

CRA EXPLORATION PTY. LIMITEDEXPLORATION IN THE VICINITY OF MOUNT ROLANDEL 7/73 SHEFFIELDNORTHERN TASMANIA

D of M	A.O.	C.G.	E.O.	D.S.M.E.
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REF. No. 6772/83				

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Date : 30th June, 1983.

Submitted To : T. W. Dickson

Accepted By :

*T.W. Dickson*

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Mines Department Tasmania

Carpentaria Exploration (2 copies)

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CONTENTS

	<u>Page</u>
1. SUMMARY	1
2. INTRODUCTION	1
3. CONCLUSIONS	2
4. RECOMMENDATIONS	3
5. GEOLOGY	3
6. EXPLORATION	3
6.1 Geology And Geochemistry	3
6.2 Geophysics	4
6.3 Trenching	4
6.4 Drilling	5
6.5 Grid Extension	5
7. REFERENCES	6
8. KEYWORDS	6
9. LIST OF PLANS	7
10. LIST OF APPENDICIES	7

## 1. SUMMARY

A window of Cambrian volcanics (Mount Read equivalents) outcrops on the northern slope of Mount Roland which is comprised of Ordovician Roland Conglomerate.

In the late 19th Century prospectors located thin veins of galena mineralisation within the volcanic sequence and developed a short adit. In April 1979 a grid was established over the adit to test the surrounding area for base metal mineralisation. Mapping, rock and soil sampling, trenching and a dipole-dipole I.P. survey were undertaken. A drillhole DD80 MRL was completed at 230 metres in July 1980. The hole intersected thick lava sequences with no significant mineralisation and the area was downgraded.

In 1981 a DIGEM II survey was completed over EL 7/73 which outlined a discrete 'bullseye' aeromagnetic anomaly coincident with a minor E.M. anomaly 500 metres north of the Mount Roland Grid. The grid was extended and soil sampling ground magnetics and a Chrono Pulse E.M. survey were completed. The results of this work did not outline any anomalous zones.

No further exploration is envisaged on this prospect.

## 2. INTRODUCTION

This report outlines exploration work completed on this prospect during 1979 - 1982 on the northern slopes of Mount Roland.

The Exploration Licence was originally applied for by Asarco (Australia) Pty. Limited on 15th March, 1973. It covered an area of 743 square kilometres. The licence

area was reduced to 429 square kilometres in March, 1974. CRAE entered into a Joint Venture agreement on the 12th July, 1976 and title was transferred to CRAE on 29th December, 1977. In August, 1979 the licence area was again reduced to its current size of 199 square kilometres and Asarco transferred its interest in the Joint Venture to Carpentaria Exploration Co. Pty. Ltd. on the 11th June, 1980.

The licence area covers a suite of Cambrian volcanics (Mount Read equivalents) and exploration has concentrated on delineating stratiform accumulations of lead-zinc mineralisation.

A stream sediment survey throughout the exploration licence (Barker 1974) outlined a series of anomalous base metal results from the Mount Roland area where Thureau (1881) described the workings of the Mount Roland Silver-Lead Mining Company. A grid was established and after soil and rock sampling, an I.P. survey and trenching a drillhole was targeted to test a conductive zone. The drillhole intersected a sequence of lavas with upto 20% pyrite but low base-metal values.

In February, 1981 a DIGEM II survey was flown over the licence area and a 'bullseye' aeromagnetic anomaly with a corresponding minor E.M. anomaly was located 500 metres north of the Mount Roland grid. The original grid was extended and soil sampling, ground magnetics and a Chrono Pulse E.M. survey was completed.

### 3. CONCLUSIONS

The I.P. survey located significant pyrite within a sequence of highly altered intermediate lavas.

The drillhole failed to locate any economic mineralisation or volcanoclastic rocks in which an orebody maybe located.

The 'bullseye' magnetic anomaly located by the DIGEM II survey is probably caused by disseminated magnetite.

The Pulse E.M. survey failed to locate a conductor.

#### 4. RECOMMENDATIONS

No further exploration work be carried out over the Mount Roland prospect.

#### 5. GEOLOGY

The Sheffield licence area was applied for to cover the east-west trend of acid to intermediate volcanics which are equivalents of the Mount Read volcanics. At the Mount Roland prospect a narrow 'window' of east-west trending volcanics occurs within a scree slope of Roland Conglomerate (Lower Ordovician). The conglomerate outcrops as a prominent east-west strike ridge just to the south of the prospect.

From petrological descriptions (refer Appendix Two) the rocks are mostly intermediate Trachy - andesites with minor tuffs which have undergone moderate to strong alteration (carbonate-sericite). The outcrop geology can be found with detailed descriptions on Plan TASH 26.

#### 6. EXPLORATION

##### 6.1 Geology And Geochemistry

A grid was cut in February/March, 1979 and mapped, and soil and rock samples were collected (refer Appendix Three). The soil and rock sample results for copper, lead, zinc and manganese were plotted on

plans TASH 45, 46, 47, 48. Due to the amount of Mount Roland scree covering the grid geochemically anomalous zones could not be accurately delineated. The copper geochemistry plan TASH 45 outlines two elongate zones within the 300 ppm contour. The old adit of the Mount Roland Silver-Lead Mining Co. was reopened and mapped in detail and channel samples collected for analysis. Results of this work can be found in Appendix Five and the geochemical results Appendix Three page two.

## 6.2 Geophysics

A Dipole-Dipole I.P. survey was completed over the grid during March, 1979. This survey outlined two chargeability zones (refer Appendix Four). The 'A' zone is a narrow source associated with a resistivity low and commences near the adit. It is thought this zone maybe due to pyrite - chalcopyrite mineralisation. The 'B' zone is broader and perhaps a multiple source anomaly not particularly conductive which may represent galena - sphalerite mineralisation. This zone was traced over a distance of 400 metres.

## 6.3 Trenching

Two trenches were bulldozed to examine the chargeability zones. Trench One was sited on line 1200E and extended from 760N to 778N. This trench exposed a series of tuff units and a fault zone. Sampling did not reveal any anomalous base metal mineralisation. The second trench was cut on line 1300E either side of a small gully at 915N. Mapping again indicated a sequence of tuffs with limonite staining and minor copper values (upto 250 ppm). Results of these trenches can be found in Appendix Three.

#### 6.4 Drilling

Diamond drillhole DD80 MR1 was sited to test the 'B' zone. The collar was located at grid co-ordinates 1200E 506N and depressed 62° to 30° magnetic. The hole was completed at 229.5 metres and intersected a sequence of intermediate lavas with intercalated breccia zones and minor tuff units. All volcanic units show moderate to strong alteration. Assay values were very low, maximum values received were 630 ppm Pb, 200 ppm Zn, 475 ppm Cu and 3gm Ag. The drillhole section is drawn on Plan TV 15.

#### 6.5 Grid Extension

In January, 1981 the Sheffield EL 7/73 was flown by DIGEM II electromagnetic/resistivity/magnetic surveys. Initial results indicated a 'bullseye' magnetic anomaly coincident with a minor E.M. anomaly some 500 metres north of the Mount Roland grid (Memorandum by Flis Appendix Four). The Mount Roland grid was extended to cover this zone and ground magnetics and soil sampling were completed. A Pulse E.M. survey was conducted over the grid extensions. The results of this work are found in Appendix Five Flis Memorandum 21st September, 1981 and the geochemical results have been plotted on plans TASH 45, 46, 47 and 48.

The Pulse E.M. survey failed to locate an anomalous conductor and the ground magnetic survey indicated the magnetic source is probably derived from disseminated magnetite. The geochemical sampling revealed moderate anomalies of the same order as that on the Mount Roland grid and other grids sampled within this belt of volcanics within the Sheffield licence area.

The results of these surveys has downgraded this prospect.

7. REFERENCES

- |  |      |   |
|--|------|---|
| Barker, R.G.                               | 1974 | EL 7/73 Stream Sediment Sampling<br>Paradise Tasmania<br>Asarco (Aust.) Pty. Ltd. internal<br>report                  |
| Barker, R.G.                               | 1975 | EL 7/73 Paradise Tasmania - Report<br>for the year ending March, 1975.<br>Asarco (Aust.) Pty. Ltd. internal<br>report |
| Jennings, I.B.                             | 1979 | Geological Survey Explanatory Report<br>Sheet 37 - Sheffield<br>Department of Mines Tasmania Report                   |
| Porter, T.M.                               | 1974 | The North-West Tasmania Regional<br>Study - Final Report<br>CRAE internal report                                      |
| Porter, T.M.                               | 1976 | The North-West Tasmania Regional<br>Study - Update Report<br>CRAE internal report                                     |
| Solomon, M.<br>Walsh, J.L.<br>Eastoe, C.J. | 1981 | Geology and Mineral Deposits of<br>Tasmania<br>Economic Geology Vol. 76 No. 2<br>March - April, 1981                  |
| Thureau, G.                                | 1881 | Report on the north-western mineral<br>deposits<br>House of Assembly Pap. Tas. 1881.                                  |

8. KEYWORDS

Burnie SK 55-3, Volcanics-acid-intermediate, Pyroclastics  
Assays-surf. Drill-diamond, Geophysics-E.M.-I.P.-mag.  
Petrology.

9. LIST OF PLANS

<u>Plan No.</u>	<u>Title</u>	<u>Scale</u>
TASh 1432	Mount Roland Prospect Location Plan	1 : 500 000
TASh 26	Geology Plan Mount Roland Prospect	1 : 5500 (approx.)
TASh 44	Sample Location Plan Mount Roland Prospect	1 : 5500 (approx.)
TASh 45	Copper Geochemistry Mount Roland Prospect	1 : 5500 (approx.)
TASh 46	Lead Geochemistry Mount Roland Prospect	1 : 5500 (approx.)
TASh 47	Zinc Geochemistry Mount Roland Prospect	1 : 5500 (approx.)
TASh 48	Manganese Geochemistry Mount Roland Prospect	1 : 5500 (approx.)
TV 15	Drillhole Section Line 1200E Mount Roland Prospect	1 : 1000

10. LIST OF APPENDICIES

- APPENDIX ONE - Diamond Drill Log  
DD80 MRL
- APPENDIX TWO - Petrological Reports
- APPENDIX THREE - Geochemical Sampling Ledgers
- APPENDIX FOUR - Results of Geophysical Surveys

APPENDIX FIVE - Mount Roland Silver - Lead  
Mining Co. - Adit Mapping

APPENDIX ONE

DIAMOND DRILL LOG

DD80 MRI



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

541013

SHEET No. 2

TENEMENT NAME MT ROLAND No. ....

PLAN - MAP REFERENCE.....

CO-ORDINATES..... AZIMUTH..... DRILLERS..... COMMENCED..... DEPTH..... HOLE No. DD 80 MR 1

RL COLLAR..... INCLINATION..... DRILL TYPE..... COMPLETED..... CASING LEFT..... DPO No(s) 2457

DEPTH		Core Rec. (M)	Core Size	Graphic Log	CORE DESCRIPTION	SPECIAL FEATURES Weath, Alteration, Fracturing, Veining, Mineralization	Sample No.	From (M)	To (M)	Rec (M)	ASSAY VALUES (Analysed by Z.C. ANAL.)								
From (M)	To (M)										Pb	Zn	Cu	Ag	Au	Sn	W		
					leached and bleached. Some pink clay due to Fe content. Abundant euhedral to anhedral feldspar phenocrysts now sericitized mostly < 2mm. Also qtz, in vitric groundmass. Rare indistinct volcanic clasts up to 35mm. Massive, with mineral lamination but non-schistose. Mineral lamination: 31.7m 45°/LCA; 45m 30°/LCA; 67m 40°/LCA. Gradual change at depth to:	disseminated cp. Best sulphides in leached zones centred on fractures, or in matrix (ε slight silicification) 1) indistinct banded breccia zones. Best sulphides: 35.5-37m: 15% py. 37-43.4m: 5% py. 49-50.5m: 5% py - locally 10-15% 50.5-53m: 10-15% py. 63.05-64.1m: 10-15% py. trace cp.													
67.00	106.00		8Q		<u>RHYOLITIC PYROCLASTIC (AUTOBRECCIATED IGNEIMBRITE?)</u> Essentially the same rock as above. Creamy green to dark green mod altered (qtz-sericite + carbonate + minor chlorite). Feldspars + qtz up to 3mm in vitric groundmass. Feldspars as euhedral crystals and irregular crystal fragments. Weak to mod schistosity. Strong mineral lamination: 40°/LCA @ 67.5m; 45°/LCA @ 77.3m; 50°/LCA @ 86.5m; 45°/LCA @ 94.1m; 40°/LCA @ 101.5m. Some lazy angular clasts of similar rock up to 15mm.	Less shearing than above 67m, shearing into again below 88m, core badly broken. 90-100.1m. Strong shears: 70m - 75°/LCA barren; 90.45m - 65°/LCA barren; 92.9m - 65°/LCA minor py; 97.45m - 55°/LCA minor py; 105.5m - 50°/LCA. Finely disseminated py ultraproducts often in bands and vein-like threads oriented // to mineral lamination in matrix of breccia zones. Usually ε associated weak silicification. Best zones: 67.9-71m: 2-3% py 71-72.3m: 5% py 81.3-82.5m: 2-3% py 87.9-89.4m: 5-7% py	816642	96.00	98.00	1.7	24	43	44	1	<.04	6	<10		
							43	98.00	100.50	2.0	16	70	87	<1					





APPENDIX TWO

PETROLOGICAL DESCRIPTIONS

# Central Mineralogical Services



39 Beulah Road  
Norwood, S.A. 5067  
Telephone 42 5659

Mr. J.G. Purvis  
Senior Geologist  
C.R.A. Exploration Pty. Ltd.  
P.O. Box 138  
BURNIE / TAS. 7320

27th February, 1981

## REPORT CMS 81/1/19

YOUR REFERENCE:	D.P.O. No. 26488
DATE RECEIVED:	13th January, 1981
SAMPLE NOS.:	795566 716 - 098, 812, 872, 084, 079
SUBMITTED BY:	J.G. Purvis
WORK REQUESTED:	Petrology

*Mt Roland rocks*

Copy to:  
The Chief Geologist  
C.R.A. Exploration Pty. Ltd.  
G.P.O. Box 384D  
MELBOURNE / VIC. 3001

*H.W. Fander*

H.W. Fander, M. Sc.

Copy & Invoice to:  
Administration Officer  
C.R.A. Exploration Pty. Ltd.  
P.O. Box 93  
NORTHLAND CENTRE / VIC. 3072

REPORT CMS 81/1/19Mt. Read Volcanics Samples

Six rock samples were received for thin-section preparation and petrological examination; all offcuts were potash-stained and the results used in the interpretations. The rocks are briefly described in the accompanying table.

Summary

All the rocks are igneous/volcanic and are altered to varying degrees, making precise classification and interpretation difficult.

The rocks range in composition from a dacite through trachytes to leucocratic (feldspar-rich) trachyandesites. This latter group has an unusual mineral assemblage which suggests possible formation by hybridisation of two contrasting magma components; it should be emphasized too, that a small change in the composition of the phenocrysts from oligoclase-andesine to albite would make these rocks trachytes.

These rocks are unusual in the context of the Mt. Read Volcanics, though dacites and andesites are known from that group.

H.W. Fander, M. Sc.

## Central Mineralogical Services

Sample No.	Rock Type - Composition	Fabric	Minor Minerals	Comments
795 566 (T.S. 35753)	<u>Porphyritic ?Dacite</u> . Rare, strongly corroded quartz phenocrysts, many small sericitised plagioclase phenocrysts, fine sericite-carbonate-secondary quartz groundmass.	Random orientation of phenocrysts. No relict flow-features. ?Intrusive	Small euhedral pyrite crystals. Leucoxene e. after primary magnetite.	Extensive alteration precludes precise classification, but could range from sodic rhyolite through dacite to trachyte; dacite most likely
716 098	<u>Porphyritic Trachyandesite</u> . Small phenocrysts of partly altered andesine and totally altered ?hornblende; fine potash-feldspar groundmass.	Random fabric, no flow-orientation. Fine-grained. Weakly brecciated.	Conspicuous coarse apatite crystals. Secondary clays, goethite, leucoxene.	More trachytic than andesitic in composition. Possibly extrusive, perhaps with pyroclastic components.
716 812	<u>Tuff-Lava</u> . Irregular fragments of argillised ?trachyte set in dacite/trachyte composed of argillised feldspar phenocrysts, fine quartz-sericite groundmass.	Good flow-alignment; suggestion of pyroclastic textures.	Rare felsite grains. Scattered, partly oxidised pyrite crystals.	Completely argillised; relict fabric, textures, suggest mixed rock of lava with incorporated pyroclastics.
716 872	<u>Porphyritic Trachyandesite</u> . Numerous small fresh oligoclase/andesine phenocrysts, altered ferromagnesian crystals, in very fine K-feldspar groundmass.	Uniform, fine-grained fabric, little or no flow-features.	Carbonate-goethite pseudomorphs. Carbonate veinlets.	Very similar to 716098, but fresher. Unusual composition, possibly a hybrid. Leucocratic, i.e. strongly feldspathic.
716 084	<u>Porphyritic Trachyandesite</u> . Many small and larger oligoclase phenocrysts set in micro-crystalline K-feldspar-sericite-secondary quartz groundmass.	Fairly closely-packed phenocrysts, crudely flow-aligned.	Small euhedral magnetite crystals. A few altered ferromagnesian crystals.	Small shift in composition of oligoclase to albite would make this a trachyte; less "basic" than 098, 872, but related.
716 079 (T.S. 35758)	<u>Argillised Porphyritic ?Trachyte</u> . Argillised plagioclase phenocrysts set in a fine, poorly-defined felsitic groundmass (?altered, devitrified glass).	Flow-aligned phenocrysts, but no flow-banding in groundmass.	Partly leucoxenised magnetite. Pale chloritised ?hornblende.	Exact composition not known because of alteration; could be leucocratic trachyandesite, i.e. related to the others.

# Central Mineralogical Services



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BURNIE / TAS. 7320

1st October, 1980

REPORT CMS 80/8/28

*Mt Roland  
drillhole.*

YOUR REFERENCE: D.P.O. No. 26459  
DATE RECEIVED: 14th August, 1980  
SAMPLE NOS.: 816 - 628, 635, 640,  
703, 727, 739  
SUBMITTED BY: J.G. Purvis  
WORK REQUESTED: Petrology

Copy to:  
The Chief Geologist  
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*H.W. Fander for*  
H.W. Fander, M. Sc.

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REPORT CMS 80/8/28Petrological Descriptions816 628 (T.S. 33291) K-stain negative.

34.6m

Despite the fragmental appearance in hand specimen, this rock can be classified as a strongly porphyritic, weakly amygdaloidal lava on relict textural grounds. Finer compositional details have been obliterated, but the rock is of quartz-andesitic character. An extrusive, or conceivably minor intrusive origin is inferred. There are no definite pyroclastic features.

Abundant feldspar phenocrysts are represented by pseudomorphous aggregates of sericite with accessory, closely intergrown chlorite and carbonate. These features show relict twin- and zoning-patterns characteristic of plagioclase, are sized in the 200  $\mu$  - 1.5 mm range and are discrete to clustered. They are accompanied by frequent carbonate-stained sericitic chlorite aggregates after phenocrystal ferromags(?amphibole) and sporadic sublenticular aggregates of quartz and chlorite representing semi-flow-orientated amygdales. Minor relict phenocrystal quartz is present. The sparse altered groundmass comprises carbonate- and chlorite-stained sericite aggregates with vague feldspar microlathic textures. Accessories include evenly disseminated fine-grained magnetite and sparse smokey apatite.

The vague fragmental appearance (hand specimen) is enhanced by a penetrative slaty cleavage. The relict fabric is distinctly andesitic and tends to confirm the intermediate nature of the original volcanic.

816 635 (T.S. 33292) K-stain negative.

53.15m

This rock is altered and sheared (i.e. greenschist-metamorphosed) in a similar manner to 816628. In contrast, it reflects a relatively acid composition ("rhyolitic"), although relict textural features are similarly consistent with a porphyritic lava.

Abundant phenocrystal feldspar grains are represented by sheared/re-orientated, vaguely pseudomorphous lenses of sericite. These are accompanied by frequent, variably microfractured and stressed/partly recrystallized relict phenocrystal quartz grains and sparse, thoroughly leucogenic sericitic aggregates after ?biotite flakes. These features are generally less than 1 mm diameter and are enclosed in a thoroughly altered matrix of orientated sericite with subordinate, closely intergrown, sericite-stained quartz. Vague felsitic devitrification textures are evident.

Close inspection reveals no tangible pyroclastic features. Whilst the evidence is partly negative in view of the marked alteration and shearing, the rock is reasonably homogeneous texturally and this tends to confirm a lava interpretation.

Ankeritic carbonate is an accessory alteration phase, with the sericite-quartz-ankerite assemblage possibly deuteritic, but enhanced by greenschist alteration. Rare sheared carbonate-quartz veinlets are pre-tectonic, as are sparse fine-grained pyrite disseminations. Accessories include evenly disseminated leucoxenised opaques and rare, typical Mount Read Volcanic-type smoky apatite euhedra.

816 640

(T.S. 33293) K-stain negative.

This is an ankeritic quartz-sericite phyllite, essentially similar to 816635. In contrast, this rock represents an altered and sheared pyroclastic.

80-35

Relatively abundant, completely sericitised feldspar grains exhibit irregular to angular and euhedral relict shapes, indicating a random assortment of crystals and crystal fragments, accompanied by subordinate, but conspicuous quartz (recrystallized). Carbonate-stained sericite semi-pseudomorphed lithic clasts are disseminated throughout and are partly recognisable as porphyritic rhyolite and pyroclastic types (vitric tuff, ?ignimbrite), which probably represent flow-brecciation clasts. Sizing is in the 100  $\mu$  - 2 mm range.

The matrix is thoroughly altered, poorly defined and generally featureless, but exhibits vague sericitic, shard-like features. The rock is thus reasonably classified as a lithic-vitric-crystal tuff and represents a probable welded and autobrecciated ignimbrite. The interpretation is necessarily tentative due to the marked alteration and cleavage effects.

Accessories include disseminated leucoxenised opaques, sparse fine-grained pyrite and occasional smoky apatite grains.

816 703

(T.S. 33294) K-stain negative.

This ankeritic quartz-sericite phyllite similarly represents a thoroughly altered rhyolitic tuff.

123 in

Relict features are similar to 816640 but, in comparison, this rock is relatively quite poorly sorted, with sporadic lithic clasts of lapilli grade. Quartz and sericitised feldspar crystals/crystal fragments are relatively inconspicuous in relation to the lithic clasts which represent a variety of devitrified and altered rhyolitic lava and tuffaceous types as distinct from thoroughly sericitised featureless types. Similarly, the matrix contains relatively distinct sericitised microshard textures, although the lined "eutaxitic" fabric is enhanced by shearing.

Chlorite is an accessory alteration phase. Accessories are typical but, in comparison to the associated specimens, this rock is relatively pyritic with fine-grained disseminations and rare segmented films accompanied by incipient quartz-sericite pressure shadows.

816 727 (T.S. 33295) K-stain negative.  
This rock is closely related to 816628 and can be similarly classified as a thoroughly altered quartz andesite.

14A-3m

The tectonic fabric is incipient only, such that the primary andesitic fabric is well preserved. This comprises abundant sericitised/ carbonate-stained, zoned plagioclase phenocrysts (mean 400  $\mu$ ) and completely chloritised (+ sericite, carbonate) ferromag phenocrysts in a similarly altered, fine-to medium-grained, granular (?felsitic) groundmass. Recrystallized quartz is a minor phenocrystal component. Ferromags are recognisable as amphibole and pyroxene on the basis of pseudomorphed prismatic shapes.

Sparse quartz amygdales with accessory carbonate and chlorite enhance the similarity with 816628. Accessories comprise evenly disseminated fine-grained magnetite and thinly disseminated cloudy apatite. As previously, there is little to choose between extrusive and minor intrusive modes of origin.

816 739 (T.S. 33296) K-stain negative.  
This rock is a thoroughly altered and mildly sheared intermediate phase, essentially similar to 816628 and 816727, but with a slightly more definite extrusive character.

227.9m

226.3m

Quartz andesitic composition is inferred and both primary and secondary features are similar to the previous specimens to the extent that no special comment is warranted. In comparison, however, (altered) phenocrysts and amygdales are slightly finer and have a dimensional preferred orientation reflecting flow, but slightly enhanced by a weak, but penetrative slaty cleavage. Rare chloritised phenocrystal biotite flakes are present. Accessories are typical, with evenly disseminated magnetite and rare smokey apatite.

Irregular pre-tectonic veins range up to a few millimetres in width and consist of deformed, comb-structured to schistose ankeritic carbonate with accessory quartz and chlorite. Minor traces of pyrite are disseminated throughout the carbonate veins and altered host rock.

D. Cowan, B. Sc.

APPENDIX THREE

GEOCHEMICAL SAMPLING LEDGERS

## GEOCHEMICAL ROCK SAMPLING LEDGER

Page No. .... 1

TENEMENT EL 7/73 - Sheffield

D.P.O. No. ....

AREA/PROSPECT Mt Roland

SAMPLE No's. ....

GEOLOGIST G.P. DATE April 1979

PLAN REFERENCE .....

