041001

92-3406

MINES
FILE REF.
14 DEC 1992
DOC. REF.

OFFICER	FOR ACTION	FOR INFO.
see folio 15 for covering letter		

RECUBMIT TO | DATE

PASMINCO EXPLORATION

BURNIE PEAK EL 44/88
ANNUAL REPORT

NOVEMBER 1991 – OCTOBER 1992

volume 1 of 2

OPEN FILE

MICROFILMED
FICHE No. 012666-77

AUTHOR: LW Kirsner

DATE: December 1992

REPORT No.: T92 – 15

SUBMITTED TO: Regional Exploration Manager – Tasmania

DISTRIBUTION:

Pasminco Exploration	– Burnie – Hawthorn – Rosebery
Mines Department Tasmania	– Hobart
Noranda Pty Limited	– Toronto
Plutonic Resources Limited	– Sydney – Deloraine

SUBMITTED BY: L. Kirsner

ACCEPTED BY:

Burnie
December 1992

041002

CONTENTS

		Page No.
1.	Summary	1
2.	Introduction	3
3.	Tenure	4
4.	Regional Geology	5
5.	Previous Exploration	6
6.	Results Exploration Programme - November 1991 to October 1992	9
	6.1 Drill Hole BPD73	9
	6.2 Drill Hole BPD74	10
	6.3 Hollway & Summit Prospects	12
	6.3.1 Project Summary	12
	6.3.2 Drill Hole BPD75 - Hollway	12
	6.3.3 Drill Hole BPD76 - Summit	15
	6.4 Drill Hole EM	21
	6.5 Gravity and Aeromagnetics	21
	6.6 Petrography, thin sections and lithogeochemistry	23
	6.7 Pinnacles Data Review	24
	6.8 Computerisation of Data	26
	6.9 Rehabilitation and Environmental Disturbance	27
7.	Conclusions & Recommendations	28
8.	References	30
Keywords & Locality		31

LIST OF FIGURES

		Scale	Location
1.	Location Map	1:500 000	text
2.	Land Tenure	1:50 000	text
3.	Regional Geology	N.T.S.	text
4.	Work Program Completed	1:50 000	text
5.	Outcrop Geology – Sheet 5A	1:5 000	pocket
6.	Outcrop Geology – Sheet 5B	1:5 000	pocket
7.	Interpretive Geology – Sheet 5A	1:5 000	pocket
8.	Interpretive Geology – Sheet 5B	1:5 000	pocket
9.	Sample Locations – Sheet 5A	1:5 000	pocket
10.	Sample Locations – Sheet 5B	1:5 000	pocket
11.	Interpreted Regional Cross Section	1:25,000	text
12.	Simplified Geology – Burns Peak – Boco Area	1:25,000	text
13.	Sections 1 – 5, Pinnacles Prospect	1:10 000	text
14.	Sections 6 – 9, Pinnacles Prospect	1:10 000	text
15.	Sections 10 – 12, Pinnacles Prospect	1:10 000	text
16.	BPD74 – Summary Section	1:1 000	text
17.	BPD75 – Summary Section	1:1 000	text
18.	BPD76 – Summary Section	1:2 000	text
19.	Drill Section BPD73	1:1 000	pocket
20.	Drill Section BPD74	1:1 000	pocket
21.	Drill Section BPD75	1:1 000	pocket
22.	Drill Section BPD76 & EAB1	1:1 000	pocket
23.	Stratigraphic Columns EAB1, 2, 4; BPD75, 76	N.T.S.	text

APPENDIX FIGURES

Appendix 2, Figure 1: DHEM loop locations	1:10 000	pocket
Appendix 4, Bouguer & Residual Bouguer Anomalies Railway & Cone Hill		pocket

