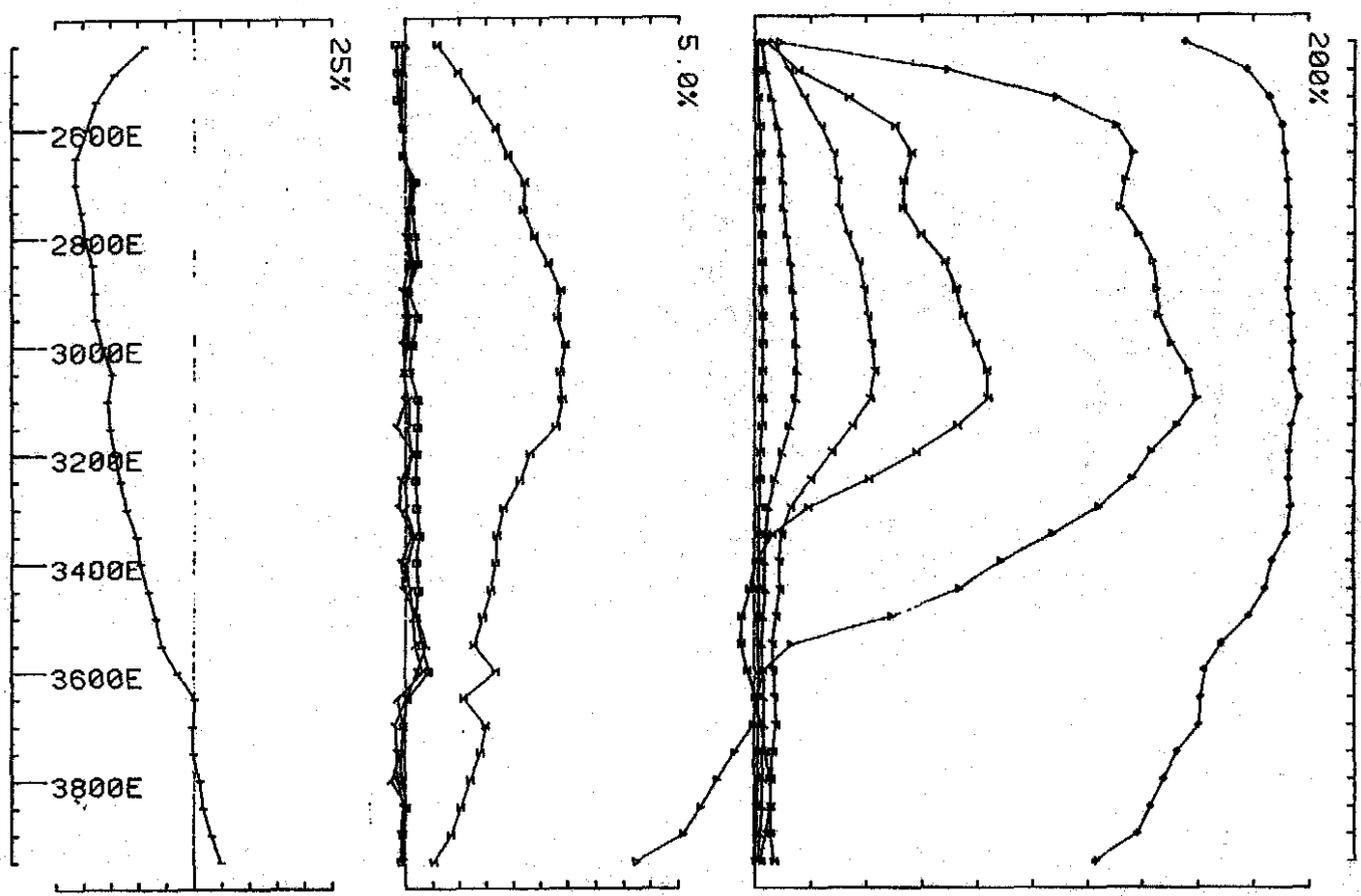
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 SECONDARY FIELD CONTINUOUS Ch 1 NORMALIZATION



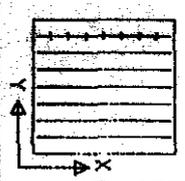
Boco Siding  
 LOOP 0004  
 LINE 7400  
 Hz

849208

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LAMONTAGNE GEOPHYSICS UTEM SURVEY JOB 8656  
 AREA :- Baco Siding  
 CLIENT :- Pancon Min. Ltd. CREW :- RH ART R x 8  
 Line 7600N Hz COMPONENT BASE FREQ :- 26.230HERTZ  
 SECONDARY FIELD CONTINUOUS Ch 1 NORMALIZATION



Baco Siding  
 LOOP 0004  
 LINE 7600  
 Hz

## APPENDIX 5

Hermann, W	1987	Exploration Potential of North Pinnacles and East Bulgobac Areas, EL 12/72 Tasmania; Pancontinental Report No 87/79
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\* Note that only the portion of the report concerning the East Bulgobac area is included here.

