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GEOPEKO LTD

A Division of North Broken Hill Peko

EL 12/72 BULGOBAC

Relinquishment Report  
incorporating Report on

EXPLORATION ACTIVITY

DECEMBER 1988 - NOVEMBER 1989

A Report prepared for Pasminco Ltd

89-3056

T243

**MICROFILMED**

I.J. Mathison  
November 1989

**OPEN FILE**

## CONTENTS

	Page
1.0 INTRODUCTION	1
2.0 REGIONAL GEOLOGY	1
3.0 PREVIOUS EXPLORATION	1
4.0 EXPLORATION ACTIVITY - DEC '88-NOV '89	2
4.1 Work Completed	2
4.2 Results Received	2
4.2.1 Geology	2
4.2.2 Geophysics	2
5.0 CONCLUSIONS AND RECOMMENDATIONS	3
6.0 REHABILITATION	3

## FIGURES

		Page
Fig. 1	EL 12/72 - TASMANIA - Tenement Plan	1
Fig. 2	North Pinnacles - Regional Geology	1
Fig. 3	EL 12/72 BULGOBAC, Rock Chip sampling and NPD004 Location	3
Fig. 4	NPD004 - Section	3

## APPENDICES

Appendix 1	NPD004 - Drill Logs and Assay Results
Appendix 2	Interpretation of Downhole Electromagnetic Surveys, North Pinnacles (E.L. 12/72) Mitre Geophysics Report

## 1.0 INTRODUCTION

The present Exploration Licence is a 5km<sup>2</sup> remnant of the original EL of 94km<sup>2</sup>, which was granted to the Electrolytic Zinc Company of Australasia Ltd in 1972 (Fig 1).

Following encouraging gold sampling results reported by Pancontinental (Taylor 1988), a twelve month extension was sought when EL 12/72 was due for total relinquishment on 25 December 1987. Following the proposal of a limited drilling program, this extension was granted.

## 2.0 REGIONAL GEOLOGY (Fig 2)

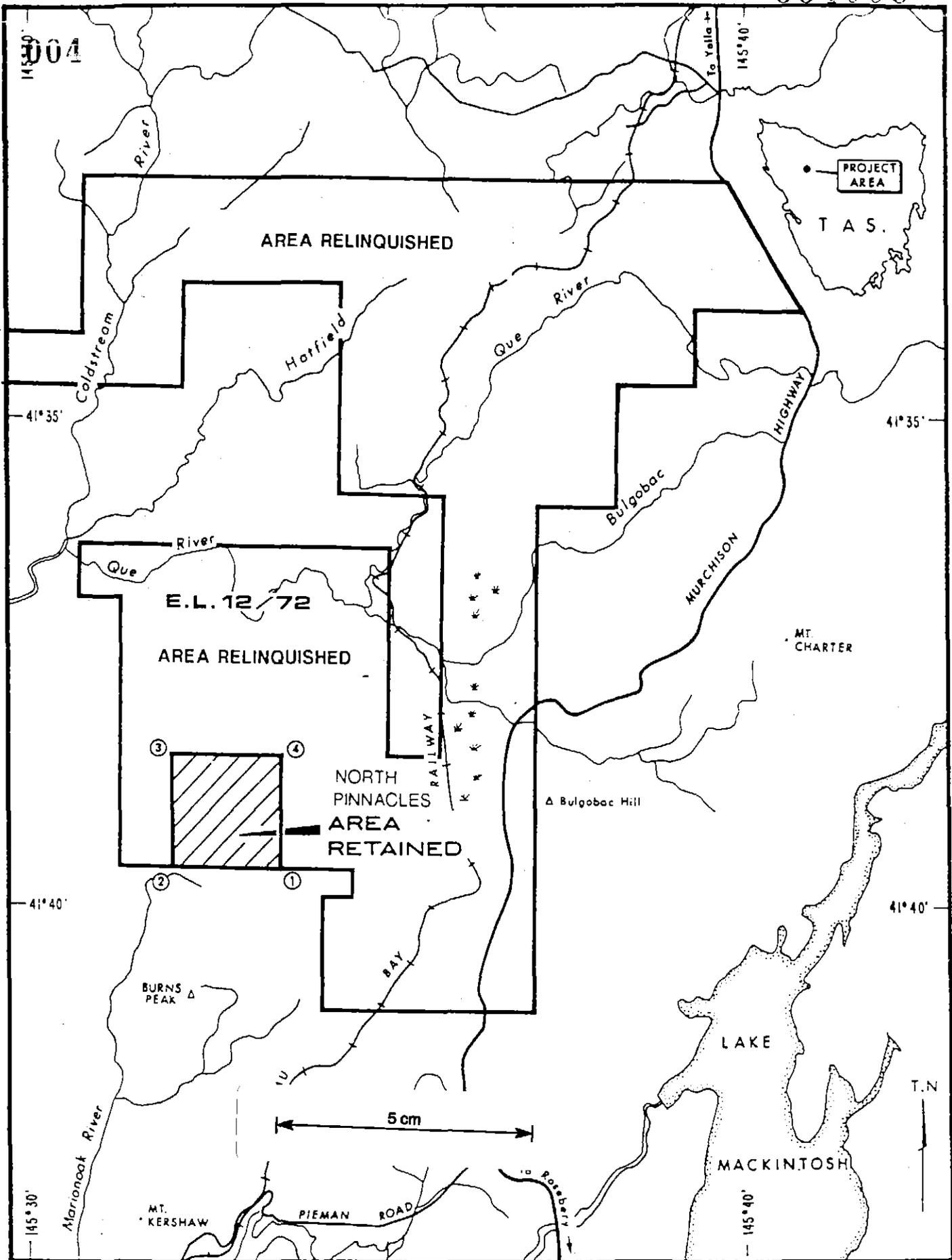
The tenement lies some 15km north of Rosebery. It covers a small area of the Mt Read Volcanics Central Volcanic Complex. A NNE-trending anticlinal core of quartz-feldspar phyrlic rhyolitic lavas, the Burns Peak Rhyolite, plunges northwards beneath the unconformably overlying Dundas Group of crystal tuff, tuff, tuffaceous sandstone, greywacke and siltstone.

To the southwest of the tenement the Burns Peak Rhyolite overlies the Pinnacles Mineralized Sequence. This sequence of volcanoclastic rocks hosts small pods of massive sulphide mineralization.

## 3.0 PREVIOUS EXPLORATION

Since the granting of EL 12/72, the North Pinnacles area has been investigated for its base metal potential by EZ (EZ-Getty JV) and for its VMS and gold potential by Pancontinental, (Pancontinental/Outukumpu-EZ-Little River Gold JV).

A concise summary of the previous exploration in the original EL12/72 (Bulgobac) and a list of all company reports on the area to 1986, including the North Pinnacles Grid, is given in Taylor (1987). Reports on the North Pinnacles area since then are Airas (1987), Hermann (1987), Wilson (1987) and Taylor (1988). These reports detail EM37 surveys, bedrock geochemical surveys, rock chip sampling and geological and geophysical reviews of the North Pinnacles grid.