LIST OF APPENDICES

1. Drill Logs BPD73, 74, 75 & 76.
   Summary Logs EAB1, 2 & 4.
2. Drill Hole EM Reports BPD69 & 71 to 75.
3. Gravity and Magnetics Interpretation Update –
   Chester Area. Leaman Geophysics.
4. Gravity and Magnetics: memoranda from Leaman Geophysics:
   (a) Railway.
   (b) Cone Hill (including correspondences with Lorrigan).
5. Petrography Reports:
   (a) Hollway BPD75 (Crawford)
   (b) Chester BPD73 (Stolz)
6. Geochemical Ledgers – BPD73, 74, 75 (Analabs Analytical Reports).
7. Drilling Proposals – LW Kirsner – BPD74, 75, 76.
   Monthly Report, July 1992 – Project Summary

1. SUMMARY

Work undertaken on EL 44/88 during 1991–92 has included:

* Completion of drill hole **BPD74** (352.0m) (begun in previous period) near **Chester Dam.**
* Drilling of **BPD75** (349.5m) near the southeast contact of the **Hollway** Andesite.
* Drilling of **BPD76** (532.5m) near the **Summit** of Burns Peak itself.
* Total drilling was **1234.0m**
* Geological mapping and sampling on the Hollway–Summit prospects.
* Re–logging and sampling of drill holes EAB1–4 drilled by Comstaff on the Hollway–Summit prospects (formerly "East Chester").
* Lithogeochemical and petrographic studies at Chester and Hollway. (BPD73 and BPD75)
* Gravity infill and interpretation, incorporating processed aeromagnetic data, at Cone Hill and Railway.
* Reinterpretation of gravity and magnetics at Chester Dam in light of the BPD74 results.
* *Assessment and re–presentation of data from the Pinnacles area, putting it into* regional structural contact.
* Receipt of assay results from drill holes BPD73, 74 & 75.
* Drill hole EM surveys on BPD69, and 71 to 75.
* Processing of pre–existing UTEM data into a useful mapping aid.
* Computerisation of a significant proportion of the historic geochemical data from both surface surveys and drill core sampling.
* Production of a revised set of geological interpretation maps and sections.

Encouraging results were obtained from drill hole BPD76, in terms of geology, alteration and mineralisation.

Recommendations for further work include:

* Follow up of results from BPD76, by drilling a series of holes to its north in what is a large, untested and mostly unassessed highly prospective volume of rock.
* Mapping, sampling and IP surveying in the Chester/Bastyan and Hollway areas to assess existing IP and geochemical anomalies.
* *A major review of the Pinnacles area over a short period by a team of 3 or 4*

geoscientists.

* Assessment of the eastern half of the EL with a view to relinquishing 50% by December 1993.

Expenditure for the year to October 1992 was $301 209 bringing the total since granting of the EL to $1 781 854.

