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LETTER DATED 11.5.'88 REFERS.

EXPLORATION LICENCE 43/85

BEULAH

TASMANIA

PROGRESS REPORT FOR THE YEAR

ENDED APRIL 29, 1988

COMPILED AND WRITTEN BY:

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PROJECT GEOLOGIST.

ISSUED BY:

D. B. WALLACE,
REGIONAL MANAGER.

DISTRIBUTION:

DEPARTMENT OF MINES
ABERFOYLE - BURNIE
ABERFOYLE - HAWTHORN

MAY 1988

FIGURES

APPENDICES

CONTENTS

1. INTRODUCTION

The Beulah Licence covers Mount Read Volcanics near Sheffield in northern Tasmania (Figure 1). Aberfoyle's primary exploration target at Beulah is volcanogenic massive sulphide. Previous exploration is summarised in figure 2.

Exploration in 1987/88 comprised :

1. a UTEM survey over the Anomaly 1 area.

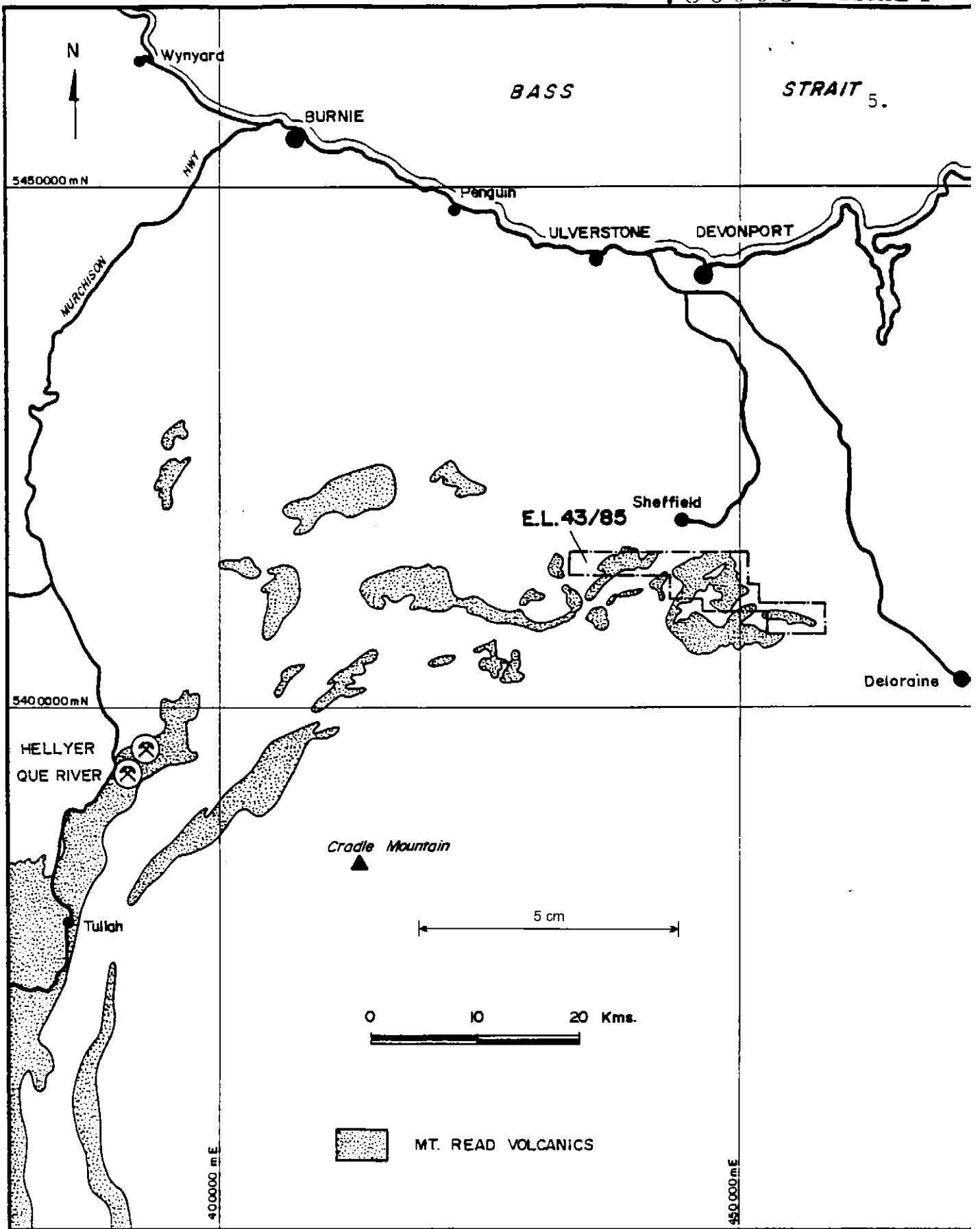
2. Petrographic and geochemical characterisation of a suite of Beulah rocks.

3. A lead isotope study of high lead areas in the Beulah basalt - andesite and of barite occurrences adjacent to the Beulah Licence.

2. SUMMARY OF RESULTS

1. No prospective UTEM conductors in the geochemical Anomaly 1 (Sharman's grid) area.

2. The Beulah volcanics are calc-alkaline Mount Read Volcanics. No rocks had early Cambrian tholeiitic characteristics.



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EXPLORATION DIVISION

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Init.	Date	Init.	Date
Location Code :			

NORTH WEST TASMANIA

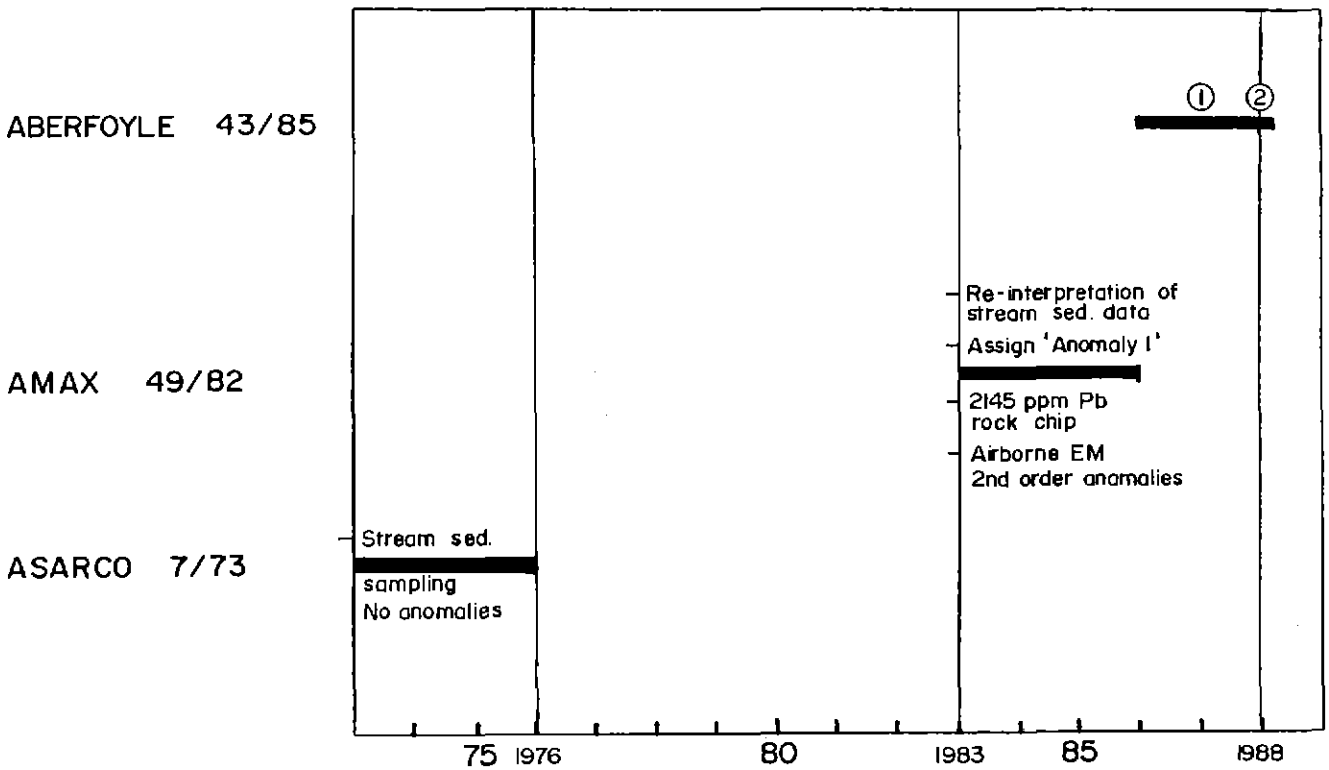
BEULAH E.L. 43/85

LOCATION PLAN

Scale : 1:500,000 | Date : April, 1988

Compiled :	RJE, DJJ
Drawn :	RJE
Traced :	
Checked :	
Plate No. :	BEUL. 8

PREVIOUS EXPLORATION



(1) 86-87 - Anomaly 1 resampled max. 725 ppm Pb
- Beulah barite resampled
- Regional assessment
- Examination of tenure

(2) 87-88 - UTEM over Anomaly 1
No anomalies
- Regional geochemistry
Calc-alkaline Mt. Read signature
- Mt. Read Petrography
- Lead Isotopes (10)
Cambrian volcanogenic signature for Anomaly 1 area. Vein style signature for Beulah and Paradise barite. No Devonian granite signatures.

3. Lead isotopes suggest the the Beulah barite and the Paradise barite are vein type but not Devonian granite related. High lead in Beulah andesite has a Cambrian Mt. Read volcanogenic massive sulphide signature.

4. A zone of high Zn in Beulah basalt - andesite was found.

5. Possible Hellyer type hangingwall alteration at Beulah barite projects onto the Beulah Licence.

6. Samples at "Anomaly 1" in the Beulah basalt and near Star of the West in Minnow Keratophyre to the south did not contain gold levels above detection limit.

3. RECOMMENDATIONS

1. The licence should be renewed.

2. A soil sampling programme should be conducted on the alteration trend from the Beulah barite onto the Beulah Licence.

3. Alteration in CRA holes to the south should be examined and compared with surface samples.

4. All the Cambrian rocks on the Licence should be mapped.

5. The rock chip sampling programme started this year should be expanded.

6. UTEM should be conducted over any targets generated from the above.

4. GEOLOGY

Regional descriptions of the geology are included in Aberfoyle's 1987 Annual Report. Aberfoyle's 1987/88 programme aimed to compare the Beulah volcanics with Cambrian volcanics elsewhere. Petrographic descriptions by Dr. A. Crawford and Mr. D. Cowan are included as Appendices II and III. Grid co-ordinates and field sample descriptions are attached as Appendix I. Sample locations are plotted on Figure 4 in a pocket at the back of this report.

It is concluded by the author (DJJ) that the lavas and lava breccias at Beulah are similar to the Que-Hellyer andesites. Petrographically the similarities include the abundance of perlitic glass in many of the lavas, abundant albite phenocrysts, pyroxene phenocrysts, the inclusion of dacitic units and rock fragments in the volcanic pile and the occurrence of a polymict component in the

lavas. Metamorphic minerals include epidote prehnite and pumpellyite, but grades are not high enough to develop amphibole. These prehnite pumpellyite facies grades are similar to those in the Que Hellyer volcanics and contrast with the higher grade Western Sequence rocks of the Queenstown area.

The Beulah lavas are petrographically distinct from the Crimson Creek type lavas such as those ascribed to the Motton Spilite north west of Beulah.

No systematic field mapping was carried out in this year's programme, however the gradational contact between the Beulah formation and the Gog Range Greywacke is apparent by intercalation and mixing both on a macroscale and microscopically. This occurs in the area north and south east of the Beulah barite occurrence where a soil sampling programme is planned.

5. GEOCHEMISTRY

1. Primary Characteristics

Beulah rocks were analysed for a suite of elements and these are tabulated in Appendix IV.

Immobile Elements

Ternary plots of the immobile elements Ti, Zr and Y are presented as figures 4 to 6 where they are compared with Cambrian volcanics elsewhere in Tasmania. Clearly the Beulah volcanics are calc-alkaline and fall within the field for the Mount Read Volcanics as reported by McClenghan and Corbett (1986) (Figure 4). They also cluster in the field for footwall andesites and hangingwall andesite-basalts at Hellyer (Jack unpublished data) (Figure 5). This accords with their petrographic similarity with footwall andesites. They are clearly neither ocean floor nor within plate lavas, (Figure 6) and are very different to Crimson Creek related Cambrian lavas.

Other Characteristics

Other characteristics similar to the Que-Hellyer volcanics are the high K_2O levels (up to >4% K_2O), and MgO levels similar to the Hellyer footwall andesite.

2. Mineralisation

Lead Isotopes

A report by G. Carr of Sirotope is included as Appendix V.

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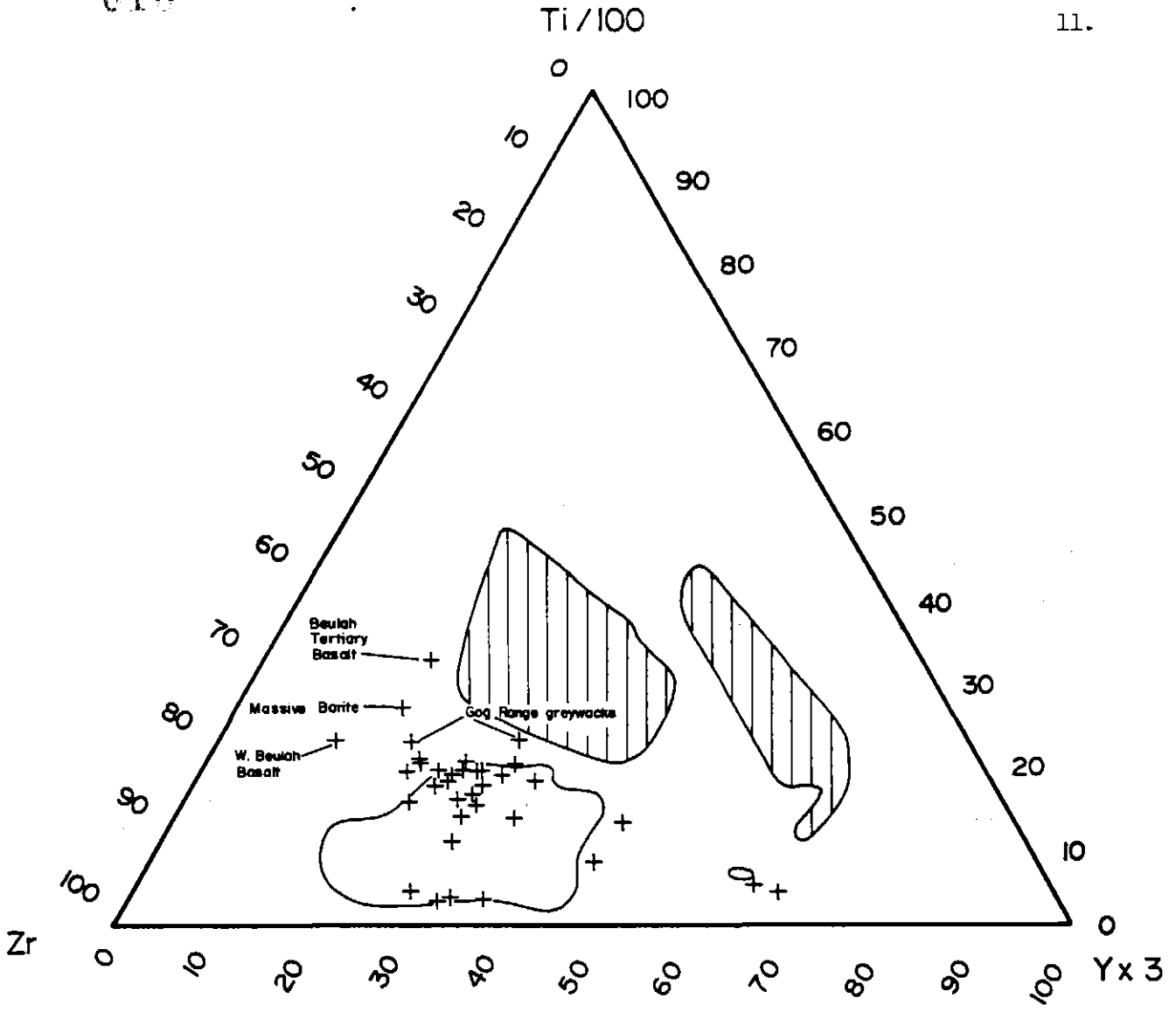
11.



+ Beulah Rock sample

MT. Read Volcanics (McClenaghan & Corbett 1985)

Cambrian rocks outside the MT. Read Volcanics (McClenaghan & Corbett 1985)
(Brown 1986)

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NORTH WEST TASMANIA

BEULAH & MT. READ VOLCANICS

IMMOBILE ELEMENT TERNARY DIAGRAM

Ti/100, Zr and Yx3

Compiled :	DJJ
Drawn :	DJJ
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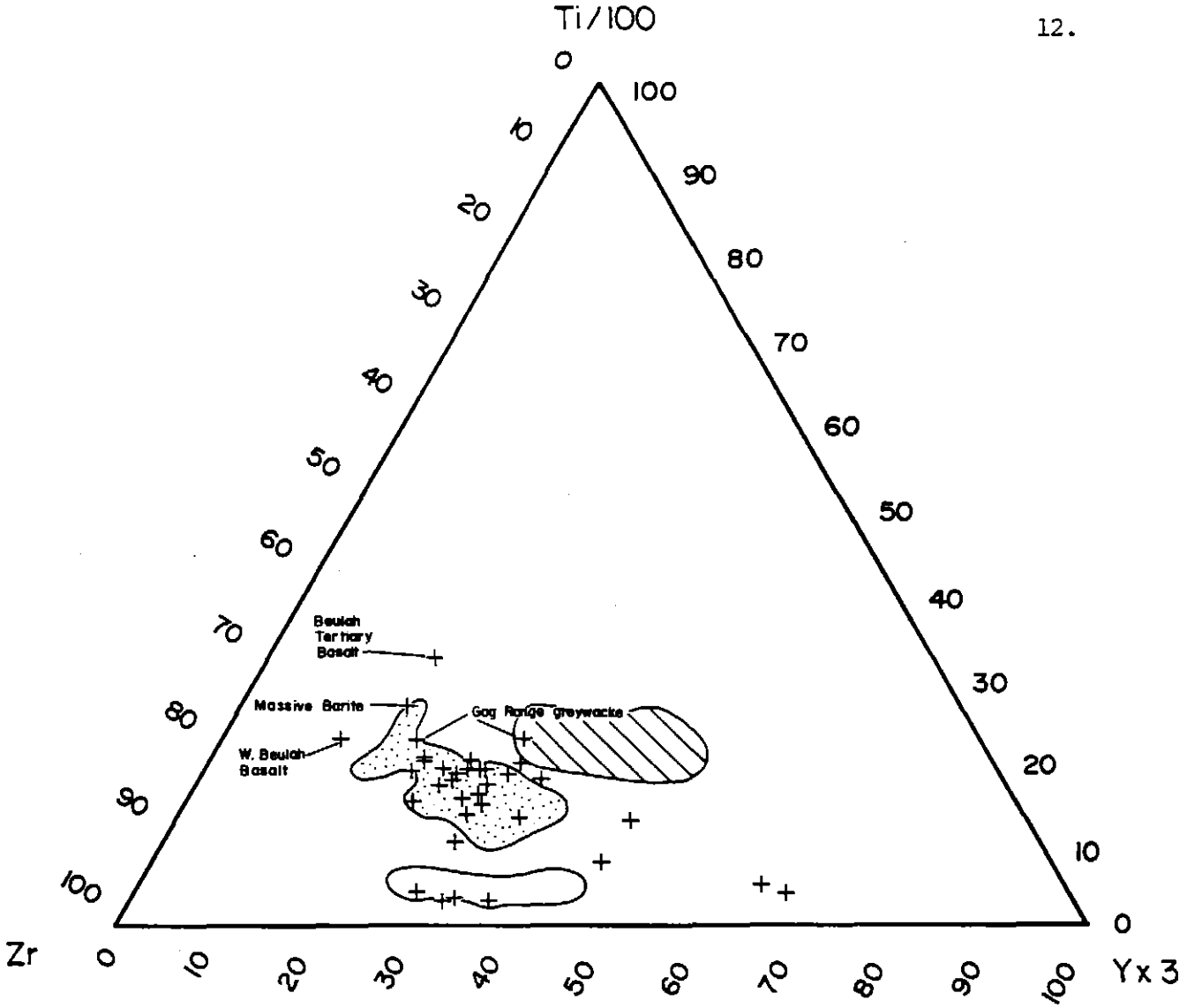
Location Code :	
Scale :	-
Date :	April, 1988
Plate No. :	BEUL 10 c

011

12.



+ Beulah Rock sample

Basalt

Andesite , Andesite - Basalt

Rhyolite

Hellyer - 247 samples outside stringer zone

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Init.	Date	Init.	Date

Location Code :

NORTH WEST TASMANIA

BEULAH & HELLYER

IMMOBILE ELEMENT TERNARY DIAGRAM

Ti/100, Zr and Yx3

Scale : —

Date : April, 1988

Compiled : DJJ

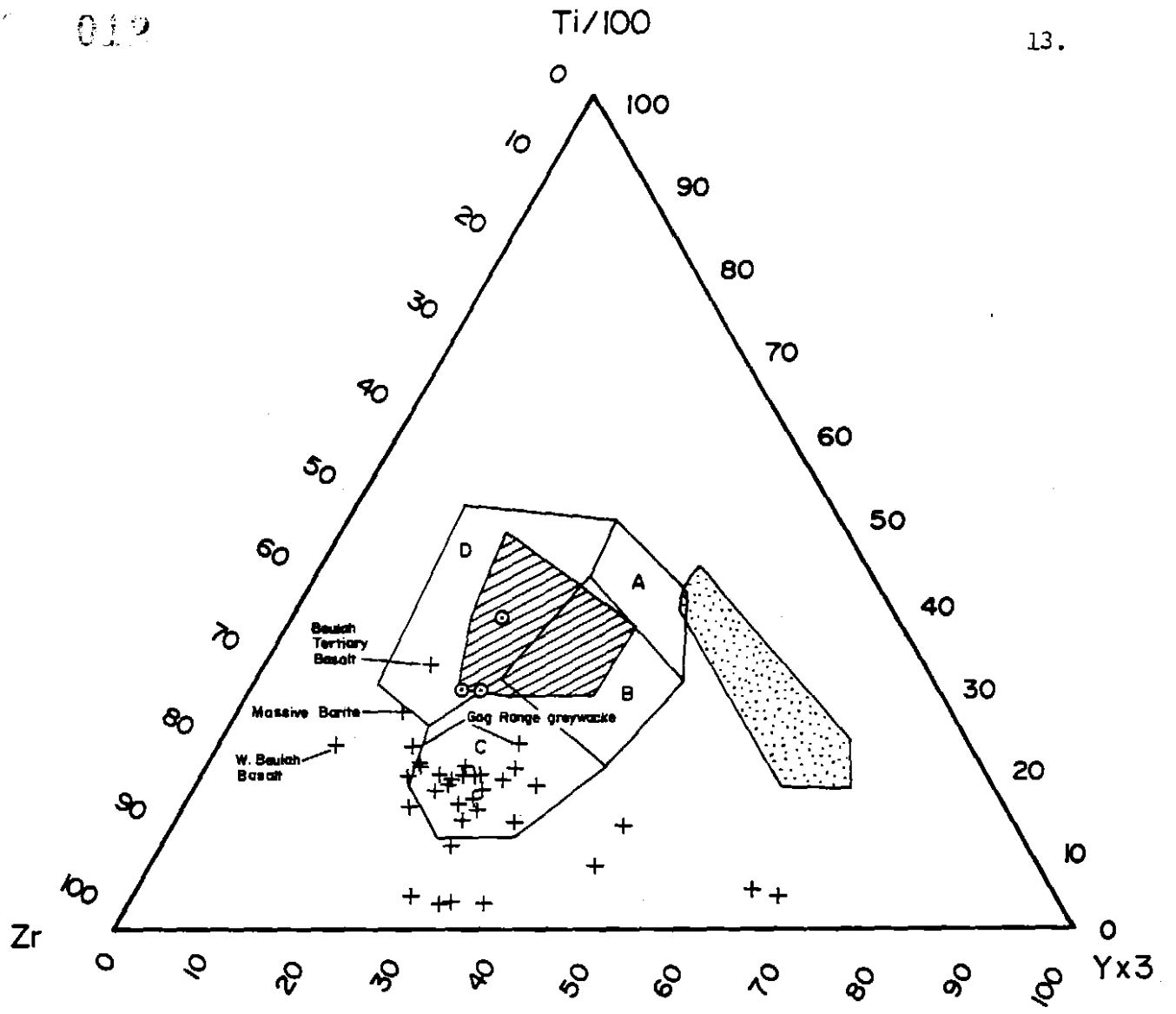
Drawn : DJJ

Traced : RJE

Checked :

Plate No. : BEUL 10a

1511



+	Beulah Rock sample		
A and B	Low potassium tholeiite	Pearce & Cann	(1973)
B	Ocean Floor basalt		
B and C	Calc-alkali basalt		
D	Within Plate basalt		
	Crimson Creek Tholeiite	Brown	(1986)
⊙	Crimson Creek tuffaceous greywacke		
	Low Titanium Tholeiite		

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Init.	Date	Init.	Date

Location Code :

NORTH WEST TASMANIA

BEULAH AND TECTONIC SETTING

IMMOBILE ELEMENT TERNARY DIAGRAM

Ti/100, Zr and Y x 3

Scale : –

Date : April, 1988

Compiled : DJJ

Drawn : DJJ

Traced : RJE

Checked :

Plate No. : BEUL 10 b

Figure 7a shows a clustering of the Beulah barite and Beulah basalt samples on a Pb^{208}/Pb^{204} vs Pb^{206}/Pb^{204} plot.

Figure 7b compares the results at Beulah with those reported in Gulson, Large and Porritt 1987. While the lead in the Beulah lavas plots close to that at Rosebery and is interpreted to be volcanogenic Rosebery type, the samples at the Beulah barite occurrence can be interpreted as Cambrian vein type. It is significant that none of the samples plot in the Devonian granite related fields. This "older" less radiogenic lead at Beulah is considered to be a positive feature.

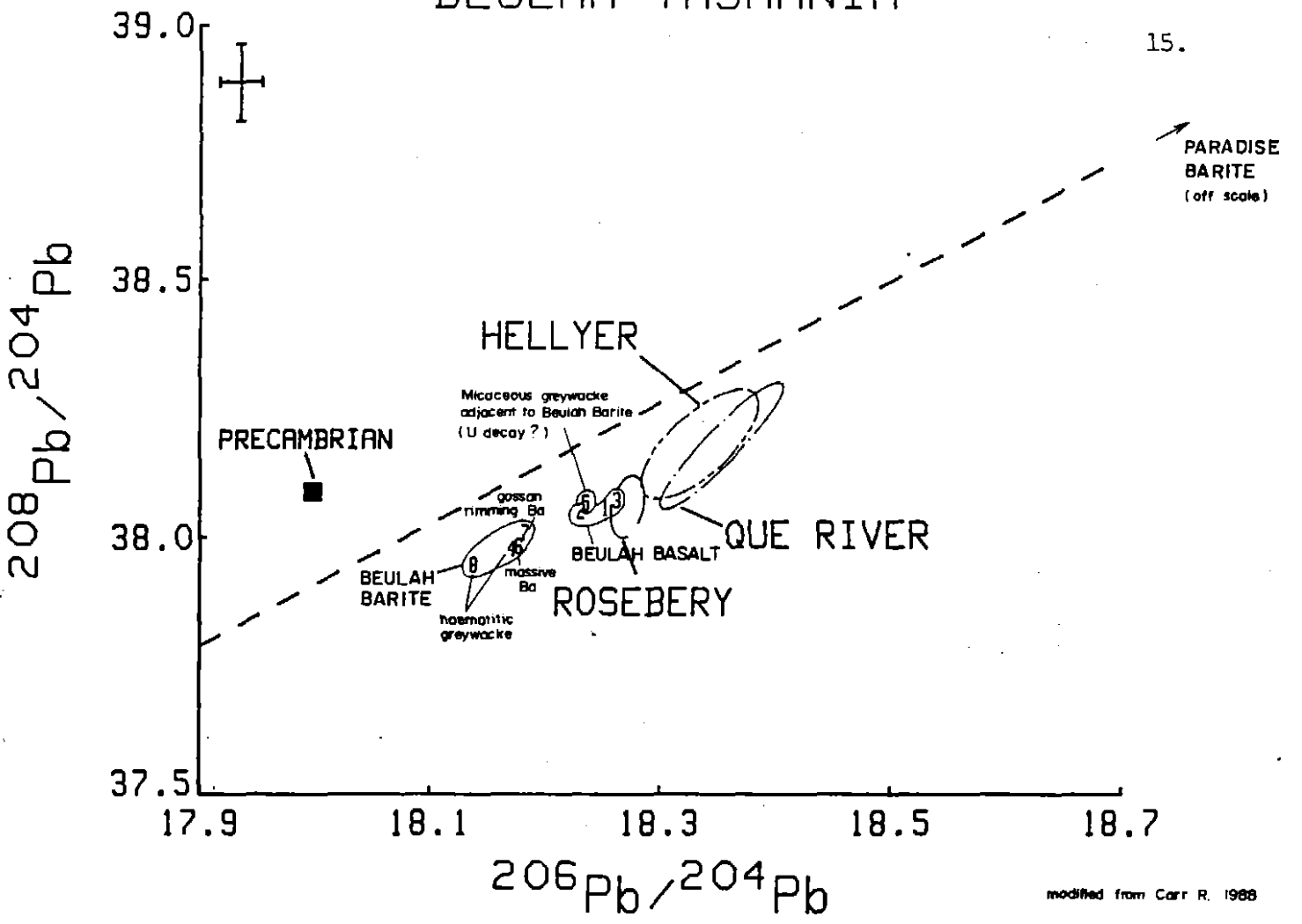
Anomaly 1 area

The high lead values obtained in the Anomaly 1 area were repeated. A suite of samples from the Anomaly 1 area, many with associated haematite and manganese were analysed for gold. No gold values were reported.

Bend in road area

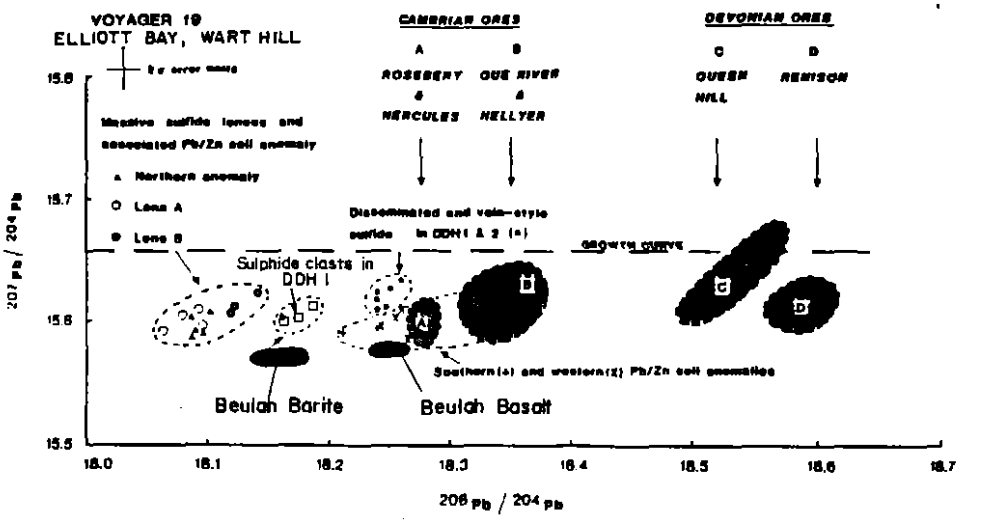
An assay of 750 ppm Zn, from north of the Beulah barite occurrence, along the trend of hangingwall alteration interpreted in CRA's drilling requires further investigation. Sericite and chlorite alteration are described in this rock, (sample no. 334714). The possibility that the elevated Zn may be due to adsorption by manganese will be tested by correlating Zn and Mn values in a suite of samples.

BEULAH-TASMANIA



modified from Carr R. 1988

FIGURE 7b



data from Gulson, Large, Porritt 1987

Beulah Barite

This is outside the licence area but was sampled for lead isotope analysis. A maximum of 2.68% Pb and 153 ppm Ag occurred in massive white barite. Other barite contained negligable Pb and Ag. Gossan adjacent to the barite contained variable Pb (20 ppm and 245 ppm). No Au was reported.