**RETAINED AREA CO-ORDINATES**

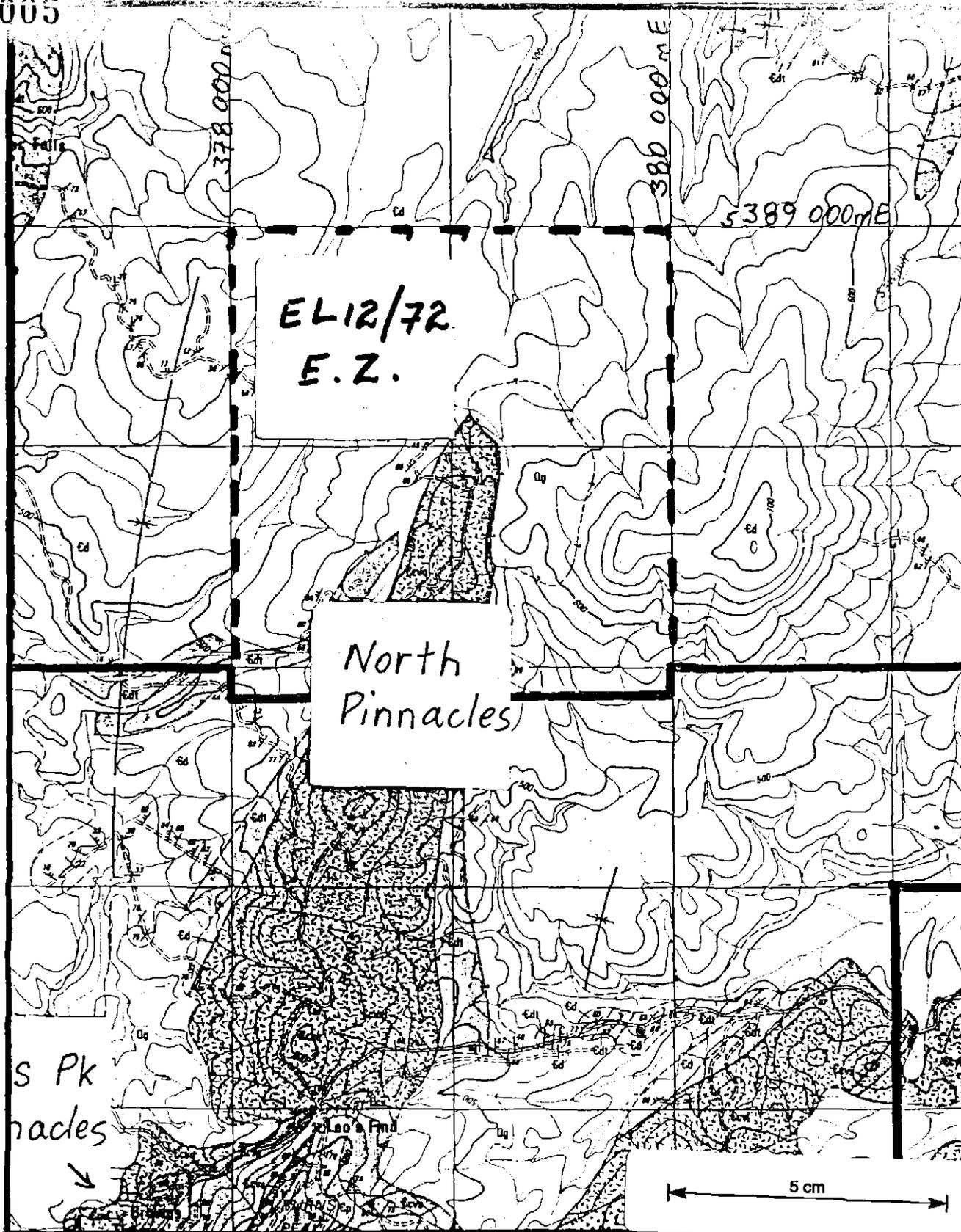
①	380 000mE	5 386 903mN
②	378 000mE	5 386 878 mN
③	378 000mE	5 389 000mN
④	380 000mE	5 389 000mN

**PANCONTINENTAL MINING LIMITED**  
 PANCON EXPLORATION DIVISION

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

SCALE 0 1000 2000 3000 4000 5000 metres 1:100000

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



EL 12/72  
E.Z.

North  
Pinnacles

s Pk  
nacles

5 cm

- LEGEND:
- cp: Quartz Feldspar Porphyry
  - edt: Dundas Group Tuff
  - ed: Dundas Group
  - scvqt: "Central Sequence" quartz feldspar phyrific tuff.
  - scvq: "C.S" quartz feldspar phyrific lava
  - scvi: "C.S" ignimbritic tuff
  - scva: "C.S" andesite
  - scvs: "C.S" volcaniclastic sediment
  - scvl: "C.S" feldspar phyrific lava

(Adapted from Corbett & McNeill 1986)

GEOPEKO	
PROJECT EL 12/72 BULGOBAC	
NORTH PINNACLES REGIONAL GEOLOGY	
Author: TAS DEPT. MINES Scale: 1:25000	FIG. 2

#### 4.0 EXPLORATION ACTIVITY - DECEMBER 1988-NOVEMBER 1989

##### 4.1 Work Completed

Following a re-interpretation of previous I.P. results by Mitre Geophysics (Appendix 2 in Taylor, 1988), diamond drill hole NPD004 was drilled to test an IP anomaly with supporting elevated gold geochemistry in rock chips and wacker sampling. On completion, the drill hole was logged, sampled and surveyed by down hole EM37.

Drill core was sampled in 3m intervals by sawing core in half. The extreme hardness of the core resulted in extensive delays in sampling. Early samples were submitted to Analabs, Burnie where the entire sample was crushed and disked. Analabs samples were analysed for Cu, Pb, Zn, Mn (AAS103) and Au (FA309). Later samples were submitted to Classic Comlabs for analyses for Cu, Pb, Zn (AAS1) and Au (FA1). All results have been transferred to the detailed drill log. (Appendix 1)

A down hole EM37 was conducted by Geoterrex. Results were forwarded to Mitre Geophysics for interpretation. The Mitre Geophysics report is appended. (Appendix 2)

##### 4.2 Results Received

###### 4.2.1 Geology (See Drill Log - Appendix 1)

Drill hole NPD004 intersected a sequence of patchily altered rhyolitic lava and lava breccias. Minor sulphide mineralization pyrite-sphalerite-galena was associated with zones of quartz-carbonated veining and as rare galena veins (to 5 cm). Best base metal assay was only 3m of 1.76% Pb. Gold values were low. Best gold was intersected near the bottom of the hole where 9m assayed 0.05 g/t Au.

###### 4.2.2 Geophysics (Appendix 2)

The small amount of sulphide intersected by NPD004 is insufficient to explain the I.P. anomaly. Down hole EM37 indicated that there is no significant body of conductive sulphides close to the hole.

## 5.0 CONCLUSIONS AND RECOMMENDATIONS (FIG 3,4)

The combination of the surface geochemistry, the interpreted position of the IP anomaly and the weakly anomalous gold values over the last 9m of the hole suggests that there may be a zone of gold mineralization above and to the east of the drill hole. Such a zone could be ~20m thick and dip eastwards at 60°-70° as suggested by the mineralization intersected by NPP215. This hole, 200m south of NPD004, intersected a 20m true thickness averaging 0.2 g/t Au. This mineralization, also, is associated with weak base metal mineralization and quartz-carbonate veining within altered rhyolite. A 60°-70° east dip is suggested by the relationship between the down hole anomalous gold zone and the surface gold zone (max 3.1 g/t Au) indicated by wacker sampling.