2. INTRODUCTION

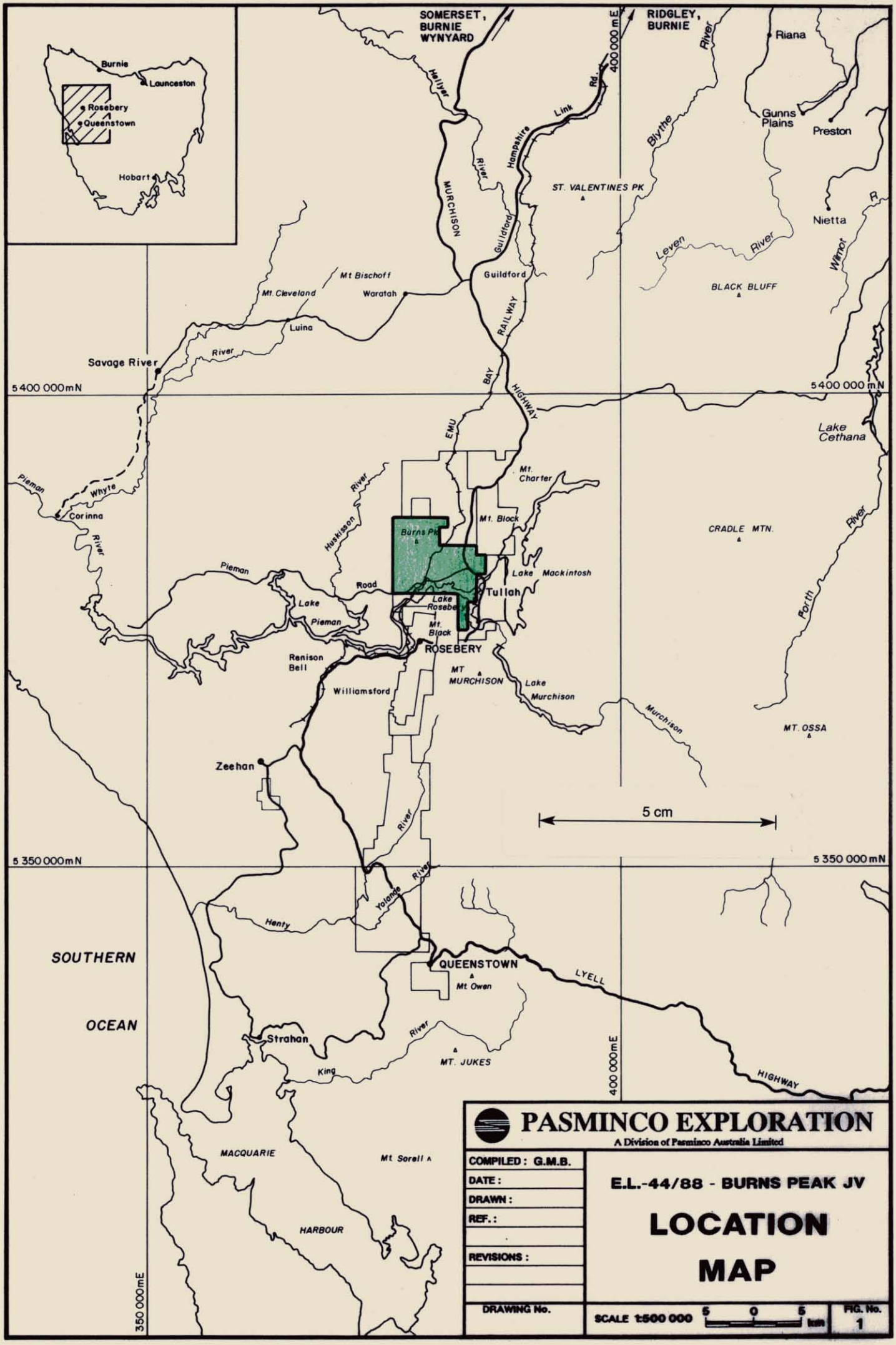
This report documents work undertaken on the Burns Peak EL 44/88, Western Tasmania, covering the period from November 1991 to October 1992. The recommended work program for the period November 1992 to October 1993 is also outlined.

Exploration on the Burns Peak EL is managed and operated by Pasminco Exploration, a division of Pasminco Australia Limited, on behalf of a joint venture between themself, Noranda Proprietary Limited and Plutonic Resources Limited. The EL covers 63km^2 of Cambrian Mt Read Volcanics, and lies immediately west of the Tullah township, north of Lake Rosebery (figures 1 – 3). Exploration targets on the EL are principally polymetallic (zinc, lead, copper, silver, gold) sulphide deposits, similar to those at Rosebery.

The EL includes old workings in the Pinnacles and Chester areas which have been the focus of significant exploration effort over the past 40 years, leaving a legacy of good access tracks and grid lines covering the western half of the EL. The eastern half is less explored, leading to slightly more difficult access in the thickly vegetated and higher relief areas.

During the period covered by this report, multi-disciplinary exploration has been conducted over prospects at Railway, Cone Hill, Pinnacles, Summit and Hollway (figure 4) including the completion of 3 diamond drill holes, two infill – style gravity surveys, a major data review, drill – hole electromagnetics on 6 drill holes, geological mapping and sampling and geochemical analyses (whole rock and base metals).

