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ELECTROLYTIC ZINC COMPANY OF AUSTRALASIA LIMITED

Mineral Resources Division

E.L. 1/62 - MT. BLACK

Annual Report on Exploration Activities for 1985.

E.Z. Report No. T213

I.R. McDonald,
December, 1985

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1. INTRODUTION

Exploration Licence 1/62 is held by Electrolytic Zinc Company of Australasia Limited. Exploration activity on the Licence has been undertaken through a series of Joint Ventures. At the start of 1985 E.Z. were managers of exploration on the western portion of E.L. 1/62 on behalf of a Joint Venture between E.Z. and Getty Oil Development Co; and Getty were managers of exploration on the eastern portion of E.L. 1/62 (referred to as Rosebery East) on behalf of a Joint Venture between E.Z. and Getty. During 1985 the American owners of Getty, Texaco, sold the Getty equity in E.L. 1/62 to Little River Resources Pty. Ltd. The Joint Venture on the western portion of E.L. 1/62 is continuing with E.Z. as managers on behalf of an E.Z.-Little River Joint Venture. A new Joint Venture has been formed over the eastern portion of E.L. 1/62 in which Billiton Aust. are managers of exploration on behalf of an E.Z.-Little River-Billiton Joint Venture.

This Annual Report is made up of three separate reports produced by Getty and by E.Z. covering the areas of their respective management. These are presented as Appendices 1, 2 and 3. The work covered in Appendix 1 was undertaken almost entirely in 1984 but the report was not received by E.Z. until after the deadline for presentation of the 1984 Annual Report.

2. SUMMARY

The data presented in the three Appendix volumes covers the following:

* Gridding, geological mapping, rock chip sampling and V.L.F. E.M. surveys at Mt. Black, South Stitt and Jones Creek (White Spur area).

* Ground magnetics and soil sampling at Mt. Black and South Stitt.

* Thin section petrology from Mt. Black and Cutty Sark.

* A Genie E.M. survey at South Stitt.

* Re-analyses of drill cores from Cutty Sark and Murchison River.

* Diamond drilling at Jones Creek, South Stitt and Colebrook Hill.

Work undertaken by Billiton Aust. to date has consisted of an extensive line cutting programme preparatory to conducting UTEM surveys over the Rosebery East Joint Venture area.

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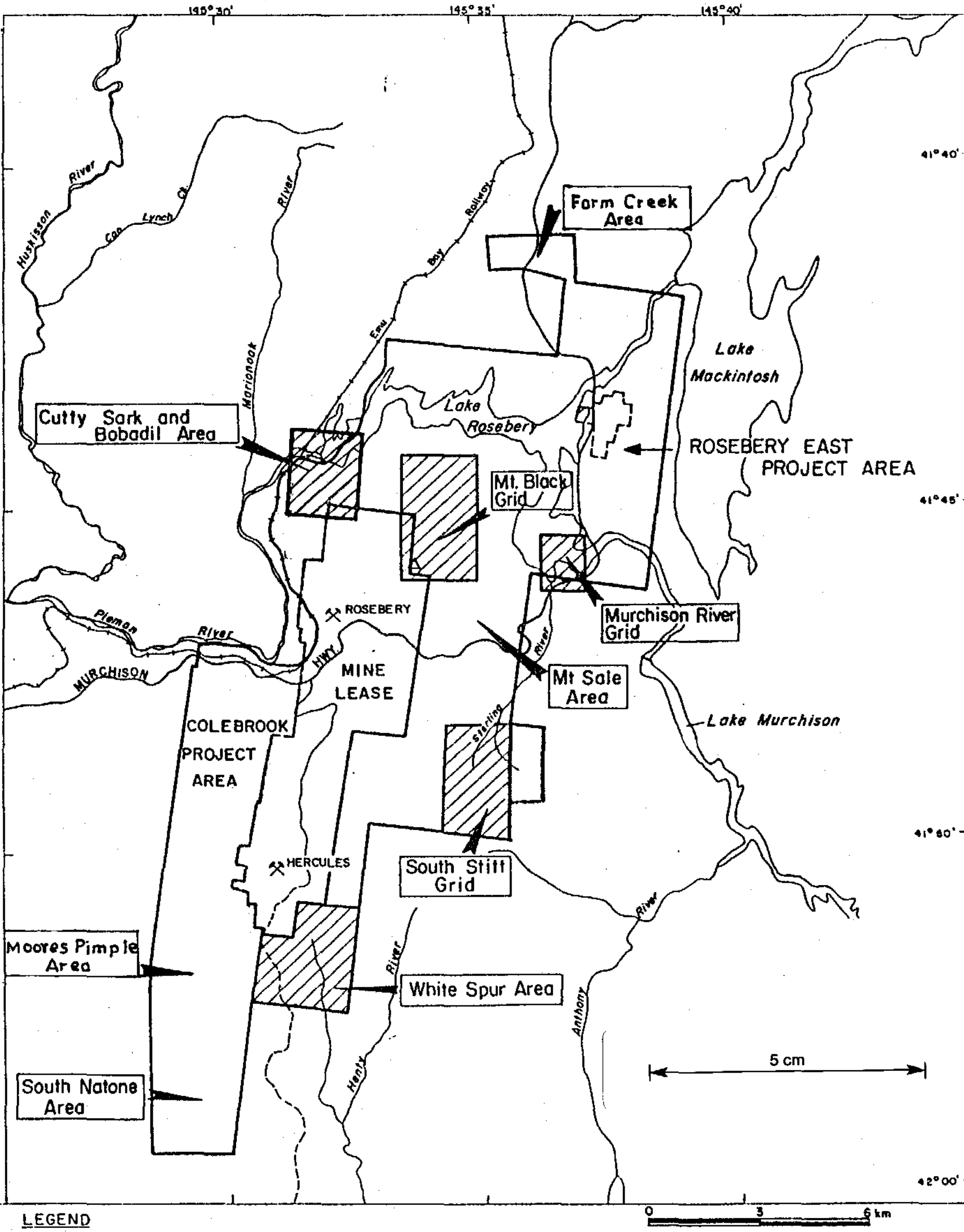

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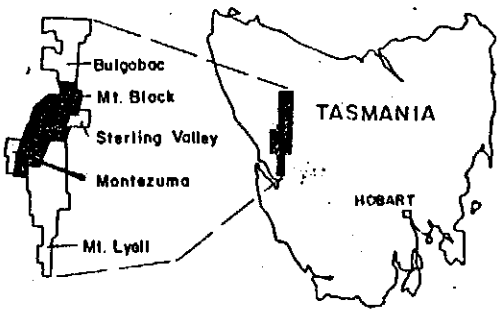
LOCATION DIAGRAM



E.L. 1/62
LOCATION PLAN

Author	F.G.F.	Scale	1:150 000
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EL 1/62 MT. BLACK

ROSEBERY EAST EXPLORATION PROGRESS REPORT

JULY, 1984 - DECEMBER, 1984

Getty Oil Development Company Ltd.
F. G. FitzGerald
I. S. McNaught
January, 1985.

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APPENDICES

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SUMMARY

The principal areas of the Rosebery East Joint Venture that have been actively explored during the period under review, are White Spur, South Stitt, Mt. Black, Murchison River and Cutty Sark-Bobadil. Both the White Spur and South Stitt prospects have been developed to a drill testing stage, however, this program has been suspended pending the outcome of negotiations for the sale of Getty Mining.

The Jones Creek area of eastern White Spur represents the most attractive volcanogenic massive sulphide prospect on the EL. Detailed geological mapping and sampling has outlined a highly prospective altered and mineralized epiclastic-pyroclastic sequence in the Upper Jones Creek-South Dallwitz area. Encouraging soil and rock geochemistry occurs over one kilometre of strike along this same horizon, which should be tested by diamond drilling. A 28 line kilometre UTEM survey was completed over the entire prospect, and a weak, although significant, response was identified. The response lies close to Jones Creek , 500m south along strike from disseminated mineralization in DDH JCP 216 and warrants further testing, including at least two diamond drill holes.

Both volcanogenic massive sulphide and disseminated gold mineralization targets have been developed for the South Stitt area. Detailed VLF EM, GENIE EM and ground magnetic surveys to follow-up previous DIGHEM anomalies, have outlined several encouraging responses over an area covered by glacial moraine and talus deposits. Interpretation from geological mapping, away from the covered area, has shown that the inferred trace of the Henty Fault Zone closely follows a sharp, linear, magnetic anomaly. This feature is adjacent to an EM conductor and a chargeability anomaly, located during an earlier IP survey. Similar stratigraphic and structural settings elsewhere along the Henty Fault, have been shown to carry significant gold and base metal mineralization. This target should be tested by diamond drilling.

The detailed exploration to follow-up the DIGHEM responses in the Mt. Black area, has been completed. Although the EM responses are not satisfactorily explained by a conductive overburden source, as interpreted geophysically, the discouraging geology and geochemistry indicates that there is little potential for economic mineralization and no further work is proposed.

Further assessment of the gold mineralization in the Murchison River area has given encouraging results. More extensive exploration is proposed to evaluate the gold potential in the Murchison River-Tullah area, as part of the overall Henty Fault Zone gold program.

Evaluation of the Cutty Sark and Bobadil prospects has confirmed the presence of minor sphalerite mineralization within favourable lithologies. However, both EM surveys and diamond drilling have failed to locate any massive sulphide mineralization. Similarly, extensive sampling has not identified any significant gold mineralization. Despite the encouraging geological environment, the exploration now completed, has severely restricted the potential for economic mineralization and no further work is proposed.

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1. INTRODUCTION

This report details the results of exploration conducted by Getty Oil Development Company Limited (GODC), on the 116 square kilometre Rosebery East area of the Mt. Black EL 1/62, during the period 1st July, 1984 to 31st December, 1984. (See Figure 1)

This report follows the previous exploration progress report for the period 5th August, 1983 to 30th June, 1984, which covered the activity from the commencement of the GODC investigation under the terms of the Mt. Black Joint Venture Supplementary Agreement (signed on 15th November, 1983).

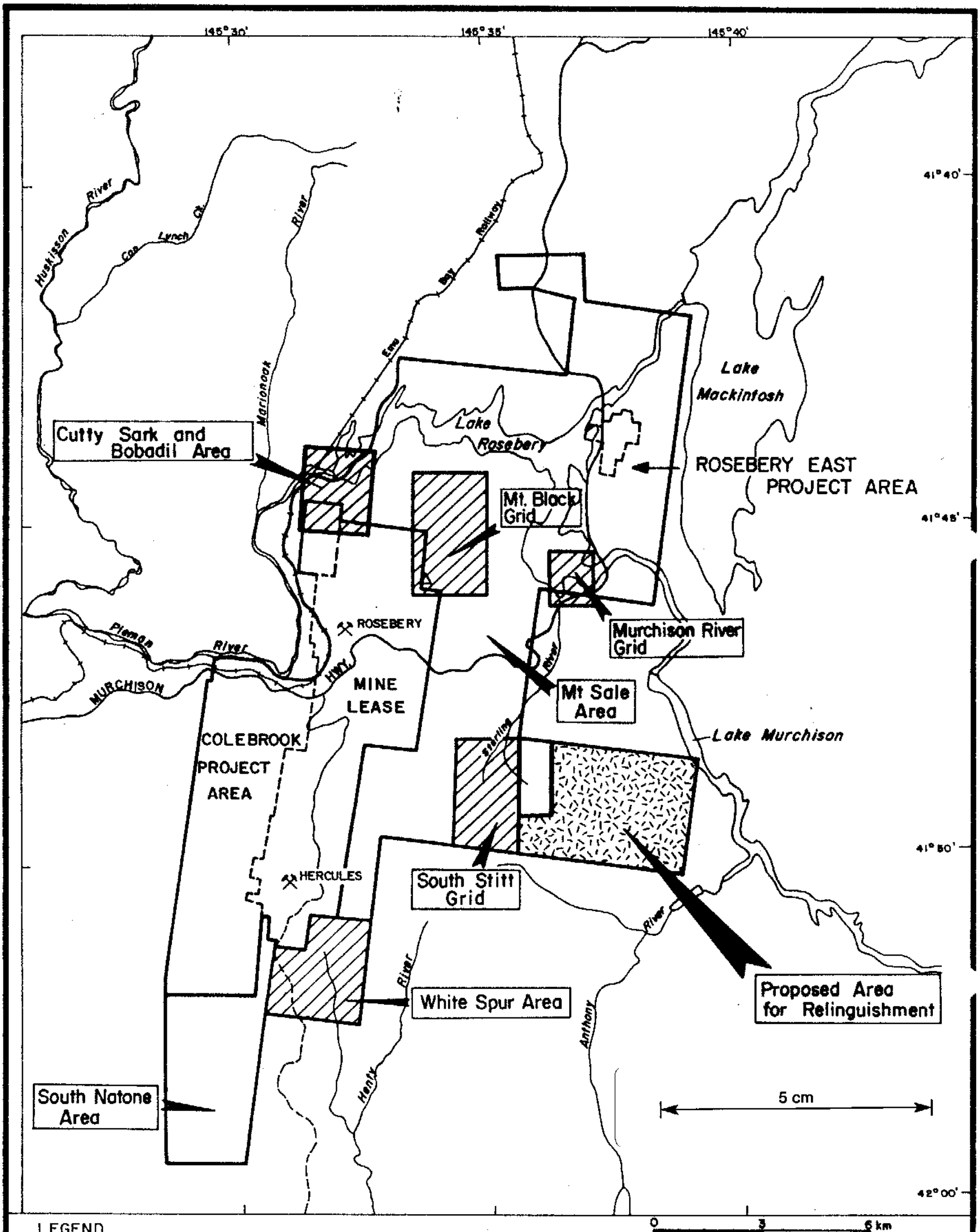
Due to the pending sale of Getty Mining (a division of GODC), field activity during the period was restricted to completion of those programs already commenced before 26th October, 1984. All new work, including drill testing of targets,has been suspended awaiting the outcome of negotiations on the disposal of the Company.

2. LAND TENURE

The Mt. Black EL of 170 square kilometres, was granted to the EZ Company in 1962. Since 1978, the EL has been the subject of a Joint Venture Agreement between the EZ Company and GODC. The agreement allowed GODC to earn a 40% interest in 138 square kilometres of the EL, but did not include the 32 square kilometre Rosebery Mine Lease. The EZ Company was the operator of the Joint Venture from April 1978 to November 1983.

In November 1983, the Mt. Black Joint Venture Supplementary Agreement divided the 138 square kilometre Joint Venture area into a 22 square kilometre "Tin Area", known as the Colebrook Project Area, (operated by the EZ Company) and a 116 square kilometre "Lead-Zinc Area", known as the Rosebery East Project Area (operated by GODC). (See Figure 1)

In compliance with the current regulations governing EL tenure, the 138 square kilometre Mt. Black licence area must be reduced to 125 square kilometres by 22nd January, 1985. A relinquishment report covering the 13 square kilometres proposed reduction (from the Rosebery East Project area [See Figure 1]), was submitted to the Mines Department in October, 1984. (EZ Company Report No. T193). The remainder of the Mt. Black EL must be relinquished by 22nd January, 1988.



Getty | AUSTRALASIA
GETTY OIL DEVELOPMENT COMPANY LIMITED

TASMANIA

DUNDAS PROJECT
ROSEBERY EAST (part of E.L.1/62)

LOCATION PLAN

Author F.G.F.		Scale 1:150 000	
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3. CUTTY SARK - BOBADIL

3.1. Introduction

Following the investigation of clasts of massive sulphide exposed by the Hydro Electric Commission during construction of a road cutting near the Bastyan Dam, within EL 1/62, a detailed exploration program leading to the completion of two diamond drill holes within the Cutty Sark Prospect, was carried out during 1983/84. A third drill hole was completed by GODC at this time, into an area highlighted by previous exploration over the adjacent Bobadil Prospect.

The results from this work have been presented in the Progress Report for the period August, 1983 - June, 1984. The current report covers the subsequent activities over this area and the final evaluation of the mineral potential.

3.2. Previous Exploration

A detailed discussion of the exploration history of the Cutty Sark and Bobadil areas prior to the current GODC program, has been given in the Progress Report August, 1983 - June, 1984 (See Sections 4.2. and 5.2.)

The previous GODC activities over these prospects have included gridding, detailed geological mapping and sampling, rock and soil geochemistry, UTEM surveys, diamond drilling and a down-hole SIROTEM survey. Two holes, DDH CS1 (451.4m) and DDH CS2 (397.0m), were completed across the prospective horizon at the Cutty Sark Prospect and a third hole, DDH BD1 (283.2m), was completed to test the Bobadil Anomaly. Detailed discussions of the results from this work are presented in the previous progress report (op.cit.).

3.3. Work Completed

The following work has been completed by GODC during the July - December, 1984 period:

Drill Core Assays: An additional 36m from DDH CS1 were split and submitted to Analabs (Burnie) for Cu, Pb, Zn, Ag analyses by AAS and Au analysis by fire assay.

Petrology: 14 samples of core from DDH's CS1, CS2 and BD1 were submitted to Geochempet Services (Dr. S. Joyce) for detailed petrographic descriptions.

HEC Drill Core: Nine of the original 24 diamond drill holes completed in 1977/78 by the HEC, during their investigations into the Bastyan Dam foundations and quarry for rock fill, are still available in the core shed at Tullah. A total of 327m was logged with 6 samples, approximately 10cm long, being submitted to Analabs (Burnie) for analysis of Cu, Pb, Zn, Ag and Fe (AAS) and Au (fire assay).

3.4. Discussion of Results

3.4.1. Drill Core Petrology

Samples of drill core from DDH's CS1, CS2 and BD1 were taken for petrographic description to clarify the logged lithological and alteration assemblages and to provide a comparison with the surface geology. The petrographic report is presented in Appendix B.1.

In general, the report has confirmed the geological interpretation which was described in the previous progress report (See Figure 2). Some pertinent comments to come from the petrographic study are summarized as follows:

1) Albitic alteration is widespread and often intensely developed giving the rock a hard siliceous feel and distinctive pink colouration.
2) Sphalerite mineralization appears to be generally related to hydrothermal alteration within the dacitic pyroclastics.
3) Several hydrothermal breccias were recognized within both epiclastic and pyroclastic lithologies. No significant mineralization is associated with this alteration.
4) The distinctive "massive pyroclastic" unit recognized in all three holes is an intensely albitized andesitic crystal tuff. This rock type is so similar between holes that it probably represents a single unit.

5) The composition of the epiclastic lenses within the dacitic-andesitic volcanic sequence shows that the sediments are locally derived.
6) The main shale lens in DDH CS1 is only weakly graphitic and not strongly altered. This unit may not be the source of the IP anomaly.
7) The inferred Chamberlain Shale in DDH BD1 was not derived from volcanic detritus, however, the pyrite appears to be syngenetic in origin.

3.4.2. Drill Core Assays

An additional 36 metres of drill core from DDH CS1 was split and assayed. The zones selected for sampling were typically silicified and carried variable, but usually minor, visible sulphide mineralization. The results are shown in the drill log for DDH CS1 (See Appendix A.1).

The assays have confirmed the weak base metal mineralization and no gold values above the detection limit of 0.008 g/t Au were received. The discouraging results from the comprehensive sampling and assay for gold within both drill core and surface rock samples, indicates that little potential for gold mineralization exists in the Cutty Sark area.

3.4.3. HEC Drill Core

The HEC completed 24 diamond drill holes during 1977/78 as part of their site investigations for the Bastyan Dam which was built immediately to the north of the Cutty Sark Prospect. Much of this area is now inundated by Lake Rosebery. All of the available drill core from these investigations was logged and sampled to evaluate the geology beneath the lake.

Most of the drill holes were less than 30m deep, although the deepest was 75.4m. Unfortunately none of the holes were directly along strike from the clasts of massive sulphide exposed in the road cutting (now also inundated by Lake Rosebery). There was no visible base metal sulphide in any of the core examined, a result borne out by the analyses. (See Appendix C.1.). However, one sample from hole 6473, which was taken from a moderately chloritic felsic volcanic, assayed 0.22% Zn.

Two holes, 4207 and 4208, which are no longer available, reported minor lead-zinc mineralization. The HEC logs suggest that these may have been small massive sulphide clasts. In fact two such clasts were exposed during bulldozing by the HEC, one clast being 1m in diameter was located at approximately 5378265mN, 378000mE (AMG) on the line of the plinth.

The lithologies logged are predominantly quartz-phyric, lithic dacitic pyroclastics, often with Fe carbonate-quartz-chlorite veins (stockwork) and more massive, olive green porphyritic volcanics, probably related to the andesitic lavas along strike at the Cutty Sark workings. It appears that the geology is continuous to the north of the EL boundary beneath Lake Rosebery.

3.4.4. EZ Company DDH BD269

The EZ Company completed DDH BD269, located just within the Rosebery Mine Lease, in August, 1984. The hole was collared approximately 200m south of DDH BD1 and was designed to test the strong zinc in soil anomaly at Bobadil. GODC examined the drill core in Rosebery to assist evaluation of the mineral potential of this area.

Although the hole was drilled beneath the broadest part of the soil anomaly only very minor mineralization was intersected. The best assays were 0.2% Zn, 300ppm Pb, 80ppm Cu and 2.5 g/t Ag over 2m intervals. All gold assays were less than 0.01 g/t Au despite extensive sampling. The assay results are much lower than those from DDH BD1 (best intersection 20m at 0.32% Zn including 4m at 0.92% Zn) and indicate that the mineralization decreases markedly to the south along strike towards Rosebery.

3.5. Conclusions and Recommendations

Detailed exploration of the Cutty Sark - Bobadil area including three diamond drill holes, for a total of 1131.6m, has failed to locate significant base or precious metal mineralization. The prominent soil geochemistry anomalies have been adequately explained by minor sphalerite mineralization associated with quartz-carbonate-chlorite veining and pervasive albite-sericite alteration.

Although no source for the clasts of massive sulphide has been located, the regularity of the geology along strike between DDH's CS1 and CS2 and to the north beneath Lake Rosebery, suggests that it is unlikely that any major stratigraphic and/or mineralization changes could exist within the untested parts of the prospective horizon at Cutty Sark. No significant gold mineralization has been detected despite extensive rock chip and drill core sampling over the Cutty Sark-Bobadil area.

Both the UTEM and down-hole SIROTEM surveys have not delineated any major conductors within the area. The discouraging results from the EZ Company drill hole, DDH BD269, collared 200m to the south of DDH BD1, have severely restricted the strike potential of any mineralization at the Bobadil Prospect.

Thus, while the geological environment of this part of the Mt. Read Volcanics, remains very favourable for the occurrence of a massive sulphide deposit, it is concluded that no such deposit exists within the Cutty Sark-Bobadil area. It is recommended that no further exploration be carried out over the area at this time.

0204. MURCHISON RIVER

4.1. Introduction

Follow-up investigation of a prominent DIGHEM anomaly outlined during the 1983 survey led to the completion of 2 short diamond drill holes, DDH MR1 (111m) and DDH MR2 (122m) in early 1984. Assays from the drill core outlined encouraging gold mineralization within a black shale sequence east of the Henty Fault Zone.

Additional sampling of the drill core specifically for gold, has been carried out as part of the broader evaluation of the potential gold mineralization associated with the Henty Fault Zone within the Tullah-Murchison River and adjoining Sterling Valley (EL 4/73) areas.

4.2. Previous Exploration

Details of the previous exploration have been presented in the progress report for the period August, 1983 to June, 1984. The current GODC program has involved a DIGHEM survey with follow-up VLF and MAXMIN EM surveys, detailed geological mapping and sampling,ground magnetics, limited soil geochemistry and the completion of two diamond drill holes totalling 233m in length (See Figure 3).

4.3. Work Completed

An additional 42 samples over 50.8m of split core from DDH MR2 were submitted to Analabs (Burnie) for analysis of Cu, Pb, Zn, Fe, Ag and As by AAS and Au by fire assay.

4.4. Discussion of Results

The remainder of the drill core in DDH MR2 was split to determine if the gold mineralization (12.9m at 0.31 g/t Au) extended beyond the main black shale quartz-carbonate-sulphide stockwork interval. The results are presented in the drill log (See Appendix A.2).

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The assays show that the significant gold mineralization is restricted to that interval previously sampled, with the maximum gold value away from this zone only 2m at 0.03 g/t Au. One zone of moderately anomalous base metal values associated with thin quartz-carbonate hosted sulphide bearing veins within grey and black tuffaceous shales was outlined. The zone, which is 9.5m wide, averages 200 ppm Pb and 500 ppm Zn, but contains negligible gold. This intersection occurs immediately below a 2.4m interval which previously assayed 0.07% Pb, 0.38% Zn, 1.20% As and 0.48 g/t Au within a chlorite-sulphide veined sericitic tuffaceous shale unit.

4.5. Conclusions and Recommendations

The GODC drilling has identified the source of the EM anomaly as a quartz-carbonate-? fluorite stockwork zone within a black shale sequence. This conductive zone has been delineated over 300m along strike and is open to the south into the Sterling Valley EL and to the north beneath Lake Rosebery. Significant gold mineralization, up to 0.7 g/t Au, has been intersected within and adjacent to this stockwork zone in DDH's MR1 and MR2, collared 50m apart. In addition, further minor gold mineralization has been identified within chlorite-sulphide veined grey tuffaceous sediments.

It is recommended that further, extensive sampling for gold be carried out along strike from the Murchison River intersections. In particular, old Pb-Ag workings which lie along a line extending over 3km between the Mt. Farrell Mine and the Sterling Valley Mine, should be investigated. Also, all previous drill core, where available, should be re-logged and significantly altered and/or mineralized intervals sampled for gold. This program should be carried out in conjunction with similar exploration being conducted over the adjacent Sterling Valley EL.

5. MT. BLACK

5.1. Introduction

The Mt. Black grid is located immediately north-east of the summit of Mt. Black (See Figure 1). The current phase of exploration was undertaken to evaluate an area highlighted by the 1983 DIGHEM survey, which outlined a broad but intense resistivity low containing several low grade conductors.

5.2. Previous Exploration

The EZ Company outlined weakly anomalous Cu-Pb soil geochemical values and minor gradient array IP anomalies within a sequence of acid to intermediate lavas with subordinate pyroclastics and minor, discontinuous epiclastics. Follow-up exploration by EZ Company on limited in-fill grids, using dipole-dipole IP and soil pitting, covered only part of the current area of interest.

GODC carried out reconnaissance exploration over the central part of a resistivity low, delineated by the 1983 DIGHEM survey, and investigated an outcrop of massive chlorite reported by the EZ mapping. The results were sufficiently encouraging to proceed to a more detailed investigation of the area. This work involved recutting and infilling the existing Mt. Black grid, and the commencement of VLF EM and soil geochemical surveys, detailed geological mapping, sampling and rock geochemistry. The results from the early part of this program are included in this report.

5.3. Work Completed

Gridding and cutting: 12.8 line kilometres were cut or cleared and pegged at 20 metre (slope corrected) intervals to cover the area at a 200 to 300 metre spaced grid. In addition, a total of 4.5km of walking tracks and tie lines were cut or recleaned.

Geological Mapping: All of the grid and access tracks were mapped at 1:5,000 scale and sampled.

Rock Samples: 133 rock chip samples were collected with 71 of these being submitted to Analabs, Burnie for analysis of Cu, Pb, Zn, Ag by AAS and Au by fire assay. In addition 6 of the samples assayed were also analysed for As and Fe by AAS.

Soil Geochemistry: 699 soil samples, including the reconnaissance and duplicate hand auger and power auger samples were submitted to Analabs, Burnie for analysis of Cu, Pb, Zn, and Ag by AAS on the minus 80 mesh fraction.

VLF EM Survey: A total of 12.8km of grid lines and 3km of access tracks were surveyed by VLF EM using a Phoenix 2 meter, taking readings every 20m.

Ground Magnetics: 8.5km of proton precession magnetics were read over selected grid lines at stations spaced 10m apart.

Petrology: 12 rock samples were submitted to Geochempet Services (Dr. S. Joyce), Brisbane for petrographic description and interpretation.

Geophysical Interpretation: The results from the DIGHEM, VLF EM and ground magnetic surveys were submitted to Mitre Geophysics Pty. Ltd. (Dr. J. Bishop) for evaluation and to assess the effectiveness of VLF EM as a follow-up method for the DIGHEM survey.

5.4. Discussion of Results

5.4.1. Geology

Geological mapping and sampling over an area of 5 square kilometres north and east of the summit of Mt. Black, has outlined a sequence of predominantly andesitic volcanics (See Figure 4). The principal lithologies identified by the mapping and petrographic study (See Appendix B.2.) are massive and vesicular porphyritic andesitic lavas. Subordinate units of flow breccias, or "heaved" breccias have been noted, although parts of these units are interpreted as probable ash flow deposits. A minor occurrence of quartz-sericite-pyrite altered volcanic ash has been mapped within these deposits.

A broad sequence of inferred pyroclastics, which are similar to the brecciated andesitic lavas in places, outcrops over the south eastern part of the grid. Several samples of andesite-derived epiclastic float were mapped within this area. It appears that these immature tuffaceous sediments occur as small, discontinuous units within the pyroclastic sequence.

Apart from regional metamorphic effects, which produced a broad northerly cleavage and weak pervasive chloritization of the intermediate volcanics only restricted hydrothermal alteration has been recognized. Potassium metasomatism and silicification has over-printed hydrothermal propylitic alteration (chlorite-epidote-sphene-albite) over much of the eastern half of the area. This alteration is prominent within the more porous volcanics, including the vesicular and brecciated lavas and the pyroclastics, and has resulted in the development of vermiform amygdaloidal textures.

A discrete zone of massive and veinlet chlorite-magnetite-haematite ±quartz-pyrite alteration has been mapped within the andesitic lava on line 76,000mN. The zone, which is approximately 400m by 100m in size, may represent a small hydrothermal feeder zone. However, no significant mineralization has been detected despite extensive sampling. The across strike orientation of this zone suggests that the alteration may be structurally controlled.

5.4.2. Geochemistry

The results from the orientation soil sampling program indicated that the hand-auger sampling was more effective than the power auger, both in terms of the rate of production and in the slightly enhanced geochemical values obtained. The higher values may reflect enrichment in metal within the B horizon as opposed to the C horizon sampled with the power auger. As a consequence, the Mt. Black grid was sampled using a hand auger.

The results from the soil geochemistry program confirm the lack of significant mineralization observed during the geological mapping (See Figure 5). The maximum assays are: 200ppm Cu, 245ppm Pb, 380ppm Zn and 3ppm Ag. Weakly anomalous lead (above 50ppm Pb) and zinc (above 150ppm Zn) values occur within the altered pyroclastic sequence over the south eastern part of the grid. These results may reflect higher background levels within the pyroclastic and inferred minor epiclastic units in this area. The other scattered elevated base metal values cannot be related to altered and/or mineralized bedrock geology.

The rock chip geochemical results are similarly disappointing (See Figure 5). The maximum assays are 165ppm Cu, 130ppm Pb, 405ppm Zn, 2.5ppm Ag, 0.02ppm Au, 700ppm As and 19.5% Fe. There appears to be little correlation between the weakly anomalous soil and rock chip results although the results are consistent with the weak soil geochemical anomalies outlined by the EZ Company.

5.4.3. Geophysics

The Mt. Black grid was designed to cover an area of low resistivity (less than 2000 ohm metres) which included a cluster of 3 EM responses as well as 3 isolated EM responses defined by the 1983 DIGHEM survey. The area also included weak IP and soil geochemical anomalies delineated by EZ Company during previous exploration. VLF EM was used to follow-up the DIGHEM survey to ground locate the EM conductors and to detail the broad resistivity low. The VLF dip angle profiles and Fraser Derivative contours are plotted on Figure 6 along with the DIGHEM results. A limited ground magnetics survey was also carried out to delineate the magnetite bearing alteration zone on line 76,000mN and to assist the geological interpretation. The magnetic profiles are presented in Appendix D.2.

Dr. J. R. Bishop (Mitre Geophysics Pty. Ltd.) evaluated this geophysical data and commented on the geophysical interpretation.

(See Appendix D.1.) Bishop correlated the aeromagnetic (from the DIGHEM survey) and limited ground magnetic results and found that the plotted DIGHEM EM responses were variably out of location by up to 250 metres. The replotted DIGHEM responses generally correspond with the broad VLF EM anomalies outlined over the central part of the grid (See Figure 6). These VLF EM anomalies are typical of conductive over-burden which is in agreement with the DIGHEM interpretation. Although Bishop favoured a broad superficial conductor as the source of these EM responses, he noted that a buried conductor (at a depth of 80 to 90m) could give rise to a similar response.

Bishop concluded that the 3 isolated DIGHEM responses had been incompletely detailed by the VLF EM survey to allow reliable interpretation. However, it appears that the interpreted cultural source DIGHEM response near line 76,750mN may have been caused by instrument noise despite its correlation with a partially defined VLF zone. The two other DIGHEM responses near lines 75,000mN and 77,750mN do not appear to warrant further investigation because of the discouraging geological and geochemical results.

The ground magnetics have confirmed the mapped extent of the chlorite-magnetite-haematite zone on line 76,000mN. A broad zone of + 300nT was outlined over 400m width with erratic magnetic spikes up to 1700nT. The zone appears to be limited in strike extent to the north and south but is open to the east. A single narrow magnetic high of 2400nT on line 76,500mN is probably due to narrow magnetite veining within the andesitic lavas.

5.5. Conclusions

No significant base or precious metal mineralization has been located over the Mt. Black grid area despite detailed geological mapping, soil and rock geochemistry and EM surveys. The area is composed predominantly of massive porphyritic andesitic lavas with subordinate flow breccias, pyroclastics and minor epiclastic units. Hydrothermal alteration is generally only weakly developed apart from a restricted area of intense chlorite-magnetite-haematite ± quartz-pyrite alteration which may represent a hydrothermal feeder zone. No significant soil or rock geochemical anomalies have been identified over the entire area, confirming the observed lack of mineralization. The broad EM responses have been interpreted as being due to conductive overburden although geological mapping has not identified widespread cover in the area.

5.6. Recommendations

It is recommended that no further exploration be carried out over the Mt. Black grid area. However, it is suggested that a quantitative EM system, such as GENIE, be used to investigate the unsatisfactorily explained broad EM response over the central part of the grid. This limited survey could be useful in evaluating other similar areas of low resistivity on the EL.

6. SOUTH STITT

6.1. Introduction

The South Stitt area is located on the western side of Mt. Murchison, south east of Rosebery (See Figure 1). The current exploration was initiated in early 1984 to follow-up a series of DIGHEM conductors aligned along the expected trend of the Henty Fault Zone, within a 2000 ohm metre resistivity low. A distinct linear aeromagnetic anomaly also encloses most of the DIGHEM conductors. Much of the gridded area is covered by an unknown thickness of glacial debris and scree which has hampered it's evaluation. The area is considered prospective for volcanogenic massive sulphides and/or gold mineralization, within and adjacent to the Henty Fault Zone.

6.2. Previous Exploration

Details of the exploration carried out by EZ Company over the area have been given in the 1983/84 Progress Report. The current GODC program commenced in 1983 when a DIGHEM survey was flown over the area as part of the EL coverage. A follow-up program of gridding, geological mapping and sampling and VLF EM surveys commenced and has continued into the current period. The results from this previous work are incorporated in this report.

6.3. Work Completed

Gridding: 1.2 kilometres of grid were cut and pegged at 20 metre slope corrected intervals.

Geology: 5.8 kilometres of line geological mapping and additional access mapping was completed to enhance and interpret previous mapping results.

Soil Geochemistry: Initially 10 reconnaissance soil samples were collected as an orientation study. A further 27 soil samples were taken, along two traverses, across the expected Henty Fault Zone position. All samples were submitted to Analabs, Burnie for analysis of Cu, Pb, Zn, Ag, Fe (Code 103, AAS).

Rock Geochemistry: A total of 65 rock chip samples were collected during mapping. From these, 43 were submitted to Analabs, Burnie for analysis of Cu, Pb, Zn, Ag (Code 103, AAS) and Au (Code 402, Fire Assay).

Pitting: A soil pit was sunk at 70000mN, 382400mE, over the magnetic high, but did not reach bedrock. Soil and rock chips from here were submitted for analysis (and are accounted for in the above statistics).

VLF EM Survey: An additional 3.7 kilometres of VLF EM surveys extended the coverage over a strike length of three kilometres.

Ground Magnetics: 9.6 kilometres of ground magnetics (at 10m spaced stations) were read over the gridded area.

GENIE-EM Survey: 7.9 kilometres of GENIE-EM was read over the central part of the grid.

Geophysical Interpretation: Results from all the geophysical surveys were submitted to Mitre Geophysics Pty. Ltd. (Dr. J. Bishop) for an evaluation of the geophysical data and an analysis of the effectiveness of VLF EM as a follow-up tool for DIGHEM.

6.4. Discussion of Results

6.4.1. Geology

The South Stitt area, located immediately west of Mt. Murchison, comprises a section of the central sequence of the Mt. Read Volcanics and possible correlates of the Tyndall Group (See Figure 7). The two sequences are separated by the Henty Fault. Quaternary glacial moraine and scree have obscured the bedrock geology over much of the central part of the grid. However, interpretation of the aeromagnetic data from the 1983 DIGHEM survey suggests that magnetic intrusives, similar to those which occur in the Sterling Valley, exists beneath this cover along the Henty Fault Zone. A possible hornblende-biotite granite has also been inferred from float seen on line 70000mN underlying the scree. This rock type appears similar to the minor but mineralized granites in the Sterling Valley.

The Mt. Read Volcanics mapped within the area comprise massive and fragmental feldspar-phyric lavas, apparently within broad units of crystal vitric ash flows and subordinate crystal lithic ash flows. Minor epiclastic float has been observed within these ash flow units, suggesting local development of subaqueous conditions. Apart from the more massive lavas, all the lithologies display significant chloritization and weak sericitization. Rare disseminated pyrite accompanies this alteration in some locations. A localized occurrence of specular haematite veining occurs within massive lavas on line 68500mN, adjacent to a minor magnetite rich felsic? lava. The DIGHEM aeromagnetics supports the observed limited extent of these magnetite-haematite bearing bodies.

The Tyndall Group rocks, east of the Henty Fault Zone, are made up of minor quartz-phyric lavas, fine to coarse grained volcaniclastics within agglomeratic pyroclastics and widespread xenolithic tuffs. Apart from the lavas, all lithologies are cleaved and sericitized-silicified. Minor, often coarse grained, disseminated pyrite, occurs within the agglomeratic pyroclastics. The epiclastic lithologies, which were only observed as float, are often cherty. The xenolithic tuffs contain clasts of chert and jasper which may be derived from the Precambrian although similar lithologies occur within the Tyndall Group elsewhere.

The Henty Fault occurs over a 100m wide sharply defined zone of intensely sheared chloritized-sericitized volcanics. The intensity of the alteration suggests probable hydrothermal activity synchronous, in part, with the faulting and deformation. The fault zone is exposed on lines 68500mN and Mt. Lyell line 68N. Minor pyrite is associated with this fault zone although the soil and rock chip geochemistry does not indicate any significant mineralization.

031 A similar area of alteration and deformation has been mapped, along the powerline, south east from Rosebery, and crossing Mt. Lyell 68N on the western side of the South Stitt area. In fact, Mt. Lyell have recorded this belt as being the northern extension of the Henty Fault Zone. This "Western Henty Fault Zone" is orientated 45° west of the "main" Henty Fault Zone. Rock chip geochemistry has failed to indicate any mineralization in the vicinity of the "Western Henty Fault Zone".

6.4.2. Geochemistry

Much of the South Stitt area is covered by either glacial debris or scree, severely reducing the ability to get an overall geochemical pattern through soil sampling, as EZ Company illustrated in their regional survey here. Distinct linear Pb soil anomalies from north and south of the Stitt area become obliterated when they pass below the glacial cover.

Soil sample traverses were completed along three lines, initially as orientation over a significant VLF EM anomaly, and then on two lines over the expected Henty Fault Zone position. Results, presented in Figure 8, indicate little overall base metal enrichment, however, bedrock responses are seen in the assays, despite the samples being glacial in nature.

Line 69750mN gives a consistent bedrock Pb response through the glacials, whereas its zinc value is depleted.

The geochemical results from the traverses on lines 69250mN and 70250mN over the interpreted position of the Henty Fault Zone reflect a bedrock response. The Fe results, in particular, indicate a wide Fe rich zone over a local magnetic anomaly on line 70250mN and along strike from the sharp anomaly on 70000mN. The area contains no outcrop.

Rock geochemical analysis indicates mild base metal enrichment over the grid. Peak values for 41 samples are: 135ppm Cu, 200ppm Pb, 600ppm Zn, < 0.5ppm Ag and 0.01ppm Au.

6.4.3. Geophysics

The South Stitt area is largely a geophysical target. It has been surveyed by VLF EM, GENIE EM and ground magnetics to follow-up and define the combined DIGHEM conductors, resistivity zone and the linear aeromagnetic high, running north east across the area. Results from the geophysical exploration of this grid have been evaluated and recommendations made by Bishop, 1984, 1985. (See Appendices D.1. and D.3.).

Several intense VLF EM conductors occur on the Stitt Grid. On contouring the Fraser derivative values of these conductors,the distribution resolves into two trends: a broad north westerly trend on the western side of the grid (oblique to the main DIGHEM trend); and several possibly related north easterly trends on the eastern side of the grid. (See Figure 9).

Bishop correlated the aeromagnetic and ground magnetic results and concluded that the plotted DIGHEM responses could be up to 250m out of position, particularly on the west flown lines. The positioning appears to have been affected by the proximity of the steep western slopes of Mt. Murchison. The replotted DIGHEM responses generally correspond with the VLF EM anomalies and occur in the area covered by glacial scree. A superficial source is interpreted for these responses.

A possible bedrock DIGHEM response near line 69250mN coincides with the southern part of one of the VLF EM responses. Several traverses using the GENIE EM system have failed to detect a significant anomaly over this response. The fact that the GENIE survey, which was designed to evaluate the VLF and DIGHEM results, may not have responded to the conductive cover in other parts of the grid, has cast some doubt on these results. At the time of writing,this problem was unresolved.

The distinct magnetic anomaly, which trends north east across the eastern side of the grid (See Figure 10), is adjacent to a strong VLF EM and Dipole-Dipole IP anomaly. Bishop interprets the magnetic response as due to two tabular sources steeply dipping to the east. The western 10m wide body has a depth to top of about 10m and the adjacent eastern 30m wide body has a depth to top of about 50m. This wider deeper body has an inferred strike extent of 700m.

The magnetic feature appears to follow the probable trace of the concealed Henty Fault and may be related to either a magnetic intrusive body or discrete pyrrhotite mineralization, as is the case further north in the Sterling Valley. However, the lack of any EM response over the magnetic high probably precludes massive pyrrhotite as the source.

The EZ Company Dipole-Dipole IP anomaly on the eastern end of line 70000mN has been interpreted by Bishop as being 150-200m offset from the peak of the magnetics. This anomaly is defined by a resistivity low (less than 500 ohm metres in a background more than 2000 ohm metres) and an associated broad chargeability high (to 22 mv/V). The VLF EM survey only partially covers this IP anomaly, however it did produce an anomaly coinciding with one of the IP resistivity lows. The recent GENIE EM survey did not extend this far east.

6.5. Conclusions

A strong linear magnetic anomaly has been outlined along the inferred trace of the Henty Fault Zone beneath a cover of glacial scree and talus deposits. A moderate IP chargeability anomaly and resistivity low occur within 250m of the magnetic feature. The IP anomaly may be due to disseminated sulphide mineralization and given the proximity of the Henty Fault represents a favourable target for gold mineralization. Similar models for gold deposits are being actively explored elsewhere along the Henty Fault Zone.

Although the results from the EM surveys are inconclusive, it appears that most of the DIGHEM (and VLF EM) responses are due to conductive overburden. The presence of this widespread cover severely restricts geological and geochemical investigations over the geophysical targets.

6.6. Recommendations

The quality of the results from the GENIE EM survey should be resolved. It is recommended that one or two lines be re-read using the same instrument or a MAXMIN EM system. The IP anomaly should be completely covered by this survey to better detail any EM response.

The existing IP and magnetic anomalies should be diamond drill tested to evaluate the potential for gold mineralization associated with the inferred Henty Fault Zone.

035 WHITE SPUR

7.1. Introduction

Detailed exploration by GODC has continued in the White Spur area since the program was initiated in 1983/84. In particular, attention has focused on the prospective, altered and mineralized horizons in the Jones Creek area of eastern White Spur. This belt of pyroclastic and epiclastic lithologies has been previously tested by EZ Company with two diamond drill holes and Mt. Lyell with one diamond drill hole approximately 2.3km to the south. All three drill holes intersected encouraging lithologies and alteration carrying minor base metal mineralization.

This report discusses the results from the current exploration program in conjunction with the earlier work.

7.2. Previous Exploration

A detailed description of the previous exploration activity carried out over the White Spur area was given in the progress report for August 1983 to June, 1984. Late in 1983, GODC initiated a program of detailed mapping and rock geochemistry over eastern White Spur in conjunction with a parallel program along strike to the south in the adjoining EL 9/66. This work included cutting access along the main drainages in the area to allow easier mapping and sampling. At the same time,the area was covered by the helicopter-borne DIGHEM survey. The results from these investigations were very encouraging and a more intense exploration program leading to diamond drilling, was planned for the current period.

7.3. Work Completed

Geological Mapping: Detailed mapping and sampling was completed in the headwaters of Jones Creek and the South Dallwitz areas, south of the Mt. Read Telecom road. Additional mapping and sampling was also completed over the north-eastern area along the newly cut grid lines covering the DIGHEM responses. The central Jones Creek area was thoroughly investigated in the area around the UTEM conductor. In all, a total of 28 rock samples were collected for detailed lithological examination, with 16 of these being submitted to Analabs (Burnie) for analysis of Cu, Pb, Zn, Ag, (AAS) and Au (fire assay).

Re-logging Drill Core: Previous EZ Company drill holes JCP 211 and JCP 216 were re-logged and sampled in preparation for a drill proposal in the Jones Creek area.

Gridding: The old Imperial EZ grid was re-cut and in-filled and extended to give complete coverage at 400 feet (122m) spaced lines from 2400S to 10400S. A total of 15.0km of new lines and 15.7km of old lines were cut and pegged at 25m slope corrected intervals.

UTEM Survey: A total of 27.7 line km were surveyed using the UTEM III instrument. Three transmitting loops to the west of the lines were used and readings were taken at 25m intervals. The results have been analysed and interpreted by Dr. J. R. Bishop.

VLF EM Survey: A total of 4.8 line km was read over the eastern end of 6 lines at 25m spaced stations using a Phoenix-2 meter and the transmitter in Japan.

7.4. Discussion of Results

7.4.1. Geology

Recent geological mapping over eastern and northern White Spur has detailed the extent of many of the lithological sequences and clarified the geological interpretation map (See Figure 11).
In particular, the highly prospective mineralized and hydrothermally altered epiclastic and pyroclastic Jones Creek sequence has been shown to extend northwards from the headwaters of Jones Creek into the South Dallwitz area. The strike extent of this horizon has now been traced for over 4.5km. The sequence disappears to the north beneath remnant cover of inferred Permian tillite just south of the Mt. Read Telecom road, It appears that the horizon is truncated (or is terminated) by a major structural dislocation, which is clearly evident on the DIGHEM aeromagnetic contour map. This major structure strikes north west and appears to cut the northern end of the Hercules massive sulphide deposit.

Widespread and often intense deformation and cleavage development, typically mask primary bedding features and complicate the structural interpretation of the area. Where reliable bedding determinations have been made consistent strike trends between 340° and 350° (AMG) are recorded. Generally the epiclastic-pyroclastic sequence dips steeply to the east although steep westerly dips are not uncommon. The repetitive occurrence of relatively thin tuffaceous shale-siltstone units in the South Dallwitz area supports the structural interpretation of numerous tight fold axes in this area. Re-logging of DDH JCP 211 has indicated that the hole was drilled down dip, confirming the general steep easterly dips mapped in this area. Similar dips are interpreted in DDH JCP 216.

It now appears that the extensive area of sericitic schists, outlined over the south-eastern part of White Spur, are the result of dynamo-thermal metamorphism. There is little petrographic evidence for any significant pre-existing hydrothermal alteration of these lithologies (See 1983/84 progress report, Appendix B.2.). It is a feature of much of the White Spur geology that intense deformation with accompanying Greenschist facies metamorphism dominates the obvious characteristics of the rocks in the field.

Although no further base metal mineralization has been identified by the recent geological mapping, the extensive rock geochemistry (See Section 7.4.2.) has shown that such mineralization occurs, presumably as fine grained disseminated sulphides, particularly within the fine grained epiclastic lithologies of the upper Jones Creek-South Dallwitz area.

Following the interpretation of an inferred UTEM bedrock conductor between lines 8000S and 9200S (See Figure 11) detailed mapping was carried out to determine the possible source of this response. Although outcrop is restricted in this area by thick forest cover, considerable geological information was obtained by examining the common float occurrences, particularly in the roots of large fallen trees. Unfortunately very few encouraging lithologies with significant hydrothermal alteration or mineralization were located. The area is bounded on the west by massive felsic lava breccias which extend much further down into the Jones Creek valley than had been previously inferred. The eastern area is composed of weakly altered pyroclastics (probable welded ignimbrites) and massive rhyolitic lavas. The only other lithologies of note are unaltered intermediate (micro-diorite) and basaltic intrusives which appear to form 2 prominent dykes (See Figure 11). There is no evidence of a large hydrothermal alteration envelope as might be expected around a concealed volcanogenic massive sulphide body.

7.4.2. Geochemistry

The extensive rock geochemical sampling program which commenced in 1983/84 has continued during the current period. All of the analytical results have been plotted on Figure 12. The recent sampling has confirmed the prospectivity of the northern Jones Creek - South Dallwitz area. The best assays are summarized below (assays in ppm):

Sample No.	Cu	Pb	Zn	Ag	Au	Lithology
T269	65	1400	305	2.5	0.09	grey tuffaceous siltst. sandstone
T280	65	1200	195	1.0	0.01	weathered shale-siltstone
T274	30	310	605	1.5	0.01	grey tuffaceous shale-ash
T286	5	40	840	<0.5	< 0.008	chloritic pyroclastic
T288	20	55	780	<0.5	< 0.008	chloritic pyroclastic-epiclastic?
T278	35	580	180	2.5	0.01	laminated grey shale-siltstone

Despite extensive sampling for gold within both rock and drill core samples, no significant values have been obtained anywhere in the eastern White Spur area.

The interpreted UTEM bedrock conductor is coincident with a narrow linear lead in soil anomaly (from the 1978-80 EZ Company soil survey results). The peak soil value is 220ppm Pb above a background of less than 50ppm. However, similar linear lead (and/or zinc) soil anomalies were outlined by the EZ work, particularly over the South Dallwitz area, where values well above 1000ppm Pb and Zn are quite widespread. On the basis of the geochemistry and geology, there is greater exploration potential over this northern part of White Spur than over the UTEM anomaly in Jones Creek.

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7.4.3. Geophysics

Prior to preparing a drill proposal to test the geological and geochemical targets outlined on White Spur, it was decided to carry out a deep seeking EM (UTEM) survey over the area. The UTEM survey was designed to cover an area approximately 2.5km along strike by 1.2km across to the eastern EL boundary. The area encompassed 3 prospective zones within eastern White Spur viz: (1) favourable lithologies with significant mineralization, hydrothermal alteration and soil geochemistry in the headwaters of Jones Creek; (2) a widespread area of intense sericitic alteration and deformation in the south eastern corner of the EL and (3) a series of DIGHEM responses over a glacial-scree covered, unexplored area just south of the Mt. Read summit.

The results from the UTEM survey were interpreted by Dr. J.R.Bishop (See Appendix D.4.). No well defined anomalies were identified and the only significant result is a low amplitude response which occurs over 4 adjacent lines, 8000S to 9200S (See Figure 13). This linear zone closely follows Jones Creek and appears to be 500m south along strike from disseminated sulphides intersected in DDH JCP 216 (95m at 0.28% Zn and 0.09% Pb).

The amplitudes of these responses are too small to permit any confident interpretation of depth and dip. Semi quantitative modelling suggests that the top to the source is within 100m of surface and that the body may be ribbon-like in form. It appears that the source is quite limited in depth extent and plunges to the south.

Several, near surface conductors were outlined from the early time UTEM data. These are indicative of poorly conducting features such as faults or glacial scree cover. Bishop has correlated the DIGHEM responses with these superficial features. A VLF EM survey was designed to cover this same area to compare the responses with the UTEM results. Good VLF anomalies (with coincident field strength highs) were obtained and these correlated with the early time UTEM responses and the DIGHEM interpretation. Profiles of the VLF EM data are included in Appendix D.4.

7.5. Conclusions

Geological mapping and sampling has extended the highly prospective, altered and mineralized epiclastic and pyroclastic Jones Creek sequence to over 4.5 kilometres of strike. The northern end of this horizon appears to be terminated by a major structure which trends north westerly across the northern end of the Hercules deposit. Extensive rock chip and previous soil geochemical sampling has highlighted the headwaters of Jones Creek and the South Dallwitz areas as being the most favourable mineralized sections of this horizon.

A 28 line kilometre UTEM survey over the eastern White Spur area identified a low amplitude response which warrants further investigation. The response forms a linear zone 500m long close to Jones Creek. This area lies 500m south along strike from disseminated mineralization in DDH JCP 216 (95m at 0.28% Zn and 0.09% Pb). Qualitative interpretation of the UTEM data suggests that the source of the response occurs about 100m below the surface, is restricted in depth extent and plunges to the south. Detailed geological investigations over the area of the response have failed to locate favourable host lithologies or hydrothermal alteration indicative of a concealed volcanogenic massive sulphide.

The DIGHEM responses over the north eastern area have been confidently interpreted as due to conductive glacial moraine. The widespread sericitic schists over south eastern White Spur appear to have developed as a result of dynamo-thermal metamorphism with little evidence of any previous hydrothermal alteration and are hence less prospective.

7.6. Recommendations

The UTEM response warrants more detailed investigation. It is recommended that a restricted UTEM survey be carried out to gain more accurate information regarding the location and orientation of the conductive source. Geological considerations suggest that a small transmitting loop placed to the east of the response would better couple with any stratabound sulphide body and sharply enhance the results.

The strongly altered and mineralized fine grained epiclastic sequence in the upper Jones Creek - South Dallwitz area should be tested by diamond drilling. The target(s) should be defined by the geological and geochemical results.

APPENDIX A.

DRILL LOGS

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GETTY OIL DEVELOPMENT COMPANY LTD.
DIAMOND DRILL CORE RECORD

HOLE No. CS1

PROJECT	Rosebery East	OBJECTIVE	RESULT	COMMENCED	8.3.1984
PROSPECT	Cutty Sark	To test prospective horizon 300m along strike south of massive sulphide clasts beneath weak soil geochem and strong IP anomalies.	Minor sphalerite mineralization intersected in sequence of epiclastic and pyroclastic lithologies beneath geochem. Graphitic black shale lens approx. down dip of IP anomaly.	COMPLETED	2.4.1984
DESIGNED BY	F.FitzGerald			LOGGED BY	F.FitzGerald

SIGNIFICANT GEOLOGY

The hole intersected chloritic pyritic andesitic lavas in the upper section. The main lithologies intersected down-hole were dacitic pyroclastics with numerous small epiclastic lenses. Intense chlorite stockwork decreases down-hole, but weak to moderate silicification increases. Minor sphalerite mineralization mostly occurs within epiclastic lenses. No source for the clasts of massive sulphide was identified.

SIGNIFICANT ASSAYS (p.p.m.)

From	To	Metres	Cu	Pb	Zn	Ag	Au	Comments
53.7	65.7	12.0	20	130	0.24%	0.5	0.02	vein + dissem.sphalerite in epiclastics.
191.2	206.4	15.2	30	590	0.20%	2.0	0.02	vein sphalerite,galena in black shale.
201.2	206.4	5.2	30	0.14%	0.32%	2.5	0.02	assays included in above interval.

LOCATION

GRID	AMG
NORTHING	approx 5377690
EASTING	approx 378470
R.L.	approx 230
LENGTH (m)	451.4

SURVEY DATA (AMG)

DEPTH (m)	BEARING	DIP	DEPTH (m)	BEARING	DIP	DEPTH (m)	BEARING	DIP	DEPTH (m)	BEARING	DIP
25	in barrel	-65°	206	253.4°	-58°	323	258°	-52°			
71	257°	-63°	236	253.4°	-57.5°	356	259°	-51.5°			
103	257°	-61.5°	266	256°	-54.5°	389	259°	-51°			
164	256°	-58°	287	257°	-52.5°						

HOLE CONDITION

SIZE		SIGNIFICANT CORE LOSS			POOR GROUND CONDITION ZONES		
Hole Size	Depth (m)	From	To (m)	% Lost	From	To (m)	Condition
HW	3.0	0.0	4.4	61	175.0	181.2	Hole cave-in through fault zone.
HQ	30.0	19.4	37.4	26			
NQ	200.0	103.4	109.4	15			
BQ	451.4	163.4	175.4	15			

HOLE CONDITIONS AFTER COMPLETION

Hole reamed in NQ from 105m to 200m
PVC pipe inserted to 451.4m
All casing recovered from hole

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GETTY OIL DEVELOPMENT COMPANY LTD.

DRILL CORE LOG & ASSAY DATA

PROSPECT: CUTTY SARK **HOLE No.** CS1 044 **Page** 1.

INTERVAL			DESCRIPTION	ASSAY DATA (p.p.m.)											
From	To	Metres		Sample No.	From	To (m)									
0.0	6.8	6.8	<u>SCREE</u> Unconsolidated andesitic porphyritic lava scree, boulders down slope from ridge to east.												
6.8	24.9	18.1	<u>ANDESITIC LAVA</u> Dark green medium grained porphyritic andesite. Cream feldspar phenocrysts. Moderate to strongly magnetic. 24.9-24.9m contact zone, deeply weathered orange to brown, apparently sharp contact with underlying unit. <u>Alteration</u>: Common chlorite-magnetite veins up to 5mm thick. Weak to moderate pervasive chlorite From 18.0m on increasing pervasive sericitic alteration. <u>Mineralization</u>: Disseminated pyrite throughout up to 1-2% locally. Fe/Mn oxides fracture fill and staining common, some after sulphide veins.												
24.9	32.5	7.6	<u>FELSIC PYROCLASTICS</u> Cream and slightly pink medium grained felsic pyroclastic. Feldspar and minor quartz crystals set in a fine grained vitric or ashy ground-mass. Crude foliation at 60-70° to LCA with hard pinkish patches set in more strongly cleaved ground-mass, suggest possible ignimbritic texture. Rock relatively soft. <u>Alteration</u>: Strong pale green sericitic and minor chloritic veinlets forming a stockwork. Moderate to strong pervasive sericite. <u>Mineralization</u>: Common disseminated pyrite throughout as medium grained crystals, up to 1%												

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GETTY OIL DEVELOPMENT COMPANY LTD.
DRILL CORE LOG & ASSAY DATA

PROSPECT: CUTTY SARK HOLE No. CS1 Page 2.

INTERVAL From	To	Metres	DESCRIPTION	Sample No.	From	To (m)	m	Cu	Pb	Zn	Ag	Au			
32.5	44.0	11.5	DACITIC PYROCLASTICS Pale green to grey, medium to coarse grained feldspar-quartz pyroclastic. Minor possible pinkish lithic clasts of felsic lava, diffuse margins set in fine grained vitric or ashy ground-mass. Alteration: Moderate to strong pervasive sericite often as patches or diffuse stringers amongst harder pinkish, siliceous patches. Common quartz-carbonate veins, decreasing down-hole. Mineralization: 32.5-37.6m moderate disseminated pyrite with minor sphalerite and galena. 36.5m semi massive fine grained pyrite 25cm wide related to fault structure. Rest of section minor mineralization. Structure: 32.5-37.6m broken core related to strong fault structure at 37.3-37.6m, all clay sericite rubble.												
44.0	53.7	9.3	DACITIC LITHIC PYROCLASTICS Dark grey and fawn relatively massive medium to coarse grained quartz-phyric lithic pyroclastic related to above sequence. Lithic clasts are pink angular lava chips up to 3cm in size. Alteration: Strong irregular chlorite veins forming a stockwork, particularly down-hole. Weak pervasive sericite. Mineralization: Very weak. Trace sphalerite associated with chlorite vein.	T535 T536	49.7 51.7	51.7 53.7	2.0 2.0	15 10	<5 10	455 400	<0.5 <0.5	<0.01 <0.01			
53.7	65.7	12.0	EPICLASTIC SEQUENCE Mixed grey shale (ashy) beds and cream coarser grained tuffaceous sediments with possible												

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GETTY OIL DEVELOPMENT COMPANY LTD.

DRILL CORE LOG & ASSAY DATA

PROSPECT: CUTTY SARK **HOLE No.** CS1

From	To	Metres	Description
			influxes of quartz-phyric pyroclastics. Subtle bedding locally evident eg. 58.7m at 75° to LCA but often disrupted. Common torn up clasts several cm in size of shale within coarser clastic material. Alteration: Moderate pervasive sericite throughout. Common thin chlorite veins. Mineralization: Variable, locally up to 2% disseminated and vein sphalerite eg.59.4-60.6m with minor pyrite and trace galena throughout. Thin section: T531 at 59.7m
65.7	78.3	12.6	DACITIC PYROCLASTICS Grey to pink medium to coarse grained quartz phyric pyroclastic related to possible welded ignimbrites up-hole. Alteration: Strong chlorite veining-stockwork decreasing in intensity down hole from sedimentary lens. Low angle quartz-chlorite veins with some sulphide. 75.0-78.3 moderate to strong sericite. Mineralization: Weakly mineralized apart from minor sphalerite in chlorite-quartz veins. Structure: 75.0-78.3m very broken core forming rubble but no clay pug zone.
78.3	94.0	15.7	DACITIC LITHIC PYROCLASTICS Light grey to pink medium to coarse grained quartz-phyric pyroclastic, similar to above sequence. Weak foliation evident at 55° to LCA. Minor lithic chips of pinkish felsic lava up to 2cm in size. Alteration: Moderate irregular chlorite veins, weak pervasive sericite. Locally well developed quartz-carbonate-chlorite veins up to 5mm thick Mineralization: Generally unmineralized.

ASSAY DATA (p.p.m.)

Sample No.	From	To (m)	m	Cu	Pb	Zn	Ag	Au			
T388	53.7	55.7	2.0	15	125	0.28%	0.5	0.02			
T389	55.7	57.7	2.0	10	320	0.15%	1.0	0.02			
T390	57.7	59.7	2.0	10	45	0.24%	0.5	0.01			
T391	59.7	61.7	2.0	15	105	0.35%	0.5	0.03			
T392	61.7	63.7	2.0	25	115	0.20%	0.5	0.02			
T393	63.7	65.7	2.0	30	60	0.21%	0.5	0.03			
T537	65.7	67.7	2.0	20	40	580	<0.5	<0.01			
T538	67.7	69.7	2.0	15	20	1250	<0.5	<0.01			
T539	69.7	71.7	2.0	15	10	215	<0.5	<0.01			

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GETTY OIL DEVELOPMENT COMPANY LTD.

DRILL CORE LOG & ASSAY DATA

PROSPECT: CUTTY SARK **HOLE No.** CS1 **Page** 4.

INTERVAL			DESCRIPTION	ASSAY DATA (p.p.m.)											
From	To	Metres		Sample No.	From	To (m)	m	Cu	Pb	Zn	Ag	Au			
94.0	107.4	13.4	DACITIC LITHIC PYROCLASTICS Grey and cream quartz-phyric pyroclastics with apparent grain-size contacts irregularly developed. Common lithic clasts of felsic lava and possible underformed pumice, and grey shale up to 3cm in size. Alteration: Moderate pervasive sericite locally strong in fault zones. Moderate to weak chlorite veinlets, sub-stockwork. Mineralization: Minor granular pyrite throughout. Structure: Very broken core, possibly related to faults eg. 94.9-95.2m.	T540	105.4	107.4	2.0	15	20	185	<0.5	<0.01			
107.4	136.8	29.4	DACITIC PYROCLASTICS Grey occasionally fawn medium to coarse grained quartz-phyric pyroclastics related to above sequence. Minor lithic clasts. Alteration: Weak to moderate pervasive sericite particularly in more broken rock intervals. 107.4-128.0m minor chlorite veinlets. 128.0-136.8m moderate chlorite-quartz-carbonate veinlets, sub-stockwork. Mineralization: Minor disseminated pyrite. Structure: Broken core intervals particularly 121.0-123.4m and 127.8-129.2m, possibly fault related.	T541	107.4	109.4	2.0	15	15	145	<0.5	<0.01			
136.8	163.4	26.6	DACITIC LITHIC PYROCLASTICS Grey and fawn blotchy coarse grained lithic pyroclastic. Appears to be mass debris type deposit. Upper contact possible fault zone 30cm wide. Possible bed or clast of grey tuffaceous sandstone 139.1-139.3m with bedding at 65° to LCA. Other clasts are irregular up to 10cm in size of grey shale, siltstone and prominent quartz-phyric volcanic blocks similar in composition												

GETTY OIL DEVELOPMENT COMPANY LTD.

DRILL CORE LOG & ASSAY DATA

PROSPECT: CUTTY SARK | HOLE No. CS1 |

INTERVAL			DESCRIPTION	ASSAY DATA (p.p.m.)											
From	To	Metres		Sample No.	From	To (m)	m	Cu	Pb	Zn	Ag	Au			
			and texture to dacitic units. Alteration: Weak to moderate sericite and scattered chlorite patches. Minor quartz-carbonate-chlorite veins. Mineralization: Generally very minor disseminated pyrite. 156.0-163.4m minor sphalerite veins up to 2mm thick at low angle to LCA. Scattered blebs of sphalerite and pyrite decreasing down-hole, some possible lithic sulphide clasts.												
163.4	170.5	7.1	BLACK SHALE Black shale with grey tuffaceous sandstone interbeds. Core quite broken but some bedding preserved at approximately 60° to LCA. Possible remnant cross bedding evident. Shales are moderately graphitic. Alteration: Pervasive sericite. Major quartz-carbonate veins up to 1.5m thick related to faults (?). Mineralization: Common vein and disseminated pyrite and possible minor sphalerite in shales. Major quartz veins appear barren. Structure: Zones of broken rubbly core, particularly adjacent to major quartz veins.	T394	163.4	165.4	2.0	15	15	60	0.5	0.01			
				T395	165.4	167.4	2.0	15	25	110	0.5	0.02			
				T396	167.4	169.4	2.0	30	35	0.16%	1.0	0.02			
170.5	175.0	4.5	FELSIC PYROCLASTIC Grey medium grained uniform felsic pyroclastic. Relatively structureless massive unit. Alteration: Weak pervasive chlorite, minor quartz-carbonate-chlorite veins. Mineralization: Minor sphalerite veins and disseminated blebs. Structure: Upper and lower contact zones very broken core, related to fault structures (?).	T542	169.4	171.4	2.0	15	<5	115	<0.5	<0.01			
				T543	171.4	173.4	2.0	10	55	500	<0.5	<0.01			
				T544	173.4	175.4	2.0	15	120	325	<0.5	<0.01			

GETTY OIL DEVELOPMENT COMPANY LTD.

DRILL CORE LOG & ASSAY DATA

PROSPECT: CUTTY SARK **HOLE No.** CS1. **Page** 6.

INTERVAL From	To	Metres	DESCRIPTION
175.0	181.2	6.2	MAJOR FAULT ZONE Major quartz vein with upper margin 25cm thick clay pug zone. Some remnant breccia within the vein with chlorite-séricite-carbonate fill containing minor pyrite and sphalerite. 175.0-175.3m estimate 5-10% pyrite-sphalerite crackle breccia fill.
181.2	206.4	25.2	BLACK SHALE SEQUENCE Predominantly black and dark grey shales with minor intervals of light grey tuffaceous sandstones. Bedding not well developed, some eg.195.8m, at 70° to LCA. Upper contact faulted with adjacent tuffaceous sandstone unit over 1.5m before main shales. Shales weakly graphitic. Alteration: Abundant irregular veins quartz-carbonate and minor chlorite forming sub-stockwork mostly 1-3mm thick, some recrystallized and up to 2cm thick. Patches of quartz-carbonate breccia fill. Mineralization: Weak to moderate vein pyrite with minor sphalerite especially concentrated in quartz-veins 181.2-182.5m common granular pyrite with minor sphalerite and galena (?). Thin Section: T532 at 194.6m NB 181.9-189.2m core out of order - tray dropped.
206.4	240.4	34.0	MASSIVE FELSIC PYROCLASTICS Grey medium to coarse grained uniform massive pyroclastics. Rock is hard, structureless almost crystalline with no prominent quartz crystals. Alteration:Very weak pervasive sericite only, minor scattered quartz-carbonate veins. Mineralization: Very minor disseminated pyrite 206.4-212.5m rare sphalerite in quartz veins.

ASSAY DATA (p.p.m.)

Sample No.	From	To (m)	m	Cu	Pb	Zn	Ag	Au			
T545	175.4	177.4	2.0	20	5	35	<0.5	<0.01			
T546	177.4	179.4	2.0	20	<5	45	<0.5	<0.01			
T547	179.4	181.4	2.0	45	235	545	<0.5	<0.01			
T397	189.2	191.2	2.0	15	25	375	0.5	0.02			
T398	191.2	193.2	2.0	40	100	0.14%	1.0	0.03			
T399	193.2	195.2	2.0	30	35	0.14%	1.0	0.02			
T400	195.2	197.2	2.0	40	235	0.23%	2.0	0.02			
T513	197.2	199.2	2.0	25	535	0.16%	2.0	0.03			
T514	199.2	201.2	2.0	20	60	190	1.0	0.02			
T515	201.2	203.2	2.0	45	970	0.41%	3.0	0.02			
T516	203.2	205.2	2.0	30	0.12%	0.40%	2.5	0.02			
T517	205.2	206.4	1.2	10	0.23%	370	2.5	<0.005			

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GETTY OIL DEVELOPMENT COMPANY LTD.
DRILL CORE LOG & ASSAY DATA

PROSPECT: CUTTY SARK **HOLE No.** CS1 **Page** 7

INTERVAL From	To	Metres	DESCRIPTION	Sample No.	From	To (m)	m	Cu	Pb	Zn	Ag	Au
240.4	249.2	8.8	<u>MIXED EPICLASTIC SEQUENCE</u> Predominantly dark grey and khaki shales and pelitic ash with minor coarser epiclastic detritus. Both contacts are indistinct almost gradational with enclosing massive pyroclastics suggesting a genetic relationship - perhaps pyroclastic ash deposits. Bedding best developed in main shale lens 247.1-248.6m at 60-70° to LCA, some 40° to LCA. The pelitic ash units are quite massive and structureless. <u>Alteration</u>:Generally weakly altered. 240.4-241.6m moderate chlorite veining. Rest of core scattered and moderate quartz-carbonate with minor chlorite veins. <u>Mineralization</u>: Minor vein and disseminated granular pyrite. Weak magnetite in chlorite veins.	T518	243.2	245.2	2.0	5	75	135	0.5	0.01
				T519	245.2	247.2	2.0	10	10	180	0.5	<0.01
				T520	247.2	249.2	2.0	10	15	410	1.0	0.02
249.2	311.2	62.0	<u>MASSIVE FELSIC PYROCLASTICS</u> Light grey medium to coarse grained uniform massive pyroclastics. Hard structureless massive sequence similar to main unit up-hole. Minor zones of apparent bleached rock particularly down-hole. No prominent quartz crystals. <u>Alteration</u>: Very weak pervasive chlorite-sericite, weakly magnetic. Minor quartz-carbonate veins. Bleached zones appear silicified especially from 298.6-302.4m. <u>Mineralization</u>: Rare pyrite grains. <u>Thin Section</u>: T533 at 292.3m.									

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GETTY OIL DEVELOPMENT COMPANY LTD.

DRILL CORE LOG & ASSAY DATA

PROSPECT: CUTTY SARK

HOLE No. CS1 051 Page 8.

INTERVAL From	To	Metres	DESCRIPTION	Sample No.	From	To (m)		Cu	Pb	Zn	Ag	Au			
311.2	318.0	6.8	FELSIC PYROCLASTICS Light grey coarse grained felsic pyroclastic, probable contact zone of above sequence. Sub-porphyritic texture with unaltered feldspar phenocrysts up to 6mm long. Fairly even structureless fabric. Alteration: Weak pervasive chlorite. Patches of pale slightly silicified detextured rock. Mineralization: Rare disseminated pyrite.												
318.0	328.4	10.4	MIXED EPICLASTICS Mixed sequence of grey shales and tuffaceous siltstones with coarser clastic (possible primary pyroclastic) lenses disrupting finer sediments. Bedding developed in main shale (pelitic ash) unit 326.2-327.6m at 75° to LCA. Clasts of shale within coarser unit but ambiguous facings. Alteration: Overall weak pervasive sericite. Mineralization: Virtually unmineralized.												
328.4	349.3	20.9	DACITIC LITHIC PYROCLASTICS Light grey medium becoming coarse grained lithic quartz-phyric pyroclastic. Lithic clasts quite common from 339m on include grey shale, siltstone, cream felsic lava and possible undeformed pumice up to 5cm sub-angular, give mass debris flow appearance. No foliation evident. Alteration: Overall only weak pervasive sericite. Minor chlorite-sericite veinlets. Mineralization: Virtually unmineralized.												

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GETTY OIL DEVELOPMENT COMPANY LTD.

DRILL CORE LOG & ASSAY DATA

PROSPECT: CUTTY SARK HOLE No. CS1 Page 9.

INTERVAL From	To	Metres	DESCRIPTION	Sample No.	From	To (m)	m	Cu	Pb	Zn	Ag	Au			
349.3	352.5	3.2	EPICLASTIC LENS Bedded dark grey shale, pale green-grey tuffaceous siltstone and coarse buff coloured epiclastics. Bedding well developed varying from 65° to 90° to LCA. Minor intraformational brecciation and disruption of finer units. Graded bedding and scour structures suggest younging down-hole (west facing sequence). Alteration: Moderate pervasive sericite. Scattered quartz-carbonate veins. Mineralization: Moderate sphalerite veins. Minor granular pyrite throughout.	T521 T522	349.4 350.9	350.9 352.4	1.5 1.5	50 45	105 125	990 1450	1.0 1.0	<0.01 0.01			
352.3	376.8	24.5	DACITIC PYROCLASTICS Light grey medium grained uniform quartz-phyric pyroclastics. Minor lithic clasts. Blotchy appearance may be due to weak alteration patches. Alteration: Generally weak. Minor quartz-carbonate-chlorite veins up to 1cm thick increasing down-hole. Mineralization: Virtually unmineralized.												
376.8	388.7	11.9	MIXED EPICLASTIC SEQUENCE Grey shale lenses and disrupted clasts within light grey to fawn tuffaceous sandstones and possible primary quartz-phyric pyroclastics related to above sequence. Common disruption of finer units as clasts within coarser units, usually sub-angular up to 5cm in size, although black shale lens 387.6-387.8m may be large clast. Most bedding disrupted, some at 70° to LCA. Alteration: Moderate pervasive sericite, particularly within coarser units. Minor quartz-chlorite veins. Mineralization: Relatively minor disseminated pyrite.												

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GETTY OIL DEVELOPMENT COMPANY LTD.
DRILL CORE LOG & ASSAY DATA

PROSPECT: CUTTY SARK

HOLE No. CS1

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INTERVAL			DESCRIPTION	ASSAY DATA (p.p.m.)											
From	To	Metres		Sample No.	From	To (m)	m	Cu	Pb	Zn	Ag	Au			
388.7	393.3	4.6	BLACK SHALE Relatively massive black shale lens with minor grey tuffaceous sandstone interbeds. Shales not very graphitic. Bedding poorly developed. Contacts between shales and coarser clastics mostly irregular. Alteration: Abundant thin quartz-carbonate veinlets mostly sub-parallel to bedding. Mineralization: Minor vein and disseminated pyrite.	T523 T524	389.0 391.0	391.0 393.0	2.0 2.0	10 15	10 15	60 65	0.5 0.5	<0.01 <0.01			
393.3	397.8	4.5	MIXED EPICLASTIC SEQUENCE Light grey fine to coarse grained tuffaceous siltstones and sandstones. Variable bedding between 70° and 80° to LCA. Some disruption by coarser clastic units which carry quartz crystals up to 7mm in size. Alteration: Moderate patchy pervasive sericite. Some weak silicification. Minor quartz-carbonate veins. Mineralization: Minor pyrite veins	T525	393.0	395.0	2.0	10	5	90	1.0	0.20			
397.8	413.2	15.4	DACITIC PYROCLASTICS Grey to buff and pale green coarse grained massive, quartz-phyric pyroclastic. Quartz crystals common up to 7mm in size. Weak foliation especially down-hole with diffuse dark streaks (relict fiammé). 411.0-413.2m scattered lithic clasts of dark shale fragments. Alteration: Generally weak, some zones of diffuse pervasive sericite especially higher up-hole. Minor quartz veins. Mineralization: Virtually unmineralized.	T548 T549	404.0 406.0	406.0 408.0	2.0 2.0	15 15	5 10	55 75	<0.5 <0.5	<0.01 <0.01			

GETTY OIL DEVELOPMENT COMPANY LTD.
DRILL CORE LOG & ASSAY DATA

PROSPECT: CUTTY SARK **HOLE No.** CS1

INTERVAL			DESCRIPTION	ASSAY DATA (p.p.m.)								
From	To	Metres		Sample No.	From	To (m)	m	Cu	Pb	Zn	Ag	Au
413.2	419.8	6.6	BLACK SHALE									
			Relatively massive black shale interbedded with									
			grey-green tuffaceous sandstones. Shales weakly									
			graphitic but not well bedded. Lower contact									
			sharp at 70° to LCA. Coarser clastic rocks	T526	412.8	414.8	2.0	20	15	75	1.0	0.01
			appear very similar to dacitic pyroclastics.	T527	414.8	416.8	2.0	95	25	915	1.0	0.04
			Alteration: Moderate pervasive sericite in	T528	416.8	418.8	2.0	105	55	0.14%	1.0	0.03
			coarser units. Abundant quartz-carbonate veins,	T529	418.8	419.8	1.0	145	25	0.17%	1.0	<0.01
			sub-stockwork and breccia fill.									
			Mineralization: Common pyrite associated with									
			quartz-carbonate veins also disseminated. Overall									
			2-5% pyrite locally up to 10% with minor									
			sphalerite.									
419.6	451.4	31.8	DACITIC LITHIC PYROCLASTICS									
			Light grey to green, blotchy, medium to coarse									
			grained quartz-phyric, lithic pyroclastics,									
			similar to inferred mass debris deposit up									
			hole. Lithic clasts are predominantly cream									
			felsic volcanics and possible undeformed pumice									
			sub-angular, up to 5cm in size and decrease									
			in quantity down hole.									
			Alteration: Generally weak pervasive sericite.	T550	440.0	442.0	2.0	15	<5	55	<0.5	<0.01
			Minor carbonate-quartz veins.	T551	442.0	444.0	2.0	15	<5	45	<0.5	<0.01
			Mineralization: Virtually unmineralized.	T552	444.0	446.0	2.0	15	<5	40	<0.5	<0.01
			Thin Section: T534 at 427.0m.									
			END OF HOLE									

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GETTY OIL DEVELOPMENT COMPANY LTD.

DIAMOND DRILL CORE RECOVERY DATA

PROSPECT: CUTTY SARK **HOLE No.** CS1. **Page** 12.

DRILL INTERVAL			CORE RECEIVED	
From	To	Metres	Metres	%
0	4.4	4.4	1.7	39
4.4	7.4	3.0	2.9	97
7.4	10.4	3.0	3.3	110
10.4	16.4	6.0	5.9	98
16.4	19.4	3.0	2.8	93
19.4	22.4	3.0	2.7	90
22.4	25.4	3.0	2.1	70
25.4	28.4	3.0	2.5	83
28.4	31.4	3.0	2.6	87
31.4	34.4	3.0	1.9	63
34.4	37.4	3.0	2.7	90
37.4	40.4	3.0	2.8	93
40.4	43.4	3.0	3.1	103
43.4	46.4	3.0	3.0	100
46.4	49.4	3.0	3.0	100
49.4	52.4	3.0	3.1	103
52.4	55.4	3.0	2.8	93
55.4	58.4	3.0	2.6	87
58.4	61.4	3.0	2.9	97
61.4	64.4	3.0	2.8	93
64.4	67.4	3.0	2.9	97
67.4	70.4	3.0	2.9	97
70.4	73.4	3.0	3.0	100
73.4	76.4	3.0	2.4	80
76.4	79.4	3.0	2.8	93
79.4	82.4	3.0	3.1	103
82.4	85.4	3.0	2.9	97
85.4	88.4	3.0	2.9	97
88.4	91.4	3.0	3.0	100
91.4	94.4	3.0	2.8	93
94.4	97.4	3.0	2.6	87

DRILL INTERVAL			CORE RECEIVED	
From	To	Metres	Metres	%
97.4	100.4	3.0	2.8	93
100.4	103.4	3.0	3.1	103
103.4	105.0	1.6	1.4	88
105.0	106.4	1.4	1.2	86
106.4	109.4	3.0	2.5	83
109.4	112.4	3.0	2.8	93
112.4	115.4	3.0	3.0	100
115.4	118.4	3.0	2.9	97
118.4	121.4	3.0	2.9	97
121.4	124.4	3.0	2.6	87
124.4	127.4	3.0	3.0	100
127.4	130.4	3.0	2.6	87
130.4	133.4	3.0	3.0	100
133.4	136.4	3.0	3.1	103
136.4	139.4	3.0	2.9	97
139.4	142.4	3.0	3.1	103
142.4	145.4	3.0	3.0	100
145.4	148.4	3.0	3.1	103
148.4	151.4	3.0	2.9	97
151.4	154.4	3.0	3.2	107
154.4	157.4	3.0	3.0	100
157.4	160.4	3.0	2.7	90
160.4	163.4	3.0	3.0	100
163.4	166.4	3.0	2.6	87
166.4	169.4	3.0	2.7	90
169.4	172.4	3.0	2.4	80
172.4	175.4	3.0	2.5	83
175.4	178.4	3.0	2.9	97
178.4	181.4	3.0	2.3	77
181.4	184.4	3.0	TRAY DROPPED	
184.4	187.4	3.0	TRAY DROPPED	

DRILL INTERVAL			CORE RECEIVED	
From	To	Metres	Metres	%
187.4	190.4	3.0	TRAY DROPPED	
190.4	193.4	3.0	3.0	100
193.4	196.4	3.0	3.0	100
196.4	199.4	3.0	2.7	90
199.4	202.4	3.0	3.2	107
202.4	205.4	3.0	3.0	100
205.4	208.4	3.0	2.9	97
208.4	211.4	3.0	2.8	93
211.4	214.4	3.0	3.1	103
214.4	217.4	3.0	3.0	100
217.4	220.4	3.0	3.0	100
220.4	223.4	3.0	3.0	100
223.4	226.4	3.0	3.0	100
226.4	229.4	3.0	3.0	100
229.4	232.4	3.0	3.1	103
232.4	235.4	3.0	3.1	103
235.4	238.4	3.0	3.0	100
238.4	241.4	3.0	3.0	100
241.4	244.4	3.0	3.0	100
244.4	247.4	3.0	3.0	100
247.4	250.4	3.0	3.0	100
250.4	253.4	3.0	3.0	100
253.4	256.4	3.0	3.0	100
256.4	259.4	3.0	3.1	103
259.4	262.4	3.0	3.1	103
263.4	265.4	3.0	2.8	93
265.4	268.4	3.0	3.2	107
268.4	271.4	3.0	2.9	97
271.4	274.4	3.0	3.0	100
274.4	277.4	3.0	3.1	103
277.4	280.4	3.0	3.0	100

DRILL INTERVAL			CORE RECEIVED	
From	To	Metres	Metres	%
280.4	283.4	3.0	3.1	103
283.4	286.4	3.0	3.0	100
286.4	289.4	3.0	3.0	100
289.4	292.4	3.0	3.1	103
292.4	295.4	3.0	3.0	100
295.4	298.4	3.0	3.0	100
298.4	301.4	3.0	3.0	100
301.4	304.4	3.0	3.1	103
304.4	307.4	3.0	3.0	100
307.4	310.4	3.0	3.0	100
310.4	313.4	3.0	3.0	100
313.4	316.4	3.0	3.0	100
316.4	319.4	3.0	3.0	100
319.4	322.4	3.0	3.1	103
322.4	325.4	3.0	3.0	100
325.4	328.4	3.0	3.0	100
328.4	331.4	3.0	3.0	100
331.4	334.4	3.0	3.0	100
334.4	337.4	3.0	3.1	103
337.4	340.4	3.0	3.0	100
340.4	343.4	3.0	3.0	100
343.4	346.4	3.0	3.0	100
346.4	349.4	3.0	3.0	100
349.4	352.4	3.0	3.0	100
352.4	355.4	3.0	3.0	100
355.4	358.4	3.0	3.0	100
358.4	361.4	3.0	3.0	100
361.4	364.4	3.0	2.9	97
364.4	367.4	3.0	3.1	103
367.4	370.4	3.0	3.0	100
370.4	373.4	3.0	3.0	100

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GETTY OIL DEVELOPMENT COMPANY LTD.