Report No: 87/33

**EXTRACT OF REPORT ON  
EXPLORATION POTENTIAL  
OF  
NORTH PINNACLES AND EAST BULGOBAC AREAS**

**E.L. 12/72 TASMANIA**

**Date:** 19/5/87  
**For:** Pancontinental Mining Ltd  
9-13 Young St, Sydney NSW 2000  
**By:** W. Herrmann  
RSD 1066, Devonport, TAS 7310

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**Copy 4:** Electrolytic Zinc  
**Copy 5:** Little River Resources  
**Copy 6:** Department of Mines, Tasmania

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## LIST OF PLANS

No	Title	Scale
1	Bulgobac E.L. 12/72 Geological Interpretation	1:50,000

## LIST OF FIGURES

No	Title	Scale
1	E.L. 12/72 North Pinnacles, Cross Section: NPP 215	1:1,000

## 1. INTRODUCTION

Exploration Licence 12/72, of approximately 94 sq km area and located north of Tullah in Western Tasmania, is held by the Electrolytic Zinc Company.

During the period 1975-1984 E.Z. Co. in joint venture with Getty Oil Development conducted exploration incorporating regional assessment of the licence and eventually focussing on detailed evaluation of the Boco, North Pinnacles and Silver Falls prospects.

In 1985 C.S.R. Limited joined in to carry out further deep drilling at Boco. C.S.R. withdrew at the conclusion of the unsuccessful drilling program.

In 1986 Pancontinental Mining Ltd entered a joint venture with E.Z. Co. with the principal objectives of exploring the Boco, North Pinnacles and East Bulgobac areas of E.L. 12/72 for volcanogenic massive sulphide deposits.

This report, as a preliminary phase in re-evaluation of North Pinnacles and East Bulgobac areas, discusses their prospectivity on the basis of a literature review, minor geological reconnaissance mapping and core logging undertaken by this author on a contract basis for Pancontinental Mining Ltd.

## 2. SUMMARY AND CONCLUSIONS

The prospectivity of the North Pinnacles and East Bulgobac areas within E.L. 12/72 for volcanogenic massive sulphide deposits has been assessed on the basis of a review of previous exploration data and a brief program of geological mapping, core logging and rock sampling for geochemical/petrographic analysis.

It is concluded that:

a) The North Pinnacles area, with weak indications of possible VMS related alteration and mineralisation, offers low prospectivity due mainly to limited extent of the volcanic host rock and the relative intensity of previous exploration.

b) In the East Bulgobac area:

- a unit of felsic vesicular lavas extending south westward from near Sock Creek into EL 12/72 as far as the Emu Bay Railway and which may be a correlate of the Que River-Hellyer ore host rock sequence, offers low prospectivity due to limited extent which is substantially covered by glacial deposits.

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- an assemblage of quartz-feldspar phyric (rhyolitic) pyroclastics, lavas and associated intrusives intercalated with Dundas Group type sediments occupies the north eastern part of E.L. 12/72 but offers low prospectivity due to almost total cover by Tertiary basalt and/or Pleistocene to recent fluvioglacial deposits.

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4. EAST BULGOBAC AREA

The East Bulgobac Area comprises the north eastern third of EL 12/72, more or less north of Boco Siding and east of the Emu Bay Railway.

It has received relatively little exploration attention due partly to poor access, poor geological exposure and the lack of early encouragement due perhaps to the latter factor.

Recently some interest in the area has been regenerated by the suggestion (Komyshan, 1986) that a horizon of felsic lava and breccia in the Sock Creek area is "equivalent" to the host rocks of the Hellyer and Que River basemetal massive sulphide deposits and may be likewise prospective for this style of mineralisation.

In order to assess this possibility and the general prospectivity of the East Bulgobac Area I have carried out a review of previous E.Z. Co. work and some limited reconnaissance mapping.

4.1 Summary of Previous Reports relating to East Bulgobac Area

4.1.1 Report No 128 N.H. Hanson, Oct 1977

Input EM:

Barringer "Input" Airborne EM survey flown by Geotrex in April 1975. Anomalies CS-27A (Fair) and CS-27B (Poor) located about 3km NW of Sock Creek were selected for follow-up.

Bulldozers were used to construct tracks north westward from Sock Creek and westward along Que Road to provide access to the area. IP follow up was planned for 1977-78 season.

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Geology:

1:10,000 Scale plan of "Northern Area" showing geological mapping mainly confined to Emu Bay Railway, Murchison Hwy, bulldozer tracks around Sock Creek, Que Road and about 4km down Que River from Murchison Hwy crossing. No discussion given. Plan shows thick interlayered? units of sediments and porphyritic acid intrusives with north easterly strike trends. Associated acid pyroclastics and lava in Sock Creek to Que Road area. Considerable areas of Tertiary Basalt cover Que Road - Que River area and Emu Bay Railway, also glacial cover west of Sock Creek.

