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ELECTROLYTIC ZINC COMPANY OF AUSTRALASIA LIMITED
 MINERAL RESOURCES DIVISION

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EXPLORATION LICENCE NO. 12/72 - BULGOBAC

ANNUAL REPORT ON EXPLORATION ACTIVITY FOR 1984.

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 Progress Report on Exploration Activity
 16th November, 1983 to 29th May, 1984.

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 Silver Falls and North Pinnacles Areas
 Progress Report on Exploration Activity
 30th May to 13th November, 1984.

VOLUME-1.

Annual Report on EF for 1984.

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ELECTROLYTIC ZINC COMPANY OF AUSTRALASIA LIMITED

Mineral Resources Division

OPEN FILE

EXPLORATION LICENCE NO. 12/72 - BULGOBAC

Progress Report on Exploration Activity

16th November, 1983 to 29th May, 1984.

Report No. T179

R.A. Sainty,
May, 1984.

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(Guido Staltari, 1983)

1. INTRODUCTION

This report covers work on Exploration Licence No. 12/72 by Electrolytic Zinc Company of Australasia Limited between 16th November, 1983 and 29th May, 1984.

The work was carried out on behalf of a Joint Venture between E.Z. and Getty Oil Development Co. Ltd., which was initiated in April, 1976. A description of the Licence can be found in E.Z. Report No. 128 - "Exploration undertaken in E.L. 12/72 during 1976-77".

2. PREVIOUS EXPLORATION

Details of all previous work on E.L. 12/72 have been reported in E.Z. Geology Department Report No's 128 (1977), 129 (1978), 130 (1980), 137 (1981), 145 (1982), 149 (1982), 153 (1982), 159 (1982), 165 (1983) and T174 (1983).

3. EXPLORATION UNDERTAKEN 16TH NOVEMBER, 1983 TO 29TH MAY, 1984

Exploration undertaken in this period consisted of the continuation of a programme of systematic diamond drill hole traverses angled across the buried quartz-sericite-pyrite alteration zone in the Boco area. This programme follows the failure of a grid percussion vertical hole programme of bedrock sampling due to the nature and the 100m depth of the glacial overburden.

3.1. Work Completed (Refer to Fig. 1 - Drill Hole Location Plan)

3.1.1. DIAMOND DRILL HOLES (Total 1,689.5m)

Four diamond drill holes, BBP 250, 251, 253 and 254 were completed on traverses 4, 4A and 5. (Traverse 4A by BBP 254 was a target-testing follow-up of BBP 251 on traverse 4.)

The final 42.5m of BBP 248 on traverse 3 were also completed at the start of the period. Details of this hole were supplied in the previous report.

Hole parameters are:

BBP 250 on Traverse 4

Collar Co-ordinates (A.M.G.) : 383,426.6mE 5,386,898.0mN
 : 399.6m R.L.
 Dip : -50°
 Azimuth (A.M.G.) : 105°
 Total Depth : 358.0m

BBP 251 on Traverse 4

Collar Co-ordinates (A.M.G.) : 383,551.6mE 5,386,826.7mN
 : 399.0m R.L.
 Dip : -60°
 Azimuth (A.M.G.) : 285°
 Total Depth : 379.5m

BBP 253 on Traverse 5

Collar Co-ordinates (A.M.G.) : 383,459.8mE 5,385,578.8mN
 : 309.8m R.L.
 Dip : -55°
 Azimuth (A.M.G.) : 285° approx.
 Total Depth : 470.0m

BBP 254 on Traverse 4A

Collar Co-ordinates (A.M.G.) : 383,728.6mE 5,386,970.3mN
 : 395.7m R.L.
 Dip : -50°
 Azimuth (A.M.G.) : 285°
 Total Depth : 439.5m

BBP 251, the second hole on Traverse 4, was targeted to intersect at depth the western side of the alteration horizon, which was not seen by DDH BBP 250. The UTEM III survey results were received after BBP 251 had commenced and indicated the presence of a weak conductor, designated 'Anomaly B', 160m west of the collar, with an interpreted depth of 25-50m. The hole therefore tested the anomaly position, but well beneath the interpreted anomaly source.

BBP 253 on Traverse 5 was designed to test for a southerly on-strike extension of the alteration horizon, but the position of the collar was shifted 130m eastwards so that the hole would pass through the position of the strongest of the three weak UTEM III anomalies, Anomaly A, interpreted as having a source greater than 50m below surface.

BBP 254 on Traverse 4A was targeted to test the 10m-thick thin pyrite-layered, cherty-silicified pelitic ash 200m north of the intersection in BBP 251 on Traverse 4. Other objectives were to

1. test the most northerly part of the UTEM III Anomaly B position
2. test for on-strike continuation of the alteration horizon north of BBP 250/251
3. perhaps clarify the conflicting information offered by BBP 250 and Hole 8 as to the eastern extent of alteration in this northern area.

3.1.2. DRILL CORE GEOCHEMISTRY

Core from the alteration components of BBP 207, 246, 247, 248, 250, 251 and 254 was split in 3m lengths within geologically-controlled boundaries. Samples were submitted to Analabs in Coee and analysed for Cu, Pb, Zn, Ag, Fe, Mn, Co, Ni and Bi by A.A.S. after nitric-perchloric hydrochloric and hydrofluoric acid digestion (for a total dissolution of the pyrite content), for Hg by flameless A.A.S., for Sr, Ba, S, SiO₂ and CaO by pressed powder XRF, for Na₂O by wet chemical method and for Au (except BBP 247) by A.A.S. after 30g fire assay fusion.

3.1.3. DOWN-HOLE SIROTEM GEOPHYSICS

The SIROTEM II survey by McSkimming Geophysical Services of Adelaide is 60% complete. BBP 242, 247, 250 and 251 have been surveyed using ground loops designed by J. Milovanovic (Senior Geophysicist) of E.Z. BBP 248, 253 and 254 remain to be surveyed due to equipment commitments elsewhere. P.V.C. pipe could not be pushed further than 240m down BBP 246, and so a down-hole survey beyond this point was not expected. However, a dummy-probe was lowered beyond the point of obstruction but the SIROTEM probe did not pass. Another attempt will be made when the survey work is recommenced.

3.1.4. TRACK CONSTRUCTION (Total 450m)

A short track (150m) was bulldozed to the site for BBP 251 off the track leading to BBP 250. Another, about 300m long, was bulldozed westwards from an H.E.C. transmission line pylon to the site for BBP 253 on Traverse 5. A front-end loader was used to prepare the site for BBP 254 adjacent to Boco Siding.

3.1.5. UTEM III SURVEY AND INTERPRETATION

The UTEM III survey by Geophysical Exploration Consultants was completed. The interpretation and final report on the survey was prepared by Guido Staltari of G.E.C.

3.2. RESULTS RECEIVED

3.2.1. DIAMOND DRILL HOLES

(Refer A2-521-0100 1:5,000 scale Drill Hole Locations Plan;
Figure 2 BBP 250/251 Traverse 4 Section;
Appendix 1 Petrological Reports C.M.S. 84/3/7 and 84/3/45)

Summary logs for BBP's 250, 251, 253 and 254 are as follows;

BBP 250 on Traverse 4

This hole was drilled from west to east (105° A.M.G. azimuth) and is now considered to have been drilled down-dip.

0	-	45.0	Fluvioglacial cover.
45.0	-	300.0	Strongly silicified-sericitised-pyritised glassy dacitic lavas and lava fragmentals. 45.0-100 The rock is severely leached (chalky) with significant core loss.
300.0	-	301.5	Fault (pug)
301.5	-	358.0m	Feebly altered (somewhat bleached and weakly pyritic) to unaltered pale pink silicic lava.
		TD	

BBP 251 on Traverse 4

This hole was drilled from east to west (285° A.M.G. azimuth)

0	-	27.0	Fluvioglacial cover.
27.0	-	323.5	Strongly to moderately silicified-sericitised-pyritised sequence of dacitic glassy lavas and coarse epiclastic debris slide lithic breccias and pyritic pelitic ash, as follows:
27.0	-	56.5	Cream pumiceous lithic breccia
56.5	-	97.85	White dacitic pitchstone, intense net veining of clear qtz±pyrite.
97.85	-	109.9	Grey-cream massive dacitic pitchstone. Abundant fine pyrite.
109.9	-	137.2	Cream massive dacitic lava; porphyritic and qtz-amygdaloidal. Disseminated pyrite.
137.2	-	143.6	Grey pyritic lithic breccia.
143.6	-	180.7	Pale grey massive dacitic pitchstone; disseminated pyrite.
180.7	-	214.9	Grey flow-banded to autobrecciated dacitic pitchstone; disseminated pyrite; stringer pyrite along flow bands and around moulded lava clasts.
214.9	-	227.0	Grey pyritic lithic breccia
227.0	-	231.05	Grey-cream massive dacitic pitchstone; disseminated pyrite.
231.05	-	262.35	Grey pyritic lithic breccia.
262.35	-	273.2	Grey pyritic pelitic vitric ash. Massive to laminated and cherty-silicified in part. Thin semi-massive syngenetic pyrite layers.

273.2 - 276.9	Grey pyritic lithic breccia; minor pelitic ash.
276.9 - 323.5	Grey pyritic ignimbrite; abundant pyritised pumice.
323.5 - 379.5	Weakly altered ignimbrite/lava; non-pyritic. Alteration decreases rapidly down-interval.
T.D.	

BBP 253 on Traverse 5

This hole was drilled from east to west (285° A.M.G. azimuth).

0 - 49.0	Fluvioglacial cover.
49.0 - 470.0	Unaltered pink to brown felsic intermediate (leuco-andesite) lavas and ignimbrites, regionally silicified. Basaltic intrusives: 133.3-180.8 and throughout 228.5-258.2.
T.D.	

BBP 254 on Traverse 4A

This hole was drilled from east to west (285° A.M.G. azimuth).

0 - 117.0	Fluvioglacial cover.
117.0 - 320	Strongly silicified-sericitised-pyritised grey dacitic glassy lavas.
320 - 439.5	Weakly altered but pyritic brown autobrecciated to massive lavas.
T.D.	

3.2.2. PETROLOGY

(Refer Petrological Reports C.M.S. 84/3/7 & 84/3/45)

Two petrological reports (C.M.S. 84/3/7 & 84/3/45) on the BBP 251 core have been received.

The larger report, C.M.S. 84/3/7, give details of most of the rock units which were encountered in the succession of intercalated altered glassy lavas, epiclastic lithic breccias and pelitic ash. These rocks are entirely pyritic quartz-sericite in composition.

Of particular interest is the comment on sample 44746 in C.M.S. 83/4/7, a sample from the 10m-thick ash unit containing very thin, contorted semi-massive pyrite layers. This pyrite is confirmed as concordant to bedding and concentrated in cherty-silicified bands, and so is "consistent with a (fumarolic or sintery) pyritic and siliceous alteration phase".

The smaller report, C.M.S. 84/3/45, was in response to a follow-up submission of core from thin, sandy, tuffaceous sediment layers occurring within the white intensely net-veined dacitic pitchstone unit, 56.5-97.85m in BBP 251. In the absence of strictly detrital features, the report suggests that these fine to medium-grained

fragmental rocks represent flow-marginal breccias, but concedes to mild reworking of one sample (44751). This sample has the appearance of a pebbly, tuffaceous sandy silt in hand specimen. This thin layer (?and the others) therefore represent either inter-flow or inter-lobe flow sedimentation.

The two samples 44753 and 44754 in C.M.S. 84/3/45 are of ashy horizons within the Que River massive P/Q lens and immediate footwall. 44754 compares closely with the description given for the BBP 251 10m-thick ash unit.

3.2.3. DRILL CORE GEOCHEMISTRY

(Refer Appendix 2: Geochemical plots for Pb, Zn, Ba, Na₂O and CaO)

The results of the drill core analyses can be summarised by the behaviour of Pb, Zn, Ba, Na₂O and CaO, although the other analyses (and various ratios such as Na₂O/Fe+S, Co/Ni, Mn/Fe) have also been plotted.

Pb/Zn

BBP 247 provided the following significant values for Pb/Zn:

43.0 - 46.0m 3m @ 2350 ppm Zn, 710 ppm Pb.

124.0 - 127.0m 3m @ 4300 ppm Zn, 210 ppm Pb.

The 10m-thick pyritic pelitic ash in BBP 251 was split in 1m lengths. One significant result was

268.5 - 269.5m 1m @ 1650 ppm Zn, 185 ppm Pb, 10.5% Fe.

Geochemical levels of Pb and Zn are concentrated towards the western margin of the alteration horizon in BBP's 207, 242, 246 and 251 (typically to 300-400 ppm), and decrease eastwards (to 100 ppm or less).

Ba

Values for Ba show no apparent systematic down-hole trend, but a comparison of different holes along strike shows that BBP 251 in the north has consistently higher levels (1000 ppm) of Ba over almost all the length of the hole. In holes to the south these levels are only sporadically obtained or not reached at all.

Na₂O

Na₂O shows no systematic variation through the alteration horizon in any of the holes.

This is in conflict with the earlier data from Holes 3 and 4 (of the abandoned vertical hole series) and four evenly-spaced samples from the 1977 DDH BBP 207.

In these six samples, the Na₂O values constantly decreased westwards from Hole 4 (0.17%) through BBP 207 (0.16, 0.10, 0.07 and 0.06%) to Hole 3 (0.05 and 0.02%).

The new data is derived from continuous split analyses, from more drill holes, and therefore must be preferred.

CaO

There is a strong variation in CaO within BBP's 207, 242 and 251. CaO values increase from zero or below 0.01% in the east to 1% or more towards the western margin of the alteration horizon.

CaO is expected to be depleted in all these strongly altered rocks (sympathetically with Na₂O) due to the total destruction of feldspars. (For this reason the CaO variation is unlikely to represent a primary rock type change.) Therefore, this pattern of CaO behaviour is probably **not** due to variable CaO depletion. Rather this CaO trend represents post CaO-depletion addition (or remobilisation) of carbonate. In C.M.S. Reports 83/9/20 (E.Z. Report T174) and 83/4/7 (this report) trace siderite carbonate films and trace apatite are noted at a threshold of about 0.5% CaO in the analyses for BBP 246 and BBP 251. The altered ignimbrite down-hole in BBP 251 (sample 44748 in 84/3/7) contains "minor clots of ankeritic carbonate" at a CaO level of about 1%.

The across-strike trends of westwards enrichment in Pb, Zn and CaO noted above are **not** displayed by the BBP 250 data. This supports the earlier statement that BBP 250 has been drilled down-dip and therefore did not traverse the stratigraphy.

3.2.4. DOWN-HOLE SIROTEM GEOPHYSICS

Peter McSkimming reports no off-hole conductors have been detected by the SIROTEM II survey on BBP's 242, 247, 250 and 251. The profiles are unusually erratic, but instrumentation has been checked. McSkimming suggests that the erratic behaviour could be due to powerline effects being made more widespread due to wet surface conditions.

3.2.5. UTEM III SURVEY INTERPRETATION

(Refer to A2-251-0109 1:5,000 scale UTEM III Survey grid & Anomaly Location Plan.

Appendix 3 UTEM III Survey Report by Guido Staltari (December, 1983)

No strong conductors were detected by the UTEM III survey, but the data has revealed three subtle anomalies and follow-up drilling has been recommended.

These three anomalies, designated A, B and C, are also indicated on the 1:5,000 scale drill hole location plan A2-251-0100 and on Figure 1. The most prominent

is Anomaly A in the southeastern part of the area. This zone was tested with negative results by BBP 253 on Traverse 5. Anomaly B lies west of the northern hill of alteration outcrop in a highly favourable geologic setting (within the width of alteration) but was tested with negative results by BBP 251 on Traverse 4. It was initially believed that Anomaly B might represent the pyritic pelitic ash up-dip from its intersection in BBP 251 if the dip of the stratigraphy is near-vertical in this location, but this is now known not to be so. A discrete conducting zone within the overburden now seems the most plausible explanation for each of these anomalies.

3.3. Interpretations and Conclusions

3.3.1. TRAVERSE 4 IS INCOMPLETE (Refer Figure 2 BBP 250/251 Traverse)

The plotting of lithological units encountered in both BBP 250 and BBP 251 on Traverse 4 has to lead to the conclusion that BBP 250 was drilled down-dip and therefore did not traverse the stratigraphy.

BBP 251 drilled a complex sequence of distinctive glassy lavas and coarse epiclastic lithic breccias, whereas BBP 250 drilled only lava, with minor fragmental derivatives. In particular, the distinctive pumiceous lithic breccia unit and the intensely qtz±py net-veined white dacitic pitchstone unit in BBP 251 are absent from BBP 250 where these units ought to occur if the dip is steep, as it is known to be on the BBP 246/247 Traverse 2. Therefore the dip must be shallower here - 45 to 50° - and BBP 250 has drilled along one lava unit within the stratigraphy.

This conclusion is supported by the down-hole geochemistry of BBP 250, which lacks the trends of westwards Pb, Zn and CaO enrichment that are observed in the other drill holes.

Therefore only BBP 251 has drilled across the stratigraphy on Traverse 4 and the traverse is only half complete. More than 200m remains between the collar of BBP 251 and Hole 8 to the east. If the tentative west facing direction is incorrect (section 3.3.5.), then the stratigraphic top of alteration has not been tested at all in the northern area. The unseen 200m ought to be covered by a hole drilled west from the vicinity of the railway line.

3.3.2. GEOLOGY ON TRAVERSE 4 (BBP 251)

BBP 251 intersected a pyritic altered sequence of intercalated dacitic glassy lavas ('pitchstone') and coarse epiclastic debris slide lithic breccias. A 10m-thick pelitic ash, laminated and cherty-silicified in part and containing thin semi-massive syngenetic pyrite layers, occurs near the western margin of the altered sequence within

a lithic breccia unit. A grey pyritic altered ignimbrite forms the western margin of the alteration.

The dip of the stratigraphy on this northern traverse is constrained to about that of BBP 250, i.e. 45° to 50° east, which was drilled down-dip (3.3.1., above).

Therefore the true width of alteration seen by BBP 251 is 300m; but ground behind the collar of BBP 251 is untested for a further 200m to the east, to where Hole 8 sampled strong, but non-pyritic, alteration consistent with the deep footwall alteration style (E.Z. Report T174).

The rock-type association in BBP 251 suggests a subaqueous intracaldera fill sequence of near vent glassy lava flows and interflow mass-flow debris slides from the steep inner walls of the caldera. The 10m-thick horizon of fine pelitic ash (near the interpreted stratigraphic top of alteration) is significant as it signifies a quiescent time-break suitable for the deposition and accumulation of any available exhalative sulphide, and the presence of thin syngenetic pyritic layers within cherty-silicified bands in it is consistent with contemporaneous fumarolic activity. This horizon may be analogous with the thin cherty pyritic tuffaceous horizons in the Canadian Archean (e.g. the 'Key Tuffite' of the Mattagami mining district) regarded as time stratigraphic markers along which massive sulphide orebodies are preferentially located.

3.3.3. GEOLOGY ON TRAVERSE 4A (BBP 254)

BBP 254 intersected strongly altered and pyritic grey lavas over its entire length of strongest alteration. To the west weakly altered but pyritic brown autobrecciated and massive lavas were encountered.

This sequence is totally different to the distinctive series of lavas and epiclastic lithic breccias seen in BBP 251 on Traverse 4 only 200m to the south, but resembles the intersections in BBP 207/242 and BBP 246/247 on Traverse 1 and 2.

The change from intercalated lavas and debris slide breccias and ash sediment to a monotonous sequence of strongly altered lavas infers a transition from caldera fill deposits to either intracaldera lava dome or caldera floor rocks.

The chief purpose of BBP 254 was to test the pyritic pelitic ash 200m to the north of its intersection in BBP 251. The hole failed to locate this sediment, and also drilled beyond the zone of strong grey pyritic alteration before reaching the position of UTEM Anomaly B, a secondary test target.

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However the BBP 254 intersection does demonstrate that the strong domal alteration continues along strike and therefore offers encouragement to continue following the horizon northwards.

3.3.4. GEOLOGY ON TRAVERSE 5

BBP 253 was targeted on the UTEM Anomaly A in the southern part of the Boco area. The hole passed through the anomaly position with no mineralisation or encouraging alteration host lithology being intersected. The hole was continued across the traverse in order to test for the presence of any southerly on-strike extension of the alteration zone, but none was encountered before it was prematurely terminated.

Note: BBP 253 was abandoned at 470.0m when the drill string became jammed down-hole (after excessive loading had caused the joins to flare open upwards).

204m of BQ rods were recovered by backing off lengths and fishing; 264m of BQ rods plus the barrel, bit and tube were not recovered.

BBP 253 has adequately tested for any extension directly south of BBP 246/247 on Traverse 2 and found none.

However there is a suggestion that there may be a southwesterly swing in the strike of the alteration horizon which has not been tested for by BBP 253. A trouser-leg feature of higher chargeability occurs on the 1982 dipole-dipole IP survey line 13,580N, centred at 10,300E southwest of the alteration intersection in BBP 246/247. A low ridge is co-incident with this feature, trending southwest, and may be caused by underlying altered rock at a shallow depth.

3.3.5. FACING DIRECTION

The alteration horizon was initially interpreted as west-facing because

1. In the south it has a sharp western contact but an eastern diffuse zone of weaker ("deep footwall") alteration.
2. Increasingly depleted Na_2O values (0.17% down to 0.05%) from east to west were reported from six samples (BBP 207 and vertical holes 3 and 4).
3. Elevated Zn-Pb values (to 345 ppm Zn, 60 ppm Pb) were concentrated towards the western margin of the alteration in BBP 242. This is consistent with a potential ore horizon being located at the stratigraphic top at the sharp western contact.

New data received since then has both challenged and supported the west-facing direction.

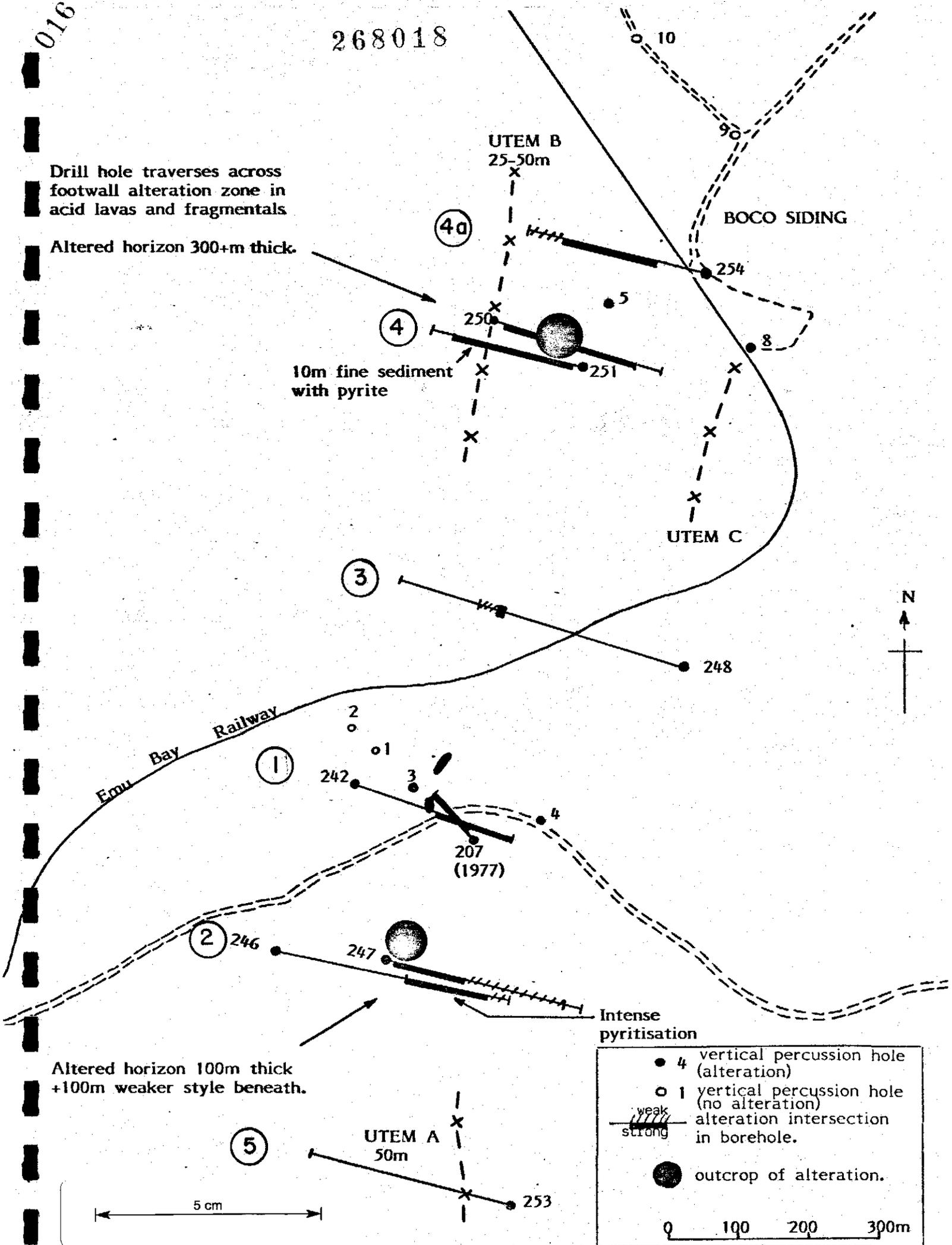
The northern holes BBP 251 and 254 have seen a gradual transition out of strong alteration on the western contact, although this transition is more limited in width than previously seen in BBP 247. (At Que River both eastern and western contacts of the alteration width have gradual contacts with the unaltered host andesitic pile.) Therefore the gross morphology may be an unreliable indicator of facing direction.

The new geochemical data has demonstrated that the Na₂O values do not decrease from east to west as reported earlier. There is no systematic across-strike trend observed.

However the new data does support the trend of westwards enrichment in Zn and Pb. CaO as carbonate has also been found to be enriched towards the western margin.

Two lithological features in BBP 251, although both rather tenuous, do support a west facing alteration horizon. Firstly, the up-hole contact of the 10m-thick pelitic ash (with coarse epiclastic breccias) has a V-shaped irregularity consistent with the fine ash having been deposited on top; and secondly, pumice fragments within the final few metres of the altered ignimbrite near the western contact are larger and less flattened than pumice throughout the remainder of the unit. This ?inverse-grading of larger pumice towards the top of a flow unit is a common feature of ignimbrites.

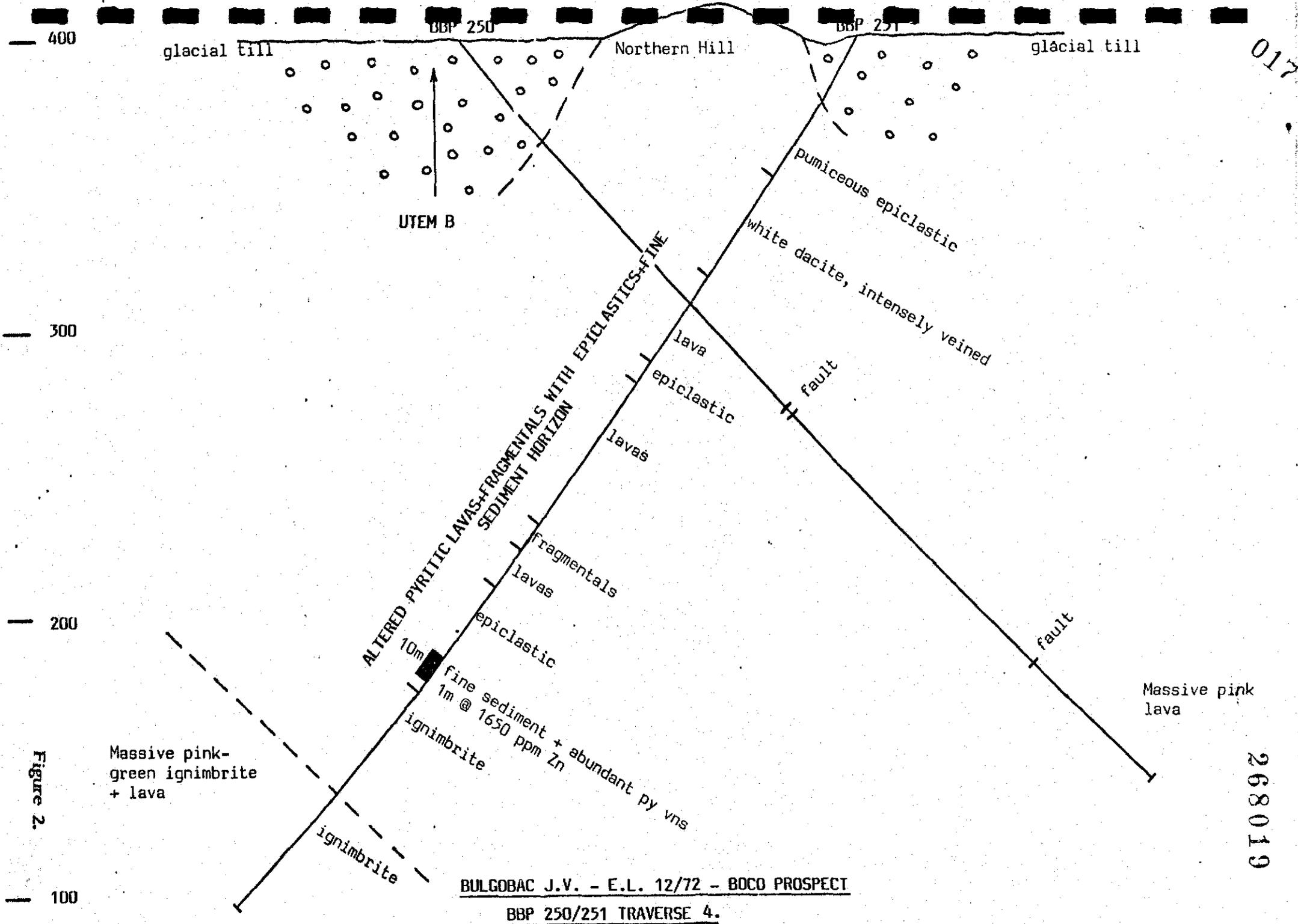
It is tentatively concluded, therefore, that the Pb-Zn-CaO zonation and lithological features observed to date, suggest a west-facing direction for the volcanic stratigraphy at Boco.



- 4 vertical percussion hole (alteration)
- 1 vertical percussion hole (no alteration)
- weak alteration intersection in borehole.
- strong
- outcrop of alteration.

BULGOBAC J.V. - BOCO ALTERATION ZONE
SUMMARY OF DRILLING RESULTS

Figure 1



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Figure 2.

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APPENDIX 1.

Petrological Reports for BBP 251

C.M.S. 84/3/7 and 84/3/45

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		GOL 1	



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Central Mineralogical Services

The Supervising Geologist
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ROSEBERY / TAS. 7470

13th March, 1984

REPORT CMS 84/3/7

YOUR REFERENCE: Order No. 900502
 DATE RECEIVED: 5th March, 1984
 SAMPLE NOS.: 44738 - 44748
 SUBMITTED BY: R. Sainty
 WORK REQUESTED: Petrology

H.W. Fander, M. Sc.

REPORT CNS 84/3/7

A suite of eleven drill core samples from a pyritic quartz-sericite alteration zone was received for petrological examination. Samples were accompanied by notes outlining general geological relationships and specific queries.

Representative thin-sections were prepared and examined together with their respective offcuts. Attached brief tabulated descriptions summarise the petrological characteristics of each rock and include interpretative comments.

Summary

Lithologies may be categorised following the interpreted sequence outlined in Rod Sainty's letter accompanying the submission.

Samples 44739, 44740, 44741 and 44742 are weakly pyritic quartz-sericite rocks with distinctive relict devitrified pitchstone-type characteristics. Individual samples are massive to flow-banded, are variously amygdaloidal to non-amygdaloidal, contain thinly disseminated pseudomorphed feldspar ± accessory amphibole phenocrysts, and exhibit typical relict felsitic and/or perlitic devitrification-derived microtextures. Pyroclastic features are conspicuously absent, as is similarly phenocrystal quartz. This group is thus interpreted as a dacitic extrusive lava complex.

Samples 44738, 44743 and 44744 represent pervasively silicified and sericitised coarsely fragmental rocks best termed breccias due to partial obliteration of finer textural detail. These rocks have a random to semi-bedded framework of (altered) acid lava, pumice and tuff clasts and a vitric ashy or elsewhere interclastic cavity filling introduced quartz-sericite matrix. A high pyroclast content is present, but strictly pyroclastic depositional features are absent or at best poorly defined. General features are consistent with fluidised or rheomorphosed pyroclastic rather than strictly primary pyroclastic modes of origin. These rocks could be interpreted as mudflow-type deposits. That is, general features are not inconsistent with Sainty's mass flow interpretation. Whether these rocks were subaerial, subaqueous or composite types however is speculative.

Samples 44745, 44746 and 44747 may be classified as vitric tuffs. Two of these rocks are fine-grained pelitic (silty vitroclastic) types (44745, 44746), with the finer textural detail partly obscured by alteration. However, 44746 exhibits relict zones eutaxite-like tuff interspersed with laminated vitroclastic sediment with a certain silt-sized clastic quartz component. Sample 44747 is a relatively massive (i.e. unbedded) type with relatively marked ignimbritic characteristics and may be considered as transitional with the overlying ignimbrite unit (44748). These four samples may thus be considered as a composite unit of terrestrial vitric ashes, with sub- to distal subaerially transported characteristics, and intercalations of ignimbritic vitric ash presumably grading into a relatively massive overlying ignimbrite facies.

Variably pyritic quartz-sericite alteration assemblages are developed throughout the suite as a whole. These are supplemented in individual samples by quartz veinlet, vug and/or cherty microcrystalline replacive zones of quartz, usually with accessory sericite, carrying relatively marked concentrations of pyrite.

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Partial recrystallization and stress effects obscure textural detail, but these pyritic "silicification" zones tend to be characterised by relict crustiform-type microtextures, notably in the distribution of pyrite.

In the dacitic lavas this assemblage is concentrated in a network of (stressed) quartz veinlets, reasonably considered as an infilled devitrification-induced cracking pattern and probably more or less contemporaneous with the finer-scale perlitic cracking. This mesoscale devitrification cracking is a common phenomenon and probably explains the white-rhined lava clasts in the breccias (c.f. accounts for the Mt. Pelee lava spine which degraded contemporaneously with later stages of the 1902 eruption).

In the breccias pyritic quartz occurs both as veinlets and interclast cavity-filling aggregates.

Pyritic contorted siliceous "stringers" in cherty-silicified pelitic ash (44746) are in detail concordant to bedding and reasonably considered as syn- to early post-depositional, whereas in lavas and breccias this assemblage is strictly epigenetic. That is, general features are consistent with a (fumarolic or sintery) pyritic and siliceous alteration phase essentially contemporaneous with the pelitic vitric ash/ignimbrite sequence, but epigenetic with respect to the underlying lava and breccia complex, and postdating the bulk of sericitic alteration.

D. Cowan, B. Sc.

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CENTRAL MINERALOGICAL SERVICES

Sample No.	Classification - Composition	Fabric	Accessories	Comments
44738 (T.S. 49004)	"Breccia". Fine-grained quartz-sericite rock comprising relatively silicified felsite (devitrified obsidian) and relatively sericitised pumice clasts with an ill-defined quartz matrix with frequent clots of sericite.	Randomly sorted irregular to subangular clasts. Moderately flow-structured. Weakly recrystallized (quartz).	Some silicified feldspar and amphibole phenocrysts in felsite clasts. Minor leucoxenised opaques.	Pumiceous flow breccia-type characteristics. Finer detail obscured by intense alteration, but lacks ignimbritic features. Dacitic characteristics.
44739	Felsite. Fine quartz-sericite rock with thinly disseminated quartz-pseudomorphed feldspar microphenocrysts. Frequent quartz veinlets. Disseminated fine to ultrafine pyrite (concentrated in quartz veinlets).	Relict weakly microphyritic felsitic, locally perlitic. Mildly sheared with stressed quartz veinlets.	Disseminated leucoxenised opaques. Small vugs of sericite in quartz veinlets. (analogous to matrix in 44738).	Devitrified sericitised/silicified "dacitic" pitchstone. Quartz veinlets appear controlled by mesoscale devitrification-induced cracking, post-date sericitic perlitic cracks.
44740	Felsite. Quartz and sericite in near-equant proportions with thinly disseminated sericitic quartz pseudomorphs after feldspar phenocrysts. Conspicuous disseminated ultrafine pyrite.	Relict weakly porphyritic perlitic-felsitic, analogous to 44739, but coarser-grained. Incipiently sheared.	Disseminated leucoxenised opaques.	Close affinities with 44739. Relatively homogeneous (absence of quartz veinlets) with a coarser-scale perlitic devitrification pattern.
44741	Felsite. Quartz and sericite in varying proportions with thinly disseminated silicified feldspar phenocrysts, sporadic quartz micro-amygdales. Disseminated ultrafine pyrite. Sporadic pyritic quartz veinlets.	Flow-banded, felsitic to locally perlitic with conformable to discontinuous cross-cutting stressed veinlets.	Disseminated leucoxenised opaques.	Close affinities with 44739, 44740, and similarly altered. Vein-related pyrite is semi-crustiform on a microscale. Veinlets analogous to 44739.
44742	Felsite. Quartz and generally subordinate but variable proportions of sericite. Thinly disseminated silicified feldspar, minor silicified amphibole microphenocrysts, quartz micro-amygdales. Disseminated fine pyrite.	Flow-banded felsitic, with fine-scale perlitic spherulitic structures largely obscured by alteration.	Leucoxenised opaques. Minor discontinuous quartz veinlets. Incipient shearing.	Flow-banded devitrified pitchstone, dacitic characteristics. Subtle contrasts with 44739, 44740 and 44741 relate to details of devitrification textures. Similarly altered.
44743	"Breccia". Framework of thoroughly sericitised/moderately silicified felsitic lava (obsidian, pitchstone), subordinate vitric tuff and pumice clasts. Sericitised featureless to shaly matrix. Conspicuous pyrite disseminations.	Flow-structured lithic breccia with contorted vitric ash matrix. Weakly sheared.	Weakly boudinaged quartz veinlets with clots of fine muscovite crystals, fragments. Leucoxenised opaques, silicified feldspar.	Fluidised breccia (or "mud flow")-type characteristics. Pyrite concentrated in matrix with interclasts, films, vugs of quartz + white mica, boudinaged by incipient cleavage.
44744	"Breccia". Ill-defined framework of altered felsitic lava, vitric and vitric-crystal tuff clasts. Sericite matrix with silicified-sericitised shard fragments, disseminated silicified feldspar grains, fine-grained pyrite.	Confused by secondary shear-related semi-mylonitic deformation, but broadly similar to 44743.	Leucoxenised opaques. Minor boudinaged pyritic quartz veinlets.	Detail obscured by relatively sericitic alteration, incompetence to shearing effects, but essentially analogous to 44743 and similarly interpreted.
44745	Perlitic Ash. Semi- to sericitic white mica with minor closely intergrown microcrystalline quartz. Thinly disseminated silt-sized clastic quartz. Conspicuous fine to ultrafine pyrite.	Vague but pervasive relict well-sorted vitroclastic micro-textures. Incipiently sheared.	Rare clastic leucoxenic opaques, apatite grains. Minor microscale discontinuous sericitic quartz veinlets.	Well-sorted silty vitric ash. Devitrified, thoroughly sericitised/pyritised and weakly sheared. Essentially massive. Distal sub-aerially transported characteristics.

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NO.	NAME	DATE	TIME	BY
		19 APR 1984		



Central Mineralogical Services

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

The Supervising Geologist
 Mineral Resources Division
 Electrolytic Zinc Co. of
 Australasia Ltd.
 West Coast Mines
 P.O. Box 21
ROSEBERY / TAS. 7470

17th April, 1984

REPORT CMS 84/3/45

YOUR REFERENCE: Order No. 900527
 DATE RECEIVED: 30th March, 1984
 SAMPLE NOS.: 44749 - 44754
 SUBMITTED BY: R. Sainty
 WORK REQUESTED: Petrology

H.W. Fander for

H.W. Fander, M. Sc.

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REPORT CMS 84/3/45

Six samples were received for petrological examination and comparison with previously described altered volcanics (refer CMS 84/3/7). Representative thin-sections were prepared and examined together with their respective stained offcuts. Attached brief tabulated descriptions summarise the microscopic data and include interpretative comments. All K-staining tests were negative.

Summary

The four rocks representative of the thin ?sediments within the dacitic pitchstone unit, are strongly altered (silicified, sericitised, pyrite-stained) and variably sheared to the degree that much of the finer critical textural detail is obscured. All four rocks, however, are strictly volcanic fragmental types notably devoid of detrital (or "epiclastic") features. The majority include clasts of altered, amphibole-bearing felsitic pitchstone which, together with a distinct lack of quartz "phenocrystal" components, provide a petrological link with the intercalated dacitic pitchstones.

Whilst alteration features render interpretation of individual samples a little tentative, this group, as a whole, represents a composite of pyroclastic and flow-marginal, breccia-type facies. Individual samples may be intraclastic in part, with clasts of pelitic ash or psammitic tuff. Whilst full interpretation will be dependant on field evidence, general features suggest this pitchstone/clastic lava/pyroclastic complex represents a multiple flow unit with interflow clastics or, alternately, a marginal interdigitation-type complex may be represented. Subtle variations between the individual previously examined pitchstones may reflect either a number of pitchstone units or meso- to macroscale flow banding-related variations.

The two pyritic sediments (44753, 44754) may be classified as weakly vitroclastic cherty argillite and pelitic ash respectively. Alteration features are analogous to the previously described pelitic ashes but, in comparison, these rocks are relatively mineralised with fine to ultrafine pyrite of recrystallized syngenetic character. Additional but subordinate concentrations of pyrite occur associated with strictly epigenetic (but pre-stress) quartz or quartz-sericite veinlets. These rocks could conceivably grade into a pyritic shale association analogous to the Rosebery ore-zones.

D. Cowan, B. Sc.

Sample No.	Classification - Composition	Fabric	Accessories	Comments
44749 (T.S. 49412)	"Obsidian Breccia". Weakly pyritic, variably sericitic microcrystalline quartz rock with zones of psammitic sericite-matrixed lithic tuff interspersed with contorted to flow-brecciated devitrified/altered obsidian.	Highly variable; essentially psammitic lithic tuff (graded) flanked by flow-folded obsidian.	Leucoxenised opaques. Minor pyritic quartz-sericite veinlets.	Interpreted on the basis of meso- and microscale features as a flow-brecciated obsidian with megacrastic xenoliths of lithic tuff. Moderately sheared.
44750	"Breccia". Framework of silicified/pyrite-stained felsitic obsidian clasts, subordinate sericitised/ill-defined ?pumice clasts. Sparse sericitic microcrystalline quartz matrix.	Extensively moulded. Moderately flow-orientated, psammitic to lapilli grade clasts; featureless matrix.	Leucoxenised opaques.	Problematical rock with finer textural detail obscured by alteration, mild shearing. Subaerial, lapilli tuff-type characteristics; alternately a flow-marginal breccia.
44751	?Reworked Tuff. Framework of variously silicified, sericitised felsitic lava clasts, similarly altered shard fragments, minor sericitised feldspar grains, intraclasts of pelitic ash. Weakly pyritic sericite matrix.	Poorly sorted in silt to pebble range with angular to subround clasts. Massive to crudely banded. Weakly	Leucoxenised opaques, thinly disseminated quartz grains (sub-angular fine sand-size) sheared.	Exhibits composite characteristics with subround "intraclasts", ill-defined shard fragments in addition to "primary" pyroclasts. Apparently mildly reworked in absence of strictly
44752	? "Ignimbrite". Sericite and fine to microcrystalline quartz with thinly disseminated pyrite, leucoxenised opaques. Minor late crosscutting, weakly pyritic quartz veinlets.	Lensoidal, semi-banded, sheared, perlitic, with relict eutaxitic and fiamme-like features.	Minor sericitised/silicified feldspar, amphibole crystals/fragments.	Welded/devitrified, ^{detrital} features. altered and sheared ignimbritic characteristics in a flow-structured lithic-vitric(-crystal) tuff.
44753	Pyritic Cherty Argillite. Sericite with subordinate/variable proportions of sericite-stained cryptocrystalline quartz. Pervasively disseminated fine to ultrafine pyrite. Thinly disseminated silt-sized clastic quartz.	Slaty with lenticular boudinaged microscale bedding laminations; pressure-shadowed pyrite.	Rare fine silt-sized clastic leucoxenic semi-opaques, apatite.	Laminated intercalation of shale, cherty argillite, impure chert; locally vaguely vitroclastic. Pyrite is largely bedded, but locally concentrated in vague sericitic films.
44754 (T.S. 49417)	Pelitic Ash. Sericite and crypto- to microcrystalline quartz; disseminated silt- to fine-sand-sized, angular-subround quartz grains; pervasive fine to ultrafine pyrite. Sporadic pyritic quartz and quartz-sericite veinlets.	Weakly laminated, vaguely (but more or less pervasively) vitroclastic. Discordant veinlets; incipiently stressed.	Thinly disseminated clastic leucoxenic semi-opaques, rare apatite.	Weakly quartzose silty vitroclastic pelite (pelitic ash), devitrified, silicified/sericitised. Pyrite is largely "syngenetic" with subordinate amounts introduced in quartz, quartz-sericite veinlets.
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APPENDIX 2.

Down-hole Geochemical Plots for Pb, Zn, Ba, Na₂O and CaO.

028A

028B

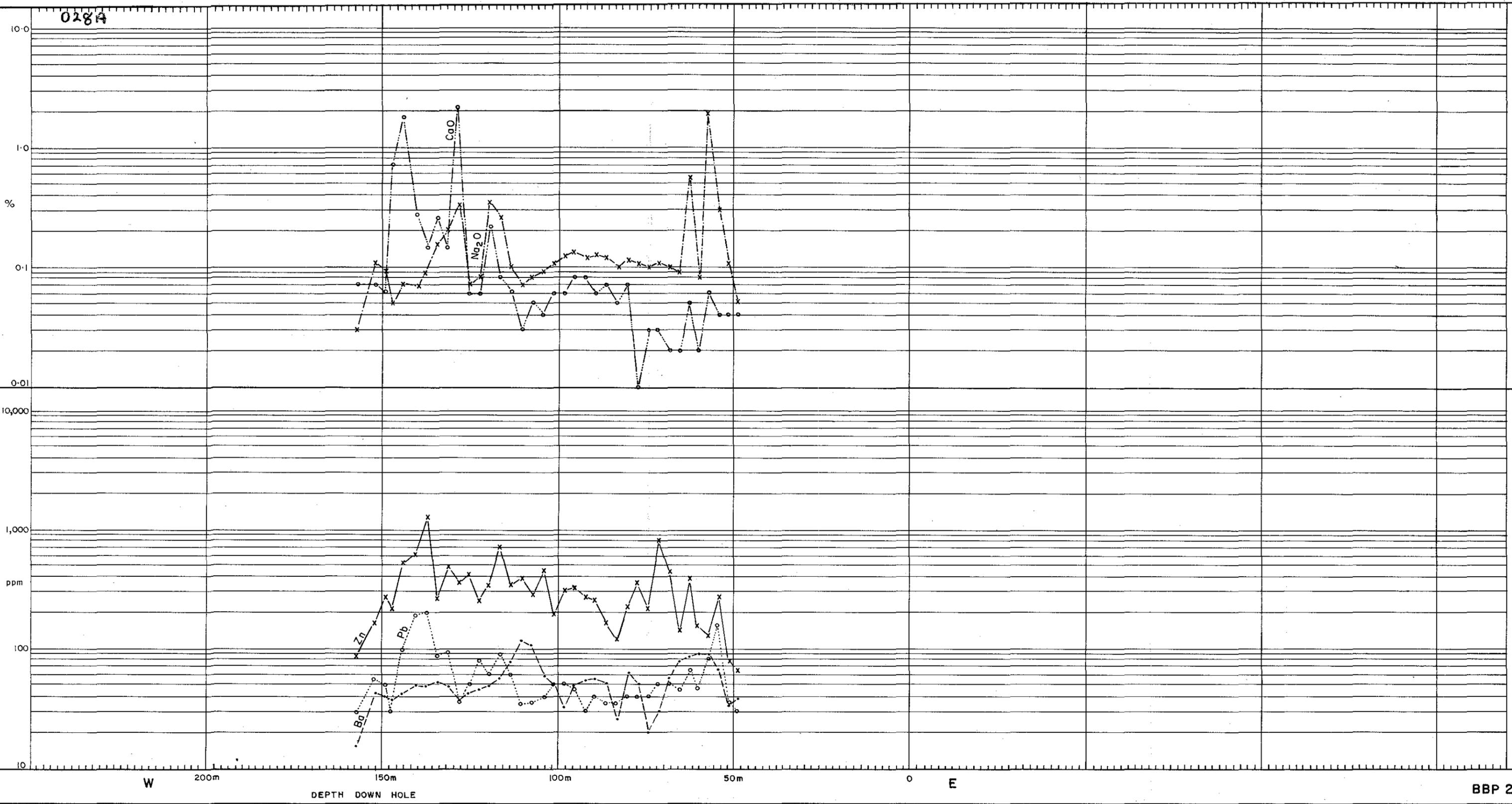
BBP 207

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DOWNHOLE GEOCHEMISTRY



W 200m 150m 100m 50m 0 E

DEPTH DOWN HOLE

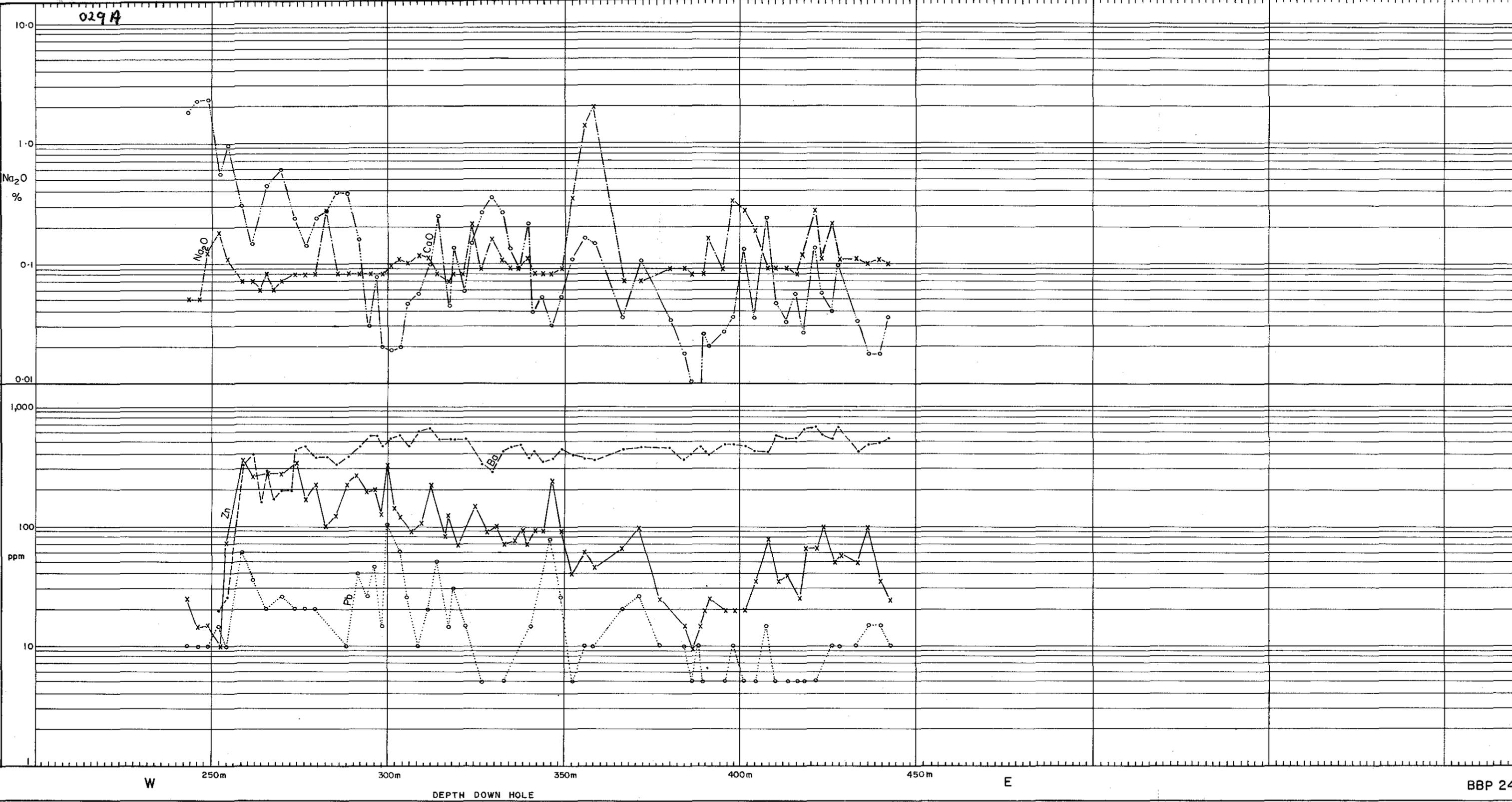
BBP 207

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DOWNHOLE GEOCHEMISTRY

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BBP 242



029A

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W

250m

300m

DEPTH DOWN HOLE

350m

400m

450m

E

BBP 242

030 A

030 B

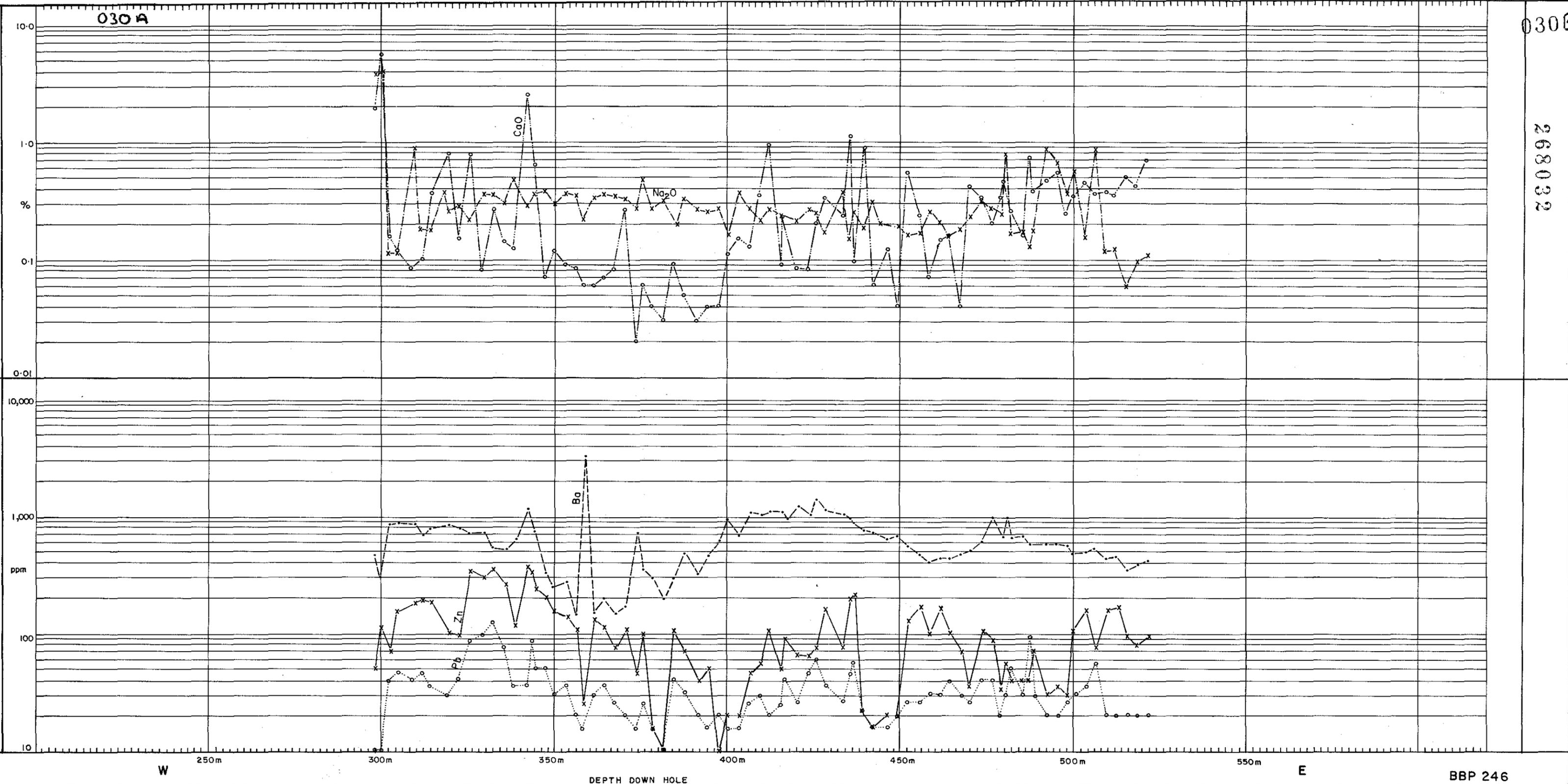
BBP 246

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DOWNHOLE GEOCHEMISTRY



W

250m

300m

350m

400m

450m

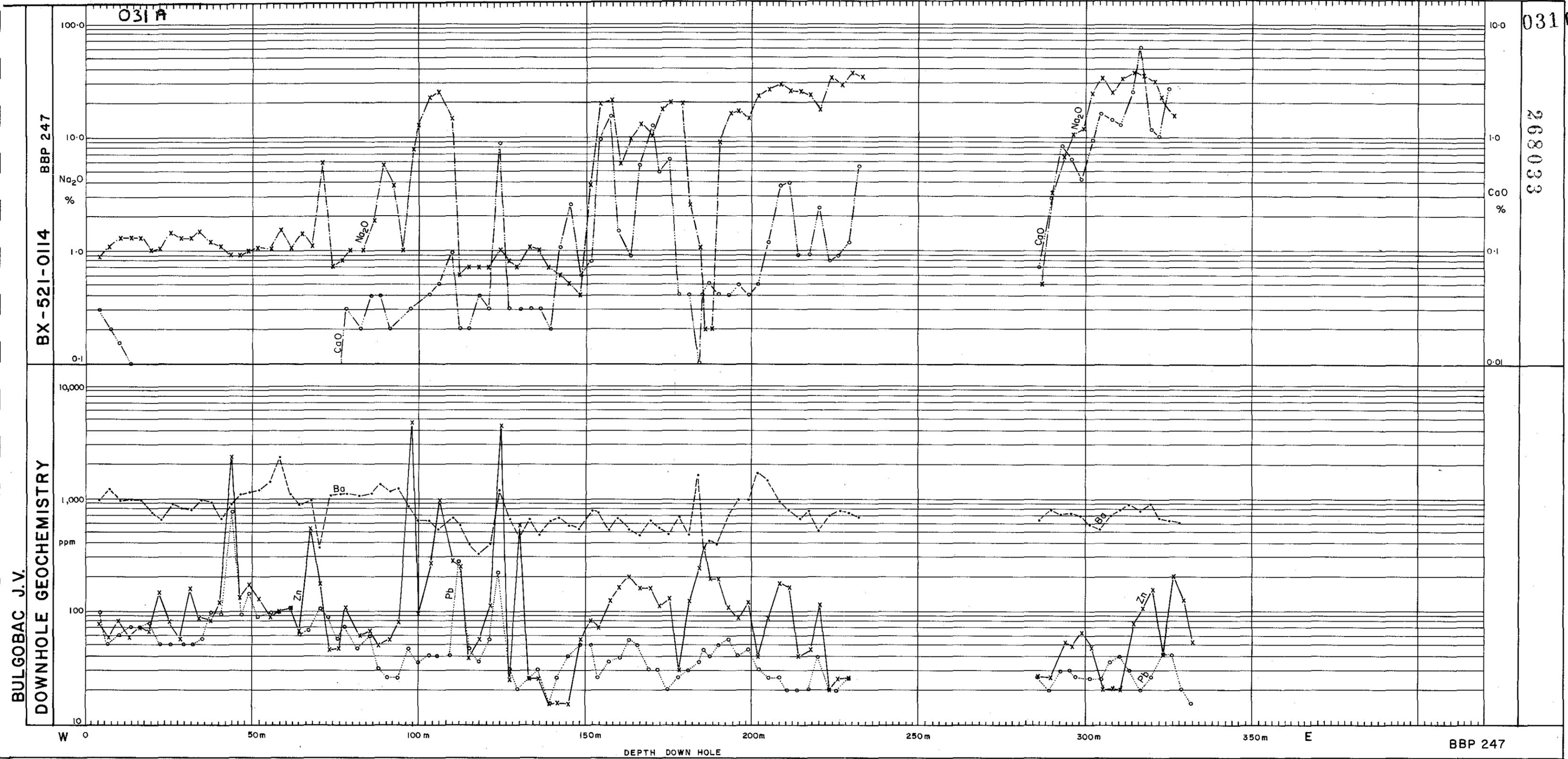
500m

550m

E

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DEPTH DOWN HOLE

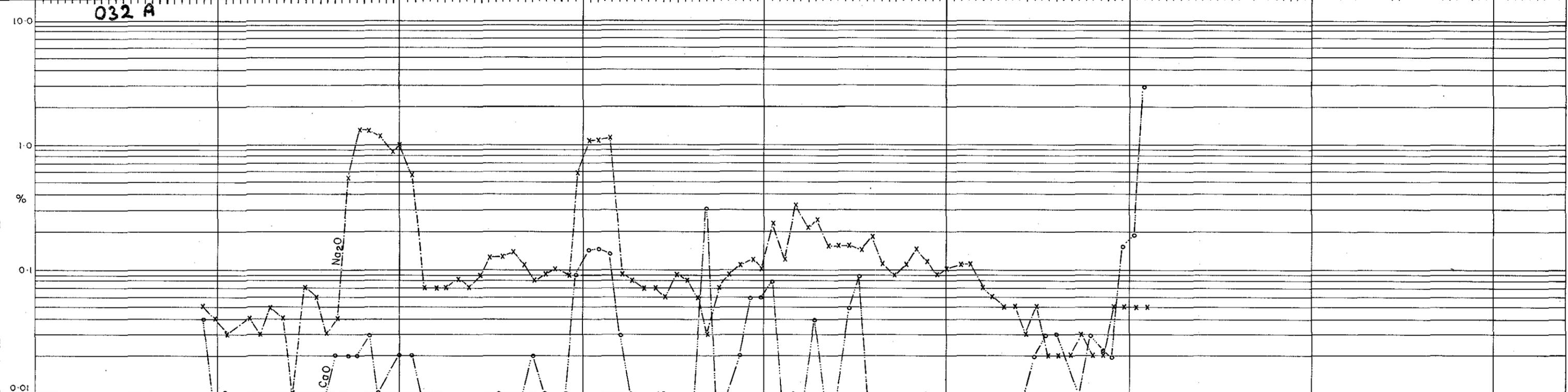


032 A

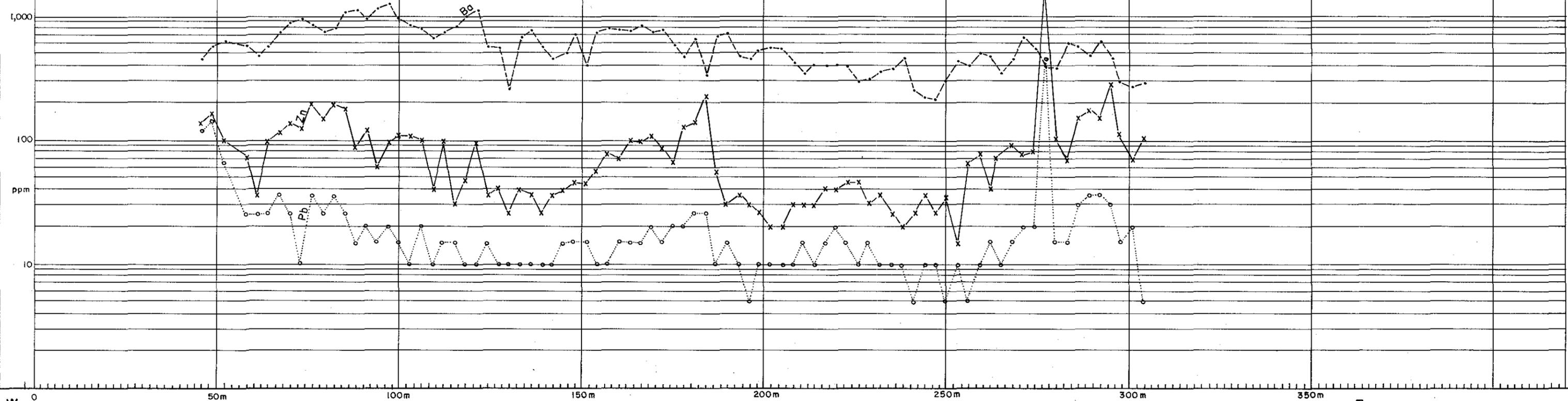
032 B

BX-521-0115 BBP 250

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BULGOBAC J.V. DOWNHOLE GEOCHEMISTRY



W 0 50m 100m 150m 200m 250m 300m 350m E

DEPTH DOWN HOLE

BBP 250

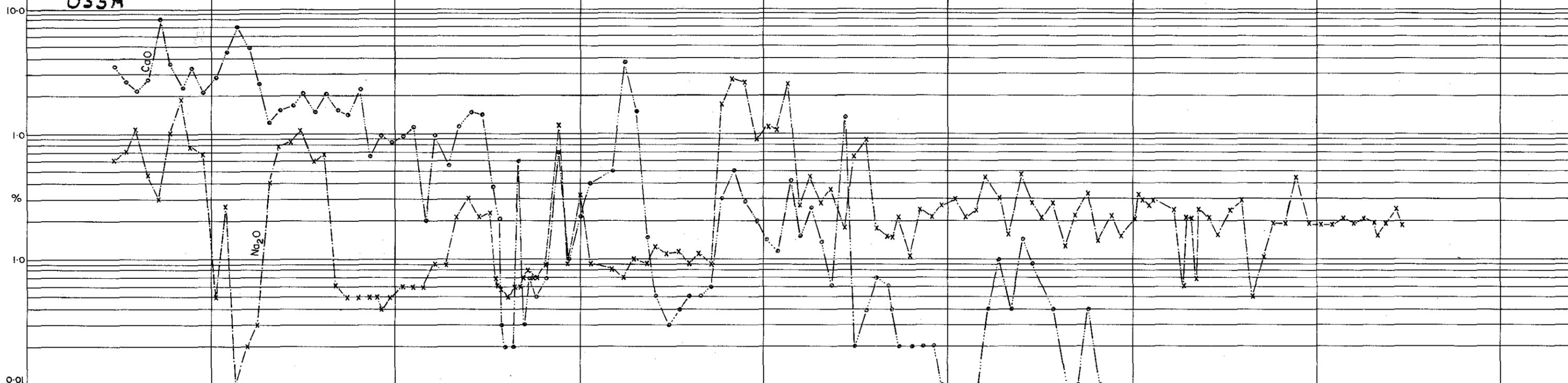
033B

268035

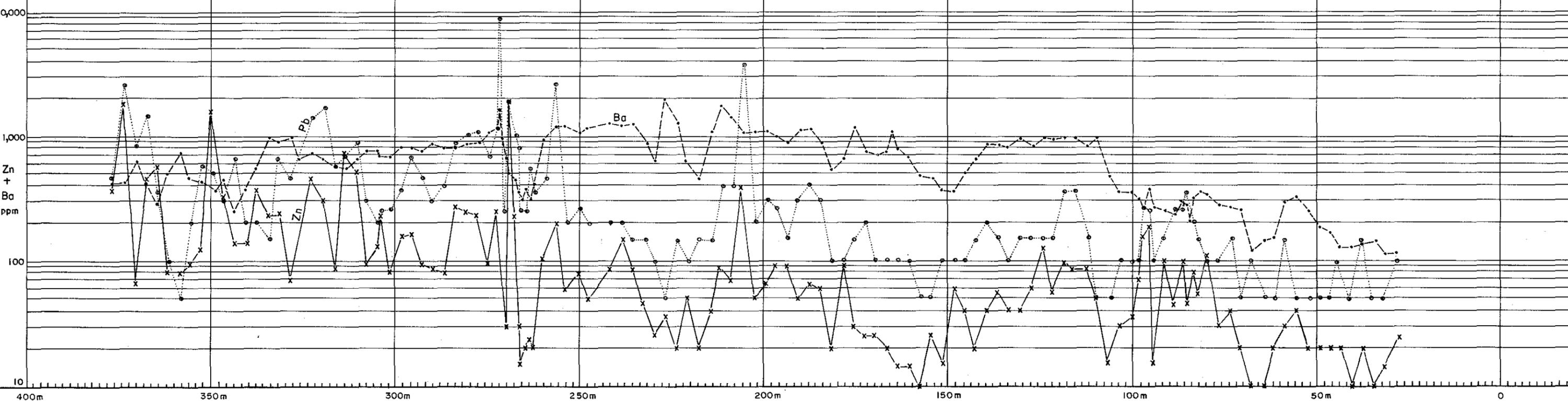
033A

BBP 251

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BULGOBAC J.V.
DOWNHOLE GEOCHEMISTRY



W 400m 350m 300m 250m 200m 150m 100m 50m 0 E BBP 251

DEPTH DOWN HOLE

1,000
100
10
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BBP 251

APPENDIX 3.