ANALYSED BY ANDEL

Sample No.	Grid Co-ordinates	Metal Content in ppm.						Geological observations
		Pb	Zn	Cu	Ag	Mn	Au	
716101	1300E/1275N	25	180	8	<1	1440	<0.05	Sub dc. Dacite? ± limonitic qtz veins 2-3mm.
716102	1000E/790N	50	250	320	<1	3000	<0.05	Sub dc. Highly limonitic and gossanous pan (?).
716103	1800E/900N	28	8	65	<1	30	<0.05	Scree. Mod alt acid vlc ± 1-3mm qtz-limonite.
716104	1000E/800N	30	240	670	<1	9.4%	<0.05	Sub dc. Highly limonitic and manganeseous pan.
716105	1000E/800N	18	38	180	<1	2%	<0.05	Scree. Mod alt acid vlc ± fine pits after pyrite.
716106	1000E/715N	10	20	10	<1	260	<0.05	Scree. Vein qtz + silicified volcanic ± limonite.
716107	1300E/910N	10	10	65	<1	50	<0.05	Scree. Altered acid vlc. ± abundant pits after py.
716108	1300E/905N	18	18	240	<1	65	0.65	Scree. Altered acid vlc ± limonite after sulphides.
716079	1000E/1045N	Taken for thin sectioning.						Scree. Hard, massive light green sandy tuff (?).
716080	1000E/1000N	3900	1.3%	20	2	4600		dc. Mineralised carbonate sandy tuff ± gn, py, sp.
716081	1000E/1000N	1600	3500	12	1	8300		dc. Mod alt vlc ± limonite stains.
716082	1000E/995N	4500	1.2%	12	2	3500		Dump of mineralised tuff from dc at 1000m.
716083	1000E/840N	25	40	18	<1	65		Scree. Highly alt siliceous vlc ± 1-2% pits after py.
716084	1100E/1100N	Taken for thin sectioning.						Sub dc. Hard, weakly alt green dacite (?).
716085	1100E/1025N	42	190	5	1	730		dc. Dacitic tuff (?) ± minor gn or haematite.
716086	1100E/930N	35	55	48	2	110		Scree. Alt lapilli tuff ± several % limonite after sulph.
716087	1100E/875N	60	48	25	2	260		Scree. Alt tuff ± pits and limonite after 5% sulphides.
716088	1100E/875N	140	42	35	2	160		Scree. Alt tuff ± pits and limonite after 5% sulphides.
716089	1100E/865N	90	55	60	1	160		Scree. Alt tuff ± much limonite after sulphides.
716090	1100E/860N	45	40	45	1	48		Scree. Alt slightly silicified tuff ± fine sulphides.
716091	1100E/825N	22	140	240	3	240		Scree. Solid gossanous iron.
716092	1100E/750N	70	100	20	1	990		Scree. Alt tuff with limonite after sulphides.
716093	1100E/687N	Taken for thin sectioning. (Rejected)						Scree. Unalt pale green felsic andesite.
716094	1200E/925N	170	48	260	1	40		Scree. Mod alt vlc ± several % pits after py.
716095	1200E/805N	30	42	190	1	75		Scree. Alt vlc ± 5% limonite after sulphides.
716096	1200E/775N	40	60	50	1	250		Scree. Alt tuff ± 5% limonite after sulphides.
716097	1200E/740N	18	22	45	1	95		Scree. Alt lapilli tuff ± limonite after sulphides.
716098	1500E/923N	Taken for thin sectioning						Scree. Alt lapilli tuff ± 1% dispersed py.
716099	1500E/923N	32	18	90	1	32		Scree. As above, except oxidised and several % py.
716100	1500E/950N	22	25	380	2	25		Scree. Silicified lapilli tuff ± 5% fine py.
716841	1500E/950N	22	90	3800	2	2600		Scree. Brown silicified vlc ± 5-10% fine py.
716842	1400E/930N	28	8	300	1	18		Scree. Alt lapilli tuff ± several % limonite after sulphid.
716843	1400E/920N	45	45	360	1	70		Scree. Alt lapilli tuff ± 5-10% limonite after sulphides.
716844	1400E/850N	40	12	440	1	60		Scree. Alt lapilli tuff ± 5% limonite after sulphides.
716845	1300E/595N	8	140	350	3	150		Scree. Solid gossanous iron oxide.
716846	1300E/625N	30	15	150	1	32		Scree. Alt tuff ± minor pits after py + limonitic.

## GEOCHEMICAL ROCK SAMPLING LEDGER

Page No. 2

TENEMENT EL 7/73 - Sheffield

D.P.O. No. 00191, 192, 195

AREA/PROSPECT Mt Roland SAMPLE No's.....GEOLOGIST GP DATE April 79

PLAN REFERENCE.....

ANALYSED BY Amadel + Zinc Corp.

Sample No.	Grid Co-ordinates	Metal Content in ppm.						Au/ free	Geological observations
		Pb	Zn	Cu	Ag	Mn	Au/ free		
716847	1300E/635N	40	15	120	1	390		Screen: Alt tuff ± 5-10% limonite after sulphides	
716848	1300E/812N	18	8	120	1	20		Screen: Alt vlc ± 5% limonite after sulphides	
716849	1300E/825N	8	10	170	1	25		Screen: Alt lapilli tuff? ± 7% limonite after sulphides	
716850	1300E/920N	12	10	370	1	18		Screen: Alt lapilli tuff ± 5-10% limonite after sulphides	
716851	1300E/920N	8	8	390	1	22		Screen: Drift ± 5-10% pits after fine sulphides	
716852	1300E/1185N	8	10	5	<1	45		Screen: Pink bedded chert (Roland Conglomerate?)	
716853	1200E/1260N	35	120	20	1	430		Screen: Alt vlc (tuff?) ± several % pits after py.	
716854	1100E/1200N	15	89	6	<1	570		Screen: Dacite? ± several % haematite + magnetite	
716855	1100E/1250N	14	157	5	<1	1550		Sub d/c: Weakly alt, massive green magnetite and/or	
716869	1000E/1400N	82	420	65	<1	2000		Screen: Andesite lava? ± minor limonite after sulphides	
716872	1000E/1450N	Taken for thin sectioning.							Screen: Unalt dacite or andesite
716874	1000E/1475N	30	39	17	<1	3400		Screen: Alt dacite ± qtz-limonite vlc	
716864	1000E/1300N	66	20	24	<1	180		Screen: Alt vlc ± minor limonite after sulphides	
716885	900E/1015N	3400	630	41	1	1510		d/c: Siliceous tuff (?) ± 2-3% pyrite	
716888	800E/1000N	16	183	4	<1	300	<0.04	Screen: Dacite lava (?) ± 5% haematite + magnetite	
716894	800E/1125N	96	420	12	<1	2100		Screen: Gritty tuff ± minor gossanous limonite	
716901	800E/1270N	30	22	17	4	80	<0.04	Screen: Cream chert ± boxworks after sulphides	
716904	800E/1310N	Taken for thin sectioning.							d/c: Unaltered basic or intermediate lava
716911	800E/1460N	92	157	340	<1	280	<0.04	Screen: Leached bleached limonitic fractured tuff?	
716912	700E/1400N	87	40	180	<1	90	<0.04	Screen: Leached bleached limonitic volcanic	
716913	700E/1395N	31	11	21	<1	40	<0.04	Screen: Gossanous siliceous rock	
716914	700E/1395N	32	30	150	<1	50	<0.04	Screen: Silicified volcanic ± limonite after 10% sulphides	
716915	710E/1390N	170	12	22	2	30	<0.04	d/c: Silicified volcanic ± 5-7% pyrite	
716917	700E/1325N	39	590	10	1	27000	<0.04	Screen: Mod alt schistose tuff ± much limonite	
Samples Taken in Adit:								Au/AAs	Au/Free
716109	0-5m bulk	240	2400	30	<1	4100	0.05	<0	Sericitic fine fragmental volcanic
716110	Left drive 0-2.5m	1520	980	70	1	2700	0.30		Sheared sericitic volcanic ± 2-3% py.
716111	5-10m bulk	1890	1.3%	25	<1	8100	0.10		Highly carbonated sericitic volcanic ± py, gn, sp.
716112	10-15m bulk	2000	9000	60	1	5700	<0.05		" " " " " " " "
716916	15-20m bulk	2800	5100	18	1	6600		0.04	Brecciated carbonated volcanic ± py, gn, sp.
716918	20-25m bulk	2200	5200	340	2	3800			Sericitic acid fragmental (?) ± py, gn, sp.
716919	25-30m bulk	340	660	23	<1	6500		<0.04	Sericitic lava (?) similar to above ± 1-20% py.
716920	30-36m bulk	600	680	42	<1	4800		<0.04	Sericitic lava (?) ± py and minor gn, sp.
716921	36-41m bulk	2400	370	57	1	2800		<0.04	Sericitic lava (?) ± py and trace gn, sp.
716922	Right drive, 0-6m	3300	15700	39	2	4700		0.45	Sericitic volcanic-carbonated. Py, sp, gn.
716923	Right drive 6-12.5m	28	104	11	<1	3700		<0.04	Sericitic lava (?) ± 1-5% py.

GEOCHEMICAL ROCK SAMPLING LEDGER

TENEMENT EL 7/73 - Sheffield

D.P.O. No. 00196

AREA/PROSPECT MF R Sand SAMPLE No's.

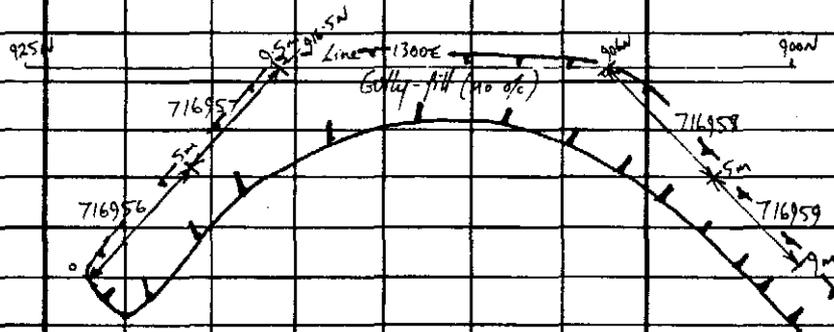
GEOLOGIST GP DATE April 79

PLAN REFERENCE

ANALYSED BY Amiel

Sample No.	Grid Co-ordinates	Metal Content in ppm.					Geological observations
		Pb	Zn	Cu	Ag	Mn	
716924	900E/1175N	2700	470	260	1	2300	Scree: weakly alt tuff ± 5-10% gossanous limonite
716925	700E/1350N	170	18	55	<1	48	Scree: leached, bleached, fractured volcanic ± limonite
Samples taken in Costean 1 - 1200E/770N.							
716951	778-775N	22	18	32	<1	35	Channel sample: Highly alt, silicified tuff ± minor lim.
716952	775-770N	48	22	60	<1	85	" Ditto - a vitric tuff. 5% limonite after py.
716953	770-765N	40	25	65	1	70	" Softer altered tuff ± 2-5% limonite after py.
716954	765-760N	55	38	110	1	290	" Fault zone in tuff as above. Minor limonite
716955	1200E/790N	22	80	150	<1	140	etc: Altered grey tuff ± 5-10% limonite after sulphides
Samples taken in Costean 2 - 1300E/910N.							
716956	see sketch	20	12	230	<1	20	0-5m channel: Hard silicified vitric tuff ± 5% lim.
716957	" "	12	12	250	<1	22	5-9.5m channel: Ditto. Limonite after sulphides
716958	" "	20	12	130	1	10	0-5m channel: Soft, leached vitric tuff. Minor lim.
716959	" "	28	12	70	2	15	5-9m channel: Ditto. Silicified in places ± 5% lim.

Costean - Site 2: Sketch Plan



C.R.A. EXPLORATION GEOCHEMICAL SAMPLE REGISTER

Tenement name SHEFFIELD EL 7/73 No. 795918 - 795937 Collected by M.W. (G.B.W.) Sheet no. ONE  
 Area / Prospect M.T. ROLAND PROSPECT Date AUGUST 1981  
 Map / Photo reference A 02143 Analysed by ANN ABS (DOEE) DPO no. 30030

Sample No.	Type	ss channel **						Carbon	Metal content ppm or %							Grid ref	Geological Observations	
		ss*	fl	wi	al	co	ca		pH	Cu	Pb	Zn	Ag	Mo	Mn			Au
		oc	o/c sample type ***															
		f	s sample type ****															
795918	S	A	40m						5	15	15	1.5		25		600E	lt sandy gy soil	
795919	S	A	80m						20	120	160	1.0		570		1900N	Dk. br soil	
795920	S	A	1m						30	95	155	0.5		240		1875N	Yellow br soil	
795921	S	A	50m						15	105	60	1.5		435		1850N	lt br soil	
795922	S	A	30m						20	150	130	1.0		450		1825N	Dk br soil	
795923	S	A	1m						10	90	80	0.5		115		1800N	yellow br soil	
795924	S	A	1.1m						35	100	170	1.0		110		1775N	Red-br soil	
795925	S	A	90m						45	245	430	0.5		840		1750N	Red-br soil	
795926	S	A	90m						45	265	445	1.0		2400		1725N	Red-br soil	
795927	S	A	1.1m						50	240	170	1.0		3900		1700N	Red-br soil	
795928	S	A	90m						85	160	225	0.5		640		1675N	Orange-br soil	
795929	S	A	80m						35	100	350	0.5		1050		1650N	Orange-br soil	
795930	S	A	90m						30	85	180	0.5		540		1625N	Red-br soil	
795931	S	A	1m						30	75	190	0.5		245		1600N	Orange-br soil	
795932	S	A	1.1m						60	255	840	1.0		2100		1575N	Red-br soil	
795933	S	A	1m						15	100	140	1.0		200		1550N	Yellow-br soil	
795934	S	A	70m						30	455	210	0.5		231		1525N	yellow-br soil	
795935	S	A	1m						30	160	240	x		345		1500N	Orange-br soil	
795936	S	A	1m						15	50	160	0.5		215		1475N	Yellow-br soil	
795937	S	A	1.1m						60	30	100	0.5		330		1450N	Dk. red br soil	

\* Sample type ss = stream sediment oc = outcrop f = float s = soil  
 \*\* Stream sed. sample description fl = flow m3/sec wi = width m al = alluvial co = colluvial ca = catchment km2  
 \*\*\* Outcrop sample type gs = grab sample rc = rock chip (state interval & length) cs = channel sample (state length)

541028

C.R.A EXPLORATION GEOCHEMICAL SAMPLE REGISTER

Tenement name SHEFFIELD EL 7/73 No. sample numbers 795938 - 795958 Collected by M.W. (G.B.W.) Sheet no. TWO  
 Area / Prospect MT ROLAND Date AUGUST 1981  
 Map / Photo reference..... Analysed by ANALABS (COSEE) DPO no. 30020  
 A 02143

Sample No.	Type	ss channel **						Carbon	Metal content ppm or %								Grid ref	Geological Observations
		ss *	fl	wi	al	co	ca		pH	Cu	Pb	Zn	Ag	Mo	Mn	Au		
		oc	o/c sample type ***															
		f	s sample type ****															
795938	S	A	80cm						15	60	105	0.5		1300			1450N	Lt-br soil
795939	S	A	90cm						30	35	120	X		285			475N	Yellow-br soil
795940	S	A	1m						10	55	115	1.5		230			1500N	Orange-br soil
795941	S	A	41m						5	50	105	1.0		165			1525N	Lt-br soil
795942	S	A	90cm						30	65	175	1.5		205			1550N	Orange-br soil
795943	S	A	1m						15	55	155	0.5		325			1575N	Red-br soil
795944	S	A	80cm						50	140	430	0.5		1600			1600N	Red-br soil
795945	S	A	41m						45	380	380	1.0		1250			1625N	Red-br soil
795946	S	A	90cm						50	230	280	0.5		565			1650N	Red-br soil
795947	S	A	70cm						15	105	660	X		1050			1675N	Yellow-br soil
795948	S	A	1m						60	200	345	0.5		860			1700N	Orange-br soil
795949	S	A	1m						40	150	500	0.5		2200			1725N	Red-br soil
795950	S	A	1m						55	170	420	0.5		2250			1750N	Red-br soil
795951	S	A	1m						50	265	585	0.5		6150			1775N	Dk red-br soil
795952	S	A	50cm						30	140	280	0.5		2650			1800N	Dk red-br soil
795953	S	A	1.1m						40	160	390	0.5		715			1825N	Red-br soil
795954	S	A	80cm						35	210	530	0.5		2600			1850N	Dk red-br soil
795955	S	A	70cm						85	270	905	1.0		6300			1875N	Br soil
795956	S	A	40cm						10	35	55	0.5		615			1900N	Dk gr soil
795957	S	A	80cm						5	45	70	0.5		440			1925N	Lt br soil
795958	S	A	30cm						5	35	35	0.5		135			1950N	Dk gr soil

\* Sample type ss = stream sediment oc = outcrop f = float s = soil  
 \*\* Stream sed. sample description fl = flow m3/sec wi = width m al = alluvial co = colluvial ca = catchment km2  
 \*\*\* Outcrop sample type gs = grab sample rc = rock chip (state interval & length) cs = channel sample (state length)

541029

C.R.A. EXPLORATION . GEOCHEMICAL SAMPLE REGISTER

Tenement name SHEFFIELD EL 7/73 No. sample numbers 795959 - 795979 Collected by M.W. (GRW) Sheet no. THREE  
 Area / Prospect MT. ROLAND Date AUGUST 1981  
 Map / Photo reference A 02143 Analysed by ANALABS (COOE) DPO no. 30024

Sample No.	Type	ss channel **						Carbon	Metal content ppm or %								Grid ref	Geological Observations
		fl	wi	al	co	ca	pH		Cu	Pb	Zn	Ag	Mo	Mn	Au			
		o/c sample type ***																
		s sample type ****																
795959	S	A	40cm					x	20	30	x		35		2000N	Dk gy soil		
795960	S	A	80cm					x	15	20	x		30		1975N	Lt gy soil		
795961	S	A	1m					15	90	105	0.5		135		1950N	Yellow-br soil		
795962	S	A	30cm					15	25	65	x		125		1925N	Dk. br soil.		
795963	S	A	50cm					15	50	170	x		450		1900N	Dk. br soil.		
795964	S	A	80cm					35	265	490	x		3650		1875N	Red-br soil.		
795965	S	A	1m					30	430	680	x		2500		1850N	Red-br soil.		
795966	S	A	1m					50	320	590	x		1750		1825N	Red-br soil.		
795967	S	A	1m					30	140	190	x		535		1800N	Red-br soil.		
795968	S	A	1m					45	290	285	x		450		1775N	Red-br soil.		
795969	S	A	1m					45	215	290	x		435		1750N	Orange-br soil.		
795970	S	A	80cm					70	410	445	x		4600		1725N	Red-br soil		
795971	S	A	30cm					25	280	580	x		2700		1700N	Red-br soil		
795972	S	A	1m					30	95	220	x		350		1675N	Yellow-br soil		
795973	S	A	1m					35	165	485	0.5		340		1650N	Red-br soil		
795974	S	A	1m					60	390	360	x		490		1625N	Orange-br soil		
795975	S	A	1m					60	715	445	0.5		2000		1600N	Red-br soil		
795976	S	A	30cm					70	1050	355	x		4150		1575N	Red-br soil		
795977	S	A	11m					25	130	190	0.5		315		1550N	Orange-br soil		
795978	S	A	60cm					30	120	400	0.5		425		1525N	Yellow-br soil		
795979	S	A	1m					20	110	215	x		260		1500N	Orange-br soil.		

\* Sample type ss = stream sediment oc = outcrop f = float s = soil  
 \*\* Stream sed. sample description fl = flow m3/sec wi = width m al = alluvial co = colluvial ca = catchment km2  
 \*\*\* Outcrop sample type gs = grab sample rc = rock chip (state interval & length) cs = channel sample (state length)

541030

C.R.A. EXPLORATION GEOCHEMICAL SAMPLE REGISTER

Tenement name SHEFFIELD EL 7/73

No. Sample numbers 795980 -

Collected by M.W. (G.B.W.)

Sheet no. Four

Area / Prospect MT. ROLAND

Date AUGUST 1981

Map / Photo reference A 02143

Analysed by ANALABS (COOPER)

DPO no. 30024

Sample No.	Type	ss channel **						Carbon	Metal content ppm or %										Grid ref	Geological Observations	
		fl	wi	al	co	ca	pH		Cu	Pb	Zn	Ag	Mo	Mn	Au	Bi	Mo	Sn/W			
		o/c sample type ***																			
		s sample type ****																			
795980	S	A	1m						50	430	405	x			880				1525N	Red-br soil	
795981	S	A	50cm						65	1600	355	0.5			835				1550N	Red-br soil	
795982	S	A	11m						60	625	770	0.5			1400				1575N	lt br soil	
795983	S	A	70cm						50	500	920	0.5			2850				1600N	lt-br soil	
795984	S	A	90cm						30	170	685	0.5			1050				1625N	Yellow-br soil	
795985	S	A	70cm						25	270	460	0.5			2800				1650N	Yellow-br soil	
795986	S	A	50cm						60	550	685	0.5			5000				1675N	Dk. br soil.	
795987	S	A	40cm						160	2500	665	0.5			7700				1700N	Dk. br soil	
795988	S	A	1m						25	400	415	x			4100				1725N	Red-br soil	
795989	S	A	1m						5	85	480	x			545				1750N	lt sandy br soil	
795990	S	A	1m						25	550	370	0.5			4200				1775N	Orange-br soil	
795991	S	A	11m						35	670	495	x			6650				1800N	Dk. br soil	
795992	S	A	40cm						35	730	1100	x			4950				1825N	Red-br soil	
795993	S	A	11m						45	580	1100	0.5			8000				1850N	Dk-br soil	
795994	S	A	60cm						25	120	245	x			340				1875N	Orange-br soil	
795995	S	A	30cm						15	20	75	x			840				1900N	Dk gy soil	
795996	S	A	20cm						25	65	180	x			3100				1925N	lt br soil	
795997	S	A	1m						50	110	250	0.5			115				1950N	Yellow-br soil	
795998	S	A	60cm						30	20	75	x			35				1975N	Dk gy soil	
795999	S	A	50cm						x	5	85	x			15				2000N	lt gy soil.	
795693	F	gs							170	1450	480	0.5					x	x	* / x	1800N	FROM ROCK PILE NEAR TREE AT MAP ANOM. CHLORITIC TUFF.

\* Sample type ss = stream sediment oc = outcrop f = float s = soil  
 \*\* Stream sed. sample description fl = flow m3/sec wi = width m al = alluvial co = colluvial ca = catchment km2  
 \*\*\* Outcrop sample type gs = grab sample rc = rock chip (state interval & length) cs = channel sample (state length)

541031

C.R.A. EXPLORATION . GEOCHEMICAL SAMPLE REGISTER

Tenement name SHEFFIELD EL 7/73

No. Sample numbers

Collected by G. Purvis

Sheet no. 1

Area / Prospect MT ROLAND

Date 28.3.79

Map / Photo reference

Analysed by Amel

DPO no. 00194, 00193

Sample No.	Type	ss channel **						Carbon	Metal content ppm or %								Grid ref LINE 1000 E	Geological Observations
		ss*	fl	wi	al	co	ca		pH	Cu	Pb	Zn	Ag	Mo	Mn	Au		
		oc	o/c sample type ***															
		f	s sample type ****															
716113	S	Anger		35cm		B2	Brown		28	400	340	<1		850			1100N	Scree: dacite? ± v. minor limonite.
14	S	"		30		B2	Brown		30	360	300	<1		2100			1075N	Scree: ditto ± limonite ± Mn on fractures.
15	S	"		30		B1	Brown		15	150	110	<1		840			1050N	Scree: ditto ± limonitic fractures.
16	S	"		50		B2	Brown		15	160	150	<1		910			1025N	Scree: ditto ± some fragments?
17	S	"		45		C	Brown		32	1900	870	1		3800			1000N	etc: Massive volcanic ± 2-4% gn, py, sp dispersed
18	S	"		35		B1	Brown		70	180	160	<1		7400			950N	Scree: Roland conglomerate pebbles. Volcanic soil
19	S	"		60		B1	Brown		60	140	95	<1		3900			925N	Scree: Roland conglomerate pebbles. Volcanic soil
716120	S	"		35		B1	Brown		18	35	40	<1		2900			875N	Scree: Roland conglomerate pebbles. Volcanic soil.
21	S	"		40		B1	Brown		170	120	160	<1		5100			850N	Scree: Roland conglomerate pebbles. Volcanic soil.
22	S	"		30		B1	Brown		100	140	80	<1		5900			825N	Scree: Green, unaltered dacite? Some lapilli tuff
23	S	"		50		B2	Brown		170	65	70	<1		9400			800N	Scree: Mostly Roland Conglomerate pebbles some Mn.
24	S	"		35		B2	Brown		210	80	55	<1		5800			775N	Scree: Manganiferous pan material.
25	S	"		35		B2	Brown		100	48	70	<1		5000			750N	Scree: Weathered volcanic (lapilli tuff?)
26	S	"		35		B2	Brown		45	42	60	<1		8800			725N	Scree: Weathered volcanic ± rare gte eyes.
27	S	"		40		B2	Brown		20	55	35	<1		2800			700N	Scree: Mod alt crystal tuff, lapilli tuff ± vitric tuff.
716856	S	"		30		B2	Brown		15	220	130	1		1800			1125N	Sub etc: Massive weakly-mod alt green dacite.
57	S	"		20		B2	Brown		50	670	180	1		2500			1150N	Sub etc: Ditto.
58	S	"		50		B2	Brown		28	140	150	1		9800			1175N	Scree: Ditto. Minor limonite.
59	S	"		40		B2	L. brown		28	75	130	1		2500			1200N	etc: Weakly alt volcanic ± lined feldspars-min?
716860	S	"		40		B2	Brown		35	340	130	1		8200			1225N	Scree: Dacite from up hill to east.
61	S	"		40		B2	Brown		45	85	210	1		5300			1250N	Scree: Altered lapilli tuff. Minor limonitic fractures
62	S	"		35		B1	Brown		42	460	170	1		6700			1275N	Scree: Altered gritty waterlaid tuff.

\* Sample type ss = stream sediment oc = outcrop f = float s = soil  
 \*\* Stream sed. sample description fl = flow m3/sec wi = width m al = alluvial co = colluvial ca = catchment km2

C.R.A. EXPLORATION . GEOCHEMICAL SAMPLE LEDGER

Tenement name SHEFFIELD EL 7/73 No. .... Sample numbers..... Collected by G. Purvis Sheet no. 2  
 Area / Prospect. MT ROLAND GRID Date. 28.03.79  
 Map / Photo reference..... Analysed by AMDEL DPO no.....