4.1.2 Report No. 129

J.H.A Mill Oct 1978

Input EM Anomaly Followup:

Total of 20.5 km of grid cutting (Que River Grid) over Input E.M. Anomalies CS-27A, CS-27B. Geological mapping on grid indicated area covered by (up to 200m thick) sequence of fluvioglacial Pleistocene sediments. Basaltic boulders (Tertiary) along south eastern edge of gridded area.

E.I.P. (Schlumberger Expander) depth sounding indicated depth of fluvioglacial overburden to be 90-120m. Resistivity 20-27 ohm/m. Chargeability 3-4 mv/v.

The line of gradient array I.P. (20160 N) showed low chargeability and resistivity. Conclusion that Input anomalies caused by low resistivity section of glacial overburden. No further work recommended.

Regional Geology:

1:10,000 plan essentially as for 1977. Recommendation for further mapping especially a traverse down Que River beyond 386,000E/5398000N.

Brief description of regional stratigraphy into 4 units:

- 1) Dacitic lavas and intrusives (See Boco area).
- 2) Pyroclastic volcanics, (NE plunging anticline east of EBR?)

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- 3) Sediments: overlies Unit 2 pyroclastics
- 4) Quartz-Feldspar Porphyry; intrusives up to 1.5 km wide, "lit parlit" and intrusion breccia structures near margin.

Suggestion that the intrusive porphyries (which have associated magnetic highs) may have Sn-W potential. Recommendation for stream sediment sampling around contacts of porphyry bodies to test for Sn-W mineralisation.

Appendix D: 22 Petrographic Descriptions from C.M.S. Mostly volcanic types. No locations given

Number: Prefix P Nos 171 - 257  
M 86 (D.D. Core).

4.1.3 Report No. 130

J. Mill Oct 1979

Presents and briefly discusses results of geological mapping along tracks and roads as well as bed of Que River from Murchison Hwy downstream to Tertiary basalt cover.

Outcrop plans presented at 1:10,000 scale. Regional interpreted geological plan at 1:50,000 scale.

Cambrian rock types subdivided into two main formations:

- 1) Acid-intermediate tuffs, lavas and intercalated sediments. These include quartz phytic ash flow tuffs, vesicular perlitic dacites, tuffaceous sediments and black slates intruded by distinctive coarse grained quartz-feldspar porphyry. Despite (Upper Cambrian) fossil evidence Mills suggests these pre date the Que River Volcanics. They occupy a NE trending belt dipping and younging to west, in sharp contact with massive lavas and pyroclastics ("Que River Volcanics") just north west of Boco.

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- 2) 'Que River Volcanics' - massive suite of quartz poor acid-intermediate lavas and pyroclastics trending NNE from Mt Black through Boco to the Que River Mine. These were considered to occupy a down faulted trough (or caldera). The sharp contact between units (1) and (2) represents the faulted trough margin.

Mineralisation of two types:

- disseminated pyrite associated with black shales and carbonaceous reworked tuffs.
- Epigenetic vein type Pb/Zn (eg: Sock Creek) structurally controlled in fractures, probably genetically related to intrusion of the quartz-feldspar porphyry.

Geochemistry:

Stream sediments and manganese coated pebbles were sampled in the Que River and tributaries. Results not at hand at October 1979.

Conclusions:

Boco area volcanics "confirmed" as strike extensions of Que River Mine host rocks and therefore most prospective area in EL 12/72 for Rosebery-Que River type mineralisation.

The western mixed volcanic-sediment sequence though not known to contain syngenetic sulphide mineralisation may have some potential. Mapping of Que River (stream) area revealed a higher than anticipated volcanic/sediment ratio. A broad regional magnetic (positive) anomaly west of this mapped area thought to represent a buried granite dome with potential for tin mineralisation. Recommendations given to carry out regional stream sediment survey to check for tin mineralisation, alteration and calcareous rocks.

Appendices:

CMS Petrographic Reports of 43 rock specimens many of which are from Que River, Sock Creek, Murchison Hwy and Emu Bay Railway in Northern Bulgobac area.

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4.1.4 Report No. 137 J.H.A. Mill, August 1981

Stream sediment sampling/mapping program commenced. Restricted to around Hay Creek area in far northwest of EL 12/72 because of acquisition of Comstaff's previous "comprehensive" stream sediment sampling data.

Discussion of Geology in Hay Creek area:

- a lower western sequence of slightly "contorted" sericitized/silicified volcanomictic lithic sandstones, siltstones and shales with minor sericitic pelitic ash. Bedding trends  $340^{\circ}$  -  $40^{\circ}$ , steep dips east and west. Alteration, cleavage and deformation increasing toward eastern contact, suggesting fault contact (?)
- an upper eastern sequence of reddish brown (hematitic) uncleaved siltstone and conglomerate. Conglomerates include limestone, chert and mafic volcanic clasts. Strike trends NNE-NE dip consistent to east  $30 - 60^{\circ}$ .

Both sequences covered by Tertiary Basalt at northern boundary of E.L. 12/72.