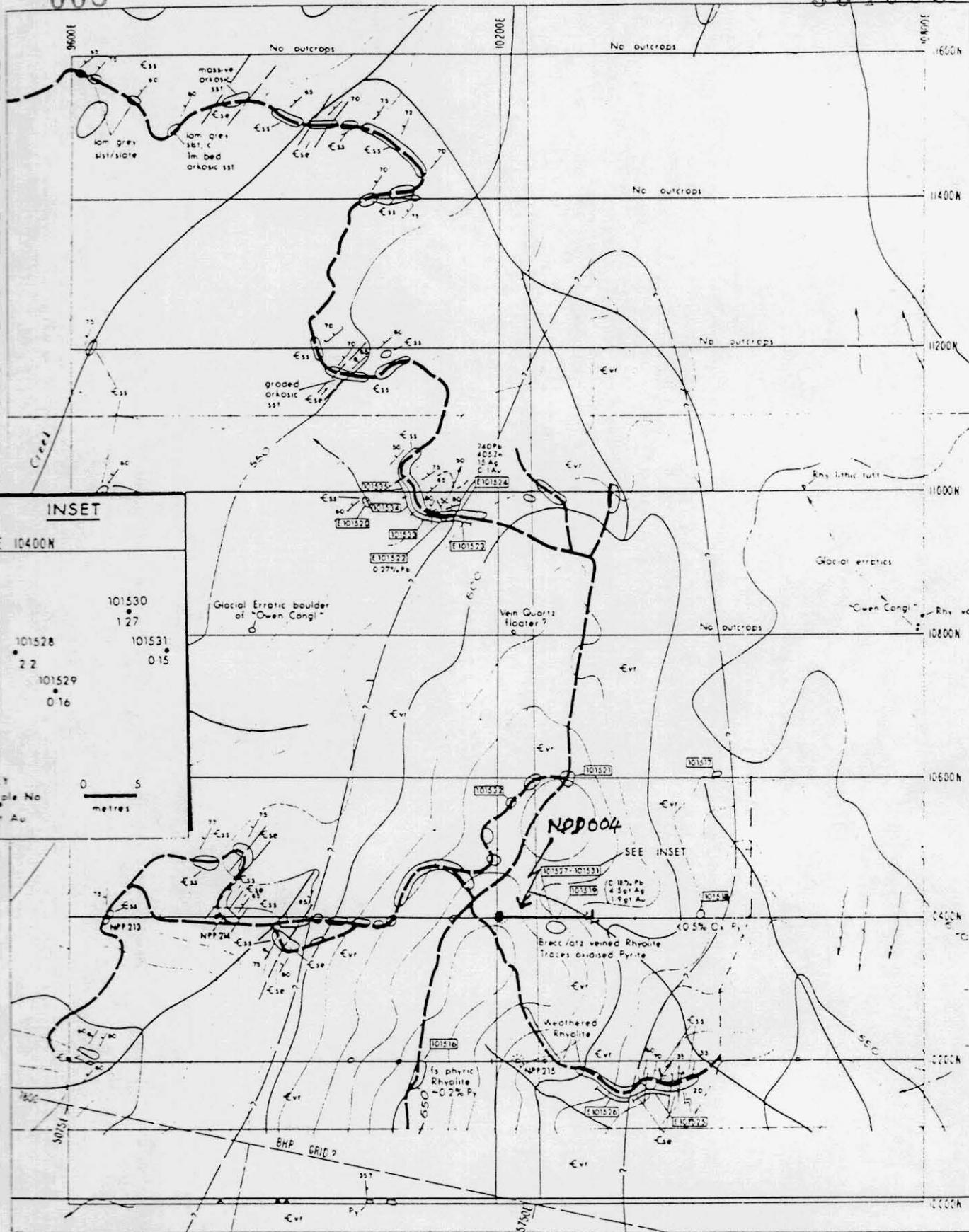
The patchy distribution of this mineralization is demonstrated by the absence of anomalous gold values from weathered rock chip samples collected from the road north of NPP215. The erratic distribution of anomalous values revealed by the wacker sampling also suggests an erratic distribution of gold.

It is considered that the generally low tenor of the mineralization, the erratic distribution and the style of mineralization are not conducive to the development of a large body of economic gold mineralization. The combination of wacker sampling, diamond drilling and rock chip sampling have adequately tested the area. No further exploration is recommended.

## 6.0 REHABILITATION

Rehabilitation of all drill tracks and drill sites in the Boco Siding area was completed with the consultative assistance of the Environmental Management Branch of the Mines Department. Old costeans and tracks at Silver Falls were checked. Advanced regrowth in these areas was observed and it is recommended that natural regeneration of the forest in these areas be allowed to proceed.

As drill hole NPD004 was collared on an existing track, no new road works were necessary. Drill access tracks through the North Pinnacles area are useful access tracks and are recommended for retention, at least until the holders of adjacent ELs are consulted.



DUNDAS GROUP : Mid Middle - Mid Late Cambrian?

**Ese** Thick bedded quartzo-feldspathic tuffaceous - epiclastic sandstone

**Ess** Thinly bedded greywacke, siltstone, grey to black shale

CENTRAL VOLCANIC SEQUENCE? : Late Early - Mid Middle Cambrian?

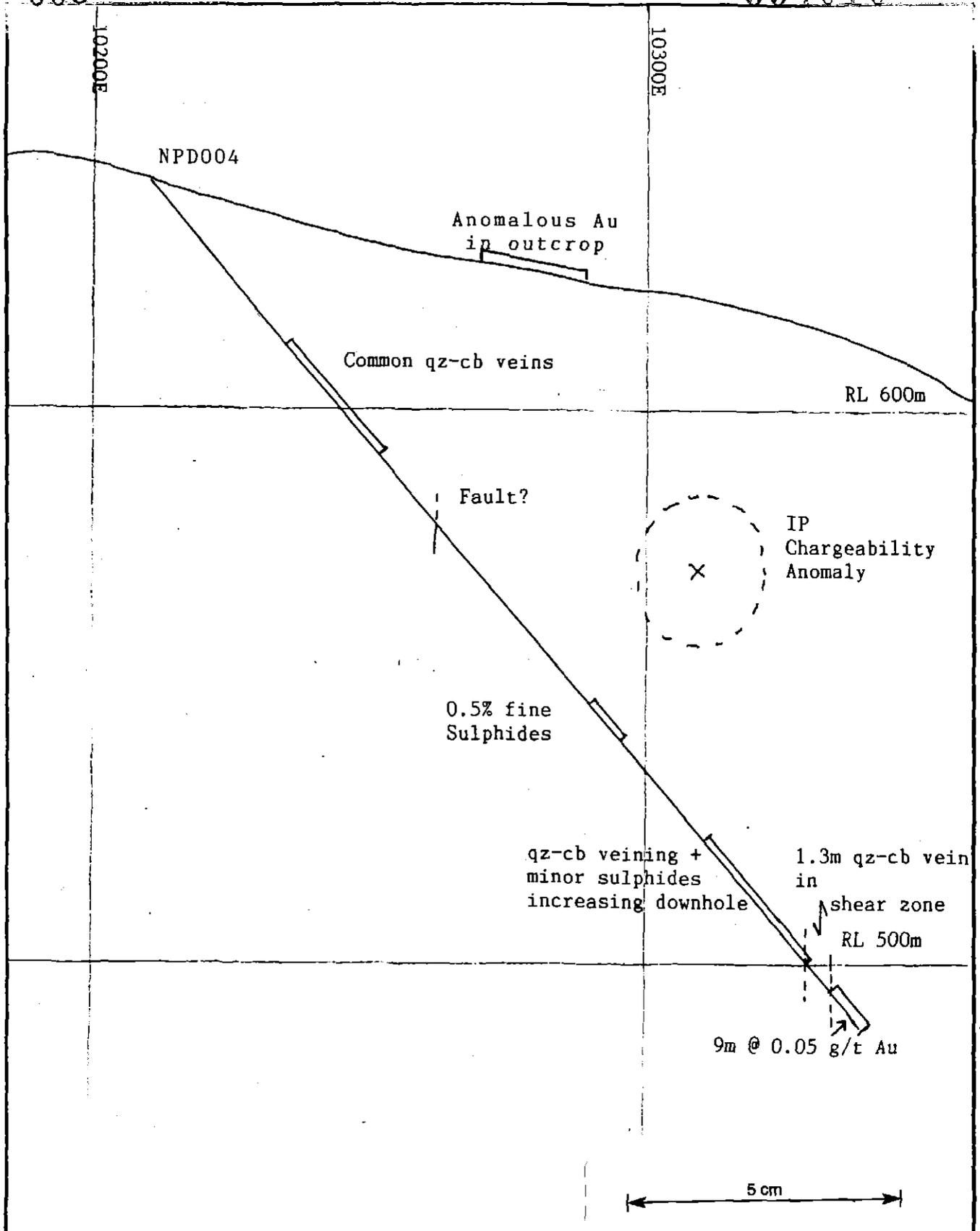
**Evr** Massive feldspar (quartz) phyric rhyolite, probably extrusive

