Aberfoyle Resources Limited

EXPLORATION DIVISION

A.C.N. 004 664 108

EXPLORATION LICENCE 40/85

ELLIOTT BAY

TASMANIA

Progress Report for the Period

January 1992 to December 1992

VOLUME 1 of 3

Text and Appendices

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December 1992

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1.0 SUMMARY

During the twelve month period to December, 1992 work on Exploration Licence 40/85 Elliott Bay has concentrated on ground evaluation of nine airborne EM anomalies (designated EB-1 to EB-9). The nine conductors were detected during a QUESTEM survey flown in 1991. All were followed up in Jan. - Feb. 1992 using various combinations of gridding, surface EM, mapping, soil and rock chip geochemistry.

Only conductors EB-1 and EB-4 require further work as all others are attributed to surficial conductors.

Complicated by surficial conductors, the EB-1 response displays some features consistent with a bedrock source. The anomaly is enhanced by its proximity to an outcropping mineralised alteration zone with anomalous

1. TOLERANT 2. SEXUALLY + MORALLY TOLERANT (THE MACQUARIE DICTIONARY) !

geochemistry and permissive lead and sulphur isotopes. Despite the equivocal nature of the EM response, prospective geology indicates that a drill test is warranted. A diamond drill hole is proposed for February, 1993.

Reconnaissance mapping of the EB-4 area indicates the response to be along strike from the Voyager 12 gold prospect. The potential association with mineralisation indicates more detailed follow up, including surface EM, is warranted in 1993.

Research into the nature of lead isotopes at Elliott Bay continues.

2.0 INTRODUCTION

Exploration Licence 40/85 is located in south west Tasmania approximately 85 km. south of Queenstown (Fig. 1). Remote and with very limited access to and within the licence, exploration has historically been conducted during the summer months; usually with helicopter support.

The licence covers the most southern portion of the Mount Read Volcanics and includes outcropping Volcanic Hosted Massive Sulphide (VHMS) at Wart Hill. VHMS is the primary exploration target within EL 40/85.

Extensive exploration of the area including EL 40/85 has been undertaken by BHP (1965-1975), Geopeko (1977-1984) and Cyprus (1985-1989) and is summarised in Wallace, 1991.

This report describes work undertaken on EL 40/85 for the twelve month period to December, 1992.

3.0 TENURE

EL 40/85, Elliott Bay, was granted to Cyprus Minerals Aust. Co., on the 24th December, 1985.

After granting of the licence Cyprus entered into a joint venture agreement with Poseidon Minerals Ltd. whereby each party contributed 50% of exploration expenditure and Cyprus acted as manager. On the 9th January, 1991 Aberfoyle Resources entered a joint venture agreement with the existing joint venture partners (Cyprus interest now transferred to Arimco Mining Pty. Ltd.). The agreement provides for Aberfoyle to earn a majority interest in the tenement by funding and managing exploration.

In December,1991 a statutory relinquishment of 50% reduced the size of EL 40/85 to 125 sq. km.

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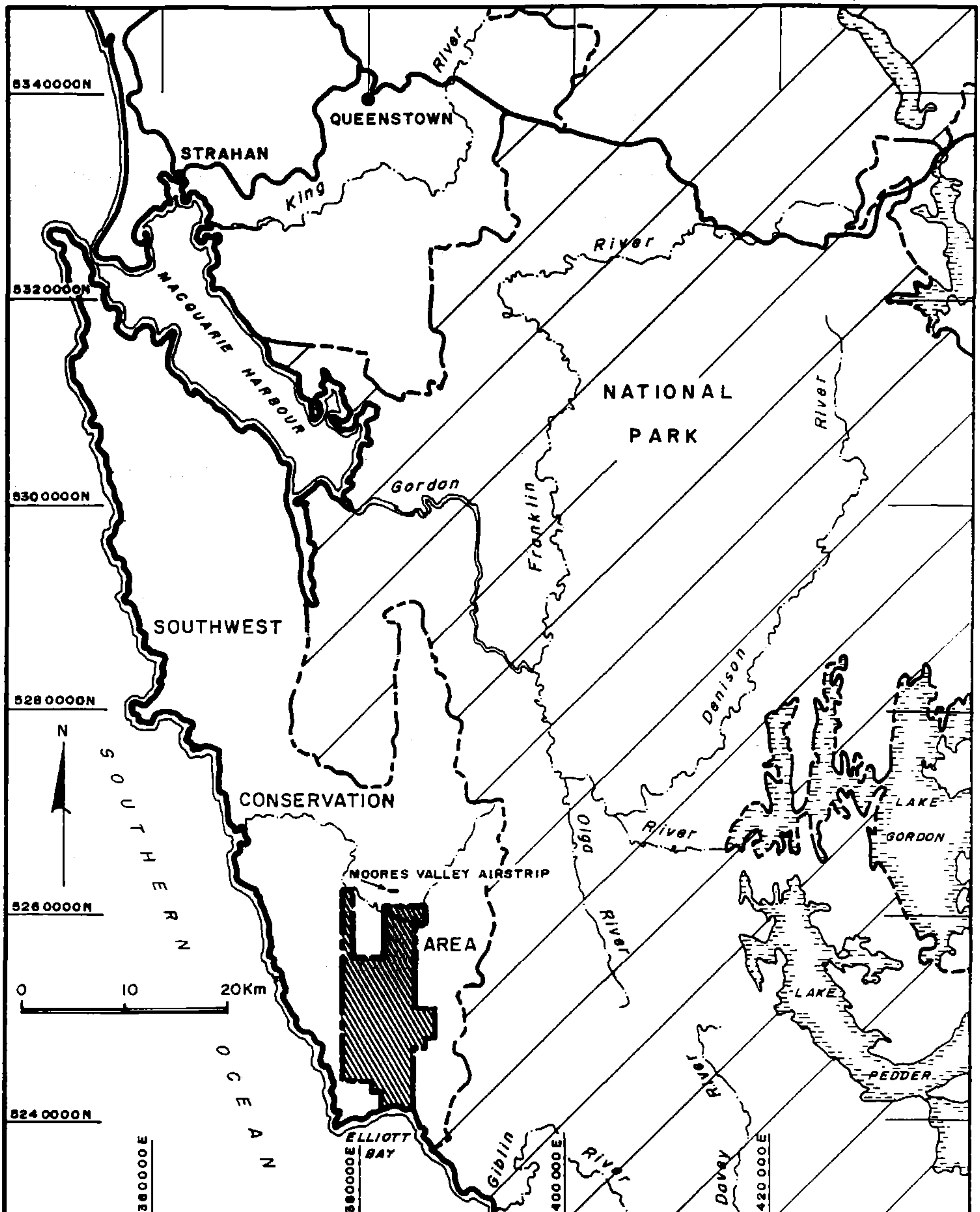

Aberfoyle Resources Limited

EXPLORATION DIVISION

FIG. 1.

REVISIONS				SOUTH WEST TASMANIA	Compiled :
Init.	Date	Init.	Date	ELLIOTT BAY E.L. 40/85	Drawn : JLR
				LOCATION PLAN	Traced : JLR
					Checked :
Location Code :				Scale : 1:500,000 / Date : December, 1991	Plate No. : EB6

4.0 1991 AIRBORNE EM SURVEY

Historically the mount Read Volcanics south of Macquarie Harbour have not been extensively surveyed with modern deep searching EM. In addition the low relief and lack of tall forest make the area ideal for surveying by the new generation of airborne EM techniques.

Aerodata were commissioned to fly a QUESTEM survey over the prospective volcanics. The aim was to locate conductive targets at depths greater than the effective search depth of previous airborne EM surveys such as DIGHEM.

In March 1991 a 725 line km. QUESTEM airborne EM survey was flown over EL 40/85 (Wallace, 1991). Evaluation of the data indicated nine conductors worthy of ground follow up. These are referred to as EB 1-9 with locations as shown on Plate EB 14.

It was proposed to evaluate these conductors by various combinations of gridding, ground EM, mapping, soil and rock chip sampling. During January and February 1992 a helicopter supported field camp was established at Cowrie Beach and ground follow up carried out.

The results of this programme are described below in Sections 5.0 through 13.0.

5.0 EB-1

5.1 Introduction

Located near the coast at Elliott Bay the EB-1 conductor is a N-S striking 1.8 km. long EM response (Plate EB 14). A four line grid was cut over the southern part of the conductor. Follow up ground EM, mapping soil and rock chip sampling were carried out.

5.2 Voyager 3 Prospect

The Geopeko Voyager 3 prospect is located immediately to the east of EB-1. This prospect was centred on haematite altered volcanogenic sediments, anomalous in copper, that outcrop on the coast 500m east of EB-1. Geopeko worked in this area between 1978 and 1981. Geochemical and geophysical surveys (IP, VLF) largely ended just east of the EB-1 conductor although some lines extended west to Cowrie Beach.

Three diamond holes were drilled at Voyager 3. The first two were 30 m long and targetted at soil geochemical anomalies. The third is a 200 m hole targetted at an IP/soil geochemical anomaly 750 m east of the EB-1 conductor. Drilled toward the west, i.e. downdip, the hole intersected volcanogenic sandstones and siltstones with minor interbedded rhyolite lava near hole bottom. Disseminated and vein pyrite to 3% is ubiquitous throughout. Base metal values are elevated over the entire hole with a maximum of 8 m @ 0.4% Zn from disseminated and vein mineralisation in a chlorite altered zone.

Lead isotopes from this mineralisation return a Rosebery signature.

5.3 Geology

A geological map is included as Plate EB 10/N3 whilst petrological descriptions of representative lithologies are attached as Appendix I.

Two major units are present in the vicinity of the conductor. The oldest is a sequence of felsic volcanogenic sandstones and minor siltstones. These are massive to locally bedded, sometimes lithic, sandstones composed mainly of reworked fragments of quartz and feldspar phenocrysts.

Overlying (to the west of) the epiclastic sequence is a unit of cleaved quartz-phyric rhyolite lava at least 500 m thick which is in faulted contact to the west with the Low Rocky Point Granite. All of this rhyolite body appears to be massive lava. The contact with the underlying epiclastics appears to be conformable, although some movement on the boundary is apparent.

The boundary between the lava and epiclastic sequences is marked by several metres of finely laminated volcanogenic siltstone. Although such intervals are locally developed elsewhere within the epiclastics, this horizon appears to mark a period of less active sedimentation prior to eruption of the lava.

No younging evidence was found within the area mapped but evidence from Geopeko drill holes and mapping further along the coast suggests that the sequence youngs and faces to the west.

Bedding generally strikes just west of north and dips steeply west. A well developed generally bedding parallel cleavage is indicative of strong ductile deformation. Although folds were not observed local areas of bedding at high angle to cleavage indicate that folding is present. Mesoscopic tight to isoclinal folds are recorded by Geopeko further east along the coast.

Outcropping on the coast, approximately along strike from the EB-1 anomaly, is a hydrothermal alteration zone approximately 100 m across, hosted by volcanogenic sandstones. This zone strikes parallel to cleavage but has an unknown dip.

The alteration is roughly zoned with boudinaged pods of Fe rich chlorite + pyrite in the core. Surrounding the chlorite are silica + chlorite ± sericite + pyrite alteration shells. Passing east from this shell, alteration is exceptionally and increasingly siliceous to a sharp contact about 30 m east of the chlorite core. Peripheral zones of sericite + silica with common limonite after pyrite occur in the east and west.

Mineralisation is present as pyrite disseminations and minor veins which vary from trace to 20% locally. Within the chlorite zone minor pyrite + chalcopyrite veins to 5 cm are present. Lead and zinc were observed as galena + sphalerite stringers within the siliceous parts of the alteration zone, in late E-W trending chloritic veins outside the alteration zone or in irregular Devonian ? quartz veins 1-2 m thick. Disseminated galena and sphalerite are common within the most siliceous alteration.

5.4 Geochemistry

5.4.1 Soil Sampling

One hundred and one 25 m spaced C horizon soil samples were collected on Aberfoyle grid lines, overlapping about 100 m with Geopeko's Voyager 3 sampling to the west. Unsieved samples were assayed for Cu, Pb and Zn. Results are attached as Appendix II and Plates 11, 12 and 13.

Values are generally low with only one significant Pb, Zn anomaly occurring on line 1600N at 2700E.

The Geopeko sampling was carried out using a Jacro drill with holes up to 5 m deep and assay of the -80# fraction. Pb and Zn assays are about ten times those of Aberfoyle (overall and when compared in the area of overlap). This results in an apparent decrease in base metal content from the approximate conductor location and out to the west. This may be indicative of a contact between metal rich footwall and barren hangingwall rocks. However, it also happens to occur in the area where outcrop ceases so that Aberfoyle power auger sampling may have been ineffective in sampling the underlying rocks. Increased enhancement of metal values in the -80# fraction in Geopeko samples would also have an effect.

Comparison of the two surveys requires caution. However, the soil sampling does show that significant base metal mineralisation occurs over a large area in the inferred footwall of the EB-1 conductor.

5.4.2 **Rock Chip Sampling**

Eleven rock chip samples of representative lithologies, including offcuts of petrographic samples were submitted for whole rock and trace element analysis. Results are attached as Appendix III with sample locations shown on Plate EB 10/N3.

Outside the alteration zone major elements are consistent with only weak hydrothermal alteration. The lava sequence to the west has a low Ti/Zr and high SiO_2 consistent with a rhyolite composition. Basic dykes are high in Cr and $P_2O_5/TiO_2 = 0.48$ equivalent to suite III or shoshonitic lavas of Crawford, 1992.

Base metals are variable outside the alteration zone, from generally low to 0.3% combined Pb + Zn. Similarly arsenic is low outside the alteration zone (<6 ppm) except for the basic dyke that assays 20 ppm. Gold values are below detection of 0.008 ppm.

5.4.3 **Continuous Rock Chip Sampling**

The alteration zone outcropping on the coast was sampled across strike from west to east. A nominal origin on the western edge was chosen and continuous chip samples were taken in 10 metre intervals or to alteration shell boundaries. Results and *sample locations are attached as* Appendix IV. *Copper is* elevated within the chlorite zone, returning 320 ppm. Lead and zinc are highest in the most siliceous alteration, assaying 0.3% Pb, 1.1.% Zn and 3 ppm Ag over 1.5 metres. Excluding this assay the rest of the alteration zone averages 600 ppm Zn and 250 ppm Pb. Gold values are low with only the base metal rich sample (565550) above detection at 0.02 ppm.

Several VHMS indicator elements were also assayed to assess their usefulness as pathfinder elements in soil sampling. Only Hg, Cd and Mo appear to be significantly elevated within the alteration zone.

Major elements indicate alteration indices ([k_2O + MgO/K_2O + CaO + Na_2O] x 100) are greater than 90. Although weathering has probably removed some Na and Ca the alteration zone is almost totally depleted when compared to surrounding rocks.

5.4.4. **Lead Isotopes**

Six samples were submitted for lead isotope analysis:

1) 2 samples of disseminated base metals in Si alteration (EB 100, EB 200).
2) 1 sample of base metal stringer vein (565576).
3) 1 continuous rock chip sample (565551).
4) 1 soil sample (565209).
5) 1 Late ? chlorite + base metal vein (565530).

Results are attached as Appendix V. Three distinct signatures are evident spread across a field straddling the Voyager 19 and Rosebery signatures. Given the complex nature of Pb isotopes in this part of the Mount Read Belt the significance of individual signatures is unclear. However, all are indicative of Cambrian mineralisation.

These results will be incorporated into a Pb isotope research project on Western Tasmanian VMS mineralisation currently being undertaken by Dr J B Gemmell from CODES at the University of Tasmania in collaboration with Dr G Carr of SIROTOPE, CSIRO, North Ryde, NSW.

5.4.5 **Sulphur Isotopes**

Five samples of disseminated and vein pyrite from within the EB-1 alteration zone were submitted for sulphur isotope analysis. Results are attached as Appendix VI.

$\delta^{34}S$ values range from 8.9 in vein pyrite from the chlorite zone to 14.3 in siliceous alteration. These values are identical to Hellyer/Que River stringer zone results and consistent with sulphur sourced from a reducing hydrothermal system.

5.5 Geophysics

5.5.1 **Ground EM Survey**

A one loop four line EM survey was undertaken over the EB-1 conductor. Results from this survey are presented in Appendix VII. Loop and line locations are shown on Plate EB-1.

Data from this survey is complex with several broad near surface conductors (gravels) complicating the EM interpretation. That part of the response which may be related to a deep bedrock conductor could also potentially be attributed to an east thickening wedge shaped (in cross section) surface conductor.

5.5.2 **Resistivity Survey**

To resolve the ambiguity in the response it was proposed to carry out a close spaced (25 metre) dipole-dipole resistivity survey over the conductor. It was hoped that this would delineate or rule out any wedge shaped surface conductor that may be the source.

Carried out in April the results are presented and discussed in Appendix VIII.

Some evidence for wedge shaped surface conductors is apparent. However, modelling and interpretation of EM data using derivative techniques cannot unequivocally attribute all features of the observed EB-1 response to surficial conductors.

5.6 Conclusion

A follow up resistivity survey has failed to unequivocally resolve the source of the EB-1 conductor. Potential remains for a deep bedrock conductor masked by overlying conductive gravels. The surface projection of the inferred bedrock conductor occurs adjacent to a mineralised footwall alteration zone and boundary between a felsic volcaniclastic and lava sequence. Prospectively is further enhanced by attractive lead and sulphur isotopic compositions.

This prospect has reached the stage where no further surface work can improve our understanding of the source of the EM anomaly. Given the favourable geological aspects it will be proposed that a diamond drill test is warranted. The hole is planned for the 1992/93 summer season.

6.0 EB-2

6.1 Introduction

The EB-2 conductor is a one kilometre long response just east of the Lewis River (Plate EB 14). A three line grid was cut over the anomaly.

6.2 Geology

Outcrop geology is shown on Plate EB 10/L3. In the area of the conductor (forest) outcrop is non-existent. However, outcrop on button grass plains to the east and in the Lewis River to the west, indicates that the conductor occurs within a sequence of felsic volcanogenic sandstones identical to and approximately along strike from those hosting the EB-1 conductor. Bedding strikes north to northwest and generally dips steeply west.

A unit of rhyolite lava is mapped by the Geological Survey in the Lewis River a kilometre north and along strike from the conductor. This suggests that felsic lava may underlie the area of no outcrop associated with the conductor.

6.3 Geophysics

A one loop three line EM survey was carried out over the conductor. Loop and line locations are shown on Plate EB 8B. Survey results are included in Appendix VII.

An unknown but clearly surficial source for the conductor is indicated. If the conductor is underlain by lava between sandstone perhaps a weathering trough is present.

6.4 Geochemistry

Down-grading of the anomaly by the surface EM survey resulted in no samples being submitted for assay.

7.0 EB-3

7.1 Introduction

The EB-3 conductor is a one kilometre long response located near the junction of the Lewis and Hudson Rivers (Plate EB 14). A three line grid was cut over this anomaly.

7.2 Geology

Outcrop geology is shown on Plate EB 10/L3. The conductor appears to be hosted by a sequence of volcanogenic sandstones, correlates of and along strike from the sequence hosting EB-1. Bedding strikes just west of north and dips steeply west with unknown facing.

Outcrop over this grid is extremely poor with no outcrop in the vicinity of the conductor.

7.3 Geophysics

A one loop three line EM survey was undertaken over the conductor. Loop and line locations are shown on Plate EB 8B whilst survey results are included in Appendix VII.

An unknown but clearly surficial source for this conductor is indicated by the surface EM.

7.4 Geochemistry

Down-grading of the anomaly by the surface EM survey resulted in no samples being submitted for assay.

8.0 EB-4

8.1 Introduction

The EB-4 conductor is located near the eastern boundary of EL 40/85 (Plate EB 14). Given low priority on the basis of the airborne EM response the only follow up proposed was reconnaissance mapping and rock chip sampling. No grid was established.

8.2 Geology

The conductor is located approximately one kilometre north east and along strike from Geopeko's Voyager 12 prospect. This prospect consists of a moderately northwest dipping zone of brecciation, veining and sericite alteration anomalous in base metals and gold. Early quartz + tourmaline and later chlorite + pyrite + arsenopyrite ± chalcopyrite ± galena ± sphalerite ± quartz veins up to two centimetres thick are common over a true thickness up to 20 m (Torrey et al, 1988). Mineralisation is hosted by volcanogenic sandstones near the western margin of a quartz feldspar biotite porphyry intrusive.

A total of ten shallow diamond drill holes have been drilled at Voyager 12 without repeating encouraging gold values obtained at surface. These appear due to surface enrichment processes.

Reconnaissance mapping (Plate EB 15) indicates the southern part of the EB-4 response is near the gossanous margins of the porphyry body. To the north little outcrop is evident but the porphyry does not appear to continue along strike.

8.3 Geochemistry

Several rock chip samples of gossanous material were submitted for assay. Sample locations are shown on Plate EB 15 and results attached as Appendix IX. Values north of Voyager 12 were low with only copper being slightly elevated at 200 ppm.

8.4 Conclusion

The potential association of the EB-4 conductor with mineralisation; possibly as a more sulphide rich and higher grade section of the Voyager 12 structure, indicate that this EM anomaly warrants further follow up.

During the 1992-93 summer season it is proposed that a grid be cut over the anomaly and surface EM, mapping soil and rock chip sampling be carried out.

9.0 EB-5

9.1 Introduction

The EB-5 conductor is located in the axis of the Osmund Syncline SE of Wart Hill, (Plate EB 14). Although spatially associated with Ordovician shale, the structurally favourable location, proximity to Wart Hill mineralisation and lack of EM response from shale elsewhere around the syncline suggested that ground follow up was warranted. A four line grid was cut over the conductor.

9.2 Geology

Located in the nose of the Osmund Syncline the conductor is hosted by tightly folded black pyritic shale of the Cambro-Ordovician Waterloo Creek Group. Outcrop is very poor but dips indicate that volcanics would lie at considerable depth. The carbonaceous nature of the shale suggests this unit is the source of the EM response. Presumably, strong deformation has favoured the formation of graphite in the nose of the fold rather than in its less strained limbs.

Outcrop geology is shown on Plate EB 10/H2.

9.3 Geophysics

A one loop four line EM survey was carried out over the conductor. Loop and line locations are shown on Plate EB 10/H2 whilst survey results are included in Appendix VII.

A strong, clearly lithological response was obtained consistent with a shale source. Cyprus also tested a ground EM response in the EB-5 area by trenching in 1989 and also attributed the source to carbonaceous shale.

9.4 Geochemistry

No samples were submitted for assay as the conductor was attributed to carbonaceous shale.

10.0 **EB-6**

10.1 Introduction

Located just south of the Wanderer River (Plate EB 14), this anomaly was not considered worthy of ground EM follow up. No grid was cut and only reconnaissance mapping and sampling were carried out.

10.2 Geology

The EB-6 conductor is located within a sequence of flow banded quartz feldspar phyric rhyolite lava with rare bedded volcanogenic sandstone. Local but strong silicification associated with minor limonite veining is evident in several areas approximately along the trend of the anomaly. The conductor closely follows a creek. Outcrop geology is shown on Plate EB 10/C3.

10.3 Geochemistry

Rock chip sampling of altered limonitic material indicates that the system is not anomalous in base metals, silver or gold. Sample locations are shown on Plate EB 10/C3 with assay results in Appendix IX.

10.4 Conclusion

It is uncertain whether the EB-6 conductor is related to a surficial conductor in the valley or weakly pyritic alteration. In either case no further follow up is recommended.

11.0 **EB-7**

11.1 Introduction

Located just north of the Wanderer River the EB-7 response has a strike length of 500 m (Plate EB 14). A three line grid was cut over the conductor.

11.2 Geology

The conductor is hosted by a monotonous sequence of quartz phyric rhyolite lavas. Regionally they strike NNE and dip steeply west and occur on the eastern limb of the Osmund Syncline. No significant alteration or mineralisation was observed.

A map of outcrop geology is attached as Plates EB 10/B3 and B4.

11.3 Geophysics

A one loop three line EM survey was conducted over the EB-7 grid. Loop location and lines are shown on Plate EB 8C. Survey results are included in Appendix VII.

Results indicate the conductor clearly is a surficial feature and probably relates to a boggy creek.

11.4 Geochemistry

No samples were submitted for assay as the conductor was attributed to a surficial source.

12.0 EB-8

12.1 Introduction

The EB-8 conductor is located just north of the Wanderer River on the northern edge of EL 40/85 (Plate EB 14). A four line grid was cut over the anomaly.

12.2 Geology

This conductor was the only anomaly not followed up within Cambrian volcanics. It occurs within Cambro-Ordovician siliciclastics; correlates of the Denison Group. However, it was hoped the response may be sourced from a deep conductor hosted by the underlying volcanics. Outcrop geology is shown on Plate EB 10/A3.

Located on the eastern limb of the Osmund Syncline bedding strikes NNE and dips shallowly west. Within the gridded area geology can be summarised as grey laminated shale occupying the western slopes of a large valley between ridges composed of sandstone, lesser siltstone and minor conglomerate.

The conductor appears closely spatially associated with the outcropping shale unit.

12.3 Geophysics

A one loop four line EM survey was undertaken over the EB-8 grid. Loop and line locations are shown on Plate EB 8D. Survey results are included in Appendix VII.

The EM response is clearly related to a near surface source, most probably the grey shale unit.

12.4 Conclusion

As the ground EM survey down-graded the EB-8 conductor no samples were submitted for assay.

13.0 **EB-9**

13.1 Introduction

Located in the north east corner of EL 40/85 the EB-9 conductor is unusual in that it strikes north west cutting across the regional strike (Plate EB 14). A three line grid was cut over the conductor.

13.2 Geology

The EB-9 conductor bisects the grid, separating outcropping rhyolitic lava in the south west from extensive Tertiary gravels of the Macquarie Graben in the north east. Outcropping volcanics are unaltered and unmineralised. The conductor is clearly related to the edge of the Macquarie Graben.

Outcrop geology is shown on Plates EB 10/A4 and B4.

13.3 Geophysics

A one loop three line EM survey was undertaken over the EB-9 grid. Loop location and reading lines are shown on Plate EB 8C. Survey results are included in Appendix VII.

Results indicate the EB-9 response is clearly a surficial feature related to Tertiary gravels on the edge of the Macquarie Graben.

13.4 Geochemistry

No samples were submitted for assay as the conductor was attributed to a surficial source.

14.0 LEAD ISOTOPE RESEARCH PROJECT

1992 was first year of a two year collaborative research project between CODES (Dr B Gemmell), SIROTOPE (Dr G Carr) and Aberfoyle into the nature of Pb isotopes at Elliott Bay. The aim of the project is to better understand the complex signatures of mineralisation in the southern Mount Read Volcanics. This will improve their usefulness in evaluating mineralisation.

To date three phases of mineralisation are evident. Two are Cambrian and one is Devonian. Results available to date are discussed in a preliminary report attached as Appendix X.

15.0 **REFERENCES**

Crawford, A. J., Corbett, K. D. and Everard, J. L., 1992.. Geochemistry of the Cambrian Volcanic - Hosted Massive Sulphide Rich Mount Read Volcanics, Tasmania, and some Tectonic Implications. Econ. Geol., Vol. 87. pp. 597-619.

Torrey, C., Poltock, R. and Suppree, J., 1988. Progress Report, 12 Months to June 1988, Exploration Licence 40/85, Elliott Bay, Tasmania. Cyprus Gold Aust. Co. Unpub. Report.

Wallace, D. B., 1991. Exploration Licence 40/85, Elliott Bay, Tasmania. Report on Exploration to December, 1991. Aberfoyle Resources Ltd. Unpub. Report.

APPENDIX I

PROJECT: EB-1

BSS SIEVE SIZE CODE - MESH NUMBER
A 200 D 80 G 30
B 150 E 60 H 20
C 100 F 40 T = TOTAL

SAMPLE TYPE CODE
☐ OXIDIZED PRODUCTS O
☐ FRESH ROCK R
☐ STREAM SEDIMENTS S
☐ SURFACE TRANSPORTED T
☐ RESIDUAL SOIL F
☐ MINE DUMP M

PRINT: YES ☐ NO ☐ VERIFY: YES ☐ NO ☐

DATE: 20-2-92 SHEET: 1 of 1

EASTINGS	NORTHINGS	SAMPLE NUMBER	DEPTH in CMS	SIZE FRACTION	Sample Type	METAL VALUES PPM	GEOLOGICAL LOG
		565515					Quartz volc. sandstone
		565516					" " "
		517					Fine volc. siltstone?
		518					Quartz volc. sandstone?
		519					Bedded " "
		520					Bedded lithic sandstone
		565528					Quartz phyric R. Lava
		529					Mafic dyke
		530					NO SAMPLE
		531					Chert
		532					Chlorite alt. volc.
		533					Si + Cl + Se alt.
		534					Si + Se alt
		535					Se + Si alt margin
		536					Quartz volc. sandstone?
		565578					Laminated shale

OPERATOR COMPUTER CHECK PLOTTER DATE

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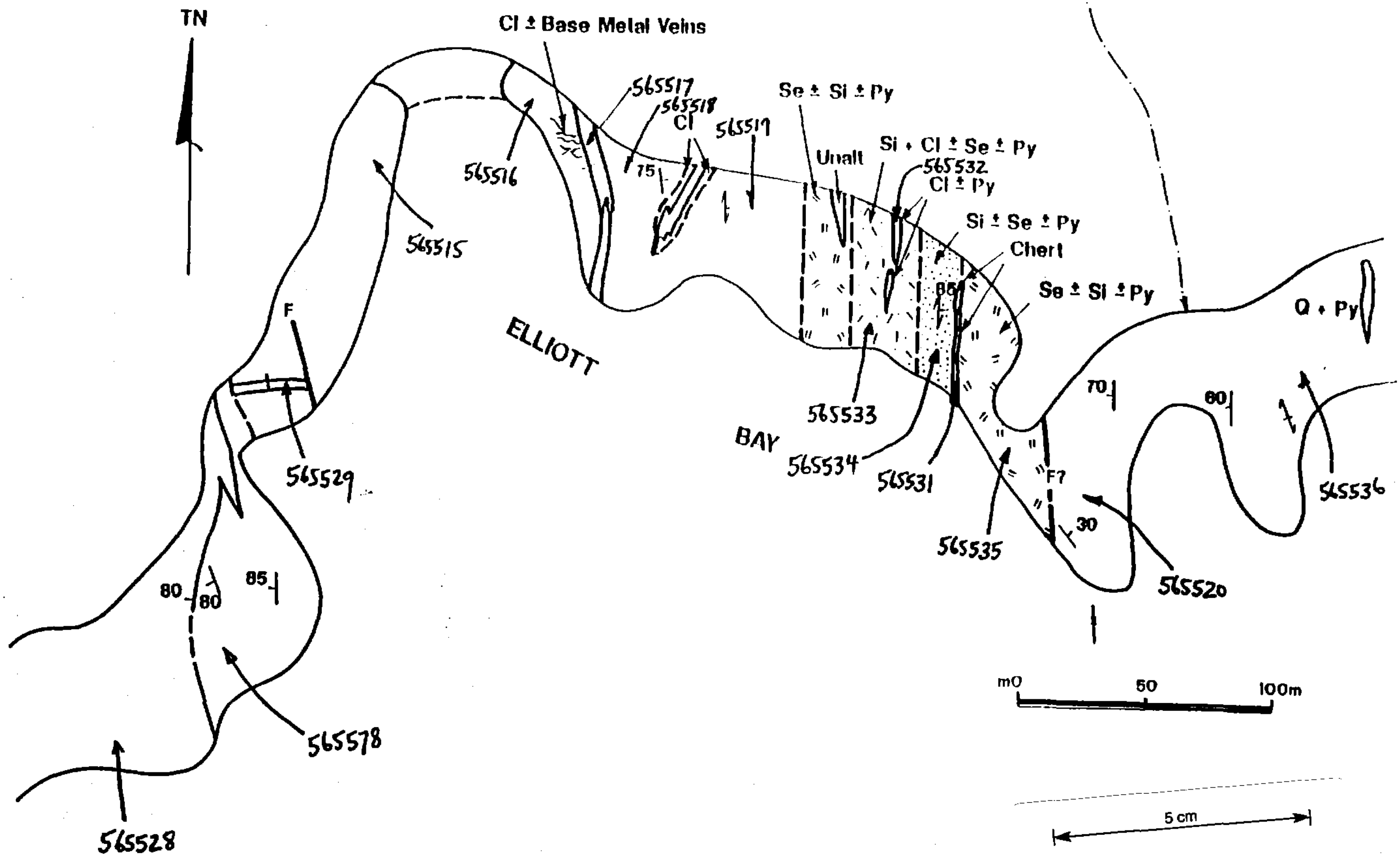
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565517
565518
Cl
565519
Se ± Si ± Py
Unalt
Si + Cl ± Se ± Py
565532
Cl ± Py
Si ± Se ± Py
Chert
Se ± Si ± Py
Q + Py
565516
565515
75
85
70
60
F
F?
30
ELLIOTT
BAY
565529
565533
565534
565531
565535
565520
565536
80
80
85
565578
565528
m0
50
100m
5 cm

044030

SAMPLE NUMBER: 565515

LOCATION: ELLIOTT BAY

SUMMARY:

This is a volcanogenic sandstone derived entirely from a quartz+feldspar-phyric felsic volcanic terrain. It has suffered strong silica±sericite alteration and recrystallization of the formerly vitric ash groundmass.

HAND SPECIMEN:

This is a dark grey-brown silicified plagioclase-phyric felsic crystal-lithic tuff or volcanogenic sediment

THIN SECTION:

In thin section, this sample is seen to be a strongly altered and largely recrystallized volcaniclastic sediment that has suffered quite strong silica±sericite alteration. Poorly defined mainly angular to rather elongate clasts of originally glassy felsic lava are up to 1cm long. These were mainly sparsely quartz+plagioclase-phyric rhyodacitic or rhyolitic lavas with glassy groundmasses that have devitrified and recrystallized as diffuse snowflake-textured quartz-albite intergrowths with sericite speckling. Quartz phenocrysts are usually less than 0.5mm across and occur as subrounded euhedra with strong internal strain shadows. Albitized plagioclase phenocrysts are also rather rounded, and commonly occur in clots of several intergrown subhedral crystals.

Most of the remainder of the framework grains in this rock consists of crystal debris identical in nature to the phenocrystal quartz and feldspar in the felsic lava fragments, although sometimes reaching slightly more than 1mm length. Most quartz grains show strong internal strain lamellae and subgrain recrystallization is common. A notable feature of this sample is the presence of size or eight quite large euhedral zircon crystals.

The heterogeneous groundmass of this sample is strongly recrystallized and probably consisted largely of felsic vitric ash and comminuted quartz and feldspar. It is now composed largely of secondary silica that shows striking local variations in texture and 'grainsize', mainly reflecting proximity to shear planes. Sericite is quite abundant, dispersed throughout the groundmass as broad wavy streams and trains that wrap around lithic fragments and clearly concentrate along the irregular shear planes in this sample. Chlorite is uncommon in this rock, and mainly occurs as yellow-green streaks within sericite. Calcite occurs as dirty brown euhedral crystals and less common amorphous patches making up probably only 1-2 modal% of this rock. A few spots of dark sphalerite occur in small quartz veinlets that transect the sample.

SAMPLE NUMBER: 565516

LOCATION: ELLIOTT BAY

SUMMARY:

This is a strongly altered volcaniclastic sandstone derived dominantly from quartz+feldspar-phyric felsic volcanics; recrystallized flattened pumice fragments are a distinctive feature of this rock. Alteration is dominated by silica-sericite±chlorite.

HAND SPECIMEN:

This is a dark grey-brown silicified plagioclase-phyric felsic crystal-lithic tuff or volcanogenic sediment very similar to 565515.

THIN SECTION:

In many respects, this sample is quite similar to the previous sample (565515), it being a strongly altered and recrystallized felsic volcaniclastic rock. However several significant differences exist, including:

1: this rock contains quite common (perhaps 5 modal%) elongate lithic fragments with a striking banded appearance, defined by very narrow banding of quartz, pale green chlorite and very fine-grained and altered FeTi oxides. The internal texture in these unusual fragments is almost skarn-like, but the presence of quartz phenocrysts in several strongly suggests that they were pumiceous.

2: the sericitization in this rock considerably exceeds that in 565515, and occurs as an almost continuous meshwork pervading the sample, in places defining a weak schistosity.

3: chlorite is significantly more abundant in this rock than in 565515, and occurs commonly as well-formed bladed crystals intergrown with polycrystalline secondary quartz.

4: a number of apatite microphenocrysts are present, in addition to the zircon crystals also noted in 565515.

This sample is texturally almost completely obliterated; however, remaining textural evidence suggests that it was probably a proximal volcaniclastic sandstone derived from quartz+feldspar-phyric felsic volcanics, including in this case, a significant pumice component.

SAMPLE NUMBER: 551517

LOCATION: ELLIOTT BAY

SUMMARY:

This is a volcanogenic sandstone derived from felsic volcanics, and including a significant component of vitric ash.

HAND SPECIMEN:

This is a pale grey felsic volcaniclastic with a recrystallized (?) matrix.

THIN SECTION:

This is a poorly-sorted sandstone dominated by around 10 modal% of coarser, mm-sized framework grains of mainly subhedral volcanic quartz phenocryst fragments, and less abundant very pale fawn albite phenocryst fragments. A few equidimensional blocky lithic fragments composed of rather coarse-grained chlorite, quartz and minor epidote may be strongly altered basaltic or andesitic fragments. The remainder of this rock is composed of more comminuted volcanic quartz and feldspar and abundant altered glassy shard material with well-preserved curved shard shapes in a few places, although recrystallization of the glassy ash has largely obliterated distinctive shard shapes. Most of the matrix has recrystallized as fine-grained quartz and feldspar peppered with pale sericite. Weakly pleochroic pale green chlorite, and strongly pleochroic (brown-pale green) biotite are not uncommon spotted throughout the rock, and chlorite also occurs in meandering veinlets with stylolite-like appearances. The rock is less altered than the previous two samples.

SAMPLE NUMBER: 565518

LOCATION: ELLIOTT BAY

SUMMARY:

This is a very strongly altered volcanogenic sandstone derived from felsic volcanics,and containing distinctive banded flattened pumice lithic fragments. It is almost certainly derived from the same lithological unit as 565116.

HAND SPECIMEN:

This is a grey weakly schistose strongly altered quartz-phyric felsic volcanic or volcaniclastic rock.

THIN SECTION:

This sample is essentially identical to 565516, with the banded flattened and recrystallized pumice fragments that are a distinguishing feature of that sample being similarly abundant in this rock. The rock consists of these distinctive lithic fragments, plus common quartz and albite phenocrysts, immersed in very fine-grained and recrystallized polycrystalline quartz-feldspar mosaics with abundant and pervasive sericitic alteration. In my opinion, it almost certainly is derived from the same lithological unit as 565116.

SAMPLE NUMBER: 565519

LOCATION: ELLIOTT BAY

SUMMARY:

This is a very strongly altered and recrystallized volcaniclastic rock, probably a volcanogenic sandstone, derived from felsic volcanics. It has suffered strong silica alteration.

HAND SPECIMEN:

This is a strongly altered volcaniclastic rock, probably felsic, with fragments to several mm of dark green-black chloritic material

THIN SECTION:

This is a very strongly altered and recrystallized felsic volcaniclastic rock. Textural alteration almost precludes determination as either a sandstone or a lithic crystal tuff, although I prefer the former interpretation. Unlike the preceding samples, albite phenocryst fragments are dominant in this rock, some crystals reaching 1.5mm across, although most are much smaller and subrounded. Quartz phenocryst fragments are rarely larger than 0.5mm and show strong internal strain shadows; their margins are recrystallized and merge in with the recrystallized matrix.

The groundmass of this sample is thoroughly recrystallized, and such that it is impossible to determine if the matrix contained a significant vitric ash component. It is mainly composed of a fine-grained but quite heterogeneous mosaic of secondary quartz and subordinate feldspar with a dispersed speckling by sericite, with the streaky grainsize changes in quartz defining a very diffuse foliation. Occasional coarser-grained patches of polygonal quartz contain common quite coarse-grained green chlorite, minor hematite(?) and sometimes radiating messy brown epidote.

SAMPLE NUMBER: 565520

LOCATION: ELLIOTT BAY

SUMMARY:

This is a volcanogenic sandstone, composed of coarser- and finer-grained bands, derived entirely from quartz+feldspar -phyric, glassy felsic volcanics, with a significant vitric ash component in the matrix. It has suffered recrystallization and sericitization, but is less altered than most of the preceding samples.

HAND SPECIMEN:

This is a brown volcanogenic sandstone with a distinctly finer-grained siltstone band at the top (?) of the sample.

THIN SECTION:

This is very clearly a volcanogenic sandstone derived entirely from felsic, commonly glassy volcanics. In the coarser-grained sandstone, detrital grains make up about 60 modal% of the rock and are dominated by volcanic quartz crystal fragments mainly 0.5-1.5mm long, and showing significant internal strain shadows. Quite distinctive but less abundant are generally smaller fragments, often with curved perlitic cracks, composed of polycrystalline quartz with intimately sutured boundaries between quartz subgrains. These fragments were clearly obsidian, or fragments spalled off felsic flow margins. Occasional small, altered FeTi oxide grains are present throughout the rock, but make up considerably less than one modal% of this sample. The matrix of the coarser-grained sandstone is dominated by very fine-grained sericite overprinting a fine-grained mosaic of intergrown quartz and minor feldspar.

The finer-grained part of this thin section is a fine-grained poorly-sorted volcanogenic sandstone, similar in every way to the more coarse-grained part of this sample. However, silica-altered glassy shards are still discernible in the matrix of this fine-sandstone, despite extensive sericite alteration.

SAMPLE NUMBER: 565528

LOCATION: ELLIOTT BAY

SUMMARY:

This is a well-preserved formerly glassy, sparsely quartz+plagioclase-phyric rhyolitic lava.

HAND SPECIMEN:

This is a dark grey silicified felsic lava or volcaniclastic rock.

THIN SECTION:

This is a strongly recrystallized formerly glassy felsic lava, with around 5 modal% of quartz phenocrysts and somewhat less abundant albitized plagioclase phenocrysts. Most phenocrysts are less than 1mm long and are notably rounded and resorbed . Quartz phenocrysts have strain shadows, and feldspar phenocrysts are slightly speckled by sericite. One or two small euhedra now composed of epidote may have been former augite microphenocrysts.

Unlike all the samples described above, this sample has a relatively even-textured and homogeneous groundmass with an excellent fluidal texture that wraps around phenocrysts and is most unlikely to have been volcaniclastic in origin. The groundmass is composed of a very fine-grained mosaic of quartz and subordinate feldspar, and almost certainly is derived from devitrification and recrystallization of glass.

A veinlet of quartz and epidote is present and shows strong boudinage and bulging. This sample is a well-preserved rhyolitic lava, with significantly less structural and compositional alteration than the foregoing samples described in this report.

SAMPLE NUMBER: 565529

LOCATION: ELLIOTT BAY

SUMMARY:
This is a quite strongly altered metabasaltic dyke rock of uncertain affinities.

HAND SPECIMEN:
This is a mottled dark grey-black very fine-grained metabasic lava or dyke rock(?).

THIN SECTION:
This is a strongly altered aphyric metabasaltic dyke rock. It is composed of a relatively fine-grained ophitic to subophitic intergrowth of altered plagioclase and augite, with interstitial altered FeTi oxides. The texture is almost obliterated in many parts of the rock. The plagioclase laths are totally altered to a rather high-birefringent sericite, and the augite altered to epidote and olive-green chlorite. A few ovoid regions up to a few mm across, with very diffuse margins, and composed of concentric epidote, chlorite and calcite cores; these may be sparse former vesicles.

The extensive alteration of this sample, and the non-diagnostic texture make it impossible to determine the affinities of this rock, which is almost certainly a metabasaltic dyke rock. The style of alteration is much more typical of the Cambrian sequences in Tasmania than of the Jurassic tholeiites, and it is not petrographically like Mesozoic lamprophyric rocks that I have seen. A chemical analysis of this rock would be most informative.

SAMPLE NUMBER: 565531

LOCATION: ELLIOTT BAY

SUMMARY:

This is a silica-sericite ± minor sphalerite rock dominated by fine-grained polygonal secondary quartz. It is obviously from a zone of intense silicification and hydrothermal alteration.

HAND SPECIMEN:

This is a light grey very fine-grained and very strongly silicified rock .

THIN SECTION:

All traces of the original texture of this sample have been obliterated by intense and pervasive silicification. The rock consists essentially of a very fine-grained mosaic of polycrystalline quartz with mainly a very even-grained texture of interlocking polygonal quartz grains. About 10 modal% of this quartz mosaic is made up of very small stubby euhedral sericite crystals, and tiny opaque (hematite?) grains. Veinlets of coarser-grained polygonal quartz transect the sample and in several instances contain intergrown foxy red amorphous sphalerite.

This sample is clearly from a zone of intense hydrothermal alteration and silica soaking. There is no way of knowing what the original lithology was, if, in fact, this sample has replaced a pre-existing rock in the alteration zone.

SAMPLE NUMBER: 565532

LOCATION: ELLIOTT BAY

SUMMARY:

This is a weakly foliated and strongly altered formerly glassy quartz-phyric rhyolitic lava. Silica-sulphide alteration is pervasive.

HAND SPECIMEN:

This is a dark grey-green very strongly altered felsic or intermediate volcaniclastic(?) rock with significant disseminated sulphides

THIN SECTION:

Thin section examination shows that this sample is very strongly altered and texturally reconstituted. However, enough of the original texture remains to suggest that it was a quartz-phyric rhyolitic lava, probably highly glassy. Notably rounded and reacted quartz phenocrysts, to about 2mm long make up about 5 modal% of this rock. They are generally strained, broken and some show near-total subgrain recrystallization. Feldspar phenocrysts are absent.

The groundmass of this rock is weakly foliated and totally recrystallized, and consists of fine-grained and generally fairly even-textured polygonal quartz pervaded by diffuse but subparallel veinlets of dark green chlorite. Chlorite is often altered to a dark almost isotropic material. Sericite also occurs as several mm wide bands intergrown with chlorite and patchy sulphides. Almost colourless, amorphous sphalerite, and trains of pyrite(?) are present mainly orientated along the weak chlorite-defined foliation.

The relatively sparse quartz phenocrysts and lack of feldspar phenocrysts are unlike typical Mount Read volcaniclastic rocks, whether primary pyroclastic crystal-lithic tuffs, or transported and redeposited volcanogenic sediments such as many of those described above. I suggest that this rock was a quartz-phyric rhyolitic lava with a very glassy groundmass, similar to sample 565528. Strong silica-sulphide hydrothermal alteration has affected this sample, recrystallizing devitrified glass and producing quartz-chlorite±sulphides.

SAMPLE NUMBER: 565533

LOCATION: ELLIOTT BAY

SUMMARY:

This is a formerly glassy quartz-phyric rhyolitic lava that was autobrecciated before being strongly silica-altered.

HAND SPECIMEN:

This is a grey-green strongly silicified felsic volcanic or volcaniclastic rock with a texture in which diffuse darker green 'cores' of less altered rock are surrounded by strongly silicified, lighter-coloured material.

THIN SECTION:

This is a very strongly altered rock in which only ghost outlines and traces of the primary texture are preserved. Quartz is the only phenocryst phase, making up a few modal% of the rock and occurring as angular to subrounded strongly strained grains that in some cases show near-total subgrain recrystallization. Diffuse margins on former ovoid fragments or clasts initially suggest that this rock was a volcaniclastic. However, most of the fragments appear to have been remarkably similar petrographically, suggesting to me that this rock was probably a rhyolitic lava that was autobrecciated and subsequently silica altered (ie. the texture is an example of a false brecciation texture preserved but camouflaged by silica alteration. Hydrothermal fluids responsible for the silicification probably migrated along autobrecciation cracks, and soaked inward, producing the present texture.

The formerly glassy groundmass is mainly an even- and quite fine-grained intergrowth of polygonal sugary secondary quartz variably riddled with sericite, which in some places forms almost monomineralic bands. A very small amount of chlorite associated with areas of slightly coarser-grained secondary quartz is also present.

SAMPLE NUMBER: 565534

LOCATION: ELLIOTT BAY

SUMMARY:

This is a very strongly altered and recrystallized rock that was probably a volcanogenic sediment derived from quartz-phyric felsic volcanics; it has suffered strong silica-sericite±pyrite alteration and recrystallization.

HAND SPECIMEN:

This is a mid-grey strongly silica-altered felsic volcanic or volcaniclastic rock.

THIN SECTION:

This is in many respects very similar to the previous sample, in that it contains ghost 'clasts' or fragments' to about 1cm long that are, in fact, very similar petrographically to one another. Unlike the previous sample, however, this rock contains far more abundant quartz crystal debris, ranging from small angular crystal fragments to almost entire phenocrysts often somewhat rounded and resorbed. The appearance and abundance of this quartz crystal debris is more reminiscent of a crystal tuff or volcanogenic sediment than a felsic lava.

The groundmass of this rock varies mainly in the ratio of fine-grained sericite to fine-grained sugary secondary quartz. It is so extensively recrystallized that it has no trace left of the primary texture; however, I suggest that the groundmass of this sample was originally quite glassy. Small pyrite cubes are disseminated through the rock, but make up much less than 1 modal% of this sample. A few spots of colourless sphalerite are also present.

SAMPLE NUMBER: 565535

LOCATION: ELLIOTT BAY

SUMMARY:

This is a strongly silica+sericite±sphalerite-altered volcanogenic sediment derived from quartz+feldspar-phyric felsic volcanics.

HAND SPECIMEN:

This is a rather weathered dull grey felsic volcanic with patches of Fe-stained clay and a possible fragmental texture.

THIN SECTION:

This rock is strongly altered and recrystallized, making definitive assignment difficult. However, texturally it seems that it was probably a volcanogenic sediment derived from felsic volcanics . Framework grains include albitized plagioclase phenocrysts (3-5 modal%) and quartz phenocryst, most of which are broken, strained and partially recrystallized. Some of the detrital feldspar has an unusual cross-hatched appearance making it difficult to decide whether it is K-spar, or more likely, strained albite.

The matrix of this sample is texturally heterogeneous, perhaps partially reflecting original groundmass texture variations in clasts in the rock, and partially reflecting variably intense silicification of the original matrix of the sample. Most of the matrix is a mosaic of sugary secondary quartz with disseminated interstitial sericite. In places, the sericite aggregates, and forms wide bands that are partly weathered to dull almost isotropic clayey material. Diffuse and amorphous patches of colourless sphalerite are quite common in this rock

SAMPLE NUMBER: 565536

LOCATION: ELLIOTT BAY

SUMMARY:
This is probably a volcanogenic fine sandstone derived entirely from quartz+feldspar-phyric felsic volcanics. Although showing some silica-sericite alteration, it is less altered than most other samples in this set.

HAND SPECIMEN:
This is a pale grey quartz+feldspar-phyric felsic volcanic rock or crystal lithic tuff, lacking a well-defined fragmental texture.

THIN SECTION:

This rock consists of about 10 modal% of mainly broken crystal debris, dominated by quartz but with subordinate albite, set in an altered matrix in which clear evidence is preserved for the former presence of glassy ash. All the crystal debris is less than about 1mm long, and the quartz grains are strained and partially recrystallized, especially along fractures and some crystal margins. Feldspar crystals are weakly sericite-speckled albite.

The matrix of this sample has a rather fluidal appearance defined by stringers and elongate patches of sericite pervading the matrix, and rather elongate secondary quartz in places possibly replacing glassy shard material. The matrix texture is difficult to interpret as either a devitrified and recrystallized fluidal and welded felsic glass, or an altered glassy ash. The implications of either are little different.

This is either a volcanogenic sandstone or a crystal vitric tuff. It is hard to choose between the two possibilities due to alteration and recrystallization of the matrix. My feeling is that this rock formed from rapid reworking and redeposition of very proximal felsic pyroclastic ejecta.

SAMPLE NUMBER: 565578

LOCATION: ELLIOTT BAY

SUMMARY:

This is a finely but weakly foliated siltstone possibly derived from the recrystallization of a glassy ash-rich sediment.

HAND SPECIMEN:

This is a banded and weakly foliated very fine-grained grey-green metasediment.

THIN SECTION:

This is a weakly foliated siltstone with the foliation defined by a strong sericite recrystallization fabric. Detrital minerals identifiable are essentially all volcanic quartz grains <0.05mm across. Much of the quartz in this rock, however, appears to have grown along the foliation during recrystallization. Small spots of pale green chlorite are present but not common, and discontinuous trains of tiny altered opaque minerals occur along many foliation planes.

It is difficult to be sure, but this sample may have been a felsic glassy ash that has recrystallized to sericite-quartz, the same alteration assemblage that dominates these exceptionally droll Elliott Bay rocks.