DIAMOND DRILL CORE RECOVERY DATA

PROSPECT: CUTTY SARK **HOLE No.** CS1 **Page** 13.

DRILL INTERVAL			CORE RECEIVED		DRILL INTERVAL			CORE RECEIVED		DRILL INTERVAL			CORE RECEIVED		DRILL INTERVAL			CORE RECEIVED	
From	To	Metres	Metres	%	From	To	Metres	Metres	%	From	To	Metres	Metres	%	From	To	Metres	Metres	%
373.4	376.4	3.0	3.0	100															
376.4	379.4	3.0	2.9	97															
379.4	382.4	3.0	3.0	100															
382.4	385.4	3.0	3.0	100															
385.4	388.4	3.0	3.0	100															
388.4	391.4	3.0	3.1	103															
391.4	394.4	3.0	3.0	100															
394.4	397.4	3.0	3.0	100															
397.4	400.4	3.0	3.0	100															
400.4	403.4	3.0	2.9	97															
403.4	406.4	3.0	3.1	103															
406.4	409.4	3.0	3.0	100															
409.4	412.4	3.0	2.9	97															
412.4	415.4	3.0	3.0	100															
415.4	418.4	3.0	3.1	103															
418.4	421.4	3.0	3.0	100															
421.4	424.4	3.0	3.0	100															
424.4	427.4	3.0	3.0	100															
427.4	430.4	3.0	3.0	100															
430.4	433.4	3.0	3.0	100															
433.4	436.4	3.0	3.1	103															
436.4	439.4	3.0	3.0	100															
439.4	442.4	3.0	3.0	100															
442.4	445.4	3.0	3.0	100															
445.4	448.4	3.0	3.0	100															
448.4	451.4	3.0	3.0	100															
	E.O.H.																		

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GETTY OIL DEVELOPMENT COMPANY LTD.
DIAMOND DRILL CORE RECORD

HOLE No. MR2

PROJECT	Rosebery East	**OBJECTIVE**	**RESULT**	**COMMENCED**	12.3.84
PROSPECT	Murchison River	Test conductive stockwork, over stronger Maxmin anomaly 50m north (on the edge of Lake Rosebery) of the intersection in MR1.	7m quartz-carbonate-? fluorite stockwork in pyritic black slates, as for MR1. Anomalous Au and As not confined to stockwork.	**COMPLETED**	15.3.84
DESIGNED BY	I.McNaught			**LOGGED BY**	I.McNaught

SIGNIFICANT GEOLOGY

54.5 - 61.1 Intense quartz-carbonate-? fluorite stockwork in black shale. Weak pyrite content and strong silicification present. The silver content is low.

83.9 - 85.5 Thin arsenopyrite-pyrite-pyrrhotite-sphalerite chlorite veins,totalling 14cm over 2.4m sample width. The silver content is low.

SIGNIFICANT ASSAYS (p.p.m.)

From	To	Metres	Cu	Pb	Zn	As	Au	Comments
50.0	62.9	12.9	239	148	174	0.25%	0.31	in and above stockwork.
50.0	54.5	4.5	582	82	93	0.55%	0.44	above stockwork.
54.5	62.9	6.6	67	234	265	0.11%	0.27	in stockwork.
51.3	53.0	1.5	385	90	90	1.10%	0.70	minor sulphide veining.
83.8	86.2	2.4	50	670	0.38%	1.20%	0.48	from 14cm of sulphide veining

LOCATION

GRID	AMG
NORTHING	5375226mN
EASTING	384972mE
R.L. approx.	160.5m
LENGTH (m)	122.0m

SURVEY DATA (AMG)

DEPTH (m)	BEARING	DIP	DEPTH (m)	BEARING	DIP	DEPTH (m)	BEARING	DIP	DEPTH (m)	BEARING	DIP
0	090°	-60°									
51	088.5°	-57°									
120	088.5°	-48.5°									

HOLE CONDITION

SIZE		SIGNIFICANT CORE LOSS			POOR GROUND CONDITION ZONES		
Hole Size	Depth (m)	From	To (m)	% Lost	From	To (m)	Condition
4" Hammer	24.0	0	24.0	Percussion	62.4	65.9	broken core
NQ	38.5	63.3	64.7	24			
BQ	122.0						

HOLE CONDITIONS AFTER COMPLETION

12 metres HQ casing at 12 - 24.0m
122m of 40mm PVC placed.
Collar cased with 125mm PVC to 6m.

GETTY OIL DEVELOPMENT COMPANY LTD.

062059

DRILL CORE LOG & ASSAY DATA

PROSPECT: MURCHISON RIVER

HOLE No. MR2

05

Page 01.

INTERVAL From	To	Metres	DESCRIPTION
0	4.5	4.5	<u>SCREE</u> Glacial scree, boulders and micaceous blue clays, weakly garnetiferous - probable Precambrian source.
4.5	64.9	60.4	<u>BLACK SHALE</u> Pyritic laminated black shale with conformable thin (<10mm) quartz veins. Significant quartz veins 30.2-30.25m, 33.0-33.3m, 33.5-33.55, 33.6-33.8m, 34.9-35.05m. Gradual build up in frequence of quartz-carbonate veins to 54.5m and sharp cut off below 61.1. 54.5-61.1 - intense quartz-carbonate-?fluorite veining-stockwork, replacing +60% of the host. <u>CBA</u>: 50° throughout. <u>Mineralization</u>: minor disseminated and syngenetic pyrite in veins and bands - overall < 3% pyrite. <u>Faulting</u>: 33.0m (quartz) 52.3-52.9m (pug + loss) <u>Alteration</u>: minor graphite on joints. Quartz-carbonate ? fluorite stockwork silicified

ASSAY DATA (p.p.m.)

See last page for Boron Analyses

Sample No.	From	To (m)	Rec.%	Cu	Pb	Zn	Ag	Fe	As	Sn	Au
1283	24.0	26.0	100	95	155	505	1.0	4.05%	10		X
1284	26.0	28.0	100	80	80	260	0.5	3.80%	23		X
1285	28.0	30.0	100	75	115	225	1.0	3.80%	22		X
1286	30.0	32.0	100	70	110	175	0.5	4.15%	42		X
1287	32.0	33.0	100	75	85	210	1.0	4.75%	45		X
1288	33.0	33.6	100	40	130	390	0.5	2.90%	44		X
1289	33.6	34.9	100	70	190	480	1.0	4.10%	21		X
1290	34.9	35.4	100	80	105	255	1.0	4.15%	80		X
1291	35.4	37.4	100	70	90	195	0.5	3.90%	10		X
1292	37.4	38.5	100	70	75	195	0.5	4.25%	55		X
1293	38.5	40.5	100	60	75	190	0.5	4.70%	65		X
1294	40.5	42.5	100	35	65	110	1.0	5.45%	55		X
1295	42.5	43.9	100	25	60	65	0.5	4.90%	66		0.02
1125	43.9	45.9	100	20	50	110	X	-	X	239	0.03
1126	45.9	47.9	100	65	55	135	X	-	X	9	X
1127	47.9	50.0	100	300	40	105	X	-	700	37	0.04
1081	50.0	51.5	100	310	55	80	1.0	7.5%	0.47%	90	0.25
1082	51.5	53.0	100	385	90	90	2.5	5.3%	1.10%	170	0.70
1083	53.0	54.5	100	1050	100	110	2.5	9.3%	800	290	0.37
1074	54.5	55.5	100	80	50	85	0.5	5.8%	X	130	0.13
1075	55.5	56.5	100	85	200	205	2.0	12.0%	0.34%	400	0.60
1076	56.5	57.3	100	25	90	75	0.5	6.4%	X	170	0.20
1077	57.3	58.3	100	30	345	180	1.5	8.9%	0.20%	90	0.30

GETTY OIL DEVELOPMENT COMPANY LTD. 062060

DRILL CORE LOG & ASSAY DATA

PROSPECT: MURCHISON RIVER **HOLE No.** MR2 **Page** 2

INTERVAL From	To	Metres	DESCRIPTION	Sample No.	From	To (m)	Rec.%	Cu	Pb	Zn	Ag	Fe	As	Sn	Au
				1078	58.3	59.3	100	25	240	150	1.0	7.1%	800	75	0.19
				1079	59.3	60.2	100	25	115	95	0.5	6.2%	500	90	0.17
				1080	60.2	61.1	100	40	75	90	0.5	7.1%	0.10%	130	0.28
				1084	61.1	62.9	100	90	260	520	2.5	11.5%	X	90	0.10
				1128	62.9	64.9	70	85	320	915	X	–	X	–	X
64.9	86.2	21.3	TUFFACEOUS SHALE												
			Medium grained grey tuffaceous shale with												
			graded contacts above and below. Quartz-chlorite	1263	64.9	66.9	100	25	185	385	0.5	1.75%	26		X
			-carbonate veins at 79.3-79.4 (2 x 30mm)	1264	66.9	68.9	100	30	50	85	X	1.80%	22		X
			CBA: 70° throughout.	1265	68.9	70.9	100	30	75	65	0.5	1.85%	34		X
			Mineralization: Sulphide veins at 83.9m (50mm);	1266	70.9	72.9	100	25	50	65	X	1.25%	20		X
			84.6m (60mm); 85.5 (30mm) - as arsenopyrite,	1267	72.9	74.9	100	15	45	70	X	8450	27		X
			-pyrite-pyrrhotite-sphalerite-chlorite.	1268	74.9	76.9	100	30	55	100	X	1.60%	54		X
			Faulting: 83.2m (intact pug).	1269	76.9	78.9	100	20	90	75	1.0	1.25%	100		X
			Alteration: weak sericite, with intense sericite	1270	78.9	79.9	100	20	125	315	0.5	1.30%	38		X
			82.2m-82.8m	1271	79.9	82.1	100	20	225	510	1.0	1.10%	4		X
				1272	82.1	82.8	100	35	265	635	1.0	2.00%	9		X
				1129	82.8	83.8	100	35	135	175	X	–	X	12	X
				1130	83.8	84.8	100	45	650	0.59%	X	–	1.30%	39	0.54
				1131	84.8	86.2	100	50	680	0.23%	X	–	1.1%	31	0.43
86.2	105.9	19.3	BLACK TO GREY SHALE												
			Black shale with gradually increasing down-hole												
			component of tuffaceous material, as a clastic	1132	86.2	87.2	100	245	260	620	4.5	–	100	77	0.03
			component in grey-black shale and inter-	1133	87.2	88.8	100	465	210	395	X	–	400	50	0.03
			laminated - interbedded grey tuffaceous shale	1134	88.8	89.5	100	450	135	200	5.0	–	100	196	0.02
			and black shale. Coarse grained tuffaceous	1135	89.5	90.3	100	175	75	105	X	–	100	241	0.04
			volcwacke at 102.8-104.1m, 104.9-105.7m. The	1136	90.3	91.3	100	365	105	285	X	–	100	41	0.02
			unit fines down-hole. Random minor thin	1296	91.3	93.3	100	90	1300	1750	3.0	5.6%	84		X
			quartz veins present.	1297	93.3	95.3	100	95	270	765	1.5	5.7%	600		0.03
			CBA: 70° overall, although locally contorted	1298	95.3	97.3	100	125	85	175	2.0	5.5%	300		0.01
			(soft sediment slumping).	1299	97.3	98.6	100	105	215	460	2.0	5.85%	X		X
			Mineralization: Very fine grained massive	1300	98.6	100.5	100	95	235	560	1.0	4.3%	X		X
			syngenetic pyrite 88.9-92.2m; 10mm pyrite-	1301	100.5	102.8	100	110	635	2250	2.5	4.55%	200		X
			pyrrhotite vein 98.5m. Minor disseminated	1302	102.8	104.9	100	45	70	125	1.0	2.8%	200		X
			pyrite in quartz veins 103.4-104.3m.	1303	104.9	105.9	100	20	40	100	0.5	1.75%	X		X
			Alteration: weak sericite.												

ASSAY DATA (p.p.m.)

GETTY OIL DEVELOPMENT COMPANY LTD. 062061 ?

DRILL CORE LOG & ASSAY DATA

PROSPECT: MURCHISON RIVER **HOLE No.** MR2 060 **Page** 3.

INTERVAL			DESCRIPTION	ASSAY DATA (p.p.m.)											
From	To	Metres		Sample No.	From	To (m)	Rec.%	Cu	Pb	Zn	Ag	Fe	As	Sn	Au
105.9	117.0	11.1	<u>TUFFACEOUS ARENITE TO SHALE</u>	1304	105.9	107.9	100	10	35	90	0.5	1.65%	X		X
			Medium-fine grained massive grey tuffaceous	1305	107.9	109.9	100	15	25	55	X	1.70%	200		X
			arenite to grey tuffaceous shale. Quartz-	1306	109.9	111.0	100	10	20	50	0.5	1.85%	X		X
			carbonate-chlorite veins: 111.0-111.1m (8cm,1cm)	1307	111.0	112.3	100	15	20	50	1.5	2.00%	X		X
			111.9-112.3m (5cm, 2 x 1cm).	1308	112.3	114.3	100	10	25	50	0.5	1.70%	X		X
			<u>CBA</u>: 70° overall.	1309	114.3	115.7	100	15	20	40	1.0	1.65%	X		X
			<u>Mineralization</u>: Barren	1310	115.7	117.0	85	30	15	30	0.5	1.45%	X		X
			<u>Alteration</u>: weak sericite												
117.0	117.9	0.9	<u>TUFFACEOUS ARENITE TO BLACK SHALE</u>												
			Zone of grey fine grained tuffaceous arenite												
			grading down-hole to black shale.												
			Faults at 117.0 (loss); 117.5 (pug + shattered	1311	117.0	117.9	90	105	65	165	0.5	4.05%	200		X
			core). Core broken throughout along cleavage.No												
			quartz veins, trace disseminated pyrite.												
			Weak sericite in tuffaceous section.												
117.9	119.5	1.6	<u>TUFFACEOUS SHALE</u>												
			Fine grained grey tuffaceous shale broken	1312	117.9	119.5	75	25	90	170	1.0	1.60%	X		X
			throughout along cleavage,except 119.2-119.5m.												
			<u>Faulting</u>: 118.8 (minor pug)												
			<u>CBA</u>: 70-80° ? cleavage.												
			<u>Mineralization</u>: Barren												
			<u>Alteration</u>: moderate sericitization												
119.5	122.0	2.5	<u>BLACK SHALE</u>												
	EOH		Black shale with fine grained tuffaceous shale												
			laminae and beds to 10cm with graded, down-hole	1313	119.5	120.9	100	85	75	235	0.5	4.25%	X		X
			fining contacts. Quartz veins throughout,	1314	120.9	122.0	100	95	240	1050	1.5	5.30%	600		X
			carrying minor sulphides at 119.7m, 8mm lens			EOH									
			with trace pyrite; 120.1m, 5mm vein and minor												
			pyrrhotite; 120.3m, 8mm vein + minor pyrrhotite;												
			120.8, 5mm vein + minor pyrrhotite; 121.2, 3 x												
			5mm vein + minor pyrrhotite; 121.5m, 8mm quartz-									X	Below detection level.				
			carbonate lens, barren.							-	Element not analysed.				
			<u>CBA</u>: 70°												
			<u>Alteration</u>: weak sericite in tuffaceous zone.												
			DETECTION LEVEL					5	5	5	0.5	50	100	3	0.008
			ANALABS - BURNIE					AAS	AAS	AAS	AAS	AAS	AAS	XRF	F.A.
			METHOD					103	103	103	103	103	103	402	309

GETTY OIL DEVELOPMENT COMPANY LTD.   062062

0.061

DRILL CORE LOG & ASSAY DATA

PROSPECT: MURCHISON RIVER   **HOLE No.** MR2   **Page** 4.

INTERVAL			DESCRIPTION	ASSAY DATA (p.p.m.)				
From	To	Metres		Sample No.	From	To (m)	Rec%	B
				1081	50.0	51.5	100	655
				1082	51.5	53.0	100	271
				1083	53.0	54.5	100	393
				1074	54.5	55.5	100	260
				1075	55.5	56.5	100	453
				1076	56.5	57.3	100	511
				1077	57.3	58.3	100	798
				1078	58.3	59.3	100	410
				1079	59.3	60.2	100	292
				1080	60.2	61.1	100	505
				1084	61.1	62.9	100	555
			DETECTION LEVEL					10
			ANALABS - BURNIE					ICP
			METHOD					203

GETTY OIL DEVELOPMENT COMPANY LTD. 062063

DIAMOND DRILL CORE RECOVERY DATA

PROSPECT: MURCHISON RIVER **HOLE No.** MR2 062 **Page** 5.

DRILL INTERVAL			CORE RECEIVED		DRILL INTERVAL			CORE RECEIVED		DRILL INTERVAL			CORE RECEIVED		DRILL INTERVAL			CORE RECEIVED	
From	To	Metres	Metres	%	From	To	Metres	Metres	%	From	To	Metres	Metres	%	From	To	Metres	Metres	%
23.2	25.7	2.5	2.0	80	76.1	78.0	1.9	1.9	100										
25.7	28.6	2.9	2.9	100	78.0	78.3	0.3	0.3	100										
28.6	30.5	1.9	1.8	95	78.3	79.7	1.4	1.4	100										
30.5	33.0	2.5	2.6	104	79.7	81.0	1.3	1.4	108										
33.0	34.7	1.7	1.7	100	81.0	83.8	2.8	2.5	89										
34.7	36.2	1.5	1.5	100	83.8	85.0	1.2	1.2	100										
36.2	38.5	2.3	2.2	96	85.0	86.3	1.3	1.3	100										
38.5	39.3	0.8	0.8	100	86.3	88.9	2.6	2.6	100										
39.3	40.0	0.7	0.4	57	88.9	91.5	2.6	0.6	23										
40.0	41.0	1.0	1.1	110	91.5	94.2	2.7	4.6	170										
41.0	42.7	1.7	1.7	100	94.2	97.3	3.1	3.1	100										
42.7	44.9	2.2	2.4	109	97.3	100.4	3.1	3.0	97										
44.9	45.7	0.8	0.6	75	100.4	102.0	1.6	1.6	100										
45.7	46.5	0.8	0.8	100	102.0	105.0	3.0	3.0	100										
46.5	49.6	3.1	3.1	100	105.0	108.0	3.0	3.0	100										
49.6	52.6	3.0	3.1	103	108.0	111.0	3.0	3.0	100										
52.6	54.0	1.4	1.2	86	111.0	114.0	3.0	3.0	100										
54.0	55.0	1.0	0.9	90	114.0	117.0	3.0	2.8	93										
55.0	57.1	2.1	2.2	105	117.0	117.5	0.5	0.5	100										
57.1	60.0	2.9	2.9	100	117.5	118.4	0.9	0.8	89										
60.0	62.9	2.9	1.8	62	118.4	118.8	0.4	0.4	100										
62.9	63.3	0.4	0.4	100	118.8	119.2	0.4	0.4	100										
63.3	63.7	0.4	0.2	50	119.2	122.0	2.8	2.7	96										
63.7	64.2	0.5	0.2	40															
64.2	64.9	0.7	0.5	71		E.O.H.													
64.9	65.5	0.6	0.4	67															
65.5	66.2	0.7	0.9	129															
66.2	68.3	2.1	2.1	100															
68.3	71.2	2.9	2.9	100															
71.2	73.5	2.3	2.3	100															
73.5	76.1	2.6	2.6	100															

APPENDIX B.

PETROGRAPHIC REPORTS

APPENDIX B.1.

Cutty Sark - Bobadil Drill Core Petrography

Geochempet Report, August 1984.

065 062066

Geochempet Services

PETROLOGICAL and GEOCHEMICAL CONSULTANTS

REGISTERED IN QUEENSLAND

Principal : A.S. Joyce B.Sc. (Hons), Ph.D.
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Chapel Hill, Qld. 4069

Telephone: (07) 375 5258
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PETROLOGICAL REPORT ON FOURTEEN SAMPLES OF
DRILL CORE FROM THE CUTTY SARK PROSPECT, TASMANIA

prepared for

GETTY OIL DEVELOPMENT COMPANY LTD.

Ref : F.G. Fitzgerald

Order No. : SO 0810

Stan Joyce

A. S. Joyce, B.Sc.(Hons), Ph.D.

14th August, 1984.

066

GENERAL COMMENTS

1. In terms of probable precursor rocks the samples may be grouped as follows :

   1.1 Sedimentary rocks

T352	micaceous quartz sandstone
T353	laminated carbonaceous mudstone with minor syngenetic sulphide
T531	silty and sandy tuffaceous sediment
T532	slightly carbonaceous mudstone

   1.2 Lava

T530	porphyritic felsite or andesite

   1.3 Pyroclastic rocks

T316	dacitic crystal tuff	
T333	andesitic crystal tuff	
T383	intermediate crystal tuff	
T384	dacitic ashflow tuff	
T385	andesitic crystal tuff	quite similar
T386	andesitic crystal tuff	quite similar
T533	andesitic crystal tuff	quite similar
T387	dacitic crystal tuff or possibly tuffaceous sediment	
T534	dacitic ashflow tuff	

2. Sample T387 does seem to be a hydrothermal breccia of dacitic crystal tuff or possibly of tuffaceous sediment. It has a disrupted quartz matrix, cemented by chlorite and veined by quartz, giving way to calcite.

   Sample T530 is hydrothermally altered and rhombic jointing seems to have exercised a significant control, but it is not regarded as a breccia.

   Sample T531 has been hydrothermally shattered and veined.

3. All of the volcanic rocks seem to have been albitized, probably by hydrothermal processes. In some samples the albite has a distinctive orange pink colour (probably relating to ultra-fine hematite pigment produced during oxidizing alteration conditions), but in many of the rocks it does not. In most cases the albite does not have plainly recognisable replacement textures but in the orange-pink feldspar in T384 there are obvious secondary mosaics.

4. Chlorite, rutile, sericite and carbonate (calcite and dolomite) are common products of hydrothermal alteration in the rocks. The assemblage quartz-chlorite-carbonate dominates late fissure veins.

5. Metallic mineralization seems to be quite weak and commonly confined to pyrite as trace disseminations or trace components of veins.

   Sphalerite is prominent in chlorite veins in T531 and in quartz-calcite veins in T383. It is a trace component of quartz-calcite veins in T532. 532

067

Sample Number : T316

Identification : Intensely albitized, lightly sericitized, dacitic crystal tuff with replacement veining by quartz and traces of late fissure veining by dolomite

Description :

The sample is a drill core specimen of orange pink rock with a general resemblance to crystal tuff and cut by irregular light grey and greenish grey veins, about 1 to 5mm thick, and several later very thin white veins.

A cobaltinitrite staining test revealed no K-feldspar.

In thin section the sample is seen to consist mainly of angular phenoclasts of quartz and plagioclase, about 0.3 to 3mm in size, set in a recrystallized matrix of plagioclase and quartz (about 0.03mm grains) with interstitial weakly aligned sericite.

The quartz phenoclasts are strained, but commonly show embayed β forms. The plagioclase phenoclasts are commonly twinned and lightly sericitized; low refractive indices and optically positive sign are consistent with albite. Barely discernible specks of probable hematite seem to account for the colour of the albite. Former, small mafic phenocrysts are represented by aggregates of anhedral to acicular, fine rutile.

The irregular grey to greenish grey veins are seen to be strained replacement aggregates of quartz with local traces of chlorite and dolomite. The late thin (0.2mm) straight, white veins are fissure fillings and consist of carbonate and minor quartz; the carbonate has refractive indices consistent with dolomite.

An approximate mode is :

10-12%	quartz phenoclasts
25-30%	albite phenoclasts (lightly sericitized)
0.2-0.3%	rutile after mafic phenoclasts
15-20%	matrix albite and quartz
10-12%	matrix sericite
30-35%	replacement quartz veins with traces of chlorite and dolomite
0.2-0.3%	fissure veins of dolomite and minor quartz

Comments and Interpretations :

It seems likely that the rock originated as a dacitic crystal tuff and that it subsequently experienced mild hydrothermal sericitization and intense albitization of plagioclase, heavy replacement veining by quartz with traces of chlorite and dolomite, and traces of late fissure veining by dolomite with minor quartz. Mafic minerals were replaced by secondary rutile. There is no sulphide mineralization.

The pink colour of the sample apparently reflects intense albitization and in detail it seems to be a product of ultra-fine pigmentation by probable hematite (suggesting oxidizing conditions during alteration).

068

Sample Number : T352

Identification : Fine, micaceous quartz meta-sandstone with traces of very fine interstitial pyrite

Description :

The sample is a drill core specimen of medium light grey rock, resembling fine meta-sandstone. It displays some dark streaks and specks, several thin light grey veins and a thinner, late, white vein.

A staining test revealed no K-feldspar.

In thin section the sample is seen to have a moderately sorted, sandy texture, dominated by subrounded quartz clasts, about 0.05 to 0.4mm in size. The quartz grains are strained and have finely sutured outlines reflecting metamorphic adjustments. There are numerous thin flakes of detrital mica, about 0.4mm in width. Some are deformed muscovite, but most are sericite-rutile pseudomorphs of deformed biotite. Trace components are tourmaline (blue and brown-green), zircon, secondary rutile after possible detrital opaques, and a few grains of carbonate.

Between the detrital grains there is a thin veneer of sericite and it is accompanied by a small amount of very fine pyrite as euhedral pyritohedrons, generally finer than 0.02mm. Additional, and commonly coarser pyrite (up to 0.04mm) occurs with (?)rutile "dust" and minor tourmaline in irregular, crenulated streaks which resemble stylolites. Distinct strained, straight fissure veins of quartz are cut by the stylolitic structures, but later, thinner fissure veins of quartz and minor dolomite seem to cut both types of structure.

An approximate mode is :

93-95%	detrital quartz
3-4%	detrital biotite, altered to sericite and rutile
0.2-0.3%	detrital muscovite
0.1%	detrital tourmaline
0.1%	zircon, rutile after possible opaques, carbonate
2-3%	interstitial sericite
tr	interstitial pyrite
0.2-0.3%	stylolitic (?)rutile, pyrite and tourmaline
0.2-0.3%	veins of quartz
0.1-0.2%	veins of quartz and dolomite

Comments and Interpretations :

This sample is considered to have originated as a fine quartz sandstone with biotite and muscovite as minor detrital components. It is unlikely that the detritus originated from volcanic terrain. Most of the dark specks are rutile-sericite pseudomorphs of detrital biotite.

It is problematical whether interstitial sericite and traces of very fine pyrite in the rock are products of regional metamorphism of a minor muddy matrix or whether hydrothermal solutions have permeated along grain boundaries. Stylolitic structures which carry (?)rutile dust, minor pyrite and (?)residual tourmaline post-date barren fissure veins of quartz and do seem likely to have formed by dissolution of quartz during metamorphism. There are later thin, straight veins of strained quartz and dolomite.

Sample Number : T333

Identification : Albitized, sericitized and carbonated, andesitic crystal tuff with a fractured, chloritic and weakly pyritic band

Description :

The sample is a short section of drill core showing a sharp contact between light yellowish grey rock and speckled medium grey rock. The contact is inclined at 50 degrees to the core axis.

A staining test revealed no K-feldspar.

In thin section the yellowish grey regime is seen to consist of angular phenoclasts of twinned, lightly sericitized plagioclase (0.1 to 2mm grains of albite), a few small phenoclasts of quartz and a few small clusters of secondary rutile scattered through a finely recrystallized matrix of untwinned albite, sericite and minor carbonate and quartz. An approximate mode is :

30-40%	phenoclasts of albite, lightly sericitized
0.1-0.2%	phenoclasts of quartz
0.2-0.3%	rutile after probable mafics
30-40%	matrix untwinned plagioclase and minor quartz
25-30%	matrix sericite
1-3%	matrix carbonate (?calcite)

The darker, speckled regime across a sharp contact marked by a suture line of dusty (?)rutile has a more fractured appearance, displays more sericite and has pale green chlorite accompanied by fine rutile in fracture controlled replacement veinlets and replacing possible mafic phenoclasts. There are also replacement patches and veins of ankeritic or dolomitic carbonate and a few of fine quartz and similar carbonate (also seen in the yellowish grey regime to a lesser extent). Short, fracture-controlled replacement veinlets consist of subhedral cubes and pyritohedrons of pyrite, finer than about 0.03mm. In the speckled regime chlorite attains 3-4%, pyrite about 0.2%, carbonate 4-5% and sericite at least 50%.

Comments and Interpretations :

The sample is thought to have originated as andesitic crystal tuff, composed of plagioclase phenoclasts and a few mafic minerals scattered through a fine feldspathic matrix. Subsequent hydrothermal alteration has albitized the feldspar, converted mafics to fine rutile and generated abundant sericite. The colour banding in the sample does not appear to be of primary origin, but rather to reflect a contrast between relatively unfractured, sericitic, altered rock and abundantly fractured rock with chlorite, minor pyrite and more sericite and carbonate. Some carbonate and quartz veining occurs in both regimes.

Sample Number : T353

Identification : Laminated graphitic slate with minor syngenetic sulphide

Description :

The sample is a drill core specimen of metasediment which displays simple open folding of crenulated medium light grey and medium dark grey layers, about 1 to 6mm thick. Fine sulphide is barely visible in some layers.

A staining test revealed no K-feldspar.

In thin section the lighter coloured layers are seen to consist of crenulated fine muscovite (0.03mm long), a few silt grains of quartz (0.02mm) and specks of sulphide (0.01mm and less). Cubes of pyrite and minor anhedral sphalerite are recognisable. A typical mode is :

10-20%	quartz
80-90%	muscovite
0.5-1%	sulphides
Tr	graphite

Within some layers, up to 1mm thick, the abundance of sulphides increases to 20% and even 40%, with common grainsizes varying from layer to layer in the range from about 0.01 to 0.02mm.

The dark layers are internally laminated and carry variable amounts of an opaque mineral which seems to be graphite. It occurs as thick hexagonal plates, about 0.005mm in size. Other components are fine muscovite and quartz silt. Some graphite has been mobilized into a slaty cleavage across the layering. Approximate modal variation is :

4-10%	quartz
5-55%	muscovite
35-55%	graphite

Several thin fissure veins of fine dolomite and quartz follow the slaty cleavage.

Comments and Interpretations :

The sample is considered to be laminated graphitic slate with minor sulphide.

Identification of graphite is based only on crystal shape and on appropriate reflectivity in obliquely reflected light, but there seems little room for doubt. Sulphides, probably mainly cubes of pyrite, occur as layers within the graphite poor layers and there is no evidence to suggest that they are not of sedimentary origin.

Sample Number : T383

Identification : Albitized,pyritized, lightly sericitized, intermediate crystal tuff with veins of quartz-sphalerite-calcite

Description :

The sample is a faintly greenish grey, drill core specimen which resembles a tuff, with many small crystal fragments and some lithic clasts up to 5mm. Brown sphalerite is visible in irregular veins thinner than about 1mm.

A staining test revealed no K-feldspar.

In thin section the sample is confirmed to have a tuffaceous texture, with angular phenoclasts about 0.2 to 1mm, and a few rounded to irregular lithic or formerly vitric clasts, about 0.5 to 5mm, scattered through a finely recrystallized groundmass, finer than about 0.02mm.

The phenocrysts are mainly poorly twinned, lightly sericitized plagioclase which is optically positive, consistent with albite. There are only rare, small phenoclasts of quartz. There are some rutile aggregates up to 0.3mm which could represent former mafic clasts. The former lithic and probable vitric clasts vary from albite mosaics to spherulitic sheafs to chlorite-sericite and chlorite-albite aggregates. The groundmass seems to consist of untwinned albite, minor sericite and quartz and traces of rutile and carbonate.

Grains are subhedral small aggregates of pyrite cubes, up to 0.4mm, accompanied by a few tiny grains of orange brown sphalerite, are disseminated through the groundmass. More abundant orange brown sphalerite, as anhedral grains 0.05 to 0.3mm in size, occurs in irregular veins of cominantly fissure type with quartz, subordinate carbonate (apparently calcite) and minor sericite.

An approximate mode is :

30-35%	phenoclasts of albite, lightly sericitized
tr	phenoclasts of quartz
0.3-0.4%	rutile aggregates after possible mafic phenoclasts
2-3%	lithic and vitric clasts now represented by albite, minor chlorite and very minor sericite
60-65%	albite-dominated groundmass
0.2-0.3%	disseminated pyrite
2-4%	quartz in veins
0.4-0.5%	sphalerite in quartz veins
0.3-0.4%	calcite in quartz veins
tr	sericite in quartz veins

Comments and Interpretations :

This sample seems to have originated as an intermediate crystal tuff, composed mainly of plagioclase phenocrysts and a few lithic and glassy clasts scattered through a fine groundmass. The rock was subsequently probably albitized, lightly sericitized and impregnated with disseminated pyrite and a trace of sphalerite. It was then fissure veined by quartz-sphalerite-calcite-(minor sericite).

It is considered that this sample has experienced a significant degree of hydrothermal alteration and metallic mineralization during a protracted or pulsed event.

Sample Number : T384

Identification : Albitized, then sericitized dacitic ashflow tuff with a trace of pyrite and later veins of chlorite-carbonate-rutile

Description :

The sample is a drill core specimen which seems to represent light greenish grey tuff in which many clasts have been altered to an orange pink mineral. There are many irregular, thin, dark greenish veins and a few specks of pyrite.

A staining test revealed no K-feldspar.

In thin section the sample displays textures consistent with an altered ashflow tuff. Angular phenoclasts (0.1 to 2mm), rounded lithic clasts (about 2mm) and stringy, filamentous pumice clasts (0.5 to 5mm) are scattered through an altered matrix with numerous ghosts of weakly welded vitric shards 0.5mm and more in size.

Quartz is prominent as phenoclasts, but there are more phenoclasts of feldspar, now replaced by relatively coarse mosaics of untwinned albite with pigmentation by ultra-fine reddish grains of (?)hematite. Some such grains contain apparently remnant segments of heavily sericitized plagioclase. Rutile-chlorite aggregates may represent mafics. Pumice fragments are now sericite and in some cases carry chlorite. The formerly vitric groundmass consists of sericite and very finely crystalline feldspar and quartz. Former lithic clasts are sutured mosaics of reddened, untwinned albite with variable quartz, chlorite and rutile.

Numerous irregular fine fractures control thin veins of chlorite, carbonate, finely granular rutile and, in a few cases, quartz. Much of the carbonate is calcite, but some appears to be dolomitic or ankeritic.

A very few subhedral grains of pyrite, 0.02 to 0.3mm in size, are disseminated through the rock.

An approximate mode is :

4-5%	quartz phenoclasts
25-35%	albitized feldspar phenoclasts, a few sericitic
0.1-0.2%	rutile-chlorite aggregates
5-8%	sericitized, weakly chloritized pumice clasts
1-3%	albitized lithic clasts
45-55%	formerly vitroclastic matrix, now sericite, albite and quartz
2-3%	veins of chlorite, carbonate, rutile and quartz
tr	disseminated pyrite

Comments and Interpretations :

This sample is considered to have originated as a weakly welded ashflow tuff of dacitic or possibly quartzose andesitic composition. It has experienced intense hydrothermal alteration, involving albitization of its feldspar phenoclasts and lithic clasts (probably before appreciable sericitization), then heavy sericitization and minor chloritization of its pumice and vitric shards, then veining by chlorite, carbonate and rutile along irregular fine fractures. A trace of disseminated pyrite may have formed during sericitization.

Sample Number : T385

Identification : Albitized, chloritized andesitic crystal tuff with a trace of pyrite

Description :

The sample is a drill core specimen which resembles tuff, composed of many white phenoclasts of feldspar, about 0.3 to 3mm in size, and some possible lithic clasts, up to 4mm, set in a wispy, dark greenish grey matrix with a foliation inclined at about 60° to the core axis.

A staining test revealed no K-feldspar.

In thin section the sample displays subhedral tabular grains of plagioclase, with finely sutured outlines, set in a fine-grained groundmass. Some of the plagioclase grains seem to have broken shapes, consistent with phenoclasts. Most are twinned, optically positive and seem likely to be secondary albite. The grains are lightly clouded and carry a few specks of calcite and sericite. There are rare, small quartz phenoclasts. Probable mafic silicates are represented by aggregates of chlorite and granular fine rutile. The groundmass is dominated by anhedral, untwinned and poorly twinned albite, about 0.1mm in grainsize, accompanied by chlorite and very fine illite or sericite. The layer silicates commonly form crudely aligned stringers, suggestive of mild shear foliation. The few clasts of apparently lithic derivation seem to be intermediate ashflow tuff or crystal tuff with albite-chlorite alteration.

A few single grains (0.03mm) and small aggregates (0.3mm) of sulphide, mainly or wholly pyrite, are disseminated through the rock.

An approximate mode is :

30-35%	plagioclase phenoclasts, albitized
rare	quartz phenoclasts
1-2%	lithic clasts
3-4%	chlorite
0.3-0.4%	rutile
55-65%	fine albite
1-3%	illite or sericite
0.1-0.3%	carbonate (probable calcite)
tr	pyrite

Comments and Interpretations :

This sample is thought to be an andesitic crystal tuff which has been albitized and chloritized, probably during weak shearing. Inconspicuous illite or sericite in the groundmass may reflect an incipient upgrading of alteration. There is a trace of disseminated pyrite.

Sample Number : T386

Identification : Intensely albitized, probable andesitic crystal tuff with veins of dolomite, rutile and minor quartz

Description :

The sample is a drill core specimen of very hard, very light grey rock with ghosted crystal tuffaceous textures and numerous, inconspicuous, yellowish grey veinlets.

A staining test revealed no K-feldspar.

In thin section the sample plainly displays plagioclase phenoclasts scattered through a finely recrystallized matrix.

The phenoclasts are about 0.3 to 2mm grains of moderately twinned albite with a trace of sericitic flecking. Some grains are weakly bent and fractured, all show sutured outlines and a few have coarse secondary mosaic textures. There are no well preserved mafic phenoclasts, but there are a few disseminated 0.2mm aggregates of translucent fine rutile, probably reflecting mafic minerals.

The groundmass consists of anhedral, crudely tabular, untwinned and poorly twinned albite grains (0.02 to 0.1mm) and very minor sericite.

Random, fracture controlled, discontinuous replacement veinlets and a few fissure veinlets, generally thinner than 0.5mm cut the sample. Most are dominated by subhedral rhombs of a carbonate which seems to be dolomite. Many contain grains and small sheafs of acicular translucent yellow-brown rutile, the coarsest nearly 1mm long. A few veins carry unstrained quartz and seem to be mainly a fissure style earlier than most of the carbonate.

There are rare, disseminated, tiny aggregates of subhedral pyrite.

An approximate mode is :

25-35%	albitized feldspar phenoclasts
0.1-0.2%	rutile aggregates
60-70%	groundmass albite
0.2-0.3%	groundmass sericite
4-5%	dolomite in veins
0.2-0.4%	rutile in veins
0.2-0.3%	quartz in veins
rare	disseminated pyrite

Comments and Interpretations :

This sample has a very siliceous hand specimen appearance but it is actually intensely albitized. Quartz is quite minor and confined to some thin fissure veins. Dolomite, accompanied by rutile forms a network of fracture-controlled replacement veins.

The primary textures of this rock are quite similar to those in T385 and it seems that the sample may represent the same style of andesitic crystal tuff modified by a particularly intense form of albitization which has displaced all mafic components except rutile. Mobilization of rutile is in progress, judging from its prominence in dolomite veins. There are only rare aggregates of disseminated pyrite.

Sample Number : T387

Identification : Quartz and carbonate-veined, hydrothermal breccia of sericitized crystal tuff in a matrix of quartz and chlorite

Description :

The sample is a drill core sample which seems to display ragged yellowish grey clasts, about 0.5 to 20mm in size, set in a dark greenish grey matrix. There are several 2 to 4mm light grey quartz veins and several late, very thin straight veins of light grey to yellowish carbonate.

A staining test revealed no K-feldspar.

In thin section the yellowish grey clasts resemble sericitized crystal tuff. Angular phenoclasts of quartz and poorly twinned albite, 0.5 to 1mm in size, are set in a matrix of angular feldspar and quartz grains, 0.1 to 0.2mm in size, along with interstitial sericite. There are some small aggregates of rutile and traces of chlorite.

The dark matrix enveloping the clasts consists of abundant grains of quartz with interstitial chlorite and a trace of sericite. The quartz is mildly strained and has finely sutured, anhedral outlines, but there is an elongate habit suggestive of disrupted fissure-style quartz. Minor rutile occurs with the chlorite.

There are several late fissure veins, up to at least 1mm wide, composed of quartz-chlorite-rutile-calcite, quartz and calcite with a small amount of dolomite or ankerite. There are rare tiny grains of pyrite clustered apparently within the veins.

An approximate mode is :

30-35%	clasts of sericitized crystal tuff
55-60%	matrix quartz
5-6%	matrix chlorite
0.1%	matrix rutile
tr	matrix sericite
2-4%	vein quartz
0.2-0.3%	vein chlorite
0.5-1%	vein carbonate
tr	vein rutile
rare	vein pyrite

Comments and Interpretations :

It seems quite possible that this sample represents a hydrothermal breccia. There are clasts of a moderately sericitized rock, which seems to be dacitic crystal tuff (or possibly tuffaceous sediment), dispersed through a dominant matrix of apparently disrupted fissure-style quartz, cemented by chlorite and a trace of sericite. Late fissure veins appear to be dominantly quartz, giving way to dominantly calcite. There are only rare sulphide grains, apparently within the late veins.

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Sample Number : T530

Identification : Intensely albitized, lightly dolomitized felsite or andesite with sericitization probably controlled by rhombic jointing

Description :

The sample is a drill core specimen of pinkish grey rock with a crudely rhombic pattern of abundant light greenish grey regimes, each less than 1mm wide.

A staining test revealed no K-feldspar, but some misleading discolouration was produced near a fracture.

In thin section the pinkish grey regimes are seen to have textures consistent with moderately aligned subhedral, tabular plagioclase phenocrysts, about 0.3 to 1.5mm long, scattered through a sutured, finely recrystallized groundmass, about 0.03mm and finer. The phenocrysts are poorly twinned albite, commonly partly sericitized. The groundmass consists of untwinned and poorly twinned albite, small aggregates of secondary rutile, flecks of sericite and disseminated subhedral and anhedral grains of dolomite (generally finer than 0.05mm).

The rhombic pattern of light greenish grey "veins" is seen to correspond with zones of heavy sericitization. Despite the rhombic grid distribution of the sericite it shows a single preferred alignment of flakes. Some inconspicuous thin, strained fissure veins of quartz and fine dolomite appear to predate the sericite distribution

There are rare disseminated tiny grains of pyrite.

An approximate mode is :

5-8%	albitized phenocrysts of partly sericitized plagioclase
70-80%	fine albite
10-15%	sericite
3-4%	dolomite
0.3-0.4%	rutile
0.2-0.4%	vein quartz
rare	pyrite

Comments and Interpretations :

It seems that this sample may have originated as an intermediate felsite or possibly andesite lava and that it has experienced pervasive intense albitization, light dolomitization and rhombic joint-controlled sericitization. A metamorphic alignment has been imposed on the sericite, but its distribution in a rhombic network suggests that permeation by hydrothermal fluids travelling along joints was the initial control. There are only rare grains of pyrite, present as disseminations.

Sample Number : T531

Identification : Sericitized silty and sandy tuffaceous sediment with hydrothermal shattering and chlorite and sphalerite-dominated veining

Description :

The sample is a drill core specimen which seems to display a sharp contact between two rock types. One resembles greenish grey crystal tuff with graded bedding and the other is a paler greenish grey rock with a crudely rhombic shatter pattern delineated by a matrix of dark greenish grey minerals. The fracture pattern is similar to that seen in T530. Sphalerite and pyrite occur in veins in both rock types.

In thin section the greenish grey rock type is seen to grade from a quite tuffaceous texture, with angular phenoclasts of partly sericitized plagioclase and minor quartz (0.1 to 1.5mm) scattered through a fine feldspathic matrix, to a distinctly silty texture, with subangular, coarse silt grains of plagioclase and quartz scattered through a matrix of aligned sericite. Disseminated fine carbonate and minor rutile occur throughout.

The paler greenish grey layer is moderately sorted, fine, tuffaceous sandstone with angular and subrounded clasts of quartz and feldspar, 0.05 to 0.2mm in size,set in an abundant matrix of aligned sericite.

A prominent, moderately regular network of brecciation in the fine sandstone is healed by coarse chlorite with translucent orange-brown sphalerite and minor fine rutile. Minor pyrite seems to be associated with a few earlier fissure veins of quartz and chlorite.

Within the graded unit the fracturing and veining is less regular and there is more abundant sphalerite associated with veins of quartz-chlorite calcite. Some sphalerite and pyrite is disseminated and there are a few grains of a platy, unidentified sulphide.

The rock is too varied for a simple mode, but the overall abundances of the sulphides and alteration minerals are about :

0.5-0.8%	sphalerite
0.2-0.3%	pyrite
tr	platy sulphide
8-12%	chlorite
30-40%	sericite
1-3%	calcite
0.2-0.3%	rutile

Comments and Interpretations :

The sample consists of water-lain silty and sandy tuffaceous sediment which has been shattered, probably by hydrothermal processes, then cemented by chlorite, quartz, sphalerite, minor pyrite, calcite and minor rutile. Abundant development of sericite probably preceded the chloritic, hydrothermal brecciation and mineralization. Source rocks for the sediment were andesitic to dacitic.

Sample Number : T532

Identification : Carbonaceous slate with abundant fissure veins of quartz with calcite and traces of pyrite and sphalerite

Description :

The sample is a drill core specimen of medium grey, fine-grained rock with an inconspicuous slaty foliation at a high angle to the core axis. There are many, fairly straight, criss-crossing, light grey to white fissure veins of quartz and carbonate, about 0.2 to 3mm wide; they contain a few specks of sulphide.

A staining test revealed no K-feldspar.

In thin section the sample is seen to be finely laminated and to have a slaty cleavage oriented at about 30° to the layering. It consists of abundant fine muscovite (with a dominant alignment parallel to layering), disseminated silt grains of quartz (less than 0.05mm), some porphyroblasts of calcite (up to 0.2mm) and tiny specks of carbonaceous matter (possibly but not necessarily graphite) occurring in small streaks aligned along each of the foliation directions.

Many fissure veins cut the sample. They carry quartz, calcite and a few grains of pyrite and sphalerite. Most are lined with quartz and have a core of calcite, with or without sulphide. A few late veins have calcite alone.

An approximate mode is :

75-80%	muscovite
5-8%	silt grains of quartz
1-3%	porphyroblasts of calcite
1-2%	carbonaceous matter
7-8%	quartz in veins
4-5%	calcite in veins
0.1%	pyrite and sphalerite in veins

Comments and Interpretations :

The sample is considered to be a slightly carbonaceous slate, but the carbonaceous matter may not be graphite. It is too fine for confident assessment. The slate does appear to have experienced significant pervasive phdrothermal alteration, although there is scope to debate whether the calcite porphyroblasts are products of original components or products of metasomatism. Hydrothermal activity seems to be confined to abundant fissure veins of quartz with abundant calcite and traces of pyrite and sphalerite.

Sample Number : T534

Identification : Chloritized and sericitized probable dacitic ashflow tuff with fissure veins of quartz-chlorite-carbonate carrying traces of pyrite

Description :

The sample is a drill core specimen of greenish grey and yellowish grey rock with vague textures suggestive of a tuff with ovoid clasts about 1 to 7mm long orientated at about 55 degrees to the core axis. There are several 0.2 to 2mm veins which vary from light grey to greenish black.

A staining test revealed no K-feldspar.

In thin section the sample plainly displays tuffaceous textures, but there has been severe alteration to sericite, chlorite and fine albite or quartz. There are numerous phenoclasts of embayed quartz, up to 1mm in size, and many tabular chloritic aggregates of similar size which seem likely to represent former feldspar phenoclasts, not mafic silicates; the chlorite is intergrown with subordinate fine albite or quartz and in a few cases with sericite. Aggregates of translucent rutile, 0.03 to 0.5mm in size, may reflect former mafic phenoclasts. Some ovoid chlorite-albite-quartz aggregates, up to 7mm long, have remnant textures consistent with filamentous pumice carrying a few chloritized phenocrysts of former feldspar; other ovoid aggregates of fine albite and/or quartz with minor chlorite are of less certain origin. A webbed matrix of aligned sericite envelopes the clasts. It may be of vitric derivation, but primary textures are gone. It is intergrown with fine albite and/or quartz. There are complex fissure veins containing quartz, chlorite, calcite and small amounts of dolomite or ankerite and pyrite.

An approximate mode is :

3-4%	quartz phenoclasts
7-8%	chloritized clasts of inferred feldspar
0.2-0.3%	secondary rutile
35-45%	chlorite and albite and/or quartz in pumice and related clasts
40-50%	matrix sericite and quartz and/or albite
3-4%	veins of quartz-chlorite-calcite with traces of pyrite and dolomite or ankerite.

Comments and Interpretations :

The sample is interpreted confidently to have been pyroclastic and it was probably an ashflow tuff of dacitic composition, composed of phenoclasts of quartz, feldspar, minor mafics, abundant pumice or glassy clasts and a matrix of glass shards. Heavy hydrothermal alteration has resulted in a chlorite-sericite-probable fine albite assemblage. It is unusual that probable feldspar phenoclasts have been largely replaced by chlorite, not sericite. Subsequent fissure veins of quartz-chlorite-carbonate carry a trace of pyrite.

Sample Number : T533

Identification : Albitized, chloritized andesitic crystal tuff with a trace of pyrite

Description :

The sample is a drill core specimen which resembles tuff and appears to consist of many light grey phenoclasts, up to 3mm, and a few pale lithic clasts, up to 9mm, set in a dark greenish grey matrix with a wispy foliation at about 55 degrees to the core axis.

A staining test revealed no K-feldspar.

In thin section the sample displays abundant tabular phenoclasts of plagioclase and a few lithic clasts set in a finely recrystallized matrix, about 0.03 to 0.1mm in grainsize.

The plagioclase clasts are twinned, optically positive, lightly clouded grains, flecked with sericite and commonly partly replaced by carbonate (resembling dolomite and calcite). There are rare, small quartz phenocrysts. Some probable mafic phenoclasts are represented by rutile and chlorite. The lithic clasts are finely recrystallized feldspar porphyry or crystal tuff, quite similar to the bulk rock, but less chloritic. The matrix is dominated by anhedral untwinned and poorly twinned albite, accompanied by chlorite and minor patchy sericite, commonly in stringy distributions consistent with a mild shear foliation.

There are disseminated subhedral grains (about 0.1mm) and small aggregates (to 0.7mm) of subhedral pyrite, some concentrated in chloritized mafics.

An approximate mode is :

30-35%	plagioclase phenoclasts (albite)
rare	quartz phenoclasts
2-3%	lithic clasts
3-4%	chlorite
0.3-0.4%	rutile
55-65%	fine albite
1-2%	sericite
0.7-0.9%	carbonate (dolomite and calcite)
tr	pyrite

Comments and Interpretations :

This sample is so similar to T385 that it could represent the same unit of andesitic crystal tuff which has been albitized, chloritized and weakly sheared. There is a trace of pyrite and quite minor sericite.

APPENDIX B.2.

Mt. Black Petrographic Report

Geochempet Services, November, 1984.

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Geochempet Services

PETROLOGICAL and GEOCHEMICAL CONSULTANTS

REGISTERED IN QUEENSLAND

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A/H 378 6467

PETROLOGICAL REPORT ON TWELVE SAMPLES

FROM THE MOUNT BLACK GRID,

MOUNT READ VOLCANICS, TASMANIA

prepared for

GETTY OIL DEVELOPMENT COMPANY LTD.

Ref : I.S. McNaught

Order No. : 7996

A. S. Joyce, B.Sc.(Hons), Ph.D.

6th November, 1984.

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SUMMARY COMMENTS

1. Starting on the western side of the grid, the sample T 1996 is considered to have been leucocratic intermediate pumice tuff or poorly welded pumiceous ashflow. It could be a proximal variant or a source rock for T 1105, a laminated fine volcanic ash. T 1996 is sericitized, either because of hydrothermal activity or metamorphism, but T 1105 is not only sericitized, but has silicified layers alternating with probably pyritic layers, quite possibly attributable to hydrothermal activity. It is also quite possible that abundant K-feldspar in the non-silicified layers was introduced hydrothermally.

The sample T 1995 seems to have been a porphyritic leucocratic andesite lava with flattish vesicles which have acted as the nuclei for vermiform replacement bodies of K-feldspar, quite comparable in style to potassic replacement in T 1324. Some quartz has entered vesicles, probably from fissure veinlets which post-date the potassic alteration.

2. All of the samples T 1324, 1325, 1346, 1398 and 1063 could represent the same porphyritic to glomeroporphyritic andesitic lava or a group of closely related lavas. The samples which appeared pyroclastic in the field seem more like flow breccias (T 1325, T 1398) or some form of "heaved" breccia (T 1346). Several have ghosted perlitic fracture patterns, consistent with former glassy matrices and all have at least some probable vesicles, now filled with quartz. Sample T 1324 is particularly amygdaloidal.

Sample T 1371 has been identified as a possible ashflow but its residual textures are inconclusive and it is possible that it is also a brecciated lava.

Together the six samples suggest a pattern of initial hydrothermal alteration which involves pervasive propylitic alteration to epidote-chlorite-sphene-secondary plagioclase (probably albite). It is then common for K-feldspar to be introduced by replacement processes, resulting in unusual vermiform patterns in samples where open vesicles act as conduits for the potassic fluids. Where the replacement is not so obviously localized, it becomes difficult or impossible to distinguish between andesite rendered "trachyandesite" by metasomatism and true trachyandesite. Quartz is emplaced last as cavity fillings alone or with traces of chlorite and epidote; it predates greenschist facies metamorphism which has strained and partly recrystallized it. Minor pyrite seems to predate the emplacement of quartz; probably it was emplaced during propylitic alteration.

The sample T 1063 may be a product of a near source, hot version of the quartz bearing fluids, having crystallized magnetite adjacent to the veins and to a limited extent in the veins.

3. The samples T 1099, T 1059 and T 1343 are confirmed to be sandy and silty sediments derived from andesitic or trachyandesitic sources. They may well be quite locally derived by aqueous processes.

4. In brief, the impression was gained that the suite of samples represents mainly a pile of andesitic lavas (possibly with a few genuinely trachyandesitic variants) with several silty and sandy sediments probably derived by local aqueous transport and deposition. The pile was affected pervasively by hydrothermal propylitic alteration and then potassic metasomatism and quartz fissure filling occurred in vesicular and brecciated parts of the lavas.

   In order to explain the abundance of introduced potassium and the presence of quartz it seems reasonable to invoke a rhyolitic intrusion as the source of alteration. It may be some distance away and does not seem to have had a significant metallic mineralizing effect on the samples examined.

086 **Sample Number :** T 1059

Identification : Partly epidotized and chloritized tuffaceous pelite and pelitic, trachyandesitic reworked lithic tuff

Description :

The sample is a hand specimen of superficially weathered greenish grey rock which on its most prominent broken surface displays mainly very fine material and a sparsely pyritic lithic clast about 13mm x 7mm. However, a sawnsurface reveals a 30mm regime of tuffaceous or reworked tuffaceous material, with clast sizes commonly up to 3mm, in sharp, undulating contact with very fine-grained detritus (of the type dominating the broken surface) carrying four scattered porphyritic lithic clasts with irregular, crudely equidimensional shapes, about 6 to 25mm in size.

A cobaltinitrite staining test revealed that many clasts carry abundant fine K-feldspar.

In thin section the fine-grained regime is seen to be mainly a fine-grained mosaic of probable untwinned albite (only about 0.01mm grainsize) with minor fine epidote group minerals and chlorite and with disseminated subhedral grains of pyrite about 0.01 to 0.03mm in size. There are disseminated, angular clasts of quartz, only about 0.02 to 0.04mm in size, and much larger clasts of partly epidotized plagioclase and partly epidotized and chloritized intermediate, porphyritic volcanic rock and a former vitric shard.

The coarser regime which dominates the thin section is of unsorted lithic tuffaceous appearance. It is dominated by porphyritic, andesitic or trachyandesitic, subrounded lithic clasts of varied grainsize and texture, some dominated by groundmass plagioclase as coarse as 0.4mm and others fine enough to have been partly glassy; all are partly epidotized and chloritized. Secondary fine sphene is also common. The matrix between the clasts, which vary from dispersed to densely packed, is a microcrystalline mosaic, similar to that constituting the fine layer; it seems to be untwinned albite with minor chlorite, epidote and very fine disseminated pyrite. It carries some partly epidotized, angular, sand sized plagioclase clasts, but only traces of fine quartz.

In addition to very fine pyrite disseminated through the former muddy matrix, there are sparse subhedral grains of coarser pyrite (up to 0.4mm) within a few lithic clasts.

The fine-grained layer has a mode of about :

85-90%	probable microcrystalline albite
2-3%	fine epidote
1-2%	fine chlorite
0.4-0.6%	fine pyrite
0.2-0.3%	fine clasts of quartz
8-10%	coarser clasts of plagioclase and trachyandesite or andesite

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The coarser layer is about :

60-70%	clasts of epidotized and chloritized trachyandesite and possibly andesite
1-2%	clasts of plagioclase
30-40%	microcrystalline, albite dominated matrix
0.2-0.3%	pyrite, finely within the matrix and more coarsely in a few lithic clasts

Comments and Interpretations :

It seems that this sample displays the deformed contact between a former tuffaceous mud, with a few lithic and mineral clasts, and a lithic tuff with an abundant muddy matrix. It is probable that both rock types represent trachyandesitic tuffaceous detritus deposited by turbidity currents in response to subaqueous slumping. Fine pyrite was deposited in the muddy matrix, probably by syngenetic or early diagenetic processes. Partial epidotization, chloritization and production of a few coarse grains of pyrite in lithic clasts may well be consequences of low grade metamorphism.

088 Sample Number : T 1063

Identification : Lightly sericitized, heavily chloritized porphyritic andesite impregnated with fine magnetite adjacent to quartz fissure veins carrying minor chlorite and magnetite

Description :

The sample is a lightly weathered hand specimen of dark greenish grey, sparsely porphyritic or tuffaceous rock cut by many very light grey to weakly iron-stained quartz fissure veins up to 5mm wide.

A cobaltinitrite staining test revealed no K-feldspar.

In thin section the host rock in part of the sample displays phenocrysts of lightly sericitized plagioclase, a few completely chloritized mafic silicates and some sphene aggregates after probable ilmenite, set in a finely crystalline mosaic of untwinned feldspar, chlorite and sericite. Other parts of the sample, especially between two major quartz veins, have former plagioclase phenocrysts, as well as the mafic silicates, converted to chlorite except for some limonitic, weathered patches which may have been an epidote group mineral. Within much of such heavily chloritic regimes there are patchily disseminated subhedral grains of magnetite, finer than about 0.06mm.

The chloritized rock is cut by many thick fissure veins of quartz, now mildly strained and partly recrystallized, but with original grainsizes as coarse as 2mm. Small rosettes of chlorite (about 0.2mm diameter) are locally abundant in the core of the thickest quartz vein and they are interlocked with some magnetite crystals, finer than 0.05mm. There are rare, iron-stained pores which appear likely to have been epidote grains, up to 0.5mm in size.

Comments and Interpretations :

The host rock has textures consistent with a porphyritic andesitic lava, but it has been lightly sericitized, heavily chloritized and locally impregnated with disseminated fine magnetite. Such effects appear to be of hydrothermal origin and closely related to the emplacement of many thick fissure veins of quartz which carry a few patches of chlorite and magnetite. Very minor epidote may have been present in and near the veins, but if so it has been oxidized by weathering.

Sample Number : T 1099

Identification : Trachyandesitic volcaniclastic arenite with regularly graded layers and partial epidotization

Description :

The sample is a weathered hand specimen of layered sedimentary rock. The freshest rock revealed on a sawn surface displays light greenish grey, finely sandy layers about 1 to 15mm thick, alternating with dark greenish grey very fine-grained layers generally less than 1mm thick. A coarser grained sandy layer, with clasts up to about 1mm in size, carries a light brown weathering pigment.

A cobaltinitrite staining test produced a bright stain, consistent with abundant K-feldspar.

In thin section the sample is seen to consist of graded layers of feldspathic arenite. The finest, greenish grey layers are the fine tops of graded layers, not discrete layers.

Two of the layers of coarsest grainsize are lightly iron-stained by weathering and grade from grainsizes of as coarse as 2mm to finer than about 0.1mm over about 15mm. Clasts are subrounded, well sorted Plagioclase grains are particularly prominent, but there are some volcanic lithic clasts of trachyandesitic or andesitic appearance. Epidote in various stages of weathering is prominent as a partial alteration of plagioclase, very abundantin some layers. Sericite occurs interstitially and as pseudomorphs of some clasts; much of it is iron-stained. K-feldspar is not plainly recognisable in the clasts, but its presence is positively indicated by cobaltinitrite stain and it is probably a major component of the volcanic lithic clasts.

In the least weathered part of the sample similar,but finer graded beds are displayed. Epidote within altered feldspar is commonly fresh. Traces of secondary spheneare also recognisable. There are some chloritized clasts.

Generalized modal variation for the sample is :

30-50%	plagioclase sand grains
30-65%	trachyandesitic lithic sand grains
1-2%	chloritized clasts
5-20%	epidote as a partial alteration of plagiocla
0.1%	secondary sphene
3-10%	sericite as a matrix and partial replacement of some clasts

Comments and Interpretations :

This sample originated as regularly graded layers of well sorted subrounded sand originating from a constant source of volcanic or tuffaceous detritus, apparently trachyandesitic. Deposition probably involved influx of detritus by pulsed, waning aqueous currents.

The rock has undergone weak sericitization, very minor chloritization and appreciable epidotization. Weathering of epidote has produced iron-oxide pigmentation.

Sample Number : T 1105

Identification : Sericitized, pyritized and possibly silicified, laminated, fine volcanic ash

Description :

The sample is a hand specimen of lightly weathered rock which displays thin, undulating, microfaulted laminations with maximum thicknesses of about 2mm. A staining test revealed that pale greenis yellow laminations are very rich in fine K-feldspar, whilst the alternating medium light grey to light olive grey laminations contai only a few specks of K-feldspar.

In thin section the grey, K-feldspar deficient layers are seen to consist of anhedral, "cherty" quartz grains, finer than about 0.05mm, along with crudely aligned, very fine sericite in patches and wisps which do not preserve primary textures well, but could be suggestive of former vitric shards, about 0.5mm long.

The paler, potassic laminations consist of abundant very fine sericite, minor quartz of similar appearance to that in the alternating laminations, and abundant, anhedral K-feldspar, about 0.03mm in size. Small ferruginous pores are common and probably represent former disseminated pyrite.

A few fissure veinlets of quartz, chlorite and inferred pyrite (now ferruginous pores) postdate the foliation. They are up to 0.3mm wide.

One rounded, sericitized, porphyritic intermediate lithic clast, 3mm in size, disrupts several thin layers. One 0.5mm sericite-quart pseudomorph of feldspar occurs in a quartzose lamination.

An approximate mode of the dark layers is :

60-70%	quartz
30-40%	sericite
tr	K-feldspar

An approximate mode of the pale layers is :

5-15%	quartz
50-70%	sericite
30-40%	K-feldspar
2-3%	ferruginous pores after probable pyrite

Chlorite-quartz-inferred pyrite veins amount to about 2 - 4% of the overall rock.

Comments and Interpretations :

It seems very likely that this rock originated as finely laminated volcanic ash. In view of the great scarcity of phenoclast and lithic clasts it is probable that deposition involved subaqueous sorting of ash or distal airfall processes. Primary textures are no well preserved. If the abundance of finely recrystallized quartz and K-feldspar is primary, then the ash may have been rhyolitic.

However, it is quite possible that the quartz is a product of hydrothermal silicification developed in alternating layers prior to introduction of disseminated fine pyrite into the remaining porous layers. Subsequent greenschist facies metamorphism is considered to be responsible for partial alignment of sericite, mild deformation and possibly the fissure veining by quartz-chlorite-pyrite.

092 Sample Number : T 1324

Identification : Chloritized, epidotized, lightly sericitized intermediate lava with quartz amygdales enveloped by mobilized or introduced K-feldspar

Description :

The sample is a lightly weathered hand specimen with an amygdaloidal appearance. Very abundant 0.5 to 3mm subspherical to vermiform, yellowish grey amygdale-like structures are set in a greenish grey groundmass. Several 5 to 10mm porous, ferruginous patches appear to represent former aggregates of pyrite cubes.

A cobaltinitrite staining test revealed that the anygdaloidal structures have a core of quartz and a major envelope of K-feldspar.

In thin section the greenish grey regimes between the potassic and siliceous structures are seen to have a glomeroporphyritic texture with abundant subhedral phenocrysts about 0.3 to 2mm in size set in an imcompletely recrystallized groundmass of plagioclase, K-feldspar, chlorite and sphene with ghosted textures of tiny feldspar laths. The phenocrysts are partly epidotized, lightly sericitized plagioclase, magnetite, chloritized mafic silicates and leucoxene pseudomorphs of inferred ilmenite. Textures and abundances are consistent with porphyritic andesite or trachyandesite if the K-feldspar is original.

Quartz occurs as strained aggregateswith some residual "toothy" fissure-filling textures in structures which closely resemble 1mm vesicle fillings. One carries an epidote core. The quartz aggregates are individually enveloped by larger zones of K-feldspar as ragged poikiloblastic, replacement grains, about 0.5mm in size and carrying remnant inclusions of sericite, but not usually chlorite or epidote. Some phenocrysts remain as remnants in some potassic zones.

A few subhedral cubes of goethite after pyrite grains up to 0.5mm in size are dispersed through the rock, mainly outside the potassic alteration.

An approximate mode is :

45-55%	K-feldspar
30-40%	plagioclase
5-7%	chlorite
4-6%	epidote
2-3%	sericite
2-3%	quartz (only in amygdales)
0.4-0.5%	magnetite
0.1-0.2%	leucoxene after probable ilmenite phenocryst
0.1-0.2%	sphene
0.2-0.3%	goethite after pyrite

Comments and Interpretations :

It seems that this sample may have originated as a porphyritic intermediate lava, either andesite or trachyandesite, with numerous small vesicles.

At some stage the rock was epidotized, chloritized and lightly sericitized and the vesicles filled with quartz. Then or later K-feldspar was remobilized or introduced to form thick replacement zones around each siliceous vesicle. Disseminated grains and small aggregates of pyrite crystallized in the rock, generally outside the amygdaloidal structures and, thus, perhaps earlier.

062095

094 Sample Number : T 1325

Identification : Chloritized, epidotized flow breccia of andesitic lava with cavity fillings and a few amygdales of quartz with epidote, chlorite and a trace of sericite

Description :

The sample is a lightly weathered hand specimen of dark greenish grey rock speckled with moderate orange pink feldspar and with several vague, coarse clastic structures. There are several small patches of pyrite.

A cobaltinitrite staining test revealed no K-feldspar.

In thin section the rock appears to consist of several large, ill-defined clasts, but its textures are not obviously pyroclastic. Glomeroporphyritic, subhedral phenocrysts (about 0.5 to 3mm) of moderately epidotized plagioclase, chloritized mafic silicates, primary magnetite and sphene pseudomorphs of probable ilmenite are scattered abundantly through a groundmass which appears to have been dominated by tiny feldspar laths, now grossly overprinted by ragged, equant, anhedral grains of untwinned plagioclase, up to 0.5mm in size. Fine chlorite and some sphene occurs patchily in the groundmass. There are traces of sericite alteration in a few plagioclase phenocrysts and in parts of the groundmass.

Strained quartz with primary fissure filling style occurs in a few vesicle-like structures, commonly witha core of epidote. Some other larger, more complex and cuspate quartz aggregates a few millimetres in size appear to fill cavities between lithic clasts; coarse cores of epidote are typical, but one aggregate about 7mm in size has a core of chlorite accompanied by minor sericite.

Only a few disseminated grains of partly oxidized pyrite (about 0.1mm pyritohedrons) were detected in section; none appear spatially related to the quartz.

An approximate mode is :

80-85%	plagioclase
5-7%	epidote
6-8%	chlorite
3-4%	quartz
0.4-0.5%	magnetite
0.1-0.2%	sphene
0.1-0.2%	partly oxidized pyrite
	sericite

Comments and Interpretations :

Residual textures and inferred primary mineralogy strongly suggest that this sample originated from the same porphyritic intermediate colvanic rock as T 1324. It was less vesicular. Its coarse clastic structures were probably caused by flow brecciation.

Quartz, accompanied by epidote and less commonly by chlorite and traces of sericite, filled vesicles and breccia pores. Thus, pervasive epidotization and chloritization may well represent propylitic alteration, rather than a late metamorphic adjustment. Pyrite may have been introduced before silicification.

Groundmass feldspar throughout this sample has comparable recrystallized textures to those in the replacement zones around quartz amygdales in T 1324, but there is a total absence of K-feldspar.

096

062097

Sample Number : T 1346

Identification : Brecciated intermediate lava which has been epidotized, chloritized and weakly mineralized by pyrite

Description :

The sample is a lightly weathered hand specimen of dark greenish grey and yellowish grey phenocrysts or clasts. There is mild iron-staining and a few grains and small patches of partly oxidized pyrite.

A staining test revealed an abundance of fine K-feldspar, including some as veinlets and patches within plagioclase phenocrysts.

In thin section the sample displays primary glomeroporphyritic volcanic textures, comparable to those in T 1324 and T 1325, but there has been subsequent brecciation into cells which are commonly several millimetres in size. In much of the rock there is little rotation of the resultant clasts, but where finer brecciation and more obvious rotation are visible, clusters of fine subhedral pyrite grains (0.01 to 0.05mm grainsize) occur as replacements localized around fractures.

Plagioclase phenocrysts are abundant, lightly to moderately epidotized and up to 2mm in size. A very few carry traces of sericite. Subhedral, partly leucoxenized magnetite forms crystals about 0.2 to 0.5mm in size and former ilmenite grains of similar size and shape are indicated by fine sphene pseudomorphs, partly leucoxenized. Former mafic silicate phenocrysts are crudely pseudomorphed by chlorite, epidote and sphene. The groundmass has recrystallized to ragged, equant poikiloblastic grains (about 0.5mm) of untwinned feldspar with ermnant inclusions of tiny plagioclase laths. The textures are comparable to those in T 1324 and T 1325 and much of the feldspar is apparently potassic. Some fine epidote group mineral, sphene and chlorite is scattered through the recrystallized matrix, but most of the epidote group mineral concentrates around breccia fractures. A trace of quartz occurs as fracture veinlets in plagioclase phenocrysts.

An approximate mode is :

30-35%	K-feldspar
50-60%	plagioclase
10-12%	epidote group minerals
0.5-1%	chlorite
0.4-0.6%	magnetite, partly leucoxenized
0.1-0.2%	sphene and leucoxene, mainly after ilmenite phenocrysts
tr	quartz
0.3-0.4%	partly oxidized pyrite

Comments and Interpretations :

It is considered quite likely that this sample originated as a glomeroporphyritic intermediate volcanic rock, comparable or identical to that represented by T 1324 and T 1325. It may well have been andesitic, but like T 1324 it now carries a large amount of K-feldspar in recrystallized or replacement textures.

The rock has experienced fine brecciation by heaving or hydrothermal processes, not by shearing, and there has been associated propylitic alteration involving production of epidote group minerals, chlorite, sphene and leucoxene. Minor pyrite was introduced via the fractures and deposited partly by replacement. A trace of quartz formed in a few fractures. The abundant pervasive K-feldspar may also have been introduced hydrothermally, or at least redistributed hydrothermally.

098 **Sample Number :** T 1343

Identification : Weathered feldspathic sandy and silty sericitic pelite

Description :

The sample is a soft, heavily weathered hand specimen of greyish orange rock with a somewhat sandy texture and some small light grey spots.

A staining test produced some weak stain but did not prove the presence of K-feldspar.

In thin section the sample is seen to be heavily weathered but there are recognisably epiclastic textures, with many subrounded sand and coarse silt-sized clasts dispersed through a sericitic silty matrix which has been heavily pigmented by limonite in mottled and crudely banded patterns.

The largest clasts are several 0.5 to 1mm subrounded grains of plagioclase, partly sericitized. There are also several probable magnetite grains of similar size. Much more abundant grains are plagioclase grains, about0.1mm in size and sericitized and weathered to varying degrees. Quartz is present in trace amounts as angular detrital grains, smaller than about 0.1mm. The pigmented matrix seems to be moderately aligned sericite with small chips of feldspar.

An approximate mode is :

30-40%	sand and coarse silt-sized feldspar, lightly to moderately sericitized
0.1%	magnetite clasts
60-70%	matrix sericitewith fine feldspar silt and extensive limonitic pigmentation
tr	detrital quartz

Comments and Interpretations :

The sample is interpreted confidently to be an epiclastic sediment. It is a feldspathic sandy and silty sericitic pelite. It is likely to have been derived from andesitic source rocks and deposited as a poorly sorted sandy mud, involving short or rapid aqueous transport.

The limonitic pigmentation has probably been introduced during weathering; it has no obvious source within the rock. The rock is not silicified and shows no positive evidence of hydrothermal alteration. The sericitic nature of the matrix and the partly sericitized nature of the feldspar could reflect hydrothermal alteration, but they may equally be products of low grade metamorphism.

099 Sample Number : T 1371

Identification : Epidotized and chloritized, andesitic or trachyandesitic possible ashflow with a few vesicles filled by quartz

Description :

The sample is a hand specimen with light to moderate weathering. The freshest parts show yellowish to greenish grey phenocrysts and several 1 to 2mm aggregates of quartz set in a greenish grey groundmass.

A staining test revealed moderately abundant K-feldspar in the groundmass and as patches and veinlets in plagioclase phenocrysts.

In thin section many phenocrysts 0.2 to 2mm in size are visible, along with some structures suggestive of perlitic cracking and former vesicles in places, but the primary textures are not interpretable with confidence. Careful scrutiny suggests that there were porphyritic glassy and in some cases vesicular clasts, about 5 to at least 30mm in size, and some subhedral phenoclasts (rarely of broken form), scattered through a weakly foliated matrix, now composed of chloritized and epidotized possible former vitric shards (0.2mm) scattered through a fine mosaic of untwinned feldspar (about 0.02mm grainsize) and minor sphene.

Possible perlitic structures, suggestive of a formerly glassy character in coarse clasts, are outlined by chlorite and epidote networks enveloping finely crystalline, untwinned feldspar. Associated phenocrysts are moderately epidotized plagioclase, partly leucoxenized magnetite, chlorite-sphene-leucoxene pseudomorphs of emphibole or pyroxene and sphene-leucoxene pseudomorphs of ilmenite.

Filamentous to irregular vesicular structures, up to several millimetres in size, are thinly lined with chlorite and filled with quartz, now strained and recrystallized.

An approximate mineralogical mode is :

55-60%	plagioclase
30-35%	K-feldspar
4-6%	epidote
3-5%	chlorite
0.2-0.3%	weakly leucoxenized magnetite
0.1-0.2%	sphene and sphene-leucoxene
0.1-0.2%	quartz, in vesicles

Comments and Interpretations :

It seems that this rock may have originated as a coarse, poorly welded or unwelded ashflow, but its primary textures are poorly displayed and there is a possibility that it was merely a brecciated lava. Parts of the sample were apparently glassy and produced perlitic cracking patterns, now outlined by epidote and chlorite. Other parts had filamentous to irregular vesicular structures, now lined with chlorite and filled with quartz which has been subsequently strained and recrystallized probably by regional metamorphism. Because chlorite lines the vesicles the propylitic assemblage of epidote-chlorite-sphene probably developed by hydrothermal processes before regional metamorphism.

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If the observed abundance of K-feldspar reflects the primary composition of the rock, then a potassic andesitic to trachyandesitic composition is indicated. Some K-feldspar has mobilized into altered plagioclase phenocrysts and there is a possibility that some or all of the K-feldspar has been introduced into the rock by metasomatic processes.

The primary composition and alteration styles of the rock are generally similar to thoseof T 1324 and T 1325.

101 Sample Number : T 1995 062102

Identification : Chloritized, porphyritic leucocratic andesite with vermiform alteration patterns of K-feldspar centred on vesicles, some of which are partly filled with later quartz

Description :

The sample is a lightly weatheredhand specimen which displays crudely aligned, moderate orange pink pods and thick vermiform structures, about 4 to 15mm in length, some with central lenticular cavities, set in a dark greenish grey groundmass.

A cobaltinitrite staining test revealed that fine K-feldspar dominates the vermiform structures and is abundant in the intervening groundmass.

In thin section the primary texture of the rock is seen to involve moderately abundant subhedral phenocrysts, about 0.2 to 30mm in size, set in a fine groundmass. The phneocrysts are mainly plagioclase and show little obvious alteration. There are a few sphene aggregates after small phenocrysts of possible ilmenite.

Lenticular pores at the cores of the vermiform structures resemble flat vesicles. Many remain empty, some are partly or wholly lined by quartz and a few are filled with quartz, now strained and partly recrystallized. Other quartz occurs in fissure veinlets, 0.02 to 0.1mm wide, criss-crossing the rock and connecting with quartzose vesicles.

The pods enveloping the vesicles display plagioclase phenocrysts set in ragged, poikiloblastic grains of K-feldspar including tiny laths of plagioclase. The textures are the same as those seen in T 1324 and T 1325.

The greenish grey regimes display phenocrysts set in a fine groundmass of feldspar, chlorite and minor sericite. Much of the feldspar is 0.03mm laths of plagioclase, some is coarser poikiloblastic K-feldspar.

An approximate mode is :

50-60%	plagioclase
35-45%	K-feldspar
3-4%	chlorite
2-3%	open vesicles
0.3-0.4%	quartz
0.2-0.3%	sericite
0.1-0.2%	sphene

Comments and Interpretations :

It seems likely that this rock originated as a porphyritic intermediate lava, probably leucocratic andesite, and that it carried many aligned, flattish lenticular vesicles. Subsequent hydrothermal alteration has involved pervasive chloritization then potassic metasomatism producing vermiform replacement zones centred on the vesicles.

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Quartz was introduced later as veinlets cutting the potassic and less altered zones and some vesicles were lined or filled with quartz. Weak sericitic alteration is aligned differently and may be of regional metamorphic origin.

The style of alteration in this sample is similar, but not identical to that in T 1324 and T 1325.

103 Sample Number : T 1996

Identification : Sericitized, leucocratic, intermediate pumice tuff or ashflow

Description :

The sample is a hand specimen of bleached, finely porous, moderately foliated rock. A sawn surface reveals greenish grey wisps of deformed pumiceous appearance, about 1 to 30mm long, set in a light greenish grey matrix.

A cobaltinitrite staining test produced some diffuse staining, but seemed to reveal only minor K-feldspar as fine grains in a few small clasts.

In thin section the sample is seen to consist largely of partly aligned sericite but remnant textures are quite suggestive of a pumiceous tuff or ashflow. There are many sericitic structures which resemble ragged lenses of pumice with small vesicles commonly occupied by feldspar grains smaller than about 0.03mm. The largest pumiceous clasts carry phenocrysts of inferred feldspar, about 1.5mm in size, now altered to sericite, secondary feldspar and minor quartz; such grains have commonly plucked from the section. Small phenoclasts of feldspar and leucoxenized opaques and a few felsite lithic clasts are scattered through the rock. Many such clasts are plucked or eroded from the sample. There are traces of quartz replacing clasts. Some thin vein structures are represented by pores.

An approximate mode is :

80-90%	sericite, mainly after pumice
8-12%	feldspar, as phenoclasts and vesicle fillings
1-3%	felsite clasts
0.1-0.3%	leucoxenized opaque clasts
0.2-0.3%	secondary quartz
3-5%	pores, after clasts and a few veins

Comments and Interpretations :

The sample is considered to have originated as a pumice tuff, deposited by airfall or ashflow mechanisms. Its composition was apparently felsic but neither acid nor potassic. The sericitization may be of either hydrothermal or low grade metamorphic origin. The apparent porosity of the sample relates mainly to weathering out of recrystallized and sericitized feldspar clasts. Original porosity in the pumice has been filled by secondary feldspar.

The rock could be related to T 1105, perhaps as a coarse proximal variant or as a source from which fine detritus was rinsed to deposit T 1105. It has not been significantly silicified, but there are traces of secondary quartz, perhaps introduced.

104 Sample Number : T 1398 062105

Identification : Epidotized, chloritized possible flow breccia of porphyritic glassy andesite lava with a few quartz-filled vesicles

Description :

The sample is a moderately weathered hand specimen. The heavily etched weathering surface appears to display poorly sorted clasts about 5 to 60mm in size, whilst the fresher, sawn sufraces are less informative and display light greenish and yellowish grey phenocrysts or clasts disseminated through a greenish grey matrix.

A cobaltinitrite staining test revealed very minor fine K-feldspar.

In thin section the sample is confirmed to consist of ovoid to irregular altered volcanic clasts about 5 to more than 30mm in size, but they are densely packed and do not seem to have an interstitial matrix, tuffaceous or otherwise.

All of the clasts are composed of similar glomeroporphyritic rock with subhedral, altered phenocrysts, about 0.2 to 2mm in size, set in a groundmass of finely crystalline, untwinned feldspar (0.02 to 0.03mm in grainsize) and a prominent network of chlorite, epidote and sphene resembling a perlitic fracture pattern. Plagioclase phenocrysts are lightly to moderately epidotized. Former mafic silicates are now chlorite and epidote aggregates. Former ilmenite has been pseudomorphed by fine sphene and probable magnetite is represented by translucent leucoxene.

Quartz occurs within irregular vesicle structures, about 0.5 to 3mm in size. It resembles cavity fillings, now strained and recrystallized. Several vesicles are lined with chlorite and less commonly minor epidote. One vesicle has a core of chlorite.

Goethite after pyrite grains and small aggregates, about 0.3mm in size, occurs in disseminated fashion away from quartz.