UTEM III Survey Report by Geophysical Exploration Consultants
(Guido Staltari, 1983)

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GEOPHYSICAL EXPLORATION CONSULTANTS PTY. LTD.

**REPORT ON A UTEM III TEST SURVEY
IN THE BOCO PROSPECT AREA, TASMANIA**

for

ELECTROLYTIC ZINC COMPANY OF AUSTRALASIA LIMITED

December 1983

Guido Staltari

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REPORT ON A UTEM III TEST SURVEY
IN THE BOCO PROSPECT AREA, TASMANIA

for

ELECTROLYTIC ZINC COMPANY OF AUSTRALASIA LIMITED

December 1983

Guido Staltari

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B. THE UTEM <u>III</u> SURVEY SYSTEM	3
C. GEOLOGICAL CONSIDERATIONS	9
D. SURVEY DESIGN	11
E. DATA PRESENTATION	13
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G. CONCLUSIONS AND RECOMMENDATIONS	19

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1. Field instrumentation and computer specifications
2. Boco data and legend for Utem plots.

List of Figures

1. Example of Utem profile over a thin steeply dipping conductor.
2. Example of Utem profile over a deep moderate conductor of limited strike and depth extent.
3. Example of Utem profile over a conductor under conductive cover - H_z component.
4. Example of Utem profile over a conductor under conductive cover - H_x component.
5. Plan of interpreted conductive units- B o c o.
6. Continuous and point normalization.

A. INTRODUCTION

During the period 11th October to 29th November 1983, a Utem III survey was carried out in the Boco Prospect area, Tasmania on behalf of E.Z. Exploration.

The prime aim of the survey was to locate economic size/grade base-precious-metal mineralization in the general Boco prospect area, using a generalized volcanogenic model as well as background knowledge on the geological and geophysical character of known deposits at Que River and Rosebery.

A secondary aim of the survey was to provide any relevant information on the geology, particularly in relation to the distribution of fluvioglacialials in the area of interest.

During the course of the survey, delays were experienced due to bad weather, severe power line noise problems and a motor-generator break-down. A short program break occurred during early November for installation of components which would result in a more effective operation of the instrumentation under the noisy conditions.

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Excessive sferic activity in the final week caused the abandonement of at least one day's work.

The work was conducted by geophysicist A. Ryder-Turner of Lamontagne Geophysics Ltd under the supervision of G. Staltari of Geophysical Exploration Consultants Pty Ltd.

B. THE UTEM III SURVEY SYSTEM

The Utem III Survey System and interpretation methods were developed at the University of Toronto during the past fifteen years and most of the relevant information on the system's function and the interpretation of results is found in University of Toronto theses and project reports.

A summary of Utem III instrumentation and computer specifications can be seen in appendix 1 and a brief description of the system is as follows:-

The measuring system is a time-domain E.M. system using a large fixed transmitter loop and a portable receiver-coil pair capable of measuring both electric and magnetic field components. The actual source is a large square or rectangular loop (Turam-style) energised by a triangular current waveform. This waveform is not of a precise triangular nature but is modified by pre-whitening circuitry which optimises the frequency content of the output power spectrum so as to improve signal/spheric-noise ratios by factors of up to 4 or 5.

Resulting total fields - note that the

receiver measures in the presence of the primary field - can be detected by a portable three-component coil (for magnetic field measurements) and grounded electrodes (for electric field measurements). The received waveform is sampled by 10 channels whose windows have widths and delay times logarithmically spaced by factors of two.

An important feature of Utem resulting from the transmission of a triangular waveform is that the system response is a step rather than an impulse. This results in a direct relationship between amplitude of response and inductance and better resolution of time constants. In addition, the power spectrum of the transmitted triangular waveform shows relatively higher levels at low frequencies as compared to that of an impulse excitation.

Because of the step response, the inductive limit of the response is of immediate diagnostic value, as in the case of frequency domain excitation, and is dependent upon conductor dimensions and depth only. This often enables the interpretation of conductor geometry from secondary field amplitude, thus complementing normal geometric interpretation based on spatial anomaly character.

The interpretation of Utem data is generally carried out on the basis of qualitative rules of thumb, type curves, parametric curves, and computer modeling routines for more complex situations.

Despite the above, the Utem III system can have certain disadvantages and these need to be accounted for carefully in the planning of surveys and interpretation of data. Firstly, because the system utilises a fixed transmitter loop which generates a quasi-static primary field pattern, conductors in certain positions and with certain dip directions can be difficult to detect due to shielding and loss of coupling sensitivity respectively (- this is a common consideration to all fixed loop systems). Secondly, because of the triangular waveform, the high frequency end of the output power spectrum is more subdued than that of an impulse system and very poor conductors exhibit lower absolute amplitude early-time secondary field responses.

Finally, because Utem secondary field data is normalised with respect to the primary field strength, secondary field measurements very close to the transmitter loop (where the primary field is strong) can result in a loss of sensitivity.

The latter problem is usually solved by overlap of successive loop positions while the former are

alleviated by careful planning and/or necessary reverse profiling. In general, the extra work that these remedies entail does not greatly affect the normally high levels of field production achievable for sizeable programs.

In summary, the Utem III system comprises a deep-looking transient E.M. technique which employs a large fixed transmitter loop and a mobile roving receiver. Its design criteria have been based on greater data interpretability and speed of operation, but like all T.E.M. systems, does have certain disadvantages which need to be taken into account during survey planning and assessment of the results.

To assist the reader in understanding the types of response being sought, figure 1 shows the "crossover-type" response from a thin, steeply dipping, conductive unit which lies some 25 to 50 metres from the surface. Its conductivity-thickness product is around 25 siemens, reflecting a generally poor to moderately conductive mineral assemblage.

Figure 2 shows the response from a long thin conductive body buried at a depth of between 200 and 300 metres. In this case, decay analysis yields a

conductivity-thickness (or conductance) estimate of around 20 siemens. It should be noted that the broad nature of the response, the definite crossover shape and the small inductive limit amplitude are indicators of a deep source.

The above two examples were chosen to show responses from poor to moderate conductors in the presence of fairly moderate overburden responses. In both cases, the conductance is not high, certainly in comparison to conductance values for typical Australian conductive, massive sulphides. The latter normally vary in the range several tens to several hundred siemens.

Figure 3 shows the response of a Western Australian nickel sulphide conductor under 75 to 100 metres of highly conductive overburden/oxidation (8 to 10 siemens). The latter causes the laterally migrating crossover effect at early times, as seen on the upper most set of profiles. On the other hand, the conductor shows up clearly as a fixed cross-over at late time (on the middle axis) and also on the last channel measured (bottom axis). The horizontal field component (figure 4) for this

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anomaly shows a peak as compared to a cross-over-type response, and as such is visually more apparent, especially to the non-familiar eye.

The anomaly at late time is representative of a unit whose thickness is in the order of 10-25 metres and whose conductance is around 125 siemens. Note that in the case of figure 4, the absence of the conductor would cause the last 3 channels (on the bottom two axes) to be featureless.

A variety of response types can be recognized with the Utem system and these will be discussed later. However, the above examples should give the reader an idea of the types of response possible for steeply dipping conductors in various geological situations.

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C. GEOLOGICAL CONSIDERATIONS

The general survey area occurs within a suite of acid lavas, pyroclastics and intrusives which have locally been intensely silicified, sericitized and pyritized.

The main zone of alteration apparently trends in a north-north-east direction and has to date been the main target of drilling investigations. Its "contact" with relatively fresh felsic volcanics is sharp on the western side but more gradual on the eastern side. It remains essentially unclosed to the south and possibly to the north, although the latter is less certain.

Much of the area is overlain by a variable blanket of glacial till and fluvioglacial clays, sands and gravels which can be up to 100 metres thick.

With respect to the types of geophysical response expected from the local geological environment, it is anticipated that strong alteration effects, particularly along preferred stratigraphic units, may impart significant bulk conductivity changes to the rocks. These changes may in cases give rise to conductive units, whose conductances occur in the range less than one to several siemens and thus can be confused with

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reponses from poorly conductive basemetal mineralization of the Que River type.

The variable, more conductive fluvioglacial cover throughout the area will result in various recognizable overburden responses and will serve to mask conductivity inhomogeneities in the bedrock. The degree of masking will obviously depend upon the conductance of the overburden as well as the conductance of the bedrock target being sought. As a guide, it should be noted that a bedrock conductor can be fairly well distinguished if its conductance is not much less than the conductance of the overburden, provided it has a reasonable strike and depth extent.

D. SURVEY DESIGN

The Utem III survey was conducted using two transmitter loop locations, as outlined in figure 5.

The loops were placed on the high ground to the west to maximize coupling with any conformable orebody within the east dipping stratigraphy.

For both loop positions, vertical (H_z') and horizontal (H_x') component measurements were taken on all traverses at station intervals of 25 metres. No strike-horizontal (H_y') component measurements were taken.

A base frequency of 26 hz was employed on all the survey work, enabling a definition of secondary field decays from early time (less than 100 μ sec) to a last channel nominal mean delay time of around 15 msec. It was found during the field work that all inductive responses had decayed completely by the last channel (number 1), thus providing a complete temporal definition of any anomalies of interest.

Considerable difficulties were experienced with power line noise. Two major high tension power lines

pass immediately to the east of the southern loop grid and pass within the northern loop grid area. Further sources of cultural noise included the Boco siding power supply line (rated at 10kVA) and the railway tracks. In general, cultural noise from power lines was greater in the southern loop data while spurious anomalies from the railway tracks were greater in the northern loop data.

Several techniques of noise reduction were experimented with and employed during the Boco survey. These included "simple stacking", "double averaging" and a "resume" function, all of which employ slightly different statistically-based electronic filters to optimize the geological signal in the presence of power-line noise. In some parts of the area, measuring times of up to 30 minutes per component per station were needed to achieve reasonably coherent signals.

E. DATA PRESENTATION.

The profiles of the field survey plots are presented in appendix 2, together with a legend showing channel mean delay times and information on normalisation procedure.

The magnetic field data plots have three axes. The top axis is used to plot the early delay time channels 9 to 4; the centre axis plots the later delay time channels 4 to 2, and the latest channel, number 1, is plotted alone on the bottom axis.

Channel 1 is normalised with respect to the calculated primary field and is plotted as a secondary field. Anomalies on this channel profile may be due to magnetostatic responses and location errors as well as inductive responses. Channels 2 to 9 are generally normalised as secondary fields with respect to channel 1 (where this has been done, "Ch 1" is shown after the measured component on the profile plot title block) thus correcting to a first order for geometric errors and magnetostatic responses.

In the B o c o data, all significant inductive responses have decayed completely by Channel 1.

Figure 6 has been included to assist the reader in the understanding of the normalization conventions possible with fixed loop T.E.M. data.

For T.E.M. systems which express the secondary field as a fraction or percentage of the primary (viz Utem and Crone P.E.M.), normalization can be achieved in two ways.

Continuous normalization is the procedure whereby the secondary field at each station is normalized with respect to the primary field at each corresponding station. This yields the series of spatial response types shown in the top of figure 6.

Point normalization is the procedure whereby the secondary field at all the stations on a profile is normalized with respect to the primary field at one station only. This gives rise to the series of spatial response types shown on the bottom of figure 6, the vertical arrow indicating the station whose

primary field value has been adopted.

The latter form of normalization is particularly useful in preserving the actual shape of broad secondary field anomalies which would otherwise, in the case of continuous normalization, be distorted by the effect of large variation in the primary field across the traverse. Also, this form of normalization results in a spatial anomaly character directly compatible with expected spatial responses for the off-time T.E.M. systems such as Sirotem, Geonics EM 37 and E.M.P.

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F. DATA INTERPRETATION

There are no strong conductors evident in the Boco Utem data. However a number of extremely subtle features are evident and these are summarized in figure 5 which also shows the loop layout and approximate positions of grid lines. The latter need to be located on the ground in order to confirm the actual positions of anomalous features.

In the southwestern part of the area, a number of poorly conductive units are evident. These are probably related to preferentially altered horizons within the stratigraphy and/or locally more conductive fluvioglacialials. The most prominent wide poorly conductive zone occurs on line 600N immediately south of the altered zone encountered in drill hole BBP 246.

Anomaly A occurs in the south-eastern part of the area and is seen most clearly on line 400N as an early-time cross-over in channels 9 and 8. The later time part of the anomalous decay is severely affected by power line noise which becomes stronger to the east. It is likely that the conductive unit has a depth in the range 25 to 75 metres and, based on a rough estimate

of its decay time constant, has a conductance less than several siemens. The anomaly is difficult to analyze quantitatively due to its partial lateral coverage and the strong power-line noise.

Zone B occurs in the north-western part of the area as a 500 to 900 metre long weak conductivity enhancement or contact. It is evident in the profile data as an early time cross-over anomaly super-imposed on the regional effect due to the oxidation zone and fluvioglacial response. To the north the zone appears to pass through the gap between drill holes 10 and 11 where it is evident on data from line 2100N as the edge of a horizontal conductive zone.

It is likely that B marks the conductivity contact between the fresh felsic volcanics to the west and the highly altered volcanics to the east and that this contact may at least in part coincide with the local thickening of the fluvioglacial cover in the area of holes 9, 10 and 12. It is not clear whether there may be a confined conductive unit along this contact or whether the contact is fault-controlled.

In the north-eastern part of the area, anomaly C has been mapped on the basis of an early

time response in close proximity to the railway line anomaly on lines 1400N, 1500N and 1600N. Its existence is subject to doubt but it warrants further attention due to its apparent strike divergence from the railway line.

G. CONCLUSIONS AND RECOMMENDATIONS

There are no strong conductors evident in the Boco Utem data. However several weakly conductive units are present.

The most prominent is anomaly A which occurs in the south-eastern part of the area. Its conductance and depth are difficult to determine due to the effect of high tension line noise but it warrants followup in view of its position within the stratigraphy. A drill hole is recommended to test this zone because it may be more significant than is immediately apparent in the data.

Zone B is more likely a contact effect but a poor confined conductor may occur along it particularly on line 1700N. A drill hole is recommended to test this zone. It is probably less than 50 metres deep and less than 1 or 2 siemens in conductance.

Anomaly C is problematic, due to the interfering effect of the railway line. However, it does appear to have a strike divergence from the railway line and may warrant drill-testing on line 1500N. A depth of 100 metres would probably suffice in

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the planning of a test hole.

Several other extremely weak and shallow conductivity inhomogeneities occur in the area but these are most likely to represent formational and alteration contrasts.

The above recommendations are made on the basis of the Utem data alone. They may need to be modified in the light of available I.P. data, particularly for anomaly A which falls close to a Scintrex I.P R11 traverse. It is thus recommended that the I.P. data and Utem data be reconciled prior to any drilling of the geophysical targets.

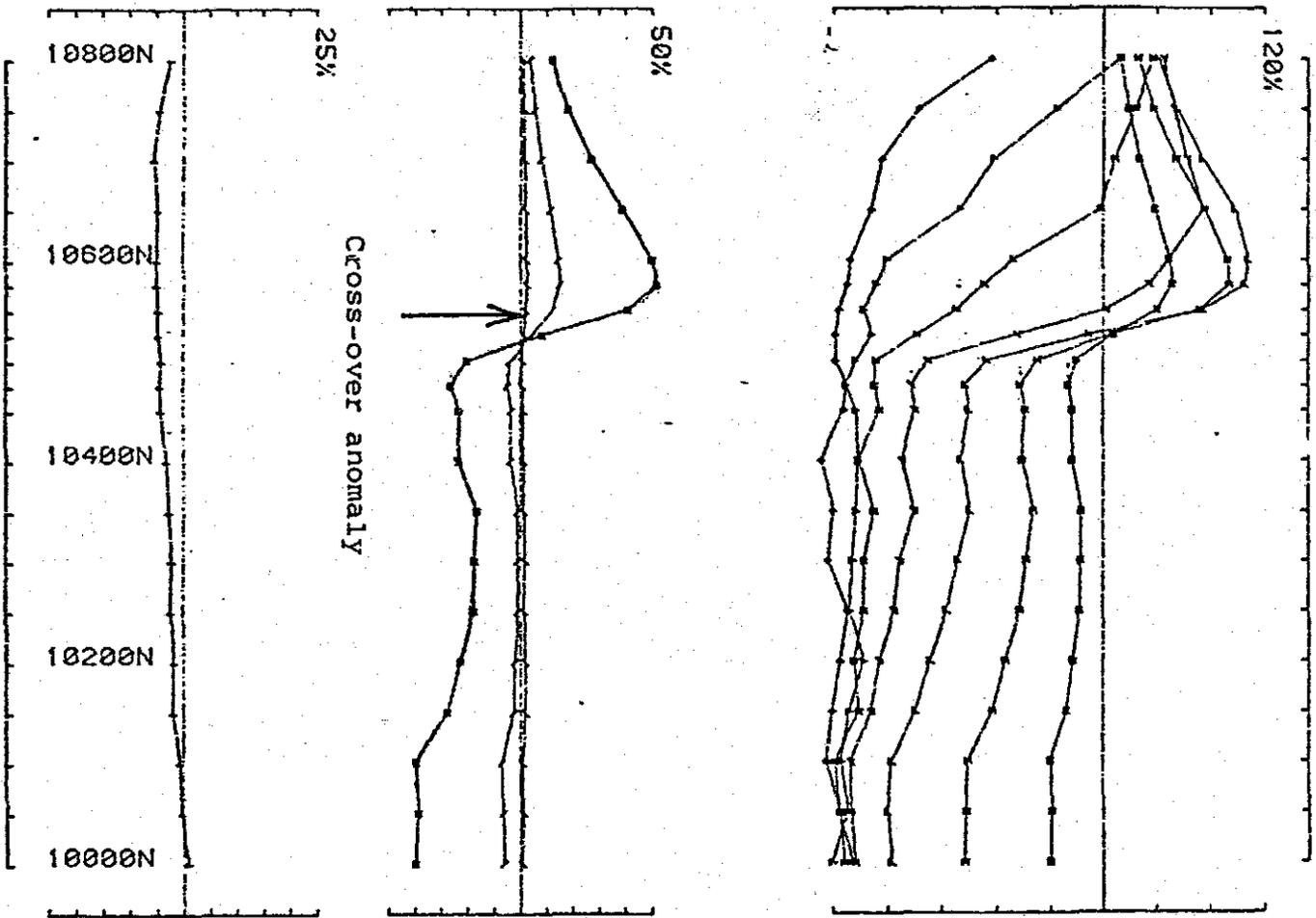


Fig. 1 Example of Utem Profile over a thin steeply dipping conductor

Job. 2702 freq(hz) 13.115

Loopno 0204 Line 10000E component Hz secondary Ch 1

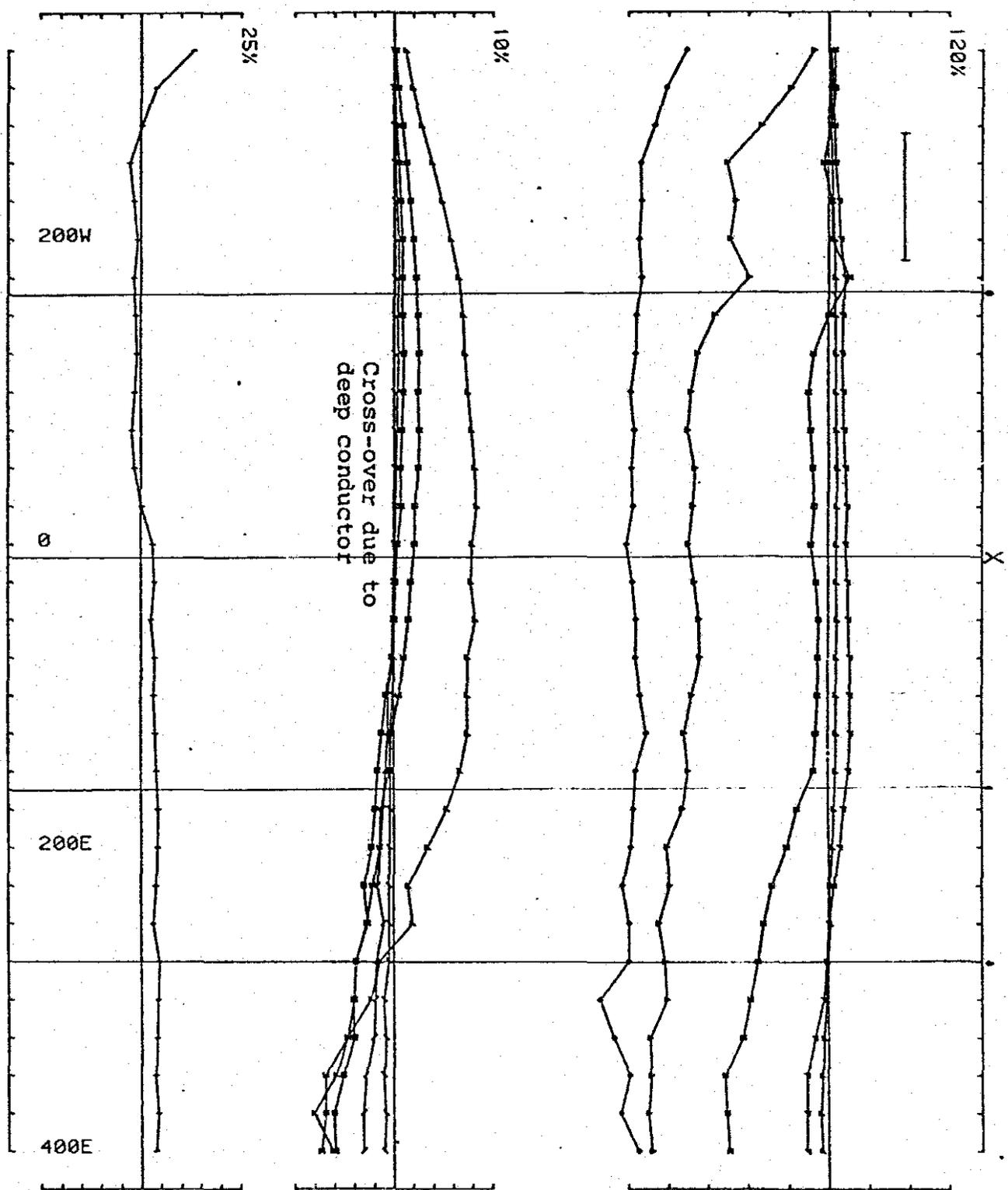


Fig.2 Example of Utem profile over a deep moderate conductor of limited strike and depth extent.

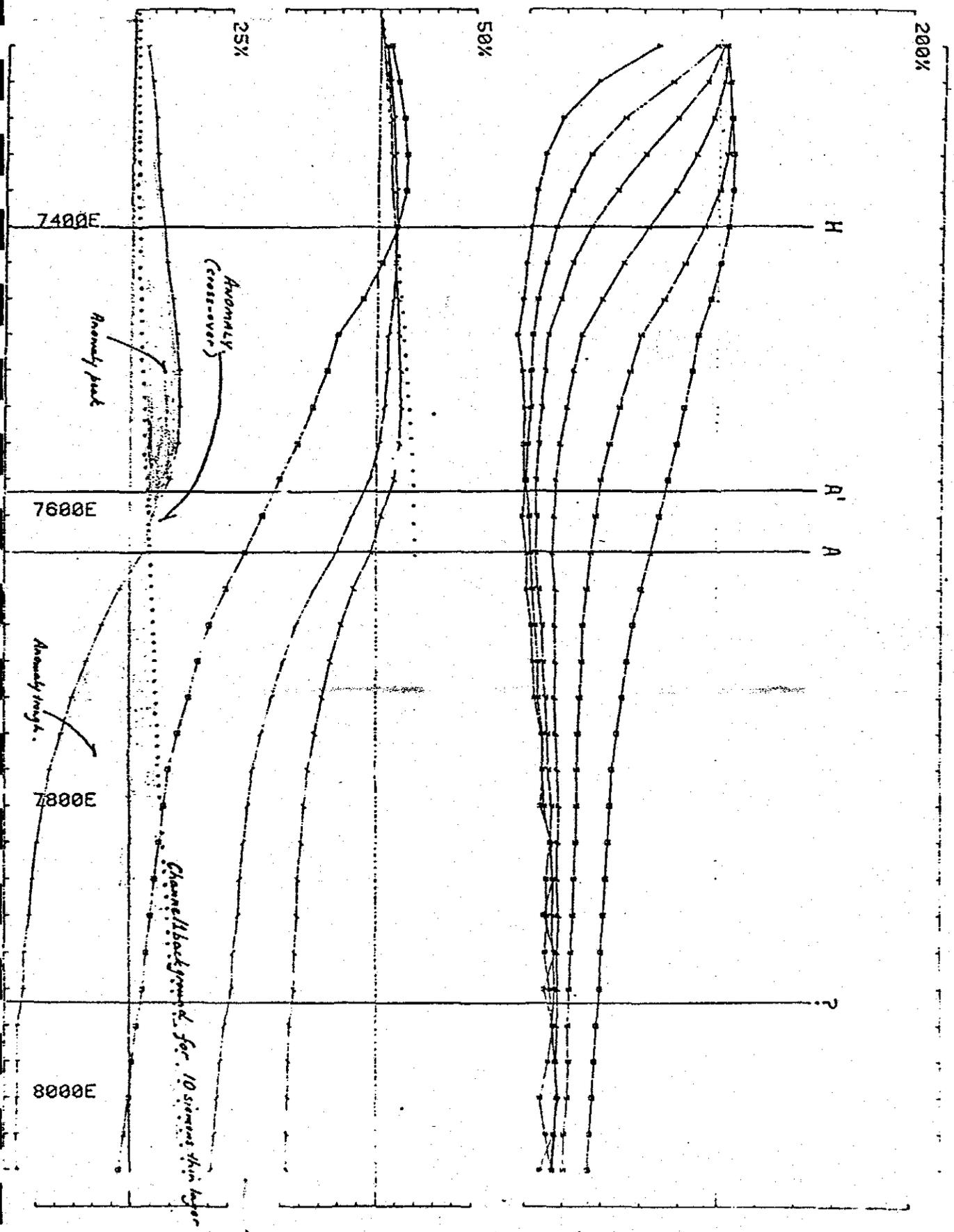


Fig. 3 Example of Utem profile over a conductor under conductive cover-
H_z (vertical field) component.

Job 2601 Freq(hz) 26.230

Loopno 0101 Line 7400E component H_z secondary (Normalized to calculated primary at each station)

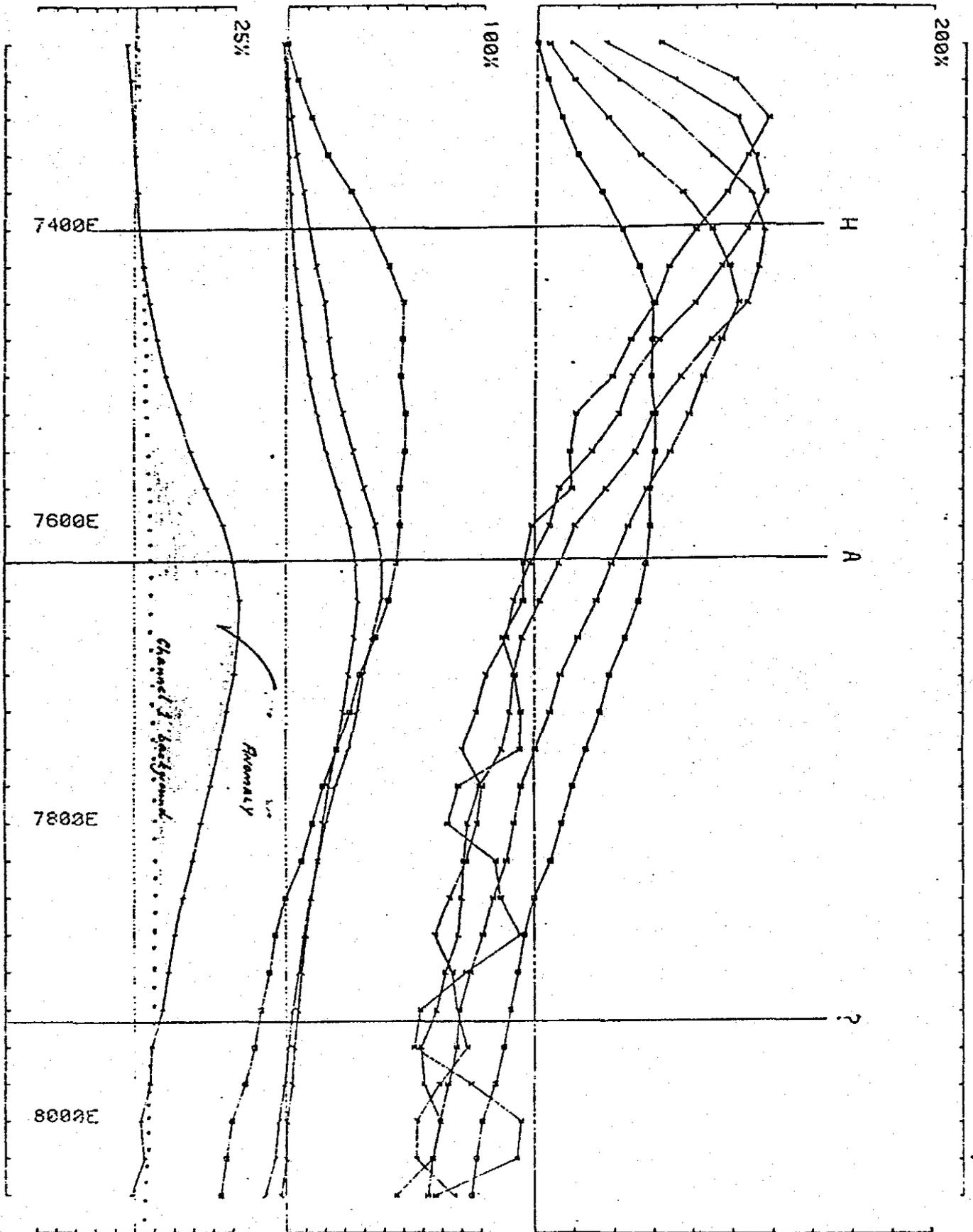
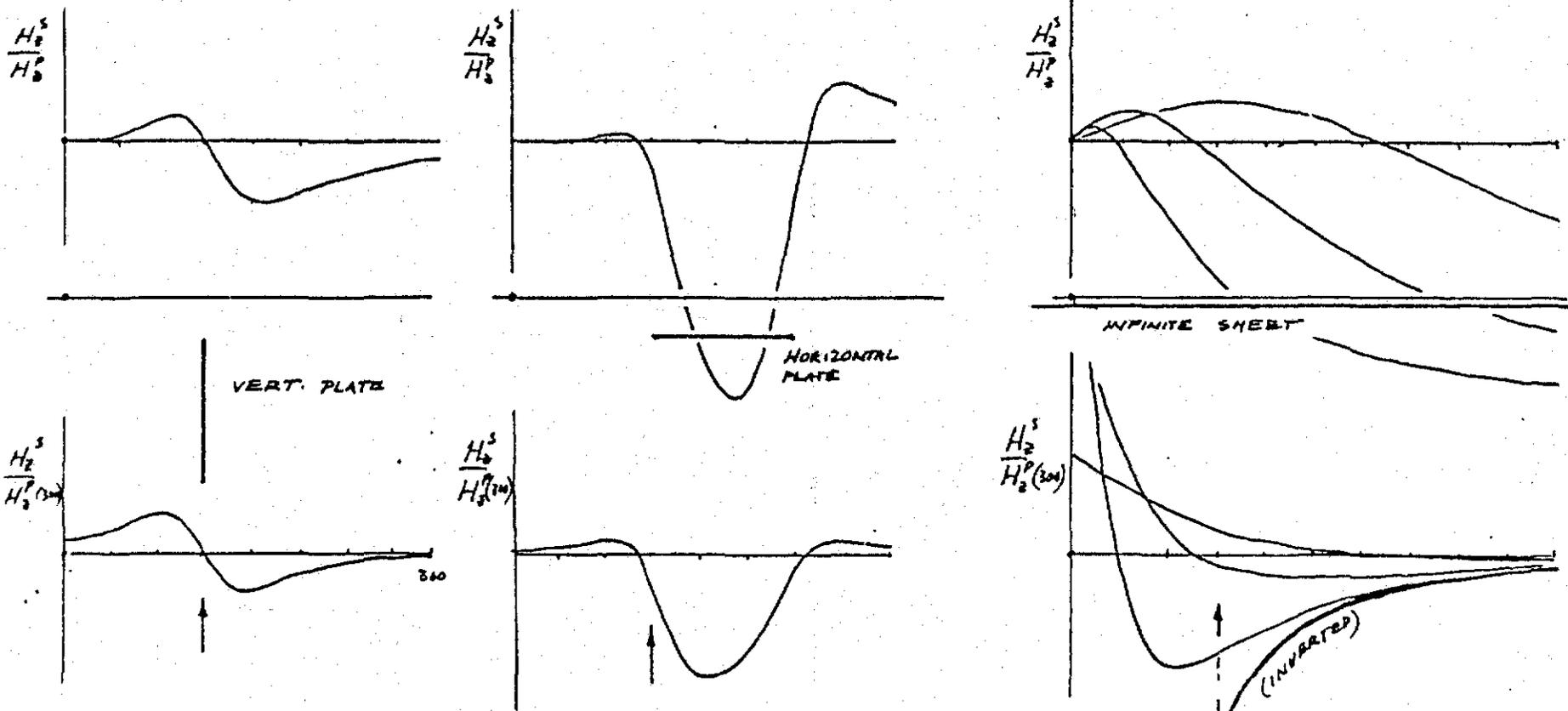


Fig.4 Example of Utem profile over a conductor under conductive cover-
H_x (horizontal field) component.

CONTINUOUS PRIMARY FIELD NORMALIZATION



POINT NORMALIZATION

Fig. 6. CONTINUOUS AND POINT NORMALIZATION

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Appendix 1

Field Instrumentation and computer specifications

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THE UTEM 3 SYSTEM

The UTEM 3 system is an upgrade of the UTEM1/UTEM2 system developed at the University of Toronto from 1973 to 1978. The Wideband Time Domain Project reports contains descriptions of the system and its use in test surveys (U. Of Toronto, Geophysical Lab.). The new UTEM 3 system makes essentially the same measurements as the former systems, but it has significant improvements in terms of reliability, field worthiness and flexibility. Some improvements in accuracy have also been achieved, particularly with regard to gain stability. A slight improvement in precision is expected to result from increased transmitter power (30% to 15% more depending on the load). More flexibility in stacking will improve the precision appreciably where power line noise is the main limiting factor. The main significant changes are the reduction in weight of the receiver and coil and a reduction in receiver power consumption. This has been done by the use of a low power microprocessor system to control most of the receiver functions.

UTEM Method

The main characteristics of the UTEM method are:

- 1- The transmission of a precisely regulated triangular current waveform into a large loop to produce a large dipole moment.
- 2- Sensing of the magnetic field by a wideband induction coil and optionally by grounded electrodes.
- 3- Sampling of the waveform by channel windows which have widths and delay times logarithmically spaced by factors of two.
- 4- Square wave response in the absence of any conductor, such that all channels have equal amplitudes.
- 5- Absolute gain calibration to detect anomalies of extremely long time constants, including magnetic susceptibility responses.

The objective of the system is to combine large bandwidth, deep penetration, and rapid survey rates in a mineral exploration

role. The main components of the system are:

- 1- A transmitter
- 2- A receiver
- 3- A tripod mounted sensing coil
- 4- A playback system.

The other less specific components are a motor generator with fuel pump system, wire reels, a battery charger, and a maintenance kit.

FIELD OPERATION OF THE UTEM 3 SYSTEM

This functional description explains how the different components of the system are used in normal surveying. After will follow individual descriptions of the components.

In normal field operation, the fixed transmitter is energising a large (say 1km^2) wire loop, and the area around it is surveyed using the single sensing coil and the receiver. Time synchronisation is achieved by precise crystal clocks. Adjustment of the clocks is usually done twice a day by connecting a short cable between transmitter and receiver. If extreme accuracy at short time channels is not needed, synchronisation once a day only can be tolerated.

The measurements are recorded automatically on cassette tape by the receiver after a selectable averaging time. All switch settings relevant to data reduction (gains, component selection, etc..) and the label indicating the line and station number are also recorded with the data. The transmitter runs unattended all day after initial set-up. Its precisely regulated output current can be read at the beginning and end of the day by means of a four digit display and is noted for use during data reduction.

At the end of the day, at the base camp, the magnetic cassette is played back by the field computer system which makes an edited back-up copy of the tape on a floppy disk, and then proceeds to reduce and plot the data without further need for the field cassette which is returned to the receiver for the next day of recording.

Display mode switch (cont'd): Toggle sw.
 Remote: display heater off to save power

Clock switch: Clock OFF/ON Rotary
 Freq. check/ Phase check
 Timer set

Timer switches: Delay time 0.1 to 99.9 hr 3 x sealed thumbwheel

Function switch: Select monitor function: Rotary
 Input current pos/neg
 Input voltage "
 Output current "
 Output voltage "

Output current: Set output current 10 turn pot.
 Input voltage Set power supply voltages "
 Main power : ON/OFF Toggle sw.

Display

LCD type automatically heated in cold temperatures
 4 digit readout

1 digit diagnostic codes:

<u>code</u>	<u>meaning</u>	<u>automatic action</u>
U	Battery low	Clock off Main power off
A	Supply current overload	Main power off
H	Overheating	"
L	Wire loop open	"
P	Output overload	Output stage off then reset
C	Output clipped supply voltage too low	On "remote" display mode: flashes the output on and off every few seconds as a remote warning.
(blank)	Undistorted output	

Connectors

- AC power receptacle
- Output connectors
- Sync cable connector
- Connector for external battery if needed

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ding. The field tapes are never overwritten and are kept for permanent data storage, as well as the corresponding diskette which contains the edited files and records of their plots. A cassette can record more than 5,000 sets of measurements, the equivalent of more than two weeks of surveying. A diskette can also store a similar amount of data.

UTEM 3 COMPONENTS

TRANSMITTER

The Transmitter outputs a precisely regulated current of triangular waveform in a large loop of wire. The output current, once set is not dependant on any changes in the resistance of the loop. The waveform is also regulated independently of the loop impedance. It is possible to accomodate a range of loop resistances (i.e. loop sizes) by adjusting the supply voltages which are also regulated.

The transmitter is powered by a modified 1750 Watt Koehler motor generator producing 120 Volt AC. The motor is equipped with a fuel pump and five gallon external fuel tank to run for a full day without refuelling.

Power ratings.

- Peak output power: 1200 Watt
- Current output: +/- 5 A in a 16 Ohm loop
- +/- 5 A in a 32 Ohm loop
- +/- 4 A in a 64 Ohm loop = 1 km²
- +/- 2.5 A in a 100 Ohm loop
- Weight: 20.5 kg including internal battery(45#)
- Dimensions: 38 cm Y 27 cm X 27cm (15"X10.5"X10.5")
- Maximum input continuous power: 1200 Watt
- Input AC voltage: 110 V minimum; 130 V maximum.

Front panel controls

- Current range switch: 6A or 3A Toggle sw.
- Display mode switch: Battery check
- Monitor: display as per Function sw.

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Accuracy of output current

- Triangular with -less than 0.05% low frequency distortion at 5Hz base frequency.
- less than 0.005% at 10 Hz and above
- Rise time of square wave time derivative: (10% to 90%)
 - 6 microseconds in 10 mh load (normal loop)
 - 10 microseconds in 20 mh load (equivalent to the largest loop used)
 - Note: the current in far parts of the loop may have slower rise times depending on capacitive leakage
- Current regulation: (long term reproducibility)
 - less than 2% variation after 40. microseconds (channel 9 at 30 Hz base freq.)
 - less than 0.2% 120-1000 microseconds
 - less than 0.05% after 1 ms
 - (these are typical specifications allowing for normal variations in characteristics from loop to loop)
- Stability of the current per day after warm-up (15 min.):
 - better than 0.02% per day
- Temperature coefficient: less than 100 ppm/°C
- Output impedance: (insensitivity to changes in load imped.)
 - more than 20 kOhm 0-500 Hz
 - more than 3 kOhm 500Hz-30KHz
 - trimmer adjustment to align within specifications after component aging
 - (A 20kOhm output impedance means that a 20 Ohm change in load resistance causes only a 0.1% change in the output current)

Phase drift specifications: see time base (common to receiver and transmitter)

Main features:

- precise current regulation
- up to 250 V output voltage
- precise crystal clock for phase reference
- built in battery operated timer for clock warm-up (includes battery and charger)
- as a safety precaution, the high voltage turns off when the loop wire is broken
- diagnostic codes to guide operator
- fully protected and self-resetting
- fail-safe shut down for gross overloads and overheating
- +/- 4 A in normal 1 km² loop
- up to 5 A in smaller loops

RECEIVER

The UTEM 3 receiver is functionally the same as the UTEM 2 receiver in routine operation. It has many added switch selectable options for special applications and the convenience of experienced operators who want to optimize survey efficiency. The front panel is substantially the same as that of UTEM 2, except for the elimination of a few controls. The added options can be set by alternate use of the same controls as indicated by a second function mask in the receiver cover. The new features added are the result of more than 2000 line-km of surveying with the UTEM 2 prototype.

The most visible changes from UTEM 2 are reductions in size, weight and power consumption, and a more sturdy, field worthy construction.

In common with UTEM 2, the UTEM 3 receiver is a digital stacking instrument, which automatically "prunes" out noisy cycles and records the data with a built in low power digital cassette recorder. The recording media are inexpensive digital grade cassettes capable of storing more than two weeks of data. A 6 digit label lets the operator set a recorded label pointing to the position of the survey station (line number and station number). All relevant switch settings such as gains, type of input, etc. are also recorded with the ten channel measurements. These settings are also internally protected against any change during stacking until they^{are} recorded or manually rejected. Audio tones inform the operator of the status of the receiver (idle, stacking, recording) and warns him of any operating errors. An analog meter is provided for monitoring the data precision, but it is not meant for note taking since this is handled by the tape recorder. As the stacking progresses, the continuous average of any channel can be monitored. A steady reading indicates that enough averaging was done. The operator can stop the stacking manually or set automatic averaging limits. Data can be recorded automatically after stacking, or by a manual control after inspection. The receiver can also be set to do a selectable number of stacking/recording cycles automatically at timed intervals if required. The meter can also be used for monitoring any receiver

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function or internal setting. This monitoring has no influence on the measurements which can be made at the same time. The meter sensitivity can be increased to detect small anomalies at survey time. Thresholds can be set to warn the operator of anomalies larger than any value on any channel to make sure that they are not overlooked in the field and any necessary detailing is done immediately. Many other convenient options can be selected by the operator if he chooses, but default options provide simple basic operation for the inexperienced operator.

Routine operation. In routine operation, the operator changes the label before moving to the next station. At the next station, he turns on the receiver, updates the signal gain if the signal overload indicator is on, and starts the stacking. He hears an audio tone during stacking that informs him when noisy samples are rejected (tone missing). After the preset averaging time, the data are recorded automatically. During recording, there is an other tone showing that the tape is engaged and moving. The receiver is then turned off, the label updated and the process is repeated at the next station. A helper carries the tripod mounted coil, sets it at every station and connects it to the receiver.

Physical specifications

- Weight: 11 kg (without battery)
13.6 kg (with battery) (30 lbs)
- Dimensions: 45cm x 33cm x 18.5 cm (17.5"x14.5"x7.25")
packframe mounted
- Batteries: 3 kg weight, rechargeable
24 hr continuous operation at 25°C
8 hr continuous operation at -30°C (with
internal case insulation in place, new
batteries with 100 recharge cycles or less)

Controls Recorded switch settings

- Label switches: 6 BCD digit sealed thumbwheel switches
- Signal gain: coarse and fine/ or automatic
- Input selection: Hz, Hx, Hy, Ex, Ey, CAL, Monitor, Enter option
(Hz measurement is the most common)
- Stacking time: 256, 512, 1k, 2k, ... 64k cycles or continuous
1, 2, ... 6, 8, 12, 16, continuous automatic repeats
- Accumulator gain: x1 or x8

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Programming switch: enter option/ enter data

Stack/ record controls: settings not recorded

Receiver On/Off switch, also acts as reset.

Stacking switch: Start or stop

Record switch: Auto record/ Wait/ Reject

Monitoring switches: not recorded, no influence on measurements

Meter function: channels absolute
channels normalised
channels auto gain
channels - channel 1
Ta ambient temperature
Tc internal main case temperature
crystal frequency check
phase adjust
special functions

Meter gain switch: 1,2,4,..512

Channel: channel monitored 1 to 10

Battery check pushbutton switch

Phase sync pushbutton: phase sync interlock switch

Small meter indicators

Meter polarity: + or -

Overload: signal overload / OK / accumulator overload

The switches and indicators have alternate functions for special purposes as indicated by the special function front panel mask. The special mode is entered by simultaneous use of two switches.

Potentiometers:

Crystal clock fine adjustment (10 turn locking pot.)

Acoustic monitor level adjustment

Audible tones:

Record tone (low note.)

Stacking tone (medium)

Reminder/warning tone (high tone)

Acoustic monitor:

Audio output of measured signal to identify interference sources (60 Hz hum, IP transmitter, sferics, etc..)

New features UTEM 3 receiver

- Double averaging option to reduce power line noise
- More flexible M x Nk averaging time selection
- Stacking times up to 64K cycles (or more on continuous) for extreme precision detail work or very noisy conditions (64K is a 35 minute averaging time at 30 Hz base frequency)
- Option of automatic signal gain setting
- Option of automatic monitor gain
- Complete file labeling as to loop number, date, time, temperatures, operating frequency.
- Use of timer for automatic interval measurements
- Check sum record for detection and correction of recording errors
- Provision of interface for linking to borehole system controller
- Microprocessor controlled for flexibility in adding new options
- Permanent memory to keep user selected options when the main battery is removed
- Reduction of weight of 35% and in power consumption by at least 30% relative to UTEM 2.

COIL - TRIPOD ASSEMBLY

The UTEM 3 coil results from a major redesign of the UTEM 2 coil. The main improvements consist in a reduction in size and weight, and in a substantial improvement in the gain stability, particularly with respect to temperature and mechanical shocks.

Specifications

Ferrite cored, shielded and guarded design

Length: 67cm (26.5")

Diameter: 9cm (3.6")

Weight: 4.7 kg (10#), 6.5 kg with tripod (14#)

Effective area without amplifier: 700 m² (nominal)

Output effective area: 60,000 m² (nominal)

Temperature stability of gain: better than 1% -40°C to 50°C

Output signal bandwidth: 0.03Hz to 45kHz

Wideband input noise: 3 microV (0-40kHz)

0.3 " (0- 1 kHz)

Equivalent magnetic field noise density referred to input:

10 Hz	0.2	mgamma/Hz ^{1/2}
100 Hz	0.02	"
1 kHz	0.0015	"

Tripod: -universal mount tripod for vertical or horizontal leveling of coil

-plastic construction with fiber glass telescopic legs

The interconnection cable to the receiver has four shielded conductors and uses a fast disconnect Cannon connector. The cable length is 4m (12 ft). The coil should be mounted at least 3 m from the receiver to keep the anomaly caused by the conductive receiver case to less than 0.01%.

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GEOPHYSICAL FIELD COMPUTER

The GFC-1 computer is a self contained computer system that may be operated in a field camp. The system was specifically designed to fill the need for field processing of most types of data collected in mineral exploration.

In the standard configuration, the GFC-1 includes peripherals for playing back data, providing hard copy printout, display of results on a screen in either alphanumeric or full graphical form, a high quality portable flat bed plotter for either hard copy of graphics or use as an accurate digitizer, and archival facilities on either cassette or floppy diskette. The GFC-1 has also extensive software support in the form of a complete disk based operating system supporting high level language programming and extensive application packages for geophysical data processing.

Reconfiguration of the GFC-1 to suit other peripherals is an easy task. The main computer assembly provides a number of standard interfaces, and custom interfacing requires only software changes as the I/O ports are controlled by a separate peripheral processor

HARDWARE FEATURESPowerful main computer

The GFC-1 uses the WD-0900 Pascal microengine as its main computer. The microengine was specifically designed for the efficient execution of compiled Pascal programs, and is considerably faster than comparable computers using Basic interpreters. 64K semiconductor memory, 127K optional.

Floppy disk storage

Dual double sided double density disk drives have 2Mbyte storage available on-line.

I/O ports processor

This processor is based on the 6809 microprocessor and is distinct from the main computer. Interfacing is completely programmable with the main computer acting as the development system for the I/O ports processor, which can also efficiently perform machine level processing.

Full screen editor / Dual page graphics

Screen graphics and joystick type control permits composition/modification of plots for subsequent hard copy. For example incorrect data may be changed or label positions moved before the final plot is run off. Dual page capability enables comparison of field data and fitted models under program control. At the push of a key, the video monitor can switch back and forth the graphical image and text functions without loss of any data. Full screen editing allows easy composition of text/programs and subsequent modification.

Plotter / Digitizer

Portable flat bed interactive plotter with 11"x17" work area (American B size or European A3 size). The digitizer function can be used to register the position of the plotter paper for example,

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so that data may be added to an existing plot, or for other applications such as timing of refraction breaks in seismic data, entry of topography etc. Optional 17"x23" plotter or graphics (dot matrix) printer.

Tape reader / writer

Reads/writes standard digital grade cassettes in ANSI-ECMA format (such as used in the Hunttec Mk 4 IP receiver). Also reads NRZI cassettes such as used in UTEM and a variety of low power data loggers. Can also format ANSI-ECMA tapes.

Printer

8 1/2" wide light weight dot matrix printer which can print 80 or 132 characters per line. Can be used for hard copy of programs, text, tables of data etc. Optional graphics printer for plot capability.

Keyboard

Customized keyboard supporting advanced features of operating system.

Interfaces

Spare RS232 serial interface which can be used to other systems such as a mainframe computer, or to interface to minicartridge magnetic tape readers used in some geophysical equipment.

GPB (IEEE 488 standard) interface can be used for simultaneous interfacing of up to 15 compatible peripherals.

Printer port adaptable to most common printers.

Uncommitted programmable PIA interface allows complex custom interfacing.

Battery backup

Input power of either 100-130V or 200-260V AC required. In the event of failure of the input power supply, a built-in battery backup takes over automatically to power the essential components

for a minimum of 20 minutes (mainframe, keyboard, video display). This feature allows processing to proceed without loss of data in the event of generator failure.

COMPONENTS LIST

Mainframe

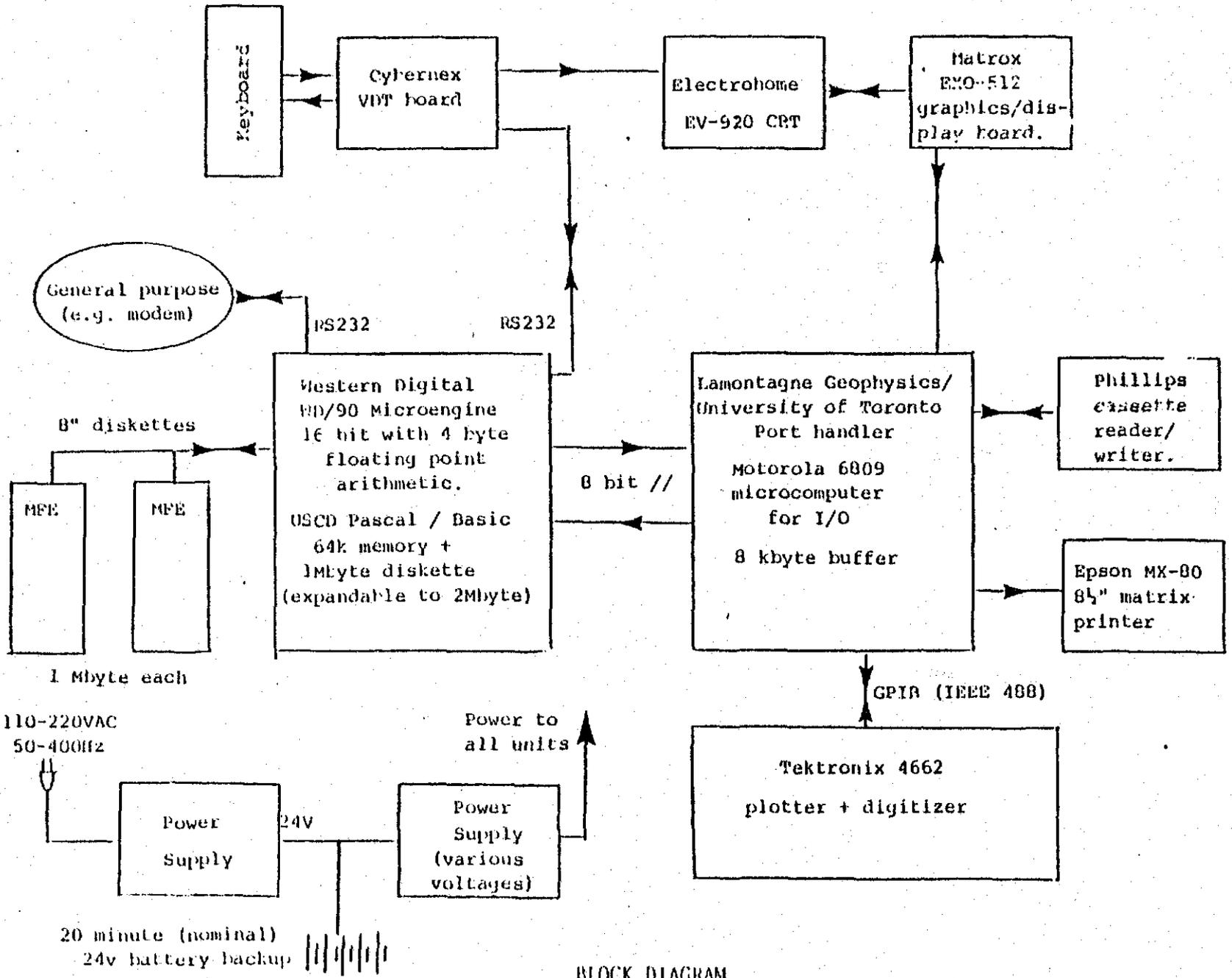
- Western Digital WD/90 Pascal Microengine computer.
16 bit with 32 bit floating point arithmetic.
64K memory expandable to 127K.
- 2Mbyte removable storage on dual double sided double density 8" diskettes.
- University of Toronto/Lamontagne Geophysics buffered intelligent interface based on 6809 microprocessor to handle I/O operations. 8K buffer memory.
- Cybernex terminal controller logic.
- Matrox EXO 512 graphics controller.
- Memodyne digital cassette tape reader/writer (Phillips compact cassette standard size).
- Switching regulators, power supplies and battery backup.

External (standard configuration)

- Electrohome EV920 monitor.
- Cybernex LGR-1 keyboard.
- Epson MX-80 printer.
- Tektronix 4662 plotter/digitizer.

Physical specifications

- 95kg total weight when packed.
- Supplied in two padded transit cases (each less than 50kg) 70cm largest dimension.
- Mainframe operable in its carrying case.
- Peripherals case can be used as a table supporting plotter.



BLOCK DIAGRAM

Lamontagne Geophysics field/playback computer system.

SOFTWARE FEATURES

Complete disk based operating system (UCSD) includes:

- High level Pascal programming
- Full screen text editor for flexible program development, editing or entry of field data. Useful for drafting of reports to be stored on disk and later printed or for scanning through and editing field data read from cassette tape.
- Powerful Pascal compiler flags syntax/program errors and can automatically return to editor at correct place in program for correction/recompilation.
- Linkage editor with overlay capability and program library lookup.
- Extensive file handler for disk file creation, modification, retrieval and for transfers of text/data between I/O devices.
- Comprehensive library of utility programs to perform standard tasks.

Extensions of the UCSD system include: :

- tape reading/writing in ANSI-ECMA or NZRI standard.
- screen graphics
- plotter/digitizer operation
- smart terminal features

Software is supplied for basic use of all the peripherals. For example, one program can be run to read an ANSI-ECMA tape, store the data on disk, display it in graphical form on the console, and print its content. Full documentation is provided so that the peripherals may be used by user programs by calling sub-routines contained in the system library. Source files of the system programs which can be called by user programs are provided.

APPLICATION PROGRAMS

Available now:

- UTEM 3 package from reading of field cassette tapes to final multichannel plots.
- Huntec Mark 4 IP system reduction programs: tape playback archiving, editing, plotting of decays, profiles and pseudo-sections.
- Contouring and graphic display programs.

Under development:

- Potential field modelling/interpretation programs for use with gravity or magnetic data for example.
- Advanced IP interpretation package.
- Advanced interactive EM interpretation package.
- Graphics printer display package.

Future developments planned:

- Refraction seismic reduction/interpretation package.
- Magnetometer/base station data correction, gridding and contouring package.

Lamontagne Geophysics can provide custom development of programs as may be required for all applications of the GFC-1 computer.

Partial list of software supplied with the computer

Full screen text editor

Hexadecimal/ASCII code editor

Pascal compiler

Linker

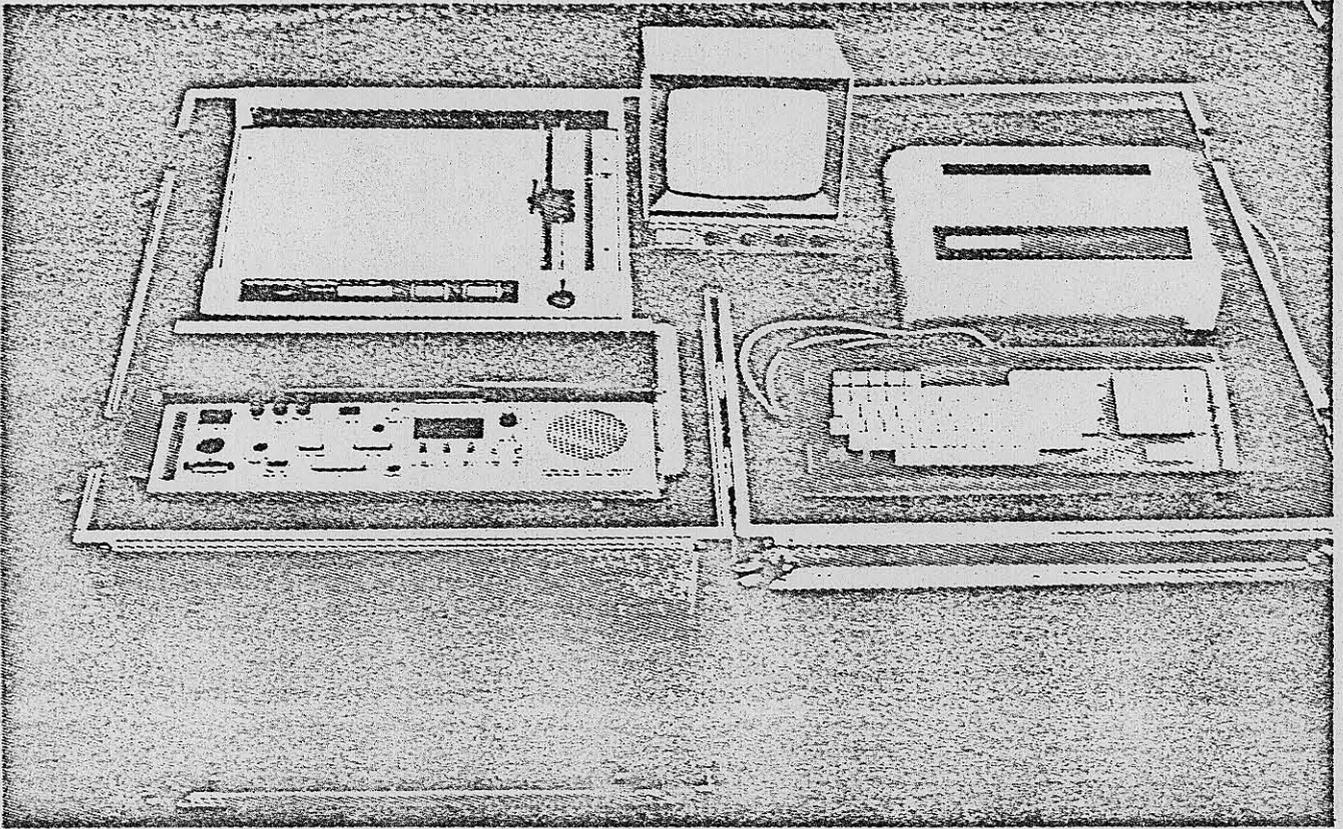
File handler: -directory listing
-transfer of files between I/O volumes
-renaming, making, deleting disk files
-verifying disk records
-repacking disks
-filer utilities

System library management programs

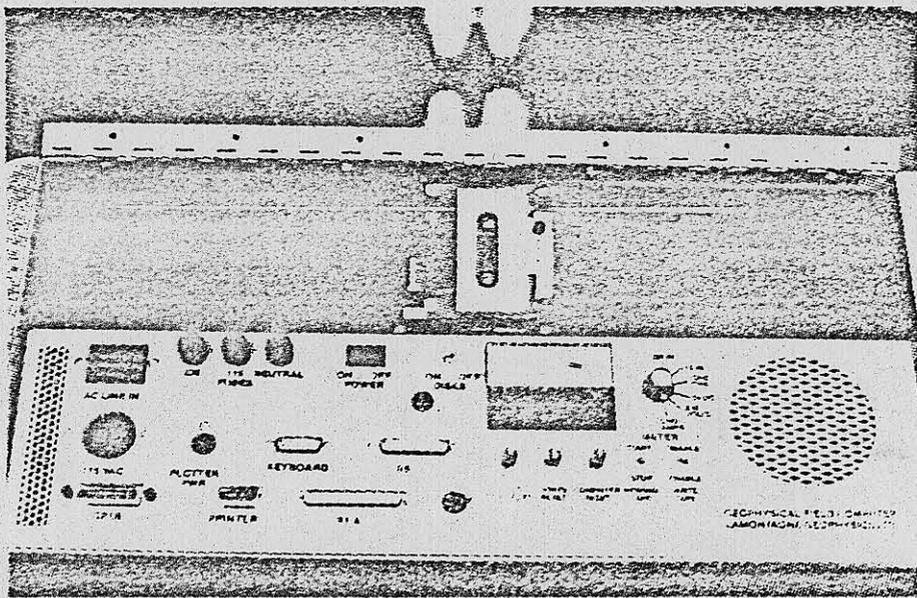
Utilities: -formatting disks
-making system disks
-printing in page size format
-comparing files
-monitoring the port handler
-searching cassette tapes
-reading NRZI and ANSI-ECMA tapes
-writing and formatting ANSI-ECMA tapes
-plotting stored plot files on the screen or plotter
-composing plots on the screen

User callable utilities

-plotting commands for screen or plotter
-routines for tape code conversion
-routines for use of any peripheral



GFC-1 computer system packed in single transit case. Dual case packaging also available. The printer, video monitor, and keyboard are stored in padded compartments under the plotter for transport.