Paradise Barite

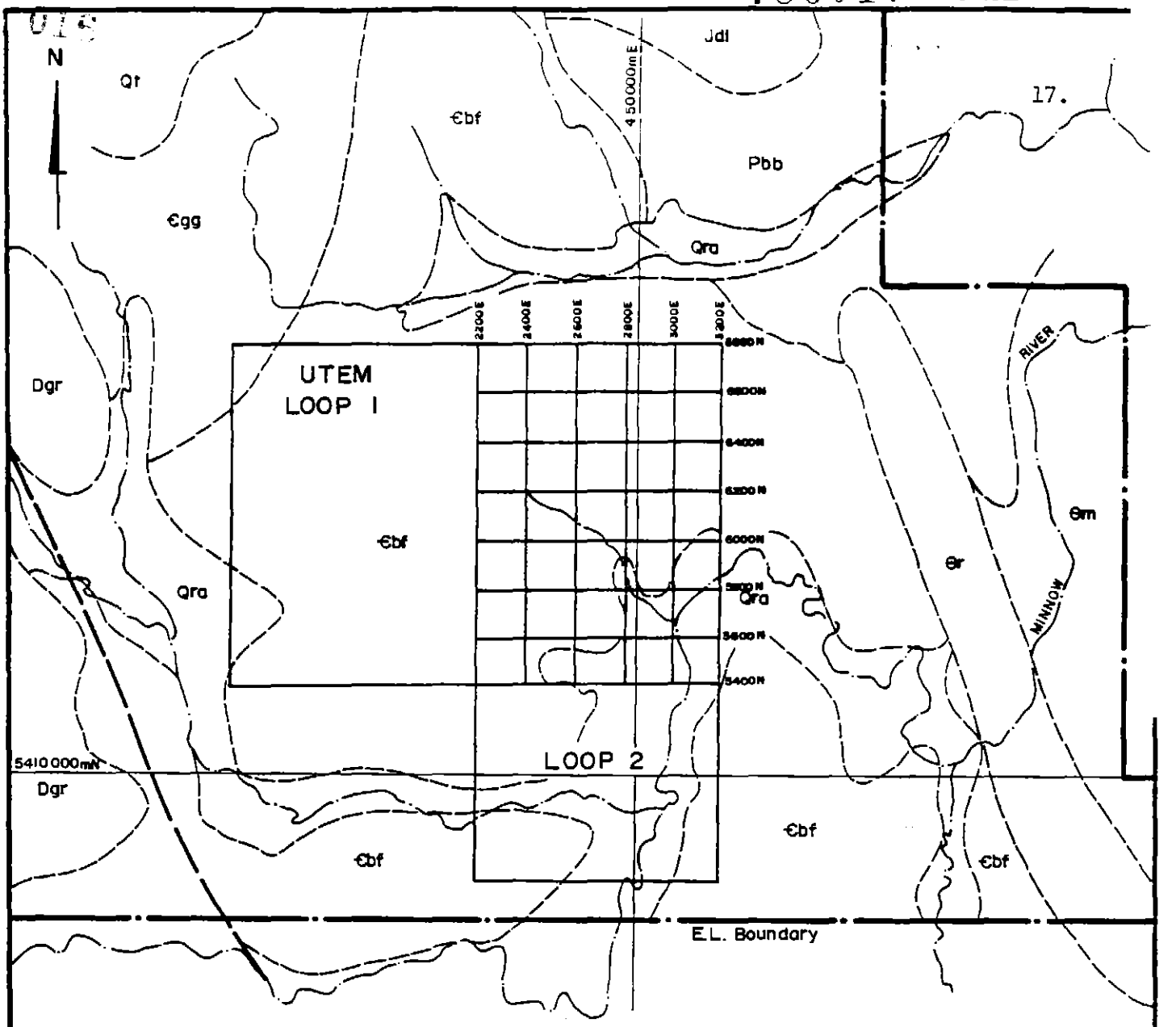
Also outside the licence, the old trench over this occurrence was located and sampled. The assays were anomalous in copper (up to 610 ppm Cu) and contained low overall Pb and Zn. The rhyolite host and quartz iron oxide gossan were submitted for lead isotope analysis.

Stonebridge Gossan

Also just outside the licence area, maximum assays of 2.17% Pb, 42 ppm Ag, 950 ppm Cu and 850 ppm Zn were obtained. The metal ratios suggest a different style of mineralisation to that at the nearby Paradise barite.

Star of the West (old gold prospect)

No gold values were reported from samples taken in the ~80 metre long "Star of the East" adit.



QUATERNARY	Qra	Recent alluvium	
	Qt	Talus and landslide debris	
PERMIAN	Pbb	Basal beds including Tasmanite oil shale member.	
ORDOVICIAN	Om	Moina sandstone	
	Or	Roland conglomerate	
CAMBRIAN	Cgg	Gog Range greywacke	
	Cbf	Beulah Formation	
JURASSIC	Jdl	Dolerite	
DEVONIAN	Dgr	Granite	

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Init.	Date	Init.	Date

NORTH WEST TASMANIA

BEULAH E.L. 43/85

LOCATION OF UTEM LOOPS

(1987)

Compiled :	DJJ
Drawn :	RJE
Traced :	
Checked :	DJJ
Plate No	BEUL 9

Location Code :

Scale : 1: 25,000

Date : April, 1988

6. GEOPHYSICS written and interpreted by Jovan Silic

Geochemical Anomaly 1 (Sharman's Grid) UTEM Survey

Considering that the strike orientation of any possible mineralisation at depth was not precisely known, two grids at right angles to each other were surveyed (Figure 8).

The collected data is generally of a good quality, despite the fact that numerous fences and some power lines are present in the area.

Although some surficial and lithological conductors are evident in the data, as are responses due to some fences, no response that can be attributed to an accumulation of massive sulphides at depth can be interpreted (see UTEM data, Appendix VI).

7. CONCLUSIONS

- A volcanogenic hydrothermal system operated at Beulah where characteristic Mount Read Volcanics are confirmed to occur.

- The possibility that the Cambrian volcanics at Beulah are tholeiitic Crimson Creek type lavas or that all the mineralisation in the area is related to Devonian granite intrusions has been discounted.

- The licence has been under explored and needs further funding to be evaluated.

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APPENDIX I

Field Descriptions and Grid Locations for samples submitted for Petrography and Geochemical Analysis

Beulah

Sample No.	Location	Co-ordinates 1:25,000 sheet	Description
271701 (Geochemistry)	Beulah Barite base of hill along strike from shaft.	GOG 5070 0862	Gossan next to massive barite.
271702 (Geochemistry)	Beulah Barite side cut just north and up hill from shaft.	GOG 5064 0866	Gossan rimming Ba vein. Haematite rich.
271703 (Geochemistry)	Beulah Barite - same Ba vein rim as 271702.	GOG 5064 0866	Gossan rimming Ba vein. Blue actinolite fibres.
271704 (Geochemistry)	Beulah Barite adjacent to 271701.	GOG 5070 0862	Massive coarse barite.
271705a (Geochemistry)	Beulah Barite top of hill.	GOG 5077 0880	Haematitic greywacke.
271705b (Thin section)	Beulah Barite as for 271705a	GOG 5077 0880	Haematitic greywacke.
271706a (Thin section)	Beulah Barite float at top of hill.	GOG 5056 0884	Haematitic altered greywacke.
271707a (Thin section)	Tertiary Basalt Beulah	GOG 398 142	Basalt
271707b (Geochemistry)	Tertiary Basalt Beulah - as for 271707a	GOG 398 142	Basalt
271708a (Geochemistry)	Beulah Barite	GOG 5070 0862	Coarse Mica adjacent to barite.
271708b (Geochemistry)	Beulah Barite	GOG 5070 0862	Massive Barite.
271708c (Thin section)	Beulah Barite	GOG 5070 0862	Coarse Mica adjacent to barite.
271709a (Geochemistry)	Beulah Basalt	SHEF 4999 1082	Basalt

Sample No.	Location	Co-ordinates 1:25,000 sheet	Description
271709b (Thin section)	Beulah Basalt	SHEF 4999 1082	Basalt
271710a (Geochemistry)	Beulah Basalt (eastern). Pb anomalous area. 333313	SHEF 498 114	Basalt
271710b (Thin section)	Beulah Basalt	SHEF 498 114	Basalt
271711a (Thin section)	Beulah Basalt	SHEF 498 114	Basalt
271711b (Geochemistry)	Beulah Basalt JRS sample	SHEF 498 114	Basalt
271712 (Geochemistry)	Beulah Barite	GOG 507 086	Greywacke
271713a (Geochemistry)	Beulah Barite	GOG 507 086	Greywacke
271713b (Thin section)	Beulah Barite	GOG 507 086	Greywacke

BEULAH

Sample No.	Description	Co-ordinates 1:25,000 sheet		Location
334714GP	Beulah Basalt altered	SHEF 5036	1025	Outcrop on sharp corner on side of road.
334715GP	Beulah Basalt unaltered.	SHEF 4935	1090	Outcrop at head of Pb anomalous creek.
334716PG	Beulah Basalt (least altered)	SHEF 4935	1090	ditto
334717PG	Beulah Basalt (trace pyrrhotite)	SHEF 4958	1145	Outcrop just north of Mn weathered outcrops in wood just next to fence.
334718GP	Beulah Basalt	SHEF 4942	1160	between two altered high Pb streams.
334719GP	Beulah Basalt	SHEF 4950	1106	top of hill on 6300N.
334720PG	Minnow keratophyre Quartz and feldspar porphyritic acid volcanic.	4580 SHEF.	0885	near star of the west 'Kenzies Hill'
334721G	Weathered Minnow Keratophyre	4580 SHEF.	0886	Ditto
334722G	Red Mn rich weathered B	SHEF 4957	1146	High Pb area in Beulah basalt.
334723G	Red Mn rich weathered B	SHEF 4952	1146	High Pb area in Western Beulah Basalt.
334724G	Red Mn rich weathered B	SHEF 4955	1146	High Pb area in Western Beulah Basalt.
334725G	Red Mn rich weathered B	SHEF 4959	1146	High Pb area in Western Beulah Basalt.
334726G	Red Mn rich weathered B	SHEF 4960	1140	Abex)2400E peg)6300N next to fence.
334727G	Red Mn rich B	SHEF 4958	1139	High Pb area in Western Beulah Basalt.
334728G	Red Mn rich B veinlets of specular haematite.	SHEF 4940	1138	High Pb area in Western Beulah Basalt.

Sample No.	Description	Co-ordinates 1:25,000 sheet		Location
334729G	Mn rich B - gossan - white mineral.	SHEF4942	1137	High Pb area in Western Beulah Basalt.
334730G	Mn rich B	SHEF4955	1120	High Pb area in Western Beulah Basalt. Mn hill immediately above (N) of dam.

Beulah

Sample No.	Description	Co-ordinates 1:25,000 sheet	Location
271748	Altered haematitic manganiferous Basalt with white silica.	SHEF 4951 1130	
271749 PG	Western Basalt. Red lava with green pumpellyite/epidote? pseudomorphs.	SHEF 3830 1430	
271750 PWR	Western Basalt	SHEF 3830 1420	
271751 PG	Western Basalt. Basalt breccia. Large angular fragments.	SHEF 3978 1445	
271752 G	Western Basalt float	SHEF 3977 1420	
271753 PG	1. "Motton Spilite" Fine-grained massive Basalt. Minor sediment? veinlets. Minor Py and Cp.	245 345 FORTH 1:100,000	Gunns Plain Road.
271754 PWR	2. "Motton Spilite" Fine-grained massive Basalt. Minor sediment? veinlets. Minor Py and Cp.	245 345 FORTH 1:100,000	Gunns Plain Road.

Paradise Baryte

Sample No.	Description	Co-ordinates 1:25,000 sheet	Location
271755	Tabular and radiating white barite crystals 80%. 20% host rhyolite and gossan.	SHEF 4220 1194	Paradise trench
271756	Radiating barite crystals. Minor pyrite & chalcopyrite. Abundant haematite including specular haematite. Abundant later silica replacement.	SHEF 4220 1194	Paradise trench. E face half way down.
271757	Gossan and haematite (specular)	SHEF 4220 1194	Paradise trench. E face bottom.
271758	Quartz 70% gossan 30% Abundant blade-like quartz crystals.	SHEF 4220 1194	Paradise trench.
271759	Gossan. Some quartz blades.	SHEF 4220 1194	Paradise trench.
271760	Quartz rich gossan	SHEF 4220 1194	Paradise trench.
271761	Quartz blades and gossan.	SHEF 4220 1194	Paradise trench.
271762	Quartz plus haematite	SHEF 4220 1194	Float next to trench.
271763	Haematitic red gossan	SHEF 4220 1194	Float next to trench.
271764	Green rhyolite (intrusive?) with occasional Fu pseudomorph.	SHEF 4220 1194	Paradise trench.

Beulah - Stonebridge, Star of the West

Sample No.	Description	Co-ordinates 1:25,000 sheet	Location
271765	Gossan. Specular haematite white silica.	SHEF4256 1000	Stonebridge. Middle of Dawsons Road near shed.
271766	Gossan.	SHEF4256 1000	Stonebridge. Middle of Dawsons Road near shed.
271767	Gossan. Specular haematite rich.	SHEF4256 1000	Stonebridge. Middle of Dawsons Road near shed.
271768	White bleached acid porphyry. Minor iron and quartz veining.	SHEF455 090	Star of the West - Kenzies Hill Adit.
271769	White bleached acid porphyry. Minor iron and quartz veining.	SHEF455 090	Star of the West - Kenzies Hill Adit.

Sample No.	Description	Co-ordinates	Location
271770	Unaltered acid rock with large 5-7mm quartz phenocrysts in light brown rock. Minor feldspar phenocrysts.	GOG453092	Adit. Star of the East Kenzies Hill Beulah.
271771	Altered minnow Keratophyre	GOG453092	Adit. Star of the East Kenzies Hill Beulah.
271772 x	Red and orange clay and manganese altered porphyry? White mica.	GOG453092	Adit. Star of the East Kenzies Hill Beulah. rock pile at end of adit.
271773 x	Red and orange clay and manganese altered porphyry? White mica.	GOG453092	Adit. Star of the East Kenzies Hill Beulah. rock pile at end of adit.
271774	Host porphyry - altered.	GOG453092	Adit. Star of the East.
271775	Host porphyry - altered.	GOG453092	Adit. Star of the East.
271776	Quartz and gossanous 2cm wide veinlet.	GOG453092	Adit. Star of the East.
271777	Gossanous veinlet	GOG453092	Star of the East. Adit.
271778	Green clay veinlet (1cm across) adjacent to coarse quartz porphyry intrusive.	GOG453092	Star of the East. Adit.
271779	Coarser quartz porphyry in Minnow Keratophyre. Adjacent to 271778.	GOG453092	Star of the East. Adit.

271780	Veinlet gossanous material plus some host porphyry.	GOG453092	Star of the East. Adit. North dipping veinlet - west face.
271781 x	Veinlet gossanous material plus some host porphyry.	GOG453092	Star of the East. Adit. North dipping veinlet - east face.
271782	Veinlet gossanous material.	GOG453092	Star of the East. Adit.
271783 x	Veinlet gossanous material.	GOG453092	Star of the East. Adit. South dipping veinlet.

x = >1/2 sample bag full.

Sample 271770, 772, 775 also for petrology.

APPENDIX II

CMS Report 88/1/2, Petrographic report on 8 samples from the Beulah Area (mostly altered rocks)

Central Mineralogical Services

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Project Geologist
Aberfoyle Resources Ltd.
Exploration Division
P.O. Box 952
BURNIE / TAS. 7320

9th February, 1988

REPORT CMS 88/1/2

YOUR REFERENCE:	Letter dated 5.1.1988
DATE RECEIVED:	6th January, 1988
SAMPLE NOS.:	8 Samples
SUBMITTED BY:	D.J. Jack
WORK REQUESTED:	Petrology

H.W. Fander, M. Sc.

Copy to:
Mr. H. Skey
Exploration Manager
Aberfoyle Resources Ltd.
Exploration Division
123, Camberwell Road
HAWTHORN EAST / VIC. 3123

Eight rock chip samples from the Beulah area near Sheffield (Tas.) were received for petrological examination. Representative thin-sections were examined in oblique incident and transmitted light, and are detailed in the attached descriptions.

Summary

The bulk of this suite comprises altered, variably sheared and variably weathered and ferruginised labile sedimentary rocks and altered basic volcanics. These two groups ("greywackes" and Beulah Basalt) are conceivably intercalated. Relatively fresh basalts carry conspicuous opaques. Sediments are basic-volcanomict in part and may carry degraded primary hematite. Both groups may exhibit phyllosilicate alteration, although basics also include saussurite-uralite and epidote-prehnite-pumpellyite alteration assemblages.

Sample 271707a represents a distinctive, relatively quite unaltered olivine basalt with Tertiary characteristics and apparerntly unrelated to the other basics in this suite.

Sample 271708c is similarly distinctive, representing a quartz-mica-barite(-carbonate)-altered tuffaceous argillite with rhyolitic clastic debris. Alteration in this rock may be broadly compared with that in certain minor baritic acid volcanics, for example at Que River, but is poorly diagnostic as to whether volcanohydrothermal or granitic in origin.

D. Cowan, B. Sc.

REPORT CMS 88/1/2

Petrological Descriptions

271705b (T.S. 59545)
This may be categorised as a ferruginous clay rock representing an altered, weathered and ferruginised labile turbiditic lithoclastic sediment. It exhibits a relict framework of degraded/ferruginised lithic clasts, poorly sorted in the sand to grit range, with angular/subangular shapes modified by a secondary dimensional orientation in response to mild shearing effects and best examined in oblique incident light. A rather prominent matrix (hence turbiditic) exhibits a weak phyllitic fabric. Clastic and particularly matrix components are largely represented by fine-grained phyllosilicate aggregates which are indeterminate due to marked limonitic Fe-staining partly derived from ultrafine hematite.

A few clasts are represented by random to incipiently orientated sericite aggregates. These may include accessory anhedral quartz and appear to represent selectively sericitised felsic types. The majority of clasts exhibit oxidised and leucoxenised fine accessory opaques and are interpreted as basic volcanic-derived. Accessory clastic components include silt- to fine sand-sized quartz grains and argillised-silicified feldspar grains.

The major phyllosilicate phase in this rock was possibly chlorite and may have been low-grade metamorphic in origin. Finer detail is obscured by the marked ferruginisation.

271706a (T.S. 59546)
This ferruginous clay rock represents a weathered and ferruginised low-grade metapelite and consists largely of heavily iron-stainedf, fine-grained, phyllitic-microtextured phyllosilicate aggregates. Traces of orientated semi-sericitic white mica are present, but the major phase was possibly chloritic. Accessories comprise thinly dispersed relict detrital silt-sized quartz grains and oxidised/leucoxenised opaques.

This rock exhibits alteration and veining features. Irregular to lensoid zones and discordant veinlets of fine-grained, rosette-textured, extensively degraded (illitised/ferruginised) white mica are present. These are concentrated in the host rock, but also appear in an irregular centimetric-scale mass of stressed vein-type quartz in marginal zones, where they appear to represent intraclasts.

Vein-quartz aggregates are pervaded by secondary intergranular patches of microcolloform limonite and Mn-oxide, possibly after carbonate in the absence of diagnostic pseudomorphs or boxworks. Minor manganiferous limonite pseudomorphs after fine-grained pyrite (and ?arsenopyrite) are present.

Stress effects evidently post-date the phyllitic tectonic fabric (host rock), which is locally mildly contorted and semi-brecciated.

271707a (T.S. 59547)
This sample represents an essentially fresh, weakly amygdaloidal olivine basalt.

Frequent single to clustered phenocrysts (to 500 um) and microphenocrysts of olivine are enclosed in a basaltic-textured groundmass of slightly felted labradorite microlaths with interstitial olivine granules and minor pale brown augite. A patchy montmorillonitic mesostasis is present. Minor amygdales consist of poorly twinned albite or locally calcite. Conspicuous accessory flaky ilmenite, supplemented by a little magnetite, is present.

Apart from development of amygdales and the semi-pervasive montmorillonite mesostasis, this rock is unaltered. General features are consistent with a Tertiary basalt.

271708c (T.S. 59548)
This rock may be categorised as an altered tuffaceous argillite, consisting essentially of a loose framework of psammitic tuffaceous debris in a cherty argillitic matrix.

Clasts are dominated by quartz crystals and fragments, with occasional classical embayed euhedra. Subordinate similarly sized feldspar grains and poorly determinate lithic clasts. These "labile" components are selectively replaced by aggregates of fine to microgranular quartz and fine to semi-sericitic muscovite with varying proportions of barite. Accessory clastic leucoxenic semi-opaques are present.

The matrix is weakly banded and consists of semi-sericitic white mica and microcrystalline quartz with pervasive fine silt-sized clastic white mica flakes, supplemented by thinly disseminated silt-sized quartz grains. In contrast to the lithic clasts and feldspar grains, the matrix is unaltered, although thin, irregular barite veinlets occur sporadically. These veinlets are locally displaced by sporadic sericitic foliae reflecting incipient shearing effects.

Accessory fine-grained carbonate, represented by limonitic pseudomorphs, accompanies the replacive sericite-mica-barite aggregates. There is no positive evidence of (oxidised) sulphide.

* **271709b** (T.S. 59549)
This sample represents an altered basaltic amygdaloidal lava.

Major constituents comprise altered plagioclase and subordinate altered pyroxene laths in a pervasively ultrafinely hematitic subvitric groundmass. Plagioclase is represented by pseudomorphous aggregates of microcrystalline cloudy epidote and sericite ("saussurite") and pyroxene by relatively massive cloudy epidote, with subordinate chlorite and pumpellyite. Sporadic to locally conspicuous amygdales consist of quartz, albite and chlorite in varying proportions with locally conspicuous calcite, accessory epidote and pumpellyite, and traces of prehnite.

This rock is flow-structured and weakly flow-brecciated, with orientated laths and amygdales and occasional intraclasts.

* **271710b** (T.S. 59550)
This is an altered basic-intermediate volcanic, reasonably classified as an andesite, although primary mineralogy is partly obscure.

The rock is strongly porphyritic in epidote-stained/sericite-pseudomorphed feldspar with subordinate fresh pale green augite and incipiently chloritised green hornblende. The groundmass comprises similarly altered random feldspar microlaths with subordinate pyroxene and amphibole laths with a sericitised and cloudy epidote-stained, primarily glassy? mesostasis. Conspicuous fine primary accessory magnetite is present.

This rock is only incipiently flow-structured. Phenocrysts are rather evenly distributed and, dependent on field relationships, the rock could be interpreted as a semi-chilled minor intrusive.

271711a (T.S. 59551)
This rock is similar to 271710b, but may be classified as a moderately altered basalt.

The conspicuous phenocrysts comprise variably sericitised/zoisitic epidote-stained labradorite (weakly zoned), with subordinate green uralitic amphibole-pseudomorphed orthopyroxene, fresh pale green augite, and relatively quite minor green hornblende. The groundmass comprises random to flow-orientated plagioclase microlites with a felsic mesostasis and conspicuous fine primary magnetite.

Alteration is analogous to that in 271710b; less advanced in terms of alteration of feldspar, but complexed by uralite development. This is essentially a reflection of the relatively mafic primary composition.

271713b (T.S. 59552)
This is a ferruginous clay rock similar to 271705b, but interpreted as an altered, mildly sheared and thoroughly weathered/ ferruginised basic volcanic on the basis of relict features.

The rock consists essentially of ferruginised clay aggregates as a matrix to pervasive aggregates (mean 250 um to 750 um) of degraded/illitised, fine-grained white mica with accessory microgranular quartz. These features have the appearance of pseudomorphed phenocrysts. Relatively ferruginous, lensoid to subprismatic, similarly sized clay aggregates are similarly interpreted.

This rock has a weak phyllitic fabric. A phyllosilicate altered/ mildly sheared volcanic interpretation is enhanced by accessory, evenly disseminated leucoxenised opaques.

Sporadic films and spongy semi-massive zones of Mn-oxide impregnate this limonitic/argillaceous weathered rock.

D. Cowan, B. Sc.

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Project Geologist
Aberfoyle Resources Ltd.
Exploration Division
P.O. Box 952
BURNIE / TAS. 7320

2nd March, 1988

REPORT CMS 88/2/19

YOUR REFERENCE:	Letter dated 18.2.1988
DATE RECEIVED:	22nd February, 1988
SAMPLE NOS.:	3 Samples
SUBMITTED BY:	D.J. Jack
WORK REQUESTED:	Petrology

H.W. Fander, M. Sc.

Copy to:
Mr. H. Skey
Exploration Manager
Aberfoyle Resources Ltd.
Exploration Division
123, Camberwell Road
HAWTHORN EAST / VIC. 3123

Star of the West Gold Mine, Beulah

Three samples (Nos. 271770, 271772, 271775) were received for petrographic study; thin-sections were prepared, and offcuts were subjected to potash stain tests.

271770, 271775 (T.S. 59702, 59704)

These two rocks are closely similar and are intrusive porphyritic rhyolites; the main difference is that 271775 is more extensively weathered (though still relatively fresh) and is goethite-veined.

Phenocrysts mainly comprise well-defined quartz with embayments, from 0.3 mm to 3 mm in size; phenocrysts of albite are less common, and are partly (271770) to completely (271775) argillised.

The phenocrysts are randomly distributed in a featureless, uniform microcrystalline groundmass consisting dominantly of K-feldspar, sometimes with spherulitic texture, and small quartz patches; fine white leucoxene occurs throughout.

271770 shows weak, sporadic limonite staining; 271775 is more extensively iron-stained in places, and is traversed by thin veinlets of earthy to compact goethite devoid of boxworks or other diagnostic textures.

271772 (T.S. 59703)

This rock is a sheared and brecciated, mildly metamorphosed fine-grained sediment, and is pervasively ferruginised; it is well-displayed in a sawn surface, almost more so than in thin-section where much of the detail is obscured.

The original rock was coarsely laminated or banded, with alternating bands of argillite and micaceous siltstone; evidently, the argillite was more competent during shearing, and was stretched and fractured (boudinaged), whereas the siltstone behaved incompetently, and deformed plastically, resulting in a semi-schistose rock. The argillite too, is semi-schistose and finely crenulated in places. Clearly, there is no resemblance between this rock and 271770/271775.

H.W. Fander, M. Sc.

APPENDIX III

Petrographic Report

for Aberfoyle Exploration Pty. Ltd. 15/2/88

by Anthony J. Crawford,

Geology Department

University of Tasmania.

PETROGRAPHIC REPORT

Rocks from Henty Fault Wedge, Anthony Road and the Beulah Area

For Aberfoyle Exploration Ltd. 15/2/88

by

Anthony J. Crawford
Geology Department
University of Tasmania

SAMPLE: 334714

LOCATION: 5036 1025 (BEULAH AREA)

SUMMARY: This rock is a reddish, highly-altered phenocryst-rich meta-andesite in which large plagioclase phenocrysts are totally sericitized and less abundant former mafic phenocrysts (augite?) are variably altered to chlorite, epidote, Fe oxide and minor sericite.

DESCRIPTION:

Phenocrysts:

This rock is highly porphyritic, with approx. 35 modal % of altered plagioclase euhedra to 4mm long and sparse former mafic phenocrysts now altered to chlorite-dominated assemblages. The large plagioclase phenocrysts are totally replaced by felted masses of colourless sericite and less abundant pale green chlorite, which have completely obliterated former zoning and twinning. Sparse former mafic phenocrysts are often aggregated together, and have crystal shapes most reminiscent of augite. They are now replaced by pale green chlorite and foxy red oxychlorite (or ferri-stilpnomelane?).

Groundmass:

The dark groundmass of this lava is microcrystalline to glassy and charged with plagioclase microlites and microphenocrysts which are also totally sericitized. Former glass is replaced by almost isotropic, red-brown Fe oxide-dominated alteration products which impart the reddish colour to this lava. A locally-developed streaky schistosity is defined by sericite and chlorite in places, and irregular patches of secondary quartz and minor epidote occur throughout the groundmass. The metamorphic mineral assemblage is probably remnant prehnite-pumpellyite or lower greenschist facies, but has been overprinted and almost obliterated by the sericite and Fe-oxide producing oxidation (weathering?) event.

SAMPLE: 334715

LOCATION: 4935 1090 (BEULAH AREA)

SUMMARY: This rock is a slightly-altered, autobrecciated phenocryst-rich acid meta-andesite or mata-dacite composed of dark, quenched glassy fragments in a 'matrix' of lighter coloured, more slowly-cooled lava.

DESCRIPTION:

This rock is clearly a dark lava breccia in handspecimen, with fragments to at least 4 cm long. In the thin section prepared, two fragment types are present, a distinct, mildly vesicular lava charged with plagioclase phenocrysts in a very dark glassy groundmass, and lighter coloured, more diffuse 'fragments' or areas also with plagioclase phenocrysts but with microcrystalline rather than glassy groundmass.

Phenocrysts:

In the dark fragments, plagioclase phenocrysts are albitized euhedra to 0.5 mm long containing specks of sericite and minor chlorite. Twinning, and rows of devitrified glass inclusions parallel to crystal edges are commonly preserved. Former mafic phenocrysts are rare, and totally chloritized. It is difficult to state with certainty whether these were formerly clinopyroxene (augite) or orthopyroxene, although for the following reasons I tend to favour the latter

1). crystal shape is more typical of orthopyroxene,

2). the fact that in modern orogenic andesite-dacite series rocks, orthopyroxene generally appears in the crystallization sequence at about the dacite stage of differentiation, and

3). in rocks of this metamorphic grade, augite is usually preserved unaltered.

Groundmass:

The groundmass of these dark coloured fragments was formerly glassy and slightly vesicular. Vesicles and fractures are filled with pale green chlorite and are lined by secondary quartz. Diffuse patches of pale, non-pleochroic prehnite permeate the dark groundmass, and small patches of higher relief, golden epidote and deeper green pumpellyite also occur. Prehnite also occurs as vein fillings and includes small perfect euhedra of quartz. Metamorphic grade is clearly prehnite-pumpellyite facies.

The lighter coloured areas of this rock differ in only two respects from the dark fragments; they contain sparse fresh augite phenocrysts notably larger (to 0.5mm) than

those mafic pseudomorphs in the dark fragments, and the groundmass in the lighter areas is microcrystalline rather than glassy as in the dark fragments. Boundaries between the light and dark fragments are sharp but highly irregular with the light areas tending to wrap around the dark fragments. It is suggested that this rock represent an andesitic to dacitic lava flow which quenched at the flow surface to form the dark, glassy lava represented by the dark fragments in this rock; as eruption continued, fragments of the glassy surface of the flow were turned over into the less rapidly cooled interior portion of the flow, now represented by the lighter areas of this rock.

SAMPLE: 334716

LOCATION: 4935 1090 (BEULAH AREA)

SUMMARY: This rock is an autobrecciated phenocryst-rich acid meta-andesite or meta-dacite composed of dark, quenched glassy fragments in a 'matrix' of lighter coloured, more slowly-cooled lava. It is virtually identical to 334715.

DESCRIPTION:

In most respects this rock is identical to 334715, except that darker fragments (some texturally intermediate between the dark and light coloured fragments described in 334715) are more abundant in this slide, and that epidote is more abundant in this rock than 334715. Epidote occurs as small high relief euhedra growing in pale green chlorite patches within the microcrystalline to glassy groundmass. Prehnite occurs as large patches intergrown with quartz and pumpellyite is restricted to tiny apple green blebs in albitized plagioclase phenocrysts. Sparse former mafic crystals are pseudomorphed by green chlorite, and were probably orthopyroxene.

SAMPLE: 334717

LOCATION: 4958 1145 (BEULAH AREA)

SUMMARY: This rock is a dark coloured, autobrecciated phenocryst-rich mafic meta-andesite in which primary augite phenocrysts are preserved and the only significant difference between fragments is a slight variation in the grainsize (glassy to microcrystalline) of their groundmass. It is suggested that this rocks represents a single eruptive unit in which quenching, and turning over within the flow led to the highly variable groundmass texture of individual fragments.

DESCRIPTION:

Phenocrysts:

The rock contains approx. 40% phenocrysts, made up of about 30% plagioclase phenocrysts and 10% large augite phenocrysts. Plagioclase phenocrysts are subhedral to euhedral prisms to 1mm long; all have been albitized and many are extensively to totally replaced by very fine-grained sericite-chlorite intergrowths containing small globular clusters of deeper green pumpellyite and colourless, low-relief prehnite. Clinopyroxene (augite) phenocrysts are slightly rounded equi-dimensional to elongate euhedra usually showing growth twinning and often occurring in pairs or glomeroporphyritic clots; they are fractured but essentially unaltered, and compositional zoning is preserved in some crystals.

Groundmass:

The most striking feature of this rock is the remarkable variation in grainsize and appearance of the groundmass, even on the scale of a single thin section. In some areas, the groundmass is almost black, formerly glassy and charged with vesicles which are filled by green chlorite (and occasionally yellow fibrous epidote) and lined by beads of quartz; in some areas this glass has devitrified to a mosaic of granular quartz and chlorite flakes. In other areas the groundmass is more crystalline, with microlites of plagioclase and tiny spheroidal particles of leucoxene after FeTi oxides, in a mesostasis less dark than the glassy areas.

SAMPLE: 334718

LOCATION: 4942 1160 (BEULAH AREA)

SUMMARY: This rock is a dark coloured, autobrecciated phenocryst-rich mafic meta-andesite in which primary augite phenocrysts are preserved and the only significant difference between fragments is a slight variation in the grainsize (glassy to microcrystalline) of their groundmass.

DESCRIPTION:

This rock is identical to the previous sample (334717) in every way except that it shows some slight alteration and oxidation of the dark, formerly glassy groundmass areas, so that these are reddish-brown in this rock, rather than nearly black as in 334717. It is so similar to 334717 that I suggest it represents part of the same eruptive unit.