E.L. 12/72

BULGOBAC

PANCONTINENTAL ROCK CHIP AND WACKER SAMPLING TO INVESTIGATE GOLD POTENTIAL

AREA COVERED BY WACKER SAMPLING



GEOPEKO

PROJECT EL 12/72 BULGOBAC

CROSS SECTION 10400N  
THROUGH  
NPD004

Author: MAT

Scale: 1:1000

FIG. 4

## REFERENCES

- Airas, K O            1987            North Pinnacles Prospect, A part of the EL 12/72 Bulgobac, Tasmania Annual Report 26 December 1986 to 25 December 1987: Pancontinental Mining Ltd Report
- Corbett, K D           1986            Map 2. Geology of Rosebery-Mt Block area. Geological Survey of Tasmania  
McNeill, A W
- Herrman, W            1987            Exploration Potential of North Pinnacles and East Bulgobac Areas, EL 12/72, Tasmania; Pancontinental Mining Ltd Report
- Taylor, S              1987            Exploration Licence 12/72, Bulgobac, 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; EZ Report
- Taylor, S              1988            Exploration Licence 12/72, Bulgobac, Annual Report on Exploration 26 December 1987 to 25 November 1988; EZ Report
- Wilson, D R            1987            Report on an EM37 Survey, North Pinnacles Prospect, Bulgobac EL 12/72, Tasmania; Pancontinental Mining Ltd Report

APPENDIX 1

NPD004 - DRILL LOGS AND  
ASSAY RESULTS

LOCALITY:- LICENCE:- DRILL HOLE:- OBJECTIVE:- RESULT:-	DRILLING DETAILS		COLLAR DETAILS		DOWN HOLE SURVEY DATA		
	Hole drilled by:- Fred Ortner Commenced:- 7/12/88 Completed:- 21/12/88 Total Depth:- 199m Logged by:- D.Gardner Annotated by:-  Hole size:- R/R 0-3; HQ -30; NQ -EOH Hole condition:- PVC to EOH (Casing etc in hole)		Local grid 10210 EAST 10400 NORTH  Approximate ANG Coordinates 378950 EAST 5387280 NORTH 640 R.L.		Survey Method:- S.Shot camera DEPTH: DIP: AZ: DEPTH: DIP: AZ: 0.0: 50: 090 61.0: 49: 095 97.0: 49: 097 150.0: 49: 097 199.0: 49: 098 All bearings ANG For mag subtract 12'		
To test a chargeability anomaly with associated anomalous gold values from rock chip samples.							
Hole intersected a sequence of brecciated and quartz-carbonate veined acid lavas and fragmental volcanics. Best gold only 0.05g/t.							

METERAGE FROM TO	ROCK DESCRIPTION	MINERALIZATION	SAMPLE		%REC	LNTH	SIGNIFICANT ASSAYS							
			NO.	FROM TO			Cu	Pb	Zn	Ag	Au	Fe		
0.0	3.0	Rock roller												
3.0	23.4	Weathered feldspar phytic acid volcanic.	Several quartz veins.											
23.4	34.0	Fragmental acid volcanic sericitized.												
34.0	63.0	Pink rhyolite lava breccia.	Common qz-cb veins with tr py, sp, gn											
63.0	79.0	Fragmental acid volcanic, patchy sericitization.	Common cb veins with minor sp, tr py											
79.0	188.3	Grey green siliceous acid lava breccia.	Common qz-cb veins, rare gn, sp, py as small xtals. 5cm gn vein 122.1	44141 44160	121.0 178.0	124.0 181.0	100 100	3.0 3.0	16 7	1.76% 1120	650 1080	<0.01 0.01		
188.3	190.0	1.3m quartz carbonate vein in shear or fault zone.												
190.0	199.0	Green grey siliceous acid lava breccia. EOH		65-67	190.0	199.0	100	9.0	9	670	300	0.05		

LOCALITY:- NORTH PINNACLES		DRILL HOLE NUMBER:- NPD004					
METERAGE FROM	TO	SAMPLE NUMBERS	SAMPLE METHOD	PURPOSE	LABORATORY	METHOD	ELEMENTS DETERMINED
3.0	70.0	44101-44122	1 CORE	ASSAY	COMLABS	AAS1 FA1	Cu, Pb, Zn Au
70.0	82.0	44123-44126	1 CORE	ASSAY	ANALABS	AAS103 FA309	Cu, Pb, Zn, Ni Au
82.0	199.0	44127-44167	1 CORE	ASSAY	COMLABS	AAS1 FA1	Cu, Pb, Zn Au

014

ELECTROLYTIC ZINC CO OF ASIA LTD ROSEBERY - TASMANIA		DIAMOND DRILL CORE RECORD						HOLE No. N.P.D. 004		A 11241				
FOOTAGE		ROCK DESCRIPTION	MINERALISATION	SAMPLE No.	8-13 FROM	14-19 TO	CORE REC'D	ASSAY DATA					CORE REC'D	
FROM	TO							Sample Length	Cu	Pb	Zn	Ag	RUN	SHORT
0	3.0	No core										0-3.0	N.C.	
3.0	7.0	weathered bn Avf s'd feldspars pink altered		44101	3.0	7.0		16	280	96	<0.01	4.0	0.05	
												7.0	1.2	
7.0	14.2	weathered gn Avf s'd feldspars pink altered (some to clay)	quartz veins 11.8-12.6m	44102	7.0	13.0		5	195	100	<0.01	10.0	0.1	
												12.6	0.8	
												14.2	1.5	
14.2	23.4	pk/gn Avf si pink feldspars weathered in places ? fragmental textures appear ↓	quartz veins 14.3 17.3-17.4 (Cb soln cavity)	44103	13.0	16.0		7	175	76	<0.01	16.0	0.5	
												17.3	1.2	
												17.6	0.3	
				44104	16.0	19.0		3	195	78	<0.01	19.0	1.3	
												20.6	1.6	
				44105	19.0	22.0		4	340	330	0.01	22.0	1.4	
												23.3	1.5	
23.4	34.0	pk/gn Av s'd fragments of pink (altered lava?) in green ground mass, frags → 20cm, smaller frags s'd (c'd?) pumice? glass? → 2cm	23.4-23.5 quartz vein	44106	22.0	25.0		3	135	220	<0.01	23.4	0.1	
												25.0	1.6	
				44107	25.0	28.0		<2	56	370	<0.01	28.0	3.0	
												30.	2.0	
				44108	28.0	31.0		<2	75	660	<0.01	31.0	1.0	
				44109	31.0	34.0		<2	165	340	<0.01	34.0	2.2	
34.0	37.0	pk L Ar some dk gn patches fine quartz veins brecciation? textures obscured sericite, silica alteration		44110	34.0	37.0		10	92	150	0.01	37.0	2.4	