APPENDIX II

044047

ANALABS

Phone (004) 316837 | 14 Thirkell St. COOEE TAS 7320 | Fax (004) 318890

ANALYTICAL REPORT No. 100560.60.08578

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

INVOICE TO:
Aberfoyle Resources Limited
Exploration Division
P.O. Box 952
BURNIE TAS 7320

ORDER No.	PROJECT
12124	E. Bay

DATE RECEIVED	RESULTS REQUIRED
05/02/92	ASAP

No. OF PAGES OF RESULTS	DATE REPORTED	No. OF COPIES	TOTAL No. OF SAMPLES
5	13/02/92	1	101

SAMPLE NUMBERS	SAMPLE DESCRIPTION	ELEMENT/METHOD
565034/50,565151/234	pu Prep : GP006,GP019	Cu,Pb,Zn/GA101

RESULTS TO:
Mr R de Bomford
Aberfoyle Resources Limited
P.O. Box 952
BURNIE TAS 7320

RESULTS TO:

REMARKS

EB-1

SOILS

044048

ANALABS

A Division of Inchcape Inspection and Testing Services Australia Pty. Ltd.
A.C.N. 004 591 664

ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	100560.60.08578	13/02/92	12124	1 OF 5

TUBE No.	SAMPLE No.	Cu	Pb	Zn					
1	565034	4	11	16					
2	565035	<4	8	19					
3	565036	<4	7	21					
4	565037	<4	7	20					
5	565038	<4	19	52					
6	565039	<4	17	97					
7	565040	<4	7	40					
8	565041	<4	13	33					
9	565042	<4	15	40	PART EB7 SUBMITTED IN ERROR				
10	565043	5	6	40					
11	565044	11	7	38					
12	565045	4	20	51					
13	565046	<4	18	60					
14	565047	5	12	76					
15	565048	8	37	55					
16	565049	4	19	36					
17	565050	4	13	37					
18	565151	4	22	20	EB1				
19	565152	4	16	13					
20	565153	4	22	39					
21	565154	<4	6	47					
22	565155	4	7	15					
23	565156	5	15	7					
24	565157	4	<5	9					
25	565158	<4	8	15					

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

044049

ANALABS

A Division of Inchcape Inspection and Testing Services Australia Pty. Ltd.
A.C.N. 004 591 664

ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	100560.60.08578	13/02/92	12124	2 OF 5

TUBE No.	SAMPLE No.	Cu	Pb	Zn					
1	565159	4	50	11					
2	565160	4	21	18					
3	565161	<4	61	20					
4	565162	8	20	26					
5	565163	4	<5	9					
6	565164	5	11	10					
7	565165	<4	18	20					
8	565166	4	<5	<4					
9	565167	<4	12	10					
10	565168	4	28	20					
11	565169	4	19	17					
12	565170	<4	7	11					
13	565171	<4	8	12					
14	565172	5	46	26					
15	565173	4	12	48					
16	565174	4	<5	26					
17	565175	<4	21	43					
18	565176	6	17	24					
19	565177	4	20	11					
20	565178	4	24	32					
21	565179	5	19	31					
22	565180	5	15	20					
23	565181	6	5	7					
24	565182	5	<5	13					
25	565183	<4	12	16					

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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ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	100560.60.08578	13/02/92	12124	3 OF 5

TUBE No.	SAMPLE No.	Cu	Pb	Zn
1	565184	7	9	7
2	565185	5	21	44
3	565186	4	17	13
4	565187	<4	8	9
5	565188	6	37	21
6	565189	4	<5	4
7	565190	4	39	19
8	565191	5	<5	9
9	565192	4	29	39
10	565193	4	6	9
11	565194	6	15	83
12	565195	4	7	21
13	565196	4	23	70
14	565197	<4	16	75
15	565198	5	22	63
16	565199	4	28	92
17	565200	<4	5	17
18	565201	4	16	37
19	565202	5	25	17
20	565203	4	9	11
21	565204	5	76	13
22	565205	6	111	20
23	565206	6	186	16
24	565207	6	119	36
25	565208	6	102	142

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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044051

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A.C.N. 004 591 664

ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	100560.60.08578	13/02/92	12124	4 OF 5

TUBE No.	SAMPLE No.	Cu	Pb	Zn
1	565209	77	1290	1750
2	565210	5	35	58
3	565211	<4	17	29
4	565212	<4	5	13
5	565213	<4	6	14
6	565214	<4	23	16
7	565215	4	8	20
8	565216	5	31	88
9	565217	4	9	41
10	565218	5	20	78
11	565219	<4	26	57
12	565220	4	34	123
13	565221	5	35	80
14	565222	4	<5	11
15	565223	6	13	24
16	565224	<4	7	15
17	565225	4	18	11
18	565226	5	20	35
19	565227	4	<5	<4
20	565228	4	<5	<4
21	565229	<4	53	16
22	565230	4	<5	<4
23	565231	<4	6	<4
24	565232	<4	15	<4
25	565233	4	32	9

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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A.C.N. 004 591 664

ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	100560.60.08578	13/02/92	12124	5 OF 5

TUBE No.	SAMPLE No.	Cu	Pb	Zn					
1	565234	4	5	6					
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									
21									
22									
23	DETECTION	4	5	4					
24	UNITS	ppm	ppm	ppm					
25	METHOD	GA101	GA101	GA101					

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

APPENDIX III

Aberfoyle Exploration GEOCHEMICAL SAMPLE LEDGER Petrology whole rock.

PROJECT: EB-1

DATE: 9-3-92

SHEET: 1 of 1

EASTINGS	NORTHINGS	SAMPLE NUMBER	GEOLOGICAL LOG
382780	5241414	565512	Vein Quartz
382553	5241171	565515	Volc. Ss.
382615	5241183	516	
382637	5241162	517	
382653	5241157	518	
382688	5241154	519	
382828	5241046	520	bedded Volc S.S.
382213	5240783	528	Q. Phy. R-C
382500	5241071	529	Basic Dyke
382907	5241075	536	Volc. Ss
382482	5240980	578	Laminated siltstone

044054

044053

ANALABS

Phone (004) 316837 | 14 Thirkell St. CODEE TAS 7320 | Fax (004) 318890

ANALYTICAL REPORT No. 100560.60.08631

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INVOICE TO:
Aberfoyle Resources Limited
Exploration Division
P.O. Box 952
BURNIE TAS 7320

ORDER No.	QUOTE
12140	

DATE RECEIVED	RESULTS REQUIRED
10/03/92	ASAP

No. OF PAGES OF RESULTS	DATE REPORTED	No. OF COPIES	TOTAL No. OF SAMPLES
3	20/03/92	1	11

SAMPLE NUMBERS	SAMPLE DESCRIPTION	ELEMENT/METHOD
<565,515/520,528/529,536,578	RO Prep : GP009,GP018	Cu,Pb,Zn,Ag/GA101 Au,Au(R)/GG309 Ba,As,Cr,Zr,Ti,Y,Ti:Zr/GX401 Whole Rock Analysis/OX408

RESULTS TO:
Mr S Richardson
Aberfoyle Resources Limited
P.O. Box 952
BURNIE TAS 7320

REMARKS

EB-1
Petrology
Whole Rock

AUTHORISED BY

044056

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ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	100560.60.08631	20/03/92	12140	1 OF 3

TUBE No.	SAMPLE No.	Cu	Pb	Zn	Ag	Au	Au(R)	Ba	As	Cr
1	565512	5	<5	4	<2	<0.008	-	-	-	-
2	565515	4	114	109	<2	<0.008	-	1250	<2	<5
3	565516	4	58	131	<2	<0.008	-	980	6	35
4	565517	5	72	110	<2	<0.008	-	590	<2	<5
5	565518	4	27	100	<2	<0.008	-	1150	<2	35
6	565519	40	2400	637	<2	<0.008	<0.008	440	5	6
7	565520	10	5	31	<2	<0.008	-	1050	2	7
8	565528	5	23	120	<2	<0.008	-	1300	<2	14
9	565529	9	<5	277	<2	<0.008	-	940	20	700
10	565536	8	19	25	<2	<0.008	-	1350	4	<5
11	565578	9	9	29	<2	<0.008	-	700	5	25
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23	DETECTION	4	5	4	2	0.008	0.008	10	2	5
24	UNITS	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
25	METHOD	GA101	GA101	GA101	GA101	GG309	GG309	GX401	GX401	GX401

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

044057

ANALABS

A Division of Inchcape Inspection and Testing Services Australia Pty. Ltd.

A.C.N. [illegible]

ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	100560.60.08631	20/03/92	12140	2 OF 3

TUBE No.	SAMPLE No.	Zr	Ti	TiZr	Y	Al2O3	SiO2	TiO2	Fe2O3	MnO
1	565515	300	2380	7.9	40	10.81	77.0	0.40	1.86	0.19
2	565516	250	3000	12.0	40	12.97	73.1	0.50	3.70	0.19
3	565517	210	1740	8.3	45	12.30	76.1	0.29	2.46	0.11
4	565518	310	3460	11.2	55	16.27	67.0	0.58	4.26	0.23
5	565519	190	1400	7.4	30	10.92	75.6	0.23	5.29	0.21
6	565520	220	1590	7.2	35	12.40	76.3	0.26	2.54	0.07
7	565528	290	2510	8.6	45	12.96	73.5	0.42	2.67	0.15
8	565529	520	8790	16.9	45	19.80	40.6	1.47	12.85	0.49
9	565536	240	1710	7.1	50	14.46	73.2	0.28	2.21	0.07
10	565578	230	2100	9.1	40	13.75	74.5	0.35	2.01	0.04
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23	DETECTION	5	50	0.1	5	0.05	0.1	0.01	0.01	0.01
24	UNITS	ppm	ppm	%	ppm	%	%	%	%	%
25	METHOD	GX401	GX401	GX401	GX401	OX408	OX408	OX408	OX408	OX408

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

044058

ANALABS

A Division of Inchcape Inspection and Testing Services Australia Pty. Ltd.

ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	100560.60.08631	20/03/92	12140	3 OF 3

TUBE No.	SAMPLE No.	CaO	K2O	MgO	P2O5	Na2O	LOI	S	TOTAL
1	565515	1.36	4.28	0.49	0.039	1.46	2.12	0.03	100.00
2	565516	0.58	3.27	1.55	0.071	1.81	1.88	0.02	99.65
3	565517	0.37	2.41	1.06	0.043	3.65	1.06	0.02	99.87
4	565518	0.71	4.58	1.93	0.087	1.92	2.61	0.01	100.15
5	565519	0.43	1.80	1.00	0.026	2.51	1.68	0.05	99.73
6	565520	0.09	3.91	1.08	0.033	2.10	1.47	0.03	100.29
7	565528	0.73	5.06	0.95	0.067	2.74	0.99	0.01	100.27
8	565529	7.61	6.80	6.45	0.702	0.42	2.96	0.01	100.15
9	565536	0.08	4.37	0.91	0.016	2.44	2.11	0.01	100.16
10	565578	0.17	4.87	1.13	0.059	1.15	2.19	0.03	100.25
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									
21									
22									
23	DETECTION	0.01	0.01	0.01	0.005	0.05	0.01	0.01	0.01
24	UNITS	%	%	%	%	%	%	%	%
25	METHOD	OX408	OX408	OX408	OX408	OX408	OX408	OX408	OX408

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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APPENDIX IV

Aberfoyle Exploration

GEOCHEMICAL SAMPLE LEDGER

PROJECT: ELLIOTT BAY

BSS SIEVE SIZE CODE - MESH NUMBER: A 200, B 150, C 100, D 80, E 60, F 40, G 30, H 20, T = TOTAL

SAMPLE TYPE CODE: OXIDIZED PRODUCTS O; FRESH ROCK R (ticked); STREAM SEDIMENTS S; WEATHERED BEDROCK W; SURFACE TRANSPORTED T; RESIDUAL SOIL E; MINE DUMP M

CARD PUNCH PRINT: YES / NO — VERIFY: YES / NO

DATE: 12-2-92 — SHEET: 1

EASTINGS	NORTHINGS	SAMPLE NUMBER	DEPTH in CMS	SIZE FRACTION	Sample Type	METAL VALUES PPM	GEOLOGICAL LOG
0 m	7.5 m	565542					Se alt
7.5	16.4	No SAMPLE					
16.4	26.0	565543					Si+Cl alt
26.0	35.5	565544					Si+Cl alt
35.5	38.0	565545					Cl+Py alt
38.0	48.0	565546					end of Si+Cl alt
48.0	58.0	565547					Si+Se alt
58.0	68.0	565548					Si+Se alt
68.0	75.0	565549					Si+Se alt
75.0	≈ 77.0	565550					CHERT
77.0	87.0	565551					Se ± Py alt
87.0	97.0	565552					Se ± Py alt
97.0	107.0	565553					Se ± Py alt
107.0	113.0	565554					Se ± Py alt.

0 = western ledge of altn zone

87.0m = corner of beach

0 = 1150N, 2720E

SAMPLED TOWARD EAST PARALLEL TO BEACH

040060

044061

ANALABS

Phone (004) 316837 | 14 Thirkell St. COOEE TAS 7320 | Fax (004) 318890

ANALYTICAL REPORT No. 100560.60.08589

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

INVOICE TO:
Aberfoyle Resources Limited
Exploration Division
P.O. Box 952
BURNIE TAS 7320

ORDER No.	PROJECT
12125	E.BAY

DATE RECEIVED	RESULTS REQUIRED
12/02/92	ASAP

No. OF PAGES OF RESULTS	DATE REPORTED	No. OF COPIES	TOTAL No. OF SAMPLES
5	11/03/92	1	13

SAMPLE NUMBERS	SAMPLE DESCRIPTION	ELEMENT/METHOD
565542/554	RC Prep : GP006,GP009,GP019	Cu,Pb,Zn,Ag/GA101,Zn/GA104
565542/554	RC Prep :	Au,Au(R),Au(S)/GG309
565542/554	RC Prep :	Ba,As,Cr,Zr,Ti,TiZr/GX401
565542/554	RC Prep :	Whole Rock Analysis/OX408
565542/554	RC Prep :	Co,Ni,Ga,Mo,Cd,In,Sn,Sb,W,Tl,Bi, /GI222,Se,Te/GA117,Hg/GI122

RESULTS TO
Mr R de Bomford
Aberfoyle Resources Limited
P.O. Box 952
BURNIE TAS 7320

RESULTS TO

RESULTS TO

REMARKS

EB1
CONTINUOUS
ROCK CHIPS
ACROSS
ALT'N
ZONE

AUTHORISED OFFICER

ANALABS

A Division of [illegible] Testing Services Australia Pty Ltd

ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	100560.60.08589	11/03/92	12125	1 OF 5

TUBE No.	SAMPLE No.	Cu	Pb	Zn	Zn	Ag	Au	Au(R)	Au(S)	Ba
1	565542	6	152	710	-	<2	<0.008	-	-	1200
2	565543	9	432	423	-	<2	<0.008	-	-	1100
3	565544	27	72	154	-	<2	<0.008	-	-	500
4	565545	323	90	464	-	<2	<0.008	-	-	200
5	565546	17	153	280	-	<2	<0.008	-	-	610
6	565547	13	88	820	-	<2	<0.008	-	-	710
7	565548	6	166	807	-	<2	<0.008	-	-	900
8	565549	28	385	606	-	<2	<0.008	-	-	1100
9	565550	86	3390	-	1.10	3	0.018	-	-	800
10	565551	37	814	1510	-	<2	0.008	-	-	1250
11	565552	8	437	702	-	<2	<0.008	-	<0.008	1050
12	565553	<4	162	776	-	<2	<0.008	<0.008	-	830
13	565554	7	147	204	-	<2	<0.008	-	-	1350
14										
15										
16										
17										
18										
19										
20										
21										
22										
23	DETECTION	4	5	4	0.01	2	0.008	0.008	0.008	10
24	UNITS	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm
25	METHOD	GA101	GA101	GA101	GA104	GA101	GG309	GG309	GG309	GX401

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

044063

ANALABS

ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	100560.60.08589	11/03/92	12125	2 OF 5

TUBE No.	SAMPLE No.	As	Cr	Zr	Ti	Ti/Zr	SiO2	TiO2	Al2O3	Fe2O3
1	565542	2	<5	260	1870	7.2	75.9	0.31	13.19	1.93
2	565543	4	<5	150	1140	7.6	79.5	0.19	10.56	3.09
3	565544	8	8	110	960	8.7	79.6	0.16	8.89	5.67
4	565545	40	13	120	920	7.7	69.1	0.15	8.12	14.84
5	565546	12	5	140	980	7.0	79.1	0.16	9.35	5.07
6	565547	12	<5	140	1100	7.9	79.8	0.18	10.06	3.32
7	565548	9	<5	160	1220	7.6	81.0	0.20	10.56	2.04
8	565549	20	<5	140	1180	8.4	79.9	0.20	10.14	3.1[illegible]
9	565550	30	25	100	1090	10.9	82.4	0.18	7.32	2.2[illegible]
10	565551	2	16	180	1400	7.8	77.5	0.23	12.20	2.21
11	565552	2	<5	170	1380	8.1	78.2	0.23	12.11	1.59
12	565553	25	<5	150	1170	7.8	80.5	0.20	11.05	1.66
13	565554	20	7	160	1310	8.2	79.2	0.22	11.39	1.6[illegible]
14										
15										
16										
17										
18										
19										
20										
21										
22										
23	DETECTION	2	5	5	50	0.1	0.1	0.01	0.05	0.01
24	UNITS	ppm	ppm	ppm	ppm	%	%	%	%	%
25	METHOD	GX401	GX401	GX401	GX401	GX401	OX408	OX408	OX408	OX408

Results in [illegible]
< = element present but concentration too low to measure
X = element concentration is below detection limit
— = element not determined

ANALABS

ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	100560.60.08589	11/03/92	12125	3 OF 5

TUBE No.	SAMPLE No.	MnO	MgO	CaO	Na2O	K2O	P2O5	S	LOI	TOTAL
1	565542	0.18	0.71	0.27	0.46	4.60	0.020	0.05	2.39	100.03
2	565543	0.15	0.68	0.03	<0.05	3.48	0.014	0.09	1.85	99.66
3	565544	0.25	0.87	0.02	<0.05	2.42	0.012	0.45	2.06	100.40
4	565545	0.66	1.66	0.14	0.09	0.92	0.013	1.89	3.93	101.49
5	565546	0.23	0.82	0.03	<0.05	2.76	0.013	0.77	2.27	100.66
6	565547	0.09	0.69	0.01	0.08	3.27	0.019	0.29	1.97	99.79
7	565548	0.04	0.55	<0.01	0.07	3.82	0.014	0.26	1.82	100.37
8	565549	0.05	0.52	0.02	<0.05	3.69	0.017	0.85	2.21	100.80
9	565550	0.04	0.53	0.03	0.40	2.68	0.015	1.63	2.18	99.63
10	565551	0.06	0.70	0.02	0.11	4.19	0.018	0.66	2.56	100.52
11	565552	0.07	0.64	0.02	0.08	4.18	0.022	0.29	2.32	99.75
12	565553	0.06	0.46	0.02	0.08	3.80	0.018	0.13	1.99	99.97
13	565554	0.05	0.47	0.01	0.07	4.28	0.020	0.22	1.86	99.46
14										
15										
16										
17										
18										
19										
20										
21										
22										
23	DETECTION	0.01	0.01	0.01	0.05	0.01	0.005	0.01	0.01	0.01
24	UNITS	%	%	%	%	%	%	%	%	%
25	METHOD	OX408	OX408	OX408	OX408	OX408	OX408	OX408	OX408	OX408

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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ANALABS

ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	100560.60.08589	11/03/92	12125	4 OF 5

TUBE No.	SAMPLE No.	Co	Ni	Ga	Mo	Cd	In	Sn	Sb	W
1	565542	1.54	5.45	15.8	1.65	0.16	0.13	3.37	1.03	3.19
2	565543	1.63	4.70	13.7	0.37	0.53	0.13	2.61	0.95	5.31
3	565544	1.93	3.76	11.9	1.24	<0.10	0.11	2.63	0.93	4.22
4	565545	10.50	4.40	11.8	2.91	0.24	0.58	1.53	1.08	3.64
5	565546	2.79	4.13	12.0	0.62	0.33	0.18	2.89	0.56	3.66
6	565547	1.66	4.41	12.4	1.36	0.63	0.17	2.76	0.51	4.64
7	565548	1.56	3.79	12.5	0.57	1.67	0.25	3.03	0.68	3.74
8	565549	1.36	6.67	13.1	1.54	1.00	0.26	2.86	1.11	5.34
9	565550	2.80	7.04	9.5	4.78	27.50	0.16	2.49	3.39	3.24
10	565551	1.56	4.35	15.9	2.38	4.42	0.11	5.15	2.13	6.97
11	565552	1.65	4.73	15.3	1.03	1.00	0.09	3.17	1.25	6.31
12	565553	0.86	4.66	13.5	0.88	0.38	0.08	2.88	1.04	6.32
13	565554	1.10	4.27	14.1	0.49	0.17	0.07	2.77	0.89	3.82
14										
15										
16										
17										
18										
19										
20										
21										
22										
23	DETECTION	0.20	2.00	0.5	0.10	0.10	0.05	0.50	0.05	0.10
24	UNITS	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
25	METHOD	GI222	GI222	GI222	GI222	GI222	GI222	GI222	GI222	GI222

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

044066

ANALABS

A Division of Inchcape Inspection and Testing Services Australia Pty Ltd

ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER NO.	PAGE
	100560.60.08589	12/03/92	12125	5 OF 5

TUBE No.	SAMPLE No.	Tl	Bi	Se	Te	Hg				
1	565542	2.45	0.72	0.3	0.2	0.025				
2	565543	1.85	0.62	<0.1	<0.1	0.015				
3	565544	1.24	0.92	<0.1	<0.1	<0.005				
4	565545	0.51	8.14	<0.1	<0.1	0.025				
5	565546	1.32	1.52	<0.1	0.1	0.015				
6	565547	1.42	0.55	<0.1	<0.1	0.025				
7	565548	1.86	0.99	0.1	<0.1	0.050				
8	565549	1.69	0.86	<0.1	0.2	0.050				
9	565550	0.54	0.54	0.1	<0.1	0.640				
10	565551	3.59	0.47	<0.1	<0.1	0.180				
11	565552	2.55	0.33	0.9	<0.1	0.025				
12	565553	1.74	0.30	4.7	<0.1	0.025				
13	565554	2.01	0.47	<0.1	<0.1	<0.005				
14										
15										
16										
17										
18										
19										
20										
21										
22										
23	DETECTION	0.50	0.10	0.1	0.1	0.005				
24	UNITS	ppm	ppm	ppm	ppm	ppm				
25	METHOD	GI222	GI222	GA117	GA117	GA122				

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

APPENDIX V

[redacted]

EB-1

A 200 D 80 G 30
B 150 E 60 H 20
C 100 F 40 F = TOTAL

☐ OXIDIZED PRODUCTS O
☐ FRESH ROCK R
☐ STREAM SEDIMENTS S
☐ RESIDUAL SOIL F
☐ MINE DUMP M

YES ☐ NO ☐ YES ☐ NO ☐

DATE

SHEET 1 of 1

EASTINGS	NORTHINGS	SAMPLE NUMBER	DEPTH in CMS	SIZE FRACTION	Sample Type	METAL VALUES PPM	GEOLOGICAL LOG
2790	1100	565551					ROCK CHIP SAMPLE PULP
2700	1800	565209					SOIL SAMPLE PULP
2630	1175	565530					GALENA IN E-W CHLORITE VEIN
2770	1120	565576					GALENA IN STRINGER Si + Se ZONE
2780	1110	EB 100					} DISSEMINATED Gn + Sp IN MOST SILICEOUS ZONE ("CHERT")
2780	1110	EB 200					

OPERATOR COMPUTER CHECK PLOTTER DATE

04068

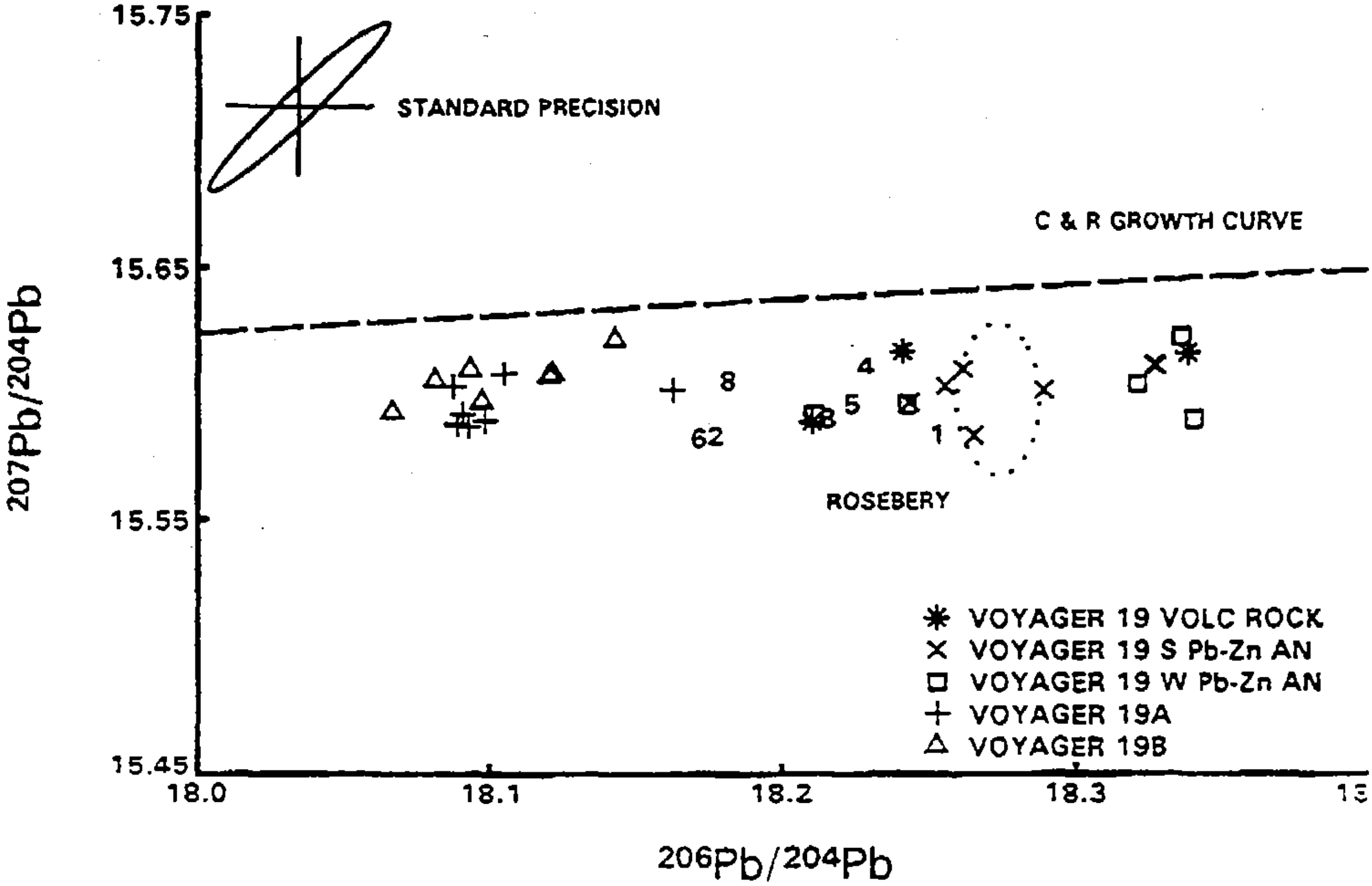
TABLE 1. LEAD ISOTOPE DATA FOR ELLIOTT BAY

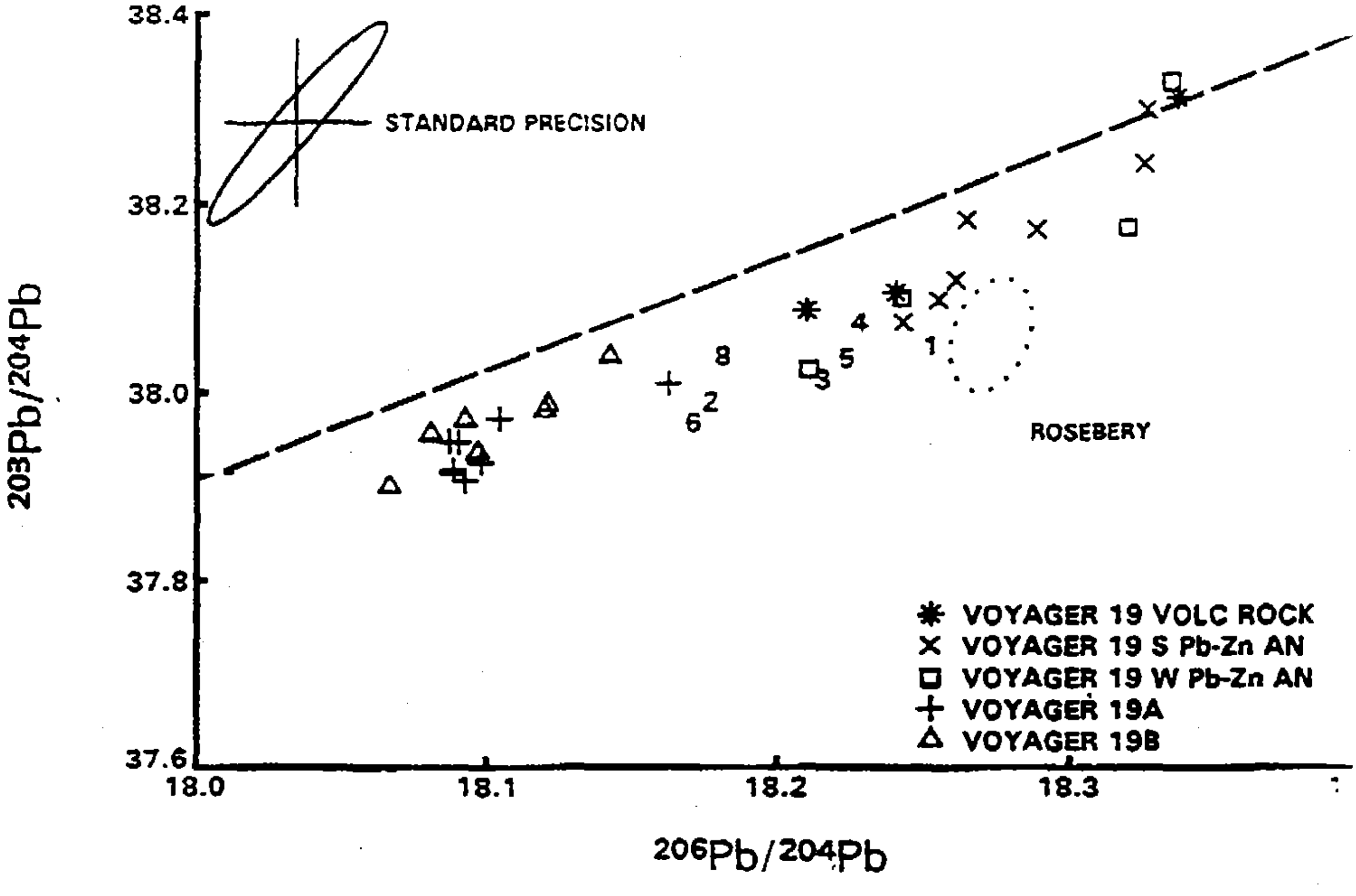
Sample	$^{208}Pb/^{206}Pb$	$^{207}Pb/^{206}Pb$	$^{206}Pb/^{204}Pb$	$^{207}Pb/^{204}Pb$	$^{208}Pb/^{204}Pb$	Pb(ppm)
1 CSN 565551	2.0847	0.8538	18.252	15.584	38.050	1540
2 CSN 565209	2.0901	0.8573	18.177	15.583	37.992	1070
3 EB 100	2.0870	0.8559	18.215	15.590	38.014	2330
4 EB 100gn	2.0889	0.8565	18.228	15.611	38.075	
5 EB 200	2.0873	0.8558	18.223	15.596	38.037	1170
6 565530gn	2.0895	0.8575	18.171	15.582	37.969	
8 565576gn	2.0923	0.8583	18.181	15.606	38.040	

gn denotes galena
Pb contents shown in this Table determined by isotope dilution
SAMPLE NUMBER PREFIXES REFER TO PLOTTED POINTS ON FIGURES

044070

ELLIOTT BAY DATA





APPENDIX VI

Aberfoyle Exploration

~~GEOCHEMICAL~~ SAMPLE LEDGER

PROJECT	BSS SIEVE SIZE CODE – MESH NUMBER	SAMPLE TYPE CODE	CARD PUNCH PRINT	VERIFY	DATE	SHEET
EB-1	A 200, B 150, C 100, D 80, E 60, F 40, G 30, H 20, T = TOTAL	☐ OXIDIZED OUTCROPS O; ☐ FRESH ROCK R; ☐ STREAM SEDIMENTS S; ☐ WEATHERED BEDROCK W; ☐ SURFACE TRANSPORTED T; ☐ RESIDUAL SOIL E; ☐ MINE DUMP M	YES ☐ NO ☐	YES ☐ NO ☐	25-2-92	1 of 1

EASTINGS	NORTHINGS	SAMPLE NUMBER	DEPTH in CMS	SIZE FRACTION	Sample Type	METAL VALUES PPM	GEOLOGICAL LOG
2780E	1110N	565531					Chert horizon
2750E	1120N	565532					Chlorite zone – Disseminated Pyrite
2750E	1120N	565577					Chlorite zone – Py + Cpy vein
2745E	1110N	565533					Silica + Chlorite zone
2775E	1090N	565534					Silica + sericite zone

04072

CSIRO
AUSTRALIA

Division of Exploration Geoscience
Institute of Minerals, Energy and Construction
51 Delhi Road, North Ryde, NSW. Postal Address: PO Box 136, North Ryde, NSW 2113
Telephone: (02) 887 8666. Telex: AA25817. Fax: (02) 887 8909

Chief: Dr. B.J.J. Embleton

EB-1

13 March 1992

Mr Steve Richardson
Aberfoyle Resources
Private Bag 4
Burnie TAS 7320

Dear Steve,

The results of sulfur isotope analyses on pyrite from samples provided.

		$\delta^{34}S$ permil CDT
	565531	14.3
565532	~~565532A~~	11.3
565577	~~565532B~~	8.9
	565533	11.8
	565534	11.5

Replicate analyses of standards are generally better than ±0.2.

We will be happy to repeat any of the analyses if you have any problems. We will return the samples to you unless we hear to the contrary within the next few weeks.

Regards

Anita Andrew
Senior Research Scientist

Floreat Park
Location: Underwood Avenue, Floreat Park
Postal Address: CSIRO Private Bag, PO Wembley WA 6014
Telephone: (09) 387 0200
Telex: AA92178
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APPENDIX VII

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ABERFOYLE MEMORANDUM

Date	18 November 1992	Ref	JS:AAI
To	S Richardson	From	J Silic
At	Burnie	At	Hawthorn
Copies to		Keep	

Subject **Elliot Bay Follow-up**

Seven targets identified from the Questem survey as having a possible bedrock source were for followed up. (EB1, EB2, EB3, EB5, EB7, EB8 and EB9).

Using techniques described in Silic, 1987 (see attached), EB2, EB3, EB5, EB7, EB8 and EB9 were identified as being caused by broad near surface slightly conductive formations, representing overburden inhomogeneities or broad lithological units such as shales.

Response over EB1 however is somewhat enigmatic. Although, obvious effects due to a broad near surface overburden conductor (confirmed by dipole-dipole surveys) are evident in the data, a more complex model than a simple overburden trough is needed to explain the results.

Two possible models may explain the EB1 response.

The first one is an overburden trough with significant thickness or conductivity variations at about its centre position. The second model includes a poorly conductive bedrock target below the overburden trough.

This ambiguity can only be resolved by a drill test.

PP JOVAN SILIC

Interpretation of TDEM Data Using First and Second Spatial Derivatives and Time Decay Analysis

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Abstract

Current gathering in fixed loop electromagnetic data often dominates responses from large high-grade ore bodies as well as responses from less desirable features such as fault zones, weathering troughs and regional conductors. Through decay curve analysis, current gathering can now be unambiguously recognised.

Many widely used EM interpretation techniques are not applicable to current gathering (channelling) responses. An effective method of deriving the location and shape of the causative source is to study the second spatial derivative, as is shown in several examples.

Key words: Time Domain electromagnetics, spatial derivatives, decay analysis, current gathering, deposits, formational conductors

Introduction

The discovery of the Hellyer orebody in Tasmania by Aberfoyle Resources (Silic *et al*, 1985), has shown that important economic discoveries need not be characterised by long time constant, time domain electromagnetic (TDEM) responses. At the time of the discovery it was recognized that the Hellyer response was largely dominated by current gathering effects, and that other non-economic features such as lithologies or weathering troughs which have a resistivity contrast with their surroundings, may produce responses lasting to similar times. Some authors have reported on some of these problems from case histories as difficulties or limitations of TDEM (Spies and Parker, 1984; Irvine and Staltari 1984).

The purpose of this paper is to show that these problems can be overcome; to discuss decay analysis techniques for recognising responses which are largely dominated by the 'static' interaction between the half spaces electric field and the target, commonly known as current gathering (West and Edwards, 1985), and to illustrate the use of the spatial derivative of fixed loop TDEM data in recognizing the geometry of the conductive targets. Only the 2-D solution for the geometry of the targets will be presented; however, the concept can be extended to 3-D bodies.

Application of the Integral Equation Method

Numerous authors have discussed the generalized frequency domain integral equation for the total vector electric field that is composed of a primary field $\underline{E}^p$ within a half space perturbed by a secondary field $\underline{E}^s$ from a local conductivity variation within the earth (Hohmann, 1975; Raiche, 1974; Weidelt, 1975). Similar formulations apply to the solutions for the magnetic field (eg. West and Edwards, 1985). San Filipo and Hohmann (1985), and Oristaglio and Hohmann (1984) have successfully obtained solutions for the time domain.

The purpose of this section however is not to discuss the solutions for the 'scattering' or 'anomalous' current $\underline{J}^s(r',t)$ within the inhomogeneity, but rather to determine the effect of a conductive half space on the problem of determining the secondary magnetic field from the scattering current. The equation relevant to the problem expresses the secondary magnetic field as

$$\underline{H}^s(\underline{r},t) = \int_{V}\int_{0}^{t} \underline{Gh}(\underline{r},\underline{r}',t-\bar{t})\ \underline{J}^s(\underline{r}',\bar{t})\ d\bar{t}\,d\underline{r}' \quad -(1)$$

and only the convolution integral

$$\int_0^t \underline{Gh}(\underline{r},\underline{r}',t-\bar{t})\ \underline{J}^s(\underline{r}',\bar{t})\,d\bar{t} \quad -(1a)$$

needs to be considered. To study this effect the Green's tensor solutions for a line source in a half space were evaluated (Silic, 1989). By assuming that current density with an arbitrary time dependence can be synthesised as a discreet or continuous sum of exponential decay functions $1_n e^{-t/\tau_n}$ it was concluded by evaluating equation 1a for a number of time constants τ_n, that for $\frac{t}{\sigma\mu r^2} \geq 1.0$ (r being the distance to the source, σ the halfspace conductivity) and measuring times up to about $4\tau_n$, free-space approximations may be used to relate the magnetic-field components to the current source, although in some instances a time delay which is largely a function of $\sigma\mu r^2$ may have to be incorporated into the calculation (Silic, 1989).

Identical results are obtained for a current dipole which is relevant to the 3-D problem. As an example, for a 200Ωm half space, and a distance r of 200 m, $\frac{t}{\sigma\mu r^2} = 1.0$ gives a time of 252 microseconds, a very early time for most TDEM responses.

However the preceding conclusions are not suggesting that the half space is not affecting the current distribution within the inhomogeneity at these 'late' times since the two effects can scale differently in time. It is only suggested that free space approximations may be used to relate the magnetic field to a current source. This concept is vital to the following sections.

Recognition of Current Gathering Responses:

West and Edwards (1985) have shown by studying the response of a disk inhomogenelty in a conductive half space that to calculate the scattering current, direct interaction between the scattering current and the eddy currents they induce in the host medium may be neglected to a first order approximation. These static or DC solutions suggest that in the case where the body is reasonably compact, and the primary electric field has the same general direction throughout, then as long as the target's 'skin effect' does not dominate, current gathering 'anomalous' current density $\underline{J}g^{S}(r',t)$ may be written from magneto metric response solutions (eg. Edwards, 1974) as,

$$\underline{J}\underline{g}^{s}(\underline{r}',t) = C\,\underline{E}^{P}(\underline{r}',t) \quad -(2)$$

where C is a conductivity contrast/geometrical (body shape) function.

The current gathering 'anomalous' current density will then essentially have the time dependence of the primary electric field in the vicinity of the body. Therefore, as long as the 'late' time free space approximation from the previous section is valid, the magnetic field will have the same time dependence. To study this time dependence, electric field in a half space solutions from Lewis and Lee (1978) and Silic (1987) are used.

It is shown that for step TDEM systems (eg. UTEM, West *et al*, 1984) at 'late' times when $(a^2 + z^2 + r^2)\,\frac{\sigma\mu}{4t} << 1.0$ where a is the loop radius, r is the distance from the loop centre and z is the depth,

$$\underline{E}^{P}(r,z,t) = \frac{a^2 r}{40\sigma\sqrt{\pi}}\left(\frac{\sigma\mu}{t}\right)^{5/2} + \frac{5a^2 rz\Gamma(5/2)}{48\sigma\sqrt{\pi}}\sqrt{\frac{\sigma\mu}{4t}}\left(\frac{\sigma\mu}{t}\right)^{5/2} \quad -(3)$$

while for the impulse systems (Buselli and O'Neill, 1977; McNeill, 1982)

$$\underline{E}^{P}(r,z,t) = \frac{a^2 r}{16\sigma^2\sqrt{\pi}}\left(\frac{\sigma\mu}{t}\right)^{7/2} + \frac{a^2 rz\Gamma(5/2)}{32\sigma^2\sqrt{\pi}}\left(\frac{\sigma\mu}{t}\right)^{4} \quad -(4)$$

Essentially at 'late' times the step system electrical field is characterized by a $t^{-5/2}$ power-law decay, while the impulse system's electric fields will have a $t^{-7/2}$ time dependence. To determine whether current gathering effects are dominating the response, a power law decay is fitted with care to the latest anomalous times. If this power law then dominates the response for most of the anomalous time, and its exponent depending on the system is close to -5/2 or -7/2, then current gathering effects may be inferred.

It is also recognized from Kaufman and Keller (1985), that the 'very late' time inductive effect, when the vortex currents in the conductive target are following the decay of the half space magnetic field, will also have a $t^{-5/2}$ or $t^{-7/2}$ power law decay. However, this effect may only be important for thick or relatively flat-lying targets since the direction of the half space primary magnetic field is relatively vertical at the 'late' times. However, unlike the current gathering effect, it begins as a 'very late' time phenomena. As such it is not expected to dominate the response for most of the anomalous time.

Interpreting Spatial Derivatives of Fixed Loop TDEM Data

Different interpretation methods must be used for current gathering anomalies than for vortex current induction responses. The strength of a current gathering effect is a function of conductivity contrast between the anomalous body and the host medium, the body's geometry and the conductivity of the half space, whereas the time dependence of the response is largely a function of the host medium's primary electric field. The latest time at which the anomalous response will be detected, will therefore be largely a function of the maximum amplitude of the magnetic field at early time, this also being a function of depth or distance to the conductor. Therefore, discriminating techniques which rely on conductivity-thickness estimates from decay analysis, or the latest time affected by a conductor, are not valid for current gathering responses.

This section looks at the problem of attempting to obtain the shape of the conductive source from spatial derivative data, and its implementation as a discriminating technique. It is reasoned that if the shape of the target can be estimated from the profile data, then we may discriminate between the conductive bodies on the basis of their interpreted geometry.

1: Theoretical Considerations

By using the approximation discussed in the previous section that at 'late' times free space Green's tensors may be used in equation 1, considerable simplication results in evaluating the potential field problem which links the magnetic field components to a current distribution. In this section, only results for 2-D bodies will be discussed. Formal solutions have been obtained for arbitrary current distributions within dipping sheets and blocks; however only some of the formal solutions for a dipping current sheet will be presented, as they have a similar, but simpler form to block conductor formulations (Silic, 1989). More complex shapes can be modelled by a superposition of a number of blocks and sheets. By assuming that a current density distribution can be expressed as a polynomial, then analytical solutions for the vertical (Hz) and horizontal (Hx) field components are obtained using Gradshteyn and Ryzhik (1980). Furthermore by manipulating the integral equation which links the magnetic field components to a current density it is shown (Silic, 1989) that the first and second horizontal spatial derivatives of the magnetic field components are related through a set of geometric functions to the current density and its first spatial derivative at the edges of the conductor. As a result a number of simple relationships between the first and second derivatives of the magnetic field components and the edges of the conductive units are obtained. For example, for relatively uniform current flow in a current sheet

$$\left(\frac{\partial Hz}{\partial x}\right)^2 + \left(\frac{\partial Hx}{\partial x}\right)^2 = \frac{J(o)^2}{x^2+h^2} + \frac{J(L)^2}{(x_L{}^2+h_L{}^2)} \quad -(5)$$

where J(O) and J(L) are the current densities at the respective edges of the sheet, while x, h and x_L, h_L, are the horizontal and vertical distances to the edges. This function is completely

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independent of dip, and is a sum of two bell shaped functions which peak over the edges of the sheet with halfwidths 2h and $2h_L$.

Similarly it is shown that over a current sheet that is flat lying and has uniform current (eg. current gathering weathering trough), the second horizontal derivative of the vertical magnetic field peaks over the edges of a sheet with halfwidths equal to the depth to top of the sheet. The peak to peak distance in the vertical magnetic field however, is always greater than or equal to the width of the sheet. In cases where the width of the sheet is large in comparison to its depth to top, the peaks in the second derivative and the vertical magnetic field are in close proximity to each other. Similar conclusions apply for non-uniform current flow (Silic, 1989).

Figure 1 illustrates these important points. Some responses are superficially similar. For example the magnetic field over a vertical sheet at depth may approximate the vertical magnetic field over a wide sheet. However, the second derivative method will highlight the short halfwidths in the derivative over the 'shallow' edges of a flat lying sheet and allow the discrimination between the two responses as will the 'proximity' of the second derivative maxima with respect to the peaks in the vertical magnetic field. Over vertical conductors the peaks in the second derivative for Hz are at least a half depth unit closer to the cross-over point than the peaks in the magnetic field (Silic, 1989). By considering block conductors, similar conclusions apply; second derivatives peak over the edges of relatively steeply dipping blocks, with halfwidths equal to twice the depth to top. Also, in comparison with sheets, the inflection points of the vertical magnetic field are further out from the edges. Discrimination between block conductors, simulating broad lithological units, and relatively steeply dipping sheets then depends on the identification of block edges through the second derivative technique.

2: Analysis of Field Data

All three techniques, the forward modelling of the magnetic field components and first and second derivatives have the capacity to recognise the shape and location of conductive bodies. The spatial derivatives however, are preferred as they have a set of simple relationships with the edges of an arbitrary shaped conductor as discussed previously.

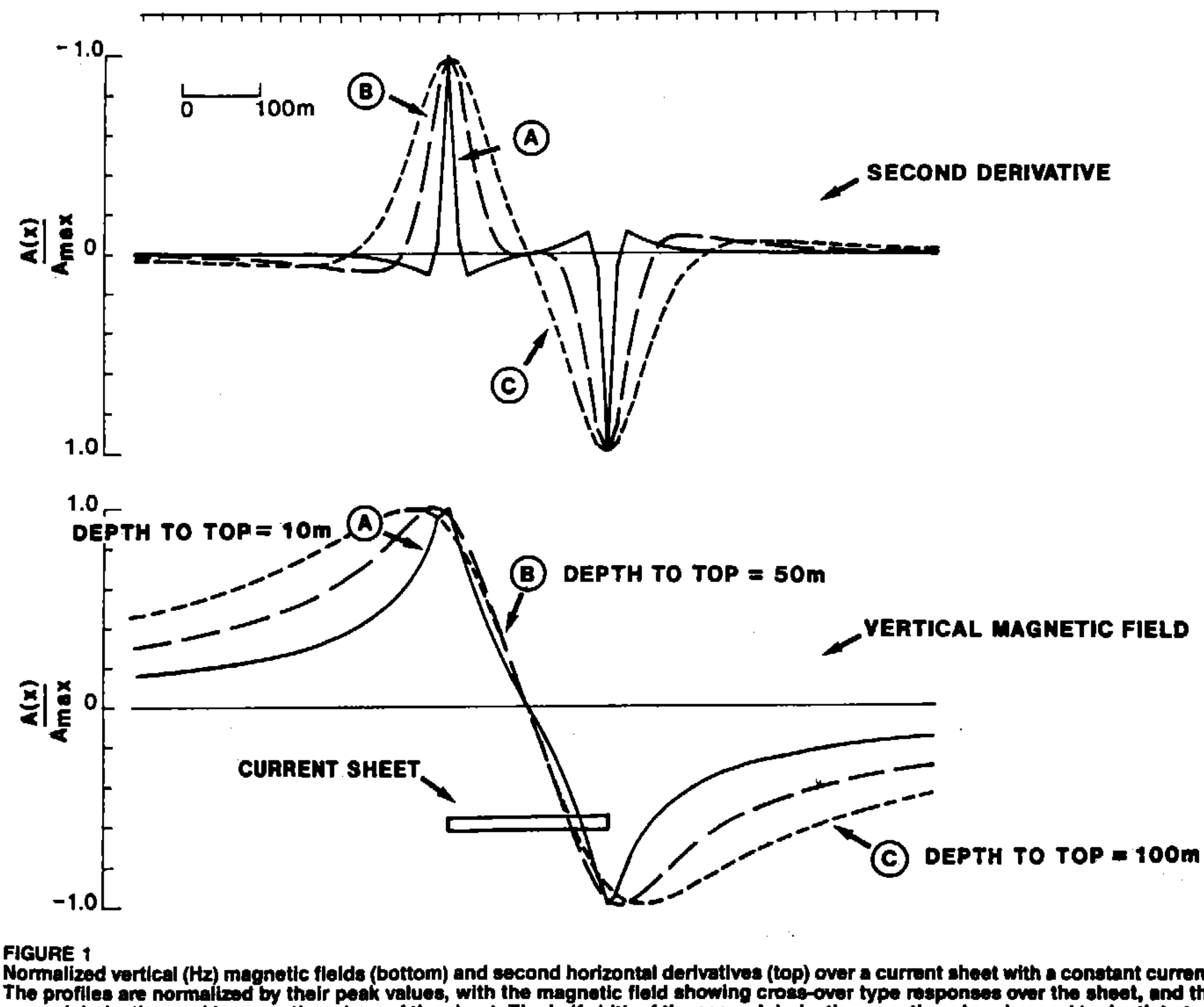

FIGURE 1
Normalized vertical (Hz) magnetic fields (bottom) and second horizontal derivatives (top) over a current sheet with a constant current. The profiles are normalized by their peak values, with the magnetic field showing cross-over type responses over the sheet, and the second derivative peaking over the edges of the sheet. The halfwidth of the second derivative over the edges is equal to depth to top. Peak to peak distances in the vertical magnetic field are greater than or equal to the width of the sheet. Second derivative peaks are close to the minima and the maxima in the vertical magnetic field.

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Four field examples, all of which have a dominant current gathering $t^{-5/2}$ 'late' time decay and a scale model data set will be used to illustrate interpretation techniques which are based on the insights from previous sections. Of the four field examples, two are over world class orebodies, one is over a lithological conductor which shows superficial similarities with responses over the two orebodies and a fourth is a complex response which may contain a worthwhile exploration target. No second derivatives are actually calculated for reasons discussed in the following section. However to follow the logic of the arguments it is sufficient to know that the locations of the peaks in the second derivative can be estimated as points corresponding to the maximum change in the slope of the raw data, and that zeroes occur where the slope of the raw data does not change over some profile length. The examples are used not so much to give a recipe for the interpretation technique but rather to demonstrate the general principles on which an interpretation can be based so that a plausible explanation for the EM processes and for the shape of conductive bodies can be obtained. Both the qualitative technique and the present limitations to the quantitative approach will be discussed.

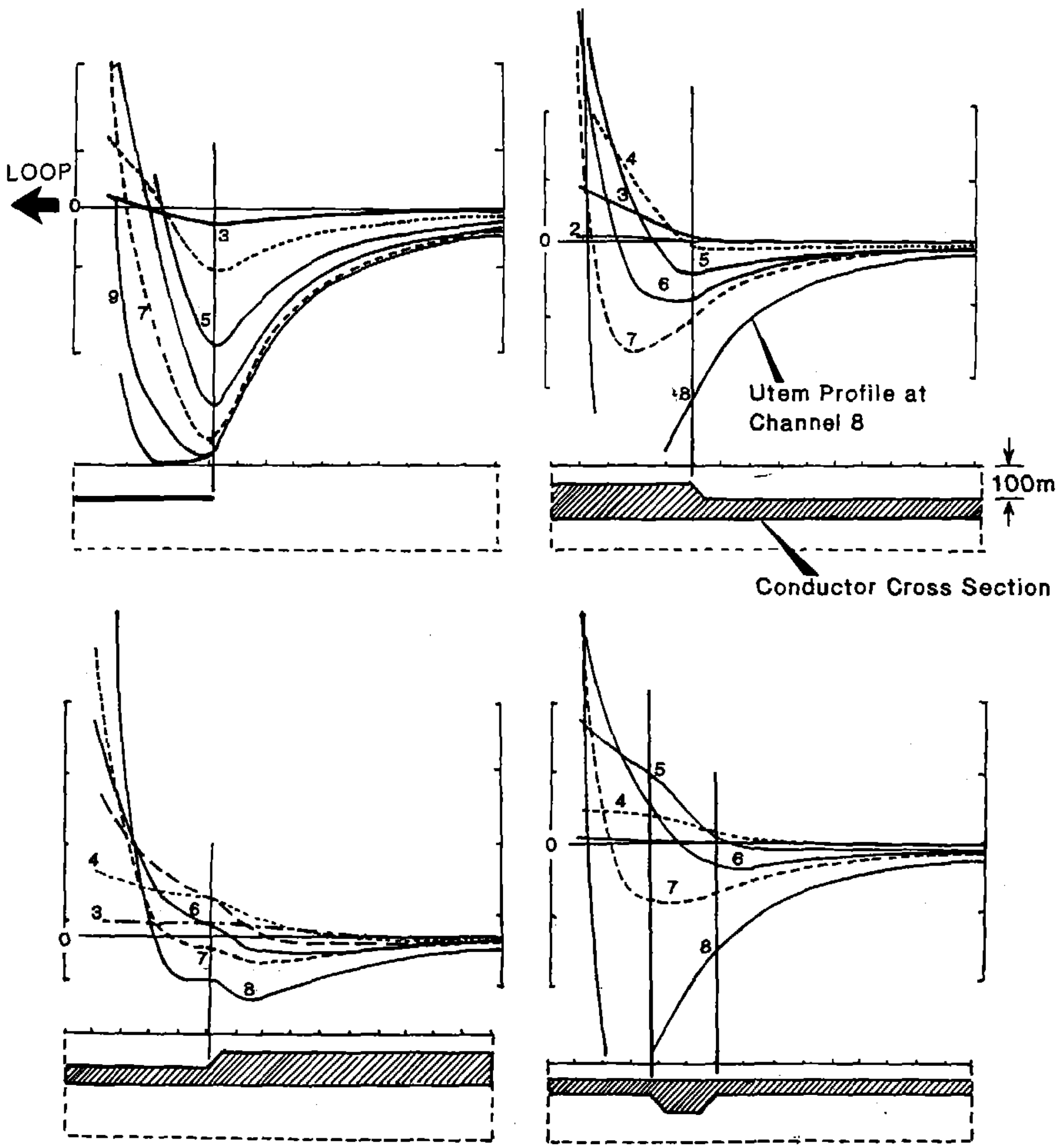

FIGURE 2
UTEM (Hz) scale models over disruptions in a thin layer adapted from MacNae *et al.* (1983). Every disruption within the layer corresponds to one of the maximum changes in the slope of the profile. Additional maximum changes in the slope are due to normal thin layer moveout.