SAMPLE: 334719

LOCATION: 4950 1106 (BEULAH AREA)

SUMMARY: This rock is a dark coloured, highly porphyritic, vesicular mafic meta-andesite or metabasalt in which primary augite phenocrysts are preserved, plagioclase phenocrysts are highly altered and the originally glassy groundmass has devitrified.

DESCRIPTION:

Phenocrysts:

Large euhedral to subhedral of phenocrysts of augite to 2mm long (about 5 modal %) are strongly fractured, but alteration is limited to minor chlorite development along fractures and cleavage planes; they often contain rounded inclusions of FeTi oxide. More abundant (20 modal %) plagioclase phenocrysts are up to 2 mm long and are albitized but usually extensively replaced by sericite and chlorite mats with minor deep green granules of pumpellyite. Notable are sparse but distinctive large (to 0.4mm across) FeTi oxide microphenocrysts which are mainly replaced by leucoxene.

Groundmass:

The groundmass of this rock was originally glassy to very finely microcrystalline. Devitrification of glass has produced ragged patches of green chlorite and small grains and granular mosaics of secondary quartz. Leucoxene granules after FeTi oxide grains are scattered through the groundmass.

SAMPLE: 334720

LOCATION: 4580 0885 (Minnow Keratophyre; Kenzies Hill)

SUMMARY: This rock is a well-preserved grey quartz- + feldspar-phyric rhyolitic lava with a devitrified formerly glassy groundmass. It is one of the best preserved acidic rocks I have seen from the Cambrian of western Tasmania.

DESCRIPTION:

Phenocrysts:

Slightly rounded euhedral quartz phenocrysts (10 modal %) to 5mm diameter show occasional embayments and rounded brownish melt inclusions, and are very slightly strained. Many quartz phenocrysts are aggregates of two or three grains with intimately sutured common boundaries. Albite phenocrysts are slightly less abundant than quartz phenocrysts and are mainly compound grains with either euhedral of fractured outlines; alteration is limited to minor sericite speckling and some patchy recrystallization to a fine-grained mosaic of secondary albite (and quartz?). Rare mafic phenocrysts were almost certainly biotite, but have have been pseudomorphed by green biotite.

Groundmass:

The formerly glassy groundmass of this rock has devitrified and crystallized to an even-grained mosaic of quartz, albite and K feldspar, with minor green chlorite flakes and epidote and pumpell- yite granules. Occasional patches of myrmekitic or granophyric quartz-feldspar intergrowths in the groundmass probably developed during devitrification.

SAMPLE: 271749P

LOCATION: 3830 1430 (BEULAH AREA)

SUMMARY: This rock is a phenocryst-rich metabasalt or mafic meta-andesite with a distict brownish colour in handspecimen due to oxidation of abundant FeTi-oxide grains in the groundmass. Phenocrysts were plagioclase and augite, although both these phenocryst phases have been pseudomorphed by secondary minerals.

DESCRIPTION:

Phenocrysts: The most abundant phenocrysts (around 30 modal %) were calcic plagioclase euhedra to 1mm long. These have been albitized and also partially replaced by tiny grains of epidote, pumpellyite and chlorite. Former augite phenocrysts, typically equidimensional euhedra to 2mm long, constitute only about 3 modal % of the rock and are always altered to a diverse suite of secondary minerals; most are faithfully pseudomorphed by a granular mosaic of albite and yellow epidote with minor chlorite, while others are replaced by unusual aggregates composed of intergrown sheaves of anomalous blue and pale yellow birefringent chlorite. The latter group invite speculation that these were formerly orthopyroxene phenocrysts; however, their crystal shapes and the fact that they often contain small, subrounded FeTi oxide grains are more reminiscent of typical augite phenocrysts in basalts.

Groundmass: The groundmass of this lava, although holocrystalline, is fine-grained and characterized by microlites of albitized plagioclase and abundant grains (to 0.4mm across) of FeTi oxide, which give the rock its dull red-brown colour in handspecimen. Within the groundmass are abundant irregular patches of beautiful pale green to clear pleochroic sheaves and fans of pumpellyite and rosettes and smaller patches of secondary quartz.

The alteration assemblage in this metabasic lava is albite-chlorite-epidote-pumpellyite-quartz, and very rare needles of pale grren actinolite in albite-chlorite pseudomorphs after augite indicate that the metamorphic facies represented by this lava straddles the lowermost greenschist -upper prehnite pumpellite facies boundary. It is noticeable that the pumpellyite in this slide is significantly less green pleochroic (usually meaning less Fe-rich) than in the previous two slides; as pumpellyite normally becomes less Fe-rich with increasing grade of metamorphism, this is in keeping with the appearance of actinolite in this slide and its apparent absence in the other two.

SAMPLE NUMBER: 271750P

LOCATION: 3830 1420 (Beulah Area).

SUMMARY: The rock is a strongly porphyritic mafic mata-andesite or metabasalt with an originally glassy to microcrystalline groundmass in which primary augite phenocrysts are preserved but former plagioclase phenocrysts have been extensively replaced by epidote and pumpellyite.

DESCRIPTION:

Phenocrysts:

Clinopyroxene (augite) phenocrysts are subhedral to euhedral equidimensional to somewhat elongate prisms from 0.2 -2 mm long. They constitute around 10-15% of the rock and are typically extensively fractured. They often contain subrounded inclusions of FeTi oxide grains and occasional former melt inclusions are replaced by chlorite and pumpellyite.

Calcic plagioclase phenocrysts were originally stubby to elongate prisms less than 2mm long, but have been totally replaced by a variety of alteration minerals which show patchy development throughout the rock. Most calcic plagioclase grains were variably albitized during low-grade burial metamorphism, and Ca and Al released was relocated in epidote and pumpellyite, which sometimes perfectly pseudomorphs former plagioclase phenocrysts, whereas in other places these secondary minerals form aggregates and irregular patches in the groundmass. Most former calcic plagioclase phenocrysts are now albite containing abundant tiny grains of pale green pumpellyite and occasional specks and streaks of sericite.

Sparse euhedral phenocrysts to 1mm long are totally replaced by a mosaic of quartz and chlorite and are surrounded by clouds of very fine-grained Fe-oxides. While it is impossible to know for certain the original identity of these crystals, I suggest that they were originally olivine, based on analogous alteration observed in other lavas, in which occasional grains of olivine have been preserved.

Groundmass:

The groundmass of this lava was originally microcrystalline to glassy. Remnant patches of partially devitrified pale brown glass are preserved, and in other areas a very fine mosaic of quartz, chlorite, FeTi oxide dust and epidote-pumpellyite group minerals have crystallized from former glass.

Metamorphic Grade and Alteration:

The metamorphic assemblage represented in this rock is albite-epidote-chlorite -pumpellyite- quartz; minor prehnite is possibly present in the form of dirty brown dusty patches adjacent to pumpellyite and chlorite. This assemblage is typical of the prehnite-pumpellyite facies of regional burial metamorphism of basic rocks; the absence of secondary actinolite or hornblende is strong evidence that this rock was probably never heated above 300^{o}C, the lower limit of the greenschist facies, and in this respect it contrasts with many basalts from the Western Volcanic Sequence in the Queenstown area, where secondary amphibole is abundant.

SAMPLE: 271751

LOCATION: 3978 1445 (Beulah Area)

SUMMARY: In handspecimen, a pronounced volcanic breccia texture is defined by fragments to more than 10cm long; most fragments are dark, fine-grained lava, although a few are lighter coloured, possibly tuffaceous clasts. The rock is an autobrecciated meta-andesite with a few exotic 'clasts' probably picked up during eruption and flow; it has been metamorphosed to prehnite-pumpellyite facies, but concentration of metamorphic fluids along fragment margins has produced more intense epidote-rich stringers and patches.

DESCRIPTION:

The brecciated nature of this sample is still evident in thin section, although not as obvious as in the hand-specimen. Most fragments appear to be of the one lava type, a dark, mafic phenocryst-poor pilotaxitic textured andesite with the flow-texture defined by abundant albitized plagioclase phenocryts and microphenocrysts always less than 1mm long; many of these contain patchy distributions of tiny grains of pale yellow epidote, green pumpellyite and chlorite, and sometimes minor sericite. The groundmass was glassy in some fragments (glass now replaced by a quartz-chlorite mosaic), and finely crystalline in others, with the main microlites being plagioclase.

One fragment at least 1cm long is very different from the others, having a vesicular, formerly glassy groundmass in which relatively abundant olivine euhedra (to 1mm) have been replaced by chlorite or pale serpentine and quartz, with the characteristic dark crystal outlines defined by very fine-grained Fe-oxide dust released during olivine breakdown and pushed to grain boundaries. A few phenocrysts with typical augite crystal shapes are replaced by epidote and quartz, and plagioclase microphenocrysts are totally replaced by very fine-grained, almost isotropic aggregates of epidote, pumpellite and chlorite.

Meandering meshworks of pale yellow to pale brown epidote traverse the rock, and in hand specimen can be seen to follow the margins of some fragments, and pervade the rock in other places. Similarly, patches of very low birefringent chlorite and mosaic-textured quartz occur throughout the rock, particularly at fragment margins. This style of alteration is typical of low-grade degradation of brecciated lava flows (Smith 1968), the hot metamorphic fluids being channeled along fragment (and flow)

boundaries and causing more extensive recrystallization than in the less permeable interior portions of fragments and blocks.

Reference: Smith R.E. 1968: Redistribution of major elements in the alteration of some basic lavas during burial metamorphism. J. Petrology 9, 191-219. This is a very useful, detailed, descriptive account of the alteration of brecciated andesitic lava flows from the Ordovicican Walli Andesite of central NSW.

APPENDIX IV

Rock chip Geochemical Analyses

ANALABS

A division of MacDonald Hamilton & Co. Pty. Ltd.

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786056

ANALYTICAL REPORT No. 23.3.08.05052

56.

THIS REPORT MUST BE READ IN CONJUNCTION WITH THE ACCOMPANYING ANALYTICAL DATA

Aberfolye Resources Exp. Division
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STATE OF SAMPLES REFER BELOW	SAMPLE NUMBERS	PRE-TREATMENT: DRY	CRUSH	SPLIT	PULVERISE	SIEVE	OTHER SEE REMARKS	NONE	ANALYSIS: REFER TO ANALYSIS SECTION	PREPARATION	METHOD
	Various	RO Prep: 005,009,011,013,016							Cu,Pb,Zn,Ag,Ni/101,As/114		
	Various	RO							Ba,Cr,Zr,Ti,K,Ca,S,Y/401		
	Various	RO Prep: 005,009,011,013,016							Pb,Ag/104		
	Various	RO							BaO/406		
	Various	RO Prep: 005,009,011,013,016							Au/309		

RESULTS TO

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P.O. Box 952
Burnie
Tasmania 7320

RESULTS TO

REMARKS

STATE OF SAMPLES		ANALYSIS — PREPARATION				ANALYSIS — METHOD	
hole core	WC	perchloric acid	A1	cold acid	CA	atomic absorbtion	AAS
bit core	SC	hydrochloric acid	A2	specific sulphide	SS	x-ray fluorescence	XRF
cutting	CU	nitric acid	A3	other mixed acids	Ma	spectrophotometry	SPEC
rock	Ro	aqua regia	A4	alkaline attack	AA	colorimetry	COL
il	SO	nitric-perchloric	A5	volatilization	VO	chromatography	CHR
ip	PU	HF mixture	A6	ignition	IG	titration	TTN
ter	WA	HF under pressure	A7	pressed powder (XRF)	PP	other chemicals means	CHEM
tissue	TI	fusion	A8	glass fusion (XRF)	GF	miscellaneous	MISC
stream sediment	SS					fluorescence	FLUOR
avy mineral	HM					inductively coupled plasma	ICP

AUTHORISED OFFICER

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786057

ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	23.3.08.05052	10/02/88	2660	1 OF 3

TUBE No.	SAMPLE No.	Cr	Cr	Ni	Cu	Zn	As	Y	Y	Zr
1	271701	36	–	35	45	130	10	8	–	46
2	271702	35	–	130	985	535	35	51	–	74
3	271703	41	–	50	365	230	9	17	–	22
4	271704	<10	–	<5	20	10	2	<1	–	<5
5	271705a	–	120	25	20	430	27	–	20	–
6	271707b	–	220	240	55	115	2	–	20	–
7	271708a	74	–	15	10	55	4	16	–	92
8	271708b	24	–	5	205	50	19	1	–	<5
9	271709a	–	45	20	10	250	7	–	30	–
10	271710b	–	100	20	10	95	2	–	20	–
11	271711b	–	60	15	15	70	3	–	20	–
12	271712	–	90	10	35	195	3	–	10	–
13	271713a	–	75	15	15	170	8	–	20	–
14										
15										
16										
18										
19										
20										
21										
22										
23	DETECTION	10	5	5	5	5	1	1	5	5
24	UNITS	PPM	PPM	PPM	PPM	PPM	PPM	PPM	PPM	PPM
25	METHOD	201	401	101	101	101	114	201	401	201

Results in ppm unless otherwise specified
T = element present; but concentration too low to measure
X = element concentration is below detection limit
— = element not determined

AUTHORISED OFFICER

786058

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BaO → Ba
÷ 1.117

ANALYTICAL DATA

58.

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	23.3.08.05052	10/02/88	2660	2 OF 3

TUBE No.	SAMPLE No.	Zr	Ag	Ag	Ba	Au	Pb	Pb	BaO	CaO
1	271701	-	5.0	-	-	<0.008	245	-	28.60 25.6	0.02
2	271702	-	<0.5	-	-	-	50	-	3.50 3.13	0.04
3	271703	-	<0.5	-	-	-	20	-	10.50 9.4	0.01
4	271704	-	2.0	-	-	-	30	-	65.10 58.28	0.04
5	271705a	90	4.0	-	1700	<0.008	115	-	-	0.02
6	271707b	180	<0.5	-	4600	-	10	-	-	7.98
7	271708a	-	0.5	-	-	-	130	-	2.10 1.88	0.02
8	271708b	-	-	153	-	-	-	2.68	33.00 29.44	0.02
9	271709a	160	4.0	-	2100	<0.008	95	-	-	4.18
10	271710b	140	1.5	-	1200	-	20	-	-	5.68
11	271711b	120	1.5	-	720	-	30	-	-	7.08
12	271712	100	3.5	-	2200	<0.008	400	-	-	0.02
13	271713a	90	2.5	-	1550	<0.008	85	-	-	0.01
14										
15										
16										
18										
19										
20										
21										
22										
23	DETECTION	5	0.5	2	10	0.008	5	0.05	0.05	0.01
24	UNITS	PPM	PPM	PPM	PPM	PPM	PPM	%	%	%
25	METHOD	401	101	104	401	309	101	104	406	406

Results in ppm unless otherwise specified
T = element present; but concentration too low to measure
X = element concentration is below detection limit
— = element not determined

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/ 058

$SO_3 \rightarrow S$ ÷2.497

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$TiO_2 \rightarrow Ti$ ÷1.668

ANALYTICAL DATA

786059

59.

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No	PAGE
	23.3.08.05052	10/02/88	2660	3 OF 3

TUBE No.	SAMPLE No.	K2O	SO3	TiO2	SO3					
1	271701	0.43	15.00 6.01	0.26 0.16	–					
2	271702	0.65	1.60 .64	0.18 0.11	–					
3	271703	0.18	5.20 2.08	0.05 0.03	–					
4	271704	0.01	34.20 13.70	<0.01 0.005	–					
5	271705a	2.09	–	0.60 0.36	0.04 0.016					
6	271707b	0.99	–	2.00 1.12	0.04 0.016					
7	271708a	1.49	0.90 0.36	0.35 0.21	–					
8	271708b	0.05	18.50 7.41	<0.01 0.005	–					
9	271709a	1.91	–	0.84 0.5	0.04 0.016					
10	271710b	4.00	–	0.66 0.4	0.02 0.008					
11	271711b	2.32	–	0.73 0.44	0.02 0.008					
12	271712	3.59	–	0.76 0.46	0.04 0.016					
13	271713a	3.36	–	0.71 0.43	0.04 0.016					
14										
15										
16										
17										
18										
19										
20										
21										
22										
23	DETECTION	0.01	0.01	0.01	0.02					
24	UNITS	%	%	%	%					
25	METHOD	406	406	406	613					

Results in ppm unless otherwise specified
T = element present: but concentration too low to measure
X = element concentration is below detection limit
— = element not determined

AUTHORISED OFFICER

ANALABS

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FAX: 004 31 8890
Telex AA92560

786060

ANALYTICAL REPORT No. 23.3.08.05075

60.

THIS REPORT MUST BE READ IN CONJUNCTION WITH THE ACCOMPANYING ANALYTICAL DATA

Aberfolye Resources Exp. Division
P.O. Box 952
Burnie
Tasmania 7320

ORDER No.	PROJECT
2670	

DATE RECEIVED	RESULTS REQUIRED
18/01/88	ASAP

No. OF PAGES OF RESULTS	DATE REPORTED	No. OF COPIES	TOTAL No. OF SAMPLES
3	24/02/88	1	17

STATE OF SAMPLES	PRE-TREATMENT								ANALYSIS			
ER BELOW	SAMPLE NUMBERS	DRY	CRUSH	SPLIT	PUL-VERISE	SIEVE	OTHER SEE REMARKS	NONE	REFER TO ANALYSIS SECTION	PREPARATION	METHOD
	334714/30	RO	Prep: 009,011,012,013,016						Cu,Pb,Zn,Ag,Ni/101,As/114		
	334714/18,334721/30	RO							Ba,Cr,Zr,Ti,K,Ca,S,Y/401		
	334719/20	RO							Al2O3,SiO2,TiO2,Fe2O3,MnO,CaO,K2O,MgO,P2O5/408,		
	334722/30	RO							Au/309		
	334719/20	RO							Zr/401		

RESULTS TO

Aberfolye Resources Exp. Division
P.O. Box 952
Burnie
Tasmania 7320

RESULTS TO

REMARKS

STATE OF SAMPLES		ANALYSIS — PREPARATION				ANALYSIS — METHOD	
...ole core	WC	perchloric acid	A1	cold acid	CA	atomic absorbtion	AAS
...t core	SC	hydrochloric acid	A2	specific sulphide	SS	x-ray fluorescence	XRF
...ting	CU	nitric acid	A3	other mixed acids	Ma	spectrophotometry	SPEC
rock	Ro	aqua regia	A4	alkaline attack	AA	colorimetry	COL
soil	SO	nitric-perchloric	A5	volatilization	VO	chromatography	CHR
...p	PU	HF mixture	A6	ignition	IG	titration	TTN
...ter	WA	HF under pressure	A7	pressed powder (XRF)	PP	other chemicals means	CHEM
...ue	TI	fusion	A8	glass fusion (XRF)	GF	miscellaneous	MISC
stream sediment	SS					fluorescence	FLUOR
heavy mineral	HM					inductively coupled plasma	ICP

AUTHORISED OFFICER

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A Division of Macdonald Hamilton & Co. Pty. Ltd.

ANALYTICAL DATA

06U

K → K_2O × 1·205

Ca → CaO × 1·399

786061

61.

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	23.3.08.05075	24/02/88	2670	1 OF 3

TUBE No.	SAMPLE No.	S	K	Ca	Ti	Cr	Ni	Cu	Zn	As
1	334714	0.015	2·63 2.2000	0·10 750	5100	110	70	25	750	3
2	334715	0.005	3·25 2.7000	4·41 31500	4200	30	30	20	150	59
3	334716	0.010	1·39 1.1500	6·30 45000	4800	35	30	15	185	16
4	334717	0.015	1·96 1.6300	5·46 39000	4000	45	30	20	90	12
5	334718	0.005	1·99 1.6500	6·30 45000	3850	30	25	10	100	5
6	334719	0.150	–	–	–	70	30	20	100	7
7	334720	0.010	–	–	–	15	15	<5	105	6
8	334721	0.005	2·83 2.3500	0·12 850	1250	<5	5	<5	75	1
9	334722	0.020	4·82 4.0000	0·08 550	5200	55	30	30	475	11
10	334723	0.010	4·82 4.0000	0·08 600	5550	70	30	20	245	8
11	334724	0.010	4·94 4.1000	0·06 400	5100	60	35	40	470	4
12	334725	0.030	4·58 3.8000	0·08 550	5400	20	35	50	205	13
13	334726	0.015	4·82 4.0000	0·08 550	5350	50	25	25	90	8
14	334727	0.010	4·82 4.0000	0·07 500	5450	55	25	35	150	4
15	334728	0.010	3·86 3.2000	0·08 600	4550	55	35	115	185	13
16	334729	0.010	3·07 2.5500	0·06 450	4950	50	40	110	255	12
17	334730	0.005	5·06 4.2000	0·11 800	4600	65	40	40	95	6
18										
19										
20										
21										
22										
23	DETECTION	0.005	0.0025	25	50	5	5	5	5	1
24	UNITS	%	%	PPM	PPM	PPM	PPM	PPM	PPM	PPM
25	METHOD	613	104	104	401	401	101	101	101	114

Results in ppm unless otherwise specified
T = element present; but concentration too low to measure
X = element concentration is below detection limit
— = element not determined

AUTHORISED OFFICER

ANALABS

A Division of Macdonald Hamilton & Co. Pty. Ltd.

786062

061

ANALYTICAL DATA

62.

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	23.3.08.05075	24/02/88	2670	2 OF 3

TUBE No.	SAMPLE No.	Y	Zr	Nb	Ag	Ba	Au	Pb	Na20	Al203
1	334714	25	150	-	<0.5	950	-	60	-	-
2	334715	30	160	-	<0.5	1200	-	70	-	-
3	334716	30	180	-	0.5	280	-	60	-	-
4	334717	20	130	-	1.5	760	-	10	-	-
5	334718	20	110	-	1.5	510	-	20	-	-
6	334719	25	120	10	1.0	830	-	20	2.76	14.3
7	334720	35	210	20	0.5	700	-	15	4.25	11.2
8	334721	30	210	-	<0.5	820	-	10	-	-
9	334722	20	170	-	1.0	530	<0.008	345	-	-
10	334723	20	160	-	0.5	610	<0.008	100	-	-
11	334724	25	160	-	<0.5	890	0.017	240	-	-
12	334725	10	160	-	<0.5	650	0.032	430	-	-
13	334726	20	160	-	<0.5	410	<0.008	60	-	-
14	334727	20	160	-	<0.5	630	<0.008	40	-	-
15	334728	20	140	-	<0.5	340	<0.008	60	-	-
16	334729	15	130	-	<0.5	450	<0.008	25	-	-
17	334730	20	140	-	<0.5	510	<0.008	50	-	-
18										
19										
20										
21										
22										
23	DETECTION	5	5	3	0.5	10	0.008	5	0.01	0.1
24	UNITS	PPM	PPM	PPM	PPM	PPM	PPM	PPM	%	%
25	METHOD	401	401	401	101	401	309	101	104	408

Results in ppm unless otherwise specified
T = element present; but concentration too low to measure
X = element concentration is below detection limit
— = element not determined

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. . 062

786063

TiO2 → Ti
÷ 1·668

ANALABS

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ANALYTICAL DATA

63. PAGE

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	
	23.3.08.05075	24/02/88	2670	3 OF 3

TUBE No.	SAMPLE No.	CaO	Fe2O3	K2O	MgO	MnO	P2O5	SiO2	TiO2	LOI
1	334714	–	–	–	–	–	–	–	–	–
2	334715	–	–	–	–	–	–	–	–	–
3	334716	–	–	–	–	–	–	–	–	–
4	334717	–	–	–	–	–	–	–	–	–
5	334718	–	–	–	–	–	–	–	–	–
6	334719	5.85	9.55	2.30	4.35	0.17	0.142	55.0	4300 0.72	3.62
7	334720	0.14	3.85	2.28	1.25	0.09	0.014	75.8	1000 0.17	0.74
8	334721	–	–	–	–	–	–	–	–	–
9	334722	–	–	–	–	–	–	–	–	–
10	334723	–	–	–	–	–	–	–	–	–
11	334724	–	–	–	–	–	–	–	–	–
12	334725	–	–	–	–	–	–	–	–	–
13	334726	–	–	–	–	–	–	–	–	–
14	334727	–	–	–	–	–	–	–	–	–
15	334728	–	–	–	–	–	–	–	–	–
16	334729	–	–	–	–	–	–	–	–	–
17	334730	–	–	–	–	–	–	–	–	–
18										
19										
20										
21										
22										
23	DETECTION	0.01	0.01	0.01	0.05	0.01	0.007	0.1	0.01	0.01
24	UNITS	%	%	%	%	%	%	%	%	%
25	METHOD	408	408	408	408	408	408	408	408	615

Results in ppm unless otherwise specified
T = element present; but concentration too low to measure
X = element concentration is below detection limit
— = element not determined

AUTHORISED OFFICER

786064

ANALABS TASMANIA

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ANALYTICAL REPORT No. 23.3.08.05114

THIS REPORT MUST BE READ IN CONJUNCTION WITH THE ACCOMPANYING ANALYTICAL DATA

Aberfolye Resources Exp. Division
P.O. Box 952
Burnie
Tasmania 7320

ORDER No.	PROJECT
2690	

DATE RECEIVED	RESULTS REQUIRED
01/02/89	ASAP

No. OF PAGES OF RESULTS	DATE REPORTED	No. OF COPIES	TOTAL No. OF SAMPLES
3	25/02/88	1	22

SAMPLE NUMBERS	PRE-TREATMENT: DRY	CRUSH	SPLIT	PULVERISE	SIEVE	OTHER SEE REMARKS	NONE	ANALYSIS: REFER TO ANALYSIS SECTION	PREPARATION	METHOD
,271731/37,271739/45,271747	RO	Prep: 005,009,011,012,013,016						Cu,Pb,Zn,Ag,Ni/101		
71731/37,271739/45,271747	RO							Au/309		
71748/54	RO	Prep: 005,009,011,012,013,016						Cu,Pb,Zn,Ag,Ni/101,As/114		
271748/54	RO							Ba,Cr,Zr,Ti,Y/401		
71748	RO							Au/309		

RESULTS TO

Aberfolye Resources Exp. Division
P.O. Box 952
Burnie
Tasmania 7320

RESULTS TO

REMARKS

STATE OF SAMPLES		ANALYSIS — PREPARATION				ANALYSIS — METHOD	
le core	WC	perchloric acid	A1	cold acid	CA	atomic absorbtion	AAS
core	SC	hydrochloric acid	A2	specific sulphide	SS	x-ray fluorescence	XRF
ing	CU	nitric acid	A3	other mixed acids	Ma	spectrophotometry	SPEC
	Ro	aqua regia	A4	alkaline attack	AA	colorimetry	COL
	SO	nitric-perchloric	A5	volatilization	VO	chromatography	CHR
	PU	HF mixture	A6	ignition	IG	titration	TTN
er	WA	HF under pressure	A7	pressed powder (XRF)	PP	other chemicals means	CHEM
ue	TI	fusion	A8	glass fusion (XRF)	GF	miscellaneous	MISC
am diment	SS					fluorescence	FLUOR
vy eral	HM					inductively coupled plasma	ICP

AUTHORISED OFFICER

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ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	23.3.08.05114	25/02/88	2690	1 OF 3

TUBE No.	SAMPLE No.	Ti	Cr	Ni	Cu	Zn	As	Y	Zr	Ag
1		–	–				–	–	–	
2		–	–				–	–	–	
3		–	–				–	–	–	
4		–	–				–	–	–	
5		–	–				–	–	–	
6		–	–				–	–	–	
7		–	–				–	–	–	
8		–	–				–	–	–	
9		–	–				–	–	–	
10		–	–				–	–	–	
11		–	–				–	–	–	
12		–	–				–	–	–	
13		–	–				–	–	–	
14		–	–				–	–	–	
15		–	–				–	–	–	
16	271748	5350	75	20	215	105	12	25	170	<0.5
17	271749	2700	25	30	10	60	4	25	110	<0.5
18	271750	3650	55	55	5	115	3	25	100	<0.5
19	271751	3800	20	40	255	335	3	20	160	1.0
20	271752	3150	150	55	30	110	<1	20	110	<0.5
21	271753	7550	120	75	165	95	4	30	80	<0.5
22	271754	6850	90	65	165	80	1	25	75	<0.5
23	DETECTION	50	5	5	5	5	1	5	5	0.5
24	UNITS	PPM	PPM	PPM	PPM	PPM	PPM	PPM	PPM	PPM
25	METHOD	401	401	101	101	101	114	401	401	101

Results in ppm unless otherwise specified
T = element present; but concentration too low to measure
X = element concentration is below detection limit
— = element not determined

AUTHORISED OFFICER

ANALABS

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Telex AA92560

67.

ANALYTICAL REPORT No. 23.3.08.05131

THIS REPORT MUST BE READ IN CONJUNCTION WITH THE ACCOMPANYING ANALYTICAL DATA

Aberfolye Resources Exp. Division
P.O. Box 952
Burnie
Tasmania 7320

ORDER No.	PROJECT
2697	

DATE RECEIVED	RESULTS REQUIRED
05/02/88	ASAP

No. OF PAGES OF RESULTS	DATE REPORTED	No. OF COPIES	TOTAL No. OF SAMPLES
2	25/02/88	1	10

	PRE-TREATMENT							ANALYSIS		
SAMPLE NUMBERS	DRY	CRUSH	SPLIT	PULVERISE	SIEVE	OTHER SEE REMARKS	NONE	REFER TO ANALYSIS SECTION	PREPARATION	METHOD
271755/64	RO	Prep: 008,011,012,013,016						Cu,Pb,Zn,Ag,Ni/101,As/114		
271755/64	RO							Ba,Cr,Zr,Ti/401		
271755/64	RO							Au/309		
271755/64	RO							Cr/101,BaO,TiO/406		
271755/64	RO							Cr/143		

RESULTS TO

Aberfolye Resources Exp. Division
P.O. Box 952
Burnie
Tasmania 7320

RESULTS TO

REMARKS

STATE OF SAMPLES		ANALYSIS — PREPARATION				ANALYSIS — METHOD	
ole core	WC	perchloric acid	A1	cold acid	CA	atomic absorbtion	AAS
it c e	SC	hydrochloric acid	A2	specific sulphide	SS	x-ray fluorescence	XRF
ting	CU	nitric acid	A3	other mixed acids	Mx	spectrophotometry	SPEC
ck	Ro	aqua regia	A4	alkaline attack	AA	colorimetry	COL
l	SO	nitric-perchloric	A5	volatilization	VO	chromatography	CHR
p	PU	HF mixture	A6	ignition	IG	titration	TTN
ter	WA	HF under pressure	A7	pressed powder (XRF)	PP	other chemicals means	CHEM
sue	TI	fusion	A8	glass fusion (XRF)	GF	miscellaneous	MISC
eam sediment	SS					fluorescence	FLUOR
vy mineral	HM					inductively coupled plasma	ICP

AUTHORISED OFFICER

ANALABS

A Division of Macconsic Hamilton & Co. Pty. Ltd.

Ba O → Ba ÷ 1.117

786067

ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	23.3.08.05131	25/02/88	2697	1 OF 2

TUBE No.	SAMPLE No.	Cu	Pb	Zn	Ag	Au	Ba	BaO	As	Cr
1	271755	80	<5	10	<0.5	<0.008	-	35.45 39.6	1	10
2	271756	205	<5	15	<0.5	<0.008	-	21.75 24.3	<1	30
3	271757	470	5	25	<0.5	<0.008	1450	-	<1	-
4	271758	345	<5	35	<0.5	<0.008	1800	-	<1	-
5	271759	610	10	30	<0.5	<0.008	700	-	<1	-
6	271760	370	10	35	<0.5	<0.008	300	-	<1	-
7	271761	430	15	35	<0.5	<0.008	390	-	<1	-
8	271762	30	200	15	<0.5	<0.008	120	-	<1	-
9	271763	40	5	30	<0.5	<0.008	500	-	<1	-
10	271764	30	175	10	<0.5	<0.008	1300	-	<1	-
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23	DETECTION	5	5	5	0.5	0.008	10	0.1	1	5
24	UNITS	PPM	PPM	PPM	PPM	PPM	PPM	%	PPM	PPM
25	METHOD	101	101	101	101	309	401	406	114	101

Results in ppm unless otherwise specified
T = element present; but concentration too low to measure
X = element concentration is below detection limit
— = element not determined

AUTHORISED OFFICER

067

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786068

ANALYTICAL DATA

69.

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	23.3.08.05131	25/02/88	2697	2 OF 2

TUBE No.	SAMPLE No.	Cr	Cr	Ni	Zr	Ti	TiO_2 TiO_2			
	271755	20	-	20	90	-	0.14			
2	271756	40	-	30	5	-	0.04			
	271757	-	15	30	9	170	-			
	271758	-	70	45	15	220	-			
6	271759	-	15	30	6	90	-			
	271760	-	20	40	8	100	-			
7	271761	-	60	50	8	240	-			
	271762	-	8	25	<5	<50	-			
9	271763	-	20	35	40	1050	-			
10	271764	-	65	15	220	4100	-			
12										
14										
19										
20										
22										
	DETECTION	10	5	5	5	50	0.01			
24	UNITS	PPM	PPM	PPM	PPM	PPM	%			
	METHOD	143	401	101	401	401	406			

Results in ppm unless otherwise specified
T = element present; but concentration too low to measure
X = element concentration is below detection limit
— = element not determined

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786069

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Telex AA92560

ANALYTICAL REPORT No. 23.3.08.05161

70.