554015

015

ELECTROLYTIC ZINC CO OF A'ASIA LTD ROSEBERY - TASMANIA		DIAMOND DRILL CORE RECORD						HOLE No. NPD 004		A 11241			
FOOTAGE		ROCK DESCRIPTION	MINERALISATION	SAMPLE No.	8-13 FROM	14-19 TO	CORE REC'D	ASSAY DATA				CORE REC'D	
FROM	TO							Sample Length	Cu	Pb	Zn	Au	RUN
37.0	43.6	dk pk LAr breccia textures lava breccia flowbanding? 45° to core axis	quartz/carbonate veins common	44111	37.0	40.0		6	36	88	<0.01	40.0	3.0
				44112	40.0	43.0		5	28	65	0.01	43.0	3.0
43.6	44.5	weathered fracture zone broken core + quartz		44113	43.0	46.0		5	14	72	<0.01	46.0	2.8
44.5	48.4	pk/gn LAr s'd si lava breccia matrix supported, dk pk and gn frags → 10cm subround, altered in dk/gn (s'd) matrix (also lava?)	strong quartz/carbonate veins, white alteration rims around some frags.	44114	46.0	48.4		4	8	54	<0.01		
48.4	49.2	Av si (very silicified)	fine quartz/carbonate veins (+ solution cavities) scattered pyrite aggregates → 3mm, + scattered sphalerite, <1% sulphides.	44115	48.4	49.5		14	10	50	0.01	49.0	3.0
49.2	49.5	weathered fracture zone											
49.5	63.0	pk/gn LAr, lava breccia, altered pk frags (subround) in gn (s'd) matrix (matrix supported) 52.6-53.0 fracture zone, oxidised	q/cb vns rare trace py	44116	49.5	52.0		8	10	48	<0.01	52.0	3.0
				44117	52.0	55.0		2	10	48	<0.01	55.0	3.0
				44118	55.0	58.0		6	22	92	0.01	58.0	3.0
				44119	58.0	61.0		3	38	115	0.01	61.0	3.0
				44120	61.0	64.0		3	52	78	<0.01	64.0	3.0

554016

016

ELECTROLYTIC ZINC CO OF A'ASIA LTD ROSEBERY - TASMANIA		DIAMOND DRILL CORE RECORD						HOLE No. NPD 004						A 1129	
FOOTAGE		ROCK DESCRIPTION	MINERALISATION	SAMPLE No.	8-13 FROM	14-19 TO	CORE REC'D	ASSAY DATA						CORE REC'D	
FROM	TO							Sample Length	Cu	Pb	Zn	Au	Fe	Mn	RUN
63.0	67.0	dk gn → gy Av s'd si a few frags of pk lava(?) → 15cm, smaller clasts? of Av's'd → 2cm matrix dominates		44121	64.0	67.0		7	110	420	<0.01			67.0	3.0
67.0	76.2	dk gn Av, frags (vesicular lava?) → 10cm in matrix gn fg Av (lava? ash?) in some areas frags fit (lava breccia?) elsewhere some disruption occurs	71.5-76.2 py in matrix between frags, + some sph along cb vns <1% sulphide overall.	44122	67.0	70.0		9	115	390	<0.01			70.0	3.0
				44123	70.0	73.0		15	175	390	<0.008	2.35%	240	73.0	3.0
				44124	73.0	76.2		10	160	890	<0.008	1.70%	185	76.0	3.0
76.2	77.8	dk gn Av s'd si very altered	No sulphides	44125	76.2	77.8		10	165	320	<0.008	1.90%	735	79.0	3.0
77.2	77.8	Fault? pug zone	many cb vns												
77.8	79.0	pl gy fg LAV (lava breccia?)	rare trace py in between frags	44126	77.8	82.0		10	70	160	<0.008	2.05%	495	81.3	2.3
				44127	82.0	85.0		10	94	185	<0.01			84.4	3.1
				44128	85.0	88.0		12	14	130	<0.01			85.5	1.1
79.0	188.3	pl gn/gy LAV bx si, lava breccia little disruption of frags flow banded in places	extensive q/cb vns 79.0-82.7 rare scattered sp xtals → 1cm between frags	44129	88.0	91.0		10	20	240	<0.01			88.0	2.5
				44130	91.0	93.0		8	15	84	<0.01			91.0	3.0
		81.7-82.0 y/gn fractured zone s'd	trace rare py in s'd 'spots' (vesicles?)	44131	93.0	95.0		9	25	175	<0.01			93.7	2.7
		97.0 20cm disrupted bx		44132	9	97.0		10	30	165	<0.01			96.8	3.1
		99.0 20cm disrupted bx due to cb vn		44133	97.0	100.0		7	32	145	0.02			99.9	3.1
		101.0 many s'd spots (vesicles? feldspars?) some with reaction rims?	101 scattered gn xtals along q/cb vns + fractures	44134	100.0	103.0		8	28	74	<0.01			103.0	3.1
				44135	103.0	106.0		5	8	24	<0.01			103.1	0.1
														106.0	2.9

554017

017

ELECTROLYTIC ZINC CO OF A'ASIA LTD ROSEBERY - TASMANIA		DIAMOND DRILL CORE RECORD										HOLE No. NPD 004		
FOOTAGE		ROCK DESCRIPTION	MINERALISATION	SAMPLE No	8-13 FROM	14-19 TO	CORE REC'D	ASSAY DATA					CORE REC'D	
FROM	TO							Sample Length	Cu	Pb	Zn	Au	RUN	SHORT
		(as before plg/gn (Av bx si))	rare gn sp as small	44136	106.0	109.0		9	280	145		0.01	109.0	3.0
		some patches of massive lava	x'tals	44137	109.0	112.0		3	38	38		<0.01	112.0	3.0
		115.1 10cm band disrupted bx	q/cb vns common	44138	112.0	115.0		8	90	34		<0.01	115.0	3.0
				44139	115.0	118.0		7	410	280		<0.01	118.0	3.0
				44140	118.0	121.0		8	115	230		<0.01	121.0	3.0
		122.1 20cm shattered lava si minor disruption	122.1 5cm vn massive gn	44141	121.0	124.0		16	176%	650		<0.01	124.0	3.0
			fine sulphides py, gn, sp between frags, in vns	44142	124.0	127.0		19	430	1750		<0.01	127.0	3.0
			up to 0.5% sulphides in places (interconnection responsible for i.p. anomaly?)	44143	127.0	130.0		8	150	86		0.01	130.0	3.0
													130.5	0.5
			130.0 decrease in sulphides < 1% still in fine vns	44144	130.0	133.0		2	180	110		0.01	132.8	2.3
				44145	130.0	136.0		6	110	330		<0.01	135.9	3.1
		138.5-140.0 q vn shatters lava + some minor disruption	trace sulphides	44146	136.0	139.0		3	165	180		<0.01	139.0	3.1
				44147	139.0	142.0		8	185	440		<0.01	142.0	3.0
				44148	142.0	145.0		3	195	195		<0.01	145.0	3.0
			147.5 gn vn 3mm wide	44149	145.0	148.0		14	290	150		<0.01	148.0	3.0
			148.5 sp in q vn	44150	148.0	151.0		7	105	185		<0.01	151.0	3.0
			152.5 sp (2%) in 5cm q vn											
		154.0-160.0 very silicified	153.7 gn in q vn	44151	151.0	154.0		16	270	1240		<0.01	154.0	3.0
				44152	154.0	157.0		8	82	85		<0.01	157.0	3.0
				44153	157.0	160.0		6	110	55		<0.01	159.7	2.7
													161.0	1.3
				44154	160.0	163.0		20	630	240		<0.01	163.0	2.0