An approximate mode is :

85-90%	plagioclase
1-2%	K-feldspar
8-10%	epidote group minerals
3-4%	chlorite
0.3-0.4%	sphene, mainly after inferred ilmenite
0.1-0.2%	leucoxene after inferred magnetite
0.3-0.4%	quartz
0.1%	goethite after pyrite

Comments and Interpretations :

It seems that this rock originated as glomeroporphyritic, glassy intermediate rock, probably andesite. Its coarsely clastic form could reflect agglomeratic processes, but it is at least equally as likely that the clasts are products of flow brecciation during solidification. Propylitic style hydrothermal alteration to epidote-chlorite-sphene and crystallization of fine feldspar (probably albite) has affected the rock and highlighted a perlitic fracture pattern. The few existing vesicles filled with quartz and minor chlorite and epidote probably at that time. Traces of disseminated pyrite show no association with quartz.

APPENDIX C.

GEOCHEMICAL RESULTS

APPENDIX C.1.

CUTTY SARK

HEC BASTYAN DAM SITE DRILL CORE ASSAYS

Sample No.	Drill Hole	(m) Depth	Cu	Pb	Zn	Ag	Fe %	Au
T260	6489	16.6	5	5	25	<0.5	1.75	<0.008
T261	6467	20.0	10	80	2150	<0.5	3.25	<0.008
T262	6472	23.2	5	25	365	<0.5	2.15	<0.008
T263	6466	1.0	30	60	580	0.5	4.10	<0.008
T264	4212	18.3	30	50	50	2.5	4.55	<0.008
T265	4212	43.5	5	20	25	<0.5	1.45	<0.008

Note: All assays in ppm unless otherwise shown.

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APPENDIX C.2.

SOUTH NATONE

RECONNAISSANCE ROCK SAMPLE ASSAYS

Sample No.	Approx. Location		Cu	Pb	Zn	Ag	Fe %	Au
T256	5,360,720N	374,960E	30	35	100	<0.5	5.40	<0.008
T257	5,360,670N	375,050E	5	40	65	<0.5	1.40	<0.008
T258	5,360,780N	375,200E	30	55	125	<0.5	5.40	<0.008
T259	5,361,080N	375,360E	5	25	50	<0.5	1.20	<0.008

Note: All assays in ppm unless otherwise shown.

APPENDIX D.

GEOPHYSICAL REPORTS

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APPENDIX D.1.

Evaluation of the VLF follow-up of the Rosebery East DIGHEM survey (over Mt. Black and South Stitt areas) Mitre Geophysics Pty. Ltd. Report, December, 1984.

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MITRE GEOPHYSICS P^TY L^TD
MINERAL EXPLORATION AND ENGINEERING CONSULTANTS
BUGGS LANE ELLIOTT TASMANIA 7325 PHONE 004-363143

EVALUATION OF THE VLF FOLLOW-UP OF THE ROSEBERY EAST DIGHEM SURVEY, E.L. 1/62, (MT BLACK).

for

Getty Oil Development Company Ltd

by

Dr J.R. Bishop

GTY/MG84/10
December, 1984.

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TABLES & FIGURES

Figures referred to but not included in this report

* Geology (plotted on 1:5,000 scale plans of Mt Black and South Stitt grids).
* Magnetic profiles (original undrafted plots at 1:10,000 scale).
* Dighem resistivity, magnetics and enhanced magnetics (plans at 1:10,000 scale).

NOTE

Figures 1 and 2 here are presented as Figures 6 and 9 respectively in the current Getty Rosebery East Report.

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SUMMARY

The VLF method was used to investigate a number of EM anomalies resulting from a Dighem survey over E.L. 1/62 (Mt Black). The follow-up was carried out over two gridded areas: the Mt Black grid and the South Stitt grid. On both grids, a number of weak Dighem responses were recorded within broad resistivity lows. These were mostly interpreted as being due to a wide conductor (Dighem's 'H' type responses). In the absence of any good bed-rock conductors, these zones were being investigated in the hope that they may be caused by sediments or altered volcanics (both possibilities being favourable sites for mineralisation). On the South Stitt grid, mapping has defined a large area of scree and glacial cover. Most (but not all) of the Dighem responses lie within this area. On the Mt Black grid, small, isolated patches of glacial cover have been observed, but not enough to account for the responses.

A number of VLF responses were defined on both grids, correlating approximately with the areas of low resistivity defined by the Dighem. To verify the correlation of a Dighem anomaly with a particular VLF conductor, the position of the anomaly was determined (where possible) by correlating Dighem's enhanced magnetic maps with the ground coverage. This exercise showed the Dighem to be 'out', in places, by more than 200m. On the South Stitt grid (which lies on the steep western slope of Mt Murchison), it appears that some lines flown in a westerly direction may be more in error than those flown easterly towards the mountain. More magnetic data (sufficient to produce a good contour map) is required to accurately plot all of the Dighem data. Following the repositioning which was possible, most of the Dighem responses coincided with a VLF zone.

The three 'H' type responses recorded on the Mt Black grid coincided with the broad VLF zone in the centre of the grid. This response is typical of conductive overburden and supports the Dighem interpretation. A fourth anomaly, interpreted as being caused by culture, seems likely to be caused by system noise, despite its correlation with a partially defined VLF zone. Two others anomalies have been insufficiently defined by the follow-up surveys to be confidently evaluated. Although the sources of the EM responses on the Mt Black grid have not been determined, they do not appear to be prospective. Integrated with the (poor) results of the geochemical surveys and mapping, no further work is recommended on this grid.

On the South Stitt grid, those 'H' type anomalies overlying the scree and glacial cover are regarded as being due to superficial sources and are considered unprospective. The VLF method defined several zones within this area. These should be considered equally uninteresting, however a possible bedrock response (anomaly 75E) overlies the southern end of the best of these zones and an uninterpreted possible anomaly (72XE) overlies the (?)same zone near its strongest development. Because of these potentially interesting responses and because the VLF method will

not penetrate conductive cover, a number of traverses with a Genie system (or similar) are recommended. It is also recommended that the other possible bedrock anomaly on this grid (anomaly 65A) be further investigated.

A well defined magnetic anomaly, coinciding with VLF responses, was defined at the eastern end of several lines of the South Stitt grid. The position and trend of this magnetic/conductive zone coincides with the interpreted position of the Henty Fault and has a possibly associated chargeability high. An interpretation of the magnetics suggests two sources: one thin shallow body (with a depth to top of about 10m) and an adjacent wider and deeper source (with a depth to top of about 50m).

INTRODUCTION

E.L 1/62 (Mt Black) surrounds EZ's Rosebery Mine and covers an area of the prospective Cambrian Mt Read Volcanics (host to several base metal mines and deposits, including Rosebery). Exploration on the lease is managed by Getty under a joint venture agreement with EZ.

A Dighem survey was flown over much of the licence in December, 1983 (Dvorak, 1984). Although well-defined bedrock conductors were hoped for, they were not expected since most of the area had previously been at least regionally investigated by ground and/or airborne geophysics, as well as with geochemistry and geological mapping. However it was hoped that the use of high frequency (7200Hz) coils on the survey would define areas of lower resistivity which might correlate with sedimentary sequences within the volcanics or possibly, areas of alteration.

The results were disappointing: no good bedrock conductors were recorded and, although there has not yet been follow up of all the Dighem responses, there are several cases where the Dighem failed to detect known areas of sediment (ie, the sediments may not be significantly less resistive than the volcanics). However, a large number of non-bedrock responses were recorded and these are being investigated.

To locate the Dighem anomalies on the ground, it was decided to use the VLF method. While it was appreciated that this method has less penetration and gives unwanted responses to swamps, faults, etc, which other systems (eg, Genie or Max-min) may not; experience in Tasmania has shown that the method will find sources of genuine anomalies (Bishop, 1981). Dighem's founder has also recommended the VLF method as an excellent one for locating Dighem anomalies (Fraser, pers. comm.). The main advantage of the method in this application is that rapid reconnaissance traverses can be made through ungridded areas using a 'topolite' and compass. Thus the anomalies can be given an order of priority (based on geological observations and soil geochem sampling as well as the EM results) without gridding each area.

Since VLF surveys often give more anomalies (than the Dighem) and the Dighem is likely to be 'out' by at least 100m (an observation based on several surveys in Tasmania), the results of the VLF survey must be interpreted to decide whether the VLF has located the source of the Dighem and, if so, which VLF anomaly the Dighem corresponds to. This report evaluates the follow up of Dighem responses in two areas (both of which have been gridded): the Mt Black grid and the South Stitt grid.

MT BLACK GRID RESULTS

The Mt Black grid covers six Dighem responses. These are listed in Table 1. The VLF has located several conductors on the grid: these trend roughly north-south and lie within a broad resistivity low defined by the Dighem survey.

Ground magnetics can often be used to verify the location of a Dighem survey. Magnetics has been read on the Mt Black grid, however the coverage on some lines is insufficient to provide a good comparison with the Dighem results (and is not sufficient to produce a magnetic contour plan which provides the best method of comparison). However there is enough information to suggest that the Dighem is 200m to 250m too far to the east in the south east corner of the Mt Black grid, but is correctly plotted in the south west corner (ie, south of 5376000mN and either side of 381000mE). North of 5376000mN, the Dighem is probably about 100m too far to the east at 381000mE/5376500mN and on 5378000mN, the ground and Dighem magnetics agree to the east of 381000mE. Elsewhere on the grid, correlations cannot be made. In summary, the Dighem over the Mt Black grid appears to be variably east (upto 250m) of the proper position.

A comparison between the VLF and the individual Dighem results is given below.

Dighem anomaly 35D (no. 1 of Table 1). This has been interpreted as being due to a surface conductor: one would therefore expect a broad VLF response. The VLF data on the lines either side of this response is very 'noisy'* and only the two 20+ responses on line 5377750mN (Figure 1) may be real. 35D can be correlated with either of these responses. It is 200m to the east of one, at 381300mE, which agrees with the general comments about the positioning of the survey drawn from the magnetics. However, the other, at 381630mE, is broader (and probably stronger) but there is no coverage to the south and a definite correlation cannot be made. (Ground follow-up must extend well past the supposed position of an anomaly; on lines either side of it.)

Dighem anomalies 38XB, 39E & 401A (nos 2, 4 & 5 of Table 1). All of these responses have been interpreted as being due to thick conductive cover or a conductive rock unit. Although no likely source for these responses has been observed on the grid (McNaught, pers. comm.), each may be correlated with a VLF response.

It was suggested above that the Dighem in the region of line 5376500mN was plotted about 100m too far to the east. If anomaly 401A is moved 150m west, then all three anomalies fall within the broad VLF zone in the centre of the grid. Such a wide response is consistent with that expected over a broad conductor such as overburden or a conductive rock unit (although it could also indicate a conductor at depth).

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* Due to either weak signal -not indicated by the field book results -or to poor reading. Field strengths were recorded and should be plotted since absence of a coincident field strength anomaly with a dip anomaly indicates either a spurious or very poor VLF response.

Dighem anomaly 39D (no. 3 of Table 1). This response has also been inadequately covered by the VLF follow-up. (The traverse along the road may have been considered adequate, however these results bear no relation to the line traverses which all (including 5376300mN) show a rise to the west.) Figure 1 shows anomaly 39D coincident with an incompletely defined VLF zone. This zone needs to be properly defined before any definite conclusions can be drawn (and possibly another traverse made with a more sophisticated EM technique). Despite the correlation, it is likely that 39D is due to instrumental noise and is not a genuine anomaly. This opinion is reinforced by the geology, which shows the area as massive andesitic lavas.

Dighem anomaly 45B (no. 6 of Table 1). Again, the VLF coverage is insufficient to try and assign the anomaly to one of the adjacent VLF zones. The coverage on line 5375250mN (the line closest to the anomaly) stops short of (ie to the east of) the Dighem response. It is possible that 45B could be correlated with a VLF zone which may pass 100m to the west. This would give a good correlation between the VLF and the low resistivty zone defined by Dighem.

SOUTH STITT GRID RESULTS

The South Stitt grid covers eleven Dighem responses. These are listed in Table 2 and are shown in Figure 2 with the VLF results. The VLF survey has defined several conductors and like the Mt Black survey, these lie within a resistivity low defined by the Dighem survey. This low is 'Y' shaped (the western arm has only been partially defined by the VLF) and overlies the area of scree and glacial overburden shown on the geological map.

Correlating the 1:10,000 scale magnetic profiles with Dighem's enhanced magnetic contours, suggests that the Dighem data has been plotted west (irregularly, but upto 250m) of the true position for most of the South Stitt grid. This may apply particularly to the west-flown flight lines. Only on line 5369500mN is a misplot to the east indicated (of about 70m).

A comparison between the VLF and the individual Dighem responses is given below.

Dighem anomaly 65A (no. 1 in Table 2) is 200m north of the northernmost VLF line. It appears to be closely along strike from a VLF high near 383000mE on line 5371000mN. Dighem anomaly 67XD (no. 2 in Table 2) is between two VLF lines 500m apart: it appears to lie on the same VLF trend as anomaly 65A. However, for both of these anomalies the VLF coverage is too far away to have 'followed-up' the Dighem. Since the former is a possible bedrock anomaly (and the latter is undefined), these responses would be at the top of any geophysical priority list of anomalies for follow-up.

Dighem anomaly 70XB (no. 3 in Table 2) is also half way between lines 500m apart. It lies along strike of a broad VLF response. The anomaly has been interpreted as being due to the (western) edge of a broad conductor, however the Dighem profile shows that there is conductive material further to the west and the VLF results support this (70XB occurs at a sudden thickening (or sudden increase in conductivity) within the overburden).

Dighem anomaly 71XC (no. 4 in Table 2) is shown overlying a good (20+) VLF anomaly in Figure 2. This is a doubtful correlation if the interpretation of the Dighem response (a broad conductor) is correct; VLF responses over broad conductors are also broad, not narrow as here. Further, it was stated above that the magnetics suggested that the Dighem results should be moved to the east (beyond the VLF coverage). For more positive identification, the VLF survey should be extended further east (on several lines).

Dighem anomaly 72XE (no. 5 in Table 2) is an uninterpreted anomaly positioned over line 5369750mN. If moved 100m to the east (in agreemant with the magnetics on this line) it coincides with a strong (20+) VLF zone. Another anomaly on the same flight line, 72XF (no. 6), then coincides with another (weaker) VLF zone. This zone (see Figure 2) is unlikely to be due to a wide conductor, but no reliability can be placed on the interpretation of 'possible' anomalies and the narrow zone indicated by the VLF is a possible source of the Dighem response.

Dighem anomalies 73E & 74C (nos 7 & 8 in Table 2) have both been interpreted as being due to broad conductors (no. 7, as 'possibly' due). They lie either side of 5369500mN. The magnetics on this line indicated a shift of about 70m to the west (ie, the Dighem was misplotted about this distance to the east). If 74C is moved 70m, it then coincides with a broad VLF zone consistent with the response (though not uniquely) over a wide conductor. Anomaly 73E coincides with a very weak VLF conductor as plotted but would coincide with the zone correlating with anomaly 72XF if it was moved 170m to the east. Such differences in direction on adjacent lines can occur in steep country (such as applies here) when adjacent lines are flown in opposite directions (as occurs here). A similar shift is suggested on the next line to the south, flight line 75 (see below). Thus 73E is tentatively correlated with the eastern VLF high (passing through 382170mE on line 5369500mN), while a stronger correlation is given for anomaly 74C with the broad VLF zone 70m to its west. To make a proper interpretation, a contour map of the ground magnetics is required (probably at a closer line spacing than has been used here). The Dighem lines could then be 'moved' to fit the true magnetic pattern. It is noted that the VLF responses, and particularly the 'broad zone', cut across, at a high angle, the magnetic high enclosing these three Dighem anomalies.

Dighem anomaly 75E (no. 9 in Table 2) has been interpreted as being possibly due to a bedrock conductor and is therefore of high interest. It overlies line 5369250mN where the magnetics suggest that the Dighem results had been plotted 250m west of the true position. A shift of 200m (to the east) places 75E in coincidence with a southern extension of the broad VLF zone mentioned above. Anomaly 77XC (no. 10 in Table 2) is apparently along strike of this zone without being moved. The ground magnetics suggests that the two adjacent westerly flown lines (76 & 78) should be shifted 200m or 300m to the east, but this may does not apply to line 77 which was flown to the east. (The fault in this logic, is that line 75 was also flown to the east.)

Dighem anomaly 79XD (no. 11 in Table 2) lies midway between two VLF lines 500m apart. Neither line shows any strong VLF response and the line separation is too far to correlate between lines. On line 5368500mN the ground magnetics (tentatively) suggested that westerly flown flight line 78 should be shifted at least 200m to the east, but no comment can be made about easterly flown line 79. The Dighem profile shows only a local resistivity low associated with this possible anomaly. Infill VLF is required for more positive identification, but 79XD may not be a genuine response. (The lack of similar comments about the anomalies discussed above does not mean that they are necessarily 'true' responses.)

CONCLUSIONS AND RECOMMENDATIONS

The VLF responses on both the Mt Black and South Stitt grids roughly lie within resistivity lows defined by the Dighem survey. On both grids, there may be a better correlation with the resistivity map than with the individual EM responses. (Dvorak (1984) points out that the resistivity map is more indicative of broad conductors (which may define potentially less resistive sedimentary sequences or altered volcanics) than the actual EM responses.)

MT BLACK GRID

On the Mt Black grid, the three central 'H' type responses were correlated with a broad VLF zone. The three remaining anomalies have been inadequately followed-up; ie, insufficient coverage with VLF either side of each anomaly. The 'S' type response in the north east corner of the grid could be correlated with a VLF zone which may occur 150m to its east and the 'E?' type response in the south west with a zone 100m to its west. The high grade 'L' anomaly in the centre-west of the grid, coincides with a partially defined zone, however a stronger VLF response would be expected over a grade 6 Dighem response. Instrument noise is suspected (but further follow-up is recommended -see later). Also, much of the VLF data on the Mt Black grid is of poor quality; particularly the four northernmost lines. Re-reading the noisier lines and plotting the field strengths (to assist in recognising noise from genuine anomalies) would reduce the number of VLF zones on the grid.

Most of the VLF anomalies are weak and those in the centre are consistent with responses over conductive cover. However, apart from a few small isolated patches of thin glacial cover, no potential source for the EM responses has been observed on the grid. VLF can give the same kind of response over a deep-seated conductor* as it will over a broad superficial one (hence no drill hole should be targeted solely on VLF information), however there are no Dighem responses indicative of a deep bedrock conductor (the lack of any geochemical anomalies also considerably downgrades the prospectiveness of the area). If a thorough follow-up of the resistivity lows defined by the Dighem survey is to be undertaken, then further investigation of this unexplained low is warranted. A few lines surveyed with a quantitative EM method (eg, Genie) would confirm the nature of the source. Line 5376750mN should be included (and extended to the west) so that the high grade 'line' anomaly '39D' is tested.

Precise correlation can be made between the Dighem and VLF data if the Dighem data has been properly located. The magnetic coverage suggests that this could be done if more (and longer) lines were surveyed. Given the unprospective nature of this area, this is probably not worth doing.

SOUTH STITT GRID

Several of the Dighem anomalies shown on Figure 2 have not been defined by the VLF coverage of the South Stitt grid. But all of those within the grid have been correlated (some more tentatively than others) with a VLF response. Like the Mt Black grid, the ground magnetic coverage was instrumental in helping to position the Dighem data. The positioning appears to be dependent upon the flight line direction. The grid is situated on the steep western side of Mt Murchison and lines flown to the west appear to be further 'out' than those flown to the east. More magnetic data would allow better positioning of the Dighem, which would in turn permit more confident comment about the two types of EM results.

The VLF and central Dighem responses (nos 5 to 10 of Table 2) overlie scree and glacial cover on the South Stitt grid; ie, superficial sources are likely. However a Dighem response (75E) which coincides with the southern part of one of the VLF responses has been interpreted as possibly being caused by a bedrock conductor. Therefore further checking (with eg, a Genie traverse) is recommended. Another possible bedrock conductor (65A) lies beyond the VLF coverage in the north east corner of the grid. Although the interpretation for such low level responses is very unreliable, these relatively isolated anomalies should receive a higher priority than the broad 'H' type conductors. Anomalies 67XD and 79XD should also be investigated in more detail: the present coverage, with lines 500m apart, is too far to properly locate and evaluate the anomalies.

A distinct magnetic high was recorded at the eastern end of lines 5369750mN, 5370000mN and 5370500mN. This high is coincident with the strong VLF response at 382500mE on 5370000mN and with the

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* A depth of 80m to 90m is indicated from the VLF assuming a simple line source (Fraser, 1981).

weaker anomaly on the next line to the south (5369750mN). This line is close to the interpreted position of the Henty Fault and it appears that here it may be both conductive and magnetic. If there is a common source, then the contouring in Figure 2 should be altered in the north east corner. (Further data, both magnetics and VLF (plotted at the same scale) would verify this.) The magnetics has been interpreted and a depth of about 10m is indicated to the shallower of two adjacent sources (see Appendix).

A dipole-dipole IP survey (Howland-Rose, 1980) defined a resistivity low in this area (less than 500ohm-m in a background of more than 2000ohm-m). A broad chargeability high (to 22mv/v) is associated with the low. The high is offset some 150m to 200m to the east of the peak of the magnetics and its diffuse shape suggests a separate source from the magnetic body.

J.R. Bishop
Dec., 1984.

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Fraser, D.C., 1981. A review of some useful algorithms in geophysics. CIM bulletin, vol. 74, no. 828.

Howland-Rose, A.W., 1980. Comments on pole and dipole-dipole surveys over the Stitt grid. Scintrex report Tas-065 for EZ.

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APPENDIX

Interpretation of the South Stitt Magnetic Anomaly

A magnetic anomaly with a maximum value of approximately 700nt was recorded at the eastern end of several lines on the South Stitt grid. A shallow, tabular source was indicated with a northeast - southwest trend. The area is overlain by scree and glacial cover, but the Henty Fault has been interpreted as being close to the position and trend of the magnetic anomaly.

The anomaly is well developed on line 5,370,000mN (at 382,400mE) and this was modelled using a 'two and a half dimensions'* modelling package. Figure A1 shows that two tabular sources steeply dipping to the east can account for most of the anomaly. (A regional gradient of 20nt per 100m -increasing to the east - has been removed from the data.)

The shallower source is buried to 10m and has a width of 10m. The deeper source is buried to 47m and has a width of 30m. These widths are largely dependant upon the magnetic susceptibility which was arbitrarily chosen to be 0.005cgs units for both bodies (a larger susceptibility will result in narrower bodies and vice-versa: the depths should remain constant).

The other relevant parameters for the modelling are:

Magnetic Field = 62400nt   Dip = -72 degrees

Profile Bearing = 78 degrees (magnetic) (ie AMG east).

Strike length of bodies = 700m

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* A body of finite strike length is used for the model, but it is assumed that the profile crosses the centre of the body. This assumption is only important when the profile is close to one end of an anomaly.

TABLE 1

Dighem Anomalies on the Mt Black Grid

No.	Anomaly	Position	Grade	Type*	Reponse	Comment
(1)	35D	381480mE/5377670mN	1	S	good out-of-phase on 7200Hz	coincident with a magnetic high
(2)	38XB	381070mE/5376820mN	X	H? CPQ on 900Hz	very weak in-phase & out-of-phase on 900Hz	written as 38XE on profile presentation. magnetic high 300m to E
(3)	39D	380520mE/5376720mN	6	L	in-phase (900Hz) only	there is no 'culture' in the area. doubtful anomaly.
(4)	39E	381210mE/5376680mN	1	H?	-	close to the peak of a large 7200Hz out-of-phase response
(5)	401A	381370mE/5376560mN	1	H	-	probably picked from a small inflection on the 7200Hz in-phase
(6)	45B	380790mE/5375130mN	1	E?	-	probably picked from a small 'blip' on the 7200Hz out-of-phase

* Dighem Symbol	Type of Conductor
B	Bedrock conductor
E	Edge of broad conductor
H	Broad conductor (rock unit or thick cover)
L	Culture (eg, power line)
S	Conductive cover

TABLE 2

Dighem Anomalies on the South Stitt Grid

No.	Anomaly	Position	Grade	Type	Reponse	Comment
(1)	65A	383000mE/5371200mN	1	B?	in- & out-of-phase 7200Hz and out-of-phase 900Hz (coaxial and coplanar)	lies on the western edge of a broad resistivity low.
(2)	67XD	382900mE/5370680mN	X	-	-	probably picked from a small blip on 7200Hz out-of -phase. On western flank of magnetic high.
(3)	70XB	381430mE/5370250mN	X	E?	-	on western edge of resistivity low
(4)	71XC	382500mE/5370030mN	X	H	-	within broad resistivity low & assoc. IP high.
(5)	72XE	381720mE/5369750mN	X	-	-	within resistivity low
(6)	72XF	382180mE/5369690mN	X	H?	-	" on eastern flank of magnetic high
(7)	73E	382020mE/5369560mN	1	H?	in- & out-of-phase 7200Hz	centre of broad resistivity low
(8)	74C	381860mE/5369420mN	1	H	broad in- & out-of-phase 7200Hz, out-of phase 900Hz (coaxial & coplanar)	"
(9)	75E	381660mE/5369220mN	1	B?	a large in- & out-of -phase 7200Hz response superimposed on a broad 7200Hz & out-of-phase 900Hz (coax. & copl.)	reponse suggests a second source within broad resistivity low coincident with a weak magnetic high
(10)	77XC	381840mE/5368870mN	X	S	-	within weak resistivty low
(11)	79XD	381650mE/5368220mN	X	-	-	discrete resistivity low

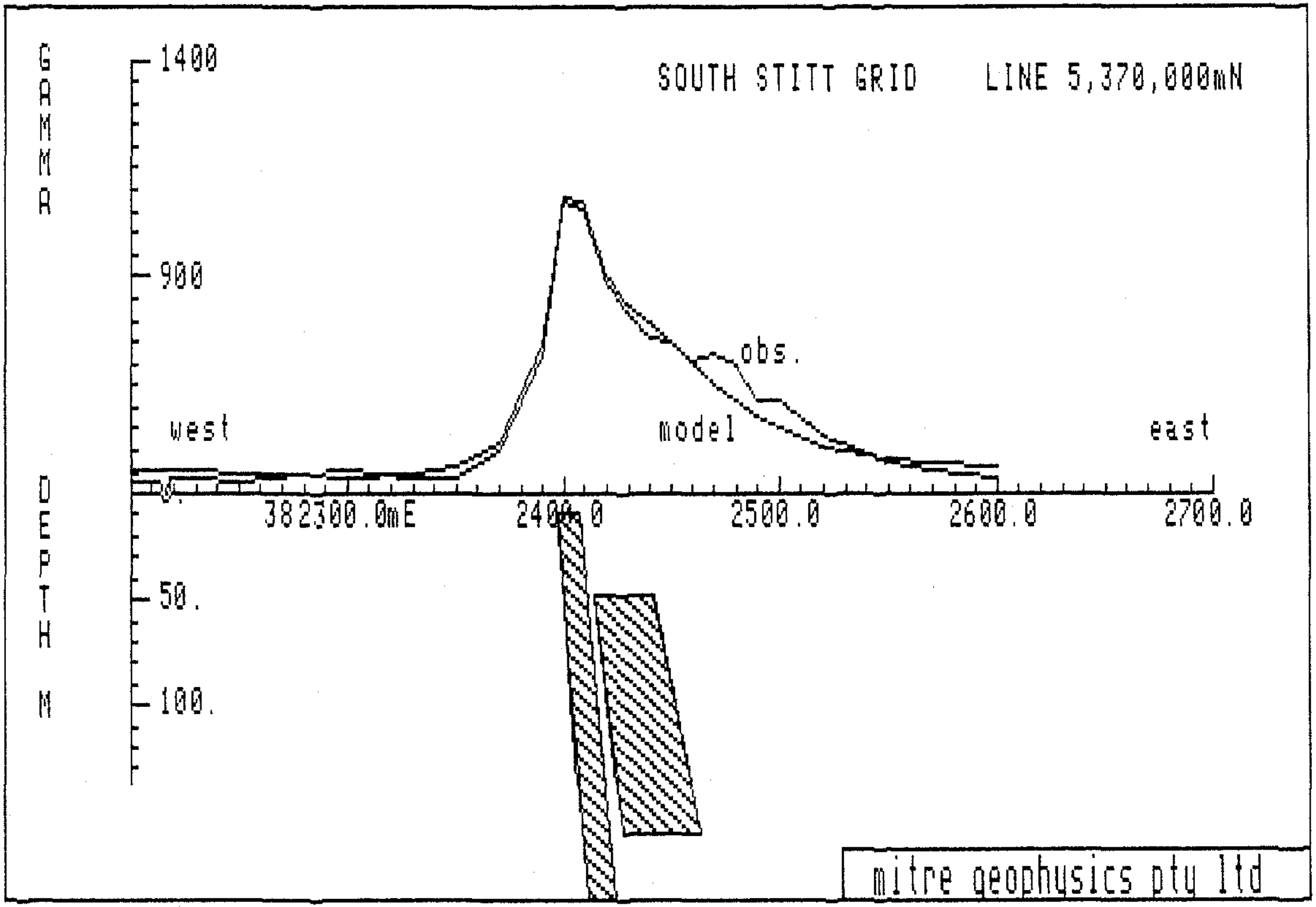

Fig. A1.

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APPENDIX D.2.

Mt. Black Grid: Ground Magnetic Profiles

Plotted at 1:5,000 Scale

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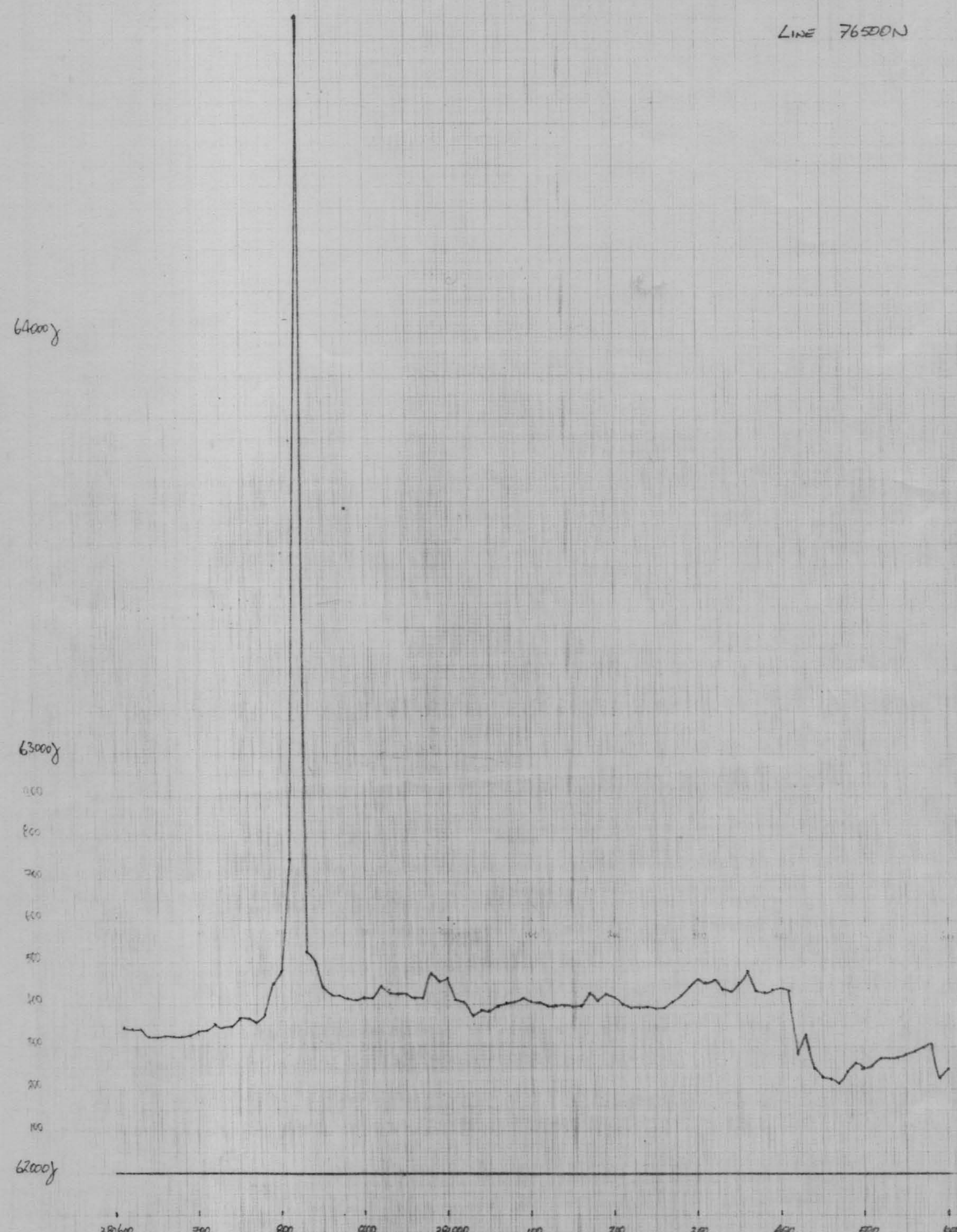
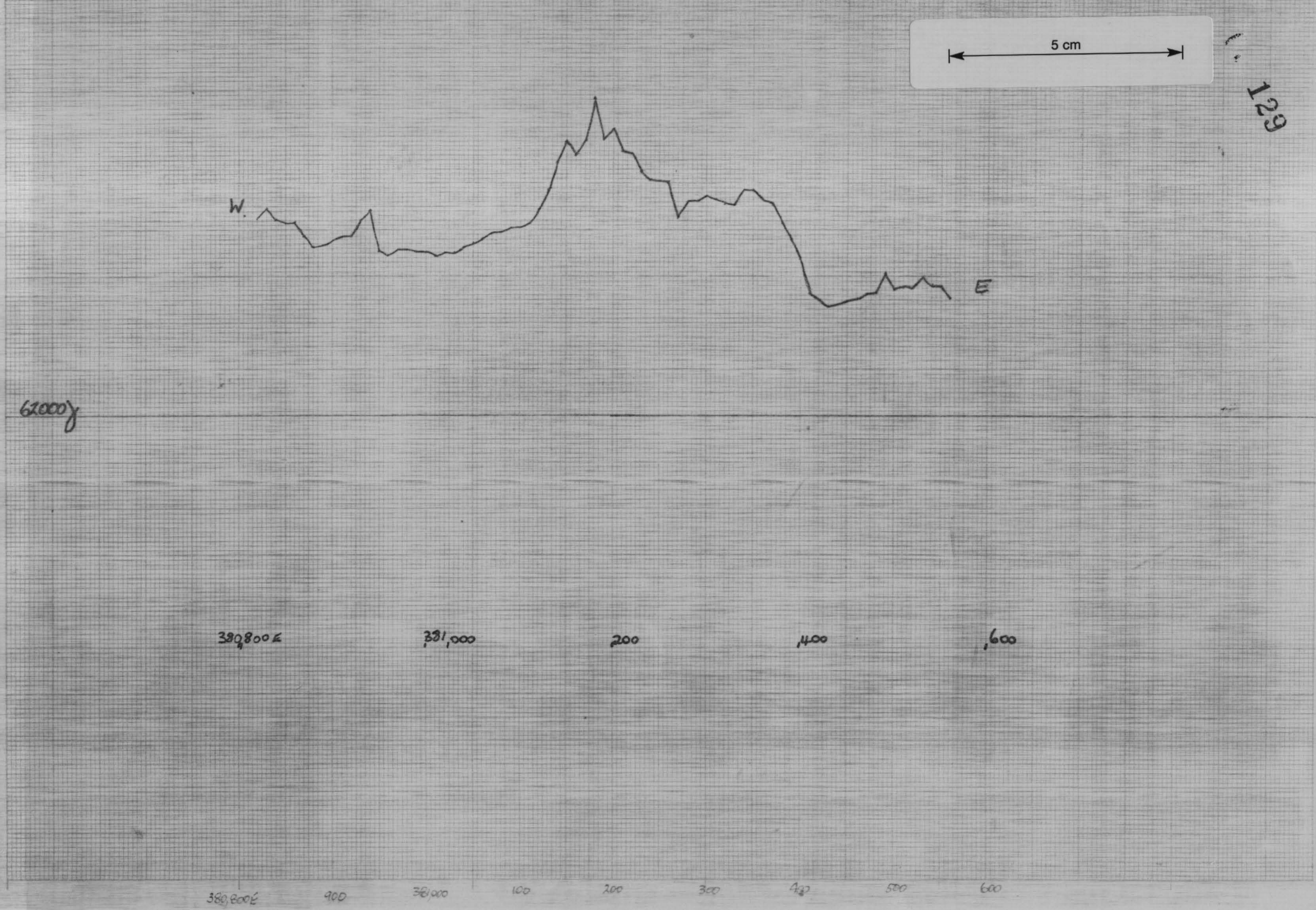
MT. BLACK GRID MAGNETICS G816 GEOMETRICS

LINE 76500N 7/9/84



5 cm

MT BLACK GRID   MAGNETICS   G816 GEOMETRICS   5/9/84   G.F. BUGG   LINE 75250N   SCALE 1,5000



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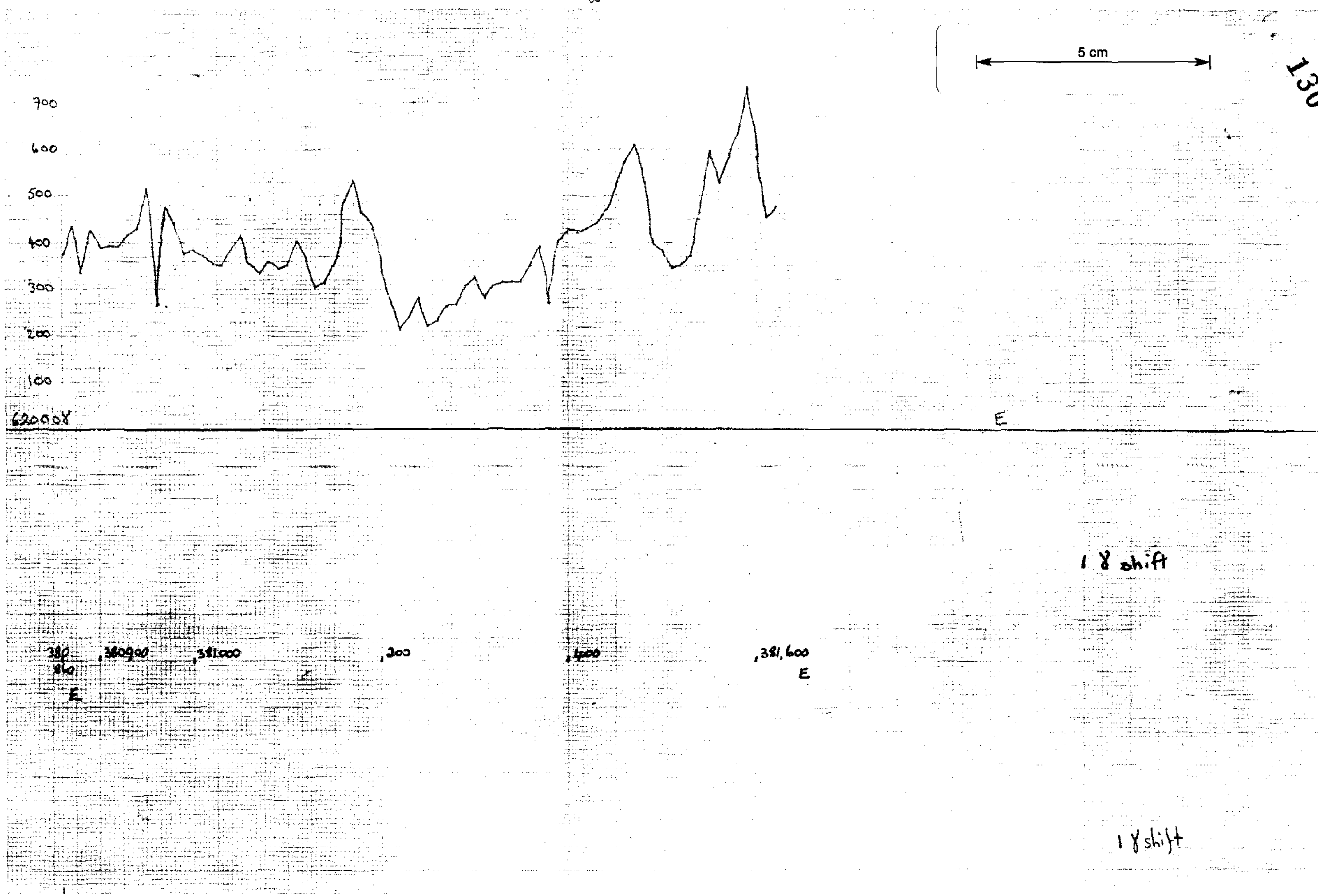
MT BLACK GRID MAGNETICS G816 Geometrics 4/9/84 G.F.Bugg LINE 76100 N Scale 1:5000



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062131

Mt. Black Grid Magnetics G816 Geometrics 5/9/84 G.F. Bugg Line 75000N Scale 1:5000

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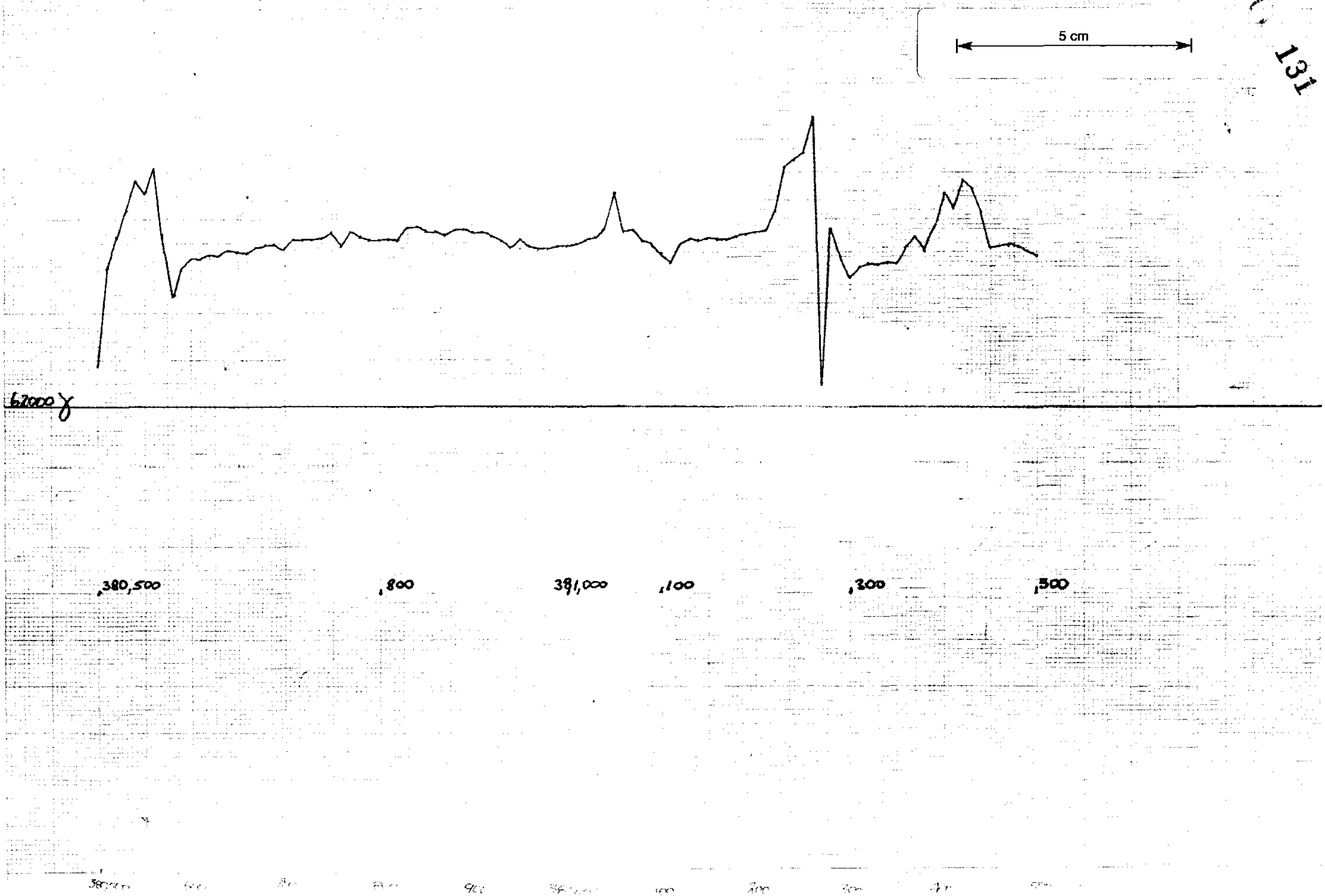

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MT BLACK GRID MAGNETICS GSIC GeoMetrics 30/8/84 G.F.Bugg

LINE 76750N SCALE 1:5000

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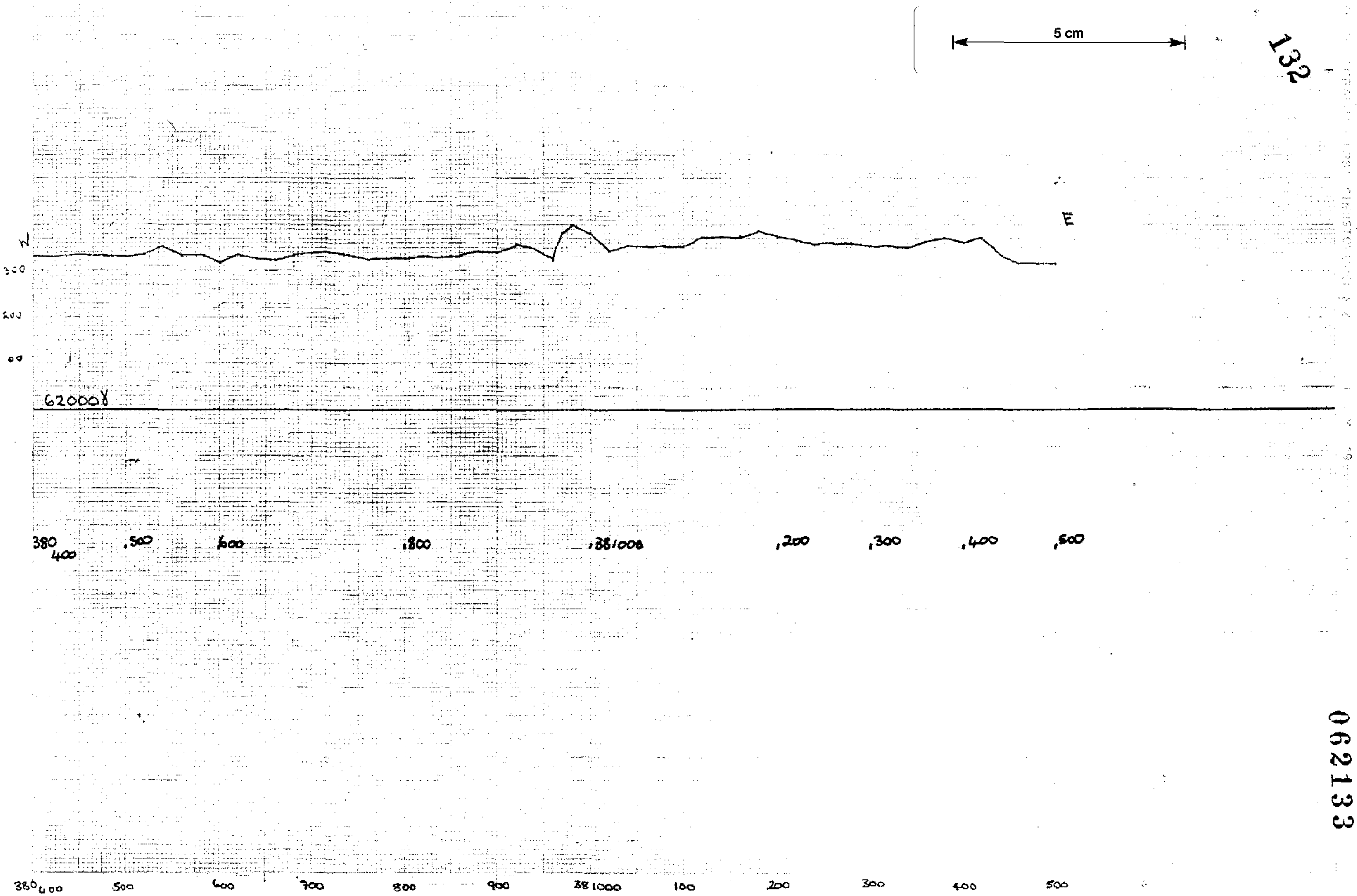

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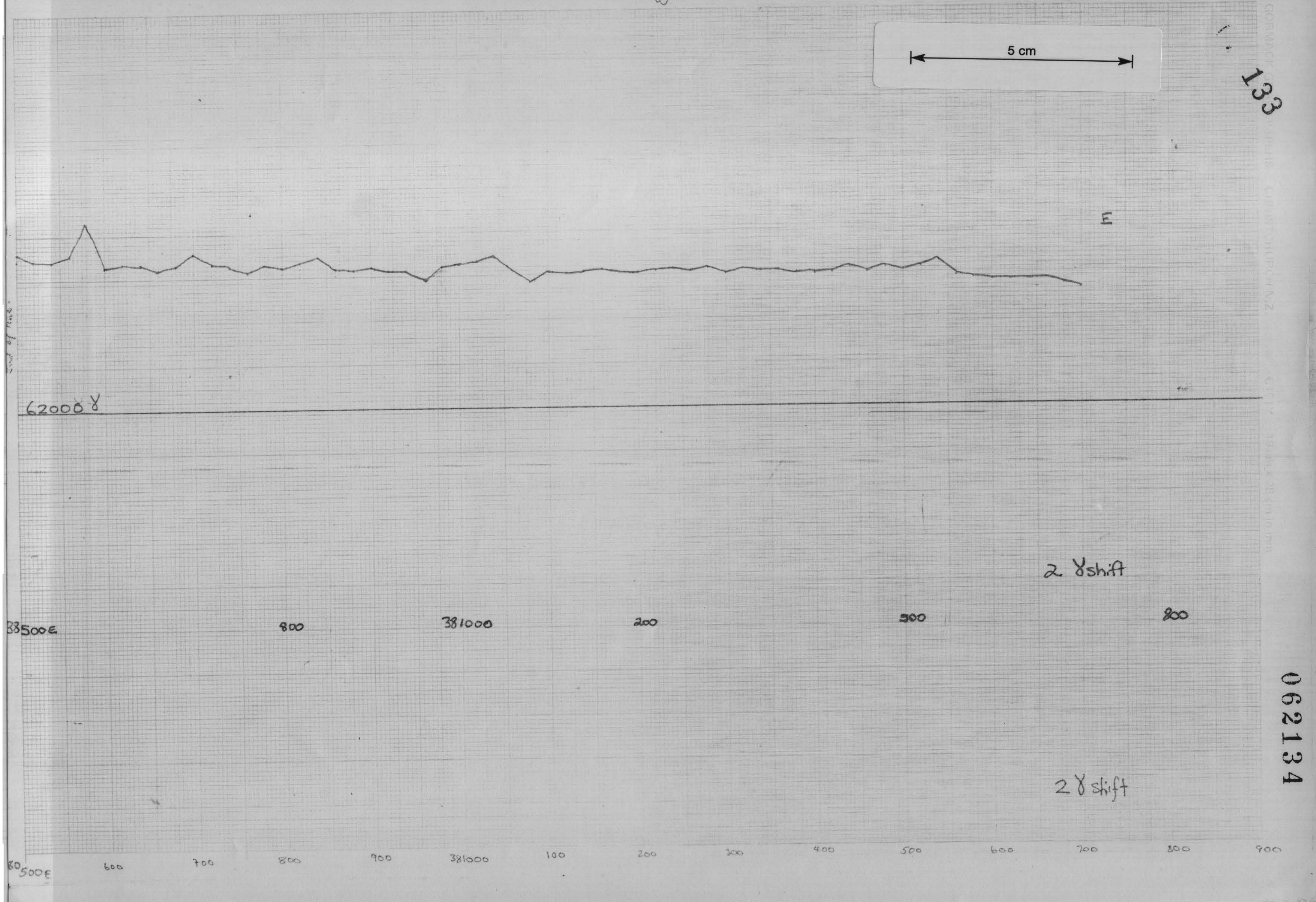

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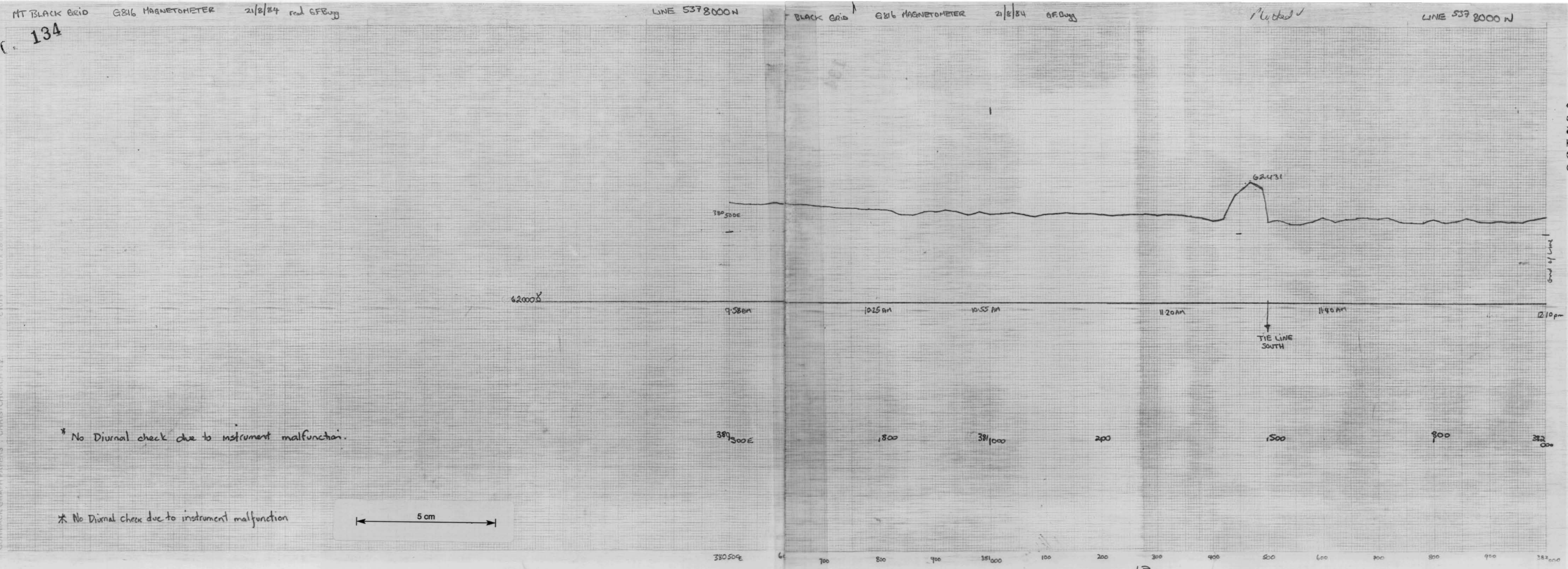

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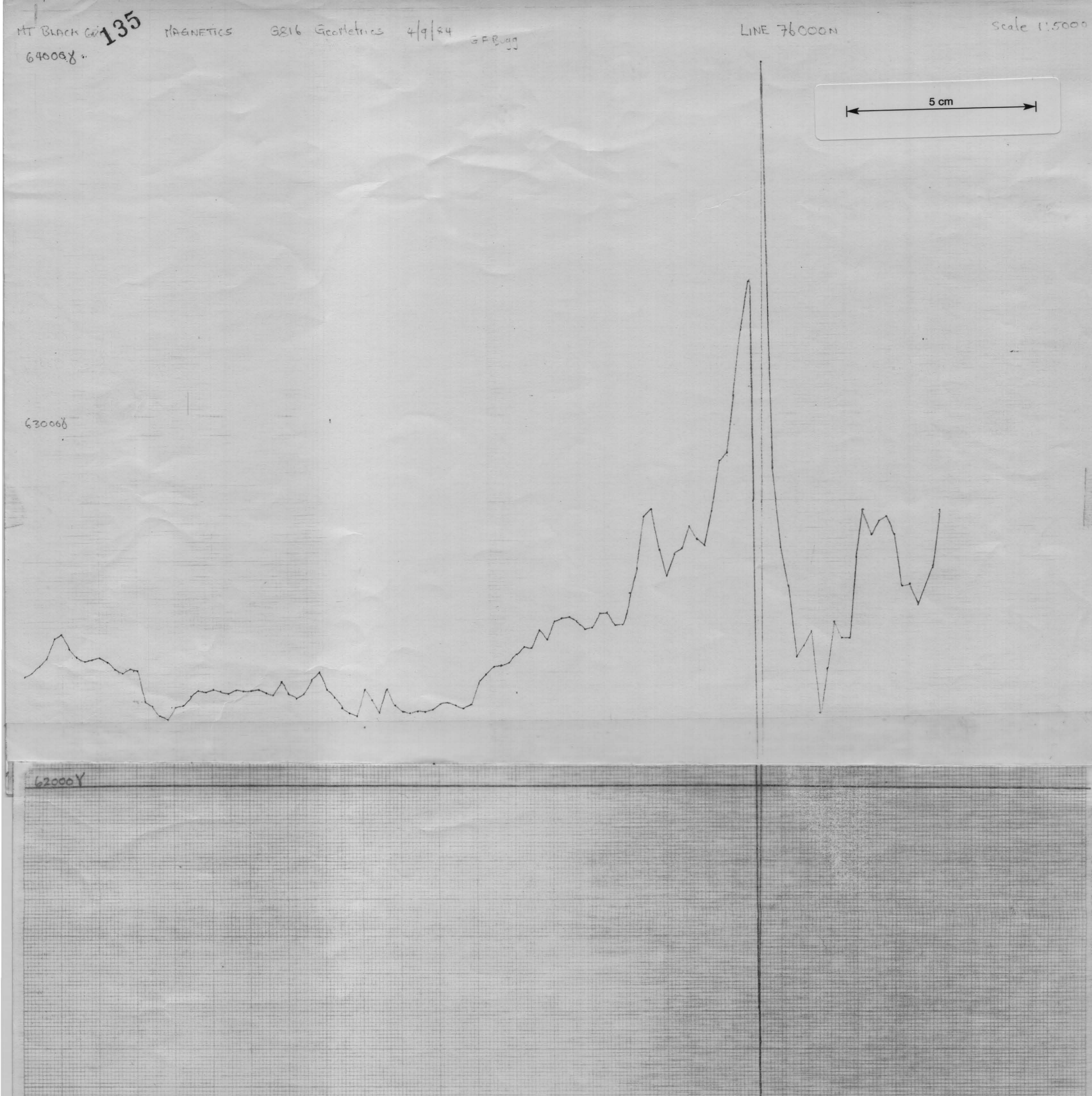
MT BLACK CO
135
MAGNETICS
3816 Geometrics
4/9/84
GFBugg
LINE 7600N
Scale 1:5000
5 cm
64000γ
63000γ
62000γ
61000γ
1γ shift
500 E
600
700
800
900
38/1000
100
200
300
400
500
600
38/700 E

062136

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APPENDIX D.3.

Discussion Paper on the South Stitt Gold Prospect and comments on a GENIE Survey of the South Stitt Grid

Mitre Geophysics Pty. Ltd. Report,

January, 1985.

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062138

MITRE GEOPHYSICS PTY LTD
MINERAL EXPLORATION AND ENGINEERING CONSULTANTS
BUGGS LANE ELLIOTT TASMANIA 7325 PHONE 004-363143

A Discussion Paper

on

The South Stitt Gold Prospect

and comments on

A Genie Survey of the South Stitt Grid

January, 1985.

062139

SOUTH STITT GOLD PROSPECT

(discussion paper)

INTRODUCTION.

The South Stitt grid lies on the western slope of Mt Murchison within E.L. 1/62 (Mt Black). The grid overlies volcanics belonging to the Central Sequence and Tyndall Group of the Mt Read Volcanics, although the eastern ends of some of the lines are over Owen Conglomerate. Most of the grid is covered by glacial moraine and scree. The Henty Fault passes through the grid, trending nor-nor-east.

EXPLORATION TARGET.

Previous exploration on the grid was directed towards a base metal deposit, however the target for the present program is gold. The model for the prospect is the nearby Sterling Valley where gold has been found in volcanics in close proximity to the Henty Fault.

No gold has been found in the region, but the rocks are altered (chloritic). The zone of interest is covered (by scree and glacial debris) and no bedrock samples have been taken from the prospect (which is centred on 382,500mE; 5,370,000mN) and considerable difficulty is anticipated in obtaining them (owing to the difficult access and possible depth to bedrock).

It is expected that the gold would be associated with sulphides, disseminated or massive and may have some structural signature. Geophysically, these features would be seen as a (possibly moderate) chargeability high and probably as a well-developed resistivity low.

EXPLORATION RESULTS.

Since the area of interest is covered, most of the data gathered so far is geophysical. Of particular interest are the results from IP, magnetic and VLF surveys. A distinctive magnetic anomaly was recorded at the eastern ends of lines 5,369,750mN and 5,370,000mN and a trend may be extrapolated from 5,369,000mN to 5,370,250mN (ie, over 1.25kms). This closely parallels the interpreted position of the Henty Fault and may be due to a basic intrusive within the fault zone or, based on experience within the Sterling Valley, a mineralised granite. (Pyrrhotite, which also occurs along the fault within the Sterling Valley, is an unlikely source, since the several EM surveys have all failed to record a response here.)

To the east of the magnetic anomaly, a well developed resistivity low (to 325 ohm-m in a background of 2000+ ohm-m) and a moderate chargeability high (to 22mv/v) were recorded by a dipole-dipole IP survey. These two features overlap rather than coincide and a disseminated source is suggested for the chargeability anomaly. A narrow, well-defined VLF anomaly was recorded within the resistivity low.

CONCLUSIONS AND RECOMMENDATIONS.

The resistivity low was recorded with 100m dipoles and extended to some depth (n=3 on the pseudosection), it should therefore reflect a bedrock feature. However it may be partly due to topography: (apparent) resistivity lows being recorded at the base of significant slopes. The low could also be due to a local thickening of glacial moraine; but since the magnetic high, which is down-slope, suggests a depth to bedrock of about 10m, this seems unlikely. Chargeability is not affected by topography and disseminated sulphides (or graphitic shales) within the country rock is the likely source (clays within the glacials being the other alternative).

The VLF method is often useful in exploration for gold deposits, particularly those that are structurally controlled. (The method will detect faults or fractures that may not be detected by other EM methods. At Hemlo, it is apparently being used to map the ore horizon itself*.) Most of the VLF responses recorded on the South Stitt grid are due to overburden and this one may be no exception, but the possibility of a bedrock source should not be ignored.

It is suggested that a topographic profile be obtained for all of line 5,370,000mE (using a clinometer) and that the area be examined for indications of depth to bedrock. This would allow a better determination of the significance of the resistivity low.

Clearly, the next step is to see if there is any gold in the area; this would be best done by augering, but if this is not possible, the positions of recommended drill-holes are shown on the attached figures. The drill-hole through the IP response has the higher priority.

J.R. Bishop
January, 1985.

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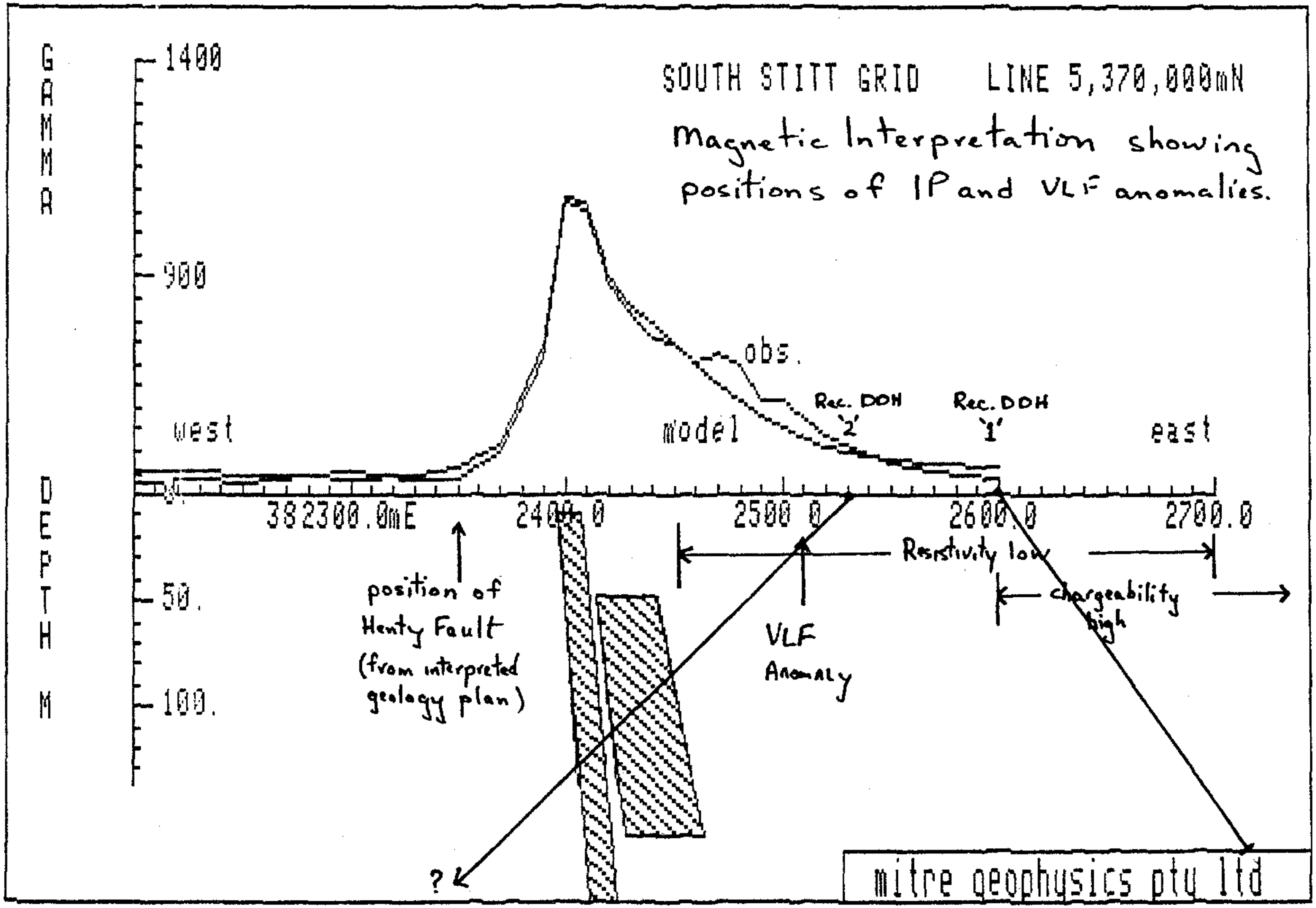
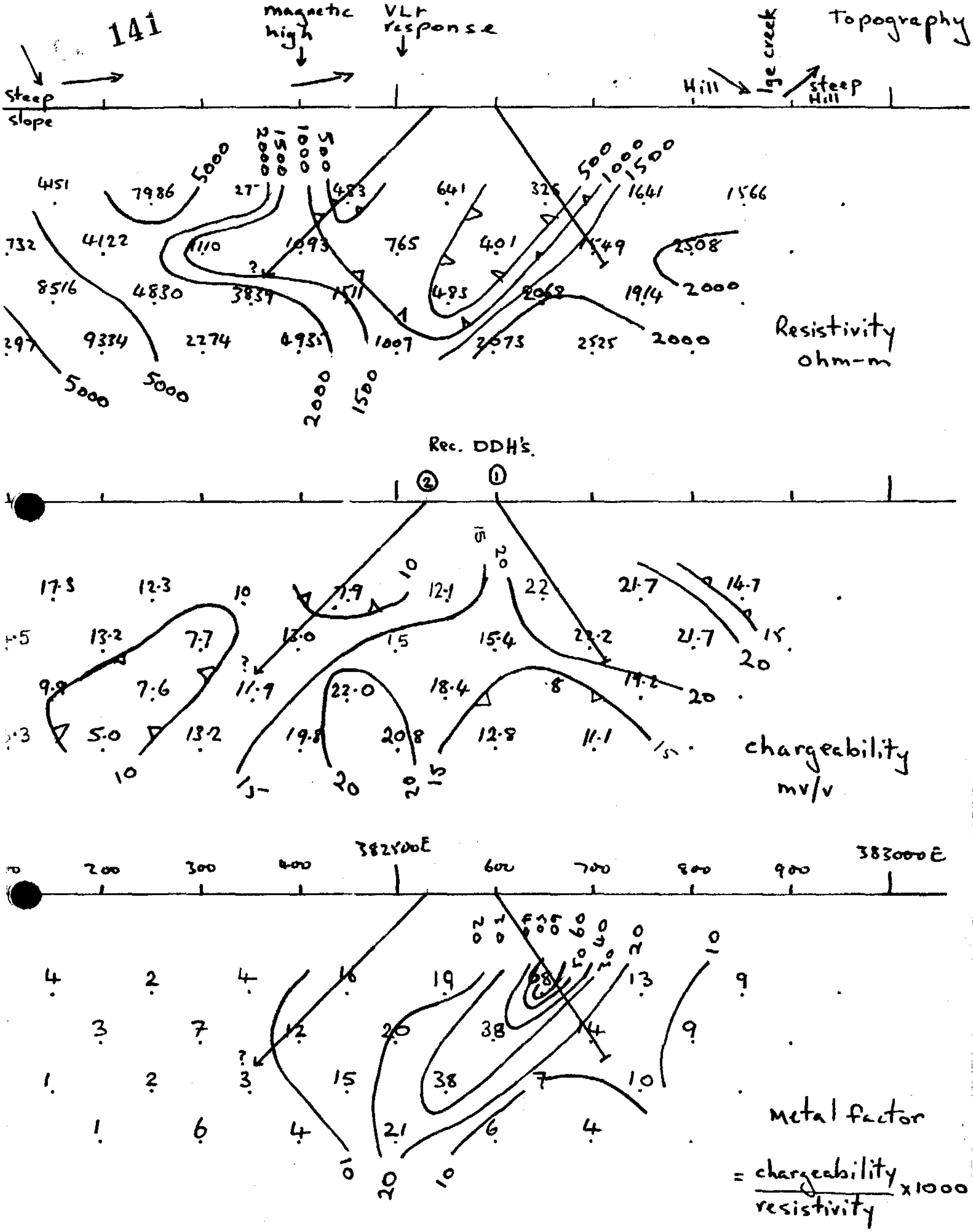
* MacGeehan, P.J., 1984; Volcanic-hosted gold deposits. Keynote address to the GSA conference Burnie, Tas.


SOUTH STITT GRID LINE 5,370,000mN
Magnetic Interpretation showing positions of IP and VLF anomalies.
GAMMA
DEPTH M
1400
900
50.
100.
west
model
east
obs.
Rec. DOH '2'
Rec. DOH '1'
382300.0mE
2400.0
2500.0
2600.0
2700.0
position of Henty Fault (from interpreted geology plan)
Resistivity low
VLF Anomaly
chargeability high
?
mitre geophysics pty ltd

062141



062142

survey by: Scintrex
date: Dec. 1979.
array: dipole-dipole
dipole: 100 m

5 cm

1:5 000 scale

Sth Stitt Grid
Line 5,370,000 mN
IP Pseudosection

JRB 8-1-85

Comments on the

GENIE SURVEY OF THE SOUTH STITT GRID

A Genie survey was carried out over the South Stitt Grid in the 1984/85 field season. The purpose of the survey was to see whether a number of Dighem responses recorded over the grid were due to conductive overburden (most of the grid is covered by glacial moraine and scree) or to bedrock conductors. A 100m coil spacing was used with a station interval of 20m.

The results were disappointing, no anomalies were obtained. They were also surprising, since neither did they indicate the presence of a conductive overburden; ie, there was no offset 'DC' level, the amplitude of which should increase with increasing frequency. (An earlier VLF survey had confirmed the presence of several conductors on the grid.) This lack of response raises some doubt as to whether the equipment was operating correctly. I suggest that the survey be checked by a traverse using a Max-Min system (ie another horizontal loop system) or by a re-run with Genie, firstly checking it over a known conductor.

Only one point of (geophysical) interest resulted from the survey, and this is at the eastern end of line 70,250mN where, at the end of the line, a partially defined and unusual shaped response (no positive shoulder) was recorded, with values down to -16%. Presumably this is beyond the area of geological interest (eg, it might be due to the Owen Conglomerate contact).

J.R. Bishop
January, 1985.

N.B.

The preliminary prolifes have been plotted at too sensitive a scale (1% per cm): this exagerates the noise level to an unacceptable level. 10% per cm is commonly used, with 5% per cm in low noise areas with subtle amplitude responses.

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APPENDIX D.4.

Interpretation of the White Spur UTEM Survey

Mitre Geophysics Pty. Ltd. Report,

December, 1984.

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MITRE GEOPHYSICS PTY LTD

MINERAL EXPLORATION AND ENGINEERING CONSULTANTS

BUGGS LANE ELLIOTT TASMANIA 7325 PHONE 004-363143

INTERPRETATION OF THE WHITE SPUR UTEM SURVEY

(MT BLACK, E.L. 1/62)

for

Getty Oil Development Company Ltd

by

Dr J.R. Bishop

GTY/MG84/09
December, 1984.

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CONTENTS

TABLES AND FIGURES

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SUMMARY

A UTEM survey was carried out in the White Spur area of E.L. 1/62 (Mt Black). The results were disappointing; no well-defined anomalies were recorded. However, a series of weak, near noise-level responses were picked on four consecutive lines. This zone is to the south and along strike from disseminated mineralisation intersected in DDH JCP216. It closely parallels Jones Creek between lines 8400S and 9200S.

It is recommended that this area be resurveyed with a transmitting loop positioned on the eastern side of the zone.

INTRODUCTION

The White Spur area is on the southern slopes of Mt Read, within EZ's Exploration Licence 1/62 (Mt Black). This licence is under a joint venture with Getty who are managing the exploration program. The area lies along strike, and about 10kms to the south of the Rosebery mine.

This report is an interpretation of a UTEM survey carried out over the Jones Creek grid in the White Spur area in Nov./Dec., 1984. The survey was carried out to explore prospective rocks in the western half of the grid and to follow up some Dighem responses recorded over glacial cover and scree in the eastern half of the grid.

GEOLOGY AND EXPLORATION TARGET

The Jones Creek grid overlies Cambrian rocks belonging to the Mt Read Volcanics. These volcanics are host to several base metal mines and deposits and the exploration target is another strata-bound, volcanogenic massive sulphide deposit.

More specifically, a deposit similar to Rosebery or the nearby Hercules mine is the expected target. These bodies are high in zinc/lead and low in copper. They are not excellent conductors, however they are sufficiently conductive to be detected, at depth, by time domain EM systems such as UTEM.*

Rosebery is a 'distal' type of deposit and sediments within the volcanics are prospective sites for mineralisation. Black shales within the sediments may be defined by IP surveys, but EM techniques are best applied to detect the zone of high conductivity usually associated with a massive sulphide deposit. Several shale bands (and tuffaceous sediments) have been mapped on the Jones Creek grid.

EXPLORATION HISTORY

The White Spur area was covered by a Turair survey flown in 1972 (Linford, 1972). About half of the Jones Creek grid was covered by the survey (the western half), but no responses were recorded.

In 1979 an IP survey was undertaken on lines 122m (400ft) apart (Howland-Rose, 1979). The gradient array was used with dipole-dipole follow up over interesting responses. The two best responses (to 45 and 25mv/v) were drilled. DDH JCP211 intersected 40m of pyritic black shales and JCP216 intersected shales and

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* Eadie and Silic (1984) have shown that the very weak UTEM response over Hellyer (at approximately 150m depth) is due to that body's geometry, not its (supposedly poor) conductivity (ie, the response rises rapidly as the width is increased).

tuffs containing disseminated pyrite and base metal mineralisation (both holes were logged with IP and high chargeabilities were recorded over these horizons).

In December, 1983 a Dighem survey was flown over the area (part of the Rosebery East survey). Six responses (including two 'possibles') were recorded in the north eastern quadrant of the Jones Creek grid. Although not likely to be caused by bedrock conductors (Dvorak, 1984), some, if not all, of the anomalies occurred over glacials and scree and were considered worth following up. Further, the 'H' type responses (denoting a broad conductive rock unit) might be indicative of sedimentary sequences -potential sites for mineralisation).

SURVEY DETAILS

The area surveyed measures approximately 1km wide by 2.5km long. It was covered by two loops on the western side of the grid, however excessive noise on the eastern ends of the northernmost lines (on all of loop 1) meant that a third loop was laid to re-read this area. The source of the noise was initially thought to be the microwave repeater station on Mt Read, but since the loop 3 lines were relatively free of noise, it seems likely that the 1000m to 1200m lines were too long. (A loop size of approximately 1.5km by 1km was used and host rock resistivities were interpreted to be 2000 to 5000ohm-m. Traverses of at least 1.5 times the loop side (1km) should be possible in this resistive environment.)

The line spacing was approximately 120m with a station interval of 25m. On loop 3 (the repeat coverage), every other line was read. The loop positions are shown in Figure 1 and the line coverage listed in Table 1. Only the vertical component was measured.

INTERPRETATION

The results from the survey are disappointing, no well-defined anomalies were obtained. Since no obvious conductors were defined (and remembering the very subtle response that located the Hellyer deposit), the data was examined for possible anomalies within the noise: ie, very low amplitude responses which were likely to be noise, but which had shapes consistent with genuine anomalies. One such response was found, occurring over four lines (thus suggesting that it is a real feature, if not a prospective anomaly).

The response occurs at: 360E/8000S, 410E/8400S, 380E/8800S & 440E/9200S*. The line connecting these points closely follows

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* The response on all four lines is mostly restricted to channel 5. It is best developed on lines 8400S and 8800S.

Jones Creek and may be along strike from the minor mineralisation intersected in DDH JCP216 (see Figure 1). The source of the responses appears to be plunging to the south. The amplitudes are too small to permit any confident interpretation for dip, depth, etc; however an interpretation was attempted and this suggests that a weak conductor, of limited depth extent, lies at a depth of around 100m. Dip is poorly resolved, but a westerly dip is indicated. It is recommended that this area be re-surveyed with a loop on the eastern side. If the dip is westerly, this should provide better coupling as well as further information on position and attitude.)

The positions of several near-surface conductors are shown in Figure 1. These have been picked from the early time UTEM data and are indicative of poorly conducting features such as faults or glacial cover. It can be seen that the Dighem responses are closely correlated with these features.

CONCLUSIONS AND RECOMMENDATIONS

The UTEM survey of the Jones Creek grid has effectively tested the area for a massive sulphide deposit of the Rosebery type. With the exception of the one area discussed above, it is unlikely that such a deposit occurs elsewhere on the grid within say at least 100m to 150m of the surface.

It is recommended that the area between 7600S and 9600S in the vicinity of 400E, be resurveyed with a loop on the eastern side. Possible loop coordinates are: 7600S, 1000E, 9600S and the leading edge at 600E (any closer to the zone and the full shape of the response might be obscured).

J.R. Bishop
Dec., 1984.

REFERENCES

Dvorak, Z., 1984. Dighem survey of the Rosebery East area. Dighem report no. 367 for Getty.

Eadie, E.T. and Silic, J. 1984. The application of geophysics in the discovery of the Hellyer ore deposit. Preprint.

Howland-Rose, A.W., 1979. A report on gradient array EIP reconnaissance and dipole-dipole detail surveys over the White Spur grid. Scintrex report Tas-065 for EZ.

Linford, J.G., 1972. Report on Turair survey Rosebery area. Scintrex report for EZ.

TABLE 1

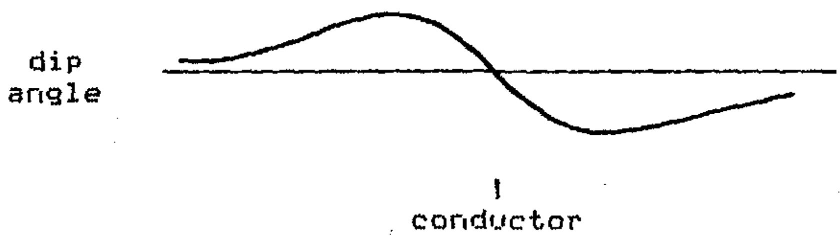
UTEM coverage of the Jones Creek Grid

Line	Loop 1 Stations	Loop 3 Stations
2400S	25E to 1225E	675E to 1225E
2800S	"	
3200S	"	"
3600S	"	
4000S	25E to 1200E	650E to 1200E
4400S	25E to 1175E	
4800S	25E to 1200E	675E to 1175E
5200S	"	
5600S	25E to 1175E	650E to 1150E
6000S	25E to 1200E	
6400S	25E to 1150E	700E to 1150E
6800S	25E to 1125E	
7200S	25E to 1100E	700E to 1100E
	Loop 2	
7600S	25E to 1075E	
8000S	25E to 1000E	
8400S	25E to 1075E	
8800S	25E to 1100E	
9200S	25E to 1000E	
9600S	25E to 975E	
10000S	25E to 1025E	
10400S	25E to 1000E	

ADDENDUM

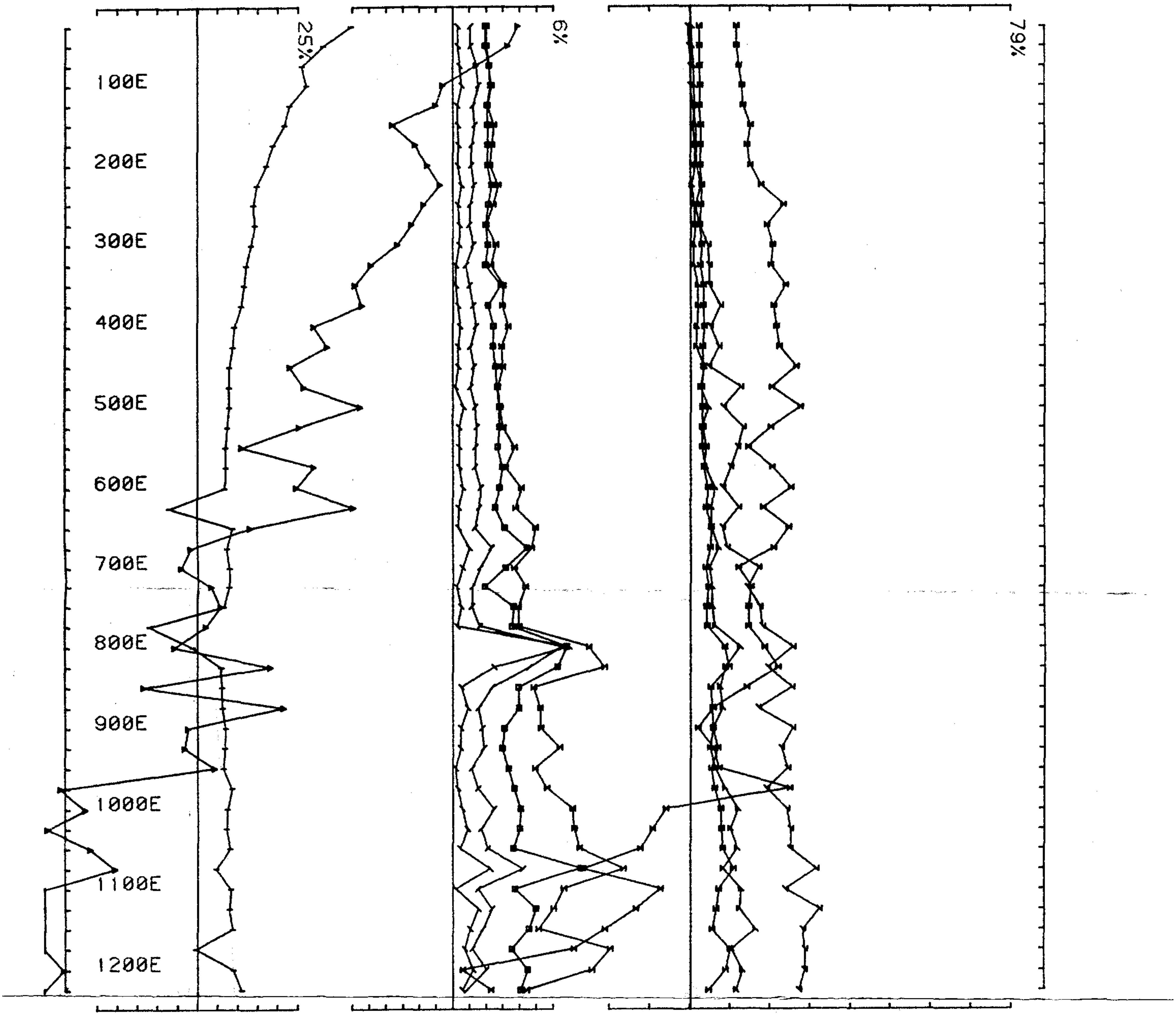
VLF Surveys

A VLF meter was read over six lines of the Jones Creek grid to compare the responses with the UTEM results. A Phoenix VLF-2 receiver was employed, using the Japanese transmitting station at Yosamai. Dip angle and field strength were measured at 25m intervals along the lines. The plotting convention for the dip angle data is:



The results are shown in Figures A1 to A6.