Sample No.	Type	ss channel **						Carbon	Metal content ppm or %								Grid ref	Geological Observations
		ss*	fl	wi	al	co	ca		pH	Cu	Pb	Zn	Ag	Mo	Mn	Au		
		oc	o/c sample type ***															
		f	s sample type ****															
716128	S		Anger		30		B <sub>1</sub>	Brown		8	15	55	<1		360		1100N	Sub % ; Hard massive weakly altered gran dacite? F.g. $\bar{c}$ occ Feld + gr Ferranag
716129	S		"		35		B <sub>1</sub>	Dk Br		12	25	85	<1		1700		1075N	Screen; no above but w-mod alt <sup>n</sup> - mag quartz
716130	S		"		40		B <sub>2</sub>	Dk Br		20	25	100	<1		8700		1050N	% ; Hard massive v. wk alt <sup>n</sup> dacite - on weathered surface dk glass frags - lapilli?
716131	S		"		40		B <sub>2</sub>	Dk Br		40	60	95	<1		1600		1025N	% ; Gr, hard, massive w-mod alt <sup>n</sup> dacite sandy volc. - occ qtz eyes small
716132	S		"		40		B <sub>2</sub>	Dk Br		150	60	75	<1		6300		1000N	Sub % ; Gr, hard massive dacite
716133	S		"		25		B <sub>2</sub>	Brown		80	65	48	<1		2400		975N	Screen; AV soil RC debris
716134	S		"		40		B <sub>2</sub>	Brown		120	75	100	<1		710		950N	Screen RC. AV soil weathered alt. A.V. $\bar{c}$ glass shards - a fine lapilli Tuff.
716135	S		"		30		B <sub>1</sub>	Brown		60	380	160	<1		8700		925N	Screen RC - top A.V. soil
716136	S		"		35		B <sub>1</sub>	Dk Br		100	430	160	<1		2600		900N	AV soil + screen; weakly alt lapilli Tuff.
716137	S		"		35		B <sub>1</sub>	Dk Br		55	240	75	<1		2300		875N	Ditto; Mod alt F.g. tuff $\bar{c}$ small qtz eyes + glass shards.
716138	S		"		35		B <sub>1</sub>	Brown		330	210	80	<1		1200		850N	AV soil + screen; Mod alt, sandy or fine gritty tuff
716139	S		"		30		B <sub>1</sub>	Dk Br		200	70	80	<1		4100		825N	Screen; mostly RC. Small amount of weathered AV. $\bar{c}$ small qtz eyes, glass shards - a tuff?
716140	S		"		50		B <sub>2</sub>	Brown		95	70	50	<1		820		800N	Screen; mod alt gritty lapilli tuff - weathered. Some li+Fe after s <sup>2+</sup> - chloritic.
716141	S		"		40		B <sub>2</sub>	Red-br		130	60	210	<1		8600		775N	AV soil + small weathered frags.
716142	S		"		35		B <sub>1</sub>	Brown		50	45	55	<1		6300		750N	AV + minor RC. F.g. mod alt - actinolite AV tuff $\bar{c}$ small glass shards + Fe + li after s <sup>2+</sup>

\* Sample type ss = stream sediment oc = outcrop f = float s = soil  
 \*\* Stream sed sample description fl = flow m3/sec wi = width m al = alluvial co = colluvial ca = catchment km2

C.R.A. EXPLORATION . GEOCHEMICAL SAMPLE LEDGER

Tenement name SHEFFIELD EL 7/73 No.            Sample numbers            Collected by G. Purvis Sheet no. 3  
 Area / Prospect M. T. ROLAND PROSPECT Date 28.03.79  
 Map / Photo reference            Analysed by AMDEL DPO no.           

Sample No.	Type	ss channel **						Carbon	Metal content ppm or %								Grid ref	Geological Observations	
		fl	wi	al	co	ca	pH		Cu	Pb	Zn	Ag	Mo	Mn	Au				
		o/c sample type ***																	
		s sample type ****																	
716143	S	Aug		30		B <sub>2</sub>	Brown		15	32	35	<1			540			725N	Screen; Weak-med alt chlorite? gritty AV. tuff.
716144	S	"		40		B <sub>2</sub>	Brown		30	110	100	<1			7300			700N	Screen; weathered chlorite? gritty AV. tuff. c. mica li.
716145	S	"		35		B <sub>2</sub>	Brown		60	55	110	<1			3800			675N	Screen; ditto.
716146	S	"		30		B <sub>1</sub>	Brown		30	60	90	<1			7600			650N	AV. soil. Gritty tuff c. qtz eyes + chlorite - Andesite

\* Sample type ss = stream sediment oc = outcrop f = float s = soil  
 \*\* Stream sed. sample description fl = flow m3/sec wi = width m al = alluvial co = colluvial ca = catchment km<sup>2</sup>

C.R.A. EXPLORATION . GEOCHEMICAL SAMPLE LEDGER

Tenement name SHEFFIELD EL 7/73 No. Sample numbers ..... Collected by G. PURVIS Sheet no. 4  
 Area / Prospect M. ROLAND Date 28.03.79  
 Map / Photo reference ..... Analysed by AMDEL DPO no. ....

Sample No.	Type	ss channel **						Carbon	Metal content ppm or %								Grid ref LINE 1200E	Geological Observations	
		fl	wi	al	co	ca	ph		Cu	Pb	Zn	Ag	Mo	Mn	Au				
		o/c sample type ***																	
		s sample type ****																	
716147	S	Auger		50		B1	Black		440	32	35	<1			5400			1000N	Screen + hole frags: Mostly RC. Small amount of A.V. Not good sample.
716148	S	"		35		B1	H/B-B		55	15	15	<1			1000			975N	Screen + hole frags: Weakly alt A.V. grit - Not good sample.
716149	S	"		35		B1	Brown		120	55	30	<1			2100			950N	Screen + hole frags: Mostly weathered A.V. rock soil
716150	S	"		30		B1	Dk Br		100	230	40	<1			2400			985N	Screen + hole frags: 50% RC A.V. - weakly - mod alt + ochreous minor S° pits.
716801	S	"		75		B2	Brown		280	48	25	<1			80			900N	Frags: A.V. Mod alt - F.g.
716802	S	"		35		B2	Brown		70	45	35	<1			3700			875N	Frags: A.V. weakly alt - ochreous weathered volc. - sandy tuff? minor f.g. S° - 1%.
716803	S	"		35		B2	Brown		48	18	18	<1			990			850N	Screen + frags: A.V. soil RC. areas.
716804	S	"		20		B1	Pk. redd		35	22	25	<1			450			825N	Screen + soil: RC.? Not good sample.
716805	S	"		35		B2	Brown		65	30	22	<1			100			800N	Screen + frags: Weathered weakly alt gritty tuff.
716806	S	"		30		B1	Brown		100	40	90	<1			6900			775N	Screen: Weathered mod alt ochreous gritty tuff minor S° pits - frags conc rounded.
716807	S	"		35		B2	Lk Br		70	55	60	<1			2000			750N	Screen: weathered gritty tuff - mineralised?
716808	S	"		50		B2	Brown		60	48	60	<1			2800			725N	Screen: Mod. alt + ochreous f.g. tuff - fractured li. staining on fractures minor S° pits.
716809	S	"		30		B2	Brown		25	60	32	<1			540			700N	Screen: Mod alt + ochreous, micritic f.g. tuff Sl. bleached by S°. Fract. li. infilling.
716810	S	"		30		B2	Lk Br		40	30	28	<1			340			675N	Screen: Weathered gritty tuff - minor li.
716811	S	"		45		B2	Lk Br		45	28	15	<1			48			650N	Screen + Sub %: Dark alt. ad. alt. tuff minor li. 1-2 S°
716812	S	"		25		B2	Brown		60	50	90	<1			900			625N	Chert, of ochreous, mainly massive c. sandy tuff. R.C. from 605N.

\* Sample type ss = stream sediment oc = outcrop f = float s = soil  
 \*\* Stream sed. sample description fl = flow m3/sec wi = width m al = alluvial co = colluvial ca = catchment km2  
 \*\*\* Outcrop sample type gs = grab sample rc = rock chip (state interval & length) cs = channel sample (state l. sh)

Tenement name SHEFFIELD EL 7/73 No.            Sample numbers            Collected by G. Purvis Sheet no. 5  
 Area / Prospect MT ROLAND GRD Date 29 MARCH 1973  
 Map / Photo reference            Analysed by AMDEL DPO no. 00193

Sample No.	Type	ss channel **						Carbon	Metal content ppm or %							Grid ref	Geological Observations	
		fl	wi	al	co	ca	pH		Cu	Pb	Zn	Ag	Mo	Mn	Au			
		o/c sample type ***																
s sample type ****																		
716813	S	Anger		30		B <sub>1</sub>	lt Br		10	20	12	<1			460		900N	Screen: 99% RC, and 50% AV. - weathered frag.
716814	S	"		25		B <sub>1</sub>	lt Br		20	22	15	<1			710		925N	Screen: 50% RC. - Some large boulders of lapilli tuff ± several % li or pits.
716815	S	"		35		B <sub>2</sub>	Brown		360	35	15	2			110		950N	Screen: h.c. + mineralised and mod. alt lapilli tuff
716816	S	"		40		B <sub>1</sub>	lt Br		35	15	12	1			35		975N	Screen mostly RC some AV gritty lapilli tuff - 1-2% py.

\* Sample type ss = stream sediment oc = outcrop f = float s = soil  
 \*\* Stream sed. sample description fl = flow m3/sec wi = width m al = alluvial co = colluvial ca = catchment km2  
 \*\*\* Outcrop sample type as = grab sample rc = rock chip leters interval (between)

C.R.A. EXPLORATION . GEOCHEMICAL SAMPLE REGISTER

Tenement name... SHEFFIELD EL 7/73 No. .... Sample numbers..... Collected by... G. PURVIS Sheet no. 6  
 Area / Prospect... MOUNT ROLAND GRID Date... 29-03-79  
 Map / Photo reference..... Analysed by... AMDEL DPO no. 00193

Sample No.	Type	ss channel **						Carbon	Metal content ppm or %								Grid ref	Geological Observations	
		ss *	fl	wi	al	co	ca		pH	Cu	Pb	Zn	Ag	Mo	Mn	Au			
		oc	o/c sample type ***																
		f	s sample type ****																
716817	S		Aug		45		B <sub>1</sub>	rusty br	12	25	18	<1			580			LINE 1400E 1075N	1300-1080N - RC SCREE + SOIL. Screen: RC Soil partly AV.
716818	S		"		55		B <sub>2</sub>	Brown	120	15	12	<1			60			950N	1073-990N RC SCREE + SOIL. Screen mostly R.C. Weathered lapilli tuff minor pits + li.
716819	S		"		40		B <sub>2</sub>	Brown	90	30	15	<1			150			925N	Weathered schistose mineralised lapilli tuff s <sup>+</sup> /schist.
716820	S		"		30		B <sub>2</sub>	Lt Br	22	10	10	<1			22			900N	Screen RC 50% minor alt. lapilli tuffs (gitty) 895-840N RC SCREE + SOILS
716821	S		"		40		B <sub>2</sub>	Fawn	25	8	10	<1			180			825N	Screen: RC + lt gr gitty lapilli tuff + 3-5% s <sup>+</sup> -py? 810-645 RC SCREE + SOIL.
716822	S		"		45		B <sub>2</sub>	Lt Br	12	12	40	<1			240			625N	Screen RC screen no other pieces. 600-525N RC SCREE + SOIL.

\* Sample type ss = stream sediment oc = outcrop f = float s = soil  
 \*\* Stream sed. sample description fl = flow m3/sec wi = width m al = alluvial co = colluvial ca = catchment km2  
 \*\*\* Outcrop sample type

C.R.A. EXPLORATION . GEOCHEMICAL SAMPLE REGISTER

Tenement name... SHEFFIELD EL 7/73 No. .... Sample numbers..... Collected by... G. POAVIS Sheet no. 7  
 Area / Prospect... MOUNT ROLAND PROSPECT. Date... 23.03.73  
 Map / Photo reference..... Analysed by... AMDEL DPO no. 00193

Sample No.	Type	ss channel **						Carbon	Metal content ppm or %								Grid ref	Geological Observations	
		ss*	fl	wi	al	co	ca		pH	Cu	Pb	Zn	Ag	Mo	Mn	Au			
		oc	o/c sample type ***																
		f	s sample type ****																
716823	S	Aug			45		B <sub>2</sub>	Brown	35	38	45	<1			140			575N	Screen mostly RC. AV soil some frags weathered altered AV tuff.
716824	S	Aug			30		B <sub>2</sub>	Fine-B	25	5	12	<1			22			600N	Screen: AV - mod alt + ochreous lapilli tuff minor li on fractures.
716825	S	Aug			30		B <sub>2</sub>	Brown	45	15	18	<1			80			625N	Screen: Mod, alt + ochreous sandy AV tuff minor pyro li
716826	S	"			35		B <sub>2</sub>	rusty br	35	30	60	<1			2700			650N	Screen: 20% AV. Pink bleached mod alt ochreous tuff 5-10% li pits after 5"
716827	S	"			40		B <sub>2</sub>	Dk rusty br	40	50	170	<1			1800			675N	AV soil.
716828	S	"			40		B <sub>2</sub>	Dk rusty br	130	35	290	<1			7800			700N	Screen: mainly v. weathered AV schist. Small frag m/f to spec
716829	S	"			30		B <sub>2</sub>	Brown	18	40	28	<1			330			725N	Screen: weakly alt + ochreous massive lt green + purple coarsely sandy AV tuff.
716830	S	"			25		B <sub>2</sub>	Brown	35	35	55	<1			2200			750N	Screen: Weakly mod alt ochreous dk green - grey lapilli tuff/sandy tuff - glass clasts
716831	S	"			25		B <sub>2</sub>	Brown	80	10	22	<1			65			775N	Screen: Yellow weathered mod alt coarsely sandy tuff
716832	S	"			50		B <sub>2</sub>	rusty br	190	25	18	<1			270			800N	Screen: Weakly alt coarsely sandy lapilli tuff. minor li.
716833	S	"			50		B <sub>2</sub>	Dk br	520	28	20	<1			380			825N	Screen: Pink, bleached mod alt AV schist + 5% green li
716834	S	"			35		B <sub>2</sub>	Brown	60	25	15	<1			65			900N	Screen: Mostly RC. AV - weathered mod alt v. + li.
716835	S	"			35		B <sub>2</sub>	Dk br	65	5	10	<1			20			925N	Screen: Min. lapilli tuff - 1-2% S"
716836	S	"			50		B <sub>2</sub>	Orange	300	18	18	<1			130			1000N	Screen: R.L. Soil AV.

\* Sample type ss = stream sediment oc = outcrop f = float s = soil  
 \*\* Stream sed. sample description fl = flow m3/sec wi = width m al = alluvial co = colluvial ca = catchment km2



C.R.A. EXPLORATION . GEOCHEMICAL SAMPLE LOG

Tenement name SHEFFIELD EL 7/73

No. Sample numbers

Collected by G. PURVIS

Sheet no.

Area / Prospect MT ROLAND PROSPECT

Date 02.04.82

Map / Photo reference

Analysed by AMDEL

DPO no. 00194

Sample No.	Type	ss channel **						Carbon	Metal content ppm or %							Grid ref	Geological Observations		
		ss*	fl	wi	al	co	ca		pH	Cu	Pb	Zn	Ag	Mo	Mn			Au	
716863	S	Augr			35		B <sub>2</sub>	Brown		32	65	120	1	6	6200			1300N	Screen: Weak - mod altered tuff
716865	S	.			30		C	Bl-Bn		100	300	240	1		1.6%			1325N	Screen: Massive, hard, weakly alt, dk green intermediate? volc - lava rot tuff.
716866	S	"			35		B <sub>2</sub>	Brown		35	220	160	1		1500			1350N	ditto.
716867	S	"			50		B <sub>2</sub>	Brown		32	130	110	1		3600			1375N	Screen: Weak - mod alt with occasional fine gritty tuff orbounded small clasts of qtz-glass.
716868	S	.			30		B <sub>2</sub>	Brown		15	220	140	<1		3300			1400N	Screen: Green, weakly alt, small black glass frags.
716870	S	"			25		B <sub>2</sub>	Brown		30	40	260	1		6400			1425N	Screen: Lt. basic lava?
716871	S	"			55		B <sub>2</sub>	Brown		65	70	210	1		7700			1450N	Screen: Almost unaltered dacite - andesite lava.
716873	S	"			45		B <sub>2</sub>	Brown		40	45	90	<1		9300			1475N	Screen: Weathered andesite lava - weak alt - purple colour - granular qtz/li veins.
716875	S	"			40		B <sub>2</sub>	Brown		60	400	240	1		12%			1500N	Screen: Lt. lava - Andesite?

\* Sample type ss = stream sediment oc = outcrop f = float s = soil

\*\* Stream sed. sample description fl = flow m3/sec wi = width m al = alluvial co = colluvial ca = catchment km2



C.R.A. EXPLORATION . GEOCHEMICAL SAMPLE REGISTER

Tenement name SHEFFIELD EL 7/73 No. Sample numbers ..... Collected by G. Purvis Sheet no. 2  
 Area / Prospect MT. ROLAND PROSPECT Date 4.4.79  
 Map / Photo reference ..... Analysed by AMDEL DPO no. 00124

Sample No.	Type	ss channel **						Carbon	Metal content ppm or %								Grid ref	Geological Observations	
		fl	wi	al	co	ca	pH		Cu	Pb	Zn	Ag	Mo	Mn	Au				
		o/c sample type ***																	
		s sample type ****																	
716887	S	high		35		B <sub>2</sub>	Brown		8	70	360	<1			1700			1000N	Screen: hard massive melt to weak alt dacite to andesite lava 50 mag - dispersed - mod magnetite
716889	S	"		40		B <sub>2</sub>	Brown		12	280	210	<1			820			1025N	Screen: Alt volc - possibly a gritty tuff
716890	S	"		30		B <sub>2</sub>	Brown		8	100	160	<1			470			1050N	Screen: v. weathered volcanic ± small qty eyes
716891	S	"		30		B <sub>2</sub>	Brown		10	140	110	<1			2700			1075N	Screen: ditto
716892	S	"		30		B <sub>2</sub>	red-bn		32	230	300	<1			920			1100N	Screen: sparse v. weakly alt dacite?
716893	S	"		50		B <sub>2</sub>	red-bn		40	260	310	<1			2000			1125N	Screen: v. weathered weakly alt gritty tuff (dacite?) ± minor glass li
716895	S	"		30		B <sub>1</sub>	dk bn		35	440	320	<1			1190			1150N	Screen: minor mostly melt dk gr-gr int. lava
716896	S	"		40		B <sub>2</sub>	Brown		32	480	300	<1			4200			1175N	Screen: ditto
716897	S	"		60		B <sub>2</sub>	Brown		40	370	250	<1			2100			1200N	Screen: ditto some more weathered tuffaceous rocks ± glass
716898	S	"		60		B <sub>2</sub>	Brown		20	290	180	<1			2300			1225N	Screen: highly weathered wh - mod alt gritty tuff - chlorite?
716899	S	"		50		B <sub>2</sub>	Brown		25	370	190	<1			2700			1250N	Screen: mod alt schistose tuff
716900	S	"		45		B <sub>2</sub>	Brown		50	400	400	<1			7300			1275N	Screen: wh - mod alt + schistose tuff
716902	S	"		50		B <sub>2</sub>	dk bn		38	200	340	<1			3100			1300N	Screen: wh alt v. coarse dacite or int. vols.
716903	S	"		45		B <sub>2</sub>	Brown		25	80	95	<1			430			1325N	Screen: ditto
716905	S	"		30		C	Brown		25	55	50	<1			250			1350N	Screen: massive int - basic vols occ v. with alt.
716906	S	"		40		B <sub>2</sub>	Brown		20	28	100	<1			160			1375N	Screen: as above - more weathered
716907	S	"		20		B/c	Brown		25	22	90	<1			240			1400N	Screen: ditto

\* Sample type ss = stream sediment oc = outcrop f = float s = soil  
 \*\* Stream sed. sample description fl = flow m3/sec wi = width m al = alluvial co = colluvial ca = catchment km2  
 \*\*\* Outcrop sample type



Tenement name SHEFFIELD EL 7/73 No.            Sample numbers            Collected by G. Purvis Sheet no.             
 Area / Prospect MT ROLAND PROSPECT Map / Photo reference            Analysed by AMDEL Date 4.4.73 DPO no. 00197

Sample No.	Type	ss channel **						Carbon	Metal content ppm or %								Grid ref	Geological Observations		
		ss *	fl	wi	al	co	ca		pH	Cu	Pb	Zn	Ag	Mo	Mn	Au				
		oc	o/c sample type ***																	
		f	s sample type ****																	
716934	S		Auger		40		B <sub>2</sub>	red-br		48	32	80	<1						1425N	
716935	S		"		40		B <sub>2</sub>	Brown		35	60	55	<1						1400N	
716936	S		"		35		B <sub>2</sub>	Brown		50	35	85	<1						1375N	
716937	S		"		40		B <sub>2</sub>	Brown		32	55	70	<1						1350N	
716938	S		"		50		B <sub>2</sub>	Brown		10	104	160	<1						1325N	
716939	S		"		35		B <sub>2</sub>	Brown		12	65	110	<1						1300N	
716940	S		"		60		B <sub>2</sub>	Brown		25	110	950	<1						1275N	
716941	S		"		50		B <sub>2</sub>	Brown		50	320	400	<1						1250N	
716942	S		"		60		B <sub>2</sub>	Brown		22	110	190	<1						1225N	
716943	S		"		55		B <sub>2</sub>	Brown		28	360	220	<1						1200N	
716944	S		"		65		B <sub>2</sub>	Brown		30	330	190	<1						1175N	
716945	S		"		45		B <sub>2</sub>	Brown		28	160	190	<1						1150N	
716946	S		"		50		B <sub>2</sub>	Brown		18	170	160	<1						1125N	
716947	S		"		60		B <sub>2</sub>	Brown		40	330	270	<1						1100N	
716948	S		"		55		B <sub>2</sub>	Brown		12	200	140	<1						1075N	
716949	S		"		30		B <sub>2</sub>	Brown		15	230	160	<1						1050N	
716950	S		"		25		B <sub>1</sub>	Black		5	100	80	<1						1025N	
																				RC SCREEN →

\* Sample type ss = stream sediment oc = outcrop f = float s = soil  
 \*\* Stream sed. sample description fl = flow m3/sec wi = width m al = alluvial co = colluvial ca = catchment km2

APPENDIX FOUR

GEOPHYSICAL SURVEYS



C.R.A. EXPLORATION PTY. LIMITED

(Incorporated in New South Wales)

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FYSHWICK, A.C.T., 2609

541046

P.O. BOX 656,  
FYSHWICK, 2609  
TELEPHONE CANBERRA (062) 80 5665  
TELEX: AA 62750  
11th June, 1979

Memorandum to : J.G. Purvis ✓  
Copy : R.J. Rebek  
: R.J. Smith  
From : T. Kerr

PROGRESS MEMORANDUM: MT. ROLAND I.P. SURVEY

1 SUMMARY

An I.P. survey was conducted on the Mt. Roland grid of the Sheffield (Tas.) E.L. in March 1979. At least two zones of high chargeability values were outlined. Additionally, the resistivity data revealed a rather complex structural situation.

2 INTRODUCTION

Further geophysical and geological work remains to be done on the Mt. Roland grid. This is accordingly, a progress memorandum only.

2.1 Reconnaissance

The original grid was covered using a 50 m dipole-dipole array. Stainless steel stakes were used for electrodes, and a roll along procedure reading to only  $n=2$  was adopted. This was facilitated by the use of a light battery powered transmitter, and progress was almost as rapid as a gradient array survey while still providing some depth control. The plan of Chargeability Contours indicated that only the S.E. corner of the grid was worth

a detailed survey.

## 2.2 Detail Survey

The S.E. quarter of the grid was extended and read using conventional 25 m dipoles to n=6. The results are presented as pseudo-sections. A note on instrumentation is appropriate. Many of us are familiar with the I.P.R.-7 which is calibrated to the Newmont standard decay curve. The Hunttec receiver is not so calibrated, and experience indicates that the Hunttec reading are about  $\frac{1}{2}$  the I.P.R.7 readings obtained at the same point.

## 3 CONCLUSIONS

Two distinct zones of chargeability run through the Mt. Roland grid. Zone A is a narrow source associated with a resistivity low. This may be indicative of a pyrite-chalcopyrite style of mineralisation. Zone B is broader, perhaps a multiple source, and does not appear to be particularly conductive. Optimistically, this may represent sphalerite-galena mineralisation. A major wrench fault is postulated running north-south through the grid with a throw of about 100 metres.

## 4 RECOMMENDATIONS

One I.P. spread with 50 meter dipoles should be run on line 900E to test for an along strike extension of conductor A at depth. This conductor appears to run through an old adit where galena is present. Up slope, the conductors could be tested at a number of points. The easiest solution is probably to pick one line, 1400E, and drill two holes. Anomaly B could be tested at 850N, depth 75 meters, and anomaly A at 950 N, depth 75 meters. These co-ordinates are tentative, and further computer modelling should refine them.

## 5 DISCUSSION

### 5.1 Structure

The reader is referred to the pseudosections where certain features have been labelled A, B, or 1,2,3,... etc. These are solely pseudosection features which can apparently be correlated from line to line and do not strictly represent geological features; indeed, some of them are geometric effects. These features are in turn plotted as traces of Chargeability and Resistivity Markers on the appropriately titled plans.

The apparent strikes are very irregular, showing abrupt changes of direction on lines 1300 and 1200E. The correlations rest considerably on 2 main features: anomaly A on lines 1300 and 1200E is of virtually identical character despite a strike displacement of perhaps 125 meters, and resistivity feature 1 is a very distinct high - over 1000 ohm-m-which can be traced across the grid except for line 1300E where the coverage was inadequate. The abrupt displacement of these features seems best explained by postulating a wrench fault with the western side thrown south about 100 or 125 meters in approximately the position shown. The reason for the turn of strike northwards at line 1200E is inexplicable at present. It may be that the possible fault is a complex, but further speculation wants some 'ground truth' from geology. Some of the variations in strike may be due to apparent effects caused by dipping beds in this high relief terrain.