THIS REPORT MUST BE READ IN CONJUNCTION WITH THE ACCOMPANYING ANALYTICAL DATA

Aberfolye Resources Exp. Division
P.O. Box 952
Burnie
Tasmania 7320

ORDER No.	PROJECT
3017	

DATE RECEIVED	RESULTS REQUIRED
17/02/88	ASAP

No. OF PAGES OF RESULTS	DATE REPORTED	No. OF COPIES	TOTAL No. OF SAMPLES
2	29/02/88	1	5

DATE COMPLETED	SAMPLE NUMBERS	PRE-TREATMENT: DRY	CRUSH	SPLIT	PULVERISE	SIEVE	OTHER SEE REMARKS	NONE	ANALYSIS: REFER TO ANALYSIS SECTION	PREPARATION	METHOD
	271765/69	RC	Prep: 009,011,012,013,016						Cu,Pb,Zn,Ag/101,As/114		
	271765/69	RC							Ba/401		
	271765/69	RC							Au/309		
	271765/69	RC							AuChk/309		
	271765/69	RC	Prep: 009,011,012,013,016						Pb,Zn,Ag/104		

REMARKS

RESULTS TO

Aberfolye Resources Exp. Division
P.O. Box 952
Burnie
Tasmania 7320

RESULTS TO

R. de Bomford
Aberfoyle Resources Exp. Division
P.O. Box 952
Burnie
Tasmania 7320

STATE OF SAMPLES		ANALYSIS — PREPARATION				ANALYSIS — METHOD	
...ore	WC	perchloric acid	A1	cold acid	CA	atomic absorbtion	AAS
...e	SC	hydrochloric acid	A2	specific sulphide	SS	x-ray fluorescence	XRF
	CU	nitric acid	A3	other mixed acids	Mo	spectrophotometry	SPEC
	Ro	aqua regia	A4	alkaline attack	AA	colorimetry	COL
	SO	nitric-perchloric	A5	volatilization	VO	chromatography	CHR
	PU	HF mixture	A6	ignition	IG	titration	TTN
	WA	HF under pressure	A7	pressed powder (XRF)	PP	other chemicals means	CHEM
	TI	fusion	A8	glass fusion (XRF)	GF	miscellaneous	MISC
...eam sediment	SS					fluorescence	FLUOR
...avy mineral	HM					inductively coupled plasma	ICP

AUTHORISED OFFICER

059

ANALABS

A Division of Macdonald Hamilton & Co Pty. Ltd.

786070

ANALYTICAL DATA

71.

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	23.3.08.05161	29/02/88	3017	1 OF 2

TUB No.	SAMPLE No.	Cu	Pb	Pb	Zn	Zn	Ag	Ag	Au	AuChk
1	271765	275	-	0.75	-	425	-	13	0.053	0.052
2	271766	930	-	2.17	-	850	-	42	0.057	-
3	271767	310	-	0.78	-	800	-	3	0.020	0.019
4	271768	10	40	-	70	-	1.0	-	<0.008	-
5	271769	5	30	-	50	-	2.0	-	<0.008	-
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23	DETECTION	5	5	0.05	5	25	0.5	2	0.008	0.008
24	UNITS	PPM	PPM	%	PPM	PPM	PPM	PPM	PPM	PPM
25	METHOD	101	101	104	101	104	101	104	309	309

Results in ppm unless otherwise specified
T = element present: but concentration too low to measure
X = element concentration is below detection limit
— = element not determined

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786071

ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	23.3.08.05161	29/02/88	3017	2 OF 2

TYPE No.	SAMPLE No.	Ba	As							
1	271765	410	220							
2	271766	680	220							
3	271767	390	100							
4	271768	960	1							
5	271769	910	<1							
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23	DETECTION	10	1							
24	UNITS	PPM	PPM							
25	METHOD	401	114							

Results in ppm unless otherwise specified
T = element present: but concentration too low to measure
X = element concentration is below detection limit
— = element not determined

AUTHORISED OFFICER

ANALABS

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FAX: 004 31 8890
Telex AA92560

786072

73.

ANALYTICAL REPORT No. 23.3.08.05176

THIS REPORT MUST BE READ IN CONJUNCTION WITH THE ACCOMPANYING ANALYTICAL DATA

Aberfolye Resources Exp. Division
P.O. Box 952
Burnie
Tasmania 7320

ORDER No.	PROJECT
3018	

DATE RECEIVED	RESULTS REQUIRED
22/02/88	ASAP

No. OF PAGES OF RESULTS	DATE REPORTED	No. OF COPIES	TOTAL No. OF SAMPLES
3	15/03/88	1	14

	SAMPLE NUMBERS	PRE-TREATMENT: DRY	CRUSH	SPLIT	PULVERISE	SIEVE	OTHER SEE REMARKS	NONE	ANALYSIS: REFER TO ANALYSIS SECTION	PREPARATION	METHOD
	271770/72	RC Prep: 009,011,012,013,016							Cu,Pb,Zn,Ag,Ni/101,As/114		
	271770/72	RC							Ba,Cr,Zr,Ti,S,Y,Nb,Sn/401		
	271770/83	RC							Au/309		
	271770	RC							Al2O3,SiO2,TiO2,Fe2O3,MnO,CaO,K2O,MgO,P2O5/408,		
	271770	RC							LOI/615		

RESULTS TO

Aberfolye Resources Exp. Division
P.O. Box 952
Burnie
Tasmania 7320

RESULTS TO

R. de Bomford
Aberfoyle Resources Exp. Division
P.O. Box 952
Burnie
Tasmania 7320

REMARKS

STATE OF SAMPLES		ANALYSIS — PREPARATION				ANALYSIS — METHOD	
ole re	WC	perchloric acid	A1	cold acid	CA	atomic absorbtion	AAS
t co	SC	hydrochloric acid	A2	specific sulphide	SS	x-ray fluorescence	XRF
ing	CU	nitric acid	A3	other mixed acids	Ma	spectrophotometry	SPEC
K	Ro	aqua regia	A4	alkaline attack	AA	colorimetry	COL
	SO	nitric-perchloric	A5	volatilization	VO	chromatography	CHR
p	PU	HF mixture	A6	ignition	IG	titration	TTN
er	WA	HF under pressure	A7	pressed powder (XRF)	PP	other chemicals means	CHEM
ue	TI	fusion	A8	glass fusion (XRF)	GF	miscellaneous	MISC
eam sediment	SS					fluorescence	FLUOR
avy mineral	HM					inductively coupled plasma	ICP

AUTHORISED OFFICER Cheryl Cathie

012

ANALABS

A Division of Macdonald Hamilton & Co. Pty. Ltd.

786073

ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	23.3.08.05176	15/03/88	3018	2 OF 3

No.	SAMPLE No.	Nb	Ag	Sn	Ba	Au	Pb	MgO	Na2O	P2O5
1	271770	<3	<0.5	<3	1300	<0.008	60	250	3.250	0.014
2	271771	9	<0.5	<3	1400	<0.008	15	-	-	-
3	271772	5	<0.5	<3	380	0.012	35	-	-	-
4	271773	-	-	-	-	0.008	-	-	-	-
5	271774	-	-	-	-	<0.008	-	-	-	-
6	271775	-	-	-	-	<0.008	-	-	-	-
7	271776	-	-	-	-	<0.008	-	-	-	-
8	271777	-	-	-	-	<0.008	-	-	-	-
9	271778	-	-	-	-	<0.008	-	-	-	-
10	271779	-	-	-	-	0.010	-	-	-	-
11	271780	-	-	-	-	<0.008	-	-	-	-
12	271781	-	-	-	-	<0.008	-	-	-	-
13	271782	-	-	-	-	0.012	-	-	-	-
14	271783	-	-	-	-	0.012	-	-	-	-
15										
16										
17										
18										
19										
20										
21										
22										
23	DETECTION	3	0.5	3	10	0.008	5	50	0.005	0.007
24	UNITS	PPM	PPM	PPM	PPM	PPM	PPM	PPM	%	%
25	METHOD	401	101	401	401	309	101	104	104	401

Results in ppm unless otherwise specified
T = element present; but concentration too low to measure
X = element concentration is below detection limit
— = element not determined

AUTHORISED OFFICER Cheryl Cattrall

ANALABS

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786074

ANALYTICAL DATA

75.

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	23.3.08.05176	15/03/88	3018	3 OF 3

TABLE No.	SAMPLE No.	Al2O3	CaO	Fe2O3	K2O	MnO	SiO2	TiO2	LOI	
	271770	11.9	0.11	1.55	3.80	0.02	78.2	0.17	1.01	
2	271771	–	–	–	–	–	–	–	–	
	271772	–	–	–	–	–	–	–	–	
	271773	–	–	–	–	–	–	–	–	
	271774	–	–	–	–	–	–	–	–	
	271775	–	–	–	–	–	–	–	–	
7	271776	–	–	–	–	–	–	–	–	
	271777	–	–	–	–	–	–	–	–	
	271778	–	–	–	–	–	–	–	–	
	271779	–	–	–	–	–	–	–	–	
	271780	–	–	–	–	–	–	–	–	
12	271781	–	–	–	–	–	–	–	–	
	271782	–	–	–	–	–	–	–	–	
14	271783	–	–	–	–	–	–	–	–	
19										
22										
	DETECTION	0.1	0.01	0.01	0.05	0.01	0.1	0.01	0.01	
24	UNITS	%	%	%	%	%	%	%	%	
	METHOD	408	408	408	408	408	408	408	615	

Results in ppm unless otherwise specified
T = element present: but concentration too low to measure
X = element concentration is below detection limit
– = element not determined

AUTHORISED OFFICER Cheryl Cathro

- 074

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786075

ANALYTICAL DATA

76.

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	23.3.08.05176	15/03/88	3018	1 OF 3

TUBE No.	SAMPLE No.	S	Ti	Cr	Ni	Cu	Zn	As	Y	Zr
1	271770	0.020	1050	60	45	10	185	1	35	200
2	271771	0.008	1150	45	60	10	150	<1	45	220
3	271772	0.020	4000	500	225	100	90	25	50	130
4	271773	-	-	-	-	-	-	-	-	-
5	271774	-	-	-	-	-	-	-	-	-
6	271775	-	-	-	-	-	-	-	-	-
7	271776	-	-	-	-	-	-	-	-	-
8	271777	-	-	-	-	-	-	-	-	-
9	271778	-	-	-	-	-	-	-	-	-
10	271779	-	-	-	-	-	-	-	-	-
11	271780	-	-	-	-	-	-	-	-	-
12	271781	-	-	-	-	-	-	-	-	-
13	271782	-	-	-	-	-	-	-	-	-
14	271783	-	-	-	-	-	-	-	-	-
15										
16										
17										
18										
19										
20										
21										
22										
23	DETECTION	0.005	50	5	5	5	5	1	5	5
24	UNITS	%	PPM	PPM	PPM	PPM	PPM	PPM	PPM	PPM
25	METHOD	401	401	401	101	101	101	114	401	401

Results in ppm unless otherwise specified
T = element present; but concentration too low to measure
X = element concentration is below detection limit
— = element not determined

AUTHORISED OFFICER Cheryl Cathie

APPENDIX V

Sirotope report to Aberfoyle Resources

on A Pb Isotope Study

of the Beulah Area, Tasmania

by Graham R. Carr 3/3/88.

786077

Aberfoyle Resources Limited
Incorporated in Victoria
EXPLORATION DIVISION

ABERFOYLE RESOURCES LIMITED
EXPLORATION DIVISION
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Telex: AA38646

78.

15th February, 1988

Mr. Graham Carr,
Sirotope,
CSIRO,
Division of Mineralogy & Geochemistry,
Sydney Laboratory,
Delhi Road,
NORTH RYDE. N.S.W. 2113

Dear Graham,

Subject: 10 Samples for Pb Isotope Analysis and Interpretation

Herewith are 10 samples from the Beulah area south of Devonport in Tasmania. They come from haematite and manganese altered "Beulah" basalt thought to be part of the Mount Read Volcanics, and from rocks at two nearby barite occurrences. Sample locations, descriptions and lead levels are appended. Analyses for other elements available are also appended.

The area contains Devonian granites and there is unequivocal Devonian skarn mineralisation associated with related granites nearby. I expect therefore that some of these samples may have Devonian mineralisation signatures. What we hope for is evidence of Cambrian volcanogenic mineralisation as well.

High Pb Beulah Basalt

Typically this is a massive unaltered green lava or lava breccia. Metamorphic minerals include epidote prehnite and pumpellyite. (Low grade green-schist-prehnite pumpellyite facies).

The samples I have sent you are atypical in that they are altered with specular haematite, manganese and other iron oxides and they contain anomalous lead levels.

Other basalts in the district altered to mica and iron oxide, contain anomalous zinc (750 ppm Zn) but no lead (60 ppm Pb).

Beulah Barite Occurrence

This occurs in a greywacke (Gog Range Greywacke). There is a possibility that the greywacke may be intercalated with the Beulah basalts below.

Haematite is a common associate of the occurrence (271705a). Lenticular massive barite surrounded by gossan (271701) occurs at one locality. A highly micaceous sample (271708a) close to a barite lens has also been included. Massive barite does not contain visible galena yet contains 2.68% Pb (271086).

Paradise Barite Occurrence

This occurs parallel to the cleavage in an (intrusive?) green rhyolite. Samples of the rhyolite host and of associated haematite-quartz gossan have been included. The barite itself contained low Pb levels (<50 ppm).

Yours faithfully,

D. J. Jack,
Project Geologist.

Order No: 3011

Encl.

Sample No.	Locality	Co-ordinates SHEFFIELD 1:63360 series E	N	Description	ppm Pb
271748	Eastern Beulah Basalt. High Pb area.	4951	1130	Haematite, manganese and white silica altered basalt.	760
334725	Eastern Beulah Basalt. High Pb area.	4959	1146	Haematite and manganese altered basalt.	430
334722	Eastern Beulah Basalt. High Pb area.	4957	1146	Haematite and manganese altered basalt.	345
271712	Beulah Barite	507	086	Altered greywacke host to Beulah barite.	400
271708a	Beulah Barite	5070	0862	Micaceous greywacke next to massive barite.	130
271708b	Beulah Barite	5070	0862	Massive white coarsely crystalline barite.	2.68%
271701	Beulah Barite	5070	0862	Gossan rimming barite vein.	245
271705a	Beulah Barite	5077	0880	Haematite greywacke	115
271762	Paradise Barite	4220	1194	Haematitic quartz rich gossan.	200
271764	Paradise Barite	4220	1194	Massive green rhyolite host.	175

APPENDIX

	Cu	Pb	Zn	Ag	Ba
271748	215	760	105	<0.5	N/A
334725	50	430	205	<0.5	650
334722	30	345	475	1	530
271712	35	400	195	3.5	180
271708a	10	130	55	0.5	1.88%
271708b	205	2.68%	50	153	29.55%
271701	45	245	130	5	25.6%
271705a	20	115	430	4	180
271762	30	200	15	<0.5	N/A
271764	30	175	10	<0.5	N/A

Results in PPM unless otherwise specified
N/A - Not Available

786081

SIROTOPE

CSIRO
Division of Exploration Geoscience

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Telex MINRE AA25817
Fax 61-2-887 8909

REPORT TO

ABERFOYLE RESOURCES

ON

A Pb ISOTOPIC STUDY

OF

THE BEULAH AREA, TASMANIA

GRAHAM R. CARR
31/3/88

SUMMARY

83.

The Pb isotopic composition of relatively high-Pb samples from the *Beulah Basalt*, and the nearby *Beulah* and *Paradise Barites* have been analysed and compared with signatures for Cambrian massive sulfides as well as with minor mineralization associated with Devonian, or older thermal events.

The *Beulah Basalt* has an isotopic composition consistent with derivation from Cambrian hydrothermal fluids similar to those responsible for the formation of the massive sulfide deposits of the region. The *Beulah Barite*, and *Paradise Barite*, however have different isotopic compositions compared to the Cambrian signature and are considered to have probably formed during a hydrothermal event(s) unrelated to the major Cambrian mineralizing event.

1. AIMS OF STUDY

84.

The aim of this study has been to assess whether the high-Pb Beulah basalt and the Beulah and Paradise barite occurrences are likely to be associated with Cambrian or Devonian metallogenic events.

2. SAMPLES

Ten sample pulps sent by Doug Jack were analysed for Pb isotopes. Brief company descriptions of the samples are reproduced in Table 1.

3. TARGET

All major Cambrian ore deposits of Western Tasmania (Mt Lyell, Rosebery, Hercules, Que River, Hellyer) have essentially identical Pb isotopic compositions indicating they were probably formed as part of a major metallogenic event. The homogeneous isotopic composition over the region suggests the hydrothermal systems were very large, leaching Pb and other elements from a significant volume of crust thus averaging out local variations in the isotopic compositions of source rocks. The Cambrian massive sulfide isotopic signature is represented in this study by the overlapping fields for Rosebery, Que River and Hellyer (Figs 1 and 2).

Minor mineralization in western Tasmania commonly consists of discontinuous pods or veins. The isotopic composition of such mineralization varies between occurrences, indicating the hydrothermal systems were much smaller. Most examples of this mineralization have isotopic compositions more radiogenic than the Cambrian target (i.e. higher $^{206}Pb/^{204}Pb$, $^{207}Pb/^{204}Pb$ and $^{208}Pb/^{204}Pb$ ratios) and some can be associated with Devonian plutonism (e.g. Queen Hill, Mt Farrell, Figs 1 and 2)).

However, other examples have isotopic compositions intermediate between Precambrian and Cambrian signatures (Figs 1 and 2). In some, the low $^{206}Pb/^{204}Pb$ ratios probably result from leaching of Pb from nearby Precambrian source rocks (e.g. WOW/CAB, old Comstaff prospect in Oonah Formation between Ramsay and Coldstream Rivers; Prover 3, Geopeko prospect Mackintosh East area). The occurrence of both populations in some examples (Marionoak, WOW/CAB) indicates the effects of different local source rock compositions or overprinting by at least two separate mineralization episodes. Although it is likely that Devonian thermal events were responsible for the generation of these relatively localized hydrothermal systems, it is possible they developed at other times, even during the Cambrian.

Irrespective of the age it is unlikely that such mineralization would have economic potential.

4. METHODS

The whole-rock samples were digested in a 7N nitric + 7N hydrochloric solution prior to ion exchange and electroplating as above. The samples were analysed on an ISOMASS 54E solid source thermal ionization mass spectrometer in fully automated mode. Precision estimates representing 2 standard deviations about the mean of over 700 analyses of standards are shown in the top left hand corner of the figures presented below.

5. RESULTS

The results are presented in Table 1 and in Figures 3 - 6. Samples of high-Pb *Beulah Basalt* plot within or adjacent to the Rosebery massive sulfide field (Figs 5 and 6). The *Beulah Barite* contains significantly less radiogenic Pb: 271712, 271708b and 271701 plotting as a tight group flanked by 271708b and 271705a

(Figs 5 and 6). The two Paradise Barite samples contain highly radiogenic Pb and plot well to the right of the Cambrian fields (Figs 3 and 4).

6. DISCUSSION

The isotopic homogeneity of the *Beulah Basalt* samples and the close similarity of the results to the Rosebery signature indicate that Pb enrichment was probably associated with the same mineralizing event responsible for the massive sulfides in the Mt Read Volcanics. The slightly lower $^{206}Pb/^{204}Pb$ and $^{207}Pb/^{204}Pb$ ratios compared with the Cambrian signature are consistent with derivation from rocks with a slightly larger mantle component. This may simply reflect region variations in the nature of the source rocks through which hydrothermal solutions circulated (i.e. more primitive mafic rocks), or may indicate minor tectonic environment differences.

The five *Beulah Barite* samples have Pb contents varying from 115ppm to 2.7%. The range in isotopic compositions is not simply related to the Pb content; the sample with lowest Pb (271705a, pt 8, Figs 5 and 6) contains the least radiogenic Pb. However, the $^{206}Pb/^{204}Pb$ ratio of the relatively low-Pb micaceous greywacke adjacent to the barite (271708a, pt 5, Figs 5 and 6) has probably increased since the formation of the rock due to *in situ* decay of U to Pb. Thus sample points 4, 6-8 probably indicate the true initial isotopic composition of the barite. The ratios are similar to those for the Voyager 2 prospect and the minor vein mineralization discussed in section 3. Whether they represent Devonian or Cambrian events, there is only a low probability they are associated with a major hydrothermal system.

The *Paradise Barite* samples contain highly radiogenic Pb, probably as a result of radiogenic addition of Pb since formation. Thus it is not possible to estimate accurately their initial ratios. However the relatively high-Pb content of especially sample 271762 (pt 9, Figs 3 and 4) suggests either the samples contain elevated levels of U (20-25ppm) or the initial ratio was close to that of Queen Hill (Figs 1 and 2).

Table 1. (Aberfoyle data) 88.

Sample No.	Locality	Co-ordinates SHEFFIELD 1:63360 series E	N	Description	ppm Pb
271748	Eastern Beulah Basalt. High Pb area.	4951	1130	Haematite, manganese and white silica altered basalt.	760
334725	Eastern Beulah Basalt. High Pb area.	4959	1146	Haematite and manganese altered basalt.	430
334722	Eastern Beulah Basalt. High Pb area.	4957	1146	Haematite and manganese altered basalt.	345
271712	Beulah Barite	507	086	Altered greywacke host to Beulah barite.	400
271708a	Beulah Barite	5070	0862	Micaceous greywacke next to massive barite.	130
271708b	Beulah Barite	5070	0862	Massive white coarsely crystalline barite.	2.68%
271701	Beulah Barite	5070	0862	Gossan rimming barite vein.	245
271705a	Beulah Barite	5077	0880	Haematite greywacke	115
271762	Paradise Barite	4220	1194	Haematitic quartz rich gossan.	200
271764	Paradise Barite	4220	1194	Massive green rhyolite host.	175

Table 2. Results of Pb isotope analyses.

Sample	$\frac{208\ Pb}{206\ Pb}$	$\frac{207\ Pb}{206\ Pb}$	$\frac{206\ Pb}{204\ Pb}$	$\frac{207\ Pb}{204\ Pb}$	$\frac{208\ Pb}{204\ Pb}$	Pb(ppm)
1 271748	2.0849	0.8537	18.254	15.582	38.057	760
2 334725	2.0870	0.8547	18.233	15.583	38.052	430
3 334722	2.0846	0.8533	18.264	15.585	38.073	345
4 271712	2.0901	0.8570	18.172	15.574	37.979	400
5 271708a	2.0873	0.8546	18.237	15.585	38.066	130
6 271708b	2.0896	0.8571	18.178	15.580	37.984	26,800
7 271701	2.0904	0.8572	18.184	15.587	38.010	245
8 271705a	2.0921	0.8585	18.139	15.572	37.949	115
9 271762	2.0618	0.8318	18.820	15.653	38.801	200
10 271764	2.0626	0.6195	25.902	16.045	53.425	175

Sample No prefixes refer to plotted points in Figs 3-6.

FIGURE 1.

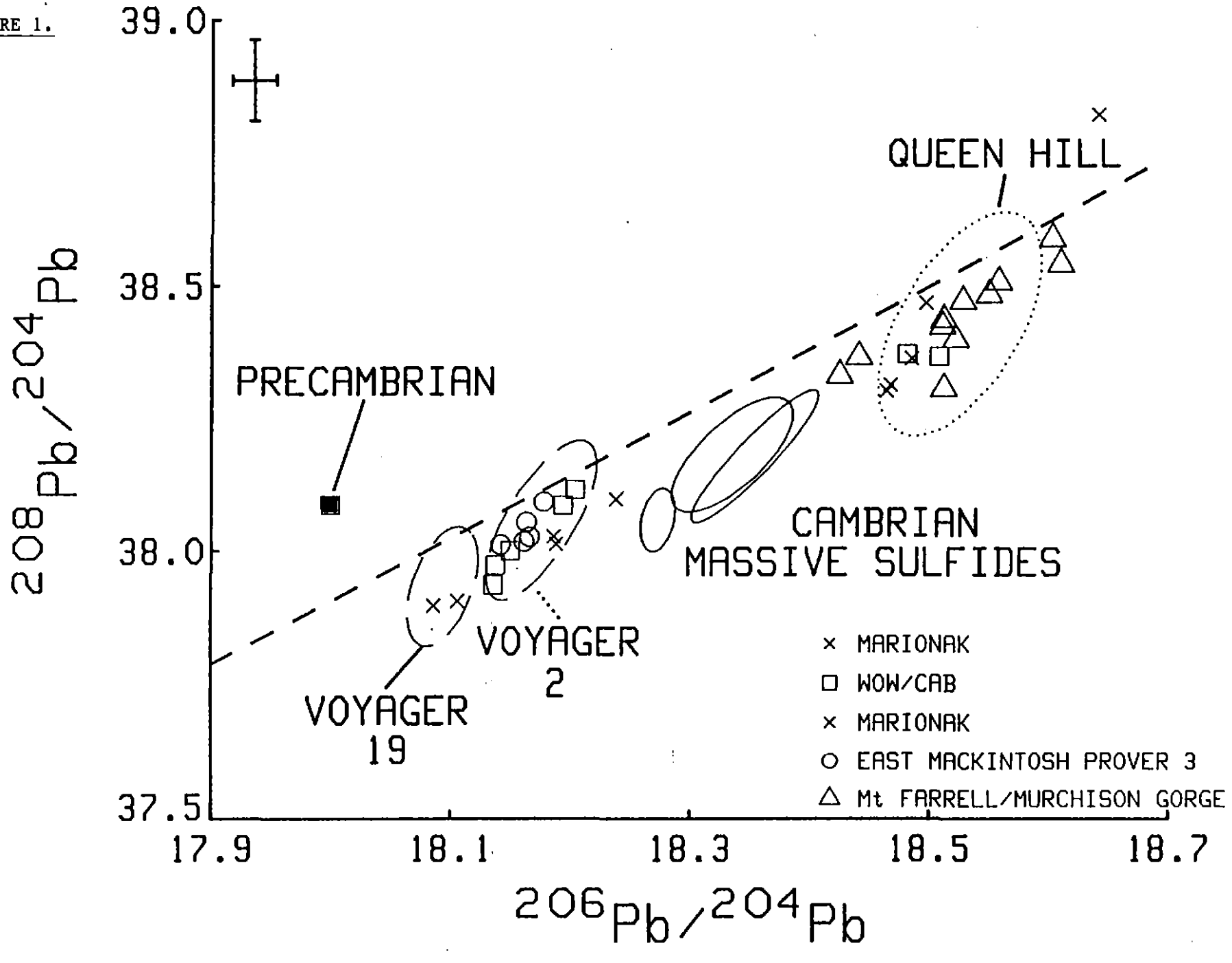

39.0
38.5
38.0
37.5
17.9
18.1
18.3
18.5
18.7
$^{208}Pb/^{204}Pb$
$^{206}Pb/^{204}Pb$
QUEEN HILL
PRECAMBRIAN
CAMBRIAN
MASSIVE SULFIDES
VOYAGER
2
VOYAGER
19
× MARIONAK
□ WOW/CAB
× MARIONAK
○ EAST MACKINTOSH PROVER 3
△ Mt FARRELL/MURCHISON GORGE

FIGURE 2.

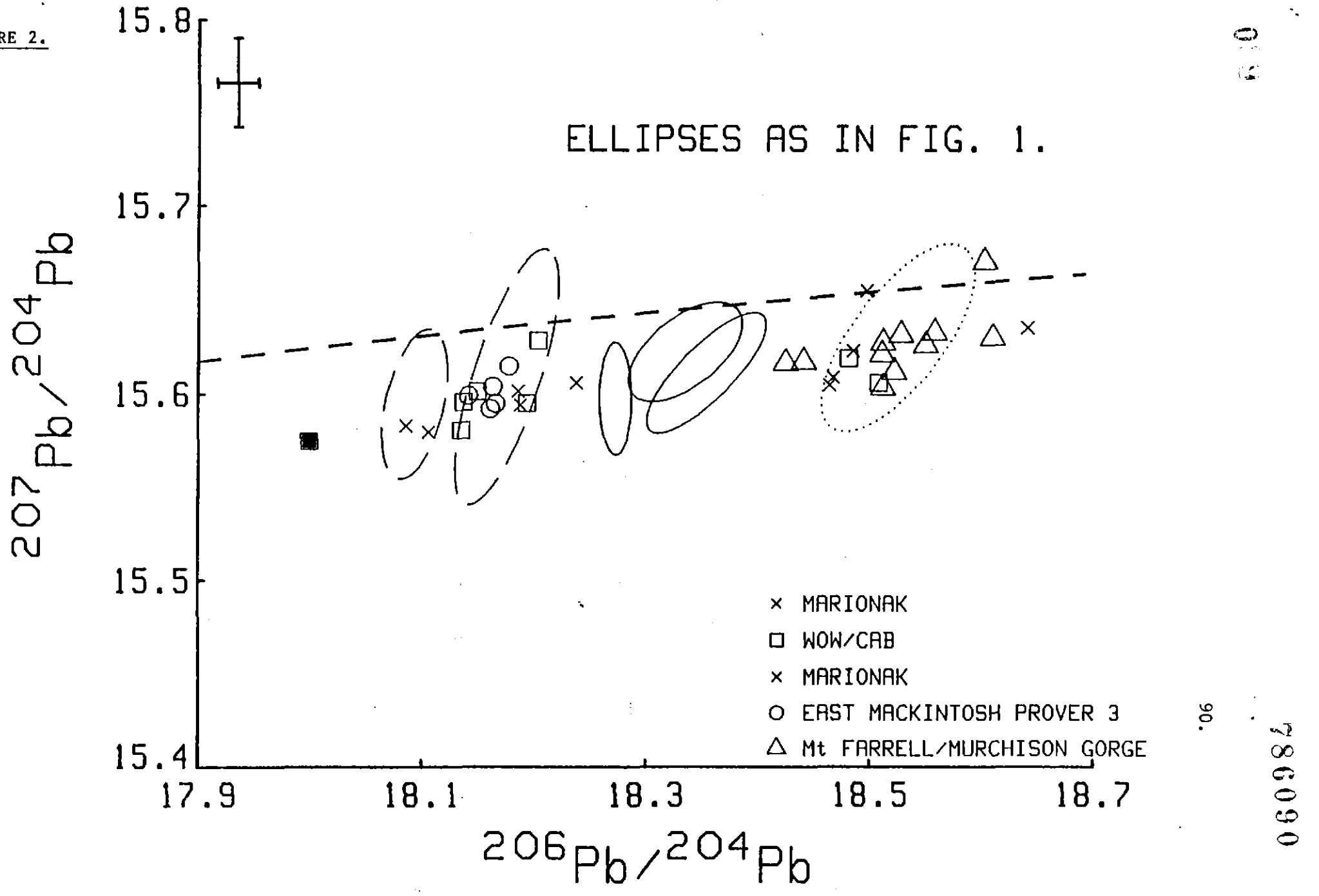

ELLIPSES AS IN FIG. 1.
15.8
15.7
15.6
15.5
15.4
17.9
18.1
18.3
18.5
18.7
207Pb/204Pb
206Pb/204Pb
× MARIONAK
□ WOW/CAB
× MARIONAK
○ EAST MACKINTOSH PROVER 3
△ Mt FARRELL/MURCHISON GORGE

FIGURE 3.