Good VLF responses (with coincident field strength highs) were obtained and these correlated with the early time UTEM responses (channels 9 & 8). The best VLF response, on line 4800S, correlated with a UTEM response which persisted to channel 7 (ie, a better conductor). Interpretation of these UTEM responses shows them to be due to poor, superficial conductors. As previously mentioned, the several Dighem responses correlate with these conductors.



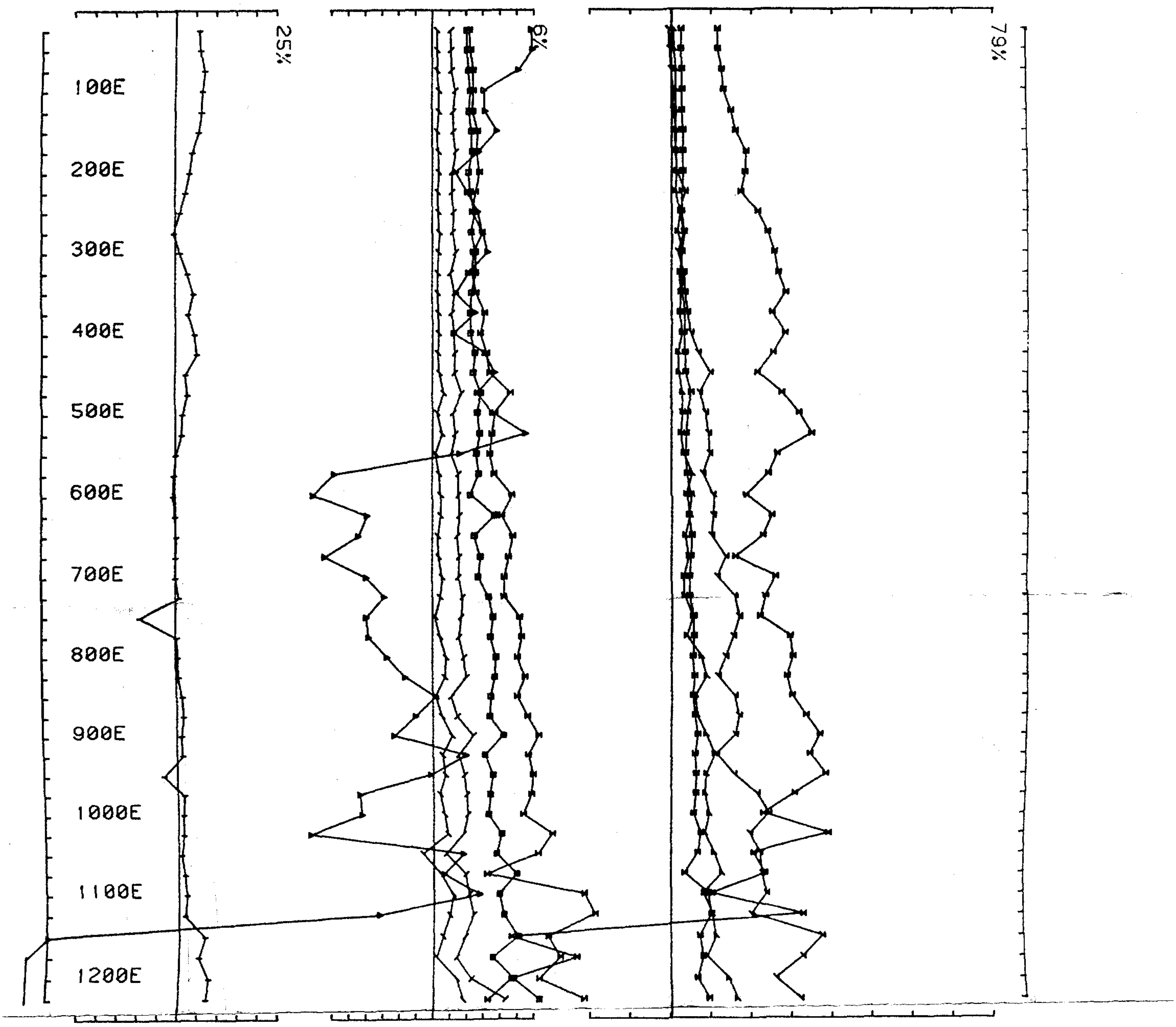
UTEM SURVEY conducted by PMM DJA Job 8455

Project Area White Spur Survey for Getty Minerals freq(hz) 26.230

Loopno 0001 Line 2400S component Hz secondary Ch 1

062155

155



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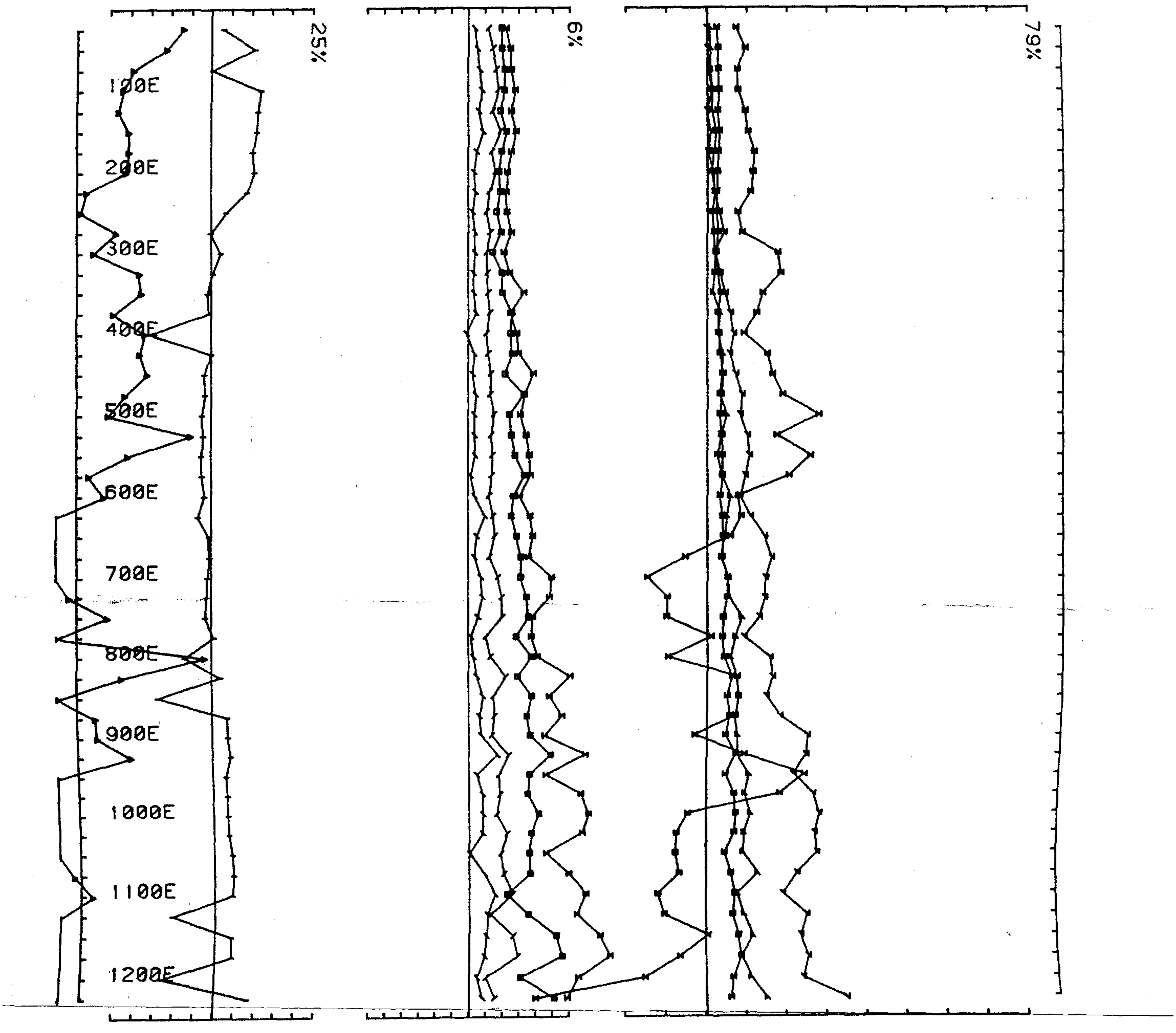
C. 156



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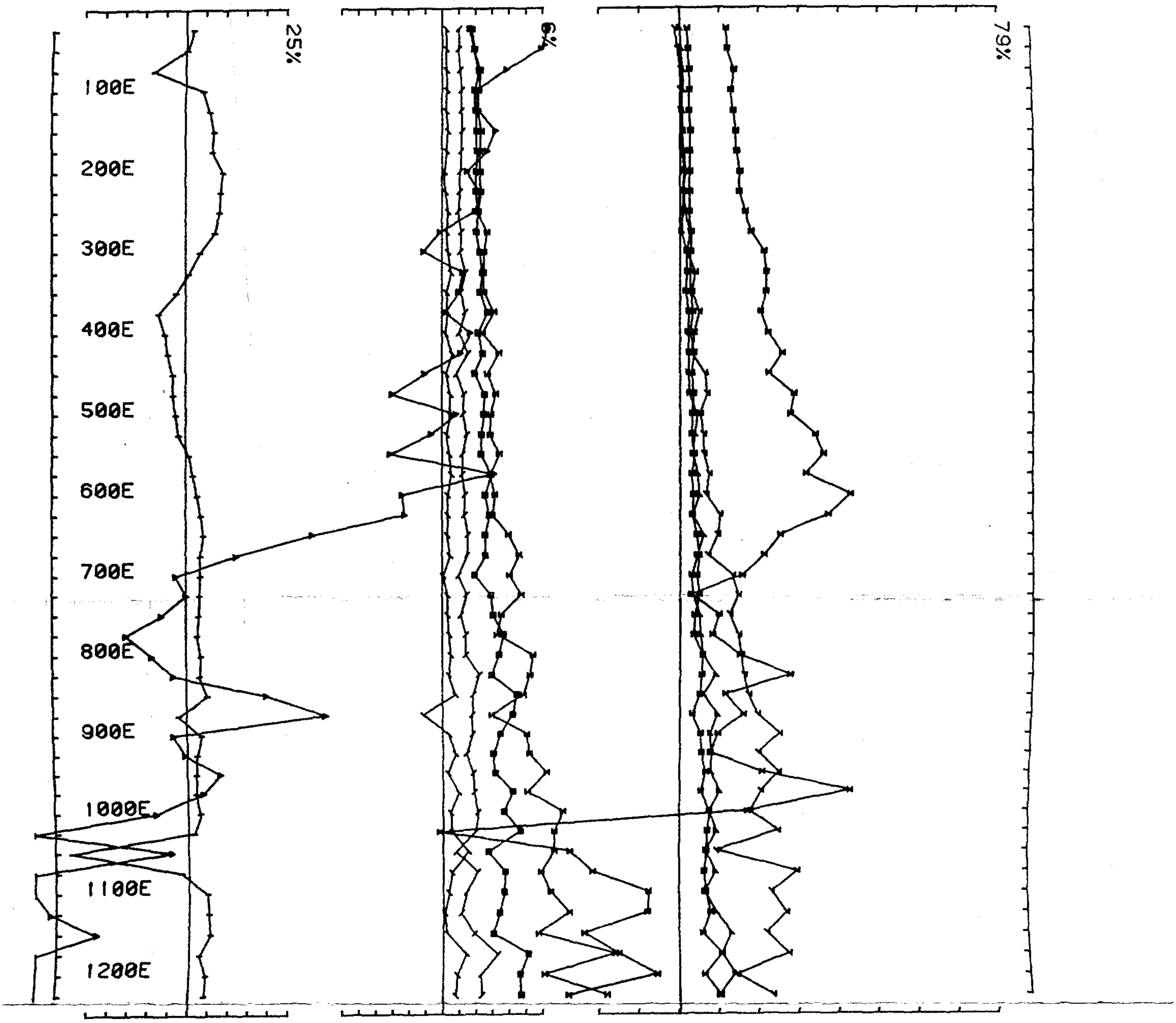
C. 157



UTEM SURVEY conducted by PMM DJA Job 8455

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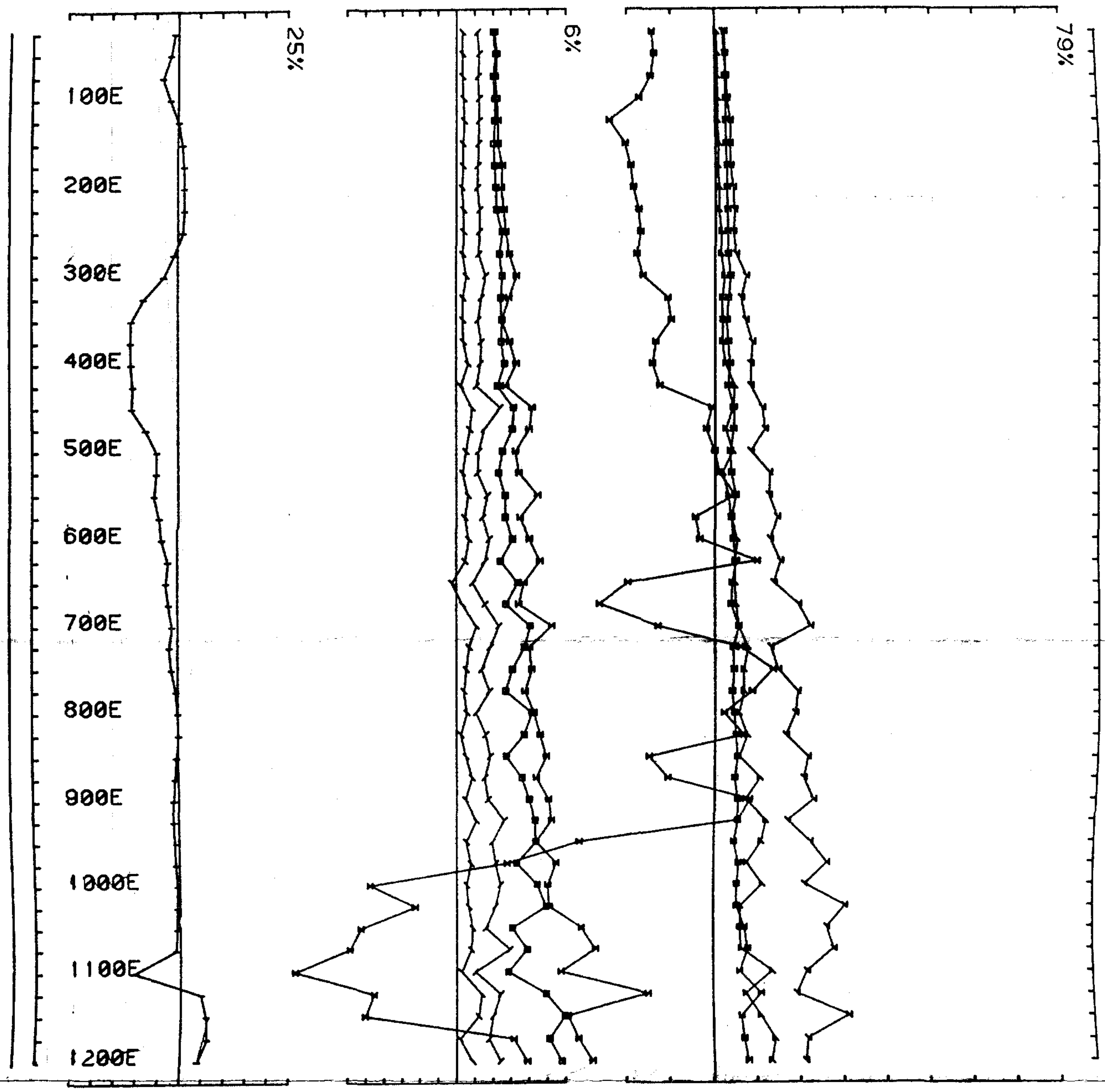
Loopno 0001 Line 3600 S component Hz secondary Ch 1 .

062158

P. 158



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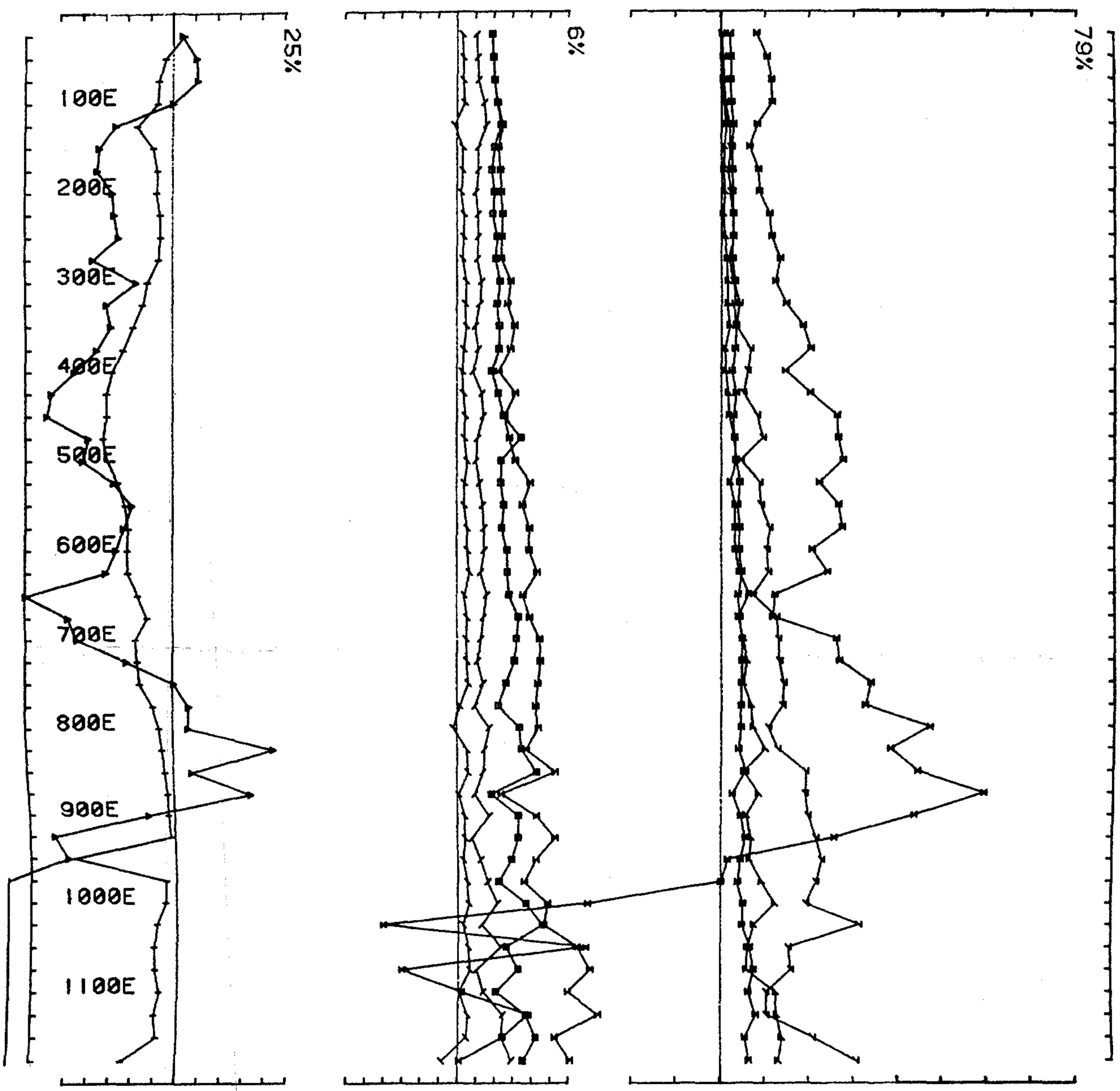

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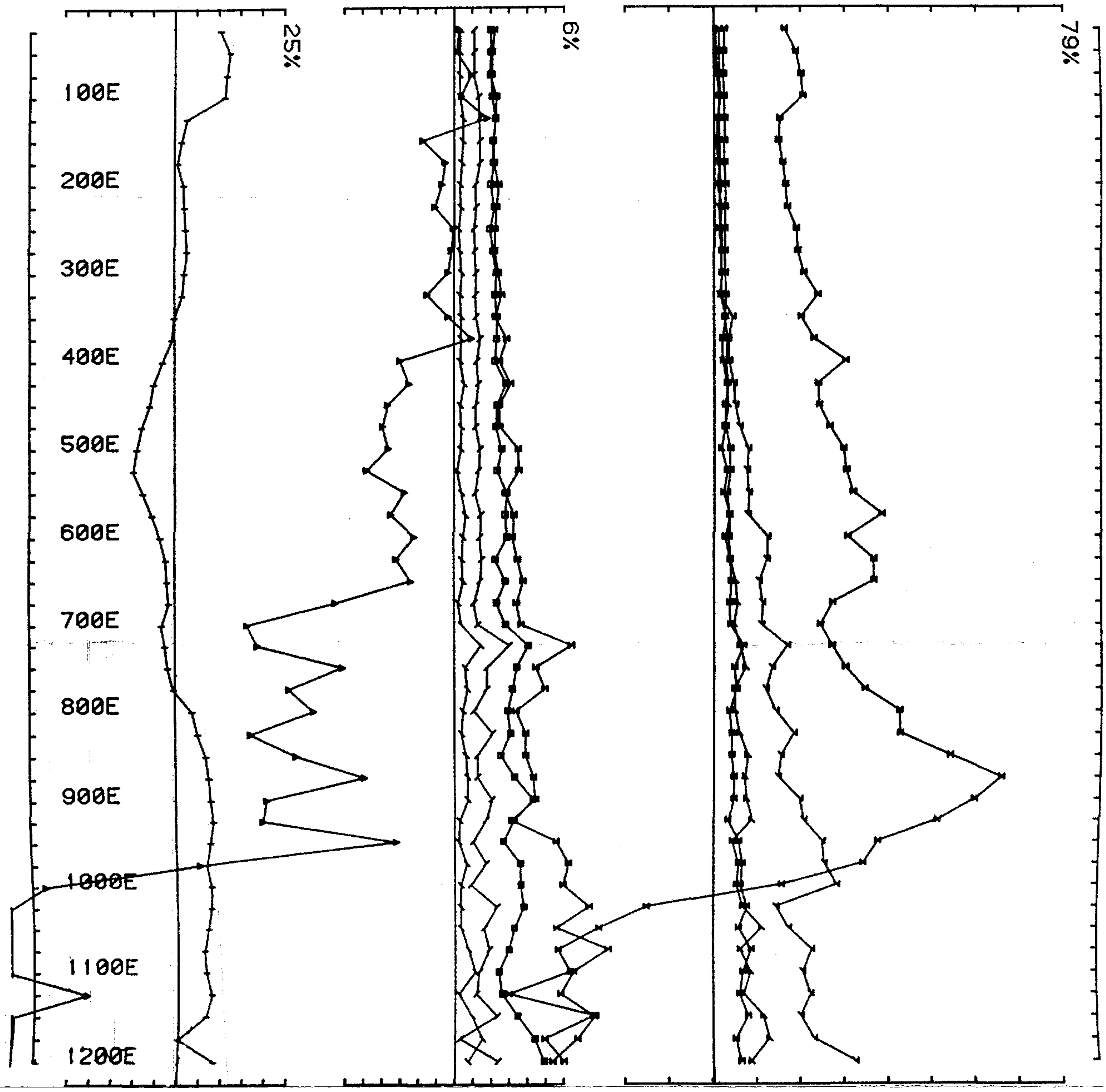
062160

160



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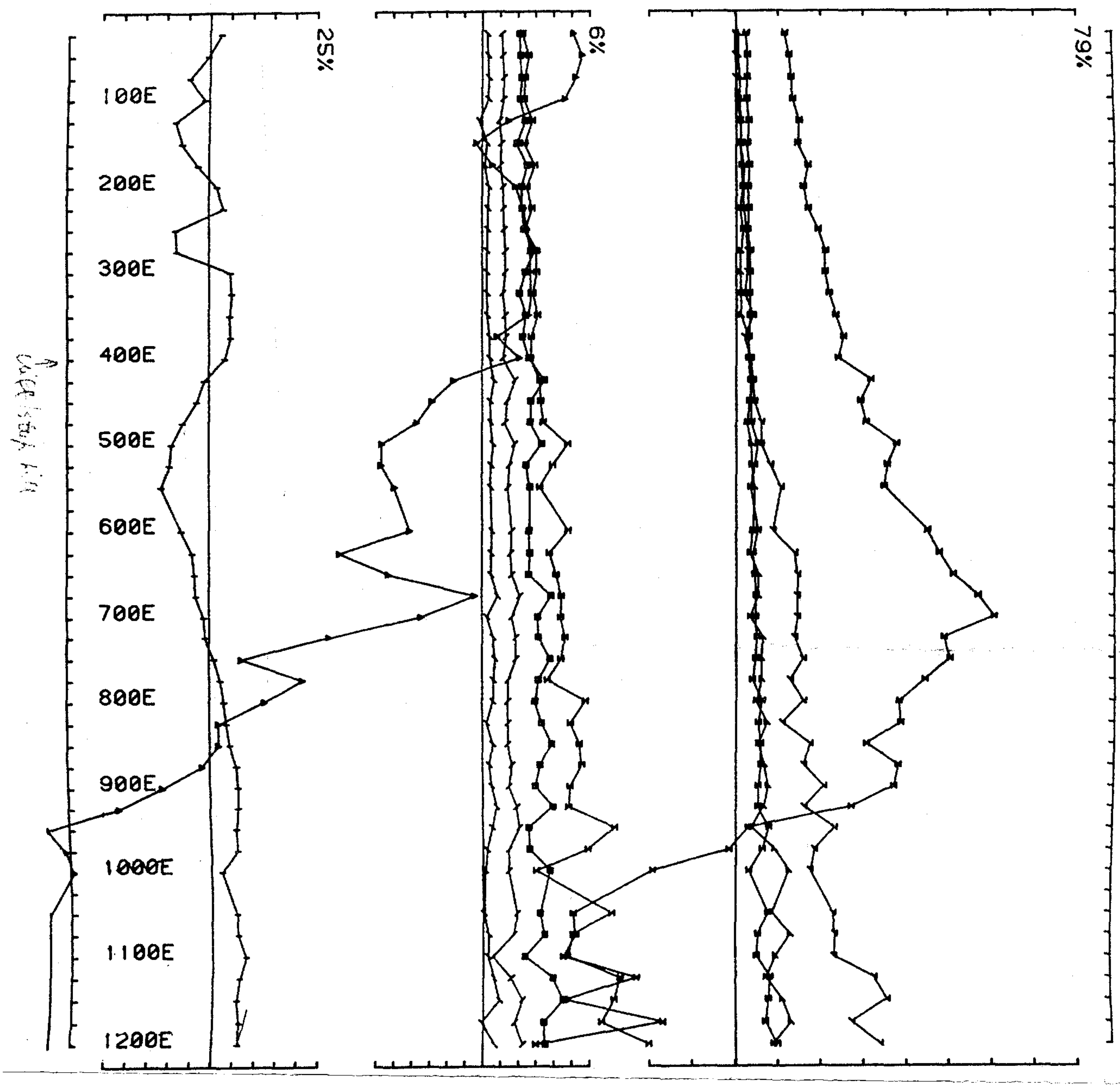
Loopno 0001 Line 4800S component Hz secondary Ch 1

062161

C. 161



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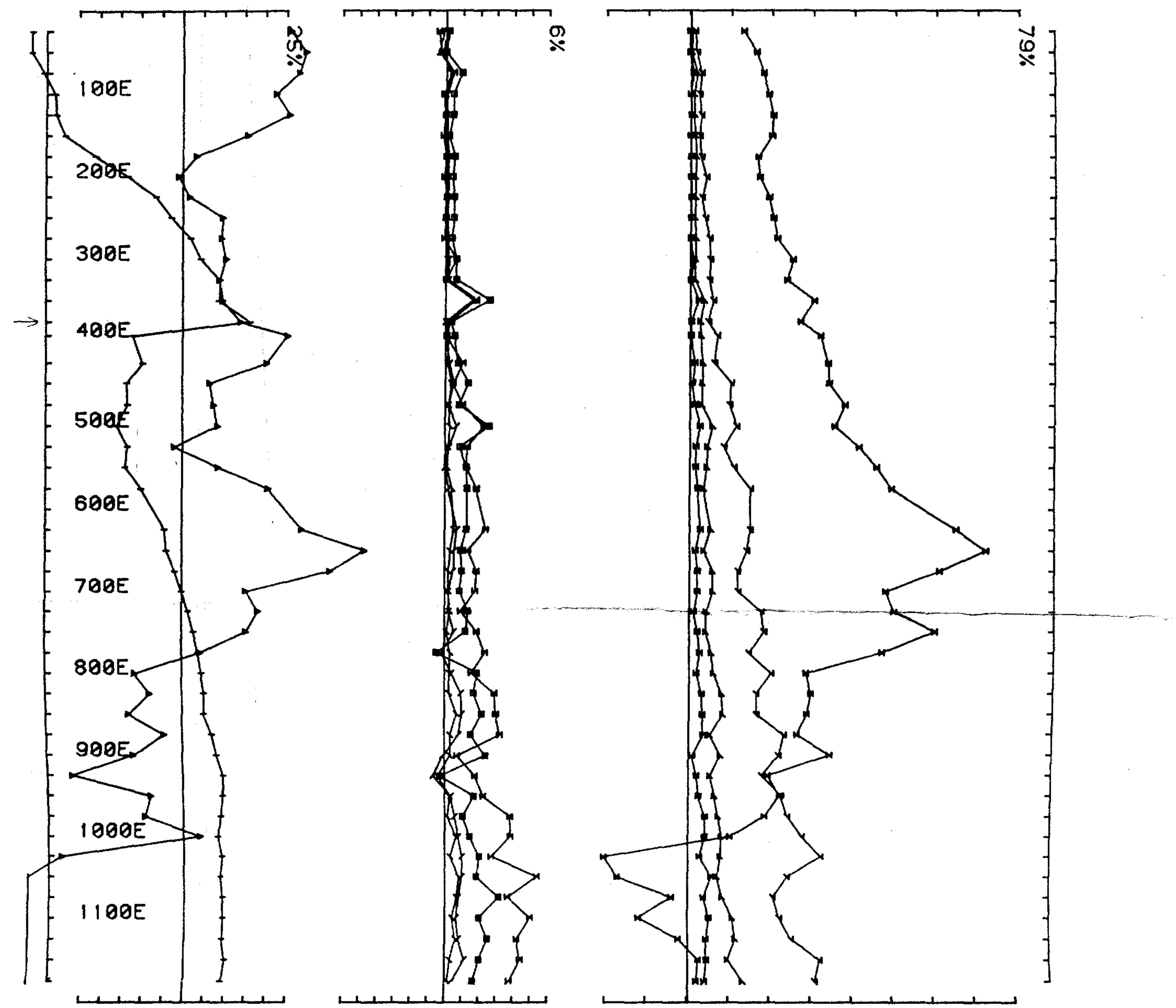

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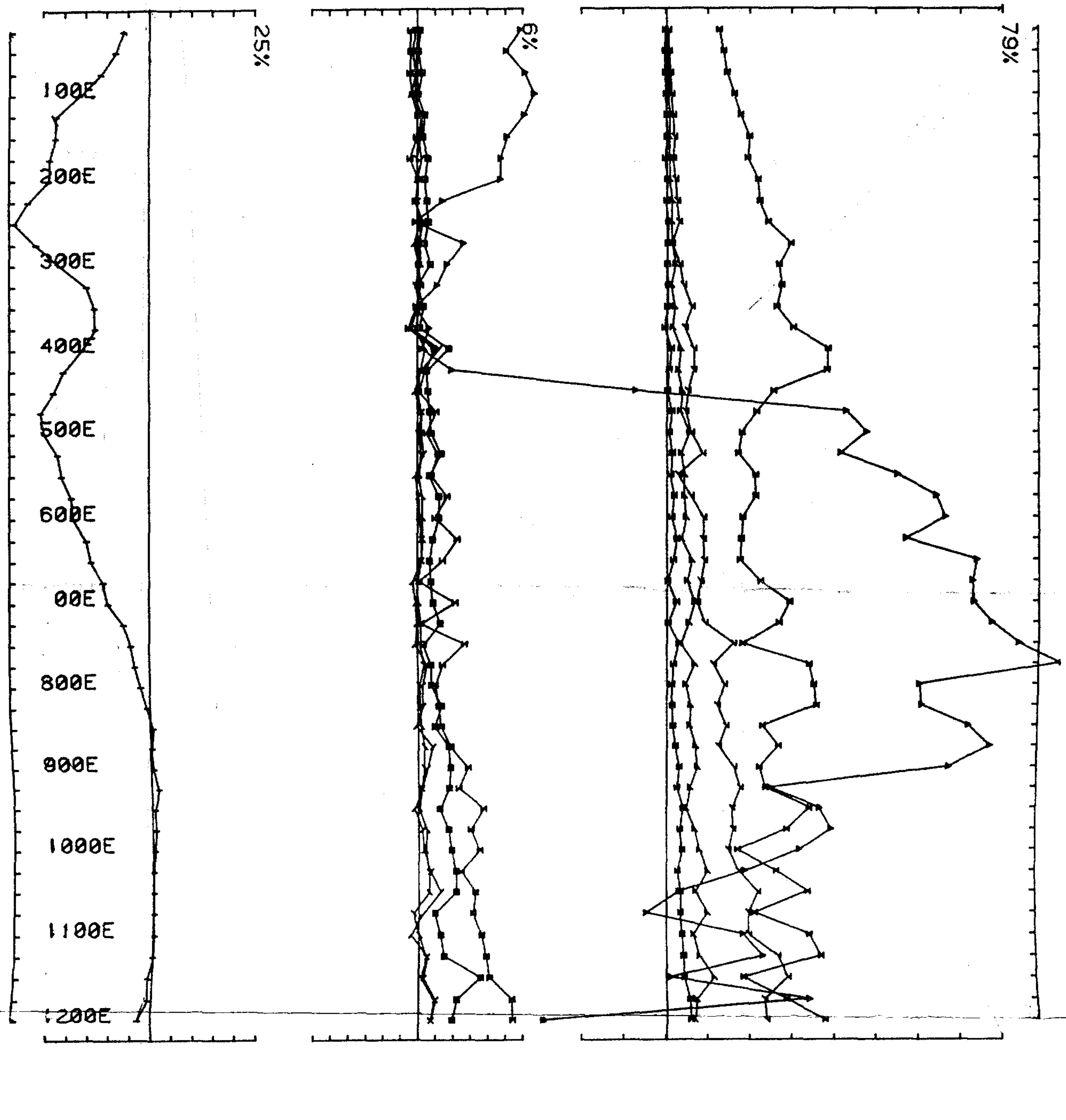

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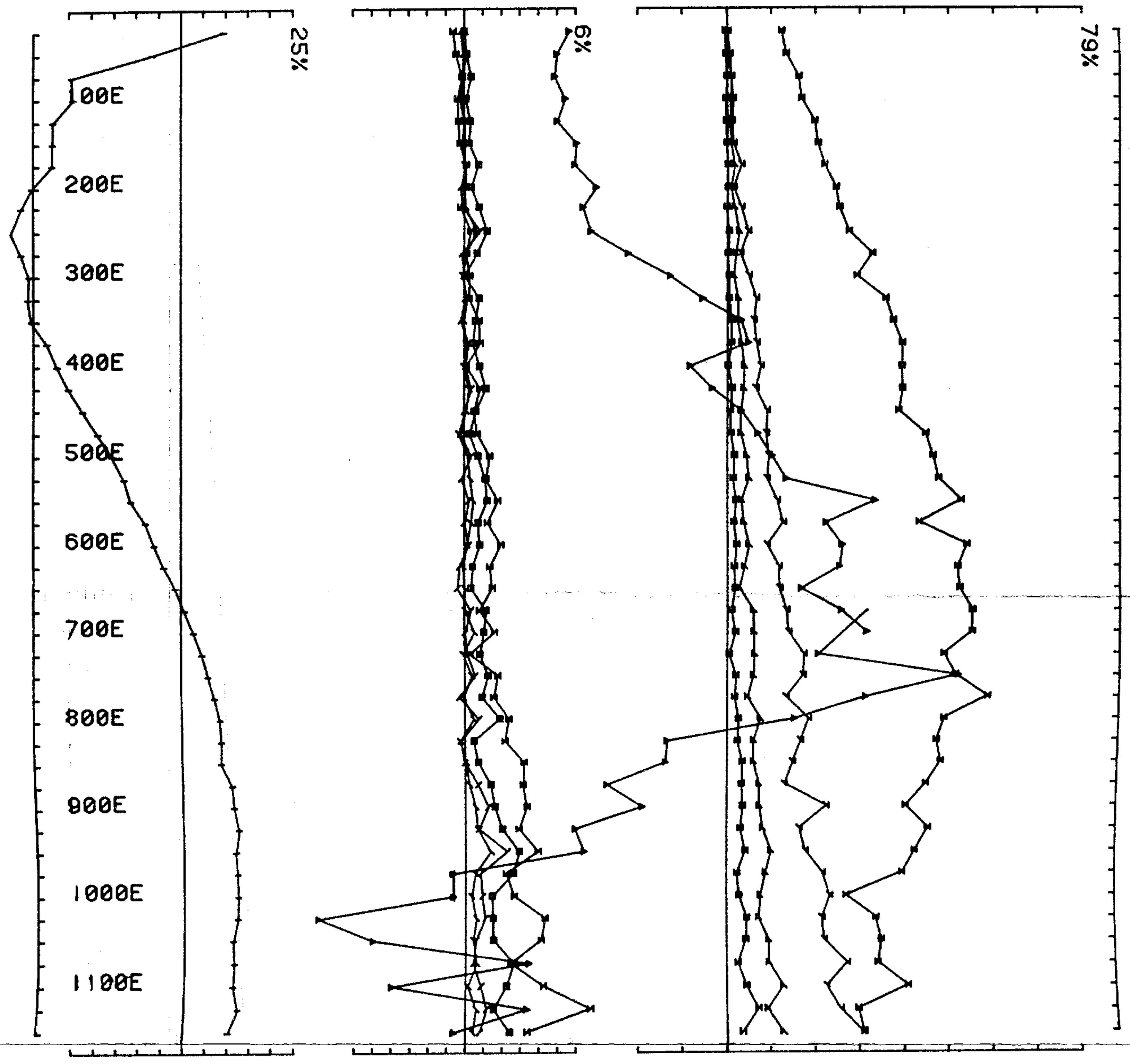
C. 164



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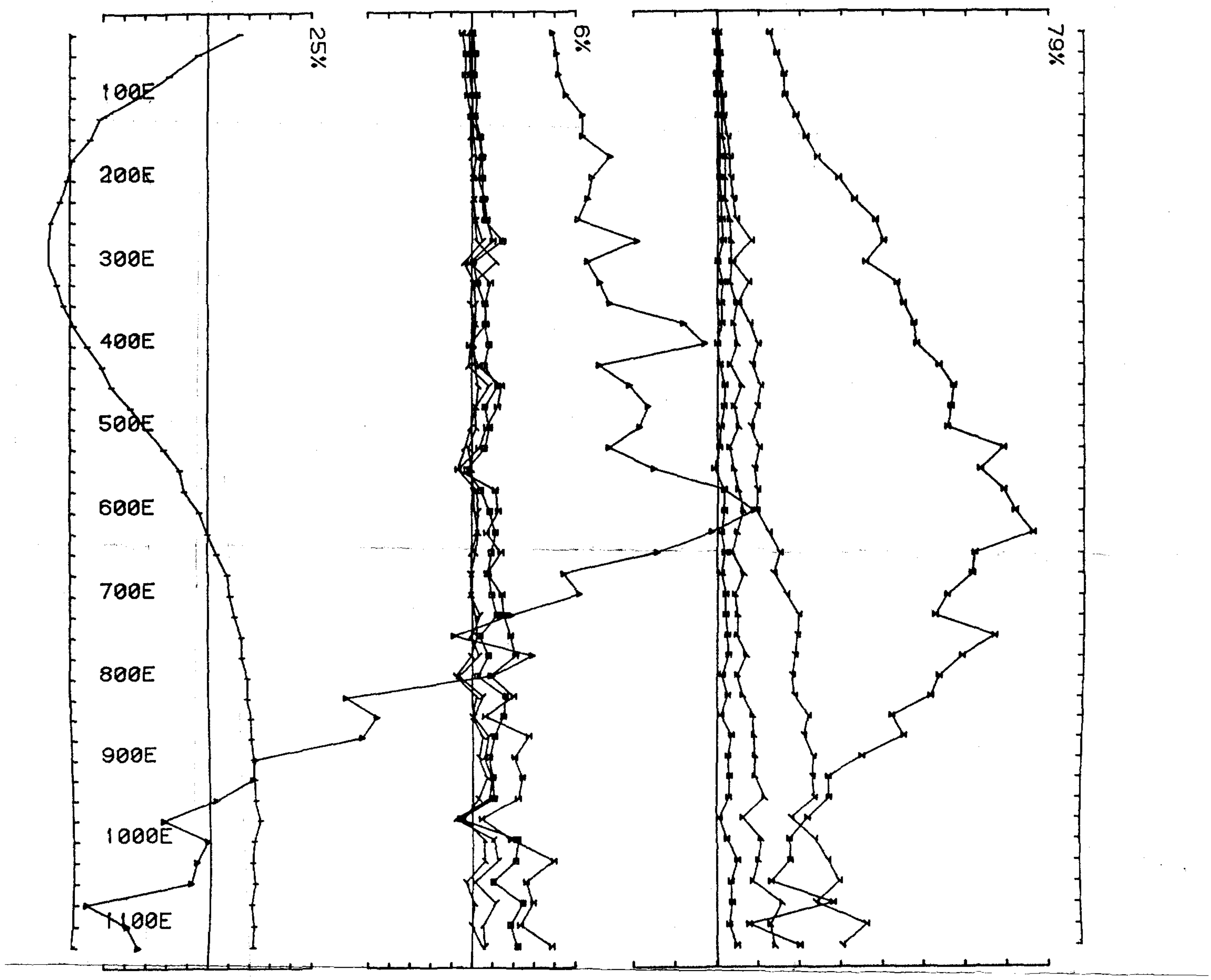
062165



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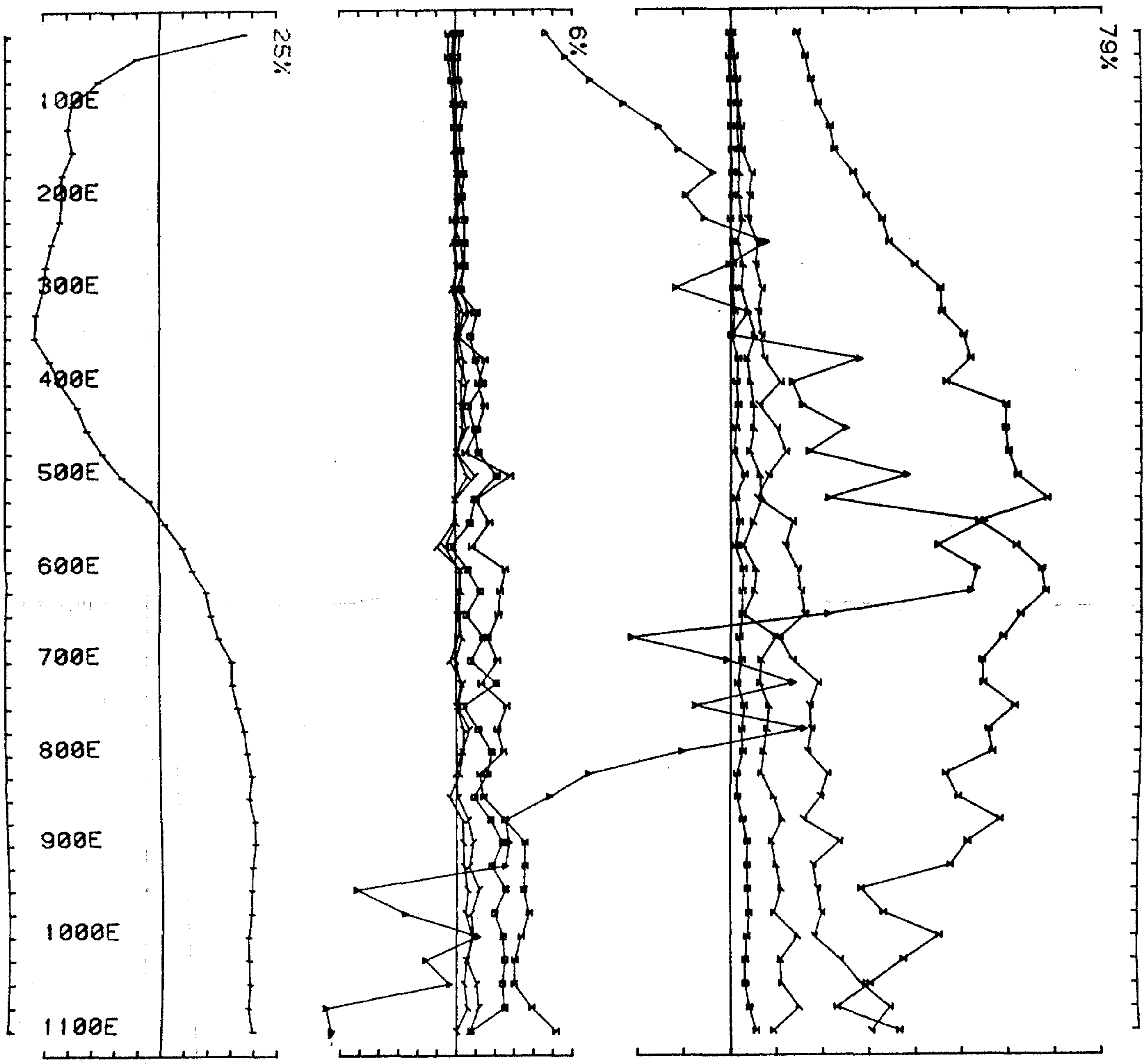
Project Area White Spur Survey for Getty Minerals freq(hz) 26.230
Loopno 0001 Line 6800S component Hz secondary Ch 1

062166



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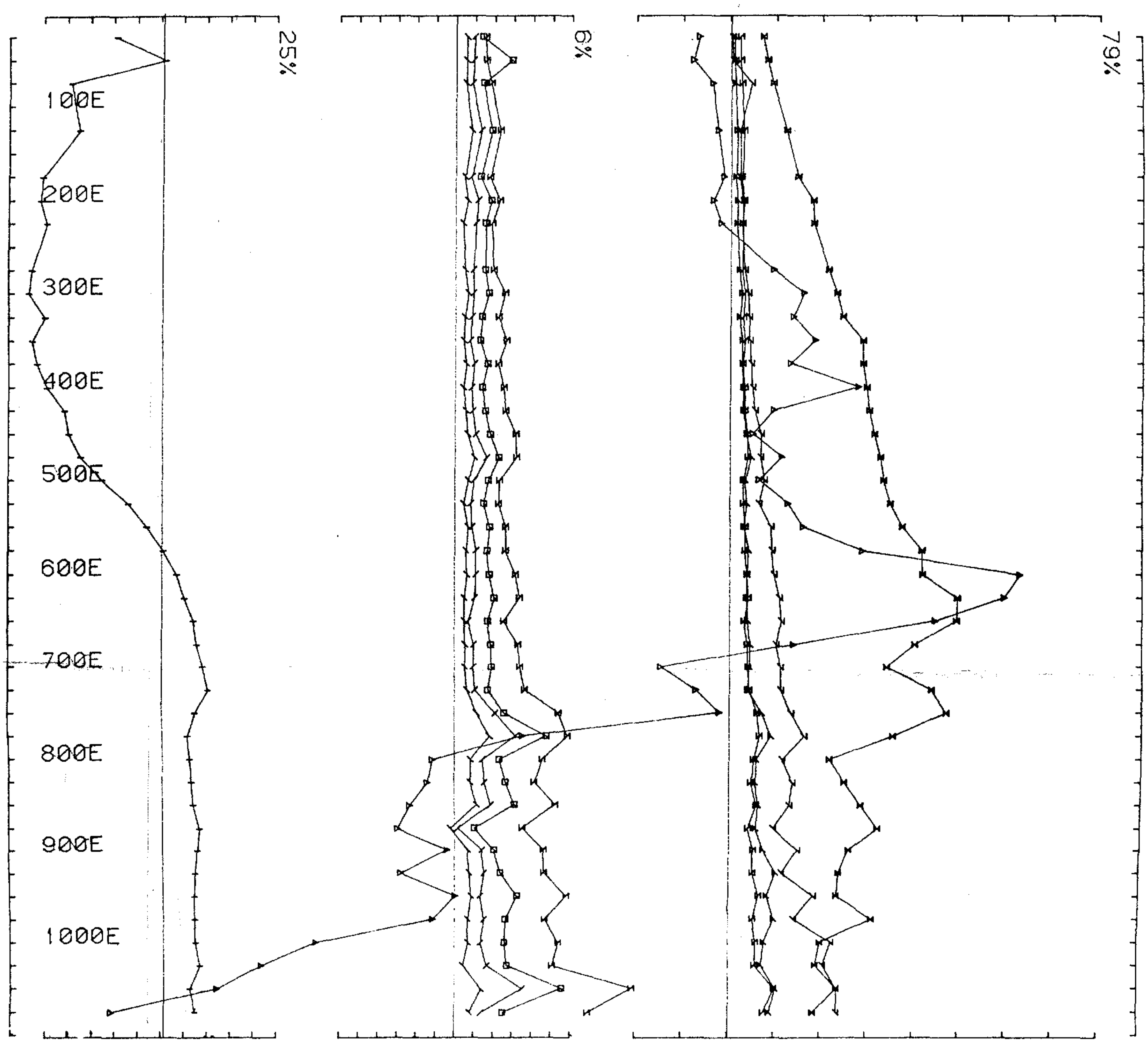
Project Area White Spur Survey for Getty Minerals freq(hz) 26.230

Loopno 0001 Line 7200S component Hz secondary Ch 1

062167



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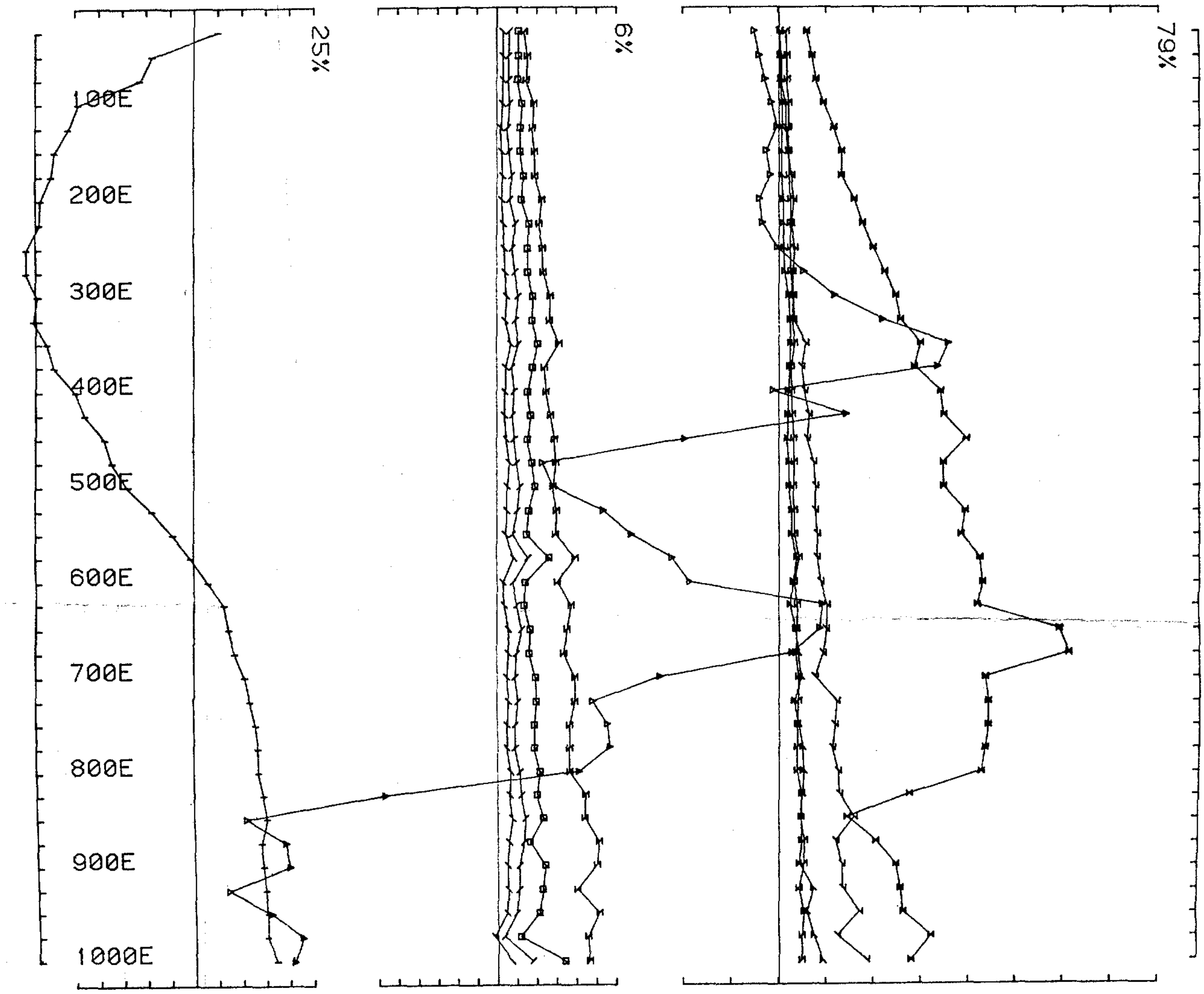
Loopno 0002 Line 7600S component Hz secondary Ch 1

062168



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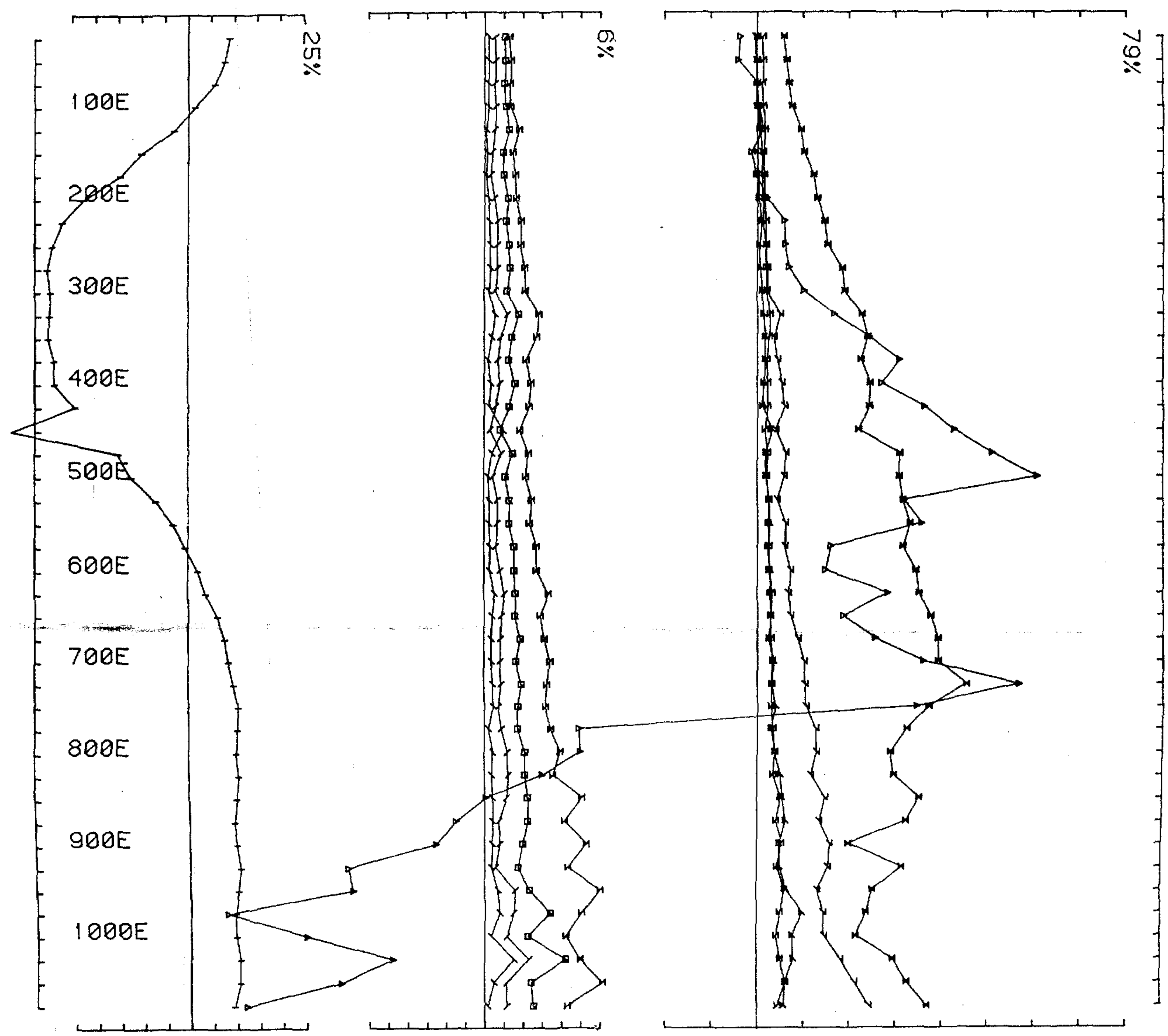


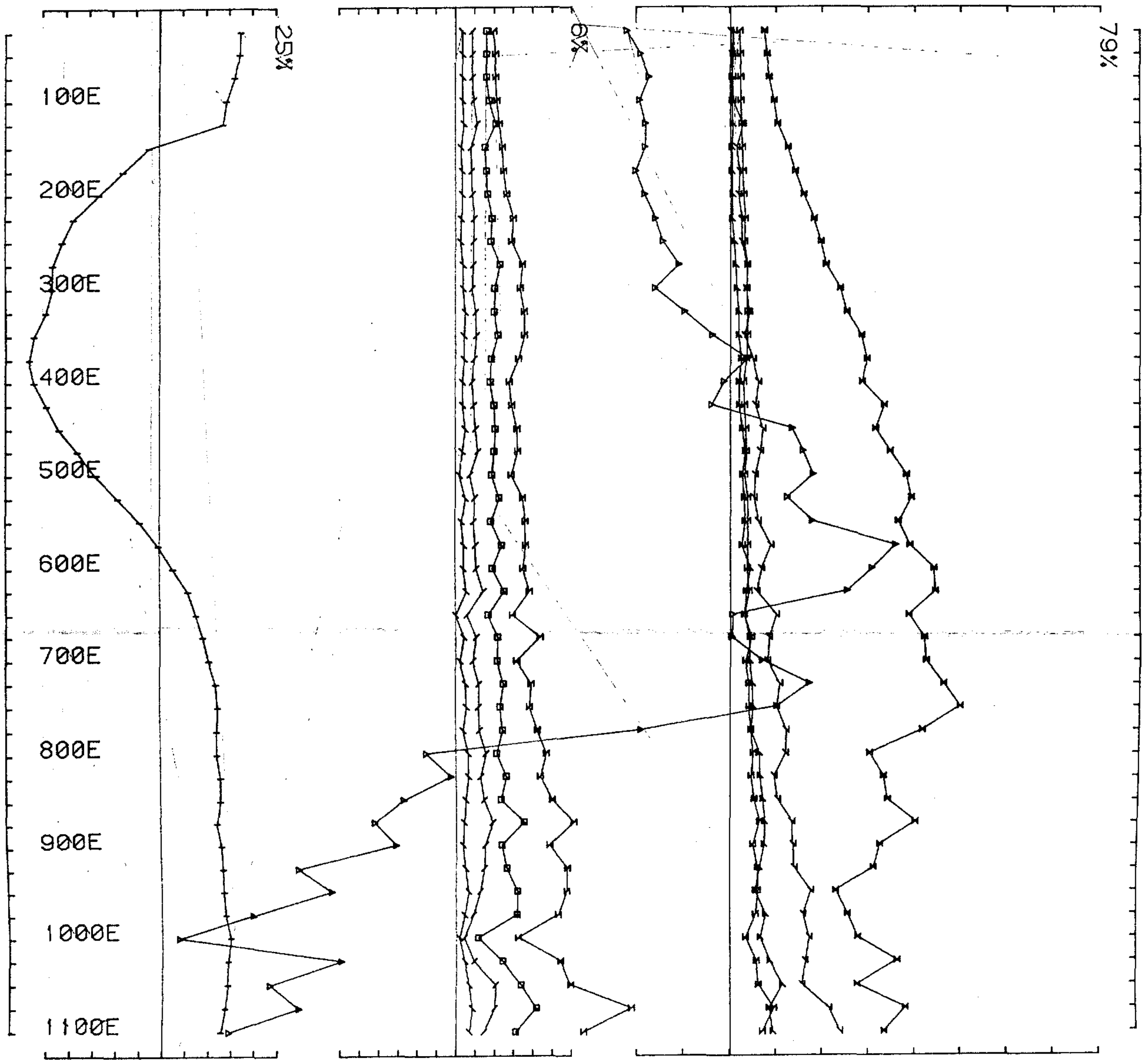
UTEM SURVEY conducted by PMM ML Job 8455

Project Area White Spur Survey for Getty Minerals freq(hz) 26.230

Loopno 0002 Line 8400S component Hz secondary Ch 1

0621170

170



UTEM SURVEY conducted by PMM ML Job 8455
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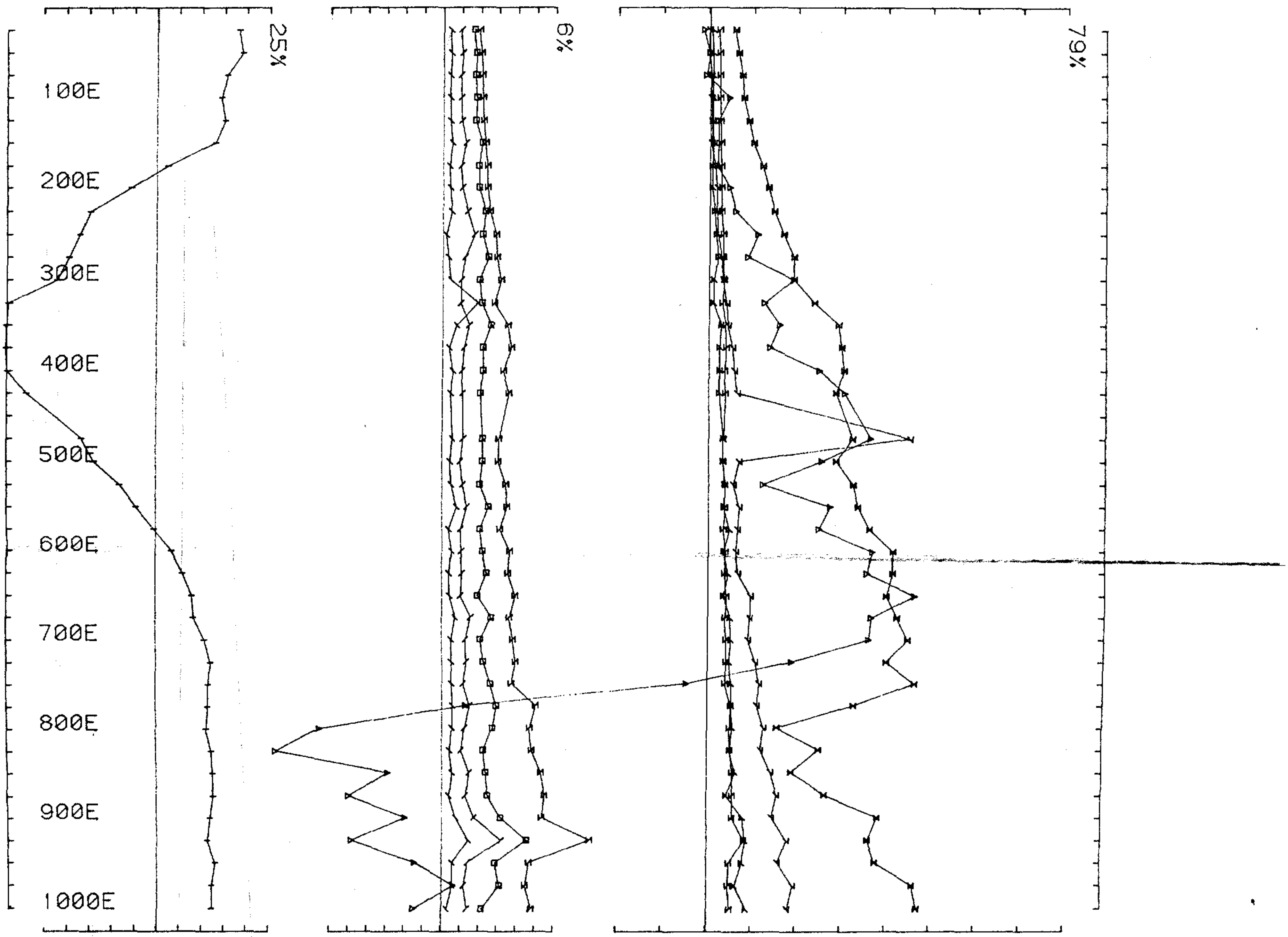
Loopno 0002 Line 8800S component Hz secondary Ch 1

062171

171

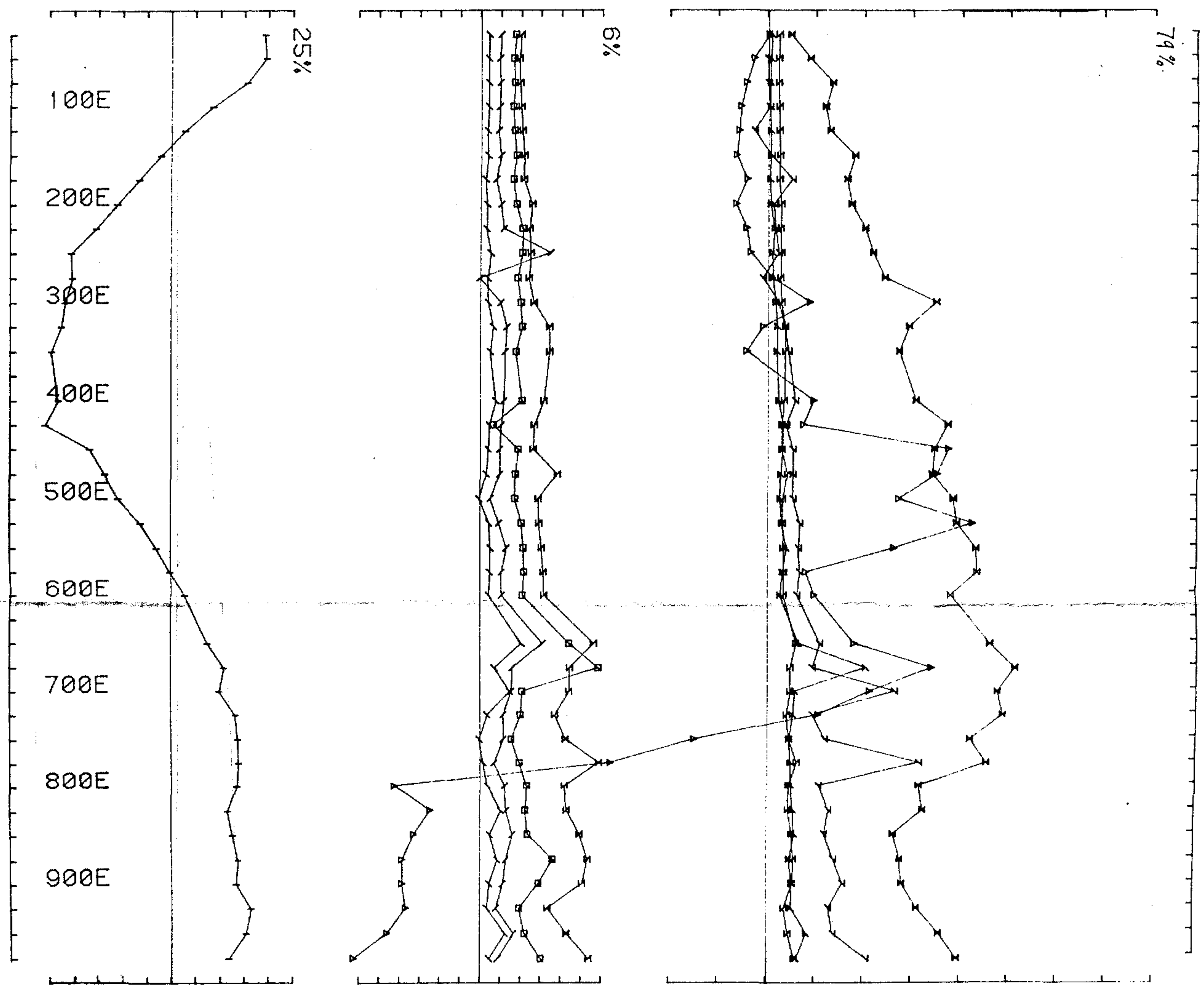


UTEM SURVEY conducted by PMM ML Job 8455

Project Area White Spur Survey for Getty Minerals freq(hz) 26.230

Loopno 0002 Line 9200S component Hz secondary Ch 1

062172



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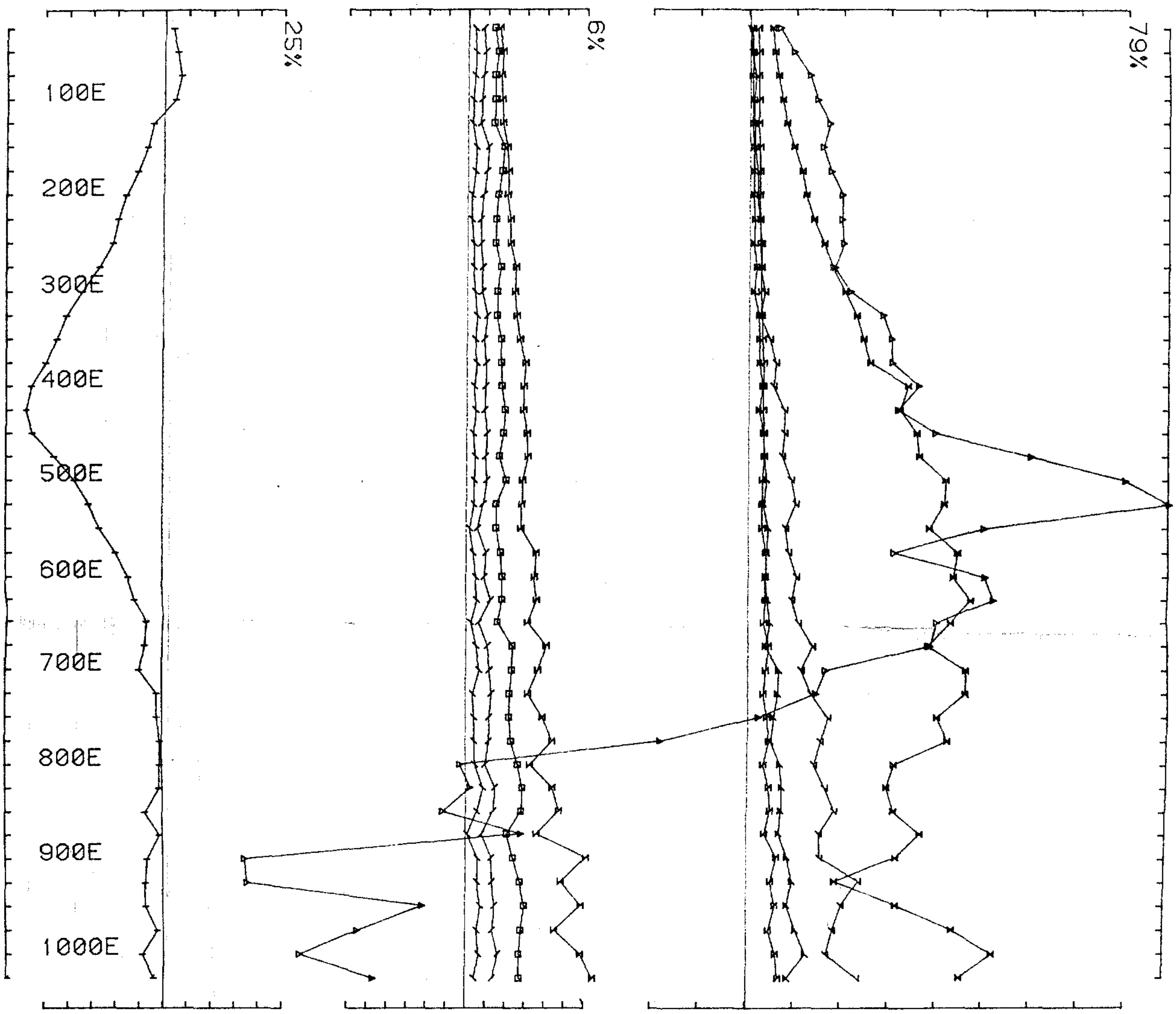
062173

173



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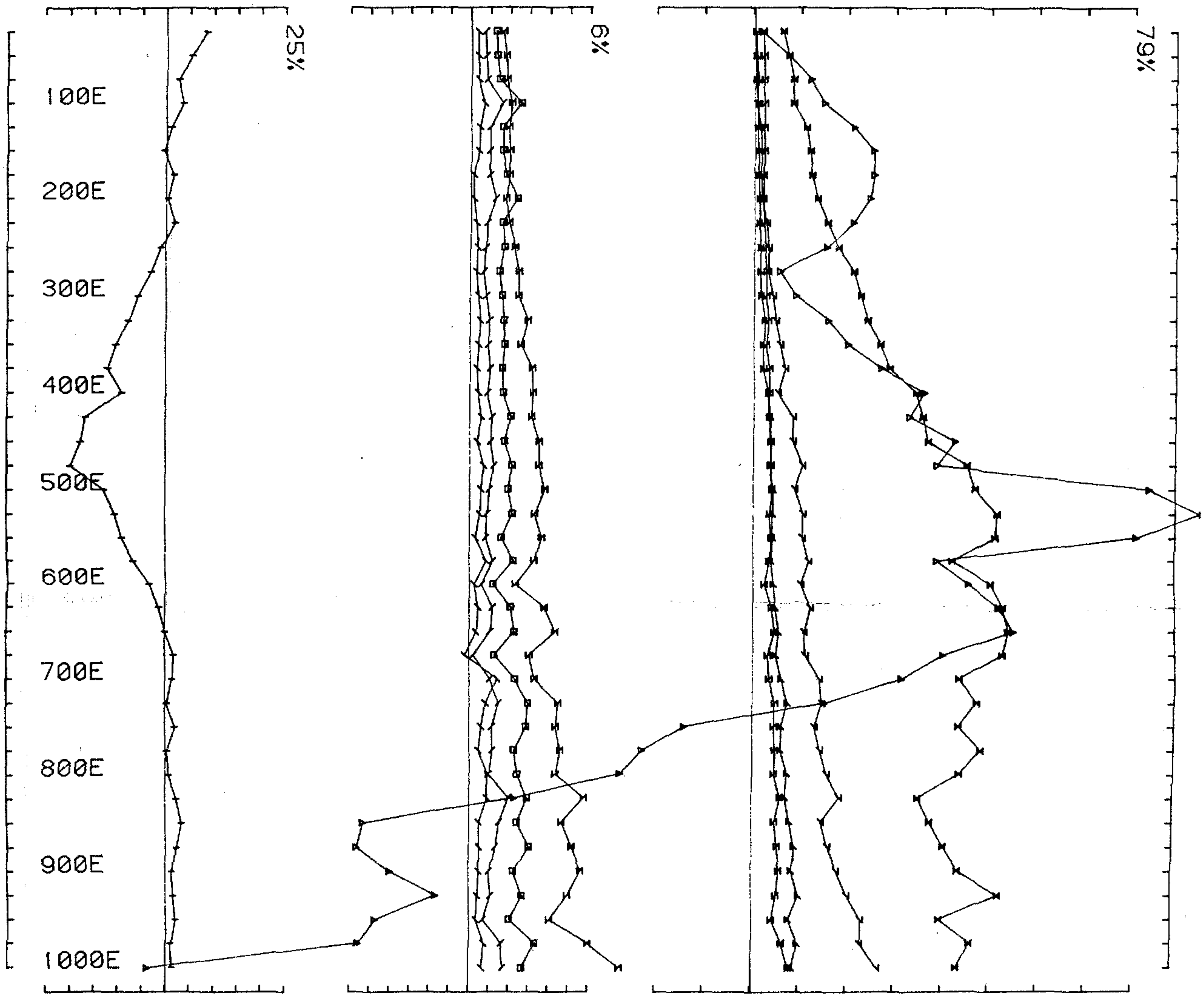
062174



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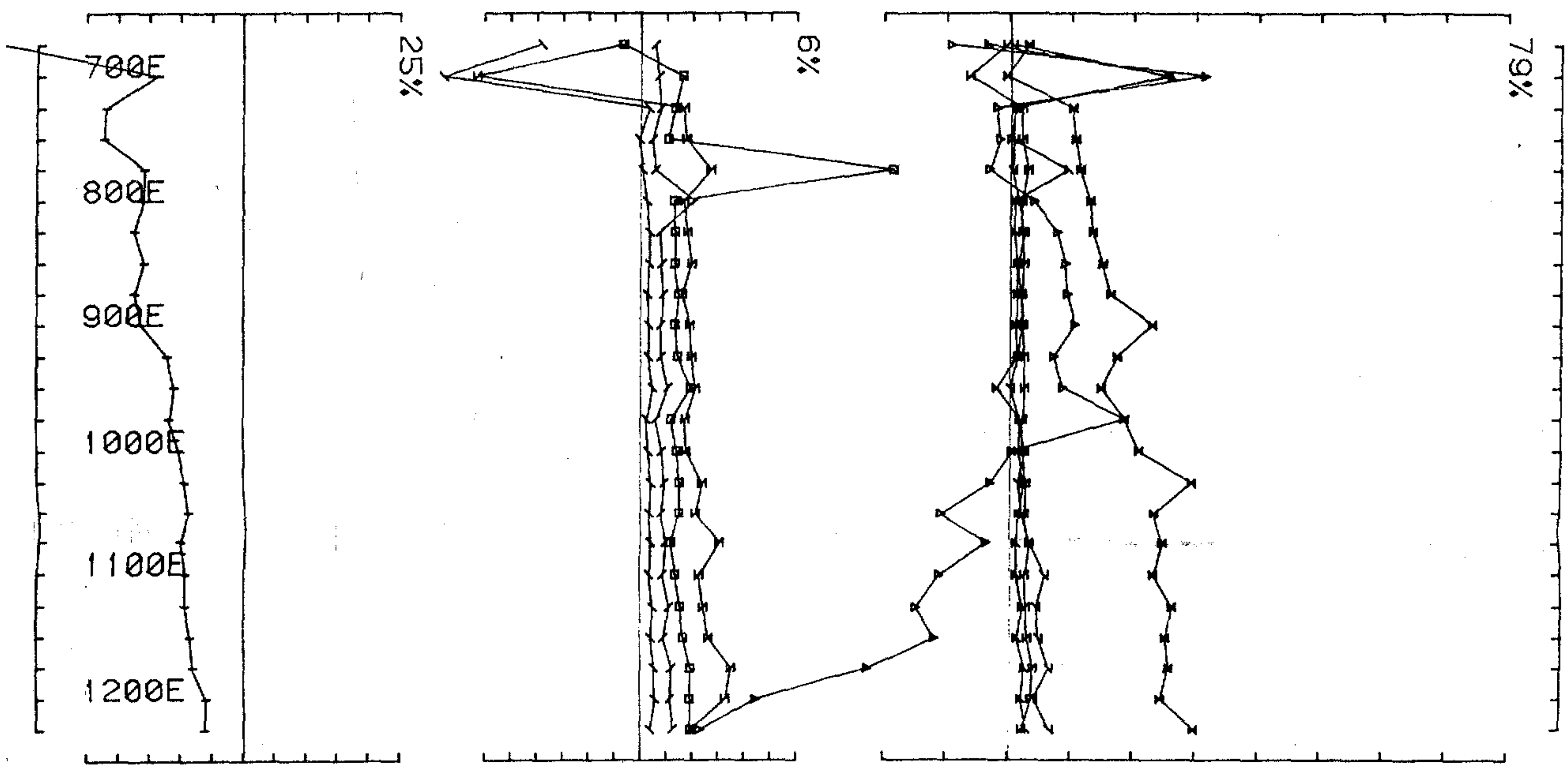
062175

175



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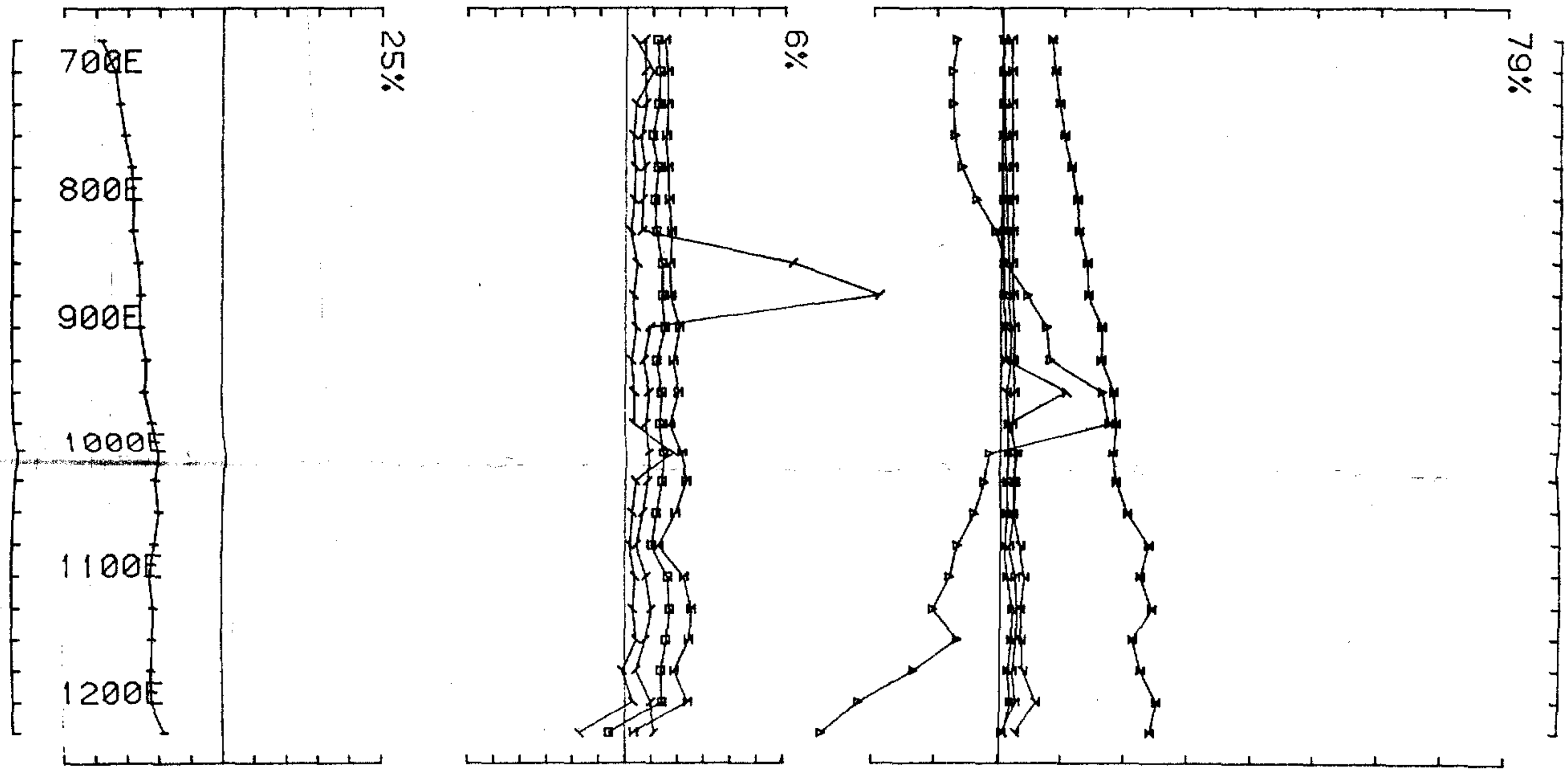
Project Area White Spur Survey for Getty Minerals freq(hz) 26.230
Loopno 0003 Line component Hz secondary Ch 1
2400S

062176

176



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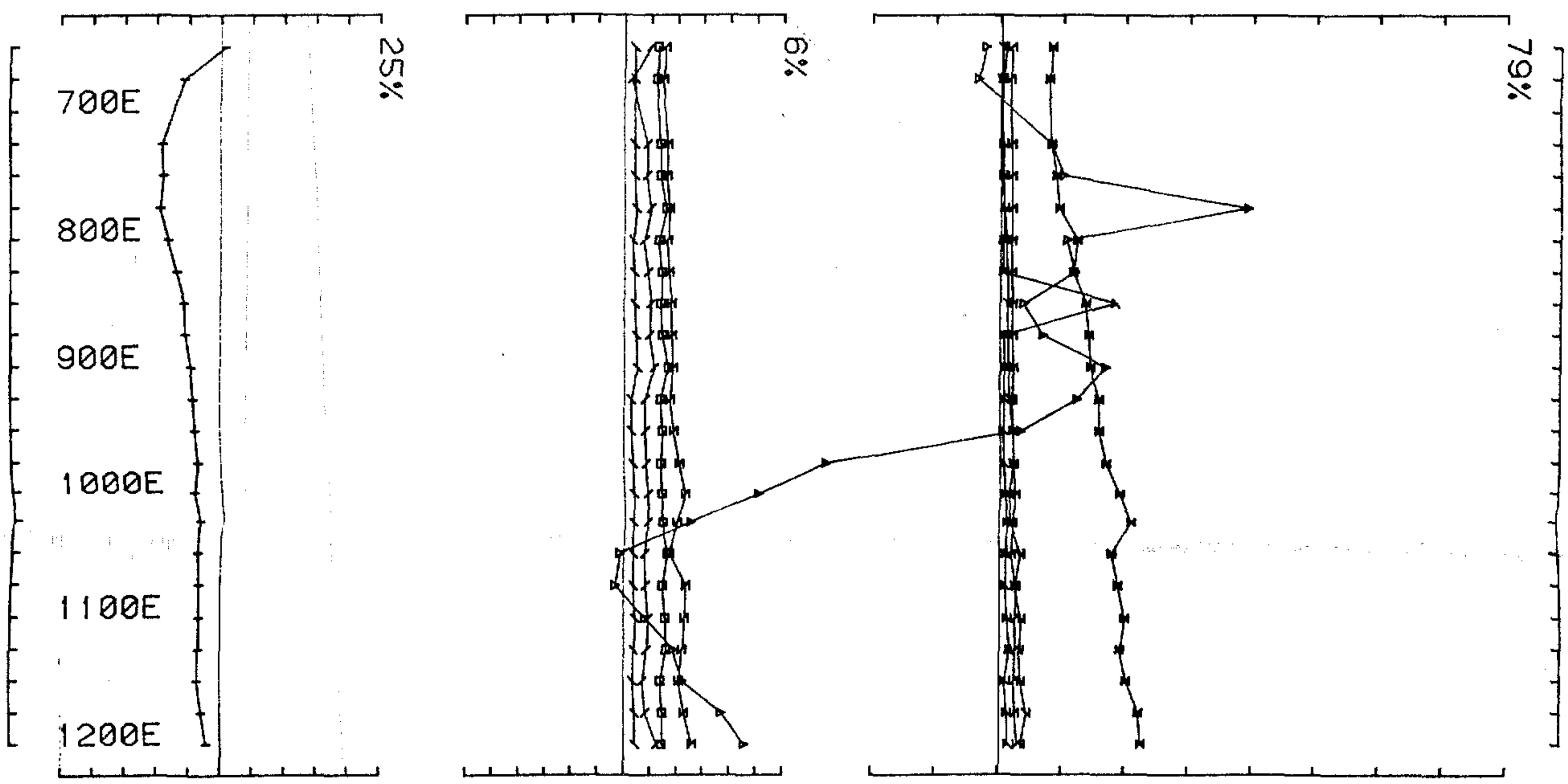
Project Area White Spur Survey for Getty Minerals freq(hz) 26.230
Loopno 0003 Line 3200S component Hz secondary Ch 1

062177

17

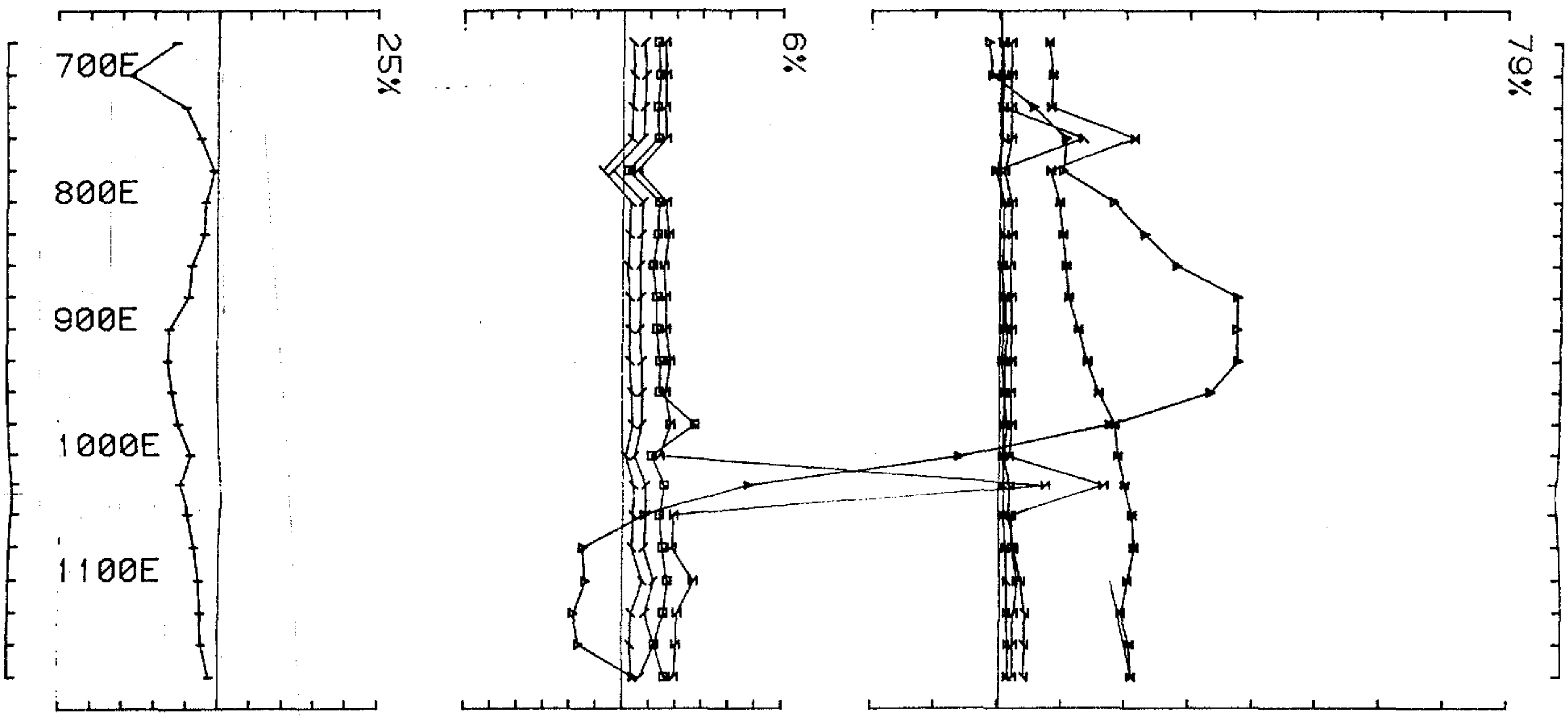


UTEM SURVEY conducted by PMM ML Job 8455

Project Area White Spur Survey for Getty Minerals freq(hz) 26.230

Loopno 0003 Line 4000S component Hz secondary Ch 1 .