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(a) Qualitative Approach

By visually estimating the variation in the slope of the Hz profiles, we can determine the location of the second derivative maxima and its wavelength. We can use this information in conjunction with Hz data, to estimate the shape of the source and its depth to top. In particular any sudden changes in the slope are to be understood as indicating a shallow edge to a conductive unit, or an abrupt variation within a wider conductor.

UTEM scale model data in Figure 2 adapted from Macnae *et al* (1983), shows that every edge within a conductor, (in this case representing variations within the overburden), corresponds to one of the maximum changes in the slope of the profile. Away from these second derivative peaks the slopes are relatively constant, indicating a 'narrow' second derivative and therefore that the source is shallow. This is supported by the fact that the peaks in the second derivative are also close to the minima and/or maxima of the anomaly due to the variations in the overburden as

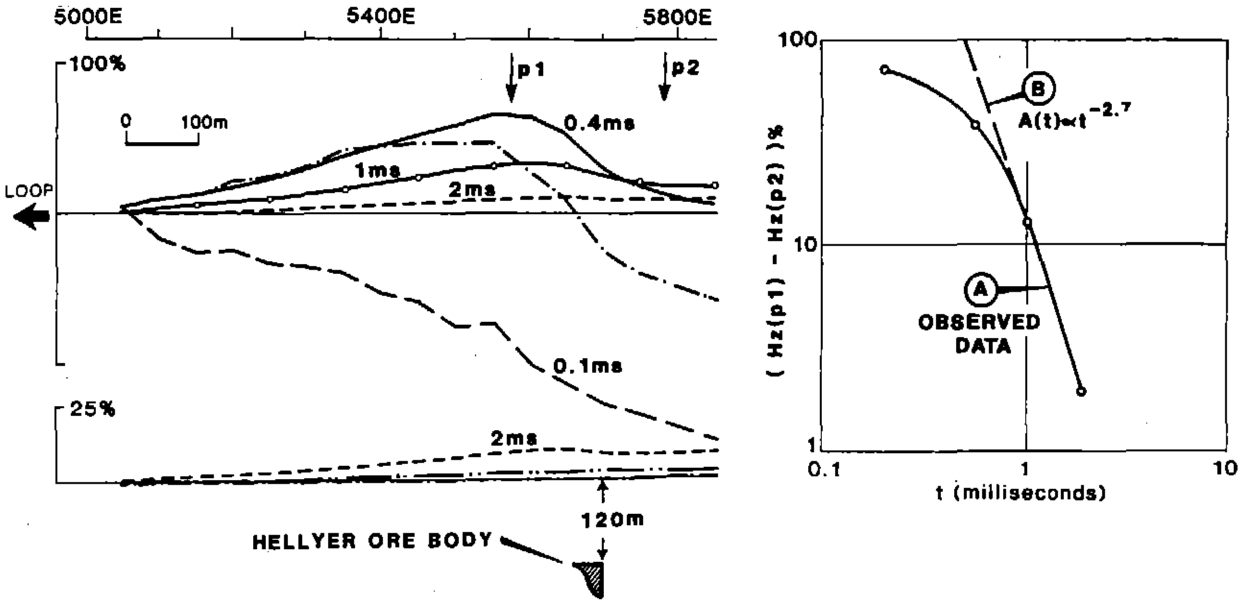

FIGURE 3
UTEM (Hz) data from Hellyer ore body. The variation in the slope of the profile is continuous and smooth indicating a broad second derivative. No obvious edge effects are evident. The decay between the two arrows is dominated by a $t^{-2.7}$ power law decay, and so a current-gathering effect is inferred.

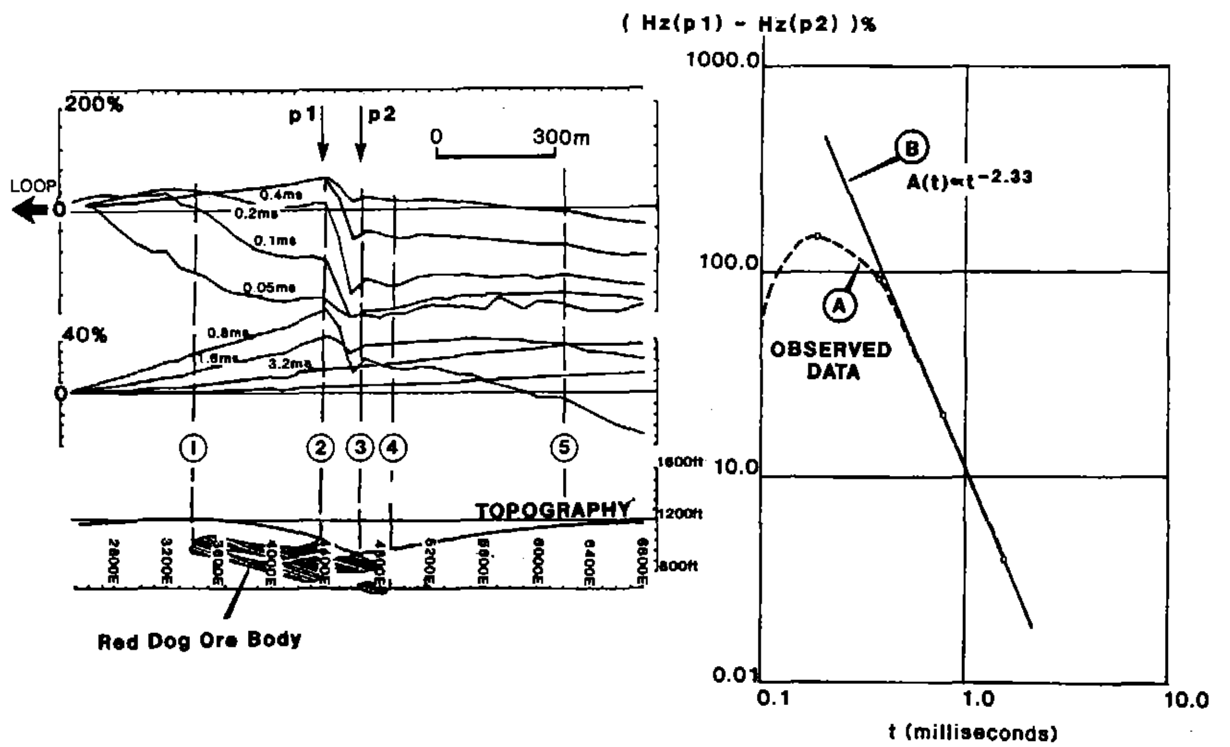

FIGURE 4
UTEM (Hz) data from Red Dog deposit, Alaska. Maximum changes in the slope of the profile correspond to the edges of the orebody. Smoother changes correspond to the deeper terminations. Edge 5 outlines a nonprospective outcropping conductor. The decay analysis for the data between the two arrows, shows that a $t^{-2.33}$ 'late' time asymptote dominates.

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discussed in the previous section. Other maximum changes in the slope are due to normal thin layer, early to late time moveouts.

This simple analysis could have led Spies and Parker (1984) and Irvine and Staltari (1984) to recognise their responses as being due to variations in overburden and not from a conductor at depth.

The response over the Hellyer deposit in Tasmania shown in Figure 3 is dominated by a 'late' time $t^{2.7}$ power law decay and hence current gathering effects may be inferred. The reason that current gathering dominates is that in this cross section the dimension of the deposit is small in comparison to its depth. Therefore, at the surface, vortex flow effect is small compared to the magnetic field from unidirectional current gathering flow. This is not to say that the body is a poor conductor. The time constant obtained from down hole EM measurements is about 3-4 milliseconds (Eadie, 1987). In spite of the fact that current gathering was known to dominate this response, the conductor became a primary target because the visual estimate of the second derivative of the profile shows a smooth continuous variation not indicative of any obvious edge effects which may be related to a broad shallow formational conductor.

The response over the very large Red Dog deposit (Van Blaricom and O'Connor, 1986), is dominated by a current gathering effect, due to its bulk resistivity of 125 Ωm (Figure 4). Any attempt to explain these results in terms of a free space model fails. However the maximum changes in the profile slope uniquely correspond with the edges of the mineralization, with the smoother slope variation corresponding to deeper terminations. The response between edges 2 and 3 is not diagnostic of any particular source and interpreting it by conventional techniques would result in identification of a shallow conductor. However connecting edges 2 and 3, with the deeper edges at 1 and 4, results in a unique interpretation of a substantial, mostly buried flat-lying target. As a comparison, the response marked by edge 5 is interpreted to be a very broad and outcropping source, and surface inspection downgraded it as a prospect.

Superficially, the current gathering response in Figure 5 is similar to the Hellyer anomaly. However, analysis of the very sudden changes in the slope of the profile identifies very shallow edges (less than 10 m from surface) from a broad conductive unit. In this area, this was not considered to be an orebody target.

A more complex profile (Figure 6) can be evaluated as a superposition of a number of responses, some of which show obvious near surface edge effects as sharp changes in the slope of the curve. Their locations have been confirmed by a conventional resistivity survey. These anomalous responses all have an approximate $t^{5/2}$ 'late' time power law decay lasting until about 4 ms, and have no separation in time. However, since the objective on this property is to find a deeply buried deposit, the smooth continuous variation in the profile's slope, indicating a 'broad' second derivative gave evidence of a primary target. In this case the smooth part of the profile is outlining only a part of a normal cross-over type anomaly making quantitative interpretation difficult.

(b) Quantitative Approach

The problem posed in the quantitative approach is to remove or identify responses from sources which are not considered to be of economic importance, and to quantitatively interpret the second derivative.

As an example the profile data from Figure 6 is splined and the subsequently splined second derivatives is produced (Figure 7). This highlights the 'broad' non-zero second derivative and the near surface edge effects. Since, as discussed earlier, the halfwidth of the second

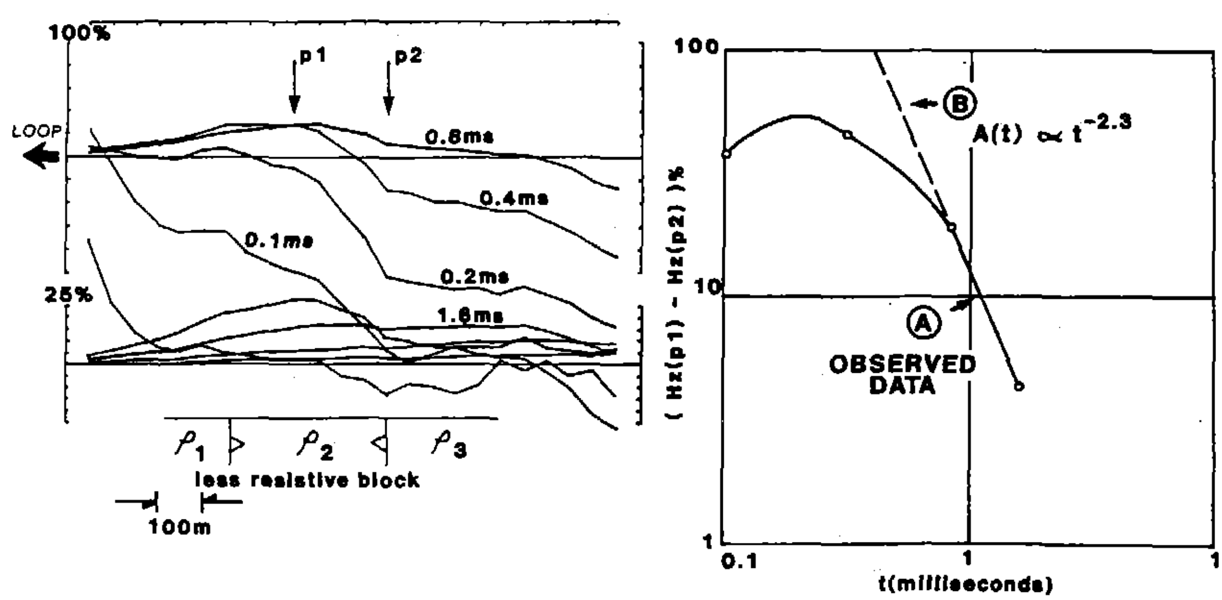

FIGURE 5
Current gathering response from a prospect near Marysville, B C, Canada shows superficial similarities to the Hellyer response in Figure 3. Sudden changes in slope identify this response to be from a broad near-surface source.

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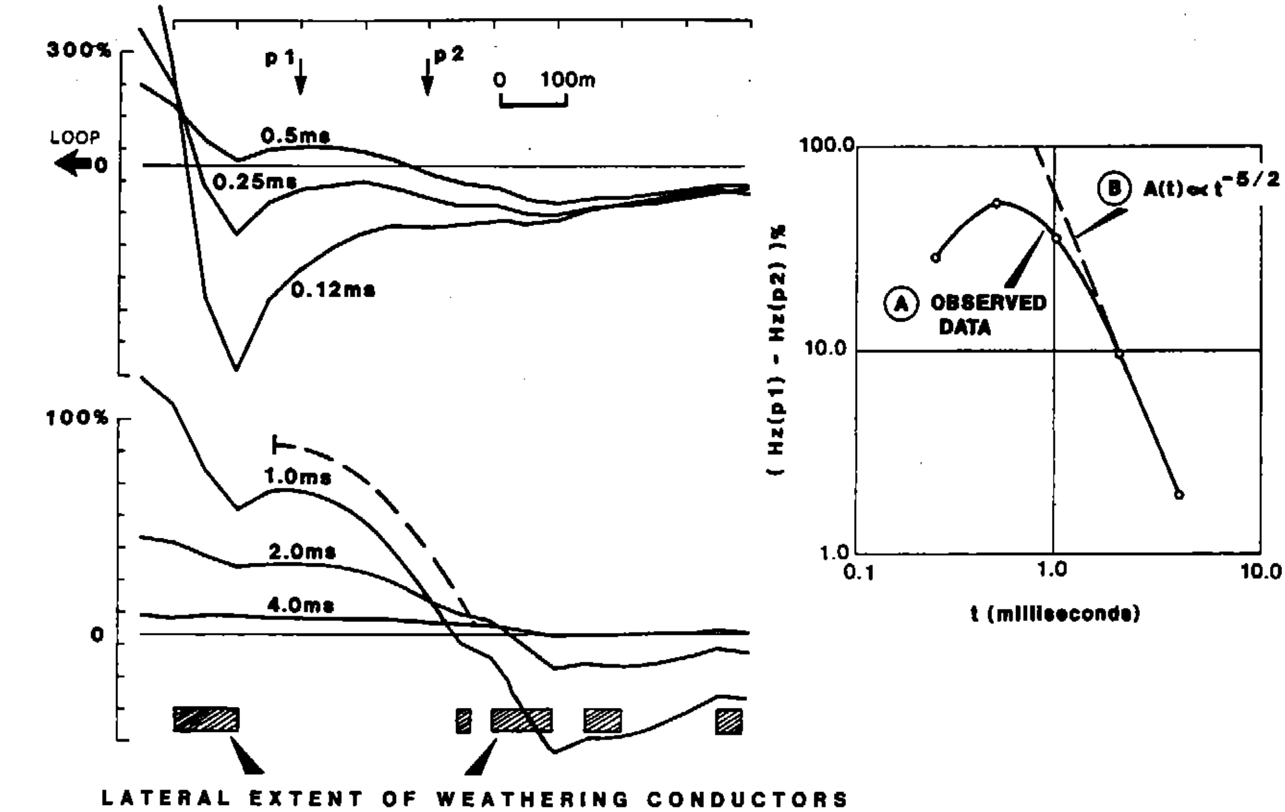

FIGURE 6
UTEM (Hz) data showing superposition of a number of responses, some of which show obvious edge effects from near surface broad conductors. All responses asymptote to a $t^{-4/3}$ power law. No separation between responses in time is evident. The response marked with the shaded line has a broad second derivative as indicated by a continuous variation in the profile slope, and could represent a buried target at a depth of 200-250 m. The shaded line represents only a part of a normal Hz cross-over anomaly.

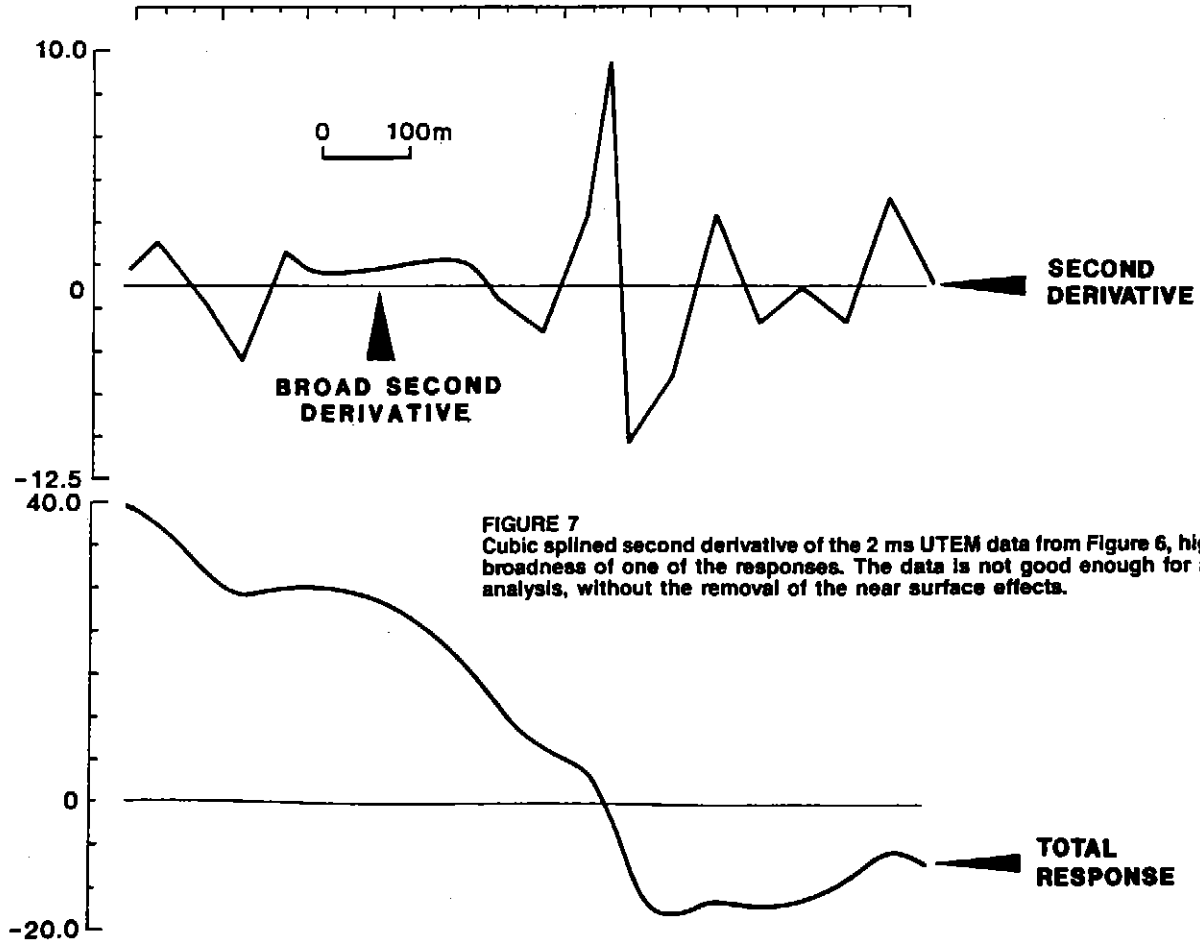

FIGURE 7
Cubic splined second derivative of the 2 ms UTEM data from Figure 6, highlighting the broadness of one of the responses. The data is not good enough for a quantitative analysis, without the removal of the near surface effects.

derivative data due to broad conductors is approximately equal to its depth to top, a problem is encountered. Fifty metre sampling of the data, as was done in this case, seriously undersamples the field data for very shallow sources. The splined second derivative data in this case has minimum halfwidths of about 50 metres. As a result, any attempt to quantitatively remove the shallow 'edge' effects is inaccurate. More closely spaced profile data is needed to accomplish this.

The quantitative approach to this type of interpretation is still being developed. A simple filter has been formulated to remove shallow edge effects from data, and a full inversion technique is the next step.

Conclusion

We in the exploration industry who have worked on interpretation problems have been frustrated over the difficulty of 3D-EM generalized modelling techniques to provide answers and inversion algorithms that are usable over a complex set of conductivity structures. As a result the historical tendency has been to discriminate between responses on the basis of their time constants or latest anomalous times. Our experience has however shown that this can be a very dangerous practice, if current gathering effects dominate, as the examples over the Hellyer and Red Dog deposits illustrate. As a result a new discrimination technique had to be found. Current gathering effects can now be recognised through decay analysis, and information about the shape and location of the source can be derived through analysis of the spatial derivatives. Although only some aspects of the spatial derivative and these new modelling techniques have been discussed in this paper and examples have been restricted to understanding current gathering responses, the technique can be applied to a completely general current flow.

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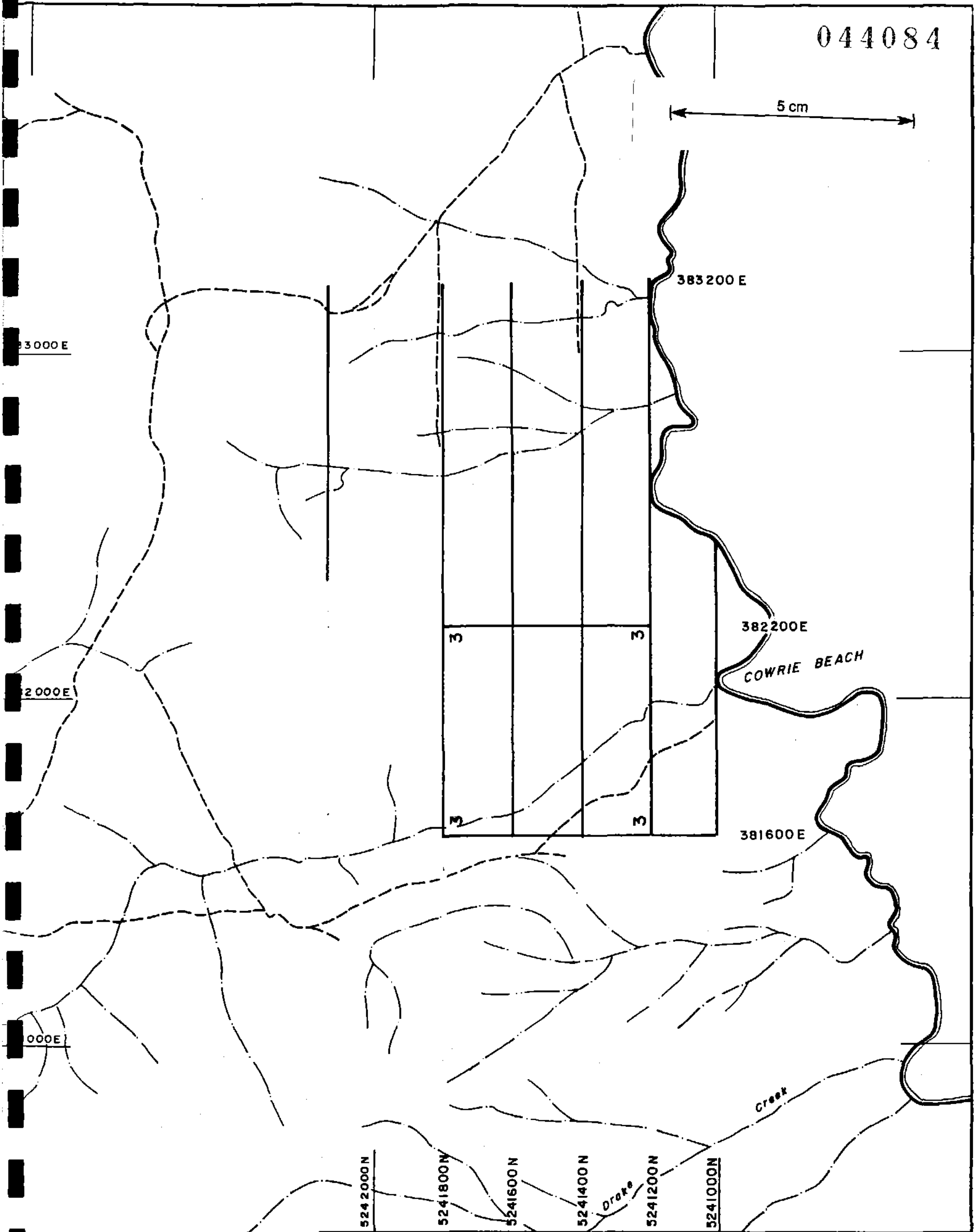

Aberfoyle Resources Limited

EXPLORATION DIVISION

REVISIONS			
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SOUTH WEST TASMANIA

ELLIOTT BAY EL 40/85

EB 1 GRID LOCATION

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Plate No : EB1

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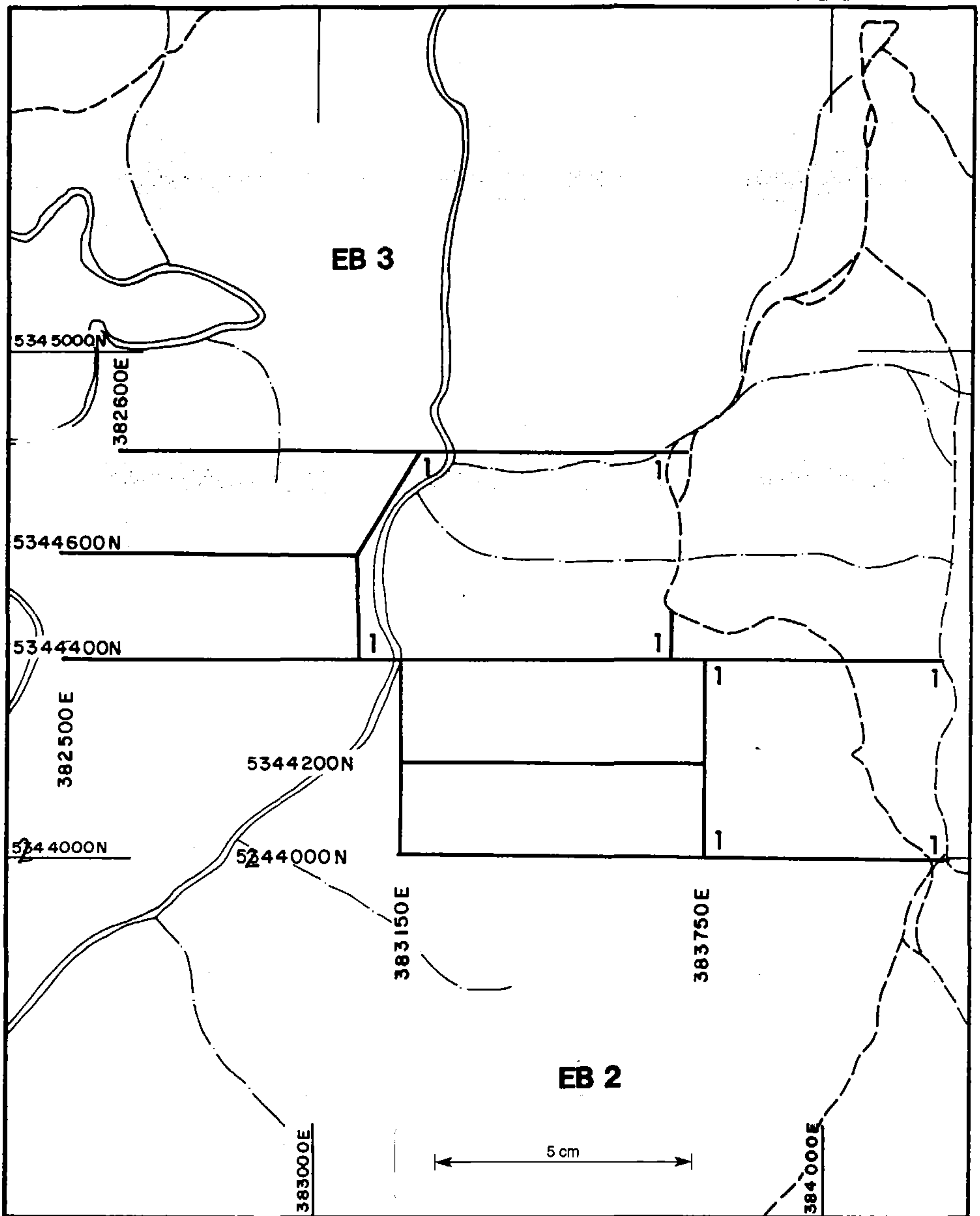

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EXPLORATION DIVISION

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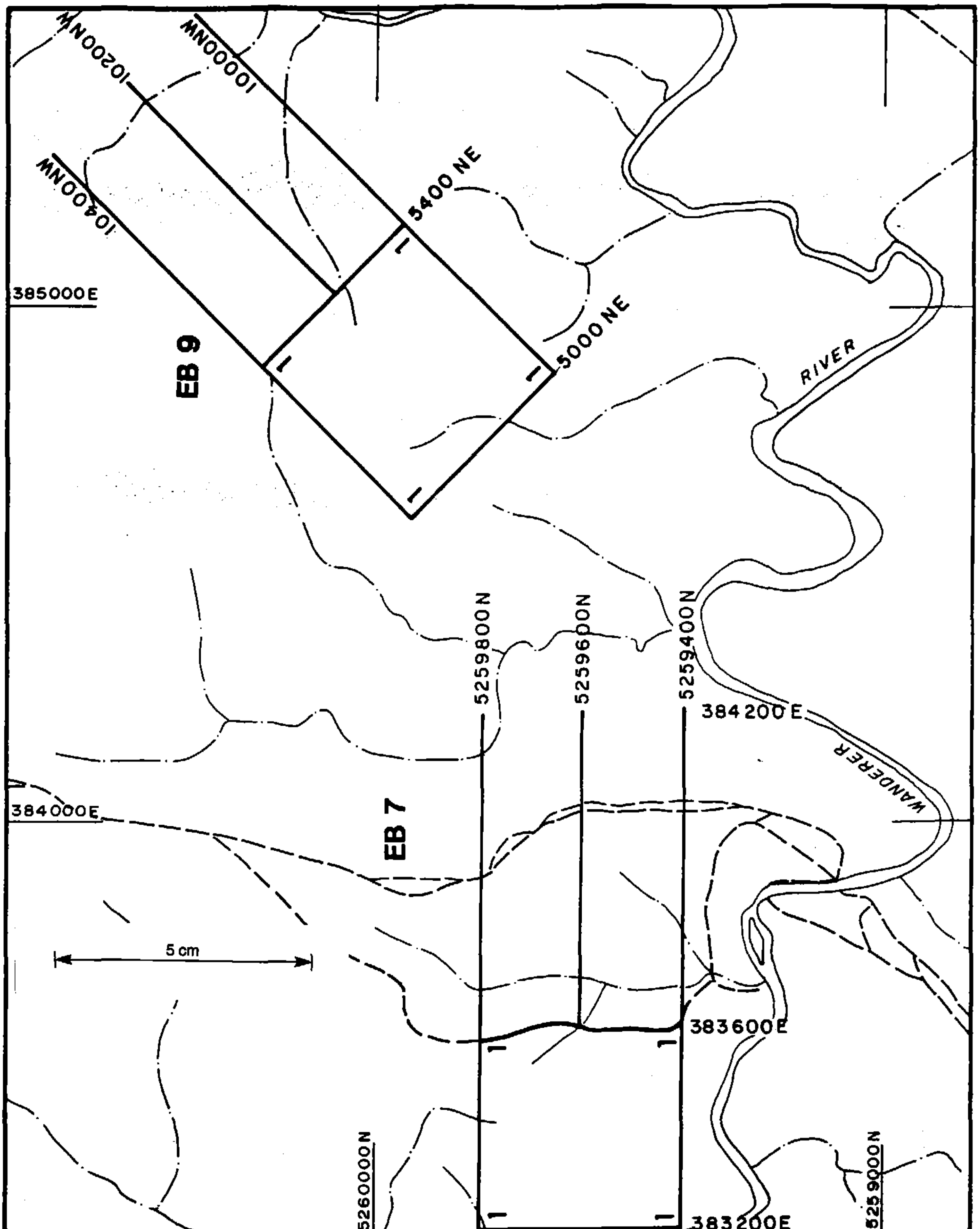

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EXPLORATION DIVISION

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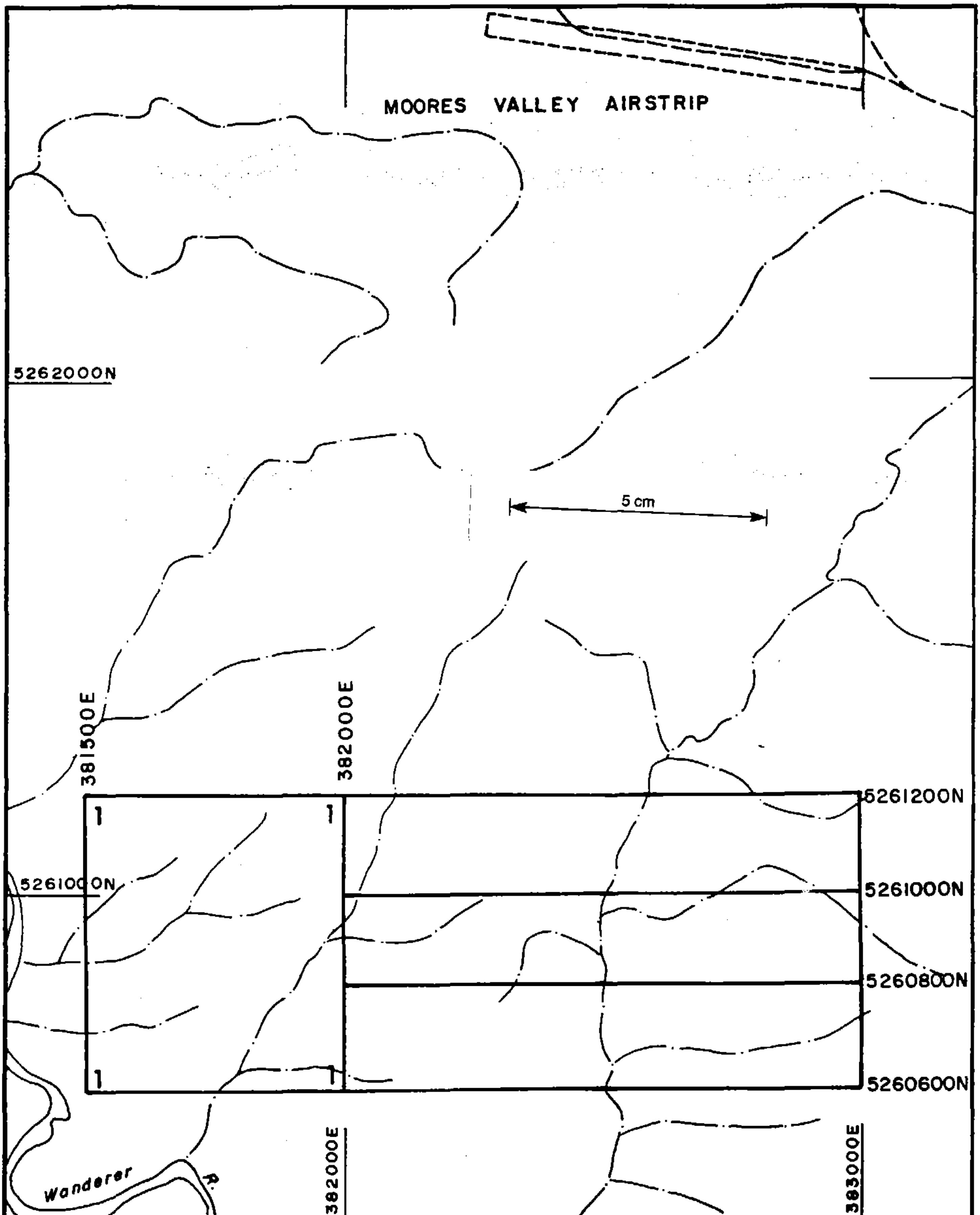

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EXPLORATION DIVISION

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SOUTH WEST TASMANIA

ELLIOTT BAY EL 40/85

EB 8 GRID LOCATION

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Drawn : JLR

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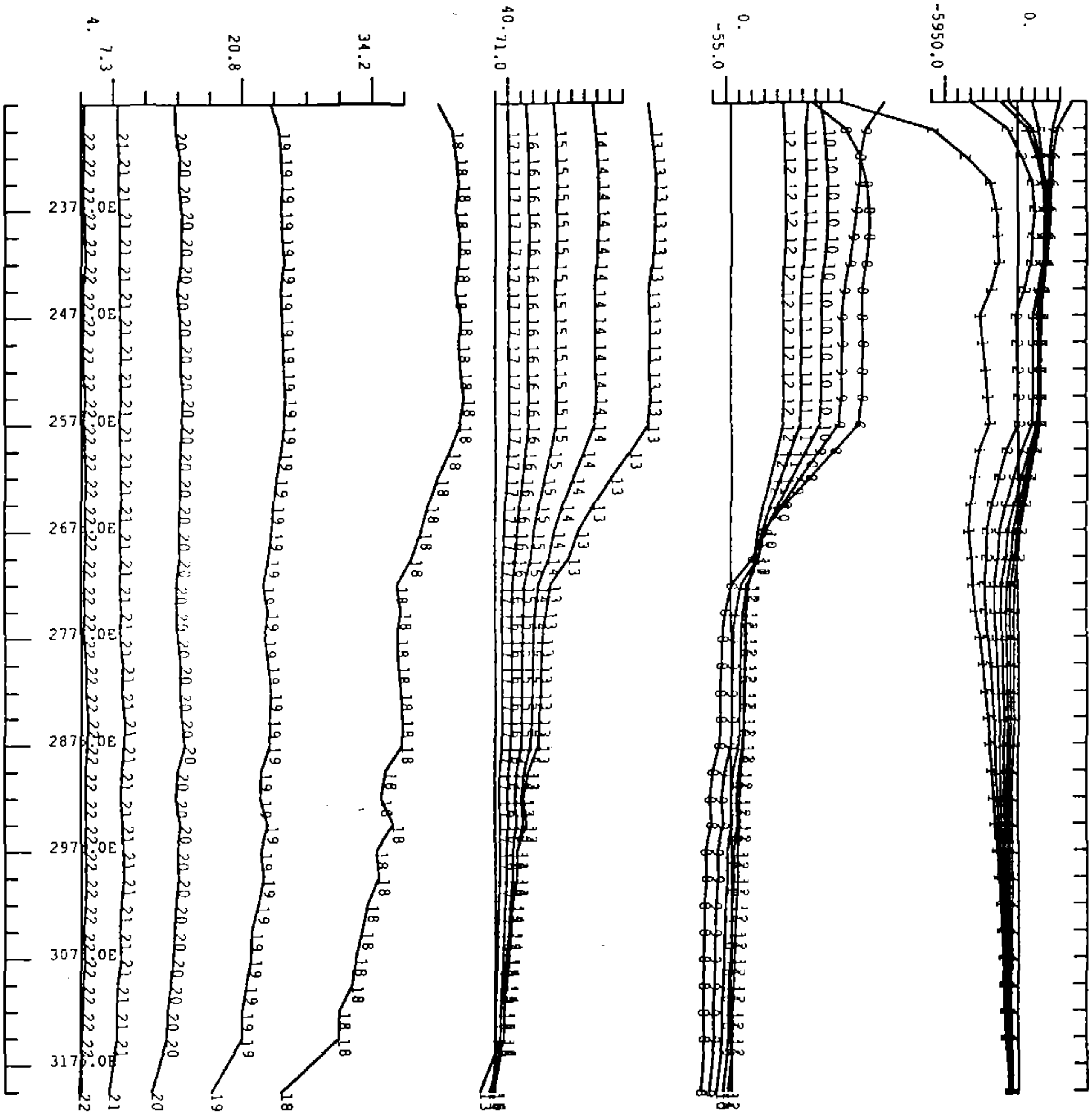
Date : December, 1991

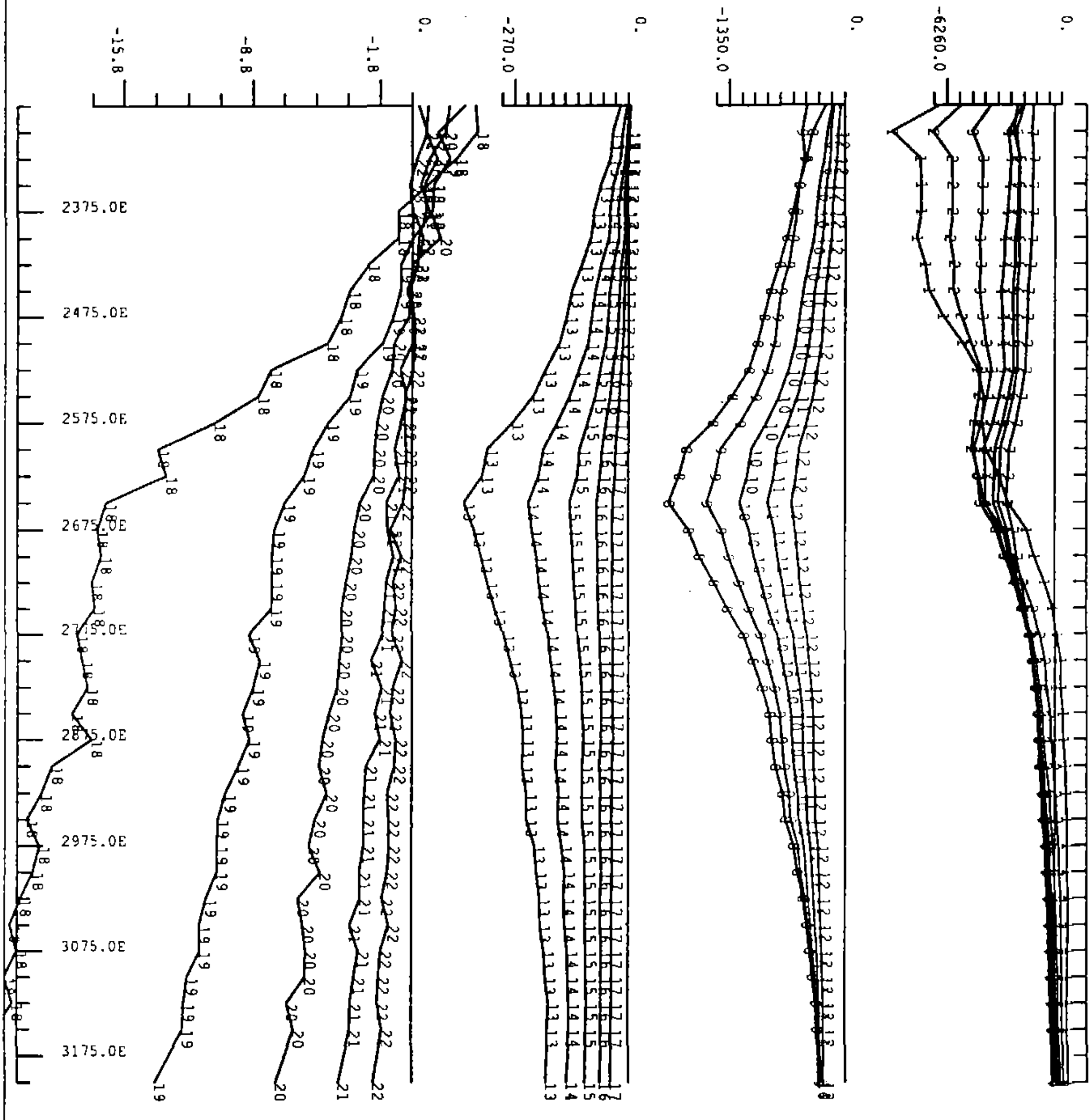
Plate No. : EB 8D



ELLIOTT BAY
SURFACE EM
ANOMALY EB1
LINE 41200 N
VERTICAL COMPONENT
ZONGE GDP_16 32 HZ
Aberfoyle Resources Limited
Horiz scale 1: 6000.0 Plot number : 32

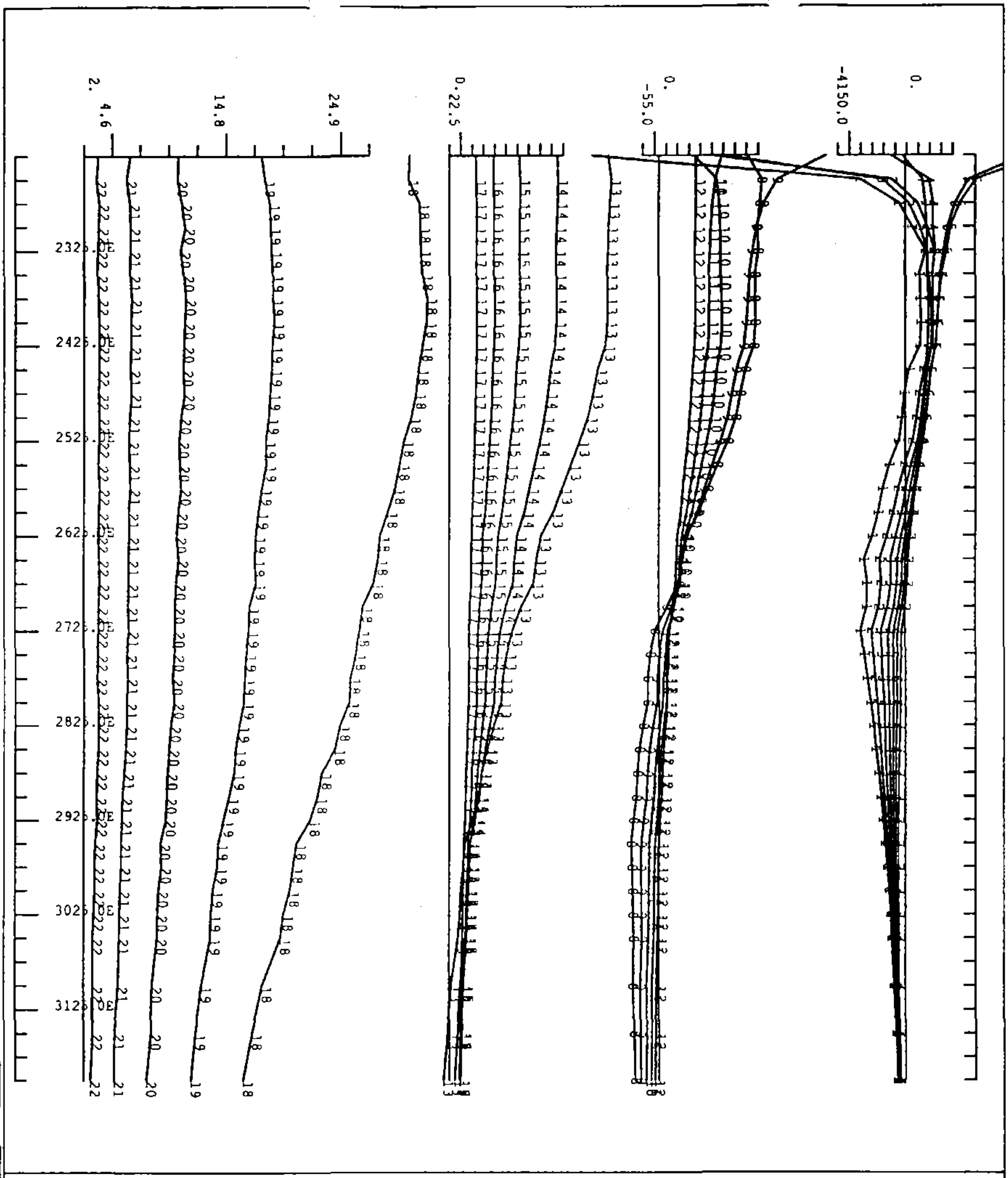
5 cm

044089



ELLIOTT BAY
SURFACE EM
ANOMALY EB1
LINE 41200 N
HORIZONTAL COMPONENT
ZONGE GDP_16 32 HZ
Aberfoyle Resources Limited
Horiz scale 1: 6000.0 Plot number : 37

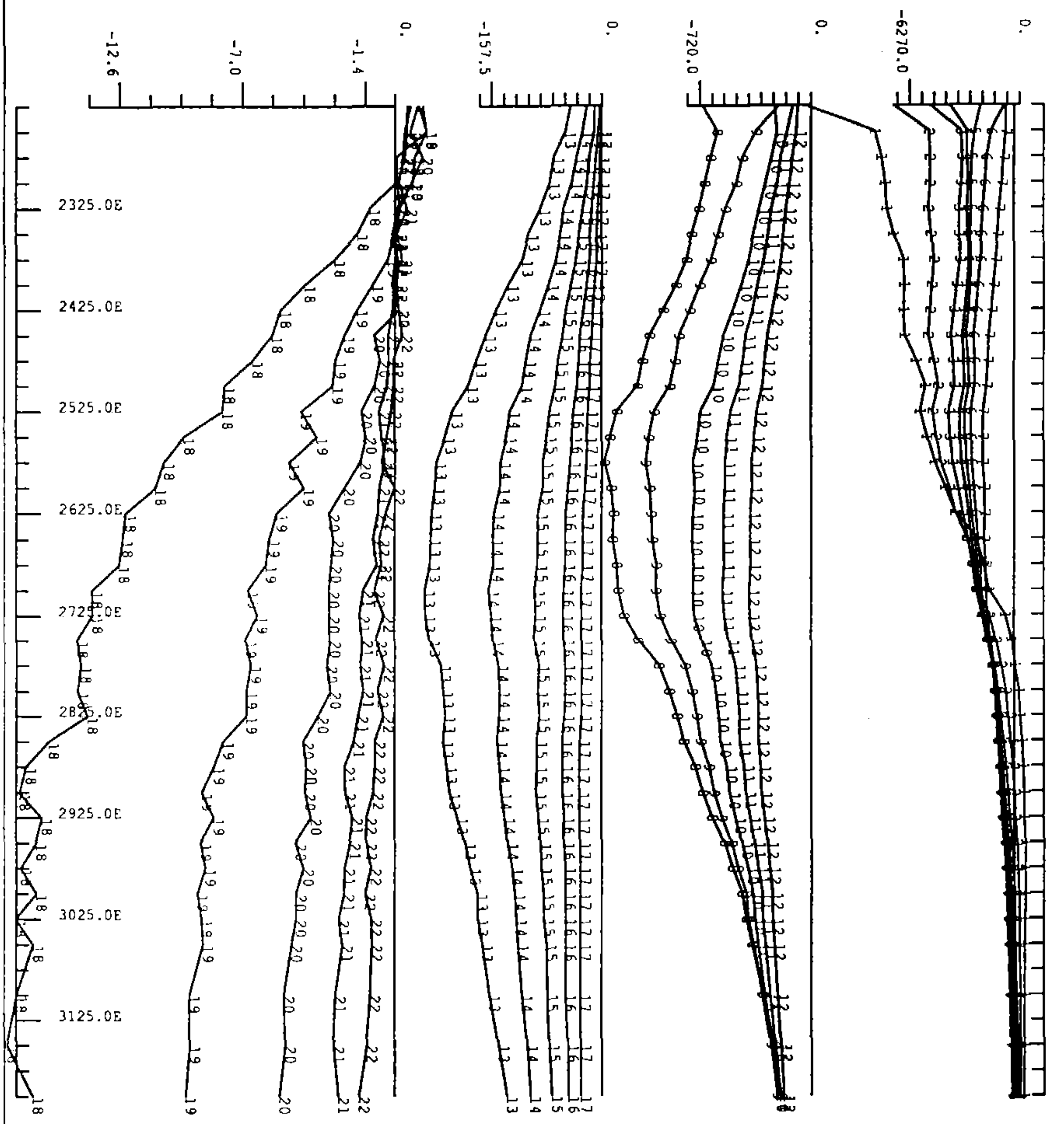
5 cm



ELLIOTT BAY
SURFACE EM
ANOMALY EB1
LINE 41400 N
VERTICAL COMPONENT
ZONGE GDP_16 32 HZ
Aberfoyle Resources Limited
Horiz scale 1: 6000.0 Plot number : 31