Discussion of Stream Geochemistry:

Limited to discussion of E.Z. sampling in Hay Creek area. All Sn analyses below detection (10 ppm). Maximum basemetals Cu 100, Pb 260, Zn 190 in Ronks Creek near northern boundary.

No discussion of Comstaff's stream geochemistry results is presented though analyses for Cu, Zn, Ag, Sn and Co are shown on plans. Size fraction and method of analysis not known. Zn shows considerable and wide spread "anomalies" in range 150-210 ppm especially in Que River near Que River Grid (Input EM anomaly CS-27A). Some of these could be derived from Tertiary Basalt?

Stream geochemistry data is presented on Sheets 1 and 3 (1:10,000) only. Sheets 2 and 4 are not given. Sheet 2 mainly covered by Tertiary Basalt except for valley of Que River near eastern boundary. Sheet 4 outside EL 12/72.

Recommendations for sampling to continue.

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Report No. 145

(1982)

This report was not found at E.Z. Co's Library at Rosebery on 31/3/87. However a reference to it in subsequent report No 153 mentions stream sediment sampling and mapping program carried out in Northern and western areas of EL 12/72 during this period.

4.1.5 Report No. 153 R.A. Sainty, I.R. McDonald August 1982

This report presents plans and discussion of geological mapping and stream sediment sampling carried out (in previous period) in northern and western areas.

Geology:

Mapping in western area confirmed presence of a sequence of 'volcaniclastic and fine grained sediments lying west of an intrusive quartz feldspar porphyry'. Remapping suggested that felsic tuffs are fairly abundant within the sedimentary group.

Further mapping in the Hatfield River area (northern part EL 12/72) (west of Emu Bay Railway) had defined a sedimentary sequence as follows:

- Upper: Micaceous sandstone/siltstone  
Tuffaceous greywacke and  
siltstone. Sandstones and  
siltstones, occasionally  
calcareous.
- Lower: Quartzites and siltstones with  
siliceous/calcareous  
conglomerate horizon.

This sequence folded around north east plunging anticlinal structure.

Stream Geochemistry:

Discussion of results of stream sediment sampling (-80#) on 1:10,000 sheets 1 and 3. Much of this data is ex Comstaff but also includes some resampling by E.Z. in Hatfield River area.

In the northern (Hatfield River) area a zone of weakly anomalous Pb (80-170 ppm) occurs around 32650E, 5398 200N over the sedimentary succession just north of a patch of Tertiary Basalt cover. High Mn values (to 2700 ppm) suggest possible "scavenging".

Zn values in general range 30-200 ppm without distinguishable anomalous pattern.

Cu values in general higher than usual but most values above 70 ppm explained by drainage off Tertiary basalts.

Ag values all below detection limit of 0.5 ppm.

Sn values very low, most below detection of 10 ppm. W values "anomalous" up to 115 ppm but suspicion of systematic analytical errors in view of low Sn results and problems in other licence with W.

#### Discussion and Conclusions:

Exploration of northern and western parts of EL 12/72 based on two exploration targets.

- i) Distal sediment hosted basemetal massive sulphides in Dundas trough sediments.
- ii) Tin mineralisation related to Devonian granites.

Distal massive sulphides extensively pursued in Silver Falls and North Pinnacles areas. Only mineralisation encountered was epigenetic vein style, potential for stratabound mineralisation written off. Known basemetal sulphide mineralisation in Tasmania is intimately associated with felsic volcanism.

Consequently it was considered that the few short train stream geochemical anomalies did not warrant follow-up.

Potential for tin mineralisation down graded by absence of geochemical anomalies, paucity of carbonate host rocks and realisation that magnetic high "dome" of central Bulgobac area is unlikely to represent a buried Devonian granite cupola.

#### Recommendation:

No further work in western and northern areas.

4.2 Discussion of Geology

Reconnaissance mapping during this review was confined to roads and tracks around Sock Creek, an old track or tramway running northwards from the Murchison Hwy crossing over Animal Creek, and along the Emu Bay Railway between Boco Siding and the Bulgobac River crossing.

This has enabled me to confirm that the 1:10,000 scale geological mapping presented by Mill (1979) is essentially factual and of good quality and furthermore has probably identified most of the useful geological exposure. Bedrock outcrop between Sock Creek and the Railway is probably very scarce, most of the area being covered by Pleistocene glacial deposits (Augustinus and Colhoun, 1986).

The details of my reconnaissance mapping were plotted on transparent overlays on 1:20,000 enlargements of airphotos (Tas Lands, M458) and are condensed into interpretative form on the accompanying 1:50,000 scale Plan No 1, with considerable adaptations from previous workers.

On the Sock Creek Road, most of the first kilometre NW from Murchison Highway is occupied by typical "Dundas Group" (Corbett, 1986) sediments comprising micaceous and/or tuffaceous greywacke, siltstone and minor interbedded dark grey siltstone and shale. These dip moderately to steeply to the NW and appear to be overlain (although the contact is not exposed) by an assemblage of weakly feldspar phyric dacitic (?) lavas and lava breccia. These are usually amygdaloidal (quartz + chlorite) and with a fine perlitic or spherulitic structured glassy matrix.