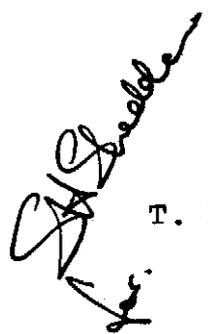
Some independent evidence for this major fault exists on Landsat Scene Centre 096-089. This clearly indicates a major fault controlled drainage both north and south of the western margin of Mt. Roland (K.O'S. personal comm.).

5.2 General

Computer modelling was undertaken in an attempt to establish conductor dips. The work to date indicates mainly the ability to produce apparent dip effects by varying the position of the conductor with respect to the nearest electrode. It may be useful to examine the surface traces of the two anomalies on stereo pair photographs to monitor the effect of topography on their apparent strike.

The anomaly appears to be deep and weak at the adit position. If it continues, a spread using 50 m dipoles for greater depth penetration is suggested for line 900E, centred about 1150N. It must be mentioned that as recorded on line 1000E, the anomaly could be an 'off-end' effect; that is, the bulk of mineralisation has terminated 50 or so meters up-slope.

Geological observations along the postulated fault, and at the change of strike about line 1200E would be greatly appreciated.



T. Kerr



C.R.A EXPLORATION PTY. LIMITED

(INC. IN N.S.W.)

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P.O. BOX 138  
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TELEGRAMS CRAEX  
TELEX AA57144  
TELEPHONE 443533  
AREA CODE (002)

IN REPLY PLEASE QUOTE

30th June, 1981

Memorandum To: G.Weber  
Copy: T.Dickson  
R.Smith  
From: M.Flis

MT.ROLAND MAGNETIC ANOMALY

Preliminary Dighem data for the Sheffield E.L. has delineated an anomaly which was previously picked from analogue charts. The anomaly exists about half a kilometre north of the Roland prospect grid. A portion of the aeromag map and flight line profile line is attached. From these the following observations are made:

- a) the anomaly is of typical "bull's eye" form indicating a discrete, equidimensional magnetic body,
- b) the anomaly is picked up on two lines,
- c) an amplitude of 320nT is evident. Rough depth estimates place its source at 100 to 140 metres,
- d) the anomaly occurs in generally depressed magnetics although it must be pointed out that not too far north occurs a magnetic zone. This zone has a signature not unlike that seen over the Beulah Formation (basic lavas) further to the east. The anomaly could be due to an outlier of this zone.

In addition, the regional geochem map (T.M.Porter) indicates anomalous Pb and Zn values (230ppm and 210 ppm respectively).

E.M. activity of the area is not great, however, a small negative response is evident - signifying the presence of magnetite. Of importance, however, is the fact that this negative response is strongest in the coplanar coil-pair. When final data is delivered this should show as a significant positive response on the in-phase difference channel.

This anomaly is an 'A' priority target for immediate follow-up work. If not already done, a local geochem survey should be carried out. Two or three ground mag. traverses will pin point the anomaly whence the Roland Grid will have to be extended to include it. The occurrence of an A.E.M. - magnetic anomaly means that ground E.M. and ground mag. will be the obvious choices for follow-up geophysics. Gravity should also be done.

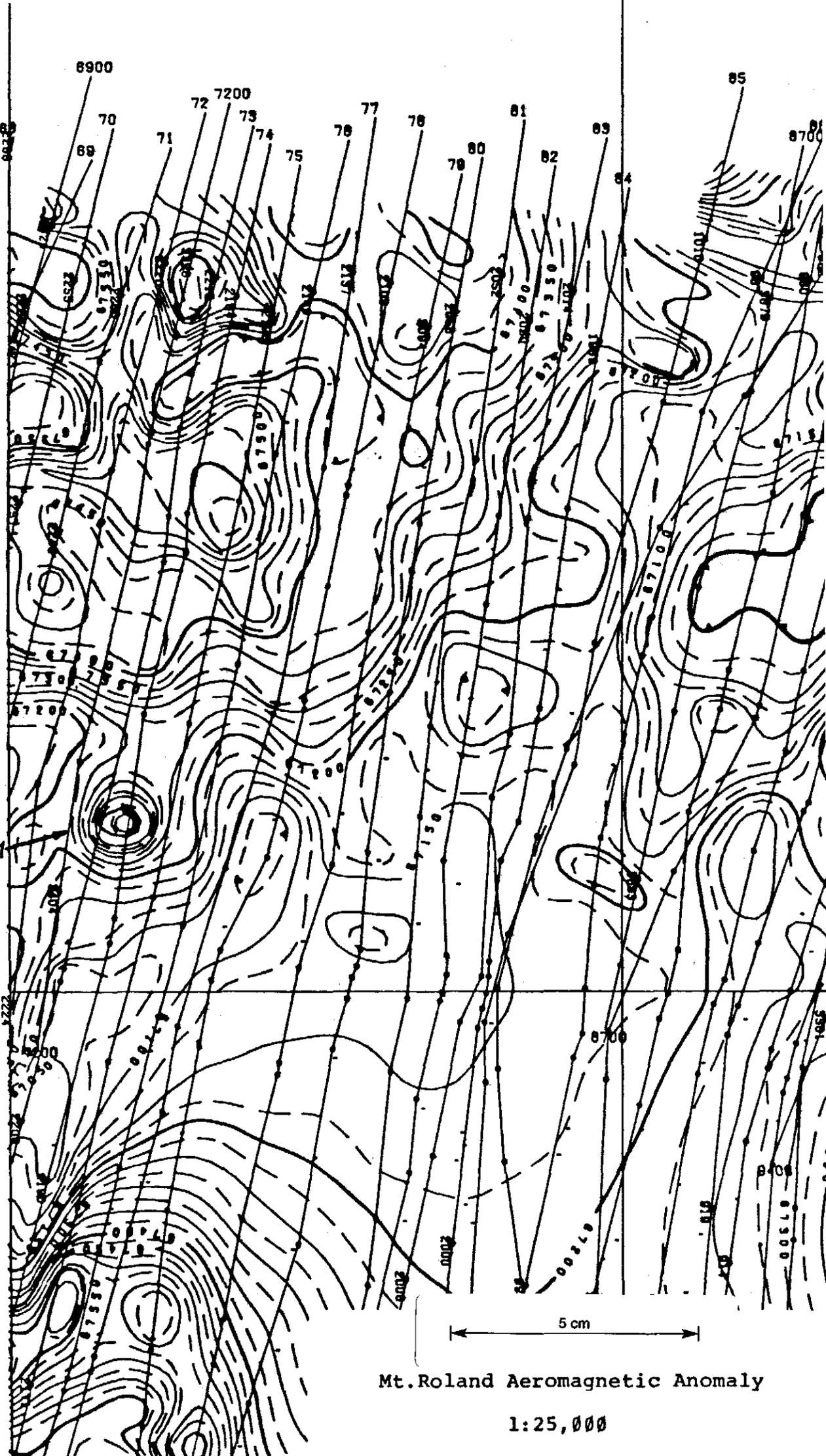


MARCUS FLIS

541052

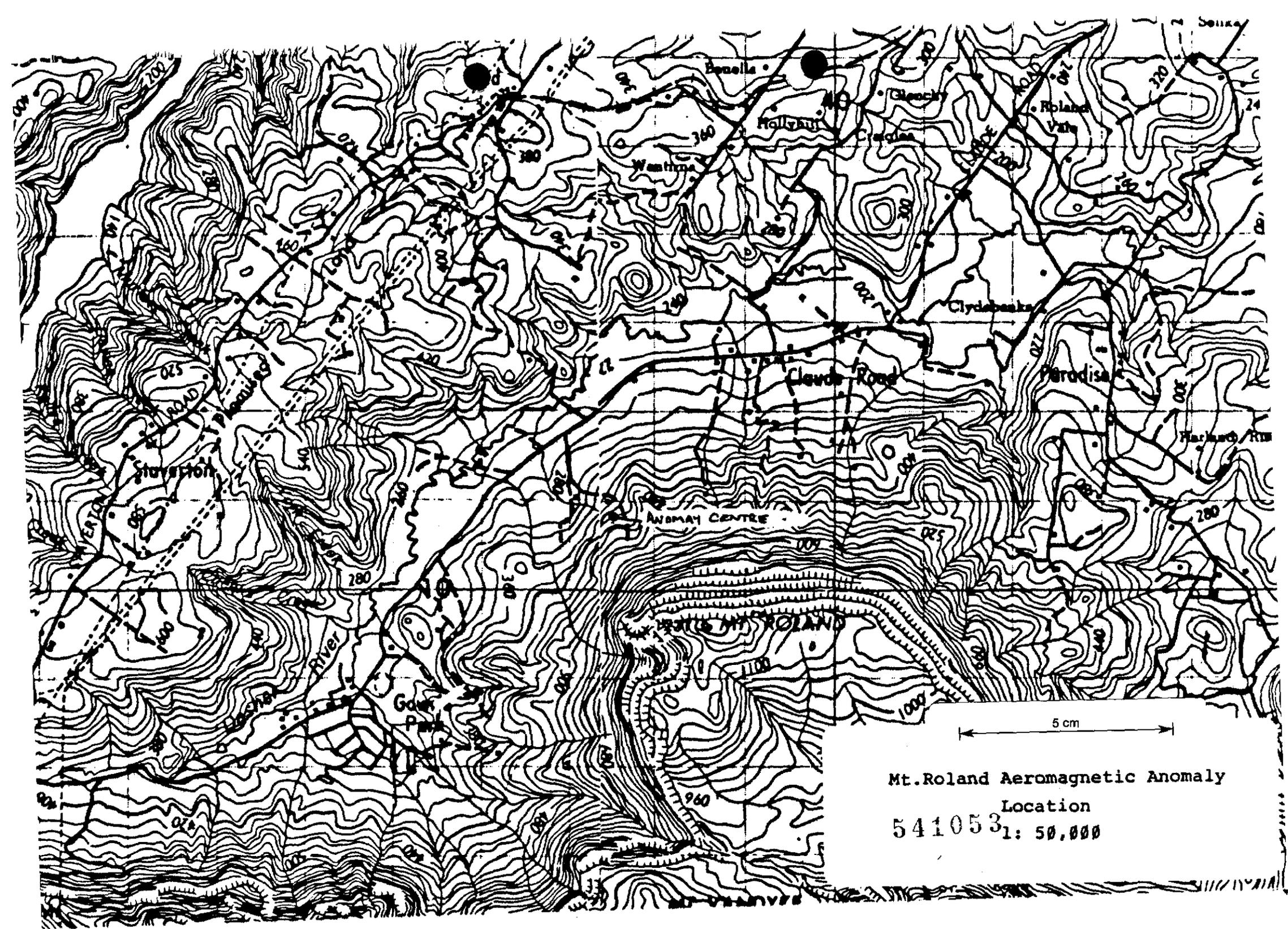
MT ROLAND ANOMALY

10



Mt. Roland Aeromagnetic Anomaly

1:25,000



Mt. Roland Aeromagnetic Anomaly  
Location  
541053<sub>1</sub>: 50,000



## CRA EXPLORATION PTY. LIMITED

(INC. IN N.S.W.)

LEVEL 4, BELLERIVE QUAY,  
CAMBRIDGE ROAD, BELLERIVE, 7018, TASMANIA, AUSTRALIAP.O. BOX 138  
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TELEX: AA57144  
TELEPHONE: 44 3533  
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IN REPLY PLEASE QUOTE

21st September, 1981.

Memorandum To: G.WEBER

Copy: T.Dickson  
R.Smith

From: M.Flis

MT.ROLAND AEROMAG/E.M. ANOMALY1.0 Introduction

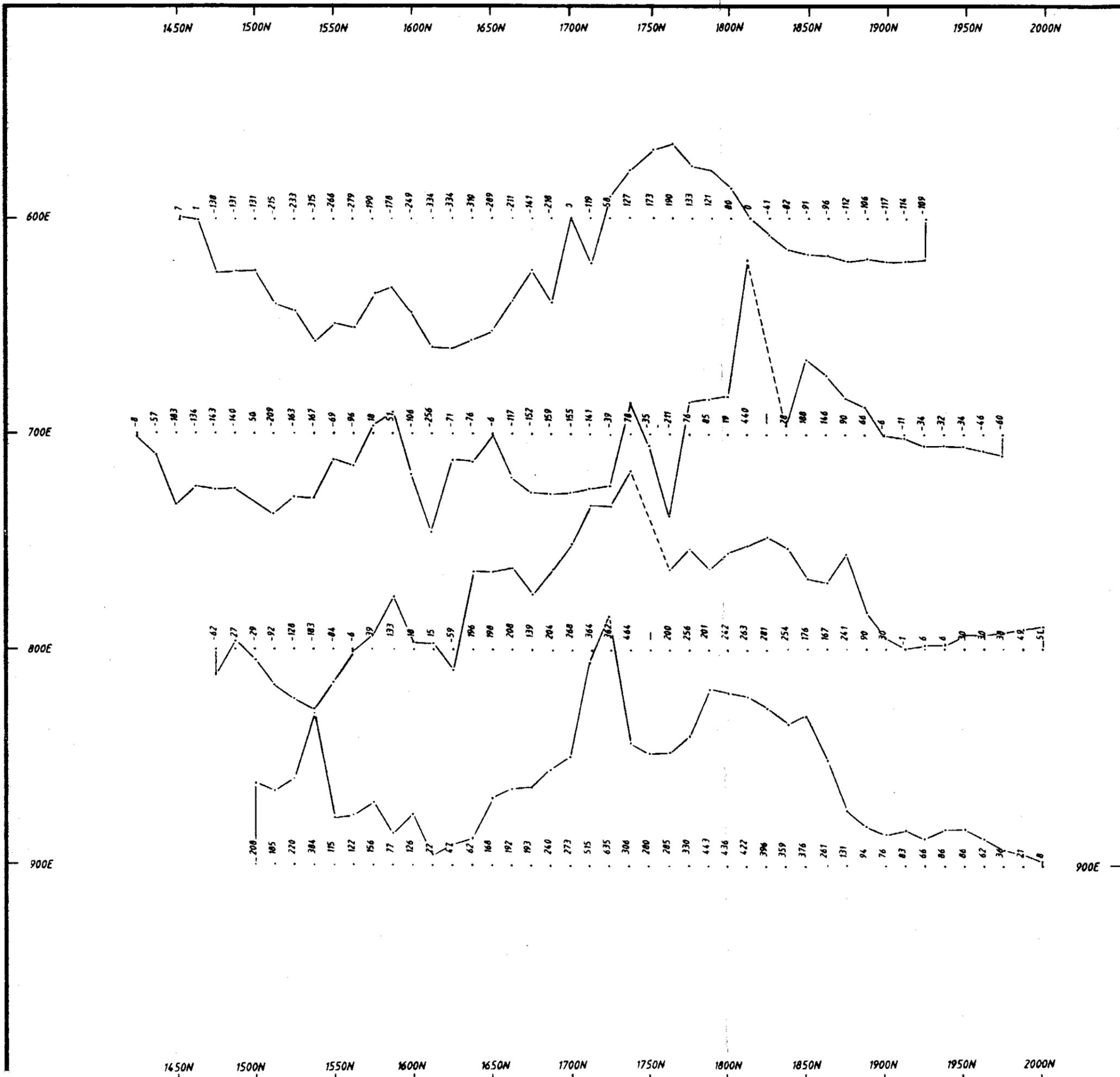
The Mt.Roland aeromag/E.M. anomaly detected in the Dighem E.M. survey of the Sheffield EL (see memo to G.Weber, 30th June, 1981) has been followed up with ground geophysics and geochemistry. The Mt.Roland grid was extended by four lines, each of approximately 500m length, to cover the aeromag anomaly. Ground magnetics, P.E.M. and geochem was carried out on this extension.

2.0 Survey Results2.1 Ground Magnetics

Ground mag was carried out with a station spacing of 12.5 metres. The sensor head was pole-mounted (2.0 metres above ground level). Results of this survey are presented as stacked profiles on the attached plan TASH 253.

It is evident from the character of these profiles that magnetite is probably the main contributor to the observed response. This is not surprising as the Dighem results indicated magnetite was present by way of the negative in-phase response observed in the E.M. data.

Geochem data collected on these lines, and attached as composites of the four main elements analysed for, exhibit a surprising sympathetic relationship between each element and the ground magnetics.



5 cm

Vertical scale: 1cm = 100nT  
 Sensor head 2m above ground level.  
 All values in nanoTeslas.  
 For total Magnetic Intensity add  
 62300 nT to all values.

CRA EXPLORATION PTY. LIMITED	
Mt. Roland Prospect Sheffield E.L. 7/73	
Ground Magnetics, Extended Grid	
Ref.	SK55-3
Geol.	M.F.F.
Drawn	RT
Scale	AS SHOWN
report N°	
Plan N°	TASH 253

This correlation is strongest with the high frequency component of the magnetic data, suggesting that a high percentage of the anomalous geochem is derived from near-surface sources.

Modelling of the mag. anomaly along line 600 mE (where it seems most coherent) indicates a small dyke-like body at a depth of 45 metres, extending to 100 metres, a width of 40 metres, and a dip of  $65^\circ$  to the north. Although this model is not very accurate it does reflect the general size and configuration which should be expected. A susceptibility contrast of 0.08 SI would be observed if magnetite content increased by approximately 2%.

## 2.2 DeeP.E.M.

Three lines (600 mE, 800 mE, and 900 mE) were covered at 50 m intervals with P.E.M. in the DeeP.E.M. configuration. Table 1 presents the data collected. From this data the following observations and interpretations are made:

- 1) all values are very low - indicating a resistive environment,
- 2) responses are confined to the first 2 or 3 channels,
- 3) no cross-overs occur in the vertical field data,
- 4) no positive anomalies persist in the horizontal field data, and therefore
- 5) no anomalous conductors were detected.

## 3.0 Conclusions and Recommendations.

Geophysically, the conclusions which must be made are that the prospect is uninteresting. Even if a disseminated body were present one would expect some response from the E.M. survey. None was forthcoming. It would seem this part of the prospect can only survive on the strength of the geochem which itself is ambiguous. I would recommend that a bedrock geochem survey be done on selected geochem anomalies. If anything reasonable comes up - i.e. the geochem anomaly persists at depth - then a couple of I.P. lines may be warranted however at this stage I remain quite skeptical.



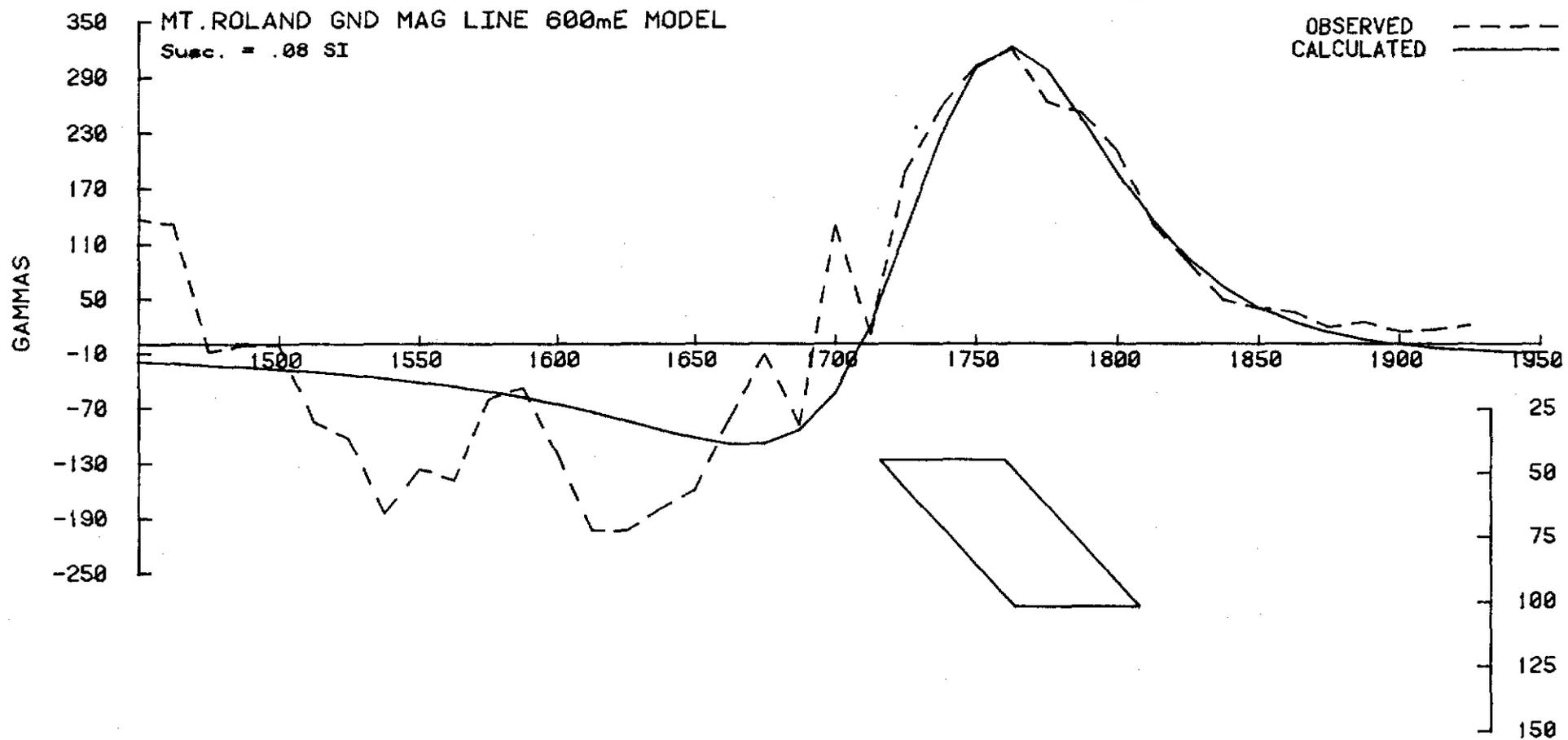
MARCUS FLIS

TABLE 1 MT.ROLAND PROSPECT "DEEP.E.M." RESULTS

Loop Geometry:- Tx: 100m x 100m horizontal loop laid out on 600 mE  
(1500mN to 1600mN), 700mE (1500mN to 1600mN)

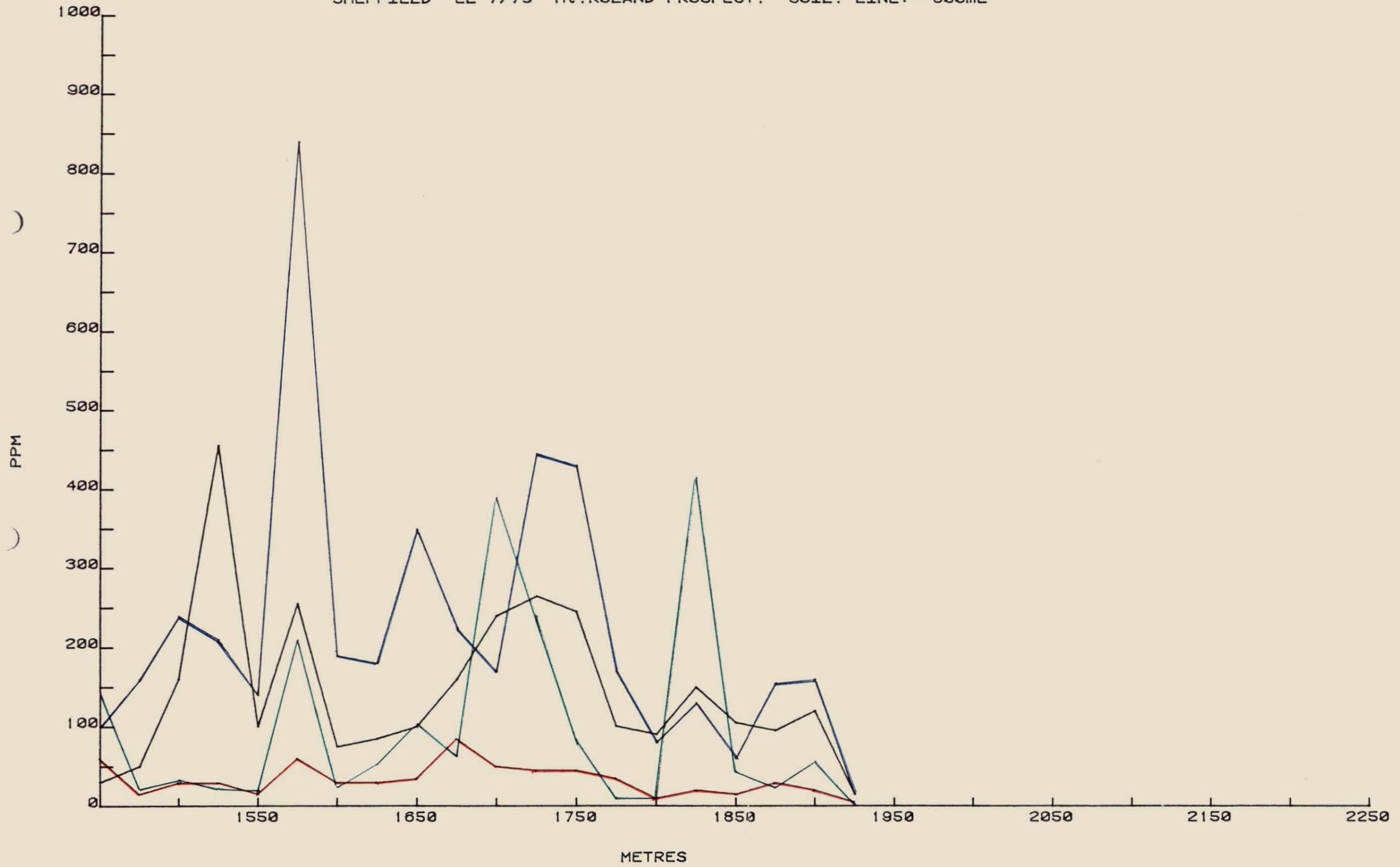
Rx: Small roving loop reading vertical and horizontal  
components of secondary field. Gain: 800, 20 msec timebase.