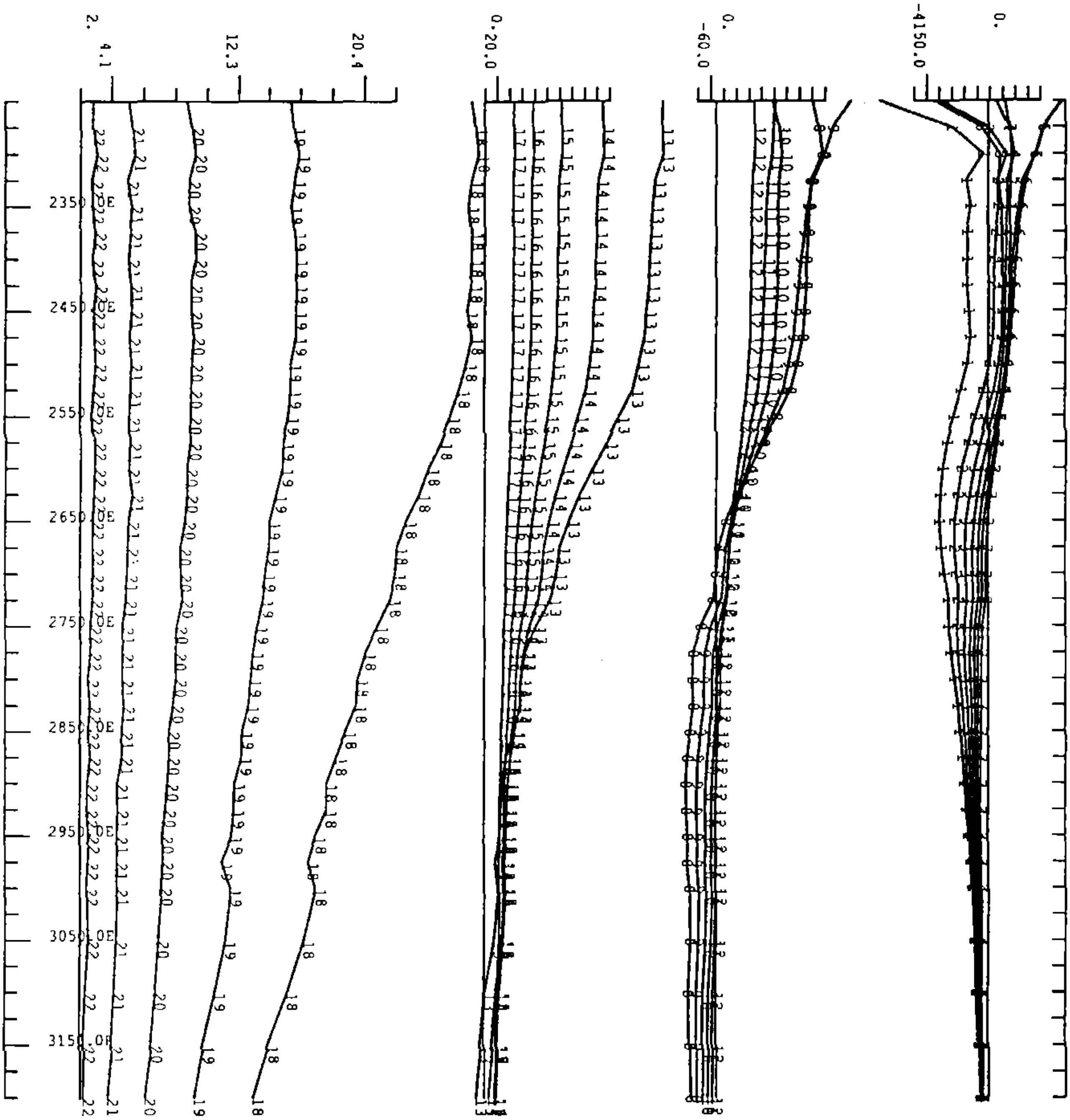
5 cm

044091



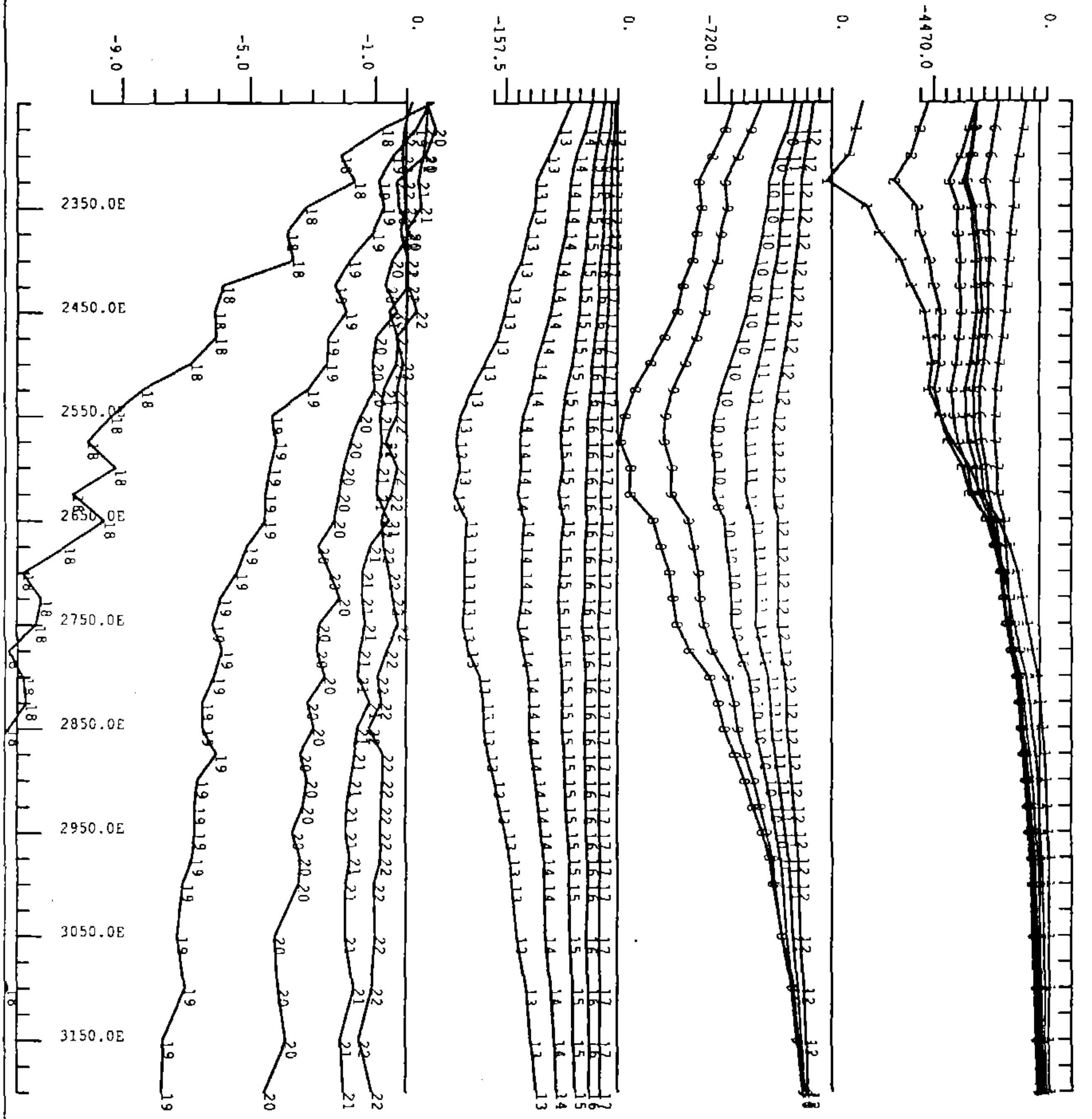
ELLIOTT BAY
SURFACE EM
ANOMALY EB1
LINE 41400 N
HORIZONTAL COMPONENT
ZONGE GDP_16 32 HZ
Aberfoyle Resources Limited
Horiz scale 1: 6000.0 Plot number : 36

5 cm



ELLIOTT BAY
SURFACE EM
ANOMALY EB1
LINE 41600 N
VERTICAL COMPONENT
ZONGE GDP_16 32 HZ
Aberfoyle Resources Limited
Horiz scale 1: 6000.0 Plot number : 30

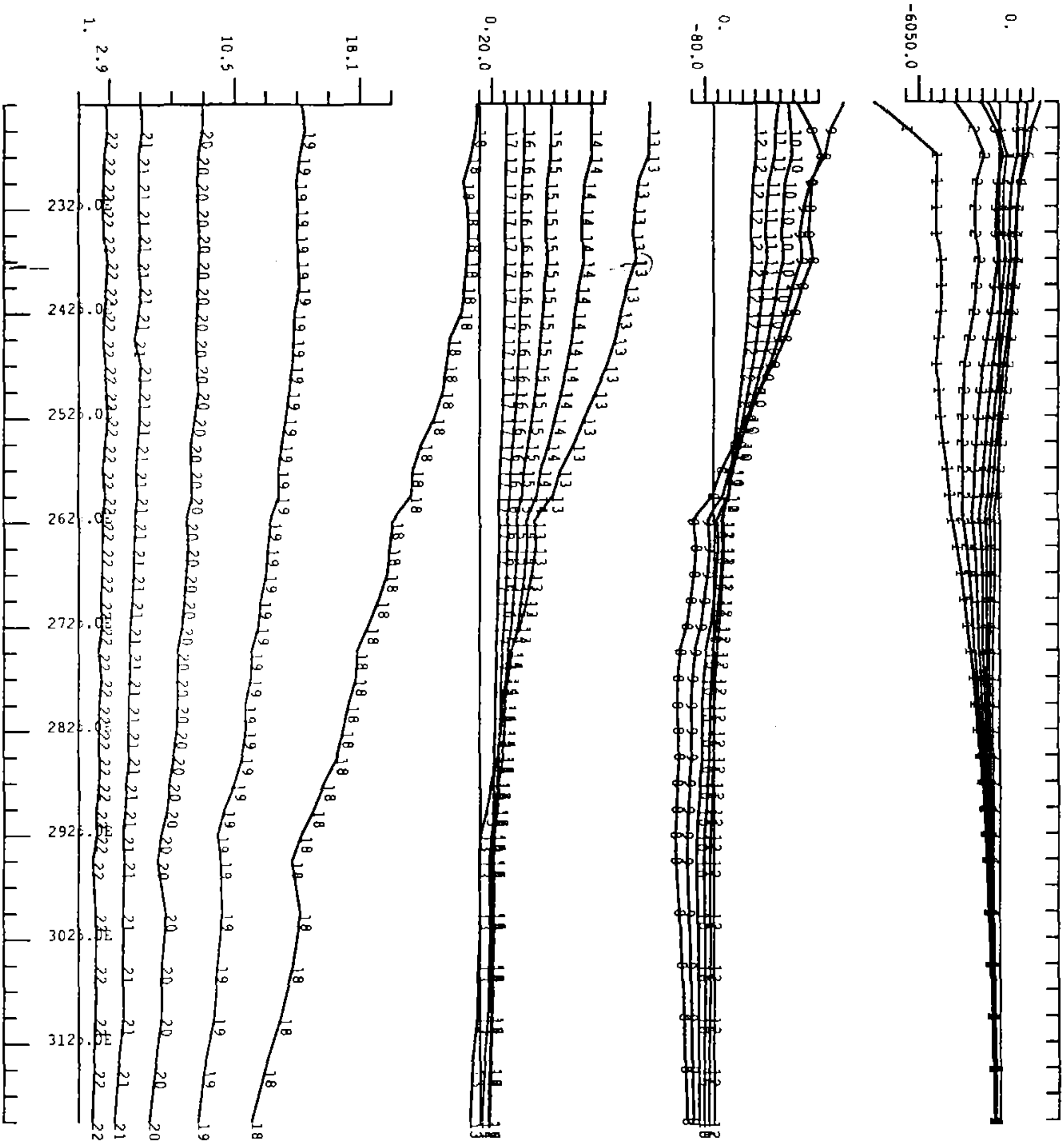
5 cm



ELLIOTT BAY
SURFACE EM
ANOMALY EB1
LINE 41600 N
HORIZONTAL COMPONENT
ZONGE GDP_16 32 HZ
Aberfoyle Resources Limited
Horiz scale 1: 6000.0 Plot number : 35

5 cm

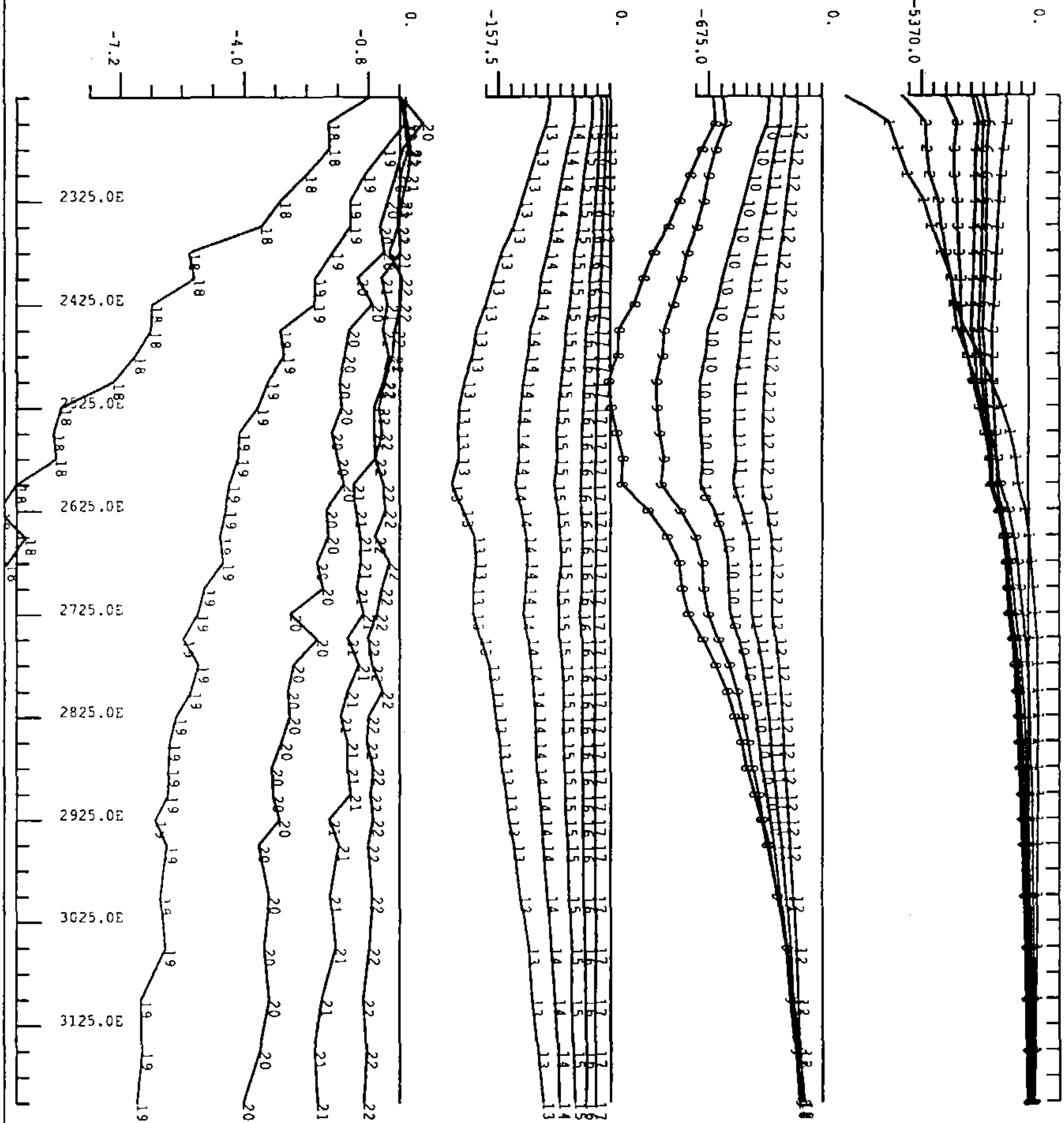
044094



ELLIOTT BAY
SURFACE EM
ANOMALY EB1
LINE 41800 N
VERTICAL COMPONENT
ZONGE GDP_16 32 HZ
Aberfoyle Resources Limited
Horiz scale 1: 6000.0 Plot number : 29

5 cm

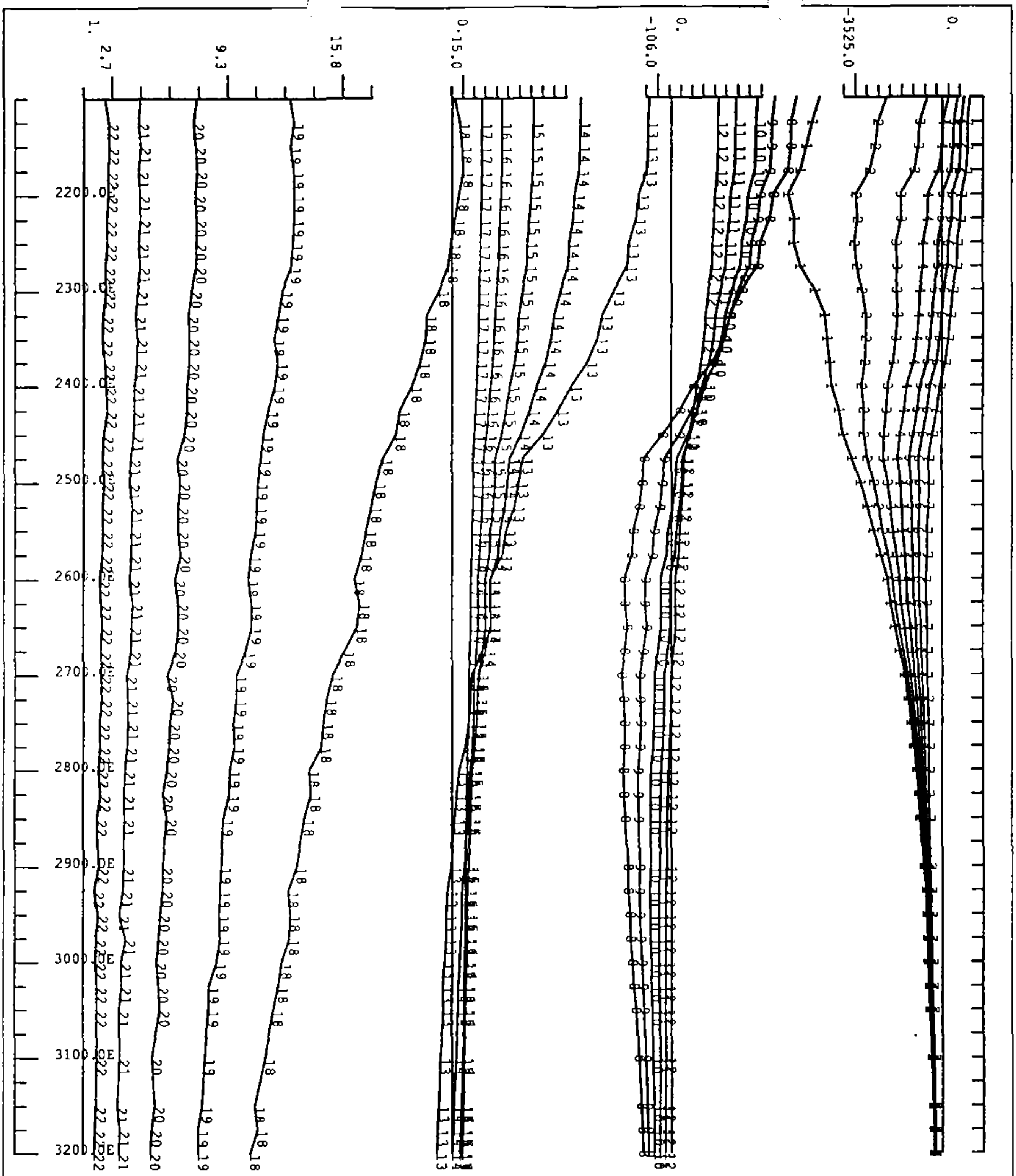
044095



ELLIOTT BAY
SURFACE EM
ANOMALY EB1
LINE 41800 N
HORIZONTAL COMPONENT
ZONGE GDP_16 32 HZ
Aberfoyle Resources Limited
Horiz scale 1: 6000.0 Plot number : 34

5 cm

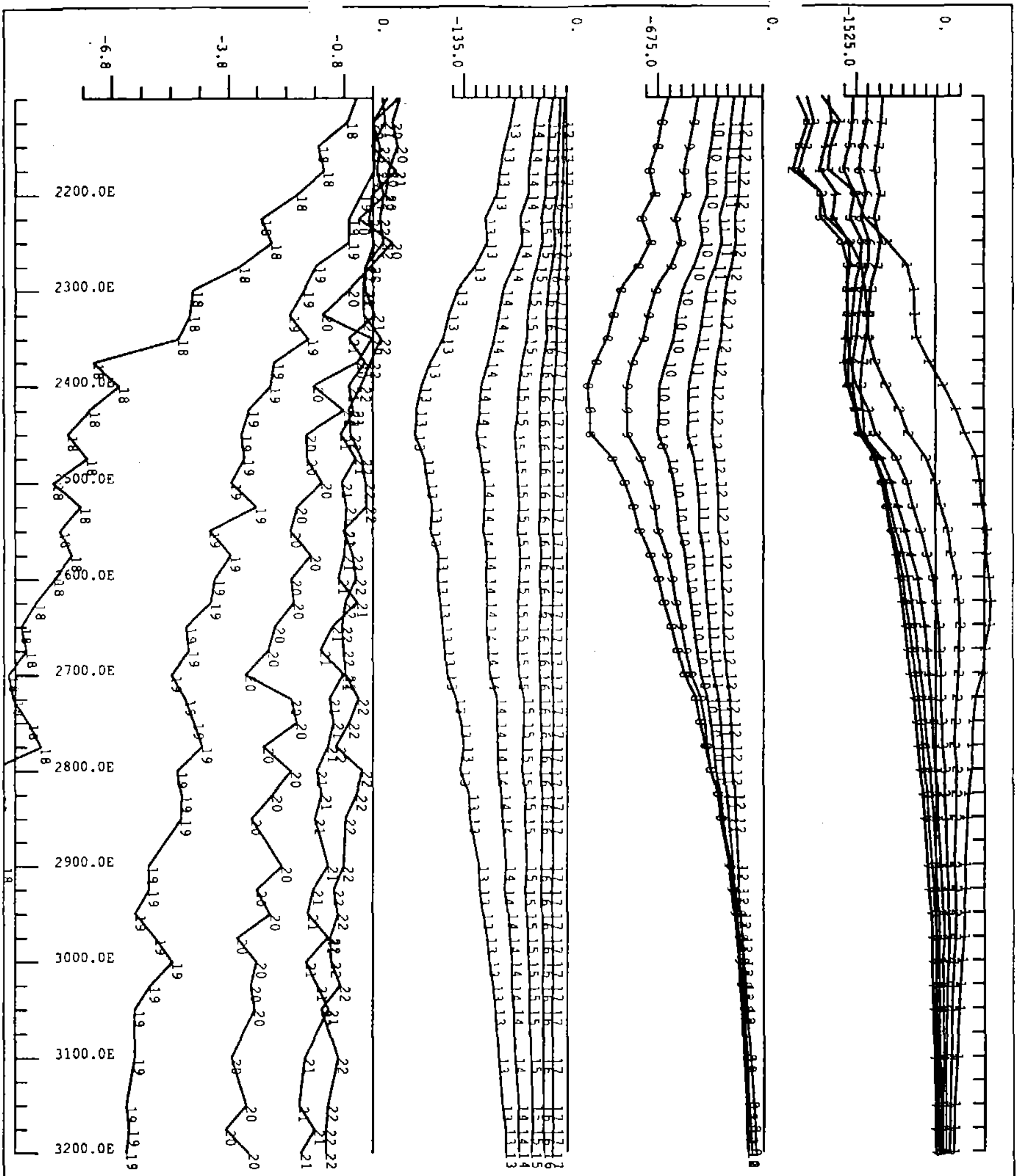
044096



ELLIOTT BAY
SURFACE EM
ANOMALY EB1
LINE 42050
VERTICAL COMPONENT
ZONGE GDP_16 32 HZ
Aberfoyle Resources Limited
Horiz scale 1: 6000.0 Plot number : 28

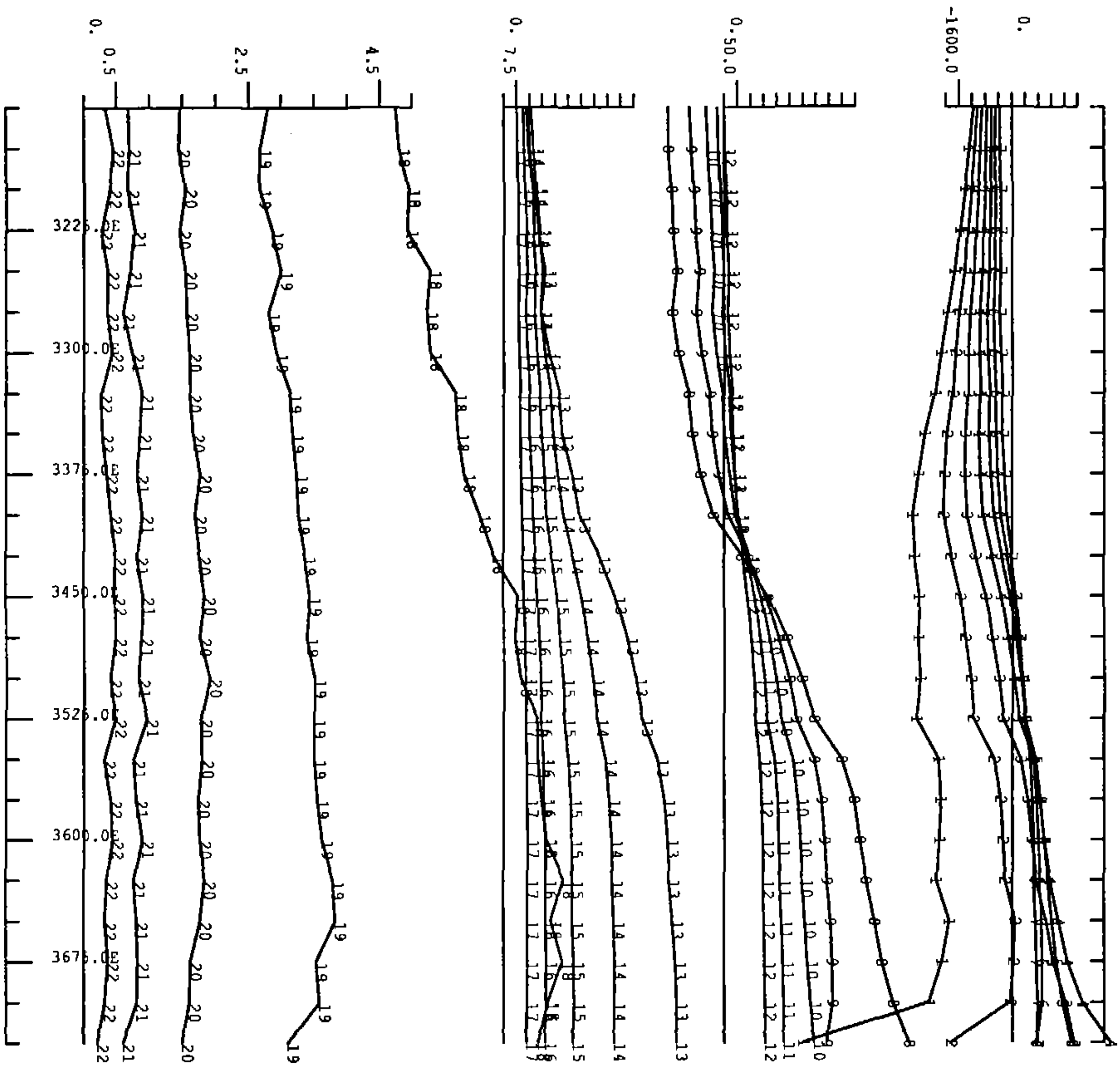
5 cm

044097



ELLIOTT BAY
SURFACE EM
ANOMALY EB1
LINE 42050 N
HORIZONTAL COMPONENT
ZONGE GDP_16 32 HZ
Aberfoyle Resources Limited
Horiz scale 1: 6000.0 Plot number : 33

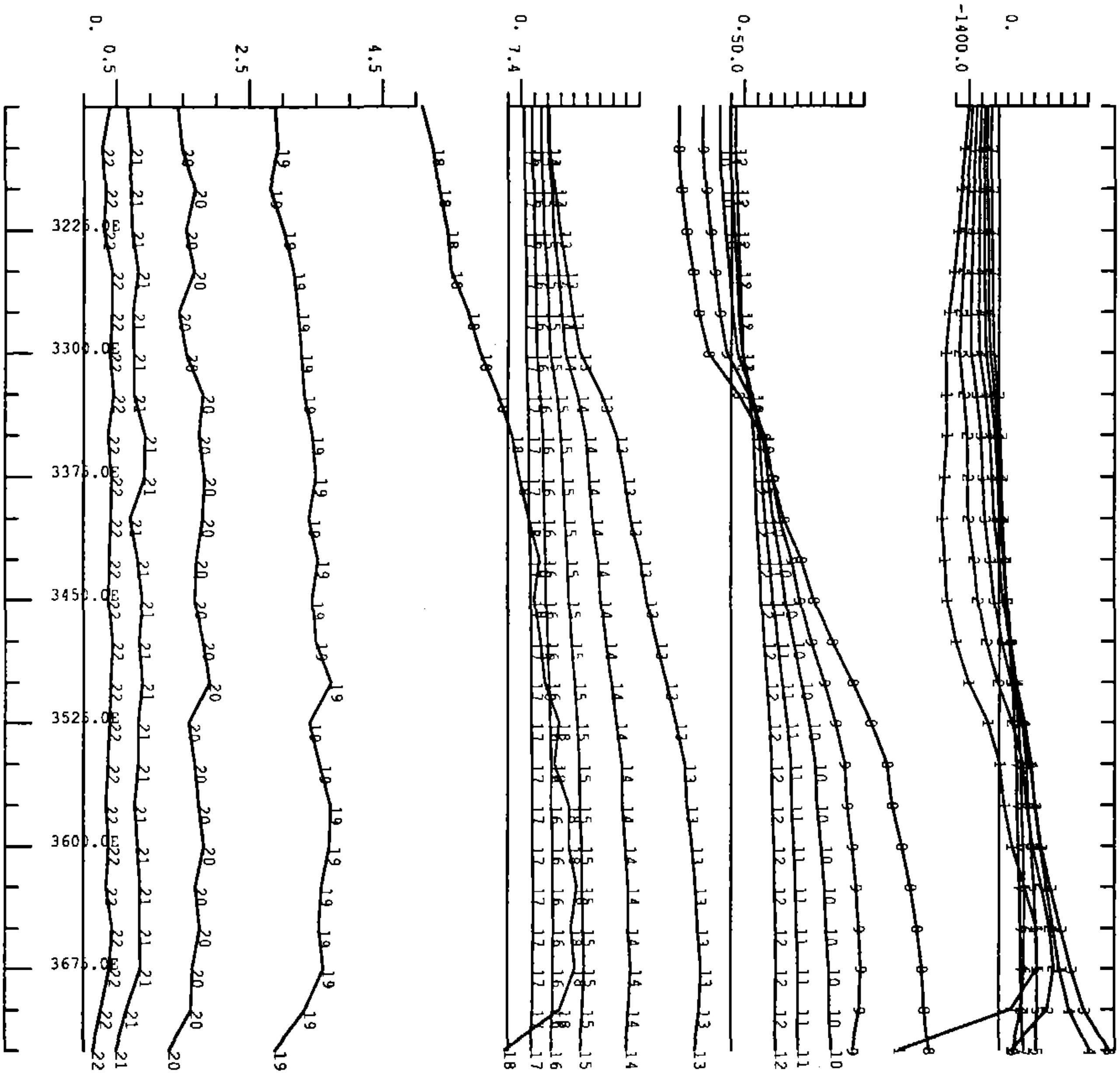
5 cm



ELLIOTT BAY
SURFACE EM
ANOMALY EB2
LINE 4000N
VERTICAL COMPONENT
ZONGE GDP_16 32 HZ
ABERFOYLE RESOURCES
Scale 1: 4000.0 Plot no : 1

5 cm

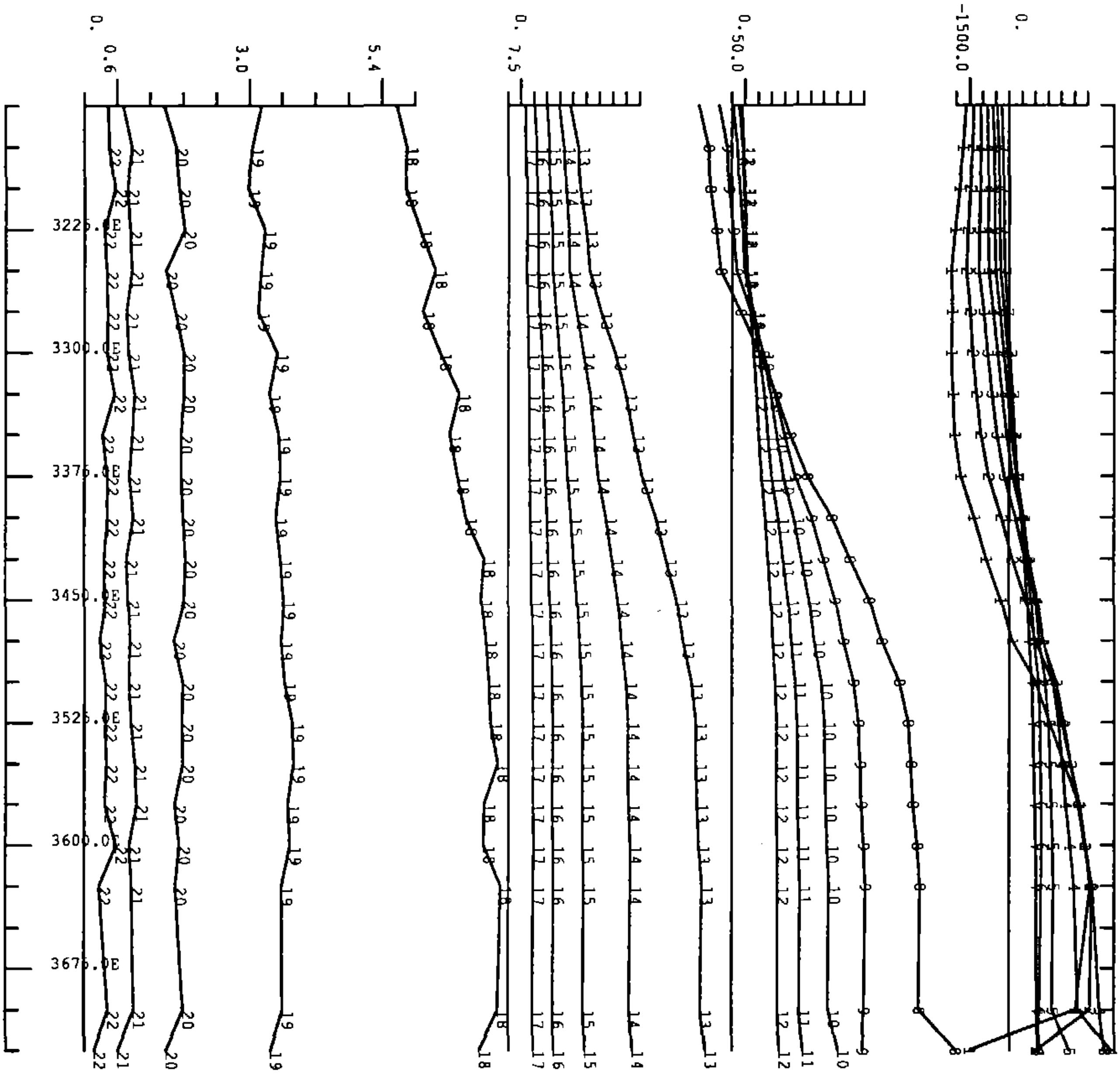
044099



ELLIOTT BAY
SURFACE EM
ANOMALY EB2
LINE 4200N
VERTICAL COMPONENT
ZONGE GDP_16 32 HZ
ABERFOYLE RESOURCES
Scale 1: 4000.0 Plot no : 2

5 cm

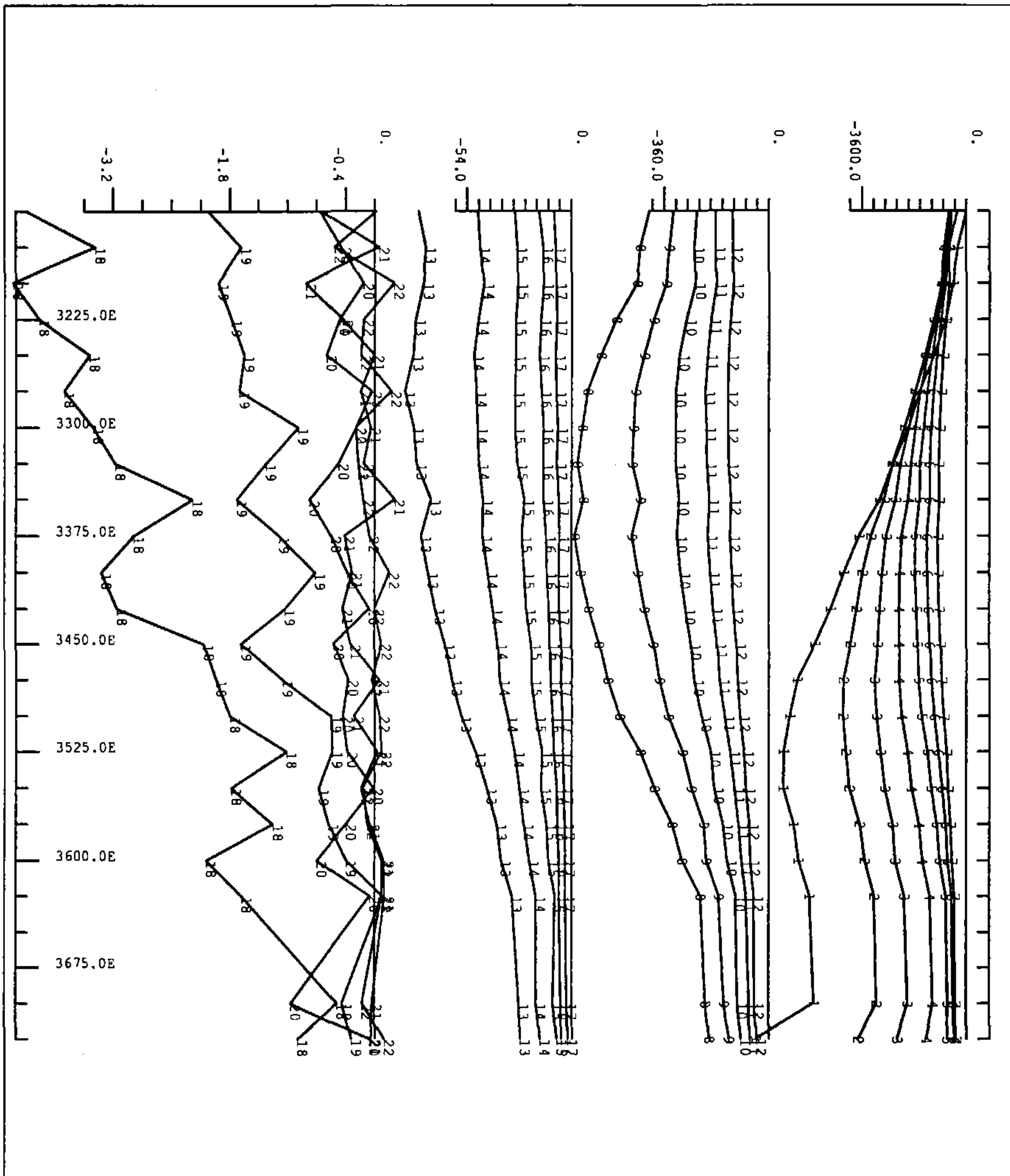
044100



ELLIOTT BAY
SURFACE EM
ANOMALY EB2
LINE 4400N
VERTICAL COMPONENT
ZONGE GDP_16 32 HZ
ABERFOYLE RESOURCES
Scale 1: 4000.0 Plot no : 3

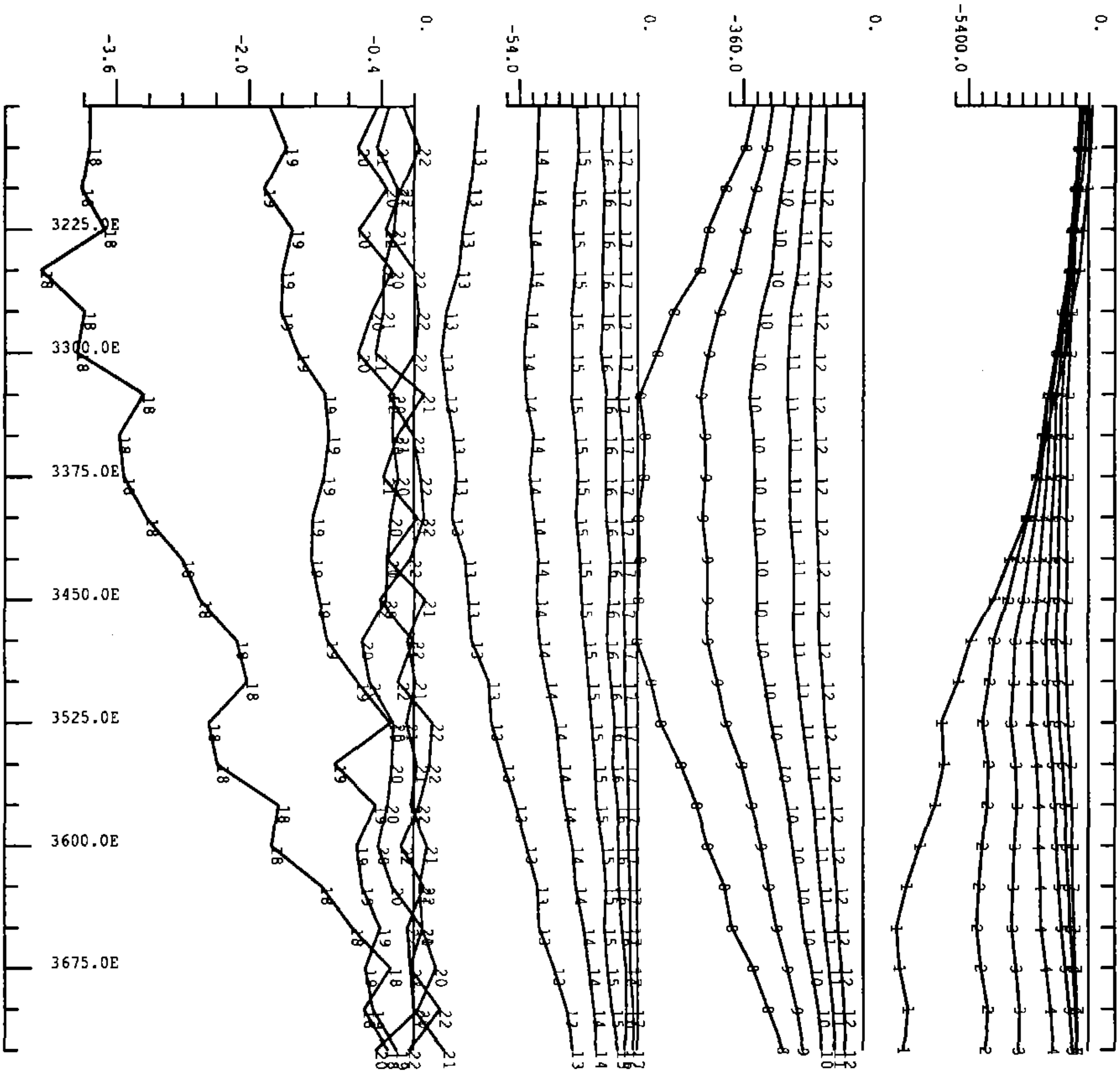
5 cm

044101



ELLIOTT BAY
SURFACE EM
ANOMALY EB2
LINE 4400N
HORIZONTAL COMPONENT
ZONGE GDP_16 32 HZ
ABERFOYLE RESOURCES
Scale 1: 4000.0 Plot no : 4

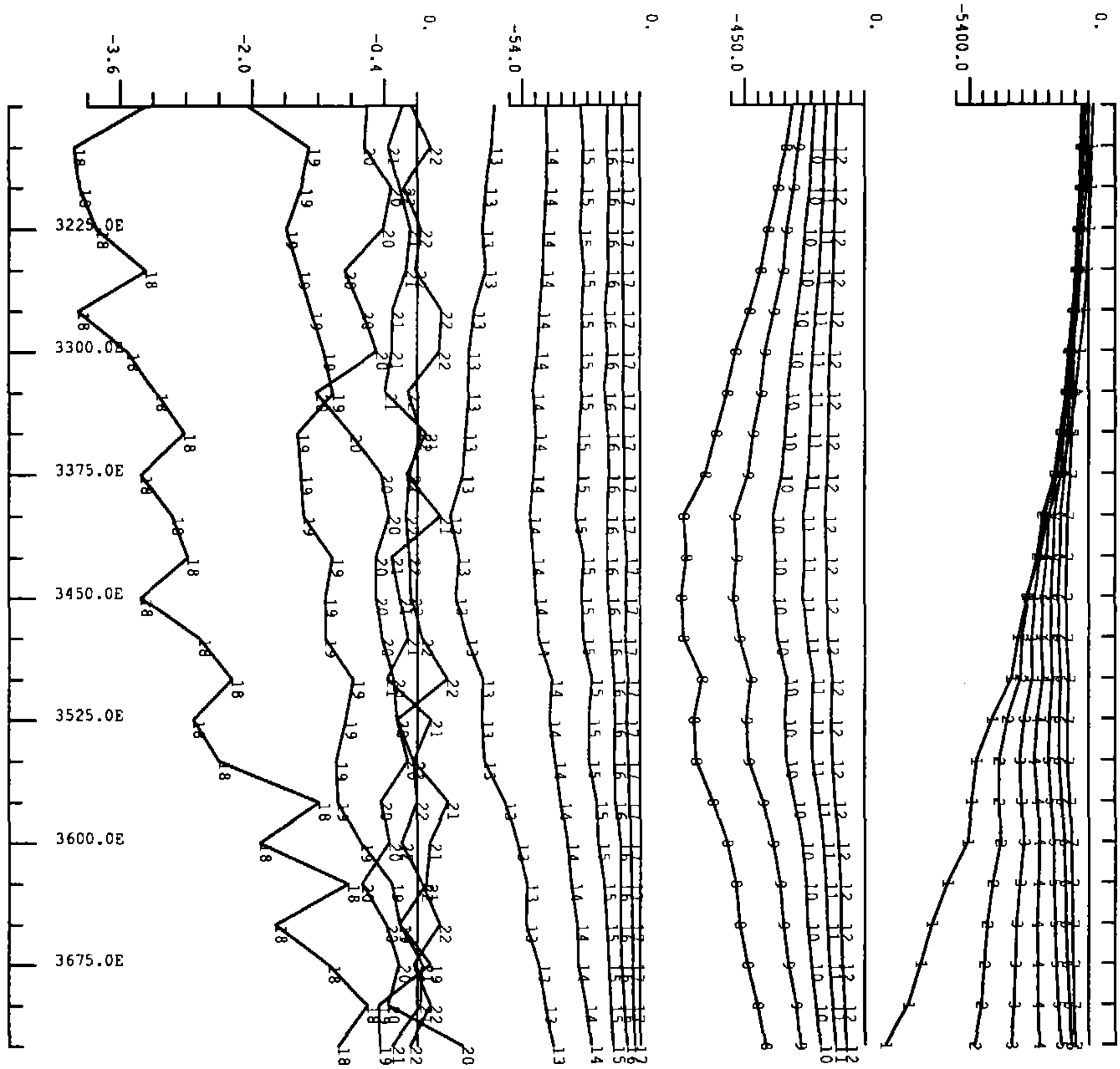
5 cm



ELLIOTT BAY
SURFACE EM
ANOMALY EB2
LINE 4200N
HORIZONTAL COMPONENT
ZONGE GDP_16 32 HZ
ABERFOYLE RESOURCES
Scale 1: 4000.0 Plot no : 5

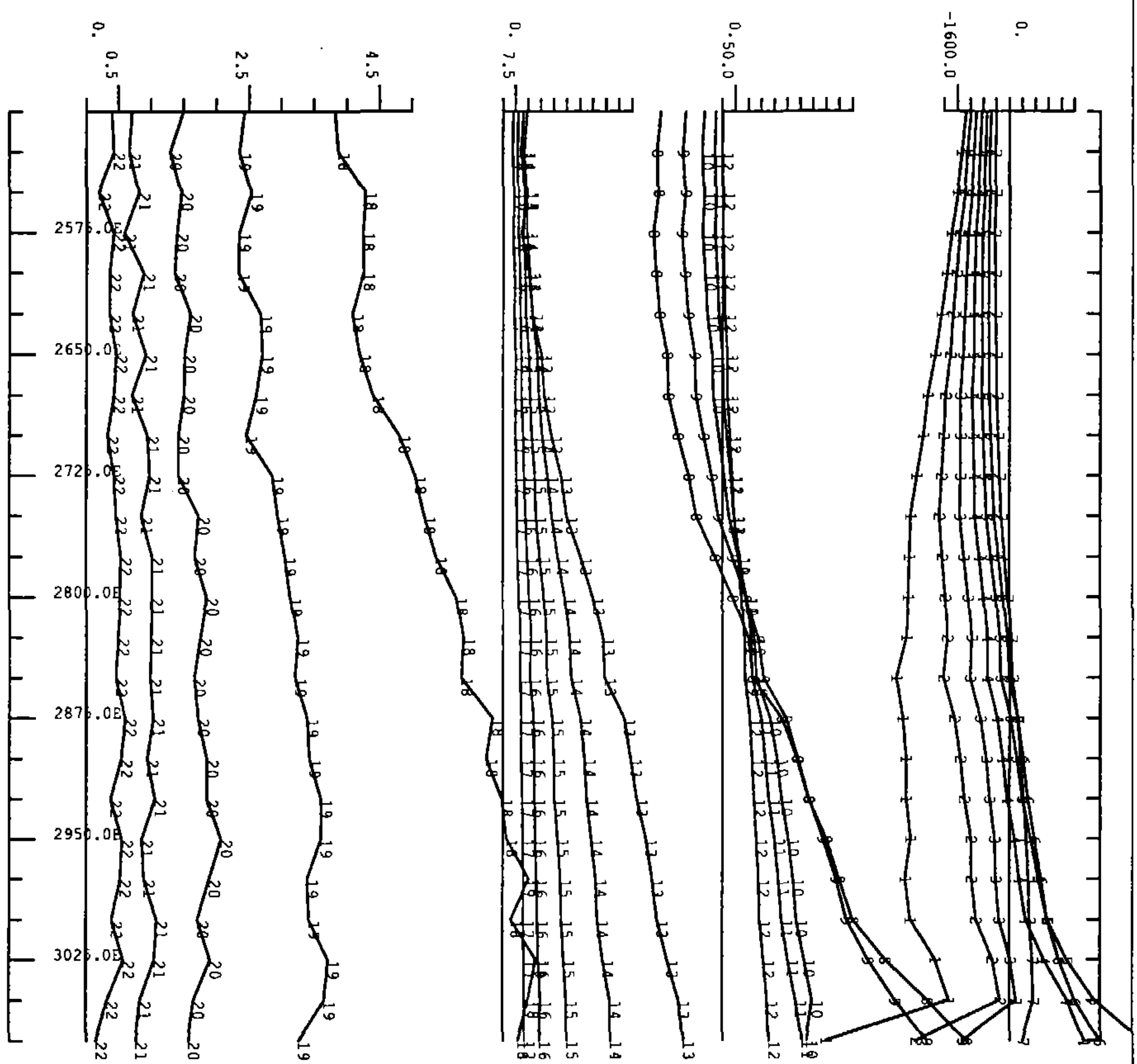
5 cm

044103



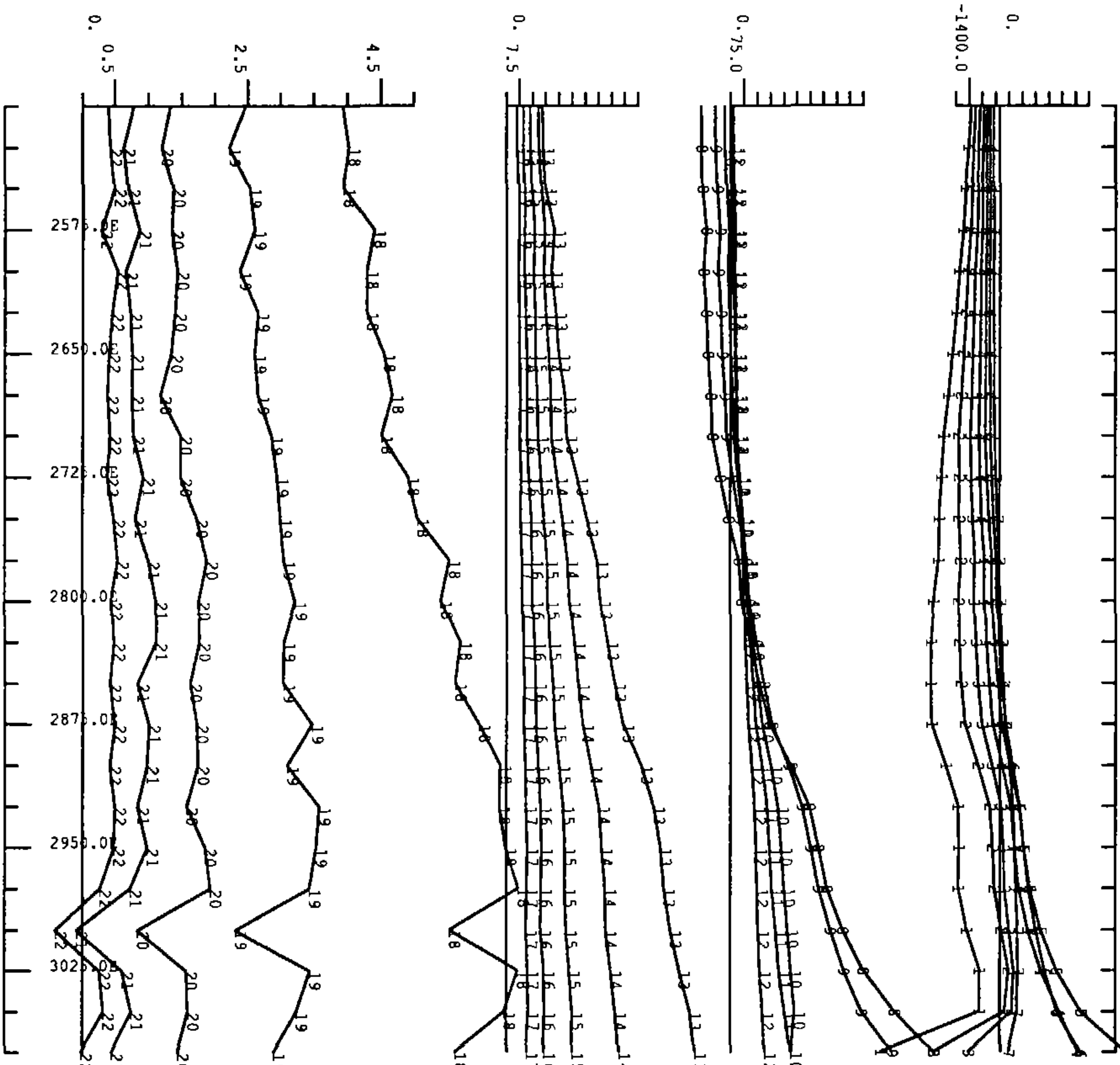
ELLIOTT BAY
SURFACE EM
ANOMALY EB2
LINE 4000N
HORIZONTAL COMPONENT
ZONGE GDP_16 32 HZ
ABERFOYLE RESOURCES
Scale 1: 4000.0 Plot no : 6