View of the computer front panel with the dust cover protecting the tape cassette drive and diskette drives lifted open.

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Appendix 2

B o c o Utem data profiles (including
legend for Utem plots)

LEGEND FOR UTEM PLOTS

<u>Symbol</u>	<u>Channel number</u>	<u>Mean Delay Time (milliseconds)</u>			
		<u>f=30Hz</u>	<u>f=26Hz</u>	<u>f=15Hz</u>	<u>f=13Hz</u>
◇	10	0.025	0.029	0.05	0.058
△	9	0.05	0.058	0.1	0.115
⊗	8	0.1	0.115	0.2	0.231
7	7	0.2	0.231	0.4	0.462
△	6	0.4	0.462	0.8	0.923
⊗	5	0.8	0.923	1.6	1.85
□	4	1.6	1.85	3.2	3.69
\	3	3.2	3.69	6.4	7.38
/	2	6.4	7.38	12.8	14.77
	1	12.8	14.77	25.6	29.54

All channels are plotted as:

$$\frac{\text{Channel} - \text{reference}}{\text{base}} \times 100\%$$

For total field normalization: reference = 0

secondary : reference = primary component or Channel 1.

If Ch 1 symbol appears on plot then:

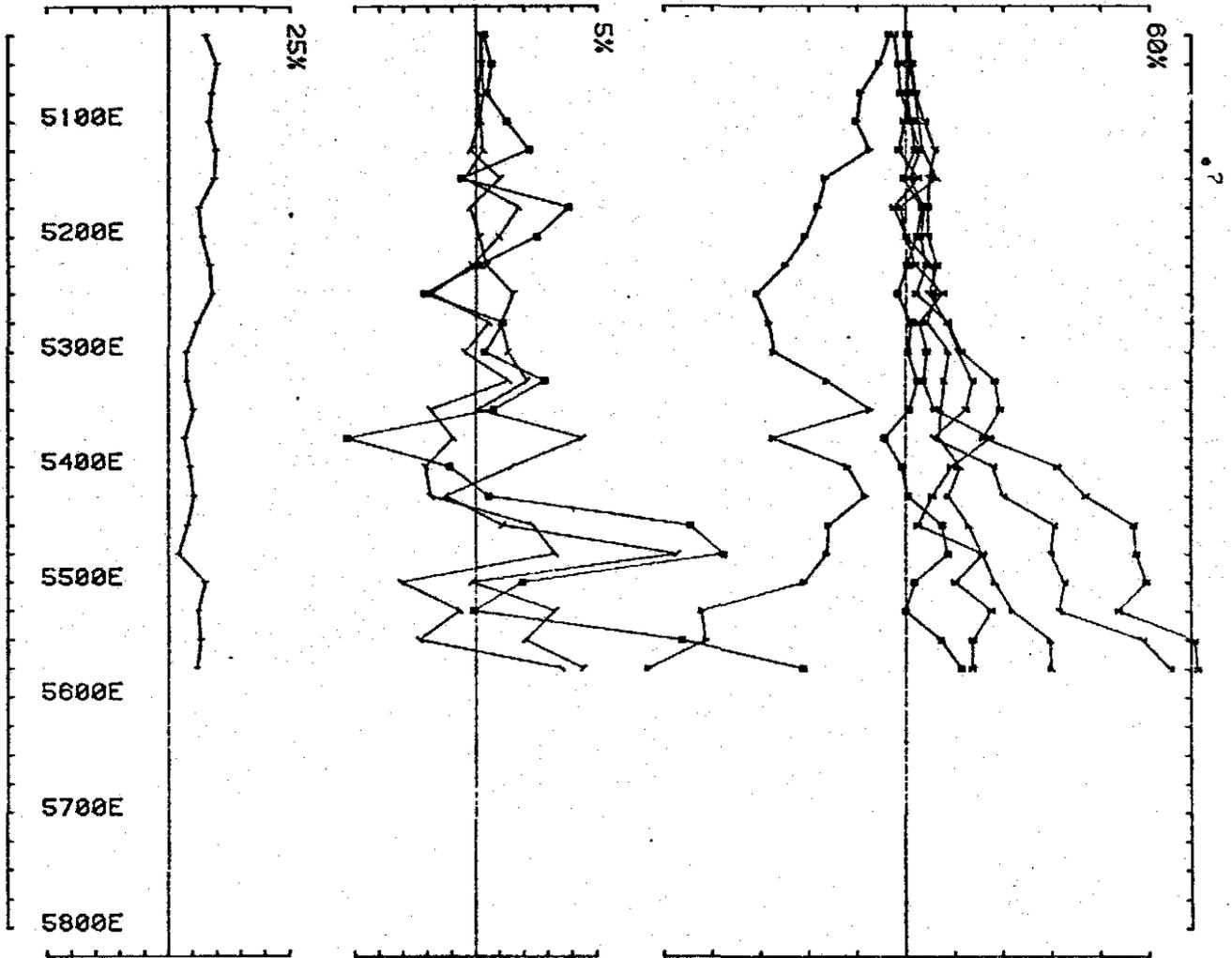
reference = primary for Chan 1
reference = Chan 1 for all other channels.

If no Ch 1 symbol is present then:

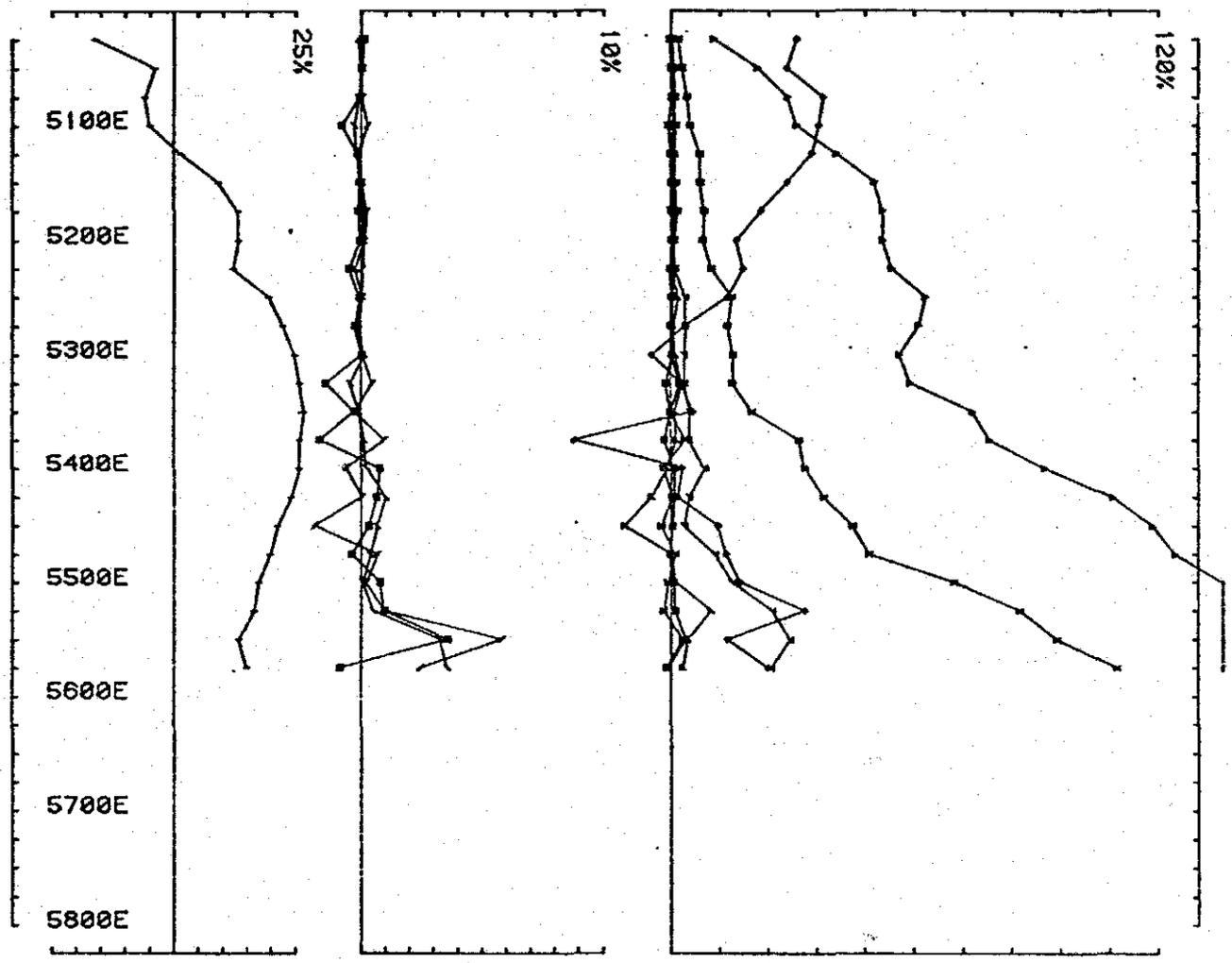
reference = primary component for all channels.

Normally base = primary field (total) at reading station.

If symbol ***> appears then base = primary field at reference station marked with symbol.



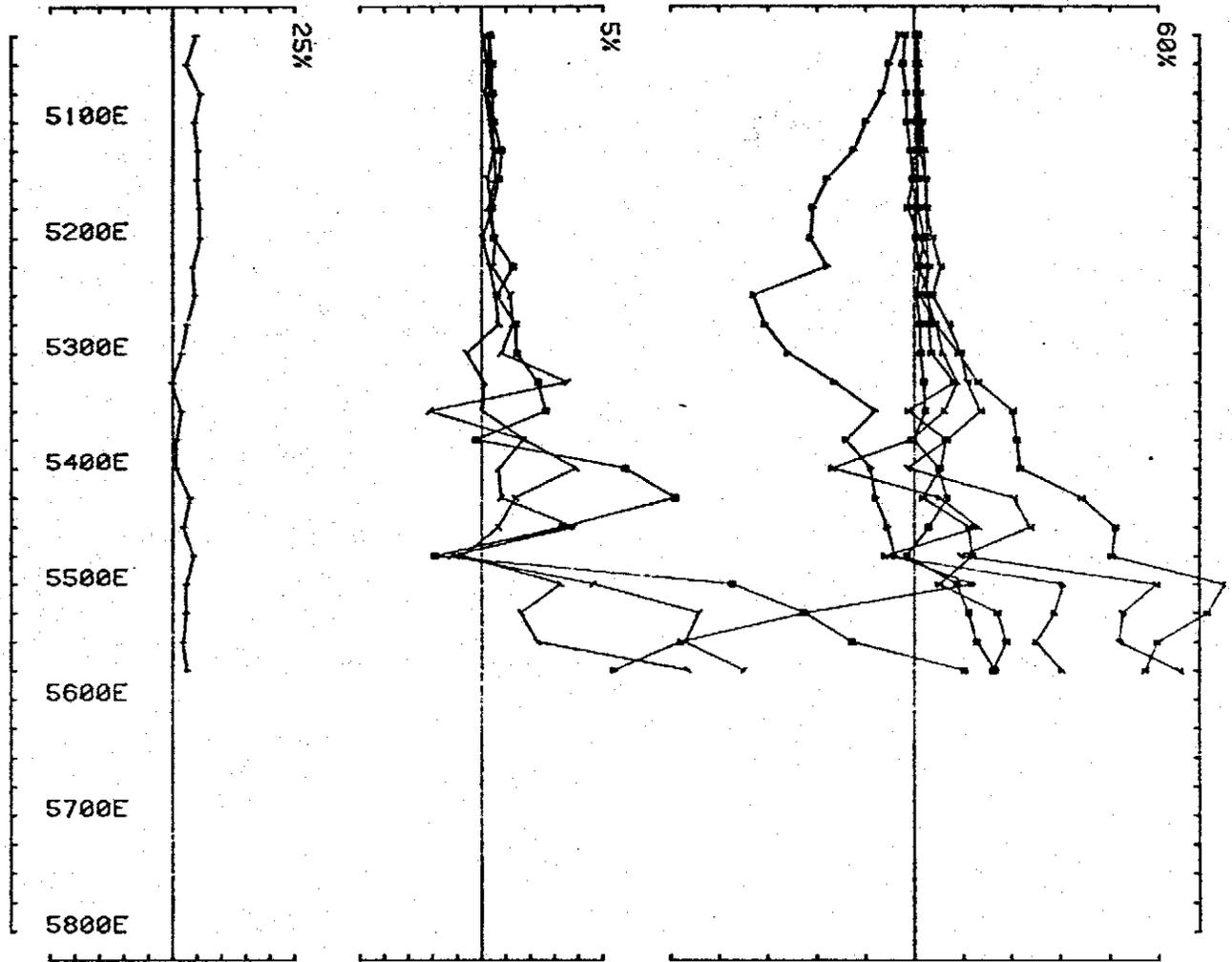
UTEM SURVEY conducted by ART Job 8334
 Project Area BOCO PROSPECT Survey for E.Z. Co. of Aust'eta freq(hz) 26.230
 Loopno 0001 Line 100N component Hz secondary Ch 1



UTEM SURVEY conducted by ART Job 8334
 Project Area BOCO PROSPECT Survey for E.Z. Co. of Aust'ia freq(hz) 26.230
 Loopno 0001 Line 100N component Hx secondary Ch 1

087

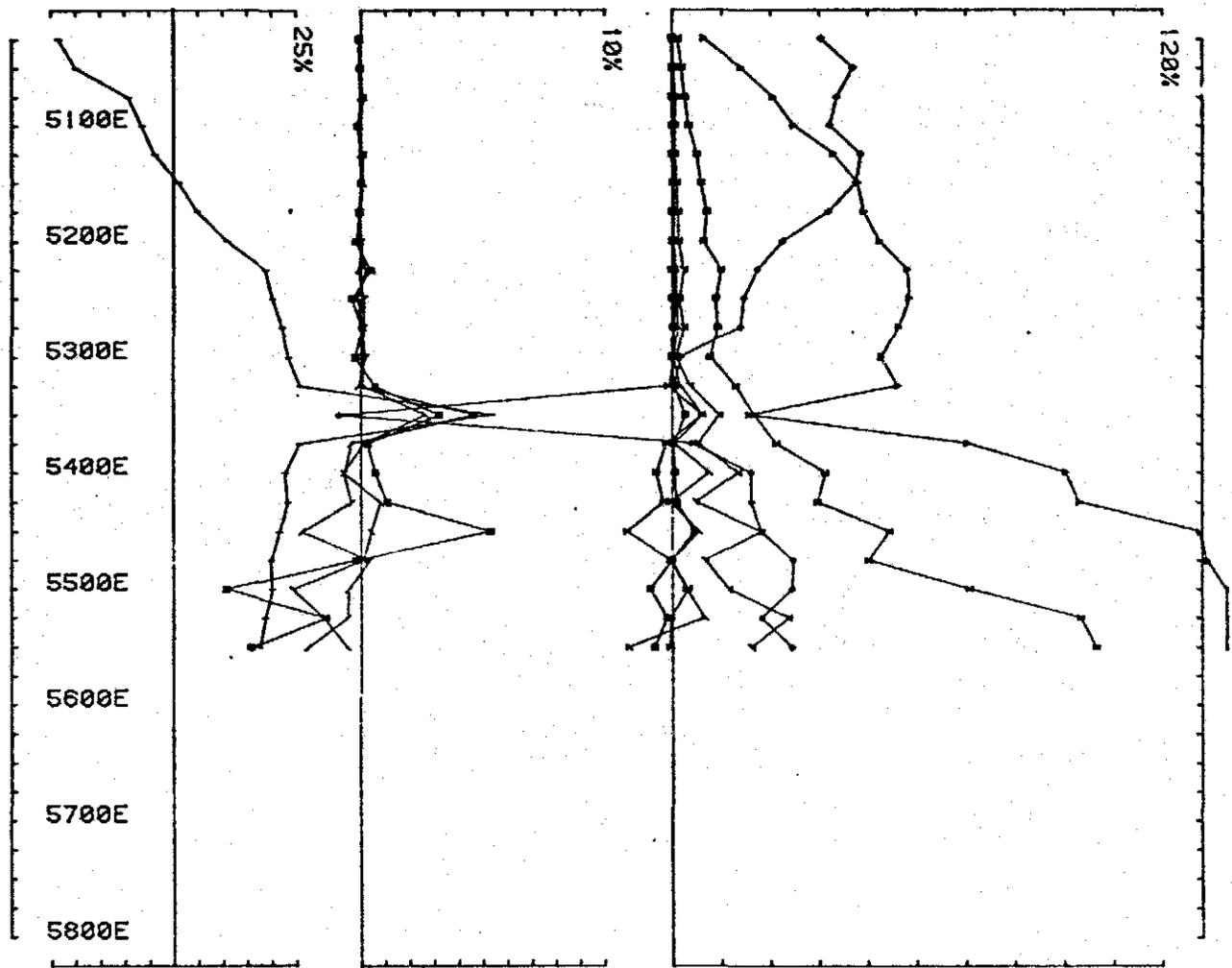
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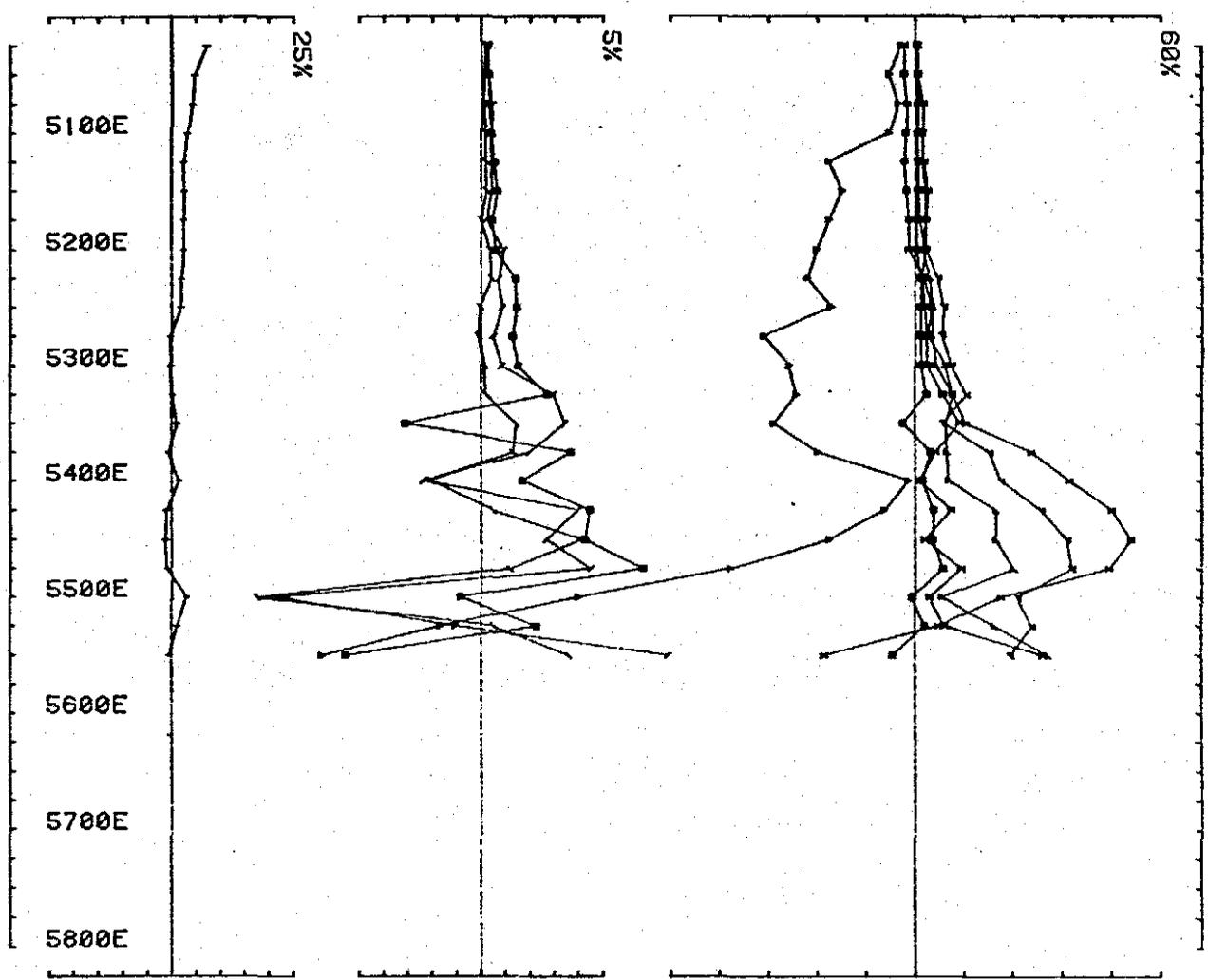
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Loopno 0001 Line 200N component Hz secondary Ch 1

088

268090



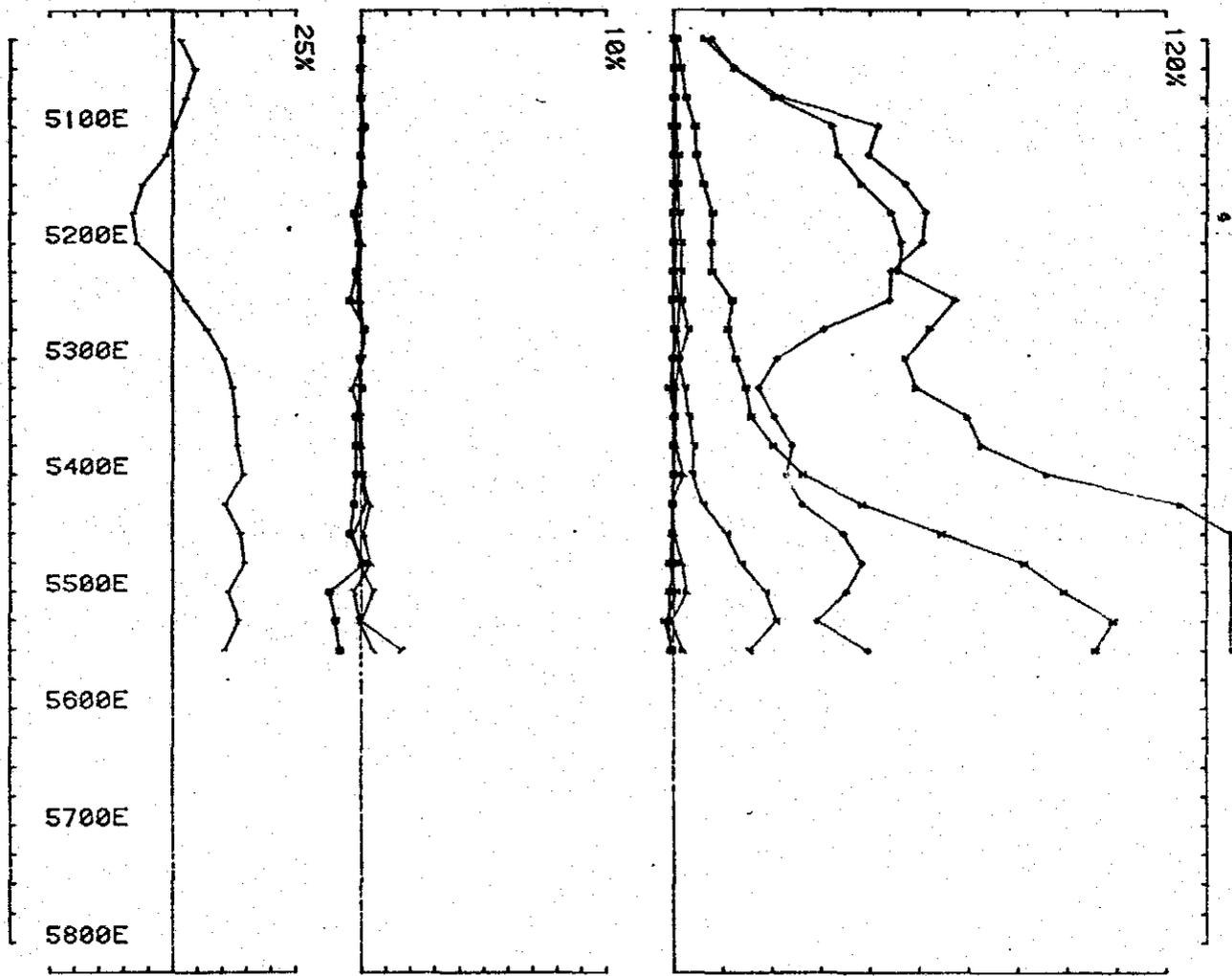
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Loopno 0001 Line 300N component Hz secondary Ch 1

030

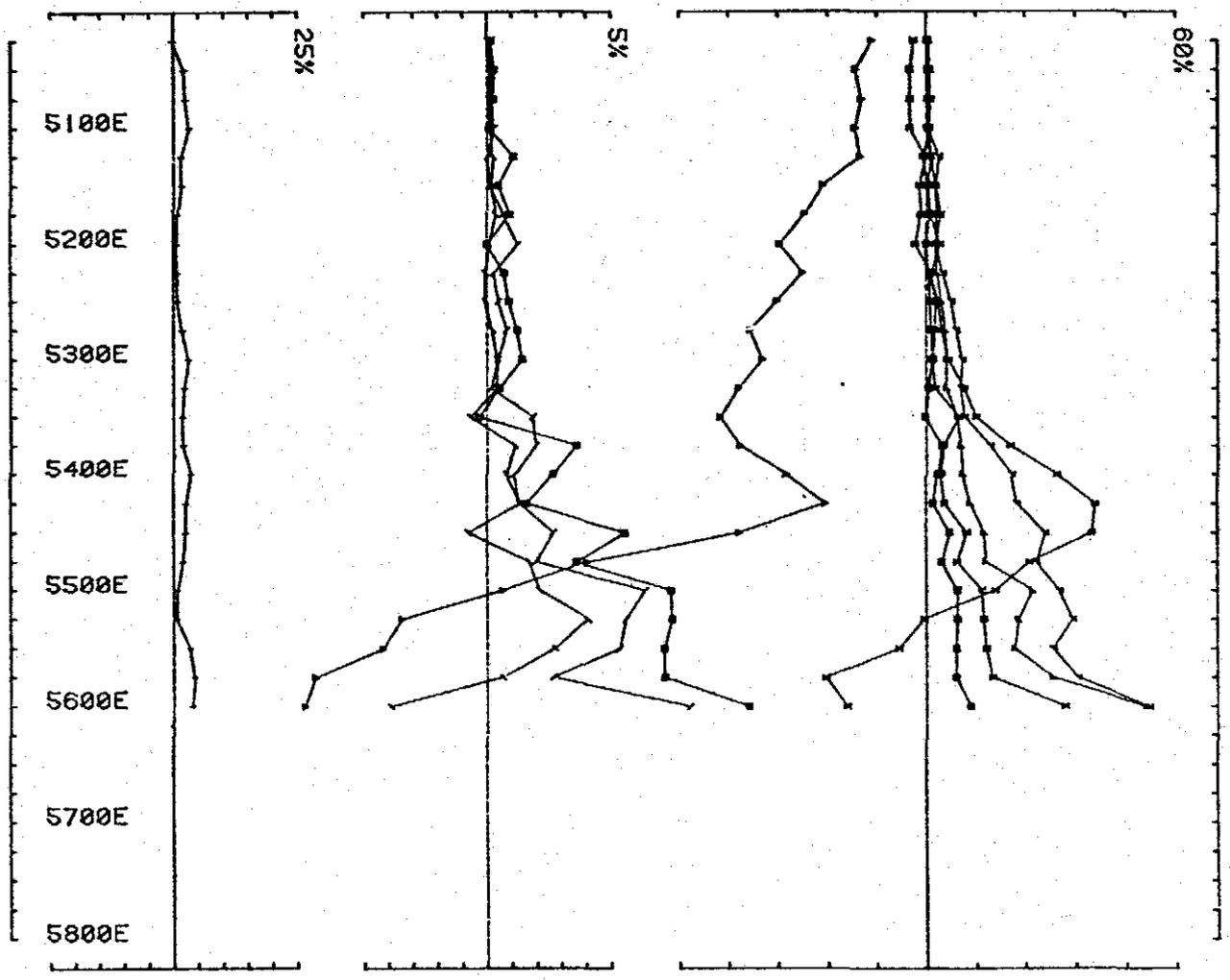
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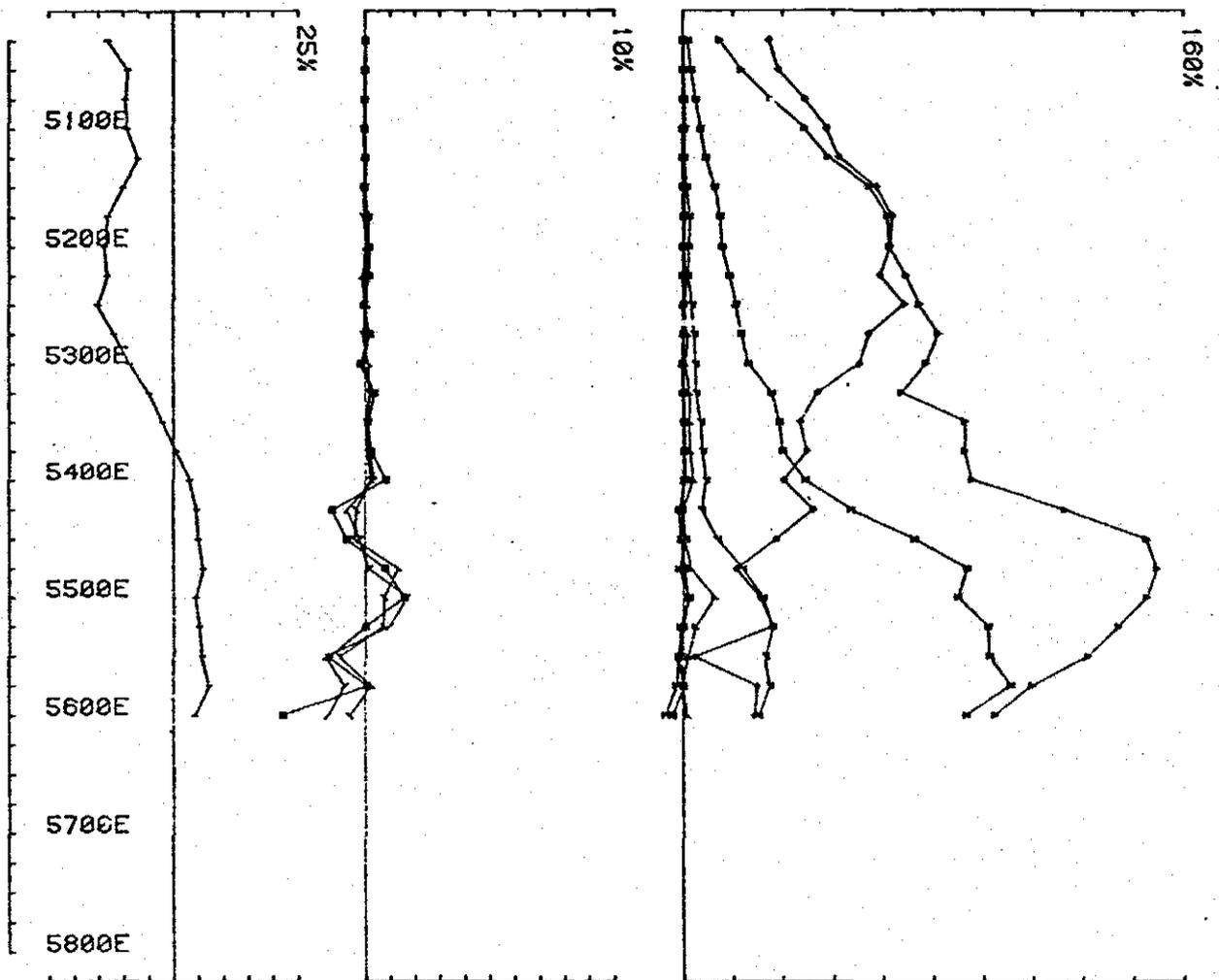
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091

268093



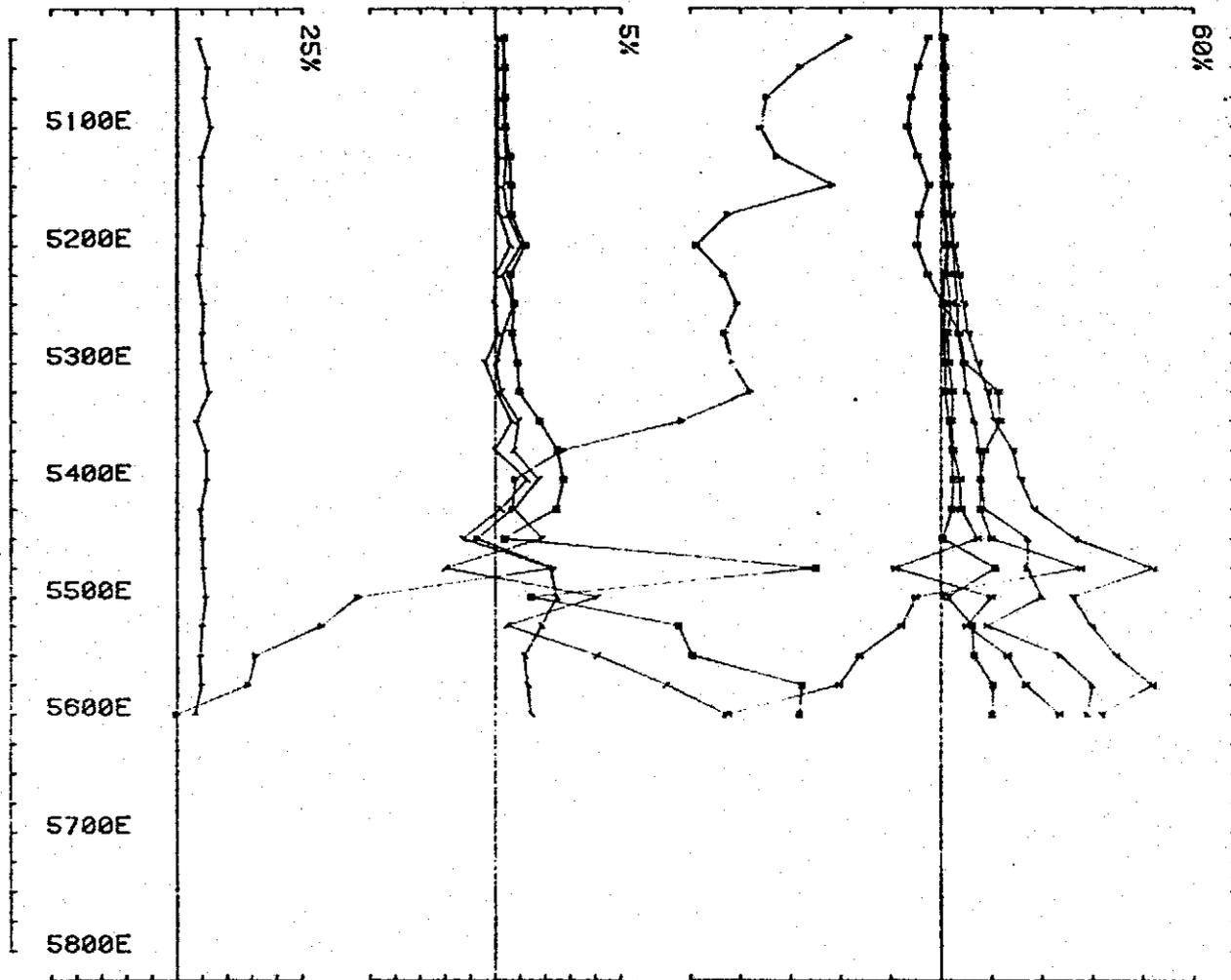
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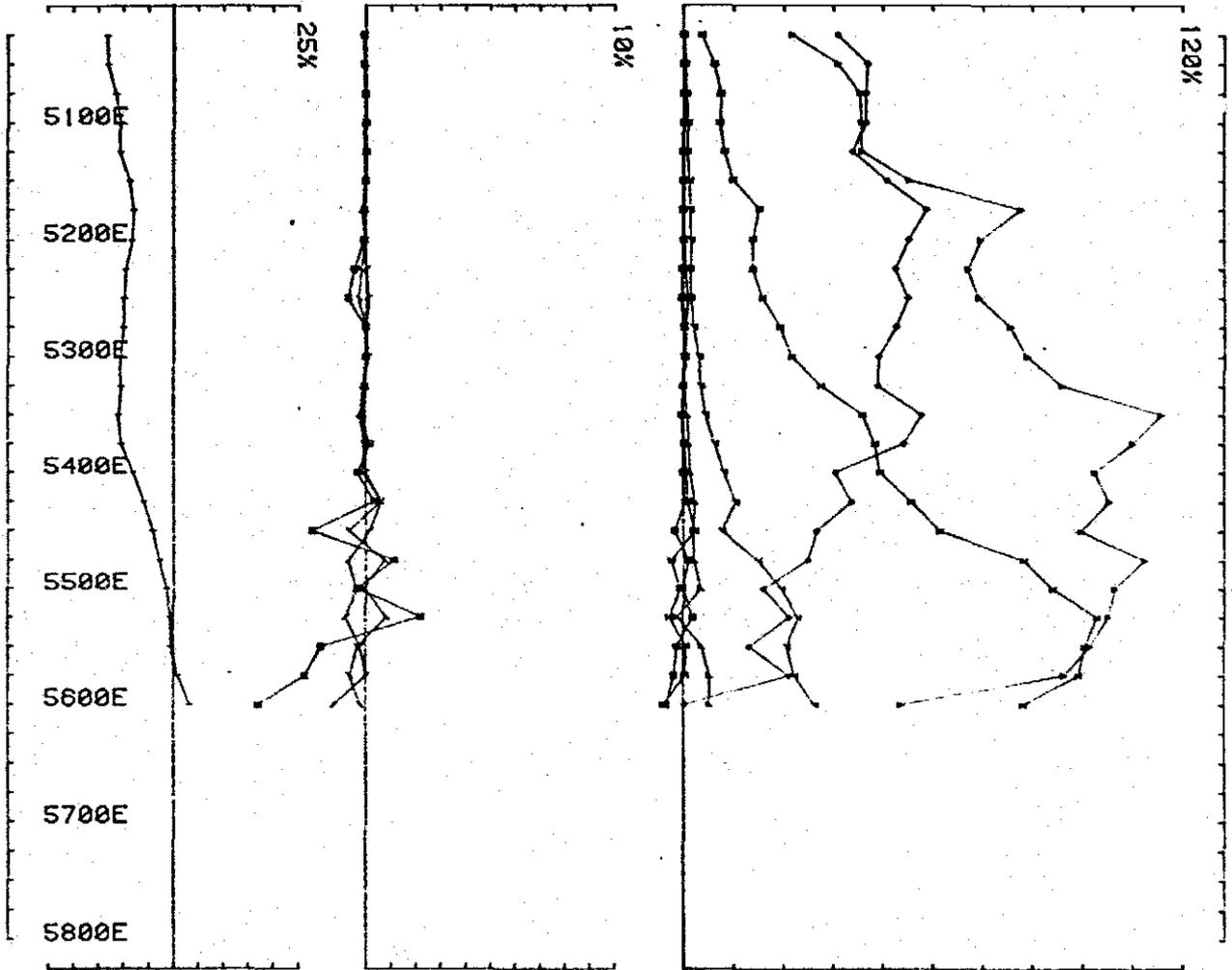
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093

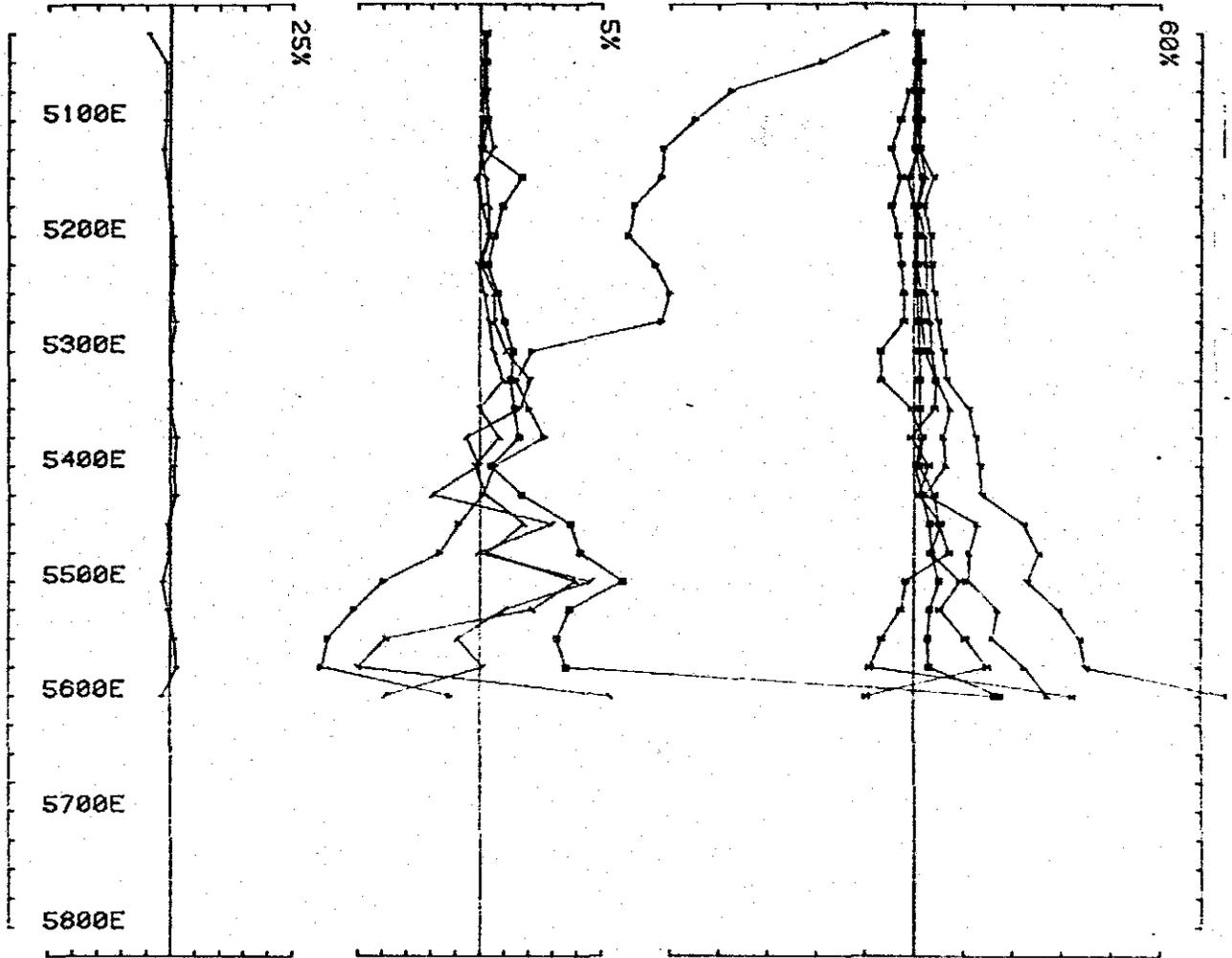
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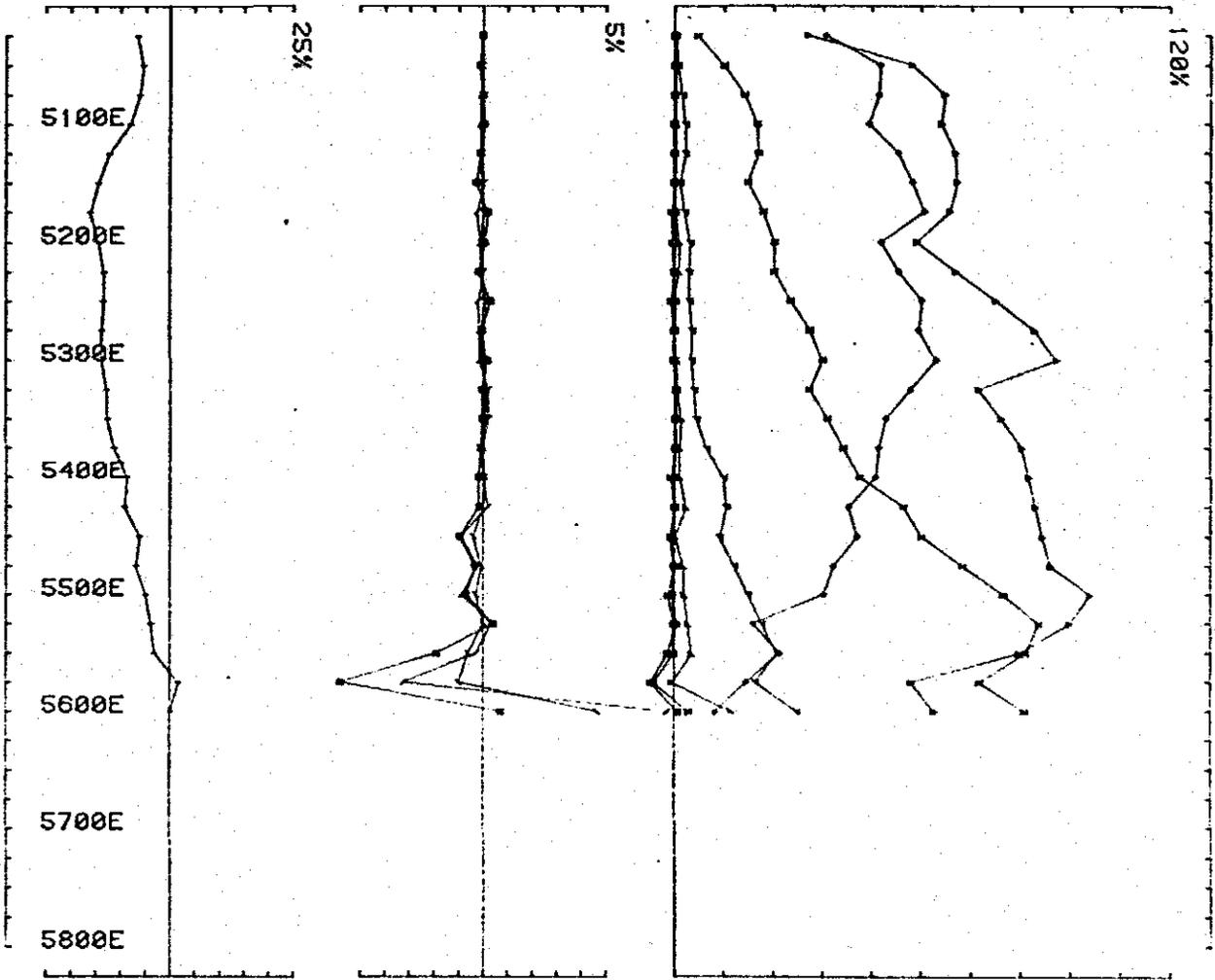
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Loopno 0001 Line 500N component Hz secondary Ch 1



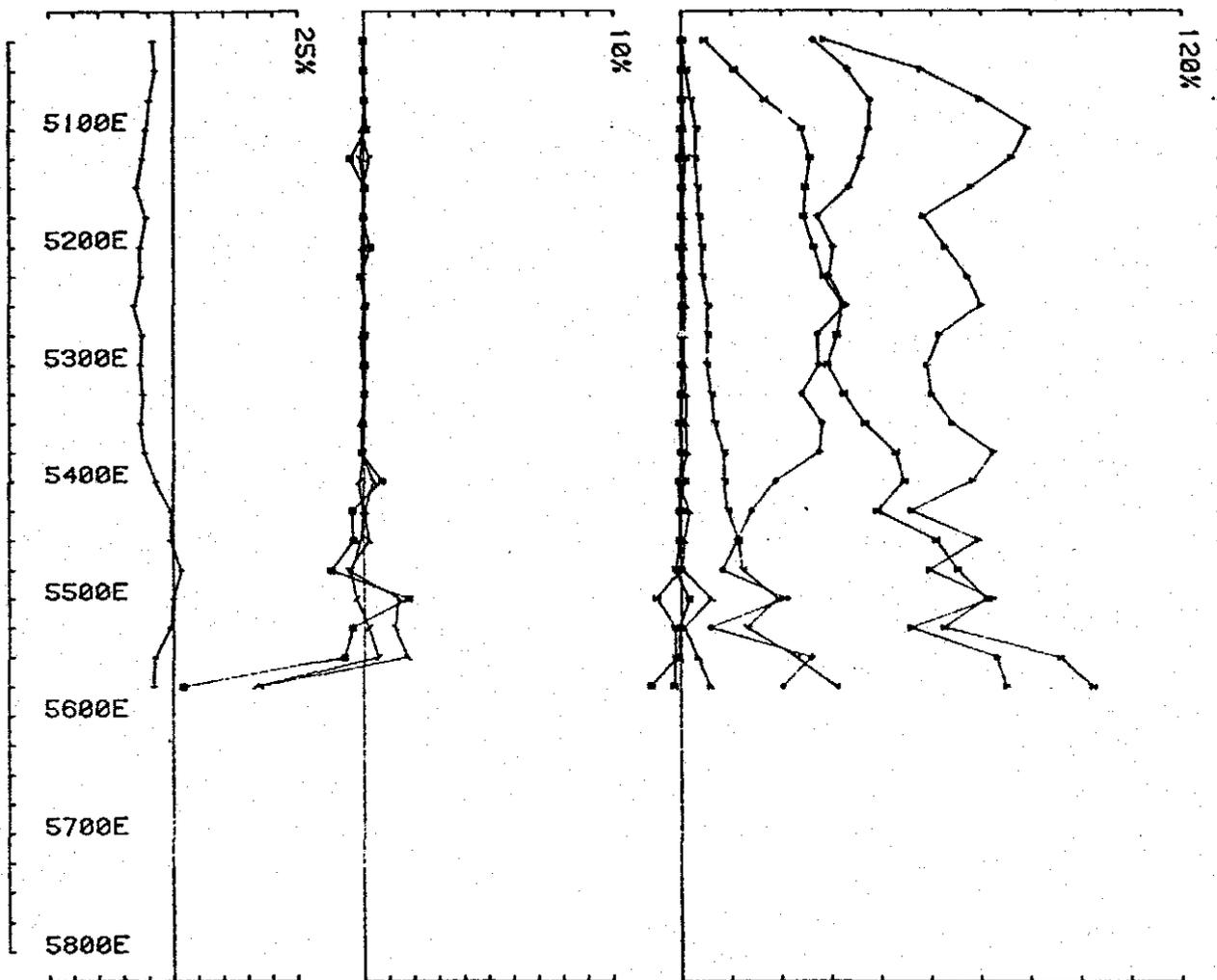
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Loopno 0001 Line 500N component Hx secondary Ch 1



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Loopno 0001 Line 600N component Hz secondary Ch 1



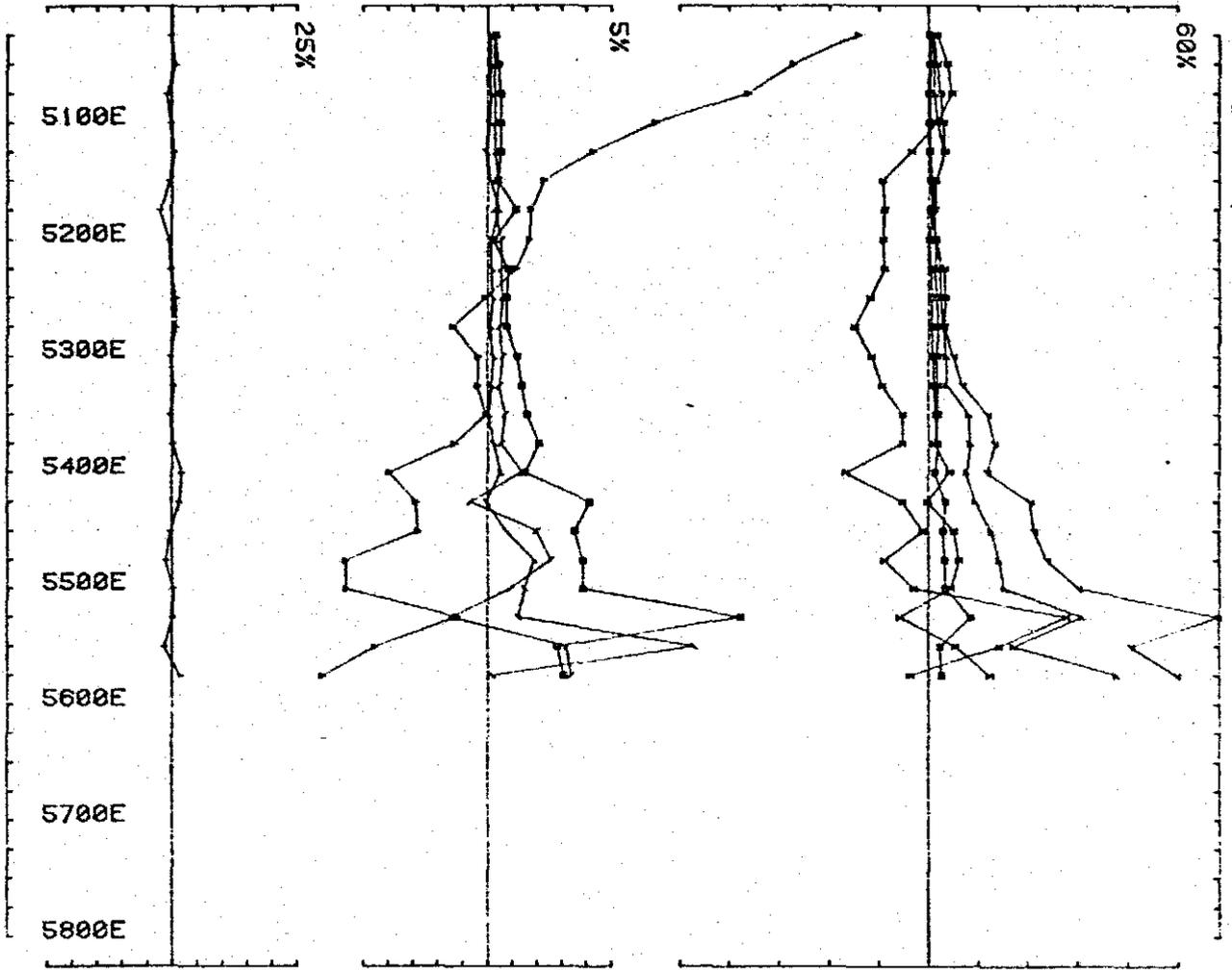
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 Loopno 0001 Line 600N component Hx secondary Ch 1



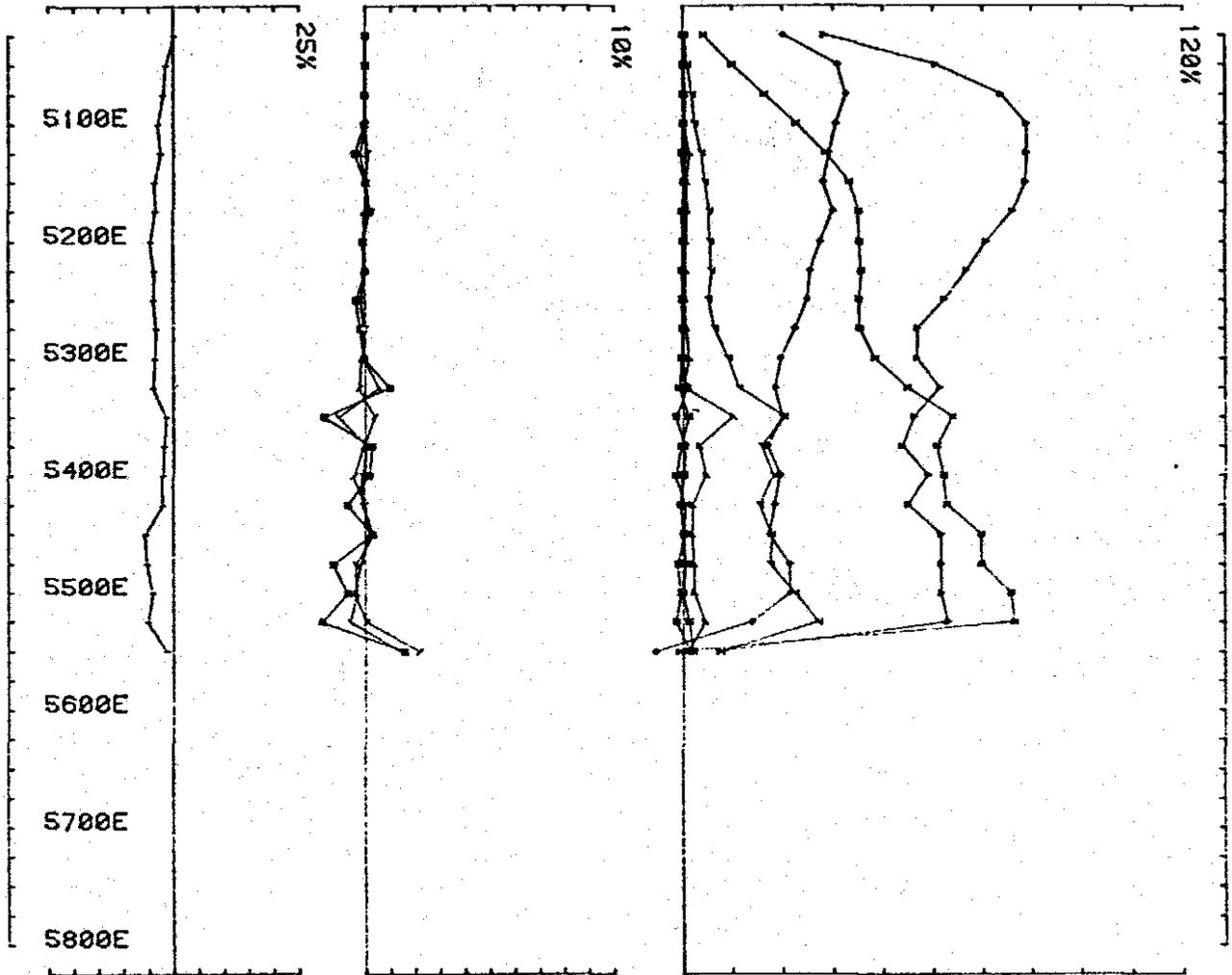
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 Loopno 0001 Line 700N component Hx secondary Ch 1

098

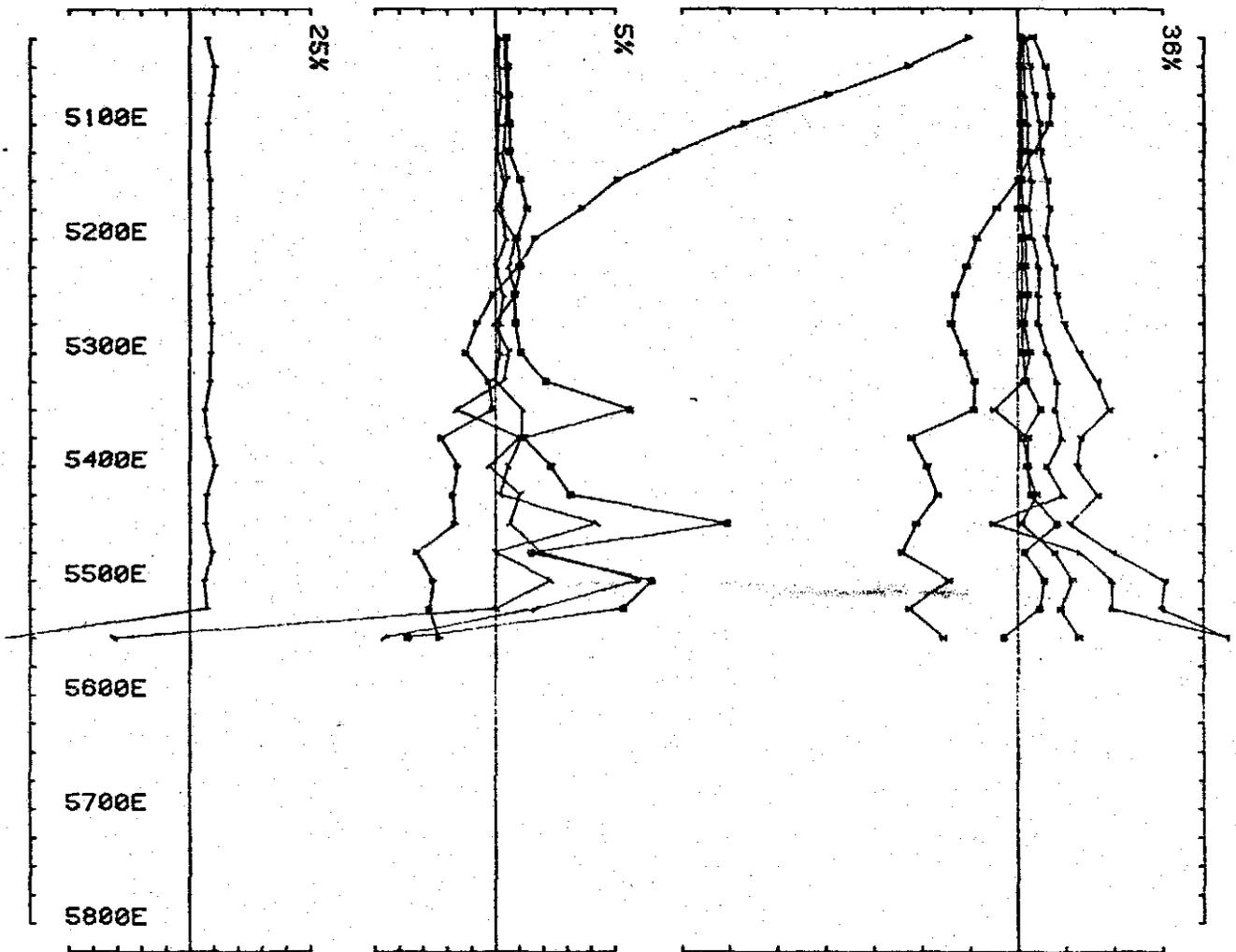
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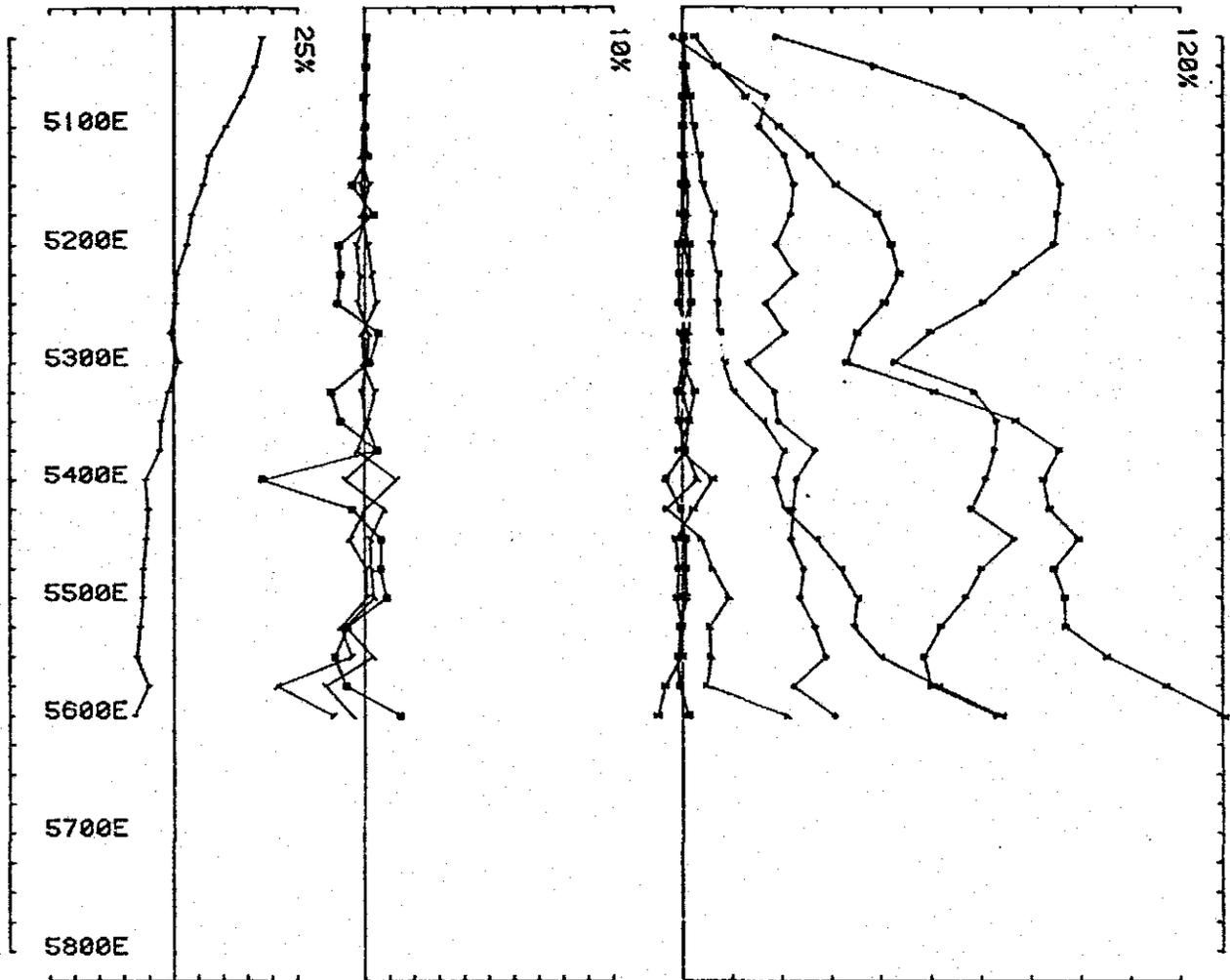
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Loopno 0001 Line 700N component Hz secondary Ch 1



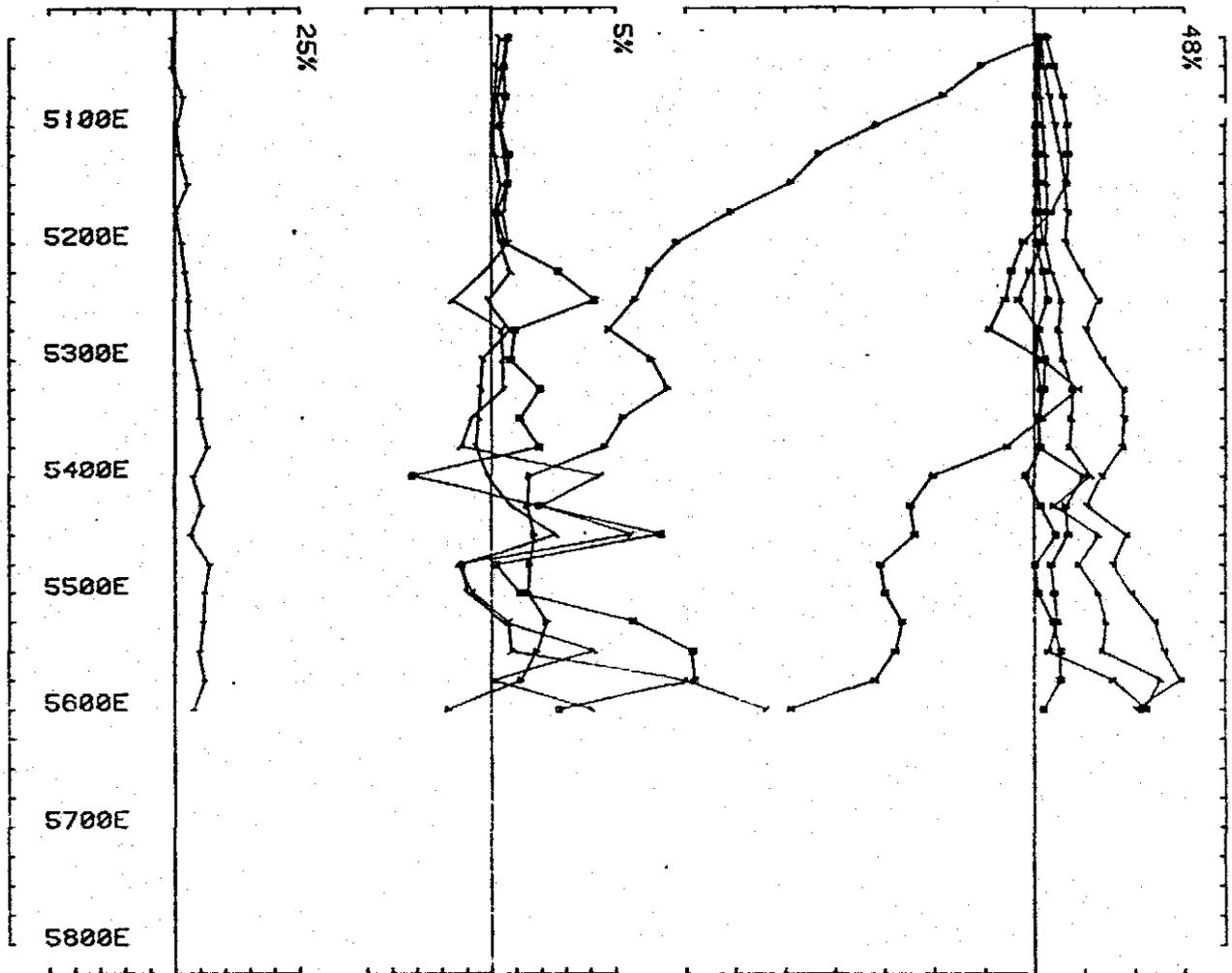
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 Project Area BOCO PROSPECT survey for E.Z. Co. of Aust'ia freq(hz) 26.238
 Loopno 0001 Line 800N component Hx secondary Ch 1.