52  
52  
52  
52  
52

ELECTROLYTIC ZINC CO OF A'ASIA LTD  
ROSEBERY - TASMANIA

DIAMOND DRILL CORE RECORD

HOLE No. NPD004

A 1124

FOOTAGE		ROCK DESCRIPTION	MINERALISATION	SAMPLE No.	8-13 FROM	14-19 TO	CORE REC'D	ASSAY DATA					CORE REC'D	
FROM	TO							Sample Length	Cu	Pb	Zn	Au	RUN	SHORT
		(as before pl gngy lAv bx si lava breccia frags 5-10cm occasional patches of disrupted breccia)	sp+gn in q/cb vns locally 1-2% overall <<1%	44155	163.0	166.0		3	110	100	<0.01		166.0	3.0
				44156	166.0	169.0		4	960	270	<0.01		169.0	3.0
				44157	169.0	172.0		6	1120	400	<0.01		172.0	3.0
				44158	172.0	175.0		3	580	410	0.01		175.0	3.0
		178.0 increase in frequency and size of q/cb vns		44159	175.0	178.0		8	430	930	<0.01		178.0	3.0
				44160	178.0	181.0		7	1120	1080	0.01		181.0	3.0
				44161	181.0	184.0		4	490	910	0.01		184.0	3.0
				44162	184.0	187.0		8	510	680	<0.01		187.0	3.0
188.3	190.0	gn s'd rock cleaved, sheared possible fault fracture zone contacts 40° to core axis	188.7-190.0 q/cb vns cleaved puggy contacts trace sulphides	44163	187.0	188.7		5	740	830	0.01			
		190.0 end of vns + s'd sheared zone		44164	188.7	190.0		8	540	55	0.01		190.0	3.0
				44165	190.0	193.0		10	910	270	0.05		193.0	3.0
190.0	199.0	pl gngy lAv bx si lava breccia		44166	193.0	196.0		7	310	135	0.05		196.0	3.0
				44167	196.0	199.0		12	790	500	0.05		199.0	3.0
		199.0 EOH												

554019

## APPENDIX 2

INTERPRETATION OF DOWNHOLE  
ELECTROLMAGNETIC SURVEYS  
NORTH PINNACLES (E.L. 12/72)

MITRE GEOPHYSICS REPORT



# MITRE GEOPHYSICS PTY LTD

MINERAL EXPLORATION AND ENGINEERING CONSULTANTS

BUGGS LANE ELLIOTT TASMANIA 7325 PHONE 004-363143

INTERPRETATION OF DOWNHOLE ELECTROMAGNETIC  
SURVEYS, NORTH PINNACLES (E.L. 12/72).

for

North Broken Hill Peko Ltd

by

Dr J.R. Bishop

NBH/MG89/07  
July, 1989.



## CONTENTS

Summary	1
Introduction	2
Survey Details	2
Interpretation	2
Conclusions and Recommendations	3

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LIST OF FIGURES

- Figure 1. DHEM Transmitter loop positions (1:1,000 scale).
- Figure 2. DDH NPD004 DHEM profile: Tx loop NP1.
- Figure 3. DDH NPD004 DHEM profile: Tx loop NP2.

022

**SUMMARY**

An electromagnetic survey has been carried out down DDH NPD004 at North Pinnacles (E.L. 12/72). The results were disappointing and the interpretation suggests that there is no significant conductor beneath the anomalous gold values and IP responses which DDH NPD004 was drilled to investigate.



## INTRODUCTION

The North Pinnacles licence (E.L. 12/72) covers an area of the Mt Read Volcanics to the north of the Rosebery base-metal mine. However, recent investigation by North Broken Hill Peko has centered on the area's gold potential. And DDH NPD004 was collared in December, 1988 to test some anomalous rock chip gold values associated with moderate IP responses. The hole intersected several veins of only minor sulphides. These are probably insufficient to explain the IP anomaly, however the hole passed some 40m to the west, and, stopped 60m vertically below, the recommended drill target ..

This report presents the results of a down-hole electromagnetic (DHEM) survey which was carried out down DDH NPD004 to test for any significant volume of sulphides in close proximity to the drill hole.

## SURVEY DETAILS

The survey was carried out by Geoterrex in April, 1989 using their EM37 system. Two loops, each nominally 60m square, were used for the survey (see Figure 1) and for each loop, the hole was read down to 180m (E.O.H. at 199m). The standard time base of 25Hz was used with loop currents in excess of 20amps. Geoterrex plotted the results in their usual manner at 1:2500 scale and Figures 2 and 3 are reductions of these plots.

## INTERPRETATION

The response levels recorded by the survey were extremely low indicating very resistive conditions. However there is some slight 'character' in the profiles (apart from the responses at the top of the hole which are due to steel casing). The character in both profiles is too weak to be termed an anomaly, however it is inconsistent with the so-called self-response, which is the response in the receiver due to the primary field.

Apart from the low amplitudes and very weak nature of the response, both profiles have a 'DC offset'; that is, the data does not decay towards zero, but rather, in this case, to about  $0.25\text{nv/a-m}^2$ . This has been a variable problem with the EM37 equipment in Tasmania this year and makes any quantitative interpretation quite difficult. The lack of a proper anomaly precludes any attempt here at such an inter-

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\* Bishop, J.R., 1988. An evaluation of the North Pinnacles IP Surveys. Mitre Geophysics report 88/06 to EZ.



pretation. But if pressed for a qualitative interpretation, one could surmise that a very weakly conducting fault or contact, steeply dipping beneath the drill-hole could cause the observed results. However, it is also just as likely that IP effects from the source of the IP anomaly could cause these excursions in the profiles.