5 cm



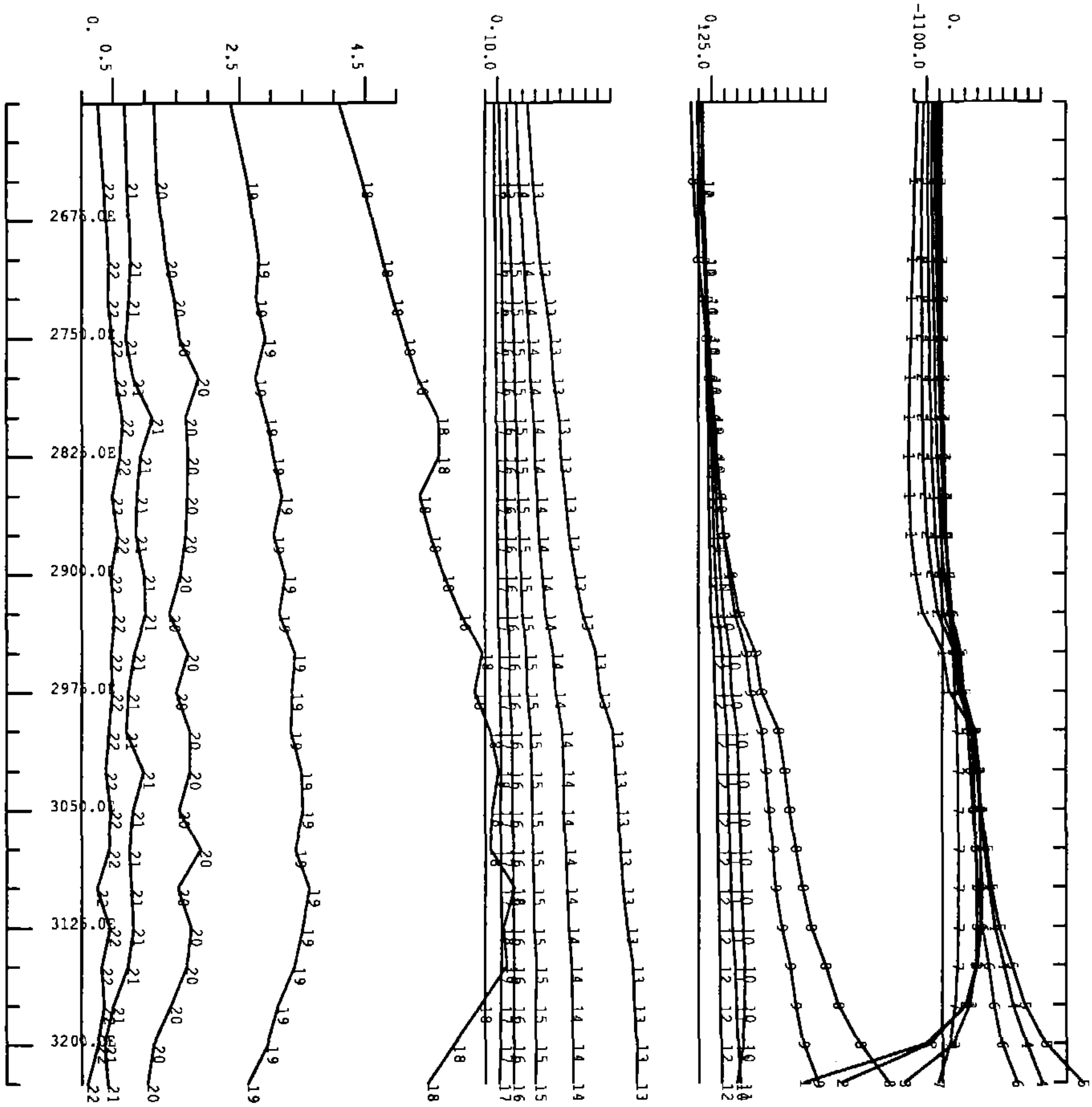
ELLIOTT BAY
SURFACE EM
ANOMALY EB3
LINE 4400N
VERTICAL COMPONENT
ZONGE GDP_16 32 HZ
ABERFOYLE RESOURCES
Scale 1: 4000.0 Plot no : 7

5 cm



ELLIOTT BAY
SURFACE EM
ANOMALY EB3
LINE 4600N
VERTICAL COMPONENT
ZONGE GDP_16 32 HZ
ABERFOYLE RESOURCES
Scale 1: 4000.0 Plot no : 8

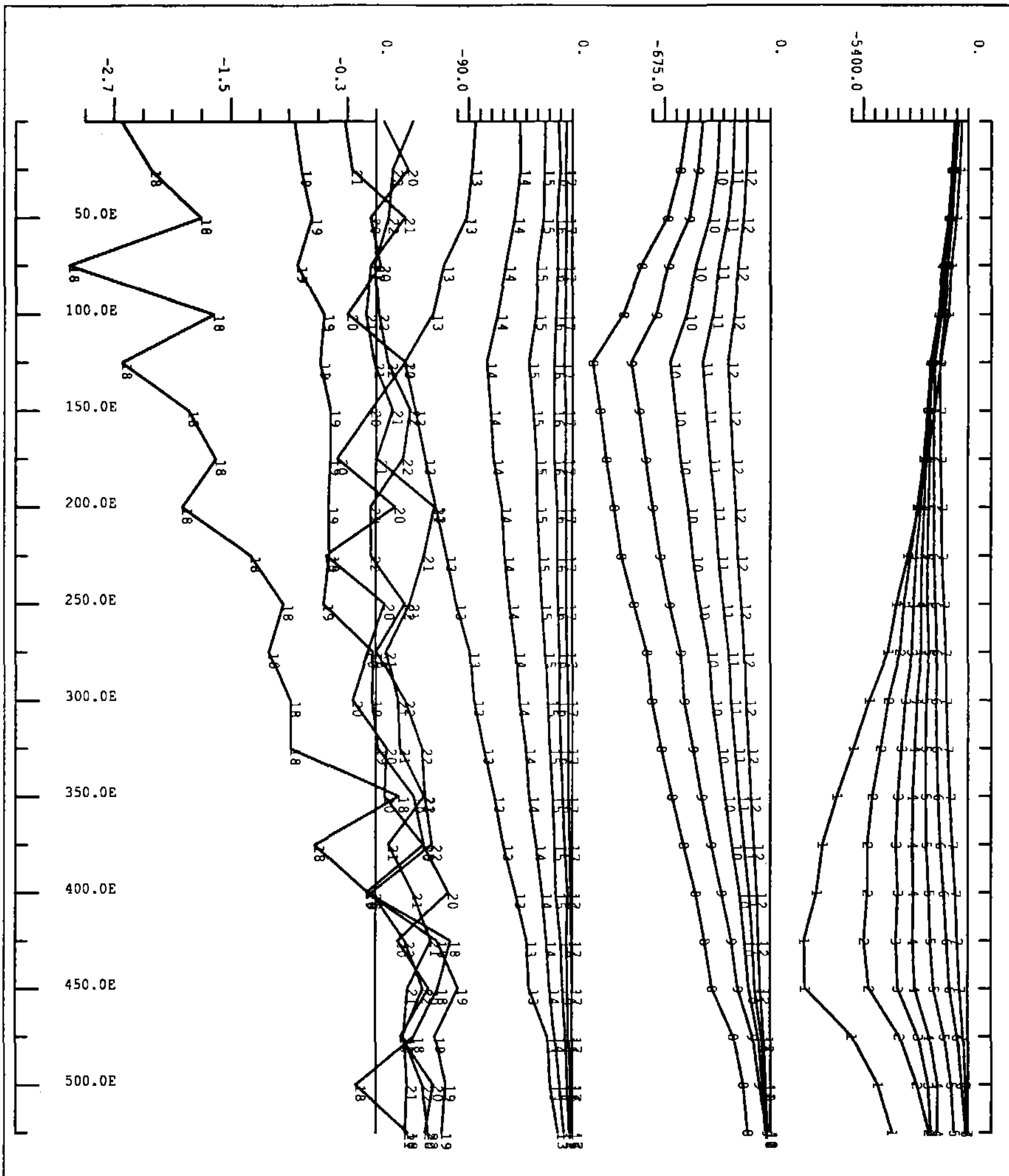
5 cm



ELLIOTT BAY
SURFACE EM
ANOMALY EB3
LINE 4800N
VERTICAL COMPONENT
ZONGE GDP_16 32 HZ
ABERFOYLE RESOURCES
Scale 1: 4000.0 Plot no : 9

5 cm

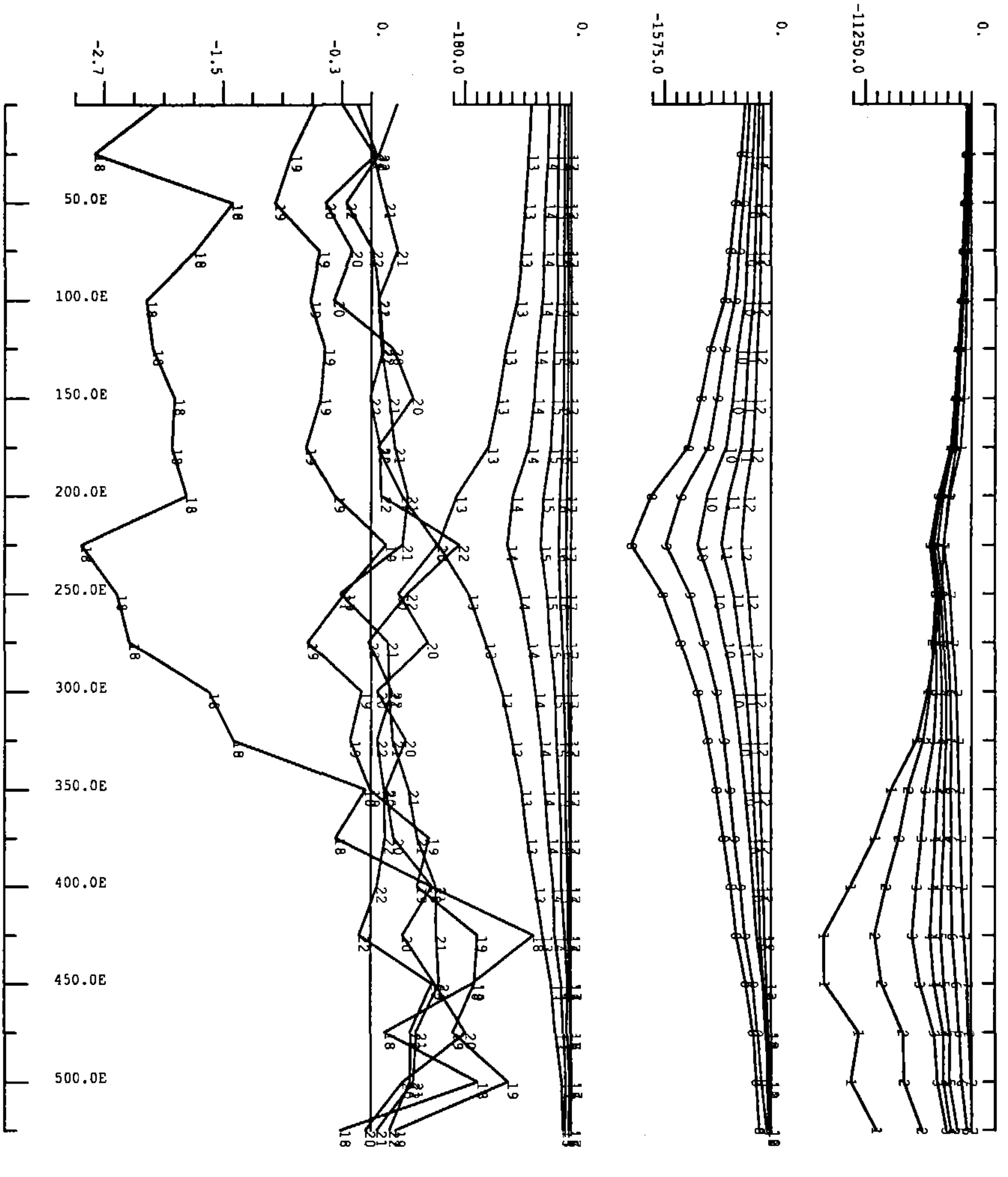
044107



ELLIOTT BAY
SURFACE EM
ANOMALY EB5
LINE 700N
HORIZONTAL COMPONENT
ZONGE GDP_16 32 HZ
ABERFOYLE RESOURCES
Scale 1: 3000.0 Plot no : 12

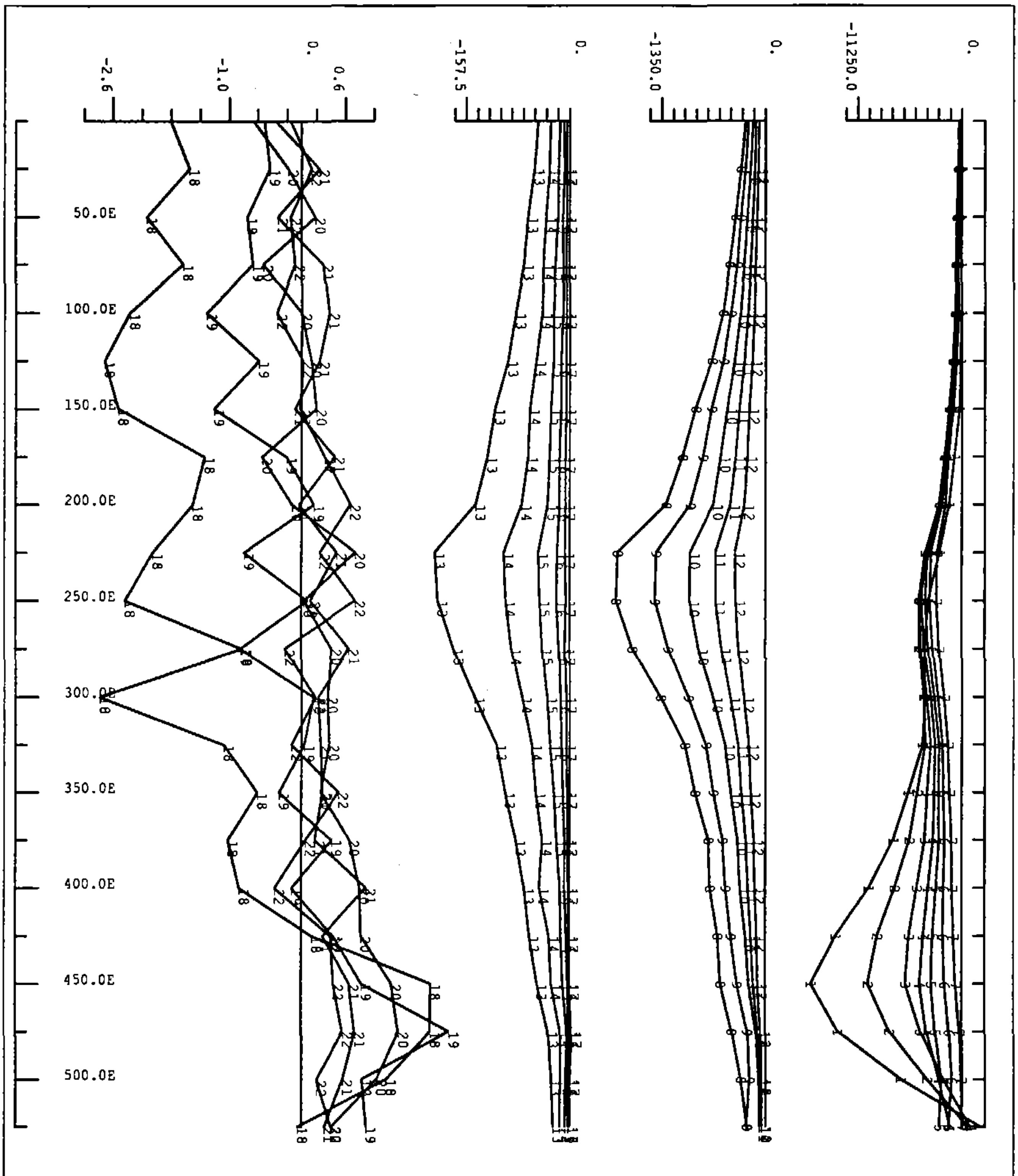
5 cm

044108



ELLIOTT BAY
SURFACE EM
ANOMALY EB5
LINE 500N
HORIZONTAL COMPONENT
ZONGE GDP_16 32 HZ
ABERFOYLE RESOURCES
Scale 1: 3000.0   Plot no :   13

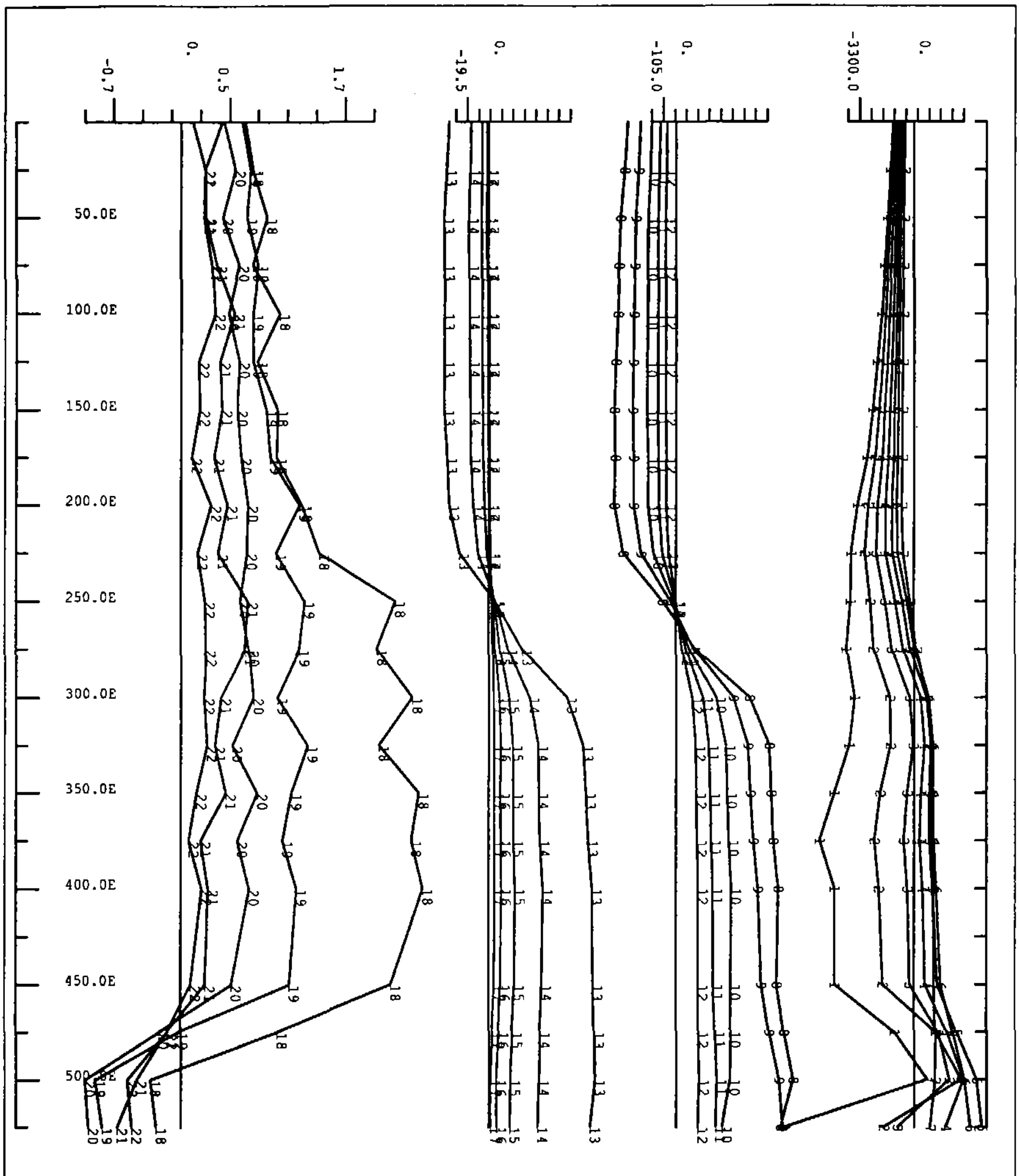
5 cm



ELLIOTT BAY
SURFACE EM
ANOMALY EB5
LINE 300N
HORIZONTAL COMPONENT
ZONGE GDP_16 32 HZ
ABERFOYLE RESOURCES
Scale 1: 3000.0 Plot no : 14

5 cm

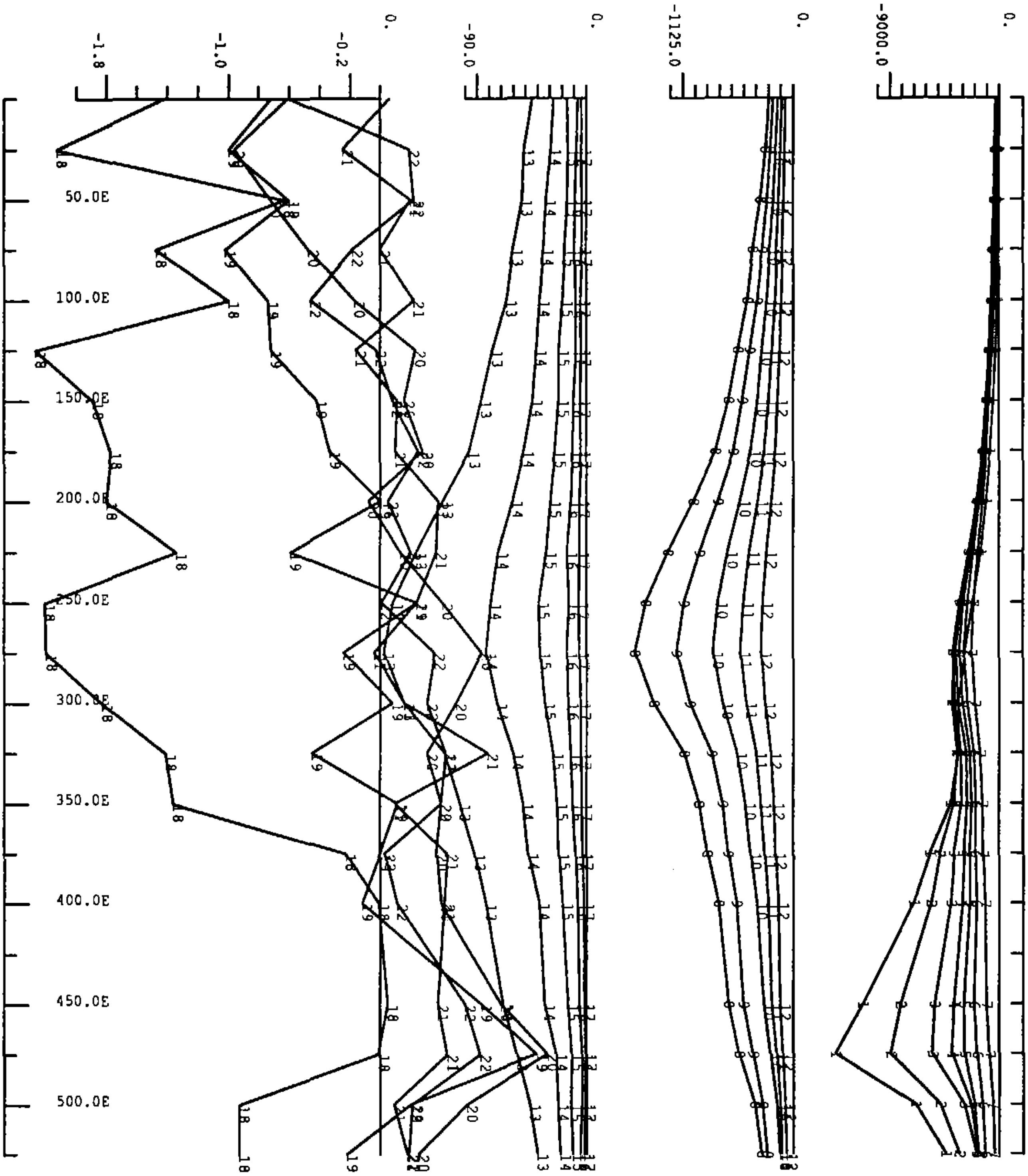
044110



ELLIOTT BAY
SURFACE EM
ANOMALY EB5
LINE 100N
VERTICAL COMPONENT
ZONGE GDP_16 32 HZ
ABERFOYLE RESOURCES
Scale 1: 3000.0 Plot no : 16

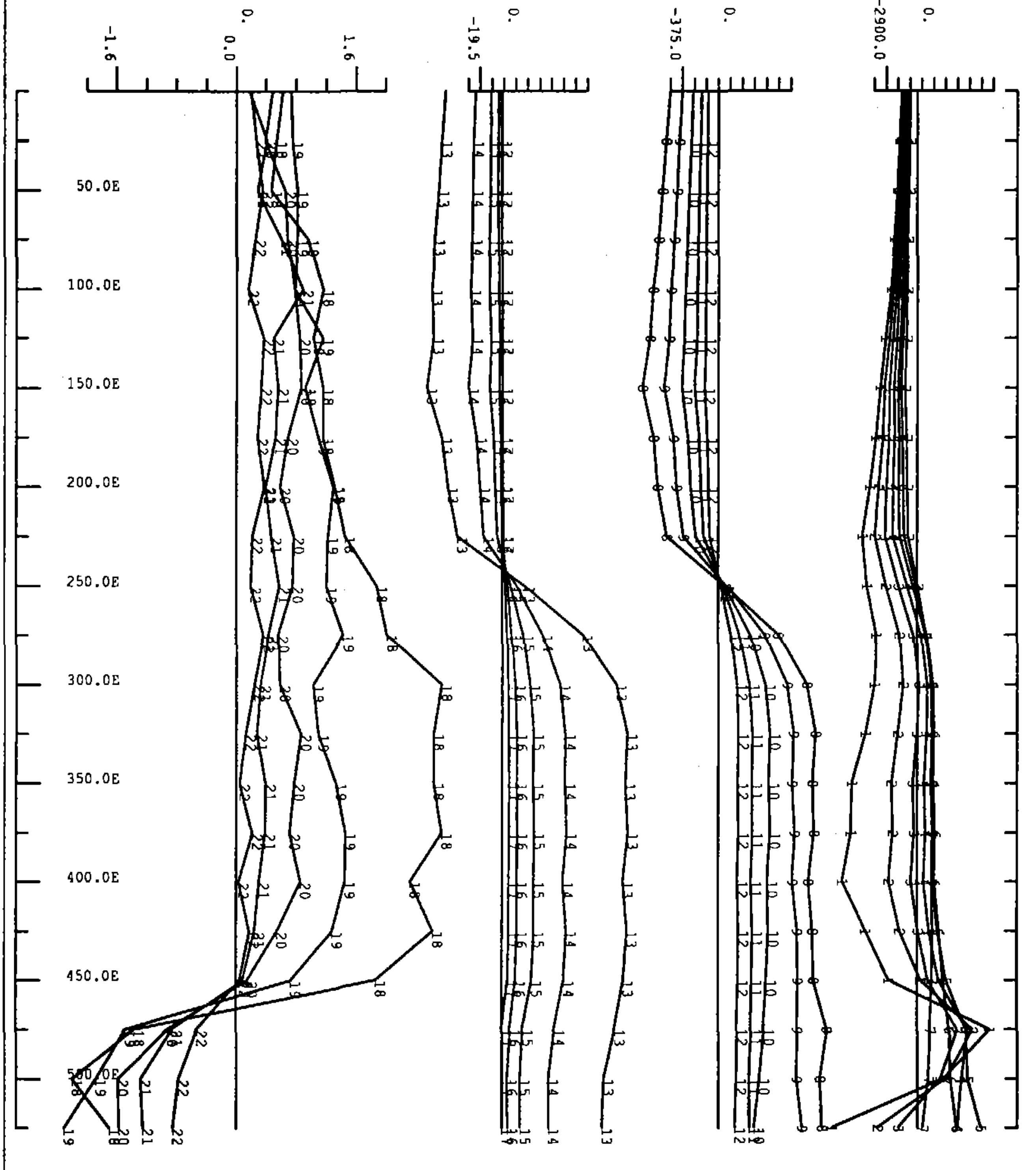
5 cm

044111



ELLIOTT BAY
SURFACE EM
ANOMALY EB5
LINE 100N
HORIZONTAL COMPONENT
ZONGE GDP_16 32 HZ
ABERFOYLE RESOURCES
Scale 1: 3000.0 Plot no : 15

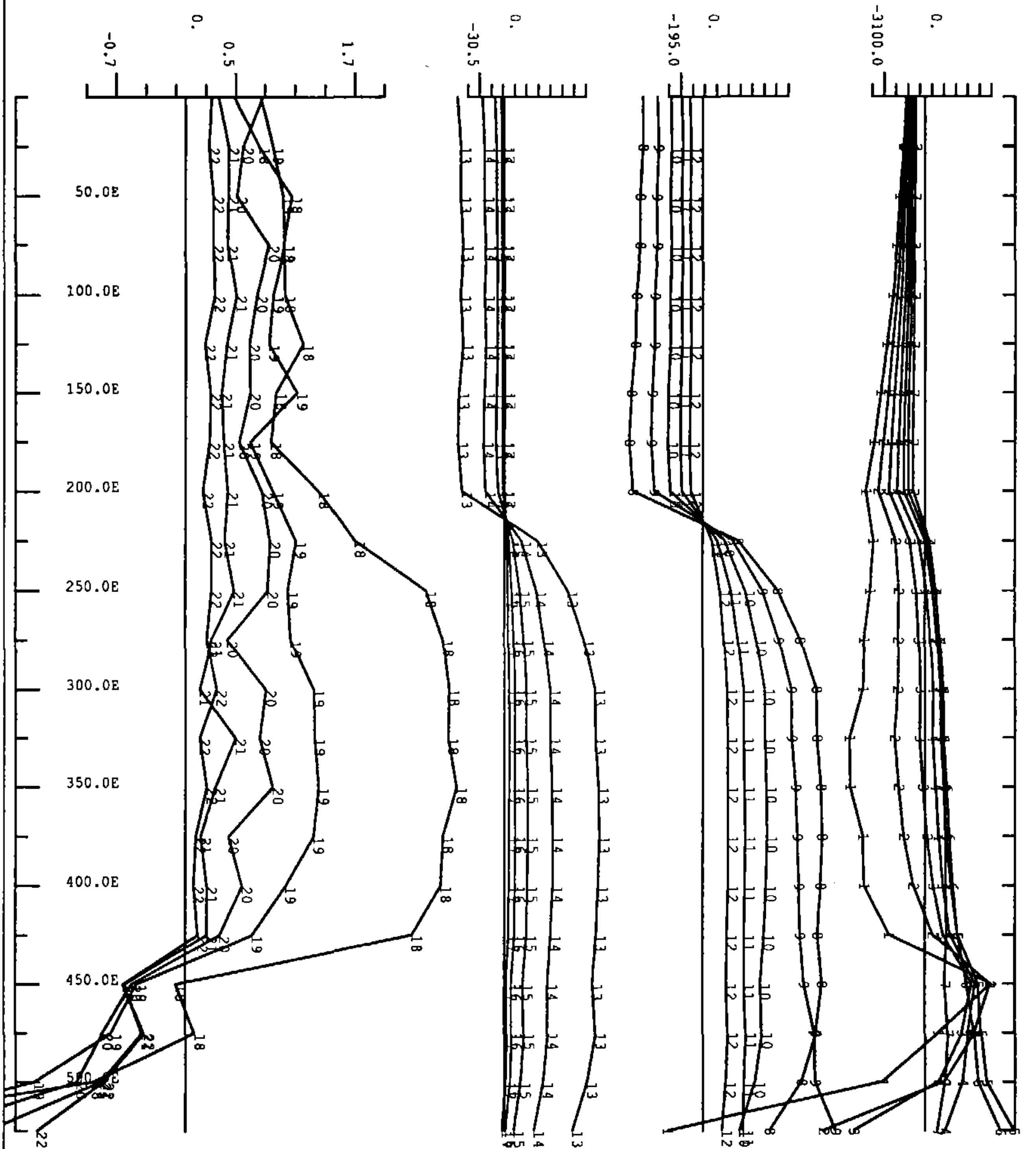
5 cm



ELLIOTT BAY
SURFACE EM
ANOMALY EB5
LINE 300N
VERTICAL COMPONENT
ZONGE GDP_16 32 HZ
ABERFOYLE RESOURCES
Scale 1: 3000.0 Plot no : 17

5 cm

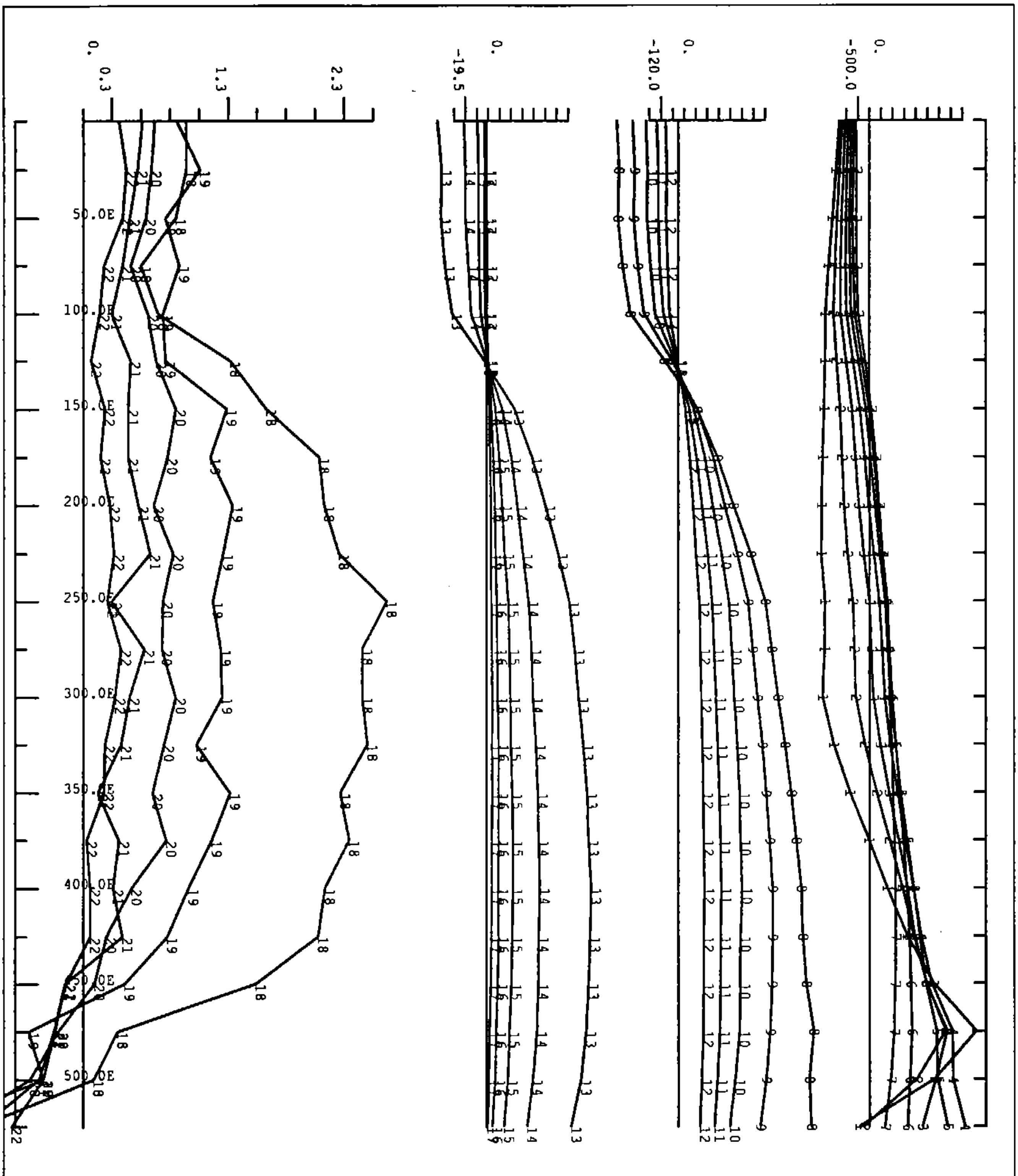
044113



ELLIOTT BAY
SURFACE EM
ANOMALY EB5
LINE 500N
VERTICAL COMPONENT
ZONGE GDP_16 32 HZ
ABERFOYLE RESOURCES
Scale 1: 3000.0 Plot no : 10

5 cm

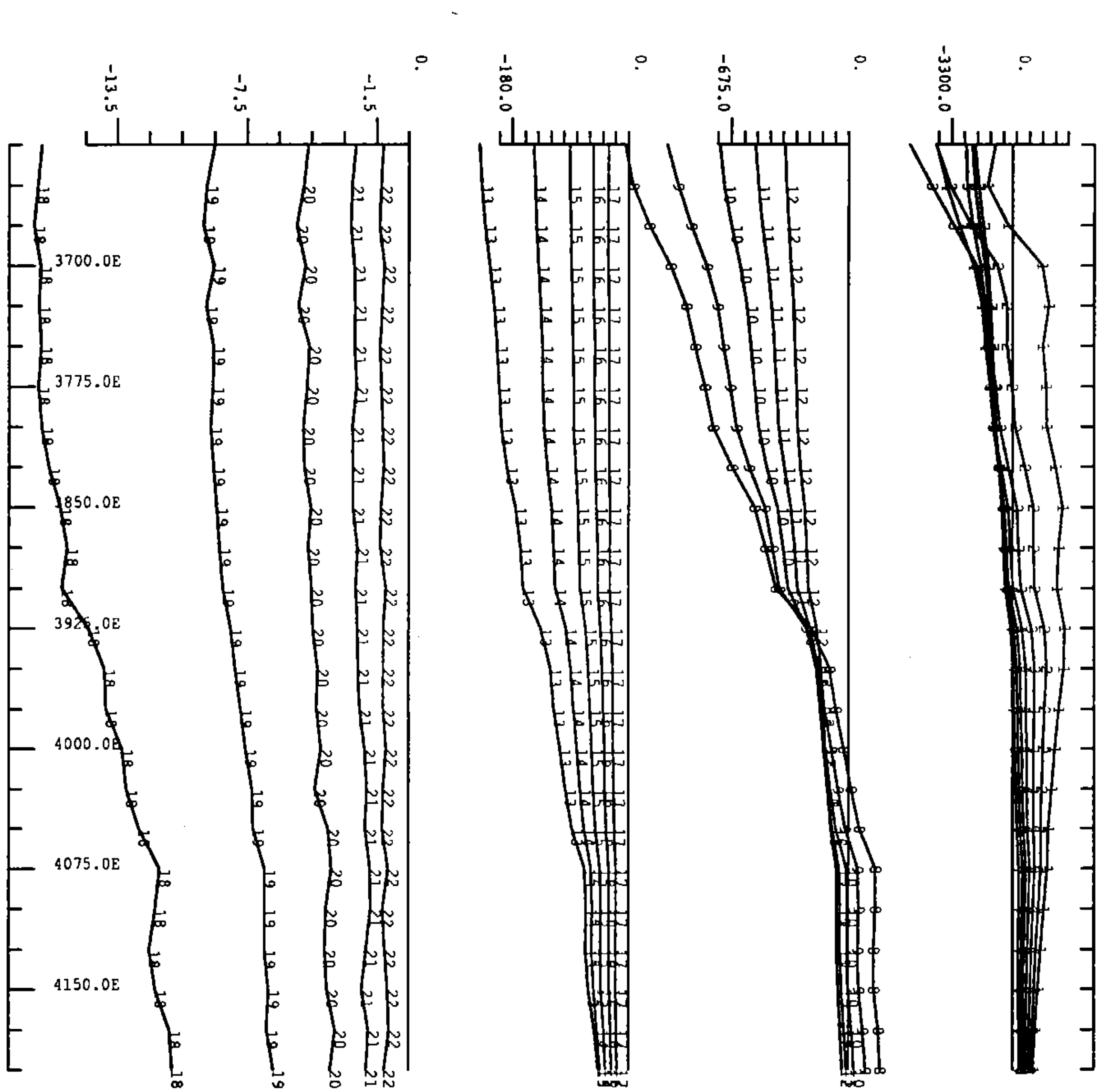
044114



ELLIOTT BAY
SURFACE EM
ANOMALY EB5
LINE 700N
VERTICAL COMPONENT
ZONGE GDP_16 32 HZ
ABERFOYLE RESOURCES
Scale 1: 3000.0 Plot no : 11

5 cm

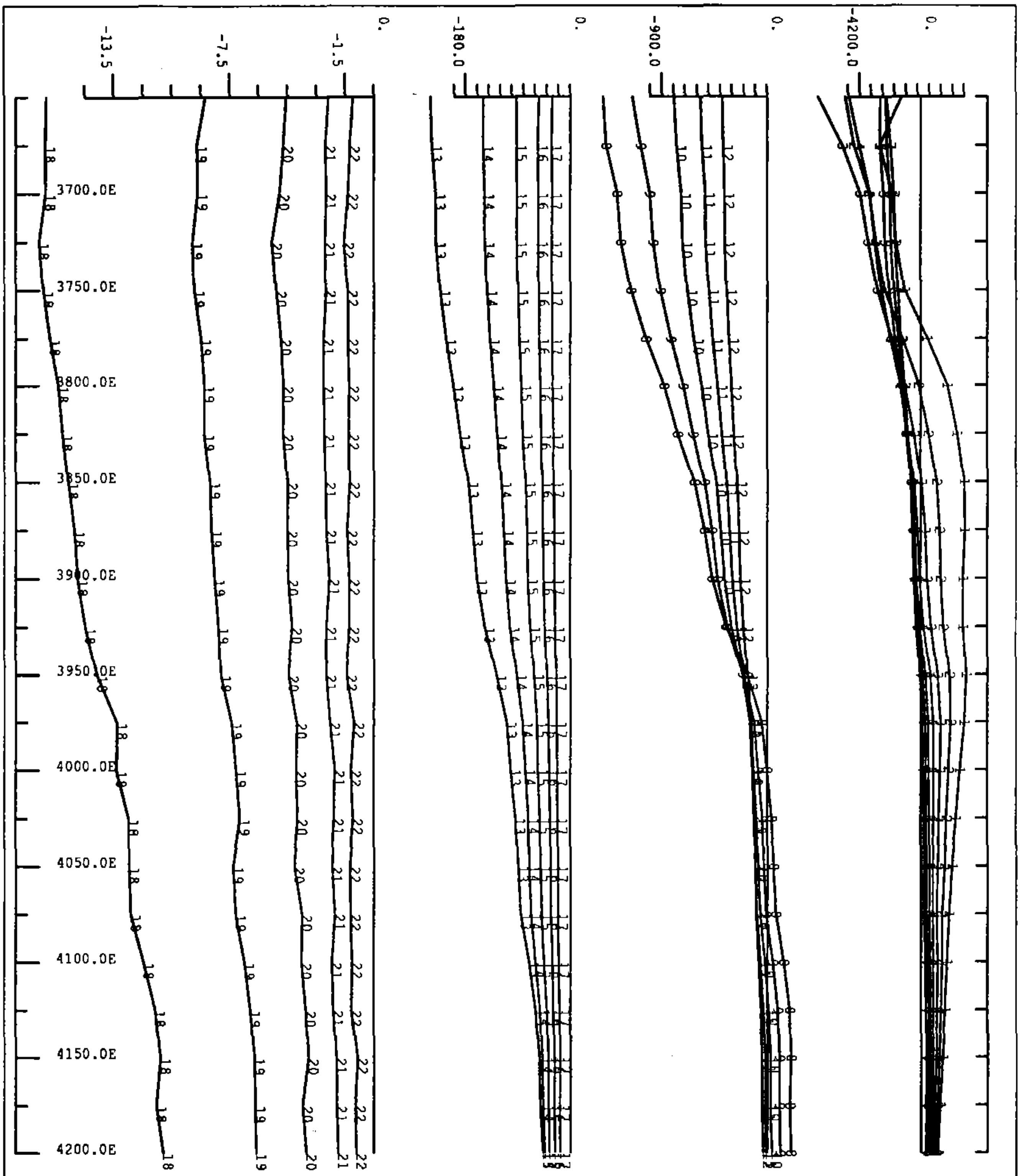
044115



ELLIOTT BAY
SURFACE EM
ANOMALY EB7
LINE 59400N
VERTICAL COMPONENT
ZONGE GDP_16 32 HZ
ABERFOYLE RESOURCES
Scale 1: 4000.0 Plot no : 18

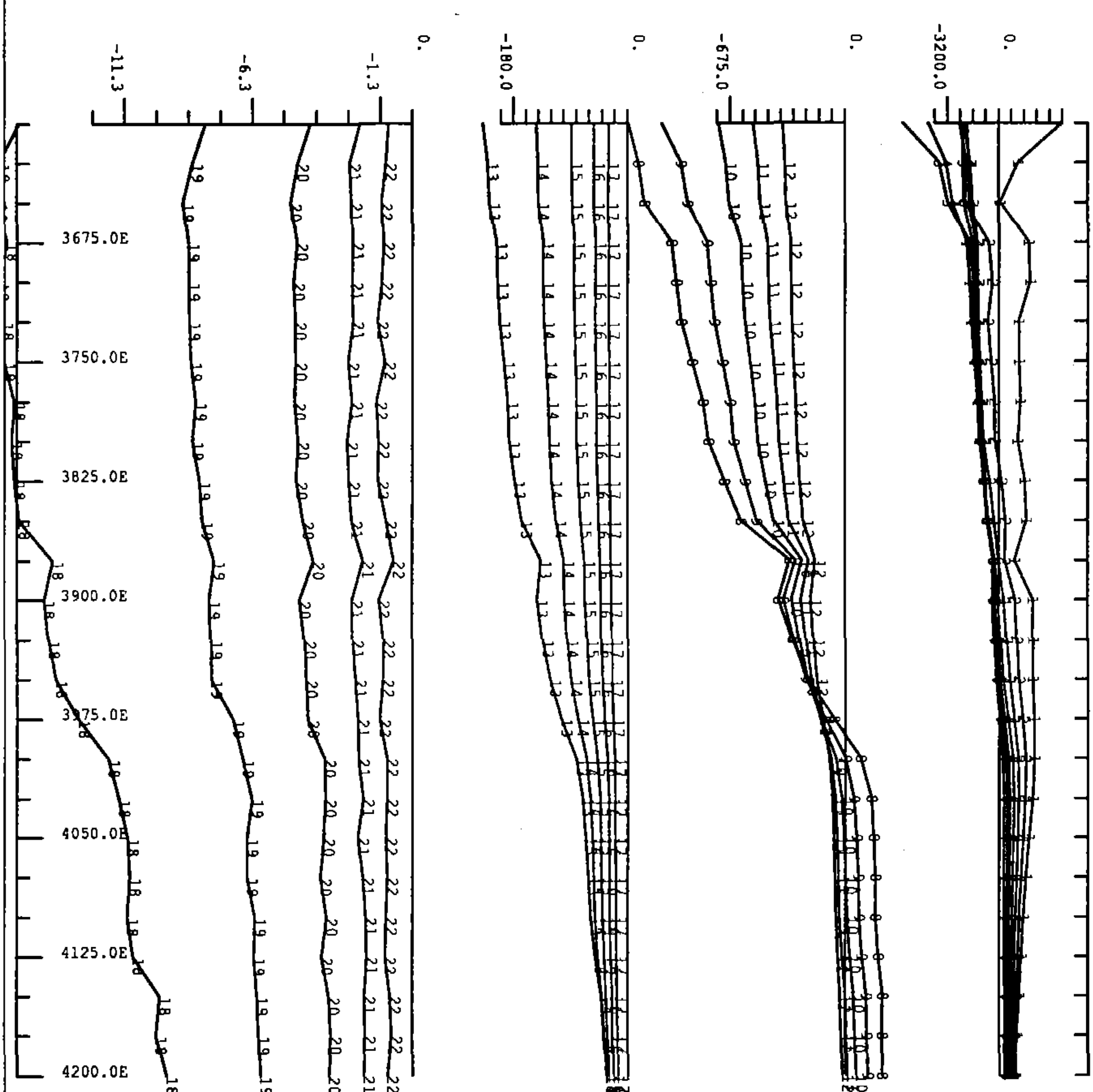
5 cm

044116



ELLIOTT BAY
SURFACE EM
ANOMALY EB7
LINE 59600N
VERTICAL COMPONENT
ZONGE GDP_16 32 HZ
ABERFOYLE RESOURCES
Scale 1: 3000.0 Plot no : 19

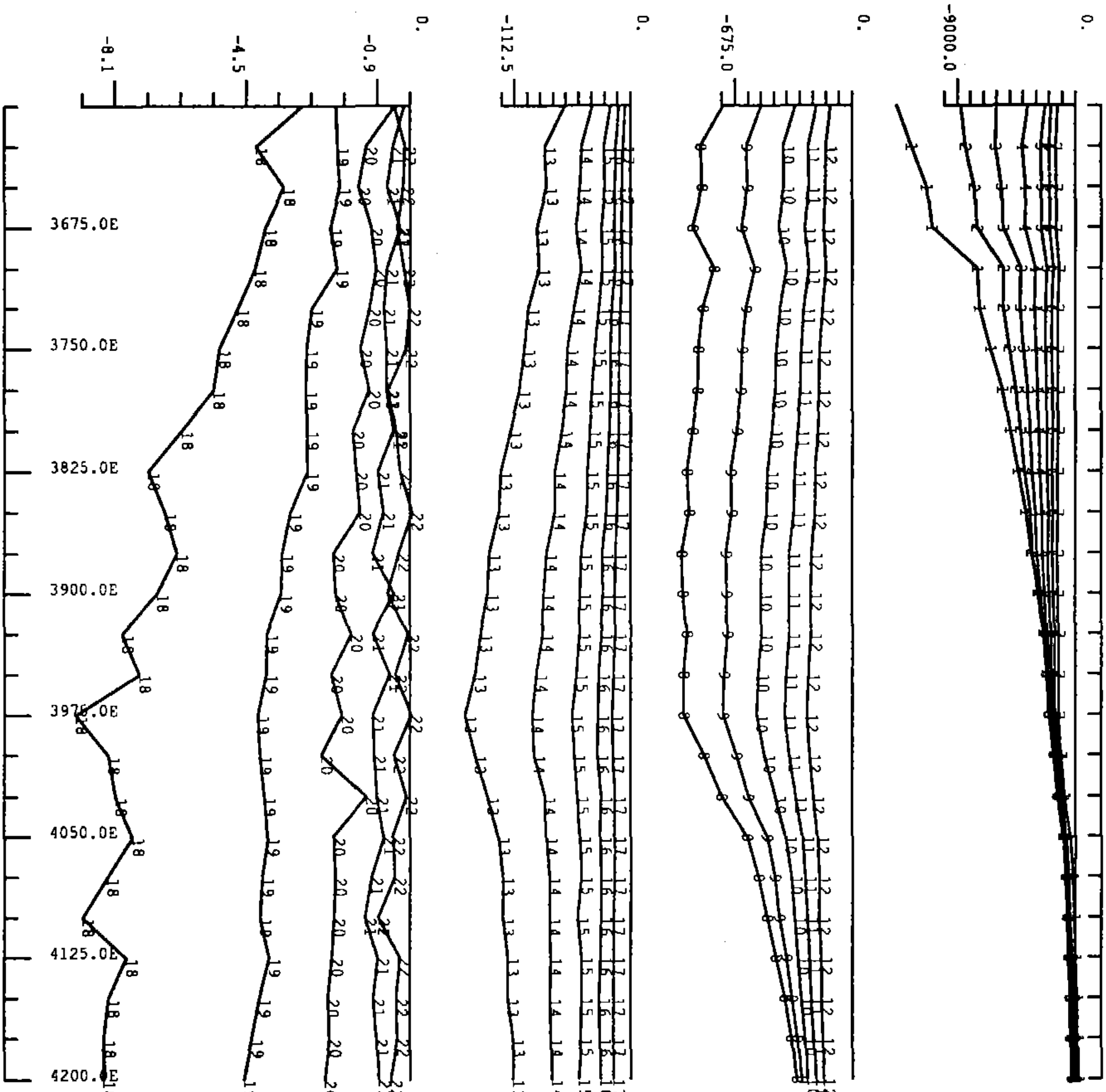
5 cm



ELLIOTT BAY
SURFACE EM
ANOMALY EB7
LINE 59800N
VERTICAL COMPONENT
ZONGE GDP_16 32 HZ
ABERFOYLE RESOURCES
Scale 1: 4000.0 Plot no : 20

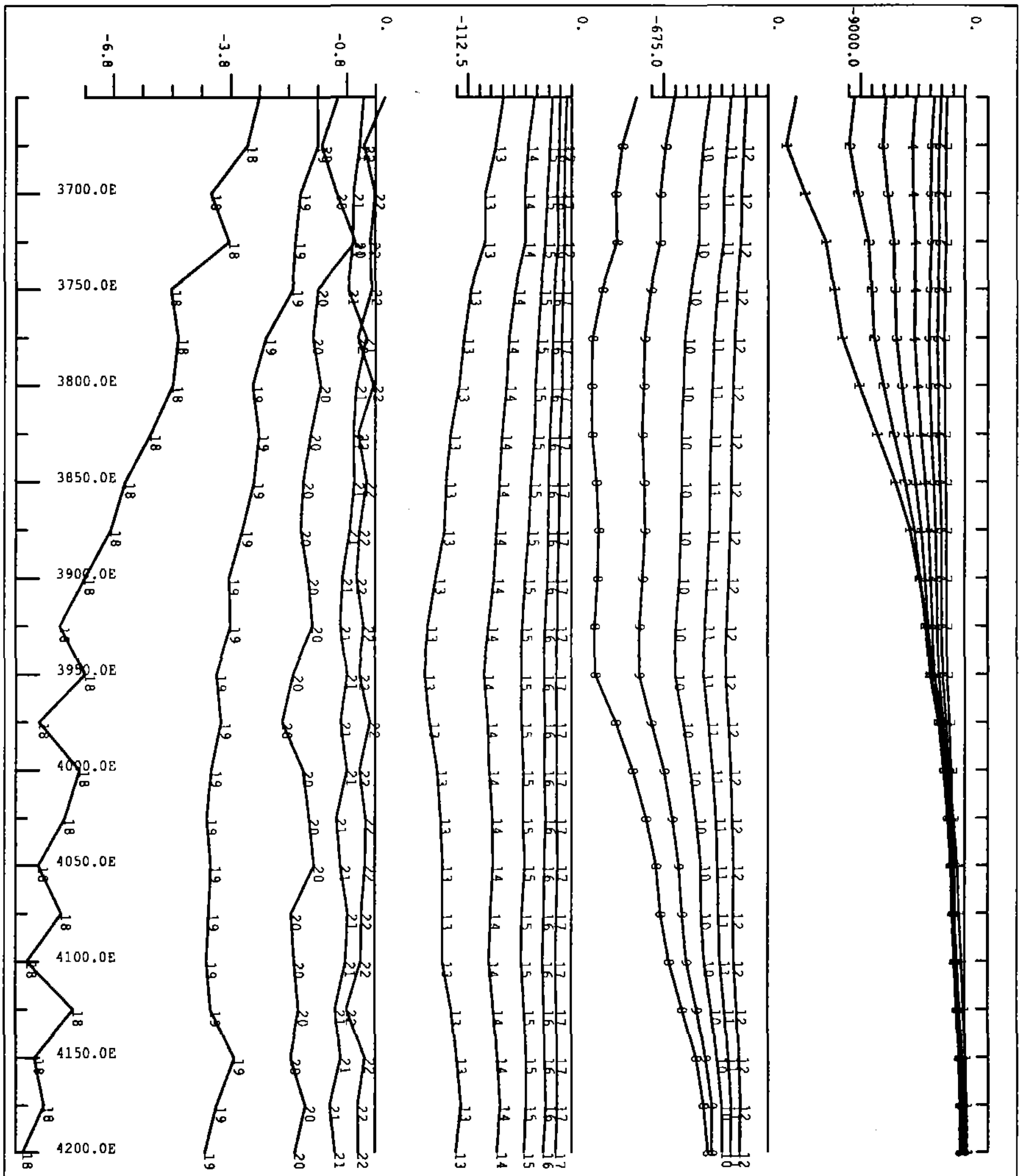
5 cm

044118



ELLIOTT BAY
SURFACE EM
ANOMALY EB7
LINE 59800N
HORIZONTAL COMPONENT
ZONGE GDP_16 32 HZ
ABERFOYLE RESOURCES
Scale 1: 4000.0 Plot no : 21