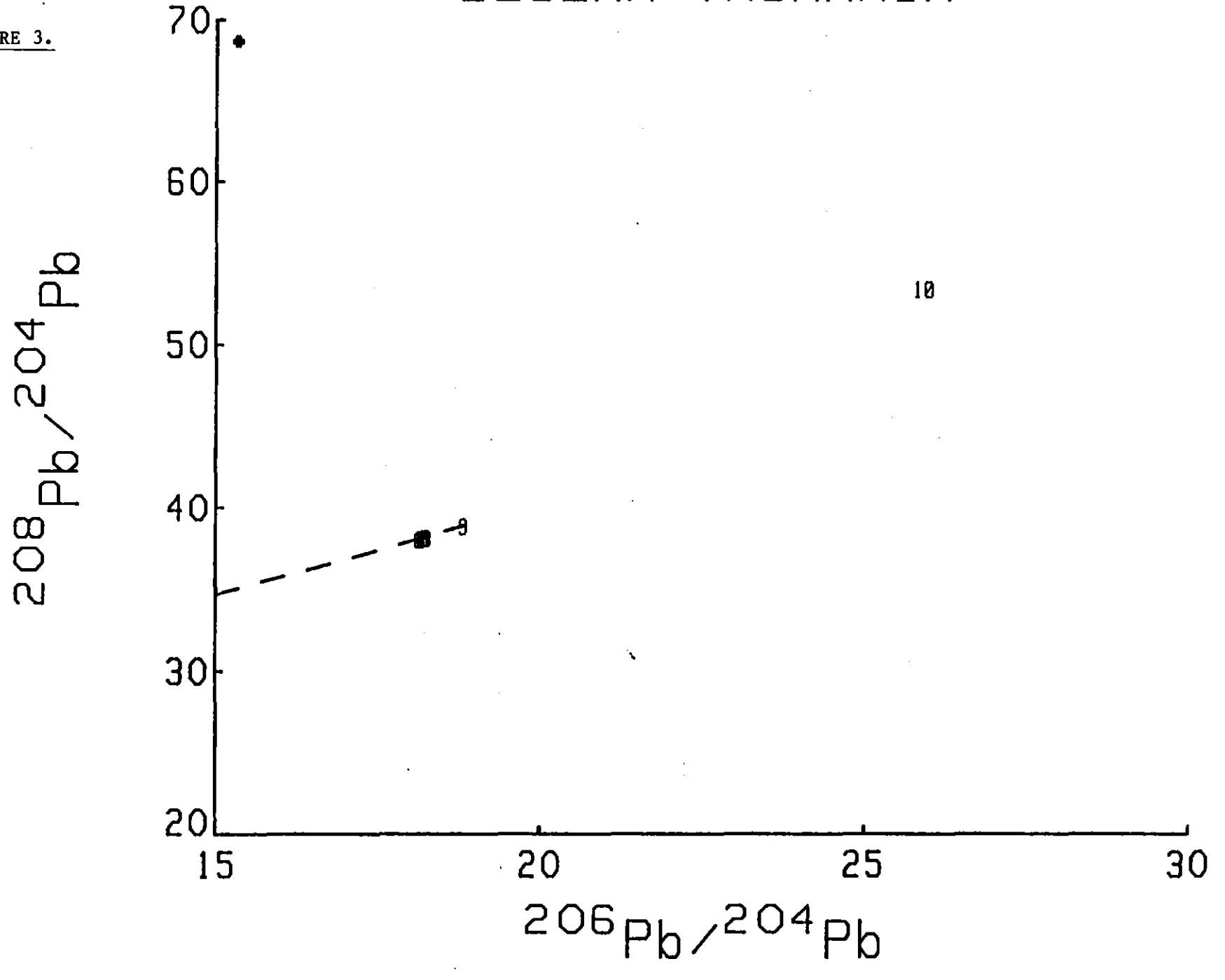

BEULAH-TASMANIA
70
60
50
40
30
20
15
20
25
30
208Pb/204Pb
206Pb/204Pb
10
9

FIGURE 4.

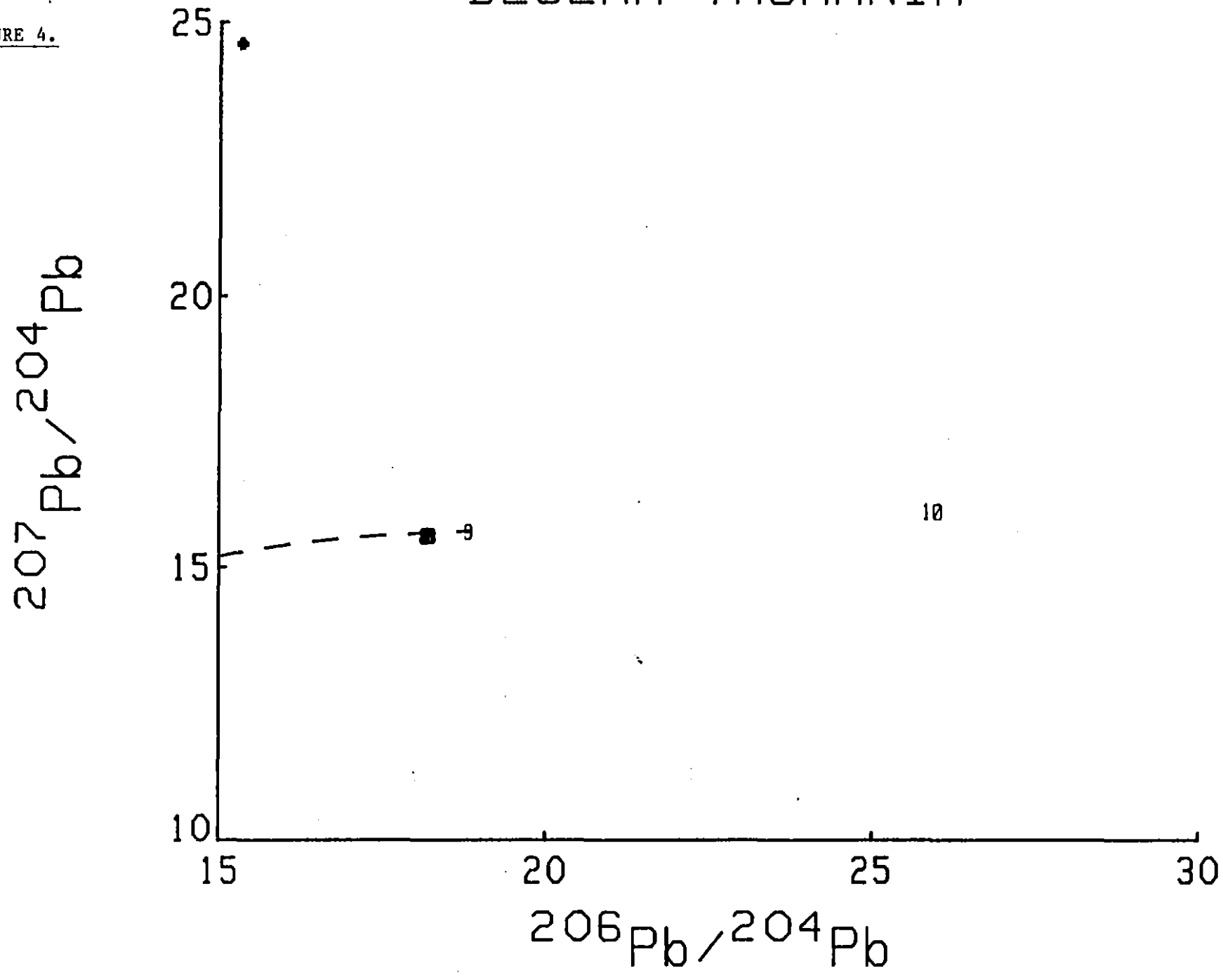


FIGURE 5.

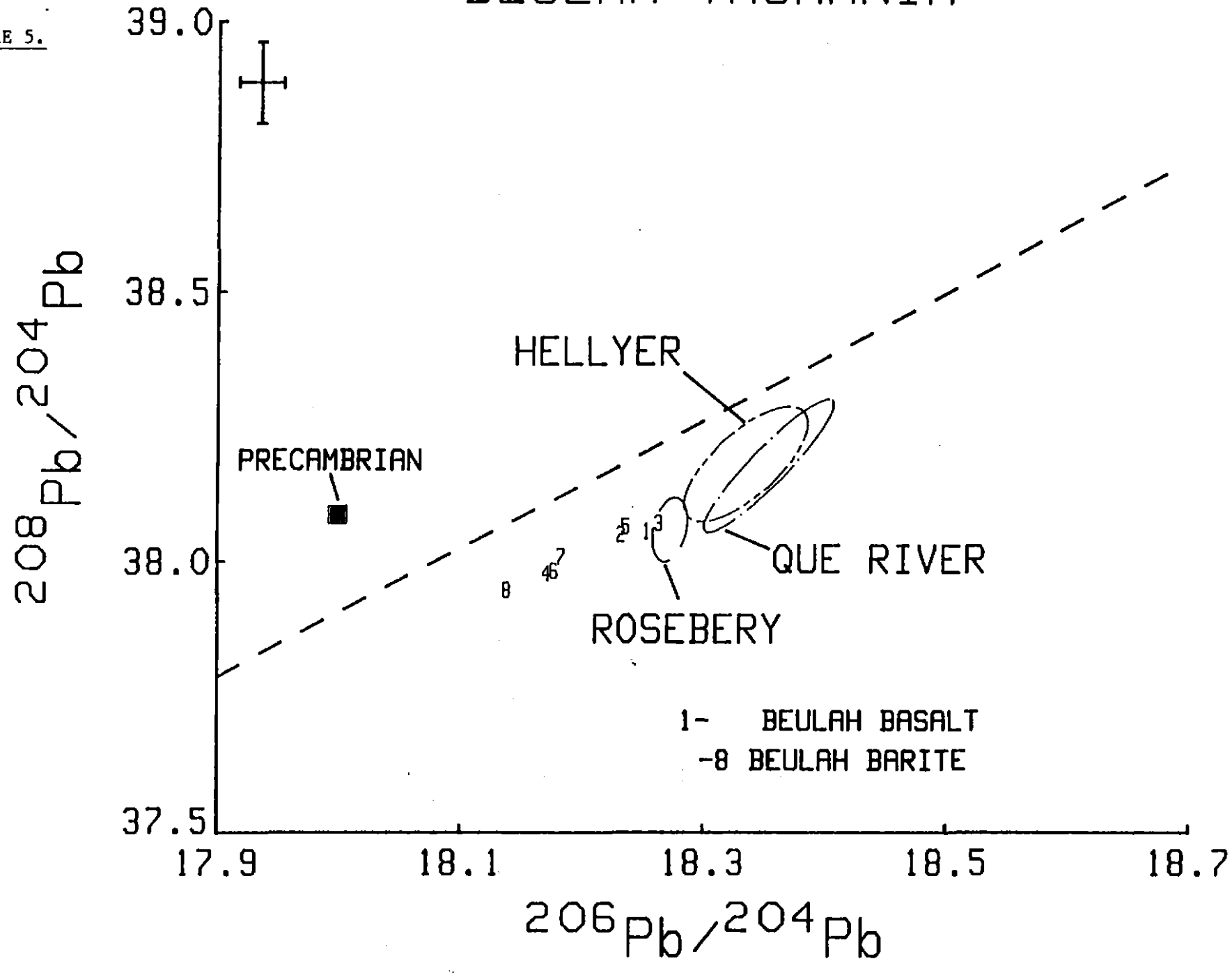
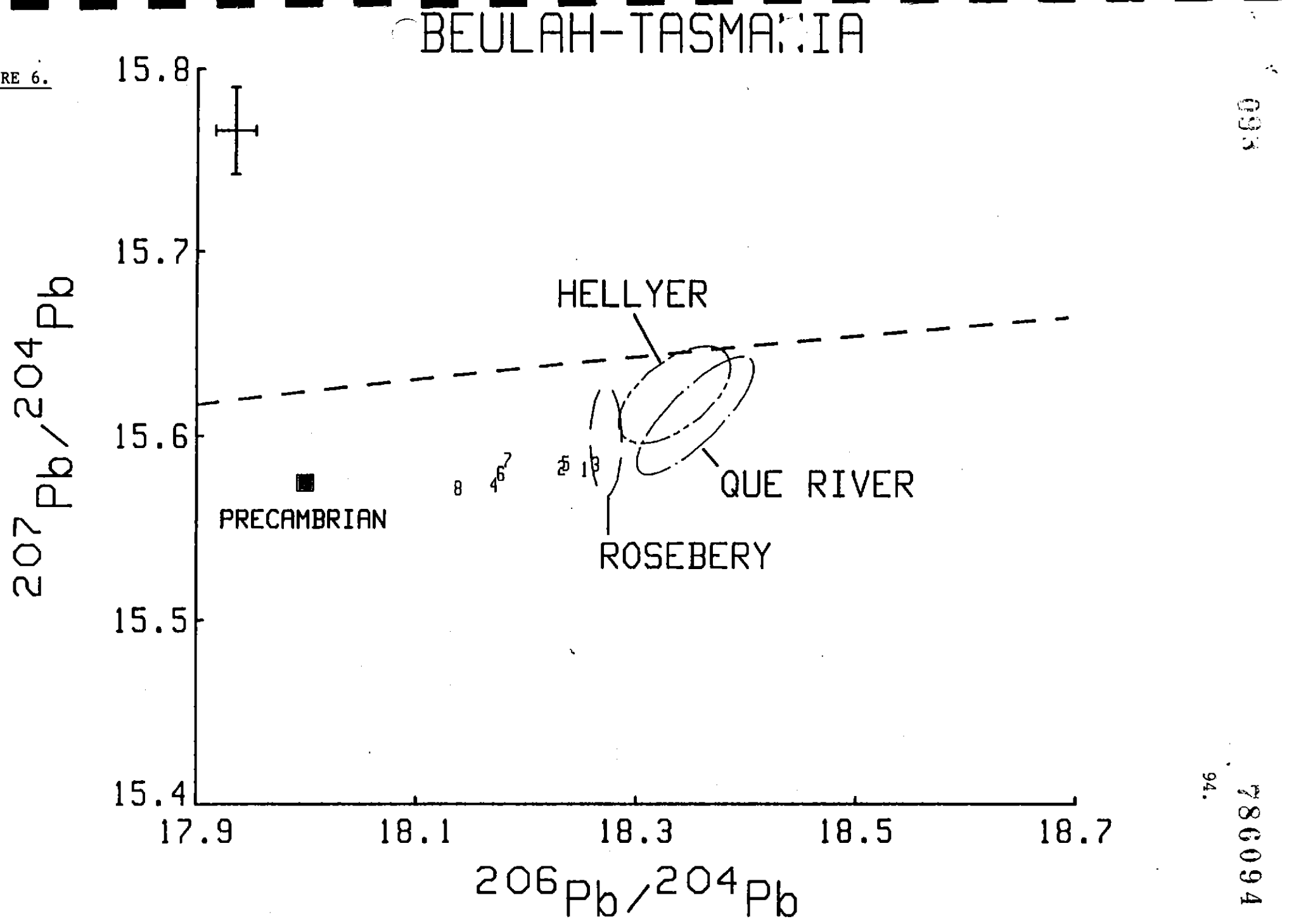
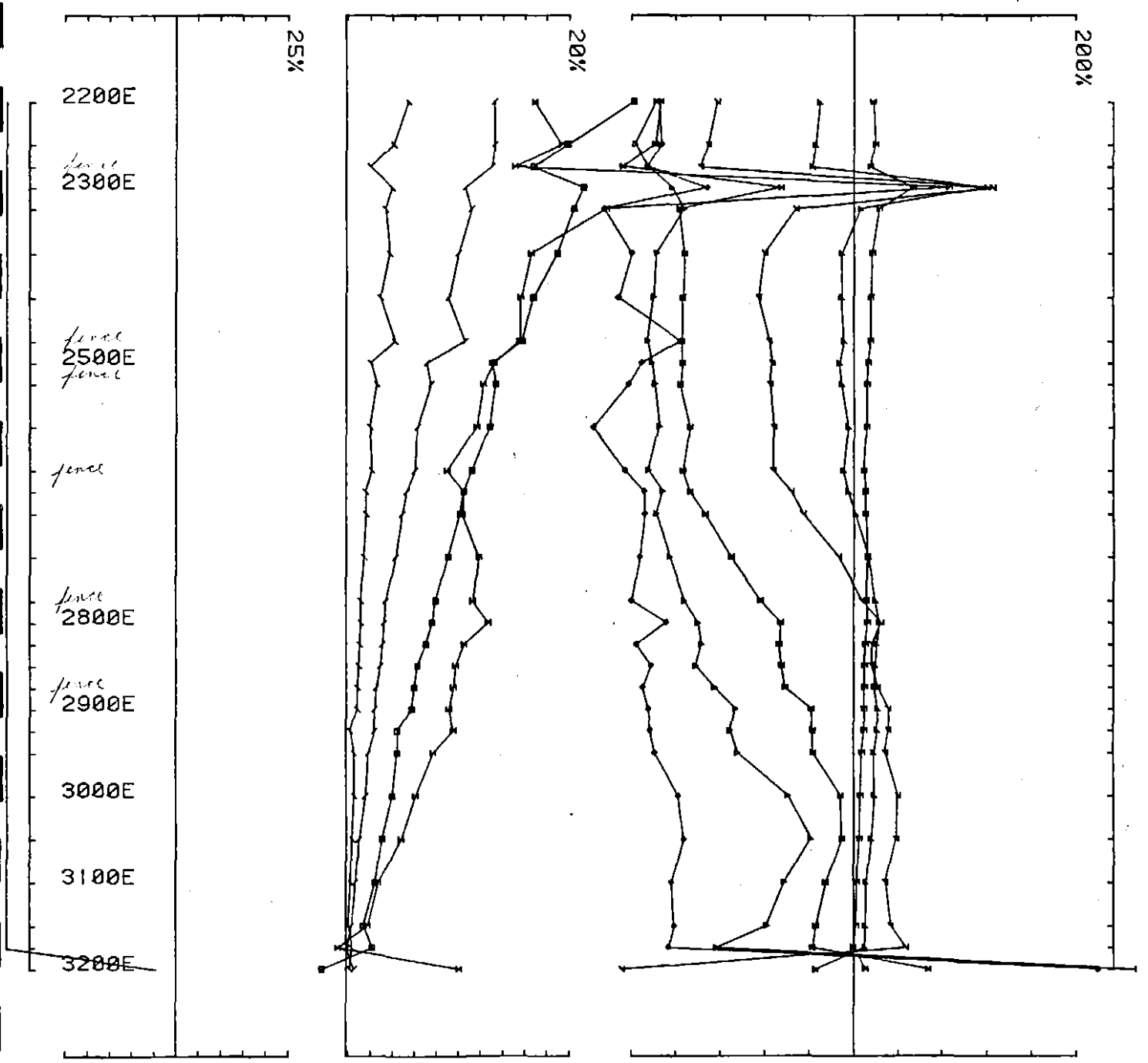


FIGURE 6.


BEULAH-TASMANIA
15.8
15.7
15.6
15.5
15.4
17.9
18.1
18.3
18.5
18.7
$^{207}Pb/^{204}Pb$
$^{206}Pb/^{204}Pb$
HELLYER
QUE RIVER
ROSEBERY
PRECAMBRIAN
8
4
6
7
2
5
1
3

APPENDIX VI

UTEM data - Sharman's Road Grid.

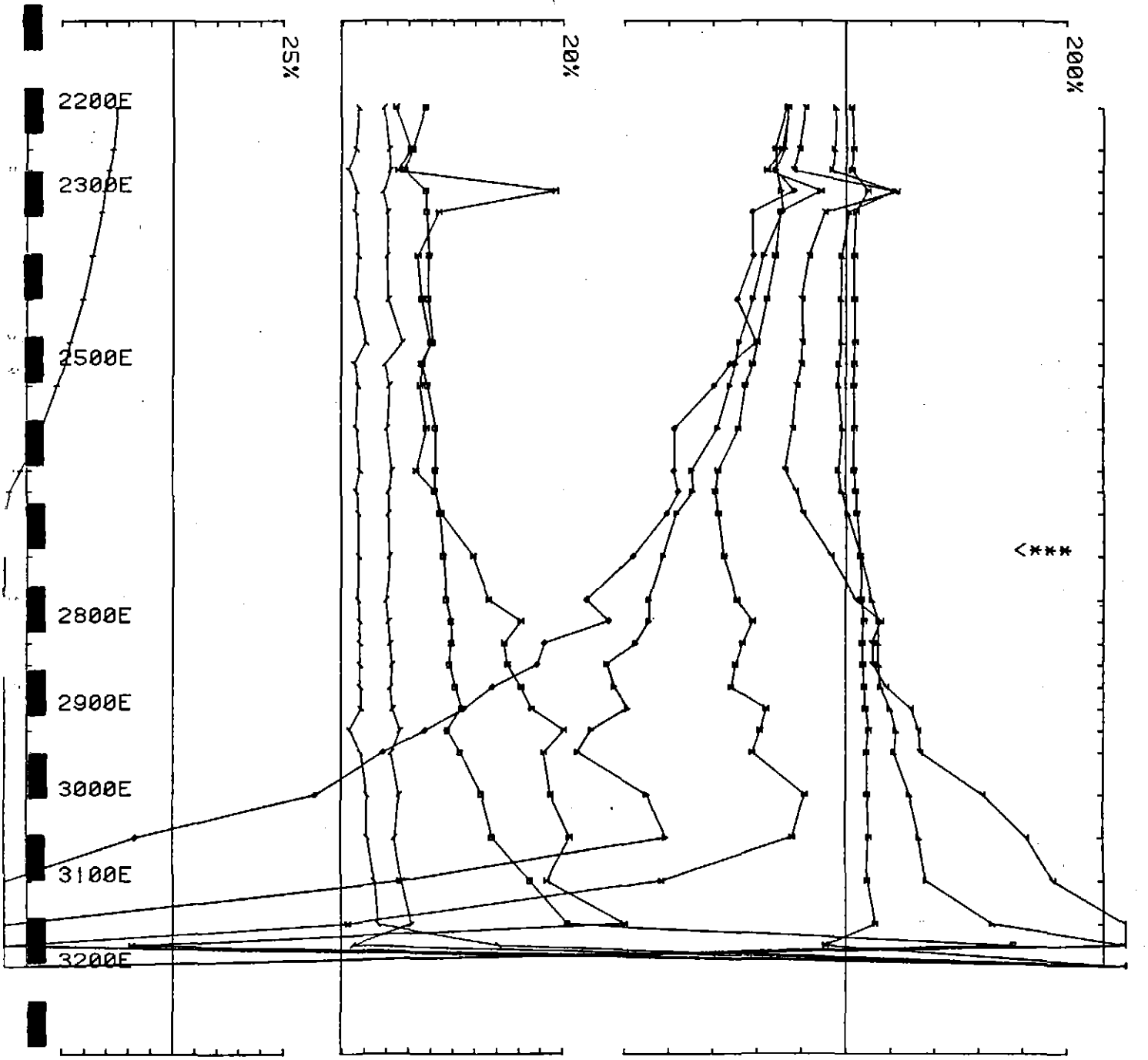


UTEM SURVEY at SHARMAN'S ROAD for ABERFOYLE RESOURCES

conducted by PAO PMM Job 8721 base freq (hz) 26.230 25/8/87

Loop 0001 line 5400N component Hz secondary field Ch 1 contin. norm.

5 cm

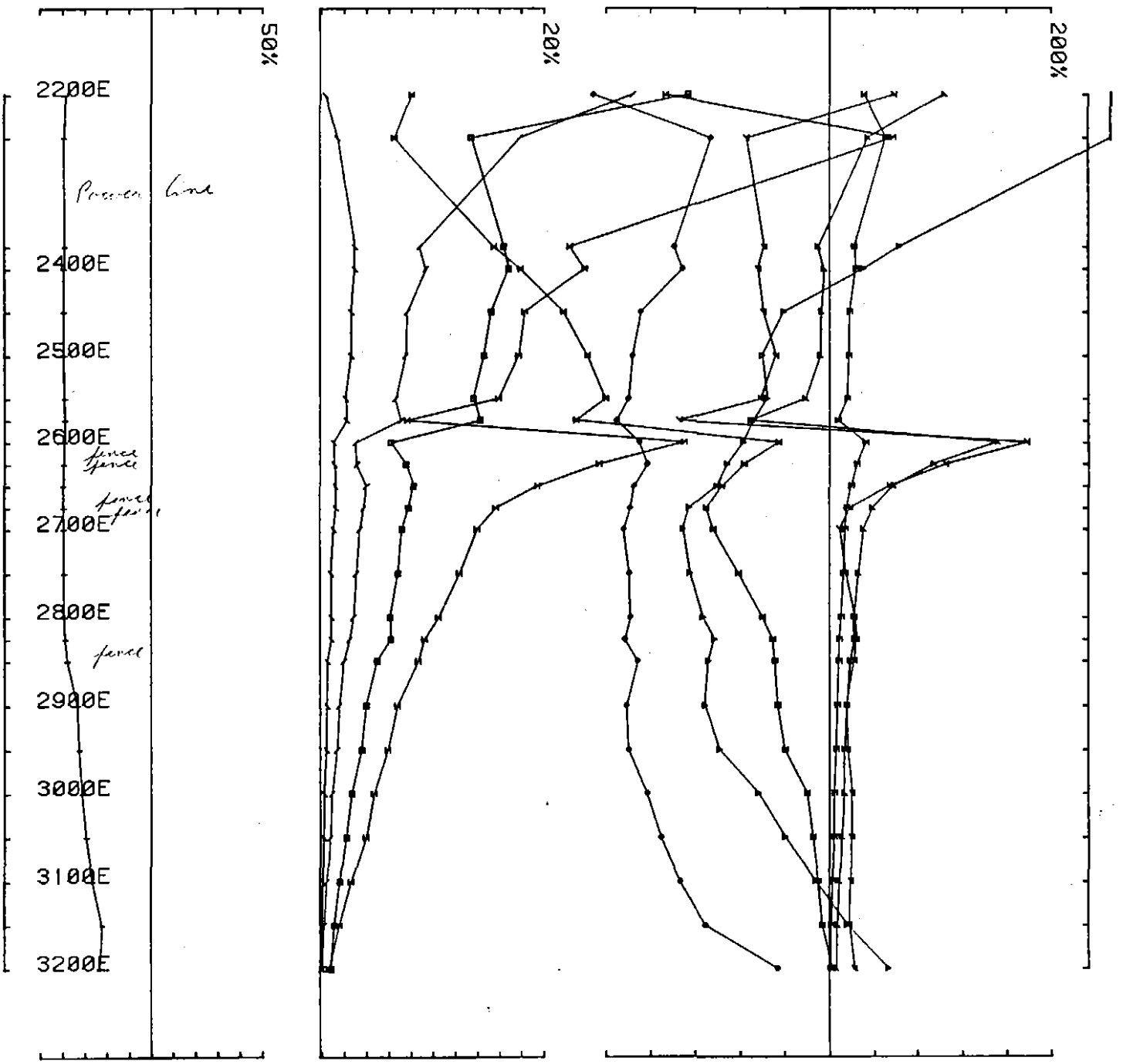


UTEM SURVEY at SHARMAN'S ROAD for ABERFOYLE RESOURCES

conducted by PAO PMM Job 8721 base freq (hz) 26.230 25/8/87

Loop 0001 line 5400N component Hz secondary field Ch 1 point norm.

5 cm

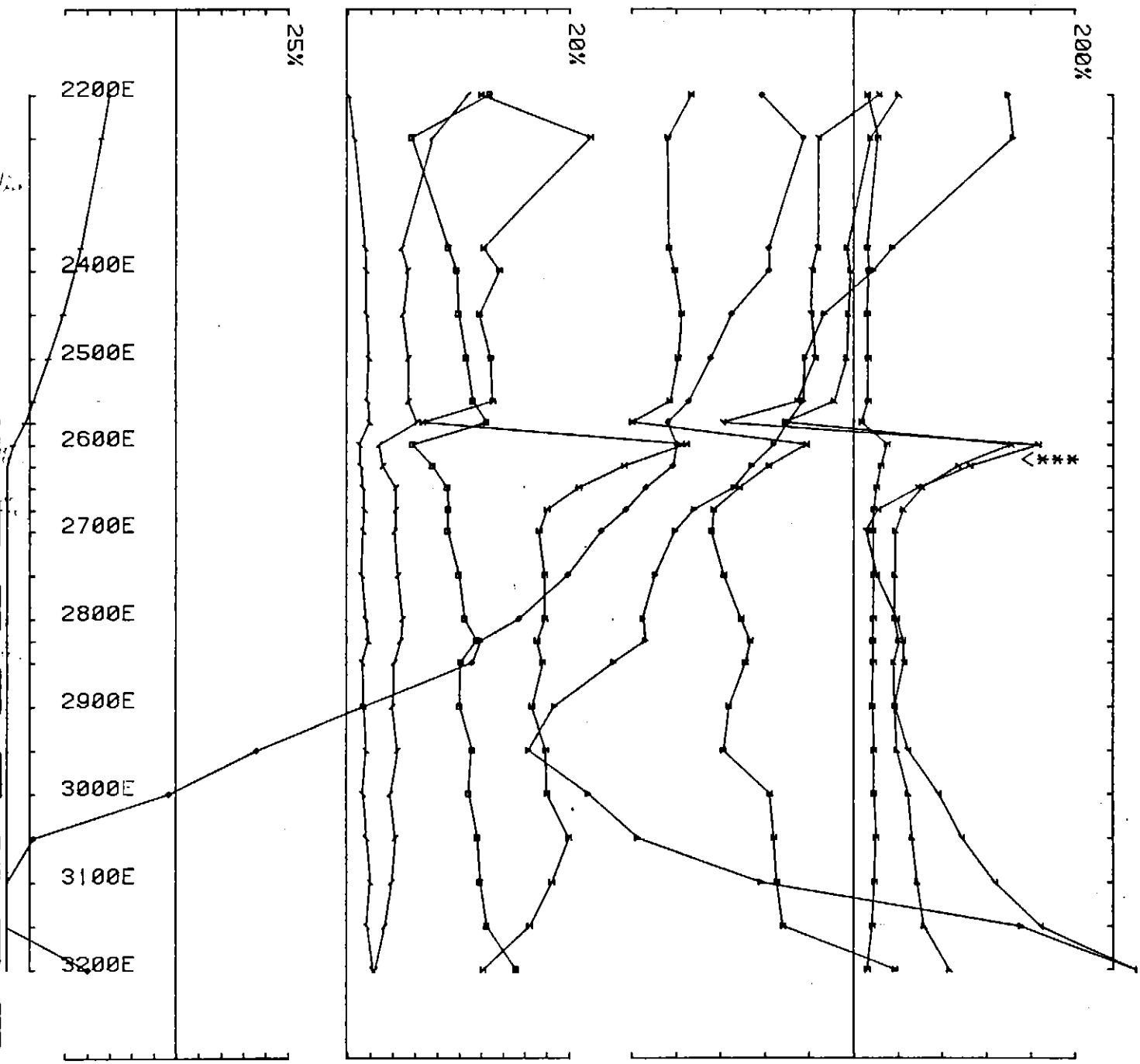


UTEM SURVEY at SHARMAN'S ROAD for ABERFOYLE RESOURCES

conducted by PAO PMM Job 8721 base freq (hz) 26.230 25/8/87

Loop 0001 line 5600N component Hz secondary field Ch 1 contin. norm.

5 cm

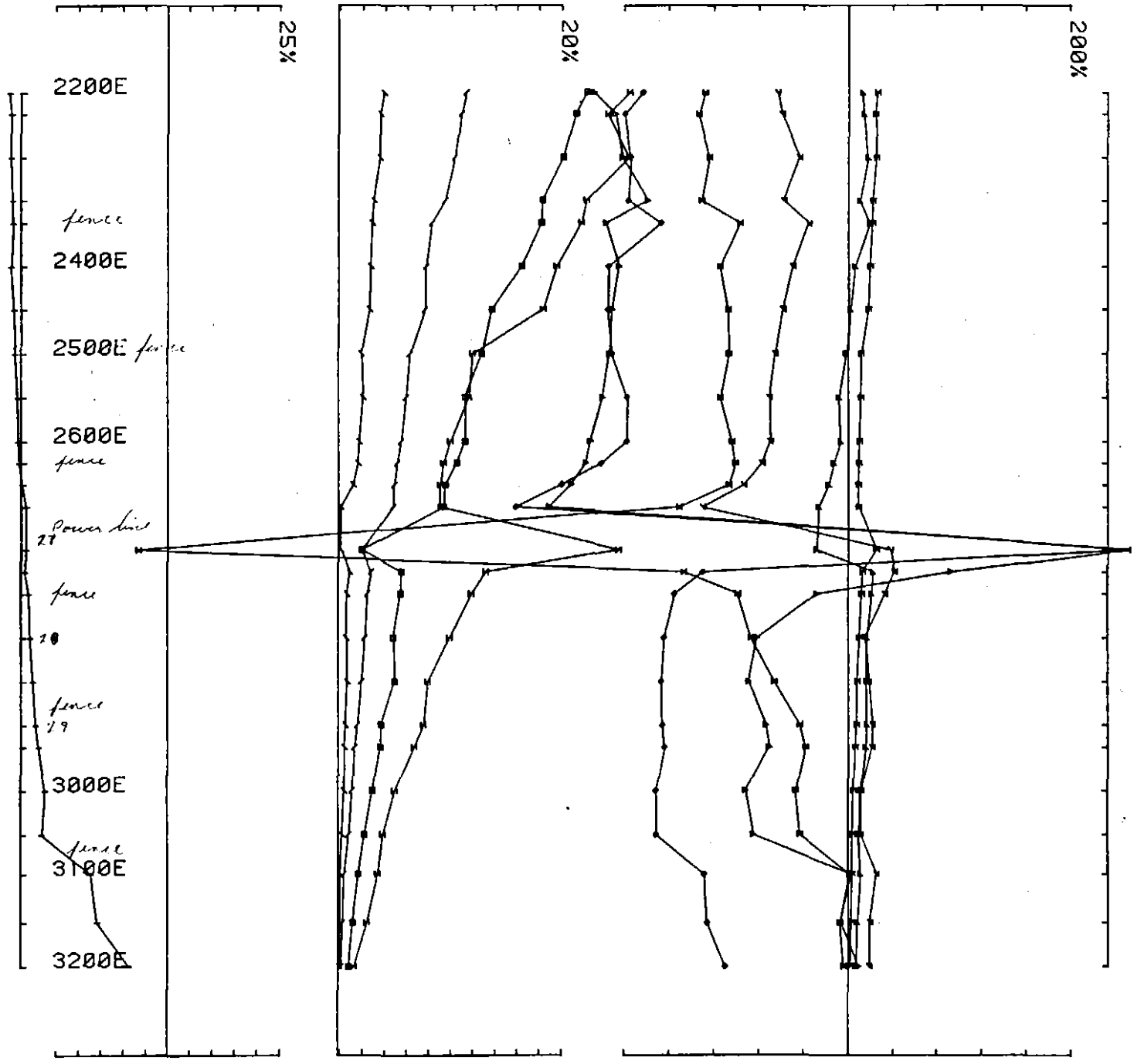


UTEM SURVEY at SHARMAN'S ROAD for ABERFOYLE RESOURCES

conducted by PAO PMM Job 8721 base freq (hz) 26.230 25/8/87

Loop 0001 line 5600N component Hz secondary field Ch 1 point norm.