Sample No 19837 represents the freshest sample I could obtain near to the sediment contact. Sample No 19838 from about 500m further west is typical of the upper (?) part of this lava unit where the rocks, though broadly similar to above, have a somewhat greenish grey appearance and may be approaching "andesite" composition. The intended geochemical analysis should help to resolve the petrological classification.

The local presence of fragmetal varieties resembling hyaloclastite breccias suggests subaqueous extrusion. Some of the fresher specimens contain accessory pyrite and rare galena (?) (19838) but are not (megascopically) recognisably altered.

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This lava unit occupies an outcrop width of about 500m and is overlain to the west by a thin unit of quartzofeldspathic crystal-vitric tuff which appears to grade westward to very fine grained pale creamy-grey, laminated tuffaceous siltstone dipping moderately to the NW. The consistent NW dips, hyaloclastite brecciation and westward fining grain size grading suggest that the greywacke/lava/tuff/tuffaceous siltstone sequence thus far is essentially conformable and younging to the NW.

North westwards from this however, the exposure is dominated by massive quartz-feldspar porphyry. This consists of equant phenocrysts of quartz and tabular feldspar (to about 6mm and in equal proportions constituting about 20% of the volume) with accessory magnetite and fine ferromagnesian (?) in a fine granular grey or pink felsic matrix.

In the places I have observed it (around Sock Creek and along the Emu Bay Railway) it has great compositional and textural uniformity.

Mill (1978) reported "lit par lit" and intrusion breccia structures near the margins of the porphyry which occupies a considerable part of the stratigraphic section between Sock Creek and the Railway, and regarded it, quite reasonably, as being of intrusive origin.

At Sock Creek there are tuffaceous and dark grey cherty tuffaceous siltstones and minor quartz pyritic rhyolite bands or rafts apparently enclosed by the porphyry (Mill, 1978; Komyshan 1986). The outcrop there is fairly limited and in my brief reconnaissance I could not determine the nature of the contacts or the full distribution of the enclosed sediments and lavas. On a broad scale the quartz feldspar porphyry appears to be more or less conformable and sill like.

Komyshan's (1986, a) Figure 1 depicts the Sock Creek lithologies as being equivalent to the Que River Beds (otherwise known as Que River Shale) whilst Komyshan's (1986, b) 1:25,000 mapping differentiates these calling the Sock Creek units "dominantly black shale and siltstone with intercalations of felsic vitric tuff".

From my observations, confined to bulldozed tracks, at Sock Creek the rocks there seem to be mostly of tuffaceous siltstone/sandstone, flinty (vitric) tuffaceous dark grey siltstone and minor dark grey shale not exactly similar to the Que River Shale as exposed on the Murchison Hwy near 5393300N where the latter are quite black and pyritic.

My reconnaissance of the old Tramway (?) near Animal Creek revealed a few outcrops and floaters of amygdaloidal feldspar phyric lava north westward of and thus probably overlying NW dipping greywackes exposed along the Murchison Highway. My samples No.s 19846, 19847 are feldsparphyric, with zoned somewhat glomeroporphyritic plagioclase constituting about 10% of the rock volume. No. 19846 has elongate ellipsoidal amygdales filled with chlorite (?) and quartz. No. 19847 has small but abundant flattened amygdales filled mainly with quartz and very subordinate chlorite. As far as I can megoscopically determine they are compositionally and texturally similar (apart from more abundant feldspar phenocrysts) to the specimens (particularly BB's 8, 9, 10, 36 in my collection) from the Sock Creek Road. No. 19847 is megoscopically similar to quartz amygdaloidal lavas I have observed in outcrop at Boco Road and in Boco diamond drill holes (Herrmann, 1987).

Along the Emu Bay Railway about 1.5km north of Boco Siding I found similar feldsparphyric amygdaloidal rocks, in this case intimately interlayered or interfingering with tuffaceous siltstone and micaceous greywacke sediments. My samples Nos 19839, 19840 should show a compositional similarity to 19846, 19847 respectively. The lavas (with associated sediments) exposed along this section of the E.B.R. occupy an across strike outcrop width of about 300m and are succeeded to the NW by an outcrop width of about 1200m of massive quartz feldspar porphyry similar to that described at Sock Creek.

✓ correct.  
(high 20)

It seems very likely that these amygdaloidal lavas (at E.B.R. and Animal Creek Tramway) being underlain by greywacke type sediments and succeeded north westwards by massive porphyry are stratigraphically continuous with the lavas exposed on the Sock Creek Road.

Hopefully, geochemical analysis of the three pairs of samples will support this interpretation.