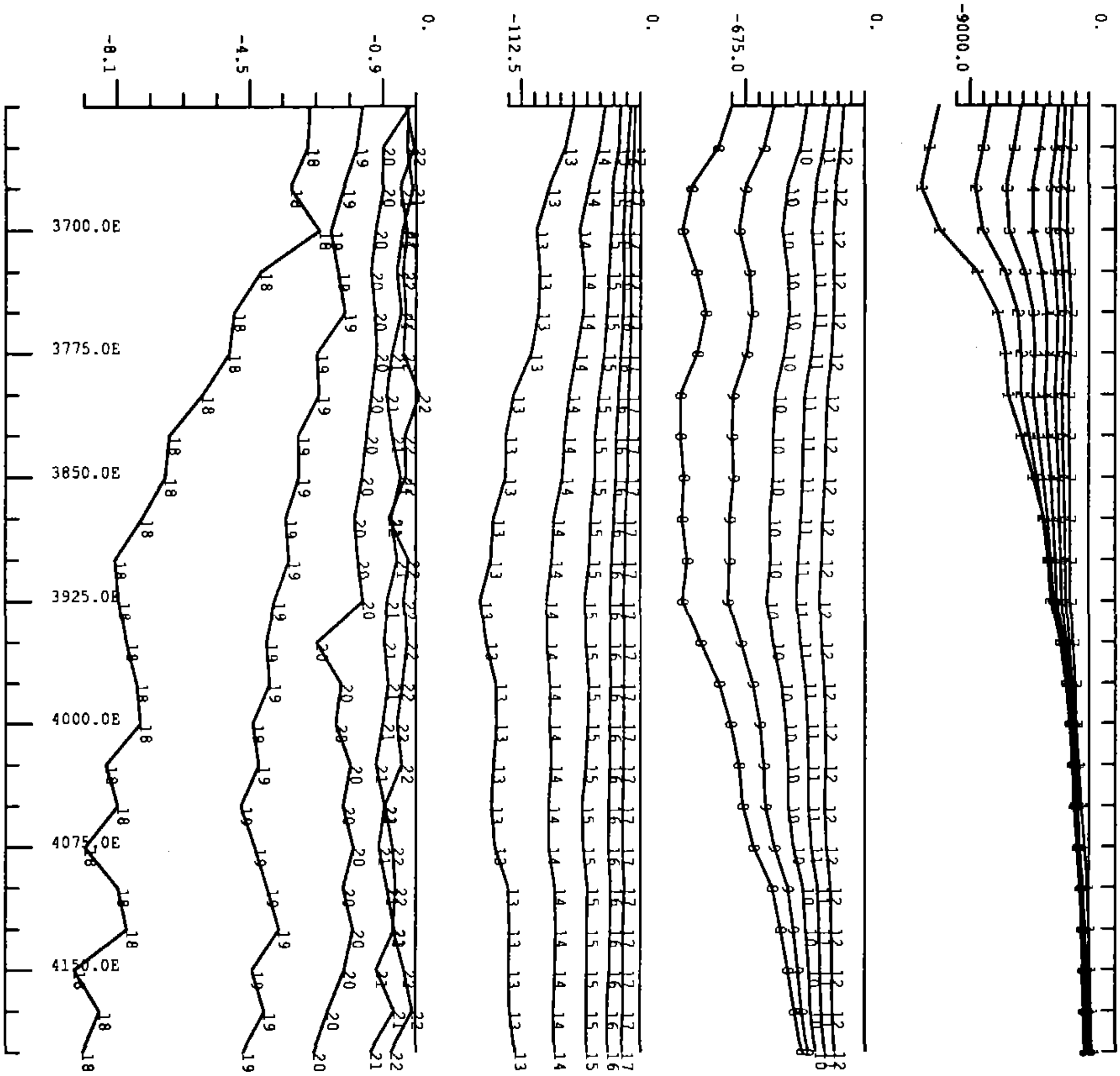
5 cm



ELLIOTT BAY
SURFACE EM
ANOMALY EB7
LINE 59600N
HORIZONTAL COMPONENT
ZONGE GDP_16 32 HZ
ABERFOYLE RESOURCES
Scale 1: 3000.0 Plot no : 22

5 cm

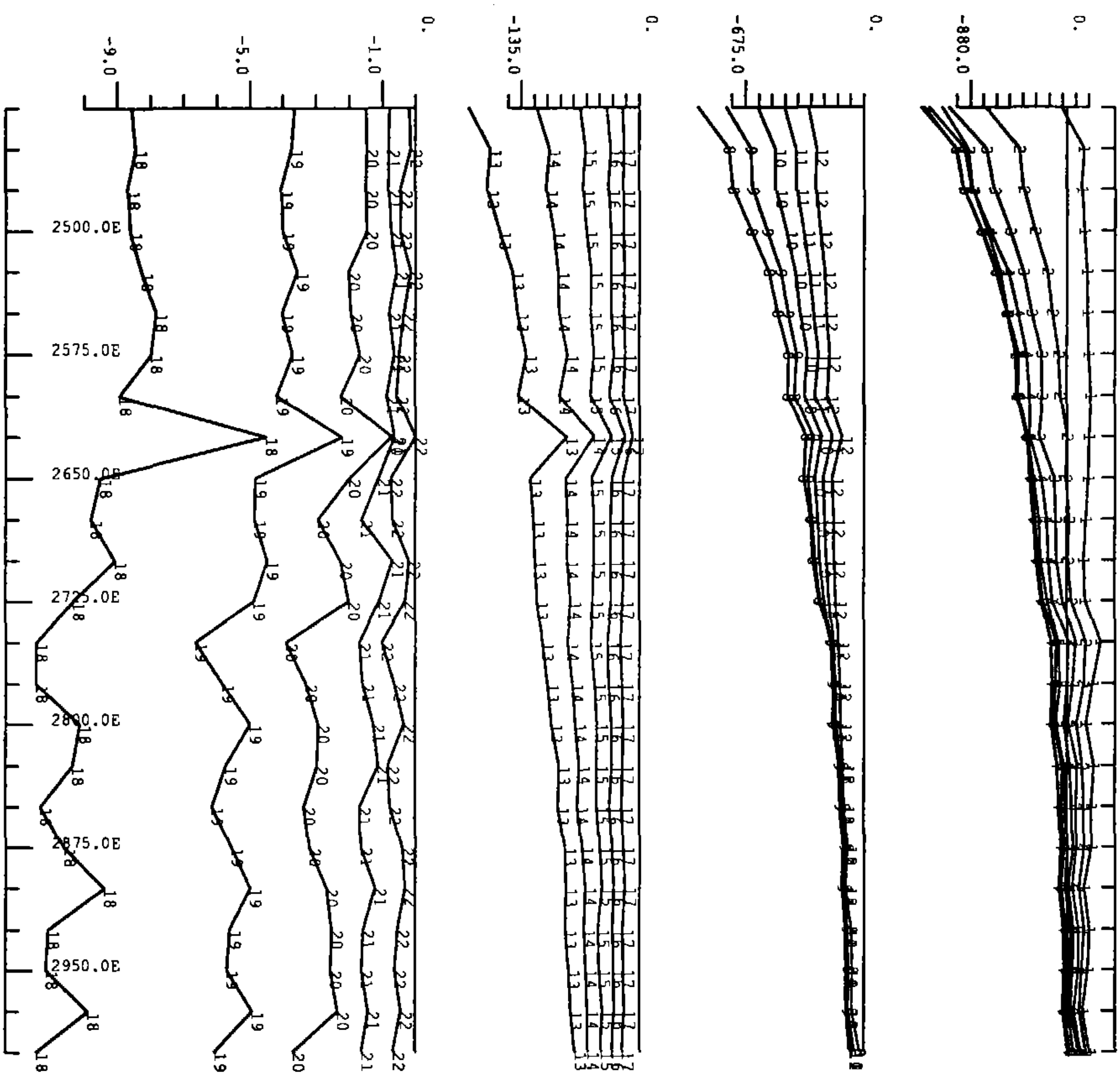
044120



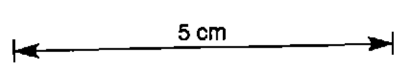
ELLIOTT BAY
SURFACE EM
ANOMALY EB7
LINE 59400N
HORIZONTAL COMPONENT
ZONGE GDP_16 32 HZ
ABERFOYLE RESOURCES
Scale 1: 4000.0 Plot no : 23

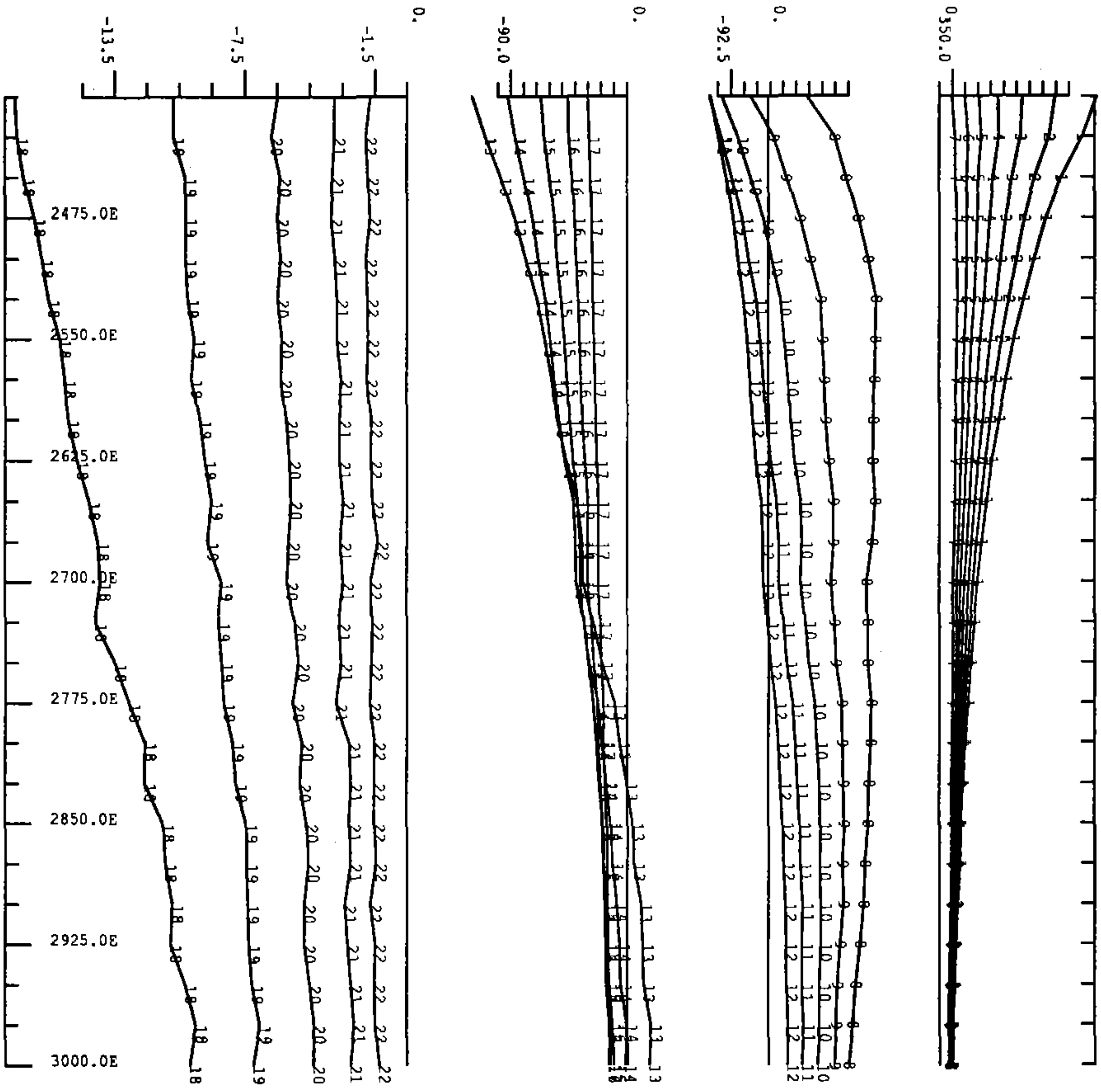
5 cm

044121



ELLIOTT BAY
SURFACE EM
ANOMALY EB8
LINE 60400N
VERTICAL COMPONENT
ZONGE GDP_16 32 HZ
ABERFOYLE RESOURCES
Scale 1: 4000.0 Plot no : 24

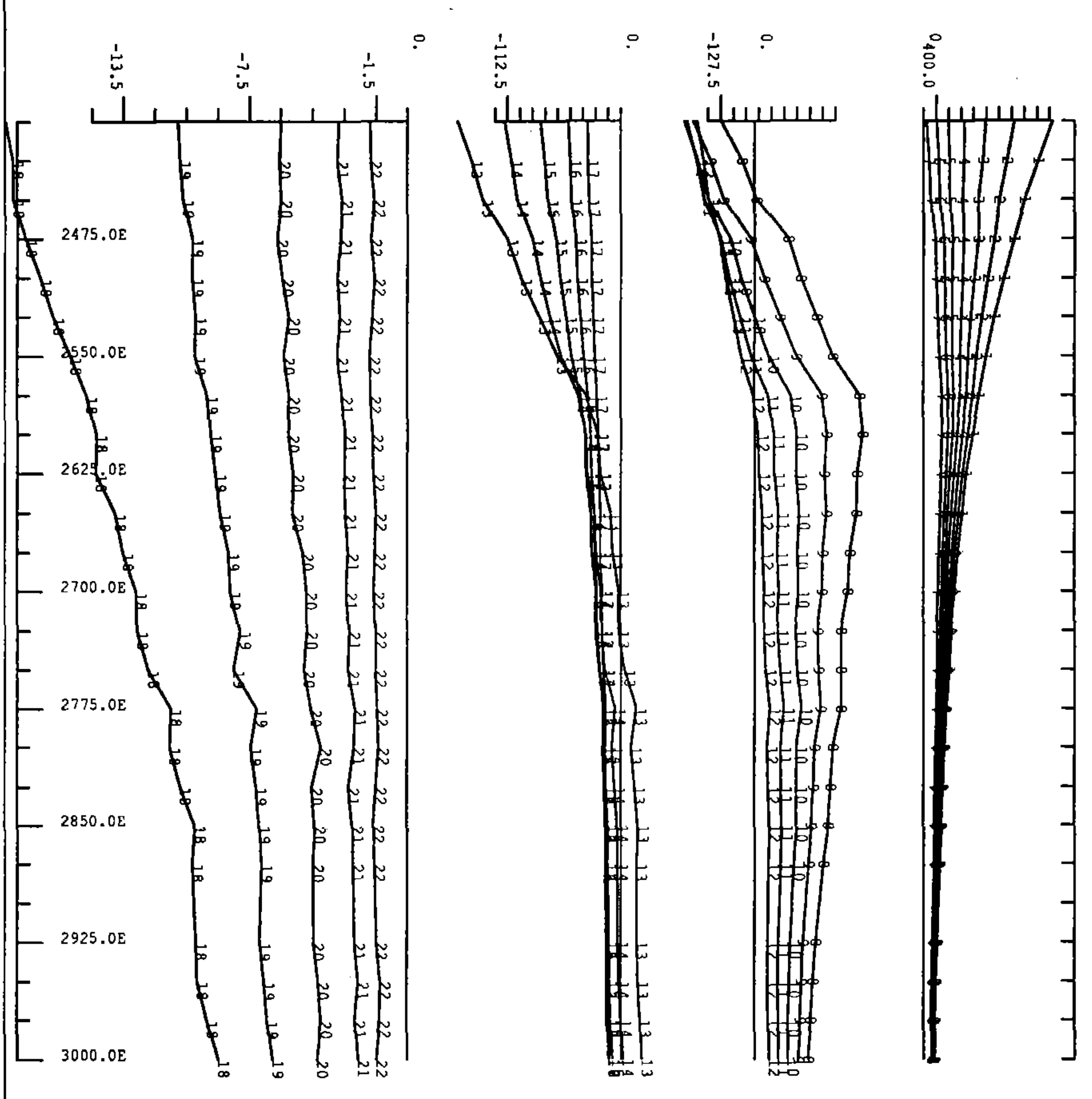




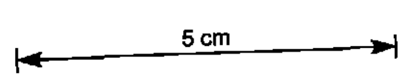
ELLIOTT BAY
SURFACE EM
ANOMALY EB8
LINE 60600N
VERTICAL COMPONENT
ZONGE GDP_16 32 HZ
ABERFOYLE RESOURCES
Scale 1: 4000.0 Plot no : 25

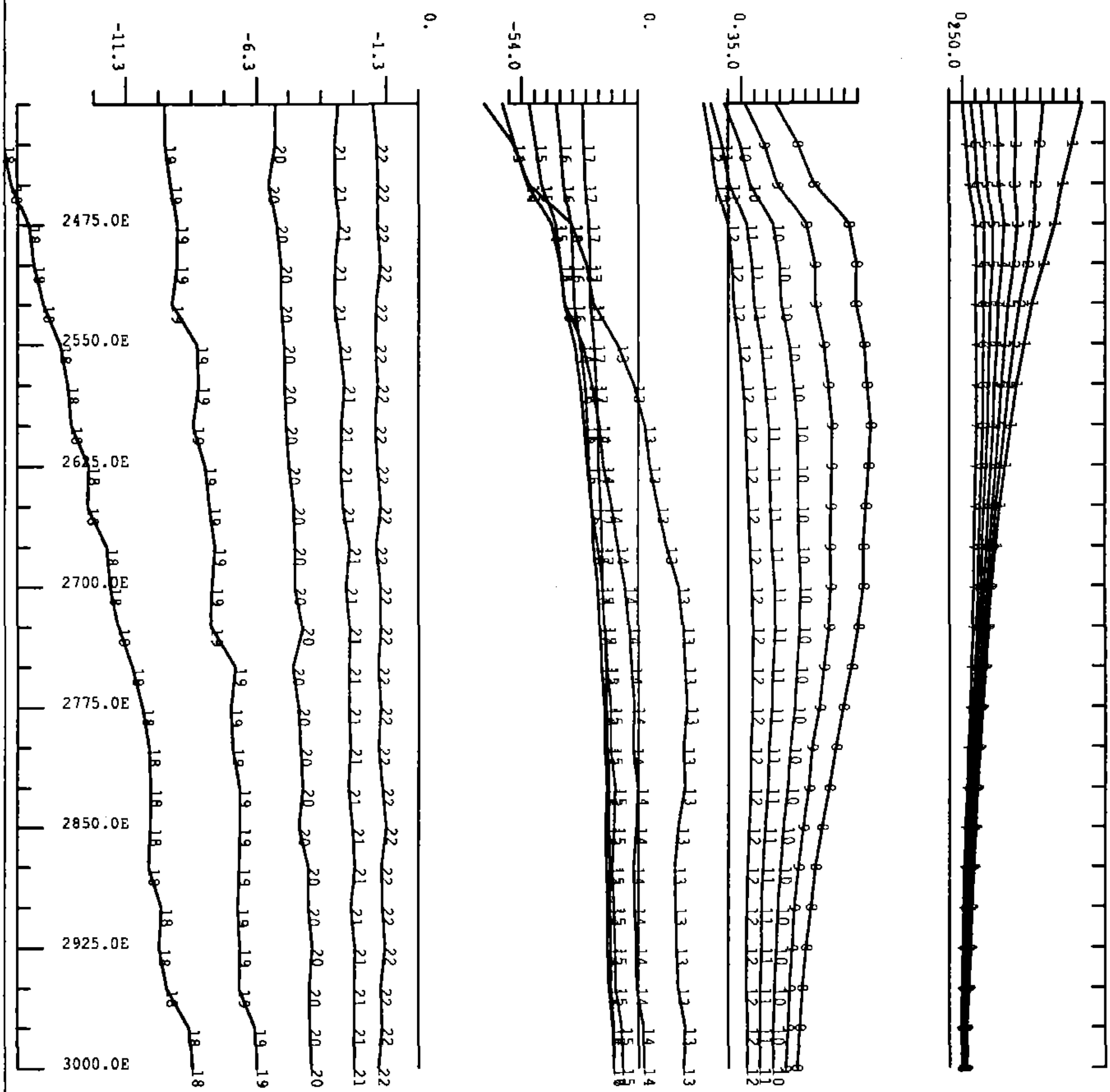
5 cm

044123



ELLIOTT BAY
SURFACE EM
ANOMALY EB8
LINE 60800N
VERTICAL COMPONENT
ZONGE GDP_16 32 HZ
ABERFOYLE RESOURCES
Scale 1: 4000.0 Plot no : 26

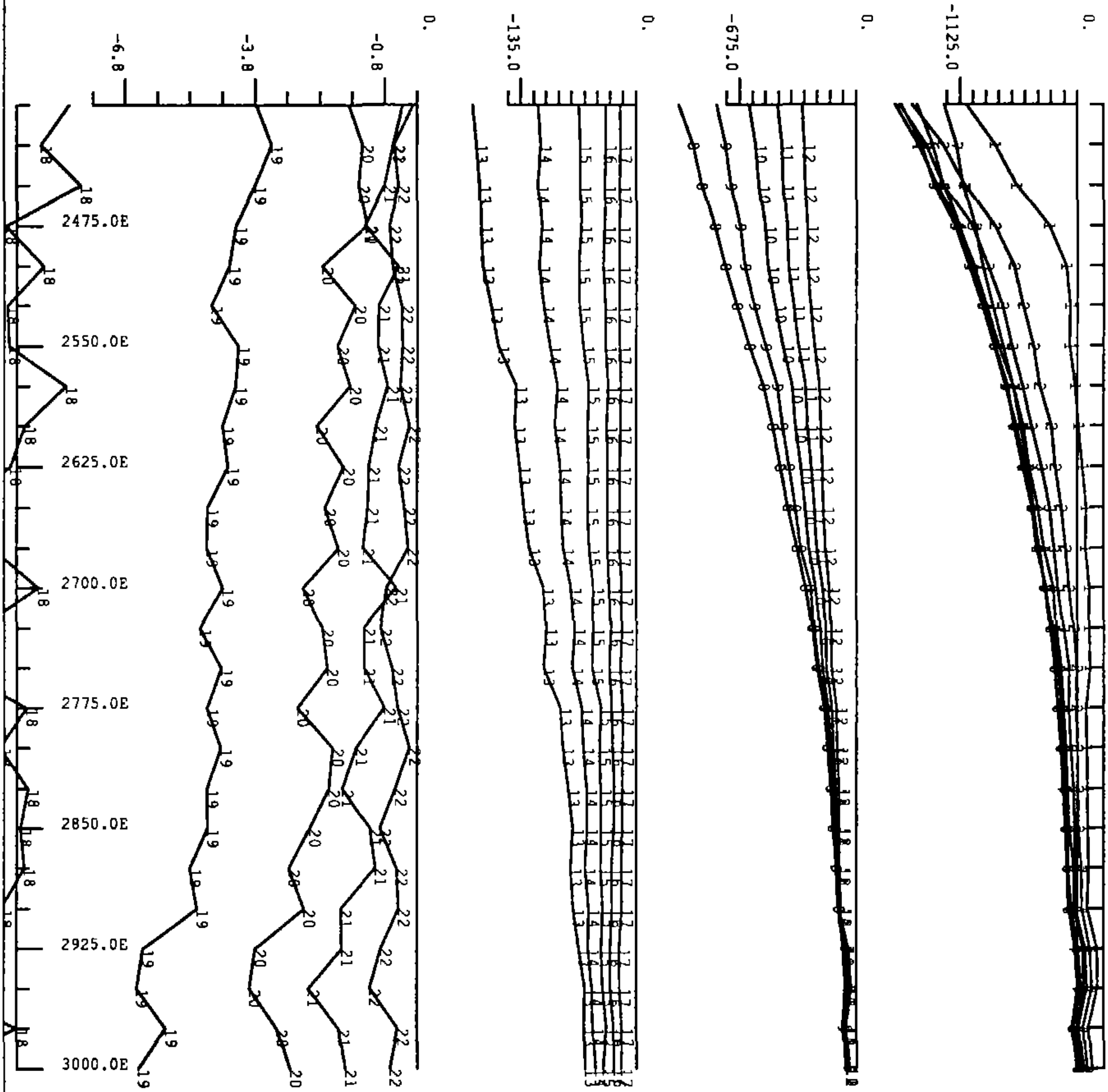




ELLIOTT BAY
SURFACE EM
ANOMALY EB8
LINE 61000 N
VERTICAL COMPONENT
ZONGE GDP_16 32 HZ
ABERFOYLE RESOURCES
Scale 1: 4000.0 Plot no : 27

5 cm

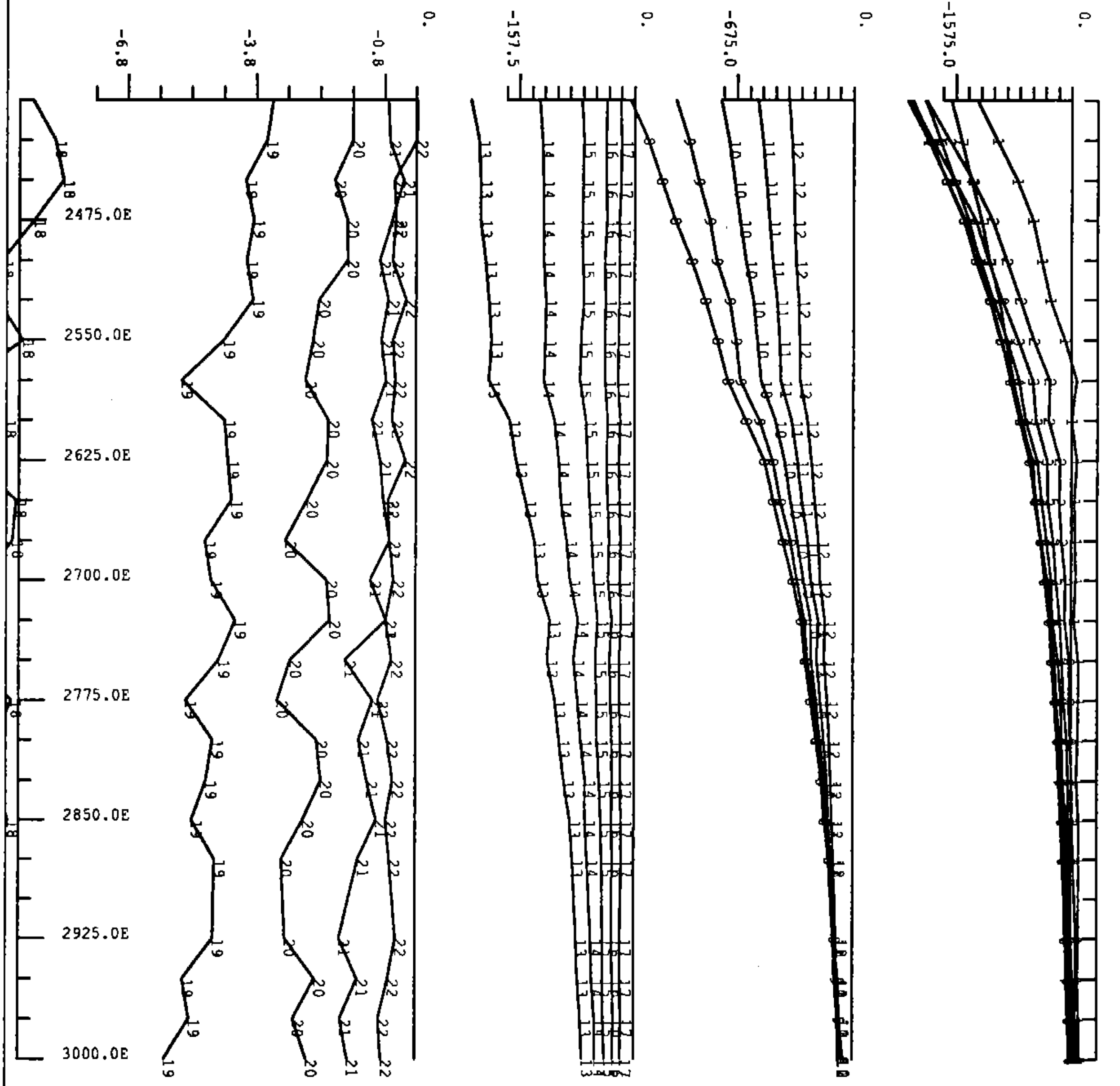
044125



ELLIOTT BAY
SURFACE EM
ANOMALY EB8
LINE 61000 N
HORIZONTAL COMPONENT
ZONGE GDP_16 32 HZ
ABERFOYLE RESOURCES
Scale 1: 4000.0 Plot no : 28

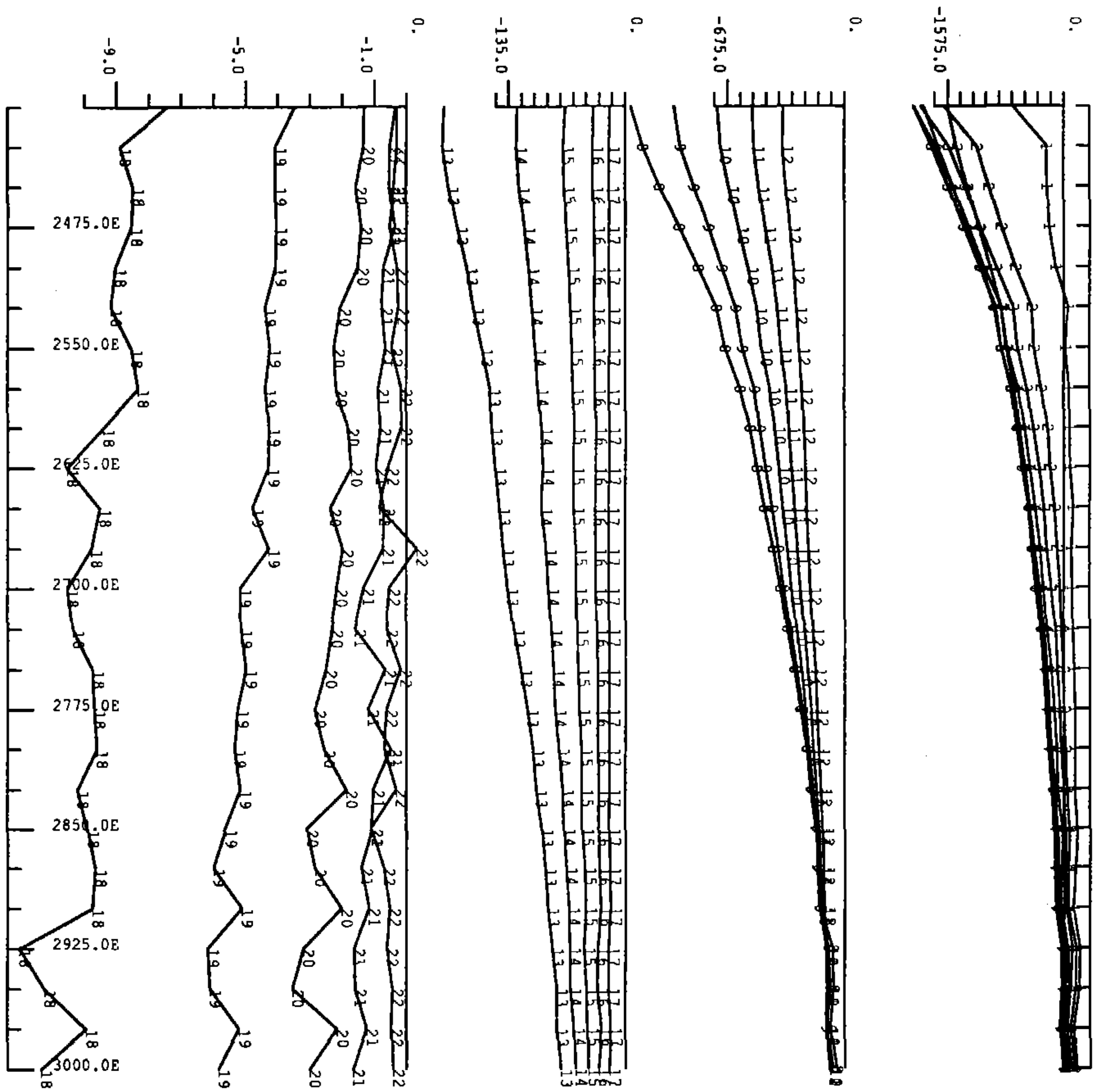
5 cm

044126



ELLIOTT BAY
SURFACE EM
ANOMALY EB8
LINE 60800 N
HORIZONTAL COMPONENT
ZONGE GDP_16 32 HZ
ABERFOYLE RESOURCES
Scale 1: 4000.0 Plot no : 29

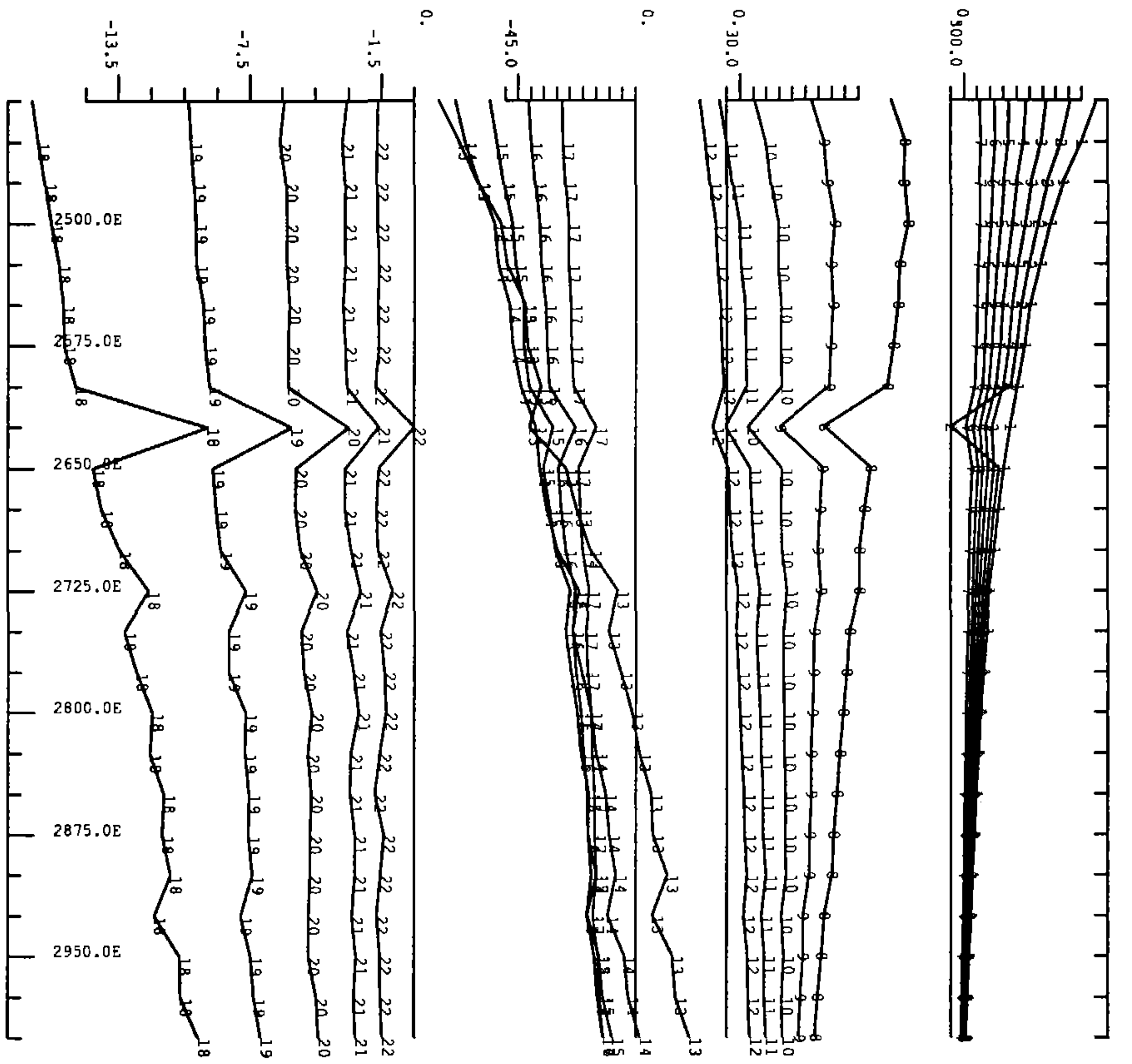
5 cm



ELLIOTT BAY
SURFACE EM
ANOMALY EB8
LINE 60600 N
HORIZONTAL COMPONENT
ZONGE GDP_16 32 HZ
ABERFOYLE RESOURCES
Scale 1: 4000.0 Plot no : 30

5 cm

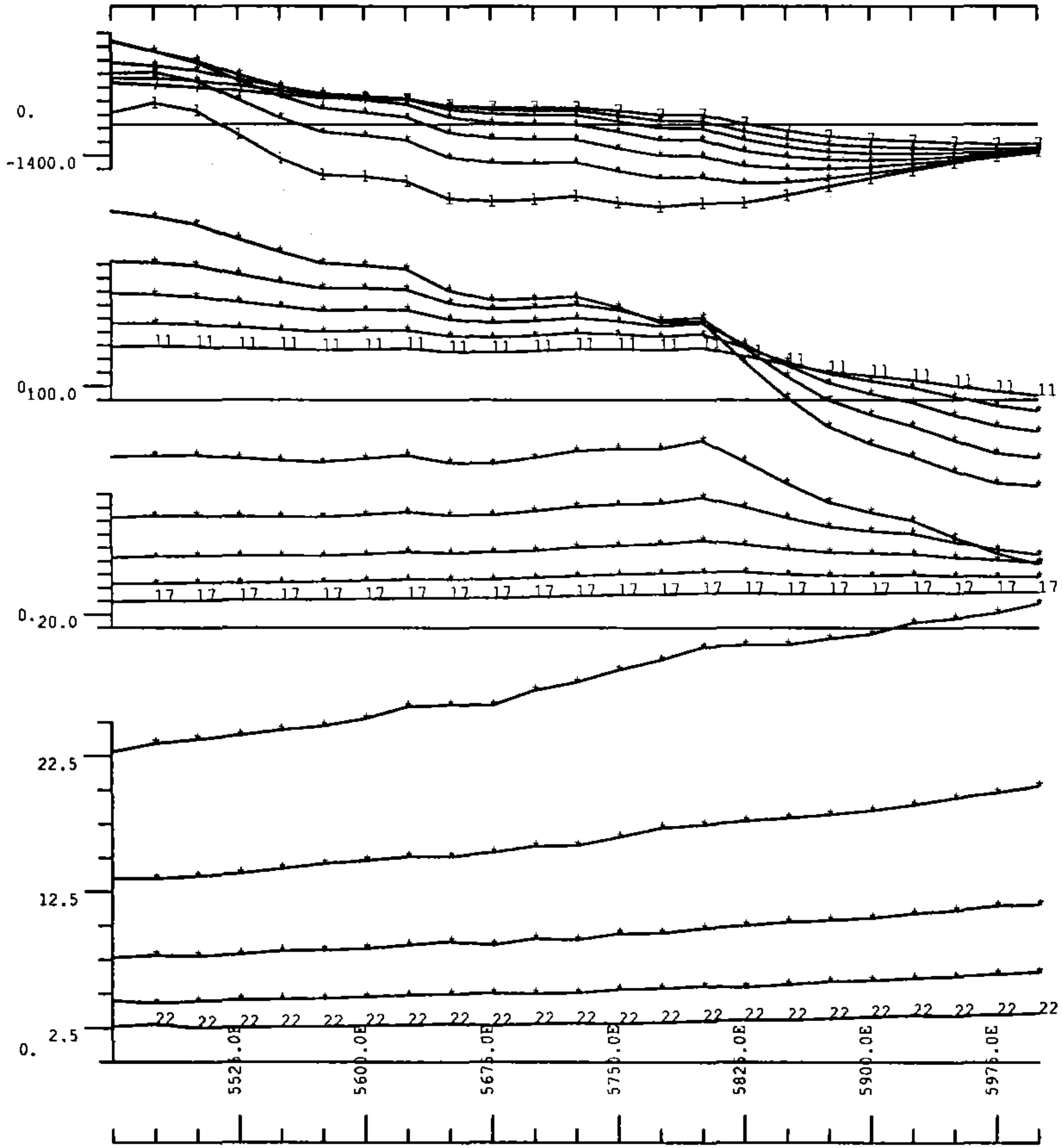
044128



ELLIOTT BAY
SURFACE EM
ANOMALY EB8
LINE 60400 N
HORIZONTAL COMPONENT
ZONGE GDP_16 32 HZ
ABERFOYLE RESOURCES
Scale 1: 4000.0 Plot no : 31

5 cm

044129



****

ELLIOT BAY

****

VERTICAL (HZ) COMPONENT

EB 9

LINE 10000 N

ZONGE GDP-16 32Hz

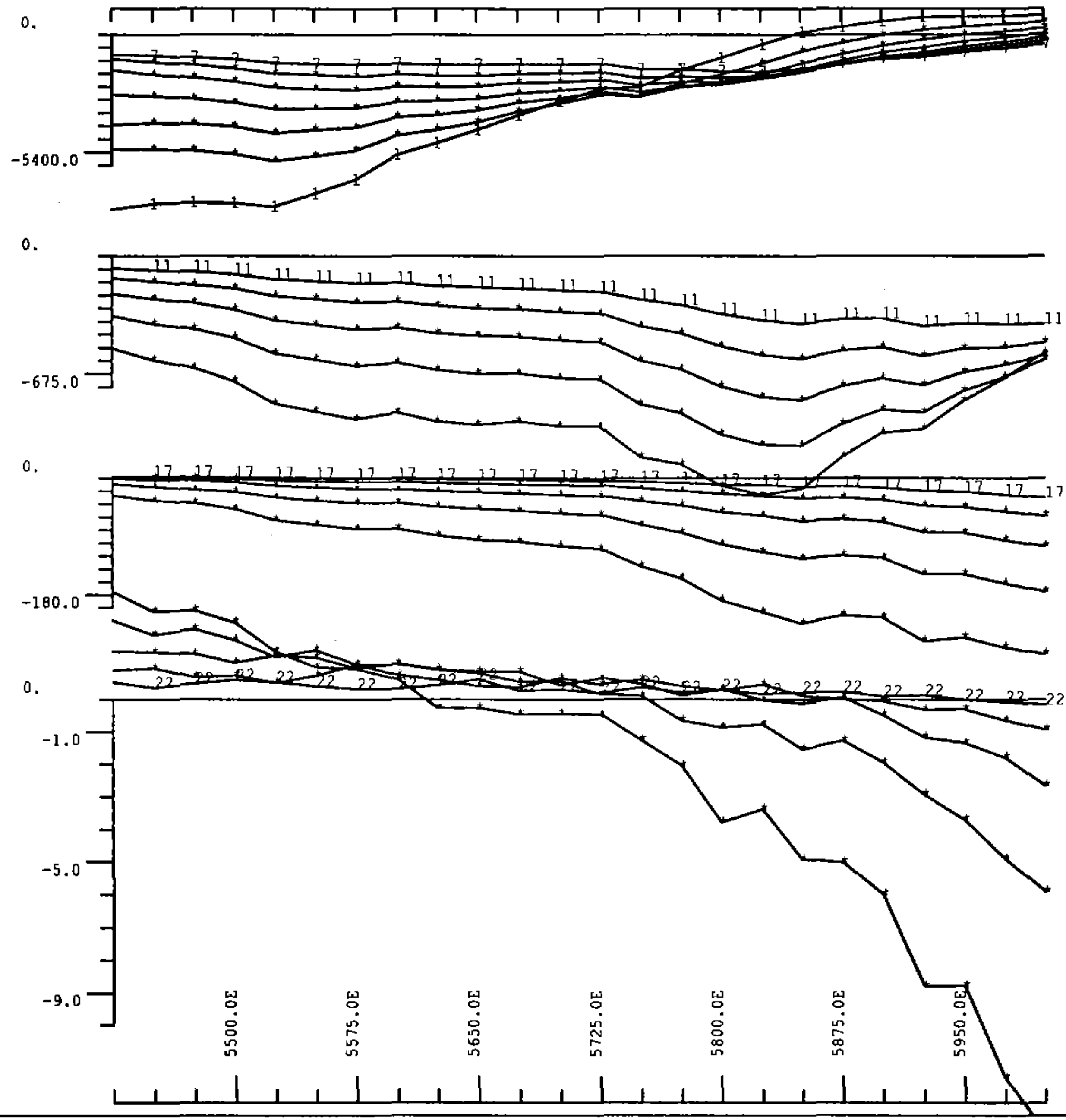
TRANSIENT ELECTROMAGNETICS

ABERFOYLE RESOURCES

Scale 1: 4000 Plot no : 8

5 cm

044130



****

ELLIOT BAY

****

HORIZONTAL (HZ) COMPONENT

EB 9

LINE 10000 N

ZONGE GDP-16 32Hz

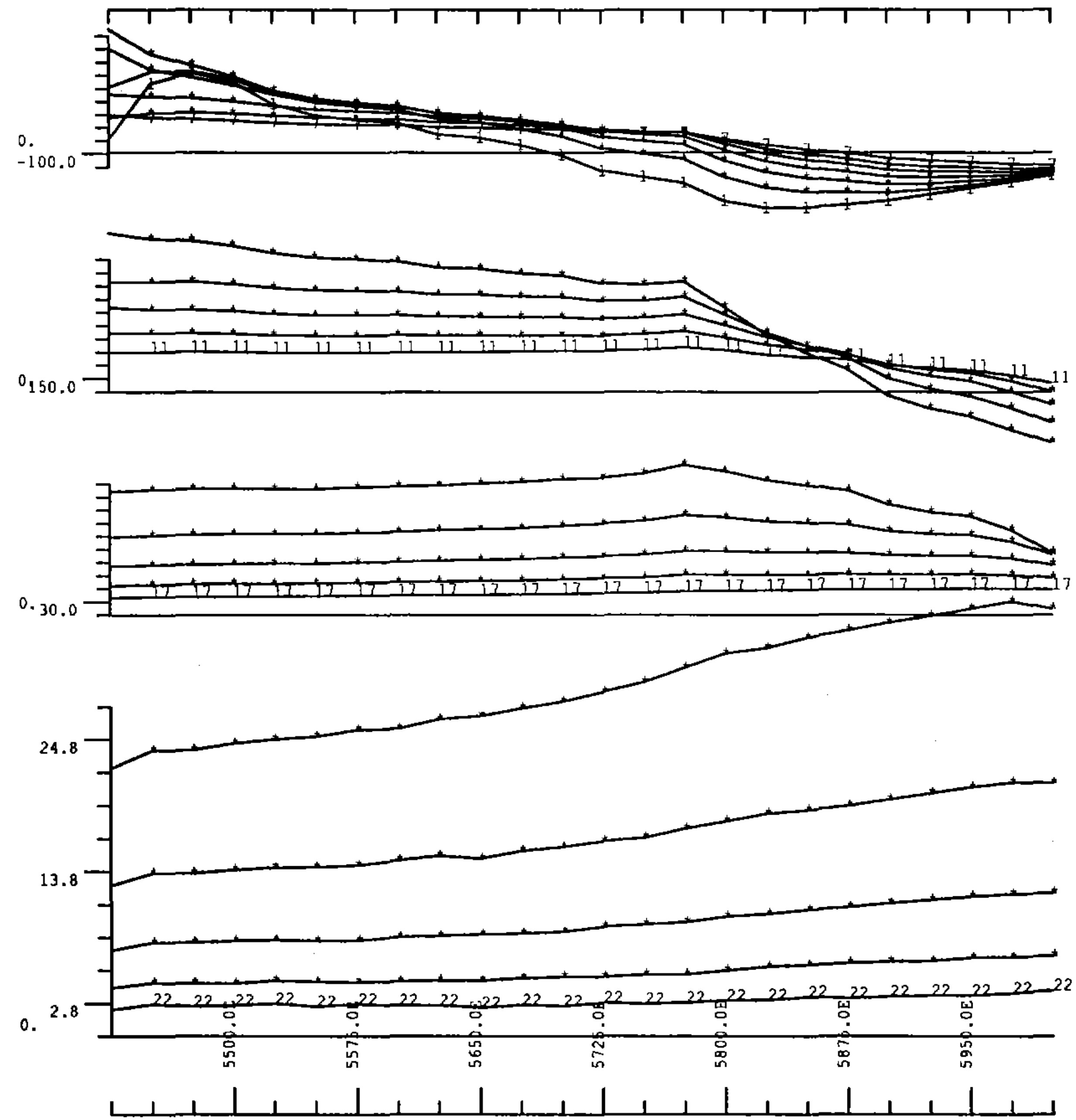
TRANSIENT ELECTROMAGNETICS

ABERFOYLE RESOURCES

Scale 1: 400010t no : 11

5 cm

044131



****
ELLIOT BAY
****

VERTICAL (HZ) COMPONENT

EB 9

LINE 10200 N

ZONGE GDP-16 32Hz

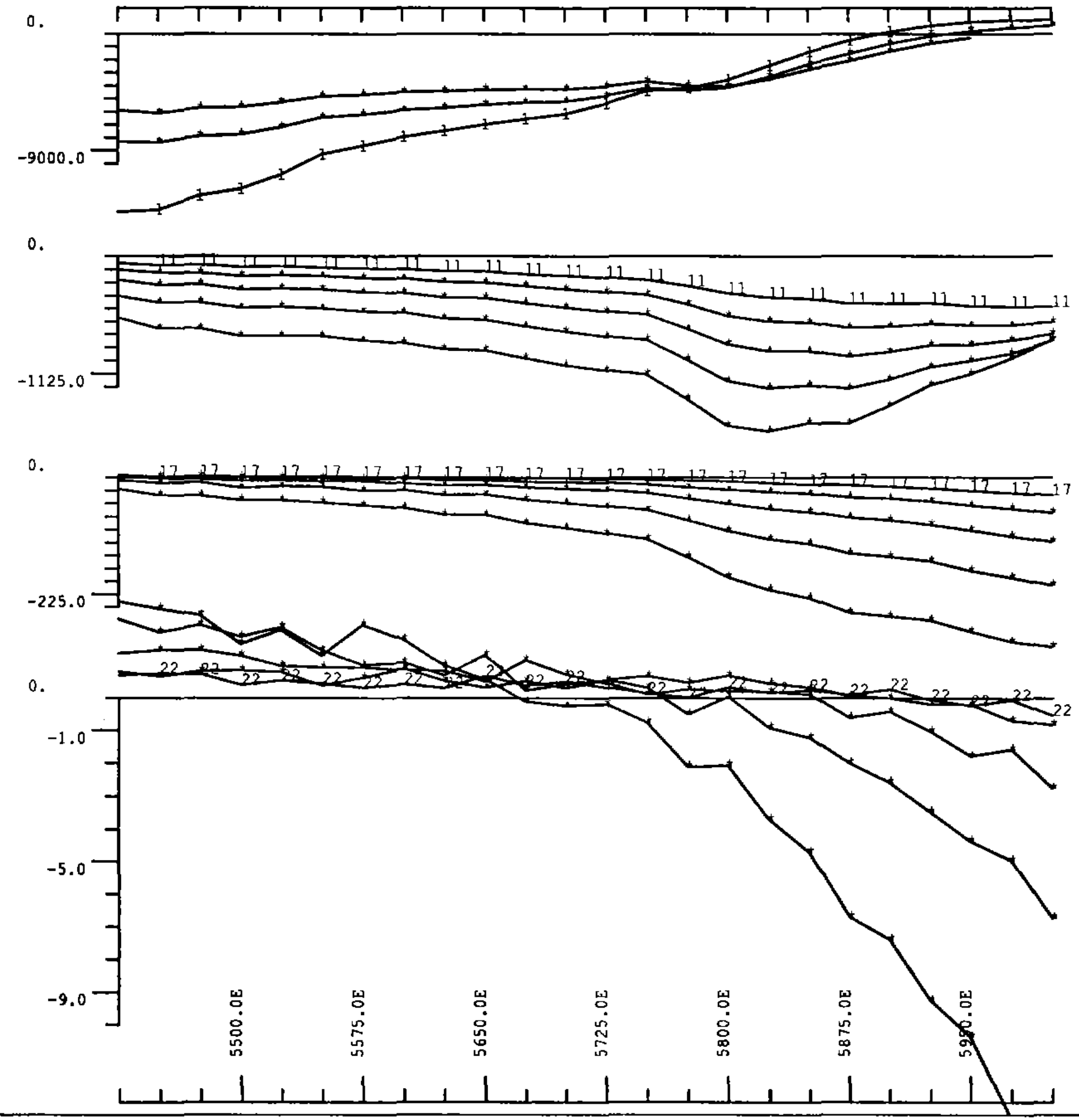
TRANSIENT ELECTROMAGNETICS

ABERFOYLE RESOURCES

Scale 1: 4000 Plot no : 9

5 cm

044132



****

ELLIOT BAY

****

HORIZONTAL (HZ) COMPONENT

EB 9

LINE 10200 N

ZONGE GDP-16 32Hz

TRANSIENT ELECTROMAGNETICS

ABERFOYLE RESOURCES

Scale 1: 400018t no : 10

APPENDIX VIII

FILE NOTE:

EB1 RESPONSE

Introduction

It was previously reported that the responses over the EB1 target are unambiguously caused by current gathering effects, and therefore it could not be unequivocally stated that the effects are caused by significant sulphide accumulations.