5 cm

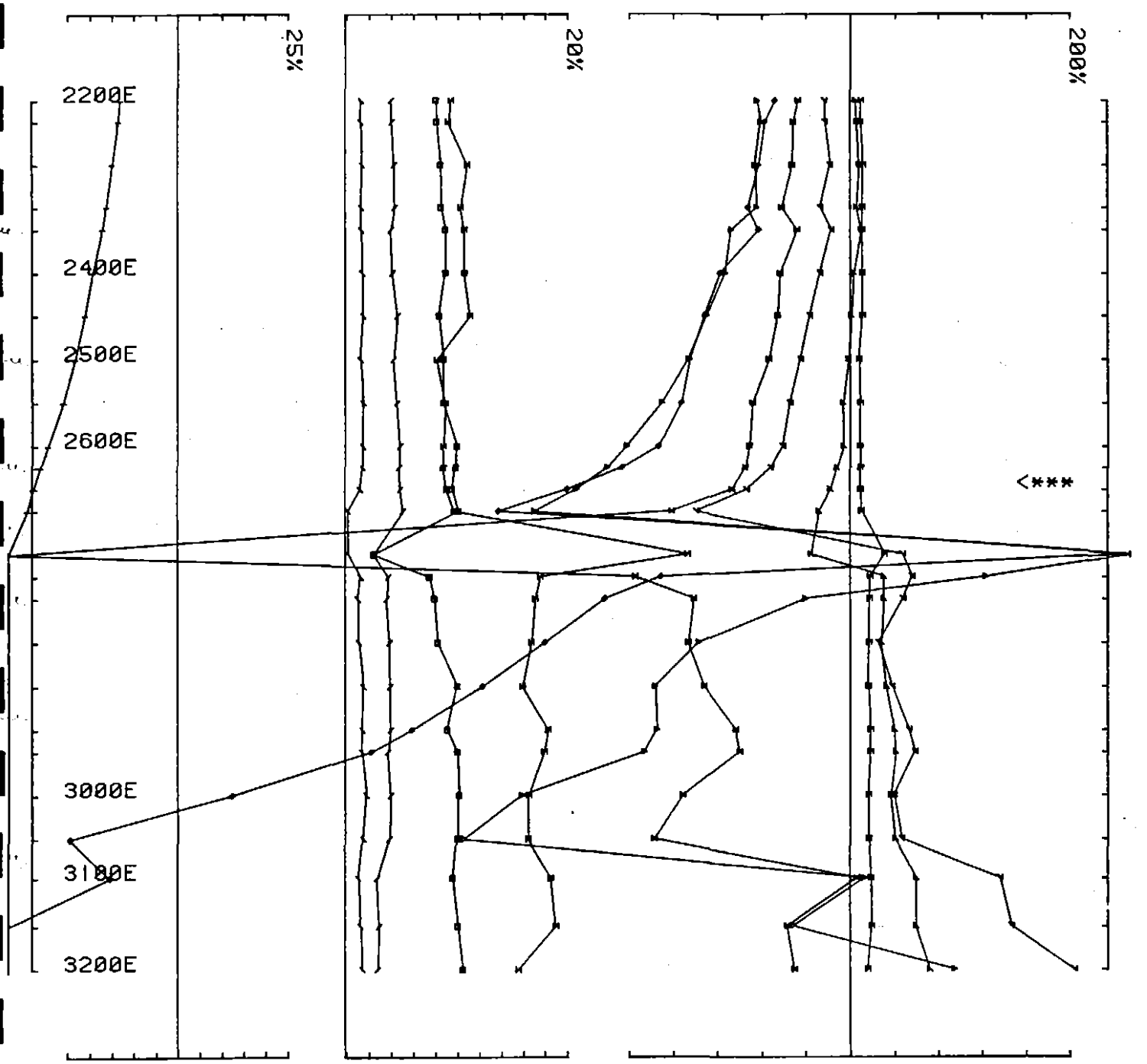


UTEM SURVEY at SHARMAN'S ROAD for ABERFOYLE RESOURCES

conducted by PAO PMM Job 8721 base freq (hz) 26.230 25/8/87

Loop 0001 line 5800N component Hz secondary field Ch 1 contin. norm.

5 cm

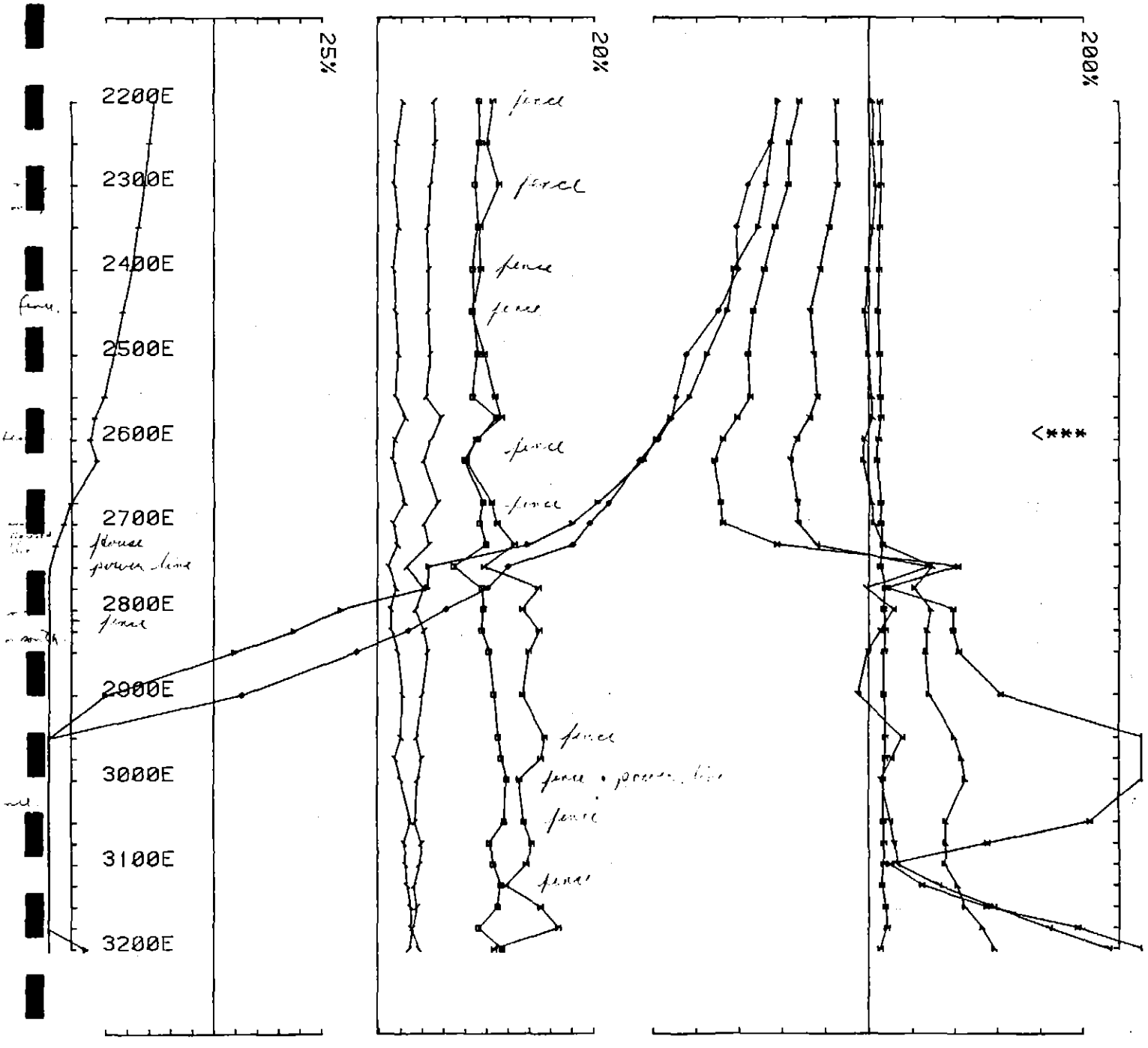


UTEM SURVEY at SHARMAN'S ROAD for ABERFOYLE RESOURCES

conducted by PAO PMM Job 8721 base freq (hz) 26.230 25/8/87

Loop 0001 line 5800N component Hz secondary field Ch 1 point norm.

5 cm

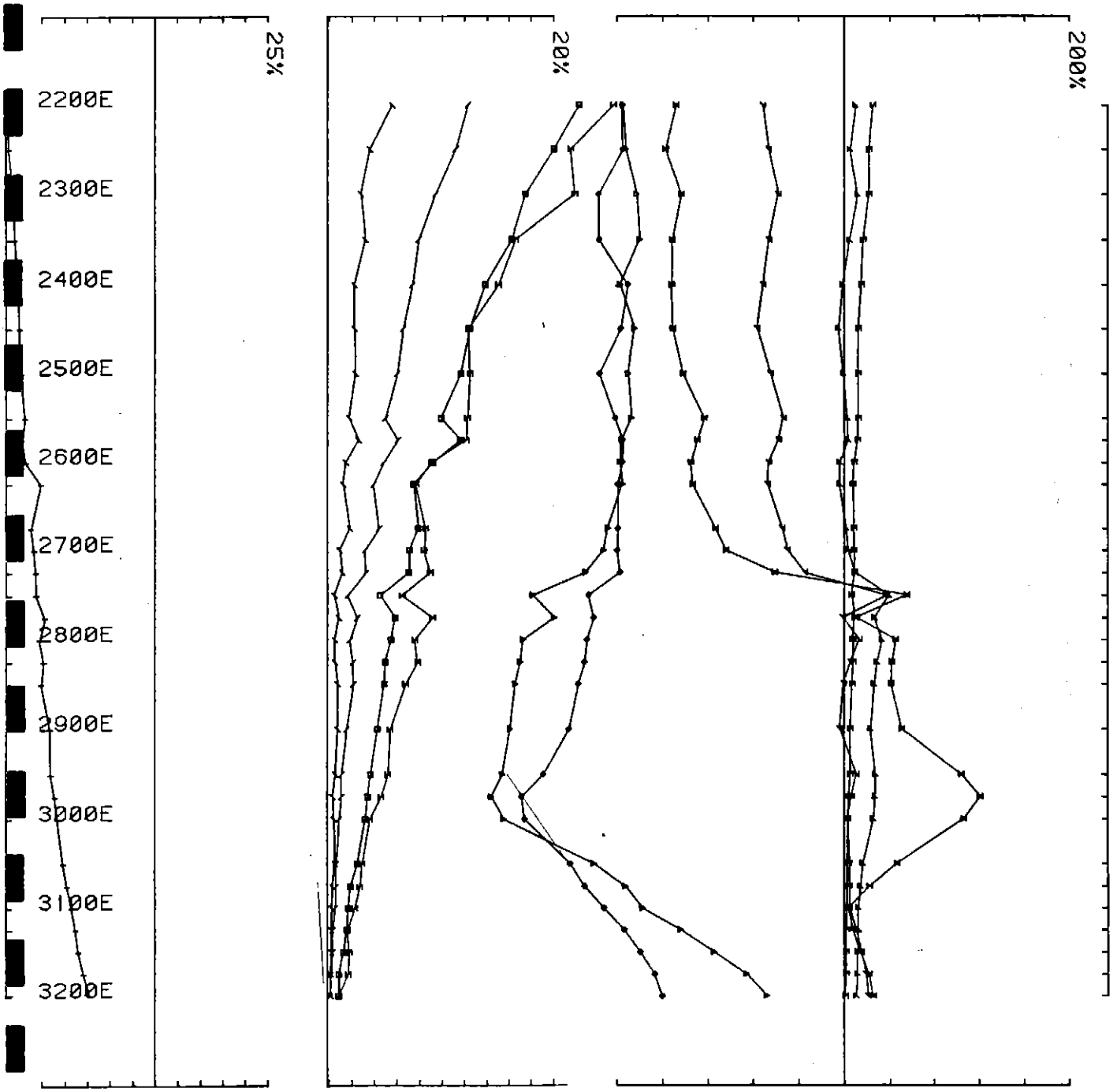


UTEM SURVEY at SHARMAN'S ROAD for ABERFOYLE RESOURCES

conducted by PAO PMM Job 8721 base freq (hz) 26.230 24/8/87

Loop 0001 line 6000N component Hz secondary field Ch 1 point norm.

5 cm

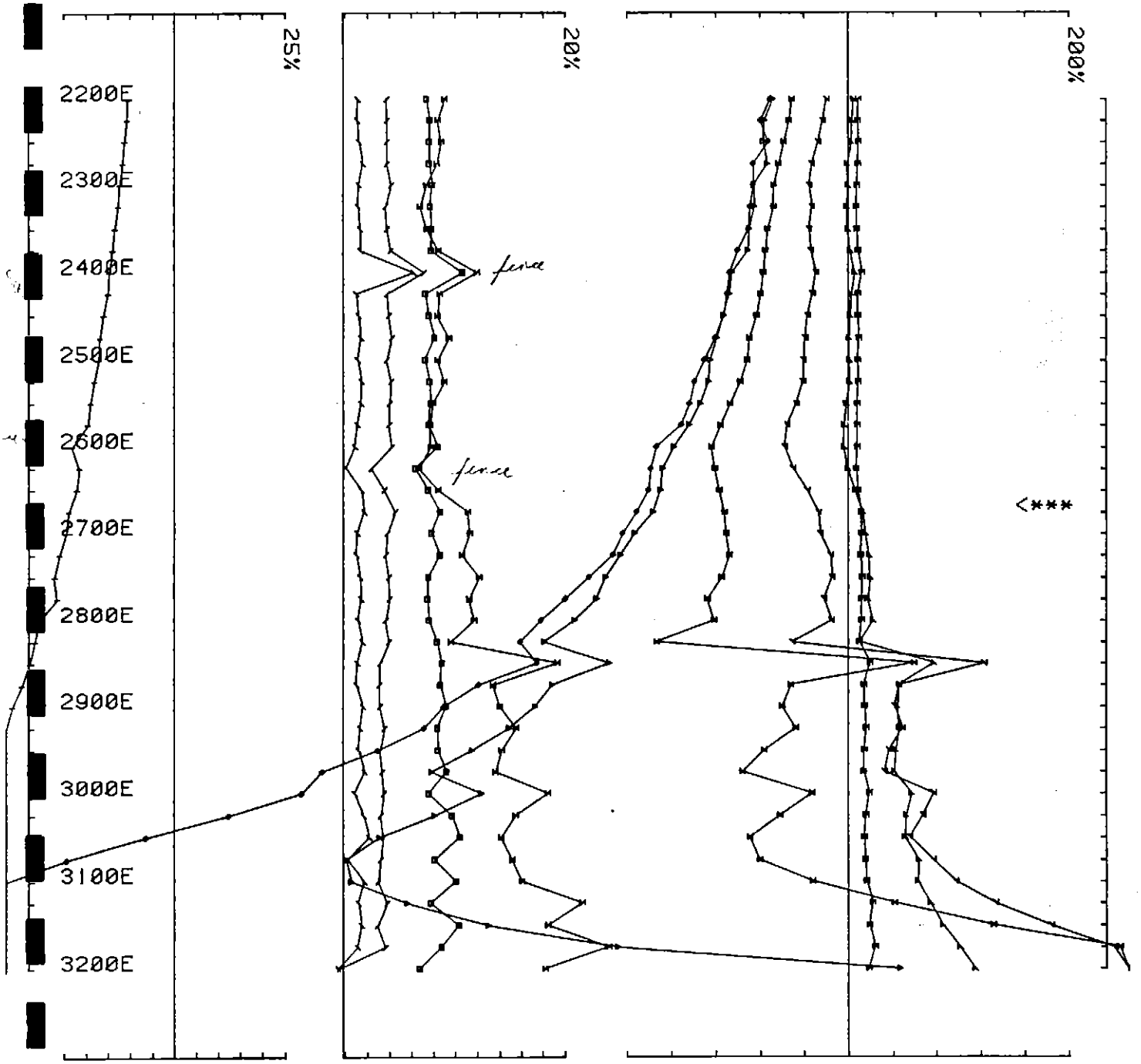


UTEM SURVEY at SHARMAN'S ROAD for ABERFOYLE RESOURCES

conducted by PAO RMM job 8721 base freq 25-> 26,200 24/8/87

Loop 0001 line 6000N component Hz secondary Ch 1 cont n norm

5 cm

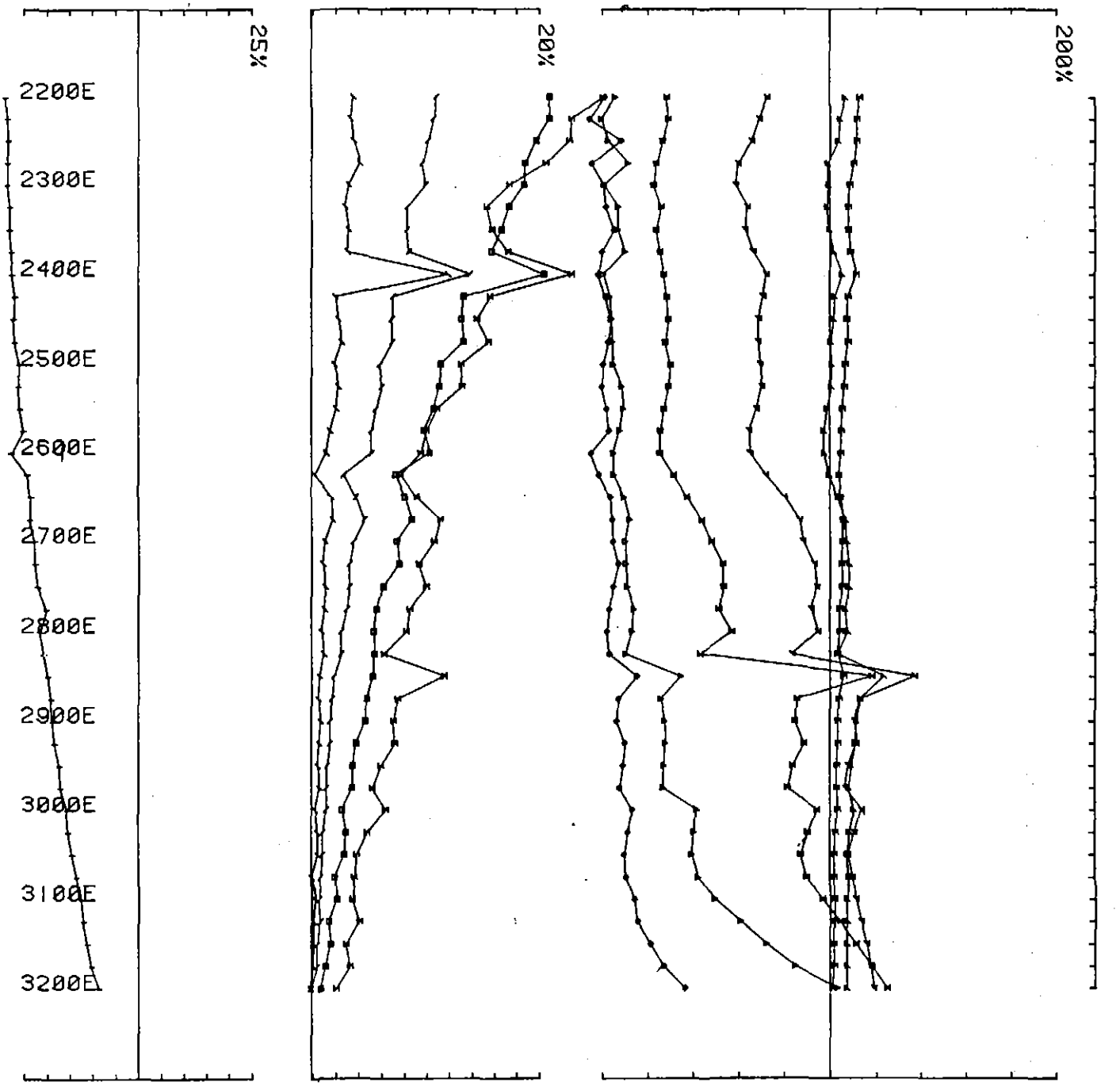


UTEM SURVEY at SHARMAN'S ROAD for ABERFOYLE RESOURCES

conducted by PAO PMM Job 8721 base freq (hz) 26.230 24/8/87

Loop 0001 line 6200N component Hz secondary field Ch 1 point norm.

5 cm

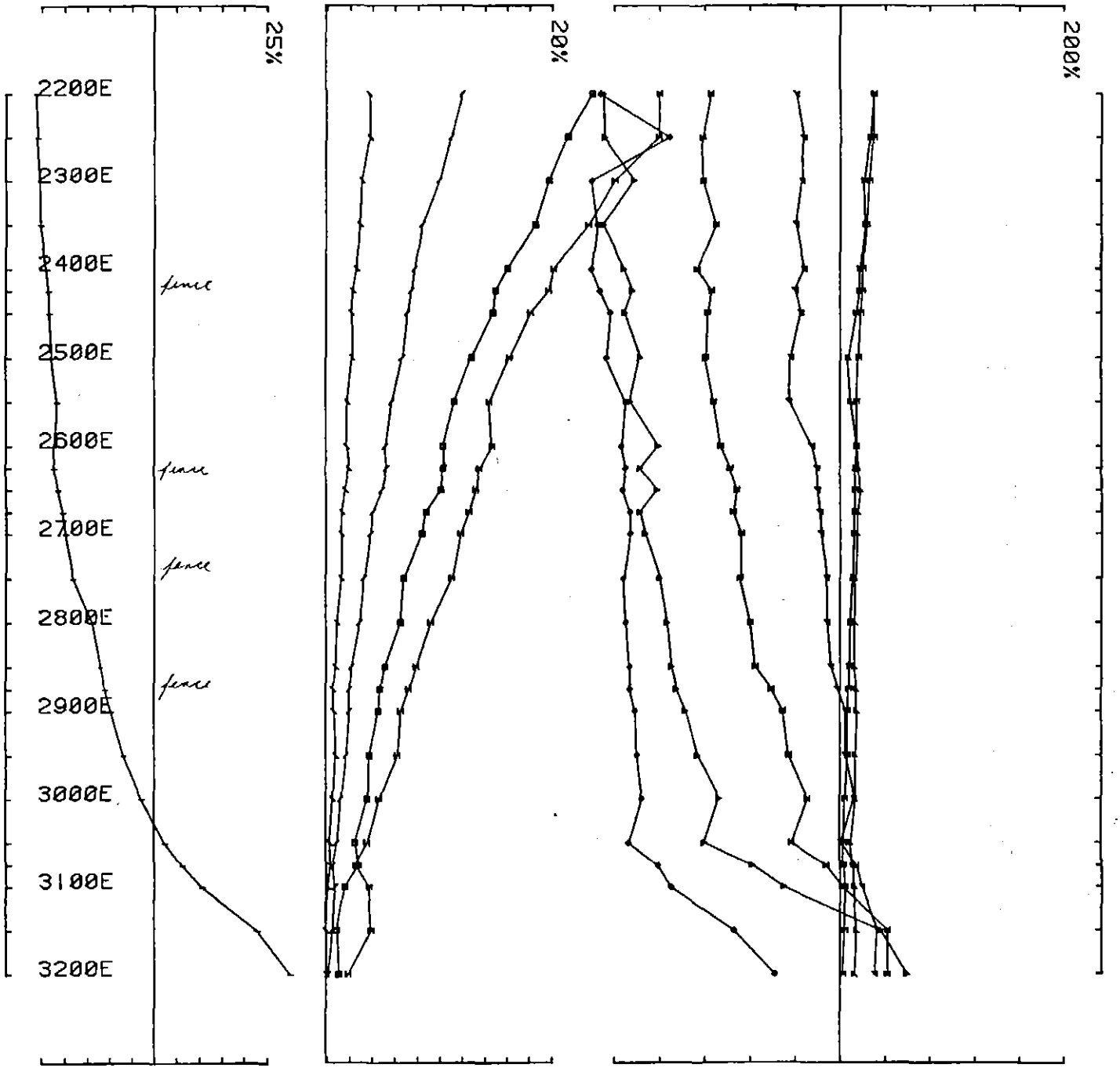


UTEM SURVEY at SHARMAN'S ROAD for ABERFOYLE RESOURCES

conducted by PAO PMM Job 8721 base freq (hz) 26.230 24/8/87

Loop 0001 line 6200N component Hz secondary field Ch 1 contin. norm.

5 cm

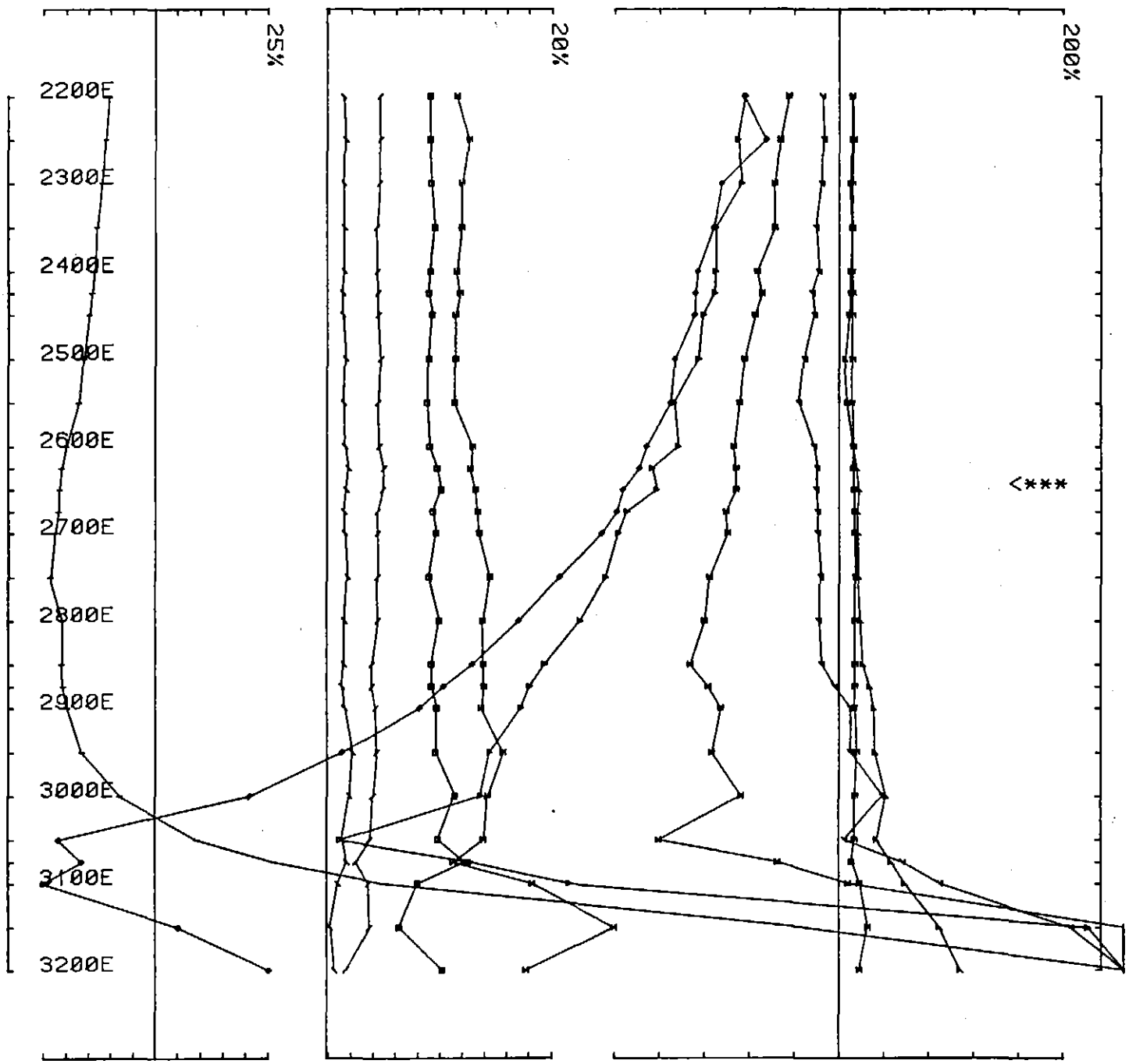


UTEM SURVEY at SHARMAN'S ROAD for ABERFOYLE RESOURCES

conducted by PAO PMM Job 8721 base freq (hz) 26.230 25/8/87

Loop 0001 line 6400N component Hz secondary field Ch 1 contin. norm.

5 cm

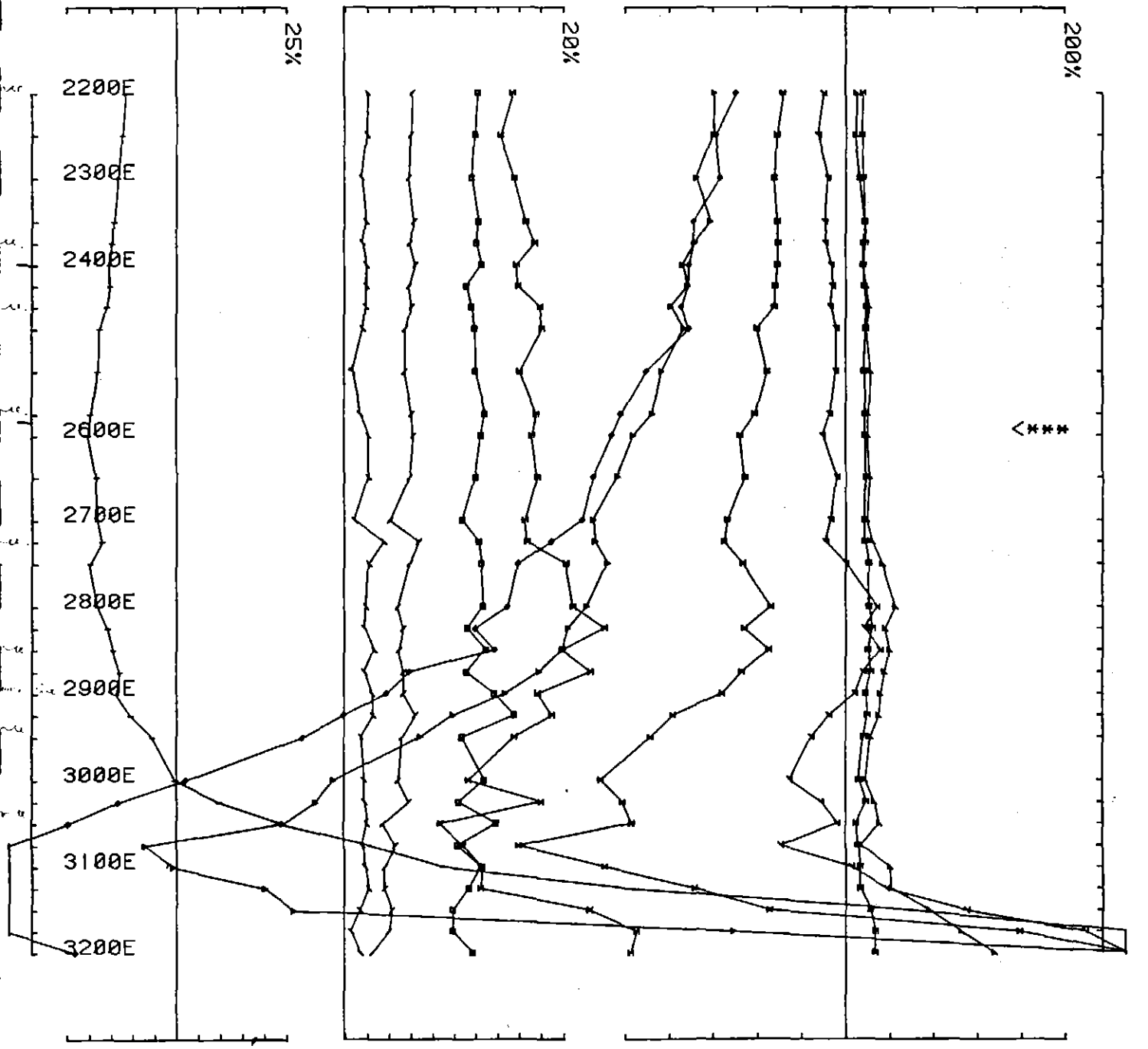


UTEM SURVEY at SHARMAN'S ROAD for ABERFOYLE RESOURCES

conducted by PAO PMM Job 8721 base freq (hz) 26.230 25/8/87

Loop 0001 line 6400N component Hz secondary field Ch 1 point norm.