Mill (1979) also recognised this interpretation. His Appendix 3 (of CMS petrographic reports) contains a description of Sample No. P680 (feldspar phyric amygdaloidal dacite) from about 1km south of Sock Creek. The same Appendix 3, contains a description of Sample No 387 from the E.B.R. 1.5 km NNW of Boco Siding. This was described as an amygdaloidal feldspar porphyritic quartz trachyte (essentially quartz poor rhyolite) with similarities to P347 and P351 which were from the Boco Prospect grid about 2km SSW of Boco Siding. This supports my suspicion that these lavas are not particularly "unusual" as implied by Corbett (1986, P.4).

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On the other hand Mill's (1979) geological interpretation led him to the conclusion that the "Que River Volcanics" were continuous from Que River Mine through Boco to Mt. Black. They comprised a massive suite of quartz poor intermediate lavas and pyroclastics occupying a down faulted trough flanked and floored by the sedimentary-volcanic-intrusive assemblage now exposed NW of Boco and recognised as belonging to the Dundas Group.

Along the E.B.R. in the vicinity of Bulgobac Siding are exposures of quartz-feldspar phyric volcanic (?) rocks occupying an across strike outcrop width of about 700m and flanked to SE and NW by massive quartz feldspar porphyry intrusive.

These lavas (?) represented by Sample Nos. 19843, 19844 have (as far as I can megascopically determine) similar phenocryst mineralogy and overall composition to the massive intrusive porphyry variety. No. 19843 type has a rather fine grained, probably glassy matrix showing traces of flow banding.

However, they could well be fine grained variants or extrusive equivalents of the coarser quartz feldspar porphyry intrusives.

I anticipate that geochemical analysis will show a similarity between the pair 19843, 19844 (representing possible lavas) and the trio 19841, 19842, 19845 (representing quartz feldspar porphyry intrusive).

) not so, different Ti/Zr.

According to Mills' (1979) mapping the quartz-feldspar phyric lavas (?) exposed at Bulgobac Siding appear to interfinger with Dundas Group sediments not far to the southwest. To the northwest there is no outcrop.

Mill (1979 Plan No AO-525-0011) shows the results of mapping a traverse down the Que River from the Murchison Hwy. The rocks exposed in the bed of the stream appear to comprise an interlayered sequence of acid lavas, pyroclastics, intrusives and tuffaceous greywacke type sediments. A suite of eleven petrographic descriptions of volcanic rock specimens from this traverse (descriptions in Mill, 1979, Appendix 3, locations plotted on AO-525-0011) indicates that all are quartz-feldspar phyric and the petrographic report mentions that some of the pyroclastic varieties (notably, P762) are closely related to the porphyritic intrusive "rhyolites". It seems probable that this group of rocks correlates with those at Bulgobac Siding. The massive lava of the North Pinnacles ridge is weakly quartz phyric and may also be related.

My litho-stratigraphic interpretation for the Boco area envisages a generally NW younging sequence of feldspar phyric felsic acid to intermediate lavas and pyroclastics (CVS of Corbett, 1986) being suddenly overwhelmed by greywacke type sedimentation (Dundas Group) but with volcanism continuing intermittently (or at least briefly) to produce the feldspar phyric-amygdaloidal/perlitic lava horizon extending from the E.B.R. to Sock Creek Road. Following this episode, volcanism become more rhyolitic producing quartz feldspar phyric rhyolitic pyroclastics, lavas and associated intrusives which were intercalated with/intruded into the greywacke type sediments which continued to accumulate whilst volcanism eventually waned.

#### 4.3 Exploration Potential - East Bulgobac

I shall divide my comments on the prospectivity of the East Bulgobac area into two sections:

##### 4.3.1

The horizon of feldspar phyric vesicular/perlitic lavas extending from Sock Creek Road to the Emu Bay Railway.

At Sock Creek Road, this horizon has been identified by Komyshan (1986) as being equivalent to the host rocks of Hellyer and Que River massive sulphide deposits. The "equivalence" is presumably based on lithological similarity and the stratigraphic situation (felsic lavas underlain by greywacke type sediments).

This horizon appears to have SW strike extension into EL 12/72 but as far as is known does not extend far beyond the Emu Bay Railway. Its extent within EL 12/72 is thus restricted to the narrow strip between E.B.R. and the eastern boundary of the E.L. near Animal Creek.

Positive factors for VMS exploration are:

- 1) Cambrian felsic volcanics, probably of similar composition to some volcanics of Boco Prospect area.
- 2) Suggested equivalence to Hellyer, Que River ore bearing horizon.
- 3) Some fabric evidence for sub aqueous extrusion.

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Negative factors for exploration are:

- 1) very limited area within E.L. 12/72 approx 400m exposed width x 2400m strike length.
- 2) Two thirds of this area covered by fluvio-glacial deposits of unknown thickness but very likely up to or over 100m.
- 3) One third of area already covered by 1986 UTEM Survey.
- 4) No reported or observed indications of hydrothermal alteration or mineralisation.
- 5) Apparent absence of associated mafic volcanics suggests correlation with Hellyer-Que River may be tenuous.

#### 4.3.2

The assemblage of quartz-feldspar phyric volcanics, intrusives and greywacke sediments to the northwest of (overlying?) the postulated Hellyer-Que River equivalent horizon.