#### CONCLUSIONS AND RECOMMENDATIONS

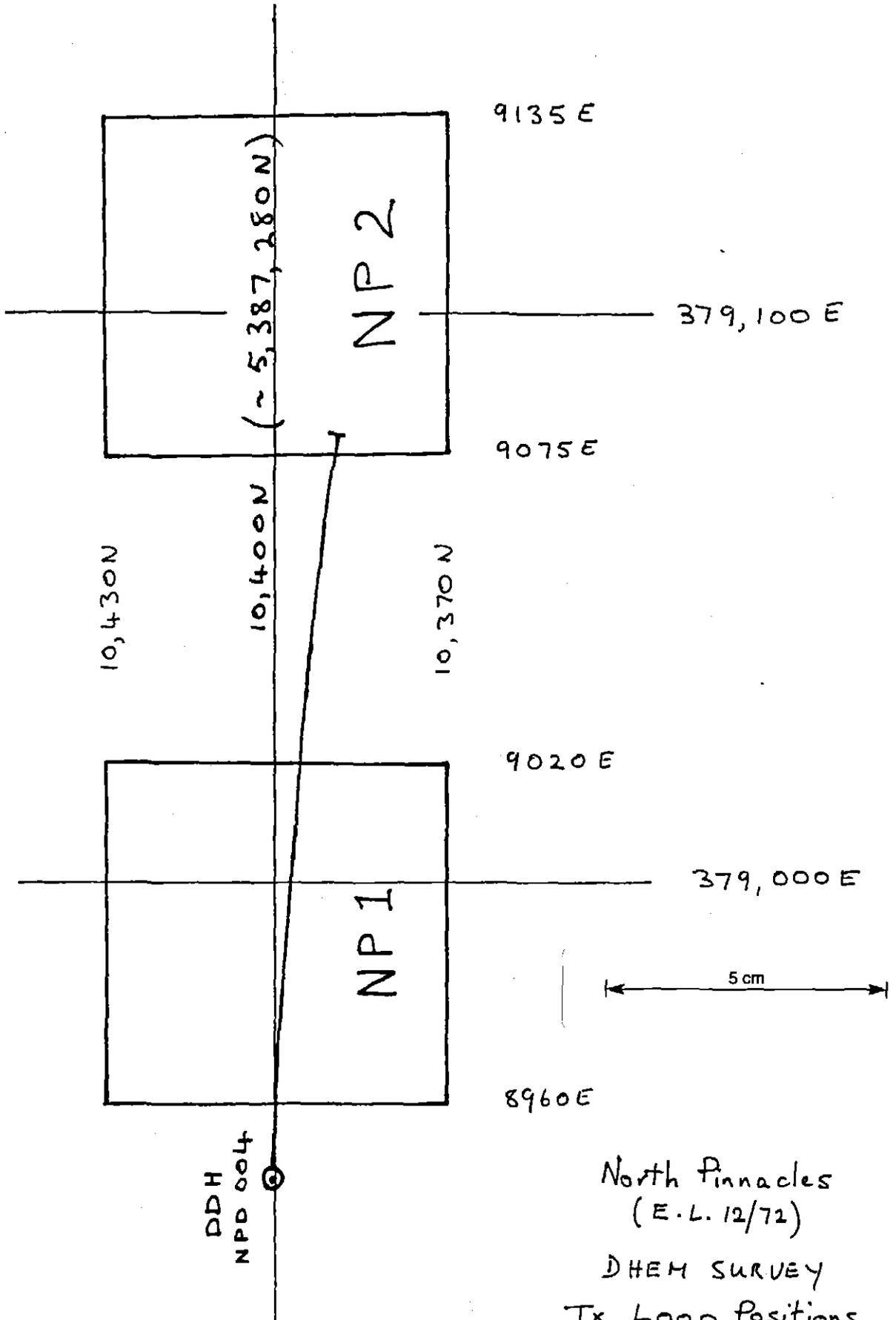
DDH NPD004 was drilled on a resistive IP anomaly and disseminated sulphides were the expected target. The small amount of sulphide intersected by the hole (described as generally less than 1% in the log) is probably insufficient to cause the observed IP effects and it is likely that more sulphide lies above and to the east of the hole. However, the DHEM survey has revealed that there is no significant body of massive sulphide within say 20m to 100m of the hole (depending upon the size and conductance of the assumed body).

At the time of writing this report, not all core assays had been received, however those which had, were disappointing. If some encouragement is obtained from the remaining samples, then further investigation of the IP anomaly is recommended. Ideally, this would include IP logging of NPD004 and this could perhaps be achieved by removal of the plastic casing. Also, another drill hole, on the same section but drilled to the west should be considered.

J.R. Bishop  
July, 1989

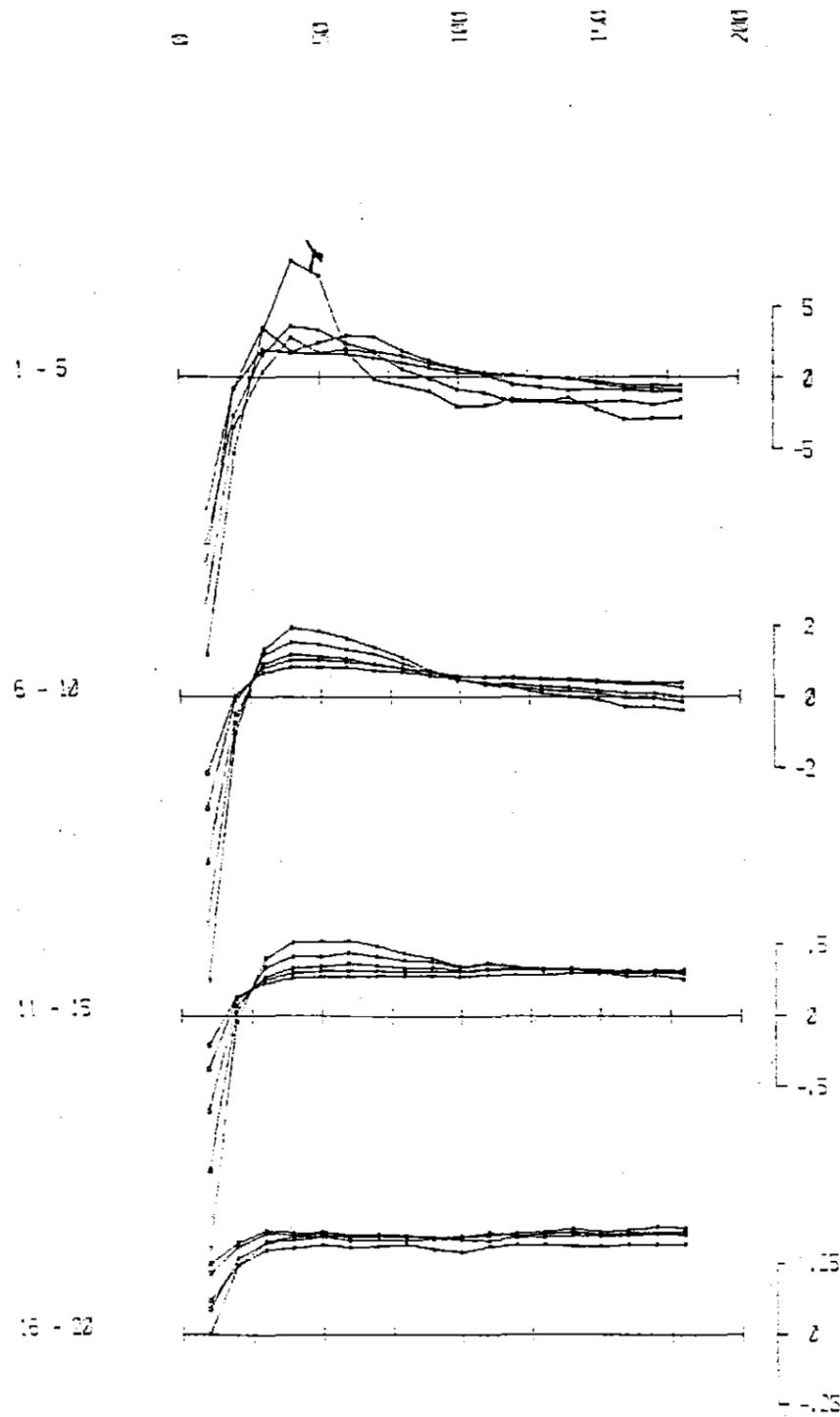
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\* Since NPD004 was targeted on an IP anomaly, slotted plastic would have been the most appropriate casing; thus allowing the option of carrying out DHEM, IP logging or even applied potential surveys.