Channel	VERTICAL (V/A)								HORIZONTAL (V/A)							
	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8
600mE																
1650 N	-30	-9	-1	0	0	0	0	0	-4	-2	-1	-2	-1	0	0	0
1700 N	-35	-7	-3	-1	0	0	0	0	-1	-1	-1	0	0	0	0	0
Power Line	1750 N	-46	-5	-2	-4	-6	-5	0	-1	0	0	0	0	0	0	0
Fence	1800 N	-31	-9	-4	-1	0	0	0	4	0	-2	-1	-2	-1	0	0
	1850 N	-31	-8	-2	0	-1	-1	0	-1	0	-1	-1	-1	0	0	0
Creek	1900 N	-31	-9	-3	0	0	0	0	7	1	0	0	0	0	0	0
800mE																
	1600 N	-25	-6	1	0	0	0	0	3	0	0	0	0	0	0	0
Fence	1050 N	-28	-6	-2	0	0	0	0	0	0	0	0	0	0	0	0
	1700 N	-28	-7	-4	-2	-1	0	0	1	0	0	0	0	0	0	0
Fence	1750 N	-29	-8	-3	-1	0	0	0	2	0	0	0	0	0	0	0
	1800 N	-30	-9	-2	-1	-1	0	0	5	0	0	0	0	0	0	0
Creek	1850 N	-26	-6	-3	-1	0	0	0	6	0	0	0	-1	-1	0	0
	1900 N	-26	-8	-2	-2	-1	0	0	8	2	1	0	0	0	0	0
900mE																
	1600 N	-25	-7	-2	0	0	0	0	0	0	0	0	0	0	0	0
	1650 N	-26	-8	-3	0	0	0	0	1	0	0	0	0	0	0	0
Fence	1700 N	-26	-8	-3	-1	0	0	0	2	0	0	0	0	0	0	0
	1750 N	-26	-7	-3	-1	-1	0	0	4	1	0	0	0	0	-1	1
	1800 N	-28	-7	-3	0	0	0	0	5	0	0	0	0	0	0	0
	1850 N	-26	-8	-3	-2	-1	0	0	6	1	0	0	-1	-1	-1	0
	1900 N	-20	-7	-3	-2	-1	0	0	5	1	0	-1	0	0	0	0



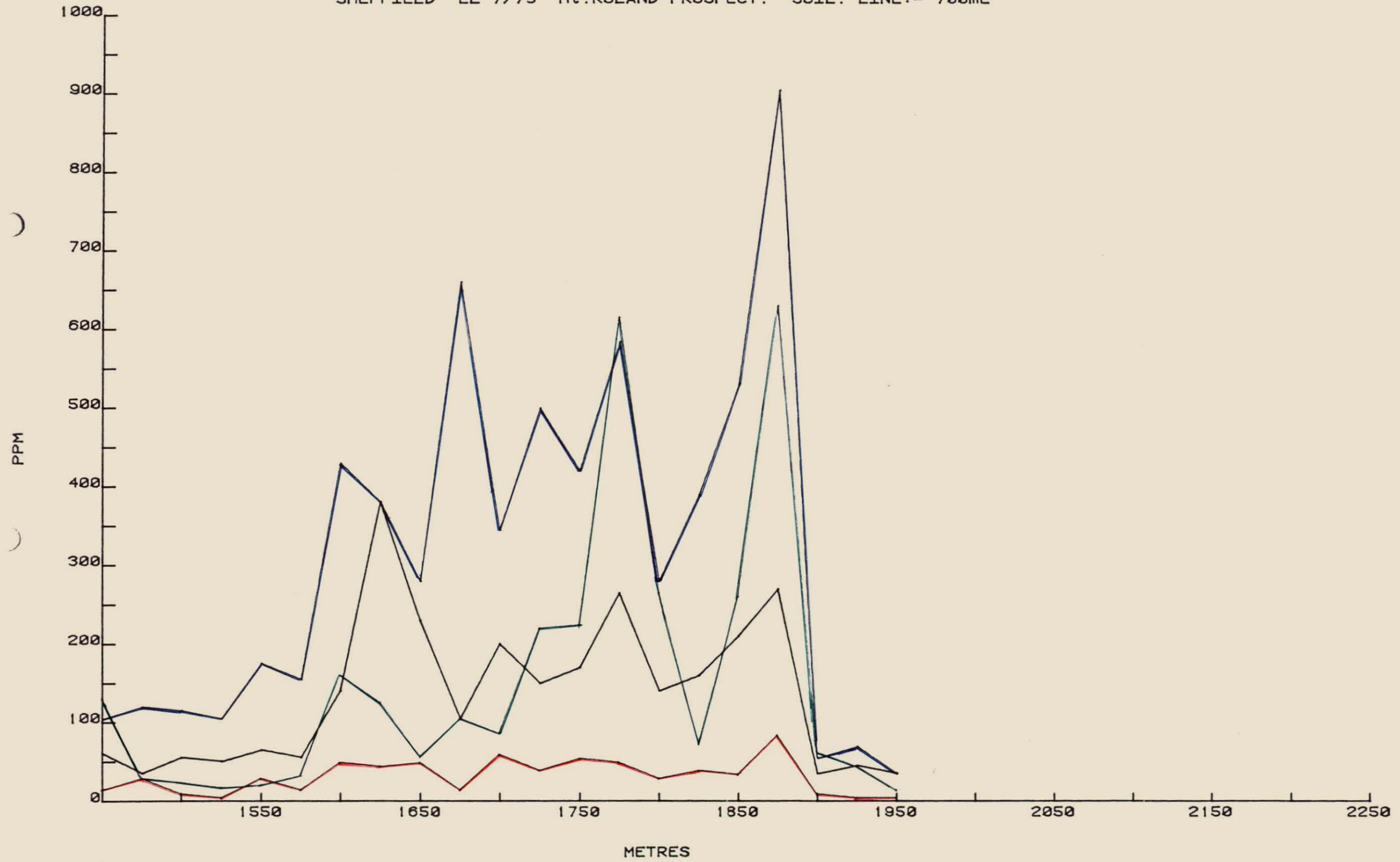
541058

SHEFFIELD EL 7/73 Mt.ROLAND PROSPECT. SOIL. LINE:- 600mE



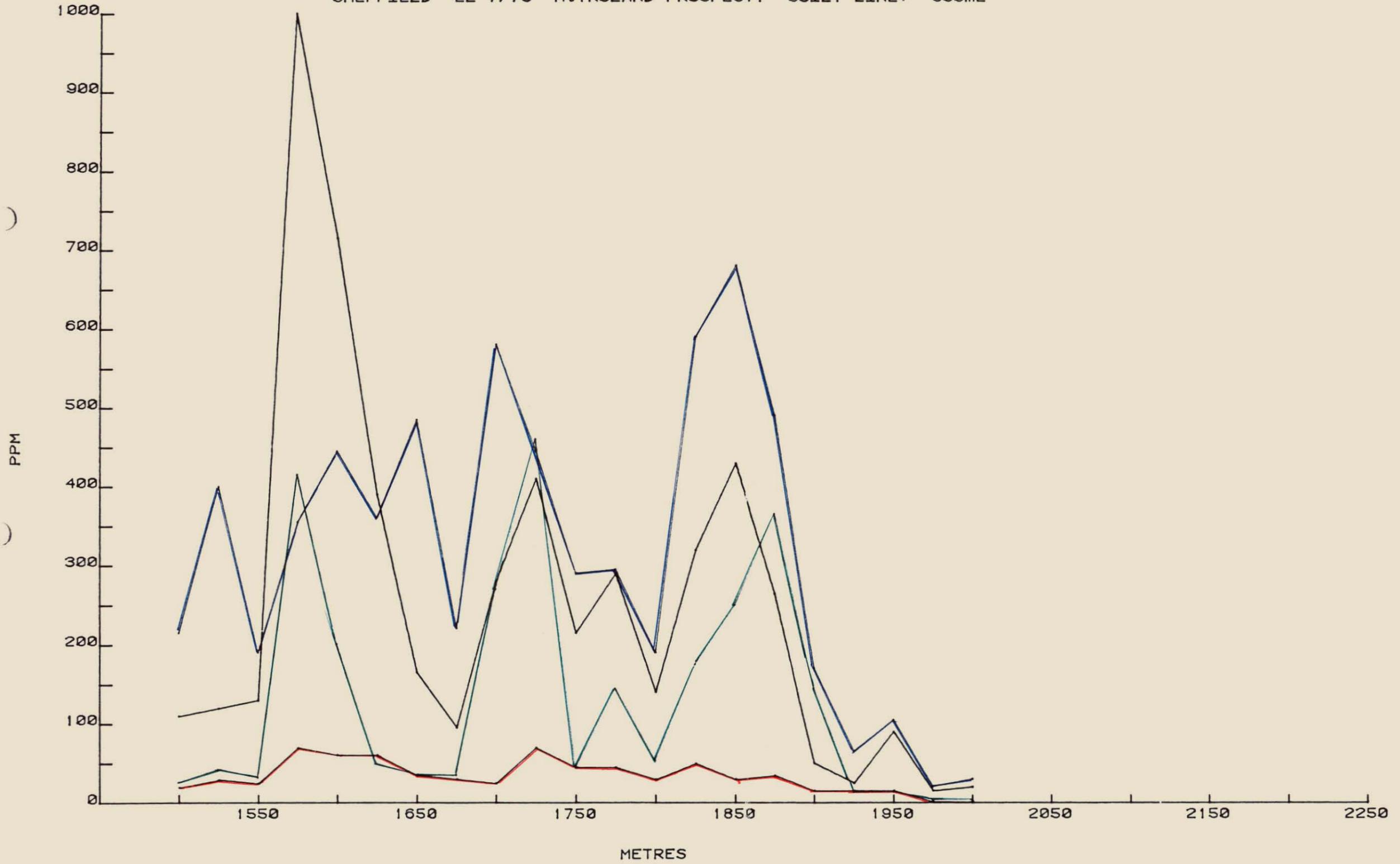
G.B.W. AUGUST 1981 Cu — Pb — Zn — Mn/10 —

SHEFFIELD EL 7/73 Mt.ROLAND PROSPECT. SOIL. LINE:- 700mE



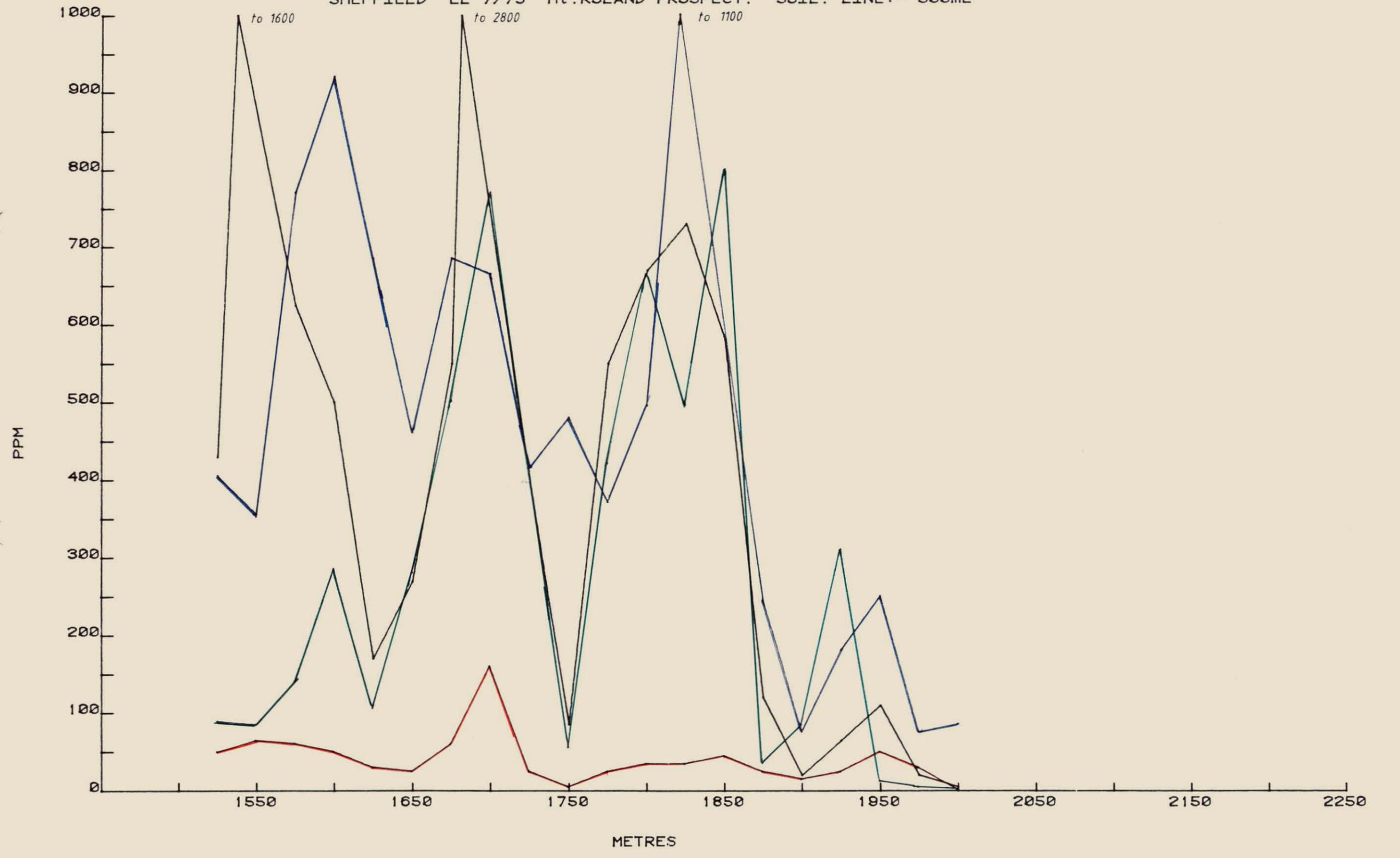
G.B.W. AUGUST 1981 Cu — Pb — Zn — Mn/10 —

SHEFFIELD EL 7/73 Mt.ROLAND PROSPECT. SOIL. LINE:- 800mE



G.B.W. AUGUST 1981 Cu — Pb — Zn — Mn/10 —

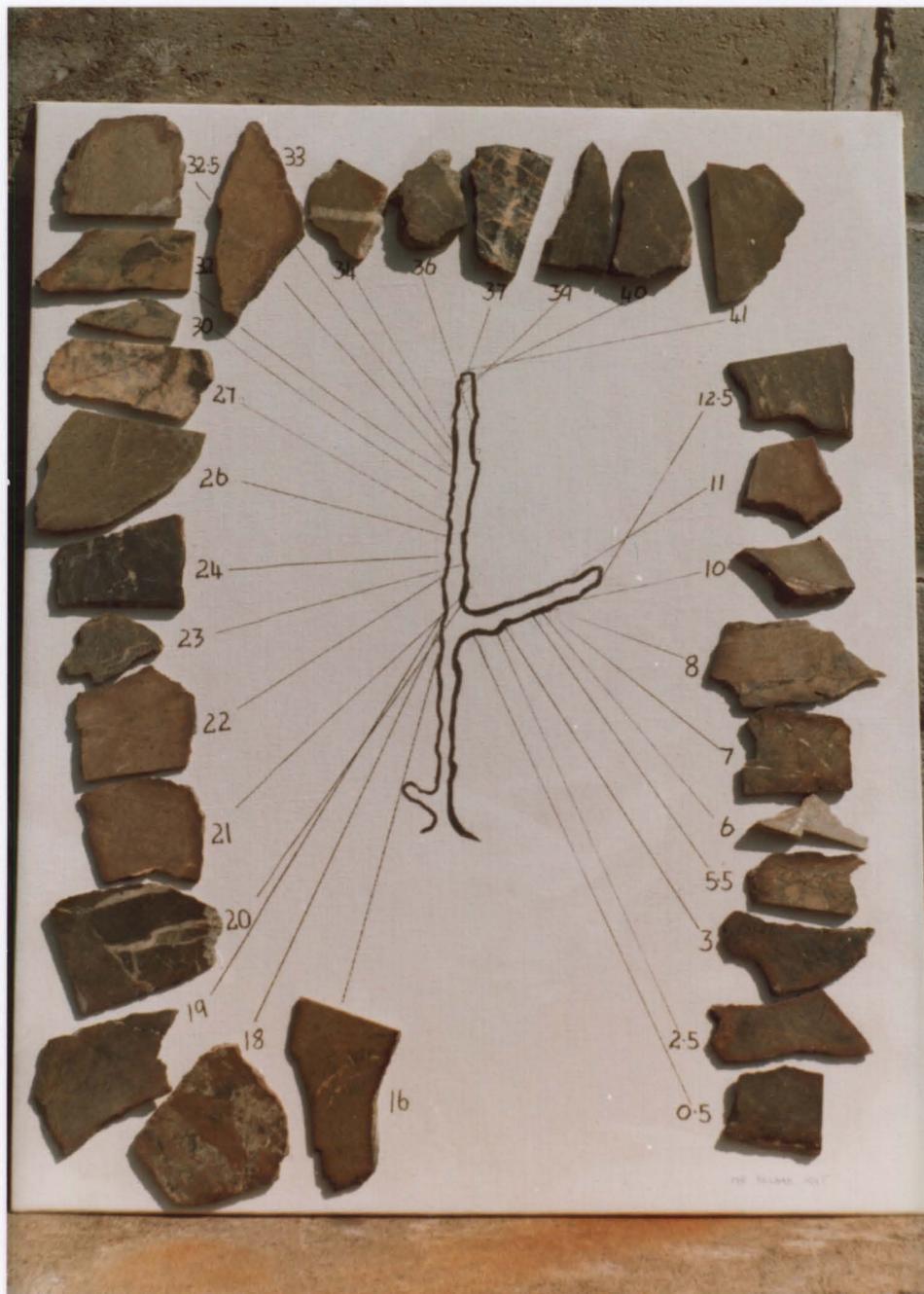
SHEFFIELD EL 7/73 Mt.ROLAND PROSPECT. SOIL. LINE:- 900mE



APPENDIX FIVE

MOUNT ROLAND SILVER-LEAD MINING CO.

ADIT MAPPING



Lithothèque showing rock types that occur within the Mount Roland Silver-Lead Mining Company adit.

ROCK DESCRIPTIONS OF SAMPLES TAKEN FROM  
THE MOUNT ROLAND ADIT

MAIN ADIT

- 16 (metres) : Highly altered, 'fuzzy' fine grained volcanic. Highly carbonated, some potassic alteration, light green, highly sericitic, abundantly micro-brecciated and slightly schistose 5 - 7% fine dispersed pyrite.
- 18 (metres) : Highly mineralised volcanic. Silicified, greenish brown fine grained volcanic, sericitised, carbonated and potassic alteration, abundantly coarsely brecciated with infilling of quartz-carbonate. 3 - 5% fine pyrite and 5% galena -sphalerite dispensed throughout-looks like an invasion of the rock.
- 19 (metres) : Mineralised volcanic. Light green fine grained volcanic with moderate schistosity. Highly sericitised, carbonated and minor potassic alteration. 5% fine grained pyrite and 5% galena-sphalerite dispersed throughout - an impregnation of the rock - small clots and aggregates of fine grained sulphides.
- 20 (metres) : Fuzzy volcanic. Slightly silicified and chloritised associated with quartz veins which brecciate the rock. Sericitised with very weak potassic alteration. 10% very fine grained pyrite and 1 - 2% galena-sphalerite dispersed throughout.

- 21 (metres) : Sericitised and slightly schistose lava. Small (1mm average) feldspars (?) in fine grained light green sericite and pinkish (haematitic ?) groundmass. Some brecciation. Upto 8mm wide quartz-carbonate veining. 5% fine grained dispersed pyrite. Same rocks as at 19 - 20 metres but less mineralised.
- 22 (metres) : Ditto - no larger clasts, just small quartz, feldspar and glass? Pale green in colour - alteration declining. Cut by quartz-carbonate veining 3 - 4mm thick with traces of galena - sphalerite. 3 - 5% pyrite dispersed throughout the rock.
- 23 (metres) : Weakly schistose, sericitised green fine fragmental (?) similar to above except less altered. 10% very fine grained pyrite and 1 - 2mm wide irregular quartz-carbonate veins and lenses.
- 24 (metres) : Highly mineralised volcanic. Dark grey-green, sericitised volcanic with visable quartz and glass shards? - plageoclase? all less than 1mm. 15% very fine grained pyrite throughout with 7% galena - sphalerite - chalcopyrite associated with net - vein fracturing of quartz-carbonate containing brecciated portions of the volcanic - a stockwork style of mineralisation.
- 26 (metres) : Change in character - not in rock type. Pale green sericitised fine grained acid volcanic-lava? Looks similar to rocks at Gowrie Park - abundant small quartz eyes 1 - 2mm with green sericitised plageoclase laths 1 - 2mm in fine groundmass. Massive rock - incipient schistosity 1% pyrite in aggregates of fine grains.

- 27 (metres) : Ditto with 1 - 2% pyrite. Large 5cm quartz-carbonate vein-barren. Rock shows slight lineation of minerals - very fine grained upto 1mm.
- 30 (metres) : Pale grey-green sericite volcanic (probably lava) with 15 - 20% very fine grained pyrite and very minor galena - sphalerite as irregular aggregates that 'brecciate' the rock - give it a blotchy effect - soft rock brecciation? Minor tiny quartz veinlets and lenses.
- 32 (metres) : Light green, highly sericite 'fuzzy' volcanic - looks like a lava - can see quartz and plageoclase. Abundant microscopic fractures, and larger fractures filled with quartz-irregular 3 - 5% fine grained pyrite and minor fine grained galena - sphalerite.
- 32.5 (metres): Ditto : 5% pyrite throughout minor galena - sphalerite associated with quartz veins (upto 10mm) schistose.
- 33 (metres) : Ditto : 'Fuzzy' 2 - 3% pyrite throughout. Trace sphalerite - galena associated with thin spidery quartz veins.
- 34 (metres) : Same rock exactly as at 26 metres. Some of the glass or feldspar looks more irregular as though fragments - largest 1 - 2mm. Minor pyrite trace galena - sphalerite.
- 36 (metres) : Same rock : more strongly sericitised, and 'fuzzy' with indistinct brecciation and minor silicification with pyrite in matrix of breccia - 5% and very fine grained. Some irregular quartz veining.

- 37 (metres) : Grey highly silicified rock now 95% quartz, cut by small quartz veinlets. 7% very fine grained pyrite.
- 39 (metres) : Green sericitic lava with feldspars upto 2 - 3mm rare quartz. 5% galena-sphalerite-chalcopyrite as very fine grained impregnation of rock matrix. 2% pyrite. Rock slightly silicified.
- 40 (metres) : Hard, grey-green sericitic lava(?) as before with 1% fine pyrite and trace galena - sphalerite (ultra fine grained) very weakly silicified.
- 41 (metres) : Ditto - probably not as silicified. Light green sericite lava with feldspars upto 1-2mm very minor quartz. Some feldspars white and extremely carbonated, others dark green - look like glass. 1 - 2% fine grained pyrite and patchy ultra-fine grained matrix impregnations of galena-sphalerite 0.5% overall. (Mineralisation and rock is very similar to rocks found on Gowrie Park Grid). This sample was dispatched for Petrological description. Refer Appendix 2 sample No. 975566.

RIGHT HAND DRIVE

- 0.5 (metres) : Light green and pink 'fuzzy' volcanic - sericitised 'lava'? Potassic alteration with 3% pyrite throughout and 1 - 2% galena-sphalerite in thin quartz veins and lenses. Carbonated.
- 2.5 (metres) : Similar rock-pink colour-maybe due to haematite. 3% fine pyrite and 2 - 3% ultrafine grained galena - sphalerite in matrix.

- 3 (metres) : Similar 3% pyrite, 7% galena - sphalerite mainly in irregular veinlets and lenses of basemetals - roughly parallel to lineation of minerals in rock.
- 5.5 (metres) : Similar except well brecciated with very fine grained pyrite in matrix of breccia - overall 5 - 10% pyrite. This rock may represent a flow-top pyroclastic layer.
- 6 (metres) : Mixture of last two rock types. 3 - 5% pyrite. No basemetals.
- 7 (metres) : Lava as per sample from 41 metres in main adit - fine grained with quartz eyes 1% pyrite. Quartz veins.
- 8 (metres) : Volcanic - very 'fuzzy', slightly brecciated and slightly silicified matrix with some pyrite - 2% overall. Thin irregular quartz veinlets.
- 10 (metres) : Fine grained lava (?) as before (7) with 1% pyrite.
- 11 (metres) : 'Fuzzy', pink and green, haematitic volcanic with thin spidery quartz veins with 1 - 2% pyrite. A lava with much fine haematite and increased alteration.
- 12.5 (metres): Fragmental or lava - similar to before - some sericitised and carbonated feldspars and fragmented (?) to 3mm in grey weakly silicified matrix with pyrite to 5% overall.

The following samples were collected for geochemical analysis and the results can be found in Appendix 3.