It was also recognised that the EB1 trend is complex with a number of obvious near surface broad conductors complicating the interpretation.

At that time it was not resolved with 100% certainty whether the major part of the response is due to a deep bedrock source, as it was also understood in a qualitative way that an asymmetrical wedge type overburden feature (not often encountered) may produce a similar result.

To resolve this ambiguity it was recommended that resistivity dipole-dipole data be collected over two lines.

Dipole Dipole Resistivity Data

Two lines, 41800 and 42050N, of dipole-dipole data using a dipole spacing of 25 metres were collected over the interpreted near surface resistivity lows.

On line 41800N a near surface resistivity low is interpreted to be between 2425E to 2600E. This low is asymmetrical, with lower resistivities evident on the eastern side, (Figure 1), supporting the original interpretation of a near surface wedge type slightly conductive body.

Similarly on line 42050N (Figure 3) a slightly conductive near surface body is located between 2275E and about 2450-2475E, although the eastern edge is somewhat more diffuse (i.e. not a sudden change in the resistivity pseudo-section). Wedge type trough nature of the pseudo-section is evident with lower resistivities favouring the eastern side of the body, as was predicted from the EM data.

Conclusion

Dipole-Dipole resistivity data over lines 41800 and 42050N, supports the original EM interpretation that a broad near surface unit having a lower resistivity than the surrounding rocks, exists at the location where some EM effects may be attributed to a possible bedrock source. The dipole-dipole resistivity data is also supporting the concept that the near surface lower resistivity unit may be wedge shaped, with more conductive and/or thicker sections concentrated towards the eastern boundary.

As was pointed out in the earlier discussion of this data set, this considerably complicates the interpretation of a bedrock source below this near surface conductive zone.

The field data set displays, some characteristics which can be explained in terms of a broad near surface wedge trough model, however cannot be explained by this model alone.

Although it is understood that an "imperfect" wedge trough (i.e. one at variance with the idealised scale model) may explain these deviations, it is also understood that a poorly conductive (current gathering) bedrock source beneath the identified slightly conductive trough may also explain the observated data set.

It is recommended that because of the favourable geology, the latter model be tested on line 41800N, with a drillhole designed to intersect a source at a depth of 200 metres at 2525E.

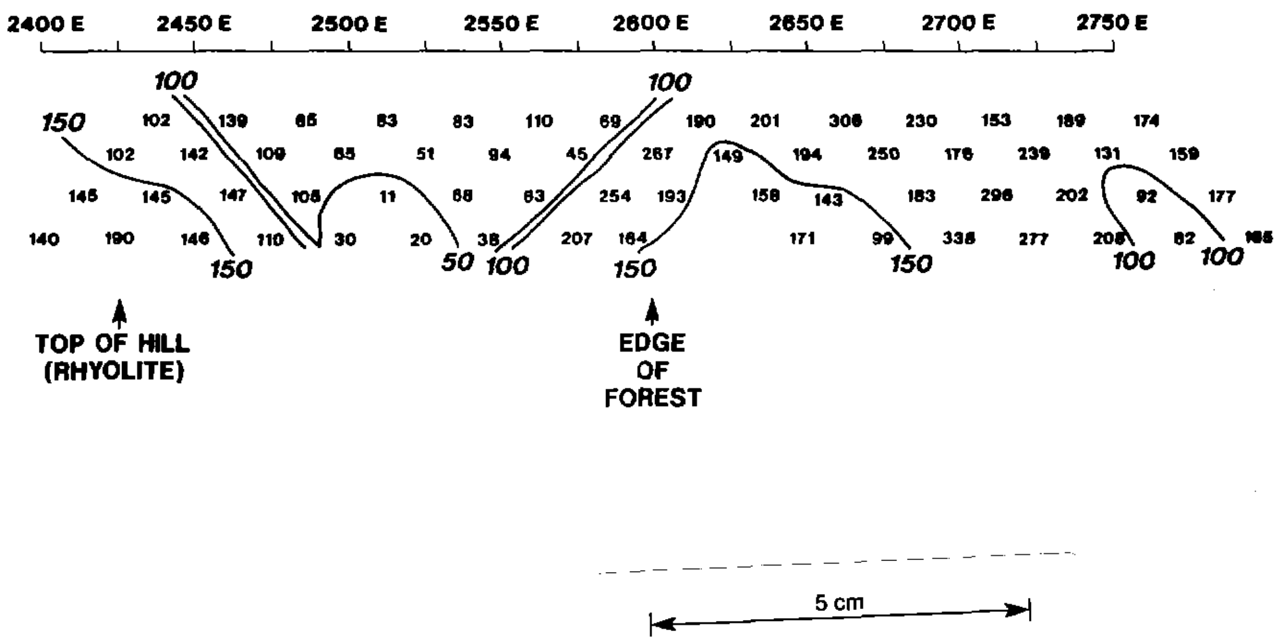


FIG. 1

Aberfoyle Resources Limited

EXPLORATION DIVISION

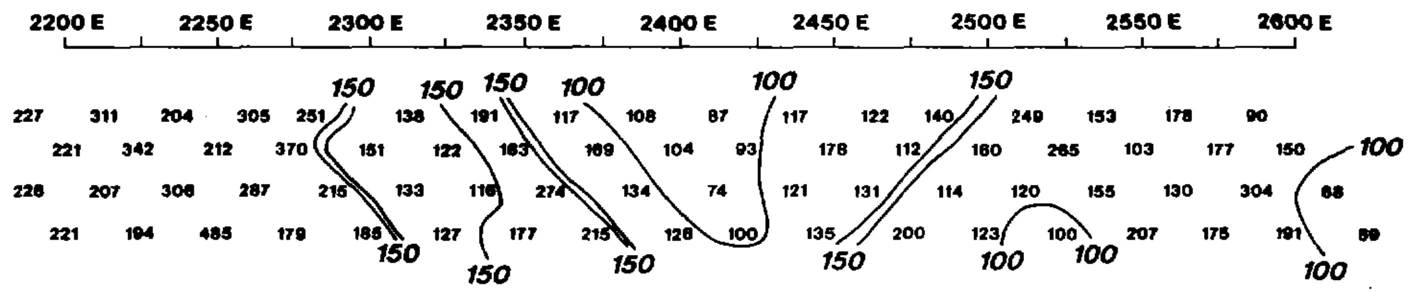
REVISIONS			
Init.	Date	Init.	Date

TASMANIA
ELLIOTT BAY
DIPOLE DIPOLE RESISTIVITY
a=25m EB1 CONDUCTOR
LINE 41800 N

Compiled :	JB
Drawn :	JB
Traced :	MAR
Checked :	JB
Plate No. :	EB 17

Location Code : K55/7 | Scale : As Shown | Date : November 1992

04136



5 cm

FIG. 3

Aberfoyle Resources Limited EXPLORATION DIVISION		
REVISIONS (Init. / Date / Init. / Date)	TASMANIA ELLIOTT BAY DIPOLE DIPOLE RESISTIVITY a=25m EB1 CONDUCTOR LINE 42050 N	Compiled : JB Drawn : JB Traced : MAR Checked : JB
Location Code : K55/7	Scale : As Shown — Date : November 1992	Plate No. : EB 18

041137

APPENDIX IX

PROJECT ELLIOTT BAY EB4 & EB6

MESH SIEVE SIZE CODE: A 200, B 150, C 100, D 80, E 60, F 40, G 30, H 20, T = TOTAL

OXIDIZED R = ROCK (O); FRESH ROCK (R); STREAM SEDIMENTS (S); RESIDUAL (E); MINE (M)

DATE 4-3-92

SHEET 1 of 1

EASTINGS	NORTHINGS	SAMPLE NUMBER	DEPTH in CMS	SIZE FRACTION	Sample Type	METAL VALUES PPM	GEOLOGICAL LOG
383397	5258075	565590					EB-6 Si alt'd R-Lava
385155	5246733	565561				EB4	Limonitic q-f-porphyry
385296	5246874	565562				"	Gossanous ± chlorite ± silica altd q-f-porphyry
385296	5246783	565563				"	Sheared unaltered porphyry
385318	5246928	565564				"	Limonitic chlorite altd. porphyry
384720	5246320	565567				"	Voyager 12 gossan float.

OPERATOR COMPUTER CHECK PLOTTER DATE

044140

ANALABS

A Division of Inchcape Inspection and Testing Services Australia Pty. Ltd.

Phone (004) 316837

14 Thirkell St. COOEE TAS 7320

Fax (004) 318890

ANALYTICAL REPORT No. 100560.60.08625

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

RECEIVED 25 MAR 1992

INVOICE TO:

Aberfoyle Resources Limited
Exploration Division
P.O. Box 952
BURNIE TAS 7320

ORDER No.	PROJECT
12139	

DATE RECEIVED	RESULTS REQUIRED
04/03/92	ASAP

No. OF PAGES OF RESULTS	DATE REPORTED	No. OF COPIES	TOTAL No. OF SAMPLES
3	24/03/92	1	6

SAMPLE NUMBERS	SAMPLE DESCRIPTION	ELEMENT/METHOD
565561/64,565567,565590	RC Prep : GP019	Cu,Pb,Zn,Ag/GA101 Au,Au(R),Au(S)/GG309 Ba,As,Zr,Ti,ZrTi/GX401 Whole Rock Analysis/OX408

RESULTS TO

Mr S Richardson
Aberfoyle Resources Limited
P.O. Box 952
BURNIE TAS 7320

RESULTS TO

RESULTS TO

REMARKS

AUTHORISED OFFICER

044141

ANALABS

A Division of Inchcape Inspection and Testing Services Australia Pty. Ltd.
A.C.N. 004 591 664

ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	100560.60.08625	24/03/92	12139	1 OF 3

TUBE No.	SAMPLE No.	Cu	Pb	Zn	Ag	Ag	Au	Au(R)	Au(S)	Ba
1	565561	208	53	41	<2	-	0.012	0.010	-	1150
2	565562	189	49	31	<2	-	0.008	0.010	-	970
3	565563	40	26	33	<2	-	<0.008	-	-	1150
4	565564	206	22	63	<2	-	<0.008	-	-	1250
5	565567	2340	2400	2050	-	34	0.358	-	-	140
6	565590	6	11	56	<2	-	<0.008	-	<0.008	600
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23	DETECTION	4	5	4	2	5	0.008	0.008	0.008	10
24	UNITS	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
25	METHOD	GA101	GA101	GA101	GA101	GA104	GG309	GG309	GG309	GX401

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 Inchcape Inspection and Testing Services Australia Pty. Ltd.
A.C.N. 004 591 664

ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	100560.60.08625	24/03/92	12139	2 OF 3

TUBE No.	SAMPLE No.	As	As	Zr	Ti	TiZr	Al2O3	SiO2	TiO2	Fe2O3
1	565561	250	-	-	-	-	-	-	-	-
2	565562	35	-	-	-	-	-	-	-	-
3	565563	17	-	230	3270	14.2	14.20	70.5	0.55	4.88
4	565564	85	-	-	-	-	-	-	-	-
5	565567	-	0.53	-	-	-	-	-	-	-
6	565590	7	-	-	-	-	-	-	-	-
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23	DETECTION	2	0.01	5	50	0.1	0.05	0.1	0.01	0.01
24	UNITS	ppm	%	ppm	ppm	ppm	%	%	%	%
25	METHOD	GX401	GX404	GX401	GX401	GX401	OX408	OX408	OX408	OX408

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 Inchcape Inspection and Testing Services Australia Pty. Ltd.
A.C.N. 004 591 664

ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	100560.60.08625	24/03/92	12139	3 OF 3

TUBE No.	SAMPLE No.	MnO	CaO	K2O	MgO	P2O5	Na2O	S	LOI	TOTAL
1	565563	0.02	<0.01	5.38	1.27	0.030	<0.05	0.006	2.79	99.61
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23	DETECTION	0.01	0.01	0.01	0.01	0.005	0.05	0.005	0.01	0.01
24	UNITS	%	%	%	%	%	%	%	%	%
25	METHOD	OX408	OX408	OX408	OX408	OX408	OX408	OX408	OX408	OX408

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

APPENDIX X

Pb ISOTOPE RESEARCH: Elliott Bay Prospects

AIMS

This is a preliminary progress report concerning the Pb isotope research on the mineralisation at Elliott Bay. Gulson et al. (1987) reported Pb isotope variation for the various styles of mineralisation on the surface and in two drill holes (Geopeko) from the Elliott Bay area. They determined that Cambrian stratiform massive sulphide mineralisation constitutes the least radiogenic group and Devonian vein style Pb-Zn-As mineralisation forms the most radiogenic group (Figure 1). A third group with isotopic ratios mostly intermediate between the other two comes from disseminated and vein type Pb-Zn mineralisation related to the intrusion of a quartz porphyry that is considered to be later than the massive sulphide formation. Gulson et al. (1987) noted that clasts of massive sulphide mineralisation within submarine epiclastic breccias, interpreted to be a series of mass flows (Callaghan, 1989), are different from the massive sulphide lenses.

Cyprus Minerals took over the ground in the mid to late 1980's and drilled a further 12 holes which resulted in a better understanding of the geology and mineralisation. In light of this increased geologic understanding, sulphide samples of the differing styles of mineralisation from recent drilling and surface exposures at Elliott Bay have been collected and analysed (30 samples from Wart Hill mineralisation and 6 samples from recent discovery on the coast).

PROGRESS REPORT

To date I have collected and analysed 36 sulphide samples from the Elliott Bay core and Tim Callaghan Honours thesis collection. Samples collected included sulphide clasts. stringer sulphides disseminated sulphides. massive sulphide lenses and sulphides associated with alteration (Table 1). Each sample for isotope analysis was hand picked or drilled out of the original sample. Galena was the dominant phase in each sample with subordinate amounts of sphalerite and pyrite being mixed in some samples. After initial sample preparation at the University of Tasmania I went to the CSIRO laboratory for four weeks in November 1991 to complete the chemical separation and analytical work. including mass spectrometry on these samples.

1) Pb Isotope Data

Table 1 lists the Pb isotope data for the Elliott Bay samples. These data are plotted on standard $^{207}Pb/^{204}Pb$ vs $^{206}Pb/^{204}Pb$ and $^{208}Pb/^{204}Pb$ vs $^{206}Pb/^{204}Pb$ diagrams (Fig. 2). The Pb isotope signature for the Rosebery, Que River and Hellyer massive sulphide

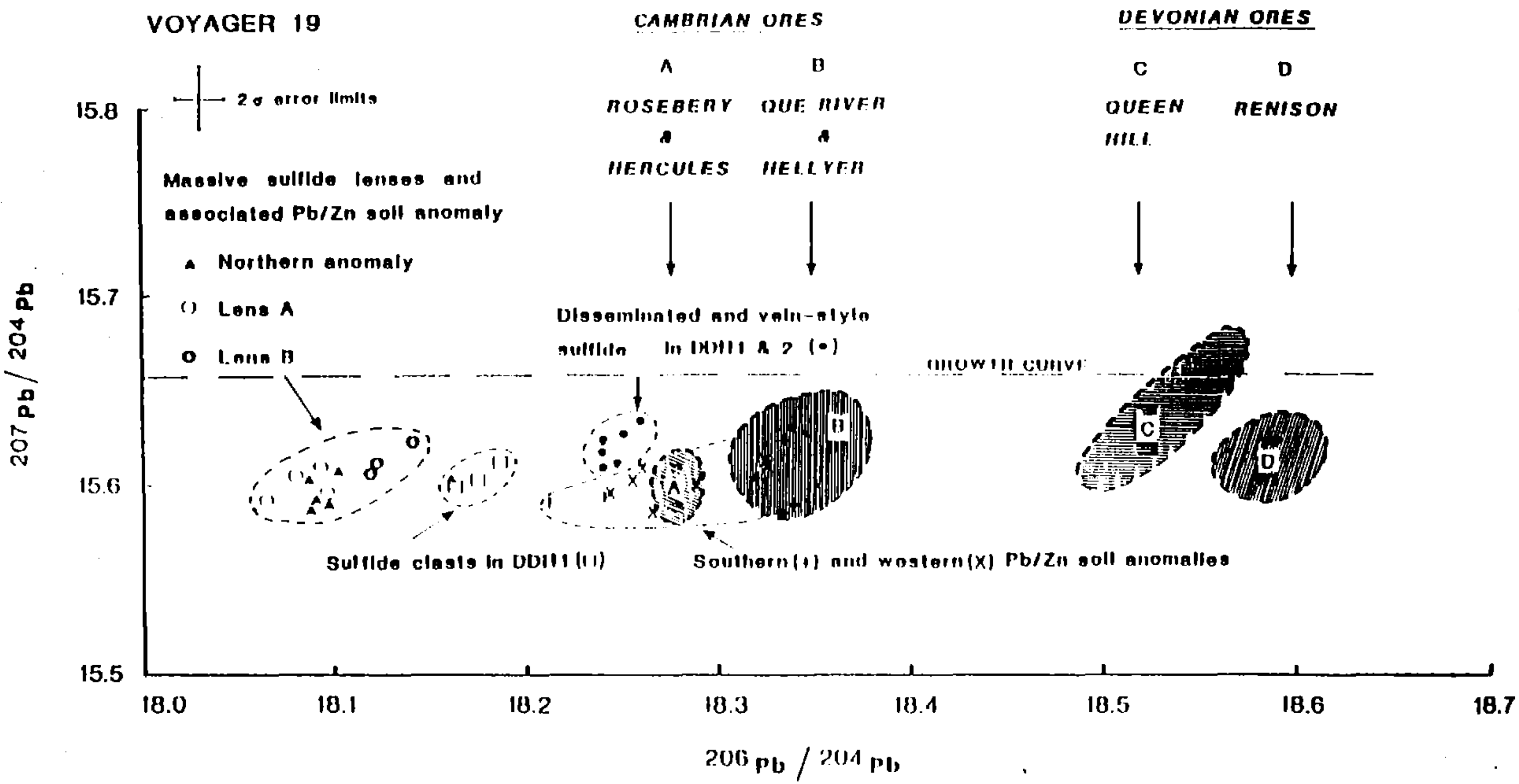


Figure 1 Lead isotope data for the Elliott Bay mineralisation from the Geopeko exploration program (From Gulson et al., 1987).

Table 1 Elliott Bay Lead and Sulphur Isotope data

Plotting	# Sample	Location	Min Type	Mineralogy	208/206	207/206	206/204	207/204	208/204	GROUP	del 34S
1	EB 1000	WH 2 33.m	SUS CLAST	Gn,Sp	2.097	0.862	18.095	15.604	37.951	A	14.6
2	EB 1001	WH 2 35.9m	DISSEM	Py,Sp,Gn	2.097	0.862	18.111	15.606	37.972	A	17.1
3	EB 1002	WH 2 44.2m	MASS SUS	Sp,Gn	2.094	0.861	18.086	15.571	37.869	A	17.6
4	EB 1003	WH 2 47.3m	STRINGER	Sp,Gn	2.096	0.863	18.070	15.586	37.883	A	17.2
5	EB 1004	WH 2 48.9m	MASS SUS	Sp,Gn	2.096	0.862	18.097	15.594	37.930	A	15.8
6	EB 1005	WH 4 49.8m	SUS CLASTS	Sp,Gn	2.096	0.862	18.083	15.592	37.907	A	12.3
7	EB 1006	WH 4 53.4m	SUS CLASTS	Sp,Gn	2.093	0.860	18.109	15.581	37.893	A	14.7
8	EB 1007	WH 4 54.0m	MASS SUS	Sp,Gn	2.092	0.860	18.119	15.580	37.910	A	16.4
9	EB 1008	WH 4 84.8m	MASS SUS	Sp,Gn	2.096	0.862	18.063	15.574	37.852	A	16.4
10	EB 1009	WH 5 279.1m	LATE VEIN	Gn	2.080	0.850	18.377	15.615	38.219	D	11.9
11	EB 1010	WH 6 48.0m	SUS CLAST	Gn,Sp	2.092	0.859	18.143	15.588	37.948	B	17.1
12	EB 1011	WH 6 50.0m	SUS IN ALT	Gn,Sp	2.092	0.860	18.121	15.583	37.914	A	16.2
13	EB 1012	WH 6 58.5m	SUS CLAST	Sp,Gn	2.087	0.856	18.233	15.603	38.058	C	12.3
14	EB 1013	WH 7 95.1m	SUS IN ALT	Sp,Gn	2.090	0.857	18.212	15.603	38.067	C	10.9
15	EB 1014	WH 9 114.8m	SUS IN ALT	Gn	2.088	0.855	18.248	15.604	38.097	C	NS
16	EB 1015	WH 8 109.5m	STRINGER	Sp,Gn	2.088	0.856	18.221	15.599	38.044	C	13.4
17	EB 1016	WH 8 148.7m	STRINGER	Sp,Gn,Py	2.086	0.855	18.236	15.592	38.039	C	14.0
18	EB 1017	WH 8 261.0m	SUS IN ALT	Gn	2.081	0.849	18.437	15.652	38.366	D	NS
19	EB 1017re	WH 8 261.0m	SUS IN ALT	Gn	2.080	0.849	18.430	15.641	38.340	D	NS
20	EB 1018	WH 10 76.4m	STRINGER	Sp,Gn,Py	2.089	0.856	18.236	15.612	38.102	C	11.2
21	EB 1019	WH 10 81.6m	SUS IN ALT	Py,Gn,Sp	2.077	0.848	18.402	15.611	38.222	D	-11.5
22	EB 1020	WH 10 170.2r	STRINGER	Sp, Gn	2.087	0.856	18.211	15.586	38.007	C	11.2
23	EB 1021	WH 10 187.5r	CLAST?	Gn,Sp	2.092	0.859	18.139	15.589	37.950	B	16.8
24	EB 1022	WH 10 189.3r	SUS CLAST	Gn,Sp	2.093	0.860	18.115	15.585	37.918	A	16.9
25	EB 72079	WH 2 45.5m	SUS MATRIX	Gn,Sp,Py	2.099	0.862	18.118	15.627	38.027	A	15.6
26	EB 72080	WH 8 185.0m	MASS SUS	Gn,Sp	2.098	0.862	18.114	15.614	38.009	A	15.3
27	EB 72080re	WH 8 185.0m	MASS SUS	Gn,Sp	2.095	0.862	18.081	15.577	37.873	A	15.3
28	EB 72085	WH 4 47.0m	SUS MATRIX	Gn,Sp,Py	2.096	0.862	18.067	15.578	37.870	A	14.5
29	EB 72086	13310N 1006(	MASS SUS	Gn,Sp	2.096	0.862	18.075	15.585	37.891	A	18.5
30	EB 72087	13040N 1006(	MASS SUS	Gn,Sp	2.093	0.860	18.098	15.570	37.876	A	16.8
31	EB 72089	WH 4 54.0m	MASS SUS	Gn,Sp	2.094	0.860	18.134	15.603	37.975	B	15.7

04147

Table 1 Elliott Bay Lead and Sulphur Isotope data

32	EB 72096	13080N 1002(	MASS SUS	Gn,Sp	2.091	0.858	18.191	15.605	38.041	C	16.2
33	EB 72094	WH 2 35.5m	SUS MATRIX	Py,Sp,Gn	2.095	0.862	18.099	15.592	37.920	A	17.5
34	EB 72111	WH 10 189.3n	MASS SUS	Sp,Gn	2.093	0.859	18.151	15.599	37.982	B	16.9
35	EB 72112	13040N 1006(	MASS SUS	Gn,Sp	2.093	0.860	18.107	15.579	37.898	A	17.2
36	EB 72113	13040N 1004(	SUS BRXX	Py,Sp,Gn	2.097	0.862	18.093	15.595	37.940	A	16.0
37	EB 72121	13310N 1008!	MASS SUS	Sp,Gn	2.095	0.862	18.075	15.576	37.862	A	17.0
38	EB 72075	WH 4 48.1m	SUS MATRIX	Sp,Gn	2.092	0.860	18.139	15.594	37.953	B	15.5

1992 Exploration

39	CSN 565551	near coast	~~SOIL~~ rock chips	814 ppm Pt	2.085	0.854	18.252	15.584	38.050	C	NS
40	CSN 565209	near coast	SOIL	1290 ppm I	2.090	0.857	18.177	15.583	37.992	C	NS
41	565531	on coast	STRINGER?	Gn,Sp,Py	2.087	0.856	18.215	15.590	38.014	C	14.3
42	565531	on coast	STRINGER?	Gn	2.089	0.857	18.228	15.611	38.075	C	14.3
43	565532?	on coast	STRINGER?	Sp,Py,Gn	2.087	0.856	18.223	15.596	38.037	C	NS
44	565530	on coast	STRINGER?	Gn	2.090	0.858	18.171	15.582	37.969	B-C?	NS
45	565576	on coast	STRINGER?	Gn	2.092	0.858	18.181	15.606	38.040	B-C?	NS

Abbreviations: MASS=massive, SUS=sulphide, BRXX=breccia, DISSEM=disseminated, ALT=alteration, Gn=galena, Sp=sphalerite, Py=pyrite
NS=no sample, re=repeat sample

044149

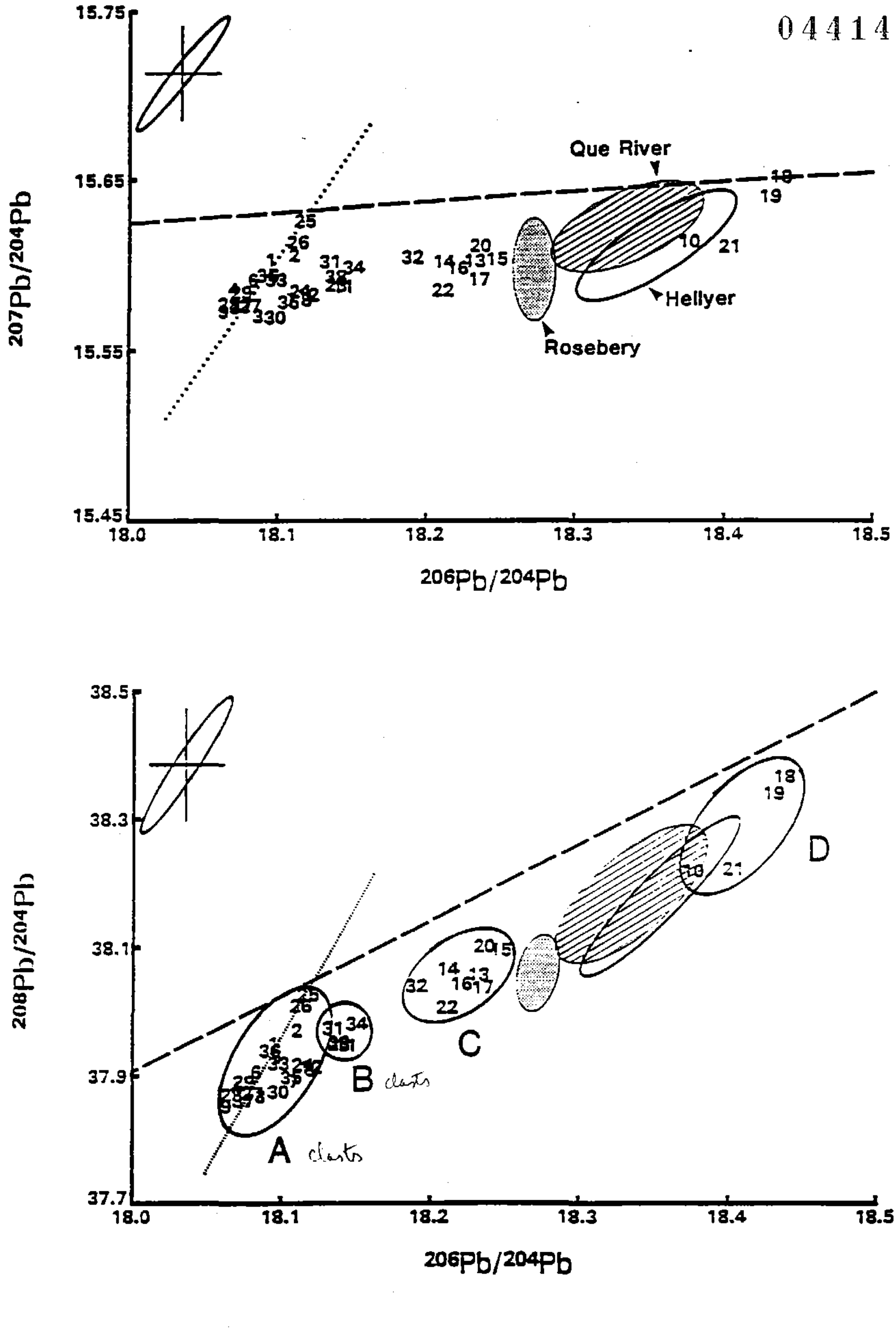


Figure 2 Lead isotope data from this study. Sample numbers refer to plotting # in Table 1. Characteristics of Groups A, B, C, and D given in text. Fields of the Rosebery, Que River and Hellyer massive sulphide mineralisation given for reference. Dotted line is a representative ^{204}Pb fractionation line. Dashed line is the lead evolution (growth) curve of Cumming and Richards (1975).

mineralisation is given for reference on Figure 2. For comparison the previous Pb isotope data for Elliott Bay from Gulson et al. (1987) and previously unpublished results from SIROTOPE's files are shown in Figure 3.

The new Elliott Bay data forms four distinct clusters (Fig. 2; Groups A-D). Group A consists primarily of galena-sphalerite clasts and is the least radiogenic. These clasts have a lead isotopic signature identical to the Voyager 19 A and 19B stratiform massive sulphide lenses.

Group B also consists of sphalerite-galena clasts but is slightly more radiogenic than the Voyager massive sulphides. Group B clasts have the same Pb isotope signature as the Voyager 2 style of mineralisation (disseminated and fracture galena coatings in crystal tuffs).

Group C consists of disseminated, vein and alteration hosted sulphides (galena, sphalerite, pyrite). These styles of mineralisation have the same Pb isotopic signature as Voyager 9 (chlorite-magnetite alteration) and Voyager 34 (soil geochem anomaly).

Group D is the most radiogenic cluster and contains disseminated and vein sulphides (Mostly galena) that are clearly younger than all the previous styles of mineralisation. This cluster has a Pb isotope signature similar to Voyager 24 (vein style galena and sphalerite) and Voyager 31 and 33 (galena-sphalerite-arsenopyrite veins).

Several mineralised samples, and two soil samples, from a new mineralised area discovered during the 1992 exploration program were analysed by SIROTOPE. These results are given in Table 1. All of the exploration samples (except 5655530 and 565576) plot in the Group C field. Samples 5655530 and 565576 plot between the Group B and C fields.

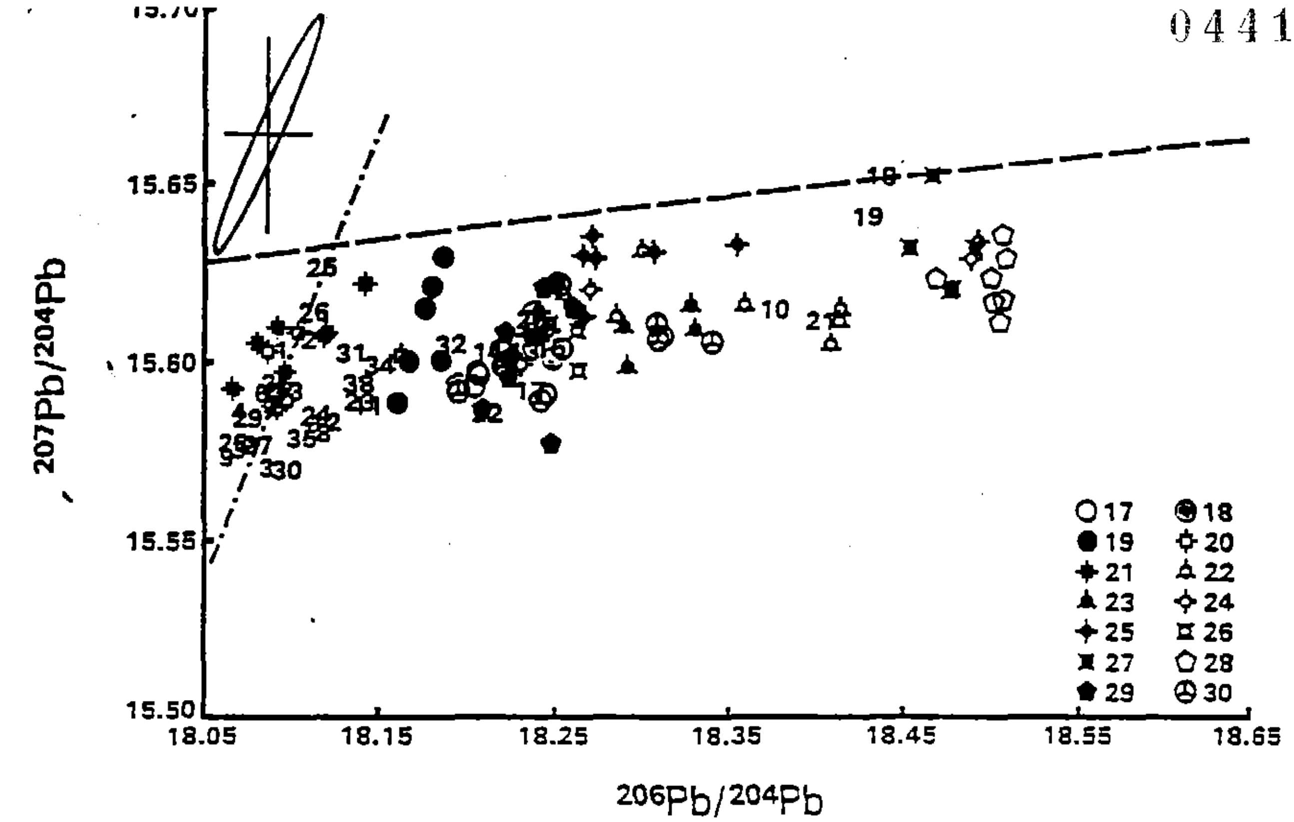
2) Sulphur Isotope Data

Although not in the original proposal, sulphur isotope ($\delta^{34}S$) data has been obtained for most samples analysed for Pb isotopes. The $\delta^{34}S$ analyses were done on the same mineral separates as used for the Pb isotope analyses and were preformed by Christine Cook in the stable isotope facility of the Central Science laboratory at the University of Tasmania.

Table 1 lists the $\delta^{34}S$ data. A histogram of the $\delta^{34}S$ values for each "Group" is given in Figure 4. Overall each Group has $\delta^{34}S$ values within a small range with the average $\delta^{34}S$ values for each group being A - 16.1‰, B - 16.4‰, and C - 13.1‰. The two samples from Group D have very different values, 11.9‰ and -11.5‰. The negative value was repeated and is real. Groups A and B have heavier $\delta^{34}S$ values than Groups C or D.

3) Initial Interpretation

The Pb isotope data from the Elliott Bay mineralisation plots in distinct groups that are related to the type of mineralisation. Lead isotope analyses clearly show the difference



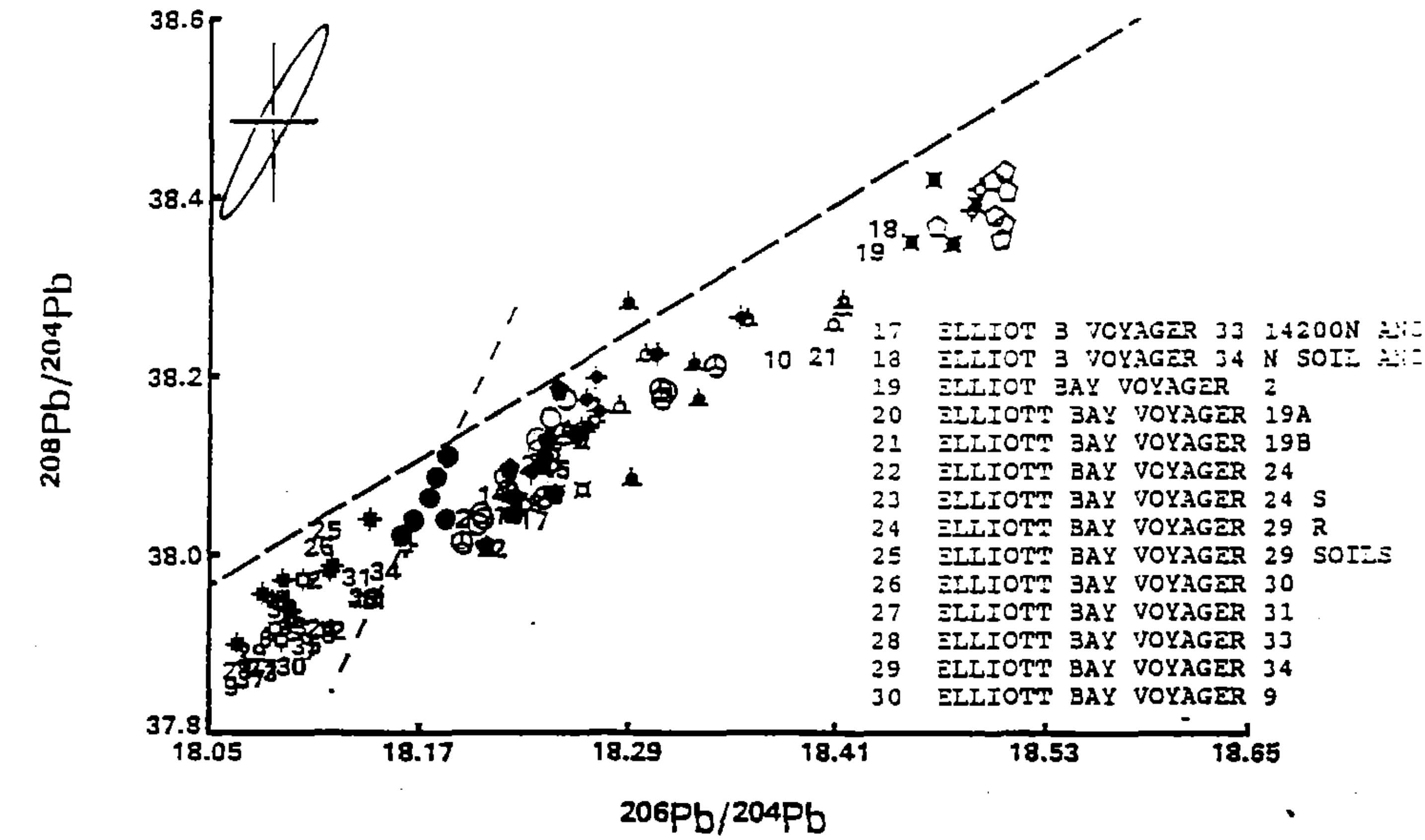


Figure 3 Lead isotope signatures of the mineralised prospects in the Elliott Bay region. Data from Gulson et al. (1987) and SIROTOPE's files. Sample numbers same as in Figure 2. Short dashed line is a representative ^{204}Pb fractionation line. Long dashed line is the lead evolution (growth) curve of Cumming and Richards (1975).

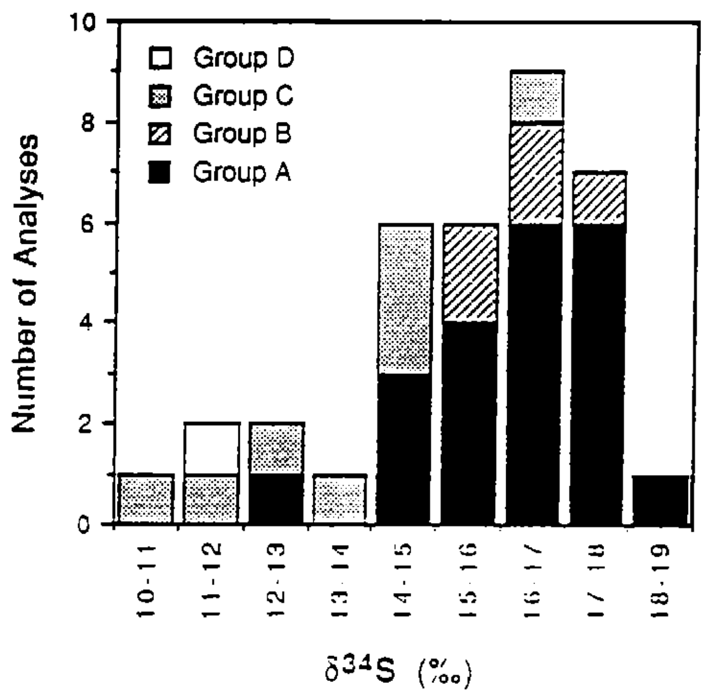


Figure 4 *Histogram of $\delta^{34}S$ values (‰) for the different Groups of mineralisation in the Elliott Bay area. Groups A and B have very similar $\delta^{34}S$ values that are heavier than mineralisation from groups C and D.*

between the different types of mineralisation (Fig. 2). The massive sulphide lenses (Voyager 19) and sulphide clasts of Groups A and B appear to have formed from a Pb source that was significantly different from the Pb in Groups C and D mineralisation. The spread in Pb $^{206}Pb/^{204}Pb$ data for mineralisation in the Elliott Bay area is greater than the spread of $^{206}Pb/^{204}Pb$ data between Cambrian and Devonian mineralisation throughout the West Coast of Tasmania (Fig. 1) as purposed by Gulson et al. (1987).

There is also a marked difference in sulphur isotope data between Groups A and B and Groups C and D (Fig. 4). The $\delta^{34}S$ values for the Group A and B sulphide lens and clast mineralisation is very similar to that reported for the Rosebery mineralisation (majority of $\delta^{34}S$ between 10 and 17‰). These values are significantly heavier than those for the Hellyer and Que River massive sulphide mineralisation ($\delta^{34}S$ between 6 and 8‰).

Figure 5 is a plot of Elliott Bay mineralisation on a $\delta^{34}S$ versus $^{206}Pb/^{204}Pb$ diagram. This type of plot highlights the differences between the different styles of mineralisation, especially Groups A and B sulphide clast mineralisation versus the Group C and D disseminated, stringer and alteration-related mineralisation.

4) Working Model

From the geology, alteration and Pb and S isotope data a preliminary model is proposed to explain the mineralisation at Elliott Bay. In the Cambrian a volcanogenic massive sulphide deposit (Voyager 19 and Group A and B-type mineralisation), of unknown size, formed on the seafloor somewhere in the vicinity of the Wart Hill area. At some time shortly after it formed this mineralisation was fragmented and transported in subaqueous debris flows and deposited at the present day site of Wart Hill. These fragments became one of the clast types in the debris flow deposits. Shortly after the deposition of the debris flows, and other "hangingwall" lithologies, a separate generation of hydrothermal fluids (still in the Cambrian?) passed through these rocks causing alteration (sericite, silica, chlorite, minor carbonate) and precipitation of disseminated and stringer sulphide mineralisation (Group C). Much later, (possibly in the Devonian?) another generation of hydrothermal fluids passed through the rocks causing minor alteration and sulphide mineralisation (Group D galena-sphalerite-arsenopyrite veins).

A more detailed explanation for the different lead and sulphur signatures will be given in the first yearly report.

5) Exploration Considerations

Lead and sulphur isotope data is useful in the Elliott Bay area for discriminating different generations of mineralisation. The most interesting style of mineralisation in the

Elliott Bay area is the Voyager 19 massive sulphide lenses and the Group A and B clasts. Care must be taken when evaluating mineralisation and alteration in the Elliott bay area as it appears that the fluids that caused the alteration and disseminated and stringer-style sulphide mineralisation (Group C) throughout the debris flows in the Wart Hill area are not the same fluids responsible for the Group A and B clasts and Voyager sulphide lens mineralisation. The hydrothermal system that formed the Group C style of mineralisation is capable of forming economic massive sulphide mineralisation and these areas should be explored to test their potential. The newly discovered coastal alteration and sulphide zone has the characteristics of Group C mineralisation and has the potential to be related to volcanogenic massive sulphide mineralisation.

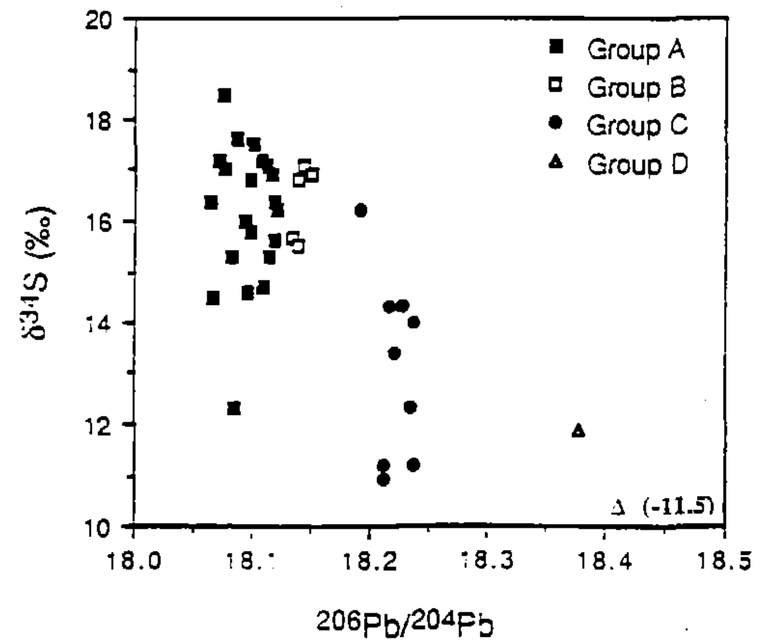


Figure 5 Elliott Bay data plotted on a $\delta^{34}S$ versus $^{206}Pb/^{204}Pb$ diagram. The differences between Groups A and B and Groups C and D are clearly illustrated.

APPENDIX XI

GEOLOGICAL ABBREVIATIONS

Abundant	abn
Adularia	Adl
Agglomerate	agg
Albite	Ab
Alkali feldspar	Afd
Altered	alt
Amphibolitic	amb
Amphibole	Amb
Amygdaloidal	amg
Andalusite	An
Andesite	A
Angular	ang
Ankerite	An
Aplite	Ap
Approximate	apx
Arcuate	ar
Arenaceous	arn
Argillaceous	arg
Argillite	Arg
Arkose	Ak
Arkosic	ak
Arsenopyrite	Ap
Ash volcaniclastic	av
Autobrecciated	aub
Average	ave
Banded	bnd
Barite	Ba
Basalt	B
Bedded	bd
Biotite	Bio
Black	bk
Black shale	Bsh
Blue	bl
Boulder	bld
Breccia	b
Breccia volcaniclastic	bv
Bright	brt
Brown	br
Calcareous	cc
Calcite	Cc
Carbonaceous	carb
Carbonate	Co
Cassiterite	Cass
Cavernous	cav
Cemented	cem
Chalcopyrite	Cp
Chert	Ch
Chlorite	Cl
Chromite	Cr
Chromitiferous	cr
Clay	cy
Coarse	c
Coarse grained	cg
Colloform	coll
Colour	col
Common	com
Conglomerate	Cg
Conglomeratic	cg
Crimson	cm
Crystal	x
Crystal volcaniclastic	xv
Dacite	D
Dark	dk
Dense	dns
Devitrification	dv
Diorite	Di
Disseminated	dis
Dolerite	Dol
Dolomite	Dm
Dyke	dy
Elongated	el
Emphasised	emp
Epiclastic (noun)	E
Epidote	Ep
Euhedral	euh
Eutaxitic	eux
Fabric	fab
Fault	F
Fault zone	FZ
Feldspar	Fd
Feldspathoid	Fdd
Feldspar phyric	fp
Felspathic	fel
Ferruginous	fer
Fibrous	fb
Fine	f
Fine grained	fg
Fissile	fis
Flowbanded	fbn
Fluorite	Fl
Foliated	fo
Fragments	fr
Fuchsite	Fu
Gabbro	Gb
Galena	Gn
Glass	Gl
Glassy	gl
Gossan	Gos
Granite	Gr
Granodiorite	Gd
Granular	glr
Graphite	Gt
Graphitic	gt
Green	gn
Grey	gy
Greywacke	Gw
Groundmass	gm
Haematite	Hmt
Hanging wall vicl	HVS
Hornblende	Hb
Ignimbrite	Ig
Illite	Ill
Interbedded	ibd
Intercalated	icl
Intrusive	int
Joint	J
Jurassic	Ju
K-Feldspar	Kfd
Khaki	kh
Laminated	lm
Lapilli volcaniclastic	lv
Lava	l
Lava breccia	lb
Leached	lch
Leucite	Lct
Leucitite	Ltt
Limonitic	Lim
Light	lgt
Limestone	Lst
Lithic	lh
Magnetite	Mt
Manganese	Mn
Marl	Ml
Massive	mas
Matrix	mtx
Matrix dominated	md
Medium	med
Medium grained	mg
Metamorphosed	meta
Mica	mic
Micaceous	mic
Mineralised	min
Minor	mnr
Mixed	mxd
Mottled	mtl
Mudstone	Mst
Nodule	nd
Off white	ow
Olivine	Ol
Oolitic	oo
Orange	or
Ordovician	O
Oxidised	ox
Pale	pl
Patchy	pat
Peperitic	pep
Perlitic	prl
Pervasive	per
Phenocrysts	phn
Phyllite	phyl
Phyric	p
Picrite	Pic
Pillow lava	pl
Pink	pk
Polymict	Y
Porphyritic	por
Predominantly	pred
Pumice	Pu
Pumiceous	pu
Purple	pp
Pyrite	Py
Pyritic	py
Pyrolusite	Pr
Pyroxene	Px
Pyrrhotite	Po
Quartz	Q
Quartzite	Qtz
Quellite	Qll
Questionable	?
Recrystallised	rx
Red	rd
Renealed	rhd
Reworked	rw
Rhyodacite	RD
Rhyolite	R
Ripple marks	rmk
Round	rnd
Rubble	rbb
Sandstone	Ss
Schist	Sch
Schistose	sch
Sediment	sed
Selected fragments	sfr
Sericite	Se
Serpentine	Srp
Shale	Sh
Sheared	~~shd~~
Sheeted	sht
Siderite	Sid
Silica	Si
Siliceous	sil
Siltstone	Slt
Slickenside	slk
Sphalerite	Sp
Spotted	spt
Sooty	spt
Stockwork	stw
Stratabound	stb
Strong	str
Structure controlled	stc
Syngenetic	syn
Talc	Tc
Tertiary	T
Tourmaline	Tm
Trace	tr
Trachyte	Tr
Tuff	Tf
Tuffaceous	tf
Variable	var
Variolitic	vr
Vein	vn
Vein concordant to bedd	cV
Vein discordant to bedd	dV
Very	v
Vesicular	ves
Vitric	vtr
Volcanic	vlc
Volcaniclastic	vlcl
Weak	wk
Weathered	wth
White	wh
Yellow	yw

044157

Aberfoyle Resources Limited

EXPLORATION DIVISION

A.C.N. 004 664 108

EXPLORATION LICENCE 40/85

ELLIOTT BAY

TASMANIA

Progress Report for the Period

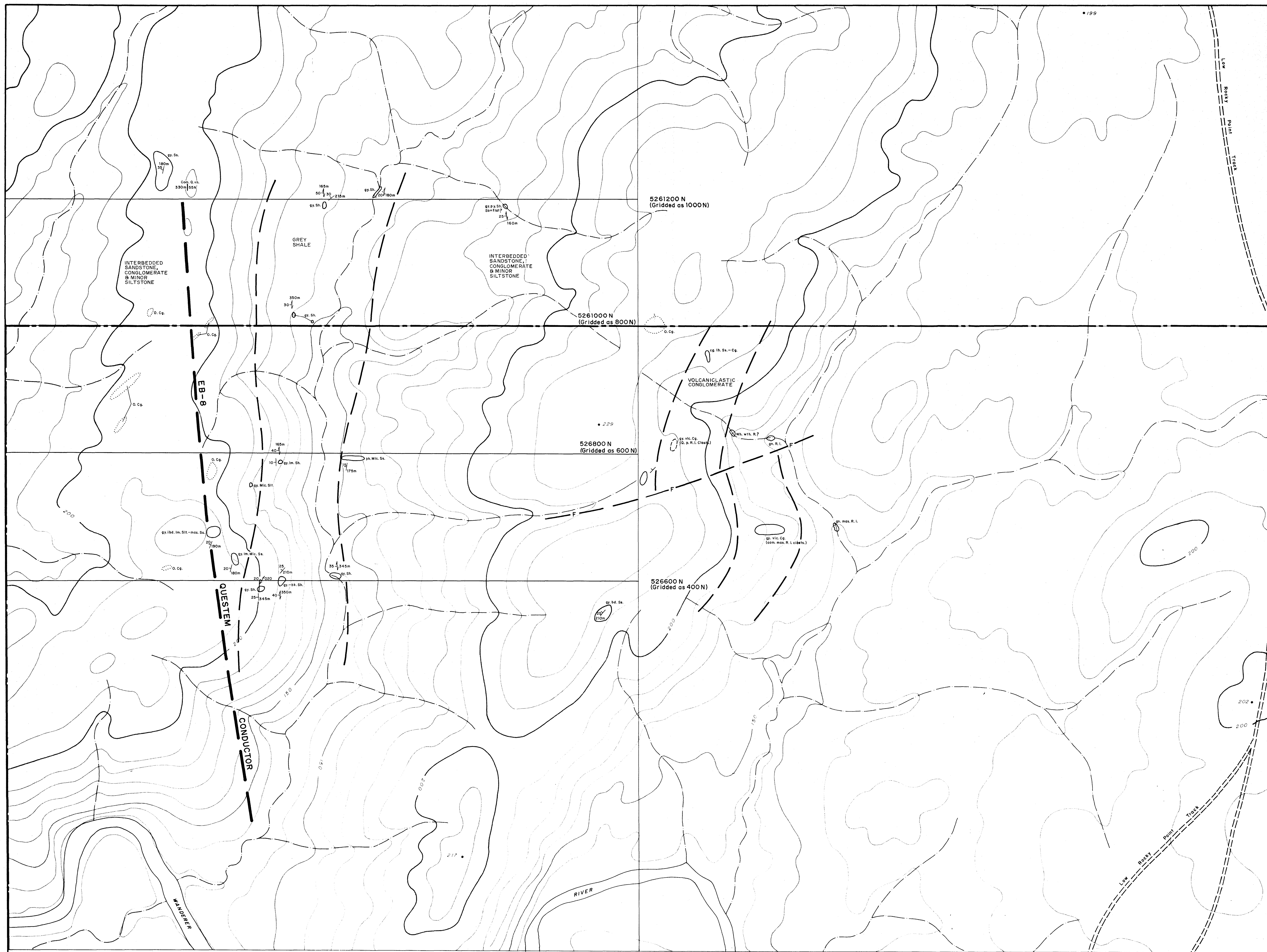
January 1992 to December 1992

VOLUME 2 of 3

Plates EB10/A3 - EB10/N3

ıtion:

le - Burnie	(1/5)
le - Hawthorn	(2/5)
	(3/5)
ın	(4/5)
ıent of Mines	(5/5)

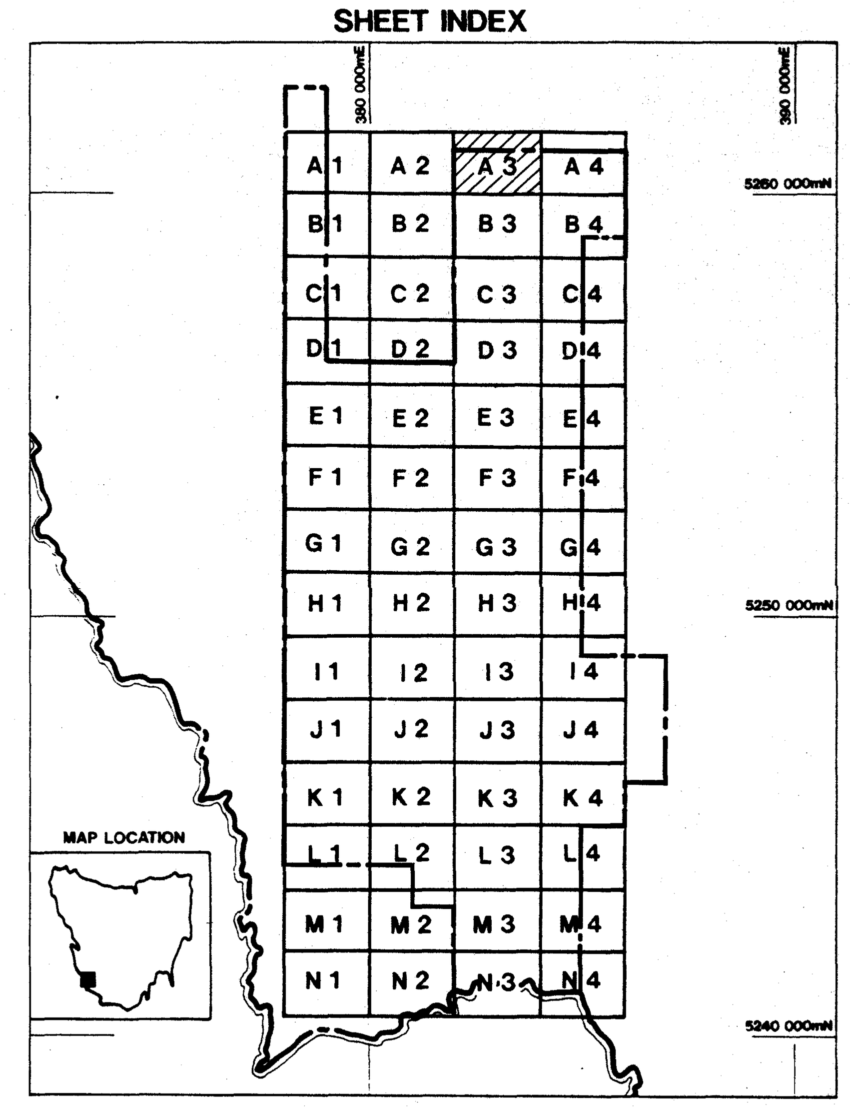


LEGEND

- OUTCROP, SUBCROP, FLOAT
- AIRBORNE EM ANOMALY
- 565567 SAMPLE NUMBER Cu/Pb/Zn/Ag/Au (ALL ppm) (ASSAY ONLY IF APPLICABLE)
- DIAMOND DRILLHOLE COLLAR AND SURFACE PROJECTION
- F FAULT
- FOLD AXIS
- 310 M 80 STRIKE AND DIP OF BEDDING
- 310 M 80 STRIKE AND DIP OF CLEAVAGE
- EDGE OF FOREST
- BOMBARDIER TRACK
- RIVER
- CREEK
- 50 CONTOUR INTERVAL 10m
- E.L. BOUNDARY
- 1 GROUND EM TRANSMITTING LOOP

ABBREVIATIONS USED ARE ABERFOYLE STANDARD.