062178



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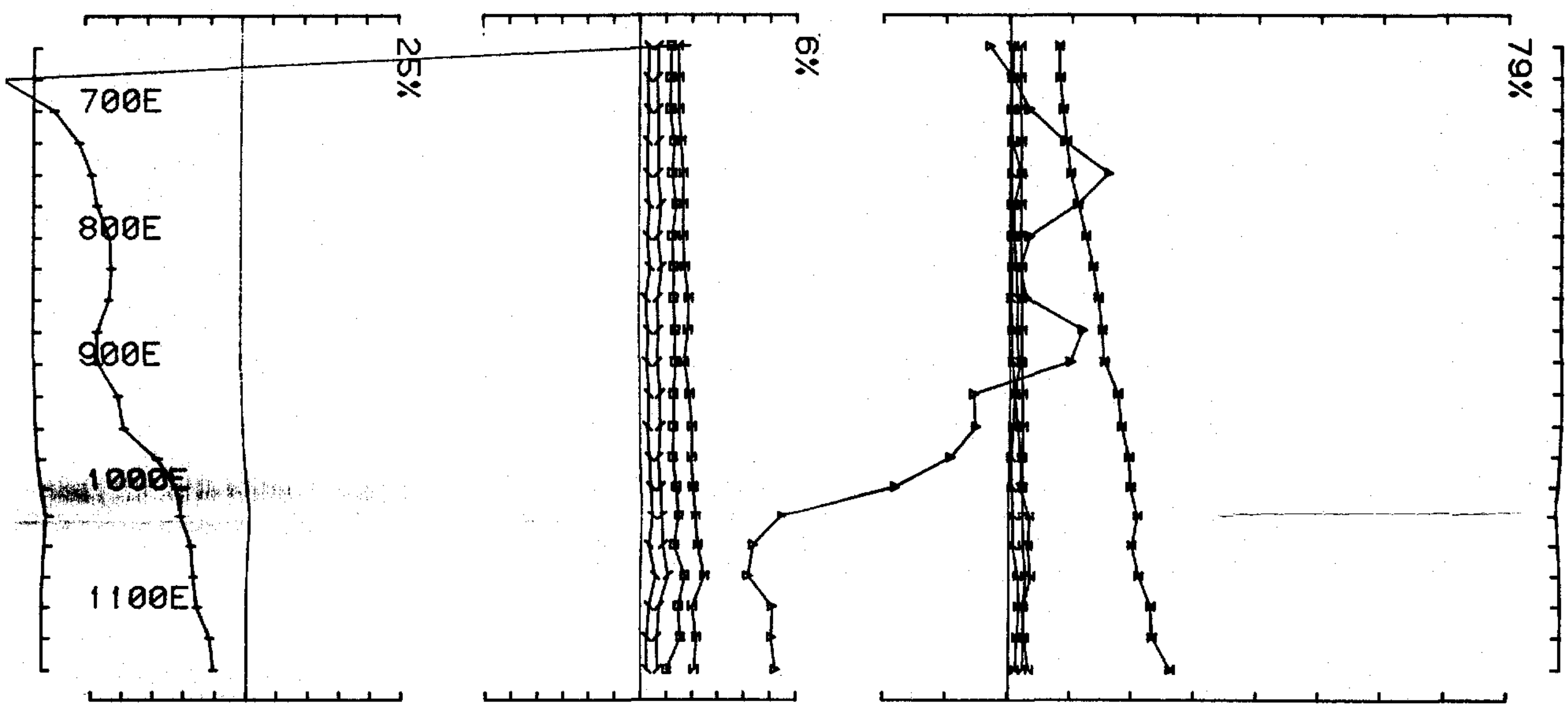
~~Project~~ Area White Spur Survey for Getty Minerals freq(hz) 26.230
~~Loopno~~ 0003 Line 4800S component Hz secondary Ch 1

062179

179

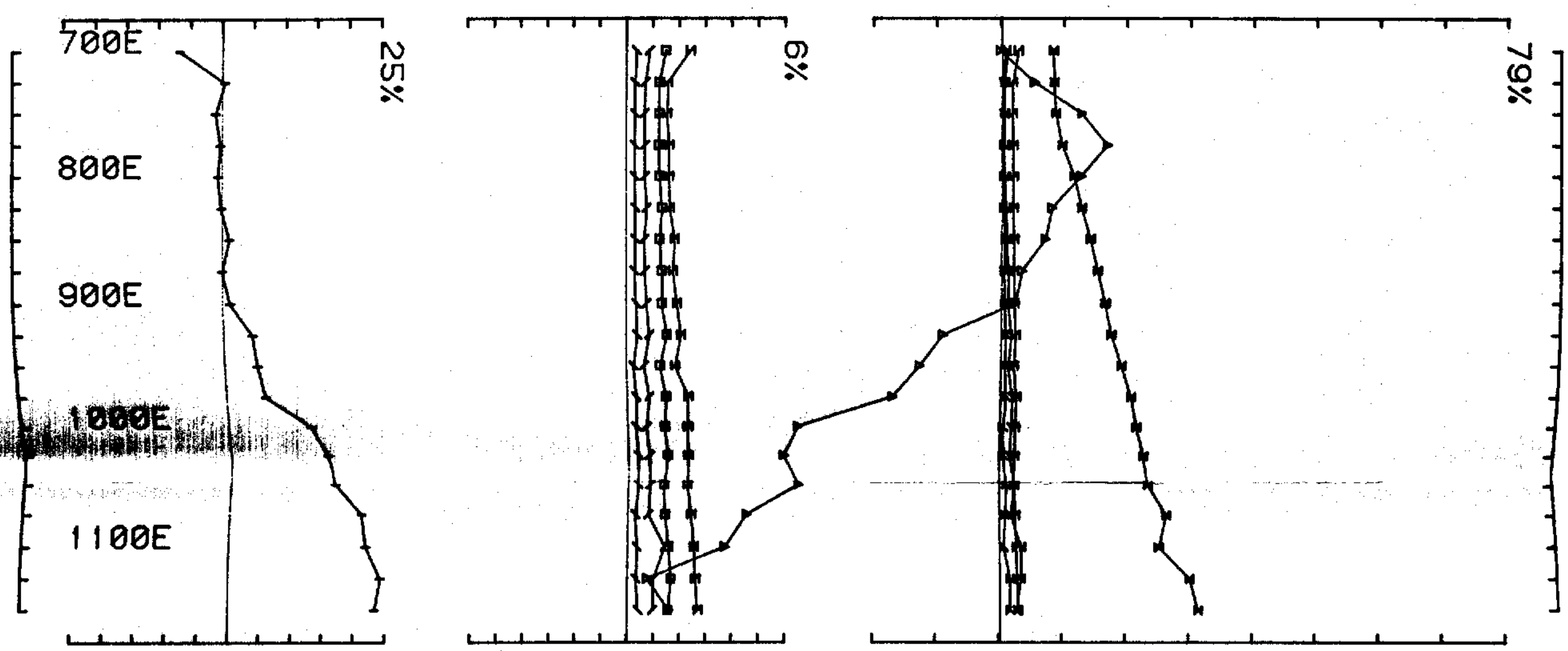


UTEM SURVEY conducted by PMM ML Job 8455

Project Area White Spur Survey for Getty Minerals freq(hz) 26.230

Loopno 0003 Line 56005 component Hz secondary Ch 1 .

062180



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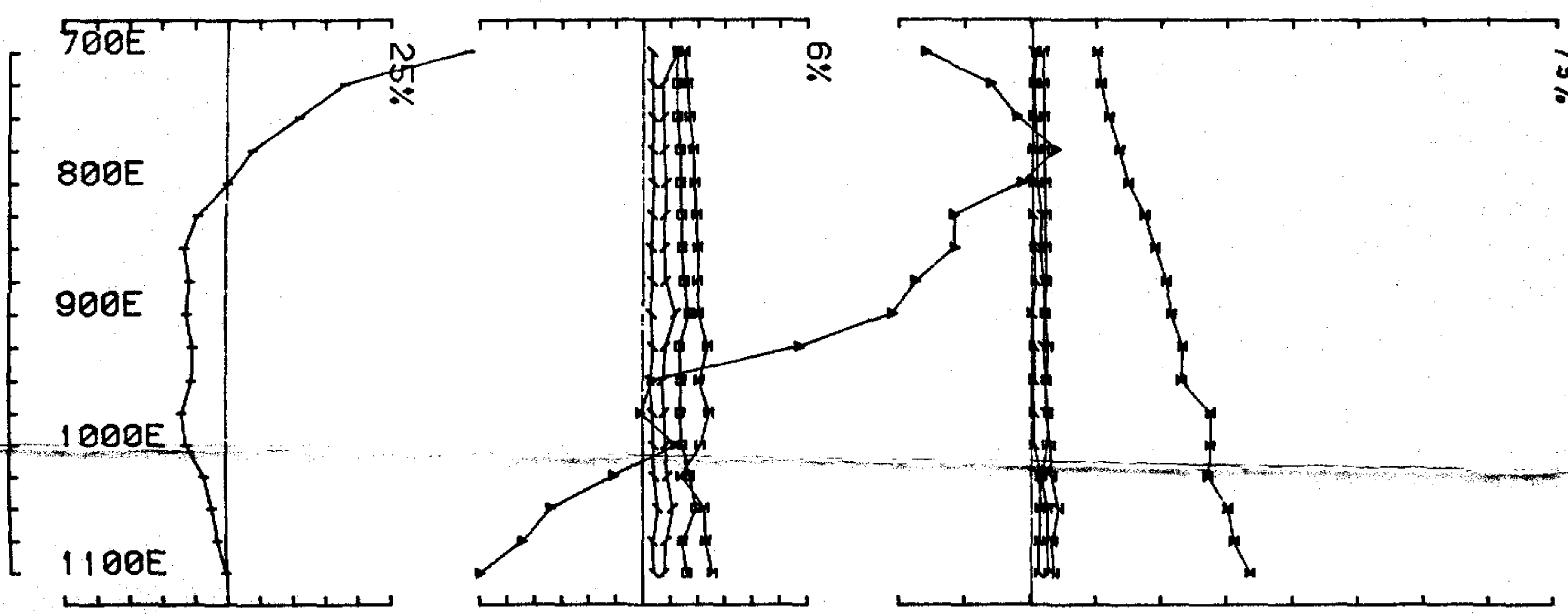
Project Area White Spur Survey for Getty Minerals freq(hz) 26.230
Loopno 0003 Line 6400 S component Hz secondary Ch 1

062181

181



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Project Area White Spur Survey for Getty Minerals freq(hz) 26.230
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062182

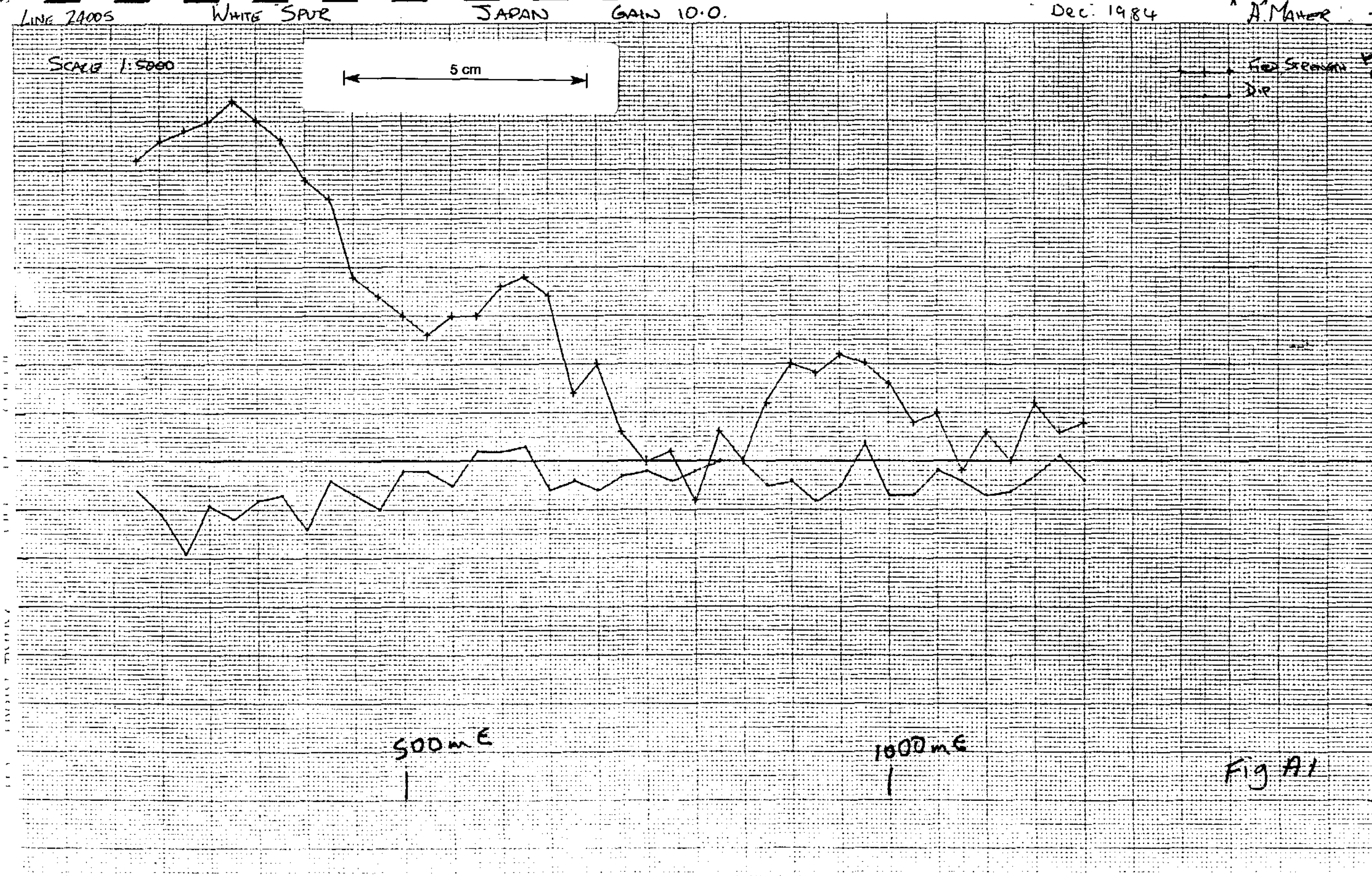
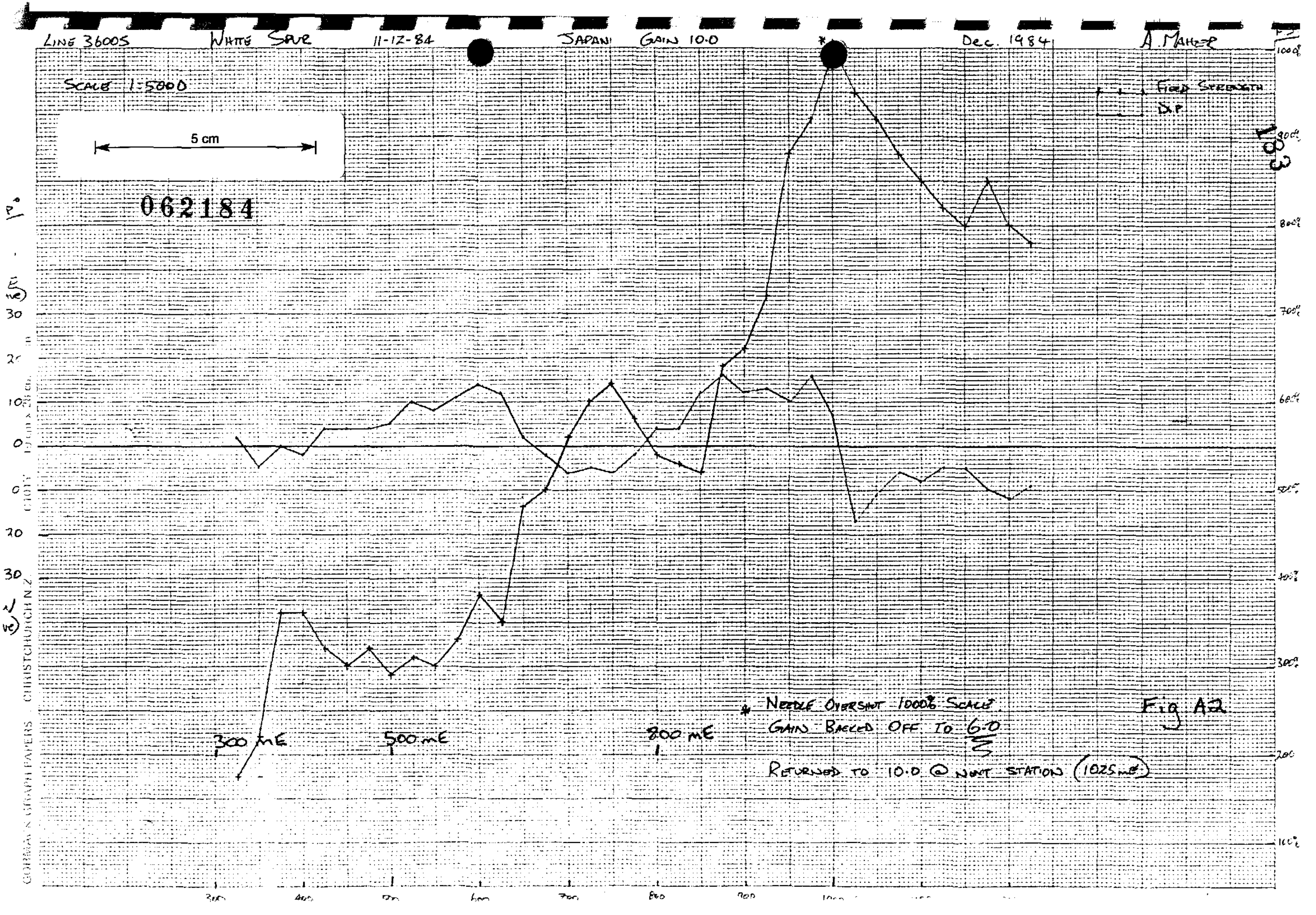


Fig A1

062183


LINE 3600S
WHITE SPUR
11-12-84
JAPAN
GAIN 10.0
Dec. 1984
A. MAHER
SCALE 1:5000
5 cm
062184
FIELD STRENGTH
D.P.
183
* NEEDLE OVERSHOT 1000% SCALE
GAIN BACKED OFF TO 6.0
RETURNED TO 10.0 @ NEXT STATION (1025mE)
300 mE
500 mE
800 mE
30
20
10
0
10
20
30
1000%
900%
800%
700%
600%
500%
400%
300%
200%
100%
300
400
500
600
700
800
900
1000
GORMAN GRAPH PAPERS CHRISTCHURCH N.Z.
Fig. A2

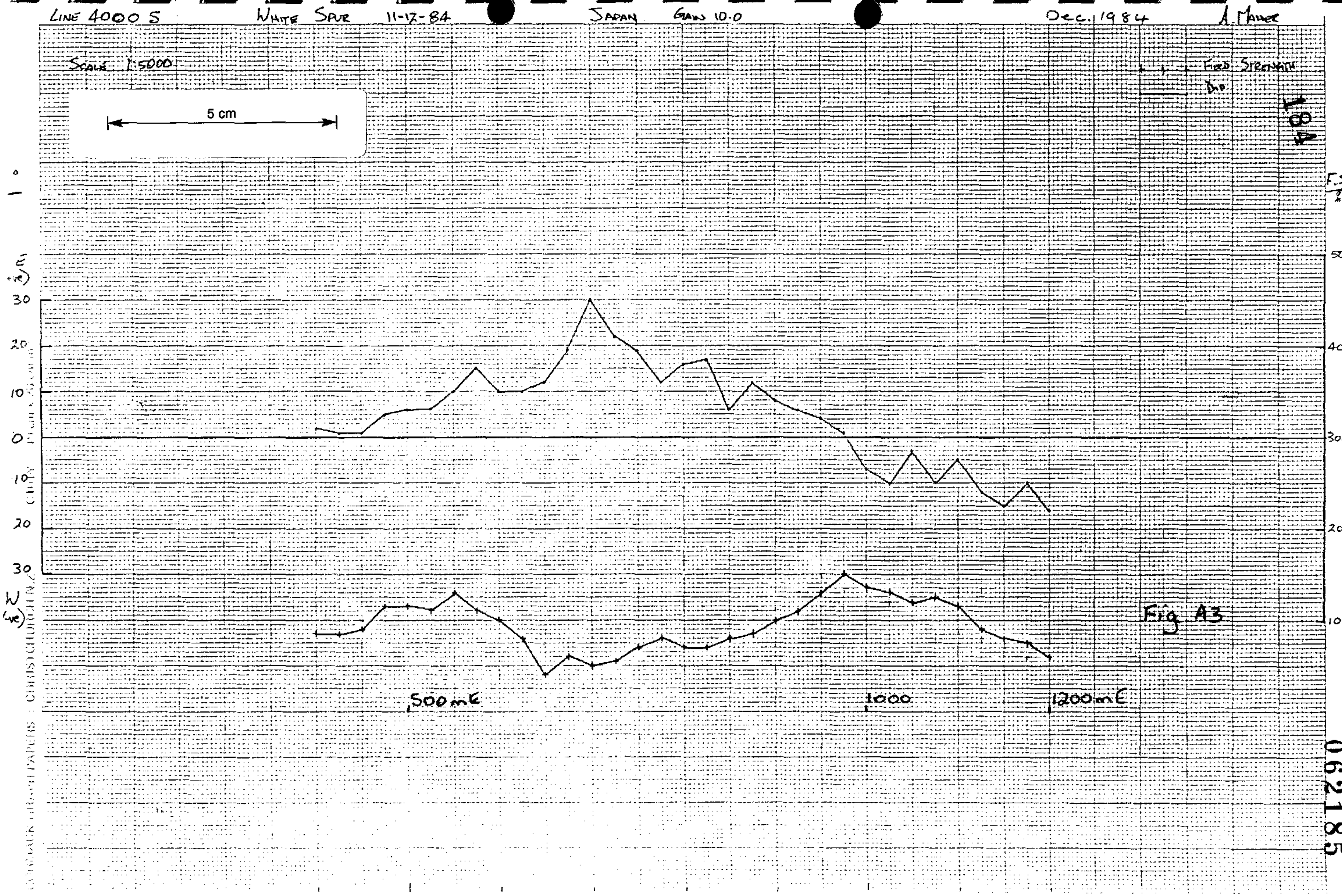

LINE 4000 S
WHITE SPUR
11-12-84
JAPAN
GAIN 10.0
Dec. 1984
SCALE 1:5000
5 cm
FIELD STRENGTH
DIP
F.S.
500
400
300
200
100
E (+ve)
30
20
10
0
10
20
30
W (-ve)
500 mE
1000
1200 mE

Fig. A3

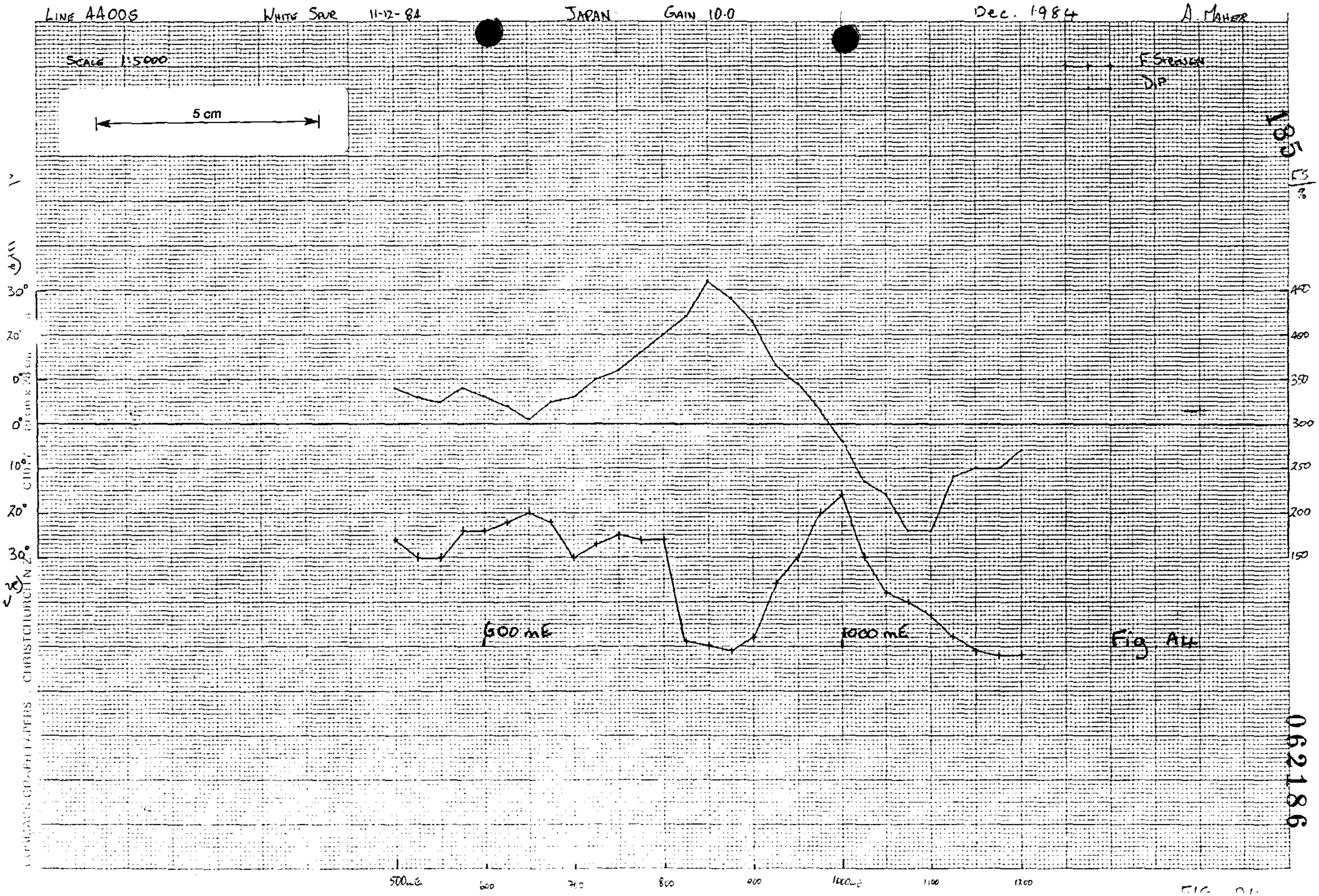
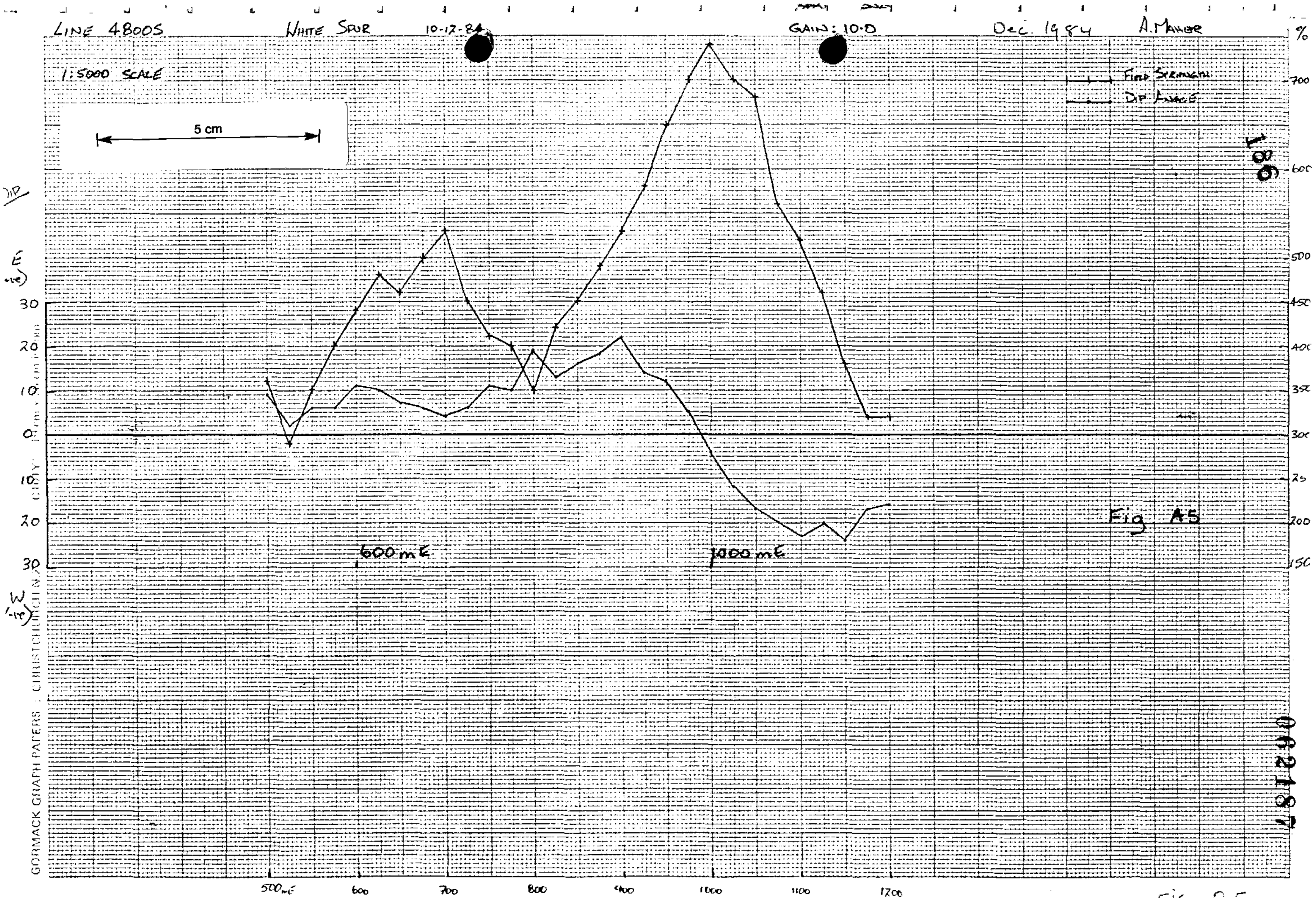


Fig. A4

185

0621 86


LINE 4800S
WHITE SPUR
10-12-84
GAIN: 10.0
Dec. 1984
A.MAHER
%
1:5000 SCALE
5 cm
Field Strength
Dip Angle
DIP
E (+ve)
W (-ve)
30
20
10
0
10
20
30
700
600
500
450
400
350
300
250
200
150
600 mE
1000 mE
Fig. A5
500mE
600
700
800
900
1000
1100
1200
GORMACK GRAPH PAPERS : CHRISTCHURCH N.Z.

LINE 6400S   WHITE SPUR   DEC. 1984   A. MAHER.

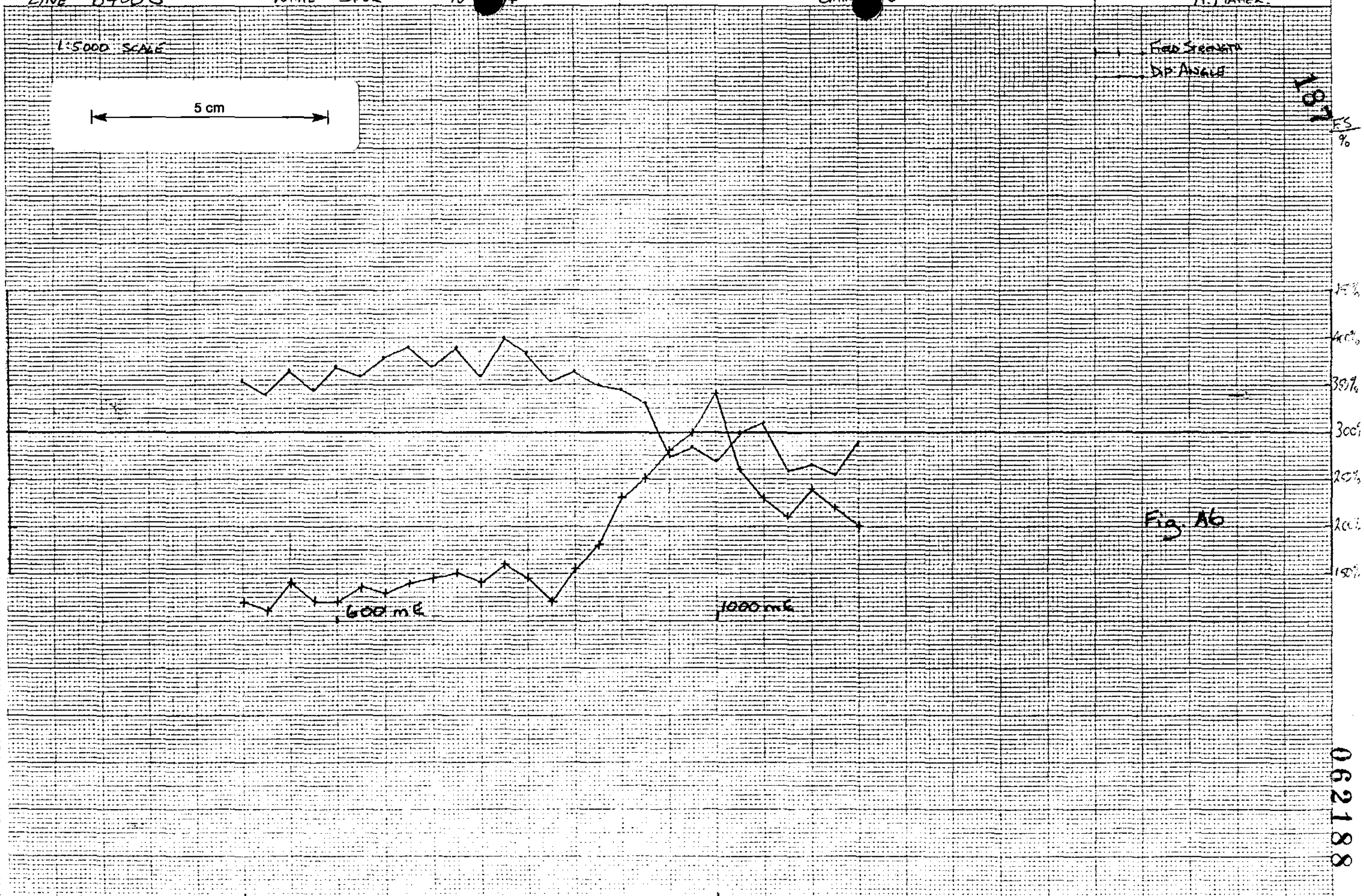
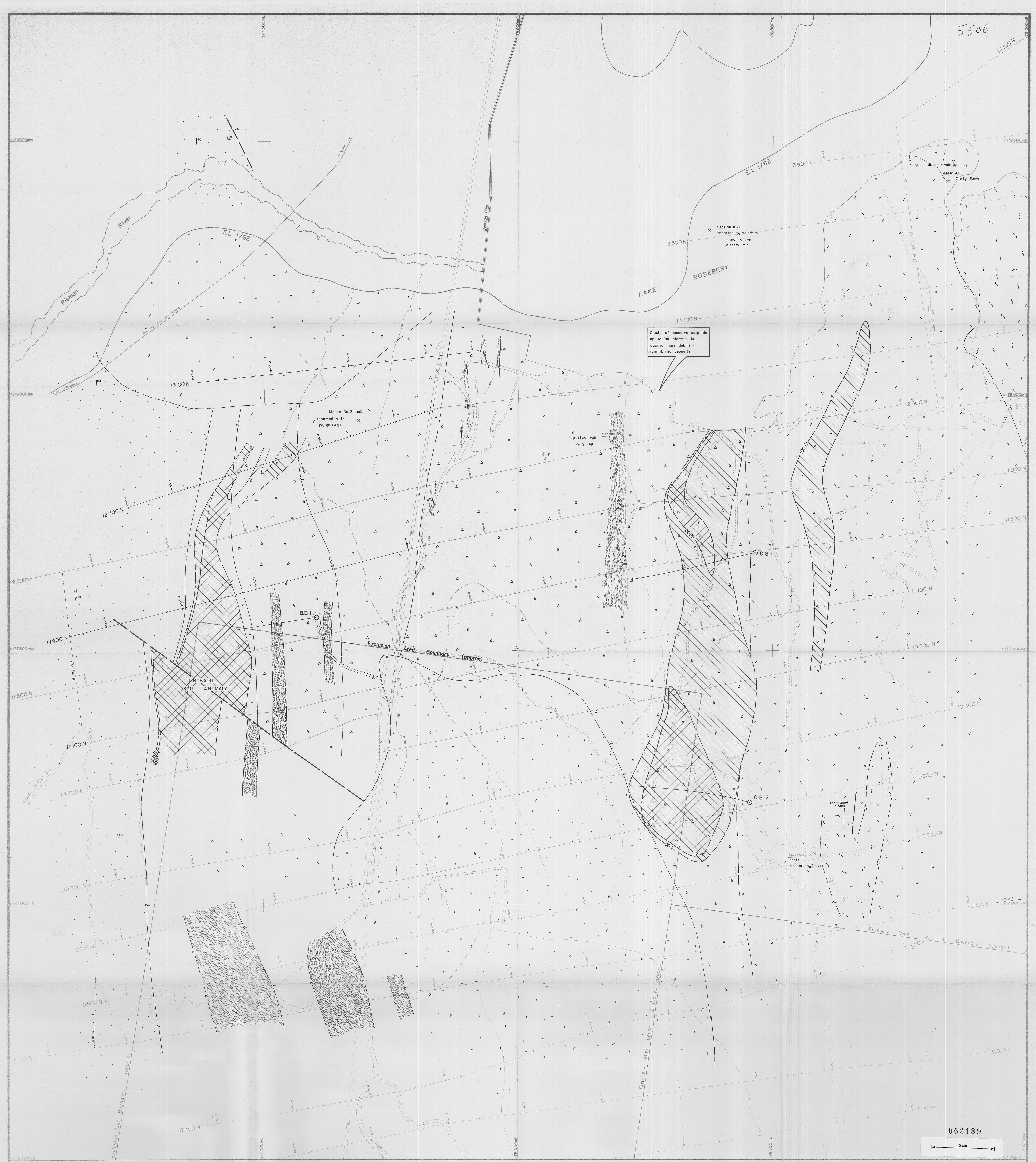


Fig. A6

187

062188

5506



062189

GEOLOGICAL LEGEND

QUATERNARY

FLUVIO - GLACIAL DEPOSITS
unconsolidated, estimate 5-20m thick

CAMBRIAN (MT. READ VOLCANICS)

WESTERN ANDESITIC LAVAS
porphyritic andesite, sometimes vesicular, sometimes possible subvolcanic intrusive
weak chlorite - sericite ± disseminated pyrite and minor epidote.

DACITIC LITHIC CRYSTAL TUFFS - IGNIMBRITES
mass debris type deposits containing clasts massive sulphide (sphalerite, pyrite, minor galena) up to 2m. diameter in eastern zone, prominent quartz crystals, some clearly welded ignimbrites, quartz-chlorite-carbonate veins (minor stockwork) ± disseminated pyrite

SEDIMENTARY LENSES - EPICLASTICS
black shale - grey tuffaceous siltstone/sandstone, minor dolomitic siliceous exhalite (?)
minor quartz - chlorite ± sulphide veins

EASTERN ANDESITIC LAVAS
porphyritic andesite, sometimes vesicular, sometimes possible subvolcanic intrusive forms prominent topographic ridge, minor hydrothermal breccias (vents)
strong chlorite - sericite + disseminated/vein pyrite ± chalcopyrite

WELDED INTERMEDIATE IGNIMBRITES
leucocratic intermediate lithic vitric tuffs with common pumiceous component
weak chlorite - sericite, unmineralized

CAMBRIAN (ROSEBERY GROUP)

STITT QUARTZITE
interbedded quartz wake turbidites, siltstones, fine sandstones and minor black shale bands, disseminated pyrite

Strike and dip of bedding

Strike and dip of volcanic foliation

Strike and dip of cleavage

Old prospects and workings (located)

Old prospect (reported, not located)

C.S.1 Diamond drill hole

SOIL GEOCHEMISTRY
(including data from E.Z. Co.)

Anomalous Zn contour

Anomalous Pb contour

GN TN MN
GRID CONVERGENCE 0°50'
GRID MAGNETIC ANGLE 12°
Magnetic value is correct for 1980.
Annual change is 03'

Getty | AUSTRALASIA
GETTY OIL DEVELOPMENT COMPANY LIMITED

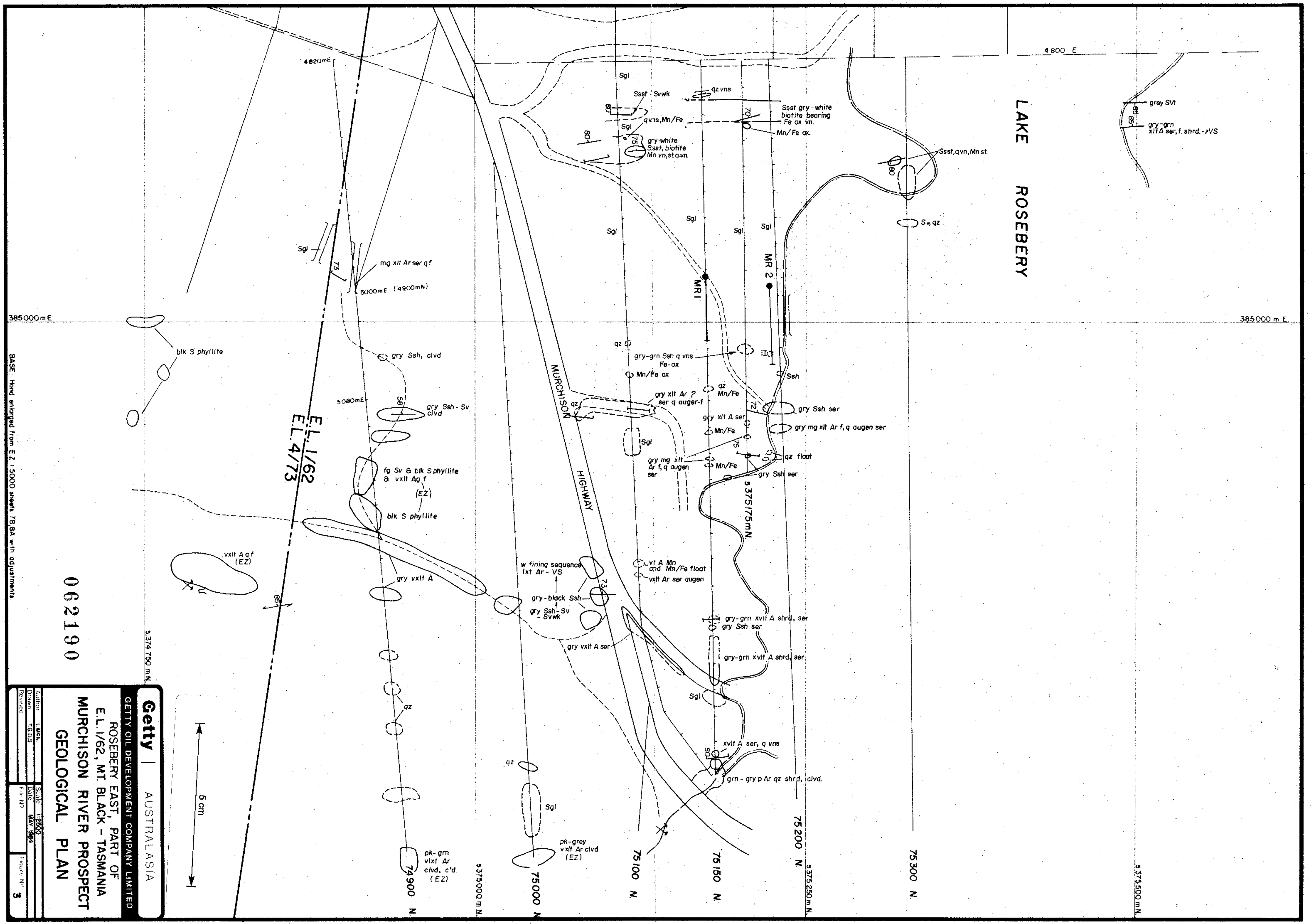
ROSEBERY EAST PROJECT, TASMANIA
CUTTY SARK

GEOLOGY - INTERPRETATION

Author F.G.F.	Scale 1:2500
Drawn T.G.D.S.	Date May 1984
Revised	File No. / Figure No. 2

85-2516 A

5506



85-2516A

5507

85-2516A

5508

LEGEND

≥ 50ppm Pb in soil contour

ROCKS

1400 O outcrop
1097 :: float } with GODC sample number

Analysis : Analabs, Burnie
Cu, Pb, Zn, Ag, As (ppm), Fe (%), Code 103 (AAS)
Au (ppm) Code 402 (Fire Assay)

Key : Cu, Pb, Zn
Ag, Au, Fe, As

x = Below limit of detection
- = Element not determined

SOILS

C Horizon Soil Samples

-80 mesh fraction analysed

Analysis : Analabs, Burnie
Cu, Pb, Zn, Ag (ppm) Code 103 (AAS)

NB. Ag ppm values recorded only if over 2 ppm Ag.

Key : Cu, Pb, Zn, Ag
x = Below limit of detection

AMG North — Mag. North

100 50 0 100 200 Metres
SCALE 1 : 5000

062192

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GETTY OIL DEVELOPMENT COMPANY LIMITED

ROSEBERY EAST PROJECT
Mt Black Grid
Geochemistry Results
Cu, Pb, Zn, Ag, Au, Fe, As.

Author	I.McN	Scale	1 : 5000
Drawn	T.G.D.S.	Date	October 1984
Revised		File No	Figure No 5

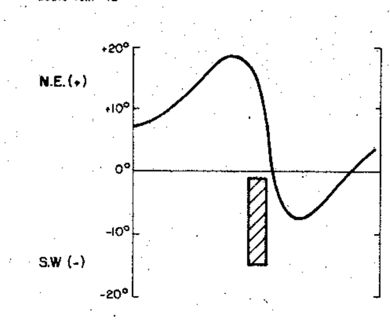
5 cm

85-2516A

5509

NOTES:

VLF CONVENTIONS



Dip Convention :-

The recorded dip direction is the direction in which the bottom of the receiver points (which is the direction in which the conductor lies).

INSTRUMENT :-

Phoenix VLF 2

Sources Yosamai, Japan 17·4 KHz

LEGEND

VLF Dip Angle Profile

Fraser Derivatives

✳ 380 860mE 65°/345° — Grid Position; Field orientation of maxima-minima VLF field strength.

⊙, × — Dighem III EM Anomaly (location from 1:10000 Dighem plot)

⊙→ — Old to New position (from VLF/Magnetic data)

CONDUCTOR MODEL	MOST LIKELY SOURCE
B	Discrete Bedrock Conductor
S	Conductive Cover
H	Rock Unit or Thick Cover
E	Edge of Wide Conductor
L	Culture
?	Questionable

Fraser Contour Values

+30
+20
+10
+2

A.M.G. North — Mag North — 12°

100 50 0 100 200 Metres

SCALE 1 5000

5 cm

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GETTY OIL DEVELOPMENT COMPANY LIMITED

PART E.L. 1/62 ROSEBERY EAST

Mt Black Grid

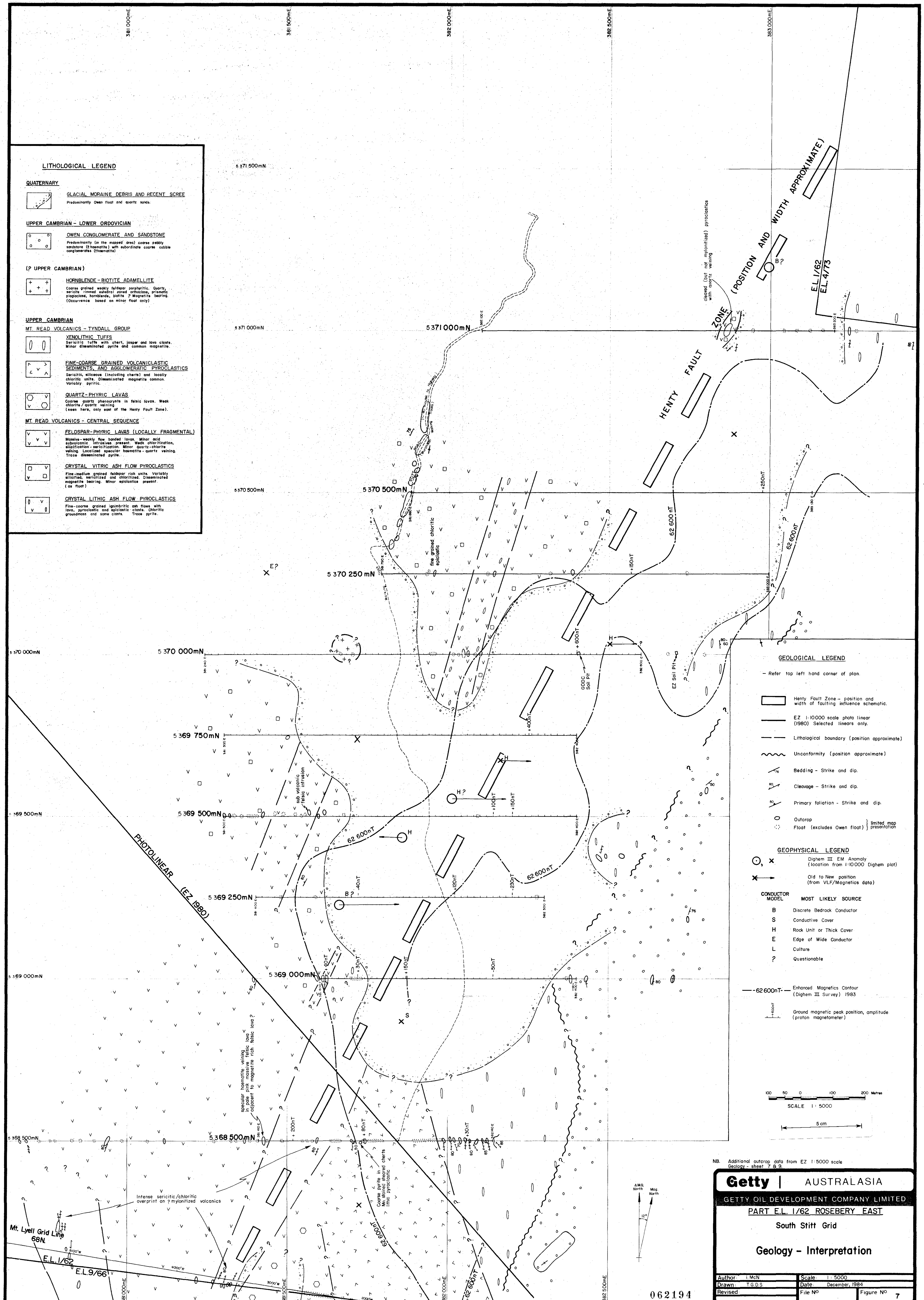
VLF Dip Angle Profiles
Fraser Derivatives
Dighem Conductors

Author I.McN	Scale 1 5000		
Drawn T.G.D.S.	Date		
Revised	File No	Figure No 6	

062193

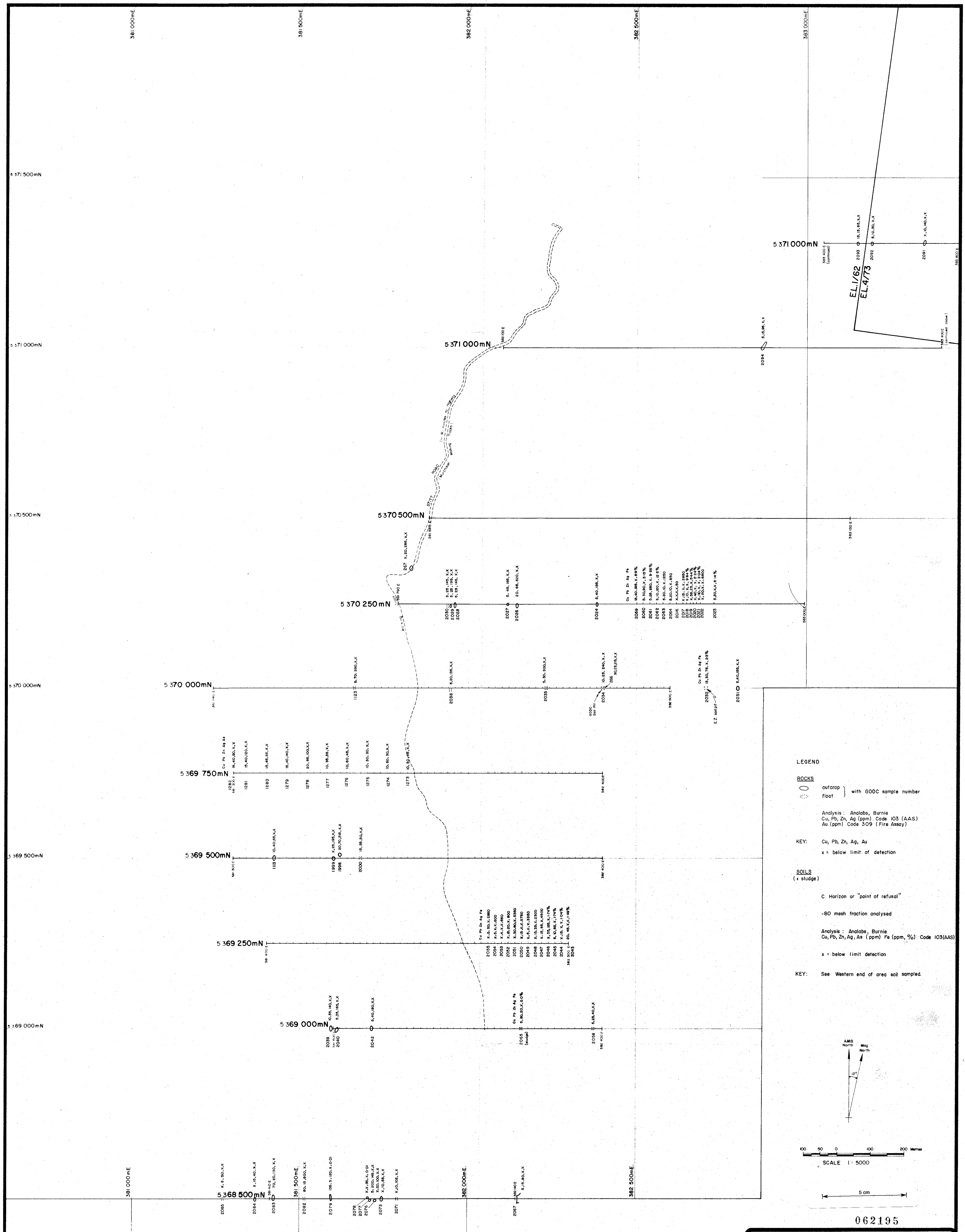
85-2516A

5510



5511

85-2516A



062195

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GETTY OIL DEVELOPMENT COMPANY LIMITED

ROSEBERY EAST PROJECT

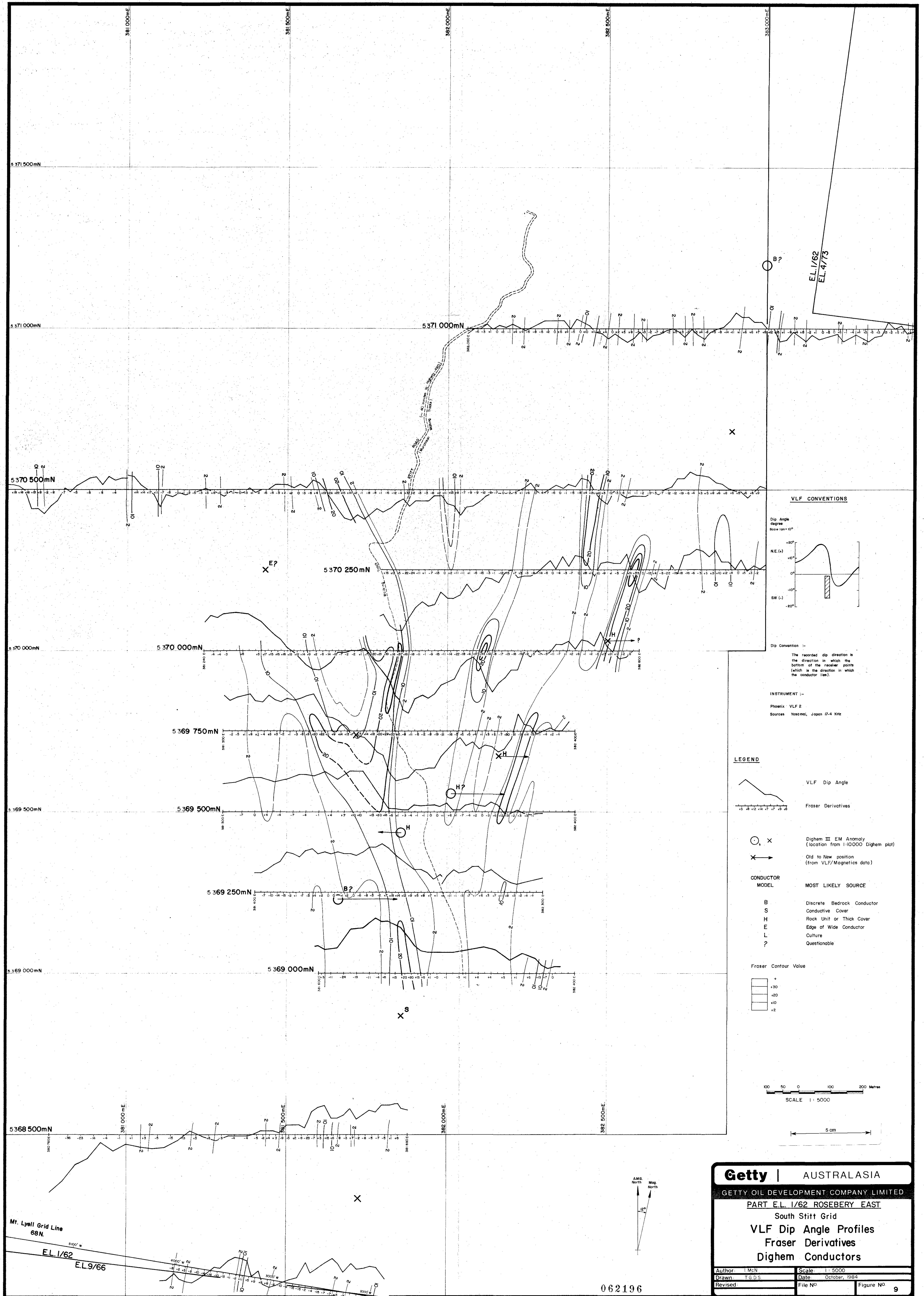
South Stitt Grid

Geochemistry Results

Cu, Pb, Zn, Ag, Au, Fe, As.

Author	I McN	Scale	1 : 5000
Drawn	T G D S	Date	December 1984
Revised		File No	Figure No 8

85-2516A 5512



85-2516A

5513

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GETTY OIL DEVELOPMENT COMPANY LIMITED

PART E.L. 1/62 ROSEBERY EAST

South Stitt Grid

Ground Magnetics - Profiles

Author: I. McN.	Scale: 1 : 5000
Drawn: T.G.D.S.	Date: November, 1984
Revised:	File No. / Figure No. 10

002197

85-2516A

5514


5515
MAJOR
AEROMAGNETIC
DISLOCATION
ZONE
APPROX POSITION OF ROSEBERY MINE LEASE
Lake Johnston
erratics to 5m diameter
augen texture
fault
diorite
strongly chloritic
lithic ignimbrite
pyritic
felsic lava dome
chloritic
hydrothermal breccia
veins of py.sp.gn
strongly sericitic
microdiorite
graphitic black shale
predominantly sandstone - greywacke
black shales predominant
Sequence of predominantly sedimentary rocks (black and grey shales - greywackes) with minor pyroclastic (ignimbritic) lithologies
clast of massive pyrite
minor gossan minor py
Fe ox after sulphides
strongly sericitic
E.L. 9/66
E.L. 1/62
HENTY FAULT
Henty Camp
White Spur Creek
5 365 000mN
5 364 000mN
5 363 000mN
5 362 000mN
380 000mE
GEOLOGICAL LEGEND:
GLACIAL DEPOSITS Unconsolidated, mostly thin veneer (<10m)
BASIC VOLCANICS Either fine grained basaltic dykes and possible lava flows or coarser grained doleritic dykes Typically unaltered, strongly magnetic.
SUB-VOLCANIC INTRUSIVES: (quartz porphyry, dacites, diorites, monzonites) Small felsic-intermediate bodies, virtually unaltered and unmineralized
SCHISTS Possibly after epiclastic and/or fine grained pyroclastic lithologies Completely detexured, quartz-sericite schists, minor disseminated sulphide min
EPICLASTIC ROCKS Predominantly finer grained grey shales and tuffaceous siltstones, minor interbedded coarser crystal tuffs-sandstones Often finely laminated, even cross-bedded, also massive, usually cleaved Variable alteration, locally intense quartz-sericite ± chlorite. Minor disseminated and vein sulphides
PYROCLASTIC VOLCANICS (predominantly ignimbritic rocks) Variable fine to coarse grained, sometimes lithic, often welded and massive or foliated Variable alteration, locally moderate to strong sericitic ± chlorite, often quite cleaved Minor disseminated and veinlet sulphide mineralization
ASHY PYROCLASTICS - Inferred air-fall pyroclastics Often fine-grained vitric deposits, massive or finely layered occasional coarser lithic layers. Variable alteration, mostly weak pervasive sericite, mostly unmin
FELSIC LAVA BRECCIAS Striking pink and dark green blotchy, massive, hard outcrops Much disruption of initial lava into blocks within vitric (?) matrix Typically weakly altered and unmineralized
FELSIC LAVAS Massive, rhyolitic, sometimes flow-banded dome-like features, aphanitic, slightly porphyritic Typically weakly altered and unmineralized, variably magnetic
MASS DEBRIS DEPOSITS - LAHAR Coarse volcanic lithologies composed of sub angular clasts of felsic lavas, pyroclastics and sediments, including rafts of black shale up to 4m long, and minor massive pyrite pebbles Generally moderate to weakly altered and, apart from lithic sulphide clasts, only minor disseminated pyrite
Bedding - strike and dip
Cleavage and/or prominent foliation within pyroclastic lithologies
Banding - prominent primary volcanic lineation
GEOPHYSICAL LEGEND:
DIGHEM 1983 SURVEY
EM ANOMALY
B bedrock conductor
H broad conductor
E edge of broad conductor
S surficial conductor
L culture
X X X Axis of magnetic belt
Major aeromagnetic dislocation
MT. LYELL 1977-78 I.P. SURVEY
Chargeability Contour: 20 msec.
E.Z. 1978-80 IP SURVEYS
Chargeability Contours (msec)
GETTY 1984 UTEM SURVEY
Interpreted Bedrock Conductor
SHEET INDEX
WHITE SPUR
Red Hills
Henty
Newton
GN
TN
MN
GRID CONVERGENCE 0°50'
GRID MAGNETIC ANGLE 12°
Metres
5 cm
Getty | AUSTRALASIA
GETTY OIL DEVELOPMENT COMPANY LIMITED
WHITE SPUR
E.L. 9/66 - TASMANIA
GEOLOGICAL INTERPRETATION
Author: F.G.F.
Drawn: T.G.D.S.
Revised: JAN. 1985
Scale: 1:5000
Date: NOV. 1984
File No.
Figure No. 11
062198
5515
85-2516A

LEGEND:
1983 - 84 rock sample location, number and assay
x outcrop
⊗ float
Cu, Pb, Zn Ag, Au assays in p.p.m.; if no values recorded then Ag ≤0·5p.p.m. and Au ≤0·005 p.p.m.
1976-78 Mt. Lyell soil geochemistry contours (east of base-line)
Zn contour ≥150p.p.m.
Pb contour ≥100p.p.m.
1978-80 E.Z. soil geochemistry contours
Zn contour ≥120ppm.
Pb contour ≥120ppm.
APPROX POSITION OF ROSEBERY MINE LEASE
Lake Johnston
E.L. 9/66
E.L. 1/62
White Spur Creek
Henty Camp
Metres
5 cm
Getty | AUSTRALASIA
GETTY OIL DEVELOPMENT COMPANY LIMITED
WHITE SPUR
E.L. 9/66 - TASMANIA
GEOCHEMISTRY
Author: F.G.F.
Drawn: T.G.D.S.
Revised:
Scale: 1:5000
Date: NOV. 1984
File No.
Figure No. 12
062199
85-2516A
5516

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GETTY OIL DEVELOPMENT COMPANY LIMITED

062200

E.L. 1/62 ROSEBERY EAST
WHITE SPUR

UTEM SURVEY INTERPRETATION

Author:	Scale: 1:5000
Drawn: T.G.D.S.	Date: December, 1985
Revised:	File No.
Ref: GTY/MG84/09	Figure No. 13

85-2516 A

5517

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062201

EL 1/62 MT. BLACK

ROSEBERY EAST EXPLORATION PROGRESS REPORT

JANUARY - AUGUST 1985

Copies:

Getty	- Sydney
E.Z.	- Melbourne
E.Z.	- Rosebery
Little River Goldfields	- Melbourne
Tas. Mines Department	- Hobart
J.G.P.	- Burnie

J.G. Purvis

J.G. Purvis & Associates Pty. Ltd.

for

Getty Oil Development Company Ltd.

August, 1985

CONTENTS

APPENDICES

LIST OF FIGURES

1. SUMMARY

Two drillholes have been put down on targets at South Stitt and one hole at Jones Creek (White Spur). With the closure of GODC's Tasmanian office in February 1985, the drilling was the only exploration activity on the Rosebery East Project Area in the period under review (January - August 1985).

Hole JC1 at Jones Creek tested a weak UTEM anomaly along strike from an altered and mineralised volcaniclastic sequence previously drilled by EZ. JC1 did not intersect any gold or basemetal mineralisation and the UTEM response is attributed to minor disseminated pyrite in a very thin tuffaceous epiclastic unit.

At South Stitt holes SS1 and SS2 also did not intersect any significant gold or basemetal mineralisation. The holes were drilled to test geophysical anomalies associated with the Henty Fault Zone and the prospective volcaniclastic sedimentary sequence along its eastern side.

Hole SS1, directed at an IP anomaly immediately east of the HFZ, encountered hydrothermally altered and pyritic, carbonaceous tuff-shales, siliceous siltstones and minor cherts. Hole SS2, directed at magnetic and VLF EM anomalies, drilled through the fault zone into a barren sequence of basic volcanics on its western side. The magnetic anomaly is attributed to a magnetite-bearing basic intrusive or flow, while the VLF EM response is due to overlying glacial scree.

The alteration, pyrite and cherts intersected by SS1 in the sequence east of the HFZ, are important indicators for gold and basemetal mineralisation in these rocks. Further drill testing of this sequence at South Stitt is recommended.

2. INTRODUCTION

This report details the results of exploration conducted by Getty Oil Development Company Limited (GODC), on the 103 sq km Rosebery East area of the Mt. Black EL 1/62, during the period 1st January - 22nd August 1985.

Activity was confined to the drilling of one diamond drillhole at Jones Creek (White Spur) and two holes at South Stitt.

In 1984 Getty Oil was taken over by Texaco and all the Australian exploration properties, including Rosebery East, were put up for tender. The GODC Tasmanian office was closed in February 1985 and the staff retrenched.

Pending finalisation of the sale of the Rosebery East area to the successful tenderer (Little River Goldfields NL), K. Wright, Exploration Manager of GODC in Sydney, initiated the drilling at Jones Creek and South Stitt in April 1985. The drilling programme was based on conclusions and recommendations by F Fitzgerald, I. McNaught and J. Bishop, contained in the six monthly progress report July to December 1984.

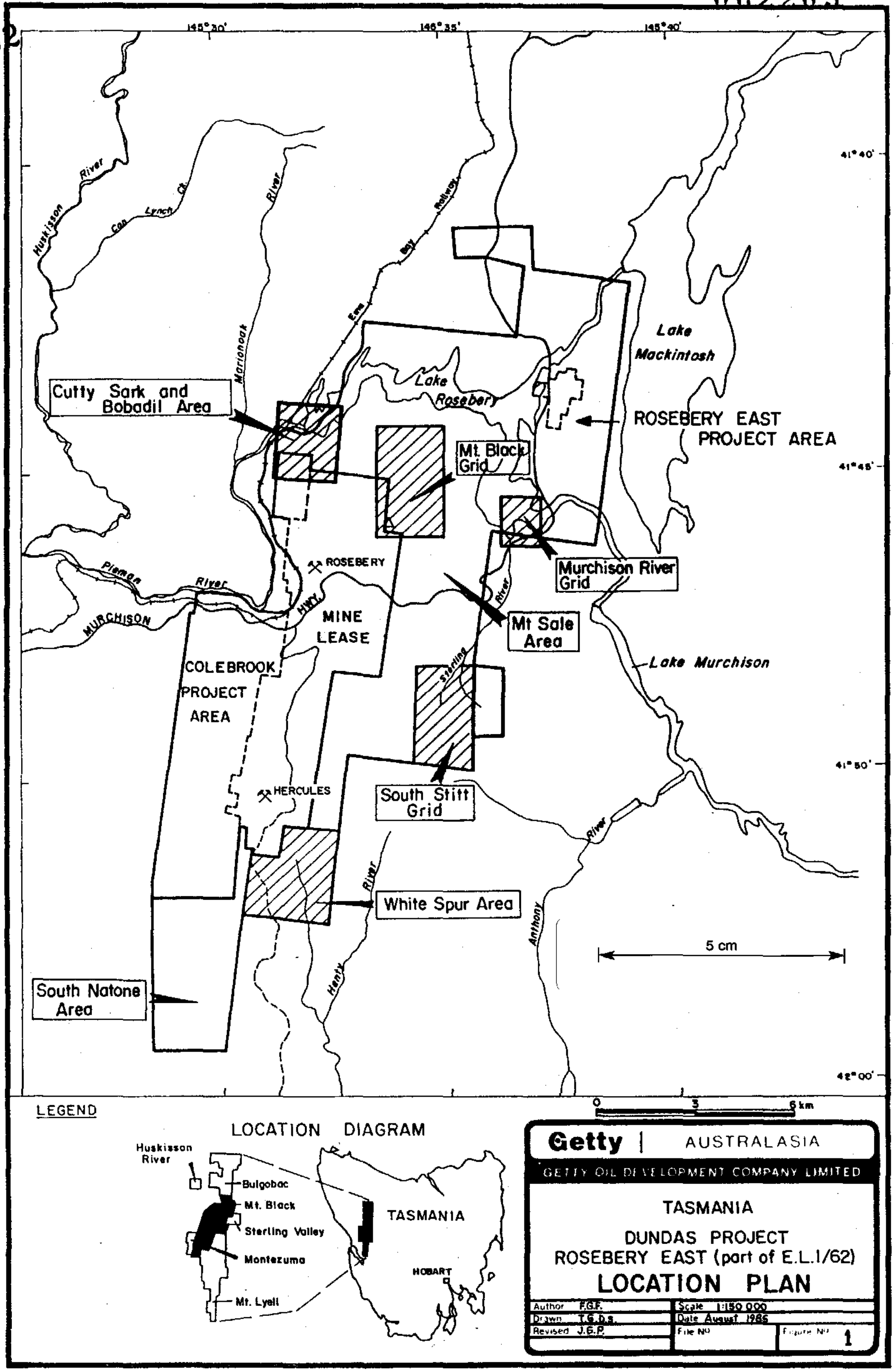
The drilling was supervised by J.G. Purvis (Consulting Geologist).

3. LAND TENURE

The Mt. Black EL 1/62 of 170 sq km was granted to the EZ Company in 1962. Since 1978, the EL has been the subject of a Joint Venture between EZ and GODC. The agreement allowed GODC to earn a 40% interest in 138 sq km of the EL, but did not include the 32 sq km Rosebery Mine Lease. EZ was the

062205

192



145°30'
145°35'
145°40'
41°40'
41°45'
41°50'
42°00'
Huskisson River
Con Lynch Ck.
Marionoak River
Emu Bay Railway
Lake Mackintosh
Lake Rosebery
Cutty Sark and Bobadil Area
ROSEBERY EAST PROJECT AREA
Mt. Black Grid
Murchison River Grid
ROSEBERY
Pieman River
MURCHISON HWY.
MINE LEASE
Mt Sale Area
River
Lake Murchison
COLEBROOK PROJECT AREA
Sterling
HERCULES
South Stitt Grid
River
White Spur Area
Anthony
5 cm
Henty
South Natone Area
0 3 6 km
LEGEND
LOCATION DIAGRAM
Huskisson River
Bulgobac
Mt. Black
Sterling Valley
Montezuma
Mt. Lyell
TASMANIA
HOBART
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GETTY OIL DEVELOPMENT COMPANY LIMITED
TASMANIA
DUNDAS PROJECT
ROSEBERY EAST (part of E.L.1/62)
LOCATION PLAN
Author F.G.F.
Drawn T.G.D.S.
Revised J.G.P.
Scale 1:150 000
Date August 1985
File No
Figure No 1

operator of the Joint Venture from April 1978 to November 1983.

In November 1983, the Mt. Black Joint Venture Supplementary Agreement divided the 138 sq km Joint Venture area into a 22 sq km 'Tin Area', known as the Colebrook Project Area (operated by EZ), and a 116 sq km 'Lead-Zinc Area' known as the Rosebery East Project Area (operated by GODC) - see Figure 1.