716916 from 16 - 20 metres - bulk sample

716918 from 21 - 25 metres - bulk sample

716919 from 26 - 30 metres - bulk sample

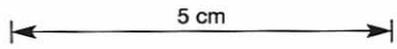
716920 from 32 - 36 metres - bulk sample

716921 from 36 - 41 metres - bulk sample

716922 from 0 - 6 metres in side drive - bulk sample

716923 from 7 - 12.5 metres in side drive - bulk sample

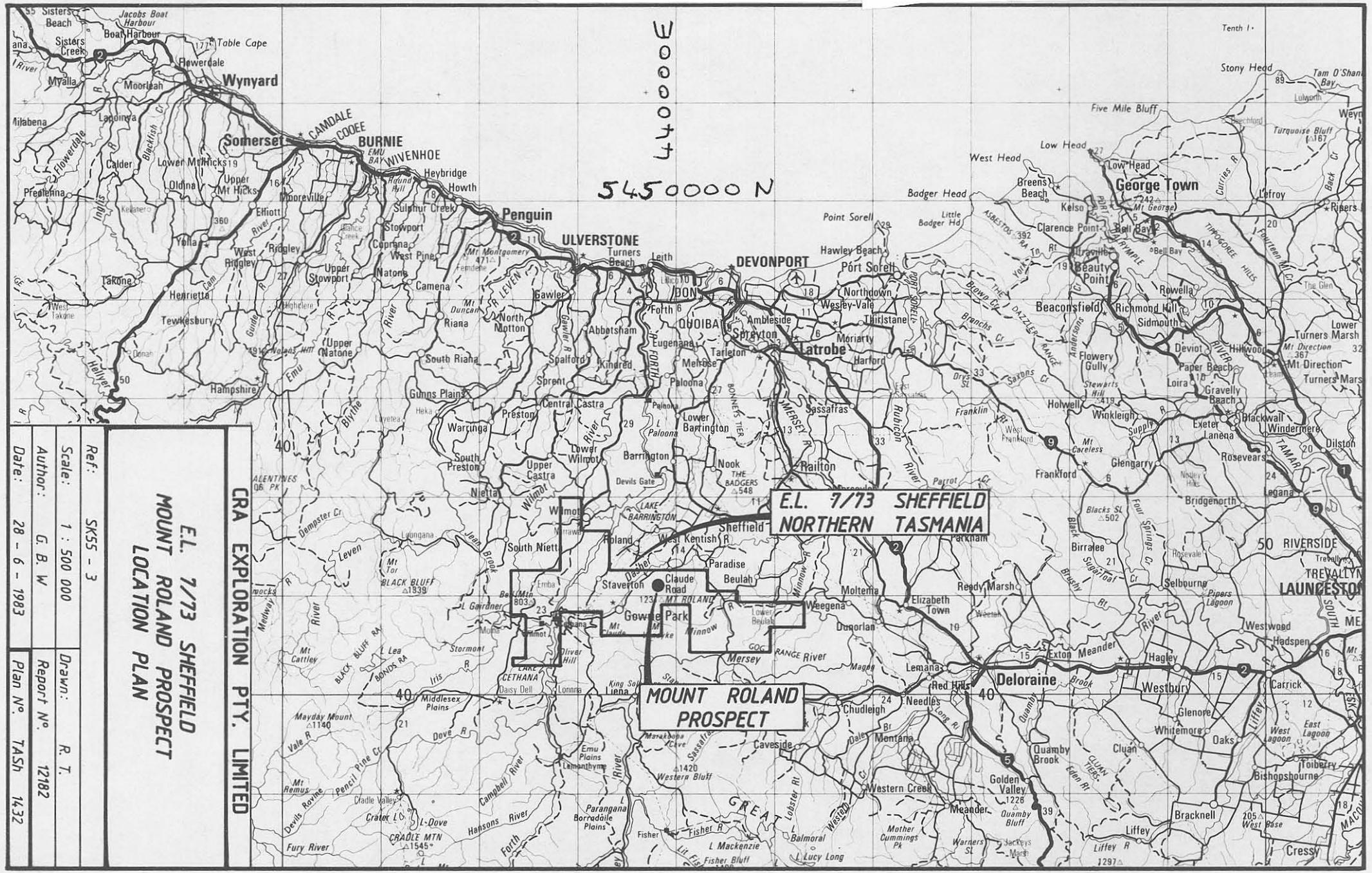
541071



AMG REFERENCE POINTS ADDED

440000

5450000 N



E.L. 7/73 SHEFFIELD  
NORTHERN TASMANIA

MOUNT ROLAND  
PROSPECT

CRA EXPLORATION PTY. LIMITED

E.L. 7/73 SHEFFIELD  
MOUNT ROLAND PROSPECT  
LOCATION PLAN

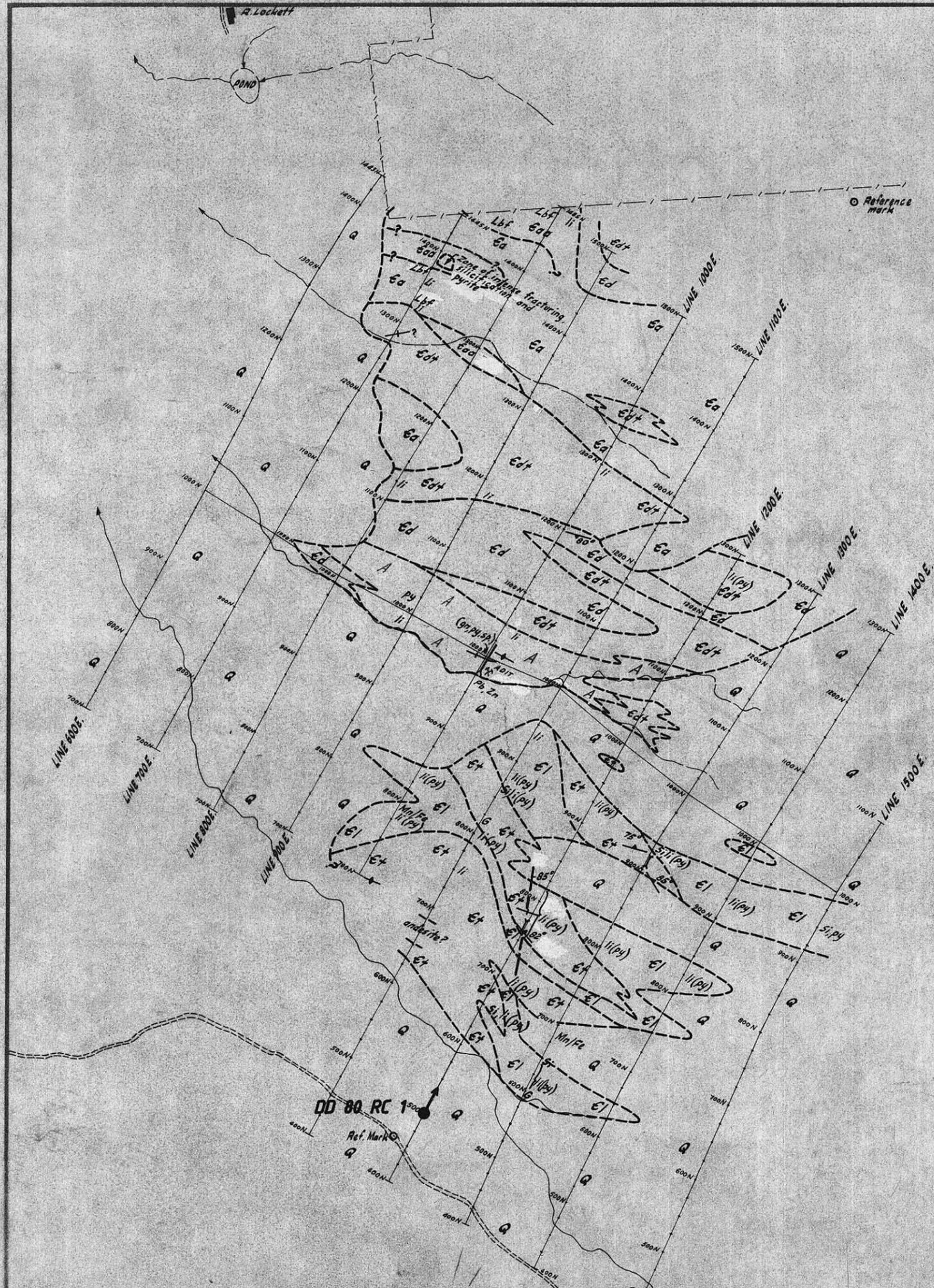
Ref:	SK55 - 3	Drawn:	R. T.
Scale:	1 : 500 000	Report No.:	12182
Author:	G. B. W.	Plan No.:	TASH 1432
Date:	28 - 6 - 1983		

541072

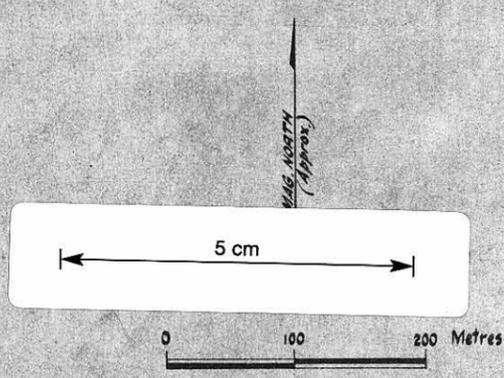
LEGEND

- li - limonite after sulphides.
- Si - Silicification.
- G - Gossanous iron oxide fragments.
- Mn/Fe - Manganese, usually massive 'pan'.
- Lbf - leached, bleached.
- fractured rock - stockwork style mineralisation.
- py - Pyrite.
- gn - Galena.
- sp - Sphalerite.
- cp - Chalcopyrite.
- 85° - Schistosity.
- Primary layering or bedding.
- Costean.
- 85° - Fault

- QUATERNARY Q Roland conglomerate scree and soil or soil derived from volcanics.
- €l LAPILLI TUFF. Weakly - moderately altered and schistose. Clasts of pumice up to 15 mm. Generally fairly fine grained with gritty texture.
- €t TUFFS. Weakly - moderately altered gritty and sandy acid volcanic. Minor very fine grained tuffs (inc. xyl. tuff). Some strongly chloritic fine grained tuffs (waterlaid).
- A "ADIT TUFF". Possibly a lava.
- CAMBRIAN
- €d DACITE (LAVA?). Weakly altered, massive, green volcanic with much feldspar in glassy (now sericitic) groundmass and rare qtz. eyes. Some hornblende.
- €dt GRITTY DACITIC TUFF. Clearly waterlain in places - rounded clasts up to 10 mm. Also weakly altered dacitic agglomerate with angular fragments up to 30 mm.
- €a INTERMEDIATE VOLCANIC LAVA (ANDESITE?). With magnetite. Essentially unaltered.
- €aa INTERMEDIATE VOLCANIC DEBRIS. Weakly to unaltered - rounded to sub-angular clasts in sandy matrix - a mud flow or agglomerate.



- Permanent creek
- Intermittent creek
- Vehicle track
- Boundary fence



MT. ROLAND  
1231m

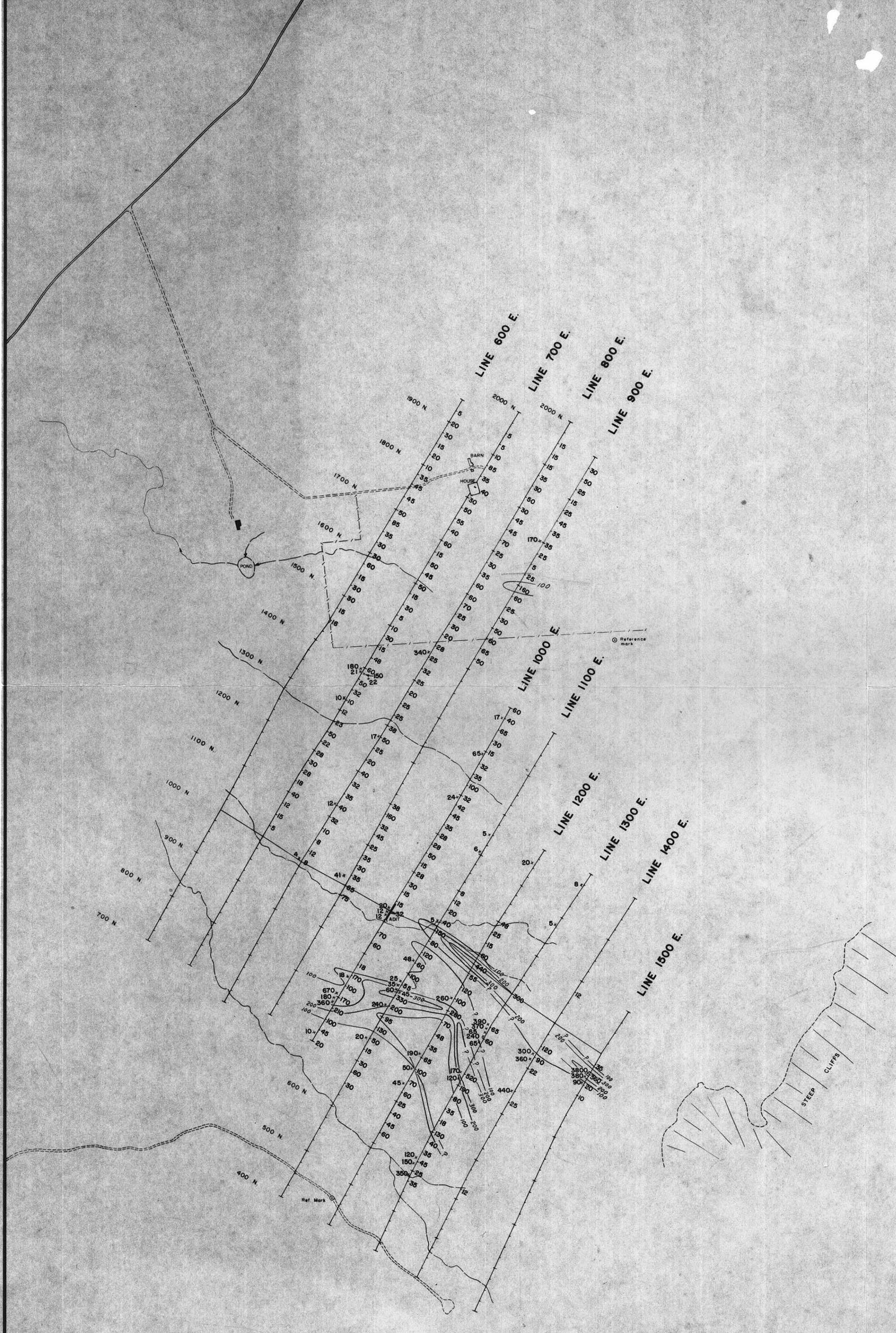
C.R.A. EXPLORATION PTY. LIMITED

**GEOLOGY PLAN**  
MT. ROLAND PROSPECT  
SHEFFIELD E.L. 7/73, NORTHERN TASMANIA

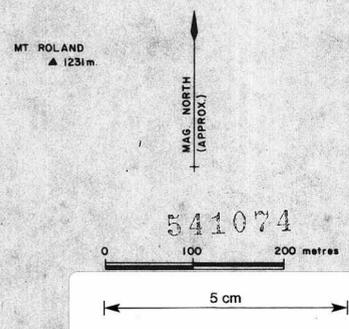
geologist: G.P.	scale: 1:5500 Approx.	report no: 12182
drawn: R.G.W.	date: Nov. 1979	plan no: TAS h 26

Plan drawn by G. Purvis from uncorrected aerial photograph.

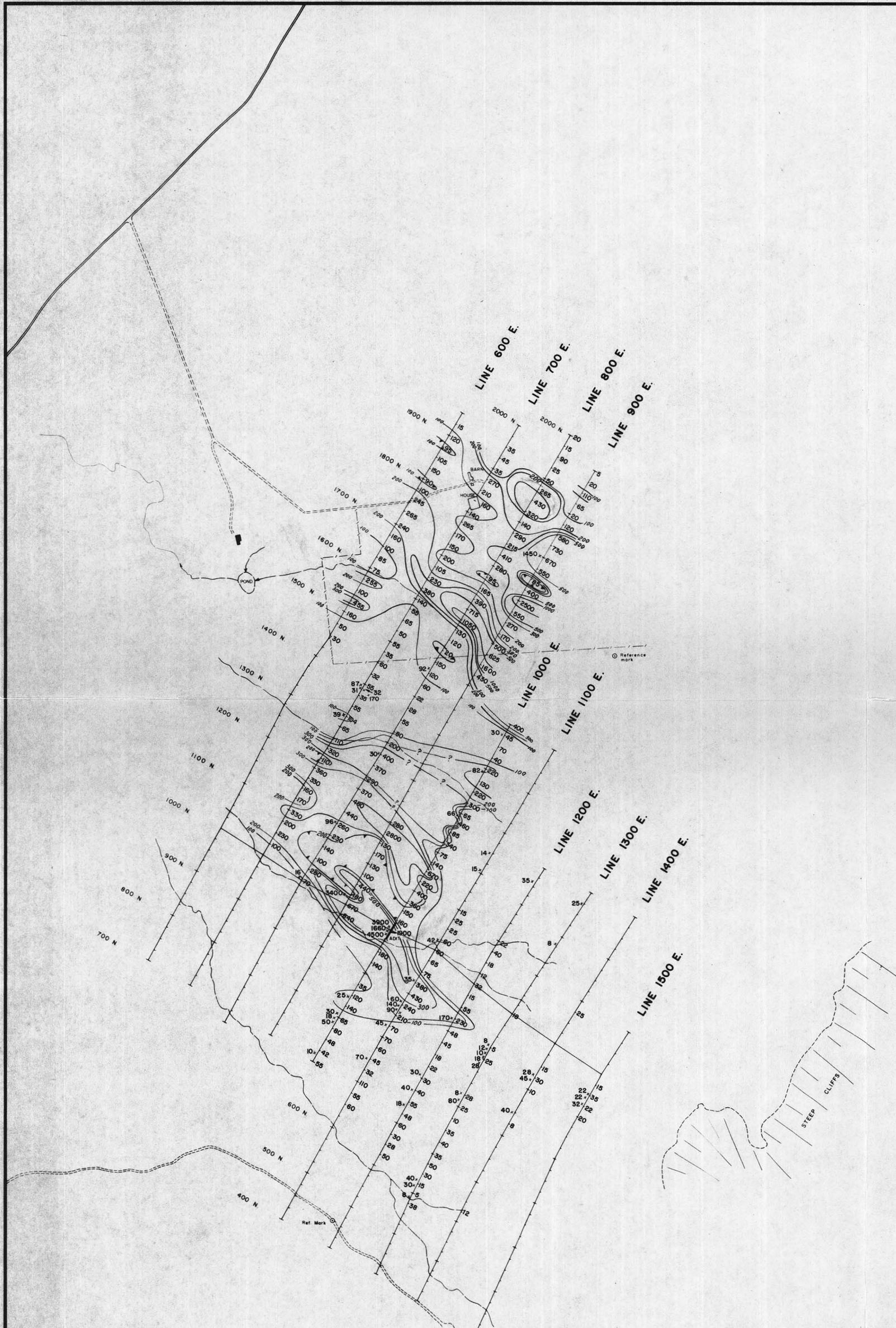




**LEGEND**  
 20 Soil Sample value in p.p.m.  
 20X Rock Sample value in p.p.m.  
 Contours based on soil samples only.



CRA EXPLORATION PTY. LIMITED		
MT. ROLAND PROSPECT		
SHEFFIELD E.L. 7/73, NORTHERN TASMANIA		
<b>COPPER GEOCHEMISTRY</b>		
Geologist : G.P. G.W.	Scale : 1:5500 approx.	Report No. 12182
Drawn : TGDS	Date : Nov. 1981	Plan No. TAS h 45

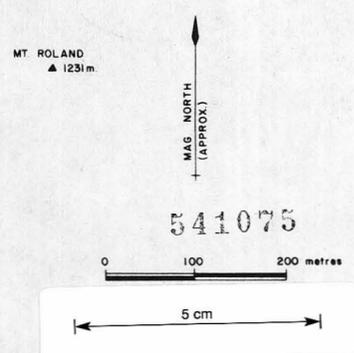


**LEGEND**

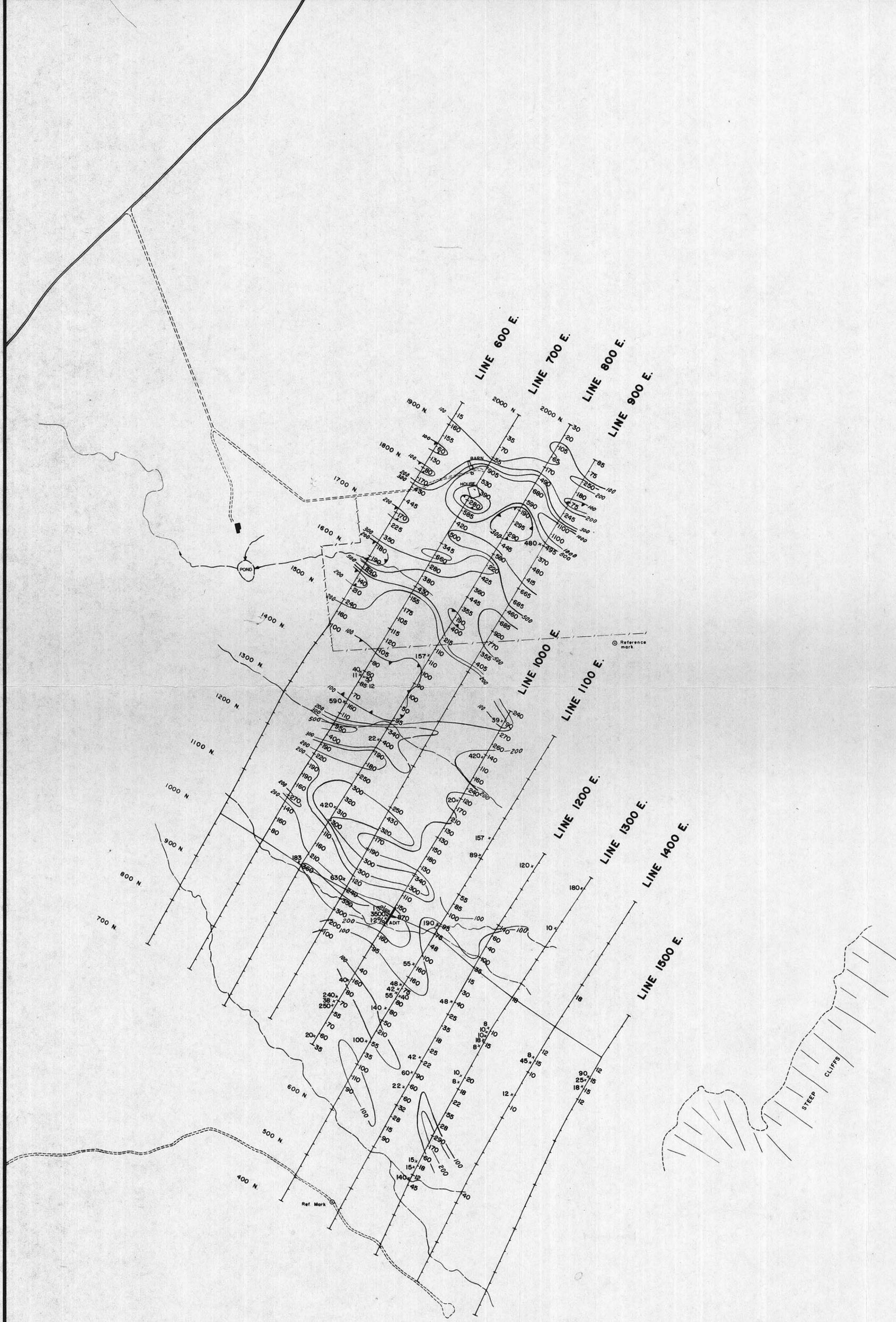
20 Soil Sample values in p.p.m.

20x Rock Sample values in p.p.m.

Contours based on soil samples only.



CRA EXPLORATION PTY. LIMITED		
MT. ROLAND PROSPECT		
SHEFFIELD E.L. 7/73, NORTHERN TASMANIA		
<b>LEAD GEOCHEMISTRY</b>		
Geologist : G.P. G.W	Scale : 1:5500 approx	Report No. 12182
Drawn : T.G.D.S.	Date : Nov. 1981	Plan No TAS h 46



**LEGEND**

20 Soil Sample values in ppm.

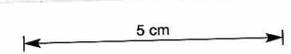
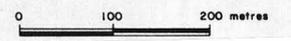
20X Rock Sample values in ppm.

Contours based on soil samples only.

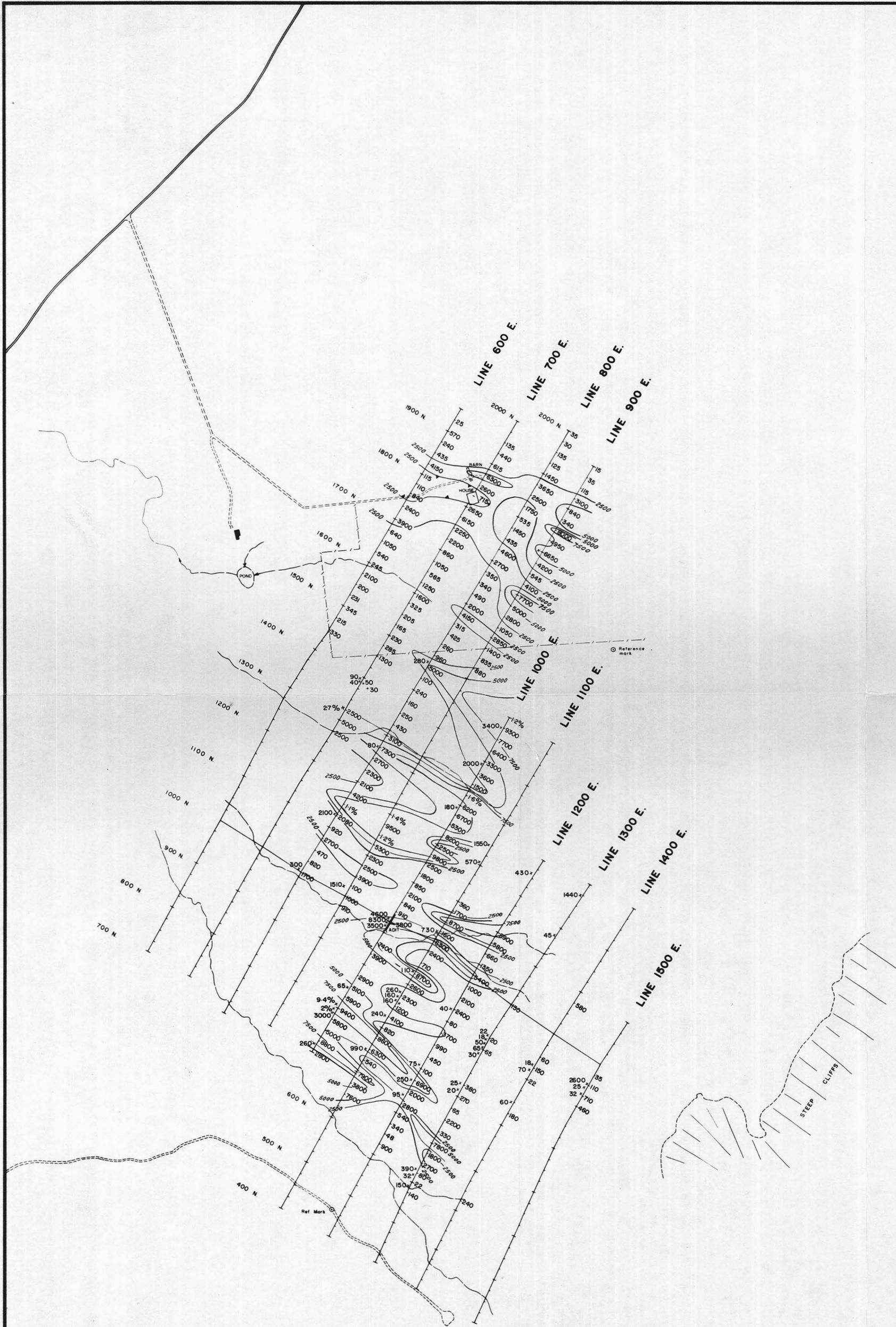
MT. ROLAND  
▲ 1231m.