SHEET INDEX



044158

5 cm

92-3401.

Aberfoyle Resources Limited
EXPLORATION DIVISION

REVISIONS					
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Location Code :				Scale : 1:2500 / Date : November 1992	Plate No : EB10/A3

044159

92-3401.

Aberfoyle Resources Limited
EXPLORATION DIVISION

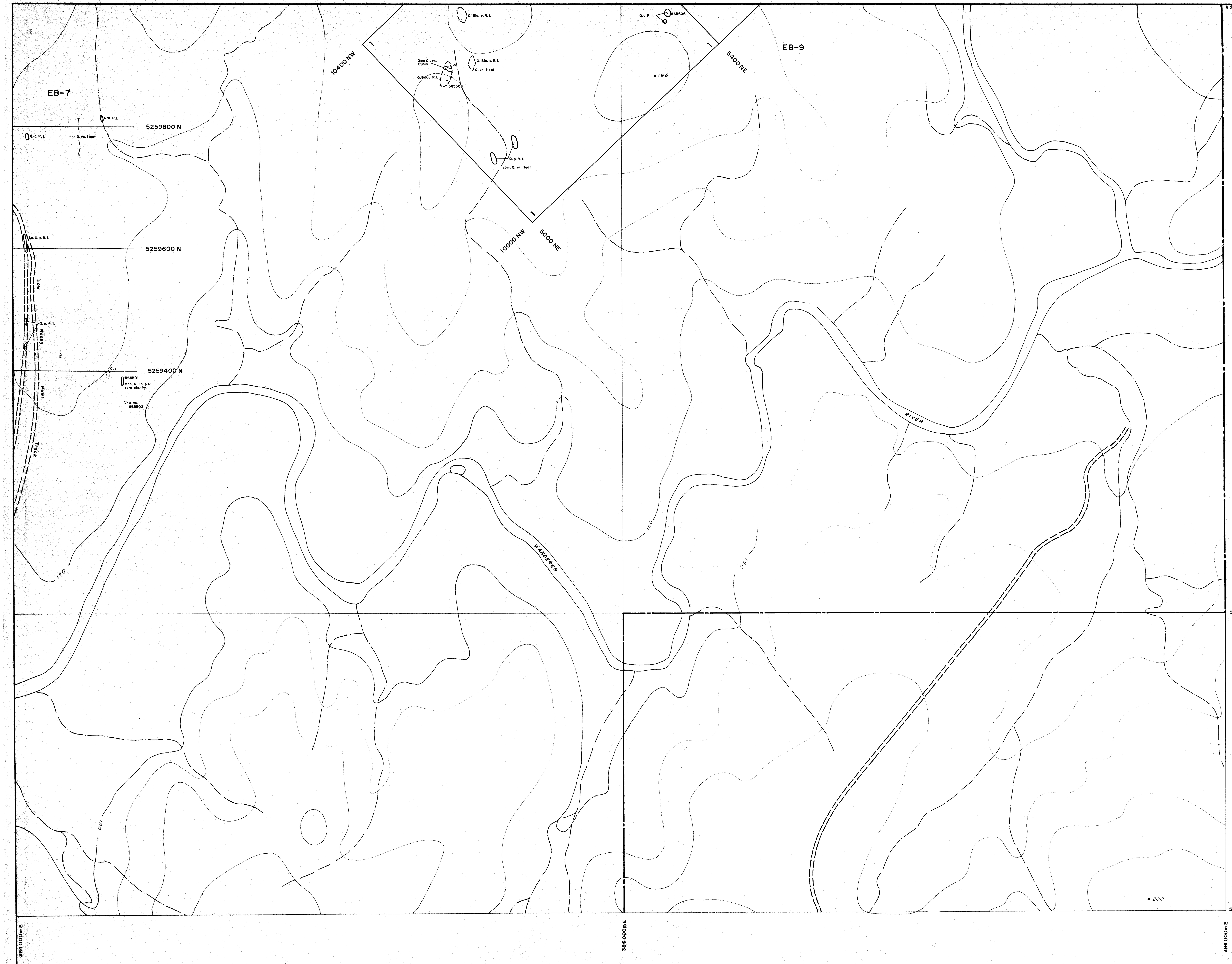
REVISIONS			
Init.	Date	Init.	Date

TASMANIA
ELLIOTT BAY E.L.40/85
EB-9 CONDUCTOR
OUTCROP GEOLOGY

Compiled : SR
Drawn :
Traced : J.L.R
Checked : SR

Location Code :
Scale : 1:2500
Date : November 1992
Plate No : EB10/A4

LEGEND
OUTCROP, SUBCROP, FLOAT
AIRBORNE EM ANOMALY
565567 SAMPLE NUMBER Cu/Pb/Zn/Ag/Au (ALL ppm) (ASSAY ONLY IF APPLICABLE)
DIAMOND DRILLHOLE COLLAR AND SURFACE PROJECTION
FAULT
FOLD AXIS
STRIKE AND DIP OF BEDDING
STRIKE AND DIP OF CLEAVAGE
EDGE OF FOREST
BOMBARDIER TRACK
RIVER
CREEK
CONTOUR INTERVAL 10m
E.L. BOUNDARY
GROUND EM TRANSMITTING LOOP
ABBREVIATIONS USED ARE ABERFOYLE STANDARD.
QUESTEM CONDUCTOR
EB-7
WANDERER RIVER
Low Rocky Point Track
5260000mN
5259000mN
5258500mN
382000mE
383000mE
384000mE
SHEET INDEX
MAP LOCATION
5 cm
044160
92-3401.
Aberfoyle Resources Limited
EXPLORATION DIVISION
REVISIONS
Init. Date Init. Date
TASMANIA
ELLIOTT BAY E.L40/85
EB-7 CONDUCTOR
OUTCROP GEOLOGY
Compiled : SR
Drawn :
Traced : JLR
Checked : SR
Location Code :
Scale : 1:2500
Date : November 1992
Plate No : EB10/B3

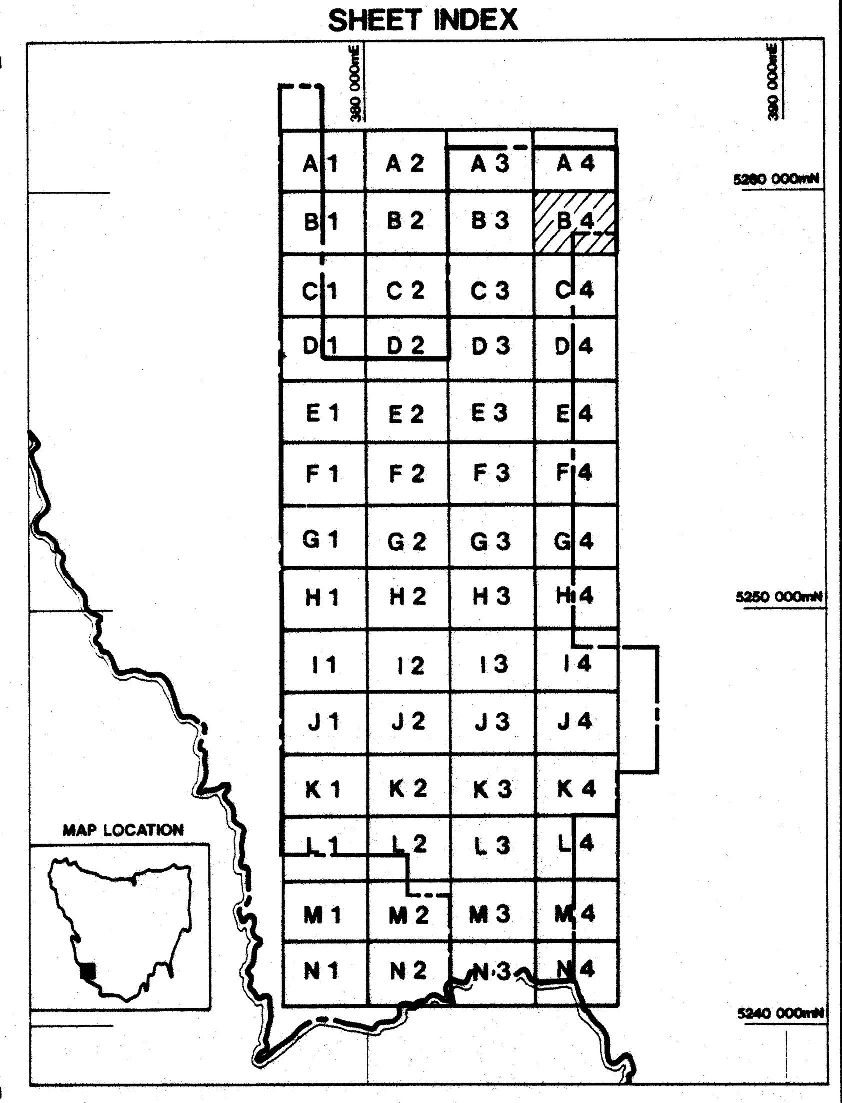


LEGEND

- OUTCROP, SUBCROP, FLOAT
- AIRBORNE EM ANOMALY
- 565567 SAMPLE NUMBER Cu/Pb/Zn/Ag/Au (ALL ppm) (ASSAY ONLY IF APPLICABLE)
- DIAMOND DRILLHOLE COLLAR AND SURFACE PROJECTION
- F FAULT
- FOLD AXIS
- 310 m 80 STRIKE AND DIP OF BEDDING
- 310m 80 STRIKE AND DIP OF CLEAVAGE
- EDGE OF FOREST
- BOMBARDIER TRACK
- RIVER
- CREEK
- 50 CONTOUR INTERVAL 10m
- E.L. BOUNDARY
- 1 GROUND EM TRANSMITTING LOOP

ABBREVIATIONS USED ARE ABERFOYLE STANDARD.

SHEET INDEX



5 cm

044161

92-3401.

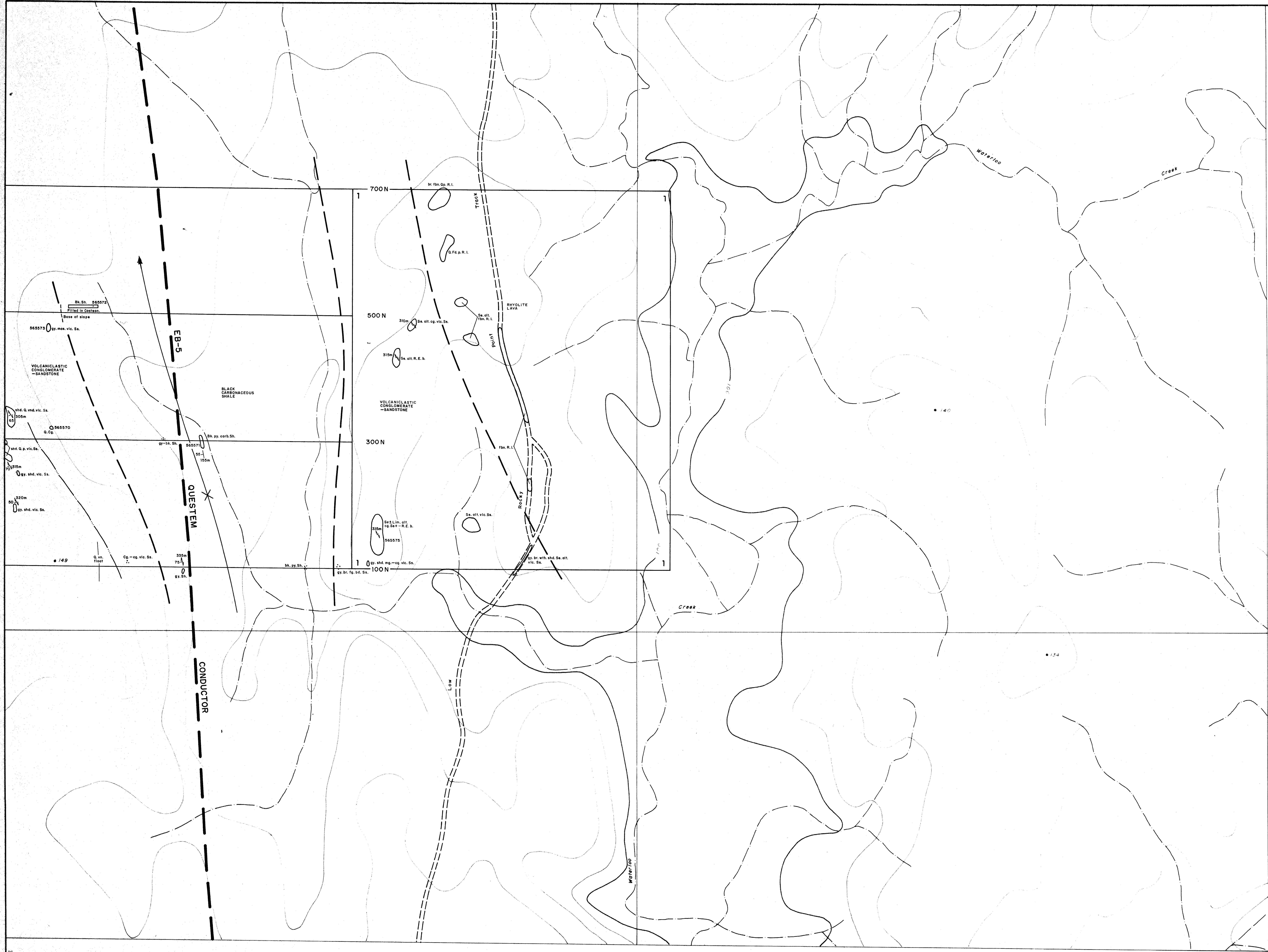
Aberfoyle Resources Limited
EXPLORATION DIVISION

REVISIONS				
Init.	Date	Init.	Date	

TASMANIA
ELLIOTT BAY E.L.40/85
EB-7 & EB-9 CONDUCTOR
OUTCROP GEOLOGY

Compiled :	SR
Drawn :	
Traced :	JLR
Checked :	SR

Location Code :
Scale : 1:2500
Date : November 1992
Plate No : EB10/B4

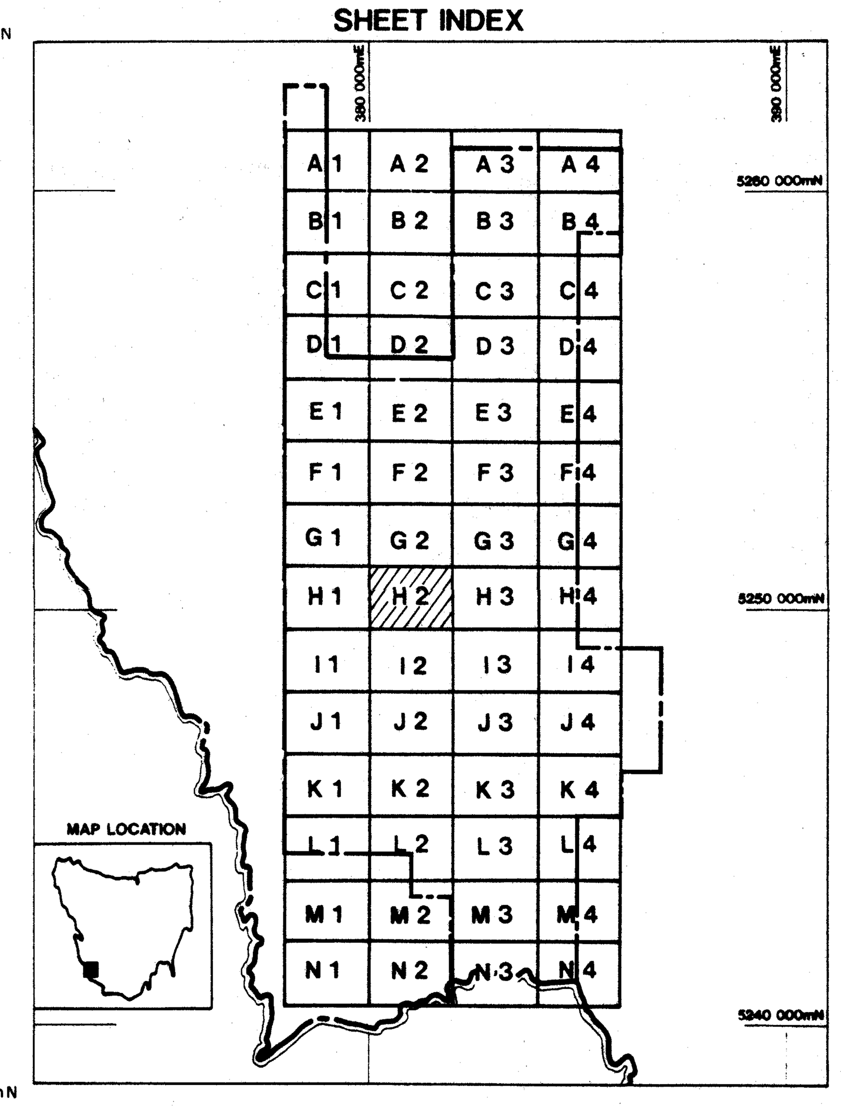


LEGEND

- OUTCROP, SUBCROP, FLOAT
- AIRBORNE EM ANOMALY
- 565567 SAMPLE NUMBER Cu/Pb/Zn/Ag/Au (ALL ppm) (ASSAY ONLY IF APPLICABLE)
- DIAMOND DRILLHOLE COLLAR AND SURFACE PROJECTION
- F FAULT
- FOLD AXIS
- 310 M / 80 STRIKE AND DIP OF BEDDING
- 310 M / 80 STRIKE AND DIP OF CLEAVAGE
- EDGE OF FOREST
- BOMBARDIER TRACK
- RIVER
- CREEK
- 50 CONTOUR INTERVAL 10m
- E.L. BOUNDARY
- 1 GROUND EM TRANSMITTING LOOP

ABBREVIATIONS USED ARE ABERFOYLE STANDARD.

SHEET INDEX



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044162

92-3401.

Aberfoyle Resources Limited
EXPLORATION DIVISION

REVISIONS			
Init.	Date	Init.	Date

TASMANIA
ELLIOTT BAY E.L. 40/85
EB-5 CONDUCTOR
OUTCROP GEOLOGY

Compiled : SR
Drawn :
Traced : JLR
Checked : SR

Location Code :
Scale : 1:2500
Date : November 1992
Plate No : EB10/H2

044163

92-3401.

Aberfoyle Resources Limited
EXPLORATION DIVISION

REVISIONS			
Init.	Date	Init.	Date

Location Code :

TASMANIA
ELLIOTT BAY E.L.40/85
EB-6 CONDUCTOR
OUTCROP GEOLOGY

Scale : 1 : 2500
Date : November 1992

Compiled : SR
Drawn :
Traced : JLR
Checked : SR
Plate No : EB10/C3

044164

92-3401.

Aberfoyle Resources Limited
EXPLORATION DIVISION

TASMANIA
ELLIOTT BAY E.L.40/85
EB-2 & EB-3 CONDUCTOR
OUTCROP GEOLOGY

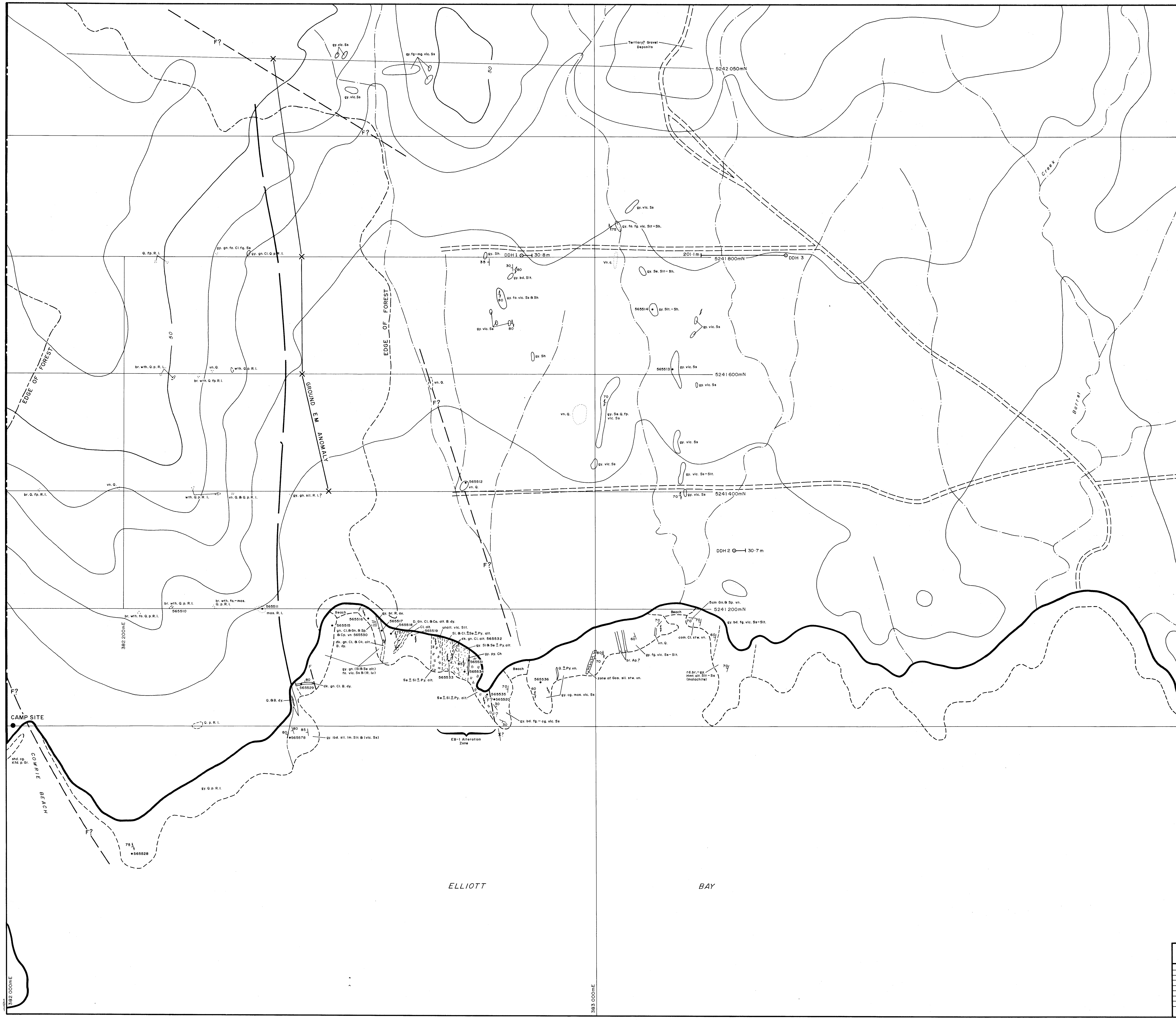
REVISIONS			
Init.	Date	Init.	Date

Location Code :

Scale : 1:2500

Date : November 1992

Compiled : SR
Drawn :
Traced : JLR
Checked : SR
Plate No : EB10/L3



LEGEND

Outcrop, Subcrop, Float

Geological boundary sharp or accurate, dip shown

Geological boundary gradational or approximate

Fault–mapped

Fault–inferred from mapping or photo interp.

Axial trace of fold–inferred

Strike and dip of bedding

Strike and dip of cleavage

Diamond drill hole projection. Total depth shown

Bombardier track

Creek

Contour interval 10m

Abbreviations used are Aberfoyle standard

TN GN MN

0.9° 12.5°

MAP LOCATION

SHEET N3

0 100 200

METRES

5cm

044165

92-3401

Aberfoyle Resources Limited
EXPLORATION DIVISION

REVISIONS			
Init.	Date	Init.	Date

TASMANIA
ELLIOTT BAY E.L. 40/85
EB-1 PROSPECT
OUTCROP GEOLOGY

Compiled : SR
Drawn : SR
Traced : MAR
Checked : SR

Location Code :
Scale : 1:2500
Date : March 1992
Plate No : EB10/N3

044166

Aberfoyle Resources Limited

EXPLORATION DIVISION
A.C.N. 004 664 108

EXPLORATION LICENCE 40/85

ELLIOTT BAY

TASMANIA

Progress Report for the Period

January 1992 to December 1992

VOLUME 3 of 3

Plates EB11 - EB15

Distribution:

Aberfoyle - Burnie	(1/5)
Aberfoyle - Hawthorn	(2/5)
Arimco	(3/5)
Poseidon	(4/5)
Department of Mines	(5/5)

044167

92-3401

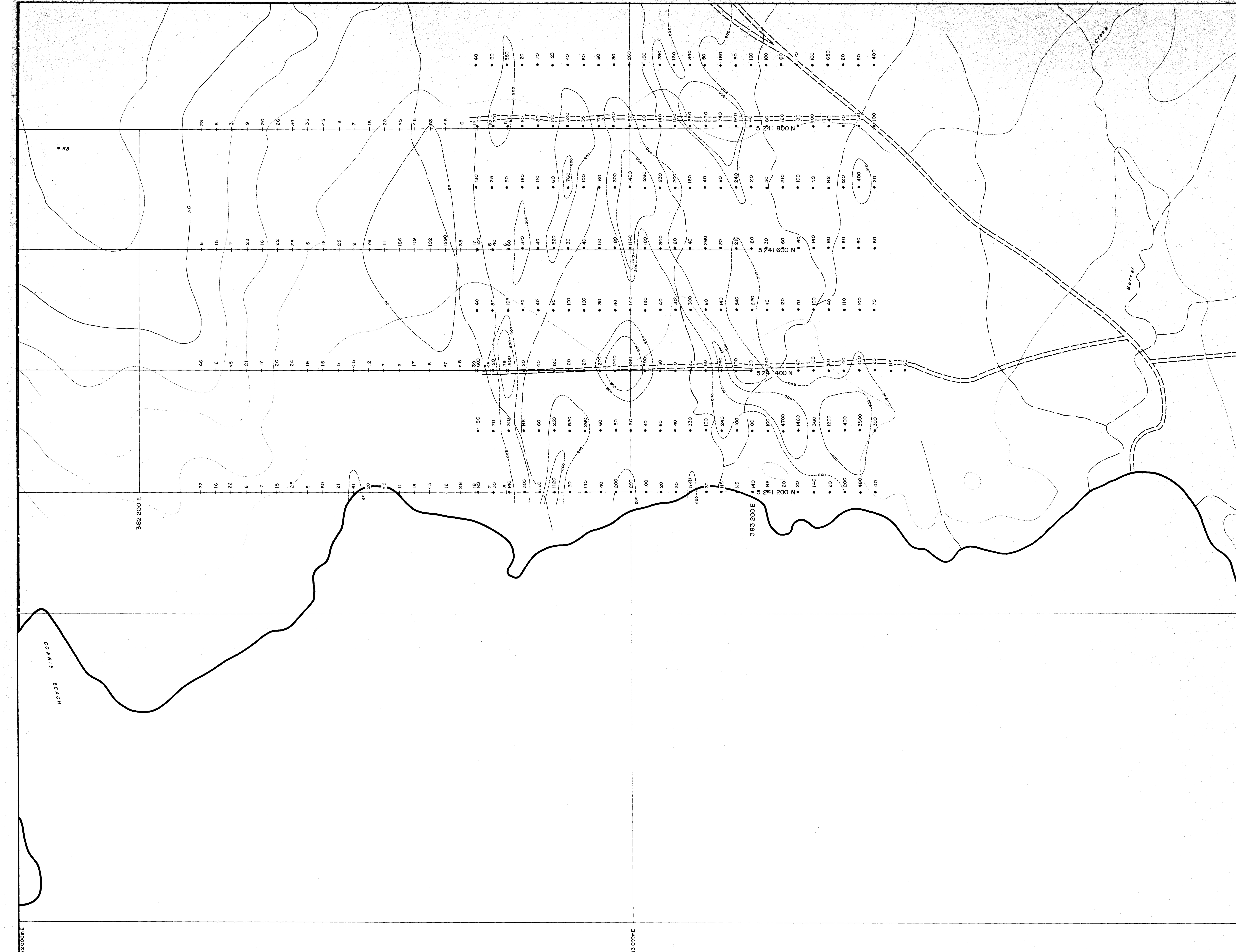
Aberfoyle Resources Limited
EXPLORATION DIVISION

REVISIONS			
Init.	Date	Init.	Date

TASMANIA
ELLIOTT BAY E.L. 40/85
EB-1 PROSPECT
ZINC SOIL GEOCHEMISTRY

Compiled :
Drawn :
Traced : JLR
Checked :

Location Code : | Scale : 1:2500 | Date : MARCH 1992 | Plate No : EB 11



LEGEND

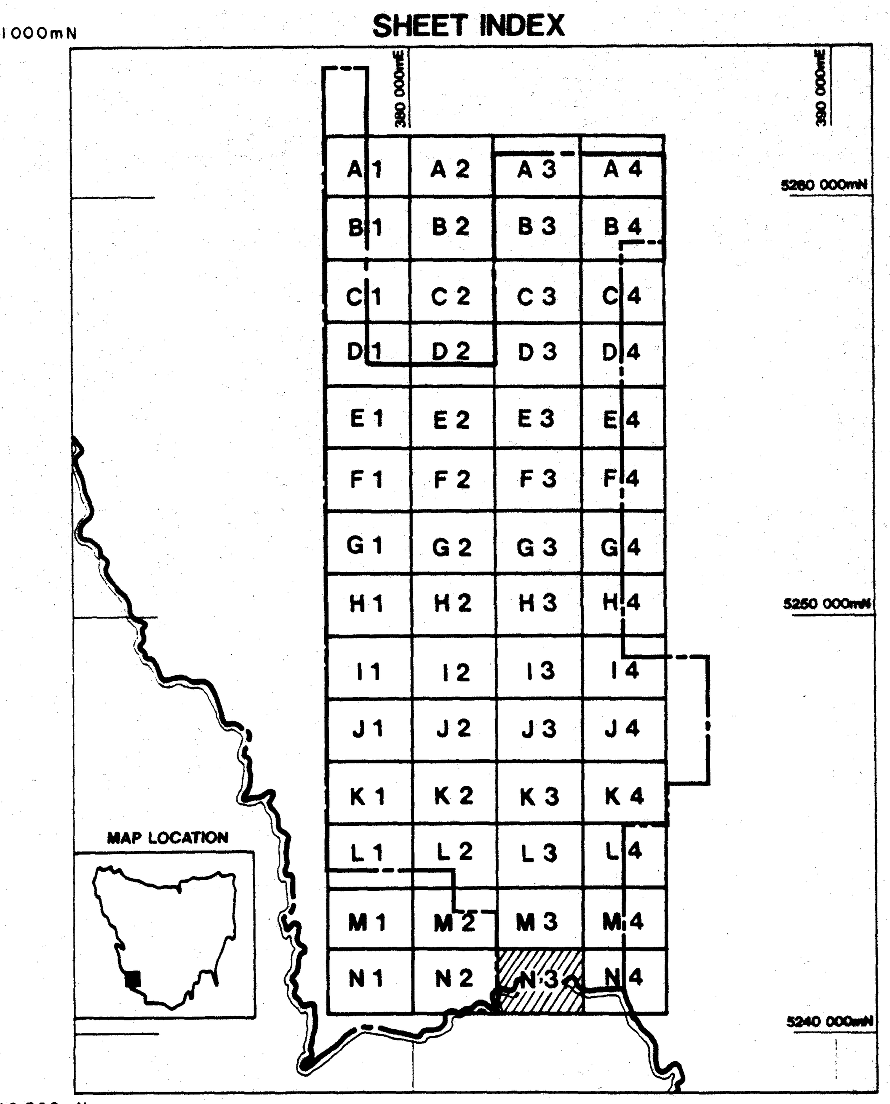
GEOPEKO 1977-1979 JACRO SAMPLING

- 100 — SAMPLE LOCATION AND ASSAY (ppm)
- -----200----- 600 ppm CONTOUR
- NS — NO SAMPLE

ABERFOYLE 1992 POWER AUGER SAMPLING

- 70 — SAMPLE LOCATION AND ASSAY (ppm)
- ——100—— 100 ppm CONTOUR

SHEET INDEX



044168

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EXPLORATION DIVISION

TASMANIA

ELLIOTT BAY E.L. 40/85

EB-1 PROSPECT

LEAD SOIL GEOCHEMISTRY

REVISIONS			
Init.	Date	Init.	Date

Location Code :

Scale : 1:2500

Date : MARCH 1992

Compiled :

Drawn :

Traced : JLR

Checked :

Plate No : EB 12

LEGEND

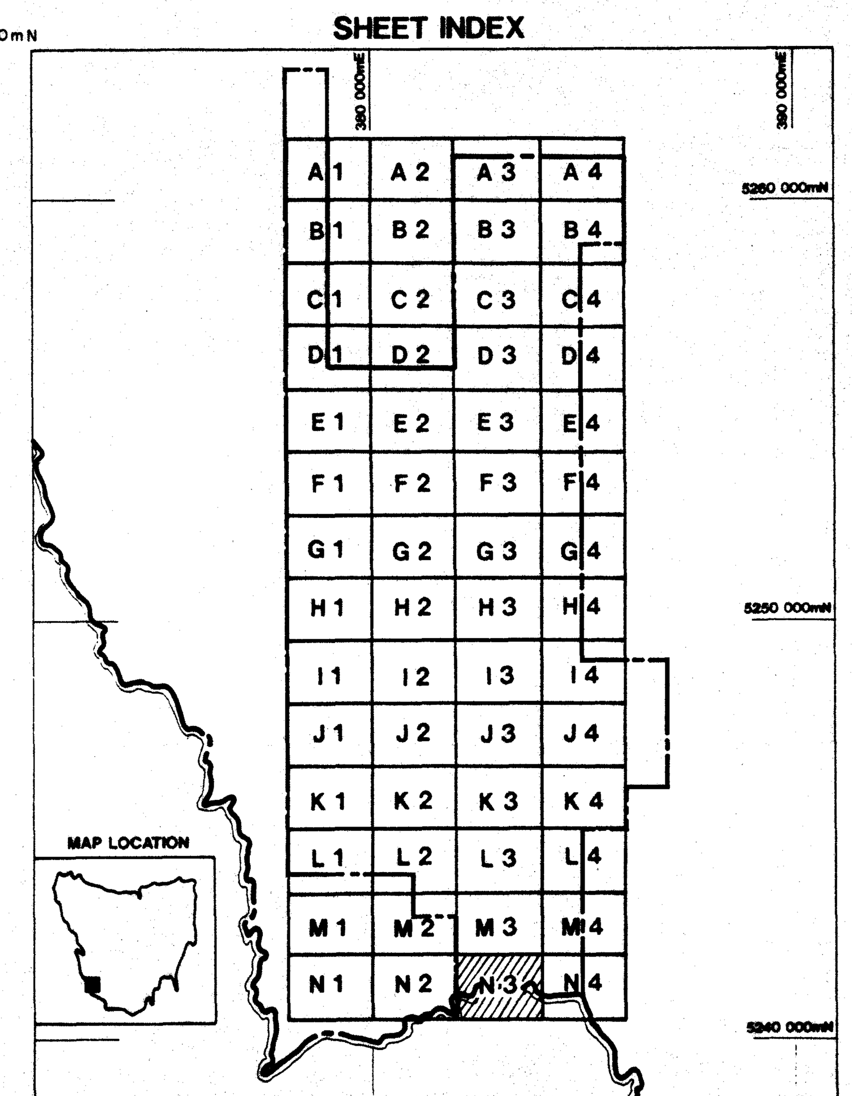
GEOPEKO 1977-1979 JACRO SAMPLING

Symbol	Meaning
100 (dot on line)	SAMPLE LOCATION AND ASSAY (ppm)
----100-----	600 ppm CONTOUR
NS	NO SAMPLE

ABERFOYLE 1992 POWER AUGER SAMPLING

Symbol	Meaning
70 (tick on line)	SAMPLE LOCATION AND ASSAY (ppm)
— — 100 — —	100 ppm CONTOUR

SHEET INDEX



5 cm

044169

92-3401

Aberfoyle Resources Limited
EXPLORATION DIVISION

TASMANIA
ELLIOTT BAY E.L. 40/85
EB-1 PROSPECT
COPPER SOIL GEOCHEMISTRY

REVISIONS			
Init.	Date	Init.	Date

Location Code :	Scale : 1:2500	Date MARCH 1992

Compiled :
Drawn :
Traced : JLR
Checked :
Plate No : EB 13

LEGEND

TERTIARY

Tg	QUARTZOSE GRAVEL

JURASSIC

Jd	DOLERITE

LATE CAMBRIAN - EARLY ORDOVICIAN

€Ocs	COARSE QUARTZOSE SANDSTONE TO FINE SILTSTONE, OWEN CONGLOMERATE
€Ovc	WATERLOO CREEK GROUP VOLCANICLASTIC CONGOMERATE/SANDSTONES TO SILTSTONES

CAMBRIAN

€vu	UNDIFFERENTIATED VOLCANICS; DOMINANTLY FELSIC.
€ve	RHYOLITIC VOLCANICLASTICS, SILTSTONES, SILICEOUS CONGLOMERATES AND GREYWACKES.
€fl	FELSIC LAVAS AND INTRUSIVES.

CAMBRIAN INTRUSIVES

€qfp	ELLIOTT POINT QUARTZ FELDSPAR PORPHYRY.
€g	GRANITE
€gm	MICROGRANITE

CAMBRIAN - WESTERN EPICLASTICS

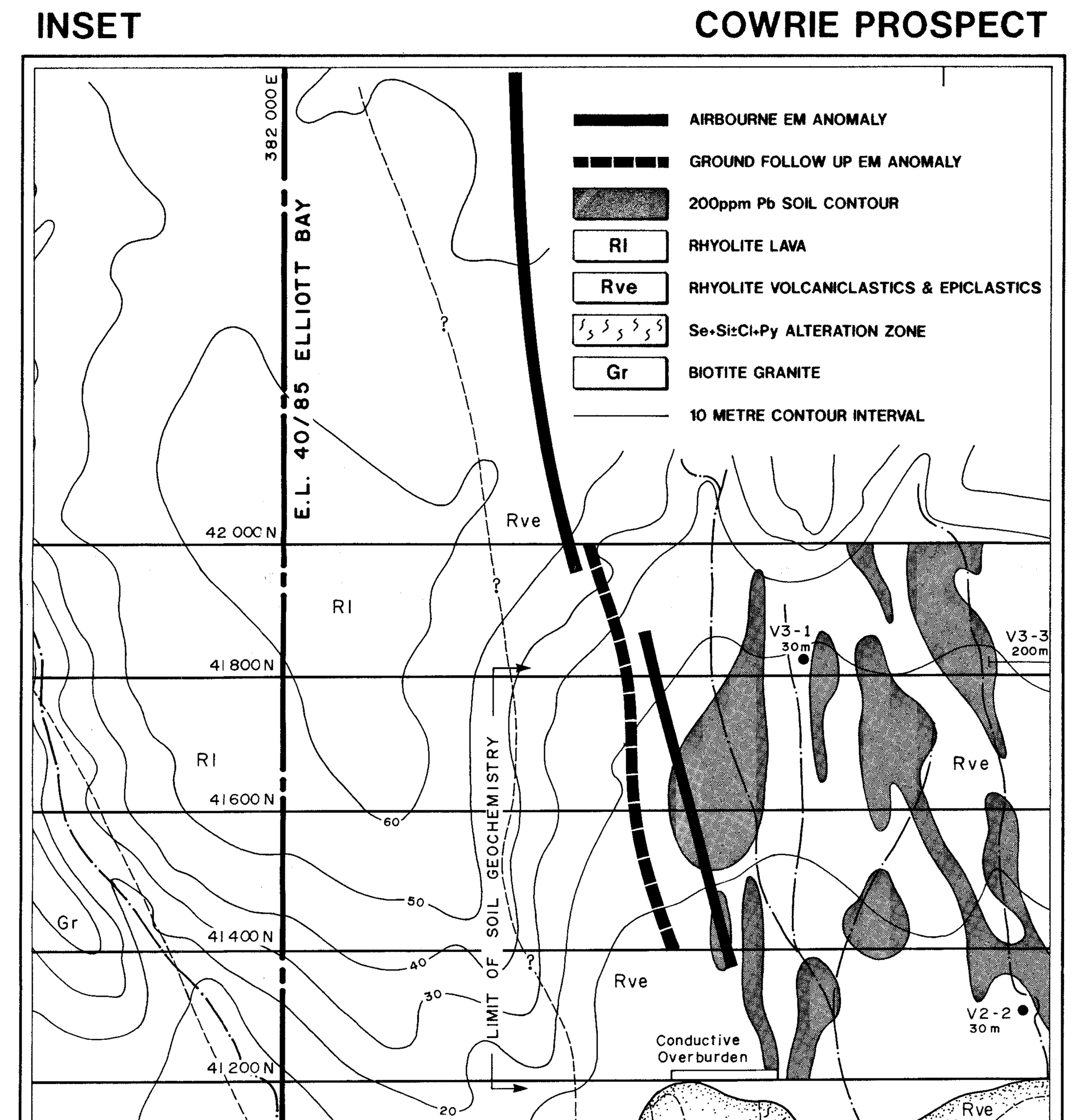
€c	INTERBEDDED CONGLOMERATES, SANDSTONES AND SILTSTONES, LOCALLY VOLCANICLASTIC.

CAMBRIAN - MAINWARING GROUP

€mu	INTERBEDDED MAFIC VOLCANICS, SANDSTONES AND SILTSTONES.

GEOLOGICAL CONTACT
E.L. BOUNDARY
GRIDLINE
AIRBORNE EM ANOMALY
FAULT
RIVER
SYNCLINE
ANTICLINE
PLUNGING SYNCLINE
DIAMOND DRILL HOLE COLLAR AND SURFACE PROJECTION
LIMIT OF GEOPEKO SOIL GEOCHEMISTRY
LIMIT OF 1983 GEOPEKO UTEM SURVEYS

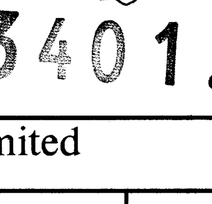
INSET — COWRIE PROSPECT



044170

5 cm

MAP LOCATION



GN TN MN

92-3401.

Aberfoyle Resources Limited
EXPLORATION DIVISION

SOUTH WEST TASMANIA

E.L. 40/85 ELLIOTT BAY

SUMMARY PLAN

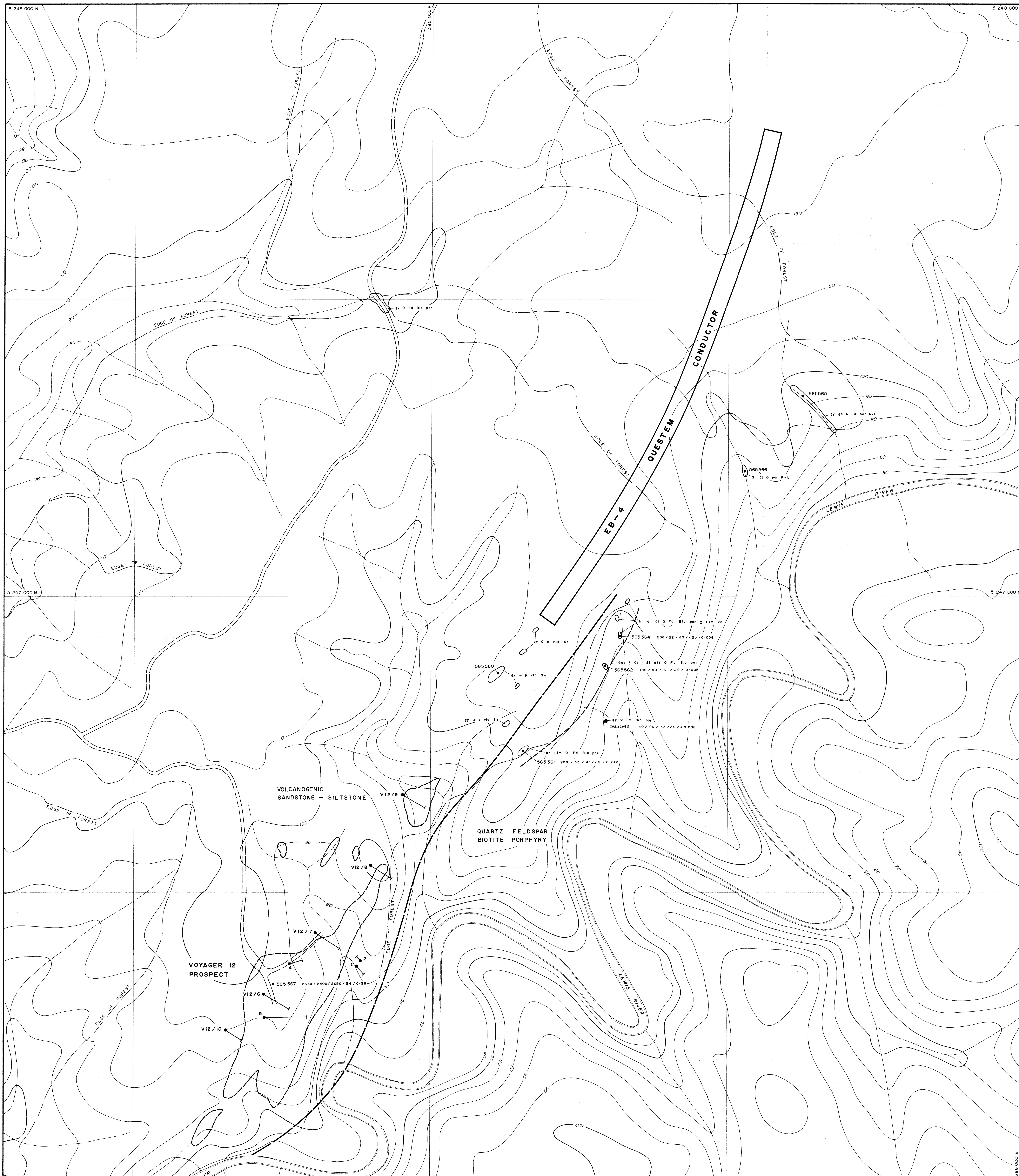
REVISIONS			
Init.	Date	Init.	Date

Location Code :

Scale : 1:25000

Date : JUNE 1992

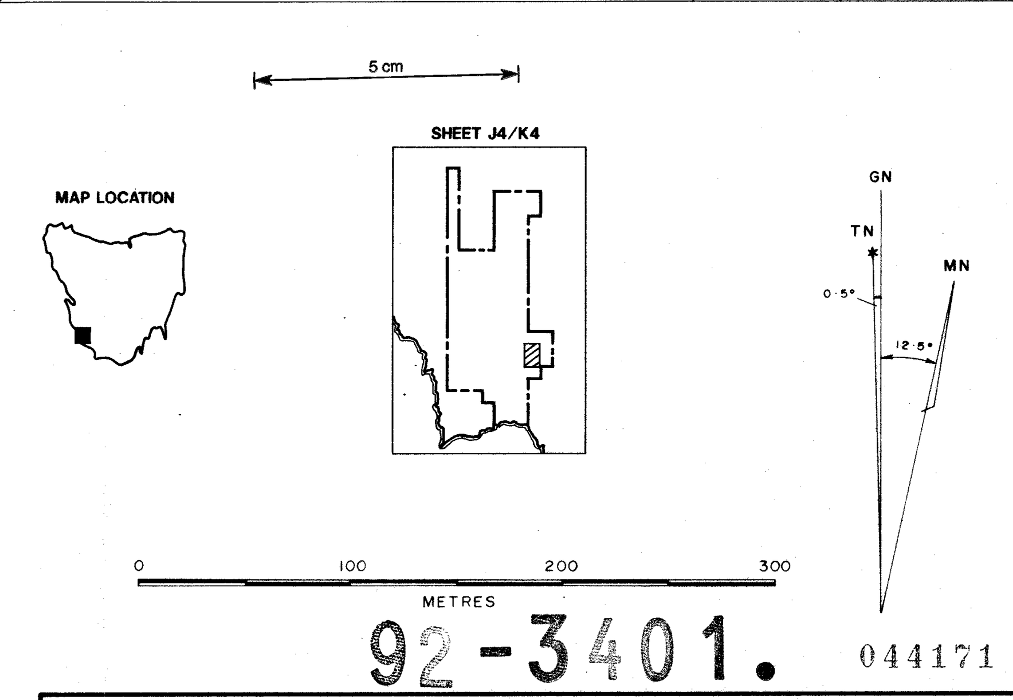
Compiled : R.S.
Drawn : J.M.S.
Traced :
Checked :
Plate No : EB 14



LEGEND

- AIRBORNE EM ANOMALLY
- ZONE OF GOSSANOUS VEINING AND LIMONITE
- OUTCROP, FLOAT
- • 565 567 — SAMPLE NUMBER Cu/Pb/Zn/Ag/Au (ALL ppm)
- DIAMOND DRILL HOLE COLLAR AND SURFACE PROJECTION
- FAULT
- 70 — CONTOUR INTERVAL 10m
- CREEK
- RIVER
- EDGE OF FOREST
- BOMBARDIER TRACK
- E.L. BOUNDARY

NOTE: ABBREVIATIONS USED ARE ABERFOYLE STANDARD.



92-3401. 044171

Aberfoyle Resources Limited
EXPLORATION DIVISION

TASMANIA
ELLIOTT BAY E.L.40/85

EB-4 RECONNAISSANCE MAPPING

REVISIONS			
Init.	Date	Init.	Date

Location Code :

Scale : 1 : 2500 | Date : JUNE 1992

Compiled :	S R
Drawn :	
Traced :	J.M.S.
Checked :	S R
Plate No :	EB 15

92-3401

044172

Aberfoyle Resources Limited
EXPLORATION DIVISION

TASMANIA
ELLIOTT BAY E.L. 40/85
EB-1 PROSPECT C HORIZON
SOIL SAMPLE LOCATIONS
1991/92

REVISIONS			
Init.	Date	Init.	Date
MAR	7·7·93		

Compiled :
Drawn :
Traced : JLR
Checked :

Location Code :
Scale : 1:2500
Date : July 1993
Plate No : EB 25