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Loopno 0001 Line 800N component Hz secondary Ch 1



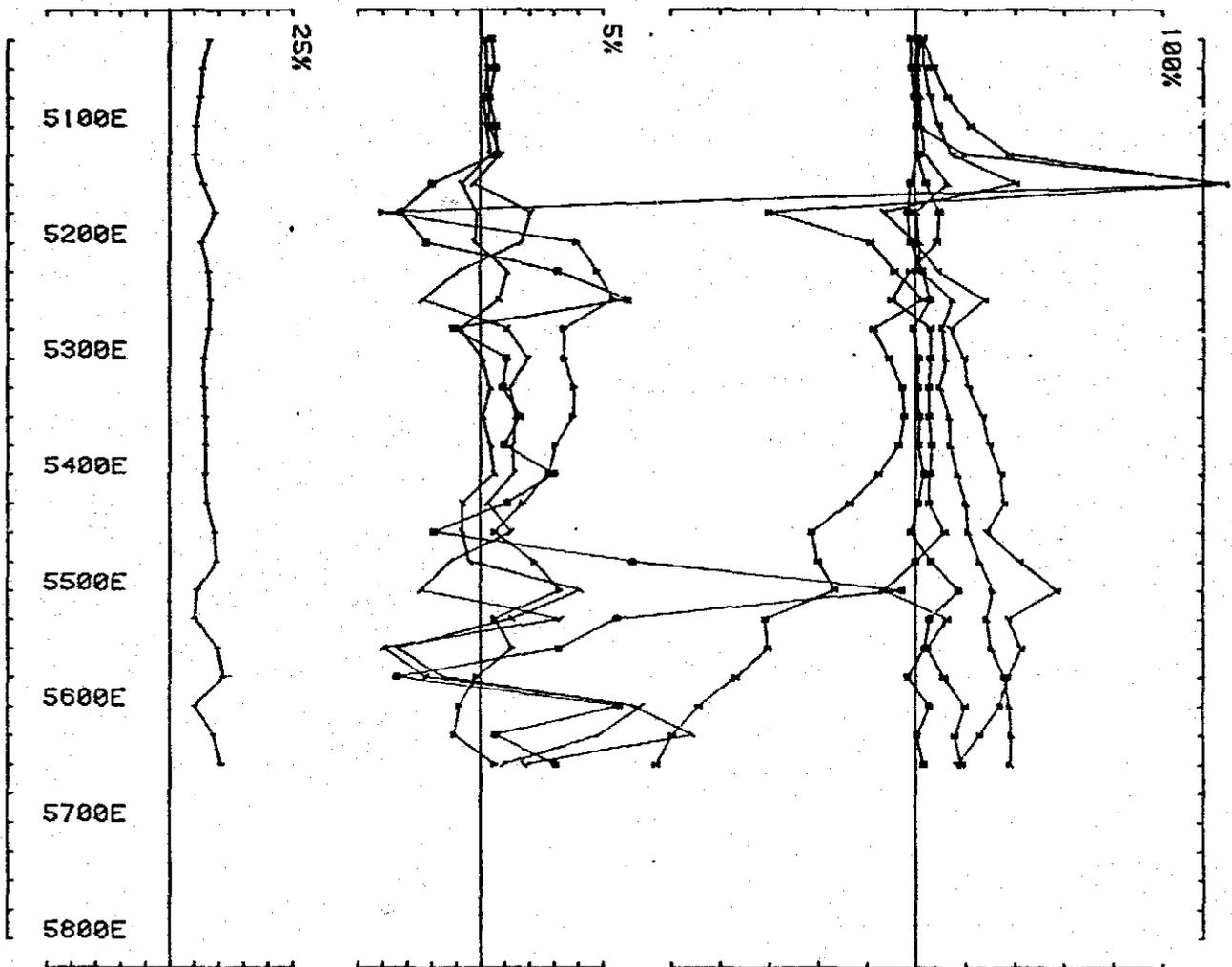
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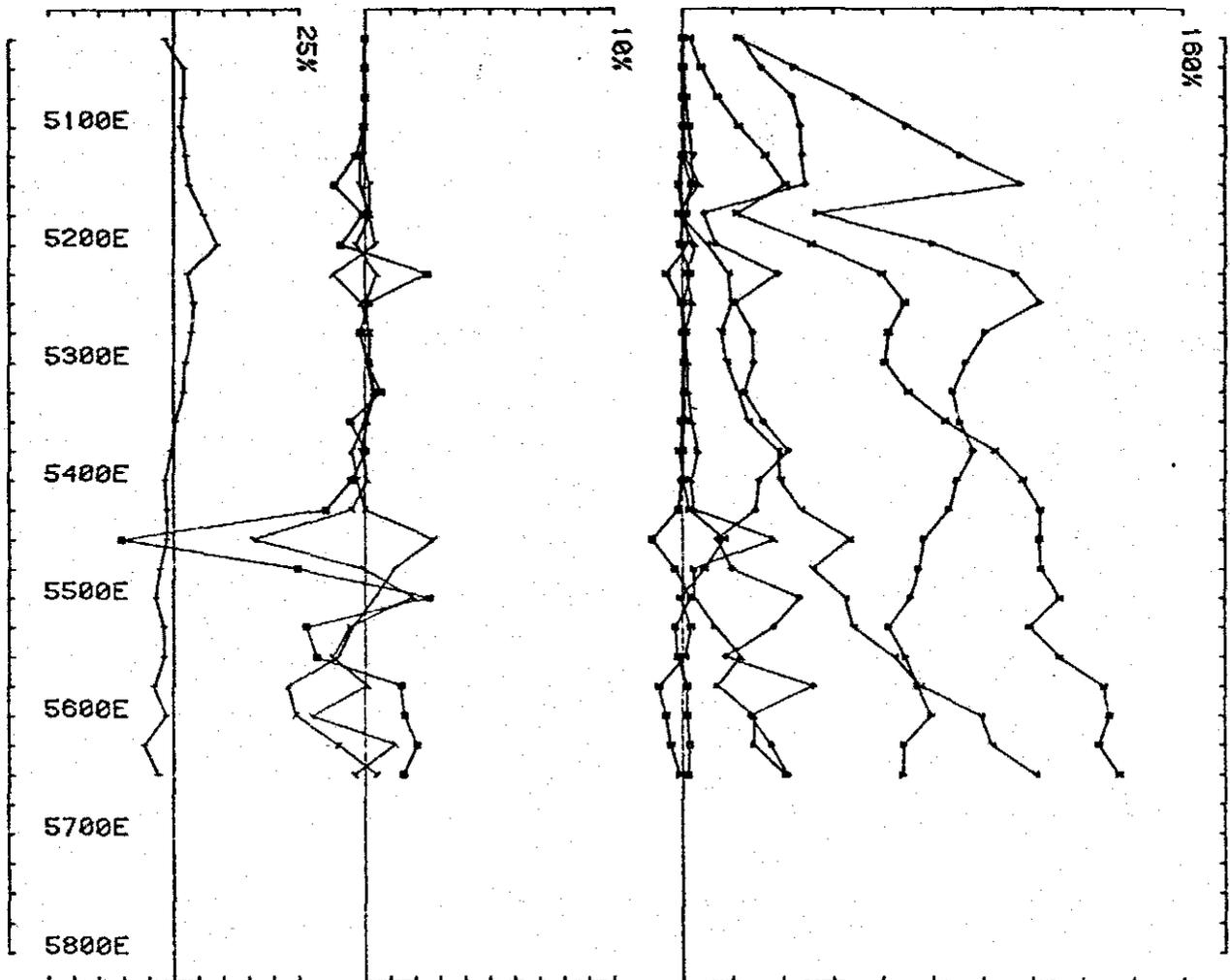
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Loopno 0001 Line 900N component Hz secondary Ch 1

103

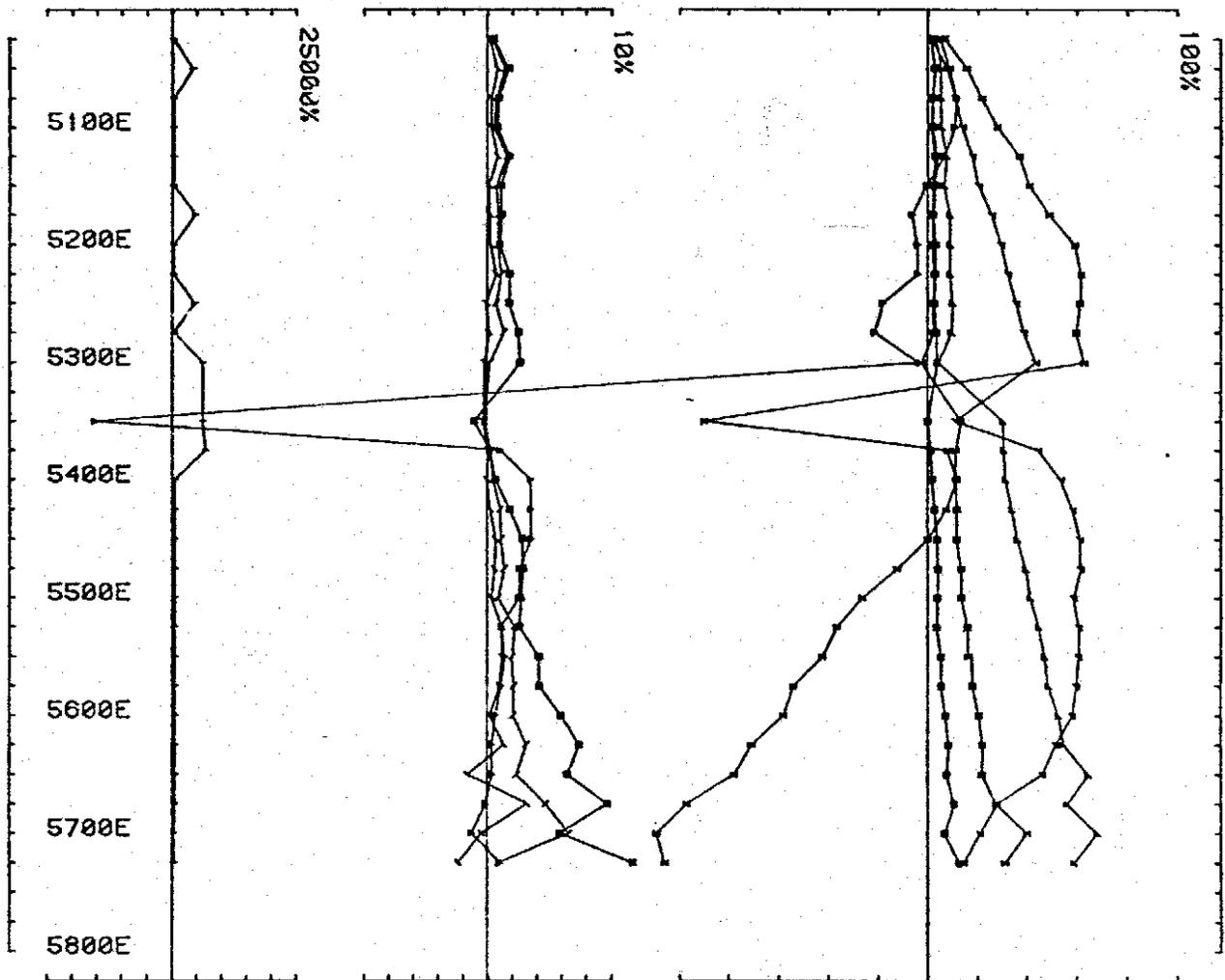
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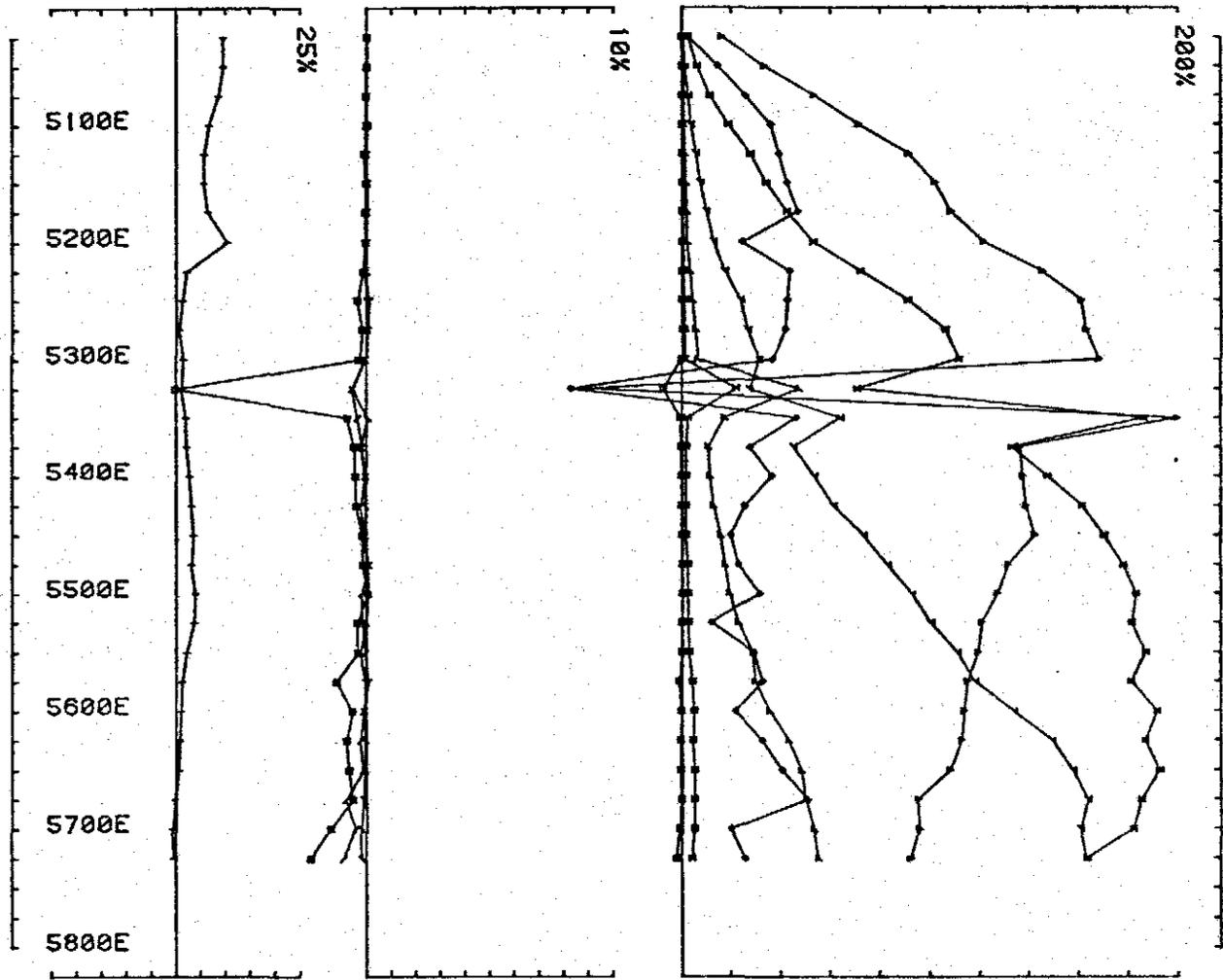
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Loopno 0001 Line 1000N component Hx secondary Ch 1



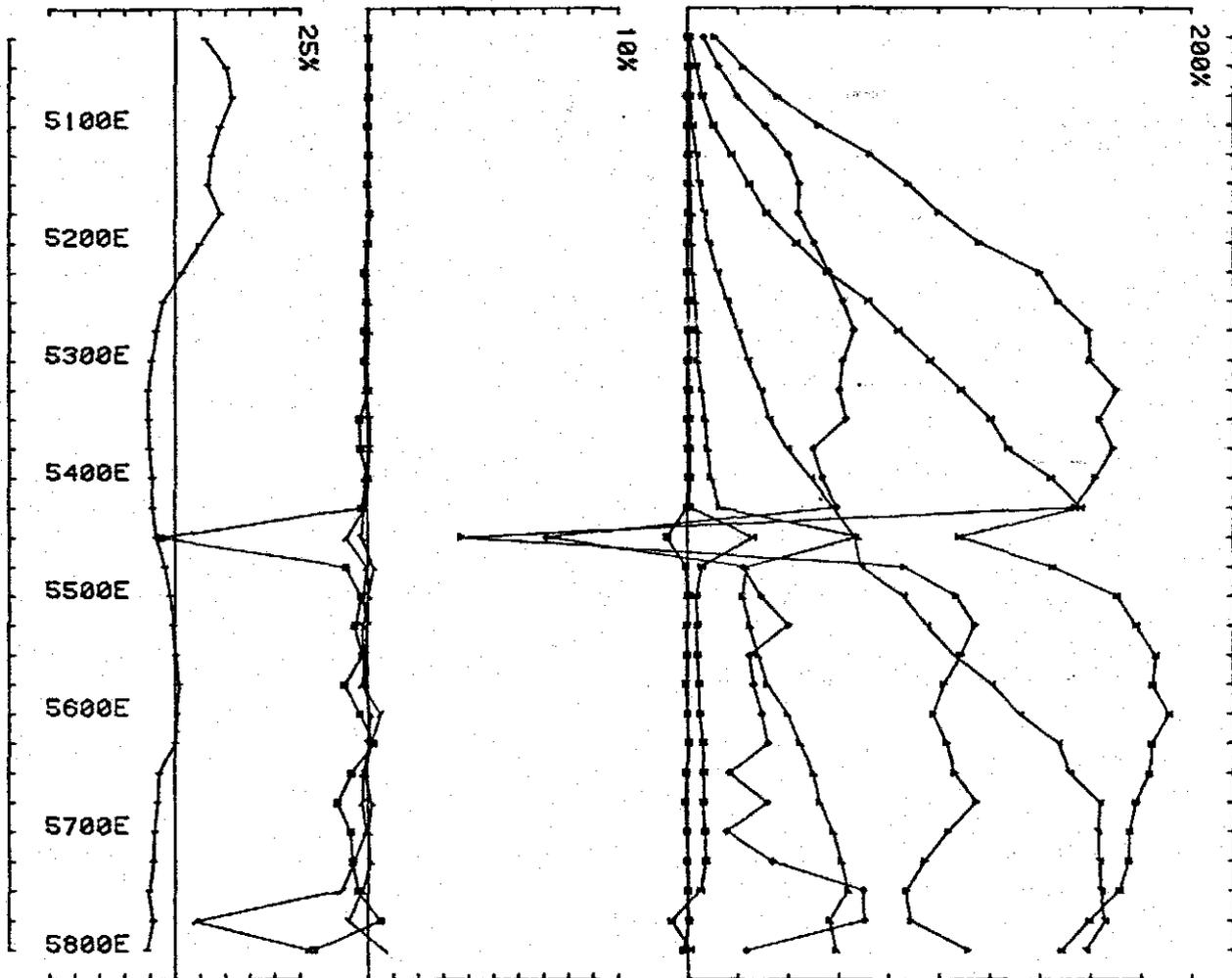
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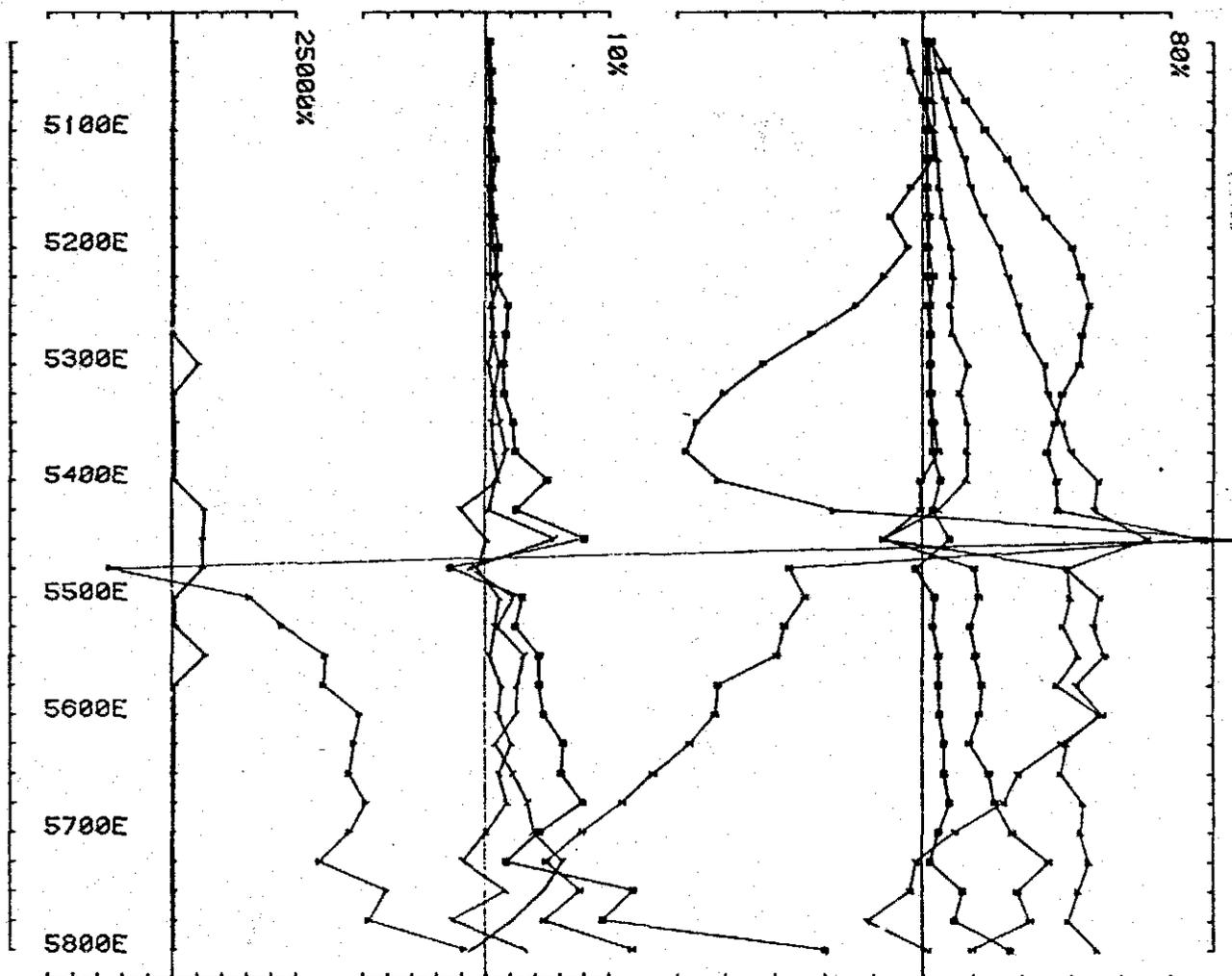
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Loopno 0002 Line 1100N component Hx secondary Ch 1.

107

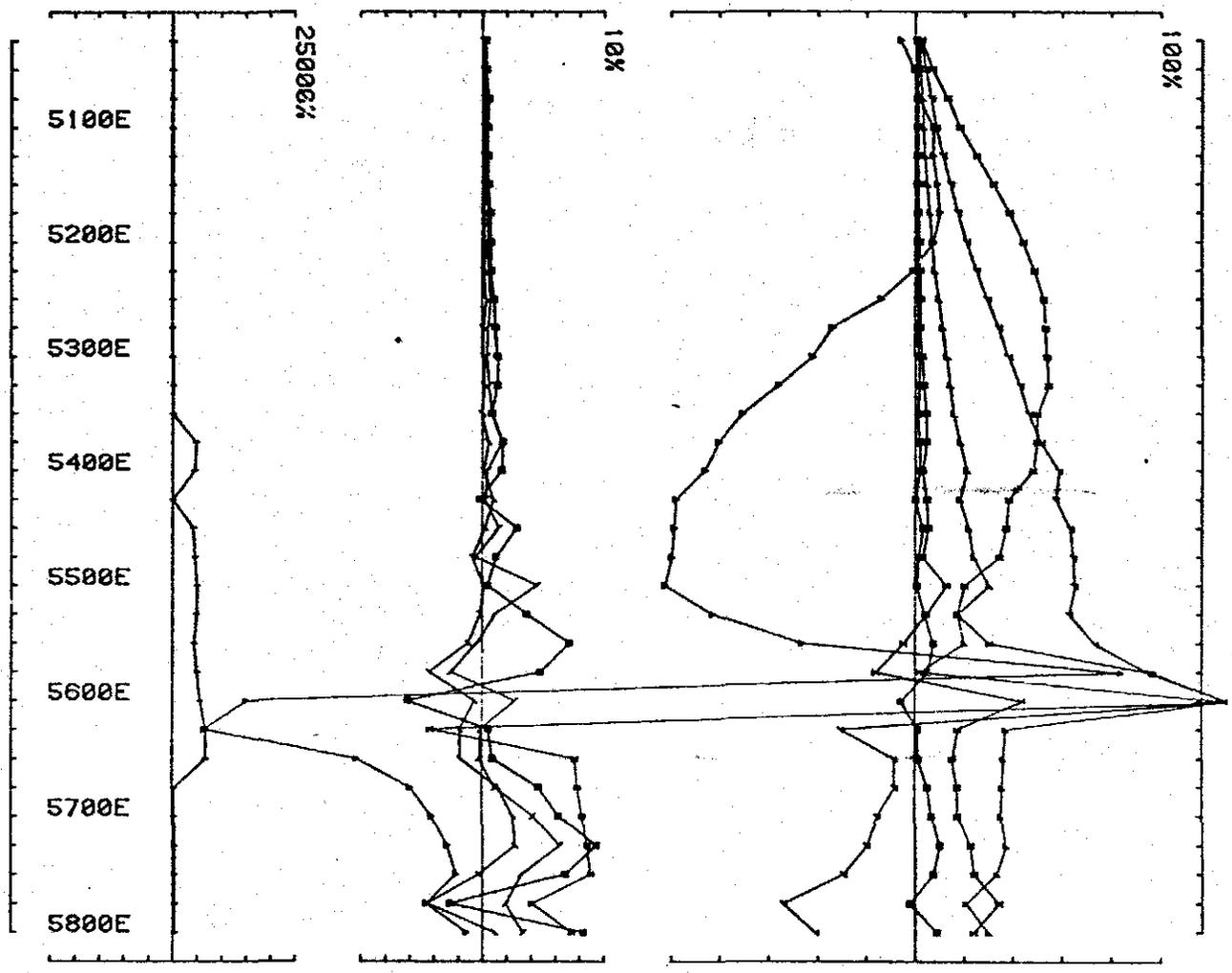
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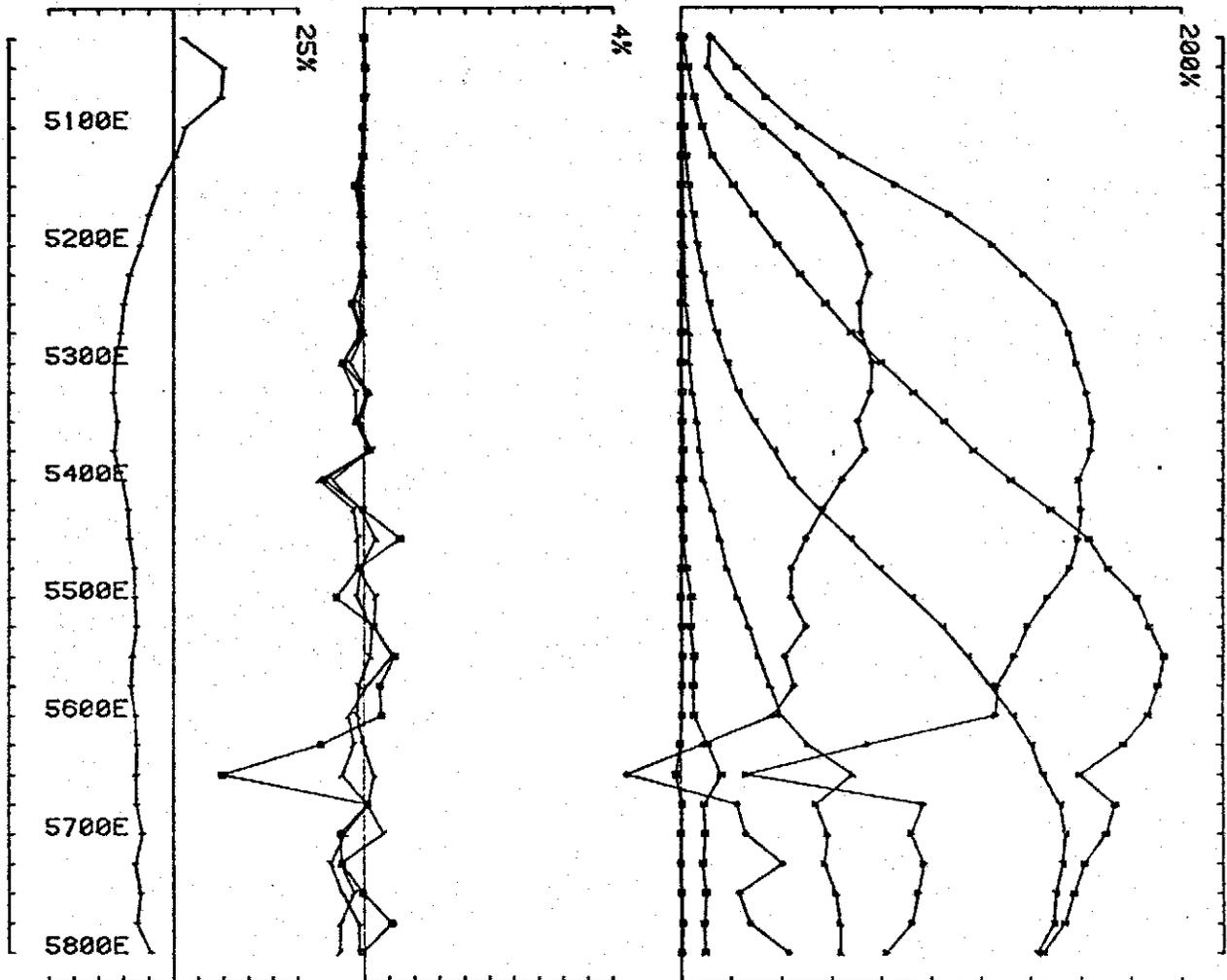
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Loopno 0002 Line 1200N component Hx secondary Ch 1



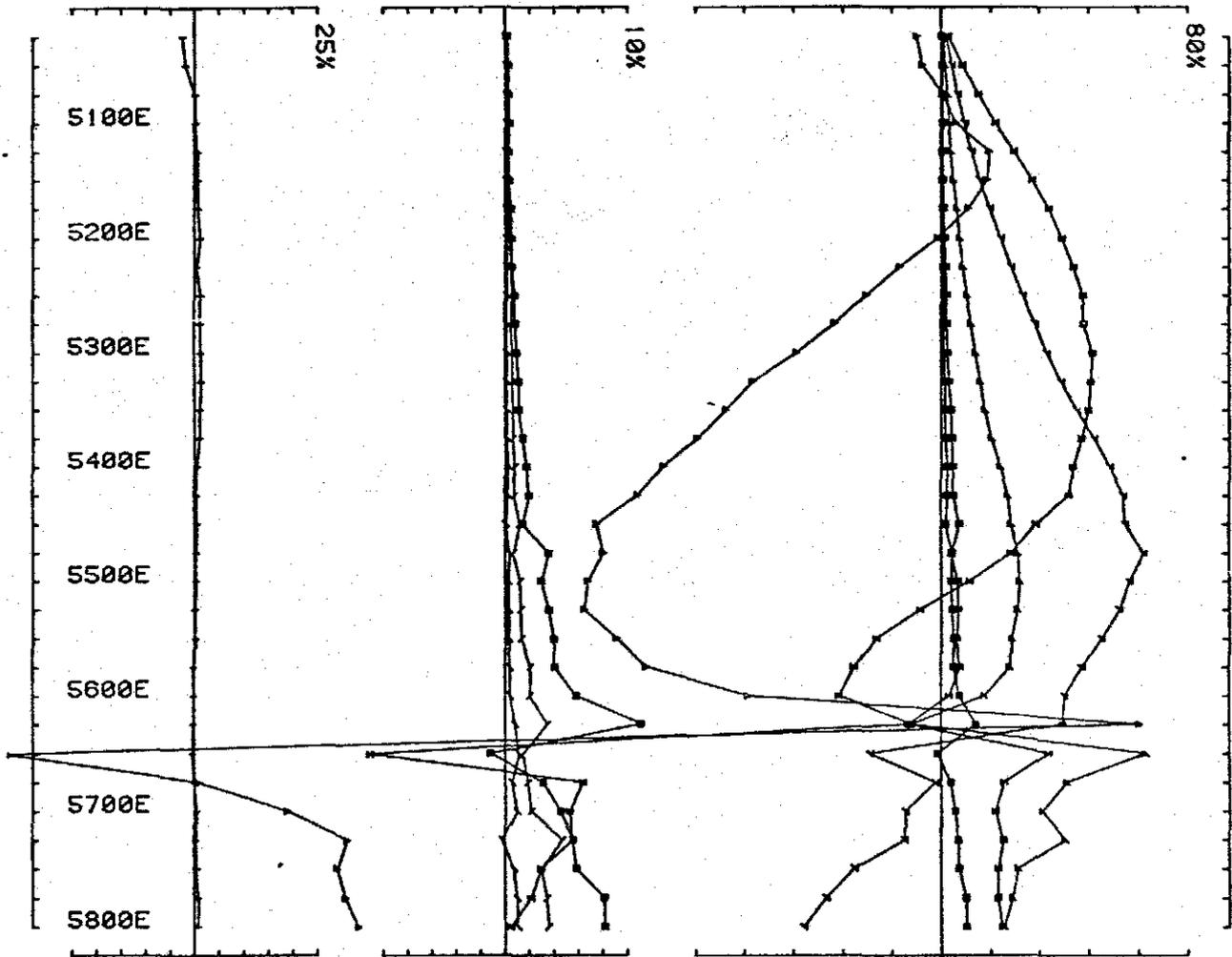
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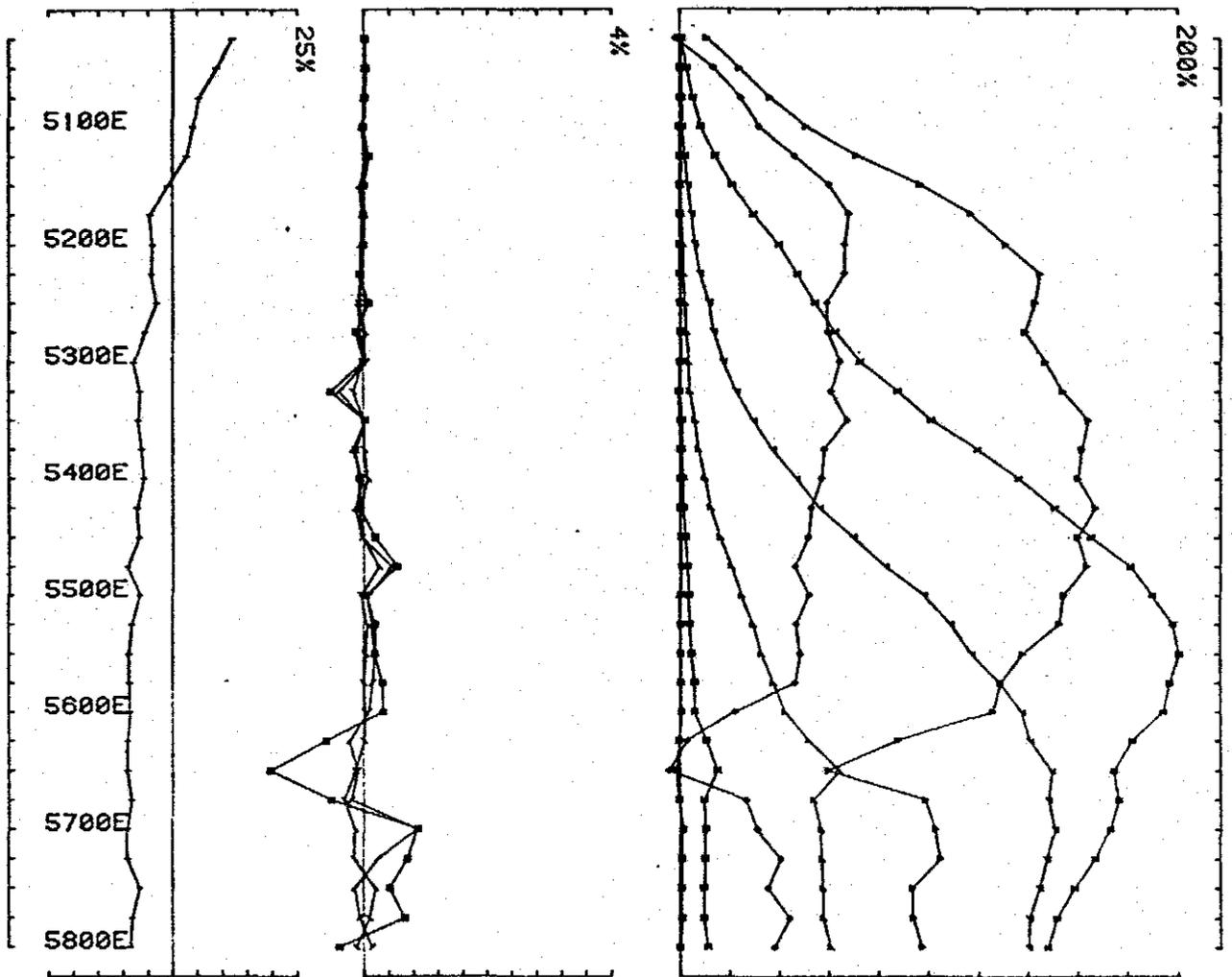
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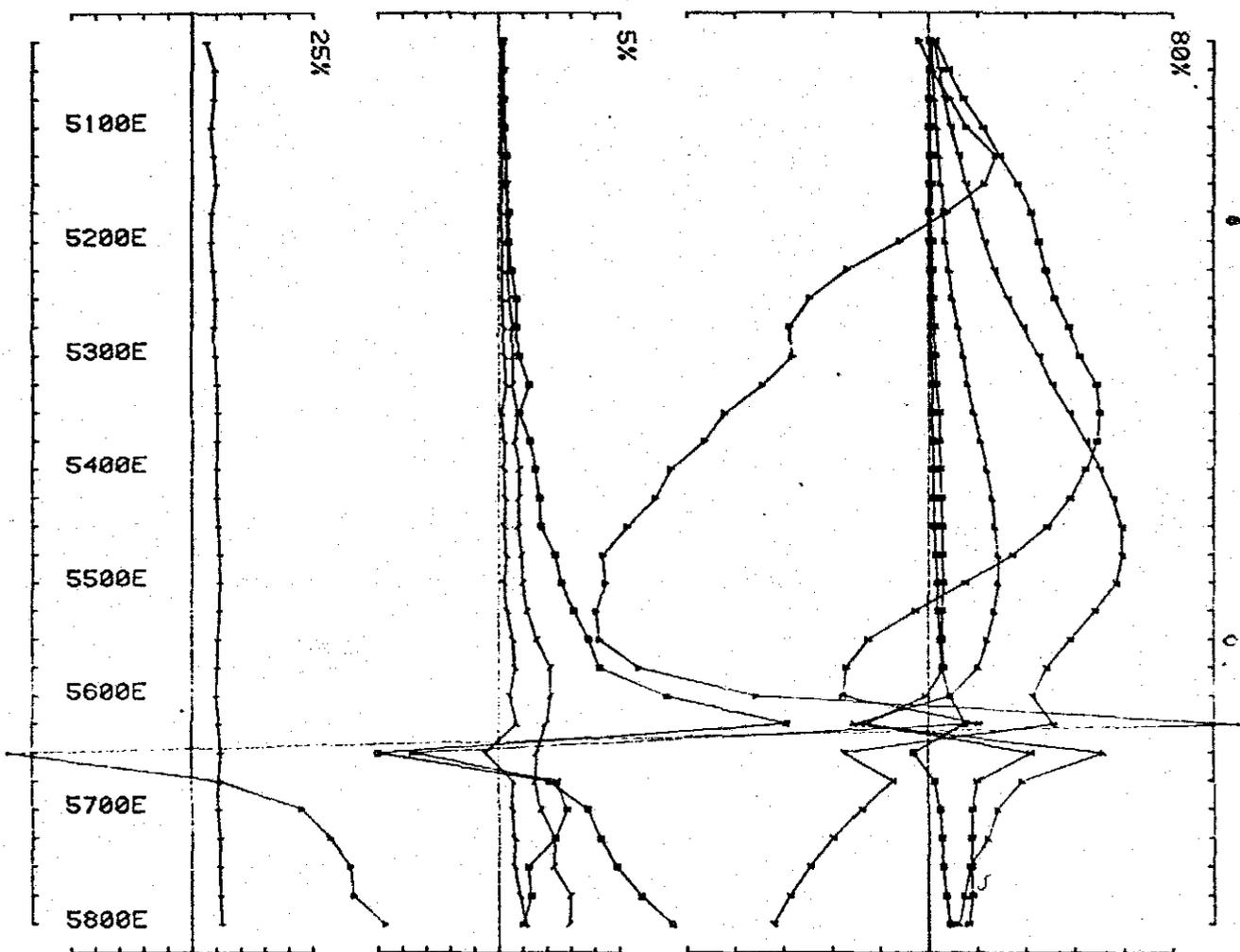
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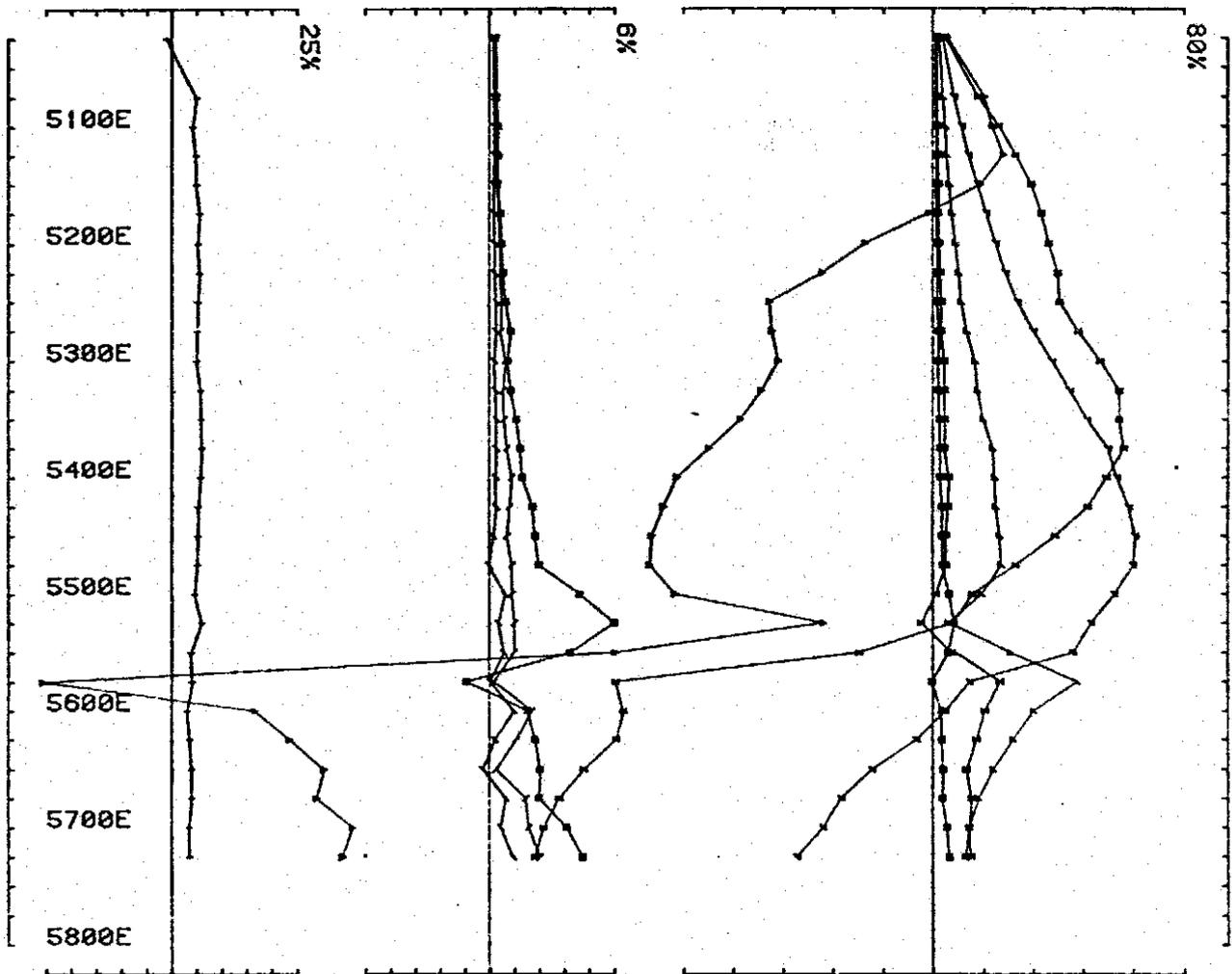
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Loopno 0002 Line 1400N component Hz secondary Ch 1



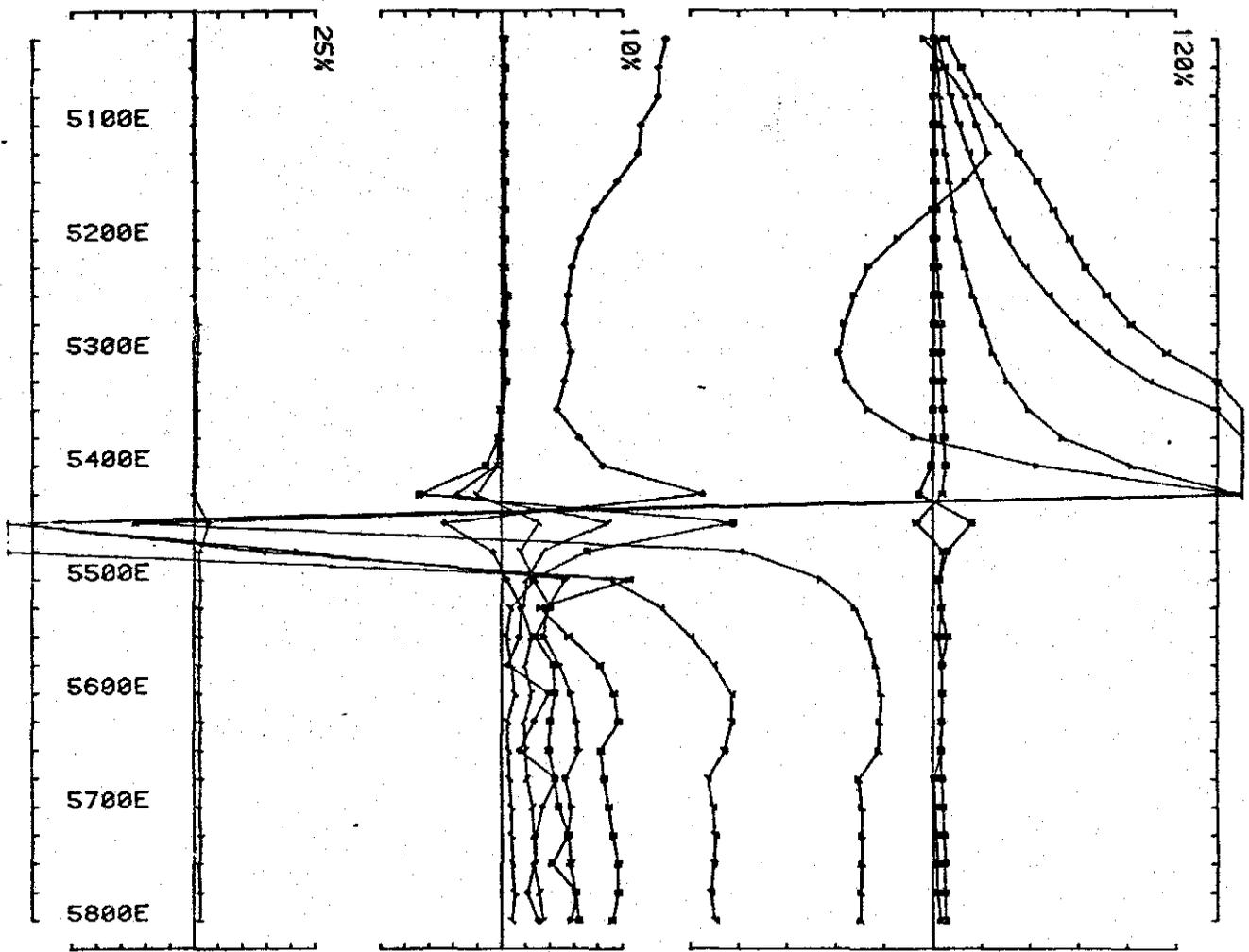
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 Loopno 0002 Line 1500N component Hx secondary Ch 1