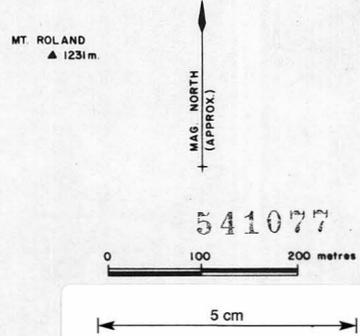
541076



CRA EXPLORATION PTY. LIMITED		
<b>MT. ROLAND PROSPECT</b>		
SHEFFIELD E.L. 7/73, NORTHERN TASMANIA		
<b>ZINC GEOCHEMISTRY</b>		
Geologist : G.P. GW	Scale : 1:5500 approx.	Report No. 12182
Drawn : T.G.D.S.	Date : Nov. 1981	Plan No. TAS h 47



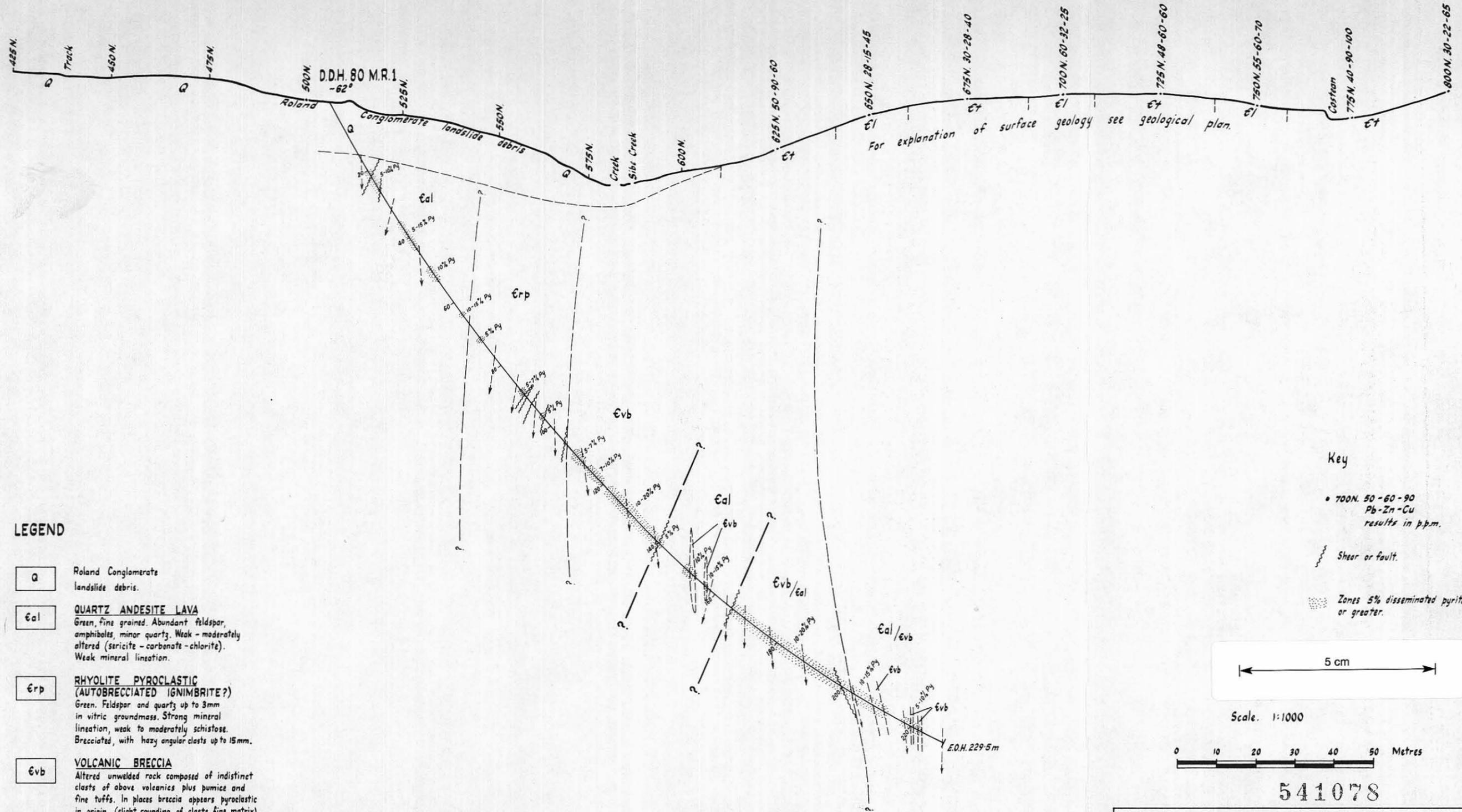
**LEGEND**  
 20 Soil Sample values in p.p.m.  
 20X Rock Sample values in p.p.m.  
 Contours based on soil samples only.



CRA EXPLORATION PTY. LIMITED		
<b>MT. ROLAND PROSPECT</b>		
SHEFFIELD E.L. 7/73, NORTHERN TASMANIA		
<b>MANGANESE GEOCHEMISTRY</b>		
Geologist : G.P., G.W.	Scale : 1:5500 approx.	Report No. 12182
Drawn : T.G.D.S.	Date : Nov. 1981	Plan No. TAS h 48

SOUTH - WEST

NORTH - EAST



LEGEND

- Q** Roland Conglomerate landslide debris.
  - Eal** **QUARTZ ANDESITE LAVA**  
Green, fine grained. Abundant feldspar, amphiboles, minor quartz. Weak - moderately altered (sericite - carbonate - chlorite). Weak mineral lineation.
  - Erp** **RHYOLITE PYROCLASTIC (AUTOBRECCIATED IGNIMBRITE?)**  
Green. Feldspar and quartz up to 3mm in vitric groundmass. Strong mineral lineation, weak to moderately schistose. Brecciated, with hazy angular clasts up to 15mm.
  - Evb** **VOLCANIC BRECCIA**  
Altered unwelded rock composed of indistinct clasts of above volcanics plus pumice and fine tuffs. In places breccia appears pyroclastic in origin, (slight rounding of clasts, fine matrix) In other places appears as soft rock brecciation of lava (rubbly flow tops?)
- Primary layering  
Mineral lineation (in lava and ignimbrite),  
clast lineation in volcanic breccia.

Key

- 700N. 50-60-90  
Pb-Zn-Cu  
results in p.p.m.
- ~ Shear or fault.
- Zones 5% disseminated pyrite or greater.

5 cm

Scale. 1:1000

0 10 20 30 40 50 Metres

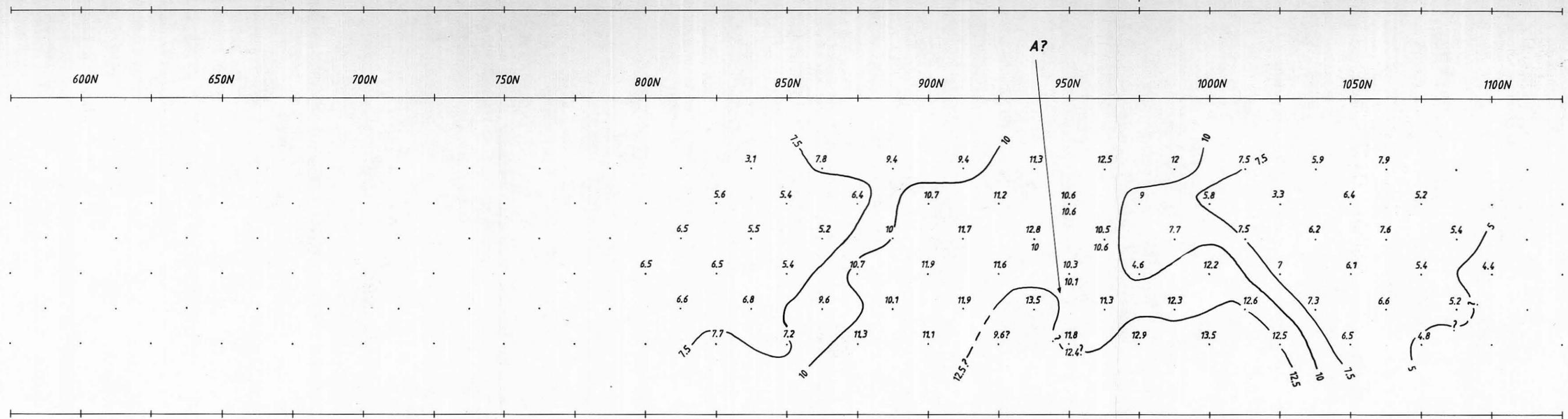
541078

C.R.A. EXPLORATION PTY. LIMITED

MT. ROLAND PROSPECT  
 E.L. 7/73 TASMANIA  
 SECTION ALONG 1200 E.  
 LOOKING NORTH - WEST

geologist: G.P.	scale: 1:1000	report no: 12182
drawn: T.G.D.S.	date: Jan. 1981	plan no: TV 15

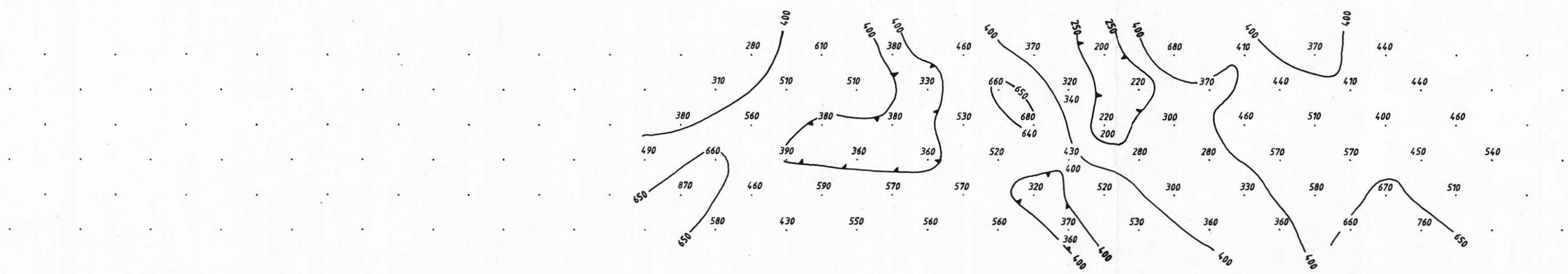
Adit  
9 m E  
Y



Culture Plan

Apparent Chargeability ( msecs )

n = 1  
n = 2  
n = 3  
n = 4  
n = 5  
n = 6



Apparent Resistivity ( ohm m )

n = 1  
n = 2  
n = 3  
n = 4  
n = 5  
n = 6

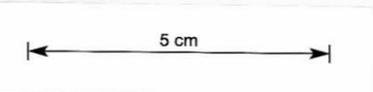
Array.	Dipole - Dipole	
Dipole length.	25	metres.
Transmitter type.	LoPo	
Timing sequence.	2 sec on / 2 sec off	
Receiver type.	Huntec Mk. IV	
Integration time.	450 to 1100 msecs after cut off.	
I. P.	Measured over one current pulse.	
Contractor.	GEOTERREX LIMITED	

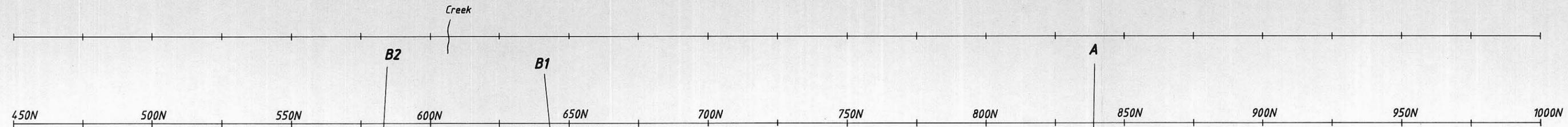
541079

CRA EXPLORATION PTY. LIMITED

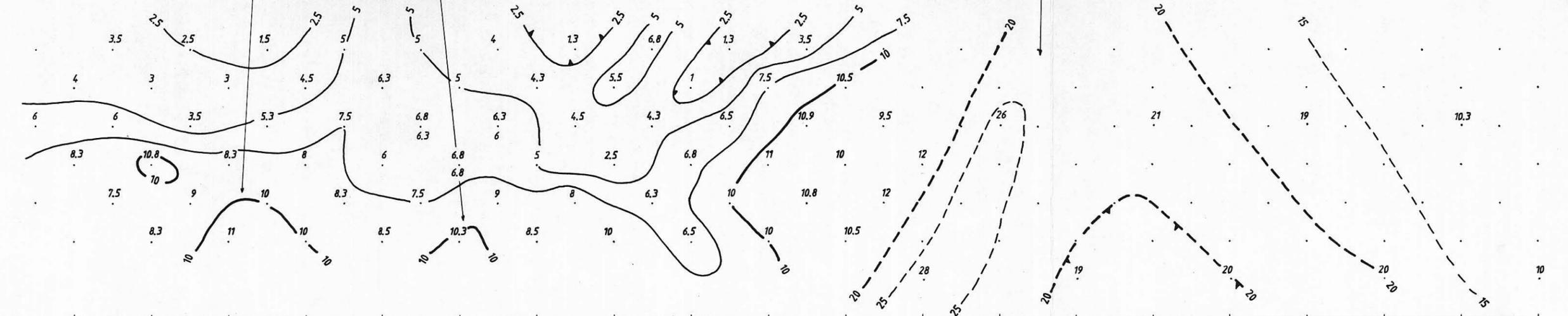
SHEFFIELD E.L. 7/73  
MT. ROLAND PROSPECT  
Induced Polarization & Resistivity Survey  
LINE 1000 EAST

Ref:	SK55 - 3	Drawn:	R. T.
Scale:	1 : 1250	Report No.:	12182
Author:	M. F. F.	Plan No.:	TASH 1443
Date:	18 - 7 - 1983		

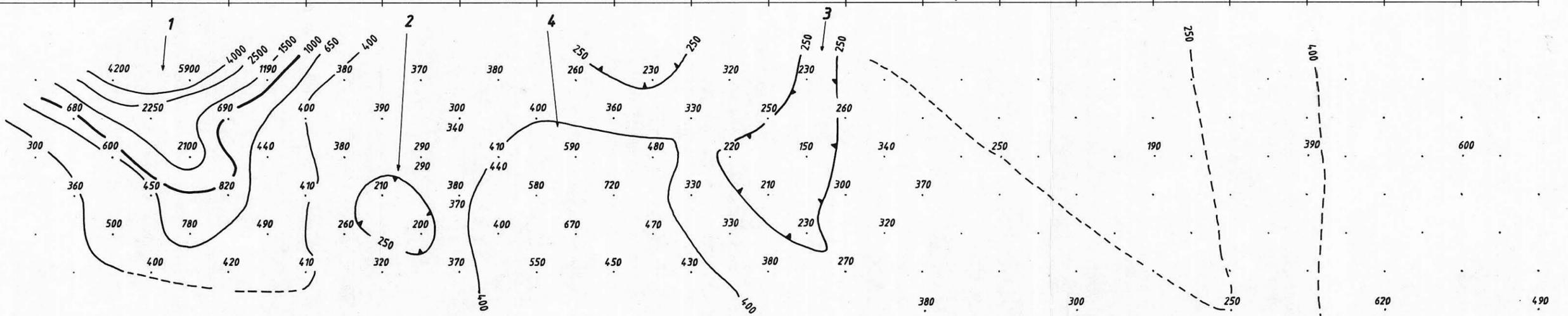




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n = 3  
n = 4  
n = 5  
n = 6



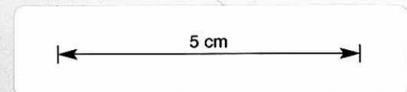
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n = 3  
n = 4  
n = 5  
n = 6



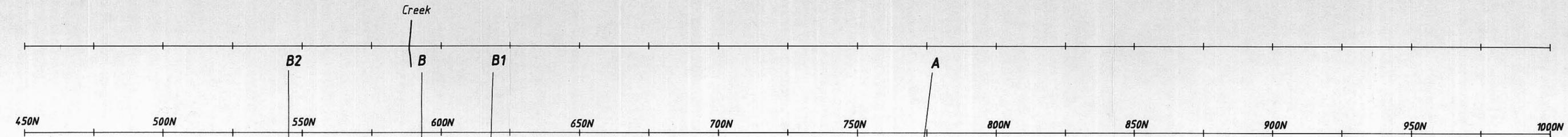
Culture Plan  
Apparent Chargeability ( msecs )  
Apparent Resistivity ( ohm m )

Array.	Dipole - Dipole
Dipole length.	25 metres.
Transmitter type.	Elliot
Timing sequence.	2 sec on / 2 sec off
Receiver type.	Huntec Mk IV
Integration time.	450 to 1100 msecs after cut off
I. P.	Measured over one current pulse.
Contractor.	GEOTERREX LIMITED

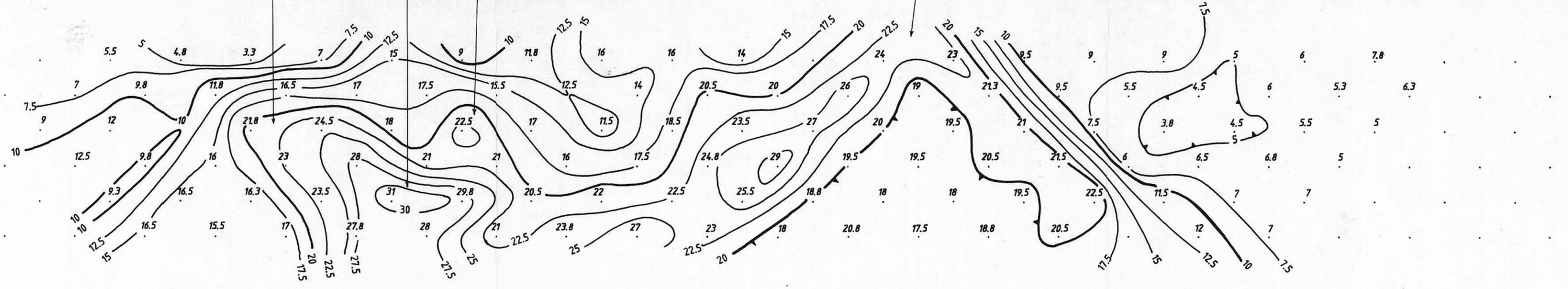
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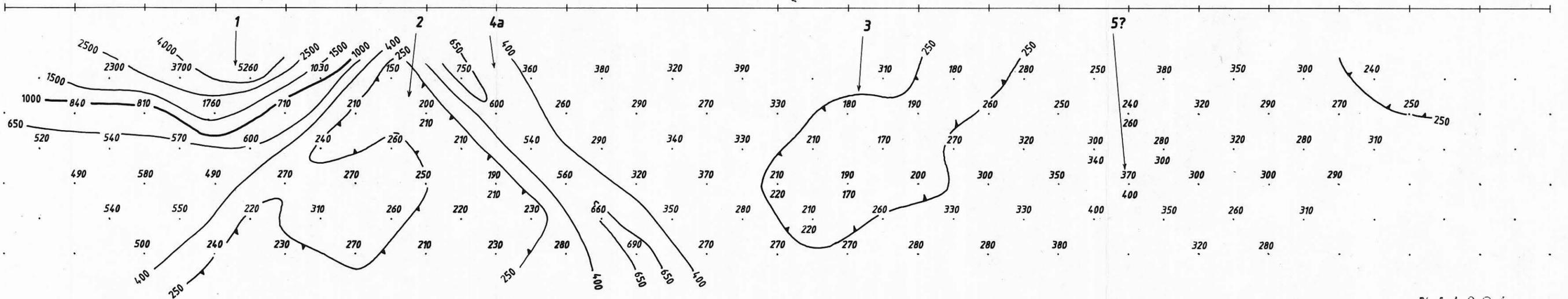
CRA EXPLORATION PTY. LIMITED	
SHEFFIELD E.L. 7/73 MT. ROLAND PROSPECT Induced Polarization & Resistivity Survey LINE 1100 EAST	
Ref: SK55 - 3	Drawn: R. T.
Scale: 1 : 1250	Report No. 12182
Author: M. F. F.	Plan No. TASH 1444
Date: 18 - 7 - 1983	



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n = 4  
n = 5  
n = 6



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n = 4  
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n = 6

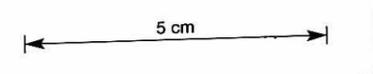


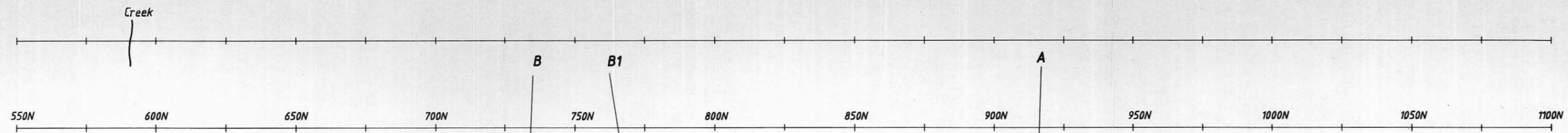
Array.	Dipole - Dipole
Dipole length.	25 metres.
Transmitter type.	Elliot 1.5 KVA
Timing sequence.	2 secs on / 2 secs off
Receiver type.	Scintrex IPR 7
Integration time.	450 to 1100 msecs after cut off
I. P.	Measured over one current pulse.
Contractor.	GEOTERREX LTD.

541081

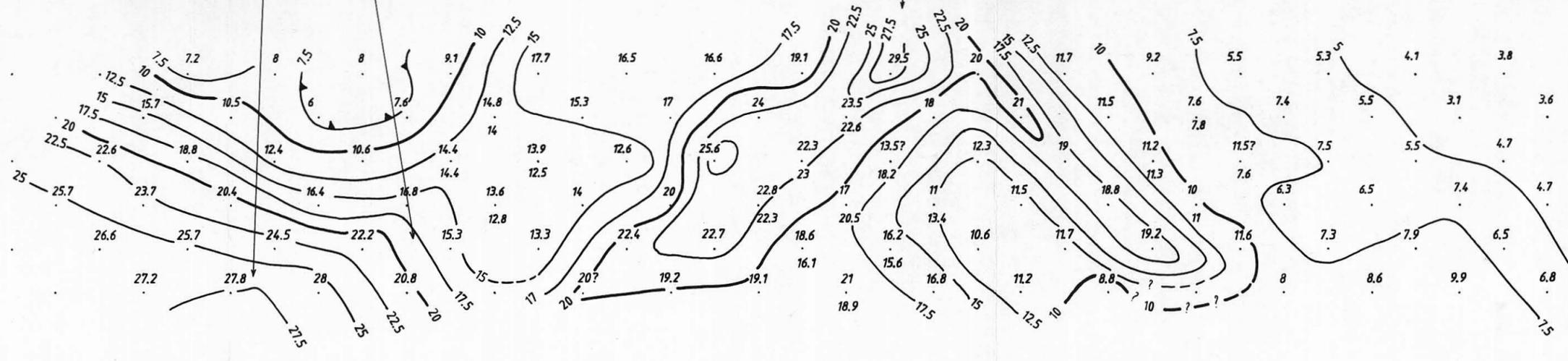
CRA EXPLORATION PTY. LIMITED  
SHEFFIELD E.L. 7/73  
MT. ROLAND PROSPECT  
Induced Polarization & Resistivity Survey  
LINE 1200 EAST

Ref:	SK55 - 3	Drawn:	R. T.
Scale:	1 : 1250	Report N°:	12182
Author:	M. F. F.	Plan N°:	TASH 1437
Date:	11 - 4 - 1979		



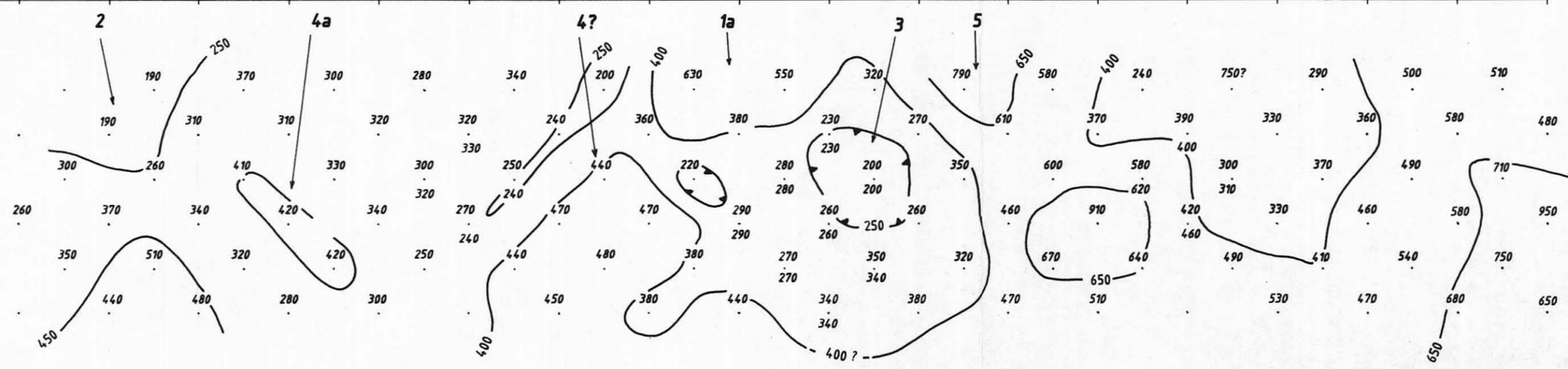


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n = 2  
n = 3  
n = 4  
n = 5  
n = 6



Apparent Chargeability ( msecs )  
2.1

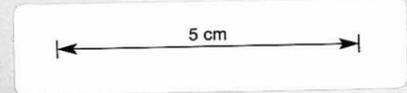
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n = 3  
n = 4  
n = 5  
n = 6



Apparent Resistivity ( ohm m )  
600

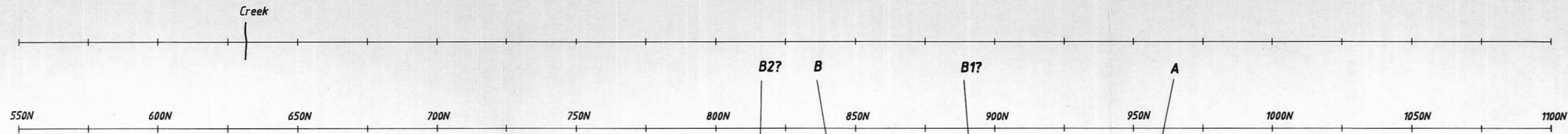
Array.	Dipole - Dipole	
Dipole length.	25	metres.
Transmitter type.	LoPo 5 KVA	
Timing sequence.	2 sec on / 2 sec off	
Receiver type.	Huntec Mk. IV	
Integration time.	450 to 1100 msecs after cut off.	
I. P. Measured over one current pulse.		
Contractor.	GEOTERREX LTD.	