In January 1985, EL 1/62 was reduced to 125 sq km as required by Mines Department regulations. This reduction was from the Rosebery East Project Area which currently covers 103 sq km. EL 1/62 must be fully relinquished by 22nd January 1988.

Current equity in the Rosebery East Project Area is GODC 50%, EZ 50%.

4. JONES CREEK (WHITE SPUR)

4.1 Introduction

Exploration by GODC in the White Spur area commenced in the 1983-84 summer season. Attention focused on the altered and mineralised felsic volcaniclastics in the Jones Creek area of eastern White Spur, in which two holes (JCP 211 and 216), had been drilled by EZ in 1979. These rocks include thin tuffaceous siltstone-shale units containing disseminated basemetal sulphides, which are present over a strike length of 4.5 km in the upper Jones Creek - South Dallwitz area.

A UTEM survey in November-December 1984 delineated a weak response in a 500 m long linear zone at the southern end of the prospective horizons. The

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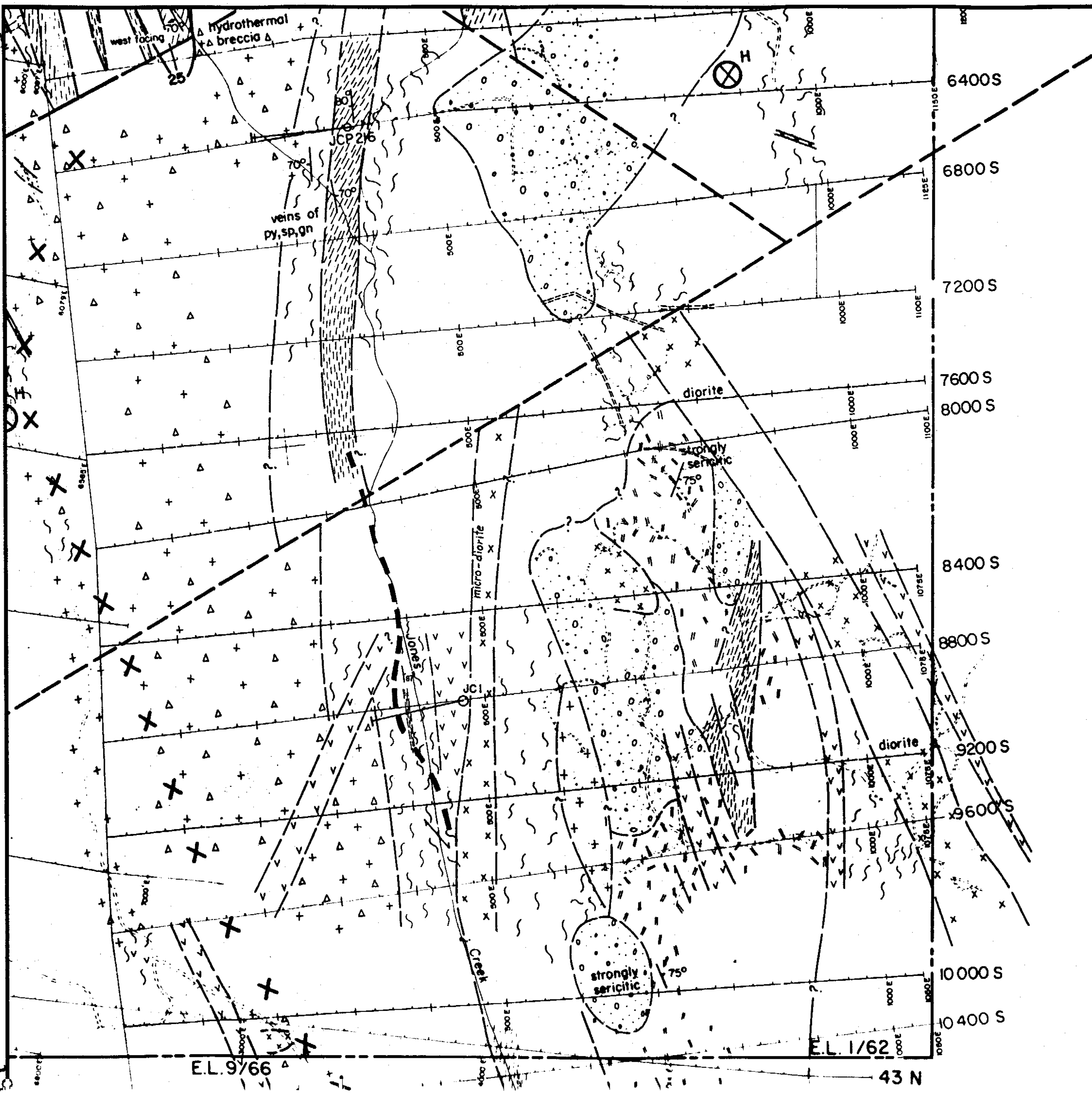

GEOLOGICAL LEGEND:

GLACIAL DEPOSITS: Unconsolidated, mostly thin veneer (<10m)

BASIC VOLCANICS: Either fine grained basaltic dykes and possible lava flows or coarser grained doleritic dykes. Typically unaltered, strongly magnetic.

SUB-VOLCANIC INTRUSIVES: (quartz porphyry, dacites?) Small felsic-intermediate bodies, virtually unaltered and unmineralized.

SCHISTS: Possibly after epiclastic and/or fine grained pyroclastic lithologies. Completely detexured, quartz-sericite schists, minor disseminated sulphide min.

EPICLASTIC ROCKS: Predominantly finer grained grey shales and tuffaceous siltstones, minor interbedded coarser crystal tuffs-sandstones. Often finely laminated, even cross-bedded, also massive, usually cleaved. Variable alteration, locally intense quartz-sericite ± chlorite.

PYROCLASTIC VOLCANICS: (predominantly ignimbritic rocks) Variable fine to coarse grained, sometimes lithic, often welded and massive or foliated. Variable alteration, locally moderate to strong sericitic ± chlorite, often quite cleaved. Minor disseminated and veinlet sulphide mineralization.

ASHY PYROCLASTICS - Inferred air-fall pyroclastics
Often fine-grained vitric deposits, massive or finely layered occasional coarser lithic layers. Variable alteration, mostly weak pervasive sericite, mostly unmin.

FELSIC LAVA BRECCIAS - Massive pyroclastics
Striking pink and dark green blotchy, massive, hard outcrops. Much disruption of initial lava into blocks within vitric (?) matrix.
Typically weakly altered and unmineralized.

FELSIC LAVAS: Massive, rhyolitic, sometimes flow-banded (snowflake) dome-like features, aphanitic, slightly porphyritic.
Typically weakly altered and unmineralized, variably magnetic.

70° Bedding-strike and dip

Cleavage and/or prominent foliation within pyroclastic lithologies

Banding - prominent primary volcanic lineation

GEOPHYSICAL LEGEND:

DIGHEM 1983 SURVEY

⊗ EM ANOMALY
B bedrock conductor
H broad conductor
E edge of broad conductor
S surficial conductor
L culture

X X X Axis of magnetic belt

Major aeromagnetic dislocation

GETTY 1984 UTEM SURVEY

Interpreted Bedrock Conductor

5 cm

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GETTY OIL DEVELOPMENT COMPANY LIMITED

PART E.L. 1/62 ROSEBERY EAST
WHITE SPUR GRID

GEOLOGY INTERPRETATION

(Base geology after Fitzgerald, November 1984)

Author J.G.P.	Scale 1:5000
Drawn T.G.D.S.	Date August 1985
Revised	File No
	Figure No 2

anomaly follows the course of Jones Creek, and is 500 m south along strike from the epiclastic units and disseminated sulphides intersected in JCP 216 (95 m @ 0.28% Zn, 0.09% Pb). It is coincident with a narrow linear weak lead soil anomaly with a peak value of 220 ppm Pb.

Effective geological evaluation of the UTEM response by surface mapping was not possible due to lack of outcrop. For this reason GODC decided to drill test the anomaly on line 8800's where it was strongest.

4.2 <u>Drilling - JC1</u>

(See detailed log in Appendix A1 and drillsection in Figure 3).

Hole JC1 was collared at 473 mE on line 8800's on 24th April 1985 and completed at 188.6 m on 2nd May. Although the hole passed exactly through the interpreted centre of the UTEM anomaly (100 m below 390 mE, 8800's), it did not intersect any significant sulphide mineralisation. The core was generally unbroken with no evidence for faulting associated with Jones Creek. Basemetal sulphides were exceedingly rare, as shown by the maximum sample values of 55 ppm Cu, 115 Pb, 360 Zn, 1.5 Ag, 0.01 Au and 1280 Ba.

The only apparent possible source of the target UTEM response was minor disseminated pyrite associated with a thin tuffaceous epiclastic unit from 116.3 - 120.2 m This is clearly of no significance and further testing of the UTEM anomaly is not warranted.

The summary log of the hole is as follows:

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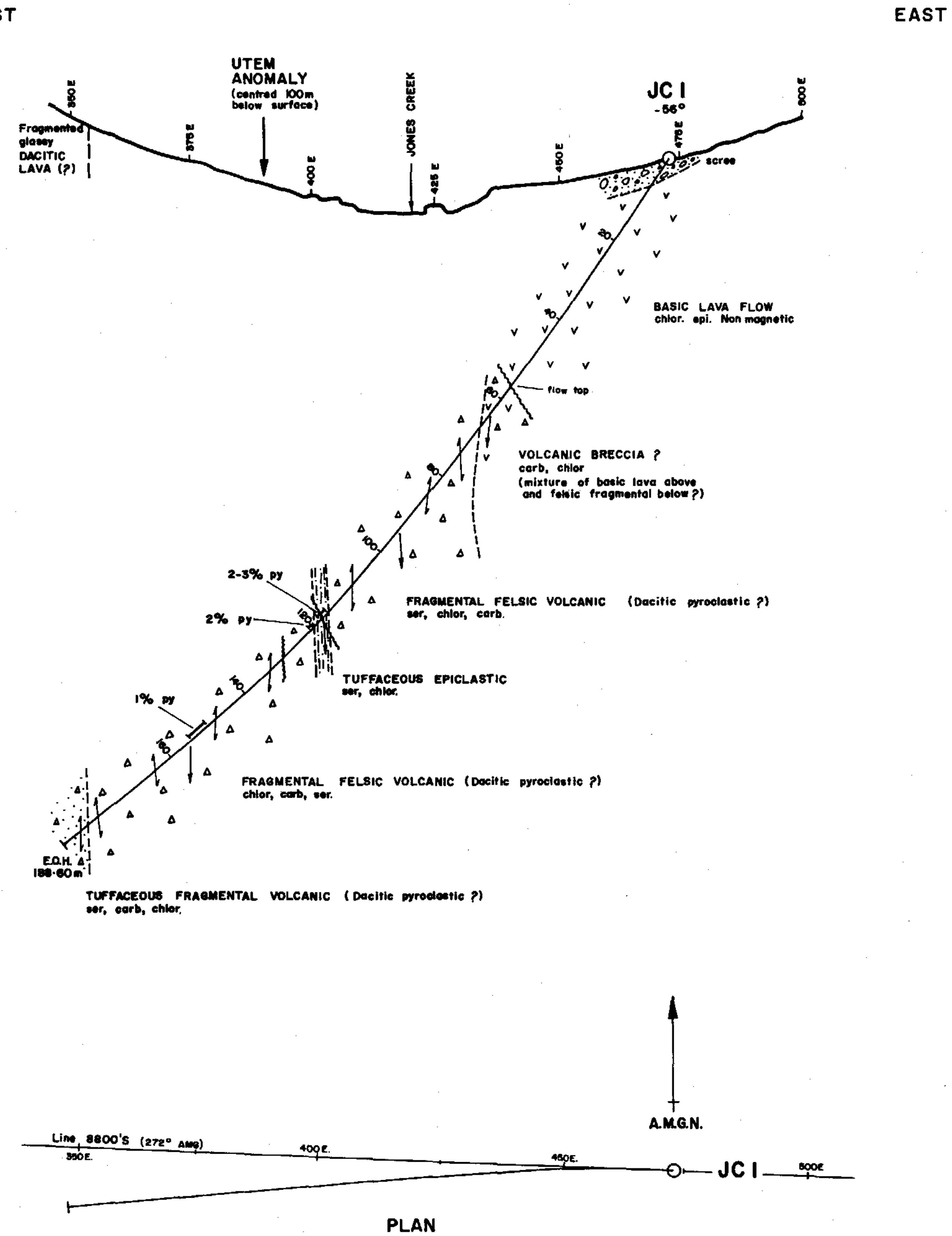

LEGEND

Alteration Types:

- chlor - chloritisation
- epi - epidotisation
- carb - carbonatisation
- ser - sericitisation

Symbols

- Geological contact
- Shear
- Primary layering
- Schistosity

5 cm

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PART E.L. 1/62 ROSEBERY EAST
JONES CREEK PROSPECT

DRILLHOLE JC 1

LINE 8800'S
Looking North

Author: G.P.	Scale 1:1000
Drawn: T.G.D.S.	Date May 1985
Revised	File No / Figure No 3

Hole JC1

Location:	473 m E, line 8800's
Collar:	-56° @ 272° AMG
Target:	Weak UTEM anomaly centred 100 m below 390 m E, line 8800's
0 - 6 m	SCREE
6 - 56.5 m	BASALT LAVA FLOW. Amygdaloidal flow top below 54 m indicates facing downhole. Non magnetic. Trace pyrite.
56.5 - 66.9 m	VOLCANIC BRECCIA? Mixture of basalt lava and felsic unit below.
66.9 - 116.3 m	FELSIC FRAGMENTAL (DACITIC PYROCLASTIC?). Mod. chlorite-carbonate alteration. V.minor pyrite.
116.3 - 120.2 m	TUFFACEOUS EPICLASTIC. Indistinctly bedded. Mod. sericite-chlorite alteration. 116.3 - 118.5 m: 2-3% pyrite. 118.5 - 120.2 m: minor pyrite.
120.2 - 188.6 m	FELSIC FRAGMENTAL (DACITIC PYROCLASTIC?). Mod. chlorite-carbonate-sericite alteration. Minor pyrite, except: 120.2 - 121.2: 2% pyrite; 150 - 154.5 m: 1% pyrite.
	E.O.H.

5. SOUTH STITT

5.1 Introduction

The South Stitt area straddles the Henty Fault Zone (HFZ) along the western side of Mt. Murchison. The HFZ separates a western sequence of felsic lavas, probable ignimbrites, and basic volcanics, from an eastern sequence of volcaniclastic sediments (facies equivalents of the Farrell Slates), volcanic breccias and quartz-porphyritic lavas.

The area is prospective for massive sulphides and/or gold mineralisation within and adjacent to the HFZ, particularly within the eastern volcan-

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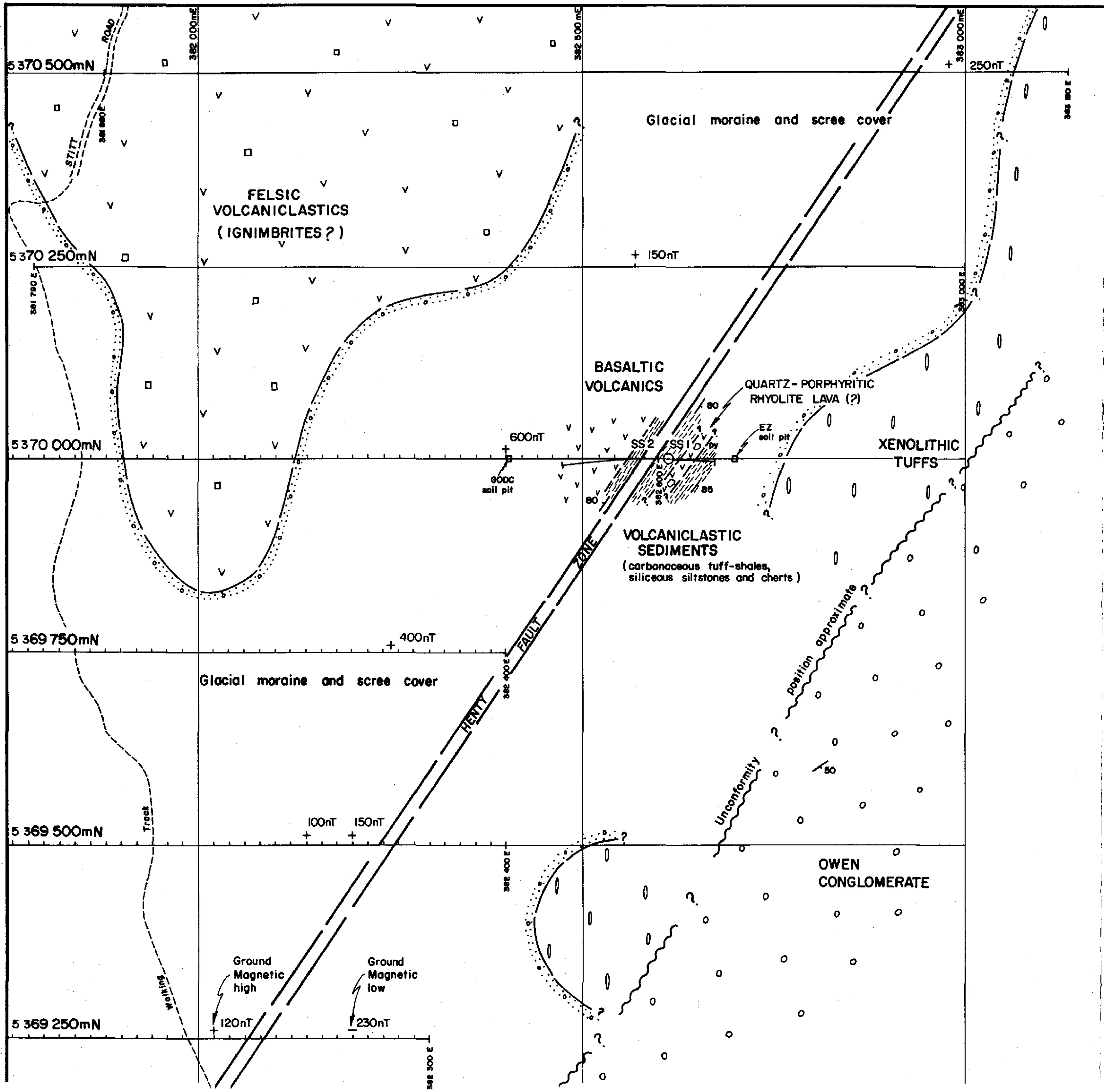

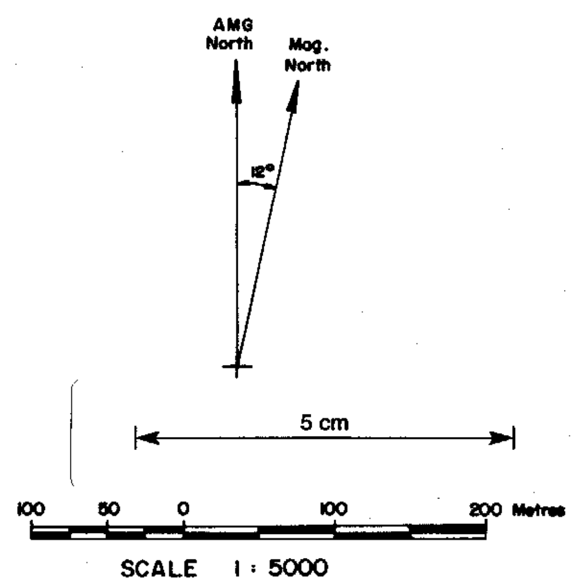

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PART E.L. 1/62 ROSEBERY EAST
SOUTH STITT GRID

GEOLOGY INTERPRETATION

(Base geology after McNaught, December 1984)

Author J.G.P.	Scale 1:5000		
Drawn T.G.D.S.	Date August 1985		
Revised	File No	Figure No 4	

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iclastic sediments Mineralisation of this type occurs along the HFZ both north and south of the South Stitt area.

However, the detailed geology at South Stitt is poorly known due to an extensive and thick cover of Owen Conglomerate boulder scree of glacial origin. The cover has hampered exploration by making geological and geochemical surveys virtually useless.

Prior to GODC commencing work at South Stitt in late 1983, EZ carried out some exploration including a dipole-dipole IP survey, but no drilling was undertaken. The GODC work outlined a strong linear magnetic anomaly along the inferred trace of the HFZ. On line 70 000 m N a moderate IP chareability high/resistivity low occurs about 250 m east of the magnetic feature, and a strong shallow VLF EM response lies between the two.

GODC concluded that the IP anomaly could be due to disseminated sulphides associated with gold mineralisation in the eastern volcaniclastic sediments, as occurs elsewhere along the HFZ. The magnetic feature was considered to be related to either a magnetic intrusive, or discrete pyrrhotite (+ gold) mineralisation on the HFZ as is the case further north in the Sterling Valley. It was decided to drill test both targets.

5.2 Drilling

(See detailed logs in Appendix A2 and drillsection in Figure 5).

Hole SS1 was collared at 382 610 m E on line 70 000 m N on 16th May 1985 and completed at 145.6 m on 29th May. It was drilled eastwards at the IP anomaly centred 70 m below 650 m E.

200

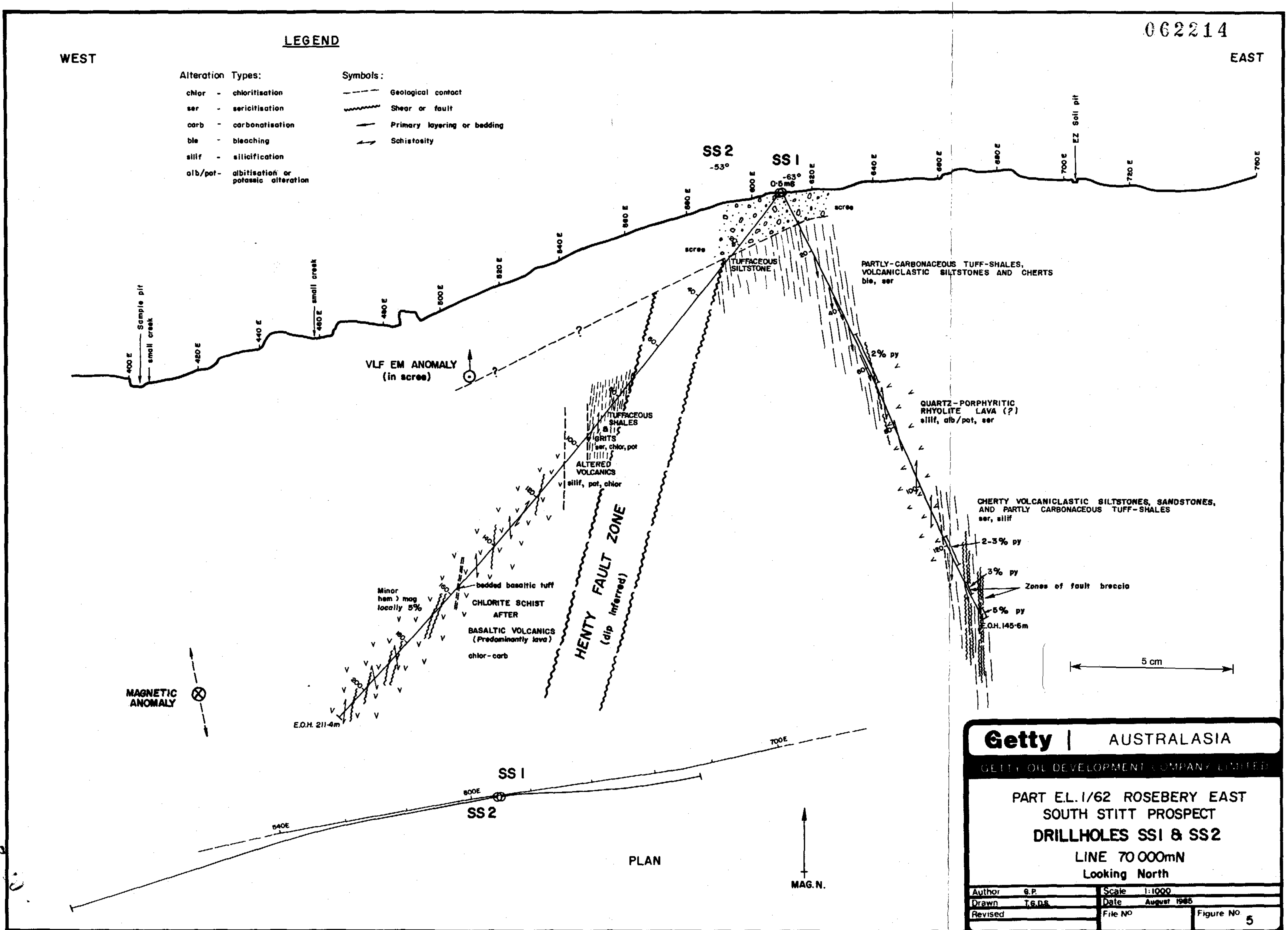
The rocks intersected included carbonaceous tuff-shales containing 1-5% disseminated pyrite, clearly the source of the IP response. The hole was inadvertently directed downdip (there is no exposure in the vicinity due to the scree cover). Because of this, while the hole satisfactorily tested the IP anomaly, it was not a good test of the prospective stratigraphy. The low angle to bedding also contributed to the considerable drilling difficulties experienced.

No significant mineralisation was intersected by SS1, the maximum sample values being 100 ppm Cu, 950 Pb, 3440 Zn, 1.5 Ag, 0.02 Au and 984 Ba. The elevated Pb and Zn values were associated with two faulted zones in pyritic black shale towards the bottom of the hole.

The summary log of the hole is as follows:

Hole: SS1

Location:	382 610 m E, line 70 000 m N
Collar:	-63^{o} @ 094^{o} AMG
Target:	Dipole-dipole IP anomaly centred 70 m below 382 650 m E/ 70 000 m N
0 - 10.5 m	OWEN CONGLOMERATE SCREE
10.5 - 65.8 m	BLACK AND GREY TUFF-SHALES, SILICEOUS VOLCANICLASTIC SILTSTONES AND CHERTS. Highly carbonaceous in places. Mod. bleaching and sericitisation. Limonite after sulphides to 40.4 m, then 1-2% pyrite.
65.8 - 117.15 m	HIGHLY SILICEOUS QUARTZ-PORPHYRITIC RHYOLITE LAVA (?) Silicified, with albitic (or potassic) alteration. Minor pyrite.
117.15 - 145.6 m	BLACK AND GREY CARBONACEOUS TUFF-SHALES AND QUARTZOSE VOLCANICLASTIC SILTSTONES. 1-5% pyrite. Fault zones 132.8 - 136.7 m and 142.2 - 145.6 m with graphitic schist and quartz veins.
	E.O.H.



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WEST
EAST
LEGEND
Alteration Types:
chlor - chloritisation
ser - sericitisation
carb - carbonatisation
ble - bleaching
silif - silicification
alb/pot - albitisation or potassic alteration
Symbols:
Geological contact
Shear or fault
Primary layering or bedding
Schistosity
SS 2
-53°
SS 1
-63°
0·5m S
scree
TUFFACEOUS SILTSTONE
PARTLY-CARBONACEOUS TUFF-SHALES, VOLCANICLASTIC SILTSTONES AND CHERTS
ble, ser
2% py
QUARTZ-PORPHYRITIC RHYOLITE LAVA (?)
silif, alb/pot, ser
CHERTY VOLCANICLASTIC SILTSTONES, SANDSTONES, AND PARTLY CARBONACEOUS TUFF-SHALES
ser, silif
2-3% py
3% py
Zones of fault breccia
5% py
E.O.H. 145·6m
5 cm
Soil pit
Sample pit
small creek
small creek
VLF EM ANOMALY
(in scree)
TUFFACEOUS SHALES & GRITS
ser, chlor, pot
ALTERED VOLCANICS
silif, pot, chlor
HENTY FAULT ZONE
(dip inferred)
bedded basaltic tuff
CHLORITE SCHIST AFTER BASALTIC VOLCANICS
(Predominantly lava)
chlor-carb
Minor hem) mag locally 5%
MAGNETIC ANOMALY
E.O.H. 211·4m
400 E
420 E
440 E
460 E
480 E
500 E
520 E
540 E
560 E
580 E
600 E
620 E
640 E
660 E
680 E
700 E
720 E
760 E
SS 1
SS 2
540E
600E
700E
PLAN
MAG. N.
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GETTY OIL DEVELOPMENT COMPANY LIMITED
PART E.L. 1/62 ROSEBERY EAST
SOUTH STITT PROSPECT
DRILLHOLES SS1 & SS2
LINE 70 000mN
Looking North
Author G.P.
Drawn T.G.D.S.
Revised
Scale 1:1000
Date August 1985
File No
Figure No 5

Hole SS2 was commenced on 3rd June, drilling westwards off the same site as SS1 and directed principally at the magnetic anomaly centred 100 m below 382 420 m E on line 70 000 m N. Due to bad weather and the unco-operative attitude of the drilling contractor (Boart Australia Drilling), following the announcement of their takeover by Longyear on 17th May, the hole did not reach its final depth of 211.4 m until 31st July. The hole was terminated still about 50 m short of its target magnetic anomaly. While there were sound geological reasons for doing this, the drilling problems also contributed to the decision.

From 106.85 m to the bottom of the hole at 211.4 m, the hole intersected a weakly magnetic basic volcanic with up to 5% hematite>magnetite and almost totally barren of sulphides. Basic volcanics, while common along the western side of the Henty Fault Zone, are not known anywhere in the sequence on the eastern side of the fault. For this reason it is believed the hole passed through the Henty Fault Zone between 28.4 - 72.5 m, a zone of almost complete core loss. This places the HFZ about 200 m further east than its inferred position from geological mapping on the South Stitt grid.

It is apparent that the target magnetic anomaly is not on or close to the fault as was thought when it was selected as a drill target. The presence of hematite/magnetite and absence of sulphides in the basic volcanic, strongly suggests that the anomaly is not due to pyrrhotite as had been hoped. The geophysical evidence suggests the anomly has a narrow (10 m) source, and it seems probable that it is a strongly magnetic dolerite dyke within the basic volcanic sequence.

It appears that the first of the two geophysical targets for this hole, a VLM EM anomaly at a depth of 25 m or less below 510 m E on line 70 000 m N, is due to responses associated with the scree and of no significance (see Figure 5).

The summary log of the hole is as follows:

Hole: SS2

Location:	382 609mE, Line 70 000mN
Collar:	-53° @ 272° AMG.
Targets:	VLF EM anomaly centred less than 25 m below 382 510mE, 70 000mN and magnetic anomaly centred 100 m below 382 420mE, 70 000mN.
0 - 25.4 m	OWEN CONGLOMERATE SCREE
25.4 - 28.4 m	TUFFACEOUS EPICLASTIC. Limonitic.
28.4 - 30.0 m	FAULT PUG
30.0 - 70.0 m	ZONE OF NEAR COMPLETE CORE LOSS. Fragments of siliceous rocks including quartz porphyry and vein quartz.
70.0 - 72.0 m	TUFFACEOUS EPICLASTIC. Strongly schistose.
72.0 - 72.5 m	FAULT PUG.
72.5 - 96.0 m	TUFFACEOUS EPICLASTICS. Mod chlor - K feldspar alteration. Limonitic.
96.0 -106.85m	ZONE OF INTENSE SILICA - K FELDSPAR - CHLORITE ALTERATION IN UNIDENTIFIABLE VOLCANICS. Trace py.
106.85-211.4 m	CHLORITE SCHIST AFTER BASIC VOLCANIC. Probable basalt lava apart from bedded tuffaceous zone 156.40 - 157.35 m. Strong chlor-carb alteration. Minor dissem hem > mag, locally 5%. Trace py to 120 m, and 146-158 m.
	E.O.H.

Hole SS2 also did not intersect significant mineralisation, maximum values being only 95 ppm Cu, 75 Pb, 420 Zn, 1 Ag, 0.03 Au and 610 Ba. Although 95% of core from the Henty Fault Zone itself was not recovered, the zones of pug and fragments of siliceous rocks (including quartz-porphyry) that were recovered were not mineralised.

The siting of the holes, combined with the unexpected position of the HFZ, means that that part of the eastern volcaniclastic sedimentary sequence closest to the fault was left largely untested. Despite being less-than-perfect tests of the prospective stratigraphy, both holes clearly indicate there is no basemetal or gold mineralisation at this point along the HFZ.

However, the occurrence in the eastern sequence of cherts, disseminated pyrite and a fair degree of hydrothermal alteration, is encouraging as all features are associated with the known significant stratiform gold and base-metal mineralisation on the HFZ. They suggest further drill testing of this sequence elsewhere in the South Stitt area would be worthwhile.

6. CONCLUSIONS AND RECOMMENDATIONS

1. The UTEM anomaly at Jones Creek is attributed to minor disseminated pyrite in a very thin tuffaceous epiclastic unit, probably the alongstrike extension of similar thicker units to the north. The anomaly is of no significance.

2. The result of the UTEM anomaly drilling has no bearing on the prospectivity of the upper Jones Creek - South Dallwitz area where FitzGerald (1985) recommends further drill testing of the altered and mineralised epiclastic sequence extending over 4.5 km.

3. At South Stitt, the IP anomaly on line 70 000 m N over the volcaniclastic

sediments east of the Henty Fault Zone is due to carbonaceous tuff-shales containing 1-5% disseminated pyrite. There is no associated gold or basemetal mineralisation.

4. The linear magnetic anomaly extending for 1.25 km through the South Stitt area is considered due to a magnetite-bearing basic intrusive or flow unit, lying up to 150 m west and parallel to the Henty Fault Zone. It is of no economic significance.

5. The VLF EM response at 382 510 m E, 70 000 m N at South Stitt is caused by glacial scree.

6. While holes SS1 and SS2 did not intersect any gold (or basemetal) mineralisation on line 70 000 m N, they highlighted the occurrence of cherts, disseminated pyrite and hydrothermal alteration in the sequence east of the fault at this locality. As all three features are key elements of the significant stratiform gold occurrence already outlined on the HFZ, potential for this type of mineralisation at South Stitt is indicated.

7. Further drill testing of the sequence east of the Henty Fault for gold and basemetal mineralisation is recommended at South Stitt. It is suggested initial holes be placed 500 m either side of 70 000 m N.

J.G. Purvis

August 1985

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7. REFERENCES

FitzGerald, F.G. and NcNaught, I.S.	January, 1985	EL 1/62 Mt. Black. Rosebery East Exploration Progress Report July - December 1984. Unpublished GODC Report.
Bishop, J.	March, 1985	Drill Targets on the White Spur and South Stitt Areas. Mitre Geophysics Memo to K. Wright, GODC.

APPENDICES

APPENDIX A DRILL LOGS

A.1 Jones Creek DDH JC 1

A.2 South Stitt DDH SS1, SS2.

APPENDIX A.1

Jones Creek DDH JC 1

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DIAMOND DRILL CORE RECORD

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HOLE No. JC 1

PROJECT	Rosebery East	**OBJECTIVE**	**RESULT**	**COMMENCED**	24.4.85
PROSPECT	Jones Creek	To intersect UTEM anomaly target 100 m below 390 mE, 8800's on the Jones Creek/ White Spur grid.	Hole largely devoid of mineralisation. Source of E.M. anomaly apparently minor pyrite from 116.3 - 121.2 m associated with epiclastic unit.	**COMPLETED**	2.5.85
DESIGNED BY	K. Wright			**LOGGED BY**	J.G. Purvis

SIGNIFICANT GEOLOGY

6.05 - 66.90 Basic volcanic lava flow, with flow top below 54.2 m.

66.90 - 116.30 Felsic volcanic fragmental.

116.30 - 118.50 Tuffaceous epiclastic with 2-3% py.

118.50 - 188.60 Felsic volcanic fragmental.

SIGNIFICANT ASSAYS (p.p.m.)

From	To	Metres						Comments

LOCATION

GRID	AMG
NORTHING	5363500 m N
EASTING	378200 m E
R.L.	665 m approx
LENGTH (m)	188.60

SURVEY DATA (AMG)

DEPTH (m)	BEARING	DIP	DEPTH (m)	BEARING	DIP	DEPTH (m)	BEARING	DIP	DEPTH (m)	BEARING	DIP
Collar	272°	-56°	150	265°	-41°30'						
30	In casing	-55°	188	265°	-37°						
61.5	266°30'	-54°									
100	265°30'	-48°30'									

HOLE CONDITION

SIZE		SIGNIFICANT CORE LOSS			POOR GROUND CONDITION ZONES		
Hole Size	Depth (m)	From	To (m)	% Lost	From	To (m)	Condition
HQ	3				0	6.05	Loose clay and boulder scree
NQ	42.80				6.05	17.5	Weathered, fractured and broken.
BQ	188.60						

HOLE CONDITIONS AFTER COMPLETION

19.5 m NQ casing with cap.

3 m HQ casing.

062222

GETTY OIL DEVELOPMENT COMPANY LTD.

DIAMOND DRILL CORE RECOVERY DATA

PROSPECT: JONES CREEK HOLE No. JC 1 210 Page 1

DRILL INTERVAL			CORE RECEIVED		DRILL INTERVAL			CORE RECEIVED		DRILL INTERVAL			CORE RECEIVED		DRILL INTERVAL			CORE RECEIVED	
From	To	Metres	Metres	%	From	To	Metres	Metres	%	From	To	Metres	Metres	%	From	To	Metres	Metres	%
		Scree																	
0	1.5	1.5	0.7	47	43.4	46.4	3.00	3.00	100	106.4	109.4	3.00	3.00	100	169.4	172.4	3.00	3.00	100
1.5	3.0	1.5	1.3	87	46.4	49.4	3.00	"	"	109.4	112.4	"	"	"	172.4	175.4	"	"	"
3.0	3.5	0.5	0.4	80	49.4	52.4	3.00	"	"	112.4	115.4	"	"	"	175.4	178.4	"	"	"
3.5	4.0	0.5	0.15	30	52.4	55.4	3.00	"	"	115.4	118.4	"	"	"	178.4	181.4	"	"	"
4.0	5.9	1.9	0.7	37	55.4	58.4	3.00	"	"	118.4	121.4	"	"	"	181.4	184.4	"	"	"
		Bed Rock																	
5.9	6.5	0.6	0.6	100	58.4	61.4	3.00	"	"	121.4	124.4	"	"	"	184.4	187.4	"	"	"
6.5	7.4	0.9	0.9	100	61.4	64.4	3.00	"	"	124.4	127.4	"	"	"	187.4	188.60	1.20	1.20	100
7.4	8.1	0.7	0.5	71	64.4	67.4	3.00	"	"	127.4	130.4	"	"	"					
8.1	10.4	2.30	2.30	100	67.4	70.4	3.00	"	"	130.4	133.4	"	"	"					
10.4	11.9	1.50	1.50	100	70.4	73.4	3.00	"	"	133.4	136.4	3.00	2.80	93					
11.9	13.4	1.50	1.10	73	73.4	76.4	3.00	"	"	136.4	139.4	3.00	3.00	100					
13.4	14.5	1.10	1.10	100	76.4	79.4	3.00	"	"	139.4	142.4	"	"	"					
14.5	16.4	1.9	1.9	100	79.4	82.4	3.00	"	"	142.4	145.4	"	"	"					
16.4	17.3	0.9	0.9	100	82.4	85.4	3.00	"	"	145.4	148.4	"	"	"					
17.3	19.4	2.10	2.10	100	85.4	88.4	3.00	"	"	148.4	151.4	"	"	"					
19.4	22.4	3.00	3.00	100	88.4	91.4	3.00	"	"	151.4	154.4	"	"	"					
22.4	25.4	3.00	3.00	100	91.4	94.4	3.00	"	"	154.4	157.4	"	"	"					
25.4	28.4	3.00	3.00	100	94.4	97.4	3.00	"	"	157.4	160.4	"	"	"					
28.4	31.4	3.00	3.00	100	97.4	100.4	3.00	"	"	160.4	163.4	"	"	"					
31.4	34.4	3.00	3.00	100	100.4	103.4	3.00	"	"	163.4	166.4	"	"	"					
34.4	37.4	3.00	3.00	100	103.4	106.4	3.00	"	"	166.4	169.4	"	"	"					
37.4	40.4	3.00	3.00	100															
40.4	43.4	3.00	2.80	93															

062223

GETTY OIL DEVELOPMENT COMPANY LTD.

DRILL CORE LOG & ASSAY DATA

PROSPECT: Jones Creek **HOLE No.** JC 1 Page 1

INTERVAL			DESCRIPTION	ASSAY DATA (p.p.m.)											
From	To	Metres		Sample No.	From	To (m)	Rec.%								
0	6.05	6.05	<u>SCREE</u> Mostly felsic volcanics.												
6.05	56.50	50.45	<u>BASIC VOLCANIC LAVA FLOW (BASALT OR BASALTIC ANDESITE)</u> Greyish green, fi-med gr, massive, hard. Felspars and ferromags (some with radiating fibrous habit), in groundmass of chlorite and epidote. Amygdales, av 2 mm, common below 34.5 m, of chlorite epidote or calcite. At 55.2 m amygdales aligned 50°/LCA. Weak-mod chloritisation, patchy epidotisation. Mod weathered and broken to 17.5 m with Mn & Fe oxides on fractures. Minor qtz-calcite veins. Calcite veining inc below 52.25 m with some pervasive carbonatisation. V.minor dissem py. Minor veinlets of micaceous hematite - rock is non magnetic. From 30-40 m rare trace cp-gn assoc with hematite veins. Below 54.2 m - <u>lava flow top</u>: grainsize finer, some ashy zones, variable texture and colours, some bleaching, zones of abundant small amygdales. Base marked by oxidised zone 70°/LCA.												

062224

GETTY OIL DEVELOPMENT COMPANY LTD.

DRILL CORE LOG & ASSAY DATA

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PROSPECT: Jones Creek **HOLE No.** JC 1 **Page** 2

INTERVAL			DESCRIPTION	ASSAY DATA (p.p.m.)											
From	To	Metres		Sample No.	From	To (m)	Rec.%								
56.50	66.90	10.40	<u>VOLCANIC BRECCIA?:</u> <u>MAINLY AMYGDALOIDAL BASIC VOLCANIC LAVA WITH INTERMIXED ACID-INTERMEDIATE VITRIC FRAGMENTAL VOLCANIC</u> Light and dark greyish-green. Variable texture. Intercalated and mixed bands and clasts(?) of amygdaloidal basic lava as before (highly carbonated and chloritised, with calcite amygdales av 2 mm), in highly lineated volcanic with chloritic 'wisps' after glass (pumice?) up to 25 mm x 5 mm, in carbonate-chlorite matrix. Some evidence of chilling (bleached, v.fi gr) of edges of some basic volcanic bands and clasts. 1° layering 33°/LCA @ 63.8 m. V.minor dissem py. Basal contact sharp 30°/LCA.												
66.90	116.30	49.40	<u>FRAGMENTAL FELSIC VOLCANIC - DACITIC PYROCLASTIC?</u> Greyish-green. Med. gr. Massive, unbroken, mod schistose. Feld xyls (some pink) av. 1-2 mm, with chloritic 'wisps' (glass - pumice?) up to 35 mm x 10 mm strongly aligned // schistosity, in sericitic, chloritic and carbonated matrix. Uniform apart from broad variations into zones feld-xyl rich or glass rich. 1° layering @ 94.05 m: 45°/LCA. Vague layering below 107.4 m in zone of inc schistosity. Schistosity: 40°/LCA @ 73.5 m, 30°/LCA @ 84 m, 40°/LCA @ 93 m, 40°/LCA @ 108.5 m. Alteration weak-mod (sericite-chlorite-carbonate + potassic alt). Chloritisation dominant below 86 m.												

062225

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DRILL CORE LOG & ASSAY DATA

PROSPECT: Jones Creek **HOLE No.** JC #23 **Page** 3

INTERVAL			DESCRIPTION	ASSAY DATA (p.p.m.)											
From	To	Metres		Sample No.	From	To (m)	Rec.%	Cu	Pb	Zn	Ag	Au	Ba		
			Minor orange-pink potassic alt-silif lithic frags to 10 mm. Minor carb + chlor veins below 100 m - some pink. V.minor dissem py. Transitional contact at base.												
116.30	118.50	2.20	TUFFACEOUS EPICLASTIC Grey-green, fi-med gr. Vitric tuff with small deformed feld xyls in places, some flattened pumice (?) and rare angular lithics to 5 mm. Mod sericitised and chloritised. Sl siliceous, with irreg qtz-carb veinlets. Bedded in places - 47°/LCA @ 117.8 m. Strongly schistose. Small shear 70°/LCA @ 117.45 m 2-3% fine dissem py. Rare trace cp-sp-gn 118-118.5 m.	2101 2102	116.3 117.5	117.5 118.5	100 100	25 55	115 90	160 360	1.5 0.5	x 0.01	837 1120		
118.50	120.20	1.70	TRANSITION ZONE Coarser gr than above with no clear epiclastic character. Abundant thin 'wisps' of dark green chlorite after glass (pumice?) up to 25 mm, and pink deformed felspars. No clear layering, strongly schistose. Rare 'clasts' of the tuffaceous epiclastic above, to 60 mm. Minor dissem py. Basal contact qtz-carb veining 50°/LCA.												

062226

GETTY OIL DEVELOPMENT COMPANY LTD.
DRILL CORE LOG & ASSAY DATA

PROSPECT: Jones Creek **HOLE No.** JC-1 214 **Page 4**

INTERVAL			DESCRIPTION	ASSAY DATA (p.p.m.)											
From	To	Metres		Sample No.	From	To (m)	Rec.%		Cu	Pb	Zn	Ag	Au	Ba	
120.2	181.5	61.3	FELSIC FRAGMENTAL VOLCANIC (DACITIC PYROCLASTIC?) Grey-green. Fi-med gr. Characteristic pink feld xyls av 1-2 mm. Chloritic 'wisps' after glass (pumice?) to 25 mm, av <15 mm. Angular lithics to 30 mm, av < 5 mm, gen minor but common 154.85 - 172 m, with some composed of finely qtz-phyric pink siliceous lava. Mod schistose - imparts a streakiness and in places aligns and deforms felspars. Mod chlor-carb alt (strong in places). Weak ser. Patchy v.weak potassic or albitic alt ± silif. Carb veins - some pale pink, av <10 mm. Overall, rock appears to be a fine fragmental with 1° text oblit by alt and deformation. Rather uniform, but rare evidence for 1° layering - slight variations in amount of feld xyls or lithics (50°/LCA @ 154.85 m). Schistosity: 43°/LCA @ 132.5 m & 147.3 m; 55°/LCA @ 164 m; 58°/LCA @ 178 m. Shear 45°/LCA @ 128.7 m. 120.2 - 121.2 m: 2% dissem py. Minor cp-sp-gn in carb patches @ 120.6 m. 121.2 - 150 m: v.minor py. 150 - 154.5 m: 1% fi gr py. 154.5 - 181.5 m: Minor to 1% py dissem. Transitional change at base.	2106	120.2	121.2			35	60	100	<0.5	0.017	1210	
				2103	150	151			10	20	85	0.5	x*	1210	
				2104	151	153			5	10	80	x	x	1190	
				2105	153	155			5	35	85	0.5	x	1280	

* Less than .008

062227

GETTY OIL DEVELOPMENT COMPANY LTD.

DRILL CORE LOG & ASSAY DATA

215

PROSPECT: Jones Creek

HOLE No. JC 1 Page 5

INTERVAL			DESCRIPTION	ASSAY DATA (p.p.m.)												
From	To	Metres		Sample No.	From	To (m)	Rec.%									
181.5	188.6	7.1	<u>TUFFACEOUS VITRIC FRAGMENTAL VOLCANIC (DACITIC PYROCLASTIC?)</u> Similar to above, but finer gr and more strongly schistose. Pale greenish-grey. Numerous chloritic 'streaks', gen <1 mm wide and <10 mm long, some form bands round core - prob glass frags (and layers?). 'Streakiness' due to lineation induced by schistosity (50^{o}/LCA @ 184 m). Feld xyls totally deformed, smaller, and much less conspicuous than in above unit. Mod ser-carb alt. Weak chlor. Minor dissem py. END OF HOLE													

062228

216

APPENDIX A.2

South Stitt DDH SS1, SS2.

GETTY OIL DEVELOPMENT COMPANY LTD.

DIAMOND DRILL CORE RECORD

217

HOLE No. SS1

PROJECT	Rosebery East	**OBJECTIVE**	**RESULT**	COMMENCED	16.5.85
PROSPECT	South Stitt	To test dipole - dipole IP anomaly 70 m below 382650mE,70000mN on South Stitt grid .	Apparent source of IP anomaly: carbonaceous and pyritic tuff-shales. Hole inadvertantly directed downdip.	COMPLETED	29.5.85
DESIGNED BY	K. Wright			LOGGED BY	J.G. Purvis

SIGNIFICANT GEOLOGY

10.5 - 65.8 m: Tuffaceous epiclastics (tuff-shales and volcanic siltstones). 1-2% py.

65.8 - 117.15 m: Quartz-porphyritic volcanic (rhyolite lava?). Minor py.

117.15 - 145.6 m: Tuffaceous epiclastics (carbonaceous tuff-shales, cherty volcanic siltstones). 1-5% py. Zones of fault breccia 132.8 - 136.7 m & 142.2 - 145.6 m.

SIGNIFICANT ASSAYS (p.p.m.)

From	To	Metres	Cu	Pb	Zn	Ag	Au	Comments
142.2	144	1.8	100	950	3440	1.5	0.017	Best interval

LOCATION

GRID	AMG
NORTHING	5370000 m N
EASTING	382610 m E
R.L.	610 m approx
LENGTH (m)	145.60

SURVEY DATA (AMG)

DEPTH (m)	BEARING	DIP	DEPTH (m)	BEARING	DIP	DEPTH (m)	BEARING	DIP	DEPTH (m)	BEARING	DIP
Collar	094°	-63°	100	094°	-66°						
30	In casing	-63°	130	093°	-64°						
34	101°30'	-64°									
75	097°30'	-66°									

HOLE CONDITION

SIZE		SIGNIFICANT CORE LOSS			POOR GROUND CONDITION ZONES		
Hole Size	Depth (m)	From	To (m)	% Lost	From	To (m)	Condition
HQ	3.00	10.5	20.5	100(sludge only)	0	10.5	Loose Owen Conglomerate scree
NQ	30.5	20.5	67.60	48	10.5	20.5	Clay and sand after highly weathered tuff-shales
BQ	145.6	79.6	91.6	17			
		133.6	136.6	30	20.5	65.8	Broken, weathered tuff-shales
					65.8	145.6	Broken by fractures & shears near-parallel to LCA.

HOLE CONDITIONS AFTER COMPLETION

PVC casing placed to 72.5 m.

NQ casing left 6 - 30.5 m.

HQ casing left 0 - 3 m.

062230

GETTY OIL DEVELOPMENT COMPANY LTD.

DIAMOND DRILL CORE RECOVERY DATA

PROSPECT: SOUTH STITT HOLE No. SS1 218 Page 1

DRILL INTERVAL			CORE RECEIVED		DRILL INTERVAL			CORE RECEIVED		DRILL INTERVAL			CORE RECEIVED		DRILL INTERVAL			CORE RECEIVED	
From	To	Metres	Metres	%	From	To	Metres	Metres	%	From	To	Metres	Metres	%	From	To	Metres	Metres	%
-----	-----	Scree	-----	-----	46.6	49.6	3.0	0.6	20	97.6	100.6	3.0	3.0	100					
00	3.0	3.0	0.5	17	49.6	52.6	3.0	2.1	70	100.6	103.6	3.0	3.0	100					
3.0	4.6	1.6	0.6	38	52.6	55.6	3.0	1.6	53	103.6	106.6	3.0	2.7	90					
4.6	6.8	2.2	1.25	57	55.6	58.4	2.8	1.4	50	106.6	109.6	3.0	3.0	100					
6.8	9.6	2.8	1.80	64	58.4	61.5	3.1	1.85	60	109.6	112.6	3.0	3.0	100					
9.6	10.5	0.9	0.4	44	61.5	64.6	3.1	1.4	45	112.6	115.6	3.0	2.85	95					
-----	-----	Bedrock	-----	-----	64.6	66.5	1.9	1.25	66	115.6	118.6	3.0	2.95	98					
10.5	13.6	3.1	Sludge	only	66.5	67.6	1.1	0.4	36	118.6	121.6	3.0	3.0	100					
13.6	16.6	3.0	"	"	67.6	70.6	3.0	3.0	100	121.6	124.6	3.0	2.8	93					
16.6	19.6	3.0	"	"	70.6	73.6	3.0	2.75	92	124.6	127.6	3.0	2.7	90					
19.6	21.4	1.8	0.45	+ sludge	73.6	76.6	3.0	2.7	90	127.6	130.6	3.0	3.0	100					
21.4	22.6	1.2	0.3	25	76.6	79.6	3.0	2.75	92	130.6	133.6	3.0	3.0	100					
22.6	25.6	3.0	0.55	18	79.6	82.6	3.0	2.6	87	133.6	136.6	3.0	2.1	70					
25.6	28.6	3.0	3.00	100	82.6	85.6	3.0	2.4	80	136.6	139.6	3.0	3.0	100					
28.6	30.5	1.9	1.85	97	85.6	88.6	3.0	2.6	87	139.6	142.6	3.0	3.0	100					
30.5	31.6	1.1	0.6	45	88.6	91.6	3.0	2.4	80	142.6	145.6	3.0	2.85	95					
31.6	34.6	3.0	0.45	15	91.6	94.6	3.0	2.6	87										
34.6	37.6	3.0	2.3	77	94.6	96.1	1.5	1.8	120			E.O.H.							
37.6	40.6	3.0	1.55	52	96.1	97.6	1.5	1.5	100										
40.6	43.6	3.0	1.05	35															
43.6	46.6	3.0	1.7	57															

062231

GETTY OIL DEVELOPMENT COMPANY LTD.

DRILL CORE LOG & ASSAY DATA

PROSPECT: SOUTH STITT **HOLE No.** SS1 219 **Page** 1

INTERVAL			DESCRIPTION	ASSAY DATA (p.p.m.)											
From	To	Metres		Sample No.	From	To (m)	Rec.%	Cu	Pb	Zn	Ag	Au	Ba		
			SCREE									*X =	<0.008		
0	10.5	10.5	Owen Conglomerate boulders. Limonite cement 'pan' 10.0 - 10.5 m.												
10.5	20.5	10	SANDY SLUDGE AFTER WEATHERED TUFF-SHALES (see below).												
20.5	65.8	45.3	TUFFACEOUS EPICLASTICS	2107	20.5	25.6	25	55	190	50	0.5	X	282		
			Interbedded black and grey TUFF-SHALES (vitric,	2108	25.6	28.6	100	45	340	90	< 0.5	X	279		
			strongly carbonaceous in places); bleached,	2109	28.6	30.5	97	50	565	65	0.5	X	284		
			vitric and quartzose VOLCANICLASTIC SILTSTONES	2110	30.5	34.6	26	30	100	55	< 0.5	X	671		
			and minor FINE SANDSTONES; minor thin beds of	2111	34.6	37.6	77	35	145	95	< 0.5	X	310		
			CHERT. Rare beds of fine lithic breccia.	2112	37.6	40.6	52	15	15	100	0.5	X	257		
				2113	40.6	43.6	35	35	15	250	< 0.5	X	226		
			Black to creamy-grey. Fine gr.	2114	43.6	49.6	38	25	90	460	< 0.5	X	251		
				2115	49.6	52.6	70	60	765	920	0.5	X	286		
			Angular to sub-rounded volcanic qtz grains to 2	2116	52.6	55.6	53	55	515	1390	< 0.5	X	287		
			mm, av. <<1 mm. Many beds v. slightly cherty.	2117	55.6	58.4	50	50	430	945	0.5	X	329		
			Strongly siliceous (silicification?) below 64m.	2118	58.4	61.5	60	20	420	165	< 0.5	X	260		
				2119	61.5	64.6	45	10	50	420	< 0.5	X	521		
			Mod-strong bleaching, mod sericitisation.	2120	64.6	65.8	66	5	10	240	< 0.5	0.017	489		
			Gen finely bedded, now deformed by mod-strong bedding plane schistosity forming lenses, boudans and breccia (some disruption possibly soft-sediment type).												
			Gen v. badly broken. Exacerbated by low bedding angles: 15°/LCA @ 20.5 m, 18°/LCA @ 31.7 m, 3°/LCA @ 36 m, 15°/LCA @ 45.5 m, 1°/LCA @ 57 m.												

06232

GETTY OIL DEVELOPMENT COMPANY LTD.

DRILL CORE LOG & ASSAY DATA

PROSPECT: SOUTH STITT **HOLE No** SS1 **Page** 2

INTERVAL			DESCRIPTION	ASSAY DATA (p p m)										
From	To	Metres		Sample No	From	To m	Rec%	Cu	Pb	Zn	Ag	Au	Ba	
			Strongly oxidised, leached and limonite-stained to 40.4 m (latter after sulphides-trace remnant py). Irreg bands, lenses and patches of partly-xylline qtz (// bedding), - poss remob chert? 40.4 - 49 m: 1% dissem py. 49 - 65.8 m: 2% dissem py, dec with depth. V minor sp-gn (some sp is red). Fault pug at base.									*X =	<0.008	
65.8	114.2	48.4	<u>SILICEOUS QUARTZ-PORPHYRITIC VOLCANIC (RHYOLITE LAVA?)</u>	2121	65.8	68.6	62	10	50	345	<0.5	X	322	
				2122	68.6	70.6	100	5	10	140	<0.5	X	466	
			Pink and grey. Hard. Massive. Fi-med gr. Abundant xylline qtz grains or phenocrysts to 6 mm, av 2 mm, in siliceous > vitric groundmass. Most qtz with indistinct grain edges. Some subrounded. Original text indistinct due to alteration and deformation, but vague 'clastic' texture incl much fine fracturing and brecciation (healed by veinlets and patches of qtz-carb up to 50 mm across). Indistinct banding at 72 m											

GETTY OIL DEVELOPMENT COMPANY LTD.

DRILL CORE LOG & ASSAY DATA

2221

PROSPECT: SOUTH STITT **HOLE No.** SS1

INTERVAL			DESCRIPTION	ASSAY DATA (p.p.m.)											
From	To	Metres		Sample No.	From	To (m)	Rec.%	Cu	Pb	Zn	Ag	Au	Ba		
			and below 108.7 m. These textures prob mostly due to deformation but some breccia zones appear 1°.	2123	99.5	100.5	100	5	5	120	<0.5	0.008	789		
			Patchy silif - v.strong below 85 m. Mod pink hematisation-albitisation (or potassic alt) - intense in places below 88 m. Mod sericitisation, minor chlorite in places.	2124	106.5	108.5	95	40	5	120	<0.5	X	984		
			Mod schistose. Badly broken by fractures at low ∠ to LCA. Schistosity: 15°/LCA @ 71.7 m, 8°/LCA @ 82 m, 25°/LCA @ 96.7 m, 25°/LCA @ 108.7 m.												
			65.8 - 114.2 m: Minor py. Except: 106.5 - 108.5 m: 1-2% py.									* X =	<0.008		
			Dissem and as films on fractures.												
114.2	117.15	2.95	<u>TRANSITIONAL CONTACT ZONE - EPICLASTIC</u> Creamy-grey qtz-porphyritic volcanic as above except rock is banded and finer gr - appears tuffaceous. Qtz phenos almost completely deformed by the strong schistosity. Epiclastic character confirmed by 55 mm wide bed of deformed grey tuff-shale @ 116.6 m (28°/LCA).												

062234

GETTY OIL DEVELOPMENT COMPANY LTD.

DRILL CORE LOG & ASSAY DATA

PROSPECT: SOUTH STITT **HOLE No.** SS1 222 **Page** 4

INTERVAL			DESCRIPTION	ASSAY DATA (p.p.m.)											
From	To	Metres		Sample No.	From	To (m)	Rec.%	Cu	Pb	Zn	Ag	Au	Ba		
			Minor pyrite.									* X =	< 0.008		
			Lower contact bedding 18°/LCA.												
117.15	142.20	25.05	TUFFACEOUS EPICLASTICS	2125	117.15	119.5	98	30	55	90	< 0.5	0.017	774		
			Grey, vitric, slightly cherty, QUARTZOSE VOLCANIC SILTSTONES and SANDSTONES; grey and black partly-carbonaceous TUFF-SHALES; rare CHERTS.	2126	119.5	122	100	20	35	120	< 0.5	0.017	695		
				2127	122	124.5	96	30	80	130	< 0.5	X	522		
				2128	124.5	127	88	40	165	255	< 0.5	X	346		
			Weak-mod sericitisation. Patchy silicification below 132.8 m.												
			Dispersed carbonate in siliceous beds, and in tuff-shales as small veinlets and patches ± qtz.												
			Abundant volc qtz grains <1 mm av. Rarely to 4 mm.												
			Shale beds av. 1-5 mm. Siliceous beds + 5 mm. Bedding deformed, with zones of breccia, boudans etc. Some due to mod-strong schistosity but others are soft-sediment features. Occ sub-rounded clasts of chert to 45 mm.	2129	132.8	134.8	82	40	370	1590	< 0.5	X	168		
				2130	134.8	136.7	63	50	2600	960	1.5	0.017	200		
			Bedding: 27°/LCA @ 124 m, 10°/LCA @ 131.5 m, 22°/LCA @ 142 m.	2131	136.7	138	100	45	1700	400	< 0.5	0.017	287		
				2132	138	140	100	30	230	110	< 0.5	X	302		
				2133	140	142.2	100	65	450	375	< 0.5	X	286		
			132.8 - 136.7 m: Fault Zone. Contorted and broken graphitic schist, large irreg barren veins of qtz-carb//bedding. Pug at 153.3 m (23°/LCA) and 136.7 m.												

062235

GETTY OIL DEVELOPMENT COMPANY LTD.

DRILL CORE LOG & ASSAY DATA

PROSPECT: SOUTH STITT HOLE No. SS1 Page 5 223

INTERVAL			DESCRIPTION	ASSAY DATA (p.p.m.)											
From	To	Metres		Sample No.	From	To (m)	Rec.%								
			117.15 - 127 m: 2-3% dissem py, also in bedded veinlets. Rare sp, arseno 121-124 m. 127 - 132.8 m: 1-2% py. 132.8 - 136.7: 3% py. Minor sp. Trace gn-cp. 136.7 - 142.2 m: 1-5% dissem py. Rare sp-gn-cp. (Best pyrite always in carbonaceous shales).												
142.2	145.6	3.4	<u>FAULT BRECCIA</u> Irreg angular frags and veins of xylline qtz-carb, and frags of silicified qtzose volc siltstone, in matrix of graphitic material after deformed black shale.	2134	142.2	144	97	100	950	3440	1.5	0.017	260		
			The xylline qtz at least partly remob from, or replacing, siliceous siltstone. Frags 2 mm to 50 mm. Vein masses to 150 mm. Breccia poss centred on 10 mm pug zone 143.75 m 25^{o}/LCA. 5% dissem py. Minor sp-gn. E.O.H.	2135	144	145.6	94	40	905	1750	0.5	0.017	233		

062236

GETTY OIL DEVELOPMENT COMPANY LTD.
DIAMOND DRILL CORE RECORD

HOLE No: SS2 224

PROJECT	Rosebery East	OBJECTIVE	RESULT	COMMENCED	3.6.85
PROSPECT	South Stitt	To test VLF EM response 25m below 382510mE 70000mN, and magnetic anomaly centred 100m below 382420mE 70000mN, on South Stitt grid	VLF EM response shown due to glacial scree. Hole stopped short of magnetic anomaly because of drilling difficulties. Source of anomaly clearly basic intrusive or flow not mineralisation.	COMPLETED	31.7.85
DESIGNED BY	K. Wright			LOGGED BY	J.G. Purvis

SIGNIFICANT GEOLOGY

0 - 25.4m: Owen Conglomerate scree.

28.4 - 72.5m: Henty Fault Zone - almost total core loss. Minor frags of quartz-porphyry and vein quartz.

72.5 - 96m: Tuffaceous epiclastics (tuff-shale to tuffaceous grit).

96 - 106.85m: Altered unidentifiable volcanics (chlor-silif-k feld)

106.85- 211.4m: Chlorite schist after basaltic volcanics. Up to 5% hem >mag.

SIGNIFICANT ASSAYS (p.p.m.)

From	To	Metres	Cu	Pb	Zn	Ag	Au	Comments
72.5	79.4	6.9	10	55	420	0.5	0.025	Best interval.

LOCATION

GRID	AMG
NORTHING	5370000mN
EASTING	382609mE
R.L.	610m approx
LENGTH (m)	211.40

SURVEY DATA (AMG)

DEPTH (m)	BEARING	DIP	DEPTH (m)	BEARING	DIP	DEPTH (m)	BEARING	DIP	DEPTH (m)	BEARING	DIP
Collar	272°	-53°									
30	In casing	-51°	131	In casing	-48°30'						
70	In casing	-51°	180	264°30'	-47°						
100	In casing	-50°30'	202	265°	-47°						

HOLE CONDITION

SIZE		SIGNIFICANT CORE LOSS			POOR GROUND CONDITION ZONES		
Hole Size	Depth (m)	From	To (m)	% Lost	From	To (m)	Condition
HQ	5	25.4	31.4	78	0	25.4m	Loose Owen Conglomerate scree
NQ	78	31.4	70.4	99	25.4	96m	Extremely badly broken&clayey
BQ	211.4	70.4	94.4	63			due to Henty Fault Zone and
		181.4	189.6	26			weathering.
					183.5	189.4	Broken by clayey shears.

HOLE CONDITIONS AFTER COMPLETION

PVC casing placed to 90m.
NQ casing left to 78m.
HQ casing left to 5m.

062237

GETTY OIL DEVELOPMENT COMPANY LTD.

DIAMOND DRILL CORE RECOVERY DATA

PROSPECT: SOUTH STITT — HOLE No. SS225 — Page 1

Drill Interval From	Drill Interval To	Drill Interval Metres	Core Received Metres	Core Received %
Scree				
0	16.4	16.4	-	0
16.4	19.4	3.0	1.95	65
19.4	22.4	3.0	2.55	85
22.4	25.4	3.0	1.2	40
Bedrock				
25.4	28.4	3.0	0.65	22
28.4	31.4	3.0	0.7	23
31.4	34.4	3.0	-	0
34.4	37.4	3.0	-	0
37.4	40.4	3.0	0.05	2
40.4	55.4	15.0	0.2	1
55.4	70.4	15.0	0.15	1
70.4	72.5	2.1	1.35	64
72.5	73.4	0.9	0.5	56
73.4	75	1.6	0.2	12
75	79.4	4.4	0.5	11
79.4	82.4	3.0	0.55	18
82.4	85.4	3.0	1.45	48
85.4	88.4	3.0	0.8	27
88.4	91.4	3.0	1.8	60
91.4	94.4	3.0	1.8	60
94.4	98.9	4.5	4.5	100
98.9	100.4	1.5	1.5	"
100.4	103.4	3.0	3.0	"
103.4	106.4	3.0	3.0	"
106.4	109.4	3.0	3.0	"
109.4	112.4	3.0	3.0	"
112.4	115.4	3.0	3.0	"
115.4	118.4	3.0	3.0	"
118.4	121.4	3.0	3.0	"
121.4	124.4	3.0	3.0	"
124.4	127.4	3.0	3.0	"
127.4	130.4	3.0	3.0	"
130.4	131.9	1.5	1.5	"
131.9	133.4	1.5	1.5	"
133.4	136.4	3.0	3.0	"
136.4	139.4	3.0	3.0	"
139.4	142.4	3.0	2.9	97
142.4	145.4	3.0	3.0	100
145.4	148.4	3.0	2.95	98
148.4	151.4	3.0	3.0	100
151.4	154.4	3.0	3.0	100
154.4	157.4	3.0	2.95	98
157.4	160.4	3.0	3.0	100
160.4	163.4	3.0	3.0	100
163.4	166.4	3.0	2.8	93
166.4	169.4	3.0	2.3	77
169.4	172.4	3.0	3.0	100
172.4	175.4	3.0	3.0	"
175.4	178.4	3.0	3.0	"
178.4	181.4	3.0	3.0	"
181.4	184.2	2.8	2.4	86
184.2	187.3	3.1	2.45	79
187.3	189.6	2.3	1.2	52
189.6	190.4	0.8	0.8	100
190.4	193.4	3.0	2.85	95
193.4	196.4	3.0	3.0	100
196.4	199.4	3.0	2.6	87
199.4	202.4	3.0	2.95	98
202.4	205.4	3.0	2.6	87
205.4	208.4	3.0	3.0	100
208.4	211.4	3.0	3.0	100

062238

SOUTH STITT - HOLE SS 2

MAGNETIC SUSCEPTIBILITY READINGS

Depth (m)	Meter Reading	Corrected Value (10^{-3} CGS)	Depth (m)	Meter Reading	Corrected Value (10^{-3} CGS)	Depth (m)	Meter Reading	Corrected Value (10^{-3} CGS)	Depth (m)	Meter Reading	Corrected Value (10^{-3}
150	0	0	165.5	Broken		181	0	0	196.5	0.7	1.4
150.5	0	0	166	0	0	181.5	0	0	197	0.6	1.2
151	0	0	166.5	Broken		182	0.1	0.2	197.5	0	0
151.5	0.1	0.2	167	0	0	182.5	0	0	198	Broken	
152	0	0	167.5	0.8	1.6	183	0.3	0.6	198.5	0	0
152.5	0	0	168	0.2	0.4	183.5	0.4	0.8	199	Broken	
153	0.3	0.6	168.5	0	0	184	0	0	199.5	0.1	0.2
153.5	0	0	169	Broken		184.5	0	0	200	0.1	0.2
154	0	0	169.5	1.0	2.0	185	0.1	0.2	200.5	0.2	0.4
154.5	0	0	170	1.0	2.0	185.5	0.1	0.2	201	0.2	0.4
155	0	0	170.5	1.0	2.0	186	0.1	0.2	201.5	0.9	1.8
155.5	0	0	171	0.8	1.6	186.5	0.1	0.2	202	5.1	10.2
156	0	0	171.5	2.1	4.2	187	0	0	202.5	0.2	0.4
156.5	0	0	172	1.5	3.0	187.5	0	0	203	0	0
157	0	0	172.5	1.2	2.4	188	0.1	0.2	203.5	0.3	0.6
157.5	0	0	173	0.1	0.2	188.5	Broken		204	0.3	0.6
158	0	0	173.5	0.1	0.2	189	Broken		204.5	0.1	0.2
158.5	0	0	174	0	0	189.5	0	0	205	0	0
159	0.1	0.2	174.5	0	0	190	0	0	205.5	0.3	0.6
159.5	0.6	1.2	175	0	0	190.4	0	0	206	0	0
160	1.1	2.2	175.5	0.1	0.2	191	0	0	206.5	0	0
160.5	0	0	176	0	0	191.5	0	0	207	0.1	0.2
161	1.2	2.4	176.5	0	0	192	0	0	207.5	0	0
161.5	0	0	177	0.3	0.6	192.5	0	0	208	0.1	0.2
162	0	0	177.5	0.1	0.2	193	0	0	208.5	0	0
162.5	0.1	0.2	178	0.1	0.2	193.5	0	0	209	0.2	0.4
163	0	0	178.5	0.5	1.0	194	0.2	0.4	209.5	0	0
163.5	0	0	179	0.1	0.2	194.5	0.1	0.2	210	0	0
164	0	0	179.5	0	0	195	0.1	0.2	210.5	0.2	0.4
164.5	0.8	1.6	180	0.1	0.2	195.5	0.6	1.2	211	0.2	0.4
165	0.3	0.6	180.5	0	0	196	0.1	0.2	211.4	0	0

GETTY OIL DEVELOPMENT COMPANY LTD.

PROSPECT: SOUTH STITT

DRILL CORE LOG & ASSAY DATA

HOLE No. SS2 227 Page 1

INTERVAL			DESCRIPTION	ASSAY DATA (p.p.m.)												
From	To	Metres		Sample No.	From	To (m)	Rec.%	Cu	Pb	Zn	Ag	Au	Ba		
													X =	<0.008	
0	16.4	16.4	NO CORE												
16.4	25.4	9.0	OWEN CONGLOMERATE SCREE Large boulders of quartzose OWEN CONGLOMERATE. 1 or 2 pieces of fine gritty JUKES BRECCIA.												
25.4	28.4	3.0	TUFFACEOUS EPICLASTICS Strongly weathered and broken up, with much core loss. Schistose sericitised TUFFACEOUS SILTSTONE and SANDSTONE with sub-rounded qtz grains to 2 mm. Mod limonite and Mn Ox stains. Schistosity @ 27 m: 65°/LCA.	2157 2156	25.4 30	30 70	 < 2	10 5	35 60	170 180	0.5 <0.5	X X	540 160		
28.4	30	1.6	FAULT PUG Creamy-white clay with rock frags.												
30	70	40	ZONE OF NEAR-COMPLETE CORE LOSS Frags of siliceous rocks incl: white, highly leached and bleached QUARTZ-PORPHYRY; limonitic or white VEIN QUARTZ; silicified quartzose RHYOLITIC VOLCANICS. Some QUARTZ GRIT and QUARTZITE - caved material from overlying Owen Conglomerate Scree.												

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GETTY OIL DEVELOPMENT COMPANY LTD.

DRILL CORE LOG & ASSAY DATA

PROSPECT: SOUTH STITT | **HOLE No.** SS200 22 | **Page** 2

X = <0.008

INTERVAL From	To	Metres	DESCRIPTION	Sample No.	From	To (m)	Rec.%	Cu	Pb	Zn	Ag	Au	Ba		
70	72	2	<u>SERICITE SCHIST (ATER TUFF-SHALE?)</u> Soft, strongly weathered and leached, broken up. Pale creamy-pink, v.fi.gr. Strongly schistose.	2136	70.4	72.5		15	60	95	0.5	0.008	240		
				2137	72.5	79.4		10	55	420	0.5	0.025	610		
				2138	79.4	85.4		10	35	215	<0.5	X	390		
72	72.5	0.5	<u>FAULT PUG</u> Brown clay with quartz frags.												
72.5	96	23.5	<u>TUFFACEOUS EPICLASTICS</u> Vary from fi.gr. TUFF-SHALE to TUFFACEOUS GRIT. Latter with sub-rounded qtz grains to 2 mm, and abundant deformed glass (pumice?) frags and lithics < 5 mm. Brownish-green and pale pink. Weathered and leached, badly broken. Limonite and Mn Ox stains. Mod sericitisation and chloritisation. Pervasive pink k-feldspar alt with minor silif below 88.4 m. Indistinct banding after deformed bedding (15°/LCA @ 94.5 m). Strongly schistose (55°/LCA @ 83 m, 30°/LCA @ 90 m). Common lensey qtz veins up to 25 mm, gen limonitic.	2139	98	100		10	10	30	<0.5	X	120		
				2140	100	102		60	20	70	<0.5	0.025	130		
96	106.85	10.85	<u>ALTERED UNIDENTIFIABLE VOLCANICS</u> Patchy pink and green. Hard. Gen unbroken. Fi gr. Rare porph qtz to 3mm. Text oblit by patchy chlor and silif-k feld alt - latter intense in places (like pink chert).	2141	102	104		35	20	80	<0.5	0.017	160		
				2142	104	106.85		10	15	35	<0.5	0.008	150		

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DRILL CORE LOG & ASSAY DATA

PROSPECT: SOUTH STITT **HOLE No** SS2 229 **Page** 3

INTERVAL			DESCRIPTION	ASSAY DATA (p.p.m.)											
From	To	Metres		Sample No.	From	To (m)	Cu	Pb	Zn	Ag	Au	Ba			
			Thin veinlets of qtz-carb ± chlor. Minor dissem and vein hem. Trace py, rare trace cp. Basal contact sharp 40°/LCA.										X = <0.008		
106.85	21140	104.55	<u>CHLORITE SCHIST AFTER BASALTIC VOLCANICS</u>	2143	106.85	109	5	25	260	<0.5	X	160			
				2144	109	111	10	20	280	<0.5	X	20			
			Dk green. Fi gr. Rare med gr zones. V uniform.	2145	111	113	50	25	255	<0.5	X	<20			
				2146	113	115	20	35	220	<0.5	X	100			
				2147	115	117	20	25	285	<0.5	X	<20			
			Gen massive and textureless lava, but occ zones with indistinct 'clastic' breccia text and vague banding//schistosity (e.g. 132.75 m - 45°/LCA, 178.7 -179.2 m, 184.6 - 185.5 m - 50°/LCA, 191.25-193 m, 208.6-211.4 m).	2148	117	119	5	15	280	<0.5	X	<20			
				2149	119	121.5	5	20	255	<0.5	X	45			
			156.4-157.35 m: undeformed beds of fi gr reworked basaltic tuff 1-9 mm thick 30-37°/LCA. Flanked from 151-158 m by indistinctly banded zones with vague clasts of variable basaltic volcs up to 50 mm (40-50°/LCA).												
			Strong chloritisation and carbonatisation. Minor epidotisation esp below 172.8 m.												
			Abundant irreg diffuse veinlets patches and segregations of calcite ± qtz, av < 5 mm, rarely + 15 mm.	2150	146	149	15	70	325	<0.5	X	<20			
				2151	155	158	95	75	290	<0.5	X	20			

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DRILL CORE LOG & ASSAY DATA

PROSPECT: SOUTH STITT **HOLE No.** SS2 230 **Page** 4

INTERVAL (From / To / Metres): —

DESCRIPTION

Minor oxidation to 132 m.

Occ shears and broken zones esp: 25°/LCA @ 119 m, 35°/LCA @ 140.25 m, 17°/LCA @ 165-169.4 m, 25°/LCA @ 183.5-184 m, 30°/LCA @ 186.8-189.4 m, 28°/LCA @ 198-199.4 m 30°/LCA @ 204.8-205.4 m, 5°/LCA @ 209.8-210.2 m.

Schistosity: 10°/LCA @ 126.5 m, 45°/LCA @ 137 m, 40°/LCA @ 148 m, 43°/LCA @ 170.3 m, 28°/LCA @ 182 m, 35°/LCA @ 194.7, 55°/LCA @ 200.5 m, 35°/LCA @ 208.2 m.

106.85-107.7 m: 1-2% py dissem. Minor fuchsite 107.25-107.45 m.

107.7-111 m: Minor py.

146-149 m & 155-158 m: Minor py, rare cp.

116-211.4 m: minor dissem hem > mag, inc with depth - locally 5% below 137 m. Rock gen weakly-mod magnetic, but patchy - many zones non-magnetic esp above 137 m, and below 178 m where hem >>mag.

E.O.H.

ASSAY DATA (p.p.m.)

x = <0.008

Sample No.	From	To (m)	Cu	Pb	Zn	Ag	Au	Ba
2152	165	167.5	75	20	165	1	x	<20
2153	167.5	170	10	15	160	<0.5	x	<20
2154	170	172.5	10	25	145	<0.5	x	<20
2155	172.5	175	5	15	165	0.5	x	25

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ELECTROLYTIC ZINC COMPANY OF AUSTRALASIA LIMITED

MINERAL RESOURCES DIVISION

EXPLORATION LICENCE 1/62 - MT. BLACK

ANNUAL REPORT ON EXPLORATION ACTIVITY IN THE COLEBROOK HILL AREA FOR 1985.

E.Z. REPORT NO. T212

I.R. MCDONALD,
DECEMBER, 1985

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LIST OF APPENDICES

LIST OF PLANS

1. INTRODUCTION

This report covers work on the Colebrook Hill area of E.L. 1/62 between 14th November, 1984 and 10th December, 1985. Exploration activity over this area is managed by E.Z. Co. of A'Asia Ltd on behalf of a Joint Venture between E.Z. and Getty Mining. During 1985 Getty Mining were sold by their American owners, Texaco, to Little River Resources Pty. Ltd. Little River have assumed the equity held by Getty Mining and are participating in the Joint Venture over this area on the same terms.

2. PREVIOUS EXPLORATION

E.Z. Report No. 134 - "E.L. 1/62 Work Undertaken 30th June, 1979 to June, 1980" - in addition to detailing all activities carried out during 1979/80, also contains a detailed reference to all previous exploration undertaken since the granting of the E.L.

E.Z. Report No's 142 (1981), 144 (1981), 148 (1982), 158 (1982), 164 (1983), T173 (1983), T178 (1984),T198 (1984) and T199 (1984) cover subsequent exploration to the commencement of this report. Of particular relevance to this report are Report No. 142 which details the results of DDH CHP 228, Report No. T173 which details the results of DDH CHP 240, and Report No. T198 which was the last report on the Colebrook Hill area.

3. WORK COMPLETED

As part of its investigations into skarn mineralisation in Tasmania, the Department of Mines drilled a vertical diamond drill hole on Colebrook Hill. The proposal to drill through the Colebrook Hill hornfels zone to intersect the postulated granite beneath was first put forward by the Department of Mines in May, 1983. It was agreed that because the hole would be drilled on E.L. 1/62 E.Z. would be allowed access to the drill core. In return for logistic support on the hole, E.Z. were allowed to log and sample the core before it was taken to the Department of Mines drill core facility in Hobart.

A Department of Mines drilling rig arrived on site on 14th November, 1984. DDH CB 1 was subsequently completed at a depth of 1,063.75m on 27th June, 1985. The drill core was geologically logged by E.Z. in Rosebery. In order to preserve as much of the core as possible it was sampled by continuously grinding a small sliver off the side of the core using a diamond wheel core grinder. Sample intervals were based on the geological logging. Samples were sent to Analabs Pty. Ltd and analysed for Cu, Pb, Zn, Ag, Fe, Mn, Cr, Ni by A.A.S. after nitric-perchloric acid digestion, for As by A.A.S. after nitric-perchloric digestion and vapour hydride generation, and for Sn, W by X.R.F.

4. RESULTS RECEIVED

4.1. Geophysics

Downhole Sirotem surveys were conducted on Colebrook area boreholes in 1984. These were reported on in the previous Annual Report (E.Z. Report No. T198). Since then an interpretation report on this work has been recieved from Geophysical Exploration Consultants Pty. Ltd. This report is presented in Appx. 1. The G.E.C. interpretation does not alter in any significant way the preliminary interpretation presented in Report No. T198.

4.2. Geology

The detailed geological log of DDH CB 1 is presented in Appx. 2 and the drill hole is summarised on Plan No. AO-504-0349.

DDH CB 1 intersected two major sedimentary sequences before eventually passing into granite at 1,034m. From 0 to about 711m the rocks are dominantly siltstones and lithic wackes with minor coarser grained tuffaceous wackes. They are of typical Crimson Creek Fm type. Below 711m the rocks are generally more siliceous in character, being typically siltstones, quartz lithic wackes and quartz wackes with occasional quartz arenite units. Below 974m the rocks are distinctly siliceous containing minor units of sedimentary breccia and of fine grained cherty quartzite. Core angles throughout are from sub-parallel to a maximum of about 30° to the core axis. Only up-hole facings were observed. These are consistent with a west facing, steeply west dipping sequence.

The sedimentary sequence is hornfelsed throughout and displays a progressively increasing grade downwards. From 0 to about 94m only chlorite hornfels is seen. From 94m to about 220m biotite occurs as a minor hornfels phase amongst the chlorite hornfels. Initially biotite occurs only in the coarser grained tuffaceous wackes suggesting that there is some compositional control on its stability. From 220m to about 400m is a zone of mixed chlorite and biotite hornfels. Below 400m biotite hornfels is dominant until about 897m. Below this hornblende hornfels occurs down to the granite contact. In the more siliceous rocks below 711m the hornfels grade is less obvious as there are fewer labile units to display the type mineralogy. These rocks typically present a very silicified appearance. It is suspected that this is probably the result of recrystallisation and annealing of the siliceous sediments in response to the hornfelsing heat flow, rather than a large scale introduction of silica.