5 cm

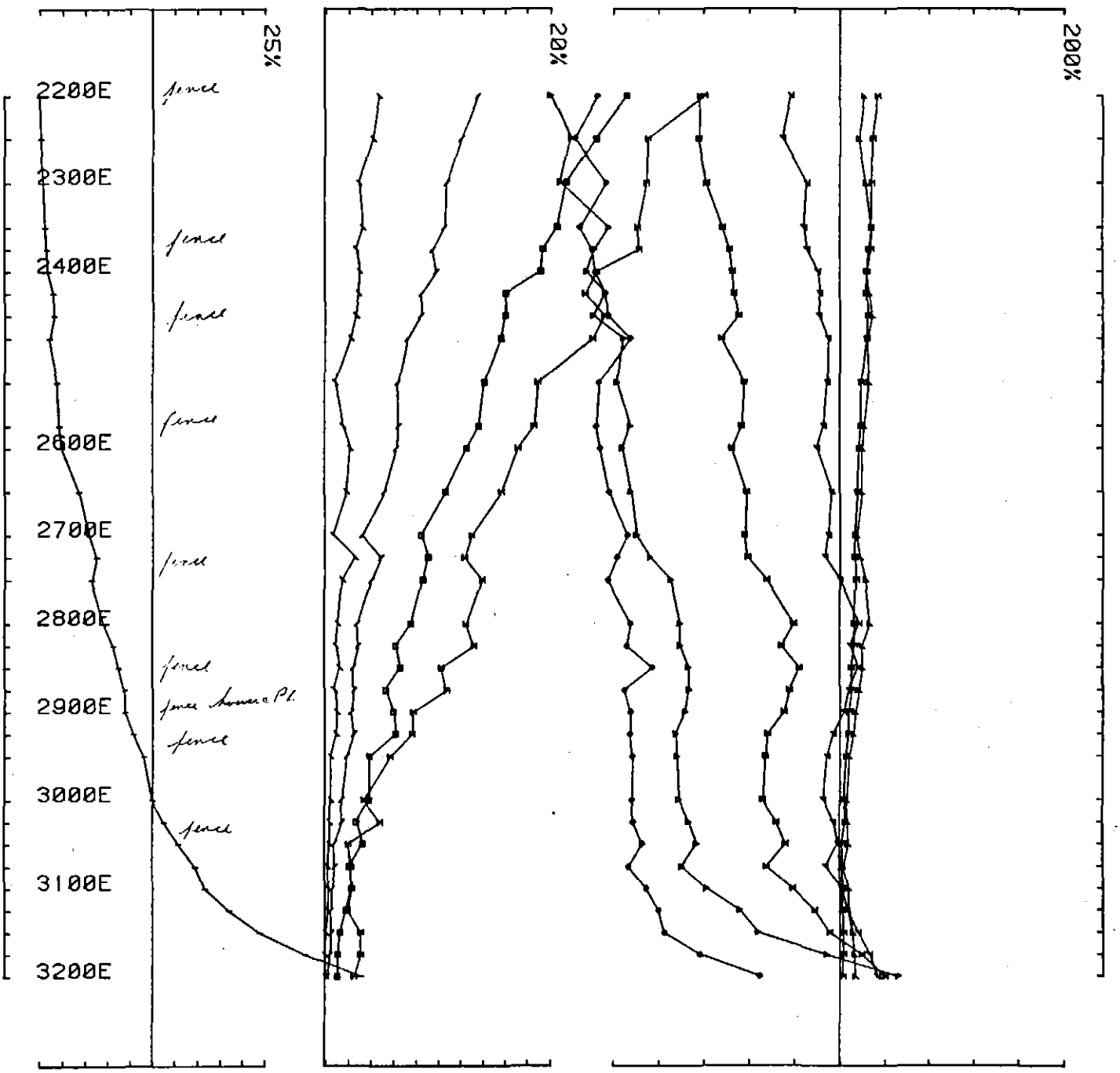


UTEM SURVEY at SHARMAN'S ROAD for ABERFOYLE RESOURCES

conducted by PAO PMM Job 8721 base freq (hz) 26.230 25/8/87

Loop 0001 line 6600N component Hz secondary field Ch 1 point norm. ,

5 cm

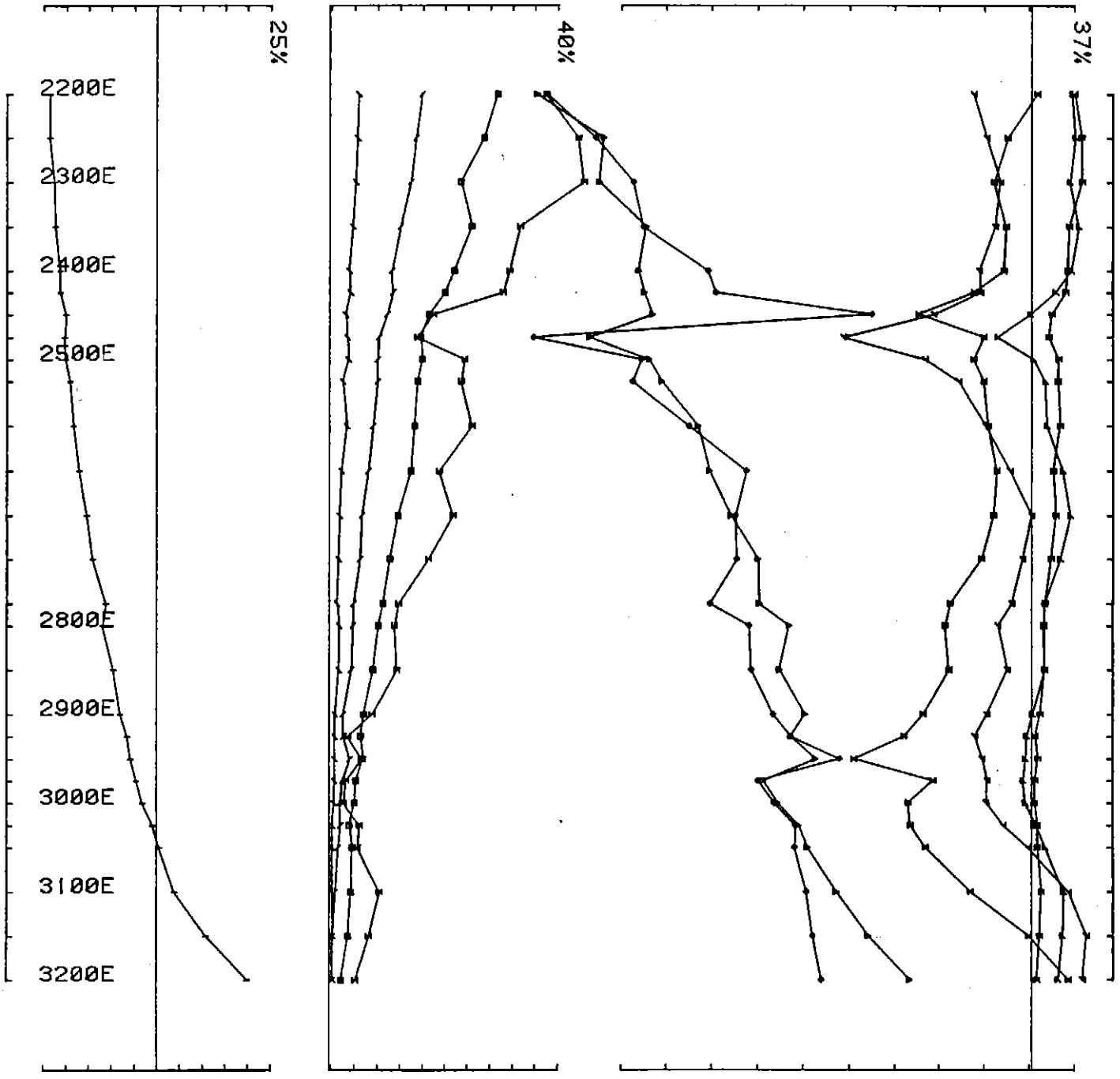


UTEM SURVEY at SHARMAN'S ROAD for ABERFOYLE RESOURCES

conducted by PAO PMM Job 8721 base freq (hz) 26.230 25/8/87

Loop 0001 line 6600N component Hz secondary field Ch 1 contin. norm.

5 cm

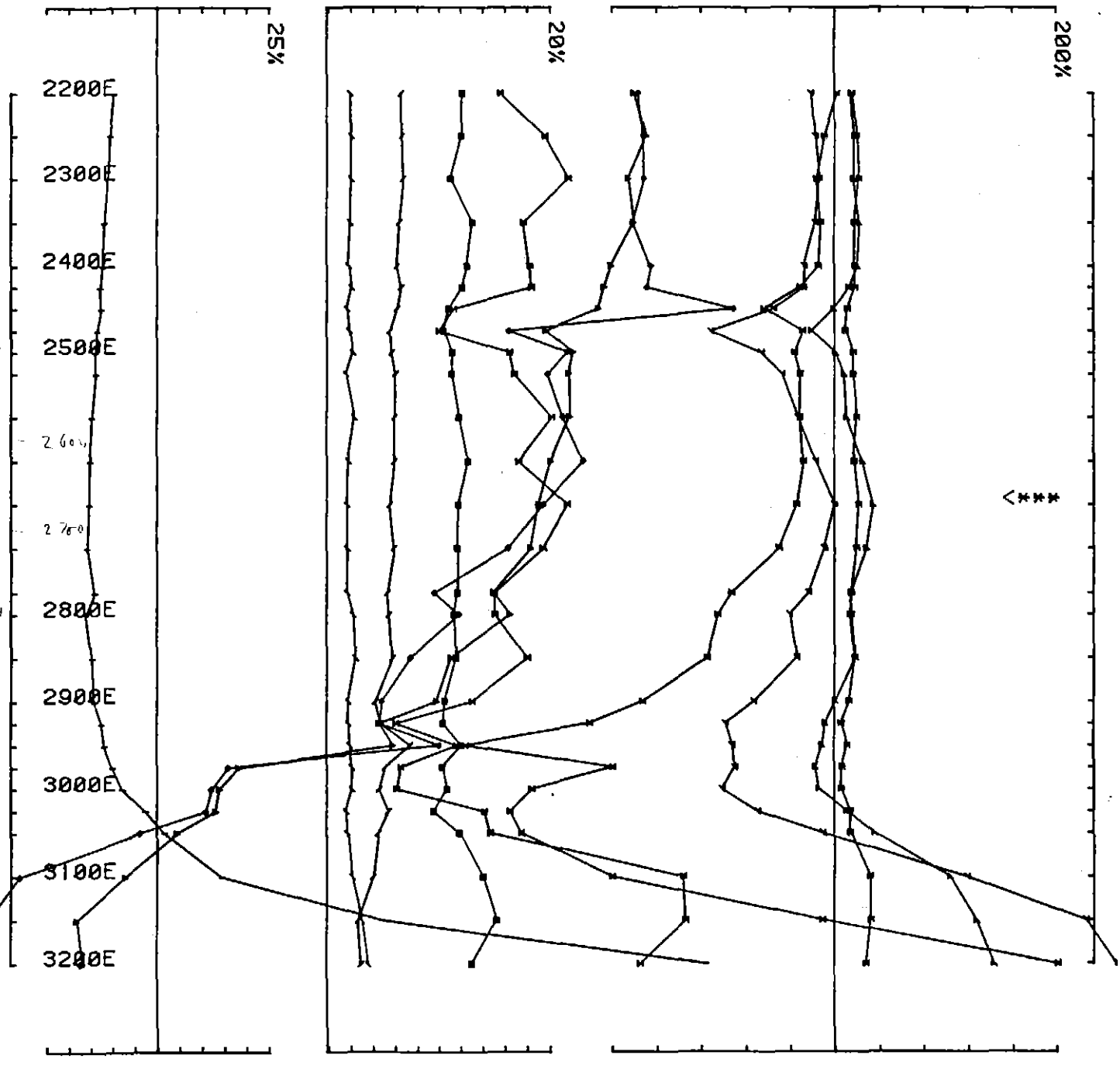


UTEM SURVEY at SHARMAN'S ROAD for ABERFOYLE RESOURCES

conducted by PAO PMM Job 8721 base freq (hz) 26.230 26/8/87

Loop 0001 line 6800N component Hz secondary field Ch 1 contin. norm.

5 cm

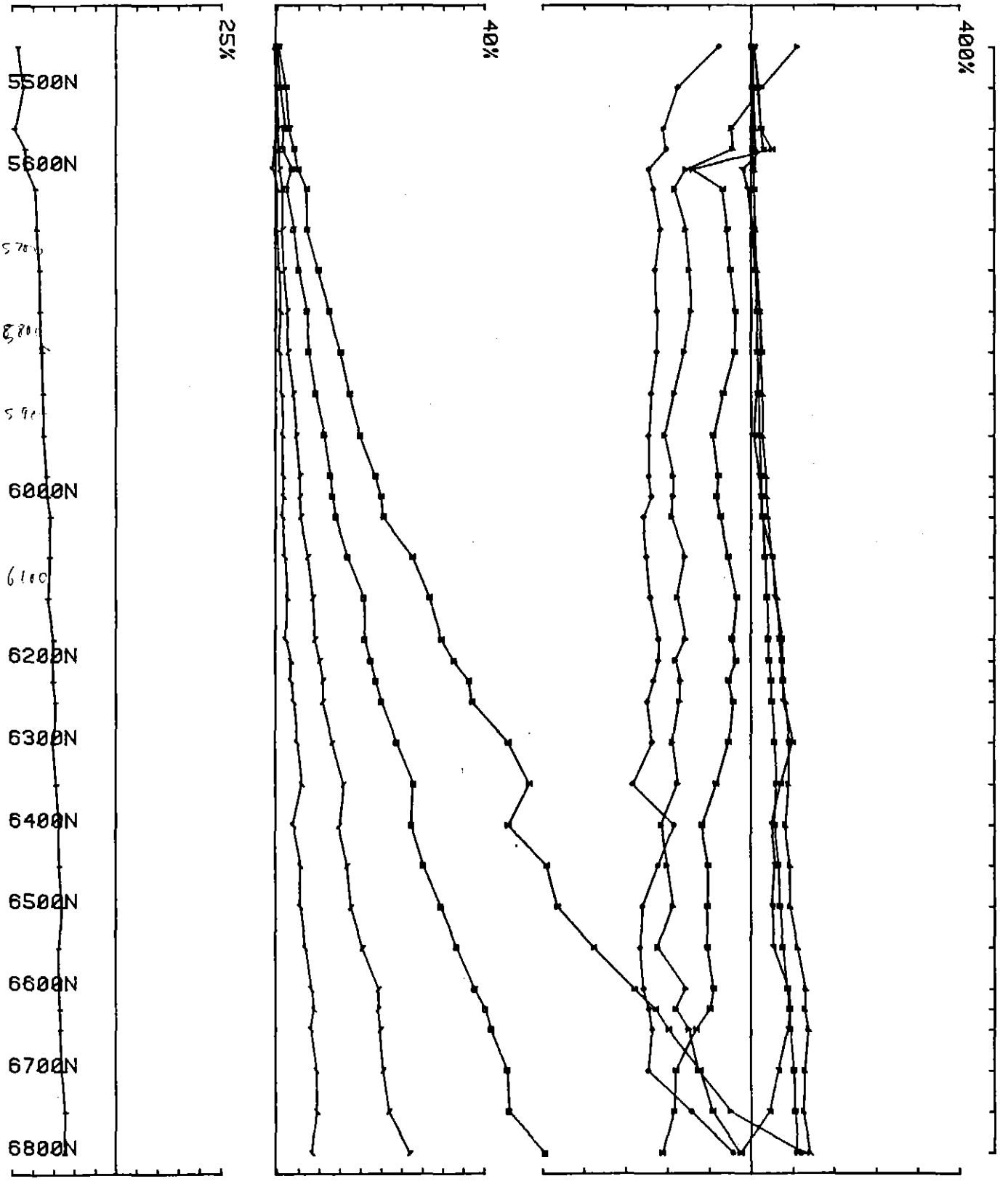


UTEM SURVEY at SHARMAN'S ROAD for ABERFOYLE RESOURCES

conducted by PAO PMM Job 8721 base freq (hz) 26.230 26/8/87

Loop 0001 line 6800N component Hz secondary field Ch 1 point norm.

5 cm

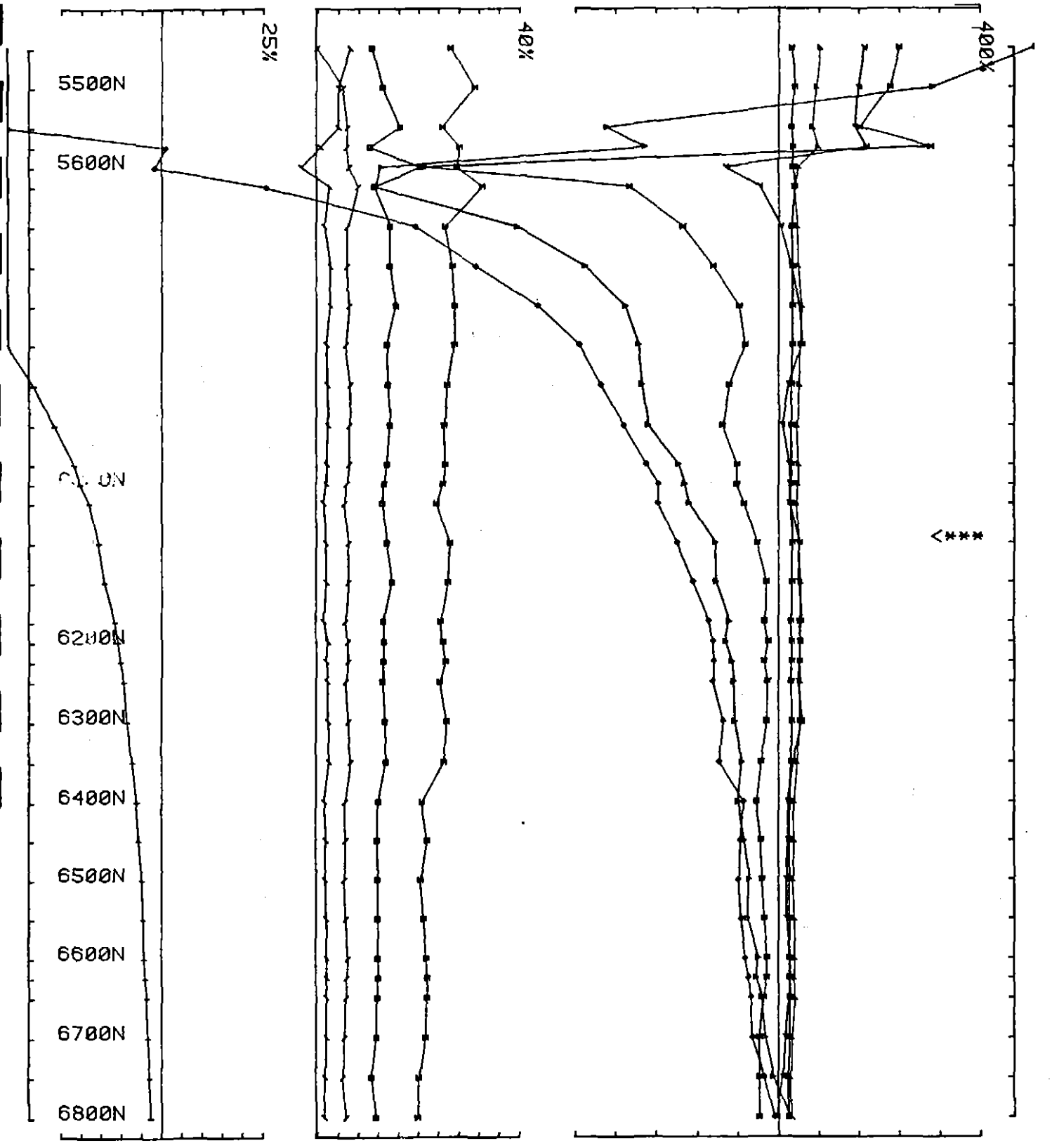


UTEM SURVEY at SHARMAN'S ROAD for ABERFOYLE RESOURCES

conducted by PAO PMM Job 8721 base freq (hz) 26.230 27/8/87

Loop 0002 line 2200E component Hz secondary field Ch 1 contin. norm.

5 cm

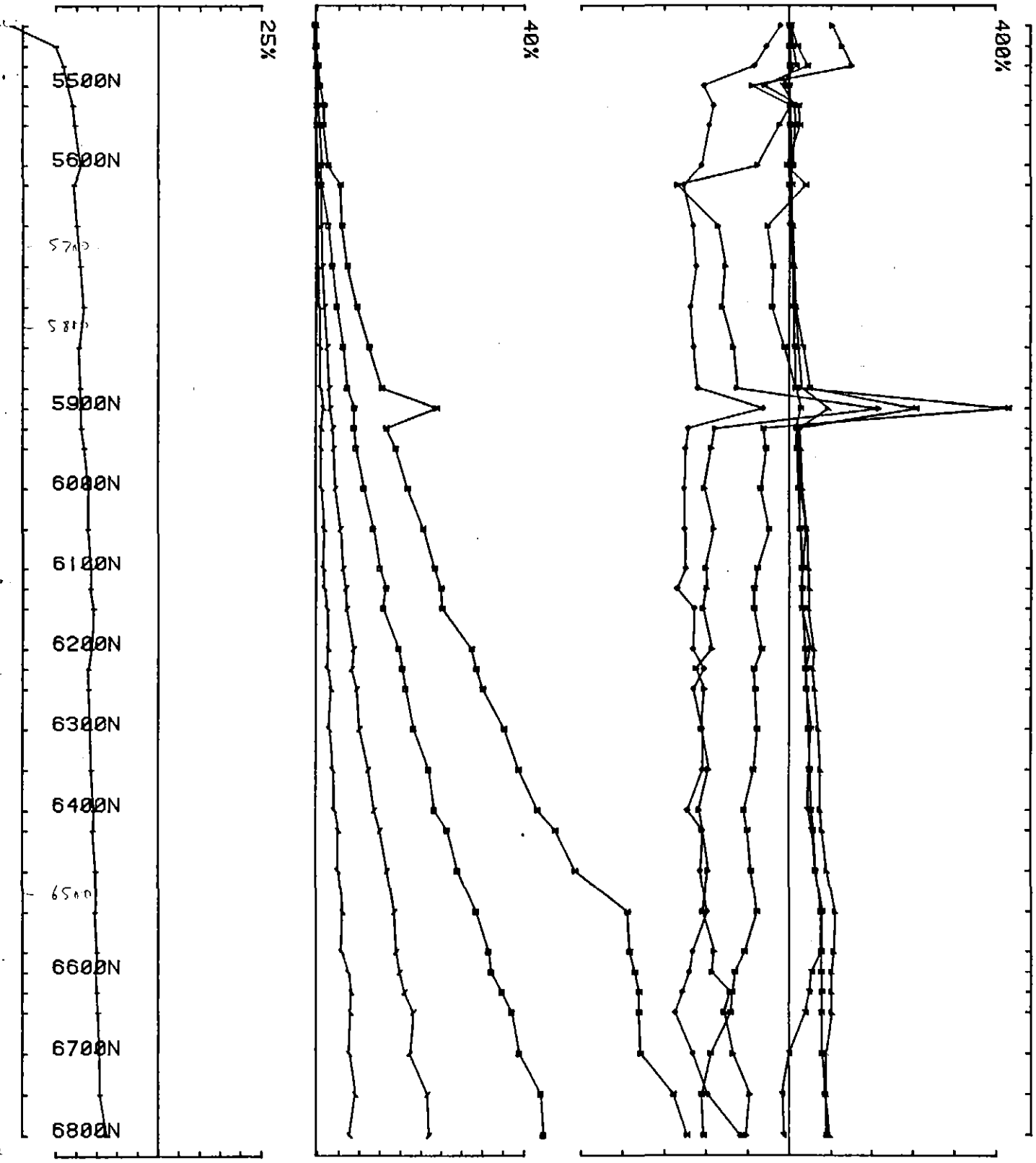


UTEM SURVEY at SHARMAN'S ROAD for ABERFOYLE RESOURCES

conducted by PAO PMM Job 8721 base freq (hz) 26.230 27/8/87

Loop 0002 line 2200E component Hz secondary field Ch 1 point norm.

5 cm

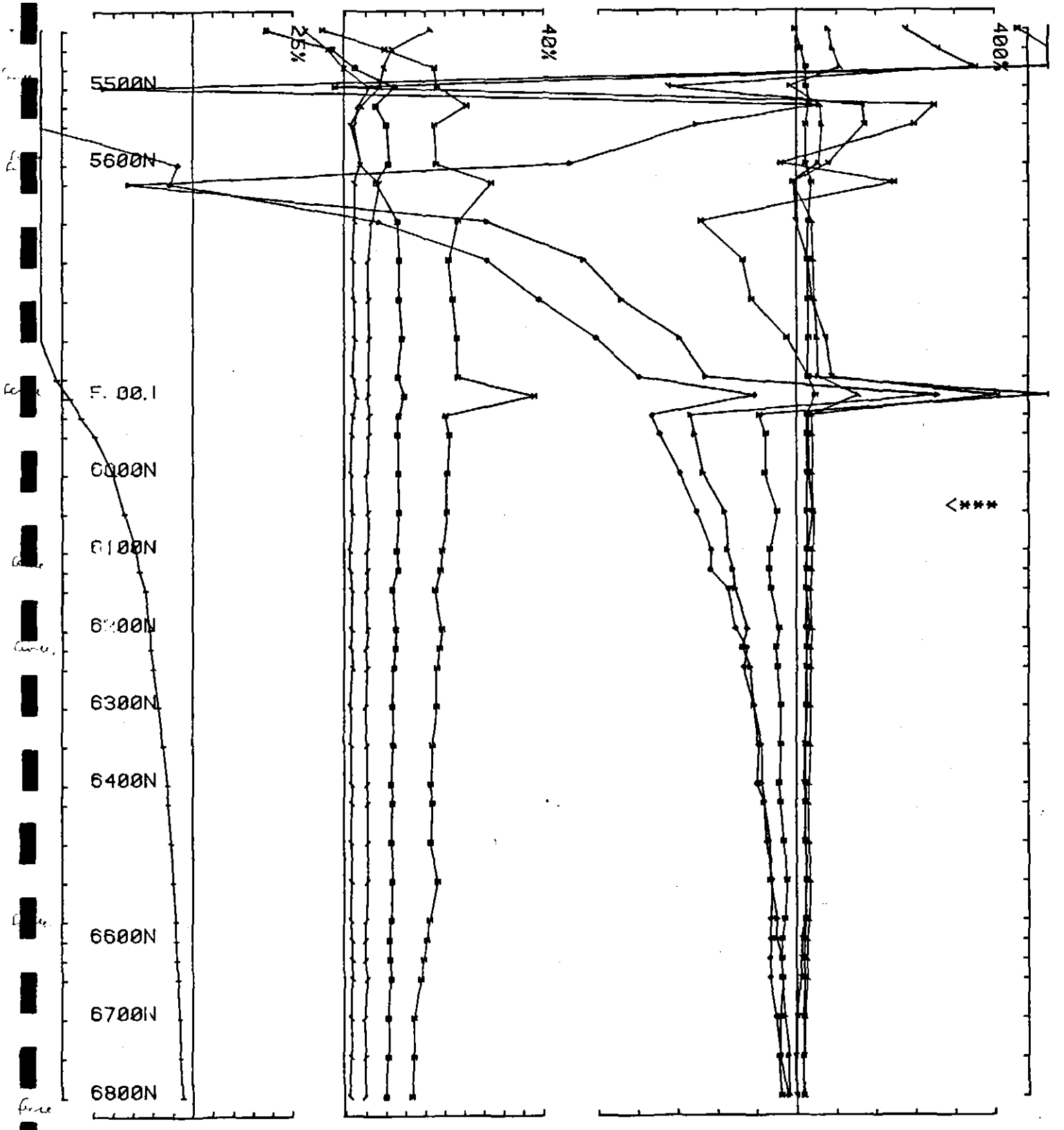


UTEM SURVEY at SHARMAN'S ROAD for ABERFOYLE RESOURCES

conducted by PAO PMM Job 8721 base freq (hz) 26.230 27/8/87

Loop 0002 line 2400E component Hz secondary field Ch 1 contin. norm.

5 cm

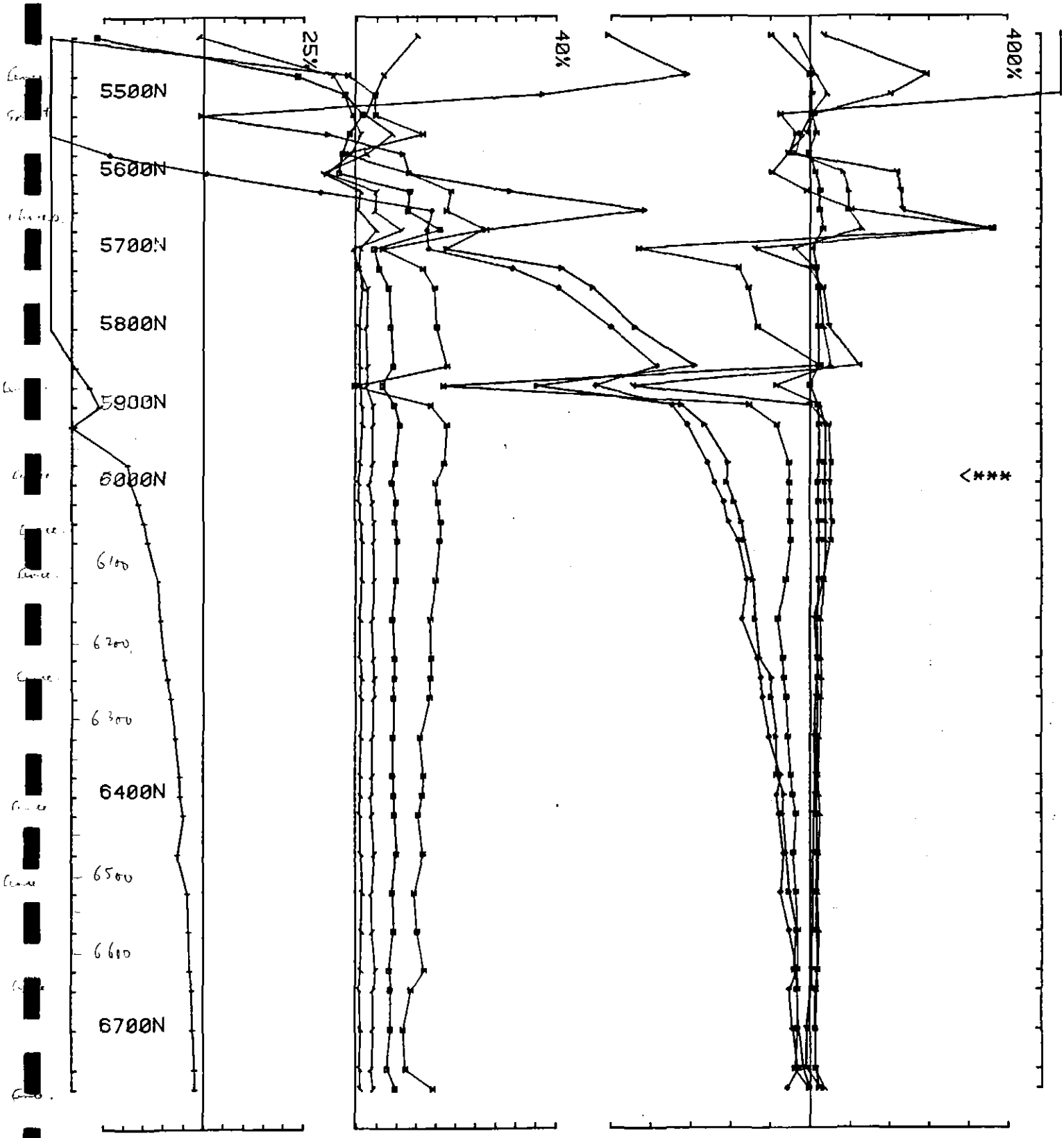


UTEM SURVEY at SHARMAN'S ROAD for ABERFOYLE RESOURCES

conducted by PAO PMM job 8721 base freq (hz) 26.230 27/8/87

Loop 0002 line 2400E component Hz secondary field Ch 1 point norm.