CRA EXPLORATION PTY. LIMITED	
SHEFFIELD E.L. 7/73 MT. ROLAND PROSPECT Induced Polarization & Resistivity Survey LINE 1300 EAST	
Ref:	SK55 - 3
Scale:	1 : 1250
Author:	M. F. F.
Date:	4 - 7 - 1983
Drawn:	R. T.
Report N°:	12182
Plan N°:	TASH 1438

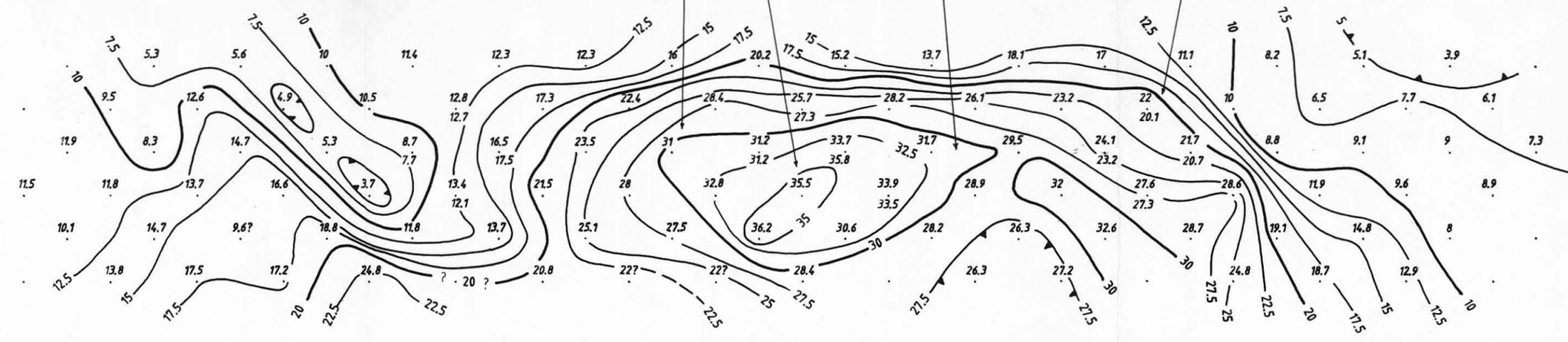


141002

Culture Plan



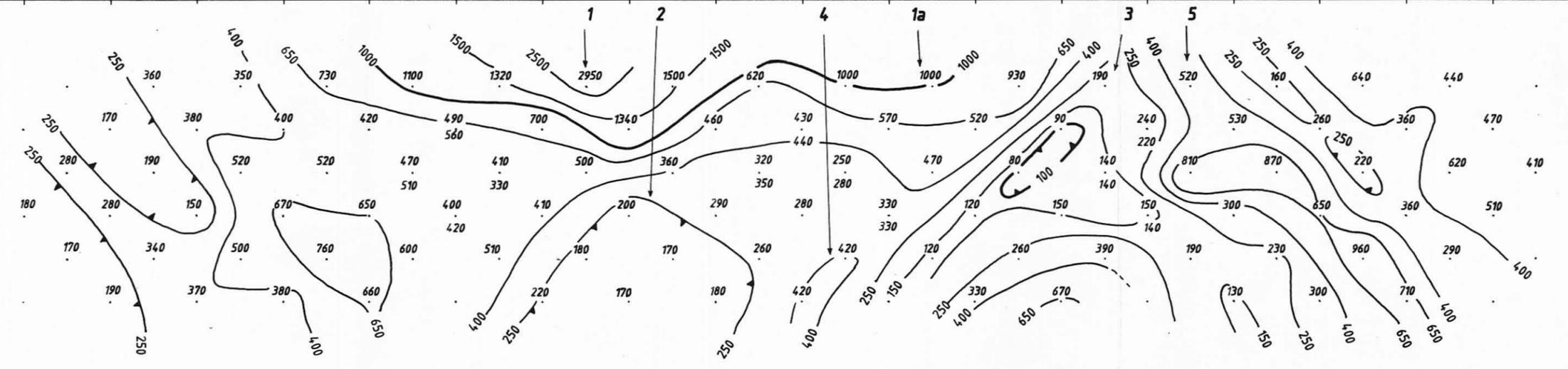
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n = 3  
n = 4  
n = 5  
n = 6



Culture Plan

Apparent Chargeability ( msecs )

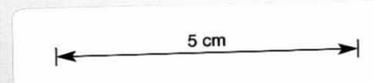
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n = 4  
n = 5  
n = 6



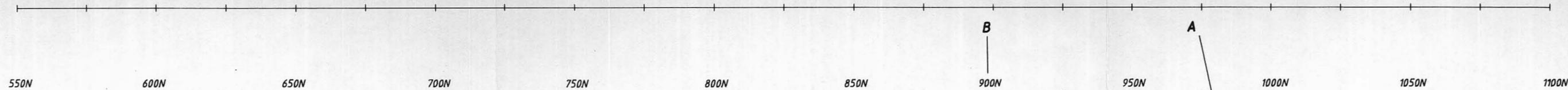
Apparent Resistivity ( ohm m )

Array.	Dipole - Dipole	
Dipole length.	25	metres.
Transmitter type.	LoPo 5 KVA	
Timing sequence.	2 sec on / 2 sec off	
Receiver type.	Huntec Mk. IV	
Integration time.	450 to 1100 msecs after cut off.	
I. P. Measured over one current pulse.		
Contractor.	GEOTERREX LTD.	

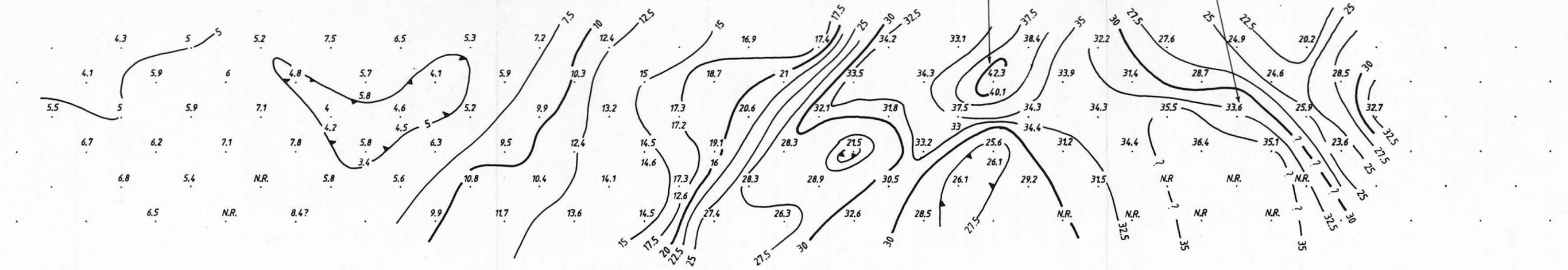
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CRA EXPLORATION PTY. LIMITED	
SHEFFIELD E.L. 7/73	
MT. ROLAND PROSPECT	
Induced Polarization & Resistivity Survey	
LINE 1400 EAST	
Ref:	SK55 - 3
Scale:	1 : 1250
Author:	M. F. F.
Date:	4 - 7 - 1983
Drawn:	R. T.
Report N°:	12182
Plan N°:	TASH 1439

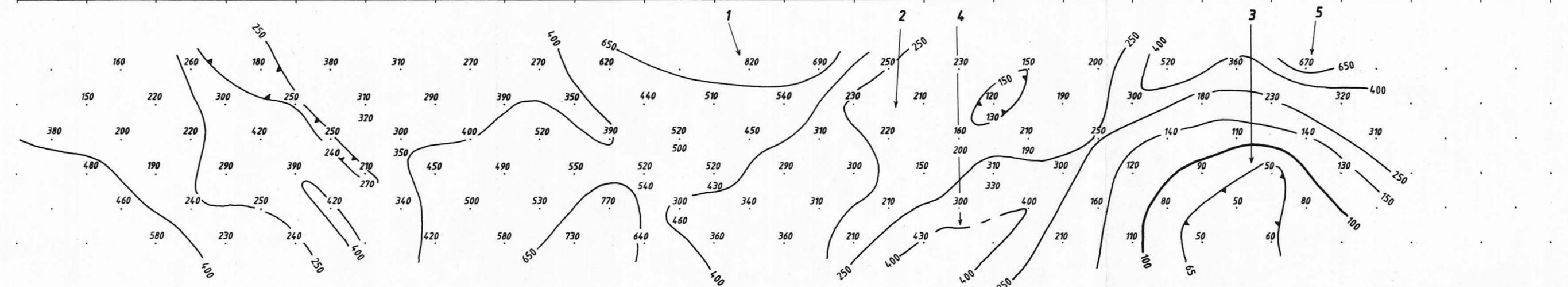


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n = 3  
n = 4  
n = 5  
n = 6



Culture Plan  
Apparent Chargeability ( msecs )

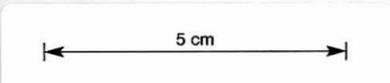
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n = 2  
n = 3  
n = 4  
n = 5  
n = 6



Apparent Resistivity ( ohm m )

Array.	Dipole - Dipole	
Dipole length.	25	metres.
Transmitter type.	LoPo 5 KVA	
Timing sequence.	2 sec on / 2 sec off	
Receiver type.	Huntec Mk. IV	
Integration time.	450 to 1100 msecs after cut off.	
I. P.	Measured over one current pulse.	
Contractor.	GEOTERREX LTD.	

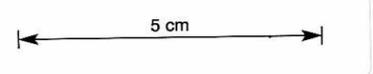
541084



<b>CRA EXPLORATION PTY. LIMITED</b>	
<b>SHEFFIELD E.L. 7/73 MT. ROLAND PROSPECT Induced Polarization &amp; Resistivity Survey LINE 1500 EAST</b>	
Ref:	SK55 - 3
Scale:	1 : 1250
Author:	M. F. F.
Date:	4 - 7 - 1983
Drawn:	R. T.
Report N°:	12182
Plan N°:	TASh 1440

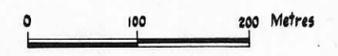


541085



Legend

- Permanent creek
- - - Intermittent creek
- · · Vehicle track
- - - Boundary fence



MT. ROLAND  
1231m

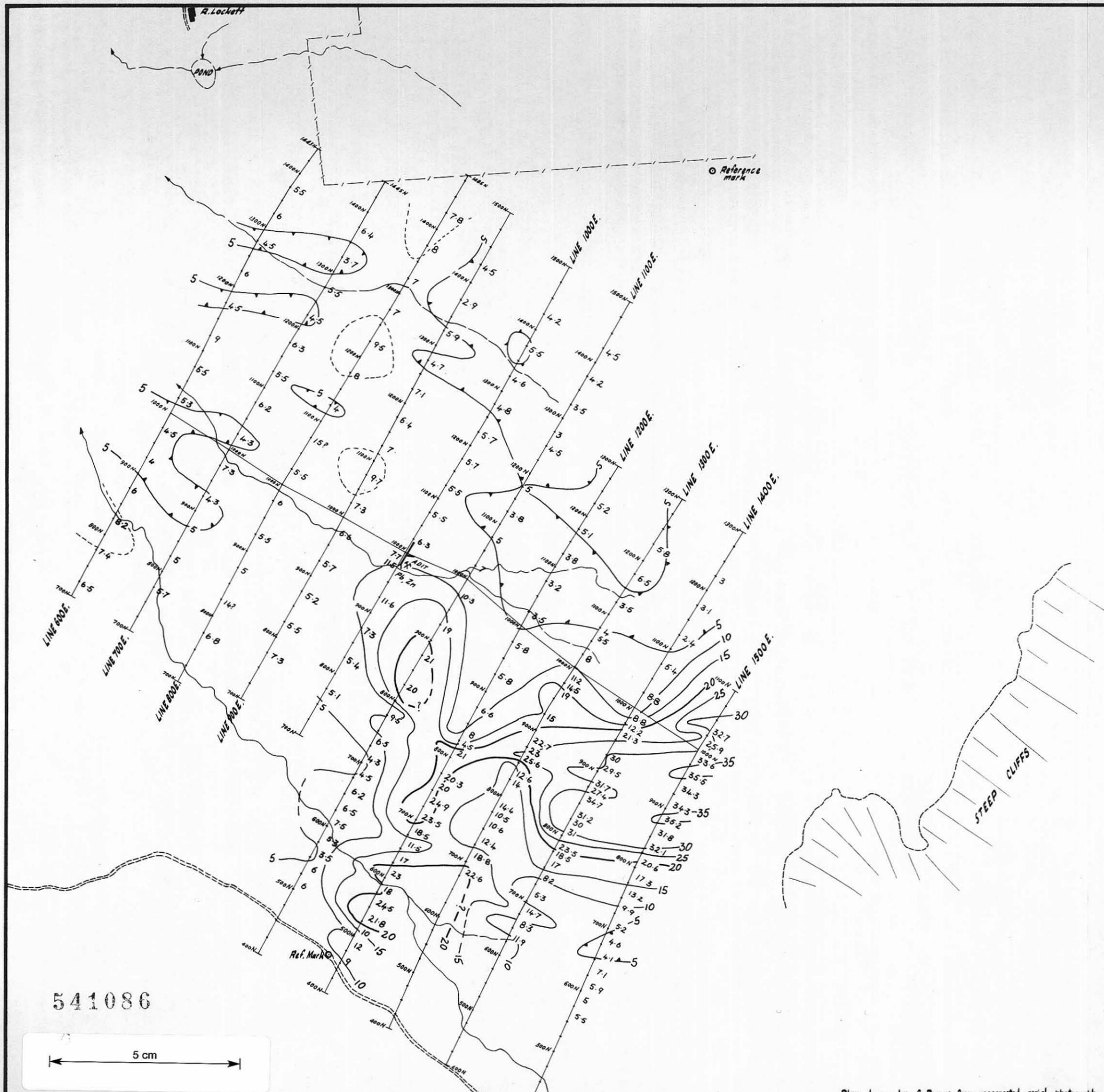
C.R.A. EXPLORATION PTY. LIMITED

**RESISTIVITY CONTOURS**  
n = 150 m. dipoles.  
**MT. ROLAND PROSPECT**

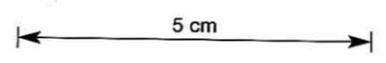
SHEFFIELD E.L. 7/73, NORTHERN TASMANIA

Author	T. KERR	scale:	1:5500 Approx.	report no:	12182
drawn:	R. T.	date:	13-3-'79	plan no:	TASH 1445

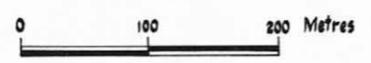
Plan drawn by G. Purvis from uncorrected aerial photograph.



541086



- Legend
- Permanent creek
  - Intermittant creek
  - Vehicle track
  - Boundary fence



MT. ROLAND  
1231m

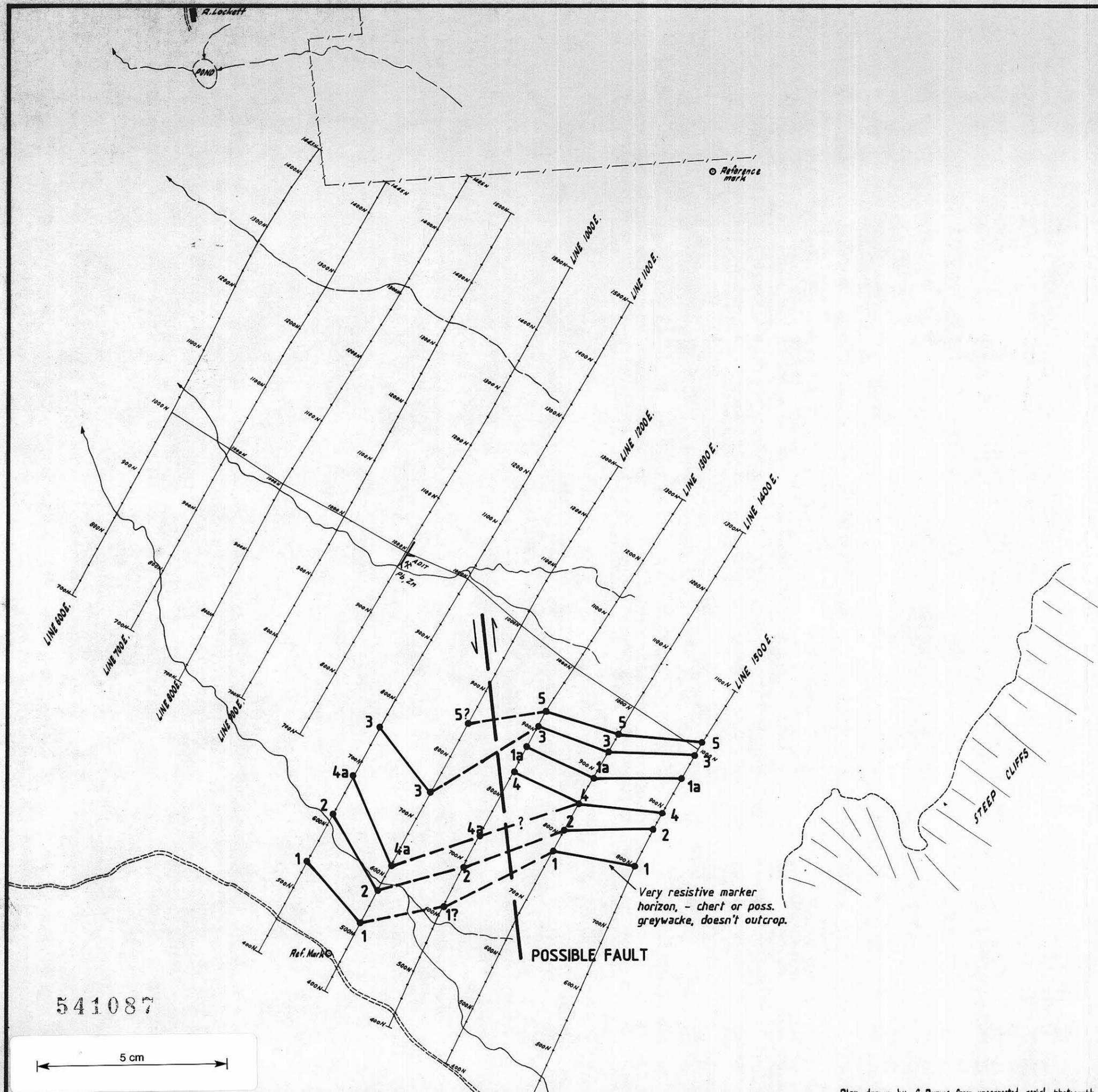
**C.R.A. EXPLORATION PTY. LIMITED**

**CHARGEABILITY CONTOURS**  
n = 1 50 m. dipoles  
**MT. ROLAND PROSPECT**

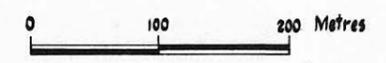
**SHEFFIELD E.L. 7/73, NORTHERN TASMANIA**

Author. T. KERR	scale: 1:5500 Approx.	report no: 12182
drawn: R. T.	date: 13-3-'79	plan no: TASH 1446

Plan drawn by G. Purvis from uncorrected aerial photograph.



- Legend
- Permanent creek
  - - - Intermittant creek
  - - - Vehicle track
  - - - Boundary fence



MT. ROLAND  
1231m

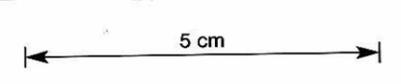
C.R.A. EXPLORATION PTY. LIMITED

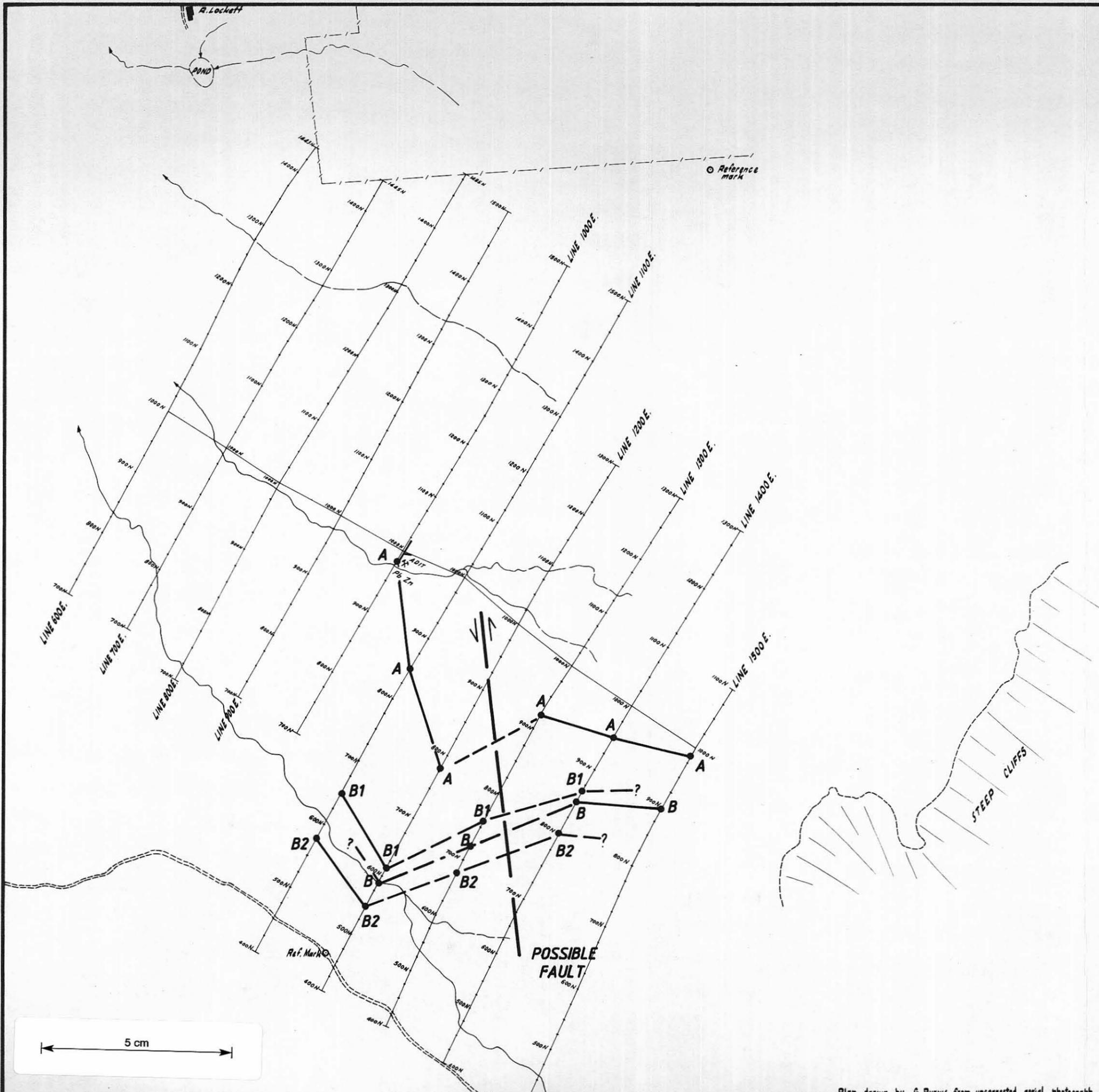
RESISTIVITY MARKER  
TRACES  
MT. ROLAND PROSPECT  
SHEFFIELD E.L. 7/73, NORTHERN TASMANIA

Author: T. KERR	scale: 1:5500 Approx.	report no: 12182
drawn: R. T.	date: 13-3-'79	plan no: TASH 1447

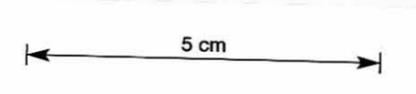
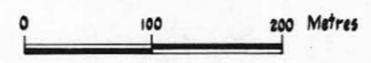
Plan drawn by G.Purvis from uncorrected aerial photograph.

541087





- Legend
- Permanent creek
  - Intermittant creek
  - Vehicle track
  - Boundary fence



MT. ROLAND 1231m 541088

C.R.A. EXPLORATION PTY. LIMITED

CHARCEABILITY MARKER TRACES  
 MT. ROLAND PROSPECT  
 SHEFFIELD E.L. 7/73, NORTHERN TASMANIA

Author, T. KERR	scale: 1:5500 Approx.	report no: 12182
drawn: R. T.	date: 13-3-'79	plan no: TASH 1448

Plan drawn by G. Purvis from uncorrected aerial photograph.