On top of the hornfels pattern are superimposed zones of calc-silicate metasomatic alteration. Two major zones of skarn occur between about 270m and 394m, and from about 558m to 702m. In the upper skarn zone typical "axinite skarn" occurs from 270m to 361m. This is an assemblage of quartz+carbonate+chlorite+actinolite±axinite±tourmaline±fluorite. This skarn is typically very low in sulphide content. It is crudely banded in parts, where bands of grey silica-carbonate dominant assemblages alternate with bands of green chlorite-actinolite dominant assemblages. This banding may be relict bedding as it parallels the bedding seen elsewhere in the drill core. From 361m to 393.8m there occurs a chlorite-rich chlorite+actinolite+pyrrhotite+chalcopyrite assemblage. This is the major sulphide intersection in the hole with pyrrhotite and chalcopyrite occurring as disseminations, stringers, veins, and semi-massive bands with up to 50% pyrrhotite and 5% chalcopyrite. Within this zone are narrow bands of axinite style skarn, such as 363.4 - 367.0m and 374.3 - 375.3m, which contain only minor sulphides.

The lower skarn zone from 558m to 702m is dominated by a dark green chlorite+actinolite assemblage. This contains patchy amounts of pale green to grey quartz+carbonate+epidote±tourmaline±garnet±rare axinite. In restricted patches the garnet, which is pale reddish brown to honey coloured, can be the dominant mineral phase. The garnet skarn occurs only above about 633m. Below this there occur poorly defined bands of a pale green quartz+tremolite±carbonate±chlorite±epidote assemblage. Throughout the lower skarn zone there occur occasional narrow bands of relatively unaltered biotite hornfels. Pyrrhotite and minor chalcopyrite occur throughout the lower skarn zone and average

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about 5% total sulphides over the entire zone. In places the sulphide content is considerably greater and can be up to semi-massive concentrations in narrow bands and veins. Scheelite was observed to occur rarely in irregular stringery veinlets.

Skarn style alteration and sulphide mineralisation occur outside the main skarn zones irregularly throughout the hole. They occur as veins of both axinite style and chlorite-actinolite style alteration, with or without sulphides. Quartz-tourmaline veins are more common towards the base of the hole. Sulphides occur as rare stringers throughout and in quartz-carbonate-sulphide veins. The sulphide assemblage changes with depth. At the top of the hole arsenopyrite is a common phase but this is absent, or very rare, below about 260m. The main sulphide zone from 361m to 394m contains no visible arsenopyrite. Pyrite is fairly rare and seems limited to the top 150m of the hole. Pyrrhotite and chalcopyrite are the dominant sulphide phases throughout but chalcopyrite becomes much less abundant below about 711m. Magnetite occurs rarely in skarn veins in association with pyrrhotite.

The granite intersected below 1034m is a grey, feldspar porphyritic, tourmaline rich granite. Feldspar phenocrysts can be up to 20mm in size. A very tourmaline rich section from 1034.5 to 1034.9m contains about 2% blebby pyrite and a mineral tentatively identified asstannite. At its base the hole was dipping at 77° almost due north. The angle of 75° on the granite contact has a dip of anywhere between 2° north and 28° south. The extreme southerly dip is very unlikely as, if maintained, this would cause the granite to outcrop in the bed of the Pieman River 1500m to the north; which it clearly does not. A dip of up to 15° east or west could be interpreted. Almost all the mineralisation seen on Colebrook Hill occurs east of DDH CB 1, so perhaps a dip to the west is favoured for the granite contact. The tourmaline micrograite with the graphic intergrowth texture, which occurs just above the granite between 1026.1m and 1032.1m has contact angles of 65° and is most easily interpreted as a slightly steeper offshoot of the granite intrusion.

? South

why? ?

4.3. Geochemistry

Sample data sheets containing all the analytical data from the grind core sampling of DDH CB 1 are presented along with the drill log in Appx. 2. The results of the Department of Mines split core sampling in the interval 359.65 to 394.75m are presented in Appx. 3.

The core grinding technique used to sample the CB 1 drill core has both good and bad attributes. It is a continuous sample and should therefore be more representative than chip sampling. It is, however, only a small sample and has, therefore, the potential to be unrepresentative. Also, in the grinding, some of the finest grounds are lost to the atmosphere. Most important is probably the potential for contamination. The diamond set wheel which does the grinding has a matrix composed of a special alloy which contains, among other things, a significant tungsten content. The potential for contamination of sample by wearing matrix exists, and therefore some caution is necessary in evaluating the tungsten results in particular. Contamination cannot be a very serious problem because numerous tungsten assays below detection limit were returned from the sampling.

It is difficult to draw any significant conclusions about the geochemical character of the host sediments because there is so much overprinting by skarn and vein mineralisation. Copper, arsenic, tin and tungsten show a zonation in the hole which can be attributed to introduced mineralisation. Iron is strongly controlled by the sulphide content of the rocks. Lead, zinc, nickel and chrome do not appear to show any distinct zonation patterns. Although these metals may vary significantly the range of variation is fairly regular throughout the hole and implies that geochemically there is no distinction between the two sediment sequences defined geologically in Section 4.2. above.

High arsenic values are restricted to the top of the hole. The last 1% As value occurs at 212m. Above this a peak of 14% As was obtained from a 0.2m sulphide rich vein. Below 212m arsenic values rarely reach above 0.1% As, and below 560m they rarely reach above 100 ppm As.

Copper reaches its peak in the main sulphide zone between 369m and 394m with a peak assay from Department of Mines sampling of 1.0m @ 1.72% Cu, and an average for the intersection of 24.7m @ 0.68% Cu (Department of Mines results).

Above this copper is generally elevated, and sporadically high, with 1.4% Cu returned from the same vein as returned the 14.0% As at 193m. Below 394m copper continues elevated with minor peaks of 8.9m @ 0.25% Cu around 540m, and 10.85m @ 0.29% Cu around 665m. The latter intersection comes from one of the most sulphide rich sections of the lower chlorite-actinolite skarn zone. Copper maintains fairly high background values, generally in excess of 100 ppm Cu till about 975m, after which it falls to less than 40 ppm Cu.

Tin values are generally less than 100 ppm Sn down to 270m. The axinite skarn zone between 270m and 361m contains the highest tin values in the hole with a peak value of 1650 ppm Sn and an interval of 57.0m @ 905 ppm Sn, between 288m and 345m. Tin values then fall in the range 150-600 ppm Sn down to the base of the copper rich zone at 394m. They are generally less than 100 ppm Sn to 480m, then rise through erratic values between 50 and 330 ppm Sn to about 560m. From 560m to 648m values are generally above 250 ppm Sn with a peak value of 560 ppm Sn. This interval comes from the lower chlorite-actinolite skarn zone. From 648m to 725m values are generally above 100 ppm Sn but rarely above 200 ppm Sn. Below 725m to the base of the hole values are generally less than 100 ppm Sn.

Tungsten values are erratic throughout the hole but are generally less than 50 ppm W down to 516m. The copper intersection zone from 369m to 394m is an exception with tungsten values ranging from below detection limit up to 1100 ppm W. Below 516m tungsten becomes more erratic, with values ranging from below detection limit up to 1.22% W, and with an intersection of 10.85m @ 0.97% W between 657m and 668m from within the chlorite-actinolite skarn zone. No clear pattern emerges from the tungsten results other than that in general terms tungsten increases with depth to about 730m and then decreases again to a high background of generally greater than 100 ppm W.

Lead is low throughout the hole atgenerally less than 30 ppm Pb.

Zinc shows no patterns being consistently between about 60 and 250 ppm Zn throughout the hole with only rare values above this.

Silver is low throughout returning values below detection limit up to a maximum of 4.0 ppm Ag in the E.Z. sampling. Department of Mines sampling in the copper rich zone returned silver values from below detection limit up to a maximum of 41 ppm Ag. These are exactly one order of magnitude greater than the E.Z. values. It strongly suggests that either the Analabs lab in Cooee or the Department of Mines lab in Launceston made a dilution error or a decimal point error in calculating the silver values. E.Z. samples from DDH CB 1 were submitted to Analabs in three separate batches and each batch returned similar values in the 0-3 ppm Ag range. Silver values in DDH CHP 240 reached a maximum of 13.5 ppm Ag and in CHP 228 a maximum of 8 ppm Ag. It seems a little more likely that the Department of Mines values are the suspect values, but it is of little importance as 41 ppm Ag is hardly a significant silver value.

NB!

The values of up to 295 ppm Cu, 255 ppm Zn and 900 ppm W returned from analyses of the granite are highly anomalous for granites and strongly support the view that the granite was the source of the mineralising fluids.

Significant intersections occurred in DDH CB 1 for copper, arsenic, tin and tungsten. For E.Z. grind core samples these are:-

113.2	-	113.95	0.75m	@	0.30% Cu, 2.82% As
114.85	-	116.30	1.45m	@	0.26% Cu, 1.79% As
137.0	-	145.5	8.50m	@	0.31% Cu, 1.38% As
178.0	-	193.0	15.0m	@	0.25% Cu, 0.68% As
(including			0.2m	@	1.40% Cu, 14.0% As)
243.25	-	251.2	7.95m	@	0.12% Cu
255.55	-	259.6	4.05m	@	0.68% Cu
361.0	-	362.6	1.60m	@	0.20% Cu
369.05	-	393.8	24.75m	@	0.45% Cu
398.85	-	417.55	18.7m	@	0.30% Cu
428.55	-	429.70	1.15m	@	0.42% Cu, 0.35% As
441.55	-	446.15	4.60m	@	0.21% Cu
475.0	-	485.0	10.0m	@	0.11% Cu, 0.21% AS
495.0	-	511.55	16.55m	@	0.33% Cu
531.2	-	540.1	8.90m	@	0.25% Cu
657.1	-	667.95	10.85m	@	0.29% Cu

	288.45 - 300.55	12.1m	@	1,400 ppm Sn	
	306.0 - 318.5	12.5m	@	1,180 ppm Sn	
	328.4 - 337.5	9.1m	@	1,320 ppm Sn	
	341.55 - 345.45	3.9m	@	1,150 ppm Sn	
Or	288.45 - 345.45	57.0m	@	905 ppm Sn	
	369.05 -370.1	1.05m	@	1,100 ppm W	
	516.05 -519.55	3.5m	@	5,750 ppm W	
	540.1 - 547.3	7.2m	@	1,375 ppm W	
	657.1 - 667.95	10.85m	@	0.97% W;	0.29% Cu
	679.25 - 681.7	2.45m	@	0.54% W	
	725.65 - 730.25m	4.60m	@	0.12% W	

Sampling by the Department of Mines between 369m and 394m returned the following intersections from 1m split core samples:

	375.35 - 384.75	9.40m	@	0.86% Cu
	387.60 - 393.75	6.16m	@	1.14% Cu
or	369.05 - 393.75	24.70m	@	0.68% Cu

5. DISCUSSION AND CONCLUSIONS

E.Z. exploration around Colebrook Hill since 1980 has been concentrated on the search for tin mineralisation based on a Renison style carbonate replacement model. It has been well known for many years that Colebrook Hill contained sub-economic copper mineralisation. All the old workings on Colebrook, which date from the turn of the century attempted to exploit this copper mineralisation. Up to and including the drilling of DDH CHP 240 in mid 1983, E.Z. exploration succeeded in little more than confirming that Colebrook Hill hosts sub-economic copper mineralisation. It did return the highest ever recorded copper assay of 3.02% Cu in DDH CHP 240, and it showed that the main mineralisation is associated with a calc-silicate skarn alteration characterised by unusual boron minerals such as axinite. The only success in respect of tin mineralisation came from the rise in background tin values from DDH CHP 228 to DDH CHP 240. The maximum tin value in CHP 228 was 36 ppm Sn. In CHP 240 this had risen to 974 ppm Sn, but more importantly, the skarn zone consistently carried a background of over 200 ppm Sn. These results together with studies of other zoned tin mineralisation systems around the world, suggested that the only possibility for significant tin mineralisation on Colebrook Hill lay at greater depth. The plan by the Department of Mines to drill a deep hole on Colebrook Hill was first proposed in May, 1983. E.Z. therefore held off any deep testing of Colebrook Hill as this would only have duplicated the Department of Mines work. In the meantime, whilst awaiting for the Department's hole to commence, E.Z. investigated and drilled other geochemical and geophysical anomalies in the wider Colebrook area (E.Z. Reports T173, T178 and T198).

The completion of DDH CB 1 has confirmed most of the ideas previously held about the Colebrook Hill area. An area of hornfelsed sediments contains within it zones of calc-silicate skarn. The main skarn zones are conformable with the bedding, and are variably sulphide mineralised. The skarn horizons are surrounded by veins, bands and stringers of skarn mineralogy and sulphide mineralisation. The area is underlain by a geochemically anomalous granite.

The vein system clearly represents a fracture controlled plumbing system whereby hydrothermal mineralising fluids rose, from the granite source, through the hornfels zones, and selectively altered what must have originally been horizons of impure limestone or dolomite or of calcareous or dolomitic shale to form the major skarn zones. The fracture system may have been initiated by forceful granite intrusion, or it may have been a pre-granite feature which helped to locate the intrusion.

Hydrothermal activity must have occurred in more than one pulse. There is over-printing of higher temperature quartz-tourmaline-axinite phases with lower temperature chlorite-actinolite-carbonate phases. The sulphide mineralisation seems to be preferentially located in lower temperature phases, especially in chlorite rich zones. This is particularly well demonstrated in DDH CB 1 where the upper skarn horizon is divided into two distinct parts. The 90m long zone of typical axinite skarn is very low in sulphides but contains all the significant tin values. The 25m long section at the base is very chlorite rich, and contains the major copper-iron sulphide intersection, and no significant tin values. DDH CHP 240 is less dramatic in its demonstration of this relationship as the two zones are not so well separated. The main sulphide concentrations in CHP 240 are associated with a chlorite rich gangue but these occur within the broader zone of axinite bearing skarn.

The lower skarn zone in DDH CB 1 is a little different to all the other skarn zones seen in drill cores and surface outcrops. It contains no visible axinite. It is typically a chlorite-actinolite-sulphide skarn, and as such would seem to be an example of the lower temperature style skarn. It also contains patchy garnet, quartz, carbonate, and tourmaline and it seems to represent a higher temperature version of the "low temperature" skarn assemblage.

The skarn/intersection zones in DDH CB 1 and CHP 240 present an interpretation problem. Does the CHP 240 mixed skarn zone connect with the CB 1 upper axinite skarn zone, or the lower chlorite-actinolite skarn zone, or both? Does the 11m @ 1.33% Cu intersection in CHP 240 connect with the 24.7m @ 0.68% Cu intersection at 394m in CB 1, or the 10.85m @ 0.29% Cu, 0.97% W intersection at 667m in CB 1, or neither? The mineralogical and metal content values would favour linking CHP 240 with the upper zone in CB 1, giving a copper rich sulphide zone dipping at about 65° to 70° to the west. This would imply true widths for the intersections of about 8.5m for CHP 240 and 9.25m for CB 1. This interpretation could see the lower skarn zone and intersection projecting back up dip and existing just off the end of CHP 240. Observed core angles and surface dips would favour linking CHP 240 with the lower skarn zone in CB 1 giving a zoned sulphide body, copper rich at the top and tungsten rich at depth, dipping at about 75° to 80° west. This interpretation would imply true widths of about 7m in CHP 240 and 2m for the lower zone in CB 1. By extrapolation the upper intersection in CB 1 would have a true width of about 4.7m, and would project up-dip to terminate against the B Trench fault (refer plan AO-504-0349) between CHP 240 and CB 1. This latter interpretation is supported by the downhole Sirotem on CHP 240 (see Appx. 1), which interpreted a conductive body about 50m off hole at a depth of about 140m down CHP 240. The Sirotem did not "see" any conductive bodies off the end of CHP 240 as is required by the first interpretation.

The B Trench fault is fairly well established. It outcrops at the B Trench where mineralisation truncates against a sharp contact which dips at 70° north. Plotting structure contours down this surface intersects almost exactly the zone of fault breccia at 161m in CB 1. They also intersect almost exactly the zone of mineralised brecciated sediments at around 141m in CHP 240. Depiction of this fault plane on the drill section is difficult because it is parallel to the section and because CHP 240 deflects south of the section line and CB 1 deflects north of the section line. DDH CHP 228 starts north of the section line and deflects into it. The resultant trace of the B Trench fault through the three drill holes appears as a curved line on the section. This fault is the reason why DDH CHP 228 did not intersect the main mineralised skarn zones seen in the Summit Trench and West Open Cut. DDH CHP 240 succeeded in passing through the fault and intersecting at least one of these zones. DDH CB 1 also passed through the fault and intersected both zones. If the proposed interpretation is correct, then the CB 1 lower skarn zone and CHP 240 zone would correspond to the Summit Trench zone. The CB 1 upper skarn zone would correspond to the West Open Cut/B Trench zone. The West Open Cut is the main axinite locality on the surface which supports this correlation.

It is also possible that the mineralisation seen in CHP 228, in the East Open Cut, and in East Colebrook Adits No's 4, 5 and 6 belongs to these same skarn zones which have been offset along the B Trench fault. Figure 1 is a summary section through the skarn system which displays these relationships.

Irrespective of whether the above interpretation is correct or not the three diamond drill holes, CHP 228, CHP 240 and CB 1 provide enough geochemical data to draw some conclusions about the nature of the metal zonation within the Colebrook mineralisation system.

Copper values are at a maximum in DDH CHP 240 with a peak assay value of 2.37% Cu in the main skarn zone. This has increased from peak values of 1.2% Cu in DDH CHP 228 and in the surface workings. Copper values decrease towards CB 1 with a peak value of 1.72% Cu (Department of Mines sampling). The maximum copper zone development therefore lies between 200m and 350m R.L. (see Fig. 1).

Arsenic is very high in DDH CHP 240 with a maximum assay of 6.05% As in a broad zone of +1000 ppm As. CHP 228 contained up to 0.8% As which suggests a decrease towards surface, but in CB 1 the peak arsenic values are all above 217m depth with a maximum of 14.0% As at 193m. Below this arsenic is generally low with occasional +1,000 ppm As values. The arsenic content of the copper rich section in CB 1 is low. This suggests that the maximum development of the arsenic zone is a little higher than the copper zone but largely overlapping. Maximum arsenic is probably between 250m and 400m R.L.

Tin shows a steady increase downwards. DDH CHP 228 is outside any tin zone with a peak value of only 36 ppm Sn. DDH CHP 240 contains a broad zone of +200 ppm Sn with a peak value of 974 ppm Sn. This increased in DDH CB 1 to a broad zone of +900 ppm Sn with a peak value of 1,650 ppm Sn at a depth of 330m. Below this tin values decline towards the bottom of DDH CB 1 where they are less than 100 ppm Sn. The lower skarn zone reaches a peak of 560 ppm Sn at 590m. It would appear that maximum tin zone development lies between 100m and 200m R.L. Tin however is strongly associated with the axinite style skarn and the main axinite skarn zone has not been intersected below 100m R.L. It is possible that tin is still increasing at this depth and that the zone of maximum development lies at some greater depth in the upper axinite skarn zone west of DDH CB 1.

Tungsten values are available only from DDH CHP 240 and CB 1. They are very erratic with large variations between adjacent samples but maximum values increase with depth from 0.23% W at 201m in CHP 240 to 1.22% W at 660m in CB 1. Maximumdevelopment of the tungsten zone may be at greater depth somewhere below -200m R.L. The tungsten mineralisation appears to be associated with the lower chlorite-actinolite skarn zone and have more association with copper than with tin mineralisation.

It is tentatively proposed that the Colebrook Hill Skarn zone developed as follows:-

1. Fracturing, granite emplacement and hornfelsing of the overlying sediments.

2. An initial high temperature pulse (or pulses) is characterised by silica, boron and probably tin. This gives rise to the typical axinite style skarn in numerous fracture controlled veins and in the West Open Cut/CB 1 upper skarn horizon. If this pulse was thermally zoned its lower temperature end has been eroded away from the top of Colebrook Hill.

3. A later lower temperature hydrothermal pulse (or pulses) is characteristed by hydrous phases, carbon dioxide and sulphides. This pulse gives rise to chlorite-actinolite-sulphide skarns. This pulse shows thermal zoning with the development of garnets at greater depths. The sulphide system associated with this pulse is zoned with an upper arsenic-copper zone, an intermediate copper and copper-tungsten zone, and possibly a lower tungsten only zone. The thermal zonation of this pulse(s) may have been preserved because the system was no longer open upwards. The early high temperature pulse may have partially sealed the conduit system. The DDH CB 1 sulphide intersection may represent second phase fluids trapped beneath first phase skarn.

4. Post mineralisation faulting as represented by the B Trench fault.

DDH CB 1 has provided a lot of useful data on the Colebrook Hill mineralisation system. An overall estimate of the potential of that system can now be made.

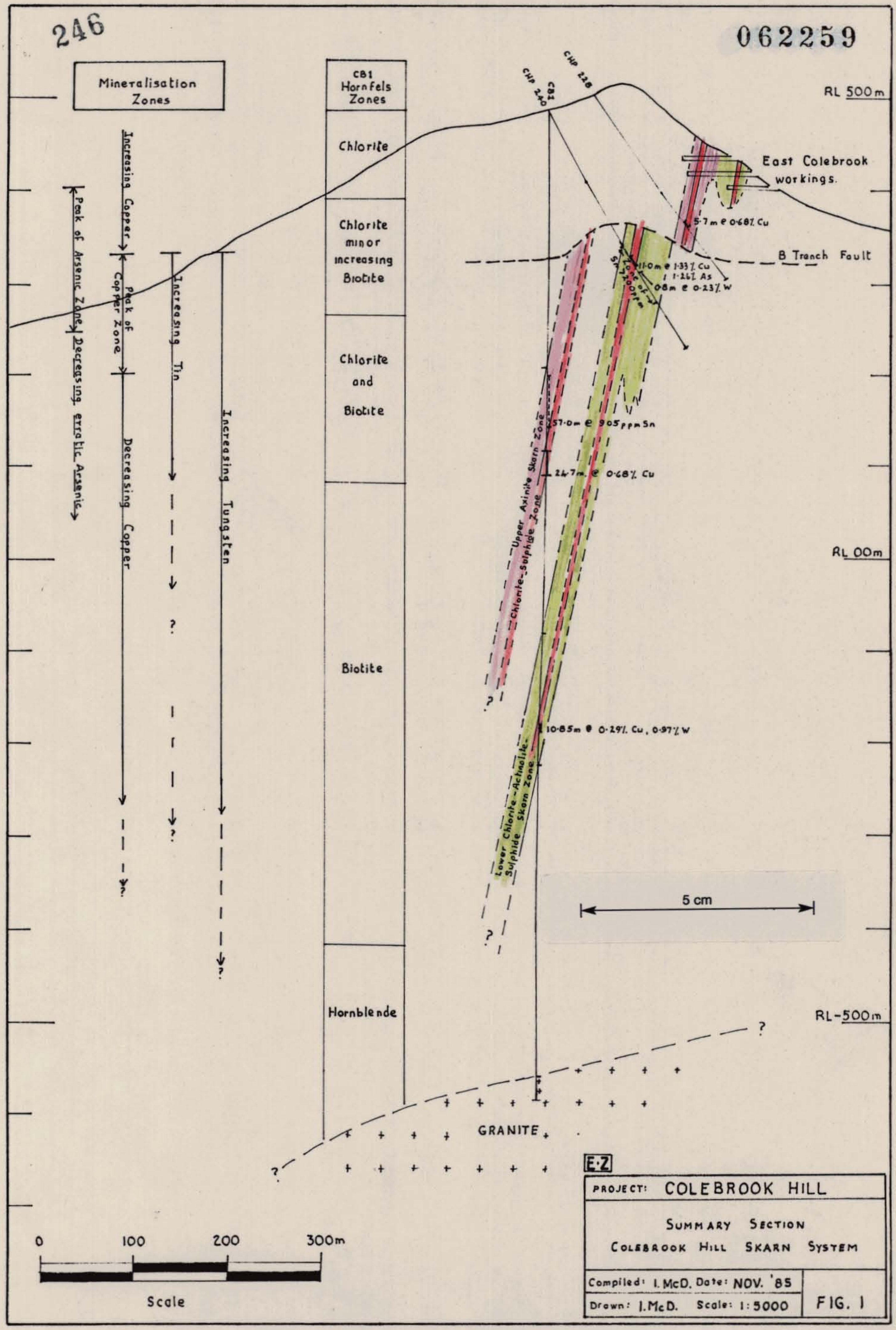
1. The significant mineralisation is contained in two steeply west dipping bodies with true widths ranging from about 2m up to about 7m.

2. The best copper mineralisation has already been seen. The zone of maximum copper development is probably contained within the 200m to 350m R.L. level and is represented by the DDH CHP 240 intersection of 11.0m @ 1.33% Cu. The Mt. Lyell Mine is closing down because it was making a loss on reserves of about 15 million tonnes of 1.3% Cu.

3. The best tin mineralisation seen is only 1,650 ppm Sn. There is a possibility that tin may increase in grade at greater depth. Maximum assays have increased from 974 ppm Sn at about 295m R.L. (CHP 240) to 1,650 ppm Sn at about 150m R.L. (CB 1). If this represents an arithmetical grade gradient (i.e. 680 ppm Sn per 145m drop in R.L.), then tin might reach a maximum grade of 0.51% Sn by the time the axinite skarn zone hits the granite contact at about -580m R.L., i.e. 1.6km below surface. If the observed grade gradient is geometrical (i.e. 70% grade increase in 145m = doubling approximately every 200m), then tin might in theory reach a grade of 1.9% Sn on the granite contact.

4. Tungsten is significant with an intersection of 10.85m @ 0.97% W and the possibility of a grade increase with greater depth. Unfortunately this intersection has a true width of only 2.0m and it occurs at -190m R.L., 660m below the surface. The Kara Mine presently operates a profitable open cut on about 1% W grade. The established underground Dolphin Mine on King Island is presently unprofitable at similar grades.

Perhaps the Department of Mines Newsletter was correct when it reprinted the now famous newspaper article about the mineralisation reported from DDH CB 1. That aticle described Colebrook Hill as a "potential new Mt. Lyell". The results from DDH CB 1 certainly show that anyone attempting to operate a mine on Colebrook Hill would, like Mt. Lyell, make a loss which would drive them out of business.


246
062259
Mineralisation Zones
Peak of Arsenic Zone
Decreasing erratic Arsenic
Increasing Copper
Peak of Copper Zone
Decreasing Copper
Increasing Tin
Increasing Tungsten
CB1 Hornfels Zones
Chlorite
Chlorite minor increasing Biotite
Chlorite and Biotite
Biotite
Hornblende
CHP 240
CB1
CHP 228
RL 500m
RL 00m
RL-500m
East Colebrook workings.
5·7m @ 0·68% Cu
B Trench Fault
11·0m @ 1·33% Cu
1·26% As
0·8m @ 0·23% W
57·0m @ 905ppm Sn
24·7m @ 0·68% Cu
10·85m @ 0·29% Cu, 0·97% W
Upper Axinite Skarn Zone
Chlorite-Sulphide Zone
Lower Chlorite-Actinolite-Sulphide Skarn Zone
GRANITE
5 cm
0
100
200
300m
Scale
E·Z
PROJECT: COLEBROOK HILL
SUMMARY SECTION
COLEBROOK HILL SKARN SYSTEM
Compiled: I. McD. Date: NOV. '85
Drawn: I. McD. Scale: 1:5000
FIG. 1

247 062260

APPENDIX 1.

A REPORT ON DOWNHOLE SIROTEM DATA

AT COLEBROOK HILL, TASMANIA

FOR

ELECTROLYTIC ZINC COMPANY OF AUSTRALASIA LTD

BY

GEOPHYSICAL EXPLORATION CONSULTANTS PTY LTD

HUGH RUTTER
NOVEMBER, 1984.

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062261

CONTENTS

Figures

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1. INTRODUCTION.

The drillholes included in this report were logged with a Sirotem downhole TEM system in order to extend the range of exploration beyond the drillhole itself.

2. INTERPRETATION.

The area of Colebrook Hill has had electrical and electromagnetic measurements taken over (airborne) upon (surface) and under (downhole) the hill; all the results point to an extremely conductive environment within which there are even more conductive mineralised zones. The downhole log from CHP 228 (which was barren) indicated a conductive body at a greater depth. CH 240 was drilled to test this feature and located considerable sulphide mineralisation, particularly between 180m and 230m. CH 240 and three extra holes were logged during this latest phase of exploration. The position of the transmitting loops and drillholes are shown in figure 1. Drillhole CH 241 could not be logged because of a blockage at a depth of 20m.

CH 240

The logs from both transmitting loops show a considerable amount of variation caused by the massive mineralisation intersected in the drillhole. The most apparent effect is between 180m and 230m where the sulphide concentration rises to 60% in places. A comparison of the TEM log with a log of the sulphide mineralisation clarifies the meaning of most of the TEM anomalies.

However one major feature remains unexplained. The TEM log from loop 1, at a depth of 15m, begins with channels 1 to 18 negative and then the remaining channels, 20 to 32, are positive. There is a reversal of this situation at 137m. At 180m, the in-hole mineralisation has an overwhelming effect and the broad response is not seen.

The situation is seen in reverse in the log from loop 2. All the channels are positive at a depth of 10m but further down the hole there is a tendancy towards lower values although they do not become negative. The effect of the half space is additive in the case of loop 1 data, but is in opposition for the loop 2 data.

This cross-over anomaly indicates a conductive body away from the drillhole. The approximate position of this feature is shown in figure 2. The top of the body is nearest to CH 240 at a depth of 137m and it is approximately 50m away. The total shape of the anomaly is obscured by in hole mineralisation in CH 240 and a more formal interpretation would be in error.

A drillhole sited at 374850E, 5371700N, with an azimuth of 90° and inclination of 60° should intersect the target at 150m to 200m.

CH 243

Three transmitting loops were used to log this drillhole; all three show a minor response between 140m and 160m which corresponds to 5% sulphides in quartz veins.

The vertical nature of this zone has meant that optimal coupling has been obtained with loop 1 and a crossover anomaly is seen. The migration of the crossover down the drillhole indicates that the conductor is sub-parallel to the drillhole and has continuation downwards rather than upwards.

CH 263

Shallow mineralisation occurs between the surface and a depth of 30m. The cross over response is clearly seen in the loop 1 data where the anomaly is in opposition to the half-space response. The same response is seen in the loop 2 data but the coupling with the transmitting loop is reversed. The cross-over shows no appreciable migration and the dip of the body is probably between 60° and 80° to the west. If this zone is of geological significance a drillhole 100m further west with the same orientation as CH 263 should test the zone at a greater depth. (figure 2)

CH 264

There is a significant response at 225 to 245m in both data sets. The sharpness of the feature at this depth indicates that the conductor (possibly two) has been intersected, but only at the edge. The slow rise in amplitude seen in the loop 1 data, which extends from 100m to 210m indicates that there is a significant proportion of the conductor beyond the drillhole. Any assymetry of the response that would indicate dip cannot be seen because of the limited extent of the log beyond the anomaly. The response is reversed in the two data sets, therefore it is coupling with each loop in a different direction. This suggests the conductor is between the two loops, below the drillhole at 235m and steeply dipping.

A drillhole on the same northing, at 5,376,640E, with an azimuth of 270° and inclination of 45° would test the anomalous zone 100m below the intersection in CH 264; total depth would be 400m. (figure 3)

3. CONCLUSION.

Significant off-hole responses were detected at Colebrook Hill and follow-up drillholes have been suggested.

Colebrook Hill data is highly anomalous and some thought has been given to surface exploration techniques prior to drilling.

There appears to be a number of conductive features within a conductive host. Frequency-domain EM systems do not have the discriminating ability nor effective penetration in these conditions. Fixed loop time-domain EM would be seriously effected by screening. The technique most likely to produce definitive results is coincident loop TEM, using a 100m loop with 50m increments. Although the topography is severe and the survey is likely to be expensive the value of the survey compared to a 300m drillhole may be extremely high. The different conductors could be identified and their strike extent and depth determined.

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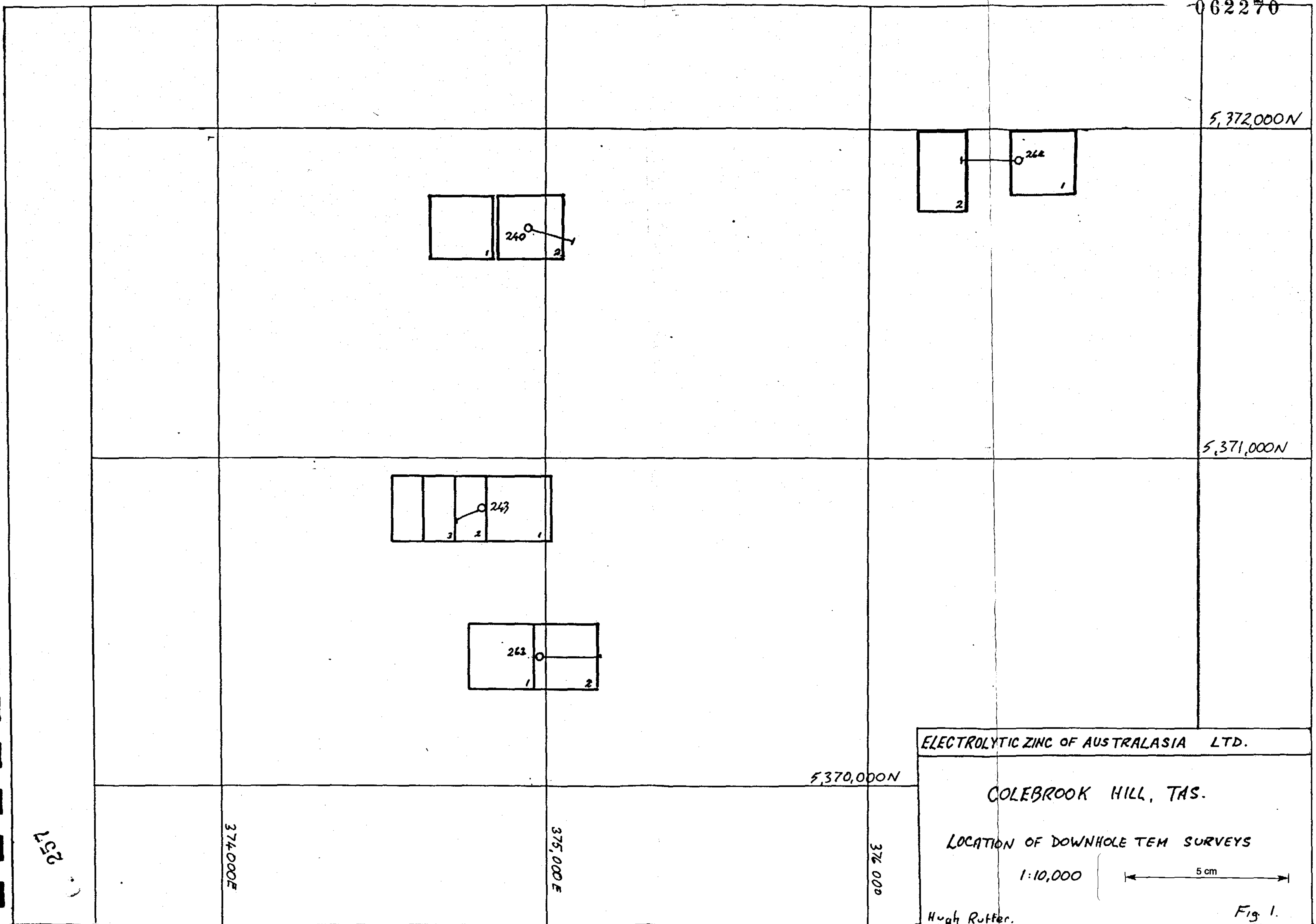
Another possible exploration tool is Controlled Source Audio Frequency MagnetoTellurics (CSAMT). Serious thought should be given to this technique which is currently being offered by Zonge Engineering in Australia.

HUGH RUTTER
CONSULTANT GEOPHYSICIST.

HR/bg

062270



ELECTROLYTIC ZINC OF AUSTRALASIA LTD.

COLEBROOK HILL, TAS.

LOCATION OF DOWNHOLE TEM SURVEYS

1:10,000

5 cm

Hugh Rutter.

Fig. 1.

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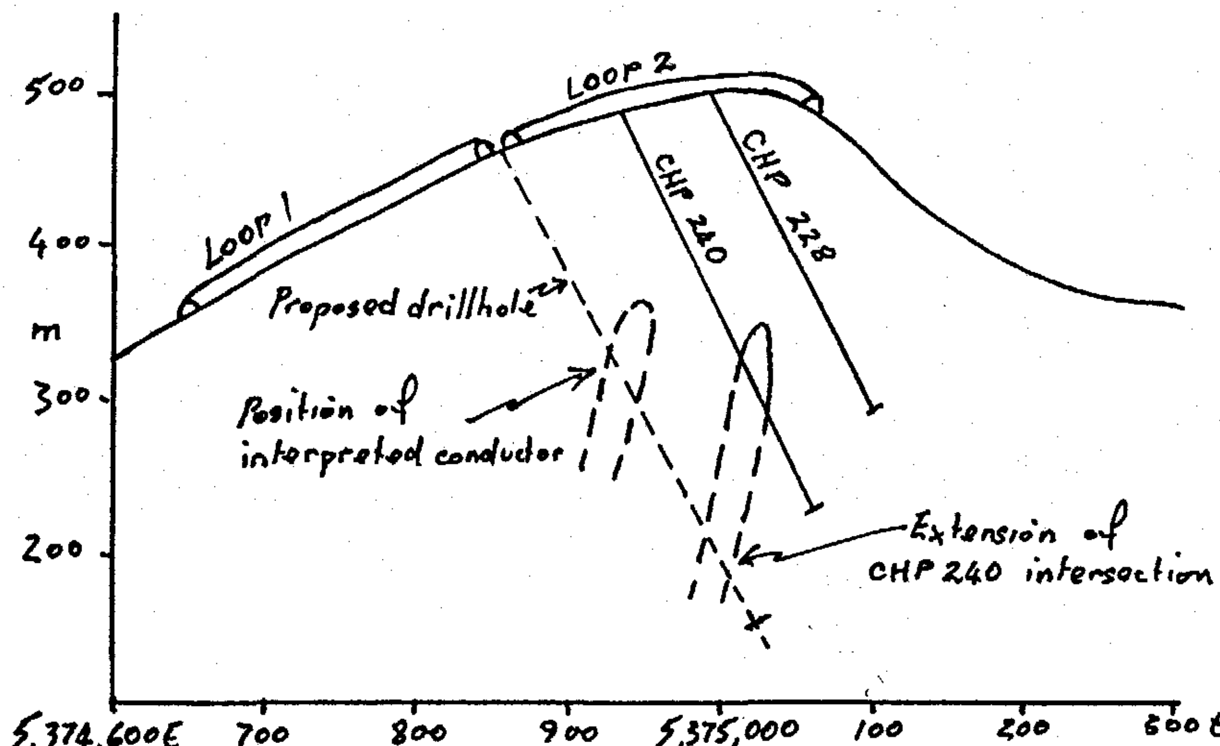
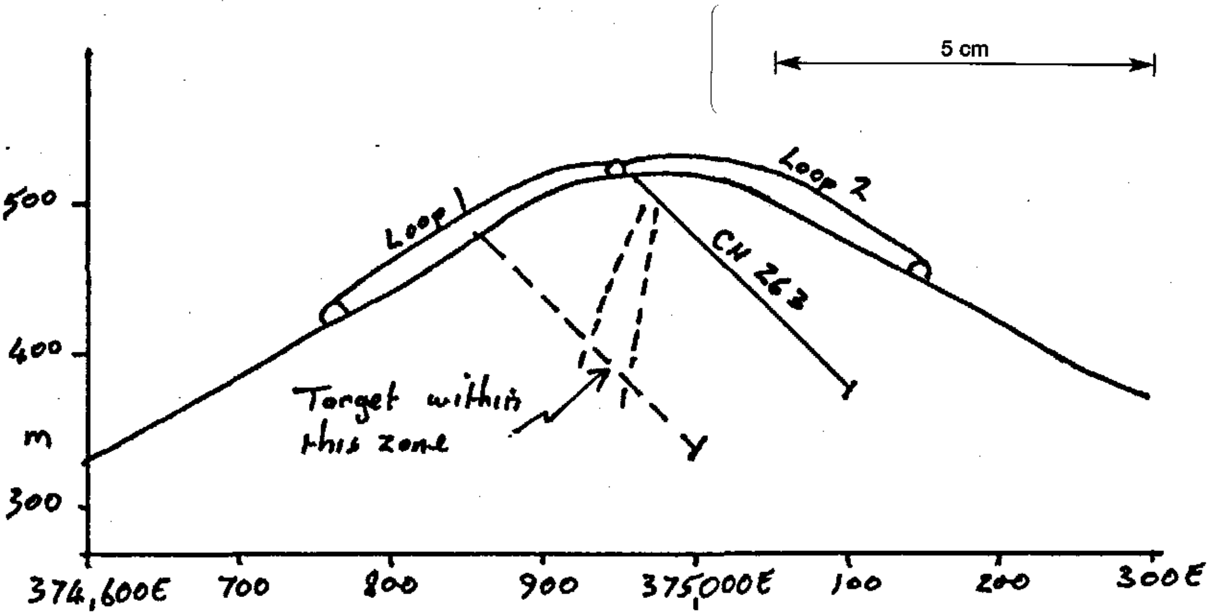


LINE 5,371,700 N



LINE 5,370,400 N

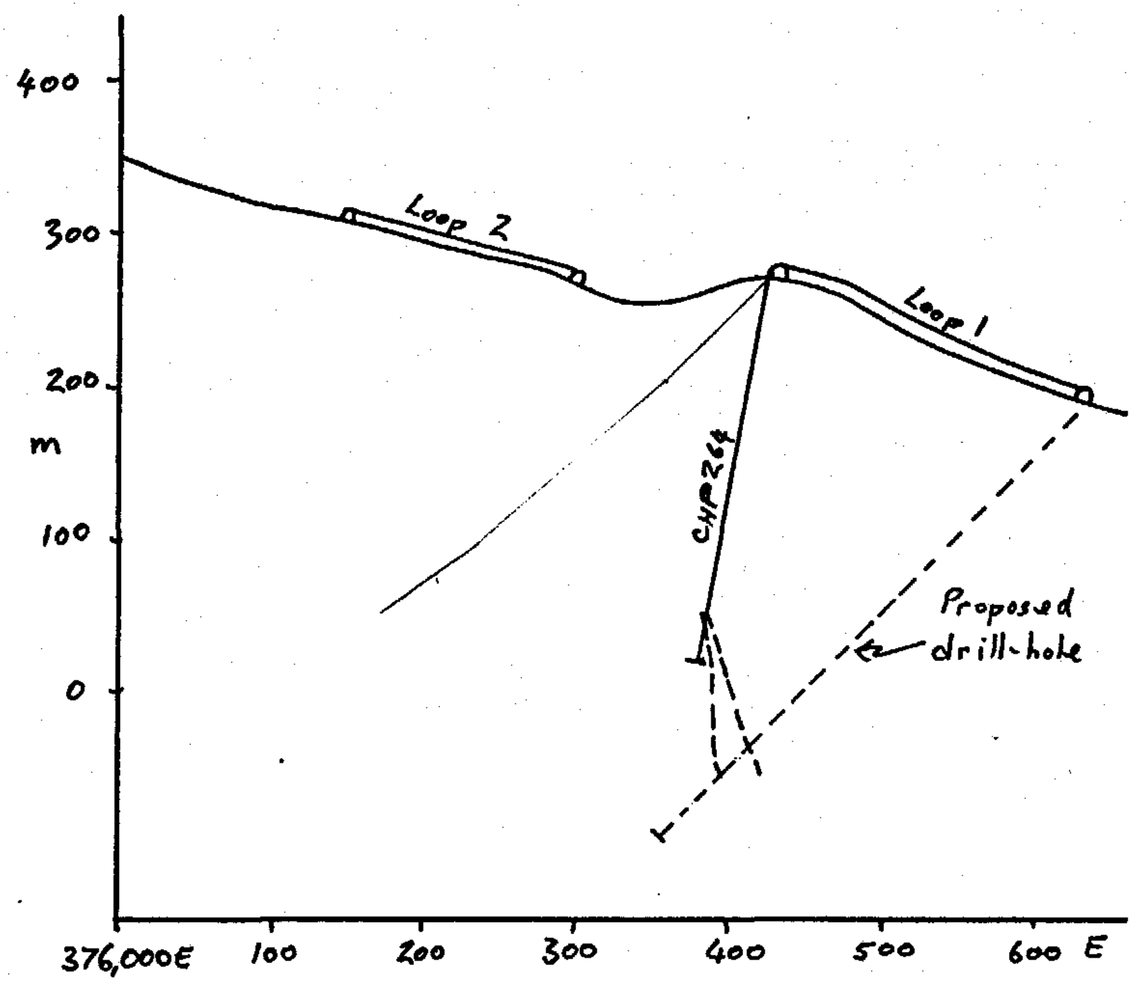
COLEBROOK HILL: INTERPRETATION SKETCH FOR CHP 240 AND CHP 263

1:5,000

Fig. 2.

259

062272



COLEBROOK HILL: INTERPRETATION SKETCH FOR CHP 264

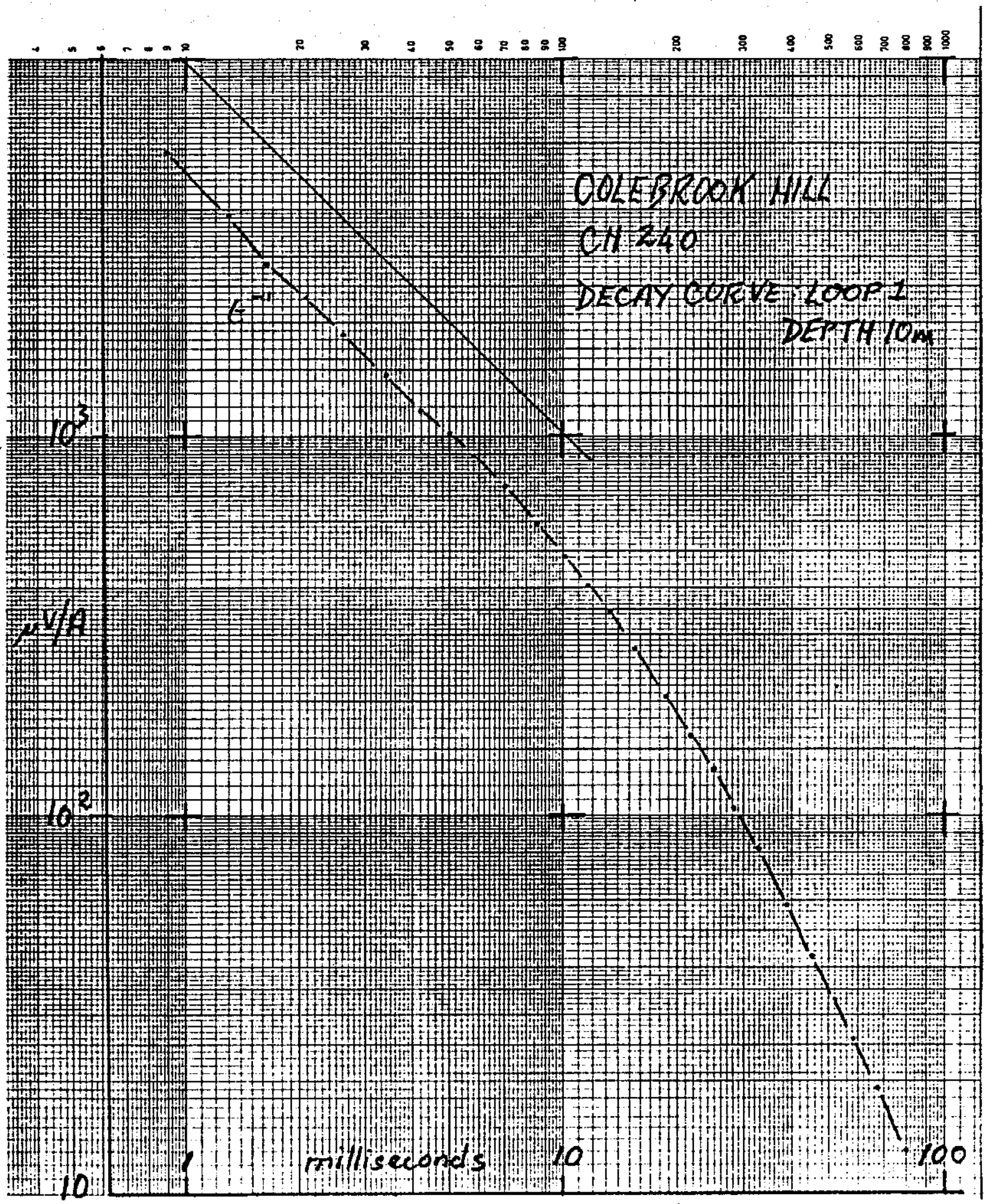
1:5,000

5 cm

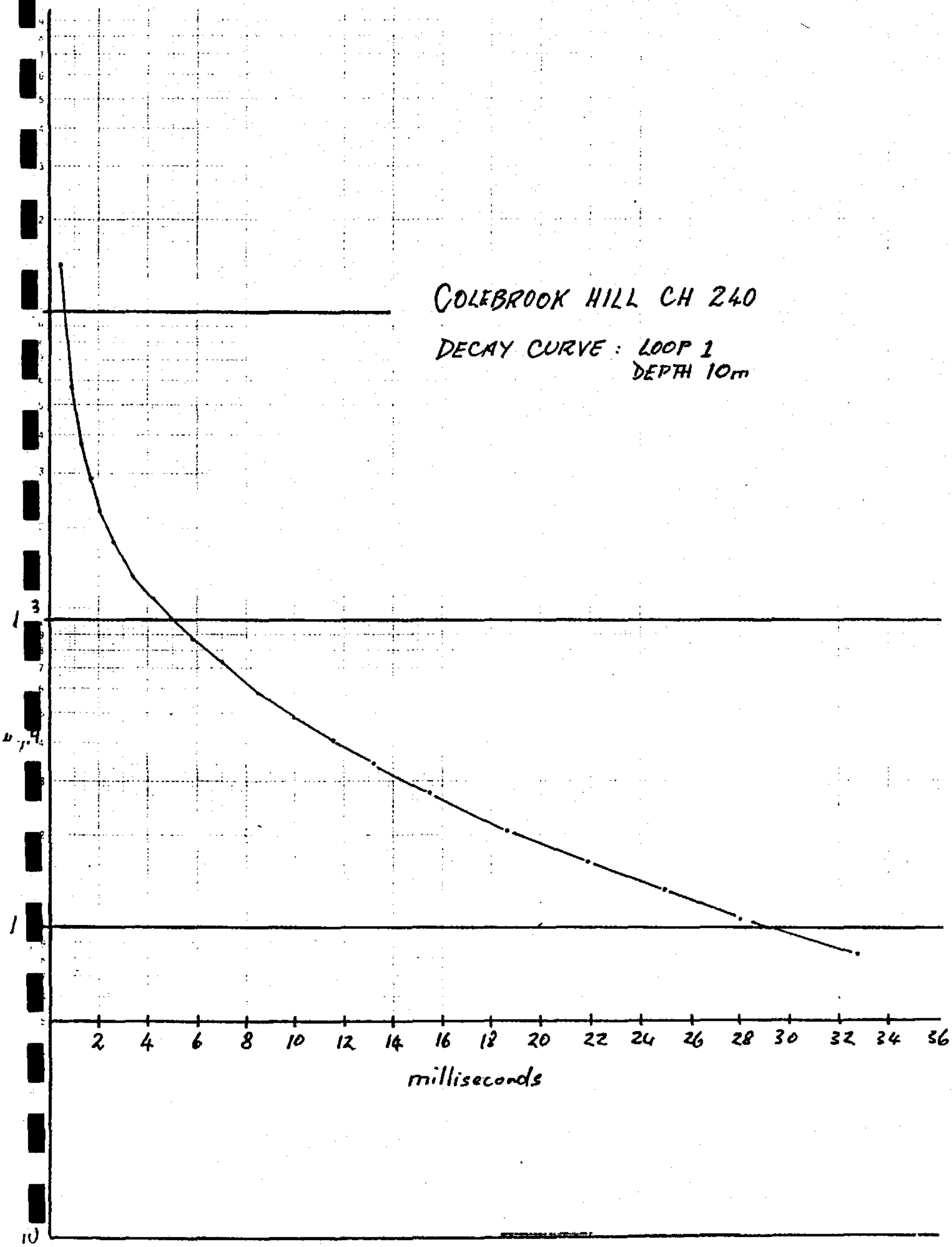
Fig. 3

062273

200


COLEBROOK HILL
CH 240
DECAY CURVE LOOP 1
DEPTH 10m
t^{-1}
10^3
10^2
10
μV/A
1
milliseconds
10
100

261


COLEBROOK HILL CH 240
DECAY CURVE : LOOP 1
DEPTH 10m
2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36
milliseconds
1
10

APPENDIX 2

DDH CB 1 Geological Log and Sample Data Sheets

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

DIAMOND DRILL CORE RECORD

HOLE No. MD DDH CB 1
SHEET No. 1.

PROJECT: Mines Dept. Investigations into Skarns
LOCALITY: COLEBROOK HILL
OBJECTIVE: To drill through the Colebrook Hill Skarn Zone and intersect granite.
RESULT: Copper rich skarn was intersected between 369 and 394m. The granite contact was reached at 1,034m.

GRID CO-ORDS:
A.M.G. CO-ORDS: 5,371,700N 374,952E
COLLAR R.L.: 477.3m
COLLAR DIP: Vertical
AZIMUTH: -
TOTAL DEPTH: 1,063.75m

HOLE SIZE: 0-45m HQ
CASING: -
COMMENCED: 14th Nov. 1984
COMPLETED: 27th June, 1985
LOGGED BY: I.R. McDonald

Depth (m)	Azimuth (°a.m.g.)	Dip	Depth (m)	Azimuth (°a.m.g.)	Dip
0	-	-90	780	343	-83.2
280	323	-88.6	849	?31	-81.8
480	325	-87.2	918	350	-80
554	325	-86.0	990	351	-78
663	?274	-85.0	1059	348	-77
717	328	-84			

Depth From	Depth To	Rock Description	Mineralisation	Core Rec'd Run	Core Rec'd Short
0	11.4	Grey and Greenish grey, weak to moderately oxidised Tuffaceous Wacke, fg Lithic Sandstone and Siltstone. 0-4.1 Core very broken and moderately oxidised. Ferruginous staining on joints. 4.2-5.3 Weak bedding 15° 9.0-11.1 Core very broken moderately oxidised. 11.4 Sharp contact between weakly oxidised tuffaceous wacke above and fresh dark grey hornfelsed silstone below. Contact 25°. Flames and rip-up clasts indicate up-hole facing.			
11.4	18.3	Grey hornfelsed Tuffaceous Wacke. Fg Lithic Sandstone and Siltstone. In patches, bedding, mostly about 20° shows soft-sediment deformation; microfaulting and disruption. 14.3 2mm thick vein @ 15° of quartz-carbonate-pyrite-arsenopyrite 16.4 1.5mm vein @ 20° of pyrite Lower contact gradational colour change.			
18.3	24.3	Lithologies as above, with Tuffaceous Wacke dominant, but greener in colour due to increased chlorite content. 19.8-21.2 Irregular thin veins of carbonate-chlorite-(actinolite) with minor pyrrhotite. 22.2-23.2 Sub-parallel thin carbonate veins 23.3 20mm thick quartz-carbonate-pyrite vein @ 90° Lower contact irregular bedding 20°	Sulphides strongest 19.8-20.0 at about 3%		
24.3	26.3	Grey fg Lithic Wacke and Siltstone. Hornfelsed. Sub-parallel jointing with thin carbonate veins and irregular sulphides. 25.1 15mm thick discontinuous ?vein of pyrrhotite at 20°	Irregular sulphides; -po; -py; less than 1%		
26.3	78.5	Greenish grey and grey hornfelsed fg Lithic Wacke and Siltstone. Generally massive. Occasional weak bedding shows slumping and soft sediment disruption. Rare irregular veinlets of quartz-carbonate-pyrite-pyrrhotite. 28.5-29.0 Veinlets chlorite-actinolite-calcite. 35.2 10mm wide irregular Po vein @ 20° 45.4-47.7 Irregular turbiditic bedding with rip-up clasts and slumps. Weak chlorite-carbonate-po-(cpy) alteration selectively replaces coarser grained sections 54.3-56.7 Irregular bleaching, silicification and carbonate alteration partly controlled by ?bedding at 30° 62.0 40mm band @ 35° of bleaching 64.1-64.3 Bleaching with irregular veinlets of carbonate-chlorite-tremolite-minor pyrrhotite -chalcopyrite 75.8-75.9 Coarse grained (5mm) pyrrhotite crystals rimmed with thin chlorite selvedges 78.5 Lower contact is 5mm thick vein Arsenopyrite-(calcite) at 35°	Total sulphides less than 1% as Pyrite and pyrrhotite plus very minor chalcopyrite in quartz-carbonate veins Po+cpy about 1% (64.1-64.3)		

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

DIAMOND DRILL CORE RECORD

HOLE No. MD DDH CB1
SHEET No. 2

DEPTH From	DEPTH To	ROCK DESCRIPTION	MINERALISATION	CORE REC'D Run	CORE REC'D Short
78.5	80.3	Zone of moderate metasomatic alteration. Green mottled carbonate-chlorite-tremolite-silica altered sediments with irregular blebs and veinlets of Pyrrhotite and very minor chalcopyrite.	5% Pyrrhotite + minor chalcopyrite in blebs and stringers		
80.3	88.6	Blue grey very fine grained massive hornfelsed siltstone. Contacts diffuse 80.8-81.6 Irregular patches of alteration as per 78.5-80.3 83.7-84.0 Core broken along fractures at 25° 87.6-88.1 Core very broken Possible fault zone	2% Po+cpy as smears on fracture surfaces		
88.6	92.9	Zone of metasomatic alteration. Green/pale grey mottled carbonate-epidote-chlorite-silica-?actinolite alteration. Replacement partly controlled by bedding. Fine siltstones are silicified. Coarser grained wacke is chloritised and carbonated. Bedding irregular with slump structures but 25-30° is dominant core angle 90.5-91.8 Blue grey massive hornfelsed siltstone as per 80.3-88.6 Upper contact slightly irregular 20°. Lower contact diffuse. lower contact irregular and diffuse	1% Po in veinlets		
92.2	94.2	Mostly blue-grey massive hornfelsed siltstone with, irregular patches of green and pale grey alteration	1% Bclebs and stringers of Pyrrhotite 93.6-93.7 10% cg crystals and aggregates of Po		
94.2	98.2	Green and grey-brown mg tuffaceous wacke. Colour changes irregular and diffuse due to changes in chlorite/biotite content. Grain size becomes slightly coarser downwards. Irregular thin veinlets of chlorite-epidote-carbonate and rare tourmaline. Lower contact is calcite veins at 15-20°			
98.2	113.2	Rock essentially as above but very strongly carbonated and moderately chloritised and extensively carbonate veined. Epidote, tremolite, and tourmaline also occur in places. Weak bedding is preserved in places through less altered finer grained bands at about 15-20° 107-107.4 Strong chlorite-epidote-calcite-axinite alteration 110.8-112.2 Finer grained green chloritised but less altered section	2% Pyrrhotite as irregular veinlets, stringers and disseminations		
113.2	113.8	Brown-green fg weakly chloritic hornfelsed Siltstone. Weak relict bedding at 10°. A not very good example of grading suggests up-hole facing. Minor irregular bands of tremolite alteration.	Less than 1% Py as thin calcite-pyrite veins on joint surfaces		
113.8	113.95	Massive pyrrhotite vein. Contacts sharp, upper 30°, lower 25°.	Massive po +5% cg Asp + 1% cpy		
113.95	114.3	As per 113.2-113.8			
114.3	116.3	Green-white mottled strongly metasomatised sediment. Chlorite-calcite-silica-tremolite-biotite-(epidote-tourmaline-fluorite-?axinite) alteration with irregular stringers and veins of Po-(asp-cpy). Lower contact diffuse.	114.3-114.85 Less than 1% Po-(asp-cpy) as thin veins on joints 114.85-115.05 10% Po+2% Asp + 1% Cpy as stringers and veins 115.055-115.8 50% Po+Asp+(Cpy) in semi-massive veins at 25°		
116.3	119.45	Blue-grey and green-brown massive hornfelsed Siltstone and fg Lithic Wacke. Faint brown colour due to biotite is restricted to coarser-grained sections. Rare thin veins of metasomatic alteration.			
119.45	119.8	Green and grey mottled metasomatic alteration zone. Chlorite-calcite-tremolite-silica-epidote-(fluorite). Contacts sharp 25°.			

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

DIAMOND DRILL CORE RECORD

HOLE No. MD DDH CB 1
SHEET No. 3

DEPTH From	DEPTH To	ROCK DESCRIPTION	MINERALISATION	CORE REC'D Run	CORE REC'D Short
119.8	122.9	Hornfelsed Siltstone and fg Lithic Wacke as per 116.3-119.45 121.2-121.7 Dark bluish-grey very fine grained hornelfs; possibly hornfelsed black mudstone 121.9-122.9 More biotite rich with increasing veinlets of chlorite-tremolite-pyrrhotite	1% Po in stringers		
122.9	123.95	Strong metasomatic alteration zone. Chlorite-calcite-epidote-tremolite-silica-(tourmaline-fluorite-axinite). Contacts diffuse.			
123.95	128.65	Weak to moderate metasomatic alteration zone. Mainly green chlorite-epidote-tremolite altered sediments with calcite-(?axinite) mainly restricted to veinlets. 127-127.3 Relatively unaltered brown biotite hornfels. 126.85-127 " " " 127.7-128.0 " " "			
128.65	141.3	Grey, bluish-green and brown-grey massive hornfelsed Siltstones and fg Wackes with irregular bands and patches of chlorite-tremolite-epidote-(bio) alteration and of silicification and carbonate alteration.	Trace po+(py) in rare stringers 137.4 5mm thick Po-Asp-Cpy-Calcite vein @ 25°		
141.3	150.1	Bluish-grey massive hornfelsed Siltstone and Lithic Wacke with very rare chlorite-tremolite alteration patches	Trace to 1% Po in rare stringers 145.3 10mm thick Po-Asp-Cpy-Calcite vein @ 20°		
150.1	157.7	Brown-grey and green-grey hornfelsed Lithic Wacke and minor Siltstone. Zones of moderate biotite recrystallisation are interspersed with irregular patches of chlorite-tremolite alteration and of silicification and of carbonate alteration and veining.	153.75-153.85 10% Asp in qtz veins in a chl-trem altered zone		
157.7	163.3	Brownish grey hornfelsed biotite bearing fg and mg Lithic Wacke. Minor patches of chlorite-tremolite alteration. 161.2-161.3 Tectonic brecciation. Core broken along joints sub-parallel to 15°. Thin carbonate veins in places. Contacts gradational.			
163.3	185.1	Grey-green and bluish-grey massive hornfelsed fg Wacke and Siltstone with rare irregular patches of silicification, patches and veinlets of weak chlorite-tremolite alteration and thin carbonate veins. 179.65 15mm thick irregular vein of Pyrrhotite-carbonate @ 20° 183.0 12mm thick vein of Pyrrhotite-chalcopyrite-carbonate at 50° 183.7 12mm thick irregular vein of Pyrrhotite-chalcopyrite-carbonate-(chlorite) @ 30°	Sulphides less than 1% over all but locally up to 2% Po+Cpy in stringers and veinlets usually associated with carbonate veins or chlorite-tremolite veins.		
185.1	185.4	Pale green chlorite-tremolite altered f-mg Lithic Wacke. Contacts irregular, almost sub-parallel to core. Possibly an original slumped sedimentary horizon. Tremolite and chlorite are concentrated in thin (0.5-2mm) anastomosing veinlets with minor carbonate.	1% irregular patches of pyrrhotite.		
185.4	190.8	Grey, bluish green and grey-green mostly massive, weakly to moderately hornfelsed Lithic Wacke and minor Siltstone with irregular thin veins and patches of epidote-chlorite-carbonate alteration. Lower contact gradational through a zone of sedimentary breccia and contorted and microfaulted bedding. 190.65 10mm thick irregular vein of pyrrhotite-chalcopyrite-carbonate-quartz @ 20°	2% Pyrrhotite, mostly in thin carbonate veins.		
190.8	199.9	Grey and dark grey Siltstone interbedded with grey and pale brownish grey Lithic Wacke. Bedding is variable, sometimes regular but frequently disrupted and microfaulted. 191.6-191.75 Replacement Pyrrhotite in bedding @ 25° 192.8-193.0 Vein of Quartz-carbonate-pyrrhotite-arsenopyrite-(chalcopyrite) Upper contact 20°, Lower contact 35°	Pyrrhotite and minor chalcopyrite present throughout from 1% to 5% as stringers and veinlets and also as disseminated replacements of the framework grains in lithic wackes 50% Pyrrhotite, 10% Arsenopyrite, 2% Chalcopyrite		

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

DIAMOND DRILL CORE RECORD

HOLE No. MD DDH CB1
SHEET No. 4

DEPTH From	DEPTH To	ROCK DESCRIPTION	MINERALISATION	CORE REC'D Run	CORE REC'D Short
		193.0-194.0 Bedding sub-parallel with pyrrhotite veinlets lying along the bedding. 194.0-195.9 More massive section with weak slump breccia textures 195.9-199.9 Fairly regular thin bedding dominantly at 25° with minor disruptions and micro-faulting. Bedding frequently picked out by pyrrhotite bands. 196.25-196.4 Replacement pyrrhotite after framework grains in Wacke.	Pyrrhotite 1% in veinlets. Total sulphides ~5%		
199.9	209.1	Lithologies as above, but not well bedded, mostly massive or vaguely slumped Lithic Wacke with minor Siltstone. 204.15 20mm thick irregular vein of pyrrhotite+chalcopyrite @ 35° 206.9-206.95 Pyrrhotite-(chalcopyrite)-quartz-carbonate vein @ 75° 206.9-207.2 Weak breccia annealed by thin carbonate veins. Lower contact very gradational	2-5% Pyrrhotite in irregular veinlets. Frequently associated with quartz-carbonate veins Sulphides 25%		
209.1	220.6	Grey to pale greenish grey hornfelsed massive Lithic Wacke with very minor Siltstone. Chlorite-actinolite alteration occurs in scattered thin veinlets. Dominant veinlet direction is 20° 215.65 10mm thick vein of Pyrrhotite-arsenopyrite-chalcopyrite-carbonate-quartz @ 25° Lower contact 25°	1% Pyrrhotite irregularly distributed in rare carbonate veins or occasionally in chlorite-actinolite veinlets.		
220.6	234.2	Grey, brownish grey, and greenish grey diffusely interbedded Siltstone, fine grained Lithic Wacke and medium grained Tuffaceous Wacke. Irregular patches of silicification and chlorite-actinolite alteration. 220.6-221.4 Regular bedding @ 20° 222.3-222.4 Patch of strong silicification and chlorite-actinolite alteration, sub-parallel to the bedding @ 30° 224.5 ?Bedding @ 40° 229.1 Bedding 30°. Small flame structure suggests up-hole facing 234.0 20mm wide Pyrrhotite-(chalcopyrite-quartz) vein @ 20°. Lower contact 20°. Overlying mg tuffaceous wacke appears to truncate bedding in underlying Siltstone/Quartz Lithic Wacke, suggesting up-hole facing.	Sulphides about 1% overall in irregularly scattered thin Pyrrhotite-(chalcopyrite) veinlets and stringers usually associated with carbonate and quartz veinlets		
234.2	235.6	Pale grey and pale yellowish grey interbedded Siltstone and fg Quartz-Lithic Wacke. Bedding slightly irregular varies from 30-45°. Lower contact 40°	About 1% thin veinlets of pyrrhotite		
235.6	243.25	Brownish grey and green-grey mg and cg Tuffaceous Wacke. A weakly developed pervasive chlorite-biotite alteration occurs with patches of chlorite-actinolite-silica-(epidote-carbonate) alteration 237.7-238.0 Strong chlorite-actinolite-silica alteration 240.4-240.7 Moderate to strong chlorite-actinolite-quartz-carbonate alteration Lower contact 50°	Sulphides less than 1% restricted to veins		
243.25	245.1	Grey hornfelsed Siltstone with irregular interbeds of brownish grey mg Lithic Wacke. Bedding irregular sub-parallel to 20° becomming contorted towards the base. Lower contact irregular.	2% veinlets of Pyrrhotite		
245.1	246.5	Massive chlorite and biotite altered m-cg Tuffaceous Wacke. Lower contact 30°			
246.5	247.95	Interbedded hornfelsed Siltstone and fg Lithic Wacke. Bedding slightly irregular, mostly at 35-40° 247.65 8mm wide Pyrrhotite-chalcopyrite vein at 15°			

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

DIAMOND DRILL CORE RECORD

HOLE No. MD DDH CB 1
SHEET No. 5

DEPTH From	DEPTH To	ROCK DESCRIPTION	MINERALISATION	CORE REC'D Run	CORE REC'D Short
247.95	251.2	Hornfelsed Siltstone and Lithic Wacke with weak breccia texture accentuated by irregular development of strong silica-carbonate-chlorite±sulphide alteration	Total sulphides about 3% in veins and veinlets		
		248.0 12mm wide Pyrrhotite vein @ 20°			
		247.95-248.9 Strongest development of alteration, veins and sulphides			
		248.9-250.9 Fewer veins and only very weak chlorite-actinolite alteration.			
		250.9-251.2 Strong silica-chlorite-actinolite alteration			
251.2	252.4	Dark grey massive hornfelsed Siltstone to fg Lithic Wacke with rare scattered thin veins of chlorite-actinolite alteration, some with narrow silicification haloes. Lower contact is 50mm zone of silicification and chlorite-actinolite alteration at about 50°	Trace fg disseminated sulphides		
252.4	266.7	Dark grey hornfelsed Siltstone to fg Wacke with irregularly interbedded brownish-grey mg Tuffaceous Wacke. Bedding slightly irregular but dominantly 15-30°			
		255.55-255.7 Irregular pyrrhotite-(arsenopyrite-chalcopyrite) vein about 30mm thick with a chlorite-silica halo @ 15°	Sulphides 75% of vein		
		256.1-256.2 Pyrrhotite vein 20mm thick @ 35°			
		256.6 Quartz-pyrrhotite-(chalcopyrite) vein 15mm thick @ 35%	Sulphides 50% of vein		
		256.9 Irregular 15-20mm thick Pyrrhotite-(arsenopyrite-chalcopyrite-quartz) vein @ 45°	Sulphides 75% of vein		
		257.2-257.5 Irregular pyrrhotite stringers	2% sulphides as pyrrhotite stringers		
		259-259.3 Quartz veins with pyrrhotite+chalcopyrite in cross-cutting orientations - sub-parallel and 25°	Sulphides ~10%		
		259.35-259.6 6mm wide vein of Quartz-pyrrhotite-chalcopyrite @ 10°	Sulphides 60% of vein		
		261.9-262.1 4mm wide Quartz-pyrrhotite-chlorite vein @ 7°	Sulphides 50% of vein		
		261.9-263.3 Rare irregular patches of chlorite-actinolite alteration			
		263.85-263.95 Quartz-pyrrhotite veins cross-cutting. 15mm thick vein @ 80° 4mm thick vein @ 10°	Sulphides 10% of interval		
		264.25-264.4 Irregular pyrrhotite-(chalcopyrite)-(quartz) veining, dominantly @ 20°			
		264.85 5mm thick vein of actinolite-chlorite @ 25°			
		265.75 15mm vein of quartz-chlorite-pyrrhotite @ 70°	Pyrrhotite 30% of vein		
		266.5-266.6 Irregular pyrrhotite stringers	Pyrrhotite 10% stringers		
		Lower contact 30°			
266.7	269.6	Pale slightly greenish-grey massive mg Volcanic Lithic Wacke.			
		268.65 12mm thick quartz-pyrrhotite-(chalcopyrite) vein @ 20°	Sulphides 50% of vein		
		268.9-269.2 Irregular thin quartz-pyrrhotite and pyrrhotite stringers	Sulphides 5% of interval		
		Lower contact irregular sub-parallel to 10°			
269.6	271.35	Grey Siltstone grades down into brown-grey biotite-rich fg Lithic Wacke. Massive, weakly hornfelsed. Lower contact irregular			
271.35	274.2	Strongly metasomatised calc-silicate zone. Contact gradational through strongly chloritised sediments into pale grey Silica-carbonate with mottled green chlorite and bladed ?axinite and ?tourmaline	Trace disseminated chalcopyrite		
274.2	287.0	Dominantly blue-grey moderately hornfelsed Siltstone to fg Wacke with lesser amounts of interbedded mg Lithic Wacke. Bedding irregular but dominantly 15-20°	1% Pyrrhotite and (chalcopyrite) in thin veinlets and stringers often associated with quartz.		
		280.2 5mm thick quartz-pyrrhotite-(chalcopyrite) vein @ 15°			
		282.7-283.5 Broken core. Broken along chloritic ?joints or ?veins sub-parallel to 10°			
		285.3-287.0 Rock is increasingly biotite rich			
		285.9-286.1 Broken core zone			
		286.6-287.0 Irregular blebby patches of silica-chlorite-actinolite-carbonate alteration			
		Lower contact irregular and diffuse.			