In the Bulgobac Siding to Sock Creek area this group appears to occupy an across strike outcrop width of about 3-4 kilometres suggesting that similar rocks of at least 2km width lie in the sub-surface between the E.B.R. and the eastern boundary of the E.L.

Positive factors for VMS Exploration are:

- 1) Cambrian felsic volcanics, relatively unexplored.

Negative factors to exploration are:

- 1) Assemblage greatly dominated by massive quartz feldspar porphyry intrusive bodies which are themselves not considered prospective.
- 2) The subordinate lavas and pyroclastics appear to be chemically related to the intrusive porphyries.
- 3) Close association with greywacke sedimentation suggest rather distal volcanic environment.

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- 4) Virtually the entire northeastern part of EL 12/72 is covered by fluvioglacial deposits and/or Tertiary basalt. Fluvioglacials in Que River Grid area interpreted to be 90-120m thick. Exploration in this area would be essentially confined to "blind" geophysical and drilling methods.

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5. REFERENCES

Augustinus, P. and Colhoun, E.A. 1986 "Glacial History of Upper Pieman and Boco Valleys, Western Tasmania". Aust Journal of Earth Sciences, V33, No 2.

Corbett, K.D. 1986 "Geological Setting of Mineralisation in the Mt Read Volcanics". Abstract: Mt Read Volcanics and Associated Ore Deposits, Symposium, Burnie, Nov 1986.

Corbett, K. D and Gregory, P.W. 1986 Notes for "Pinnacles Excursion" Mt Read Volcanics and Associated Ore Deposits Symposium, Burnie, Nov 1986.

Gregory, P.W. 1986 "Some Geological Aspects of Massive and Disseminated basemetal mineralisation in the Pinnacles Area, northwest Tasmania". Abstract: Mt Read Volcanics and Associated Ore deposits; Symposium, Burnie, Nov 1986.

Hanson, N.H. 1977 "Report on Exploration Undertaken in the Bulgobac E.L. 12/72". E.Z. Co. West Coast Mines Geological Dept Report No. 128.

Herrmann, W. 1987 Exploration Licence 12/72 - Bulgobac, Tasmania. A re-examination of the Boco prospect. Pancontinental Mining Ltd Report No. 87/25

225

Komyshan, P. 1986 (a)

"Geology of the Hellyer-Mt Charter Area". Abstract: Mt Read Volcanics and Associated Ore Deposits, Symposium, Burnie Nov 1986.

Komyshan, P. (b) 1986

1:25,000 Map: Geology of the Mt Charter-Hellyer area. (Geological Survey of Tas-Dept of Mines Mt Read Volcanics Project 1986).

Large, R.R. 1986

"The Zinc Number, A New Geochemical Discriminator for Mineral Exploration in the Mount Read Volcanics". Abstract: Mt Read Volcanics and Assoc. Ore Deposits, Symposium, Burnie, Nov 1986.

Mill, J.H.A., 1978

"E.L. 12/72 Progress Report on Activity 10/77 - 10/78". E.Z. Co West Coast Mines Geological Dept Report No 129.

Mill, J.H.A. 1979

"E.L. 12/72 Report on Work undertaken from Oct 1978 to Oct 1979". E.Z. Co. West Coast Mines Geological Dept. Report No 130.

Mill, J.H.A. 1981

"E.L. 12/72 Progress Report on Activity" July 1980 - June 1981". E.Z. Co. West Coast Mines Geological Dept. Report No. 137