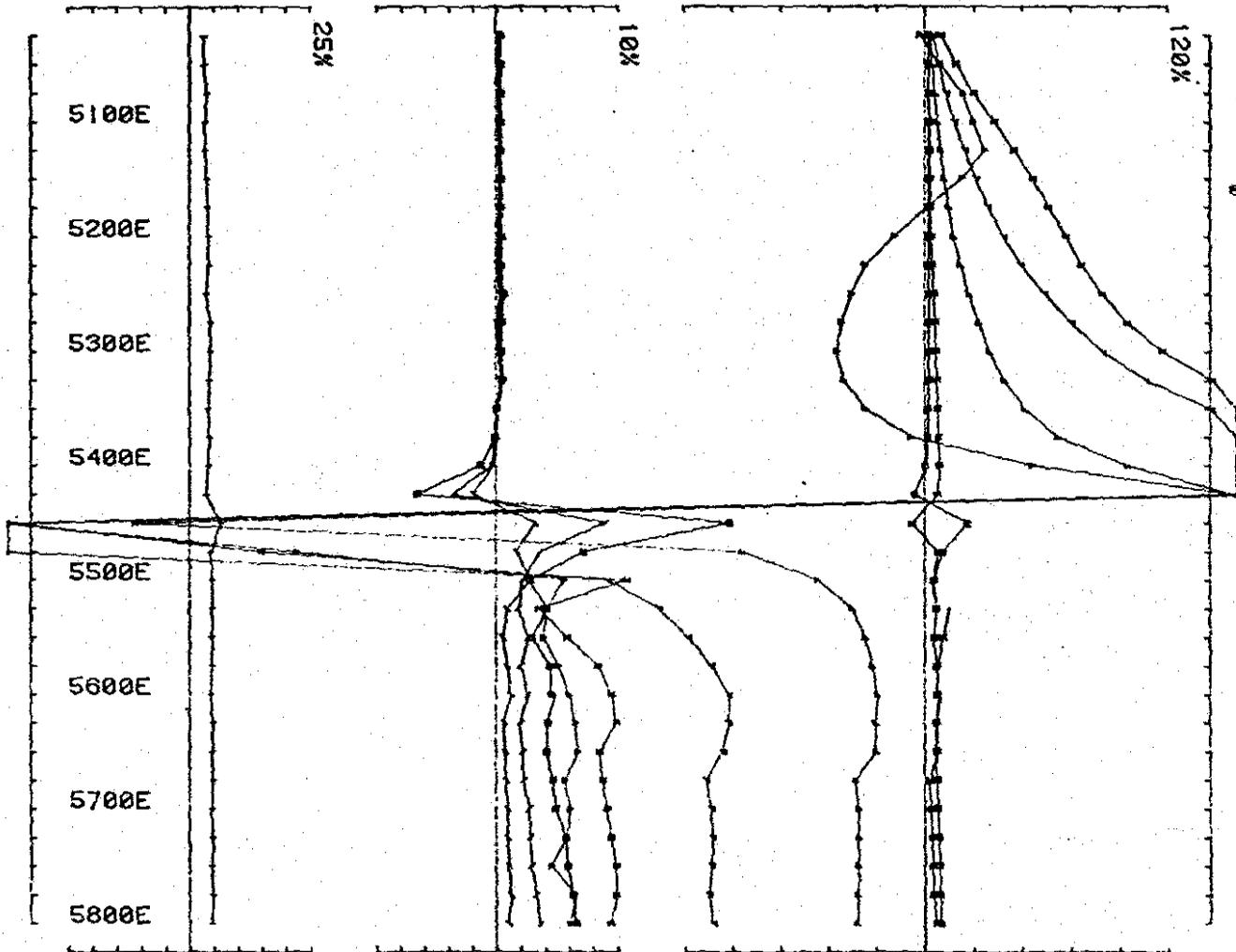
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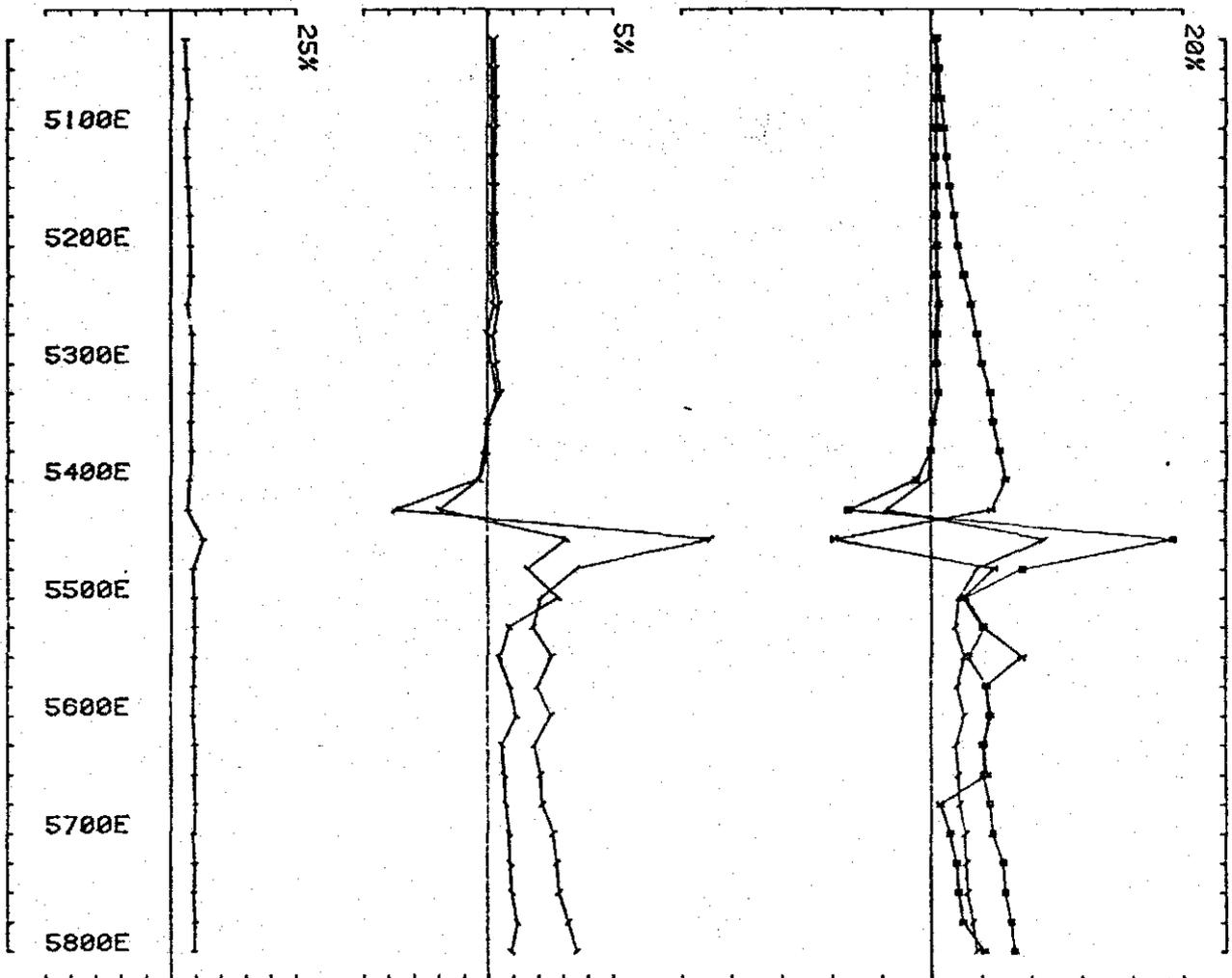
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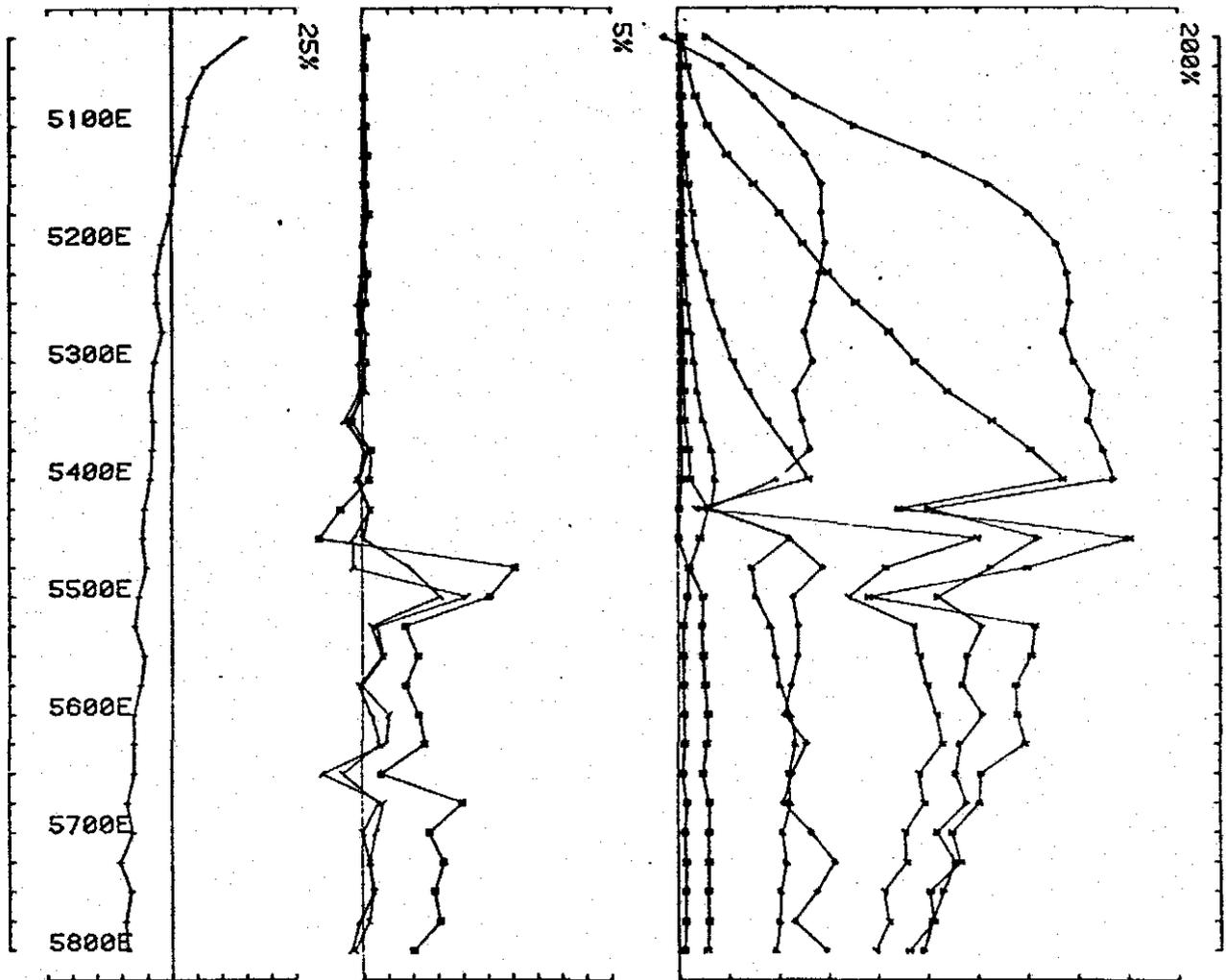
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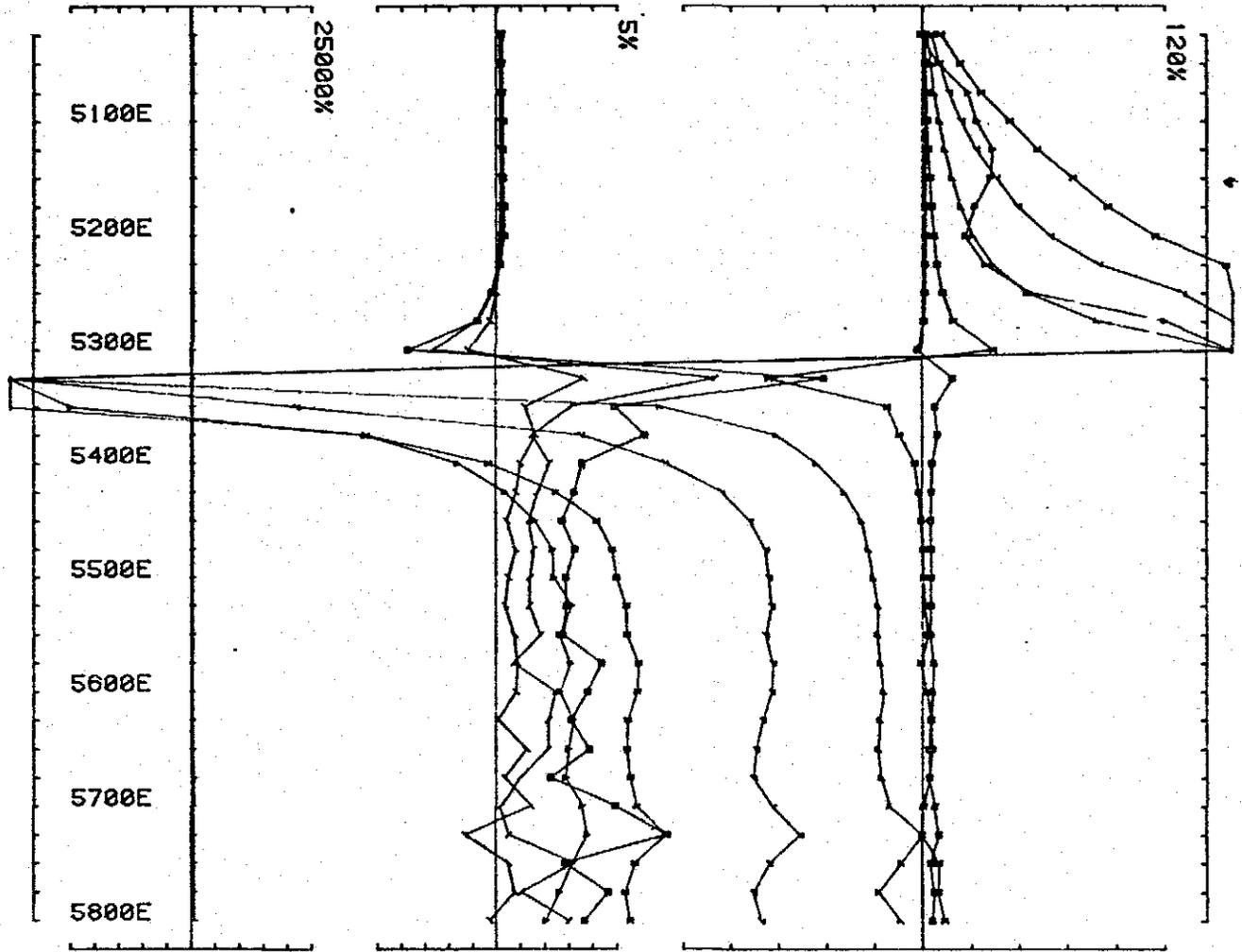
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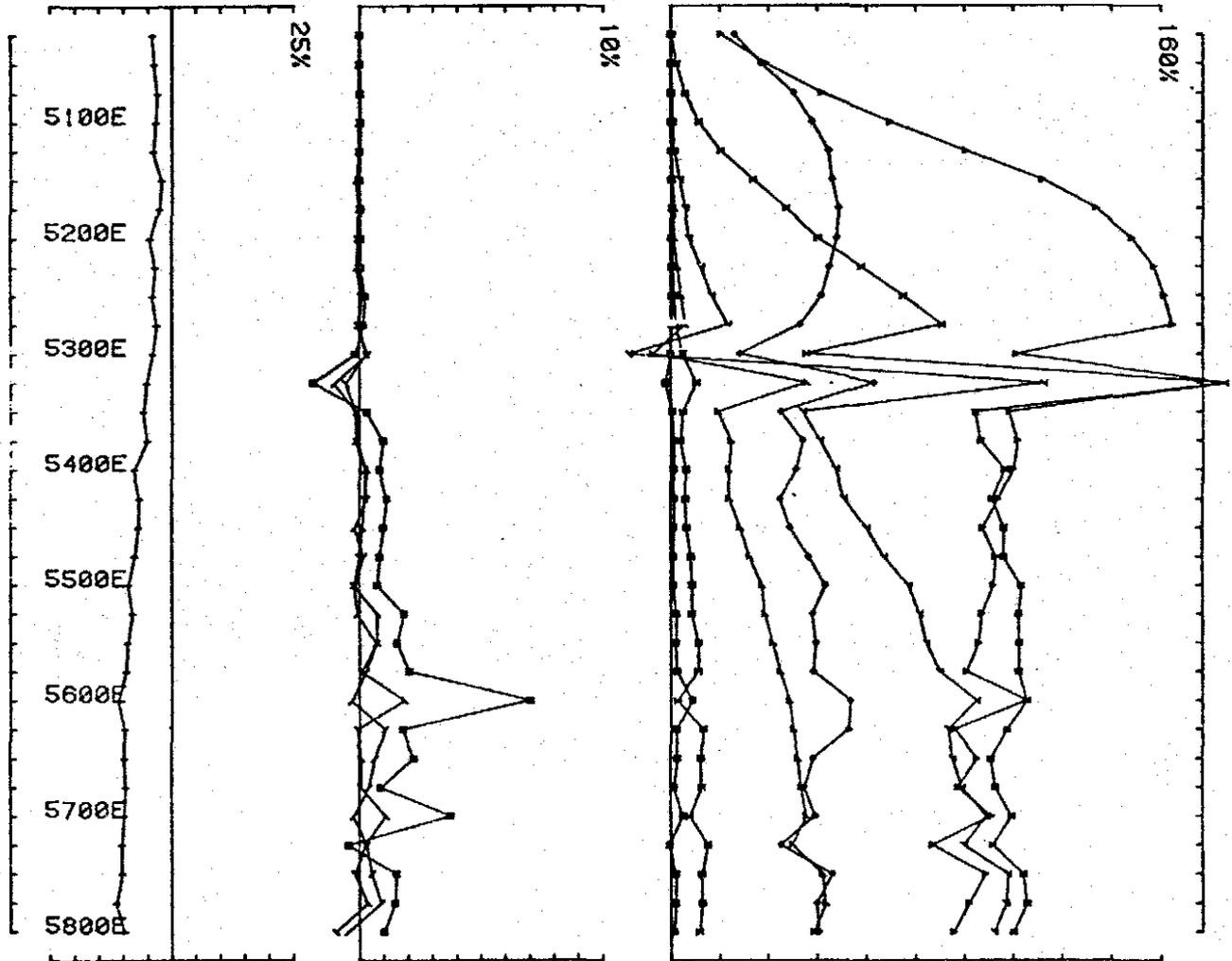
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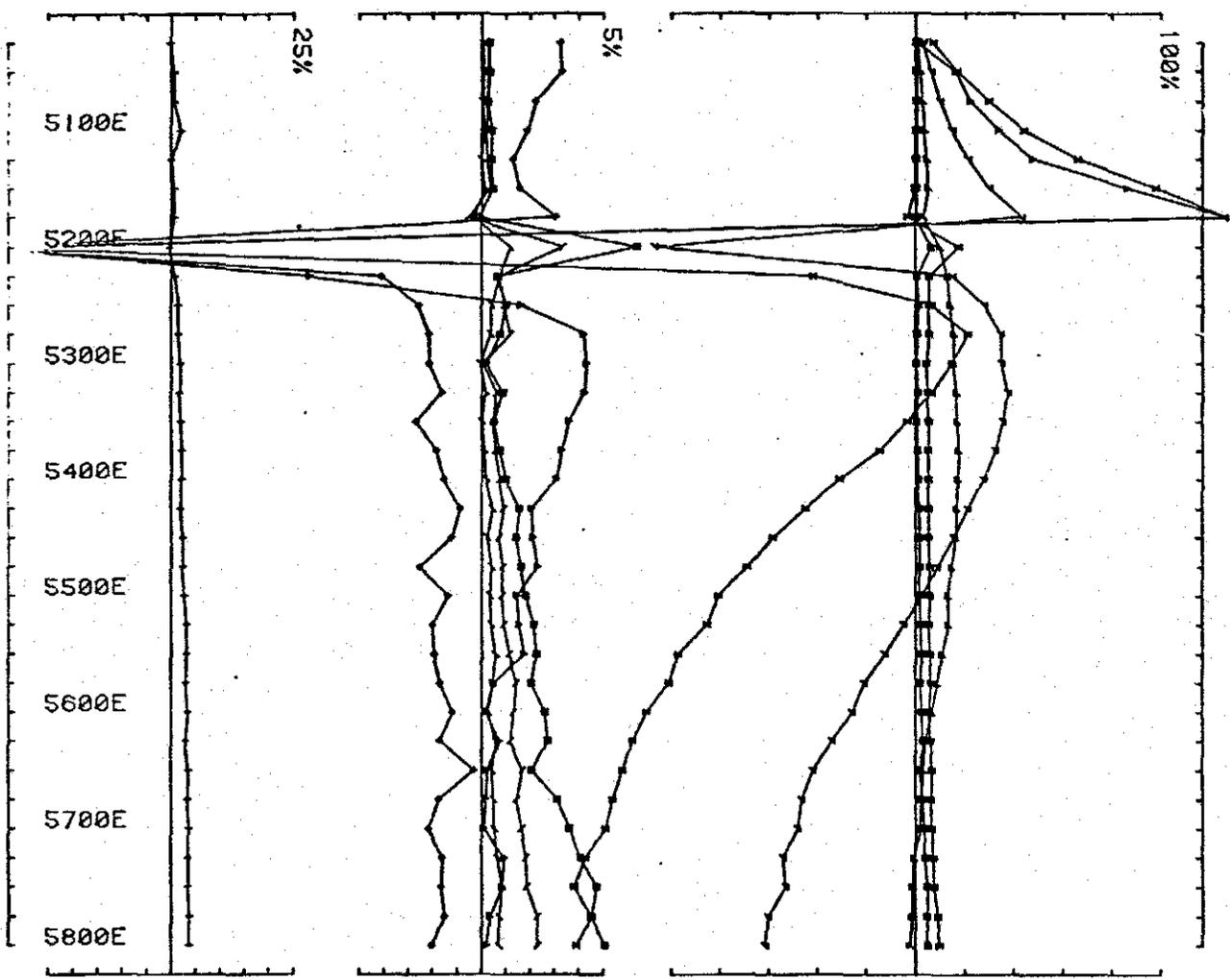
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Project Area BOCO PROSPECT Survey for EZ Co of Aust'ia freq(hz) 26.230
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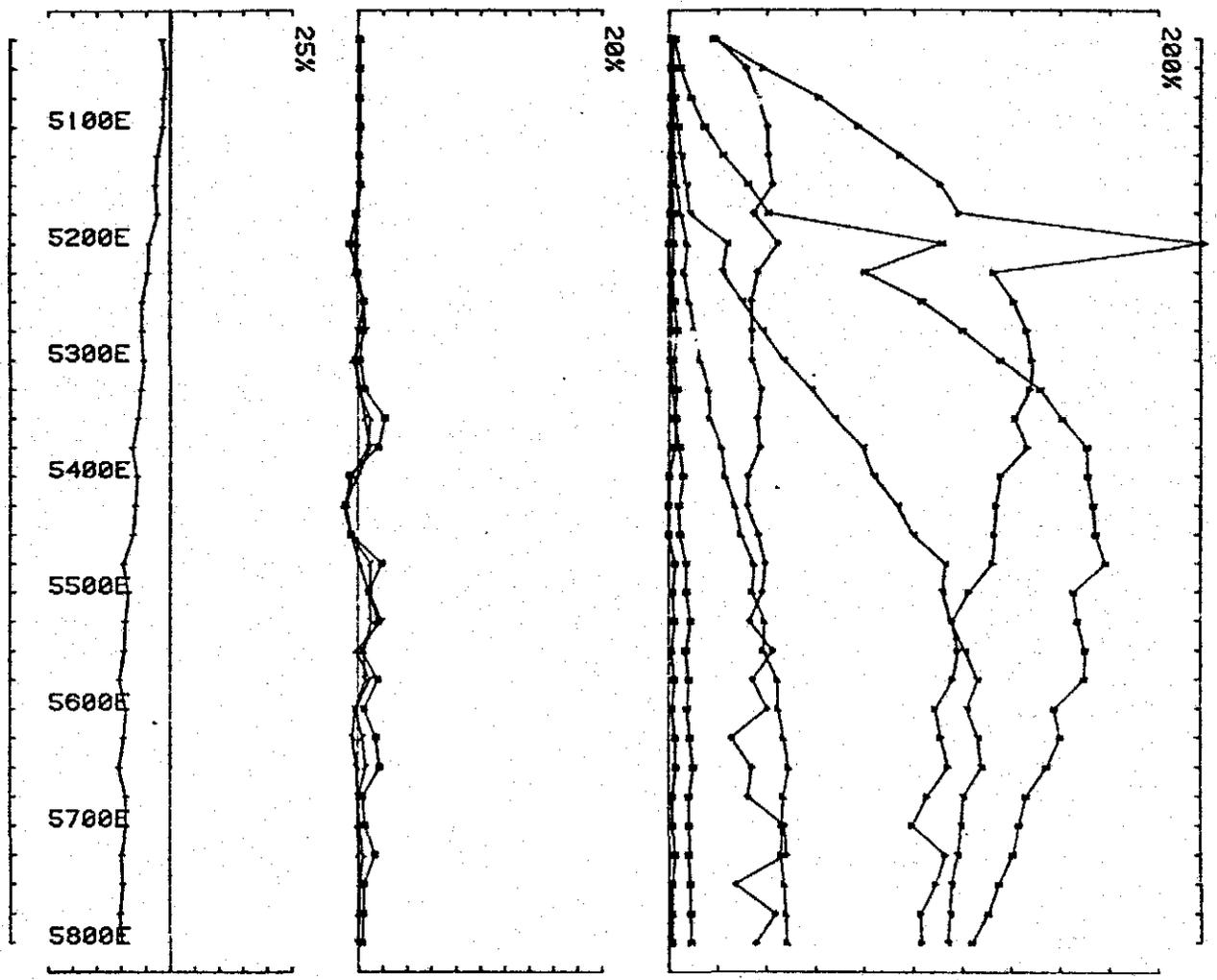
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Loopno 0002 Line 1800N component Hx secondary Ch 1



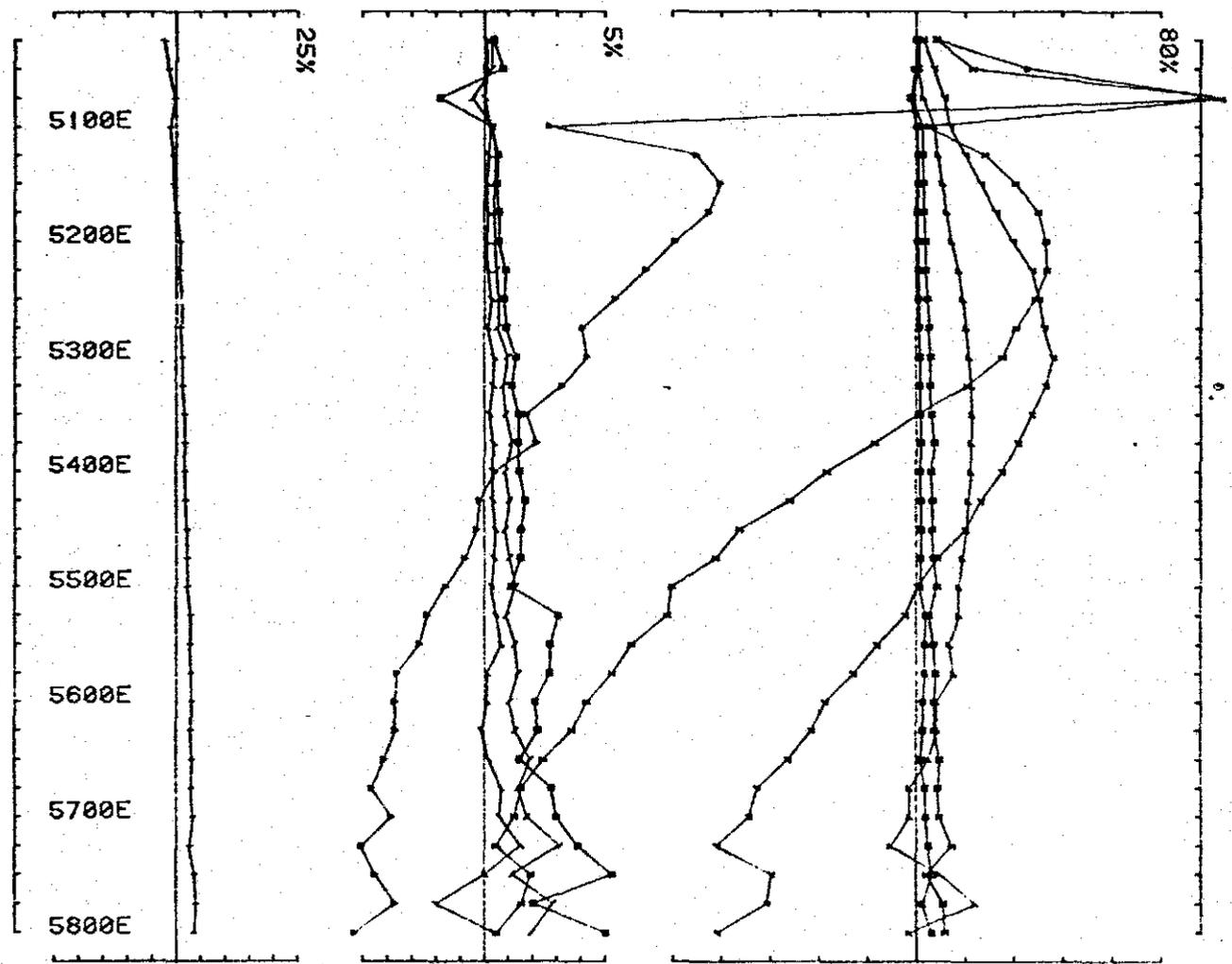
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Loopno 0002 Line 1900N component Hz secondary Ch 1

122

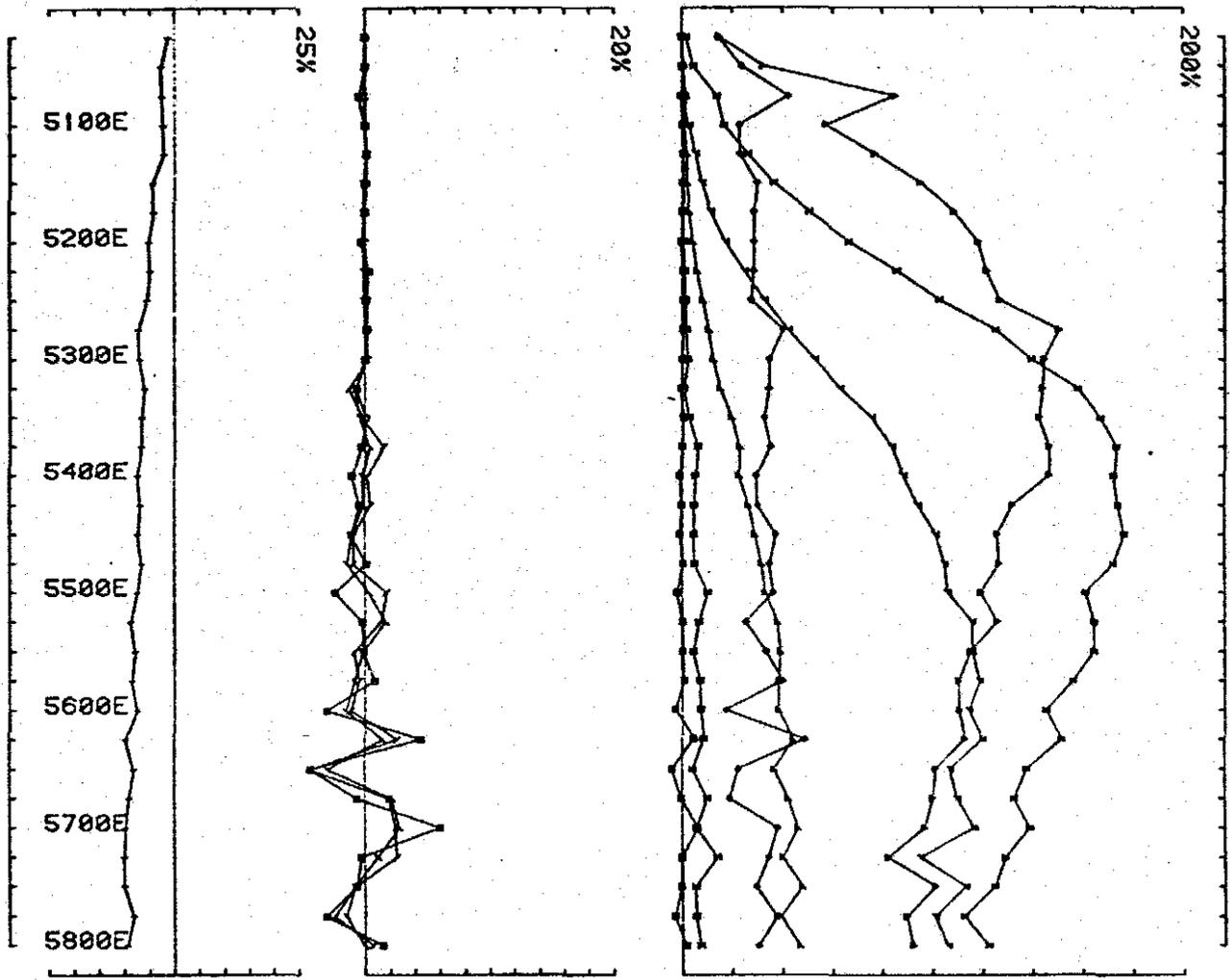
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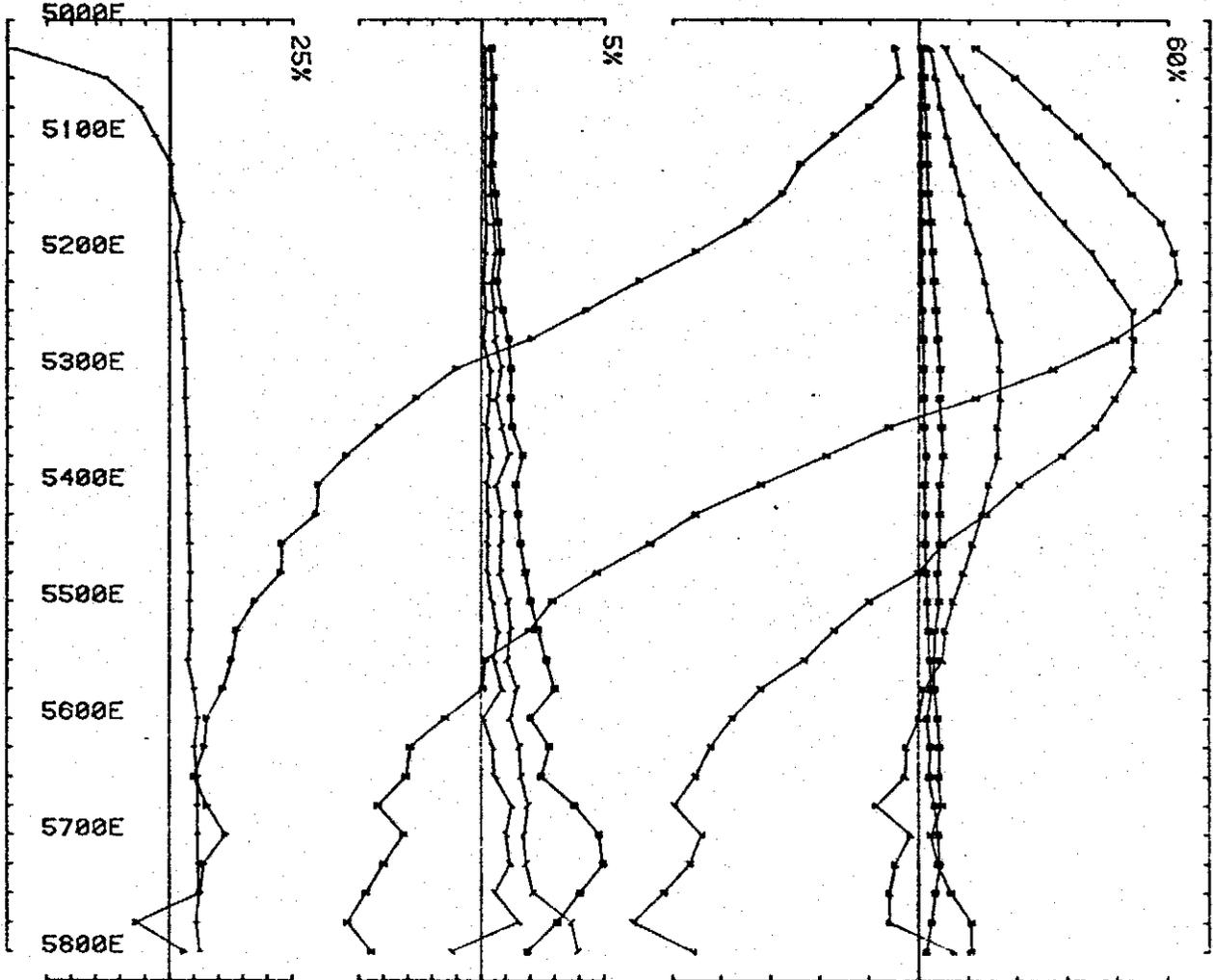
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Loopno 0002 Line 1000N component Hx secondary Ch 1



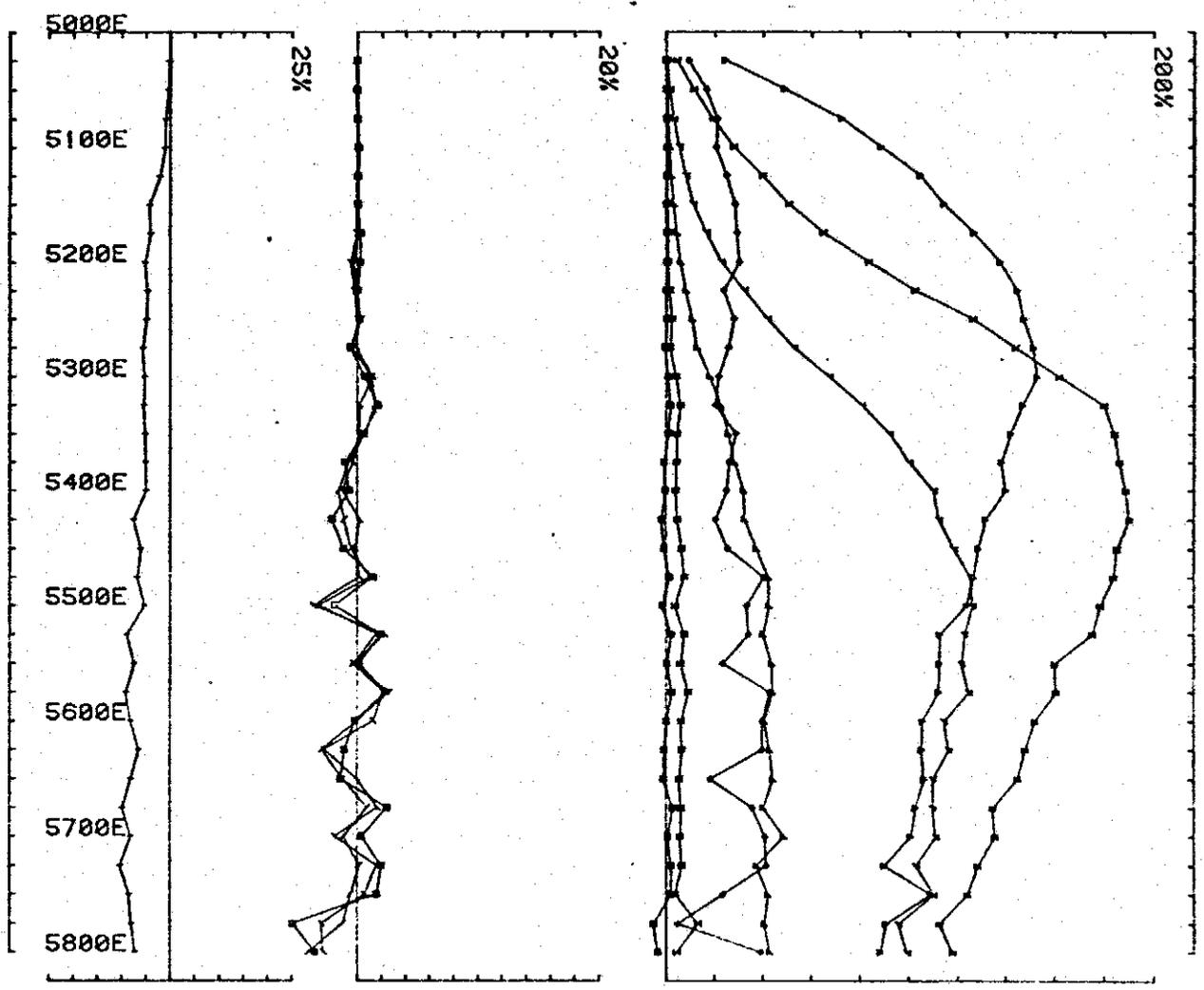
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Loopno 0002 Line 2000N component Hz secondary Ch 1



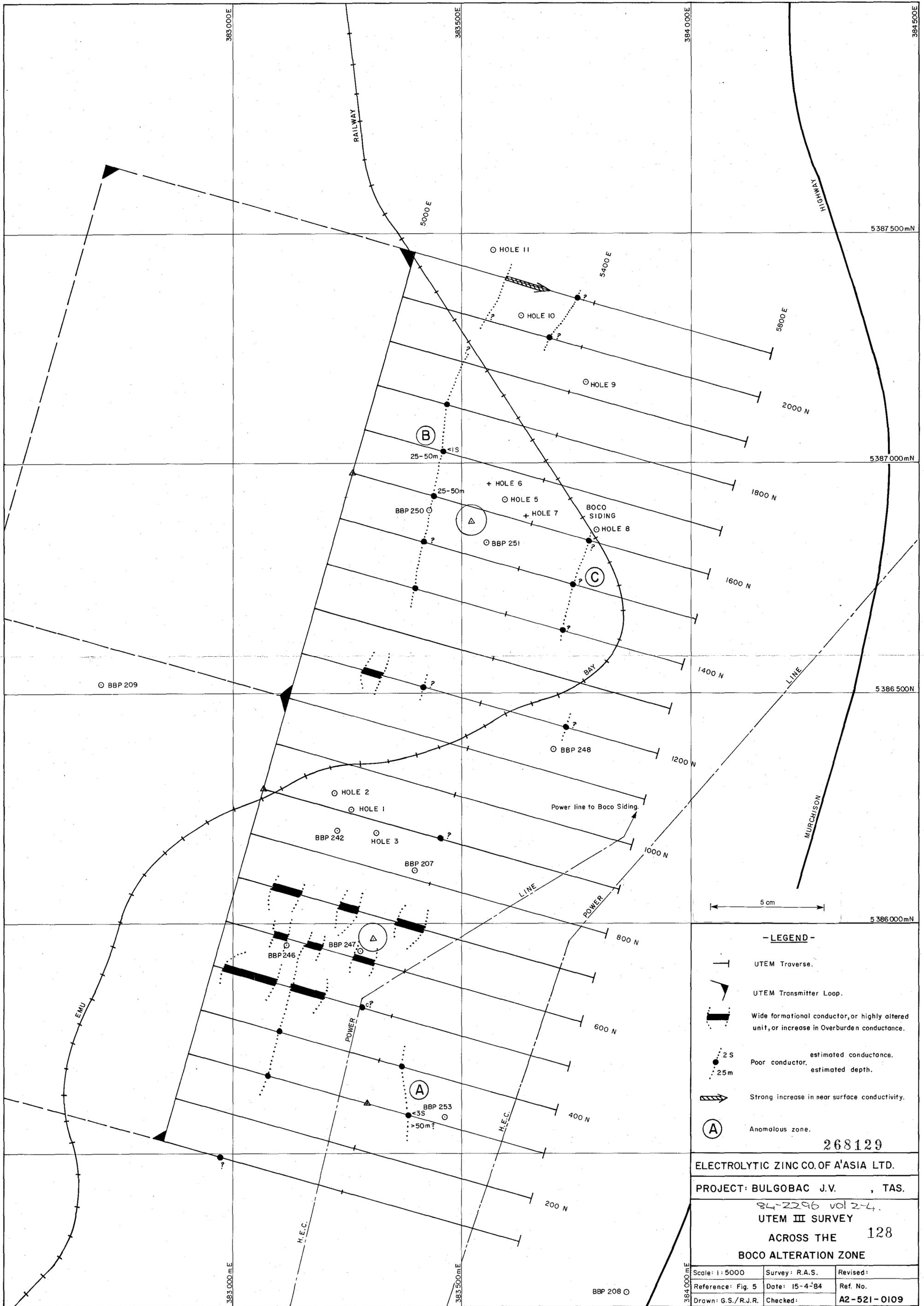
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UTEM SURVEY conducted by ART Job 8334
Project Area BOCO PROSPECT Survey for EZ Co of Aust'ria freq(hz) 26.230
Loopno 0002 Line 2100N component Hz secondary Ch 1



UTEM SURVEY conducted by ART Job 8334
Project Area BOCO PROSPECT Survey for EZ Co of Aust'ia freq(hz) 26.230
Loopno 0002 Line 2100N component Hx secondary Ch 1



- LEGEND -

- UTEM Traverse.
- UTEM Transmitter Loop.
- Wide formational conductor, or highly altered unit, or increase in Overburden conductance.
- Poor conductor, estimated depth.
- Strong increase in near surface conductivity.
- Anomalous zone.

268129

ELECTROLYTIC ZINC CO. OF ASIA LTD.

PROJECT: BULGOBAC J.V., TAS.

84-2296 vol 2-4.

UTEM III SURVEY

ACROSS THE 128

BOCO ALTERATION ZONE

Scale: 1:5000	Survey: R.A.S.	Revised:
Reference: Fig. 5	Date: 15-4-'84	Ref. No.
Drawn: G.S./R.J.R.	Checked:	A2-521-0109



268130

Intense silica-sericite-pyrite alteration
 Weaker sericite±silica±pyrite alteration

5 cm

ELECTROLYTIC ZINC CO. OF ASIA LTD.

PROJECT: BULGOBAC J.V., TAS.

84-2296 vol 2-4

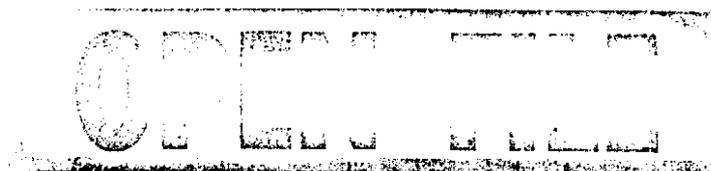
DRILL HOLE TRAVERSES 127

ACROSS THE
BOCO ALTERATION ZONE

Scale: 1:5000	Survey: R.A.S.	Revised:
Reference:	Date: 21-7-'83	Ref. No.
Drawn: N.I.K., R.J.R.	Checked:	A2-521-0100

12.439/80

ELECTROLYTIC ZINC COMPANY OF AUSTRALASIA LIMITED
MINERAL RESOURCES DIVISION



PART OF EXPLORATION LICENCE NO. 12/72

BOCO AREA

PROGRESS REPORT ON EXPLORATION ACTIVITY
30TH MAY TO 13TH NOVEMBER, 1984.

E.Z. REPORT No. T194

R.A. SAINTY,
NOVEMBER, 1984.

ELECTROLYTIC ZINC COMPANY OF AUSTRALASIA LIMITED
MINERAL RESOURCES DIVISION

PART OF EXPLORATION LICENCE NO. 12/72

BOCO AREA

PROGRESS REPORT ON EXPLORATION ACTIVITY
30TH MAY TO 13TH NOVEMBER, 1984.

E.Z. REPORT No. T194

R.A. SAINTY,
NOVEMBER, 1984.

LIST OF PLANS

- AO-521-0105 · BBP 248 Summary Sheet
- 0107 · BBP 251 (+250) Summary Sheet
- 0108 · BBP 253 Summary Sheet
- 0110 , BBP 254 Summary Sheet

LIST OF APPENDICES

- Appendix 1. Detailed DDH logs and Analyses Records.

1. INTRODUCTION

This report covers work on the Boco area of Exploration Licence No. 12/72 by Electrolytic Zinc Company of Australasia Limited between 30th May and 13th November, 1984.

The work was carried out on behalf of a Joint Venture between E.Z. and Getty Oil Development Co. Ltd., which was initiated in April, 1976. A description of the Licence can be found in E.Z. Report No. 128 - "Exploration Undertaken in E.L. 12/72 during 1976-77".

2. PREVIOUS EXPLORATION

Details of all previous work on the Boco area of E.L. 12/72 have been reported in E.Z. Report No's 128 (1977), 129 (1978), 130 (1979), 137 (1981), 145 (1982), 153 (1982), 159 (1982), T174 (1983) and T179 (1984).

3. EXPLORATION UNDERTAKEN 30TH MAY TO 13TH NOVEMBER, 1984

Exploration undertaken in this period consisted largely of detailed logging of core and collating of data obtained during the previous year's programme of systematic drill hole traverses across the buried quartz-sericite-pyrite alteration zone in the Boco area.

E.Z. wishes to attract a third Joint Venture partner into the Boco project in order that further high cost exploration of the area may proceed at a faster rate. Accordingly, a data review was compiled and circulated with a joint venture offer to several companies.

3.1. Work Completed

3.1.1. DOWN-HOLE SIROTEM GEOPHYSICS

McSkimming Geophysical Services completed the SIROTEM II survey of the eight drill holes initiated in the previous period. BBP 248, 253 and 254 were surveyed, using ground loops designed by J. Milovanovic (Senior Geophysicist) of E.Z.

A second attempt to survey the blocked BBP 246 was unsuccessful.

An interpretation report by H. Rutter of Geophysical Exploration Consultants is expected shortly.

3.1.2. DRILL CORE LOGGING AND REPORTING

Drill holes BBP 250, 251 and 254 were geologically logged in detail, and formal logs were written and typed for all eight holes. Emphasis was placed on standardisation of terminology throughout, and previously logged holes were partly re-examined to enable this. All core assays were collated and typed on the standard sheets that accompany the typed logs. Cross-section summary sheets were prepared for BBP's 248, 251 (and 250), 253 and 254.

3.2. Results Received

3.2.1. BOCO DRILL HOLE LOGS

Results of this work are presented as:

Appendix 1 : Detailed DDH logs and analyses records.

AO-521-0105 BBP 248 Summary Sheet

-0107 BBP 251 (+250) Summary Sheet

-0108 BBP 253 Summary Sheet

-0110 BBP 254 Summary Sheet

3.2.2. BBP 254 ANALYTICAL RESULTS

Analytical results for BBP 254 were received during this period, and this data is tabulated in the drill hole assay record and summarised in plots for Zn, Pb, Ba, Na₂O and CaO on the BBP 254 summary sheet AO-521-0110.

The only significant base metal assay value from this hole is 424.5-430.5 : 6.0m @ 1325 ppm Zn, associated with visible sphalerite-pyrite veinlets within the marginal zone of weak alteration present to the west of the main strong grey pyritic alteration.

Unlike holes to the south, trace gold values (0.008 to 0.08 ppm) are present through almost the entire length of hole.

3.3. Interpretations and Conclusions

The strongly quartz-sericite-pyrite-altered massive and (sub-aqueously) hyaloclastite-brecciated dacite obsidian is a Kuroko-style white 'rhyolite' (dacite) dome. The Boco white rhyolite dome increases in thickness northwards along the 1.1km strike length from 100m to 300m, inferring a transition from domal flank to domal centre. This transition is supported by:

1. The massive (proximal) character of the BBP 254 intersection as against the dominantly hyaloclastite-brecciated (distal) character of the BBP 246/247 intersections;
2. The uniformly stronger grey pyritic alteration in the massive obsidian of BBP 254 than in any other hole;

3. The trace Au recorded through almost the entire length of BBP 254;

and

4. The numerous thin multilithic explosion breccia dykes within BBP's 250, 251 and 254 which are absent from the BBP 246/247 and BBP 242/207 intersections.

The implication for exploration at Boco is that the northern end of the currently known 1km length of alteration appears to be closer to the exhalative vent. Therefore continued exploration northwards is necessary.

APPENDIX 1.

Detailed DDH logs and Analyses Records

ELECTROLYTIC ZINC COMPANY OF A'ASIA LTD.			DIAMOND DRILL CORE RECORD				HOLE No. <u>BBP 242</u>				
MINERAL RESOURCES DIVISION - TASMANIA							SHEET No. 1.				
PROJECT:	LOCALITY:	OBJECTIVE:	GRID CO-ORDS:	A.M.G. CO-ORDS:	HOLE SIZE:	Depth (m)	Azimuth (%m.g.)	Dip	Depth (m)	Azimuth (%m.g.)	Dip
BULGOBAC E.L. 12/72	BOCO PROSPECT	Across-strike traverse drilling of concealed quartz-sericite-pyrite alteration zone	383,226.7mE	5,386,203.1mN	HW 8; HQ 52.0; NQ 84.7; BQ TD	67.5	112	59.5°			
Traverse 1		This hole did not lift as planned and drilled nearly down dip. It did not cover the traverse width.	358.8	-60°	PVC to TD	91.0	110	58.5°			
			COLLAR R.L.: 358.8	110°	COMMENCED: 1.6.83	124.5	113	58.3°			
			COLLAR DIP: -60°	457.5m	COMPLETED: 5.7.83	208	113	59°			
			AZIMUTH: 110°		LOGGED BY: R.A. Sainty	298.5	118	59°			
			TOTAL DEPTH: 457.5m			457.5	120	59°			

DEPTH		ROCK DESCRIPTION	MINERALISATION		CORE REC'D	
From	To		Run	Short		
0	52.0	Glacial Cover				
52	256.8	Unaltered felsic-intermediate lavas (leuco-andesites), regionally silicified.				
56.8	57.5	Fault (pug). Silicified zone up and down hole from fault - massive qtz 52.0-55.7, pale grn foliated sericite alteration 55.7-57.5, silicified and qtz-veined lava 57.5-69.3				
69.3	102.7	Green, grey-green to pale pink and orange pink massive silicic lava				
102.7	134.6	Orange pink massive silicic lava 127.0-129.0 Green ?sericitic foliated alteration, no py				
134.6	145.6	Grey-green porphyritic silicic lava, some minor orange				
145.6	161.5	Orange pink massive silicic lava				
161.5	161.9	Contact zone of two flow units? - marked by dark jade-green massive ?sericite zone				
161.9	169.1	Green weakly altered massive lava. Includes short sections of dark chlorite-stained sericitised feldspars. Abundant thin dark-green chlorite veinlets.				
169.1	192.3	Pink to pale brown porphyritic massive silicic lava. Abundant white feldspar phenocrysts. Abundant thin dark green chloritic veinlets.				
192.3	195.7	Grey green to buff weakly altered porphyritic lava. In part dark chlorite-stained sericitised feldspars: more abundant thin chloritic veinlets.				
195.7	213.35	Silicified lava : grey pink i.e. grey cloudy silicification overprint on pink porphyritic lava. Diffuse blotchy pink spots in grey silicified matrix.				
213.35	217.25	Basalt dyke Calcite rhombs to 10mm in veins adjacent to contacts.				
217.25	226.8	Green-pink-brown massive silicic lava.				
226.8	242.95	Silicified and qtz-veined (especially 238.4 on)				
242.95	256.8	Wholly intensely silicified and brecciated - largely massive white qtz (± calcite - above fault below)				
256.8	258.0	Fault (pug)				

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

DIAMOND DRILL CORE RECORD

HOLE No. BBP 242

SHEET No. 2

DEPTH		ROCK DESCRIPTION	MINERALISATION	CORE REC'D	
From	To			Run	Short
258.0	457.5	Strongly silicified-sericitised-pyritised dacitic glassy lavas (obsidians)			
258.0	298.35	Green-grey, sericitised weakly silicified, pyritic zones of dark chlorite-stained sericitised feldspars with diss ultrafine py, py clumps and stringers. Py increases down-interval to include areas of veiling ultrafine py. Refer 44721 @ 291.5, CMS 83/9/20 264.0-265.75; 267.9-269.2; 272.4-273.0 basalt dykes.			
298.35	300.0	Streaky yellow-grey sericitic-silicified, pyritic. Grey patches after sheared qtz amygdales? Abundant py as diss crystals + clots small stringers.			
300.0	305.0	Zone of brecciation, mild shearing (flow-top breccia zone?). Relatively coarse-grained, granular appearance. Strongly pyritic-siliceous alteration. 300.0-301.1 high py zones 40% 301.1-305.0 high py zones 10-20%. Py as fine diss stringers and veinlets. Refer 44722 @ 304.2, CMS 83/9/20			
305.0	315.2	Brecciated and massive glassy lava. Sericitic-qtz-py alteration. Brecciated zones comprise sericitic sheared zones around massive domains. 309.5-309.8 basalt dyke. Pale yellow, entirely sericitised & pyritised, diffuse patches, veins of py on margins.			
315.2	317.15	Basalt dyke. Green fg, non-pyritic. Irregular lower contact.			
317.15	318.7	Weakly laminated pelitic ash sediment : dense, yellow-grey sericitised and pyritised. Refer 44723 @ 318.5m, CMS 83/9/20			
318.7	326.2	Altered glassy lavas as per 305.0-315.2 320.2-321.1 basalt dyke 324.1-326.2 basalt dyke with FAULT (pug)			
326.2	334.8	Weakly sericitised. Vague patches of chlorite-stained sericitised feldspars. Increasing buff-coloured matrix down-interval, with sericite-carbonate after feldspars. Sparce diss py.			
334.8	339.5	Sericite-py altered. Buff-coloured, abundant diss fine + clump py.			
339.5	340.35	As per 326.2-334.8			
340.35	355.4	Sericite-qtz-py altered streaky yellow-grey, but faint below 349.5. Refer 44724 @ 343.5 CMS 83/9/20			
355.4	360.3	Sericitised : green-grey to brown with dark green chlorite-stained sericite after feldspars.			
360.3	366.8	Basalt (?andesite) dyke green, mg.			
366.8	371.7	Sericite-qtz-py altered Yellow-grey, massive. Abundant fine to ultrafine py			
371.7	375.4	Strongly sericitic-qtz-py altered : pale yellow, sheared.			
375.4	376.0	Basalt dyke - green, mg			

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ELECTROLYTIC ZINC COMPANY OF A'ASIA LTD. MINERAL RESOURCES DIVISION - TASMANIA		DIAMOND DRILL CORE RECORD		HOLE No. <u>BBP 242</u>	
				SHEET No. <u>3</u>	
DEPTH		ROCK DESCRIPTION	MINERALISATION	CORE REC'D	
From	To			Run	Short
376.0	377.7	Basalt dyke.			
380.7	391.9	Strong sericite-qtz-py alteration. Streaky yellow-grey. Abundant diss py. Short lengths of high py e.g. 384.0-386.2; 388.4-388.9 fine py zones : 40% Refer 44725 @ 384.5 CMS 83/9/20			
391.9	457.5	Sericite-qtz-py altered. Strong, massive orange colouration: 449.7-449.75; 450.4-451.4. Refer 44726 @ 412.5 CMS 83/9/20 Basalt dykes: 416.6-416.9; 418.1-418.5; 419.35-421.1; 421.75-423.6; 424.6-426.5; 430.2-433.1. Purple tint (?fluorite) present within siliceous domains. 427.0-429.7; 433.5-435.0.			
	TD				

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ELECTROLYTIC ZINC COMPANY OF A'ASIA LTD. MINERAL RESOURCES DIVISION - TASMANIA					DIAMOND DRILL CORE GEOCHEMICAL ANALYSES RECORD										HOLE No. <u>BBP 242</u> SHEET No. 1					
LABORATORY ANALYTICAL TECHNIQUE DETECTION LIMIT					ANALABS, Cooeee AAS at Cooeee, others at Perth										GRID CO-ORDS: A.M.G. CO-ORDS: 383,226.7mE 5,386,203.1mN COLLAR R.L.: 358.8 COLLAR DIP: -60° AZIMUTH: 110° TOTAL DEPTH: 457.5m					
					AAS	AAS	AAS	AAS	AAS	AAS	XRF	XRF	Wet	Fire AAS	XRF	XRF	XRF	AAS		
					103	103	103	103	103	103	408	408	408	309	401	401	402	122		
5	5	5	0.5	5	5	?	?	?	0.005	5	20	30	0.005							
Sample No.	Sample Type	From	To	Core Rec'd	Sample Length	METAL CONTENT (ppm unless specified)													COMMENTS	
						Cu	Pb	Zn	Ag	Fe	Mn	SiO ₂ %	CaO%	Na ₂ O%	Au	Sr	Ba	S %		Hg
52924		243.0	246.0		3.0	10	10	25	X	1.20%	2500	65.6	18.1	0.05	X	75	X	.031	0.050	Zone of silicification above fault-contact. In unaltered lavas (fault: 256.8-258.0)
925		246.0	249.0		3.0	5	10	15	X	4250	3000	58.6	23.7	0.05	X	85	X	.028	0.040	
926		249.0	252.0		3.0	10	10	15	X	6350	2600	58.6	22.9	0.13	X	95	X	.022	0.040	
927		252.0	254.0		2.0	10	15	10	X	7250	940	87.0	5.35	0.18	X	40	20	.025	0.050	
928		254.0	256.8		2.8	10	10	70	X	1.50%	2250	77.0	9.95	0.11	X	90	25	.050	0.050	
929		258.0	261.0		3.0	10	60	345	X	2.95%	1400	70.1	3.00	0.07	0.032	40	310	1.29	0.140	
52930		261.0	264.0		3.0	10	35	255	X	2.70%	420	72.6	1.50	0.07	0.008	25	400	1.52	0.080	
931		264.0	265.75		1.75	15	50	390	0.5	6.85%	2750	50.4	9.35	0.06	X	140	170	.303	0.060	
932		265.75	267.9		2.15	10	20	270	X	3.35%	1000	69.0	4.30	0.08	X	70	290	1.43	0.060	
933		267.9	269.2		1.30	10	5	500	X	6.15%	3300	45.0	11.9	0.06	X	180	170	.462	0.070	
934		269.2	272.4		3.2	10	25	270	X	3.50%	1900	62.8	5.95	0.07	X	90	290	1.19	0.060	
935		272.4	273.0		0.6	15	50	445	X	6.70%	4100	45.3	13.3	0.05	X	220	190	.411	0.060	
936		273.0	276.0		3.0	10	20	335	X	3.21%	730	66.3	2.35	0.08	X	40	430	1.54	0.090	
937		276.0	279.0		3.0	10	20	175	X	2.50%	420	71.8	1.40	0.08	X	30	440	1.37	0.070	
938		279.0	282.0		3.0	10	20	215	X	2.85%	620	70.5	2.30	0.08	0.008	40	380	1.33	0.110	
939		282.0	285.0		3.0	5	X	100	X	1.90%	585	70.0	2.45	0.27	X	50	370	.492	0.050	
52940		285.0	288.0		3.0	5	X	120	X	2.05%	970	67.3	3.90	0.08	X	55	330	.161	0.040	
941		288.0	291.0		3.0	10	10	215	X	2.40%	1000	66.0	3.80	0.08	X	65	380	.786	0.070	
942		291.0	294.0		3.0	15	40	250	X	2.60%	475	70.7	1.60	0.08	X	30	450	1.43	0.080	
943		294.0	296.0		2.0	15	25	190	X	2.60%	175	71.8	0.30	0.08	X	15	550	1.76	0.070	
944		296.0	298.35		2.35	10	45	195	X	2.40%	235	71.8	0.74	0.08	X	15	540	1.61	0.070	
945		298.35	300.0		1.65	10	15	135	X	1.95%	80	76.0	0.20	0.08	X	10	460	1.67	0.060	
946		300.0	303.0		3.0	85	105	310	X	6.90%	75	67.7	0.19	0.09	X	20	510	7.35	0.200	
947		303.0	305.0		2.0	85	60	155	0.5	4.70%	55	68.9	0.20	0.11	X	25	560	4.97	0.090	
948		305.0	308.0		3.0	15	25	120	X	2.10%	150	74.1	0.45	0.10	X	15	460	1.95	0.050	
949		308.0	311.0		3.0	20	10	90	X	1.95%	165	75.0	0.54	0.12	X	15	600	1.48	0.050	
52950		311.0	313.0		2.0	10	20	105	X	1.70%	280	74.0	1.00	0.10	X	20	640	1.17	0.030	
951		313.0	315.2		2.2	15	50	220	X	2.70%	565	71.2	2.40	0.08	X	50	510	2.06	0.060	
953		317.15	318.7		1.55	10	15	80	X	1.70%	185	76.0	0.43	0.07	X	10	510	1.13	0.040	
954		318.7	320.2		1.5	15	30	120	X	2.40%	400	73.5	1.40	0.08	0.008	30	520	1.55	0.050	
956		321.1	324.05		2.95	25	15	70	X	2.20%	180	73.9	0.59	0.08	X	20	510	1.52	0.040	
958		326.02	329.0		2.8	10	5	145	X	1.90	750	70.7	2.65	0.09	X	45	330	.256	0.030	
959		329.0	332.0		3.0	5	X	85	X	1.60%	855	71.9	3.50	0.16	X	75	280	.200	0.030	
52960		332.0	334.8		2.8	5	5	100	X	1.80%	735	67.0	2.60	0.11	0.008	50	410	.168	0.040	
961		334.8	337.0		2.2	10	X	70	X	2.25%	365	73.0	1.30	0.09	X	35	440	.833	0.040	
962		337.0	339.5		2.5	5	X	75	X	1.95%	235	72.7	0.90	0.09	X	25	470	.898	0.040	
963		339.5	340.35		0.85	10	X	90	X	1.70%	540	71.3	2.10	0.11	X	55	380	.327	0.030	
964		340.35	343.0		2.65	10	15	70	X	1.90%	110	75.0	0.39	0.08	X	15	410	1.26	0.040	
965		343.0	346.0		3.0	15	X	90	X	1.90%	125	76.3	0.51	0.08	X	20	330	1.49	0.050	
966		346.0	349.0		3.0	15	75	235	X	1.90%	105	74.3	0.30	0.08	X	15	370	1.25	0.050	
967		349.0	352.0		3.0	10	25	90	X	2.05%	130	73.0	0.51	0.09	X	15	430	1.20	0.065	
968		352.0	355.4		3.4	10	5	40	X	2.55%	300	71.7	1.10	0.35	X	25	390	1.19	0.050	
969		355.4	358.0		2.6	5	10	60	X	1.55%	460	72.0	1.75	1.31	X	50	370	.050	0.040	
52970		358.0	360.3		2.3	10	10	45	X	1.50%	430	73.3	1.45	2.02	X	65	350	.046	0.040	

Sample No.	Sample Type	From	To	Core Rec'd	Sample Length	METAL CONTENT (ppm unless specified)													COMMENTS	
						Cu	Pb	Zn	Ag	Fe	Mn	SiO ₂ %	CaO%	Na ₂ O%	Au	Sr	Ba	S %		Hg
52971		360.3	363.0		2.7	15	10	205	X	7.45%	2200	47.1	7.25	0.03	X	90	75	.375	0.050	basalt dyke
972		363.0	366.8		3.8	15	10	185	X	7.20%	3050	42.0	12.5	0.03	X	250	85	.196	0.040	basalt dyke
973		366.8	371.7		4.9	15	20	65	X	1.95%	135	75.0	0.35	0.07	X	10	430	1.03	0.030	
974		371.7	375.4		3.7	10	25	95	X	2.20%	250	72.9	1.05	0.07	X	20	450	1.25	0.040	
276		376.0	377.7		1.7	20	5	25	X	1.45%	325	75.3	1.40	0.07	X	40	520	.345	0.030	
978		380.7	384.0		3.3	15	10	25	X	2.90%	135	73.3	0.33	0.09	X	15	440	1.59	0.04	
979		384.0	386.2		2.2	20	10	15	X	2.60%	70	75.5	0.17	0.09	X	15	360	2.69	0.040	high py
52980		386.2	388.4		2.2	15	5	10	X	1.85%	75	77.0	0.10	0.08	X	10	400	1.66	0.030	
981		388.4	388.9		0.5	35	10	15	X	3.55%	25	71.0	0.05	0.08	X	8	450	3.29	0.040	high py
982		388.9	391.9		3.0	20	5	20	X	2.85%	95	73.2	0.26	0.08	X	15	420	2.23	0.030	
983		391.9	395.0		3.1	15	X	25	X	2.15	185	76.1	0.20	0.17	X	10	400	1.15	0.030	
984		395.0	398.0		3.0	15	5	20	X	1.60%	70	74.6	0.27	0.09	X	10	480	1.03	0.020	
985		398.0	401.0		3.0	10	10	20	X	2.30%	110	75.0	0.35	0.33	X	15	480	1.39	0.030	
986		401.0	404.0		3.0	10	5	20	X	1.70%	280	74.5	1.35	0.28	X	35	450	.628	0.030	
987		404.0	407.0		3.0	10	5	35	X	1.95%	135	76.3	0.35	0.19	X	20	420	1.15	0.030	
988		407.0	410.0		3.0	15	15	75	0.5	2.50%	455	71.3	2.30	0.09	X	50	410	1.32	0.040	
989		410.0	413.0		3.0	10	5	35	X	1.75%	90	75.5	0.46	0.09	X	20	550	1.35	0.040	
52990		413.0	416.6		3.6	15	5	40	X	2.00%	115	74.7	0.32	0.09	X	15	530	1.08	0.050	
991		416.9	418.1		1.2	20	5	25	X	1.80%	210	75.7	0.55	0.08	X	30	530	.844	0.050	
992		418.5	419.35		0.85	15	5	65	X	2.25%	375	77.9	0.27	0.12	0.008	15	610	.380	0.050	
993		421.1	421.75		0.65	20	5	65	X	2.20%	590	73.6	1.35	0.28	X	40	660	.062	0.040	
994		423.6	424.6		1.0	15	X	108	X	3.50%	675	71.5	0.55	0.11	X	25	580	.036	0.050	
995		424.6	428.0		3.4	45	10	50	X	2.00%	260	75.2	0.40	0.21	X	20	530	.347	0.030	
996		428.0	430.2		2.2	40	10	55	0.5	2.20%	390	73.1	0.98	0.11	X	40	660	.338	0.130	
997		433.1	436.0		2.9	45	10	50	X	1.85%	145	77.9	0.32	0.11	0.008	20	410	1.22	0.060	
998		436.0	439.0		3.0	20	15	35	X	2.25%	90	74.7	0.17	0.10	X	10	480	1.73	0.120	
999		439.0	442.0		3.0	10	15	35	X	1.50%	110	75.7	0.17	0.11	X	15	480	1.65	0.070	
53000		442.0	445.0		3.0	20	10	25	X	1.95%	60	76.1	0.35	0.10	X	20	530	1.13	0.095	
57809		445.0	448.0		3.0	15	10	20	X	1.65%	140	78.1	0.47	0.11	X	20	500	1.15	0.060	
810		448.0	451.0		3.0	10	15	40	X	2.35%	300	72.7	0.95	1.64	X	45	410	.96	0.050	
811		451.0	454.0		3.0	15	125	95	X	1.00%	320	73.5	1.20	0.39	X	55	470	1.00	0.060	
812		454.0	457.4		3.5	15	20	135	X	1.80%	360	75.5	0.94	0.13	X	35	470	1.18	0.060	

ELECTROLYTIC ZINC COMPANY OF ASIA LTD. DIAMOND DRILL CORE RECORD HOLE No. BBP 246
 MINERAL RESOURCES DIVISION - TASMANIA SHEET No. 1.

PROJECT: BULGOBAC E.L. 12/72 BOCO PROSPECT LOCALITY: Traverse 2 OBJECTIVE: Across-strike traverse drilling of concealed qtz-sericite-py alteration zone. RESULT: Intersected dacite obsidian fragmental, host to strongest alteration 302.35-479.6. Less altered rocks eastwards to TD	GRID CO-ORDS: A.M.G. CO-ORDS: 383,116.8mE 5,385,952.7mN COLLAR R.L.: 363.2 COLLAR DIP: -50° AZIMUTH: 105° TOTAL DEPTH: 525.0m	HOLE SIZE: HW 4m; HQ 36.5m; NQ 43.0; BQ TD PVC to 240m COMMENCED: 7.7.83 COMPLETED: 11.8.83 LOGGED BY: R.A. Sainty	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>Depth (m)</th> <th>Azimuth (°m.g.)</th> <th>Dip</th> <th>Depth (m)</th> <th>Azimuth (°m.g.)</th> <th>Dip</th> </tr> <tr> <td>76</td> <td>102</td> <td>51°</td> <td></td> <td></td> <td></td> </tr> <tr> <td>135</td> <td>102</td> <td>51°</td> <td></td> <td></td> <td></td> </tr> <tr> <td>300</td> <td>102</td> <td>50°</td> <td></td> <td></td> <td></td> </tr> <tr> <td>360</td> <td>104</td> <td>48.5°</td> <td></td> <td></td> <td></td> </tr> <tr> <td>426</td> <td>104</td> <td>46°</td> <td></td> <td></td> <td></td> </tr> <tr> <td>525</td> <td>104.5</td> <td>42.5°</td> <td></td> <td></td> <td></td> </tr> </table>	Depth (m)	Azimuth (°m.g.)	Dip	Depth (m)	Azimuth (°m.g.)	Dip	76	102	51°				135	102	51°				300	102	50°				360	104	48.5°				426	104	46°				525	104.5	42.5°			
Depth (m)	Azimuth (°m.g.)	Dip	Depth (m)	Azimuth (°m.g.)	Dip																																								
76	102	51°																																											
135	102	51°																																											
300	102	50°																																											
360	104	48.5°																																											
426	104	46°																																											
525	104.5	42.5°																																											

DEPTH		ROCK DESCRIPTION	MINERALISATION		CORE REC'D	
From	To				Run	Short
0	36	Glacial cover				
36.5	302.35	Unaltered felsic intermediate lavas (leuco-andesites), regionally silicified, and basalt dykes.				
36.5	36.75	Basalt dykes				
37.25	38.2					
36.75	37.25	Pink brown and green massive silicic lavas 124.5-137.4 Buff, weakly sericitised. In part, chlorite-stained sericite after feldspars 137.4-155.1 Pink silicic lava, 143.6-150.0: brecciation and infilling silicification 150.0-155.1: Entire rock veined by thin chlorite-qtz veinlets.				
38.2	155.1					
155.1	187.9	Basalt dyke				
187.9	239.5	Porphyritic massive silicic lava				
233.1	239.45	Pale green massive silicification above fault (especially 228.8 on)				
239.45	239.95	Fault (pug). Upper contact @ 40° c.a.				
239.95	259.1	Grey-green to buff massive silicic lava. Mostly dark chlorite-stained sericitised feldspars. Lower contact marked by a fine webbing of ultrafine py 258.4-259.7, and silicification 258.75-259.1				
259.1	271.2	Basalt dyke: dark green, mg, massive. Chilled margins: 259.1-259.75 fg, v dk green to black small amygdalae, fracturing, diffuse veins and veiling of ultrafine py. 267.7-271.2 fg v. dk green, diffuse veinlets and veiling of ultrafine py.				
271.2	302.35	Pink and buff massive silicic lavas. Pink lava with zones of weak alteration (buff + dk chlorite-stained sericitised feldspars), as follows 271.2-273; 274.9-276; 277.4-278.8; 287.2-290.1. Refer 44727 @ 298.4m CMS 83/9/20 3.95m above alteration contact. 300.2-302.35 Strong chloritisation above contact with altered dacitic glassy lavas.				
302.35	479.6	Strongly silicified-sericitised-pyritised dacite obsidian lava & lava fragmentals A strongly bleached and altered sequence of grey moulded lava clast breccias and micobreccia (hyaloclastite) enveloping lobes of massive grey glassy lava. These grey lava fragmentals are typified by a selectively silicified felsitic obsidian framework and a selectively sericitised, sheared and ill-defined matrix. Pervasive fine to ultrafine py and pyritic qtz-sericite veinlets.				