North Pinnacles  
 (E.L. 12/72)  
 DHEM SURVEY  
 Tx Loop Positions  
 Scale 1:1,000 Fig. 1.

AXIAL COMPONENT  $E_z$  (Z)



EM-37

BOREHOLE SURVEY

ELECTROMOTIVE FORCE INDUCED BY SECONDARY FIELD  
TIME DERIVATIVE OF FLUX DENSITY (B)

5 cm

nanovolts per amp metre squared

TX LOOP SIDES : 10370N 78980E  
                  : 10430N 79020E  
TX LOOP SIZE : 60 m X 60 m  
TX TURN OFF TIME : 260 microseconds  
FIRST GATE TIME : 88.5 microseconds  
CURRENT : 20.3 amps  
FREQUENCY : 25 Hz  
INTEGRATION TIME : 1824 cycles  
SYNC MODE : CRYSTAL  
HORIZONTAL SCALE : 1:1500  
SURVEYED BY : SMDF  
DATE : 17/04/1988

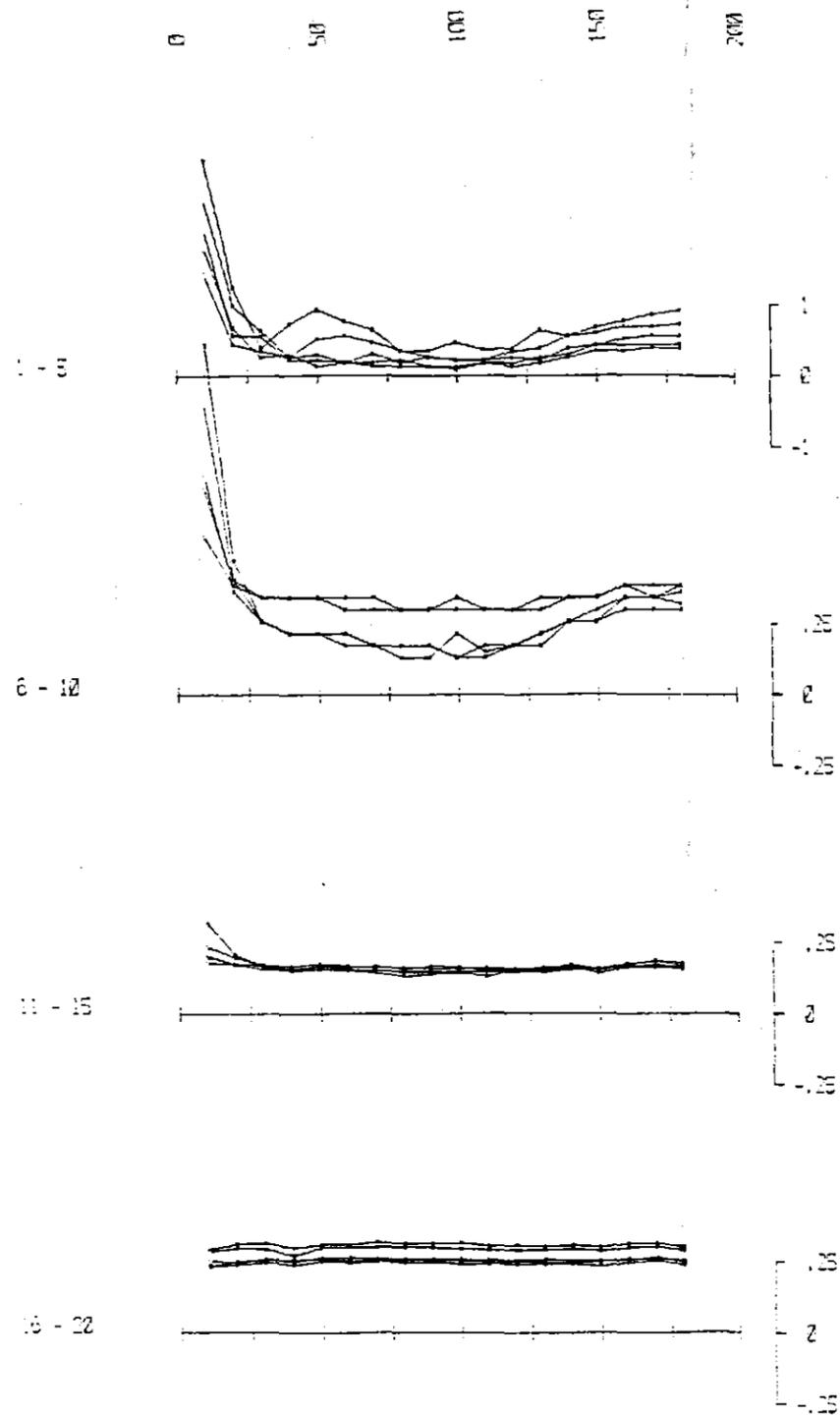
North Pinnacles (E.L.12/72)  
DHEM SURVEY  
Tx Loop: NP1

Ref: NBH/M689/07

Fig. 2.

SURVEYED AND COMPILED BY GEOFFREY R. W. LTD.		PROJECT NO. 1-182
CLIENT	NORTH BROKEN HILL	
PROJECT	NORTH PINNACLES	
AREA	ROSEBERY - TASMANIA	
BOROHOLE	ME0304	8
LOOP	NP1	

AXIAL COMPONENT B (E)



554028

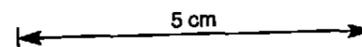
EM-37

BOREHOLE SURVEY

ELECTROMOTIVE FORCE INDUCED BY SECONDARY FIELD

TIME DERIVATIVE OF FLUX DENSITY (B)

nanovolts per amp metre squared



TX LOOP SIDES : 12370N 79275E  
 : 12432N 79135E  
 TX LOOP SIZE : 60 m X 60 m  
 TX TURN OFF TIME : 288 microseconds  
 FIRST DATE TIME : 89.5 microseconds  
 CURRENT : 23.5 amperes  
 FREQUENCY : 25 Hz  
 INTEGRATION TIME : 1024 cycles  
 SYNC MODE : CRYSTAL  
 HORIZONTAL SCALE : 1:2500  
 SURVEYED BY : SMOP  
 DATE : 17/24/1989

North Pinnacles (EL. 12/72)  
 DHEM SURVEY  
 Tx Loop: NP2

Ref: NBH/M689/07

Fig. 3.

SURVEYED AND COMPILED BY GEOBERRY PLY. LTD.		PROJECT NO. 4-102
CLIENT	NORTH BROWN HILL	
PROJECT	NORTH PINNACLES	
AREA	RODGERBY - TASMANIA	
BOREHOLE	NE0284	4
TX LOOP	NE1	