Mollison, A.J. 1980

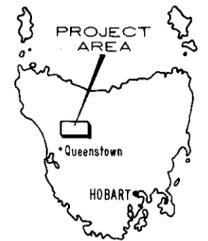
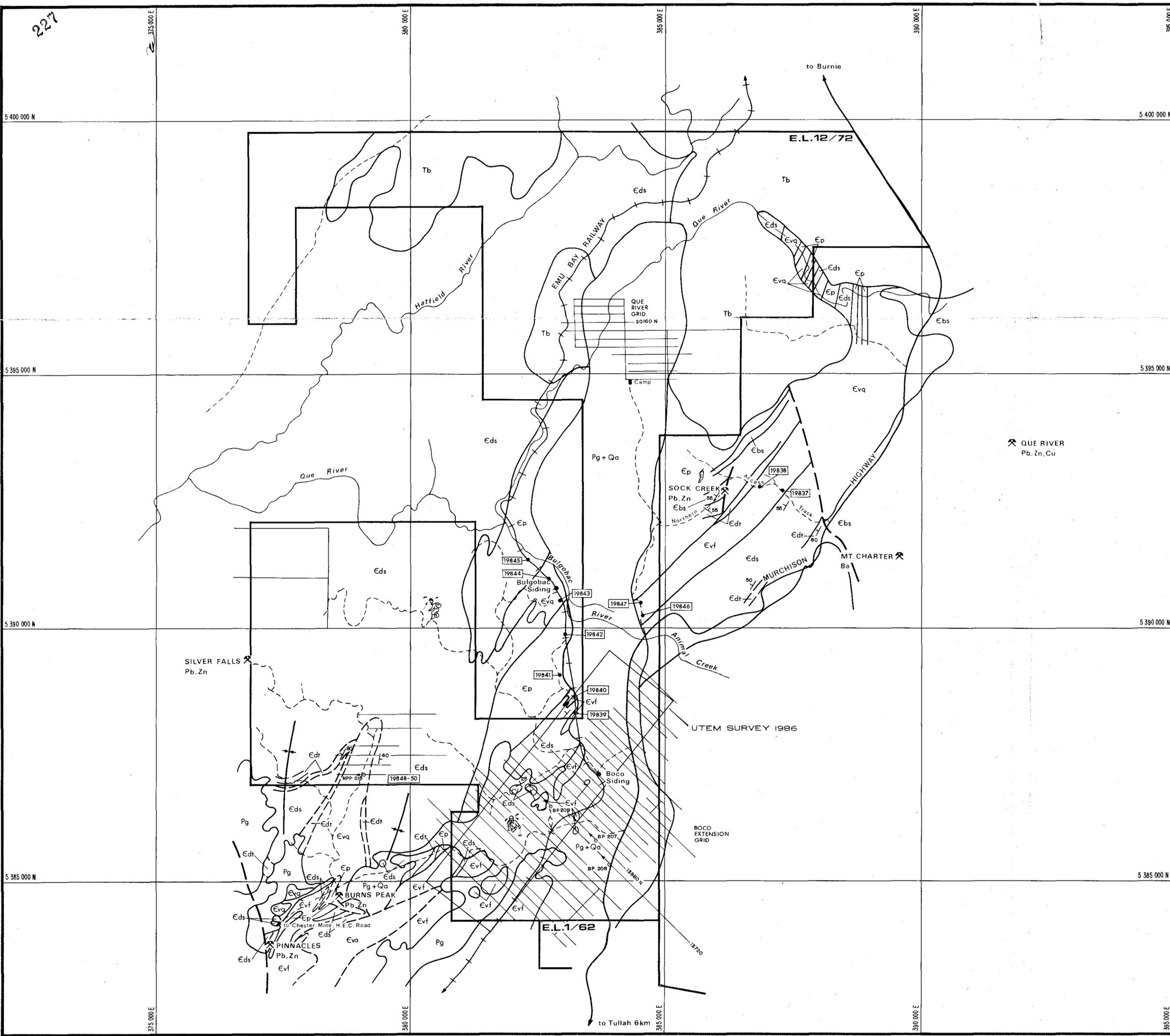
"E.L. 12/72 Progress  
Report on Activity"  
Oct 1979 - June 1980"  
E.Z. Co. West Coast  
Mines Geological Dept.  
Report No 132.

Sainty, R.A. and McDonald, I.R. 1982

"E.L. 12/72 Report on  
Activity 5/5/82 to  
24/8/82". E.Z. Co.  
West Coast Mines  
Geological Dept.  
Report No 153.

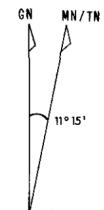
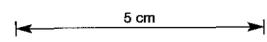
Sainty, R.A. 1984

"E.L. 12/72 Progress  
Report on Exploration  
Activity 30/5/84 to  
13/11/84". E.Z. Co.  
Mineral Resources  
Division Report No.  
T195.



**LEGEND**

- PLEISTOCENE-RECENT**
- Pg+Qa Fluvio-glacials and Alluvium
- TERTIARY**
- Tb Basalt and sub-basaltic gravels
- CAMBRIAN**
- Eds Micaceous - tuffaceous greywacke, siltstone, shale
  - Edt Felsic tuffs and epiclastic sediments (quartz feldspar phryic)
  - Ebs Dark grey to black shales, siltstones
  - Eva Quartz-feldspar phryic (rhyolitic) pyroclastics and lavas
  - Ep Coarse quartz-feldspar porphyry (rhyolitic, intrusive)
  - Evt Feldspar phryic (dacitic-rhyolitic) lavas and pyroclastics
  - Eva Andesite (?)
- Mine, Prospect
  - 19837 • Sample locality
  - BP 207 Drill hole



849232

NOTE: ADAPTED FROM MAPPING BY-MILL 1979, KOMYSHAN 1986, CORBETT + GREGORY 1986.

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<b>PANCONTINENTAL MINING LIMITED</b> PANCON		
<b>EXPLORATION DIVISION</b>		
<b>E.L.12/72-TASMANIA</b> <b>BULGOBAC PROJECT</b> <b>GEOLOGICAL</b> <b>INTERPRETATION</b>		
SCALE 1:50 000 0 0.5 1 1.5 2 2.5 3 kilometres		
Compiled: W.H.	Date: May 1987	Dwg.No. 108/D/9
Report No.: 87/33	Map Ref.	<b>PLATE 1</b>