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ELECTROLYTIC ZINC COMPANY OF A'ASIA LTD. MINERAL RESOURCES DIVISION - TASMANIA		DIAMOND DRILL CORE RECORD		HOLE No. <u>BBP 246</u>	
				SHEET No. <u>2</u>	
DEPTH		ROCK DESCRIPTION	MINERALISATION	CORE REC'D	
From	To			Run	Short
		Altered grey massive lava occurs in 0.1-0.5m lengths throughout unit and 356.0-361.0; 373.7-375.5 and 436.7-470.5 Refer in CMS 83/9/20 to 44728 @ 304.5, 44729 @ 328.5, 44731 @ 358.7; 44732 @ 377.2; 44733 @ 379.2; 44736 @ 459.4. Note: 44735 @ 427.3 misinterpreted as ignimbrite by CMS because it contains sheared pumice over a 5cm length in hole. Part of a 1.3m wide strongly sheared unit now interpreted as a sheared pumiceous flow margin between massive fragmental lavas.			
306.4	309.4	Interrupted by: Basalt dyke - green fg massive			
316.55	319.45	Altered basalt dykes commonly associated with narrow breccia zones. These are fine-grained sometimed amygdaloidal pale yellow-grey, entirely qtz-sericite-py with very abundant py as diffuse veinlets, clumps and bands, particularly near margins. Some have only their margins bleached and sericitised (418.3-420.07, 431.65-433.0, 434.75-435.9), dk green cores (basaltic) remain. Refer 44730 @ 341.9 in CMS 83/9/20 - misidentified.			
324.75	325.9				
341.63	342.8				
343.06	343.75				
418.3	420.07				
428.35	428.55				
431.65	433.0				
434.75	435.9				
406.4	416.35	Less strongly bleached and altered andesitic obsidian. Green-grey with dark green chlorite-stained sericitised feldspars. Py as diss blebs often nucleated on phenocrysts, as short veinlets and veiling ultrafine py. Refer 44734 @ 412.0 in CMS 83/9/20			
479.6	525.0	Sericite-altered sheared and brecciated lavas and rhyolitic ignimbrite.			
479.6	482.1	Less altered lava breccia. Flesh-pink-orange lava fragments within a grey sericitic pyritic matrix. Gradational to unit below.			
482.1	488.6	Altered strongly sheared andesitic lava. Dark greyish-yellow.			
488.6	498.65	Altered rhyolitic ignimbrite. Matrix supported ?pseudo-fragmental texture. Grey (to pink-orange) pyritic porphyritic lava? fragments to a few cm in size within a yellow sericitised matrix. Fragments have distinct to only diffuse edges, and sometimes fragment textures can be traced into the matrix. This suggests overprinting of a qtz-py alteration by a later non-pyritic sericitic alteration phase. Some of the coarse fragmental texture may be due only to this strong differential alteration effect. Refer 44737 @ 491.4 in CMS 83/9/20			
498.6	525.0	Altered, silicified, sheared lava or ignimbrite. Yellow-grey to pale green. FAULTS (broken+pulverised core); 503-507.9; 515.7-517.7; 523-525.0.			
	TD				

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

DIAMOND DRILL CORE GEOCHEMICAL ANALYSES RECORD

HOLE No. BBP 246

SHEET No. 1

LABORATORY ANALYTICAL TECHNIQUE DETECTION LIMIT	ANALABS, Cooee														AAS at Cooee, others at Perth					GRID CO-ORDS: A.M.G. CO-ORDS: 383,116.8mE 5,385,952.7mN COLLAR R.L.: 363.2 COLLAR DIP: -50° AZIMUTH: 105° AMG TOTAL DEPTH: 525.0m			
	AAS	AAS	AAS	AAS	AAS	AAS	AAS	XRF	XRF	Fire AAS	Wet	XRF	XRF	XRF									
	103	103	103	103	103	103	122	401	401	309	408	402	408	408									
	5	5	5	0.5	5	5	0.005	5	20	0.005	0.1%	30	0.1%	0.1%									

Sample No.	Sample Type	From	To	Core Rec'd	Sample Length	METAL CONTENT (ppm unless specified)															AAS 103		COMMENTS
						Cu	Pb	Zn	Ag	Fe%	Mn	Hg	Sr	Ba	Au	Na.0%	S %	Ca0%	Si0.0%	Co	Ni		
57897		298.0	300.0		2.0	10	10	50	0.5	2.00	580	0.020	230	460	X	3.84	.144	1.90	69.7	15	15	Unaltered leuco-andesite lava	
898		300.0	302.35		2.35	15	10	115	X	4.15	1650	0.020	220	300	X	3.91	.079	5.30	59.9	15	20		
57813		302.35	304.4		2.05	20	40	70	X	2.60	80	0.060	20	850	0.033	0.11	1.95	0.16	72.0	20	10	Start of alteration inglassy fragmental dacite	
814		304.4	306.4		2.0	15	45	155	X	2.40	85	0.080	20	880	X	0.11	1.74	0.11	73.0	15	15		
815		306.4	309.4		3.0	15	35	270	X	8.40	1550	0.070	75	340	X	1.21	.522	2.30	52.5	40	30	Basalt dyke	
816		309.4	311.8		2.4	25	40	185	0.5	5.15	480	0.090	55	830	X	0.86	2.27	0.80	61.7	45	30		
817		311.8	314.2		2.4	30	45	195	X	2.45	65	0.080	25	700	X	0.19	1.97	0.10	72.5	20	15		
818		314.2	316.9		2.7	25	35	190	0.5	2.50	95	0.090	30	780	X	0.18	2.56	0.37	71.9	20	15		
819		316.9	319.45		2.55	25	45	290	0.5	8.00	865	0.070	35	770	X	0.14	2.36	1.10	53.7	50	30	Py-altered basalt dyke	
57820		319.45	322.1		2.65	25	30	105	0.5	1.75	230	0.070	50	830	0.017	0.25	1.12	0.78	72.3	20	15		
821		322.1	324.75		2.65	30	40	100	0.5	2.85	65	0.060	45	780	X	0.29	2.02	0.15	71.7	25	20		
822		324.75	325.9		1.15	20	35	210	0.5	2.95	280	0.120	90	1950	X	0.43	2.09	1.67	54.9	45	35	Py-altered basalt dyke	
823		325.9	329.0		3.1	25	85	335	0.5	3.25	190	0.080	60	720	X	0.21	2.53	0.77	70.7	15	15		
824		329.0	332.2		3.2	80	100	305	1.0	3.25	40	0.080	70	710	X	0.36	3.41	0.08	68.6	20	15		
825		332.2	335.4		3.2	110	120	340	1.0	3.45	65	1/S	60	530	X	0.35	3.52	0.27	69.5	20	15		
826		335.4	338.5		3.1	55	75	255	1.0	2.90	45	0.090	45	520	X	0.30	3.06	0.14	70.0	20	20		
827		338.5	341.65		3.15	40	35	120	0.5	2.85	80	0.080	65	620	X	0.47	2.82	0.12	71.5	20	15		
828		341.65	342.8		1.15	20	40	220	0.5	6.55	360	0.095	100	1350	X	0.34	3.71	1.60	50.8	50	20	Py-altered basalt dyke	
829		342.8	343.05		0.25	35	35	370	1.0	4.80	445	0.085	140	1200	X	0.29	3.01	2.45	63.5	30	15		
57830		343.05	343.75		0.70	30	85	320	0.5	5.40	240	0.080	160	1650	X	0.51	4.13	1.85	48.3	50	25	Py-altered basalt dyke	
831		343.75	347.0		3.25	25	50	220	0.5	2.90	140	0.090	85	740	X	0.36	2.60	0.52	70.1	20	15		
832		347.0	350.0		3.0	20	50	205	1.0	2.20	95	0.070	90	330	X	0.38	2.07	0.07	73.4	20	15		
833		350.0	353.0		3.0	20	30	165	1.0	2.75	75	0.060	50	250	X	0.30	2.56	0.12	72.2	20	15		
834		353.0	356.0		3.0	20	35	140	1.0	2.45	45	0.070	120	270	X	0.37	2.28	0.09	71.1	20	15		
835		356.0	358.5		2.5	15	20	110	1.0	1.85	50	0.060	70	150	X	0.34	1.98	0.08	74.2	15	15	Grey massive dacite 356.0-361.0	
836		358.5	361.0		2.5	15	15	25	0.5	1.60	45	0.050	510	3200	X	0.21	1.67	0.06	75.5	10	5		
837		361.0	364.2		3.2	20	30	135	1.0	2.05	45	0.070	60	150	X	0.33	2.18	0.06	71.2	20	10		
838		364.2	367.4		3.2	20	35	110	1.0	1.95	125	0.110	65	200	X	0.36	2.30	0.07	73.5	15	10		
839		367.4	370.6		3.2	40	25	75	1.5	1.80	45	0.060	35	150	X	0.35	2.23	0.08	73.7	20	15		
57840		370.6	373.7		3.1	20	20	110	1.0	1.70	75	0.050	80	170	X	0.32	1.94	0.27	73.6	15	10		
841		373.7	375.5		1.8	5	15	45	0.5	1.40	40	0.040	210	710	X	0.27	1.56	0.02	75.7	15	10	Grey massive dacite Grey brecciated dacite 375.5-4604	
842		375.5	378.6		3.1	15	25	100	1.0	2.05	60	0.050	35	340	X	0.46	2.14	0.06	72.7	25	15		
843		378.6	381.7		3.1	15	15	15	1.0	2.10	65	0.050	45	300	X	0.28	2.36	0.04	74.0	15	15		
844		381.7	384.8		3.1	15	10	10	1.0	1.80%	60	0.030	75	200	X	0.31	1.94	0.03	77.1	15	15		
845		384.8	387.9		3.1	20	40	110	1.0	2.15	40	0.050	55	300	X	0.20	2.62	0.09	75.3	15	10		
846		387.9	391.0		3.1	20	30	70	1.0	1.85	75	0.040	110	490	X	0.32	1.92	0.05	74.3	15	10		
847		391.0	394.1		3.1	10	20	40	1.0	1.95	40	0.040	150	330	X	0.27	2.36	0.03	72.7	25	10		
848		394.1	397.2		3.1	15	15	50	0.5	2.15	45	0.030	180	460	X	0.25	2.42	0.04	72.4	25	10		
849		397.2	400.3		3.1	10	20	10	0.5	1.75	35	0.040	220	600	X	0.27	2.16	0.04	73.0	10	10		
57850		400.3	403.4		3.1	10	15	20	1.0	1.75	30	0.040	240	930	X	0.16	2.46	0.11	75.6	10	10		
851		403.4	406.4		3.0	20	15	20	1.0	1.90	45	0.050	50	690	X	0.35	2.38	0.15	72.6	15	10		
852		406.4	409.4		3.0	10	25	45	1.0	2.20	55	0.060	30	1100	X	0.28	2.31	0.13	69.9	15	10	less altered andesite lava 406.4-416.35	
853		409.4	412.4		3.0	10	30	55	1.0	2.30	480	0.040	35	1050	X	0.21	1.62	0.36	72.7	10	10		
854		412.4	415.4		3.0	10	20	110	0.5	1.90	305	0.050	45	1100	X	0.27	1.92	0.94	69.5	15	10		

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

DIAMOND DRILL CORE GEOCHEMICAL ANALYSES RECORD

HOLE No. BBP 246
SHEET No. 2

Sample No.	Sample Type	From	To	Core Rec'd	Sample Length	METAL CONTENT (ppm unless specified)														Co	Ni	COMMENTS
						Cu	Pb	Zn	Ag	Fe%	Mn	Hg	Sr	Ba	Au	Na ₂ O%	S %	CaO%	SiO ₂ %			
57855		415.4	416.35		0.95	15	25	50	0.5	1.70	65	0.040	25	1100	X	0.23	1.65	0.09	75.3	15	10	Basalt intrusive py-altered margin
856		416.35	418.3		1.95	20	40	90	0.5	2.25	130	0.050	25	970	X	0.24	2.14	0.22	74.1	20	10	
857		418.3	420.1		1.8	15	30	335	0.5	6.55	855	0.050	35	1200	X	0.26	1.80	0.63	54.1	40	25	
858		420.1	423.1		3.0	10	25	65	1.0	2.10	70	0.040	30	1200	X	0.21	2.13	0.08	71.8	20	18	Basalt intrusive
859		423.1	425.3		2.2	15	45	65	1.0	2.95	45	0.050	30	1050	X	0.27	3.16	0.08	72.3	15	10	
57860		425.3	428.35		3.25	20	60	75	1.0	2.30	105	0.060	35	1550	X	0.24	2.16	0.20	70.7	25	18	
861		428.55	431.65		3.1	15	35	165	1.0	2.00	185	0.050	35	1150	X	0.18	1.68	0.32	72.8	20	15	Basalt dyke
862		431.65	433.0		1.35	10	25	805	0.5	8.70	2200	0.060	55	900	X	0.29	0.70	1.70	47.1	40	20	
863		433.0	434.75		1.75	25	25	75	1.0	2.35	165	0.040	35	1050	X	0.38	1.82	0.23	72.9	20	10	
864		434.75	435.9		1.15	15	25	760	0.5	8.30	2300	0.030	120	400	X	2.69	0.192	2.20	47.7	40	25	Grey massive dacite 436.7-470.5
865		435.9	436.7		1.2	35	45	200	1.0	3.15	365	0.060	45	960	X	0.15	2.86	1.15	69.9	25	15	
866		436.7	439.8		3.1	30	55	215	1.0	2.50	60	0.105	25	890	X	0.25	2.44	0.10	72.0	15	10	
867		439.8	442.9		3.1	20	20	20	0.5	1.60	220	0.020	50	760	X	0.19	1.44	0.89	74.3	10	19	Basalt dyke
868		442.9	446.0		3.1	15	15	15	0.5	1.35	55	0.030	25	720	X	0.31	1.32	0.06	76.5	15	10	
869		446.0	449.1		3.1	15	15	20	0.5	1.35	55	0.030	20	640	X	0.21	1.28	0.12	79.7	15	10	
57870		449.1	452.2		3.1	15	20	20	1.0	1.60	50	0.030	20	670	X	0.19	1.77	0.04	74.0	15	10	Basalt dyke
871		452.2	455.3		3.1	20	25	130	0.5	1.45	190	0.040	25	550	X	0.16	1.24	0.54	77.2	15	15	
872		455.3	458.4		3.1	15	25	180	1.0	1.40	95	0.040	20	480	X	0.17	1.50	0.24	77.0	20	10	
873		458.4	461.5		3.1	15	30	105	0.5	1.50	50	0.040	75	420	X	0.25	1.50	0.07	77.8	15	10	Basalt dyke
874		461.5	464.5		3.0	25	30	170	1.0	2.10	110	0.070	20	440	X	0.21	1.95	0.15	76.9	20	10	
875		464.5	467.5		3.0	25	40	105	1.0	2.15	135	0.100	15	430	X	0.17	2.16	0.16	76.3	20	10	
876		467.5	470.5		3.0	20	30	70	1.0	1.55	40	0.085	15	480	X	0.19	1.73	0.04	76.7	15	10	Basalt dyke
877		470.5	473.5		3.0	20	25	35	1.0	1.85	105	0.040	20	500	X	0.23	1.77	0.41	71.5	20	10	
878		473.5	476.5		3.0	20	40	110	1.0	2.65	55	0.050	15	610	X	0.31	2.50	0.23	68.7	30	15	
879		476.5	479.6		3.1	25	40	90	1.0	2.50	160	0.040	15	1000	0.008	0.28	2.54	0.20	71.1	25	15	Basalt dyke
57880		479.6	480.5		0.9	20	20	35	0.5	2.20	95	0.020	20	680	X	0.24	2.06	0.33	68.9	25	15	
881		480.5	482.9		2.4	25	30	55	1.0	3.00	115	0.040	35	1000	X	0.77	2.65	0.47	67.8	40	15	
882		482.9	485.3		2.4	15	50	40	1.0	1.90	155	0.030	20	660	X	0.17	1.48	0.26	74.4	15	15	Altered sheared lavas, minor lava breccias 479.6-488.6
883		485.3	487.8		2.5	15	30	40	0.5	1.70	100	0.030	15	680	X	0.17	1.35	0.16	74.0	15	10	
884		487.8	488.6		0.8	20	95	40	1.0	2.70	140	0.040	30	570	X	0.13	2.4	0.72	68.8	30	10	
885		488.6	492.0		3.4	15	20	70	1.0	1.95	105	0.050	20	600	X	0.18	1.78	0.39	68.9	25	15	Altered rhyolitic ignimbrite: 488.6-498.65
886		492.0	495.3		3.3	20	20	30	X	1.90	140	0.030	25	570	X	0.84	1.10	0.48	71.8	20	15	
887		495.3	498.65		3.35	20	20	35	0.5	2.45	155	0.030	30	570	X	0.64	1.71	0.56	70.0	25	20	
888		498.65	500.8		2.15	30	25	30	1.0	3.10	75	0.030	20	550	X	0.37	2.52	0.24	68.4	30	15	Altered massive sheared lava or ignim- brite: 498.66-525.0
889		500.8	503.0		2.2	25	30	110	1.0	2.65	120	0.040	30	500	X	0.54	2.03	0.33	68.6	30	20	
57890		503.0	506.2		3.2	20	35	170	1.0	2.70	120	0.050	20	500	X	0.16	2.45	0.44	69.9	20	40	
891		506.2	509.4		3.2	20	55	75	1.0	2.10	130	0.040	15	530	X	0.84	1.70	0.36	70.3	25	15	Broken & faulted.
892		509.4	512.6		3.2	15	20	165	1.0	1.90	190	0.050	10	440	X	0.12	1.36	0.39	75.4	20	10	
893		512.6	515.7		3.1	10	20	180	0.5	1.75	140	0.060	20	450	X	0.13	1.50	0.35	75.8	25	10	
894		515.7	518.8		3.1	15	20	95	0.5	1.85	245	0.050	20	350	X	0.06	1.38	0.50	77.9	25	10	Broken & faulted.
895		518.8	521.9		3.1	15	20	80	1.0	1.80	130	0.030	20	400	X	0.10	1.42	0.42	76.2	25	15	
896		521.9	525.0		3.1	15	20	95	1.0	1.70	225	0.040	25	410	X	0.11	1.08	0.70	75.4	25	10	

NOTE

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

ELECTROLYTIC ZINC COMPANY OF A'ASIA LTD. HOLE No. BBP 247
 MINERAL RESOURCES DIVISION - TASMANIA DIAMOND DRILL CORE RECORD
SHEET No. 1.

PROJECT: BULGOBAC E.L. 12/72 BOCO PROSPECT LOCALITY: Traverse 2 OBJECTIVE: Across-strike traverse drilling of concealed qtz-sericite-py alteration zone. RESULT: Extended coverage east of BBP 246 into weaker alteration. Evidence for steep easterly dip and 100m thickness of dacite obsidian host.	GRID CO-ORDS: A.M.G. CO-ORDS: 383,276.8mE 5,385,941.3mN COLLAR R.L.: 374.4 COLLAR DIP: -45° AZIMUTH: 105° TOTAL DEPTH: 382.2m	HOLE SIZE: HQ 35m; NQ 56m; BQ TD CASING: PVC to TD COMMENCED: 15.8.83 COMPLETED: 1.9.83 LOGGED BY: R.A. Sainty	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>Depth (m)</th> <th>Azimuth (°m.g.)</th> <th>Dip</th> <th>Depth (m)</th> <th>Azimuth (°m.g.)</th> <th>Dip</th> </tr> <tr> <td>100</td> <td>108°</td> <td>42°</td> <td></td> <td></td> <td></td> </tr> <tr> <td>220</td> <td>106°</td> <td>42°</td> <td></td> <td></td> <td></td> </tr> <tr> <td>382</td> <td>109°</td> <td>40°</td> <td></td> <td></td> <td></td> </tr> </table>	Depth (m)	Azimuth (°m.g.)	Dip	Depth (m)	Azimuth (°m.g.)	Dip	100	108°	42°				220	106°	42°				382	109°	40°			
Depth (m)	Azimuth (°m.g.)	Dip	Depth (m)	Azimuth (°m.g.)	Dip																						
100	108°	42°																									
220	106°	42°																									
382	109°	40°																									

DEPTH		ROCK DESCRIPTION	MINERALISATION		CORE REC'D	
From	To				Run	Short
0	4.0	Glacial Cover				
4.0	153.55	Strongly silicified-sericitised-pyritised dacite obsidian lava fragmentals A strongly bleached and altered sequence of grey moulded lava clast breccias and microbreccia (hyaloclastite) enveloping lobes of massive grey glassy lavas. The lava fragmentals dominate and are typified by a selectively silicified felsitic obsidian framework and a selectively sericitised, sheared and ill-defined matrix. Pervasive fine to ultrafine py and pyritic qtz-sericite veinlets. Massive grey altered lavas occur as follows: 71.1-71.9 Grey altered massive flowbanded lava 78.2-88.2 Grey strongly altered relatively massive lava - veined and partially brecciated. Py veined.				
57.2	60.1	This sequence is interrupted by: Altered pyritic basalt dyke bleached to pale cream and yellow, diffuse pyrite vein webbing throughout.				
69.35	70.5	Altered basalt dyke bleached pale green to white, non-pyritic, small amygdaloides.				
88.2	101.3	Little-altered felsparphyric leuco-andesite lava. Pale green to cream, flowbanded and flow brecciated. Sporadic strong massive py veining in narrow grey altered zones. Fine chlorite qtz webbing.				
101.3	108.5	Unaltered but pyritic pale pink-brown silicic massive lava. Very fg dk py within and haloing fractures.				
108.5	110.1	Basalt dyke. Bleached margin.				
125.0	126.8	Basalt dyke. Amygdaloidal. Bleached margin.				
153.55	382.22	Moderately to weakly altered leuco-andesite lavas and lesser ignimbrites. Alteration dominated by sericitisation-pyritisation, decreasing down-hole.				
153.55	192.8	Grey-pink weakly altered but pyritic lava breccias and sheared lavas.				
157.95	159.0	Basalt dyke. Dark green to pale brown (bleached), amygdaloidal				
161.9	163.2	Pumiceous sheared flow margin or top.				
172.5	173.2	Basalt dyke				
173.8	176.2	Basalt dyke				

ELECTROLYTIC ZINC COMPANY OF A'ASIA LTD. MINERAL RESOURCES DIVISION - TASMANIA		DIAMOND DRILL CORE RECORD		HOLE No. BBP 247		SHEET No. 2	
DEPTH		ROCK DESCRIPTION	MINERALISATION	CORE REC'D			
From	To			Run	Short		
176.2	182.5	Grey-green moderate qtz-sericite altered, no py, in sheared lava breccia					
182.5	185.7	Pink unaltered but pyritic lava, tiny amygdales					
185.7	192.8	Grey-green strong qtz-sericite alteration, no py, in lava breccia. Qtz veined					
192.8	259.5	Buff (bleached) - brown flow banded silicic lavas and lava breccias. Py veining and elsewhere qtz or chlorite veining is locally prominent. Unit is strongly silicified					
259.5	302.4	Green-grey moderate sericite-py altered andesitic ignimbrite. Crystal-tuff with occasional centimetric lava fragments.					
265.3	285.9	Basalt dyke					
302.4	308.9	Pink to buff unaltered feldsparphyric leuco-andesite lava. Qtz veined.					
308.9	310.6	Interflow contact zone. Sheared, brecciated, fragmental in part. Minor pumice.					
310.6	322.0	Green-grey moderate sericite-py altered to lesser buff feldsparphyric leuco-andesite lava. Abundant py as fine diss and veinlets. Feldspars visible throughout.					
322.0	324.4	Brown-grey highly pyritised fragmental. Abundant fine diss py in matrix-supported fragmental rock. Pink to buff clasts.					
324.4	342.0	Green-brown weakly altered leuco-andesite lava. Silica webbing, with py in dk green moderate sericite-altered intervals. i.e. as per 259.4-302.4 and 310.6-322.0 in sporadic intervals only. Faintly flow banded, flow brecciated. Some intervals are strongly silicified.					
342.0	382.2	Pink unaltered silicic leuco-andesite lava. Narrow zones of yellow to green-grey moderate sericite, weakly pyritic alteration					
	TD	364.4-365.2 Grey, pyritic-matrixed fragmental. Sericitised and strongly pyritised.					

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ELECTROLYTIC ZINC COMPANY OF ASIA LTD.																				DIAMOND DRILL CORE GEOCHEMICAL ANALYSES RECORD																				HOLE No. <u>BBP 247</u>	
MINERAL RESOURCES DIVISION - TASMANIA																																								SHEET No. 1	
LABORATORY ANALYTICAL TECHNIQUE DETECTION LIMIT						ANALABS, Coeee AAS at Coeee, other at Perth.														GRID CO-ORDS: A.M.G. CO-ORDS: COLLAR R.L.: COLLAR DIP: AZIMUTH: TOTAL DEPTH:																					
						AAS	AAS	AAS	AAS	AAS	AAS	AAS	XRF	XRF	Wet	XRF	XRF	XRF	AAS	383,276.8mE	5,385,941.3mN	374.4	-45°	105° AMG	382.2m																
						103	103	103	103	103	103	122	401	401	408	408	408	402	103																						
5	5	5	0.5	5	5	0.005	5	20	0.1%	0.1%	0.1%	30	5																												
Sample No.	Sample Type	From	To	Core Rec'd	Sample Length	METAL CONTENT (ppm unless specified)														AAS 103		COMMENTS																			
						Cu	Pb	Zn	Ag	Fe%	Mn	Hg	Sr	Ba	Na ₂ O%	SiO ₂ %	CaO%	S %	Co	Ni	Bi																				
58040		4.0	7.0		3.0	20	95	75	1.5	1.35	60	0.070	25	950	0.09	84.5	0.03	0.52	10	15	50	4.0-88.2: Grey pyrite-altered dacite obsidian fragmental																			
041		7.0	10.0		3.0	20	50	60	0.5	1.50	65	0.040	25	1250	0.11	77.1	0.02	0.324	10	15	10																				
042		10.0	13.0		3.0	15	60	80	0.5	1.35	45	0.070	20	940	0.13	78.9	X	0.952	10	15	40																				
043		13.0	16.0		3.0	15	70	60	1.0	1.40	35	0.070	25	980	0.13	76.5	0.01	1.42	15	20	30																				
043B		16.0	19.0		3.0	15	65	70	0.5	1.35	30	0.050	25	940	0.13	75.1	X	1.21	15	15	20																				
044		19.0	22.0		3.0	15	75	65	1.5	1.50	75	0.060	25	710	0.11	80.0	X	1.26	15	15	20																				
045		22.0	25.0		3.0	15	50	145	1.5	1.65	55	0.110	20	620	0.11	79.2	X	1.74	10	15	20																				
046		25.0	28.0		3.0	10	50	80	1.0	1.45	50	0.060	20	840	0.14	76.4	X	1.64	15	15	30																				
047		28.0	31.0		3.0	15	50	55	1.5	1.30	50	0.050	25	800	0.13	78.5	X	1.46	10	15	20																				
048		31.0	34.0		3.0	15	50	155	1.0	1.40	50	0.080	15	700	0.13	81.3	X	1.66	15	15	30																				
049		34.0	37.0		3.0	15	55	85	1.5	1.35	35	0.060	15	960	0.15	74.2	X	1.72	15	20	20																				
58050		37.0	40.0		3.0	15	95	80	1.5	1.45	35	0.060	15	900	0.12	76.8	X	1.70	15	15	20																				
050		40.0	43.0		3.0	15	90	120	2.0	1.65	35	0.070	15	640	0.11	78.3	X	2.13	15	15	10																				
052		43.0	46.0		3.0	20	710	2350	4.0	2.45	30	0.700	10	860	0.09	73.5	X	2.66	20	15	20																				
053		46.0	49.0		3.0	20	90	135	2.0	2.90	45	0.100	20	1100	0.09	73.9	X	2.56	20	15	30																				
054		49.0	52.0		3.0	20	145	160	2.0	3.35	40	0.100	15	1150	0.10	70.6	X	3.40	30	15	40																				
055		52.0	55.0		3.0	15	85	130	2.0	1.90	35	0.090	20	1200	0.11	74.3	X	2.14	20	15	20																				
056		55.0	58.0		3.0	20	95	90	2.0	3.10	60	0.060	20	1450	0.11	70.4	X	2.83	35	20	30																				
057		58.0	61.0		3.0	15	90	100	1.5	2.15	40	0.040	95	2450	0.15	62.8	0.01	2.10	45	20	20																				
058		61.0	64.0		3.0	25	110	105	2.0	2.35	45	0.080	25	1100	0.11	76.8	X	2.16	15	10	10																				
059		64.0	67.0		3.0	20	60	65	2.0	1.60	45	0.050	25	870	0.14	76.0	X	1.70	10	15	20																				
58060		67.0	69.5		2.5	20	65	525	1.5	1.55	35	0.100	25	930	0.12	74.1	X	1.75	15	15	40																				
061		70.5	73.0		2.5	15	105	180	2.5	2.30	110	0.090	20	360	0.57	81.4	0.04	0.828	30	20	30																				
062		73.0	76.0		3.0	15	85	45	1.5	1.70	60	0.050	20	1050	0.07	78.8	X	1.65	20	15	20																				
063		76.0	78.3		2.3	15	55	45	2.0	2.10	40	0.040	15	1100	0.08	75.0	X	2.14	35	15	20																				
064		78.3	82.0		3.7	15	70	105	1.5	2.00	40	0.070	20	1100	0.10	75.1	0.03	2.32	30	15	10																				
065		82.0	85.0		3.0	15	45	60	1.5	2.10	35	0.040	15	1050	0.10	74.4	0.02	2.30	20	15	20																				
066		85.0	88.2		3.2	15	60	65	1.5	2.60	35	0.030	15	1100	0.18	73.0	0.04	2.92	45	20	10																				
067		88.2	91.0		2.8	10	30	50	1.5	1.70	70	0.030	30	1350	0.56	74.3	0.04	1.30	30	15	10																				
068		91.0	94.0		3.0	20	25	55	1.5	2.45	75	0.040	25	1150	0.37	73.7	0.02	1.96	45	15	20																				
069		94.0	97.0		3.0	10	25	80	1.5	1.75	95	0.040	15	1250	0.10	68.7	X	1.04	35	20	20																				
58070		97.0	100.0		3.0	20	45	465	1.5	1.20	80	0.070	55	830	0.75	76.6	0.03	0.544	15	15	20																				
071		100.0	103.0		3.0	10	35	95	1.0	.725	35	0.030	50	630	1.29	78.2	0.02	0.732	5	5	10																				
072		103.0	106.0		3.0	15	40	260	0.5	.980	75	0.050	60	620	2.22	75.8	0.04	0.844	15	5	X																				
073		106.0	108.1		2.1	10	40	970	0.5	1.10	75	0.115	70	530	2.31	77.8	0.05	1.20	15	10	20																				
074		110.3	112.0		1.7	10	40	270	1.0	2.20	255	0.060	55	680	1.45	71.9	0.10	0.936	20	10	10																				
075		112.0	115.0		3.0	10	275	235	1.5	1.30	45	0.090	10	590	0.06	77.9	0.02	1.58	30	10	20																				
076		115.0	118.0		3.0	10	45	40	1.0	1.30	45	0.060	15	390	0.07	77.8	0.02	1.38	40	10	10																				
077		118.0	121.0		3.0	10	35	55	1.0	1.50	50	0.070	20	320	0.07	77.7	0.04	1.89	30	10	10																				
078		121.0	124.0		3.0	10	55	110	1.0	1.40	55	0.070	15	400	0.07	78.3	0.03	1.68	20	10	20																				
079		124.0	127.0		3.0	20	210	4300	1.5	2.30	205	2.7	20	1200	0.10	62.5	0.86	1.22	40	20	10																				
58080		127.0	130.0		3.0	15	30	25	1.0	1.60	55	0.040	20	650	0.08	76.3	0.03	1.96	15	10	20																				
081		130.0	133.0		3.0	15	20	570	1.0	1.50	40	0.060	25	440	0.07	76.7	0.03	1.82	15	20	X																				
082		133.0	136.0		3.0	20	25	25	1.0	1.85	60	0.070	45	650	0.11	76.8	0.03	2.09	40	10	X																				
083		136.0	139.0		3.0	20	30	25	1.0	1.85	65	0.050	30	480	0.10	74.5	0.03	2.03	30	40	10																				

2068150

Sample No.	Sample Type	From	To	Core Rec'd	Sample Length	METAL CONTENT (ppm unless specified)														Ni	Bi	COMMENTS
						Cu	Pb	Zn	Ag	Fe%	Mn	Hg	Sr	Ba	Na ₂ O%	SiO ₂ %	CaO%	S %	Co			
58084		139.0	142.2		3.2	15	15	15	0.5	1.60	50	0.040	30	620	0.07	77.5	0.02	1.87	30	10	20	
085		142.2	145.2		3.0	15	25	15	1.0	1.80	65	0.060	20	670	0.06	77.2	0.11	1.92	35	15	X	
086		145.2	148.2		3.0	20	40	15	2.5	2.00	90	0.070	20	580	0.05	74.9	0.25	2.39	20	15	40	
087		148.2	151.2		3.0	15	50	55	1.0	2.10	100	0.070	15	530	0.04	76.6	0.06	2.33	45	10	10	
088		151.2	154.2		3.0	15	50	30	1.0	1.70	55	0.070	20	770	0.36	73.7	0.08	1.98	10	10	10	
089		154.2	157.2		3.0	15	25	70	1.0	1.65	265	0.050	70	720	1.99	71.6	0.95	1.27	30	15	10	
58090		157.2	160.2		3.0	10	35	125	1.0	1.75	555	0.050	75	510	2.09	68.8	1.61	0.696	30	10	20	157.95-159: basalt dyke
091		160.2	163.2		3.0	10	35	160	1.0	1.55	165	0.135	15	660	0.58	71.3	0.16	1.70	40	10	20	Moderated to weakly
092		163.2	166.2		3.0	10	35	200	1.0	1.80	165	0.105	30	520	0.96	74.0	0.09	1.94	40	10	40	altered leuco-andesites
093		166.2	169.2		3.0	10	50	170	1.0	1.90	270	0.100	45	480	1.27	77.1	0.56	2.01	30	20	10	and ignimbrites
094		169.2	172.2		3.0	10	30	170	1.0	2.75	395	0.080	45	620	1.02	66.3	1.25	1.54	30	15	10	
095		172.2	175.2		3.0	15	30	115	1.0	3.70	680	0.040	45	540	1.73	66.6	0.49	1.57	40	20	20	
096		175.2	178.2		3.0	10	20	130	1.0	4.25	1350	0.040	50	490	2.00	64.2	0.63	0.752	30	25	40	
097		178.2	181.2		3.0	10	25	30	1.0	1.30	40	0.040	8	690	1.99	72.4	0.04	1.27	20	10	10	
098		181.2	184.2		3.0	15	30	120	1.0	.875	45	0.050	10	480	0.24	78.3	0.04	.760	10	10	X	
099		184.2	185.7		1.5	10	35	230	1.0	.865	40	0.050	70	1550	0.12	68.5	0.01	1.63	10	10	X	
58100		185.7	187.2		1.5	10	45	355	1.5	1.20	60	0.145	8	360	0.02	80.3	0.04	1.01	20	15	20	
53378		187.2	190.2		3.0	15	40	195	1.5	1.40	90	0.100	8	420	0.02	72.7	0.05	1.26	25	20	30	
379		190.2	193.2		3.0	15	50	185	1.5	1.35	80	0.080	25	400	0.88	78.8	0.04	0.924	20	20	10	
53380		193.2	196.2		3.0	10	55	110	2.0	1.20	65	0.040	45	700	1.65	80.3	0.04	0.888	25	20	20	
381		196.2	199.2		3.0	10	40	85	1.5	1.45	85	0.040	55	970	1.70	76.5	0.05	1.29	35	20	X	
392		199.2	202.2		3.0	10	45	120	2.0	1.90	70	0.060	60	1000	1.15	75.3	0.04	1.80	35	15	20	
383		202.2	205.2		3.0	10	30	40	1.0	1.40	55	0.040	70	1600	2.23	76.2	0.05	1.42	30	15	20	
384		205.2	208.2		3.0	10	25	85	2.0	2.80	240	0.030	100	1400	2.55	71.1	0.12	0.892	35	20	20	207.1-214.2: basalt dyke
385		208.2	211.2		3.0	5	25	180	1.0	7.20	755	0.030	140	930	2.90	60.1	0.37	0.036	25	25	30	
386		211.2	214.2		3.0	10	20	165	2.5	6.45	740	0.030	110	780	2.61	61.5	0.40	0.068	25	25	30	
387		214.2	217.2		3.0	10	20	40	1.0	1.40	120	0.020	65	650	2.57	78.1	0.09	0.684	20	15	10	
388		217.2	220.2		3.0	10	20	45	1.5	1.80	150	0.020	65	760	2.24	75.8	0.09	0.744	20	15	40	
389		220.2	223.2		3.0	10	40	110	1.5	2.35	320	0.040	45	510	1.78	73.9	0.23	1.11	40	20	30	
53390		223.2	226.2		3.0	10	20	20	2.0	1.55	150	0.030	70	700	3.21	77.3	0.08	1.11	35	15	10	
391		226.2	229.2		3.0	10	20	25	1.0	1.35	145	0.020	70	770	2.97	77.0	0.09	0.868	30	20	20	
392		229.2	232.2		3.0	10	25	25	1.5	1.25	300	0.030	85	750	3.68	76.7	0.12	0.520	15	20	10	
393		232.2	235.2		3.0	10	25	25	1.5	1.30	175	0.020	80	690	3.33	76.6	0.54	0.724	20	25	10	
58911		286.2	289.2		3.0	15	20	25	1.0	1.25	90	0.030	20	630	0.05	79.1	0.07	0.26	10	20	10	
912		289.2	292.2		3.0	20	30	50	2.0	2.55	200	0.030	25	790	0.32	71.7	0.29	1.17	20	20	X	
913		292.2	295.2		3.0	15	30	45	1.0	2.25	245	0.030	40	710	0.66	71.0	0.82	1.04	25	20	20	
914		295.2	298.2		3.0	15	25	60	2.0	2.50	270	0.020	70	720	1.10	67.6	0.62	0.988	20	20	30	
915		298.2	301.2		3.0	20	25	45	1.5	2.75	165	0.030	80	670	1.16	69.1	0.42	1.32	20	20	20	
916		301.2	304.2		3.0	20	25	20	1.5	1.30	45	0.030	130	570	2.34	68.2	0.95	1.54	35	20	20	
917		304.2	307.2		3.0	25	35	20	1.5	1.60	40	0.040	170	520	3.33	69.8	1.68	1.32	40	20	20	
918		307.2	310.2		3.0	30	40	20	2.0	1.80	40	0.030	110	700	2.45	70.1	1.55	0.876	25	20	30	
919		310.2	313.2		3.0	30	30	70	2.0	2.30	235	0.020	160	770	3.29	67.5	1.33	1.76	35	20	10	
58920		313.2	316.2		3.0	15	20	100	1.5	2.45	380	0.030	210	860	3.73	66.3	2.26	2.12	40	20	20	
921		316.2	319.2		3.0	125	25	150	2.0	2.00	775	0.030	200	760	3.41	67.2	4.05	1.45	25	20	20	
922		319.2	322.2		3.0	20	40	40	1.5	3.50	205	0.030	150	850	3.04	64.5	1.12	2.86	35	25	10	
923		322.2	325.2		3.0	15	40	190	1.5	1.90	165	0.050	80	660	2.23	64.4	1.01	2.84	50	20	10	
924		325.2	328.2		3.0	15	20	120	1.5	2.05	560	0.020	90	630	1.86	68.4	2.66	0.352	20	15	10	
925		328.2	331.2		3.0	10	15	50	2.0	1.95	675	0.020	90	600	1.51	70.0	2.88	0.172	15	15	10	

PROJECT: BULGOBAC E.L. 12/72 - BOCO PROSPECT LOCALITY: Traverse 3 OBJECTIVE: Across-strike traverse drilling of concealed quartz-sericite-pyrite alteration zone. RESULT: Did not intersect the dacite obsidian fragmental host horizon. Saw weaker 'marginal' alteration.	GRID CO-ORDS: A.M.G. CO-ORDS: 383,698.4mE 5,386,378.6mN COLLAR R.L.: 376.3 COLLAR DIP: -50° AZIMUTH: 285° TOTAL DEPTH: 577.5m	HOLE SIZE: HW 7.0; HQ 21.0; NQ 123.5; BQ TD. CASING: PVC to TD COMMENCED: 5. 9.83 COMPLETED: 24.11.83 LOGGED BY: R.A. Sainty	Depth (m) 130 217 325 406 490 574	Azimuth (°m.g.) 289 288° 289° 291° 294° 296°	Dip 45° 45.5° 44° 40.5° 37° 31°	
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DEPTH		ROCK DESCRIPTION	MINERALISATION		CORE REC'D	
From	To		Run	Short		
0	90.5	Glacial cover.				
90.5	388.2	Unaltered to weakly altered felsic intermediate lavas (leuco-andesites) regionally silicified and basalt intrusives Alteration (sericitic+chloritic) increasing down-hole.				
90.5	145.2	Basalt dyke				
145.2	221.0	Pale pink-orange, massive silicic lava				
221.0	228.4	Intensely silicified zone above fault, below				
228.4	228.55	FAULT (pug)				
228.55	248.0	Pale pink-orange, massive silicic lava				
248.0	288.0	As above 228.55-248.0, with much patchy green chloritic alteration.				
288.0	344.5	Weakly altered (sericite+chlorite). Green chlorite-stained sericitised feldspars.				
344.5	353.8	Basalt dyke				
353.8	376.5	Weakly altered (sericite+chlorite), as above, 288.0-344.5				
376.0	377.0	Strongly silicified + pyritised fragmental.				
377.0	388.2	Grey-brown, weakly silicified, massive porphyritic lava.				
388.2	431.35	Moderately to strongly altered felsic intermediate lavas and fragmentals (leuco-andesites), with basalt intrusives.				
388.2	396.7	Moderately silicified+sericitised, strongly pyritised. Pale grey. Basalt dykes: 389.3-390.6; 391.5-391.8; 394.9-395.4.				
396.7	400.8	Weakly silicified massive porphyritic lava, brown with patchy green.				
400.8	402.0	Moderately sericitised+chloritised				
402.0	404.1	Strongly silicified, sericitised, pyritic, pale grey				
404.1	410.7	Moderately sericitised+pyritic; scattered wispy + dis py, grey-green, with chlorite-stained sericitised feldspars.				

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ELECTROLYTIC ZINC COMPANY OF ASIA LTD. MINERAL RESOURCES DIVISION - TASMANIA		DIAMOND DRILL CORE RECORD		HOLE No. <u>BBP 248</u>	
				SHEET No. <u>2</u>	
DEPTH		ROCK DESCRIPTION	MINERALISATION	CORE REC'D	
From	To			Run	Short
410.7	431.35	Moderately sericitised+chloritised, some area (eg 418.3-421.0) overprinted by grey silicification, producing a pseudo lithic texture			
431.35	577.5	Unaltered felsic intermediate lavas (leuco-andesites), regionally silicified, and basalt intrusives. Sporadic strong alteration.			
431.35	434.0	Basalt dyke.			
434.0	435.65	Pale brown massive silicic lava			
435.65	437.4	Basalt dyke (also 440.8-441.2; 442.7-443.2, intervening areas, as above)			
443.2	450.4	Strongly silicified and bleached massive lava. Minor py as narrow fracture fill and clots. 446.75-446.9: Intense py-filled breccia matrix - fluid channelway. 0.1m wide basalt dyke on down hole contact.			
450.4	453.65	Basalt dyke			
453.65	474.2	Pale (bleached) brown massive silicic lava. V little py.			
474.2	490.3	Blotchy pink massive silicic lavas.			
490.3	499.9	Weakly to strongly silicified pink massive lava.			
499.9	506.1	Strongly altered (sericitised+silicified, no py), pale green			
506.1	511.9	Massive silicic lava			
511.9	514.0	Basalt dyke			
514.0	517.5	Silicified+pyritised, fine py webbing in bleached, pale brown to pale pink lava - producing a pseudo fragmental texture.			
517.5	518.4	Sericitised+pyritised (diss py). Pale yellow-green and pink.			
518.4	519.3	Basalt dyke			
519.3	520.9	Sericitised+py-webbed (in breccia zones-fluid channelway). Bright green scattered ?fuchsite.			
520.9	526.1	Brown porphyritic massive silicic lava. Some diss py			
526.1	526.6	Basalt dyke			
526.6	577.5	Brown and green weakly to strongly silicified massive lava.			
	TD				

268153

ELECTROLYTIC ZINC COMPANY OF A'ASIA LTD. DIAMOND DRILL CORE RECORD HOLE No. BBP 250
 MINERAL RESOURCES DIVISION - TASMANIA SHEET No. 1.

PROJECT: BULGOBAC E.L. 12/72 - BOCO PROSPECT LOCALITY: Traverse 4 OBJECTIVE: Across-strike traverse drilling of concealed qtz-sericite-pyrite alteration zone. RESULT: Failure. Drilled entirely down-dip along the irregular contact between two altered lava units.	GRID CO-ORDS: 383,426.6mE A.M.G. CO-ORDS: 5,386,898.0mN COLLAR R.L.: 399.6m COLLAR DIP: -50° AZIMUTH: 105° AMG TOTAL DEPTH: 358.0m	HOLE SIZE: HW 6.0; HQ 27.0 NO 58.5; BQ TD (NQ 25.5-58.5) CASING: PVC to TD COMMENCED: 26.11.83 COMPLETED: 14.12.83 LOGGED BY: R.A. Sainty	Depth (m) 80 170 230 290 350	Azimuth (°m.g.) 108° 109° 108° 108.5°	Dip 46° 47° 45.5° 44°			
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DEPTH		ROCK DESCRIPTION	MINERALISATION		CORE REC'D	
From	To		Run	Short		
0	47.0	Glacial Cover				
47.0	298.4	Two adjacent altered lava units in a moderately east-dipping stratigraphy: one moderately to strongly pyritic-altered obsidian (hyaloclastite-brecciate in part), the other only weakly altered but pyritic lava. Drilled across-dip by BBP 251 at 97.85-109.9 and 109.9-137.2, respectively				
47.0	52.0	Yellow, FeO _x -stained and veined weathered ex-pyritic-altered rock				
52.0	57.0	FAULT: pug, and broken highly leached pyritic-altered fragmental with mill- to centimetric clasts.				
57.0	67.4	Green-grey massive flowbanded lava, hyaloclastite-brecciated in part. Thin py veinlets.				
67.4	72.7	FAULT: pug, broken highly leached pyritic-altered				
72.7	104.25	Leached weakly altered but abundantly pyritic massive lava. Ex-feldsparphyric textured, occasional resorbed centimetric xenoliths. Disseminated py Same unit as 109.9-137.2 in BBP 251				
104.25	110.8	Broken zone including fault (below) mostly pyritic massive to fragmental lava				
	107	FAULT: pug over 20cm within broad broken zone (above)				
110.8	122.4	Pale grey, pyritic massive to fragmental lava (hyaloclastite-brecciated)				
122.4	146.9	Cream, strongly altered but weakly pyritic massive lava. Intervals of abundant py. Incipiently net-veined. Grey altered zones sometimes appear to be shell-like, surrounding cores of cream massive lava. Same unit(s) as (56.5-)97.85-109.9 in BBP 251. Sporadic multilithic breccia dykes, 125.4-125.8, 131.6-131.9 (grey pyritic-altered), 134.55-136.6 (grey pyritic-altered in part), at 143.0, 144.45-144.65 (grey pyritic-altered).				
146.9	149.0	?Epiclastic multilithic breccia. Pale grey pyritic-altered matrix, milli- to centimetric clasts.				
149.0	208.4	Pale pink-orange, little-altered but abundantly pyritic massive lava. Abundant feldspars, amygdaloidal Slightly sheared. Same unit as 109.9-137.2 in BBP 251. 154.2-154.35 Highly pyritic, grey altered breccia dyke. 159.6-169.7 Highly leached, above fault, below 169.7-173.0 FAULT: pug and granulated rock. Fault contains pale green weakly to moderately pyritic massive and brecciated lava. 179.2-187.0 FAULT: granulated rock, minor pug 195.2-195.65 Multilithic breccia dyke, milli- to centimetric clasts.				
208.4	215.35	Cream to grey altered massive dacite obsidian. Slightly sheared. Same unit at 97.85-109.9 in BBP 251				

ELECTROLYTIC ZINC COMPANY OF ASIA LTD. MINERAL RESOURCES DIVISION - TASMANIA					DIAMOND DRILL CORE GEOCHEMICAL ANALYSES RECORD										HOLE No. <u>BBP 250</u>						
LABORATORY ANALYTICAL TECHNIQUE DETECTION LIMIT					ANALABS, Cooeee					AAS at Cooeee, others at Perth					GRID CO-ORDS: A.M.G. CO-ORDS: COLLAR R.L.: COLLAR DIP: AZIMUTH: TOTAL DEPTH:						
					AAS	AAS	AAS	AAS	AAS	AAS	AAS	AAS	AAS	AAS	XRF	XRF	Wet	XRF	XRF	383,426.6mE 5,386,898.0mN 399.6 -50° 105° AMG 358.0m	
					103	103	103	103	103	103	103	103	103	122	401	401	408	408	408		
5	5	5	0.5	5	5	5	5	5	0.005	5	20	0.1%	0.1%	0.1%							
Sample No.	Sample Type	From	To	Core Rec'd	Sample Length	METAL CONTENT (ppm unless specified)													XRF 402 0.003	COMMENTS	
						Cu	Pb	Zn	Ag	Fe	Mn	Co	Ni	Hg	Sr	Ba	Na,0%	Si0,%	Ca0%		S %
58944		46.0	49.0		3.0	15	120	125	X	1.20%	120	10	10	0.050	10	460	0.05	82.9	0.04	0.01	
945		49.0	52.0		3.0	15	140	160	X	5700	130	10	10	0.040	5	590	0.04	77.9	X	0.015	
946		52.0	58.0		6.0	15	65	100	X	2.00%	120	20	10	0.020	15	610	0.03	75.2	0.01	1.95	
947		58.0	61.0		3.0	10	25	70	X	1.60%	115	15	15	0.030	7	580	0.04	72.5	X	1.45	
948		61.0	64.0		3.0	10	25	35	X	1.40%	70	15	10	0.020	15	490	0.03	76.9	X	0.95	
949		64.0	67.0		3.0	25	25	100	X	1.65%	45	20	10	0.040	30	550	0.05	75.1	X	1.45	
58950		67.0	70.0		3.0	15	35	115	X	2.00%	75	20	15	0.030	10	720	0.04	72.4	X	1.60	
951		70.0	73.0		3.0	25	25	135	X	2.35%	70	25	20	0.020	20	870	0.010	69.7	X	2.30	
952		73.0	76.0		3.0	10	10	120	X	2.00%	100	25	15	0.020	20	960	0.07	71.5	X	1.75	
953		76.0	79.0		3.0	10	35	195	X	2.80%	80	25	15	0.040	15	830	0.06	69.5	X	3.35	
954		79.0	82.0		3.0	15	25	150	X	2.50%	80	20	15	0.030	15	730	0.03	71.0	X	2.50	
955		82.0	85.0		3.0	15	35	185	X	2.60%	60	25	15	0.020	25	780	0.04	69.8	0.02	2.10	
956		85.0	88.0		3.0	15	25	170	X	2.35%	90	20	15	0.020	40	1100	0.51	68.4	0.02	2.40	
957		88.0	91.0		3.0	10	15	85	X	2.20%	200	20	15	0.010	70	1100	1.37	69.5	0.02	1.50	
958		91.0	94.0		3.0	50	250	125	X	4.65%	370	40	1150	0.020	50	970	1.36	71.1	0.03	1.35	
959		94.0	97.0		3.0	10	15	60	X	2.70%	90	20	10	0.030	50	1150	1.22	69.5	0.01	3.00	
58960		97.0	100.0		3.0	10	20	95	X	2.55%	80	20	15	0.030	35	1250	0.84	69.7	X	2.95	
961		100.0	103.0		3.0	10	15	115	X	2.10%	90	20	10	0.030	40	930	0.97	73.0	0.02	2.10	
962		103.0	106.0		3.0	10	10	110	X	4.10%	195	40	15	0.020	30	820	0.55	69.0	0.02	2.90	
963		106.0	109.0		3.0	15	20	105	X	2.70%	50	35	15	0.030	10	760	0.07	71.0	X	2.90	
964		109.0	112.0		3.0	10	10	40	X	2.65%	30	20	10	0.020	10	650	0.07	75.4	X	2.10	
965		112.0	115.0		3.0	20	15	95	X	3.70%	165	35	15	0.020	20	720	0.07	67.5	X	3.40	
966		115.0	118.0		3.0	25	15	30	X	2.65%	40	20	10	0.030	10	800	0.08	73.2	X	2.90	
967		118.0	121.0		3.0	20	10	45	X	2.70%	55	25	10	0.030	9	1000	0.07	70.9	X	2.60	
968		121.0	124.0		3.0	15	10	95	X	3.95%	60	40	20	0.040	35	1100	0.09	67.5	X	4.55	
969		124.0	127.0		3.0	10	15	35	X	1.00%	55	15	10	0.020	20	560	0.13	78.9	X	0.67	
58970		127.0	130.0		3.0	40	10	40	X	1.50%	50	15	10	0.020	15	550	0.13	80.3	0.01	1.50	
971		130.0	133.0		3.0	10	10	25	X	1.35%	55	15	10	0.010	25	260	0.14	78.2	X	1.55	
972		133.0	136.0		3.0	10	10	40	X	1.45%	60	20	10	0.020	25	680	0.11	77.4	X	1.45	
973		136.0	139.0		3.0	10	10	35	X	2.80%	50	25	10	0.030	10	740	0.08	72.3	0.02	2.90	
974		139.0	142.0		3.0	10	10	25	X	1.95%	55	20	10	0.020	10	560	0.09	75.8	0.01	2.05	
975		142.0	145.0		3.0	15	10	35	X	1.55%	40	15	10	0.020	15	450	0.10	81.5	X	1.55	
976		145.0	148.0		3.0	15	15	40	X	1.70%	60	15	10	0.020	15	500	0.09	78.9	0.01	1.50	
977		148.0	151.0		3.0	5	15	45	X	2.65%	80	20	10	0.030	20	700	0.59	72.3	0.09	2.60	
978		151.0	154.0		3.0	10	15	45	X	2.90%	170	20	10	0.020	40	400	1.05	70.7	0.14	2.90	
979		154.0	157.0		3.0	10	10	55	X	2.75%	170	20	10	0.030	30	710	1.06	70.7	0.14	1.45	
58980		157.0	160.0		3.0	45	10	75	X	2.45%	270	20	15	0.040	40	790	1.16	72.2	0.13	0.71	
981		160.0	163.0		3.0	5	15	70	X	2.60%	175	20	10	0.020	15	780	0.09	69.8	0.03	1.35	
982		163.0	166.0		3.0	35	15	100	X	1.60%	70	25	15	0.010	9	740	0.08	74.0	0.01	0.98	
983		166.0	169.0		3.0	10	15	95	X	1.30%	60	25	15	0.010	10	810	0.07	74.3	X	0.84	
984		169.0	172.0		3.0	5	20	110	X	1.90%	45	30	20	0.020	10	730	0.07	72.0	X	1.95	
985		172.0	175.0		3.0	15	15	85	X	1.95%	50	25	20	0.020	10	760	0.06	75.0	0.01	1.80	
986		175.0	178.0		3.0	20	20	65	X	1.85%	35	30	15	0.010	15	590	0.09	76.0	X	1.10	
987		178.0	181.0		3.0	15	20	135	X	1.45%	25	20	10	0.030	10	480	0.08	77.5	X	1.70	
988		181.0	184.0		3.0	10	25	145	X	2.15%	25	25	15	0.030	10	640	0.06	79.2	X	2.35	

Sample No.	Sample Type	From	To	Core Rec'd	Sample Length	METAL CONTENT (ppm unless specified)														COMMENTS	
						Cu	Pb	Zn	Ag	Fe	Mn	Co	Ni	Hg	Sr	Ba	Na ₂ O%	SiO ₂ %	CaO%		S %
58989		184.0	187.0		3.0	5	25	220	X	6750	45	25	30	0.020	10	330	0.03	68.8	0.31	0.25	
58990		187.0	190.0		3.0	10	10	55	X	2.45%	30	20	10	0.030	15	680	0.07	71.9	X	2.90	
991		190.0	193.0		3.0	10	15	30	X	2.65%	35	20	10	0.020	20	700	0.09	72.7	X	3.30	
992		193.0	196.0		3.0	10	10	35	X	2.50%	30	25	10	0.030	15	480	0.11	72.0	0.02	2.90	
993		196.0	199.0		3.0	15	5	30	X	2.45%	30	20	10	0.020	15	460	0.13	70.7	0.06	3.15	
994		199.0	202.0		3.0	10	10	25	X	2.70%	30	20	10	0.020	10	510	0.10	70.7	0.06	3.05	
995		202.0	205.0		3.0	10	10	20	X	2.80%	30	20	10	0.030	15	560	0.23	71.5	0.08	3.55	
996		205.0	208.0		3.0	10	10	20	X	2.20%	35	15	10	0.020	10	540	0.12	72.1	X	2.70	
997		208.0	211.0		3.0	10	10	30	X	5500	40	20	10	0.010	20	410	0.32	77.4	0.01	0.41	
998		211.0	214.0		3.0	30	15	30	X	1.70%	30	20	10	0.020	15	340	0.21	72.2	X	1.90	
999		214.0	217.0		3.0	25	10	30	X	2.55%	30	25	10	0.030	15	400	0.24	71.9	0.04	3.10	
59000		217.0	220.0		3.0	20	15	40	X	2.40%	40	15	10	0.020	15	400	0.16	75.3	X	2.55	
58301		220.0	223.0		3.0	15	20	40	X	2.45%	40	20	10	0.020	15	410	0.16	74.6	0.01	2.75	
302		223.0	226.0		3.0	20	15	45	X	1.95%	30	15	10	0.020	15	390	0.16	74.0	0.05	2.45	
303		226.0	229.0		3.0	20	10	45	X	1.45	45	20	10	0.010	15	300	0.15	76.1	0.09	1.45	
304		229.0	232.0		3.0	20	15	30	X	1.20%	30	20	10	0.010	15	310	0.18	77.1	X	1.05	
305		232.0	235.0		3.0	20	10	35	X	8000	40	15	10	0.020	15	350	0.12	77.6	X	0.70	
306		235.0	238.0		3.0	30	10	25	X	1.25%	35	15	10	0.020	15	380	0.09	77.2	X	1.45	
307		238.0	241.0		3.0	40	10	20	X	1.80%	60	15	10	0.010	15	450	0.12	74.6	X	2.00	
308		241.0	244.0		3.0	15	5	25	X	1.55%	50	10	5	0.020	20	250	0.15	76.5	X	1.35	
309		244.0	247.0		3.0	10	10	35	X	6600	40	15	5	0.020	10	220	0.12	76.9	0.01	0.60	
58310		247.0	250.0		3.0	20	10	25	X	1.45%	40	20	15	0.020	20	210	0.09	75.6	X	1.25	
311		250.0	253.0		3.0	10	5	35	X	6650	45	20	10	0.010	9	300	0.10	77.9	X	0.50	
312		253.0	256.0		3.0	15	10	15	X	2.05%	40	20	10	0.020	15	430	0.11	76.3	X	2.50	
313		256.0	259.0		3.0	15	5	65	X	1.65%	25	15	5	0.060	20	400	0.11	76.5	X	2.05	
314		259.0	262.0		3.0	15	10	75	X	2.20%	35	20	10	0.040	15	500	0.07	74.8	X	2.65	
315		262.0	265.0		3.0	30	15	40	X	2.15%	40	55	15	0.030	15	470	0.06	76.3	X	2.55	
316		265.0	268.0		3.0	25	10	80	X	1.65%	55	25	10	0.030	15	340	0.05	75.6	X	1.75	
317		268.0	271.0		3.0	15	15	90	X	1.45%	40	15	10	0.030	7	450	0.05	79.3	X	1.48	
318		271.0	274.0		3.0	10	20	75	X	1.55%	55	15	5	0.020	5	670	0.03	74.7	X	1.50	
319		274.0	277.0		3.0	15	20	80	X	2.15%	40	25	20	0.030	15	530	0.05	71.8	0.02	2.25	
58320		277.0	280.0		3.0	115	440	1650	1.0	1.75%	40	20	10	0.150	7	360	0.02	79.7	0.03	1.85	
321		280.0	283.0		3.0	15	15	105	X	1.35%	50	15	10	0.035	9	390	0.02	76.7	0.03	1.20	
322		283.0	286.0		3.0	10	15	70	X	1.30%	65	15	10	0.030	8	600	0.02	80.0	X	1.05	
323		286.0	289.0		3.0	10	30	150	X	1.25%	85	15	10	0.040	20	560	0.03	79.2	0.01	0.84	
324		289.0	292.0		3.0	10	35	180	X	1.20%	50	15	10	0.060	10	480	0.02	78.7	0.03	0.99	
325		292.0	295.0		3.0	10	35	155	X	2.00%	80	20	10	0.050	8	610	0.02	75.4	X	1.65	
326		295.0	298.0		3.0	10	30	275	X	1.50%	80	15	10	0.070	9	450	0.05	76.6	0.02	1.00	
327		298.0	301.0		3.0	5	15	120	X	2.25%	800	10	20	0.030	25	300	0.05	77.3	0.16	0.30	
328		301.0	304.0		3.0	5	20	70	X	4.30%	1850	15	15	0.020	9	280	0.05	72.7	0.19	0.005	
329		304.0	307.0		3.0	5	5	105	X	2.95%	1400	15	15	0.010	40	290	0.05	67.8	2.95	X	

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

Bi All Bi assayed below the limit of detection (10 ppm)
 Au All Au assayed below the limit of detection (0.005 ppm) except 58944 (46-49.0) @ 0.017 ppm and 58319 (0.008) -20 (0.024), -21 (0.017), -24 (0.008) and -26 (0.008) between 274.0- and 298.0m.

ELECTROLYTIC ZINC COMPANY OF A'ASIA LTD. MINERAL RESOURCES DIVISION - TASMANIA		DIAMOND DRILL CORE RECORD		HOLE No. <u>BBP 250</u>		SHEET No. <u>2</u>	
DEPTH		ROCK DESCRIPTION	MINERALISATION	CORE REC'D			
From	To			Run	Short		
		208.4-209.1 Lava breccia 214.2-215.35 Multilithic breccia dyke					
215.35	279.1	Cream to pale grey pyritic altered lava, hyaloclastite-brecciated in part. Generally only weakly diss py but locally strongly pyritic (in veinlets and diss) in areas of hyaloclastite granulation. Much py replacing feldspars. Towards base of interval (260.0-276.0) there are sporadic intervals of strongly sheared 'quartz-eye' texture developed with sericite-wisping and more abundant pyrite. These intervals represent zones of hyaloclastite brecciation. The longest of these are 262.0-263.1 and 270.0-273.0. The intervening massive lava intervals display incipient 'crazy' veining (similar to that in 56.5-97.85 of BBP 251). 227.75-227.9 FAULT? pug within zone of broken rock 226-231.7 239.1-239.6 Basalt dyke with 15cm-wide pug on upper contact. 276.0-279.1 Basalt dyke with 40cm wide pug on lower contact.					
279.1	286.0	Pale grey to grey pyritic altered massive obsidian. Diss py. Sporadic later-stage cream-haloed veinlets. Same unit as 97.85-109.9 in BBP 251.					
286.0	298.4	Greyish-brown very weakly altered but pyritic feldsparphyric lava. Same unit as 109.9-137.2 in BBP 251 293.0-293.1 FAULT (pug) within zone of broken rock 292.6-304.3					
298.4	358.0 TD	Pink to orange unaltered but silicified aphyric lava Strongly silicified 298.4-318.0 298.4-298.6 FAULT (pug) with zone of broken rock 298.6-304.3					

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ELECTROLYTIC ZINC COMPANY OF A'ASIA LTD. DIAMOND DRILL CORE RECORD HOLE No. B8P 251
 MINERAL RESOURCES DIVISION - TASMANIA SHEET No. 1.