5 cm

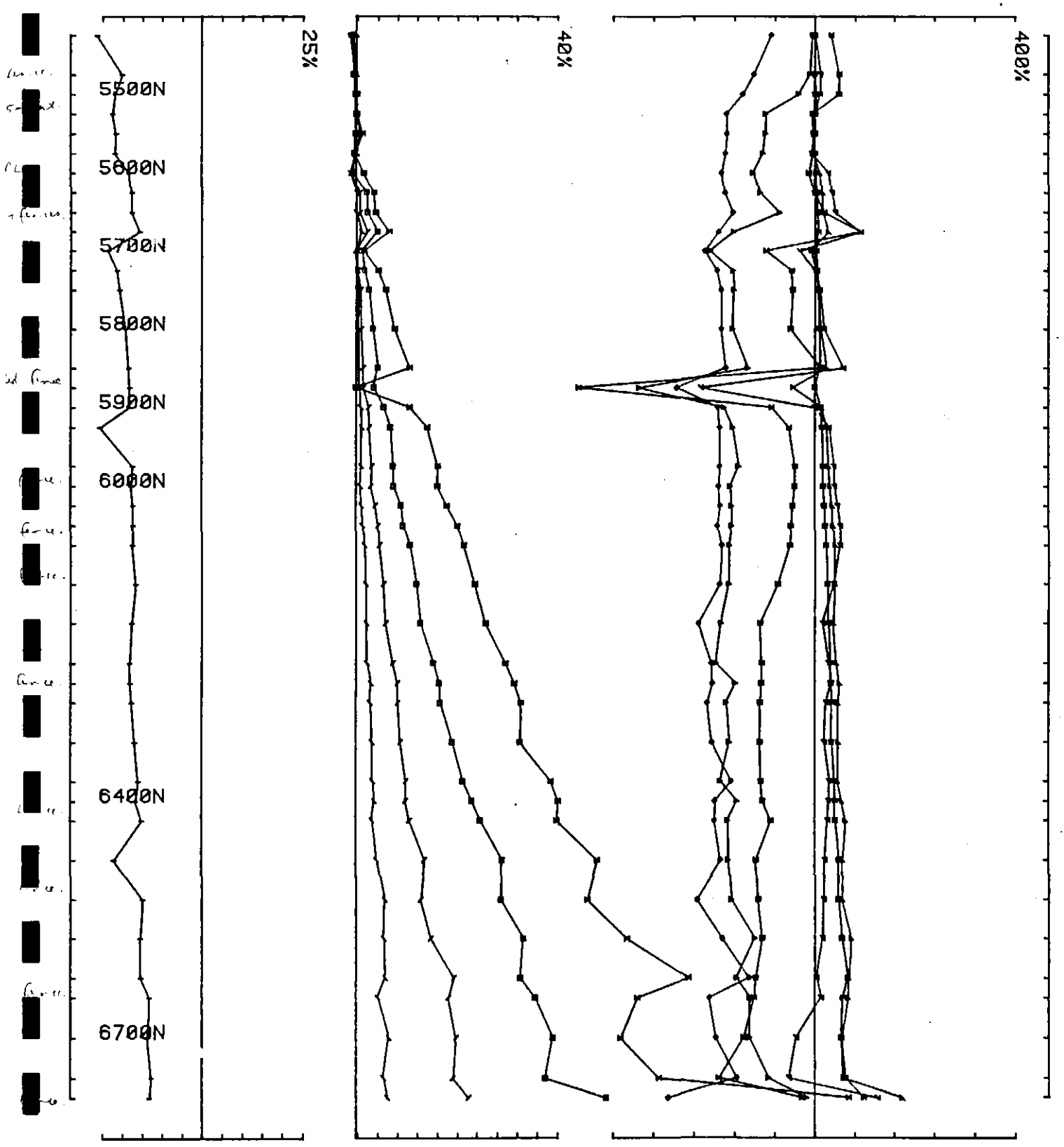


UTEM SURVEY at SHARMAN'S ROAD for ABERFOYLE RESOURCES

conducted by PAO PMM Job 8721 base freq (hz) 26.230 27/8/87

Loop 0002 line 2600E component Hz secondary field Ch 1 point norm.

5 cm

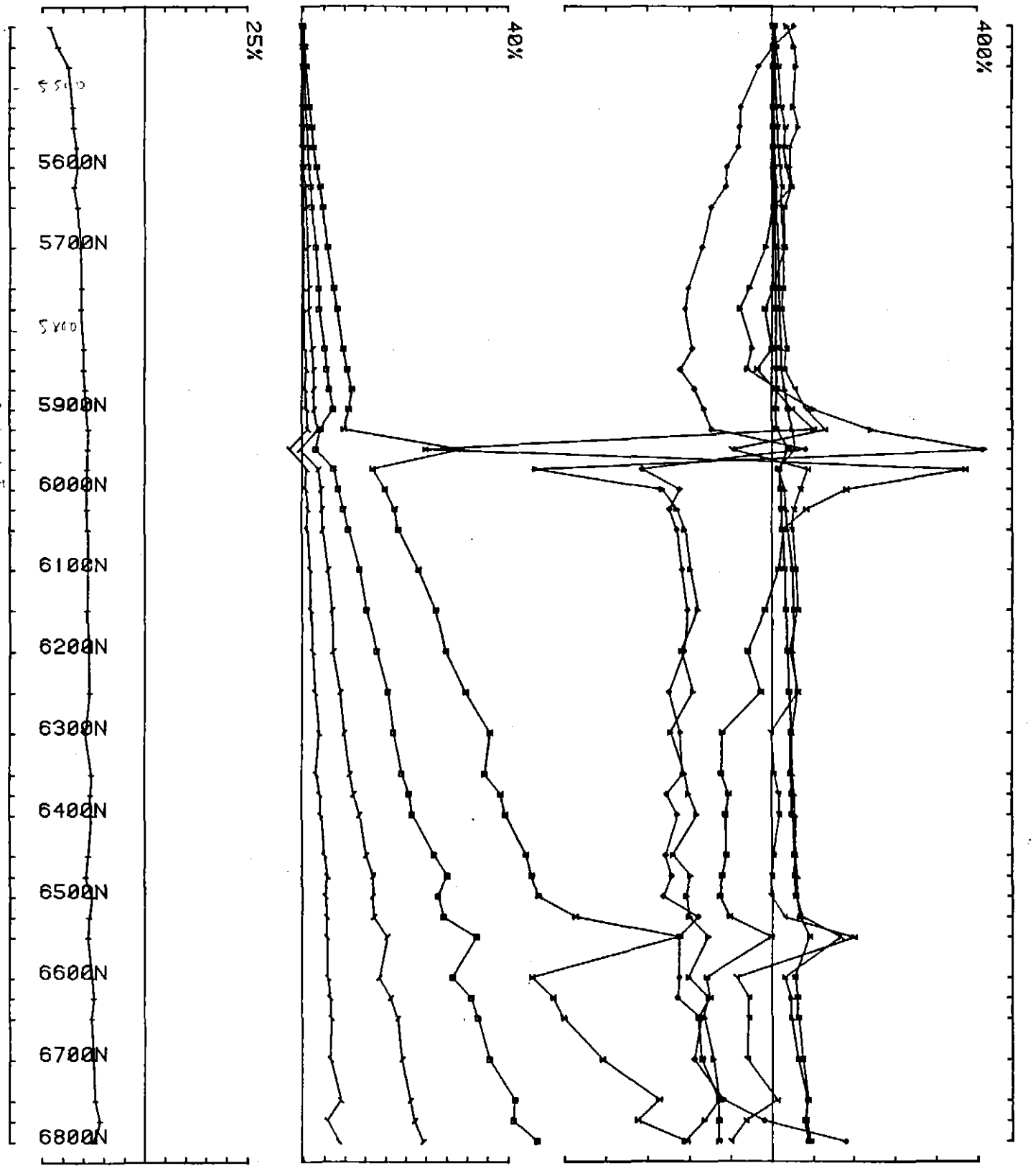


UTEM SURVEY at SHARMAN'S ROAD for ABERFOYLE RESOURCES

conducted by PAO PMM Job 8721 base freq (hz) 26.230 27/8/87

Loop 0002 line 2600E component Hz secondary field Ch 1 contin. norm.

5 cm

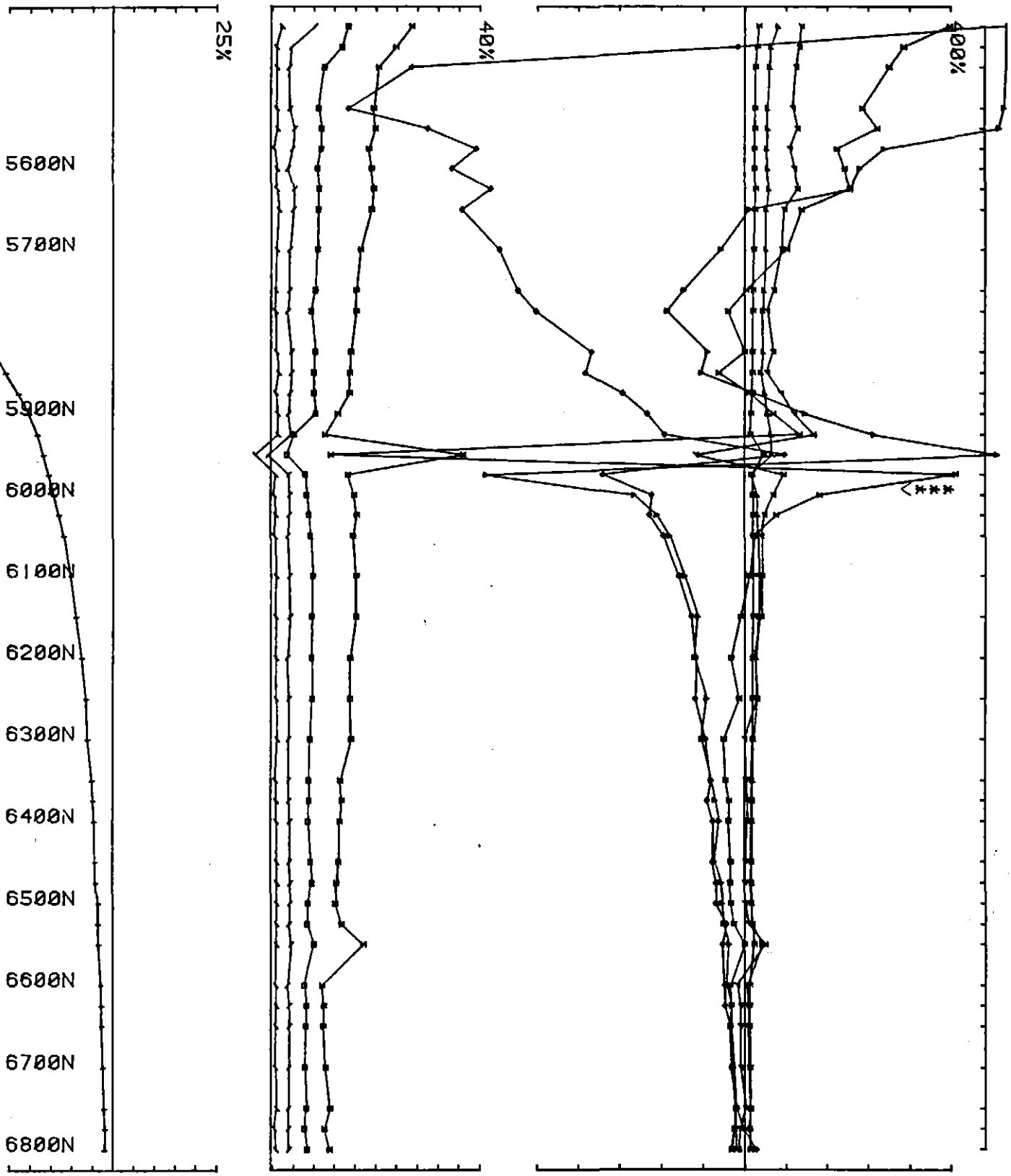


UTEM SURVEY at SHARMAN'S ROAD for ABERFOYLE RESOURCES

conducted by PAO PMM Job 8721 base freq (hz) 26.230 26/8/87

Loop 0002 line 2800E component Hz secondary field Ch 1 contin. norm.

5 cm

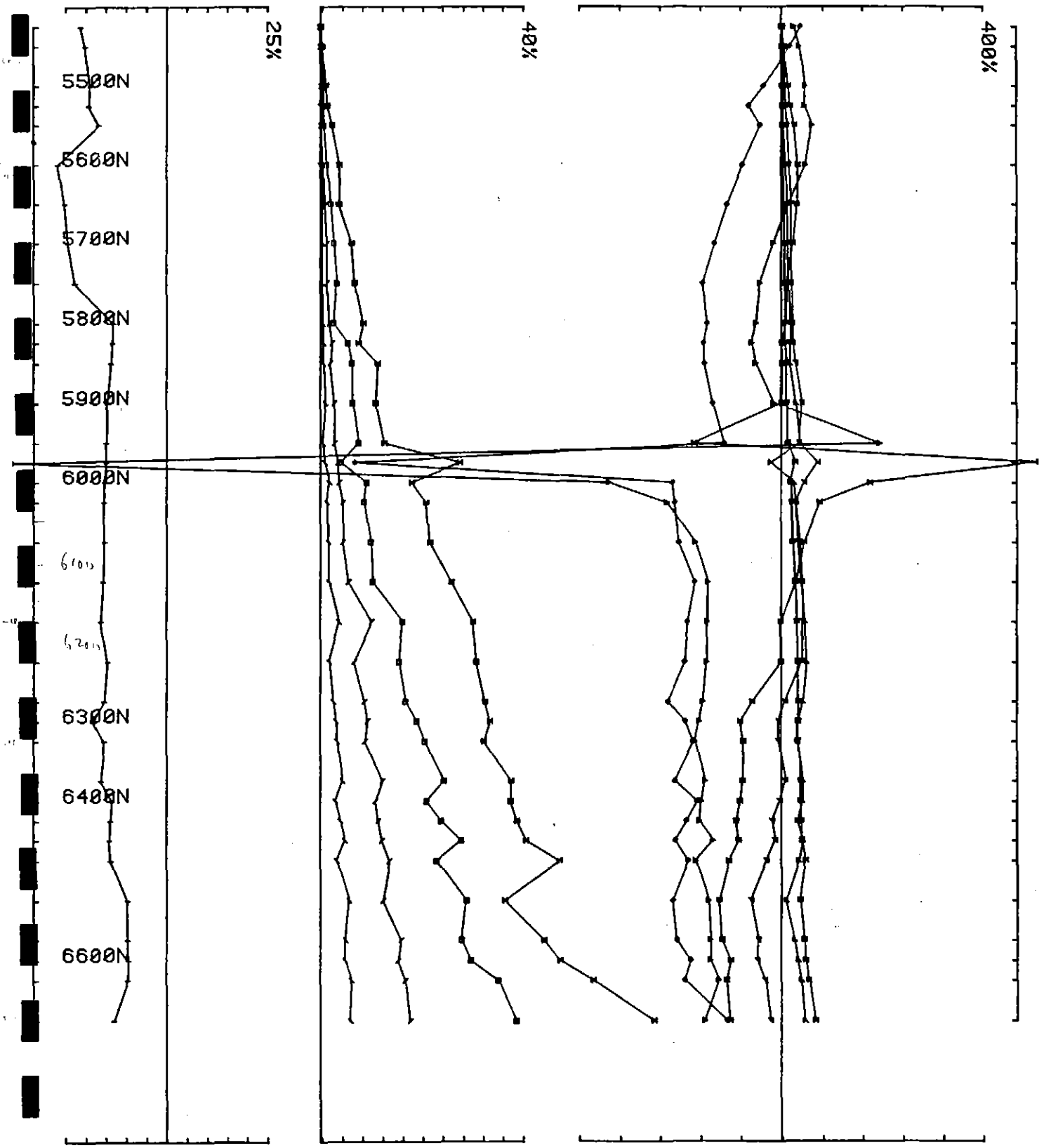


UTEM SURVEY at SHARMAN'S ROAD for ABERFOYLE RESOURCES

conducted by PAO PMM Job 8721 base freq (hz) 26.230 26/8/87

Loop 0002 line 2800E component Hz secondary field Ch 1 point norm.

5 cm

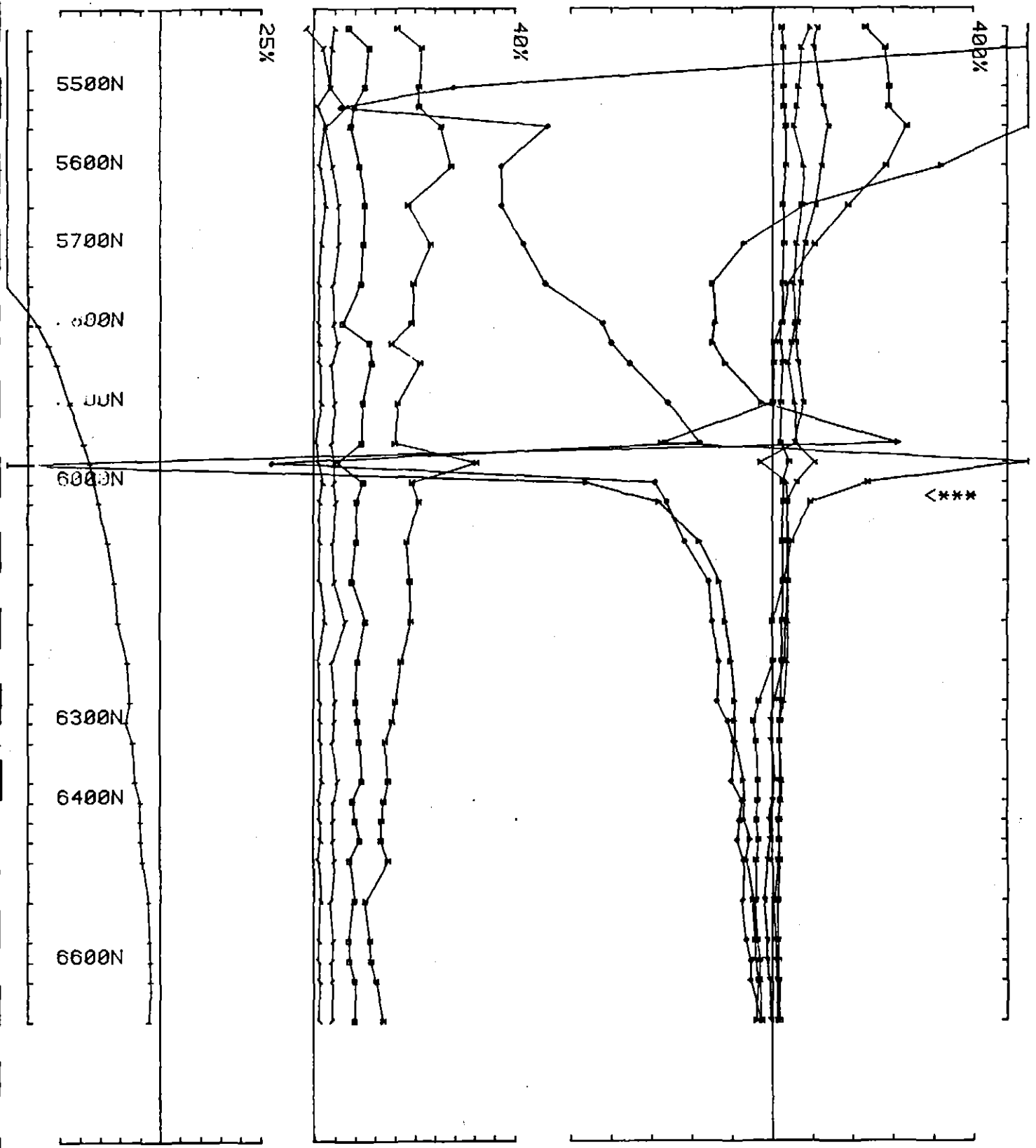


UTEM SURVEY at SHARMAN'S ROAD for ABERFOYLE RESOURCES

conducted by PAO PMM Job 8721 base freq (hz) 26.230 26/8/87

Loop 0002 line 3000E component Hz secondary field Ch 1 contin. norm.

5 cm

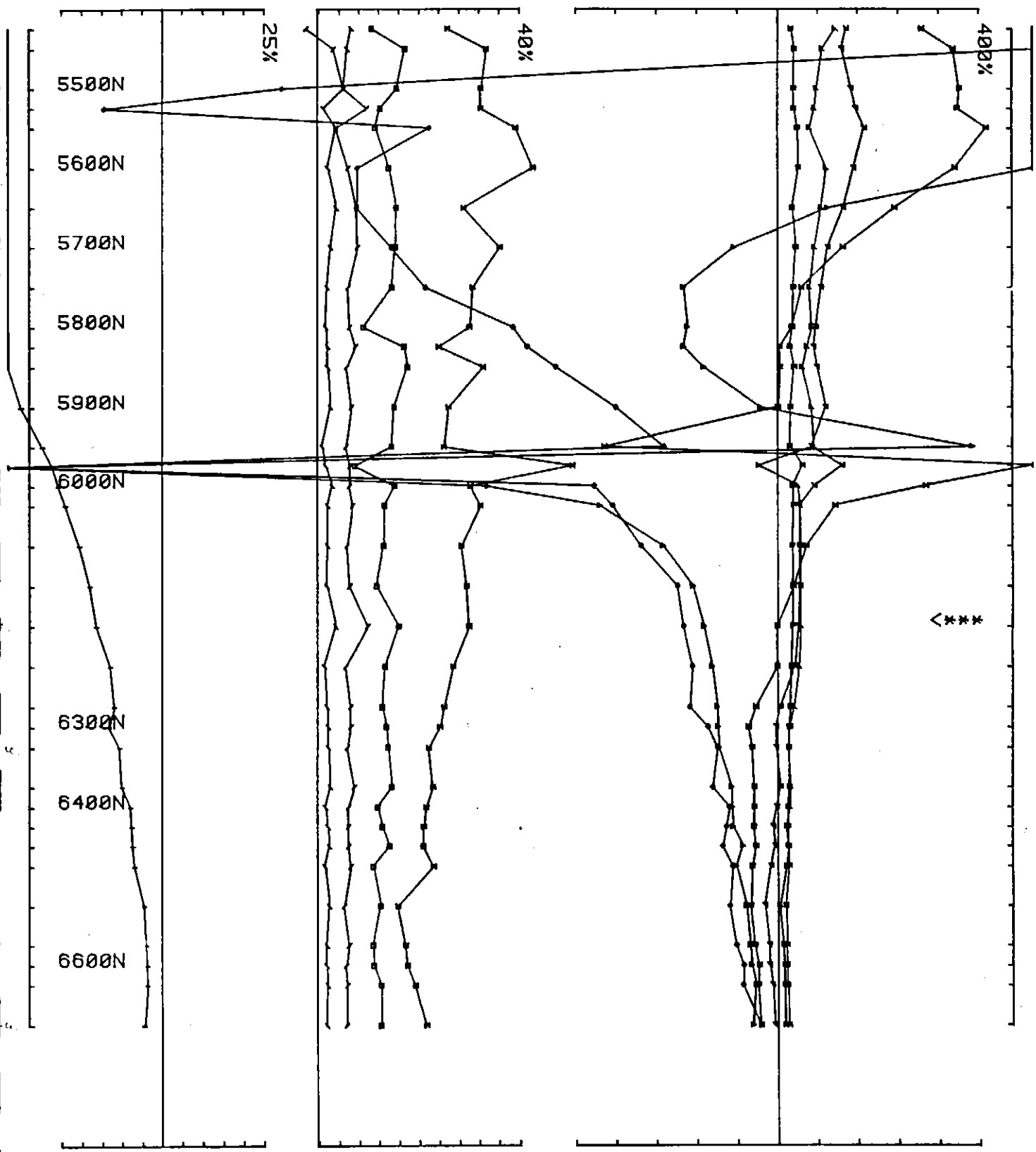


UTEM SURVEY at SHARMAN'S ROAD for ABERFOYLE RESOURCES

conducted by PAO PMM Job 8721 base freq (hz) 26.230 27/8/87

Loop 0002 line 3000E component Hz secondary field Ch 1 point norm.

5 cm



UTEM SURVEY at SHARMAN'S ROAD for ABERFOYLE RESOURCES

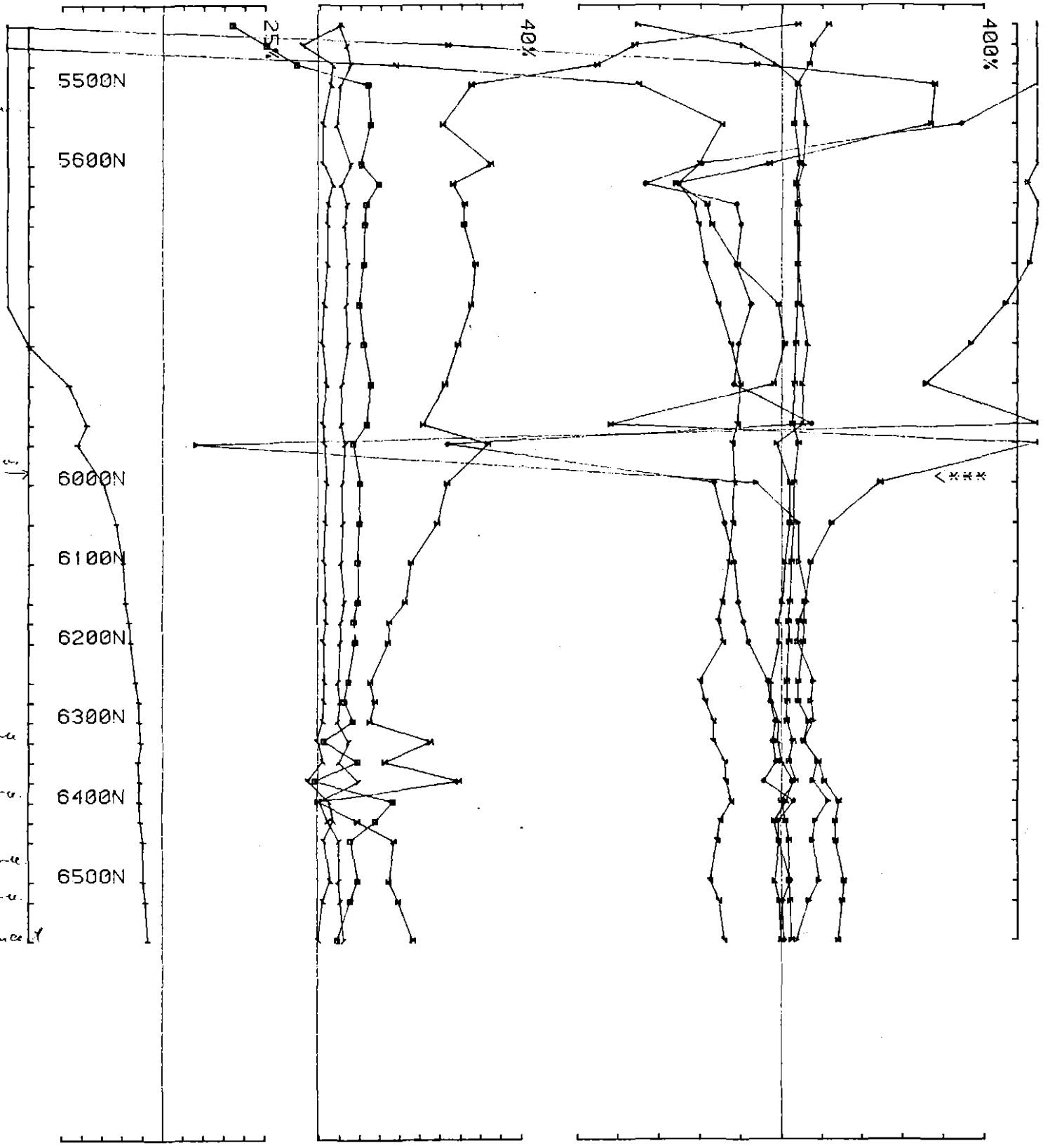
conducted by PAO PMM Job 8721 base freq (hz) 26.230 26/8/87

Loop 0002 line 3000E component Hz secondary field Ch 1 point norm.

5 cm

192

123.

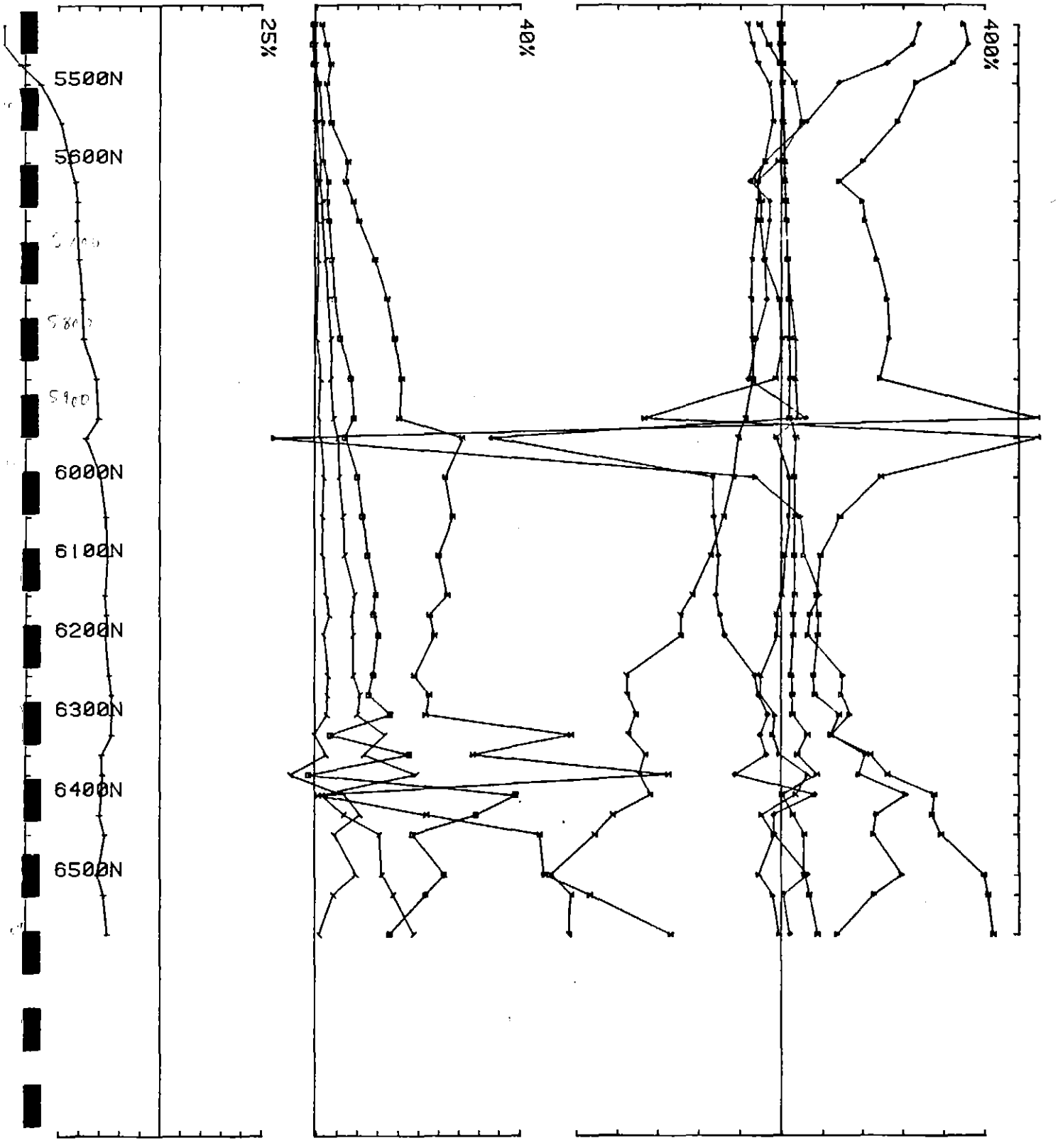


UTEM SURVEY at SHARMAN'S ROAD for ABERFOYLE RESOURCES

conducted by PAO PMM job 8721 base freq (hz) 26.230 6/9/87

Loop 0002 line 3200E component Hz secondary field Ch 1 point norm. .

5 cm



UTEM SURVEY at SHARMAN'S ROAD for ABERFOYLE RESOURCES

conducted by PAO PMM job 8721 base freq (hz) 26.230 26/8/87

Loop 0002 line 3200E component Hz secondary field Ch 1 contin. norm.

5 cm

124
SHEFFIELD
LAKE BARRINGTON
WEST KENTISH ROAD
SHEFFIELD ROAD
DASHER RIVER
MINNOW RIVER
MERSEY RIVER
Roland
Promised Land
Paradise
Beulah
Weegena
Kellys Bridge
- GEOLOGICAL LEGEND -
QUARTERNARY
Qra Recent alluvium
Qt Talus and landslide man
Qg Marsh deposits and gravels
TERTIARY
Ts Sands, clay and conglomerate
PERMIAN
Pbb Basal beds including Tasmanite oil shale member
ORDOVICIAN
Θm Moina Sandstone
Θr Roland Conglomerate
CAMBRIAN
Єmk Minnow Keratophyre : quartz - feldspar porphyry, rhyolite, keratophyre, tuff and subordinate greywacke.
Єgg Gog Range Greywacke : dominantly greywacke sequence with mudstone
Єsf Sprent Formation : lenticular polymict breccia with minor shale intercalations. Abundant chert fragments with some mafic volcanics
Єbf Beulah Formation : basic to intermediate lavas, pyroclastics and breccia
Є Unassigned
Tb Tertiary Basalt
Jdl Jurassic Dolerite
Dgr Devonian Granite : fine grained granite and microgranodiorite
Fault
x 271779 Rock sample location - G, Geochemistry P, Petrography
- Topography LEGEND -
Major Road
Minor Road
Township
Lake
Dam on river or stream
River or stream
Exploration Licence boundary
Bridge
Scale 1:25,000
TN GN MN
GRID CONVERGENCE 0·4°
GRID / MAGNETIC ANGLE 12·5°
5 cm
786125
88-2805.
Aberfoyle Resources Limited
EXPLORATION DIVISION
Fig 3
REVISIONS
Init. Date Init. Date
DJJ rje 2·5·88
NORTHERN TASMANIA
BEULAH E.L. 43/85
SUMMARY GEOLOGY
(after Dept. of Mines)
Compiled : JRS / RJE
Drawn : JRS
Traced : RJE
Checked :
Location Code : K55/3
Scale : 1: 25,000
Date : April, 1987
Plate No : BEUL. 5