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

DIAMOND DRILL CORE RECORD

HOLE No. MD DDH CB 1
SHEET No. 6

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DEPTH From	DEPTH To	ROCK DESCRIPTION	MINERALISATION	CORE REC'D Run	CORE REC'D Short
287.0	288.45	Weak metasomatic alteration zone. Green strongly chloritic wacke with weak silica-carbonate alterations grades into the next unit.			
288.45	300.55	Strongly metasomatised calc-silicate alteration zone. Pale grey and green mottled silica-carbonate (mostly dolomitic or ankeritic as it fizzes with conc. HCL only) - chlorite-actinolite-?axinite-?tourmaline alteration. Irregular crude banding between grey silica-carbonate dominant and green chlorite-actinolite dominant zones possibly represents original bedding. Much of the carbonate has an interlocking lath-like habit. Contacts gradational.	No visible mineralisation		
300.55	302.6	Zone of weak to moderate metasomatic alteration. Green chloritic Wacke as per 287-288.45 contains patches of relatively unaltered biotite-rich mg Lithic Wacke. Lower contact diffuse sub-parallel to core.			
302.6	306.0	Brownish grey massive biotite-rich m-cg Lithic Wacke with thin veins and irregular patches of green chlorite-(actinolite) alteration. Lower contact diffuse.			
306.0	318.5	Strong metasomatic calc-silicate alteration zone as per 288.45-300.55			
318.5	324.55	Green-grey and brown-grey massive weakly altered fg and mg Wacke. Irregular veinlets and patches of more intense green chlorite-(actinolite) alteration occur throughout. Upper contact is very gradational decrease in chlorite-carbonate-silica alteration over about 1m.			
324.55	328.4	As above but green chlorite-actinolite±silica-carbonate alteration patches increase to about 50% of core. Contacts gradational.			
328.4	345.45	Strong metasomatic calc-silicate alteration zone as per 288.45-300.55. 336.8-342.5 More chloritic section dominantly green in colour 342.5-345.45 Grey carbonate-silica-axinite rich zone lower contact 35°	337.5-341.55 5% Pyrrhotite in irregular veins stringers and blebby patches. Veins sub parallel to 40°. Locally sulphides are up to 20% of core volume		
345.45	347.1	Green chloritised fg Lithic Wacke with scattered thin veinlets of carbonate-quartz-tourmaline-chlorite-actinolite±pyrrhotite. Lower contact gradational across increasing alteration	2% Pyrrhotite+trace chalcopyrite as stringers and fg disseminations.		
347.1	360.7	Metasomatic calc-silicate alteration zone very similar to 288.45-300.55 with zones where one suite of minerals dominate over the others. 347.1-350.7 Green-grey mottled zone with carbonate-quartz-chlorite-actinolite-tourmaline-axinite 350.7-351.7 Green zone with chlorite-actinolite dominant. 351.7-352.7 Mixed zone 352.7-354.0 Pale green zone with chlorite-tremolite-carbonate dominant and quartz-carbonate-axinite in veins. 354.0-356.4 Green zone, almost exclusively chlorite-actinolite 356.4-358.2 Mixed zone with all minerals 358.2-359.65 Pale green zone with chlorite-tremolite-carbonate-(quartz) dominant 359.65-360.7 Grey zone with carbonate-quartz-axinite-tourmaline dominant Lower contact diffuse about 35°	Sulphides very rare throughout. Trace pyrrhotite and chalcopyrite in rare stringers.		
360.7	361.0	Grey-green chloritised, relatively unaltered fg Lithic Wacke	3% Pyrrhotite in stringers		

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

DIAMOND DRILL CORE RECORD

HOLE No. MD DDH CB 1
SHEET No. 7

DEPTH From	DEPTH To	ROCK DESCRIPTION	MINERALISATION	CORE REC'D Run	CORE REC'D Short
361.0	393.8	Variable, but generally strongly mineralised, calc-silicate alteration zone. Green chlorite-actinolite alteration is predominant and the typical axinite assemblage is restricted. The intensity of alteration varies with some small patches retaining recognisable sedimentary structure. The sulphide mineralisation is dominantly pyrrhotite with variable minor chalco-pyrite and occurs preferentially in the chlorite rich zones. Zones with high axinite are very poorly mineralised.			
		361.0-363.4 Chlorite dominant with variable actinolite and with quartz-carbonate in veins and irregular patches.	361.0-361.1 50% Po + 5% Cpy in semi-massive vein @ 35° 361.1-361.4 5% Po in stringers and disseminations 361.4-361.85 40% PO + 5% Cpy as heavy disseminations running at about 30° to core. 361.85-362.6 15% Po stringers		
		363.4- 363.9 Grey carbonate-quartz-axinite-(chlorite-tourmaline) zone. Contacts gradational 363.9-367.0 Pale green chlorite-tremolite with grey carbonate-quartz-axinite mostly in veins and irregular patches.	362.6-367.0 Trace sulphides only		
		367.0-374.3 Chlorite dominant zone with variable actinolite-tremolite-carbonate. Quartz is minor and axinite very rare. Original sedimentary grain texture and banding occurs in places such as from 368.8 to 369.1.	367-367.8 30% Po as semi-massive bands @ 30° 367.8-367.95 Less than 1% sulphides 367.95-368.2 20% Po + 2% Cpy in stringers 368.2-369.05 1% Po + minor Cpy in rare stringers 369.05-370.1 15% Po + minor Cpy in disseminated bands to 369.35 and then in stringers and blebby patches. 370.1-371.45 50% Po + 2% Cpy in semi-massive bands, at 45° near top of section and at 25° near the base; and in minor cross-cutting stringers. 371.45-373.05 15% Po + 2% Cpy (variable from 5% to 30%) in bands and stringers.		
		374.3-375.3 Pale green and grey chlorite-tremolite-carbonate-quartz-(axinite) zone. Contacts irregular and gradational	373.05-375.3 2% Po in scattered stringers with minor Cpy		
		375.3-387.6 Green chlorite dominant zone as per 367-374.3	375.3-376.5 10% Po + 1% Cpy stringers 376.5-377.65 25% Po + 2% Cpy in bands stringers and veinlets 377.65-380.25 40% Po + 5% Cpy in massive bands and vein at 15-30° 380.25-381.15 5% Po + 2% Cpy in stringers 381.15-382.25 10% Po + 3% Cpy in stringers mostly sub-parallel to core 382.25-383.55 20% Po + 5% Cpy in stringers and blebby patches 383.55-384.75 55% Po + 5% Cpy in massive bands and stringers. Lower contact cut off fairly sharp at 35° 384.75-387.2 Sulphides less than 1% except for one patch of 7% Po + 3% Cpy between 385.65 and 385.7 387.2-387.6 5% Po + 2% Cpy in stringers		
		387.6-393.8 Dark green chlorite zone with variable actinolite. This is the most consistently strongly mineralised section	387.6-390.45 40% Po + 2% Cpy (variable 1-5% Cpy) in massive & semi massive bands and stringers 390.45-393.8 50% Po + 5% Cpy in massive bands and stringers. Cpy variable, increases in bottom metre to locally 10%		
		Lower contact to both alteration and mineralisation is quite sharp @ 35°			

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

DIAMOND DRILL CORE RECORD

HOLE No. MD DDH CB 1
SHEET No. 8

270

DEPTH From	DEPTH To	ROCK DESCRIPTION	MINERALISATION	CORE REC'D Run	CORE REC'D Short
393.8	398.85	Green grey and brownish grey massive hornfelsed Siltstone and fg Wacke. Rare thin veinlets of chlorite-actinolite alteration some with narrow silicification haloes. Lower contact irregular.	Less than 1% Po in rare thin stringers, mostly associated with the chlorite-actinolite veinlets.		
398.85	399.15	Grey carbonate-quartz-chalcopyrite-(epidote)-(tremolite) alteration zone. Contacts irregular.	5% Chalcopyrite in cg disseminations.		
399.15	400.2	Grey-green hornfelsed Siltstone with bands of strong fg carbonate-quartz-epidote-(tremolite) alteration. Alteration occupies about 50% of the interval. Lower contact 15°	2% Pyrrhotite+chalcopyrite in stringers and disseminations		
400.2	403.9	Interbanded brown-grey biotitic hornfelsed Siltstone and pale greenish grey weakly silicified and tremolite-carbonate-chlorite altered Siltstone. The bands of weakly metasomatised siltstone contain thin veins of strong tremolite-chlorite and/or quartz-carbonate-(with rare axinite) alteration. Banding is irregular, dominantly 10-20° and looks like original sedimentary bedding. Lower contact gradational.	Trace disseminated chalcopyrite associated with the alteration veins.		
403.9	417.55	Dominantly brown-grey biotitic hornfelsed massive Siltstone to locally fg Lithic Wacke. Bands, patches and veinlets of pale greenish grey weak metasomatic silica-carbonate-tremolite occur irregularly through the unit. Alteration occupies approximately 15% of core. In places thin (< 10mm) veins of intense tremolite-chlorite alteration occur within the weakly altered zones. 413.65-413.9 Zone of intense silicification with quartz-carbonate-tremolite-chlorite-magnetite-pyrrhotite-(chalcopyrite) veining. Contacts gradational. 415.3-415.7 Moderate to strong silicification 417-417.35 Weakly metasomatised zone with a sub-parallel vein of intense actinolite-chlorite alteration. Lower contact diffuse.	Chalcopyrite and pyrrhotite occur irregularly, mostly in quartz-carbonate veins up to 12mm thick. Sulphide may be up to 70% of a vein but veins are rare and scattered. Total sulphide for unit is less than 1% Magnetite 10% , Pyrrhotite 5%, Chalcopyrite 1% 3% Pyrrhotite + chalcopyrite		
417.55	420.35	Brown massive biotitic hornfelsed m-cg Tuffaceous Wacke with minor v fg Wacke. Lower contact 20°			
420.35	421.9	Green-grey mottled moderate to strong metasomatic alteration zone with a quartz-carbonate-chlorite-tremolite-(biotite) assemblage. Lower contact 25°			
421.9	428.55	Brown massive biotitic hornfelsed fg Lithic Wacke and minor Siltstone. Rare thin (4mm) irregular carbonate-quartz veins. 421.9-422.8 Disrupted and microfaulted bed of Siltstone sub-parallel to core. Lower contact irregular about 25°	2% disseminated Pyrrhotite and in the thin carbonate-quartz veins.		
428.55	429.7	Rock type essentially as above but with variable alteration and veining. 428.55-428.8 Breccia with broken and brecciated strong carbonate-quartz veining 428.9-429.02 Massive pyrrhotite+(quartz-carbonate) vein @ 40° 429.02-429.04 Intensely silicified band on the base of the sulphide vein @ 40° 429.04-429.7 Weak to moderate silicification with thin veins of carbonate-quartz±chlorite-tremolite±pyrrhotite-chalcopyrite Lower contact gradational and diffuse	2% blebs of pyrrhotite + chalcopyrite Pyrrhotite 70%, chalcopyrite 2% Average suls 1% over unit		
429.7	436.2	Greyish-brown massive biotitic hornfelsed f-mg Lithic Wacke with irregular thin carbonate-quartz veins. 432.8-433.0 Strong carbonate-quartz veins @ 45° 435.3-435.8 Very weak silicification and carbonatisation	Total sulphides less than 1% associated with veins 5% pyrrhotite+chalcopyrite		
436.2	441.5	Greyish brown massive biotitic hornfelsed Siltstone and fg Lithic Wacke interbanded with zones of pale greenish-grey weak to moderate silica-carbonate±chlorite±tremolite alteration. 436.2-436.5 Slumped sedimentary bedding mainly at 20°. Contains clast of ?carbonate mud -	Total sulphides 2-3% Pyrrhotite+(chalcopyrite)		

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

DIAMOND DRILL CORE RECORD

HOLE No. MD DDH CB 1
SHEET No. 9

DEPTH From	DEPTH To	ROCK DESCRIPTION	MINERALISATION	CORE REC'D Run	CORE REC'D Short
		totally replaced by pyrrhotite plus (chlorite-tremolite) 437.45-437.55 & 437.95-438.3 } Weakly silicified siltstone with 10% blebby pyrrhotite lying along bedding planes @ 30° and in microfractures perpendicular to bedding 440.95-441.55 Weakly slumped sedimentary banding @ 25°. Lower contact 25°			
441.55	450.85	Brown massive biotitic hornfelsed fg & mg Lithic Wacke. Rare irregular thin carbonate-quartz veins and rare irregular small blotchy patches of silica-carbonate-chlorite-tremolite alteration. Lower contact slightly diffuse 30°.	Total sulphides less than 1% pyrrhotite+chalcopyrite in some of the carbonate-quartz veins.		
450.85	457.4	Greyish brown massive biotitic hornfelsed Siltstone and fg Wacke interbanded with zones of moderate metasomatic alteration. 450.85-451.1 Vein of quartz-carbonate-tremolite-chlorite-axinite with a well developed halo of moderate silicification. 453.1-454.05 Breccia with clasts of variably silicified and carbonatised siltstone annealed by veins of strong quartz-carbonate-tremolite-chlorite alteration. 454.05-455.2 The above zone tails off into a zone of irregular quartz-carbonate veining and blotchy patches of pale grey-green metasomatic alteration 456.4-457.4 Mainly weakly metasomatised siltstone with thin veinlets of intense tremolite-chlorite. Lower contact 25°	Total sulphides less than 1% chalcopyrite and pyrrhotite in rare blebs		
457.4	511.55	Dominantly greyish-brown biotitic massive hornfelsed Siltstone and fg Lithic Wacke with some units of m-cg Tuffaceous Wacke. containing irregular thin quartz-carbonate±chlorite±tremolite veins dominantly at 15-35° with occasional cross-cutting veins at 75-90°, and containing irregular interbands of and patches of weak to strong quartz-carbonate-chlorite-tremolite metasomatic alteration. Total veins and alteration would occupy 10% of core. 464.6-465.0 Strong quartz-carbonate-tremolite-chlorite alteration 470.7-471.8 M-cg Tuffaceous Wacke. Grading suggests up-hole facing 475.2-478.2 Zone of increased vein density and blotchy patches of alteration 482.6-483.1 & 483.4-483.7 } Siliceous (or silicified) siltstone with ? bedding @ 15-25° 486.2-487.8 Grading in mg Lithic Wacke suggests up-hole facing 489.35-489.55 & 490.05-491.2 & 491.95-492.25 } Patches of intense silicification with veins of quartz-carbonate-tremolite-chlorite. 500.2-500.5 Breccia annealed by quartz-carbonate-pyrrhotite-chalcopyrite-chlorite 501.4-501.7 Strong veins of quartz-carbonate-chlorite-(tremolite) 507.95-508.35 Calc-silicate skarn alteration zone. Quartz-carbonate-chlorite-pyrrhotite-chalcopyrite in a weakly brecciated and sheared band with contact @ 20° 509.9-510.3 Similar zone to above, more weakly developed. Strong silicification at the base. Sulphides concentrated in veinlets and stringers near the top of the unit.	Sulphide distribution very erratic and mostly all confined to veins. Total sulphides less than 1% but locally pyrrhotite and chalcopyrite may form 15% of a thin vein 3% Pyrrhotite in stockworked microveinlets. 10% Pyrrhotite+chalcopyrite 5% chalcopyrite+pyrrhotite Pyrrhotite 5% + chalcopyrite 3% Pyrrhotite 5% + chalcopyrite 1%		
511.55	516.05	Mixture of brown massive biotite hornfelsed fg Lithic Wacke and green/grey mottled calc-silicate skarn alteration. Principally a chlorite-actinolite rich skarn with blotchy patches of quartz-carbonate alteration and patches of very fine grained dark brown to black biotite.	Sulphides very rare. Trace disseminated pyrrhotite only		
516.05	517.25	Calc-silicate skarn zone as per the skarn patches in the above unit. Contacts diffuse.	Sulphides very rare.		
517.25	527.2	Pale grey-brown, mostly massive, biotite hornfelsed and weakly silicified, fg Lithic Wacke and Siltstone. Patches of weakly developed skarn style alteration occur irregularly, as do thin quartz-carbonate±sulphide veins. 517.95-518.10 Chlorite-actinolite-quartz-carbonate-biotite alteration 519.2-519.55 " " " " " "			

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

DIAMOND DRILL CORE RECORD

HOLE No. MD DDH CB 1
SHEET No. 10

DEPTH From	DEPTH To	ROCK DESCRIPTION	MINERALISATION	CORE REC'D Run	CORE REC'D Short
		519.65-519.8 Weak bedding @ 25° 521.7 10mm thick quartz-carbonate-pyrrhotite vein @ 60° 522.65-522.85 Thin quartz-carbonate-pyrrhotite veins. Veins 15% of unit 526.1-526.5 Buff bleached ?retogressively altered weakly silicified siltstone. Upper contact 20°. Lower contact broken core.	520.95-521.35 2% Pyrrhotite associated with thin carbonate-quartz vein Pyrrhotite 40% of vein 521.85-522.45 Pyrrhotite 2% in thin stringers, some associated with quartz-carbonate veinlets Pyrrhotite 3% of unit 522.85-527.2 1-2% Pyrrhotite in thin veinlets and stringers scattered throughout		
527.2	531.2	Mixture of pale brown hornfelsed Siltstone and fg Wacke as above and green/grey mottled calc-silicate skarn alteration zones. The alteration zones are variable mixtures of chlorite-actinolite-quartz-carbonate-biotite (very dark brown coloured.)	1% Pyrrhotite in scattered stringers mostly in the brown hornfels patches		
531.2	535.6	Calc-silicate metasomatic skarn zone. Dominantly green chlorite-actinolite with blotchy grey-white quartz-carbonate. Contacts diffuse.	Pyrrhotite+minor chalcopyrite runs about 5% throughout in irregular stringers, veinlets and blebs		
535.6	536.5	Pale brown, massive, biotite hornfelsed, fg Wacke to Siltstone.	2-3% Pyrrhotite in thin stringers		
536.5	547.3	Calc-silicate skarn zone as per 531.2-535.6	5-7% Pyrrhotite + minor chalcopyrite in irregular blebs, patches and stringers		
547.3	548.55	Pale brown, weakly silicified, hornfelsed Siltstone	2% Pyrrhotite in thin veinlets.		
548.55	557.95	Mixture of skarn style alteration as per 531.2-535.6 and pale brown hornfelsed Siltstones as per 547.3-548.55. 548.55-550.7 Mostly skarn with more quartz-carbonate than average 550.7-552.45 Mostly siltstone with thin quartz-carbonate veins and pyrrhotite stringers. 552.45-553.7 Mostly skarn 553.7-554.4 Mostly Siltstone 554.4-557.95 Mostly skarn with thin siltstone intervals at 555.4-555.65 and 557.65-557.95	Average 2-3% pyrrhotite+minor chalcopyrite over interval, but sulphides are patchily dispersed in veins and stringers		
557.95	610.45	Metasomatic skarn-style alteration zone. Dominantly green massive chlorite-actinolite with variable patchy amounts of quartz-carbonate-epidote alteration. Fg black tourmaline is mostly restricted to the paler quartz-rich patches, as is a pale pink-brown to honey coloured garnet 567.2-568.2 Pale green quartz-chlorite-epidote-actinolite-carbonate skarn with streaky patches of pale pinkish-brown fg garnet and minor tourmaline and rare axinite 568.2-568.65 Massive green chlorite -actinolite skarn 568.65-569.3 Skarn as per 567.2-568.2 570.0-570.5 Green corroded section - solution cavities after ?carbonate 573.4-573.85 Skarn as per 567.2-568.2 574.25-574.8 " " " 575.15-576.5 Mixture of chlorite-actinolite skarn and skarn as per 567.2-568.2	Pyrrhotite+minor chalcopyrite and magnetite are developed patchily throughout as irregular ragged blebs, stringers and occasional veins. 557.95-558.45 2% Pyrrhotite stringers 558.45-558.55 35mm thick vein of massive pyrrhotite @ 20° 1% Pyrrhotite mostly on fracture surfaces. 573.1-574.2 2-3% Pyrrhotite stringers 576.7-577.6 2% Pyrrhotite in stringers and veinlets 577.6-579.0 5% Pyrrhotite in ragged stringers and veinlets. 580.1-580.2 5% Pyrrhotite + minor chalcopyrite stringers		

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

DIAMOND DRILL CORE RECORD

HOLE No. MD DDH CB 1
SHEET No. 11

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DEPTH From	DEPTH To	ROCK DESCRIPTION	MINERALISATION	CORE REC'D Run	CORE REC'D Short
		590.25-590.4 Weak banding, possibly original bedding @ 20°	580.2-580.35 Semi massive pyrrhotite 75% + minor chalcopyrite 580.35-582.2 5% Pyrrhotite+minor chalcopyrite strin-ers 583.8-584.0 5% Pyrrhotite in veinlets and stringers 584-587.85 1-2% Pyrrhotite in scattered stringers 587.85-589.75 5% Pyrrhotite+ minor chalcopyrite in ragged stringers and disseminations 590.6-592.55 2% Pyrrhotite in irregular scattered stringers 592.55-593.25 10% Pyrrhotite+minor chalcopyrite including a 20mm thick semi-massive vein at 592.85 593.25-597.8 3% Pyrrhotite in stringers 596.45-597.8 3-5% Magnetite in irregular bands 597.8-601.75 2-3% Magnetite in irregular stringers and disseminations 603.85-604.0 35% Pyrrhotite in irregular patches 605.85-606.25 5% Pyrrhotite in veinlets		
		606.15-610.45 Massive green chlorite-actinolite with very few pale quartz-rich patches.	607.3-607.45 40% Pyrrhotite in veinlets and stringers.		
610.45	611.5	Pale brown hornfelsed fg and mg Wacke. Weak banding 15°. Upper contact irregular 10°. Lower contact 35°			
611.5	612.8	Green chlorite-actinolite massive skarn or ?amphibole zone hornfels; no relict sedimentary textures preserved.			
612.8	614.2	Biotite hornfels as per 610.45-611.5 Contacts diffuse.			
614.2	630.5	Metasomatic skarn alteration zone very similar to 557.65-610.45. Dominantly dark green chlorite-actinolite assemblage with patchy pale grey-green quartz-?tremolite-(carbonate) alteration patches and rarer pale brownish pink irregular patches of garnet	Sulphides erratically distributed in stringers and veinlets throughout. Average 2-3% Pyrrhotite+minor chalcopyrite 615.05 40mm thick quartz-pyrrhotite-(chalco-pyrite) vein @ 25° Po 15% Cpy 1% concentrated on the margins of the vein 616.45 25mm thick quartz-pyrrhotite-(chalco-pyrite) vein @ 30° Po 30% of vein on the margins.		
		616.85-617.4 Pale greenish grey fg quartz rich section. Contacts diffuse, 618.05-618.25 Pale pink-brown garnet 25% 621.1-621.45 Brown 'Unaltered' massive biotite hornfelsed fg Wacke 623.55-624.8 Irregular blotchy patches of pink garnet	617.8-618.7 5% Pyrrhotite in stringers and patches 2-3% Pyrrhotite + minor chalcopyrite in stringers 623.55-623.7 Pyrrhotite+chalcopyrite+magnetite 15% 625.0 10mm thick Pyrrhotite vein @ 25°		
		626.5-627.6 Mixed zone of very irregularly shaped chlorite rich and quartz rich patches. Has a brecciated appearance. Lower contact gradational.	625.2-625.35 10% Pyrrhotite + 2% chalcopyrite Pyrrhotite+chalcopyrite 10% in ragged blebs and stringers. 627.6-629.4 Pyrrhotite+chalcopyrite 5% in ragged blebs, stringers and disseminations		
630.5	633.25	Mottled dark green, pale green and pink metasomatic skarn zone, with irregularly shaped patches of chlor-actinolite dominant, qtz-?tremolite dominant with garnet dominant skarn. Lower contact gradational.	Pyrrhotite+chalcopyrite 10% in irregular blebs		

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

DIAMOND DRILL CORE RECORD

HOLE No. MD DDH CB 1
SHEET No. 12

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DEPTH From	DEPTH To	ROCK DESCRIPTION	MINERALISATION	CORE REC'D Run	CORE REC'D Short
633.25	657.1	Dominantly dark green fg chlorite-actinolite skarn or ?hornblende grade hornfels; no sedimentary textures preserved, with variable amounts of quartz-?tremolite patches. 640.65-643.4 Zone of increased pale green quartz-tremolite alteration. Approximately 30% in poorly defined bands at about 25°. Contact very gradational 653.3-653.6 Brown 'unaltered' massive biotite hornfelsed fg Wacke. Contacts diffuse 654.05-654.55 As per above. Upper contact 20°. Lower contact irregular 25° Lower contact gradational	Pyrrhotite+chalcopyrite, at about 15:1 ratio; occur irregularly throughout in patches and stringers average about 3% 636.9-637 Pyrrhotite-(chalcopyrite-quartz) vein @ 35° 638.95-639.75 Pyrrhotite+minor chalcopyrite 10% in stringers & blebby disseminations forming a weak banding @ 40° Pyrrhotite 5% in blebby disseminations 648-648.1 Pyrrhotite+minor chalcopyrite 50% in a disseminated band @ 35° 6458.55 20mm thick band of 50% Pyrrhotite @ 15° 649.2-650.55 Pyrrhotite+minor chalcopyrite 5% in stringers and blebs strongest at 650-650.55 650.55-650.75 Pyrrhotite+minor chalcopyrite 60% in semi-massive veins 651.05-651.3 Pyrrhotite+minor chalcopyrite 35% in veins and stringers. 656.75-657.1 Pyrrhotite+minor chalcopyrite 5% in stringers and veinlets.		
657.1	663.35	Dominantly pale green quartz-tremolite-(chlorite-epidote) skarn. 661.85-662.15 Dominantly dark green chlorite-actinolite rock. Lower contact 35°	5-10%pyrrhotite+minor chalcopyrite in ragged blebs stringers and veinlets. 657.1-660.6 Sulphides 10% 660.6-663.35 " 5%		
663.35	701.60	Dark green massive chlorite-actinolite ?metasomatic skarn or ?hornblende hornfels; no relict sedimentary structures. Rare patches of pale green quartz-tremolite alteration. 679.25-681.7 Paler green, more quartz-rich skarn 681.7-686.0 Blotchy patches of pale green quartz-rich skarn 698.1-698.25 Strong quartz veining with included clasts of green hornfels. Possible fault zone	Sulphides variable in veins, stringers and disseminated bands. 664.1-664.45 Semi-massive pyrrhotite 50% 664.8-665.2 Pyrrhotite 25% in stringers & blebby disseminations 667.55-667.95 Pyrrhotite 20% in stringers and blebby disseminations. 667.95-679.25 Pyrrhotite average 3%. Locally 15% in stringers and ragged bands. Pyrrhotite 10%, chalcopyrite 1% in stringers veinlets and blebs. Pyrrhotite+minor chalcopyrite 3-5% in stringers veinlets and blebs 686.0-690.85 Pyrrhotite average 1-2% stringers and blebs 690.85-694.0 Pyrrhotite+minor chalcopyrite 5% in stringers and ragged veins. 694-697.25 Pyrrhotite 10% + chalcopyrite 1% in stringers and ragged veins including 696.4-697.0 Po 15% + Cpy 5% associated with a sub-parallel brecciated quartz vein about 10mm thick.		

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

DIAMOND DRILL CORE RECORD

HOLE No. MD DDH CB 1
SHEET No. 13

DEPTH From	DEPTH To	ROCK DESCRIPTION	MINERALISATION	CORE REC'D Run	CORE REC'D Short
		700.7-701.6 More siliceous zone with ?slump breccia texture Lower contact irregular	698.4-699.3 Pyrrhotite 5% + minor chalcopyrite in veinlets and stringers 699.3-701.6 Pyrrhotite 1% in stringers		
701.6	704.05	Mixture of brown massive biotite hornfelsed fg Lithic Wacke, and grey-green quartz-chlorite-tremolite altered mg Lithic Wacke with thin green chlorite veinlets and rare thin quartz veins.	Pyrrhotite less than 1% in isolated stringers		
704.05	706.7	Brown massive biotite hornfelsed fg Lithic Wacke and Siltstone with rare veinlets of green quartz-chlorite-tremolite alteration	Pyrrhotite less than 1% in rare stringers.		
706.7	711.2	Pale grey and green mottled brecciated and strongly silicified mg Wacke. Veins of green chlorite-tremolite anneal clasts of silicified wacke. Lower contact gradational	Trace disseminated pyrrhotite and chalcopyrite		
711.2	725.65	Green-grey ?slump brecciated mg tuffaceous quartz wacke. Degree of brecciation is variable Moderately to strongly silicified; especially the clasts in the areas of strongest breccia texture. Matrix areas are generally chloritic. Thin veinlets of chlorite-tremolite occur scattered throughout. 715.15-715.55 Massive chloritic, weakly silicified, hornfelsed f-mg lithic wacke. Contacts gradational 716.15-716.9 8mm thick sub-parallel vein of quartz-pyrrhotite-(trace chalcopyrite) surrounded by more intense breccia and chloritisation 717.65-718.2 Similar to above with 3mm thick sub-parallel vein 719.7-720.15 Similar to above with a 2mm and a 6mm sub-parallel vein and a 3mm vein @ 30° 722.5-722.8 3mm thick sub-parallel vein of quartz-tourmaline. Lower contact 30°	Pyrrhotite 40% of vein; ~3% of unit Pyrrhotite 30% of vein Pyrrhotite 30% of veins		
725.65	727.0	Pale grey massive f-mg Quartz Arenite, Silicified. Rare thin chlorite-tremolite veinlets. Lower contact slightly irregular 20°.	Trace Pyrrhotite-(chalcopyrite) in the chlorite veinlets.		
727.0	730.6	Green-grey unit similar to 711.2-725.65. Silicification variable moderate to strong 728.1-728.6 Very strong silicification 730.25-730.6 Very strong silicification and weak brecciation Lower contact 50°	2% Pyrrhotite in stringers and blebs.		
730.6	731.65	Pale brownish grey massive strongly silicified (?originally siliceous) Siltstone	2% Pyrrhotite+minor chalcopyrite in irregular stringers and blebs.		
731.65	733.3	Mixture of pale grey massive f-mg quartz arenite and green chloritic (?after amphibole) altered wacke. All rocks are variably silicified. 731.65-731.9 Dominantly quartz-arenite 732.2-732.45 Dominantly chloritic ?slump brecciated quartz-lithic wacke 732.45-732.65 Dominantly quartz-arenite 732.65-733.3 A mixture of quartz-arenite and chloritic ?veins	730.65-730.9 2% Pyrrhotite stringers and blebs 15% Pyrrhotite in semi-massive veins with chloritic gangue		
733.3	734.1	Pale grey massive silicified f-mg Quartz Arenite			
734.1	735.4	Mixture of Quartz Arenite, green f-mg Quartz-Lithic Wacke, and brown biotite hornfelsed fg Wacke	Pyrrhotite 2% in irregular stringers and blebs.		
735.4	736.25	Dominantly pale grey massive f-mg silicified Quartz Arenite	Pyrrhotite 1% in very thin stringers.		

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

DIAMOND DRILL CORE RECORD

HOLE No. MD DDH CB 1
SHEET No. 14

DEPTH From	DEPTH To	ROCK DESCRIPTION	MINERALISATION	CORE REC'D Run	CORE REC'D Short
736.25	755.05	Dominantly a green, variably silicified, mostly massive, chloritised quartz-lithic wacke. This unit contains irregular zones and patches of brown biotite-rich fg wacke, patches of fg quartz arenite, zones of bluish-grey intense silicification, zones of intense chloritisation, rare veinlets of chlorite-tremolite alteration, and rare quartz veins.	Pyrrhotite less than 1% scattered irregularly throughout in blebs and stringers, mostly associated with veins.		
		737.5-739.1 Zones of brown biotite rich hornfelsed wacke			
		740.8-741.8 Irregular patches of biotite alteration			
		742.4-742.6 4mm thick sub-parallel quartz-pyrrhotite vein	Pyrrhotite 10% of vein		
		742.55-742.85 Very strong chloritisation with gradational contacts			
		746.7-748.5 Very strong silicification			
		747.35-748.5 Only 0.35m of broken core recovered. ?Fault zone			
		748.6-749.9 Irregular patches of brown biotite alteration			
		753.2-754.25 Strong silicification with chlorite tremolite veins, quartz veins	2% Pyrrhotite in blebs and stringers		
		754.25-755.05 Strong chloritisation, increasing biotitisation and rare thin quartz-pyrrhotite veins.	Pyrrhotite less than 1% of unit		
		Lower contact 15°			
755.05	774.55	Dominantly greyish brown massive biotite hornfelsed fg wacke and siltstone with minor m-cg Lithic Wacke units. Thin quartz veins and irregular patches of silicification occur sporadically.	Pyrrhotite very rare in occasional blebs or in rare quartz veins.		
		760.1-760.35 4mm thick quartz-tourmaline-pyrrhotite-(chalcopyrite) vein @ 10°	Pyrrhotite 40% of vein		
		770.05-771.05 Grey very strongly silicified fg rock with thin chlorite-tremolite-carbonate veinlets. Contacts diffuse.			
		773.9-774.1 Irregular vein of silica-chlorite-tremolite-pyrrhotite alteration approx. @ 20°	Pyrrhotite 5% of vein.		
		Lower contact diffuse about 30°			
774.55	776.7	Greenish-grey massive strongly silicified f-mg Quartz-Lithic Wacke. Rare thin veinlets of chlorite-tremolite or of quartz. Lower contact gradational.			
776.7	779.55	Grey-brown massive biotite hornfelsed fg and f-mg Quartz Lithic Wacke. Coarser grainsize units are texturally immature - possibly tuffaceous in part. Contains thin bands of greenish-grey strong silicification with irregular and diffuse contacts. Lower contact 35°	Trace pyrrhotite associated with thin quartz veins		
779.55	781.9	Greenish grey strongly silicified wacke as per 774.55-776.7. Lower contact diffuse & irregular.			
781.9	785.1	Dominantly grey-brown massive f-mg and m-cg ?tuffaceous Lithic Wacke with patches of grey strongly silicified wacke as per 774.55-776.7.			
		783.3-783.8 Dominantly strongly silicified wacke.			
		Lower contact irregular brecciated.			
785.1	785.9	Strong Alteration Zone. Creamy grey/green mottled. Silica alteration ranges from strong silicification of the groundmass up to quartz veins. Remainder of rock is tremolite-chlorite-carbonate + ?fg tourmaline. Lower contact diffuse through a zone of silicification	2% Pyrrhotite in irregular blebs		
785.9	792.95	Dominantly grey-brown massive biotite hornfelsed Quartz-Lithic wackes. These range in grainsize from fg to cg. The cg units are texturally immature and in places approach a matrix supported granule conglomerate in texture; possibly tuffaceous in origin. The section contains units of grey-green strongly silicified wacke as per 774.55-776.7 with generally diffuse contacts.			
		785.9-787.6 Mainly brown cg ?tuffaceous wacke.			
		787.6-788 Grey-green strongly silicified wacke			
		787.65-787.7 Tremolite-chlorite-pyrrhotite-(chalcopyrite) vein @ 90°	Sulphides 10% of vein		
		788-789.25 Brown cg wacke grading downwards to m-cg wacke.			
		789.25-790.1 Green-grey strongly silicified wacke	1% Pyrrhotite in stringers		

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

DIAMOND DRILL CORE RECORD

HOLE No. MD DDH CB 1
SHEET No. 15

DEPTH From	DEPTH To	ROCK DESCRIPTION	MINERALISATION	CORE REC'D Run	CORE REC'D Short
		790.1-790.5 Brown m-cg quartz-lithic wacke 790.5-790.8 Strong silicification around a 70mm thick quartz-tremolite-chlorite-pyrrhotite vein at 90° 790.8-792.6 Brown m-cg quartz-lithic wacke grading down to fg wacke and back to mg wacke at the base. 792.6-792.8 Very strong silicification 792.8-792.95 Brown m-cg Quartz-Lithic wacke Lower contact diffuse	Pyrrhotite 5% of vein		
792.95	797.65	Greenish grey massive strongly silicified mg Quartz Wacke. Rare thin veinlets of chlorite-tremolite, sometimes with pyrrhotite 797.4-797.65 V fg siliceous section; has appearance of chert but may be a silicified siltstone or mudstone. Lower contact diffuse	Pyrrhotite less than 1% of unit		
797.6	802.0	Mixture of brown biotite hornfelsed mg quartz lithic wacke and grey strongly silicified quartz-wacke. Brown wacke decreases in grainsize downhole. 797.65-799.4 Mainly brown wacke 799.4-800.3 Mainly grey silicified wacke Lower contact gradational			
802.0	808.1	Brown biotite hornfelsed, thinly interbedded, Siltstone and f-mg Wacke. Bedding is sub-parallel to 20° and shows soft-sediment slumping and microfaulting. Very equivocal grading suggests up-hole facing. 804.5-804.7 Breccia with ragged vein-like patches of biotite+quartz+minor carbonate and chlorite and rare pyrrhotite blebs. 804.7-808.1 Massive section with very little bedding trace and rare irregular bands of silicification Lower contact gradational	Pyrrhotite less than 1% in rare quartz-pyrrhotite veinlets.		
808.1	813.5	Pale greenish grey massive silicified mg quartz lithic wacke. Irregular thin veinlets of tremolite-chlorite 809.1-809.95 Pale brown biotite rich zone Lower contact 25°	1% Pyrrhotite in thin stringers mostly associated with the tremolite-chlorite veinlets		
813.5	856.25	Dominantly pale brown grey massive biotite hornfelsed and silicified sediments ranging in grainsize from siltstone to m-cg wacke. Thin bands of grey intense silicification, often associated with streaky veinlets of chlorite-tremolite, occur throughout with irregular distribution. 818.2-820.3 Increased patchy silicification and chlorite-tremolite veins give a weak breccia texture. 822.45 Contact between mg wacke and siltstone with very weak scour and fill texture, suggests up-hole facing. 822.45-823.6 Weak slumped bedding at 10-15° 825.95-835.0 Increased frequency of silicification±chlorite-tremolite zones to approx 10% of rock. 832.4-835.6 Dominantly a m-cg texturally immature, quartz-lithic wacke - probably tuffaceous 842.15-843.75 Dominantly m-cg wacke as above. 850.8-851.15 3mm thick sub-parallel vein of quartz-pyrrhotite-tourmaline-(carbonate)-(chalcopyrite) 854.4-855.5 Thin bands of pale grey silicified wacke Lower contact irregular about 35°	Pyrrhotite + very rare chalcopyrite in total are less than 1% but locally up to 5% as stringers associated with the silicification zones and the tremolite-chlorite veinlets		

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

DIAMOND DRILL CORE RECORD

HOLE No. MD DDH CB1
SHEET No. 16

DEPTH From	DEPTH To	ROCK DESCRIPTION	MINERALISATION	CORE REC'D Run	CORE REC'D Short
856.25	857.0	Grey-green strongly amphibolitised f-mg quartz wacke. Very weak banding, possibly bedding @ 25°. Lower contact irregular.	2% Pyrrhotite + trace chalcopyrite in irregular blebs		
857.0	858.45	Grey-green porphyritic fg strongly altered ?Quartz Diorite Intrusive. Lower contact irregular			
858.45	860.4	Dominantly grey-green strongly silicified f-mg quartz lithic wacke with thin (1 to 2mm) chloritic veinlets and quartz veinlets. 859.35-859.8 Brown biotite rich section. Upper contact sharp 50°. Lower gradational Lower contact 25°			
860.4	861.55	Grey-green, brown and white porphyritic strongly altered intrusive. The center of the unit looks like an altered gabbroic rock with a weakly brecciated fabric of amphibole rich areas and weakly biotite altered areas, and coarse leucoxene grains. The margins of the unit are strongly quartz porphyritic and look more like an altered quartz diorite. The groundmass is rich in amphibole. Lower contact 25°			
861.55	867.65	Mixture of grey-green strongly silicified f-mg quartz-lithic wacke and brown biotite hornfelsed and silicified f-mg lithic wacke. thin chloritic veinlets, thin quartz veins, and bands of intense silicification occur mainly in the silicified grey wacke. 861.55-865.05 About 50% is grey silicified wacke. 865.05-867.65 Almost entirely grey silicified wacke Lower contact gradational			
867.65	878.0	Brown fg and mg biotite hornfelsed lithic wacke; poorly developed slump brecciated bedding occurs in places at about 10-20°. Rare thin quartz veinlets, and patches of grey-green silicification and tremolite alteration occur irregularly throughout. Lower contact gradational.	Pyrrhotite, variable, about 2% overall, in patchy fg disseminations, stringers and in quartz-pyrrhotite-tourmaline veins		
878.0	881.1	Green-grey brecciated strongly silicified hornfelsed wacke. Thin anastomosing quartz veinlets occur in patches associated with the most intensely silicified sections.	1% Pyrrhotite in stringers.		
881.1	884.95	Brown f-mg biotite hornfelsed lithic wacke with patches of thin quartz veining. Lower contact gradational.	2% Pyrrhotite mainly as stringers associated with quartz veins.		
884.95	886.1	Brown biotite hornfelsed, matrix supported cg tuffaceous lithic wacke. Texturally immature Coarse volcanic liths are scattered irregularly throughout a f-mg wacke matrix. Some coarse liths show tremolite alteration. Rare thin quartz veins. Lower contact sharp 30°	1% Pyrrhotite in stringers		
886.1	888.45	Pale grey to white, black speckled tourmaline-biotite microgranite. Tourmaline is disseminated and concentrated in thin (1-2mm) bands mainly at 50°. Lower contact irregular about 15°			
888.45	892.15	Brown unit as per 884.95-886.1 888.45-889.7 Patchy grey green silicified and tremolite-chlorite altered zones. Lower contact gradational	2% Pyrrhotite as stringers and in quartz-pyrrhotite-tourmaline veins.		
892.15	893.8	Grey-green silicified and weakly tremolite altered quartz-lithic wacke. Vague slump textures in places. Rare veins of tremolite-chlorite alteration. Lower contact sharp 40°.	Less than 1% sulphides in thin stringers.		
893.8	895.8	Tourmaline Microgranite as per 886.1-888.45. Very quartz-rich on the upper contact which has a selvidge from 1 to 8mm thick of 35% fg disseminated pyrrhotite. Lower contact sharp 55°			

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

DIAMOND DRILL CORE RECORD

HOLE No. MD DDH CB 1
SHEET No. 17

DEPTH From	DEPTH To	ROCK DESCRIPTION	MINERALISATION	CORE REC'D Run	CORE REC'D Short
895.8	896.9	Brown biotite hornfelsed vaguely slump brecciated cg Lithic Wacke. Thin veinlets of chlorite-tremolite. Lower contact 35°			
896.9	973.15	Hornfelsed sediments dominantly grey-green ?hornblende hornfelsed quartz-lithic wackes of variable grainsize from fg to mg. Mostly massive irregular patches and bands of brown biotite-rich hornfels. Zones with scattered chlorite-tremolite veins. 897.55 70mm thick vein of microgranite. Upper contact 35°, Lower irregular 40° 898-899.1 Irregular patches of brown biotite hornfels 900.8-901.7 Breccia texture marked by brown biotite rich patches in a grey-green matrix 905.7-906.1 Breccia zone 906.4-910.7 Streaky brown biotite rich patches 907.5-913.4 Increased veinlets of tremolite-chlorite 917-920.5 Pale brownish semi-pervasive biotite throughout. Very massive hornfels 926.5-927.8 Strongly silicified breccia zone 929.1-929.5 10mm thick vein of tremolite-chlorite @ 5° 929.5-930.9 patchy biotite development 934.7-935.6 A 3mm to 5mm thick vein of quartz-tourmaline-(carbonate-pyrrhotite-pyrite-chalcopyrite) sub-parallel with a biotite rich halo. 937.1-937.5 Broken zone round a 5mm thick quartz-tourmaline-pyrrhotite-(chalcopyrite) vein at 15° with a strong biotite halo 938.7-939.1 Amphibole rich zone with whispy and ragged relict sedimentary ?lithic clasts. 940.1-941.2 Irregular patches of strongly silicified breccia 941.5-943.1 Coarser grained tuffaceous wacke or lithic tuff. Liths up to 1.5mm are rather ragged in shape. Some have typical shard shapes 944.1-944.75 Sub-parallel irregular chlorite-tremolite veins 945.4-946.2 Biotite rich zone with very thin quartz-carbonate veinlets 949.9-952.0 Biotite rich zone of m-cg tuffaceous wacke 952-952.8 Relict slumped and microfaulted at 10° 955.25-962.4 Irregular patches of strongly silicified breccia. 966.85-969.1 Biotite rich section. 972.5-972.7 Quartz-tourmaline-(pyrrhotite-chalcopyrite) vein @ 25° with sharp contacts and biotite rich selvedges	Sulphides rare much less than 1% in isolated stringers (934.7-935.6) Sulphides 5% of vein 1% of interval (972.5-972.7) Sulphides 2%		
973.15	974.1	Black and white mottled quartz-tourmaline rich microgranite. Upper contact sharp 25°. Lower contact sharp 35°	Small veinlets and disseminations of pyrrhotite and minor chalcopyrite and pyrite occur on the upper contact. Fg pyrite is disseminated throughout. Total sulphides less than 1%		
974.1	1026.1	Pale greenish grey massive hornblende hornfelsed quartz-lithic wackes. Mainly mg and m-cg. Some of the m-cg units have vaguely tuffaceous texture. Where preserved, sedimentary textures are mainly slump brecciation and microfaulting. Occasional white to pale pinkish thin (~10mm) very fg cherty quartzite bands occur. This lithology occurs more frequently as fractured clasts in zones of ?sedimentary breccia. Thin (0.5-2mm) chloritic veinlets are common throughout. 976.2-976.9 Bedding @ 20°. CRoss-bedding indicates uphole is up sequence. 979.25-979.9 Strongly contorted plastic slump structures 983.75 Bedding @ 25° 988.9 3mm thick vein of tourmaline+quartz+minor pyrrhotite @ 30° 992.15-993.1 Breccia with broken ?slump clasts of fg white cherty quartzite. 995.75-996.4 Breccia as above 1002.7-1003.55 Breccia as above with some large clasts of white quartzite showing sedimentary bedding.			

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

DIAMOND DRILL CORE RECORD

HOLE No. MD DDH CB 1
SHEET No. 18

DEPTH From	DEPTH To	ROCK DESCRIPTION	MINERALISATION	CORE REC'D Run	CORE REC'D Short
		1003.55-1005.6 Irregular thin bands of brecciated quartzite. 1005.6-1006.4 Breccia as per 992.15-993.1 1008.3-1009.7 Rare thin bands of quartzite @ 25° 1010.2-1010.45 Quartz-tourmaline-feldspar 'Aplite' vein @ 25°. Contacts sharp 1010.7-1011.0 Quartzite-clast breccia zone 1011.9-1012.35 Quartz-tourmaline feldspar Aplite vein. Contacts sharp: Upper 65°, Lower 30° 1014.35-1014.5 " " " " " " @ 35° 1015.45-1015.5 " " " " " " @ 40° 1015.85-1017.0 Quartzite-clast breccia zone 1017-1019.7 Irregular patches of quartzite-clast breccia Lower contact sharp 65°	2% Pyrrhotite in coarse blebs		
1026.1	1032.1	Tourmaline Microgranite. Quartz and feldspar in approximately equal amounts, with grainsize 1-2mm display a graphic intergrowth texture. Tourmaline about 5% occurs in orbicular quartz-tourmaline segregations from 10mm to 20mm across. Lower contact sharp 65°			
1032.1	1033.7	Grey massive hornblende hornfelsed quartz wacke			
1033.7	1034.0	Contact Zone. Breccia with clasts of cream silicified rock passes into a cream coloured zone of fg quartz and silicified hornfelsed clay. Contact 75°			
1034.0	1063.75	Grey feldspar porphyritic tourmaline rich granite. Feldspar phenocrysts up to 20mm across 1034.5-1034.9 Blackish very tourmline-rich section END OF HOLE 1,063.75m (at last)	2% cg blebby pyrite and ?stannite		

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

DIAMOND DRILL CORE GEOCHEMICAL ANALYSES RECORD

HOLE No. MD DDH CB1
SHEET No. 1

GRID CO-ORDS:
A.M.G. CO-ORDS: 5,371,700N 374,952E
COLLAR R.L.: 477.3m
COLLAR DIP: -90°
AZIMUTH: -
TOTAL DEPTH: 1,063.75m

	Cu	Pb	Zn	Ag	As	Sn	W	Fe%	Mn	Cr	Ni
LABORATORY	A N A L A B S										
ANALYTICAL TECHNIQUE	108 AAS	108 AAS	108 AAS	108 AAS	114 AAS	401 XRF	401 XRF	108 AAS	108 AAS	108 AAS	108 AAS
DETECTION LIMIT	5	5	5	0.5	1	3	10	50	5	5	5

METAL CONTENT (ppm unless specified)

Sample No.	Sample Type	From	To	Core Rec'd %	Sample Length	Cu	Pb	Zn	Ag	As	Sn	W	Fe%	Mn	Cr	Ni	COMMENTS
65401	Grind	0	6.0m	80	6.0	170	20	175	X	7	15	25	6.70	675	185	125	
02	"	6.0	11.4	100	5.4	135	10	130	1.0	21	10	15	6.50	760	165	115	
03	"	11.4	15.0	"	3.6	95	10	135	0.5	38	9	X	6.90	830	175	120	
04	"	15.0	18.3	"	3.3	85	10	135	0.5	30	5	X	6.40	715	150	110	
05	"	18.3	24.3	"	6.0	100	15	140	0.5	28	10	X	6.65	745	180	125	
06	"	24.3	30.0	"	5.7	470	15	155	1.0	74	35	X	7.25	1000	180	140	
07	"	30.0	35.0	"	5.0	475	10	155	0.5	420	20	X	6.95	960	175	120	
08	"	35.0	40.0	"	5.0	470	25	170	1.0	880	20	X	6.75	915	135	110	
09	"	40.0	45.0	"	5.0	140	10	130	0.5	93	15	X	6.35	955	135	105	
65410	"	45.0	50.0	"	5.0	150	15	135	0.5	26	10	X	6.55	1400	115	110	
11	"	50.0	54.3	"	4.3	165	15	105	0.5	40	15	X	6.40	1500	120	95	
12	"	54.3	59.3	"	5.0	55	10	100	0.5	25	20	X	5.45	1250	80	100	
13	"	59.3	64.3	"	5.0	445	20	75	X	17	20	15	4.65	630	70	95	
14	"	64.3	69.0	"	4.7	340	15	80	1.0	19	15	X	4.80	700	65	90	
15	"	69.0	74.0	"	5.0	270	10	75	0.5	100	10	X	5.40	615	65	95	
16	"	74.0	78.5	"	4.5	1350	10	105	0.5	46	15	10	5.95	715	65	120	
17	"	78.5	83.5	"	5.0	1750	20	140	1.0	1.30%	15	400	6.25	1150	110	120	
18	"	83.5	88.6	"	5.1	350	10	90	0.5	350	20	X	5.25	665	70	100	
19	"	88.6	92.2	"	3.6	695	45	210	1.0	290	45	X	5.95	1550	75	120	
65420	"	92.2	94.2	"	2.0	370	25	110	0.5	100	20	X	7.40	750	75	130	
21	"	94.2	98.2	"	4.0	55	10	115	0.5	100	65	X	4.10	715	130	90	
22	"	98.2	103.2	"	5.0	130	20	135	0.5	25	160	X	3.15	2900	45	60	
23	"	103.2	108.2	"	5.0	215	30	60	0.5	29	60	X	3.85	1900	50	65	
24	"	108.2	113.2	"	5.0	170	20	50	X	15	30	10	2.75	1400	35	60	
25	"	113.2	113.8	"	0.6	2700	10	180	1.5	3.00%	25	X	19.50	610	50	95	0.75m @ 0.30% Cu; 2.82% As
26	"	113.8	113.95	"	0.15	4300	5	195	2.0	2.10%	25	170	31.50	110	10	110	
27	"	113.95	114.30	"	0.35	435	15	165	0.5	1000	90	30	8.25	865	105	60	
28	"	114.3	114.85	"	0.55	805	35	210	0.5	450	220	45	8.40	2850	65	50	
29	"	114.85	115.8	"	0.95	3350	10	305	1.5	2.65%	80	15	19.70	950	35	130	
65430	"	115.8	116.3	"	0.50	1200	15	345	X	1600	290	X	10.40	2950	90	40	] 1.45m @ 0.26% Cu 1.79% As
31	"	116.3	119.45	"	3.15	130	15	90	0.5	160	25	X	5.65	515	125	110	
32	"	119.45	122.9	"	3.45	85	40	170	0.5	160	68	15	5.30	1300	85	95	
33	"	122.9	123.95	"	1.05	30	60	270	0.5	390	200	X	4.40	4500	110	95	
34	"	123.95	128.65	"	4.70	45	160	345	0.5	100	95	15	4.80	2300	80	95	
35	"	128.65	133.0	"	4.35	180	20	165	X	95	20	20	5.05	715	75	100	
36	"	133.0	137.0	"	4.00	500	15	125	X	3500	10	25	6.55	730	120	125	
37	"	137.0	141.3	"	4.30	2200	10	170	0.5	2800	10	X	6.70	880	120	115	
38	"	141.3	145.5	"	4.20	4100	10	160	1.5	2.50%	7	X	10.70	760	110	130	] 8.50m @ 0.31% Cu 1.38% As
39	"	145.5	150.1	"	4.60	345	10	100	X	1000	10	X	8.25	830	135	110	
65440	"	150.1	154.0	"	3.90	30	10	125	X	2600	50	20	5.55	645	135	110	
41	"	154.0	157.7	"	3.70	50	15	110	X	100	55	30	4.65	580	165	105	
42	"	157.7	163.3	"	5.60	80	20	90	X	41	20	25	5.85	530	135	110	
43	"	163.3	168.0	"	4.70	140	10	85	X	38	10	X	6.25	530	155	110	
44	"	168.0	173.0	"	5.00	700	10	110	X	2500	8	20	7.15	510	135	125	
45	"	173.0	178.0	"	5.00	170	10	125	X	65	10	X	6.70	570	125	120	

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

DIAMOND DRILL CORE GEOCHEMICAL ANALYSES RECORD

HOLE No. MD DDH CB 1
SHEET No. 2

Sample No.	Sample Type	From	To	Core Rec'd %	Sample Length	Cu	Pb	Zn	Ag	As	Sn	W	Fe%	Mn	Cr	Ni	COMMENTS
						METAL CONTENT (ppm unless specified)											
65446	Grind	178.0	183.0	100	5.0	1400	35	150	0.5	3700	9	X	9.20	675	140	130	
47	"	183.0	185.1	"	2.10	5800	15	210	3.0	1.25%	15	10	12.00	730	140	150	
48	"	185.1	190.8	"	5.70	2300	25	130	0.5	580	15	35	10.20	770	140	160	15.0m @ 0.25% Cu, 0.68% As
49	"	190.8	192.8	"	2.00	1300	15	75	X	1.30%	9	X	12.10	420	75	120	(0.2m @ 1.40% Cu 14.0% As)
65450	"	192.8	193.0	"	0.20	1.40%	10	165	4.0	14.00%	15	X	24.10	45	15	200	
51	"	193.0	195.9	"	2.90	260	25	110	X	720	15	15	9.15	715	100	105	
52	"	195.9	199.9	"	4.00	600	30	90	X	530	30	X	6.25	315	75	105	
53	"	199.9	204.1	"	4.20	490	20	70	X	93	30	20	7.70	420	70	125	
54	"	204.1	209.1	"	5.00	1250	10	100	X	77	25	25	8.75	695	95	120	
55	"	209.1	213.1	"	4.00	680	20	95	X	100	20	10	8.60	700	90	200	
56	"	213.1	217.1	"	4.00	950	20	105	X	1.55%	10	X	8.05	655	90	100	
57	"	217.1	220.6	"	3.50	2000	20	125	0.5	96	30	X	7.00	690	90	115	
58	"	220.6	225.0	"	4.40	220	25	125	X	780	40	30	6.15	575	70	95	
59	"	225.0	230.0	"	5.00	1500	25	130	X	90	35	10	7.15	575	105	125	
65460	"	230.0	234.2	"	4.20	1350	15	90	X	41	25	20	8.40	585	135	155	
61	"	234.2	235.6	"	1.40	820	15	115	X	40	30	10	5.55	390	70	105	
62	"	235.6	240.7	"	5.10	265	25	100	X	93	45	35	5.65	590	160	110	
63	"	240.7	243.25	"	2.55	115	20	85	X	47	65	15	5.15	530	195	115	
64	"	243.25	247.95	"	4.70	1200	25	120	X	41	30	10	7.70	565	135	130	
65	"	247.95	251.20	"	3.25	1100	25	110	X	260	30	40	8.35	585	80	90	] 7.95m @ 0.12% Cu
66	"	251.20	255.55	"	4.35	255	10	70	X	98	15	25	7.10	490	120	120	
67	"	255.55	259.6	"	4.05	6800	5	145	1.5	3900	30	25	15.10	440	105	180	
68	"	259.6	263.85	"	4.25	65	15	65	X	150	25	X	6.10	490	120	110	
69	"	263.85	266.7	"	2.85	1350	5	80	X	88	30	X	9.65	500	110	150	
65470	"	266.7	271.35	"	4.65	180	10	85	X	96	65	10	6.70	855	110	110	
71	"	271.35	274.2	"	2.85	15	15	100	X	150	1150	35	5.60	4750	60	80	
72	"	274.2	279.0	"	4.80	15	40	160	X	78	55	X	5.15	615	75	95	
73	"	279.0	283.5	"	4.50	1900	20	130	X	95	50	X	6.40	520	90	120	
74	"	283.5	287.0	"	3.50	25	10	95	X	70	55	X	5.85	595	75	100	
75	"	287.0	288.45	"	1.45	60	80	145	X	99	140	X	6.30	1900	65	80	
76	"	288.45	292.5	"	4.05	10	10	115	X	750	1200	X	6.20	5200	80	190	
77	"	292.5	296.5	"	4.00	20	20	155	X	430	1550	20	10.80	7300	65	90	
78	"	296.5	300.55	"	4.05	15	10	120	X	170	1450	X	4.95	6650	90	90	
79	"	300.55	302.6	"	2.05	25	10	160	X	97	340	20	6.55	2550	130	125	
67480	"	302.6	306.0	"	3.50	15	10	130	X	91	140	X	5.05	1300	130	115	
81	"	306.0	310.0	"	4.00	15	10	145	0.5	99	1250	15	6.30	7000	120	120	
82	"	310.0	314.0	"	4.00	15	15	135	X	340	1200	X	4.45	7000	95	115	
83	"	314.0	318.5	"	4.50	10	15	110	0.5	100	1100	X	4.40	5800	105	90	
84	"	318.5	321.5	"	3.00	45	15	90	X	100	170	30	3.45	1300	90	90	
85	"	321.5	324.55	"	3.05	60	10	150	0.5	97	70	X	5.85	790	125	125	
86	"	324.55	328.4	"	3.85	100	20	150	X	95	120	25	5.60	695	95	125	
87	"	328.4	332.5	"	4.10	15	10	95	X	100	1650	10	4.20	5100	80	95	
88	"	332.5	337.5	"	5.00	20	10	115	0.5	340	1050	X	3.90	6600	45	115	
89	"	337.5	341.55	"	4.05	960	10	90	X	300	250	X	19.50	2300	30	175	
65490	"	341.55	345.45	"	3.90	20	15	175	X	98	1150	X	3.90	6750	45	70	
91	"	345.45	347.1	"	1.65	105	20	120	X	330	360	X	7.50	2650	70	135	
92	"	347.1	350.7	"	3.60	40	10	155	X	1000	430	65	4.30	7250	70	105	
93	"	350.7	354.0	"	3.30	30	10	115	X	96	570	60	3.75	5950	50	60	
94	"	354.0	356.4	"	2.40	810	15	90	1.0	53	250	X	3.60	1250	20	40	
95	"	356.4	359.65	"	3.25	30	20	100	X	140	380	X	2.80	5850	45	100	
96	"	359.65	361.00	"	1.35	75	15	125	0.5	130	940	X	3.45	5300	60	150	
97	"	361.00	361.85	"	0.85	2600	25	195	1.0	100	150	X	21.50	855	50	265	] 1.6m @ 0.20% Cu
98	"	361.85	362.6	"	0.75	1400	10	90	0.5	330	130	X	24.00	630	35	225	

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

DIAMOND DRILL CORE GEOCHEMICAL ANALYSES RECORD

HOLE No. MD DDH CB 1
SHEET No. 3

283

Sample No.	Sample Type	From	To	Core Rec'd %	Sample Length	METAL CONTENT (ppm unless specified)											COMMENTS
						Cu	Pb	Zn	Ag	As	Sn	W	Fe%	Mo	Cr	Ni	
65499	Grind	362.6	367.0	100	4.40	60	15	100	X	88	580	75	3.45	4650	40	60	
65500	"	367.0	368.2	"	1.20	1500	20	100	X	150	180	15	20.50	935	55	120	
01	"	368.2	369.05	"	0.85	100	20	110	X	47	290	X	4.55	2750	70	30	
02	"	369.05	370.1	"	1.05	1500	20	130	X	39	280	1100	16.5	1550	50	90	
03	"	370.1	371.45	"	1.35	4000	10	130	0.5	96	110	80	30.0	475	20	65	
04	"	371.45	373.05	"	1.60	2100	15	125	0.5	130	180	450	21.0	855	30	55	
05	"	373.05	375.3	"	2.25	355	20	125	X	100	350	800	7.40	2500	50	35	
06	"	375.3	376.5	"	1.20	3350	15	175	1.0	100	210	190	21.00	840	30	60	
07	"	376.5	377.65	"	1.15	4250	10	155	1.0	17	100	10	27.00	400	20	60	369.0-393.8
08	"	377.65	380.25	"	2.60	6450	15	200	1.5	13	95	630	32.00	315	20	70	24.75m @ 0.45% Cu
09	"	380.25	382.25	"	2.00	4650	15	210	1.0	43	260	170	15.30	1200	35	40	
65510	"	382.25	383.55	"	1.30	1.00%	10	355	3.5	78	150	X	19.70	565	25	75	
11	"	383.55	384.75	"	1.20	5200	10	110	1.0	25	85	540	32.00	310	10	120	
12	"	384.75	387.2	"	2.45	860	10	100	0.5	55	310	100	6.85	2800	25	60	
13	"	387.2	390.45	"	3.25	6350	10	225	2.0	27	180	380	25.70	720	25	65	
14	"	390.45	393.8	"	3.35	7100	5	170	0.5	14	110	380	34.40	425	15	55	
15	"	393.8	396.4	"	2.60	195	5	90	X	43	30	40	6.05	380	75	125	
16	"	396.4	398.85	"	2.45	90	5	75	X	35	25	35	5.65	400	80	115	
17	"	398.85	403.9	"	5.05	4200	20	235	0.5	450	100	50	3.55	1500	100	120	
18	"	403.9	408.9	"	5.00	3150	20	135	X	100	45	30	5.65	490	75	110	18.7m @ 0.30% Cu
19	"	408.9	413.9	"	5.00	1500	10	100	0.5	88	30	25	6.05	500	80	135	
65520	"	413.9	417.55	"	3.65	3200	10	145	X	80	50	50	8.00	495	120	235	
21	"	417.55	420.35	"	2.80	50	X	100	X	93	45	55	6.75	520	130	115	
22	"	420.35	421.9	"	1.55	55	X	75	X	240	55	15	3.30	490	100	85	
23	"	421.9	425.15	"	3.25	95	X	95	X	890	30	45	6.10	450	105	130	
24	"	425.15	428.55	"	3.40	125	X	95	X	250	40	30	7.25	500	105	160	
25	"	428.55	429.70	"	1.15	4150	X	90	X	3500	50	50	14.90	250	70	200	1.15m @ 0.42% Cu 0.35% As
26	"	429.70	433.0	"	3.30	610	X	115	X	150	30	45	7.40	510	90	120	
27	"	433.0	436.2	"	3.20	40	X	100	X	130	35	35	6.40	435	90	115	
28	"	436.2	438.3	"	2.10	360	X	120	X	65	45	35	6.30	455	135	65	
29	"	438.3	441.55	"	3.25	520	X	105	X	970	40	10	6.75	550	2650	970	
65530	"	441.55	446.15	"	4.60	2050	5	130	X	38	45	20	6.95	565	120	38	4.60m @ 0.21% Cu
31	"	446.15	450.85	"	4.70	300	X	120	X	210	35	20	8.25	635	105	210	
32	"	450.85	454.05	"	3.20	1150	10	140	0.5	33	50	65	6.70	645	90	33	
33	"	454.05	457.4	"	3.35	70	10	175	X	96	110	35	4.75	650	95	96	
34	"	457.4	460.0	"	2.60	60	X	120	X	150	80	20	4.95	620	95	150	
35	"	460.0	465.0	"	5.00	30	5	120	X	89	50	20	5.45	600	100	89	
36	"	465.0	470.0	"	5.00	410	10	170	X	130	60	20	6.55	785	125	130	
37	"	470.0	475.0	"	5.00	50	10	155	X	95	85	285	6.80	830	110	95	
38	"	475.0	480.0	"	5.00	1000	5	185	X	3700	120	85	7.2	885	145	3700	
39	"	480.0	485.0	"	5.00	1150	5	195	X	400	110	100	6.95	940	145	400	] 10.0m @ 0.11% Cu 0.21% As
65540	"	485.0	490.0	"	5.00	50	X	145	X	90	100	35	6.90	850	120	90	
41	"	490.0	495.0	"	5.00	80	X	130	X	140	100	60	7.55	820	100	140	
42	"	495.0	500.2	"	5.20	3900	5	200	1.0	100	90	45	8.35	675	105	100	
43	"	500.2	504.05	"	3.85	6850	10	255	2.0	98	90	30	8.55	660	170	98	16.55m @ 0.33% Cu
44	"	504.05	507.95	"	3.90	315	5	120	X	68	65	20	8.35	600	145	68	
45	"	507.95	511.55	"	3.60	2000	5	190	0.5	56	90	35	10.90	640	160	56	
46	"	511.55	516.05	"	4.50	50	5	120	X	42	150	70	6.95	855	55	42	
47	"	516.05	519.55	"	3.50	260	10	130	X	140	280	5750	7.25	1450	70	140	
48	"	519.55	522.85	"	3.30	270	5	135	X	210	70	190	6.25	565	85	210	
49	"	522.85	527.2	"	4.35	350	10	120	X	69	45	70	7.65	615	75	69	
65550	"	527.2	531.2	"	4.00	410	20	130	X	540	210	100	6.50	1200	125	540	

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

DIAMOND DRILL CORE GEOCHEMICAL ANALYSES RECORD

HOLE No. MD DDH CB 1
SHEET No. 4

Sample No.	Sample Type	From	To	Core Rec'd %	Sample Length	METAL CONTENT (ppm unless specified)											COMMENTS
						Cu	Pb	Zn	Ag	As	Sn	W	Fe%	Mn	Cr	Ni	
65551	Grind	531.2	535.6	100	4.40	1700	20	190	0.5	840	300	440	11.80	1600	45	85	
52	"	535.6	536.5	"	0.90	500	25	150	X	68	50	X	10.50	750	40	55	8.9m @ 0.25% Cu
53	"	536.5	540.1	"	3.60	3950	15	220	1.0	1500	220	270	12.90	1450	45	90	
54	"	540.1	543.7	"	3.60	625	10	150	X	510	270	1450	10.90	1550	40	95	
55	"	543.7	547.3	"	3.60	850	10	150	X	320	330	1300	14.20	1600	45	85	
56	"	547.3	548.55	"	1.25	890	10	145	X	220	85	20	8.55	575	80	130	
57	"	548.55	550.7	"	2.15	160	20	105	0.5	810	390	25	4.50	1150	45	85	
58	"	550.7	553.7	"	3.00	1850	10	135	X	510	130	690	9.65	700	55	130	
59	"	553.7	557.95	"	4.25	800	10	140	X	270	130	50	7.80	805	60	105	
65560	"	557.95	562.5	"	4.55	430	X	95	X	110	250	10	5.45	865	20	110	
61	"	562.5	567.2	"	4.70	15	10	105	1.0	17	430	110	4.50	2000	30	20	
62	"	567.2	569.3	"	2.10	70	15	75	0.5	17	470	90	5.08	5700	55	45	
63	"	569.3	573.4	"	4.10	120	X	95	1.5	21	460	90	4.95	1900	40	40	
64	"	573.4	576.5	"	3.20	80	5	135	0.5	42	380	X	5.75	3900	65	60	
65	"	576.5	580.1	"	3.60	1050	10	140	X	47	300	X	11.50	1550	50	130	
66	"	580.1	582.2	"	2.10	1350	X	65	X	3	140	X	13.00	350	10	230	
67	"	582.2	587.85	"	5.65	160	X	100	1.5	11	470	120	5.25	1550	25	90	
68	"	587.85	592.55	"	4.70	725	15	145	X	5	560	100	9.40	1600	25	70	
69	"	592.55	597.8	"	5.15	1350	X	120	X	2	240	190	14.00	920	35	145	
65570	"	597.8	601.75	"	3.95	495	X	100	X	8	300	X	11.00	970	25	115	
71	"	601.75	606.25	"	4.50	415	X	155	X	16	240	X	9.70	1600	45	100	
72	"	606.25	610.45	"	4.20	525	X	175	X	300	250	100	9.85	2050	85	90	
73	"	610.45	614.2	"	3.75	100	X	165	X	97	130	80	7.60	1300	80	100	
74	"	614.2	618.7	"	4.50	915	X	155	X	90	230	250	12.00	1950	60	115	
75	"	618.7	623.7	"	5.00	840	10	150	X	16	220	60	10.50	1800	50	90	
76	"	623.7	626.5	"	2.80	895	5	150	X	8	420	80	10.50	2450	60	45	
77	"	626.5	630.5	"	4.00	2750	X	165	X	30	340	80	13.50	1950	25	50	
78	"	630.5	633.25	"	2.75	2500	X	95	X	5	340	50	11.50	3150	20	60	
79	"	633.25	638.95	"	5.70	425	X	190	X	5	410	X	11.00	2500	35	45	
65580	"	638.95	643.4	"	4.45	2800	X	170	X	3	430	X	12.50	1950	15	65	
81	"	643.4	648.0	"	4.60	625	15	185	X	16	400	140	11.00	2550	40	45	
82	"	648.0	653.3	"	5.30	1750	10	165	X	28	190	510	18.00	1600	45	125	
83	"	653.3	657.1	"	3.80	910	15	170	X	9	180	90	12.00	1650	55	135	
84	"	657.1	660.6	"	3.50	3050	X	90	X	18	130	1.224%	13.00	610	15	240	
85	"	660.6	663.35	"	2.75	1850	X	90	X	7	170	0.509%	8.20	940	10	130	10.85m @ 0.29% Cu 0.97% W
86	"	663.35	667.95	"	4.60	3400	X	145	X	7	140	1.058%	15.00	1250	35	170	
87	"	667.95	671.75	"	3.80	1450	X	155	X	5	160	0.272%	11.50	1600	45	135	
88	"	671.75	675.55	"	3.80	745	X	190	X	X	190	70	10.50	1900	50	90	
89	"	675.55	679.25	"	3.70	1750	X	185	X	5	250	150	8.70	2050	40	100	
65590	"	679.25	681.7	"	2.45	3300	X	85	X	1	110	0.538%	12.50	585	15	190	
91	"	681.7	686.0	"	4.30	920	X	145	X	8	200	920	10.50	1650	40	99	
92	"	686.0	690.85	"	4.85	775	X	160	X	8	190	150	11.50	1700	35	60	
93	"	690.85	694.0	"	3.15	1850	X	135	X	30	180	X	13.00	1650	45	65	
94	"	694.0	697.25	"	3.25	3200	X	110	X	21	100	150	10.00	885	30	115	
95	"	697.25	710.6	"	4.35	1400	10	130	X	18	150	X	11.50	1300	40	125	
96	"	710.6	706.7	"	5.10	135	5	160	X	21	70	70	4.90	775	45	115	
97	"	706.7	711.2	"	4.50	105	10	130	1.5	37	100	220	1.25	310	50	50	
98	"	711.2	716.15	"	4.95	70	10	105	X	20	130	170	1.55	560	60	35	
99	"	716.15	720.15	"	4.00	185	15	110	X	11	140	630	3.60	1900	55	75	
65600	"	720.15	725.65	"	5.50	50	5	125	0.5	37	110	90	1.65	450	50	60	
66701	"	725.65	730.25	"	4.60	100	X	95	X	33	X	0.121%	1.85	650	35	80	
02	"	730.25	733.3	"	3.05	1045	X	130	X	3	40	330	7.05	485	30	450	
03	"	733.3	736.25	"	2.95	430	X	115	X	7	80	100	3.45	595	20	150	

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

DIAMOND DRILL CORE GEOCHEMICAL ANALYSES RECORD

HOLE No. MU DDH CB1
SHEET No. 5

285

Sample No.	Sample Type	From	To	Core Rec'd %	Sample Length	Cu	Pb	Zn	Ag	As	Sn	W	Fe%	Mn	Cr	Ni
						METAL CONTENT (ppm unless specified)										
66704	Grind	736.25	740.80	100	4.55	290	35	215	X	93	80	120	5.15	1020	65	155
05	"	740.8	745.0	"	4.20	65	X	185	X	92	70	X	7.20	1350	150	290
06	"	745.0	749.9	84	4.90	65	X	190	X	92	70	70	4.50	1100	150	275
07	"	749.9	755.05	100	5.15	330	10	185	X	170	100	330	3.95	940	50	210
08	"	755.05	760.1	"	5.05	145	X	140	X	7	30	550	4.10	550	30	125
09	"	760.1	765.1	"	5.00	100	5	205	X	8	70	130	4.20	715	35	100
66710	"	756.1	770.05	"	4.95	135	X	120	X	8	40	80	5.25	565	40	185
11	"	770.05	774.55	"	4.50	185	X	210	X	10	40	110	4.10	560	35	195
12	"	774.55	779.55	"	5.00	100	X	110	X	7	80	140	2.80	430	35	85
13	"	779.55	785.1	"	5.55	105	X	165	X	20	80	90	3.05	560	40	100
14	"	785.1	789.25	"	4.15	435	X	150	X	8	60	140	4.25	420	35	160
15	"	789.25	792.95	"	3.70	160	X	175	X	2	70	70	3.00	490	35	95
16	"	792.95	797.65	"	4.70	100	10	1040	X	3	80	220	0.99	220	50	45
17	"	797.65	802.0	"	4.35	165	5	175	X	3	50	240	3.2	470	30	105
18	"	802.0	808.1	"	6.10	85	X	145	X	5	30	80	5.35	565	30	110
19	"	808.1	813.5	"	5.40	125	5	120	0.5	4	100	150	2.25	405	45	70
66720	"	813.5	818.2	"	4.70	150	X	150	X	13	50	60	5.60	570	35	120
21	"	818.2	822.45	"	4.25	225	5	175	X	2	60	60	5.68	810	35	135
22	"	822.45	826.8	"	4.35	65	5	160	X	7	50	90	4.10	660	30	95
23	"	826.8	831.2	"	4.40	175	X	165	0.5	4	60	160	5.00	650	30	130
24	"	831.2	835.6	"	4.40	185	5	150	X	1	50	210	3.60	520	30	100
25	"	835.6	839.6	"	4.00	80	5	160	0.5	3	X	X	4.20	490	30	100
26	"	839.6	843.75	"	4.15	190	X	150	X	X	X	110	5.70	390	35	190
27	"	843.75	848.75	"	5.00	350	15	250	0.5	1	70	500	4.75	450	40	165
28	"	848.75	853.0	"	4.25	250	5	215	1.0	2	50	150	4.65	505	30	130
29	"	853.0	857.0	"	4.00	175	5	185	0.5	2	50	120	4.45	515	30	150
66730	"	857.0	861.55	"	4.55	105	X	175	1.5	12	70	90	2.85	700	35	50
31	"	861.55	865.05	"	3.50	150	10	185	1.0	3	50	320	3.20	550	60	85
32	"	865.05	867.65	"	2.60	95	5	145	0.5	4	70	250	1.45	385	70	60
33	"	867.65	872.8	"	5.15	125	X	175	0.5	X	60	310	4.85	730	55	105
34	"	872.8	878.0	"	5.20	265	5	280	1.0	2	100	590	4.90	1065	50	110
35	"	878.0	881.1	"	3.10	850	5	175	1.5	1	90	730	3.35	1250	60	120
36	"	881.1	886.1	"	5.00	270	5	365	2.0	9	90	440	4.95	1250	45	100
37	"	886.1	888.45	"	2.35	190	95	190	1.0	4	X	330	1.45	255	45	35
38	"	888.45	893.8	"	5.35	275	5	185	1.5	20	70	460	3.65	950	50	110
39	"	893.8	895.8	"	2.00	535	15	540	1.0	1	X	240	0.66	230	65	160
66740	"	895.8	900.8	"	5.00	95	5	150	1.5	20	30	310	3.05	740	45	90
41	"	900.8	905.7	"	4.90	130	70	245	1.0	20	60	70	1.65	440	35	65
42	"	905.7	910.7	"	5.00	65	5	230	0.5	7	60	160	4.25	1040	45	100
43	"	910.7	915.7	"	5.00	70	60	205	0.5	15	70	90	2.10	575	95	90
44	"	915.7	920.5	"	4.80	50	5	230	1.0	3	60	110	2.80	540	70	105
45	"	920.5	925.5	"	5.00	75	50	255	0.5	39	80	90	2.05	545	70	115
46	"	925.5	929.5	"	4.00	60	10	135	0.5	40	80	140	1.60	400	75	70
47	"	929.5	934.7	"	5.20	250	X	180	X	80	90	90	5.42	1200	90	180
48	"	934.7	939.1	"	4.40	145	15	190	X	37	140	180	7.85	1600	120	140
49	"	939.1	944.1	"	5.00	45	15	105	X	26	95	80	2.00	390	120	85
66750	"	944.1	949.9	"	5.80	35	15	125	X	23	85	55	3.05	520	120	110
51	"	949.9	955.25	"	5.35	20	25	145	X	2	55	65	4.15	555	125	140
52	"	955.25	959.9	"	4.65	15	10	130	X	16	95	45	4.45	890	115	115
53	"	959.9	964.5	"	4.60	40	20	145	X	24	120	95	5.00	905	115	100
54	"	964.5	969.1	"	4.60	220	185	500	4.0	9	75	55	5.00	1100	95	140
55	"	969.1	973.15	"	4.05	105	25	145	X	12	60	310	3.45	835	95	100

COMMENTS

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A 18626

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

DIAMOND DRILL CORE GEOCHEMICAL ANALYSES RECORD

HOLE No. MD DDH CB 1
SHEET No. 6

Sample No.	Sample Type	From	To	Core Rec'd %	Sample Length	Cu	Pb	Zn	Ag	As	Sn	W	Fe%	Mn	Cr	Ni				COMMENTS
66756	Grind	973.15	974.10	"	0.95	515	140	445	X	2	50	0.16%	1.85	900	110	135				
57	"	974.10	979.25	"	5.15	35	10	95	X	52	45	110	1.80	675	85	95				
58	"	979.25	984.0	"	4.75	30	10	65	X	71	65	100	1.00	200	50	100				
59	"	984.0	988.9	"	4.90	20	10	45	X	76	50	70	1.00	215	50	90				
66760	"	988.9	993.1	"	4.20	35	10	65	X	22	60	95	1.25	275	50	55				
61	"	993.1	998.0	"	4.90	20	X	50	X	25	60	90	0.56	130	40	45				
62	"	988.0	1002.7	"	4.70	25	10	85	X	5	75	90	2.15	415	70	70				
63	"	1002.7	1006.4	"	3.70	30	25	170	X	42	65	100	0.61	150	45	60				
64	"	1006.4	1010.2	"	3.80	20	10	65	X	76	50	100	7.70	230	45	100				
65	"	1010.2	1015.5	"	5.30	65	5	100	X	14	75	310	0.94	205	45	55				
66	"	1015.5	1021.0	"	5.50	20	5	45	X	54	70	100	0.55	130	35	60				
67	"	1021.0	1026.1	"	5.10	20	5	60	X	15	70	95	0.83	175	50	40				
68	"	1026.1	1032.1	"	6.00	245	95	345	X	8	40	0.10%	0.56	215	25	75				
69	"	1032.1	1034.0	"	1.90	20	10	65	X	1	80	120	2.45	845	50	80				
66770	"	1034.0	1044.0	"	10.00	295	25	255	X	10	40	900	1.40	450	25	90				
71	"	1044.0	1054.0	"	10.00	285	35	220	X	100	45	900	1.50	425	45	75				
72	"	1054.0	1063.75	"	9.75	205	15	185	X	13	30	700	1.50	425	35	55				

METAL CONTENT (ppm unless specified)

END OF HOLE 1063.75 metres.

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APPENDIX 3

DDH CB 1 Sample Data Sheets for Department of Mines Split Core Sampling.

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

DIAMOND DRILL CORE GEOCHEMICAL ANALYSES RECORD

HOLE No. M.D DDH CB1
SHEET No. 1.A.

Sampling by P. Collins Dept. of Mines Hobart.
Analyses by Dept of Mines laboratory Launceston
Split Core samples from main sulphide intersection.

Sample No.	Sample Type	From	To	Core Rec'd	Sample Length	DENSITY T/m³	Cu	Pb	Zn	Ag	Au	Sn	W	As	Mo	Bi	Co	Ni	Cr
							METAL CONTENT (ppm unless specified)												
0359	SPLIT	359.65	360.70	100%	1.05	3.1	47	19	149	<6		1000	<15	150	<4	29	19	150	220
360	"		361.93		1.13	3.3	1800	50	190	7		185	<15	250	<4	1700	140	180	210
61	"		362.60		0.77	3.4	1300	24	160	11		300	135	670	4	210	185	105	145
62	"		363.70		1.10	3.1	26	40	170	9		700	<15	350	<4	410	49	56	200
63	"		365.00		1.30	3.1	16	21	140	<6		450	16	76	<4	17	18	66	175
64	"		366.20		1.20	3.2	23	15	145	<6		350	410	70	<4	18	14	38	170
65	"		366.95		0.75	3.2	94	18	155	6		260	70	460	<4	<12	64	350	95
66	"		368.20		1.25	3.5	2370	23	155	8		190	15	320	5	32	130	77	130
67	"		369.05		0.85	3.2	94	21	135	10		290	97	150	<4	<12	34	16	150
68	"		370.00		0.95	3.5	1400	21	155	6		310	1.03%	220	10	28	67	28	99
69	"		371.00		1.00	3.8	0.64%	<8	290	36	<0.05	175	630	190	4	340	240	14	105
0370	"		372.00		1.00	3.6	2900	27	170	11		210	420	130	<4	910	150	20	99
71	"		373.05		1.05	3.5	2900	24	195	13		210	730	350	5	190	125	26	95
72	"		374.25		1.20	3.2	250	29	130	7		280	150	85	<4	18	34	32	120
73	"		375.35		1.10	3.2	89	23	130	8		280	18	55	<4	57	21	38	72
74	"		376.35		1.00	3.5	0.42%	28	210	<6		195	520	71	12	270	125	20	78
75	"		377.35		1.00	3.7	0.77%	13	340	41	<0.05	170	520	69	9	220	230	13	68
76	"		378.35		1.00	3.6	0.96%	14	310	19		160	590	35	5	67	210	16	89
77	"		379.35		1.00	3.8	1.54%	19	560	33	<0.05	175	1050	73	10	<12	330	18	90
78	"		380.25		0.90	3.8	1.51%	<8	580	26	<0.05	210	<11	60	9	<12	290	28	96
79	"		381.15		0.90	3.3	0.22%	20	180	8		280	110	50	4	<12	53	<6	93
550380	"		382.35		1.20	3.4	0.75%	12	330	14		200	<15	100	9	22	160	17	135
81	"		383.55		1.20	3.5	0.86%	13	360	16		170	<15	240	7	15	210	41	99
82	"		384.75		1.20	4.0	0.74%	18	260	29	<0.05	100	570	120	10	<12	350	84	83
83	"		385.75		1.00	3.2	510	17	135	<6		230	19	66	30	120	31	<5	105
84	"		386.75		1.00	3.2	350	18	140	8		320	26	21	8	13	17	<5	84
85	"		387.60		0.85	3.2	3100	21	280	6		320	<15	250	9	24	64	11	87
86	"		388.75		1.15	3.8	1.02%	14	380	27	<0.05	220	990	98	4	<12	280	31	81
87	"		390.00		1.25	3.6	0.51%	23	200	13		240	250	54	7	<12	210	13	105
88	"		391.00		1.00	3.7	1.21%	8	410	27	<0.05	250	770	87	9	<12	300	5	76
89	"		392.00		1.00	3.9	1.38%	18	360	33	<0.05	190	210	65	12	34	410	<5	56
390	"		393.00		1.00	4.0	1.72%	19	410	29	0.08	160	3800	140	15	110	510	<5	52
0391	"		393.75		0.75	3.9	1.22%	29	370	33	<0.05	200	810	84	7	1200	410	<5	65

Sample No.	Ti %	V	Cd	Ga	Sb	S %	Ta	Nb	Na	Rb	Sr	Y	Sc	Ce	U	Th	La	In	Se
	METAL CONTENT (ppm unless specified)																		
0359	1.44	230	<6	14	<6	0.04	<30	22	740	6	32	35	18	58	9	<8	33	35	<6
360	1.30	240	<6	23	<6	9.60	<30	22	4000	105	140	29	24	57	<8	<8	41	12	<6
61	1.11	195	<6	17	<6	7.00	<30	15	2700	110	54	27	19	33	<8	<9	21	15	<6
62	1.27	230	<6	19	<6	0.08	<30	22	1600	25	66	35	22	45	<8	<8	32	29	<6
63	1.13	220	<6	24	<6	0.02	<30	18	2300	21	130	30	19	29	<8	<8	20	16	<6
64	0.82	150	<6	13	<6	0.03	<30	15	520	6	35	28	13	50	<8	<8	34	13	<6
65	0.50	105	<6	16	<6	0.41	<30	10	1500	7	28	16	<10	36	<8	<8	19	14	<6
66	1.02	170	<6	13	<6	10.00	<30	17	2100	160	45	18	12	20	9	<8	<9	11	<6
67	1.24	210	<6	12	<6	0.35	<30	18	2600	170	83	27	15	29	<8	<8	12	11	<6
68	1.09	185	<6	14	<6	6.70	32	14	2300	94	42	28	15	87	<8	<8	<9	13	30
69	0.70	125	<6	<10	<6	18.60	<30	12	2000	31	26	19	19	6	5	<8	<9	16	11
0370	0.98	175	<6	14	<6	10.90	<30	11	2700	57	28	20	12	14	<8	<8	<9	17	<6
71	0.90	155	<6	14	<6	6.10	<30	16	3500	100	43	26	16	32	<8	<8	13	<10	<6
72	1.40	230	<6	23	<6	0.55	<30	31	3900	220	80	32	19	39	<8	<8	23	11	<6
73	0.80	125	<6	16	<6	0.02	<30	44	2700	240	120	38	<10	62	11	<8	33	12	<6
74	0.94	120	<6	<10	<6	9.10	<30	18	3400	190	85	20	15	41	<8	<8	20	14	<6
75	0.72	135	<6	10	<6	13.70	<30	10	3000	50	36	19	10	10	<8	<8	10	17	<6
76	0.77	135	<6	10	<6	12.90	<30	16	4000	86	59	18	17	9	11	<8	<9	18	6
77	0.77	125	<6	16	<6	19.60	<30	10	3100	47	34	19	11	<6	9	<8	<9	32	6
78	0.82	140	<6	13	<6	18.40	<30	13	3000	47	42	19	17	<6	9	<8	<9	27	11
79	1.02	175	<6	21	<6	2.10	<30	40	5000	185	145	35	17	48	11	9	27	10	<6
550380	0.83	150	<6	20	<6	8.10	<30	21	3900	130	100	28	16	53	5	<8	20	14	<6
81	0.82	135	<6	11	<6	11.20	<30	27	2400	110	79	27	12	36	8	<8	15	18	<6
82	0.79	145	<6	13	7	25.40	<30	10	1000	14	77	19	14	<6	11	<8	<9	19	15
83	0.86	155	<6	14	<6	0.91	<30	23	1800	24	62	30	10	52	<8	<8	27	13	<6
84	0.93	155	<6	22	<6	0.05	<30	35	3300	270	135	36	13	69	12	<8	35	11	<6
85	0.68	105	<6	15	<6	1.45	<30	46	3200	210	79	29	<10	80	11	<8	43	18	<6
86	0.90	155	<6	12	<6	16.20	<30	18	2300	18	18	22	18	13	13	<8	<9	15	11
87	0.94	165	<6	<10	<6	14.10	<30	15	3000	69	28	23	21	28	<8	<8	16	10	<6
88	0.97	195	<6	<10	<6	17.50	<30	12	2400	16	15	24	20	<6	6	<8	<9	21	9
89	0.75	140	<6	14	7	23.10	<30	12	1850	18	14	16	15	8	<8	<8	<9	22	8
390	0.68	120	<6	<10	<6	24.40	<30	7	1550	16	21	15	16	9	10	<8	<9	18	18
0391	0.70	130	<6	<10	<6	22.10	<30	8	2200	28	32	14	19	10	<5	<8	<9	20	14

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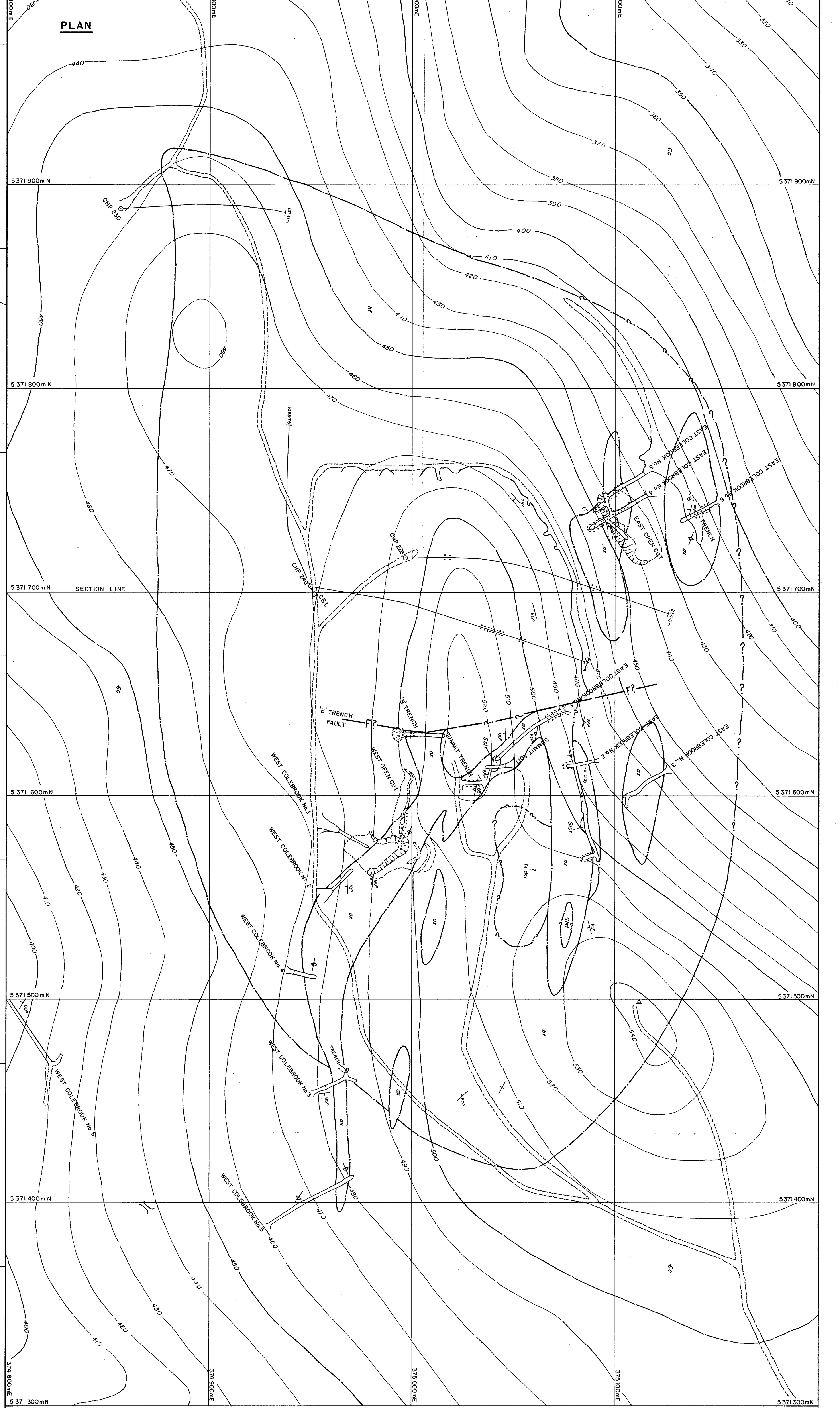

LEGEND

- D.D.H. Collar surveyed
- Strike and dip of bedding
- Strike and dip of banding in skarn

Md	Dolerite
iM	Minor Mafic Intrusive (Gabbro)
Us	Serpentinized Ultramafic Intrusive
ax	>10% Sulphide Axinite-actinolite skarn or hornfels with axinite
Slst	Impure Limestone
hf	Hornfelsed siltstone and ! wacke
€c	Interbedded tuffaceous siltstone and volcanic wacke

062302

5 cm

SCALE

0 20 40 60 80 100

metres

EZ

ELECTROLYTIC ZINC COMPANY OF AUSTRALASIA LIMITED
MINERAL RESOURCES DIVISION

PROJECT: E.L. 1/62 MT. BLACK TAS.

COLEBROOK HILL

D.D.H. CB 1

Compiled : I. Mc D.	Date : 7-12-'85	Scale : 1:1000
Drawn : R.J.R.	Reference : A0-504-0265	
		Plan No.: A0-504-0349

85-2516C