PROJECT: BULGOBAC E.L. 12/72 BOCO PROSPECT LOCALITY: Traverse 4 OBJECTIVE: Across-strike traverse drilling of concealed quartz-sericite-py alteration zone. RESULT: Altered intercalated lavas and epiclastic lithic breccias with an 11m pyritic ash sediment. True width 300m encountered.	GRID CO-ORDS: A.M.G. CO-ORDS: 383,551.6mE 5,386,826.7mN COLLAR R.L.: 399.0 COLLAR DIP: -60° AZIMUTH: 285° TOTAL DEPTH: 379.5m	HOLE SIZE: HW 9.0; HQ 18.5; NQ 33.0; BQ TD CASING: PVC to TD COMMENCED: 20.12.83 COMPLETED: 26. 1.84 LOGGED BY: R.A. Sainty	Depth (m) 50 100 200 253 303 369	Azimuth (°m.g.) 280° 281° 283.5° 281.5° 285°	Dip 55.5° 55° 54° 53° 50° 48°	Depth (m) Azimuth (°m.g.) Dip
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DEPTH		ROCK DESCRIPTION	MINERALISATION			CORE REC'D	
From	To		Run	Short	Run	Short	
0	27	glacial cover.					
27.0	323.5	Moderately to strongly silicified - sericitised - pyritised sequence of dacite obsidian lavas, coarse epiclastic debris slide lithic breccias with pyritic pelitic ash, and ignimbrite.					
27.0	56.5	Graded cream pumiceous lithic breccia. Strongly altered, no py. Angular to rounded silicified obsidian and angular sericitised shard-like compressed pumice fragments, milli-to centimetric; graded and well sorted, in fine qtz matrix. Crudely layered to poorly bedded Multiple size graded intervals, some grading down-hole. Finer-grained, laminated 30.5-31.3 No py. Refer 44738 @ 50.8m C.M.S. 84/3/7					
56.5	97.85	White dacite obsidian, intensely veined. Strongly altered, pyritic. White massive obsidian dominated by intense development of thin (to 1mm) folded and stressed veins of clear quartz and pyrite. (Devitrification or quench-induced cracking?) Refer 44379 @ 92.5m C.M.S. 84/3/7 Intense pyritisation: 83.8-84.0 - Two massive vns 3-5cm; 85.2-85.7 - massive-semi massive py vns and clumps; 87.45-89.25 - fine net veining; 91.15-92.0 - fine wispy to semi-massive clump and veinlet py; 93.5 3cm massive py vein; 95.5-95.9 strong net veining. This unit is interrupted by thin multilithic+pumice intervals (?representing interflow or interlobe gravelly slide deposits and/or flow marginal breccias), as follows: 59.4-59.7 pumiceous lithic, possibly graded down hole 67.45-67.6 gravelly multilithic 70.3-70.4 graded turbidite interval: coarse sand to laminated silt. Graded up hole (i.e. eastwards) 44749 @ 70.3 in CMS 84/3/45: "graded psammitic lithic tuff" 86.3-87.45 pumiceous lithic 89.2-89.9 pumiceous lithic, possibly graded down hole (lithic rich base, finer pelitic ash-like top) 44750 @ 89.2 in CMS 84/3/45 96.4-97.0 pumiceous multilithic This unit also features intervals of cream massive, non-veined lava towards the base, as follows 94.1-94.5; 94.75-95.0; 95.17-95.5, 95.9-96.4					
97.85	109.9	Cream to grey massive dacite obsidian, diss py. This unit is probably continuous from that above. Interrupted by 100.4 0.30mthick pumiceous lithic 101.3-101.9 pumiceous multilithic, graded down hole (i.e. westwards) 44751 @ 101.5 in CMS 84/3/45 "reworked tuff" 104.8-104.9 pumiceous lithic, possibly graded down hole (lithic rich base, less-packed and matrix-rich top) 44752 @ 104.8 in CMS 84/3/45					

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ELECTROLYTIC ZINC COMPANY OF A'ASIA LTD. MINERAL RESOURCES DIVISION - TASMANIA		DIAMOND DRILL CORE RECORD		HOLE No. <u>BBP 251</u>	
				SHEET No. <u>2</u>	
DEPTH		ROCK DESCRIPTION	MINERALISATION	CORE REC'D	
From	To			Run	Short
		107.7-108.7 white, veined obsidian, pyritic 108.2-108.3 multilithic, graded up hole (i.e eastwards) from coarse sand and pebbles to a 'cherty' grey pelitic ash at top. Sharp contacts at high angle to core.			
109.9	137.2	Pale cream to pale orange-pink feldsparphyric lava (leuco-andesite). Weakly altered, sericitised, quartz-amygdaloidal. Leached in part. Contains occasional xenoliths of relatively pyritic grey rock with rounded (?resorbed) margins.			
137.2	143.5	Grey pyritic epiclastic lithic breccia. Distinct semi-rounded multilithic fragments with some relict colours in a grey altered matrix. Matrix-supported. Most fragments are less than 2cm, (mean less than 1cm), but a few are 5-10cm, especially towards top of interval. Disseminated and small clump py. Lower contact is sharp.			
		139.0-139.9 Basalt dyke: pale green, oxidised, small vesicles.			
143.6	180.7	Pale grey massive dacite obsidian; sparsely pyritic 44740 @ 145.2 in CMS 84/3/7 This unit is interrupted by 149.65-149.8 Brecciated or granulated: round fragments in sheared matrix 153.3-153.4 Brecciated flow margin?; ?pumice present. 157.4-157.6 Fragmental: angular fragments less than 1 to 2 cm in grey silicified matrix. 166.7-167.4 167.85-168.05 170.6-171.3 • Basalt dykes: pale green, oxidised, vesicular at contacts. Small areas of brecciation of surrounding rock are associated with these dykes e.g. 167.4-167.85; 168.05-168.2 and 171.3-171.8. 171.8-173.0 Moulded lava clast fragmental. 177.25-180.7 Basalt dyke: pale green, oxidised, vesicular			
180.7	214.9	Grey pyritic flow banded to flow brecciated dacite obsidian. Disseminated py and stringer py along flow bands and around moulded lava clasts. 44741 @ 196.0 and 44742 @ 209.0 in CMS 84/3/7 Autobrecciation well displayed at 181.6, 191.3 and 193.3 203.5-204.15; 204.55-205.95: multilithic breccia. Possible flow marginal breccia.			
214.9	227.0	Grey pyritic epiclastic lithic breccia Multilithic lava and pumice fragments from less than 1 to 5cm, but occasional 10-12cm. Very large clast - 0.65m - of grey massive lava at 218.8-219.45. Some contained pumice fragments are flattened, others are not. At 222.7 and 222.9 white obsidian fragments feature a thin pygmatic vein style similar to, but less intense than, that in the white dacite obsidian unit-56.5-97.85, suggesting derivation from that unit.			
227.0	231.05	Grey-cream pyritic massive dacite obsidian. Feebly shear-laminated.			
231.05	262.35	Grey pyritic epiclastic lithic breccia Abundant multilithic fragments (different lavas of varying alteration and pyritisation, grey pelitic ash, and pyritised pumice in a range of collapse) from less than 1 to 5cm, but occasional to 7cm. Very large clast - 0.5m - of pink, pyritic brecciated lava at 256.75-257.25. At 257.8-260.8 there are abundant dark (sericitised pyritised) uncollapsed pumice fragments in addition to large lava and 'chert' fragments to 5cm. At 260.1 a 7cm fragment of faintly laminated pelitic ash contains pale sp and lesser gn in a 2mm-wide clear qtz microfault vein. 44743 @ 251.7 and 44744 @ 259.0 in CMS 84/3/7			

268159

DEPTH		ROCK DESCRIPTION	MINERALISATION		CORE REC'D	
From	To				Run	Short
262.35	273.2	<p>Grey pyritic pelitic vitric ash sediment Massive to laminated silty to psammitic vitric ash; much soft-sediment slumping, producing a non-uniform bedding angle. Abundant py veining and contorted semi-massive py stringers. The pyrite stringers occur within narrow layers and bands of darkened cherty-silicified ash and contain locally abundant colloform textures. Sometimes disseminated by parallels these distinct thin layers. 44745 @ 266.7; 44746 @ 269.9 and 44747 @ 271.3 in CMS B4/3/7</p> <p>At the up hole contact at 262.35, a possible scour and fill structure provides tentative west facing evidence: a 2cm deep x 2.5cm wide V-shaped projection of pelitic ash into the uphole lithic breccia is consistent with the pelitic ash having been deposited on top. At 272.35 a 5mm quartz vein contains fine gn and is rimmed by diss py. The lower contact at 273.2 with the lithic breccia is sharp but indistinct because of the uniform grey pyritic alteration colour.</p>				
273.2	276.1	<p>Grey pyritic epiclastic lithic breccia Epiclastic lithic breccia similar to 231.05-262.35. A few large grey and pink lava clasts 5, 10, 12cm and a large pelitic ash clast more than 11cm. This ash clast is irregularly shaped in a manner suggestive of fragmentation whilst only semi-consolidated. At 276.1 contact between epiclastic breccia and pelitic ash is sharp, at 50° to core.</p>				
276.1	276.35	Grey pyritic pelitic ash sediment				
276.35	276.45	Grey pyritic epiclastic lithic breccia				
276.45	276.95	Grey pyritic pelitic ash sediment.				
276.95	323.5	<p>Grey pyritic ignimbrite, abundant pyritised pumice. Abundant pink to white and carbonated feldspars in pale grey fine pyritic groundmass with less common pyritised and sericitised collapsed pumice fragments. Alteration gradually lessens down interval. Pumice fragments within the final few metres of this ignimbrite flow unit are larger and less-flattened than pumice throughout the remainder of the unit. This may define inverse grading of larger pumice towards the top of a flow unit, which is a common feature of ignimbrites. A down hole, west facing is suggested.</p>				
323.5	379.5 TD	<p>Weakly altered ignimbrite and lava; non pyritic. A separate flow unit to that above (276.95-323.5). Alteration decreases rapidly down-interval.</p>				

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

DIAMOND DRILL CORE GEOCHEMICAL ANALYSES RECORD

HOLE No. BBP 251
SHEET No. 1

LABORATORY						ANALABS, Cooee				AAS at Cooe, others at Perth						GRID CO-ORDS: 383,551.6mE					
ANALYTICAL TECHNIQUE						AAS	AAS	AAS	ASS	AAS	AAS	AAS	Wet	XRF	XRF	XRF	XRF	XRF	AAS	A.M.G. CO-ORDS: 5,386,826.7mN	
DETECTION LIMIT						103	103	103	103	103	103	103	408	408	408	401	401	402	122	COLLAR R.L.: 399.0	
						5	5	5	0.5	5	5	5	0.1%	0.1%	0.1%	5	20	0.003	0.005	COLLAR DIP: -60°	
																				AZIMUTH: 285° AMG	
																				TOTAL DEPTH: 379.5m	
Sample No.	Sample Type	From	To	Core Rec'd	Sample Length	METAL CONTENT (ppm unless specified)													COMMENTS		
						Cu	Pb	Zn	Ag	Fe	M	Co	Na ₂ O%	SiO ₂ %	CaO%	Sr	Ba	S %		Hg	
58330	All	27.0	28.5		1.5	45	10	25	0.5	9150	90	10	0.09	78.9	0.01	10	110	0.700	0.160		
331A	Split	28.5	31.5		3.0	25	15	20	0.5	8000	80	10	0.12	80.5	X	15	120	0.460	0.080		
331B		28.5	31.5		3.0	15	10	20	0.5	5650	75	10	0.11	79.8	X	15	120	0.290	0.030		
332		31.5	33.0		1.5	15	5	15	X	3600	80	15	0.09	79.5	X	20	120	0.150	0.010		
333		33.0	34.5		1.5	20	5	10	0.5	4300	90	10	0.08	80.3	X	20	150	0.025	0.020		
334		34.5	37.5		3.0	15	5	10	X	4300	105	10	0.09	77.8	X	20	140	0.015	0.050		
335		37.5	40.5		3.0	125	15	20	0.5	4500	100	10	0.11	78.6	X	20	140	X	0.040		
336		40.5	43.5		3.0	15	5	10	0.5	4200	95	5	0.09	79.5	0.01	20	130	0.015	0.030		
337		43.5	46.5		3.0	15	10	20	X	5500	125	10	0.11	78.9	0.01	25	130	0.025	0.180		
338		46.5	49.5		3.0	10	5	20	0.5	3400	90	10	0.09	81.3	X	25	170	0.015	0.050		
339		49.5	52.5		3.0	15	5	20	X	4750	110	15	0.09	79.8	X	35	180	X	0.020		
58340		52.5	55.5		3.0	20	X	20	X	4950	85	10	0.09	80.8	X	25	250	0.200	0.105		
341		55.5	58.5		3.0	15	5	40	X	9950	60	25	0.22	66.2	X	20	320	1.100	0.120		
342		58.5	61.5		3.0	15	15	30	0.5	1.60%	70	20	0.09	79.7	X	50	290	1.600	0.090		
343		61.5	64.5		3.0	10	5	20	0.5	1.15%	70	5	0.09	82.6	X	55	150	1.100	0.080		
344		64.5	67.5		3.0	10	5	10	0.5	1.25%	60	10	0.05	79.4	X	70	140	1.400	0.055		
345		67.5	70.5		3.0	15	10	10	0.5	1.05%	55	5	0.03	76.0	X	80	130	1.250	0.060		
346		70.5	73.5		3.0	20	5	20	0.5	1.00%	85	10	0.15	77.1	X	55	240	1.150	0.060		
347		73.5	76.5		3.0	20	15	40	0.5	1.35%	100	10	0.12	78.8	X	35	260	1.350	0.020		
348		76.5	79.5		3.0	20	10	30	0.5	1.40%	40	10	0.08	77.4	X	45	280	1.600	0.050		
349		79.5	82.5		3.0	15	10	115	0.5	9100	50	15	0.11	79.9	X	55	330	0.940	0.060		
58350		82.5	85.2		2.7	60	15	55	0.5	1.80%	75	15	0.12	74.9	X	400	370	2.350	0.060		
351		83.8	84.0		0.20	600	20	80	3.5	20.0%	105	40	0.07	36.9	X	10	320	27.0	0.520		
352		85.2	85.7		0.50	890	35	45	4.0	20.5	30	40	0.06	32.6	X	25	210	28.9	5.600		
353		85.7	88.5		2.8	35	25	100	X	2.15%	95	15	0.11	77.9	X	35	320	2.500	0.130		
354		88.5	91.5		3.0	30	25	45	X	2.70%	85	15	0.11	76.0	X	55	270	3.200	0.100		
355		91.5	94.5		3.0	60	15	105	X	3.05%	60	15	0.12	72.9	X	35	230	4.000	0.140		
356		94.5	95.6		1.1	40	10	15	0.5	2.50%	60	10	0.15	75.8	X	35	270	2.950	0.095		
357		95.6	97.0		1.6	45	25	195	X	2.20%	50	15	0.14	71.4	X	40	390	2.550	0.195		
358		97.0	97.8		0.8	65	25	155	0.5	2.80%	60	15	0.15	69.8	X	40	270	2.650	0.125		
359		97.8	100.5		2.7	15	10	70	X	1.50%	65	5	0.16	77.5	X	35	310	1.900	0.065		
58360		100.5	103.5		3.0	10	10	35	X	9950	80	10	0.11	76.0	X	30	350	1.000	0.030		
361		103.5	106.5		3.0	10	10	30	X	8050	55	15	0.08	78.6	X	25	360	0.900	0.020		
362		106.5	109.5		3.0	10	5	15	X	1.20%	35	15	0.11	75.9	X	20	480	1.350	0.045		
363		109.5	112.5		3.0	10	5	50	X	1.80%	115	15	0.71	70.4	0.01	40	960	1.950	0.040		
364		112.5	115.5		3.0	10	15	85	X	2.00%	70	10	1.65	70.5	0.04	50	830	2.100	0.058		
365		115.5	118.5		3.0	10	35	85	0.5	2.10%	80	15	1.11	69.6	0.01	30	930	2.500	0.050		
366		118.5	121.5		3.0	15	35	100	X	2.45%	90	15	0.66	69.1	0.01	30	960	2.750	0.055		
367		121.5	124.5		3.0	10	15	55	X	2.45%	95	15	1.40	69.3	0.04	55	940	2.750	0.050		
368		124.5	127.5		3.0	15	15	130	X	2.85%	105	20	0.11	69.1	X	15	960	3.150	0.080		
369		127.5	130.5		3.0	15	15	60	0.5	2.35%	90	15	1.42	70.0	0.09	60	820	2.650	0.055		
58370		130.5	133.5		3.0	10	15	40	0.5	2.55%	100	15	2.39	72.2	0.14	110	950	2.750	0.065		
371		133.5	136.5		3.0	15	10	40	0.5	2.40%	70	15	0.08	69.8	0.04	15	800	2.750	0.065		
372		136.5	139.5		3.0	15	15	55	0.5	2.25%	90	10	1.50	71.5	0.10	60	810	2.550	0.060		
373		139.5	142.5		3.0	20	20	40	0.5	2.15%	70	15	0.22	71.9	0.04	15	840	2.400	0.075		

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

DIAMOND DRILL CORE GEOCHEMICAL ANALYSES RECORD

HOLE No. BBP 251
SHEET No. 2

Sample No.	Sample Type	From	To	Core Rec'd	Sample Length	METAL CONTENT (ppm unless specified)													COMMENTS	
						Cu	Pb	Zn	Ag	Fe	Mn	Co	Na ₂ O%	SiO ₂ %	CaO%	Sr	Ba	S %		Hg
58374		142.5	145.5		3.0	20	15	20	0.5	1.70%	75	10	0.12	74.2	X	10	630	1.750	0.045	
375		145.5	148.5		3.0	15	10	40	X	1.25%	65	10	0.11	77.1	X	15	500	1.450	0.040	
376		148.5	151.5		3.0	10	10	60	0.5	1.45%	90	10	0.15	77.6	0.01	10	370	1.450	0.170	
377		151.5	154.5		3.0	15	10	15	0.5	1.50%	65	10	0.14	75.9	0.01	10	380	1.750	0.100	
378		154.5	157.5		3.0	30	5	25	0.5	1.55%	65	10	0.11	76.7	0.02	15	460	1.600	0.090	
379		157.5	160.5		3.0	10	5	10	0.5	1.55%	65	10	0.12	75.2	0.02	10	480	1.550	0.115	
58380		160.5	163.5		3.0	15	10	15	X	1.55%	65	5	0.05	76.9	0.02	16	670	1.600	0.060	
381		163.5	165.0		1.5	10	10	15	0.5	1.35%	95	10	0.11	77.7	0.02	15	790	1.450	0.095	
382		165.0	166.5		1.5	10	10	20	0.5	1.80%	105	5	0.08	76.1	0.04	15	1050	1.710	0.090	
383		166.5	169.5		3.0	15	10	20	0.5	2.10%	185	5	0.08	73.9	0.06	9	730	1.850	0.120	
384		169.5	172.5		3.0	15	10	25	0.5	1.65%	225	10	0.88	77.4	0.07	35	700	1.300	0.080	
385		172.5	175.5		3.0	15	20	25	0.5	1.40%	175	5	0.45	76.5	0.04	35	730	1.250	0.080	
386		175.5	178.5		3.0	10	15	30	0.5	1.55%	150	5	0.32	78.7	0.02	25	1150	1.100	0.070	
387		178.5	181.5		3.0	30	10	90	0.5	3.75%	1000	20	0.90	67.4	1.35	50	660	1.050	0.150	
388		181.5	184.5		3.0	10	10	20	X	1.35%	165	5	0.18	77.2	0.06	20	540	1.300	0.055	
389		184.5	187.5		3.0	15	30	60	0.5	1.40%	195	5	1.35	74.7	0.13	65	880	1.550	0.070	
58390		187.5	190.5		3.0	10	40	65	0.5	1.35%	235	5	2.21	74.9	0.25	75	1100	1.350	0.080	
391		190.5	193.5		3.0	15	30	50	0.5	1.45%	210	5	1.29	74.2	0.15	80	1050	1.350	0.070	
392		193.5	196.5		3.0	10	15	90	X	1.70	300	15	2.38	77.6	0.41	90	880	1.100	0.030	
393		196.5	199.5		3.0	20	25	90	X	2.30	175	15	1.03	76.2	0.12	50	1000	1.800	0.050	
394		199.5	202.5		3.0	15	30	65	X	1.55	175	10	1.10	78.0	0.14	65	1050	1.350	0.050	
395		202.5	205.5		3.0	15	20	50	X	1.75	165	10	0.85	76.1	0.20	65	1050	1.500	X	
396		205.5	208.5		3.0	30	375	395	0.5	2.10	285	20	2.39	75.9	0.28	130	1050	1.350	0.090	
397		208.5	211.5		3.0	20	40	70	X	1.50	295	10	2.66	76.2	0.52	160	1350	1.150	0.035	
398		211.5	214.5		3.0	25	40	90	X	1.80	280	10	1.67	76.2	0.30	100	1500	1.050	0.040	
399		214.5	217.5		3.0	20	15	40	X	1.90	70	10	0.09	76.0	0.06	25	1050	1.750	0.035	
58400		217.5	220.5		3.0	15	15	20	X	2.15	50	10	0.11	75.7	0.05	95	440	2.550	0.030	
401		220.5	223.5		3.0	15	10	50	X	1.90	70	10	0.09	76.9	0.05	30	620	1.800	X	
402		223.5	226.5		3.0	15	15	20	X	2.20	75	10	0.12	76.1	0.04	190	1250	2.300	X	
403		226.5	229.5		3.0	20	5	35	X	1.95	50	15	0.11	76.8	0.03	150	2150	2.100	0.040	
404		229.5	232.5		3.0	15	10	25	X	1.90	50	10	0.13	74.4	0.05	30	620	1.850	X	
405		232.5	235.5		3.0	20	15	45	X	2.40	120	15	0.09	73.6	0.14	25	860	2.300	0.035	
406		235.5	238.5		3.0	25	15	85	X	2.95	390	15	0.10	70.9	1.60	40	1250	1.900	0.030	
407		238.5	241.5		3.0	30	20	150	X	4.00	1100	25	0.07	67.9	3.70	90	1200	0.600	0.035	
408		241.5	244.5		3.0	35	20	85	X	2.40	180	15	0.08	74.3	0.50	20	1250	2.100	0.030	
58410		247.5	250.5		3.0	35	20	60	X	2.80	200	20	0.09	72.2	0.40	20	1200	2.350	0.040	
411		250.5	253.5		3.0	45	25	80	X	2.65	205	20	0.32	72.6	0.21	15	1050	2.350	0.035	
412		253.5	256.5		3.0	35	20	60	X	2.50	110	20	0.09	73.7	0.10	15	1150	2.650	0.030	
413		256.3	259.3		3.0	45	160	200	X	2.75	420	20	1.12	71.5	0.70	40	1200	2.600	0.050	
414		259.3	262.3		3.0	20	45	105	0.5	2.85	140	15	0.09	72.7	0.07	15	940	2.850	0.050	
415		262.3	263.5		1.0	30	35	20	1.0	2.85%	55	20	0.07	72.1	0.05	20	420	3.1	0.245	
416		263.5	264.5		1.0	45	55	25	1.5	7.65	65	25	0.07	65.1	0.05	10	320	3.1	0.240	
417		264.5	265.5		1.0	35	25	20	1.5	4.95	90	15	0.08	66.5	0.07	20	370	5.3	0.200	
418		265.5	266.5		1.0	35	25	15	1.0	3.55	55	20	0.07	70.6	0.03	10	320	3.7	0.155	
419		266.5	267.5		1.0	45	80	30	3.0	10.5	95	20	0.06	57.5	0.04	10	360	11.9	0.270	
58420		267.5	268.5		1.0	20	100	235	1.5	4.40	400	15	0.06	70.0	0.60	15	450	4.8	0.125	
421		268.5	269.5		1.0	45	185	1650	2.5	10.5	70	30	0.05	56.4	0.02	X	500	12.5	0.220	
422		269.5	270.5		1.0	25	35	30	1.0	6.10	75	15	0.05	68.2	0.02	8	660	6.9	0.125	
423		270.5	271.5		1.0	15	25	40	0.5	3.75	105	20	0.06	71.2	0.02	8	950	3.8	0.090	
424		271.5	272.4		1.0	20	830	900	1.0	3.15	140	15	0.06	71.5	0.03	30	1750	3.3	0.163	
425		272.4	274.5		2.0	20	115	250	X	1.95	310	15	0.07	73.9	0.21	15	1250	1.850	0.090	
426		274.5	277.5		3.0	20	65	95	X	2.10	405	15	0.23	72.7	0.37	20	1050	2.550	0.045	
427		277.5	280.5		3.0	75	105	230	0.5	1.45	1100	15	0.21	73.3	1.40	30	860	1.350	0.055	

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

DIAMOND DRILL CORE GEOCHEMICAL ANALYSES RECORD

HOLE No. BBP 251
3
SHEET No. _____

Sample No.	Sample Type	From	To	Core Rec'd	Sample Length	METAL CONTENT (ppm unless specified)													COMMENTS	
						Cu	Pb	Zn	Ag	Fe	Mn	Co	Na ₂ O%	SiO ₂ %	CaO%	Sr	Ba	S %		Hg
58428		280.5	283.5		3.0	25	100	235	X	1.45	1350	10	0.30	72.3	1.50	30	850	1.300	0.060	
429		283.5	286.5		3.0	10	85	280	X	1.40	1200	15	0.21	73.2	1.20	25	810	1.300	0.050	
58430		286.5	289.5		3.0	45	40	80	X	1.40	640	15	0.09	74.5	0.56	15	800	1.300	0.030	
431		289.5	292.5		3.0	15	30	85	X	1.50	1200	15	0.09	73.6	0.96	20	860	1.400	X	
432		292.5	295.5		3.0	135	45	95	X	1.70	380	15	0.06	74.2	0.20	15	770	1.650	X	
433		295.5	298.5		3.0	15	65	170	X	1.45	1250	10	0.06	74.1	1.18	20	790	1.400	0.030	
434		298.5	301.5		3.0	15	35	165	X	1.40	1350	15	0.06	74.0	0.97	25	800	1.400	X	
435		301.5	303.5		1.5	15	35	165	X	1.40	1350	15	0.06	74.0	0.97	25	800	1.400	X	
436		303.5	304.5		1.5	20	25	220	X	1.40	2050	10	0.04	74.4	1.05	20	690	1.250	0.030	
437		304.5	307.5		3.0	25	20	130	X	1.60	2100	15	0.05	73.8	0.98	15	740	1.250	X	
438		307.5	310.5		3.0	10	30	95	X	1.35	1050	10	0.05	73.9	0.65	20	740	1.300	X	
439		310.5	313.5		3.0	20	85	510	X	1.45	2900	15	0.05	73.4	2.25	25	650	1.100	0.060	
58440		313.5	316.5		3.0	20	70	720	X	1.45	2150	10	0.05	74.8	1.42	15	530	1.400	0.090	
441		316.5	319.5		3.0	20	55	85	X	1.75	1800	15	0.06	73.1	1.62	20	560	1.600	0.030	
442		319.5	322.5		3.0	25	170	300	X	1.60	2450	15	0.67	72.2	2.03	40	650	1.650	0.050	
443		322.5	325.5		3.0	20	145	450	X	1.80	2200	15	0.59	72.4	1.57	40	700	1.250	0.070	
444		325.5	328.5		3.0								1.06	73.7	2.08	50	630	1.300	X	
445		328.5	331.5		3.0	25	45	70	X	1.95	2400	15	0.84	73.5	1.79	50	980	1.200	0.030	
446		331.5	334.5		3.0	15	65	240	X	1.75	2150	15	0.79	73.7	1.69	50	890	0.740	0.030	
447		334.5	337.5		3.0	15	15	225	0.5	1.55	2000	15	0.40	71.5	1.27	35	980	1.000	0.040	
448		337.5	340.5		3.0	25	20	380	X	2.70	2700	20	0.03	68.9	2.54	40	540	2.000	0.075	
449		340.5	343.5		3.0	30	20	140	X	3.35	5100	15	0.02	65.3	4.94	110	370	2.550	0.040	
58450		343.5	346.5		3.0	65	65	130	X	5.10	8150	15	0.01	57.2	7.38	150	240	4.550	0.160	
451		346.5	349.5		3.0	30	30	325	X	3.20	8000	15	0.26	65.3	4.40	75	460	2.100	0.080	
452		349.5	352.5		3.0	30	50	1450	X	2.75	5150	20	0.05	69.5	2.72	45	370	2.150	0.170	
453		352.5	355.5		3.0	25	55	120	X	3.10	1450	25	0.69	69.3	2.02	50	420	2.400	0.050	
454		355.5	358.5		3.0	15	20	95	X	1.90	1900	15	0.79	72.5	3.30	80	450	0.710	0.030	
455		358.5	361.5		3.0	10	5	80	0.5	1.50	1200	15	1.85	72.5	2.30	95	710	0.005	0.030	
456		361.5	364.5		3.0	10	10	80	X	1.30	1450	10	1.01	70.6	3.69	100	500	0.100	0.030	
457		364.5	367.5		3.0	10	35	560	0.5	2.95	4300	20	0.30	62.0	8.20	160	290	0.620	0.120	
458		367.5	370.5		3.0	15	145	455	0.5	1.90	2150	15	0.44	69.2	2.75	55	410	1.200	0.100	
459		370.5	373.5		3.0	15	80	660	X	1.95	2050	15	1.14	69.0	2.15	55	610	1.000	0.090	
58460		373.5	376.5		3.0	25	250	1750	X	2.05	2450	15	0.71	70.1	2.59	55	420	0.910	0.190	
461		376.5	379.5		3.0	15	45	370	X	1.85	2750	15	0.61	71.9	3.40	60	410	0.830	0.070	

All samples were also assayed for Ni and Bi by AA3 103 and for Au by AAS after 30g fire assay fusion.

Ni Ni assayed 5-10 ppm for all samples 58330-58391 and 10-30 ppm for a second batch 58351-58352 and 58414-58424. But assays from the third batch of 58392-58461 mostly assayed 135-220ppm. This suggests Ni contamination has occurred during sample preparation.

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

Au All Au assayed below the limit of detection (0.005 ppm) except 58352 @ 0.050 ppm and 58403, -411, -425, -426, -448, -451 and -453 which all recorded 0.008 ppm.

268163

ELECTROLYTIC ZINC COMPANY OF ASIA LTD.		DIAMOND DRILL CORE RECORD				HOLE No. <u>BBP 253</u>			
MINERAL RESOURCES DIVISION - TASMANIA						SHEET No. 1.			
PROJECT:	GRID CO-ORDS:	HOLE SIZE:	Depth (m)	Azimuth (%m.g.)	Dip	Depth (m)	Azimuth (%m.g.)	Dip	
BULGOBAC E.L. 12/72 BOCO PROSPECT	383,459.8mE	HW 3; HQ 48;	107	281	53°				
LOCALITY: Traverse 5	A.M.G. CO-ORDS: 5,385,578.8mN	nq 99; BQ TD	136	-	51°				
OBJECTIVE: Across-strike traverse drilling of concealed qtz-sericite-py alteration zone and UTEM anomaly.	COLLAR R.L.: 309.8	PVC to TD	185	286°	50°				
RESULT: No alteration or obsidian fragmental host intersected. Hole abandoned prematurely due to drill string jam.	COLLAR DIP: -55°	COMMENCED: 2.2.84	264	287.5°	47.5°				
	AZIMUTH: 282° AMG	COMPLETED: 17.2.84	Surveys below 264 not done due to drill string failure.						
	TOTAL DEPTH: 470.0m	LOGGED BY: R.A. Sainty							
DEPTH		ROCK DESCRIPTION	MINERALISATION					CORE REC'D	
From	To							Run	Short
0	49.0	Glacial cover							
49.0	470.0	Unaltered pink to brown felsic intermediate (leuco-andesite) lavas and ignimbrites, regionally silicified. Uniform appearance. Basaltic intrusives: 133.8-180.8 (doleritic) and throughout 228.5-258.2.							
	TD								

268164

PROJECT: E.L. 12/72 BULGOBAC BOCO PROSPECT LOCALITY: Traverse 4A OBJECTIVE: To test the pyritic cherty ash sediment 200m N of BBP 251; to test the northern part of a UTEM anomaly. RESULT: An entirely different sequence to that in BBP 251. Sediment horizon not found. Strong alteration hosted by massive obsidian.	GRID CO-ORDS: 383,728.6mE A.M.G. CO-ORDS: 5,386,970.3mN COLLAR R.L.: 395.7 COLLAR DIP: 50° AZIMUTH: 285° AMG TOTAL DEPTH: 439.5m	HOLE SIZE: HW 15.5; HQ 53; CASING: NQ 117; BQ TD .PVC to TD 48m of NQ left COMMENCED: 2.3.84 COMPLETED: 7.5.84 LOGGED BY: R.A. Sainty	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>Depth (m)</th> <th>Azimuth (°a.m.g.)</th> <th>Dip</th> </tr> <tr> <td>236</td> <td>280</td> <td>40</td> </tr> <tr> <td>287</td> <td>278</td> <td>39</td> </tr> <tr> <td>338</td> <td>276</td> <td>37</td> </tr> <tr> <td>389</td> <td>275</td> <td>36</td> </tr> <tr> <td>439.5</td> <td>274</td> <td>34</td> </tr> </table>	Depth (m)	Azimuth (°a.m.g.)	Dip	236	280	40	287	278	39	338	276	37	389	275	36	439.5	274	34	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>Depth (m)</th> <th>Azimuth (°a.m.g.)</th> <th>Dip</th> </tr> <tr> <td colspan="3">0-236m: no surveys because camera jammed in rods</td> </tr> </table>	Depth (m)	Azimuth (°a.m.g.)	Dip	0-236m: no surveys because camera jammed in rods		
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236	280	40																										
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338	276	37																										
389	275	36																										
439.5	274	34																										
Depth (m)	Azimuth (°a.m.g.)	Dip																										
0-236m: no surveys because camera jammed in rods																												

DEPTH		ROCK DESCRIPTION	MINERALISATION	CORE REC'D	
From	To			Run	Short
0	117.0	Glacial cover			
117.0	335.3	Strongly silicified-sericitised-pyritised dacite obsidian lava and lava fragmentals.			
117.0	171.5	Pale grey pyritic massive obsidian. Faintly flow banded in part. Py concentrated in 1-3mm round spots (ex phenocrysts?) evenly disseminated throughout. Occasional distinct thin intervals of multilithic breccia (= ?explosion breccia dykes) e.g. 125.2-125.5 multilithic lava clasts, subangular to rounded 1-2cm max. 144.8 5cm thick multilithic breccia, 1-2cm max size 151.8-151.9 multilithic breccia			
171.5	181.5	Pale grey pyritic flow banded obsidian. Relatively chaotic appearance caused by patchy differential white silicification vs sericitisation along flow bands. Upper contact is sharp, lower contact obscured by fault below.			
176.4	177.4	Fault (pug) Minor bright green fuchsite.			
181.5	187.2	Fault (pug and broken core; includes sheared dark qtz±py veins)			
187.2	189.4	?Dyke of altered pale khaki to pale pink lava. Abundant py as elongate semi-massive clumps and veinlets. Final 0.2m is entirely bleached, to white fg quartz + dis py crystals.			
189.4	193.0	Pale grey, weakly pyritic massive obsidian. Similar to 117.0-171.5 above. Py as round clots.			
193.0	197	Fault (pug and pulverised core)			
195 approx	196	Pale grey, weakly pyritic flow banded obsidian. Chaotic appearance due to differential strong silicification similar to 171.5-181.5, above.			
196	205.5	Pale grey weakly pyritic massive obsidian. Uniform textured.			
203.0	208.3	Fault zone: pug 205.5-208.3			
208.3	286.2	Dark grey pyritic massive obsidian. Abundant diss py. Abundant pale yellow sericite wisps produce a variable but pervasive mesh texture. Sporadic distinct thin intervals of multilithic lava clast breccia (= ?explosion breccia dykes). Sharp contacts, millimetre to centimetric lava clasts. 209.3-209.4; 212.7-212.8; 216.5-217.0; 219.2 (5cm); 222.0-222.3 224.65-225.0 238.1-242.3 Bleached zone of uniform cream colour. No py. Gradational upper and lower contacts. This zone contains 239.2-239.4: multilithic breccia dyke, millimetre to 6cm max, with sharp contacts. However the bleaching alteration is not centred on this breccia dyke. Matrix is grey.			

268165

ELECTROLYTIC ZINC COMPANY OF A'ASIA LTD. MINERAL RESOURCES DIVISION - TASMANIA		DIAMOND DRILL CORE RECORD		HOLE No. <u>BBP 254</u>	
				SHEET No. <u>2</u>	
DEPTH		ROCK DESCRIPTION	MINERALISATION	CORE REC'D	
From	To			Run	Short
		Further multilithic (?explosion breccia) dykes at 243.5 (5cm width, millimetric to 2cm max. clasts) at 258.9 (3cm width, millimetric clasts) and at 265.1-265.9 (millimetric to 6cm max clasts, mean 1cm) All sharp contacts.			
		270.0-286.2 A gradual increase in intensity of pervasive yellow sericite webbing through the dark grey pyritic obsidian. This possibly reflects the incipient development of a fragmental hyaloclastite texture present through this interval. Discrete monolithic lava fragments are distinguishable within a sheared and sericite-webbed matrix. Lower contact @ 286.2 is sharp, probably a flow margin.			
286.2	292.5	Grey pyritic, faintly flow banded obsidian. Semi-pervasive massive grey siliceous-pyritic overprint on earlier foliated dark green sericite-pyrite alteration phase, producing a pseudo-pumice appearance. Pink silicified feldspars are present within the relict foliated sericite-pyrite domains.			
292.5	315.45	Dark grey pyritic obsidian, hyaloclastite fragmental in part. Similar to 208.3-270.0 (excluding 238.1-242.3). Abundant py as millimetre diss clumps and spots, probably after phenocrysts. 209.4-310.0 ?Fault: broken core 314.1-314.5 Multilithic (?explosion breccia) dyke. Millimetric clasts, sharp contacts.			
315.45	335.3	Grey pyritic altered obsidian with relict white to pink silicified feldspars in a grey pyritic matrix. Some pseudo-pumice texture-relict elongate foliated dark green sericite-pyrite domains after semi-pervasive overprint by massive grey siliceous-pyritic alteration. Upper contact is gradational, lower contact is sharp (=flow margin)			
335.3	439.5	Weakly altered leuco-andesite lavas. Alteration comprises either weak to strong pyritisation in otherwise unaltered brown lavas or a chloritic-sericitic alteration with no py.			
335.3	395.0	Brown to green pyritic feldsparphyric lava. Upper contact is sharp and marked by a broken, orange silicified zone 0.15m long. Brown colour is dominant over green and contacts are clearly diffuse. Contains occasional resorbed centimetric xenoliths of highly pyritic lava. Pyrite content ranges from sparse disseminated clumps after selected feldspars (esp so in green intervals) to moderate as diss clumps, haloes around most phenocrysts and irregular stringers along fractures. From 349.35-367.5 py content increases to include a semi-pervasive veiling ultrafine py centred on abundant microfractures, in addition to diss clumps and stringers. 348.85-349.35 Multilithic (explosion breccia?) dyke, millimetric to 3cm clasts of varying colours and lavas. 349.35-367.5 Increase in py content as semi-pervasive ultrafine py (see note above) Quartz-filled amygdales become abundant below 359.5 and especially conspicuous within 377-389 but decrease gradually towards the flow contact @ 395.0 without providing good facing evidence.			
395.0	436.35	Green-grey chloritic-sericitic-siliceous altered lavas, little to no py. Py confined to grey siliceous overprint zones. Prominant and abundant white to brown feldspar relicts. 396.6-397.1 Multilithic (?explosion breccia) dyke. Millimetric to 5cm max. clasts. Sharp contacts. 406.0-406.5 As above, millimetric to 3 cm max. clasts. Sharp contacts. Pyrite+sphalerite is locally abundant as clots and stringers e.g. 424.15-424.35: py; 426.0-426.3: py+sp			
436.35	439.5	Basalt dyke.			
	TD				

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ELECTROLYTIC ZINC COMPANY OF ASIA LTD.										DIAMOND DRILL CORE GEOCHEMICAL ANALYSES RECORD										HOLE No. <u>BBP 254</u>				
MINERAL RESOURCES DIVISION - TASMANIA																				SHEET No. 1				
LABORATORY					ANALABS, Cooee										A.A.S. at Cooee, others at Perth					GRID CO-ORDS: 383,728.6mE				
					ANALYTICAL TECHNIQUE					AAS					XRF					A.M.G. CO-ORDS: 5,386,970.3mN				
DETECTION LIMIT					103					114					COLLAR R.L.: 395.7									
					5					402					COLLAR DIP: 50°									
					5					5					AZIMUTH: 285° A.M.G.									
					5					0.003					TOTAL DEPTH: 439.5m									
Sample No.	Sample Type	From	To	Core Rec'd	Sample Length	METAL CONTENT (ppm unless specified)															XRF 408	XRF 408	Fire 309	AAS 0.005
						Cu	Pb	Zn	Ag	Fe	Mn	Co	Ni	As	S %	Sr	Ba	Hg	Na ₂ O%	SiO ₂ %	CaO%	Au		
61401	All	117.0	118.5		1.5	10	50	80	X	2.10%	125	15	35	24	1.33	8	380	0.010	0.13	76.4	0.02	0.042		
402		118.5	121.5		3.0	10	40	100	X	1.55%	30	20	40	22	1.26	10	420	0.030	0.21	74.0	X	0.017		
403		121.5	124.5		3.0	15	45	65	X	1.40%	30	20	50	10	1.13	10	390	X	0.17	74.2	0.03	0.017		
404		124.5	127.5		3.0	10	30	35	X	1.55%	30	20	55	2	1.27	10	350	X	0.20	78.4	0.01	0.017		
405		127.5	130.5		3.0	5	30	40	X	1.30%	25	20	55	7	1.18	9	290	X	0.20	80.0	X	0.017		
406		130.5	133.5		3.0	5	20	20	X	1.30%	30	20	40	3	1.03	10	340	X	0.19	80.0	X	0.008		
407		133.5	136.5		3.0	10	40	25	X	1.60%	25	20	40	5	1.32	15	460	X	0.15	79.2	X	X		
408		136.5	139.5		3.0	5	25	20	X	1.75%	30	20	30	9	1.49	6	510	X	0.09	79.0	X	0.008		
409		139.5	142.5		3.0	20	35	25	X	2.20%	30	20	35	10	1.99	10	470	X	0.13	73.8	X	X		
61410		142.5	145.5		3.0	5	25	25	X	1.40%	30	15	30	11	1.10	7	450	X	0.14	77.5	X	0.067		
411		145.5	148.5		3.0	5	25	20	X	1.35%	35	15	35	8	1.01	7	440	X	0.14	73.2	0.01	0.017		
412		148.5	151.5		3.0	5	25	40	X	1.30%	25	15	45	6	1.26	9	360	0.010	0.11	78.3	0.03	0.008		
413		151.5	154.5		3.0	40	40	80	X	1.95%	25	20	50	4	2.17	9	330	0.030	0.14	75.8	0.04	0.008		
414		154.5	157.5		3.0	20	35	25	X	1.80%	25	15	35	8	1.94	9	390	0.020	0.16	73.4	0.04	0.017		
415		157.5	160.5		3.0	15	30	20	X	1.70%	20	15	35	5	1.67	10	390	X	0.16	74.9	0.05	0.017		
416		160.5	163.5		3.0	10	30	20	X	1.60%	25	15	45	8	1.41	8	360	X	0.11	76.0	0.03	0.008		
417		163.5	166.5		3.0	5	30	45	X	1.40%	50	15	40	8	1.19	7	410	X	0.10	75.6	0.05	X		
418		166.5	169.5		3.0	5	25	25	X	6800	25	10	25	7	1.22	9	400	X	0.14	75.8	0.05	X		
419		169.5	172.5		3.0	5	30	55	X	1.50%	55	15	40	6	1.18	10	440	X	0.11	73.7	0.03	0.008		
61420		172.5	175.5		3.0	10	40	110	X	2.10%	50	20	45	6	1.74	15	440	0.010	0.31	72.0	0.16	0.008		
421		175.5	178.5		3.0	10	40	100	X	2.25%	55	20	45	7	1.63	10	410	X	0.12	74.0	0.08	0.008		
422		178.5	181.5		3.0	10	45	125	X	1.70%	55	20	45	2	1.26	6	470	X	0.13	74.9	0.05	X		
423		181.5	184.5		3.0	10	35	100	X	1.75%	90	20	45	7	1.16	10	580	0.010	0.15	70.0	0.04	X		
424		184.5	187.5		3.0	10	35	70	X	4.00%	120	35	55	24	2.13	25	350	0.020	0.85	63.2	0.58	0.008		
425		187.5	190.5		3.0	15	55	60	X	4.05%	80	30	35	15	2.95	30	410	X	0.91	63.4	0.47	X		
426		190.5	193.5		3.0	5	30	25	X	1.80%	40	20	45	22	1.53	6	450	X	0.10	74.0	0.02	X		
427		193.5	196.5		3.0	10	30	30	X	1.70%	50	20	40	21	1.25	8	500	X	0.09	74.8	0.04	0.008		
428		196.5	199.5		3.0	10	25	25	X	1.65%	45	15	80	8	1.10	7	430	X	0.07	73.9	0.03	0.008		
429		199.5	202.5		3.0	5	25	25	X	1.50%	35	15	35	8	1.03	8	430	X	0.07	76.7	0.03	0.024		
61430		202.5	205.5		3.0	10	55	65	X	1.85%	45	15	145	5	1.25	8	330	X	0.07	76.8	0.04	0.008		
431		205.5	208.5		3.0	10	35	95	X	1.50%	15	15	40	6	1.26	10	240	X	0.12	77.0	0.05	0.008		
432		208.5	211.5		3.0	15	60	80	X	2.05%	140	20	210	4	1.58	9	400	X	0.13	73.6	0.07	X		
433		211.5	214.5		3.0	5	40	50	X	1.60%	80	15	55	4	1.39	10	410	X	0.12	72.3	0.05	0.032		
434		214.5	217.5		3.0	15	45	100	X	2.00%	610	20	185	19	1.34	15	390	X	0.09	73.6	0.11	0.017		
435		217.5	220.5		3.0	15	35	65	X	1.90%	35	20	50	5	2.00	10	470	X	0.14	72.5	0.05	0.017		
436		220.5	223.5		3.0	10	40	80	X	1.80%	35	20	55	19	1.40	10	570	X	0.11	73.4	0.05	0.008		
437		223.5	226.5		3.0	15	30	25	X	2.00%	90	15	235	5	1.48	15	630	X	0.07	74.0	0.06	X		
438		226.5	229.5		3.0	10	30	20	X	1.85%	65	15	65	6	2.00	15	640	X	0.11	74.2	0.17	0.025		
439		229.5	232.5		3.0	15	20	20	X	2.20%	45	15	210	21	2.33	43	1700	0.010	0.11	74.4	0.06	0.017		
61440		232.5	235.5		3.0	10	20	20	X	2.55%	75	15	150	4	1.77	25	810	X	0.13	72.9	0.03	0.008		
441		235.5	238.5		3.0	10	30	85	X	1.70%	145	15	70	5	1.35	30	400	X	0.10	74.2	0.38	0.032		
442		238.5	241.5		3.0	5	15	15	X	5100	25	15	135	3	0.24	90	220	0.010	0.12	78.9	0.06	0.008		
443		241.5	244.5		3.0	5	20	15	X	1.45%	25	15	95	4	1.26	55	430	0.010	0.16	74.5	0.03	0.008		
444		244.5	247.5		3.0	5	20	15	X	1.55%	20	10	75	2	1.50	30	520	X	0.18	72.6	0.03	0.008		
445		247.5	250.5		3.0	5	20	20	X	1.50%	30	10	70	4	1.42	50	570	X	0.21	73.9	0.05	X		

ELECTROLYTIC ZINC COMPANY OF A'ASIA LTD.		DIAMOND DRILL CORE GEOCHEMICAL ANALYSES RECORD																			HOLE No. <u>BBP 254</u>			
MINERAL RESOURCES DIVISION - TASMANIA																						SHEET No. <u>2</u>		
Sample No.	Sample Type	From	To	Core Rec'd	Sample Length	METAL CONTENT (ppm unless specified)																SiO ₂ %	CaO%	Au
						Cu	Pb	Zn	Ag	Fe	Mn	Co	Ni	As	S %	Sr	Ba	Hg	Na ₂ O					
61446		250.5	253.5		3.0	15	25	165	X	1.75%	20	15	195	3	1.50	35	570	X	0.17	73.8	0.05	X		
447		253.5	256.5		3.0	10	25	20	X	1.80%	25	15	165	1	1.68	20	650	0.040	0.18	72.6	0.05	X		
448		256.5	259.5		3.0	10	30	30	X	1.55%	25	15	145	4	1.50	20	690	0.030	0.20	74.9	0.04	X		
449		259.5	262.5		3.0	10	35	70	X	1.90%	60	20	65	2	1.72	20	770	X	0.20	69.7	0.21	X		
61450		262.5	265.5		3.0	10	25	55	X	2.05	50	20	125	6	1.68	15	610	0.010	0.17	73.1	0.15	X		
451		265.5	268.5		3.0	10	30	100	X	1.95%	40	25	65	3	1.20	15	650	X	0.17	71.6	0.13	X		
452		268.5	271.5		3.0	5	50	220	X	1.85%	75	20	130	6	1.90	15	620	0.020	0.15	72.6	0.25	X		
453		271.5	274.5		3.0	10	55	320	X	1.70%	195	20	120	4	1.46	20	600	0.030	0.19	72.4	0.74	X		
454		274.5	277.5		3.0	5	25	145	X	1.75%	45	20	70	5	1.80	10	660	0.040	0.18	71.5	0.11	0.008		
455		277.5	280.5		3.0	10	25	25	X	1.80%	35	15	175	4	1.81	10	620	X	0.21	70.8	0.06	X		
456		280.5	283.5		3.0	10	25	60	X	1.65%	45	15	110	3	1.75	14	560	0.040	0.11	74.2	0.04	0.025		
457		283.5	286.5		3.0	5	20	30	X	1.40%	40	15	60	5	1.72	34	1200	X	0.11	76.9	0.04	0.017		
458		286.5	289.5		3.0	10	25	30	X	1.70%	100	20	150	5	1.82	85	1650	0.020	1.09	75.1	0.21	0.008		
459		289.5	292.5		3.0	5	25	25	X	1.20%	130	15	55	4	1.65	35	960	X	1.17	71.7	0.32	0.008		
61460		292.5	295.5		3.0	10	25	200	X	1.70%	90	15	170	3	1.73	15	860	0.050	0.16	72.5	0.23	0.017		
461		295.5	298.5		3.0	10	20	25	X	1.60%	400	15	55	4	1.55	35	770	X	0.16	69.0	2.15	0.082		
462		298.5	301.5		3.0	10	20	40	X	2.05%	400	20	145	6	1.66	20	720	X	0.24	71.5	0.42	X		
463		301.5	304.5		3.0	10	20	35	X	1.60%	85	20	80	6	1.49	10	830	X	0.14	73.2	0.16	X		
464		304.5	307.5		3.0	10	20	35	X	1.65%	60	15	140	5	1.62	15	770	X	0.16	72.2	0.10	0.008		
465		307.5	310.5		3.0	10	40	270	X	2.05%	525	20	60	7	1.80	45	750	0.020	0.13	67.9	2.32	X		
466		310.5	313.5		3.0	10	35	165	X	1.70%	170	15	95	7	1.63	20	770	0.030	0.14	73.2	0.41	X		
467		313.5	316.5		3.0	5	30	70	X	1.60%	125	20	70	7	1.47	20	790	0.010	0.25	72.1	0.24	X		
468		316.5	319.5		3.0	5	25	45	X	1.55%	130	15	130	24	1.80	25	870	X	0.69	72.9	0.17	X		
469		319.5	322.5		3.0	5	30	75	X	1.40%	125	15	75	21	1.50	30	780	X	0.89	73.6	0.17	X		
61470		322.5	325.5		3.0	5	20	45	X	1.70%	195	15	145	25	1.64	95	820	X	2.29	70.7	0.30	X		
471		325.5	328.5		3.0	5	30	35	X	1.70%	100	20	85	23	1.74	85	850	X	2.09	68.9	0.29	X		
472		328.5	331.5		3.0	10	30	60	X	1.75%	120	20	75	22	1.73	70	610	X	2.16	71.0	0.20	0.008		
473		331.5	334.5		3.0	15	25	60	X	2.15%	160	20	405	10	1.74	55	610	0.010	1.39	71.5	0.19	0.017		
474		334.5	337.5		3.0	10	20	50	X	2.15%	300	20	140	22	1.23	190	1100	X	4.83	68.1	0.61	0.017		
475		337.5	340.5		3.0	10	20	85	X	2.15%	435	15	165	20	0.32	220	1100	0.010	4.85	69.3	0.82	0.008		
476		340.5	343.5		3.0	5	15	85	X	2.10%	500	15	105	3	0.08	210	1050	X	4.85	68.4	0.65	0.017		
477		343.5	346.5		3.0	5	20	80	X	1.95%	420	20	95	11	0.32	190	1250	X	5.00	68.1	0.50	0.017		
478		346.5	349.5		3.0	10	35	110	X	2.55%	585	20	110	18	0.77	150	1000	X	3.86	68.4	0.57	0.080		
479		349.5	352.5		3.0	20	25	75	X	3.85%	555	35	185	54	3.25	160	1000	X	3.95	62.8	0.98	0.017		
61480		352.5	355.5		3.0	15	30	55	X	3.15%	265	30	135	56	2.71	140	920	X	3.55	67.0	0.60	0.017		
481		355.5	358.5		3.0	15	35	40	X	2.55%	255	25	185	37	2.39	160	940	X	3.15	65.8	0.97	0.017		
482		358.5	361.5		3.0	10	35	45	X	2.40%	380	20	110	44	2.64	190	940	0.010	2.80	64.1	1.75	0.017		
483		361.5	364.5		3.0	10	30	45	X	2.25%	455	20	15	44	2.27	180	1050	X	2.85	63.3	2.20	0.008		
484		364.5	367.5		3.0	15	30	35	X	2.70%	890	20	115	860	2.57	180	990	0.010	2.83	62.6	2.50	0.017		
485		367.5	370.5		3.0	10	30	25	0.5	2.50%	925	15	135	8	2.37	150	830	X	2.43	61.8	3.65	0.024		
486		370.5	373.5		3.0	15	25	45	X	2.25%	575	20	275	69	1.17	120	860	X	1.85	64.2	2.60	0.017		
487		373.5	376.5		3.0	10	30	45	X	1.80%	380	20	75	60	1.16	110	860	X	2.46	67.0	1.85	0.017		
488		376.5	379.5		3.0	10	30	60	X	1.95%	675	20	85	20	1.14	110	770	X	2.28	64.1	3.20	0.008		
489		379.5	382.5		3.0	10	25	50	0.5	2.05%	990	20	70	22	1.23	95	770	X	1.57	63.1	4.10	0.008		
61490		382.5	385.5		3.0	10	90	175	0.5	2.05%	880	15	85	22	1.59	85	780	X	1.95	63.5	3.15	0.008		
491		385.5	388.5		3.0	10	50	150	X	1.90%	805	20	55	27	0.98	100	800	X	2.01	65.3	2.40	0.008		
492		388.5	391.5		3.0	15	35	160	X	2.35%	1250	20	135	21	1.31	120	690	X	2.27	62.0	4.20	X		
493		391.5	394.5		3.0	15	20	125	X	2.00%	740	20	70	16	0.81	120	750	X	2.67	65.3	3.05	X		
494		394.5	397.5		3.0	10	35	125	X	2.05%	460	15	70	16	2.01	75	750	0.040	1.43	63.1	2.15	X		
495		397.5	400.5		3.0	5	40	185	X	2.05%	920	20	60	12	1.56	70	400	0.030	3.64	67.6	2.95	X		
496		400.5	403.5		3.0	5	30	160	X	1.70%	485	15	70	22	1.61	60	950	0.040	0.43	70.3	1.25	0.008		
497		403.5	406.5		3.0	10	20	105	X	1.55%	275	15	70	15	1.75	140	2200	0.020	1.21	69.5	1.35	X		
498		406.5	409.5		3.0	10	25	90	X	1.30%	275	15	80	16	1.01	130	940	0.010	1.79	71.8	1.35	X		

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

DIAMOND DRILL CORE GEOCHEMICAL ANALYSES RECORD

HOLE No. BBP 254
SHEET No. 3

Sample No.	Sample Type	From	To	Core Rec'd	Sample Length	METAL CONTENT (ppm unless specified)																
						Cu	Pb	Zn	Ag	Fe	Mn	Co	Ni	As	S %	Sr	Ba	Hg	Na ₂ O	SiO ₂ %	CaO%	Au
61499		409.5	412.5		3.0	5	25	40	X	1.25%	305	15	75	17	0.60	140	750	X	2.06	71.6	1.75	X
61500		412.5	415.5		3.0	5	20	40	X	1.30%	420	15	60	24	0.34	160	740	X	1.91	71.3	2.05	X
501		415.5	418.5		3.0	5	20	45	X	1.25%	535	15	80	21	0.34	130	740	X	1.59	71.3	2.75	0.008
502		418.5	421.5		3.0	5	20	45	X	1.25%	605	10	85	10	0.48	110	840	X	1.24	71.2	2.65	X
503		421.5	424.5		3.0	10	25	60	X	2.10%	495	15	65	7	1.61	50	820	X	0.72	66.4	1.90	0.008
504		424.5	427.5		3.0	30	45	1300	X	2.30%	655	15	380	10	1.40	130	810	0.110	2.49	67.7	2.25	X
505		427.5	430.5		3.0	15	40	1350	X	2.00%	325	15	90	38	1.60	140	1050	0.115	2.84	72.1	1.25	X
506		430.5	433.5		3.0	15	70	175	X	2.05%	415	20	385	32	0.61	140	1200	X	1.41	68.0	1.25	X
507		433.5	436.5		3.0	10	210	550	X	2.25%	615	15	110	79	0.84	130	980	0.050	1.44	66.2	1.60	X
508		436.5	439.5		3.0	20	40	360	X	6.10%	3150	40	70	18	0.45	280	290	0.030	3.89	50.2	6.00	0.008
			TD																			

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

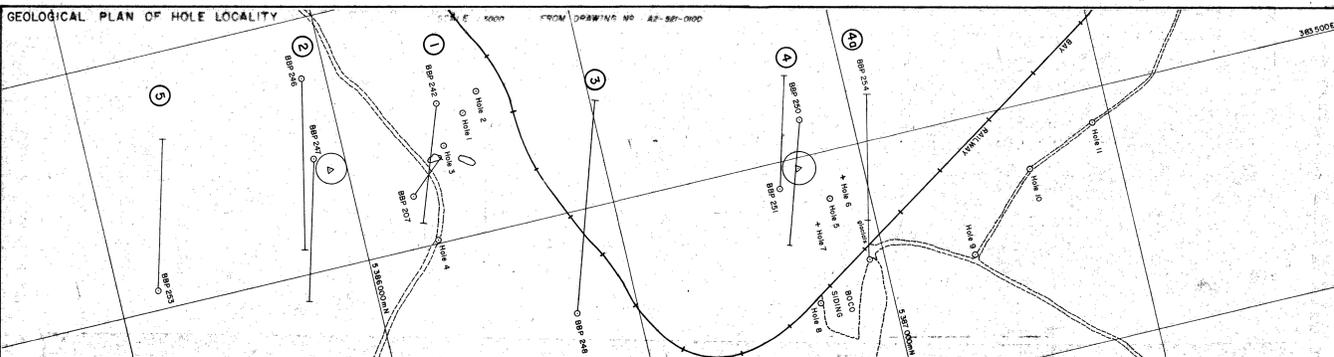
DIAMOND DRILL CORE GEOCHEMICAL ANALYSES RECORD

HOLE No. BBP 207
SHEET No. 1

LABORATORY	ANALABS, Coee										A.A.S. at Coee, others at Perth					GRID CO-ORDS: 383,370mE	
	ANALYTICAL TECHNIQUE															A.M.G. CO-ORDS: 5,380,130mN	
	AAS	AAS	AAS	AAS	AAS	AAS	AAS	AAS	XRF	XRF	XRF	AAS	Wet	Fire AAS	COLLAR R.L.: 360		
DETECTION LIMIT															COLLAR DIP: -60°		
103	103	103	103	103	103	103	103	408	408	402	122	408	309	AZIMUTH: 318° approx			
5	5	5	0.5	5	5	5	5	0.1%	0.1%	0.003	0.005	0.1%	0.005	TOTAL DEPTH: 159.5m			

Sample No.	Sample Type	From	To	Core Rec'd	Sample Length	METAL CONTENT (ppm unless specified)															XRF 401	XRF 401	COMMENTS
						Cu	Pb	Zn	Ag	Fe	Co	Ni	Mn	SiO ₂ %	CaO%	S %	Hg	Na ₂ O%	Au	Sr	Ba		
58477	All	49.0	51.0		2.0	25	30	65	X	1.75%	25	185	65	76.7	0.04	2.00	0.040	0.05	0.098	10	380		
478	Split	51.0	54.0		3.0	20	35	75	X	1.35%	30	140	50	77.2	0.04	1.15	0.030	0.11	0.024	8	340		
479		54.0	57.0		3.0	20	160	270	2.5	1.70%	30	200	90	75.8	0.04	1.30	0.030	0.28	0.017	15	650		
58480		57.0	60.0		3.0	20	80	130	2.0	1.60%	30	160	150	75.9	0.06	1.20	0.020	0.98	X	25	870		
481		60.0	62.5		2.5	20	45	160	1.5	1.50%	30	260	115	76.4	0.02	0.84	0.030	0.08	0.017	6	880		
482		62.5	65.3		2.8	20	65	375	1.5	1.65%	25	130	165	76.3	0.05	1.25	0.120	0.55	X	15	810		
483		65.3	68.3		3.0	25	45	145	2.5	1.80%	30	230	75	75.2	0.02	1.60	0.030	0.09	X	X	760		
484		68.3	71.3		3.0	20	50	430	2.0	1.80%	30	150	65	73.5	0.02	1.90	0.040	0.10	X	15	560		
485		71.3	74.3		3.0	30	50	800	1.5	2.45%	30	320	50	71.4	0.03	2.55	0.075	0.11	X	15	300		
486		74.3	77.3		3.0	30	40	215	5.0	1.45%	30	170	65	79.4	0.03	1.45	0.030	0.10	X	10	200		
487		77.3	80.3		3.0	20	40	360	X	1.50%	30	115	35	79.1	0.01	1.60	0.040	0.11	X	10	500		
488		80.3	83.3		3.0	20	40	220	8.0	1.75%	30	100	25	75.4	0.07	2.05	0.040	0.12	0.017	10	610		
489		83.3	86.3		3.0	20	35	125	4.0	1.80%	30	140	35	75.5	0.05	2.20	0.020	0.10	X	10	250		
58490		86.3	89.3		3.0	20	35	170	2.0	1.60%	35	95	20	75.3	0.07	1.85	0.020	0.12	X	15	510		
491		89.3	92.3		3.0	25	40	240	11.5	1.85%	30	190	45	74.9	0.06	2.15	0.030	0.13	X	20	540		
492		92.3	95.3		3.0	20	30	260	X	1.95%	25	135	45	74.4	0.08	2.35	0.040	0.12	X	15	530		
493		95.3	98.3		3.0	20	45	310	0.5	2.05%	35	130	30	73.8	0.08	2.50	0.030	0.13	0.008	20	480		
494		98.3	101.3		3.0	40	50	300	4.5	1.90%	25	125	50	74.5	0.06	2.45	0.040	0.12	X	15	310		
495		101.3	104.3		3.0	35	50	190	4.0	2.50%	35	160	40	73.7	0.06	3.10	0.060	0.11	0.017	10	510		
496		104.3	107.3		3.0	20	40	440	2.5	2.00%	30	135	90	77.3	0.04	1.95	0.040	0.09	0.008	8	580		
497		107.3	110.3		3.0	20	35	280	X	1.45%	25	130	105	74.6	0.05	0.67	0.010	0.08	0.008	8	1050		
498		110.3	113.3		3.0	20	35	380	X	1.35%	30	120	140	75.8	0.03	0.33	0.020	0.07	X	8	1150		
499		113.3	116.3		3.0	25	60	335	X	2.80%	40	125	125	71.8	0.06	0.23	0.030	0.10	0.017	7	760		
58500		116.3	119.3		3.0	20	90	700	X	3.86%	45	110	150	69.5	0.08	4.20	0.070	0.26	0.017	10	560		
501		119.3	122.3		3.0	20	60	335	X	3.00%	50	110	230	71.0	0.21	3.00	0.030	0.33	X	15	490		
502		122.3	125.3		3.0	30	75	250	1.5	3.55%	65	105	65	71.3	0.06	4.10	0.050	0.08	0.008	9	450		
503		125.3	128.3		3.0	20	50	405	X	2.20%	55	120	300	76.1	0.06	1.90	0.040	0.07	0.008	6	410		
504		128.3	131.3		3.0	20	35	350	X	4.05%	65	160	800	68.5	2.05	1.40	0.030	0.32	0.017	30	370		
505		131.3	134.3		3.0	20	90	485	X	2.75%	55	135	920	73.1	0.14	1.70	0.040	0.20	0.008	8	490		
506		134.3	137.3		3.0	20	85	260	X	3.35%	65	110	1200	70.0	0.25	2.15	0.050	0.16	0.008	7	520		
507		137.3	140.3		3.0	20	200	1300	X	2.80%	60	145	550	72.0	0.14	2.05	0.270	0.09	0.017	6	480		
508		140.3	144.8		4.5	20	190	610	0.5	2.40%	75	130	300	73.6	0.27	1.75	0.100	0.07	0.017	9	480		
509		144.8	147.8		3.0	25	95	515	3.5	2.60%	65	165	500	72.2	1.80	2.05	0.040	0.07	0.017	25	420		
58510		147.8	149.9		2.1	20	30	215	2.0	4.10%	60	175	660	70.6	0.71	1.70	0.030	0.05	0.017	15	370		
511		149.9	152.3		2.4	30	50	260	X	2.80%	55	140	75	74.1	0.06	2.40	0.030	0.09	0.008	5	400		
512		152.3	155.3		3.0	20	55	170	X	2.10%	45	160	70	77.1	0.07	1.65	0.010	0.11	0.017	7	410		
513		157.4	159.5		2.1	20	30	85	1.0	1.30%	40	170	130	90.4	0.07	0.54	0.030	0.03	0.017	X	160		

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



DOWN HOLE INFORMATION		GEOCHEMISTRY		GEOPHYSICS	
Lithology	Mineralin				
Depth (m)					
0					
50					
100					
150					
200					
250					
300					
350					
400					
450					
500					
550					
600					
650					
700					
750					

SUMMARY OF COMPLETED HOLE				SPECIFICATIONS OF PROPOSED HOLE			
CO-ORDINATES	NORTHING	EASTING	R.L.	CO-ORDINATES	NORTHING	EASTING	R.L.
LOCAL GRID	TRAVERSE 3			LOCAL GRID	TRAVERSE 3		
A.M.G.	5 386 378.6	383 698.4	376.3				
AZIMUTH 285° A.M.G.	DIP - 50°	TOTAL DEPTH 577.5m		AZIMUTH 285° A.M.G.	DIP - 50°	DESIGNED DEPTH open	
COMMENCEMENT DATE 5-9-83	COMPLETION DATE 24-11-83	ESTIMATED COMMENCEMENT	Sept, 1983				

INTERNAL SURVEY INFORMATION						ANTICIPATED GEOLOGY			
DEPTH	AZIMUTH	DIP	DEPTH	AZIMUTH	DIP	DEPTH	LITHOLOGY	DEPTH	NATURE OF TARGET AND ANTICIPATED DEPTH
130m	289°	45°	406m	291°	405°				
217m	288°	45.5°	490m	294°	37°				
325m	285°	44°	574m	298°	31°				

DRILLED GEOLOGY (SUMMARISED)			MINERALISATION AND SIGNIFICANT ASSAYS		
DEPTH	LITHOLOGY	DEPTH			
0-90.5m	Glacial cover.				
90.5-388.2m	Unaltered to weakly altered felsic intermediate rocks (leuco-andesites), regionally silicified, and basalt dykes.				
388.2-431.35m	Moderately to strongly pyritic altered felsic rocks and fragments, esp. 388.2-396.7, 402.0-404.1, strongly pyritic.				
431.35-577.5m	Unaltered leuco-andesites regionally silicified, with basalt dykes. Sporadic strong alteration (Zn).				

DESIGNED BY: _____ DATE: _____

AIM OF HOLE: Across-strike drilling of quartz-sericite-pyrite alteration zone on traverse No. 3.

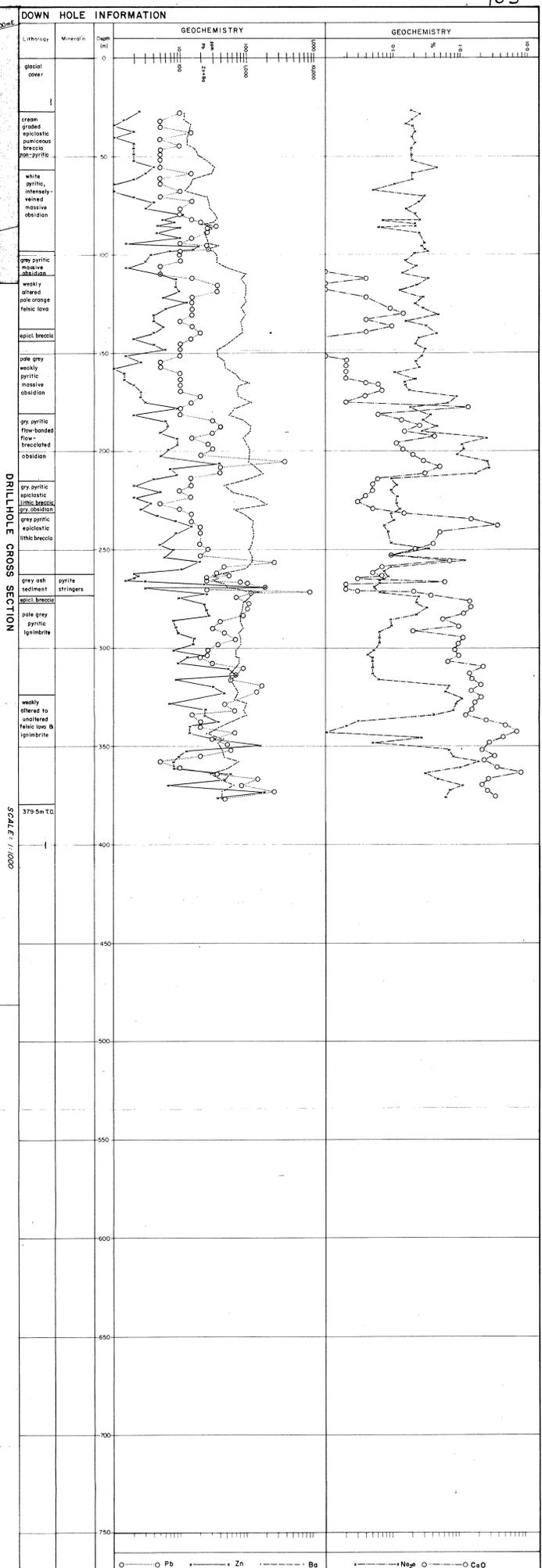
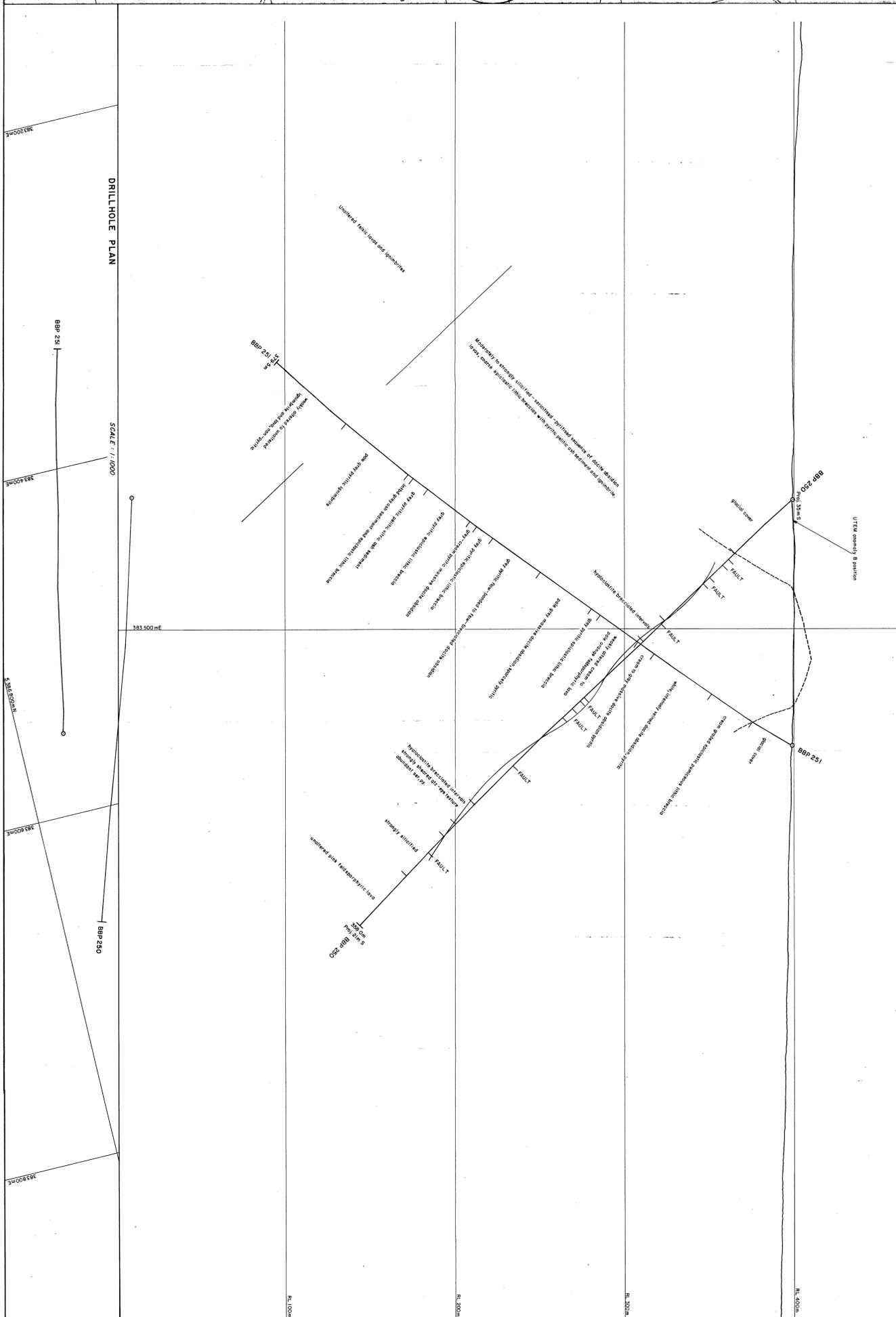
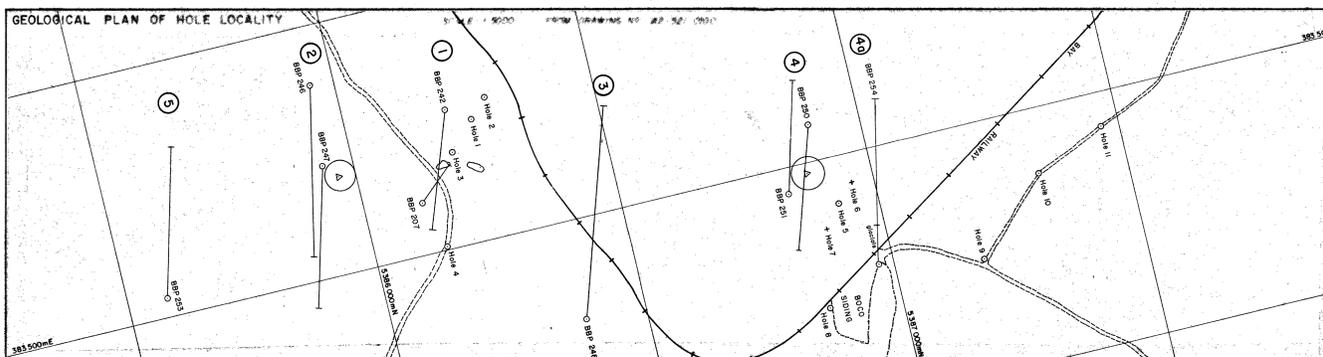
NOTES: RESULT: This hole intersected a much-reduced width of alteration, which does not appear to be hosted by the biotitized dacite obsidian intersected to the south.

268171

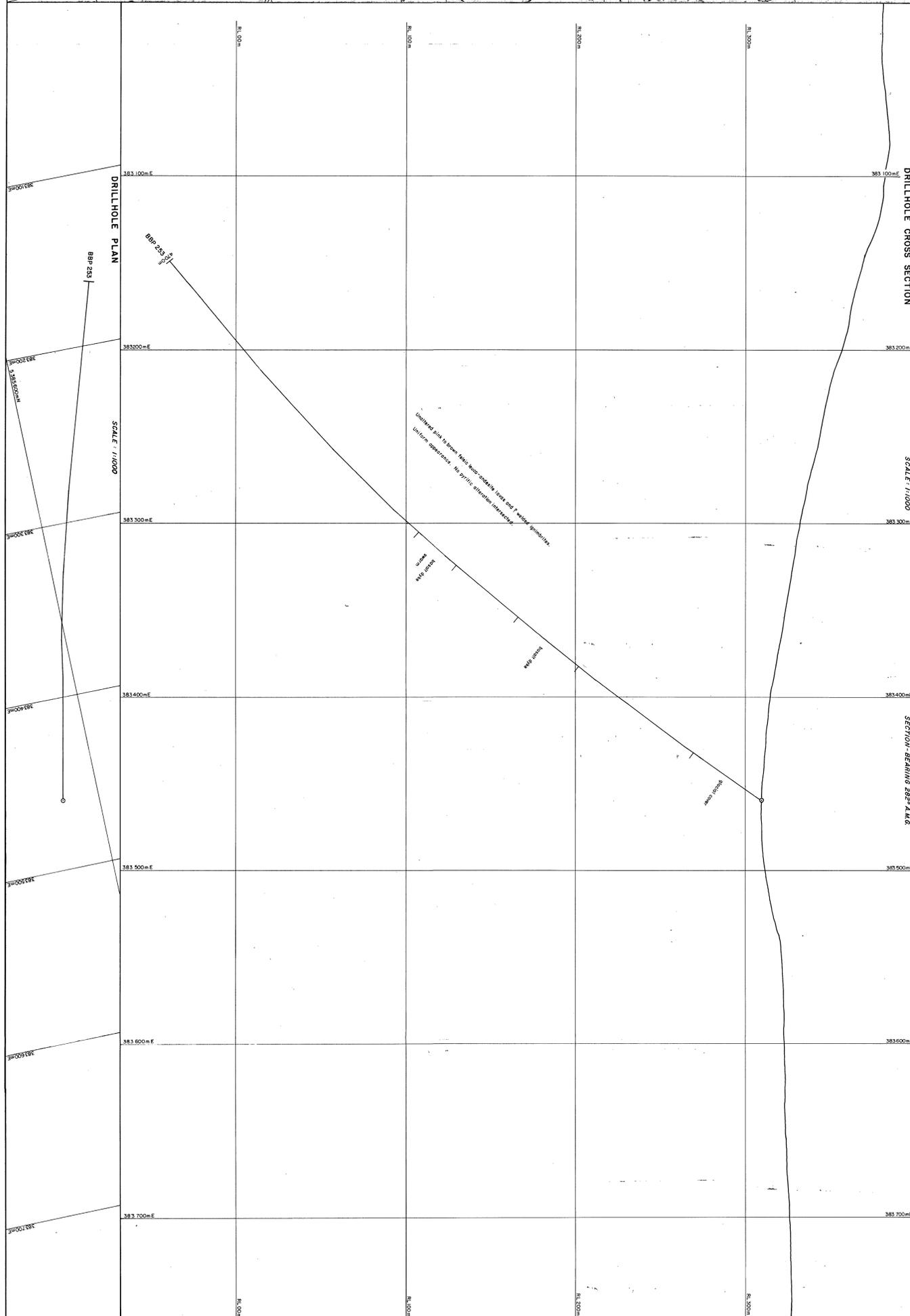
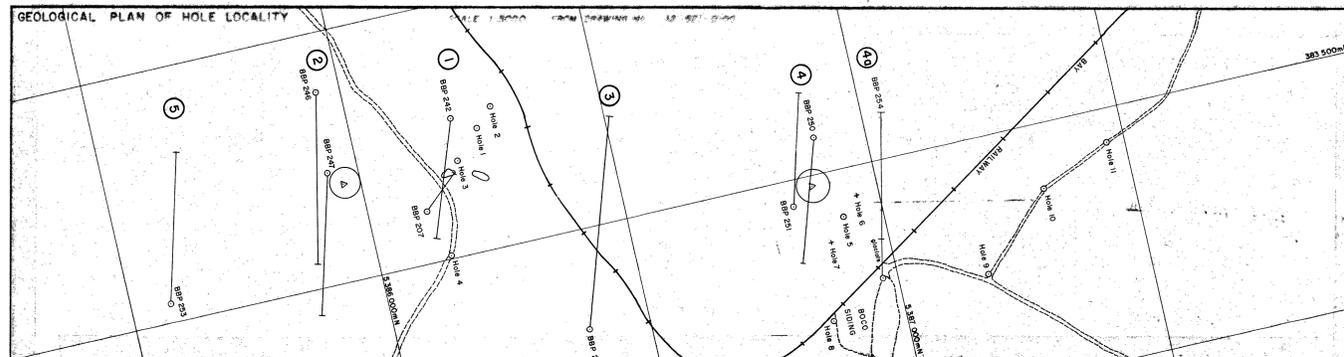
LOGGED BY: Rod Sainy	DATE: November, 1983	ELECTROLYTIC ZINC CO. OF ASIA LTD.	
PROJECT: BULGOBAC EL12/72 TAS.		SPECIFICATIONS AND SUMMARY OF RESULTS	
EXPLORATION DIAMOND DRILL HOLE No. BBP 248		168	

SAMPLE DATA		ELEMENTS DETERMINED		LAB. METHOD	
SAMPLED INTERVAL	SAMPLE NUMBERS	SAMPLE TYPE			
376.5-377.0m	58412	split	Cu, Pb, Zn, Ag, Fe, Mn, Co,		AAS
388.2-389.2m	58403		Ni, Bi, Hg		AAS
390.0-391.5m	58404		SiO ₂ , CaO, Sr, Ba, S		XRF
391.8-392.8m	58405				
395.4-396.7m	58476				
402.1-404.1m	58456				
404.1-407.4m	58467				
407.4-410.7m	58468				
410.7-416.0m	58469				
499.9-505.0m	58470				
503.0-506.0m	58471				
514.0-523.0m	58472-76				

NOTES: SCALE: As shown Survey: R.A.S. Revised: _____ Date: 9-12-83 REF No: _____ Drawn: R.J.R. Checked: R.A.S. AO-521-0105

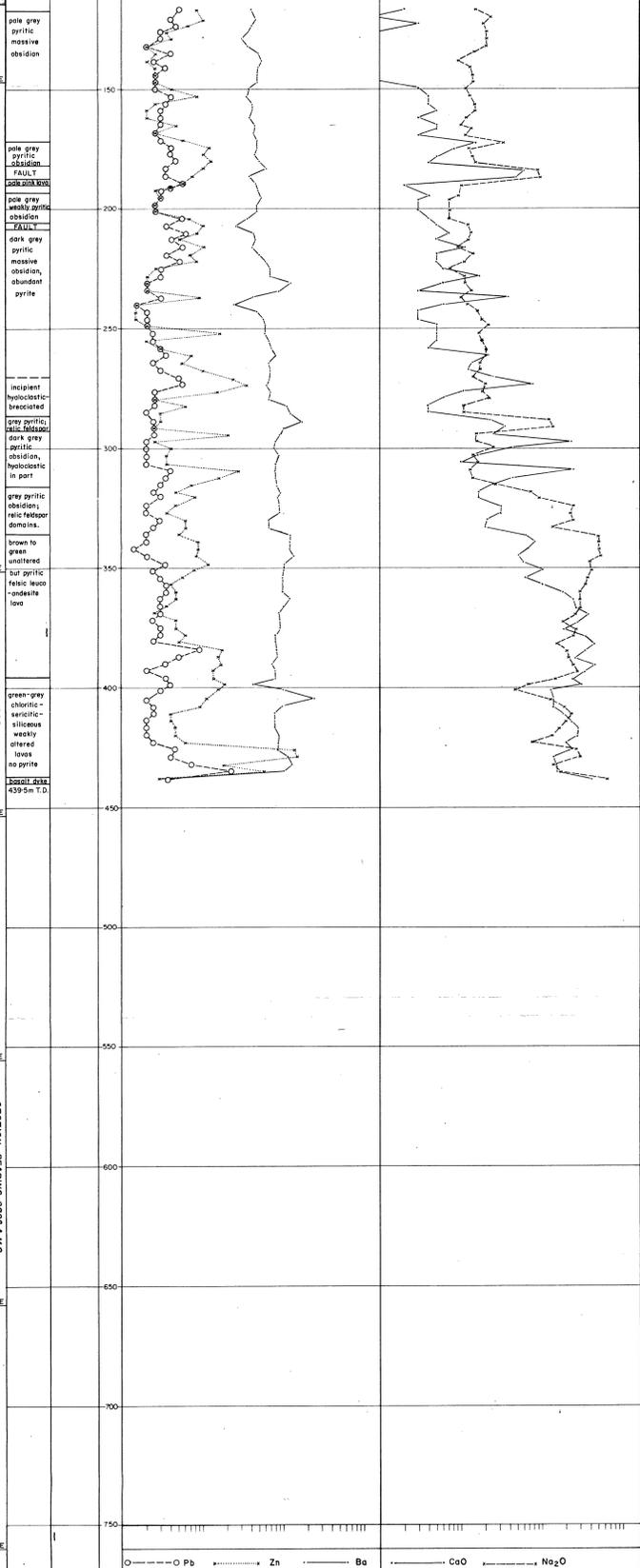
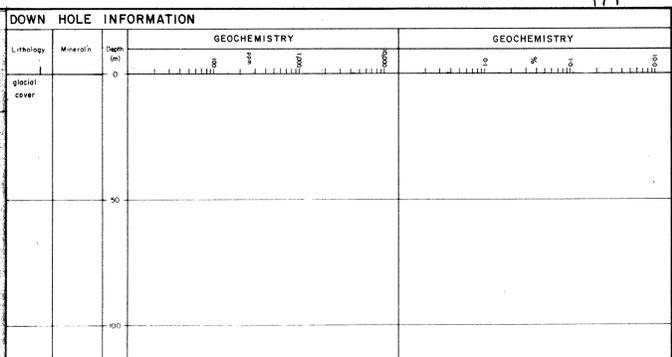
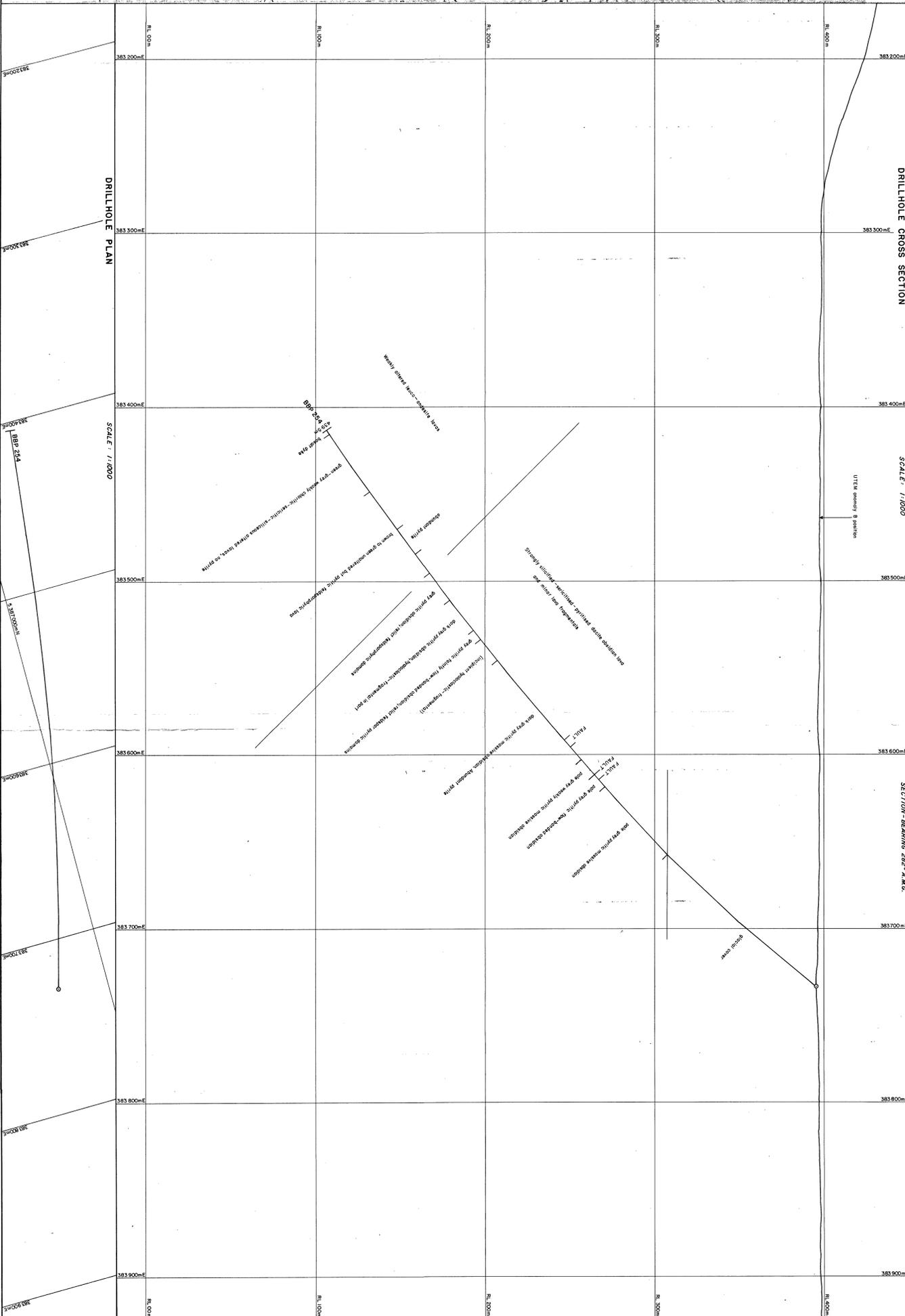
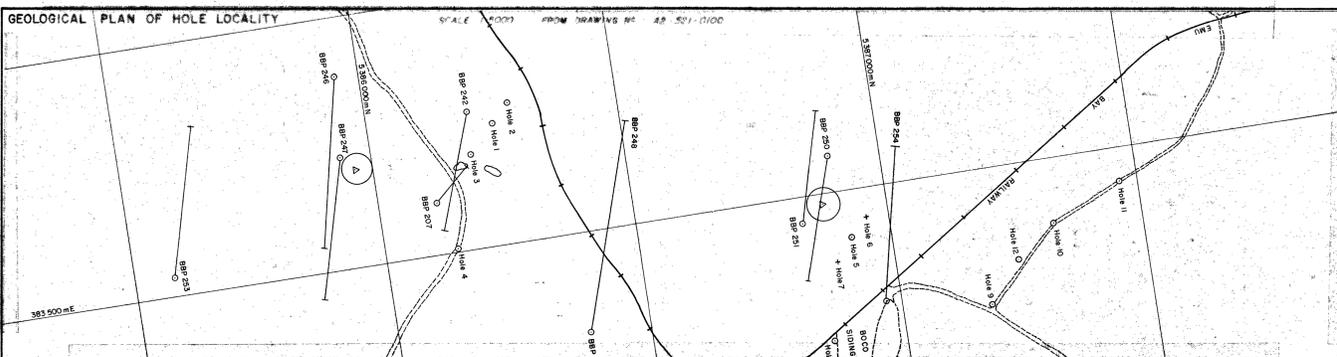


SUMMARY OF COMPLETED HOLE				SPECIFICATIONS OF PROPOSED HOLE			
CO-ORDINATES	NORTHING	EASTING	R. L.	CO-ORDINATES	NORTHING	EASTING	R. L.
LOCAL GRID				LOCAL GRID			
A.M.G.	5 386 8267	383 551.6	399.0	A.M.G.			
AZIMUTH	285° A.M.G.	DIP -60°	TOTAL DEPTH 379.5m	AZIMUTH		DIP	DESIGNED DEPTH
COMMENCEMENT DATE	20-12-'83	COMPLETION DATE	26-1-'84	ESTIMATED COMMENCEMENT			
INTERNAL SURVEY INFORMATION				ANTICIPATED GEOLOGY			
DEPTH	AZIMUTH	DIP	DEPTH	AZIMUTH	DIP	DEPTH	NATURE OF TARGET AND ANTICIPATED DEPTH
50m	280°	-55.5°	303m	-	-50°		
100m	281°	-55°	369m	285°	-48°		
200m	283.5°	-54°					
253m	281.5°	-53°					
HOLE SIZE				HOLE SIZE			
HW	0	9.0m	N0	18.5m	33.0m	379.5m	
HQ	0	9.0m	B0	18.5m	33.0m	379.5m	
DRILLED GEOLOGY (SUMMARISED)							
DEPTH	LITHOLOGY	DEPTH	MINERALISATION AND SURFACANT ASSAYS				
0-270m	Fluvioglacial cover.						
270-	Cream altered epistatic pumiceous breccia.						
56.5-	White altered intensely veined obsidian.						
97.85-	Cream to grey pyritic dacite obsidian.						
109.9-	Weakly altered feldspariferous loam.						
137.2-	Grey pyritic epistatic breccia.						
143.5-	Pole grey dacite obsidian.						
180.7-	Grey pyritic dacite obsidian flow banded, flow-brecciated.						
214.9m	Grey pyritic epistatic breccia.						
227.0-	Grey pyritic dacite obsidian.						
239.0m	Grey pyritic epistatic breccia.						
262.35-	Grey pyritic pelitic ash sediment.						
275.2-	Grey pyritic epistatic breccia, minor ash.						
276.95m	Grey pyritic lignite.						
323.5-	Weakly altered to unaltered volcanics.						
379.5m							
LOGGED BY Rod Sainy, DATE Feb/Sept. 1984							
SAMPLE DATA				ELECTROLYTIC ZINC CO. OF ASIA LTD.			
SAMPLED INTERVAL	SAMPLE NUMBERS	SAMPLE TYPE	ELEMENTS DETERMINED	LAB METHOD	PROJECT: BULGOBAC J.V. TAS.		
270-379.5m in 3m max lengths	58300-58461	split	Cu,Pb,Zn,Ag,Mo,Fe,Hg,Sn,Be,S,Ca,0,Si,02,As, Ni, Bi, Au.	AES, XRF, AAS, ICP/AAS	SPECIFICATIONS AND SUMMARY OF RESULTS		
50.8m	44738	split	Petrological description C.M.S. 84/3/77	thin section	EXPLORATION DIAMOND DRILL HOLE No. BBP-251		
92.5m	44739				268172		
143.5m	44740				SCALE: As shown Survey: R.A.S. Revised		
196.0m	44741				Reference: Date: 1-2-84 REF No.		
209.0m	44742				Drawn: R.J.R. Checked: R.A.S.		
251.7m	44743				AO-521-0107		
259.0m	44744						
266.7m	44745						
268.7m	44746						
271.5m	44747						
275.2	44748						
70.3	44749	split	Petrological description C.M.S. 84/3/45	thin section			
89.0m	44750						
101.0m	44751						
104.0m	44752						



DOWN HOLE INFORMATION		GEOCHEMISTRY		GEOPHYSICS	
Lithology	Mineral	Depth (m)			
		0	No assays undertaken in this hole.		
		50			
		100			
		150			
		200			
		250			
		300			
		350			
		400			
		450			
		500			
		550			
		600			
		650			
		700			
		750			

SUMMARY OF COMPLETED HOLE			SPECIFICATIONS OF PROPOSED HOLE		
CO-ORDINATES	NORTHING	EASTING	R. L.	CO-ORDINATES	NORTHING
LOCAL GRID				LOCAL GRID	
A.M.G.	5,385,578.8	383,459.8	309.8	A.M.G.	
AZIMUTH	282° A.M.G.	DIP	55°	AZIMUTH	282° A.M.G.
COMPLETION DATE	2-2-'84	COMPLETION DATE	17-2-'84	DIP	55°
INTERNAL SURVEY INFORMATION			ANTICIPATED GEOLOGY		
DEPTH	AZIMUTH	DIP	DEPTH	AZIMUTH	DIP
0m	282°	55°	264m	287.5°	47.5°
107m	281°	53°	Surveys below 264m not done because of drill string failure.		
136m	—	51°			
185m	286°	50°			
HOLE SIZE			HOLE SIZE		
FROM	TO		FROM	TO	
HW	0	3.0m	NG	48.0	99.0m
HQ	3.0	48.0m	BQ	99.0	470.0m
DRILLED GEOLOGY (SUMMARISED)			MINERALISATION AND SIGNIFICANT ASSAYS		
DEPTH	LITHOLOGY	DEPTH			
0-49m	Glacial cover.				
49-470m	Unaltered pink to brown felicit intermediate (succ-oxidised) levels and sulphides. Very uniform appearance. Basalt dykes: 133-185.6m and throughout 228.5-258.2m.				
DESIGNED BY: Rod Selby DATE: February 1984					
AIM OF HOLE:					
1. Trace 5 in a programme of cross-strike drilling of the concealed at-surface-pyrite alteration zone.					
2. Test of the UTEM anomaly A position.					
NOTES: Hole path below 264m, as shown, assumes a 2° lift every 50m.					
RESULTS: Hole abandoned prematurely due to drill string jam. No alteration or oblation fragmental host intersected. No down-hole explanation of the UTEM anomaly.					
LOGGED BY: Rod Selby DATE: February 1984					
268173					
ELECTROLYTIC ZINC CO. OF ASIA LTD.					
PROJECT: BULGOBAC J.V. TAS.					
SPECIFICATIONS AND SUMMARY OF RESULTS					
EXPLORATION DIAMOND DRILL HOLE No. BBP 253					
170					
SCALE: As shown Survey: R.A.S. Revised:					
Reference: Date: 1-2-'84 REF. No.					
Drawn: R.J.R. Checked: R.A.S. AO-521-0108					



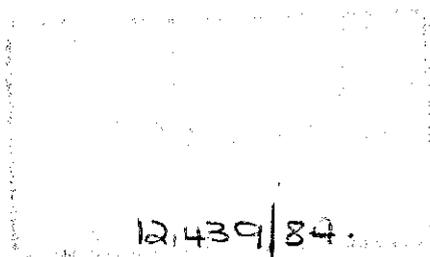
SUMMARY OF COMPLETED HOLE				SPECIFICATIONS OF PROPOSED HOLE			
CO-ORDINATES	NORTHING	EASTING	R. L.	CO-ORDINATES	NORTHING	EASTING	R. L.
LOCAL GRID				LOCAL GRID			
A.M.G.	5,386,970.3	383,728.6	395.7	A.M.G.			
AZIMUTH 285° A.M.G. DIP 50°	TOTAL DEPTH 439.5m		AZIMUTH 285° A.M.G. DIP 50°	DESIGNED DEPTH			
COMMENCEMENT DATE 2-3-84	COMPLETION DATE 7-5-84		ESTIMATED COMMENCEMENT				
INTERNAL SURVEY INFORMATION				ANTICIPATED GEOLOGY			
DEPTH	AZIMUTH	DIP	DEPTH	AZIMUTH	DIP	DEPTH	NATURE OF TARGET AND ANTICIPATED DEPTH
236m	280°	40°	439.5m	274°	34°		
287m	278°	35°					
338m	278°	37°	0-236m -				No surveys, survey gear jammed at 236m, requiring rods to be pulled.
389m	275°	36°					
HOLE SIZE				HOLE SIZE			
HW	0	15.5m	N0	53.0	117.0m		
HQ	15.5	53.0m	B0	117.0	439.5m		
DRILLED GEOLOGY (SUMMARISED)				MINERALISATION AND SIGNIFICANT ASSAYS			
DEPTH	LITHOLOGY	DEPTH					
0-117.0m	Glacial cover.						
117.0-335.3m	STRONGLY SILICIFIED - SERICITISED - PYRITISED DACITE OBLIVIAN LAVA and MINOR LAVA FRAGMENTALS.						
335.3-389.5m	Pole grey weakly pyritic massive to flow-banded obsidian.						
389.5-439.5m	Dark grey pyritic massive 315-400m obsidian. Abundant pyrite. Hypoblastic intervals within 270.0-286.2m, 292.5-335.45m.						
439.5-450.0m	Grey pyritic obsidian. Relict feldsparphyric domains.						
450.0-455.0m	WEAKLY ALTERED LEUCO-ANDESITE LAVAS.						
455.0-456.35m	Unaltered but pyritic lava.						
456.35-436.35m	Green-grey weakly chloritic - sericitic - siliceous lavas, no pyrite.						
436.35-439.5m	Bosill dyke.						

LOGGED BY Rod Seinty	DATE October, 1984
DESIGNED BY Rod Seinty	
DATE	
AIM OF HOLE: To test the 1m-thick pyritic cherty-silicified pelitic ash sediment 200m north of BBP 251; to test the northern part of the UTEM anomaly B.	
NOTES: RESULT This hole encountered an entirely different sequence to that in BBP 251, and the sediment horizon was not found. Strong alteration is hosted by mostly massive obsidian. The quartz-sericitic-pyrite alteration is stronger in this hole than in BBP 251 and of at least as strong as that in BBP 246, 247.	
268174	

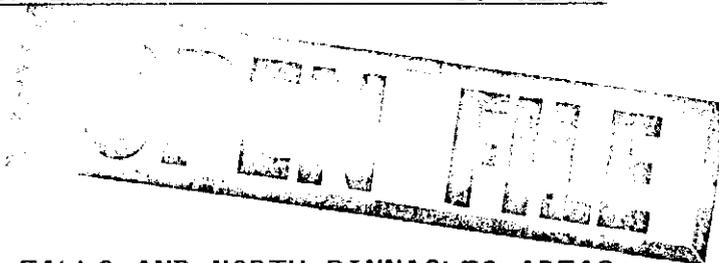
ELECTROLYTIC ZINC CO. OF ASIA LTD.	
PROJECT: BULGOBAC J.V.	TAS.
SPECIFICATIONS AND SUMMARY OF RESULTS	
EXPLORATION DIAMOND DRILL HOLE No. BBP 254 171	
Sur-2296-01-246	

NOTES:	SCALE: As shown	Survey: R.A.S.	Revised:
	Reference:	Date: 5-5-84	REF. No.
	Drawn: R.J.R.	Checked: R.A.S.	AO-521-0110

ELECTROLYTIC ZINC COMPANY OF AUSTRALASIA LIMITED
MINERAL RESOURCES DIVISION



PART OF EXPLORATION LICENCE NO. 12/72



SILVER FALLS AND NORTH PINNACLES AREAS

PROGRESS REPORT ON EXPLORATION ACTIVITY
30TH MAY TO 13TH NOVEMBER, 1984.

ELECTROLYTIC ZINC COMPANY OF AUSTRALASIA LIMITED
MINERAL RESOURCES DIVISION

PART OF EXPLORATION LICENCE NO. 12/72

SILVER FALLS AND NORTH PINNACLES AREAS

PROGRESS REPORT ON EXPLORATION ACTIVITY
30TH MAY TO 13TH NOVEMBER, 1984.

E.Z. REPORT No. T195

R.A. SAINTY,
NOVEMBER, 1984.

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List of Appendices

- Appendix 1. Silver Falls Rock Chip Analyses
- 2. Petrological Report C.M.S. 84/6/42
- 3. NPP 215 Analyses Record.

1. INTRODUCTION

This report covers work on the Silver Falls and North Pinnacles areas of Exploration Licence No. 12/72 by Electrolytic Zinc Company of Australasia Limited between 30th May and 13th November, 1984.

The work was carried out on behalf of a Joint Venture between E.Z. and Getty Oil Development Co. Ltd., which was initiated in April, 1976. A description of the Licence can be found in E.Z. Report No. 128 - "Exploration Undertaken in E.L. 12/72 during 1976/77".

2. PREVIOUS EXPLORATION

Details of all previous work on the Silver Falls and North Pinnacles areas of E.L. 12/72 have been reported in E.Z. Report No's 130 (1979), 132 (1980), 137 (1981), 149 (1982) and 153 (1982).

3. EXPLORATION UNDERTAKEN 30TH MAY TO 13TH NOVEMBER, 1984.

Previous exploration by E.Z. and individual prospectors in these two areas located subeconomic base-metal mineralisation. Exploration during this six-month period consisted of the beginning of a reappraisal of the potential for economic gold mineralisation by sampling surface exposures and E.Z. drill core.

3.1. Work Completed

3.1.1. Au REVIEW - SILVER FALLS AREA (Ref. Figure 1 - Rock chip sample location plan)

A field visit was made to the Silver Falls Prospect, as a brief literature review suggested potential for volcanogenic Au. The prospect, lying some 100m west

of the western boundary of E.L. 12/72 within Aberfoyle's E.L. 22/74, is described in old reports as sporadic veinlets and patches of galena, sphalerite, pyrite and chalcopyrite within a "silicified carbonate", containing barite, talc and pyrophyllite. The "carbonate" and an adjacent suite of porphyritic rhyolites and ignimbrites both strike N.E. into E.Z's ground.

Initially, 34 samples were taken from the E.Z. coastline on grid line 5,390,300N, the track to the river and from the outcrop at Silver Falls. Of these, 9 were submitted for petrological examination and 25 were dispatched for analysis for Cu, Pb, Zn, Ag, Mo, Fe, Mn, Cr, As, Sb, B, W, Sn and Au.

A further 11 samples were later taken from the vicinity of the two highest values (0.075 and 0.08 ppm Au) from the initial sampling, and analysed for Au only.

Analysis techniques were: Au by 30g fire assay fusion/AAS, Cu, Pb, Zn, Ag, Mo, Fe, Mn and Cr by AAS after nitric, perchloric, hydrochloric and hydrofluoric acid digestion, As and Sb by vapour Hydride generation, B by colourimetry after fusion and W and Sn by pressed powder XRF.

3.1.4. Au REVIEW - NORTH PINNACLES AREA

Selected intervals of core from the North Pinnacles hole NPP 215 were split and submitted for assay for Au and Ag and the gold indicators As, Tl and Sb. In 1980 this hole intersected a weakly mineralised (vein and fracture-fill) rhyolite and rhyolite breccia in a test of combined Pb/Zn geochemical and IP anomalies.

Nineteen core samples, each 2-3m in length, representing 41.5-72.5m and 84.5-105.5m TD (high Pb Zn zones) were initially split. Following encouraging results from the higher interval, a further 13 samples representing 0-41.5m were split and assayed.

Analysis techniques were: Au by 30g fire assay fusion/AAS; Ag and Tl by AAS after nitric, perchloric, hydrochloric and hydrofluoric acid digestion and Sb by vapour Hydride generation.

Selected intervals of NPP 213 (12 samples, total length 31.2m) and NPP 214 (18 samples, total length 50.2m) were also split and dispatched to Analabs for Au assay only. In 1980 these holes intersected black shales and tuffaceous sediments in testing Pb-Zn geochemical ±IP anomalies. The gold assay results for these holes have not yet been received.

3.2.2. Au REVIEW - SILVER FALLS AREA

(Refer: Figure 1 - Rock chip sample location plan;
Appendix 1 - Rock chip analyses;
Appendix 2 - Petrological report CMS 84/6/42)

The petrological report CMS 84/6/42 identifies the costean and track samples as flow-brecciated rhyolitic ignimbrite rocks which have been mildly silicified and very weakly sericitised. Primary albite or alkali feldspar occurs in all samples. Variations are subtle and a single ash flow unit may be represented. A single sample (61335), that of a coarsely porphyritic, brecciated and weakly mineralised rhyolite, may represent a high level intrusive. The sulphide traces are concentrated in late-stage quartz-carbonate veinlets. At the Silver Falls Prospect itself (61342), the "silicified carbonate" referred to in old reports is a silicified welded ignimbrite or lava with semi-pervasive quartz-carbonate veinlets containing the galena-rich mineralisation.

The analytical results show elevated to high Pb and elevated Zn (max. 3.35% Pb, 0.69% Zn in 61336) but show only trace gold and gold-pathfinders. The two highest Au values (61331 - 0.075 ppm and 61339 - 0.08 ppm) were from samples in the costean and track, respectively. The samples taken later from the vicinity of these two highest samples returned even lower results : all below detection limit except for two near sample 61339 which assayed 0.02 and 0.01 ppm Au. Samples from the silicified and weakly mineralised ignimbrite at Silver Falls Prospect (61343-61356) assayed insignificant Au (max. 0.03 ppm).

3.2.3. Au REVIEW - NORTH PINNACLES AREA

(Refer Appendix 3 : NPP 215 Analyses Record)

Assays have been received for the NPP 215 samples only. A total of 32 split core samples, each 2-3m in length, representing 0 -72.5m and 84.5-105.5m TD (total length 93.5m) were split.

Elevated Au values (+0.1 ppm) occur in seven consecutive samples and bulk as follows:

34.0-54.3m 20.3m at 0.25 ppm Au.

This interval includes

4.5m at 0.38 ppm and 3.0m at 0.47 ppm Au.

The assays for the other samples were either very low or below the limit of detection.

These elevated Au values are contained within one of two zones of elevated Pb/Zn (1700 ppm to 1.1% Zn) marked by thin ramifying veinlets of galena, sphalerite and pyrite within fractured, mildly silicified felsic lava and lava breccias.

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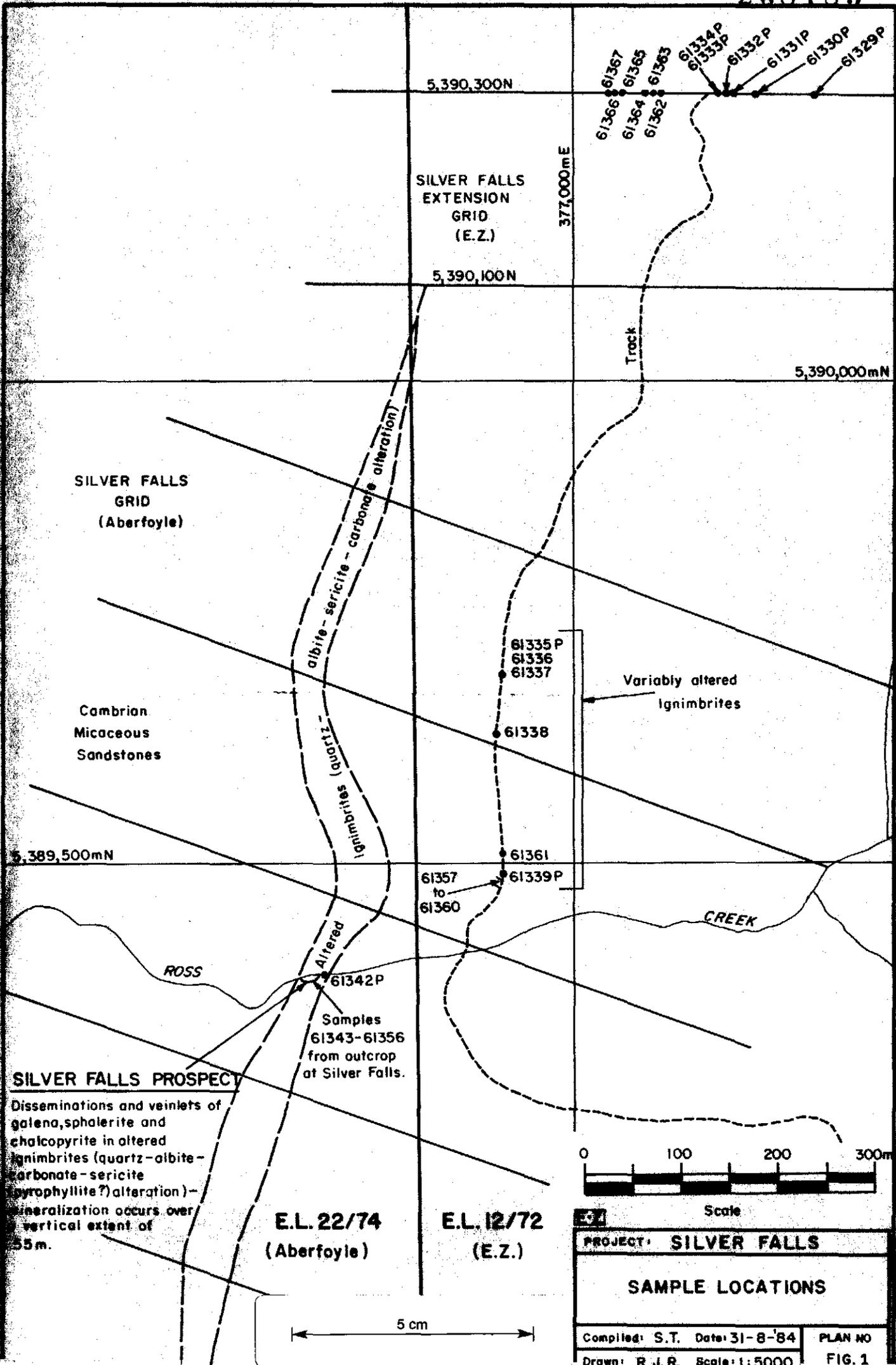
3.3. Recommendations

3.3.1. SILVER FALLS

No further work is recommended.

3.3.2. NORTH PINNACLES

Follow-up of the elevated Au values in NPP 215 should be undertaken by rock chip sampling in the vicinity of the drill hole and adjacent tracks.



APPENDIX 1.

Silver Falls Rock Chip Analyses

Electrolytic Zinc Co. of A'asia Ltd. Rosebery, Tas.			ROCK SAMPLE LEDGER					PROJECT: BULGOBAC		LOCALITY: SILVER FALLS												
								COLLECTED BY: S. Taylor, W. Moyle		DATE: 21.6.84 28.8.84												
Sample Number	A. M. G. Co-ordinates		Sample Type	Geological Description	Rock-type (Macroscopic)	Thin or Polished Section				Metal Content (p.p.m. unless specified)												
	N	E				T or P	By	Reference	Sn	B	Au	W	Cu	Pb	Zn	Ag	Mo	Fe	Mn	Cr	As	Sb
61329			ROCK CHIP	LITHIC SANDSTONE		T	CMS	84/6/42	5	55	0.50	10	30	1400	55	X	X	3300	30	165	35	X
61330			"	IGNIMBRITE flow brecciated (hyalitic vitric-crystal tuff - mildly sericitized/silicified)		T	"	"	3	23	0.32	X	15	575	55	X	X	4450	40	55	X	X
61331			"	IGNIMBRITE as 61330 with moderate sericitization/silicification		T	"	"	4	33	0.75	X	20	660	85	X	X	7500	150	45	9	X
61332			"	KAOONITE VEIN		T	"	"	X	18	0.17	X	15	955	90	X	X	4850	585	45	X	X
61333			"	IGNIMBRITE = 61330, 61331: minor sericitization		T	"	"	X	70	0.17	X	15	2500	160	0.5	X	1.45%	2000	55	20	X
61334			"	IGNIMBRITE as above with minor, late stage quartz vein stockwork		T	"	"	5	46	0.17	10	15	1350	145	X	X	1.40%	1450	70	X	X
61335			"	"ORISSIA" quartz-albite porphyry with quartz-siderite-sphal. galena-chalcopyrite veinlets		T	"	"	3	19	0.17	X	15	1950	2250	X	X	1.25%	1400	295	40	X
61336			"	= 61335					3	36	0.32	X	40	3.35%	6900	32	X	1.55%	1100	210	X	1
61337			"	= 61335					3	36	0.17	X	15	130	110	X	X	6100	85	280	40	X
61338			"	equivalent to 61339					X	32	0.25	X	20	245	80	X	X	1.20%	215	260	X	3
61339			"	IGNIMBRITE = 61333 with sericitization and silicification; quartz-c veinlets		T	CMS	84/6/42	X	30	0.80	X	15	770	80	X	X	1.35%	290	155	120	X
61342			"	IGNIMBRITE silicified with gal. in quartz-siderite veinlets		T	"	"	X	47	0.32	X	35	1.15%	485	2.0	X	1.25%	705	160	X	3
61343			"	IGNIMBRITE with moderate quartz-albite - carbonate - sericite (pyrophyllite)					3	36	0.17	X	20	2800	240	X	X	1.30%	690	255	X	3
61345			"	alteration - contains sporadic disseminated pyrite and veinlets of galena, pyrite & sphalerite					4	20	0.08	X	20	400	225	X	X	1.30%	1000	420	2	1
61346			"	"					X	29	X	X	20	5750	705	1.0	X	2.20%	2750	350	X	1
61347			"	"					X	44	X	10	20	6000	790	1.0	X	2.30%	2450	325	X	X
61348			"	"					5	41	0.08	X	100	6050	950	1.0	X	2.90%	2850	480	X	X
61349			"	"					5	32	X	X	20	8150	450	1.5	X	2.10%	1300	1000	X	X
61350			"	"					4	34	X	X	15	420	95	0.5	X	1.85%	1700	390	X	X
61351			"	"					X	40	0.08	X	25	6550	160	1.5	X	3.05%	2150	385	X	X
61352			"	"					X	36	0.08	X	65	2.05%	900	4.5	X	1.20%	1450	480	110	4
61353			"	"					X	38	X	X	30	1350	95	0.5	X	1.25%	1050	445	X	3
61354			"	"					4	25	0.08	X	15	475	130	0.5	X	1.60%	1500	440	X	X
61355			"	"					4	32	0.17	X	25	6600	755	2.5	X	2.00%	2300	245	X	X
61356			"	"					X	25	0.08	X	15	1300	150	0.5	X	1.35%	1200	465	X	X
61357			"	IGNIMBRITE equivalent to 61339										0.02								
61358			"	"										0.01								
61359			"	"										X								
61360			"	"										X								
61361			"	"										X								
61362			"	"										X								

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APPENDIX 2.

Petrological Report C.M.S. 84/6/42

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

Central Mineralogical Services

The Supervising Geologist
 Mineral Resources Division
 Electrolytic Zinc Co. of
 Australasia Ltd.
 West Coast Mines
 P.O. Box 21
ROSEBERY / TAS. 7470

25th July, 1984

REPORT CMS 84/6/42

YOUR REFERENCE: Order No. 900551
 DATE RECEIVED: 29th June, 1984
 SAMPLE NOS.: 9 Samples
 SUBMITTED BY: S. Taylor
 WORK REQUESTED: Petrology

H.W. Fander, M. Sc.

REPORT CMS 84/6/42

Nine rock samples from Silver Falls were received for routine petrological examination. Representative thin-sections were prepared, examined in transmitted light and, together with their respective cobaltinitrite-stained offcuts, in oblique incident light. Attached tabulated descriptions summarise the microscopic data and include interpretative comments.

Summary

With a few exceptions this suite comprises devitrified and moderately altered rhyolitic fragmental rocks of ignimbritic character. This group exhibits subtle compositional and textural variations and may be categorised as vitric-crystal tuffs, with the ubiquitous mesoscopic lithic clasts largely a reflection of flow-brecciation. Textural variations relate largely to variations in the proportion of crystals present. Compositionally, these rocks grade from sodi-potassic to sodi-rhyolitic. Variations are subtle, to the degree that essentially a single ash flow unit could be represented.

A compositionally similar coarsely porphyritic rhyolite (61335) may represent a contemporaneous (or subsequent) high-level intrusive but, problematically, the critical microtextural detail is obscured by marked stress effects. Rhyolites, in general, reflect incipient to marked silicification and sericitisation. Minor base metal sulphide disseminations appear in association with temporally late veinlets of quartz and sideritic carbonate, with probable affinities to Zeehan-type mineralisation.

Accessory lithologies represented comprise a kaolin rock which is featureless in terms of mode of origin, and a partly acid-volcanomict polymict lithic sandstone. This psammite includes clasts of greenschist facies metapelite, is poorly consolidated, and carries characteristically dark red (Cambrian ultramafic-derived) chromite.

D. Cowan, B. Sc.

Sample No.	Classification - Composition	Fabric	Accessories	Comments
61329 (T.S. 50810)	Lithic Sandstone. Framework of subangular sericitic pelite, greenschist metapelite, de-graded glassy to felsitic (devitrified) felsic volcanic, minor impure chert clasts; conspicuous quartz grains, muscovite flakes. Fe-stained argillaceous matrix.	Poorly sorted (silty fine to medium), massive (unbedded), sandy clastic.	Conspicuous clastic leucoxenic opaques. Traces detrital zircon, chromite, schorl, and (rare) garnet.	Poorly consolidated polymict lithic sandstone. Includes reworked acid volcanic, greenschist metapelite components, and Cambrian ultramafic-derived chromite.
61330	Ignimbrite. Microcrystalline quartz and alkali feldspar aggregates, weakly/pervasively stained with sericite. Conspicuous fine quartz, alkali feldspar crystal fragments. Semi-pervasive leucoxenic stainings.	Vitric-crystal tuff with interspersed sub- to millimetric, similarly-textured clasts, reflecting flow-brecciation.	Minor "fiamme" (collapsed pumice clasts). Sporadic quartz veinlets, late kaolinitic fractures.	Flow-brecciated ignimbritic rhyolitic (lithic-) vitric-crystal tuff. Devitrified, mildly sericitised/silicified. Unmineralised, essential unstressed, mildly weathering-kaolinitised.
61331	Ignimbrite. Sericite-stained microcrystalline alkali feldspar-quartz aggregates with conspicuous quartz, alkali feldspar crystal fragments; minor felsitic lava clasts. Weak carbonaceous and leucoxenic stainings.	Analogous to 61330, relatively flow-structured in comparison. Very incipiently sheared.	Minor oxidised/leucoxenised opaques.	Close affinities with 61330. Relatively flow-structured, slightly coarser grained (crystal fragments) and moderately sericitised in comparison.
61332	"Kaolinite". Massive, weakly Fe-pigmented to marginally colourless kaolin. Minor secondary films, impregnations of limonite, Mn-oxide, marginal to discontinuous films of vein-quartz.	Cryptocrystalline, massive and featureless apart from sporadic dessication cracks.	Very minor traces of quartz, sideritic carbonate as randomly disseminated ultrafine particles.	This is a problematical rock in that it is featureless in terms of mode of origin.
61333	Ignimbrite. Microcrystalline kaolinitic quartzofeldspathic material with thinly disseminated quartz, minor alkali feldspar crystals/fragments. Interspersed sericitic foliae, sericitic lithic clasts.	Analogous to 61330 and particularly 61331, but crystal-deficient. Mildly sheared.	Leucoxenised opaques. Minor traces carbonaceous matter. Patchy secondary limonite, Mn-oxide stainings, films.	Close affinities with 61330 and 61331. The main contrast is the paucity of crystal fragments. Slightly relatively sericitised, incipiently sheared.
61334	Ignimbrite. Partly degraded (kaolinitised) micro- to cryptocrystalline quartzofeldspathic material with thinly disseminated quartz crystals. Interspersed sericitic lithic clasts. Locally conspicuous sericite-semi-pervasive quartz veinlets.	Eutaxitic/flow-brecciated, incipiently sheared, with late displacive unstressed quartz veinlet "stockwork".	Leucoxenic stainings. Patchy secondary limonite stainings. Rare very fine oxidised pyrite in quartz veinlets.	Analogous to 61330, 61331, 61333 in terms of general characteristics (flow-brecciated, ignimbritic). In comparison, this rock reflects relatively marked welding.
61335	"Breccia". Clasts, zones of weakly sericitic/variably silicified and quartz-siderite-veined quartz-albite porphyry with an ill-defined semi-mylonitic matrix, irregular quartz-siderite veinlets with thinly disseminated sphalerite.	Thoroughly stressed to semi-mylonitically brecciated porphyry-like, with variably stressed veins, veinlets.	Semi-pervasive carbonaceous stainings. Traces galena, chalcopryrite. Patchy limonite (after siderite).	Primary textural detail obscured by deformation, but consistent with a minor intrusive. Sulphides concentrated in late, relatively unstressed quartz-carbonate veinlets.
61339	Ignimbrite. Crypto- to microcrystalline quartz with subordinate to minor intergrown sericitic albite; thinly disseminated albite, minor quartz crystal fragments. Interspersed sericitic lithic clasts. Frequent quartz veinlets.	Flow-banded/brecciated, eutaxite-like, with sporadic sericitic "fiamme". Variably stressed veinlets.	Leucoxenic stainings. Traces carbonaceous matter, oxidised sulphide (veinlets).	Textural affinities with 61333. Reflects subtle, semi-pervasive chert silicification, supplemented by sericite. Traces oxidised ?chalcopryrite in late quartz veinlets.

Sample No.	Classification - Composition	Fabric	Accessories	Comments
61342 (T.S. 50818)	?Ignimbrite. Crypto- to microcrystalline quartz with subordinate to minor sericite, disseminated quartz, albite phenocrysts. Semi-pervasive quartz-siderite veinlets transecting films of quartz and sericite.	Stressed to semi-brecciated. Porphyritic, lava-like, variably micro-scale flow-banded.	Leucoxic and minor carbonaceous stainings. Minor traces galena in veinlets. Minor limonite (after siderite)	Conceivably thoroughly welded ignimbritic, but finer detail obscured by deformation. Relatively silicified Galena in late, relatively unstressed quartz-carbonate veinlets (sim. 61335).

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APPENDIX 3.

NPP 215 Analyses Record

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

DIAMOND DRILL CORE GEOCHEMICAL ANALYSES RECORD

HOLE No. NPP 215
SHEET No. 1

189

LABORATORY						ANALABS												GRID CO-ORDS: 5,387,100mN 379,310mE	
ANALYTICAL TECHNIQUE						Fire/A.A.S.	A.A.S.	A.A.S.	A.A.S.	A.A.S.								A.M.G. CO-ORDS: 5,387,078mN 379,007mE	
DETECTION LIMIT						309	103	114	117	135								COLLAR R.L.: 605m	
						0.008	0.5	1	1	0.5								COLLAR DIP: 55°	
																		AZIMUTH: 270° AMG	
																		TOTAL DEPTH: 128.0m	

Sample No.	Sample Type	From	To	Core Rec'd	Sample Length	METAL CONTENT (ppm unless specified)										COMMENTS			
						Au	Ag	As	Sb	Tl									
62542	All	0	2.5*		2.5	X	0.5	78	X	0.5									
543	Split	2.5	5.3		2.8	X	X	64	X	1.0									
544	"	5.3	7.1		1.8	X	X	63	X	0.5									
545	"	7.1	10.6		3.5	0.032	0.5	57	X	0.5									
546	"	12.4	16.0*		3.6	X	0.5	41	X	2.0									
547	"	16.0	19.0		3.0	X	1.0	41	1	1.0									
548	"	19.0	22.0		3.0	0.067	2.0	230	X	1.0									
549	"	22.0	25.0		3.0	X	3.0	50	X	1.5									
62530	"	25.0	28.0		3.0	X	1.0	67	X	2.0									
551	"	28.0	31.0		3.0	0.017	2.5	56	1	1.0									
552	"	31.0	34.0		3.0	0.067	2.0	150	9	3.5									
553	"	34.0	38.5		4.5	0.380	2.0	390	4	3.0									
554	"	38.5	41.5		3.0	0.133	2.0	300	3	2.0									
62523	"	41.5	44.5		3.0	0.467	2.5	220	4	3.5									
524	"	44.5	46.5		2.0	0.193	1.5	180	4	3.5									
525	"	46.5	49.5		3.0	0.167	2.5	240	3	3.5									
526	"	49.5	51.5		2.0	0.175	1.0	140	1	2.5									
527	"	51.5	54.3		3.0	0.142	1.5	320	1	3.0									
528	"	54.3	56.5		2.2	0.083	2.5	410	3	3.5									
529	"	56.5	58.5		2.0	0.032	3.0	340	1	3.0									
62530	"	58.5	60.5		2.0	0.025	3.0	150	1	2.0									
531	"	60.5	63.5		3.0	0.017	2.0	700	3	2.0									
532	"	63.5	66.5		3.0	0.008	1.0	54	1	1.0									
533	"	66.5	69.5		3.0	X	0.5	19	X	0.5									
534	"	69.5	72.5		3.0	X	0.5	11	X	0.5									
535	"	84.5	87.5		3.0	X	1.0	11	X	0.5									
536	"	87.5	90.5		3.0	X	1.5	19	X	0.5									
537	"	90.5	93.5		3.0	X	2.5	58	3	1.5									
538	"	93.5	96.5		3.0	X	2.0	32	X	1.5									
539	"	96.5	99.5		3.0	X	2.5	61	1	1.5									
62540	"	99.5	102.5		3.0	X	2.0	41	1	1.0									
541	"	102.5	105.5		3.0	X	1.0	50	X	1.0									

* 62542: 0-2.5 and 10.6-12.4 due to error

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