041008



PASMINCO EXPLORATION
A Division of Pasminco Australia Limited

COMPILED : G.M.B.	E.L.-44/88 - BURNS PEAK JV
DATE :	
DRAWN :	
REF. :	
	LOCATION MAP
REVISIONS :	
DRAWING No.	SCALE 1:500 000 5 0 5 km — FIG. No. 1

3. TENURE

The Burns Peak EL 44/88 was initially granted for a renewable one year term on 9 December 1988 to Noranda Pty Ltd and Pasminco Limited in joint venture following their successful tender. Pioneer Minerals Australia Limited became a third member of the joint venture upon granting of the EL. The formal Burns Peak Joint Venture was finally executed on 6 March 1990, between the three companies, having been effectively in place since granting of the EL. The licence was renewed in December 1989, 1990 and 1991, and a further one year renewal is being sought.

Expenses have been shared equally between Noranda, Pasminco and Pioneer with Pasminco the designated operators since the licence was granted.

Until 1 July 1990, Geopeko, the exploration division of North Broken Hill Peko Ltd administered and operated the EL under contract for Pasminco. Since that time, Pasminco Exploration (a division of Pasminco Australia Ltd) has taken over these responsibilities. All expenses and tenure are still shared equally between the three Burns Peak Joint Venture partners. Pioneer Minerals Australia has now become Plutonic Resources Limited and "Pasminco Australia Limited" has been substituted on all licence documents in place of "Pasminco Limited".

The EL is subject to a number of land classifications which were changed in March 1992 to include land vested in the Hydro-Electric Commission in the area immediately surrounding Lake Rosebery and the Transmission Lines, part of the Farrell Mine Lease, Scenic Reserves along the Murchison Highway, Multiple Use Forest Land and Deferred Forest (figure 2). The vast majority of the EL is Multiple Use Forest, with minimal restrictions and regulations governing exploration.

041010

KEY

- HEC Vested Land – excluded from E.L.
- HEC Vested Land – included in E.L.
- RAP – Recommended Area for Protection
- Private Freehold Land
- Crown Reserve
- State Reserve
- Conservation Area
- Deferred Forest
- Multiple Use Forest
- Mine Lease
- Nomination for National Estate
- Unallocated Crown Land (within EL only)

5 cm

375 000mE
380 000mE
385 000mE
5 385 000mN
5 380 000mN
5 375 000mN
390 000mE

E.L. 2/90
E.L. 8/90
E.L. 44/88 BOUNDARY
E.L. 12/88
E.L. 22/90

Lynch's Creek
John River
Boco Rivulet
Hollway
Marionoak
Emu Bay
Pieman River
Lake Rosebery
Lyell Highway
Railway
Transmission Lines
HEC Transmission Lines
HEC Transmission
Mackintosh Dam Road
Murchison Dam Road

Lee's Find
Brown's
Thomas'
BURNS PEAK
Pinnacles
Chester
MT. KERSHAW
ROSEBERY MINE
1065M
91M/74

NOMINATION FOR NATIONAL ESTATE

PASMINCO EXPLORATION
A Division of Pasminco Australia Limited

COMPILED : G.M.B.	E.L.44/88 - BURNS PEAK JV
DATE : Nov., 1992	**LAND TENURE**
DRAWN :	
REF. :	
REVISIONS :	
DRAWING No.	SCALE 1:50,000 500 0 500 m — FIG. No. 2

4. REGIONAL GEOLOGY

The Burns Peak EL covers a large section of the Cambrian Mt Read Volcanics in Western Tasmania. Most of the units exposed at the surface are included in the Central Volcanic Sequence (CVS) (Corbett and McNeill, 1986; figure 3) and consist of rhyolitic to dacitic lavas and sills and associated volcaniclastic deposits, andesitic lavas and minor sedimentary units. Intruding the sequence are minor quartz–feldspar porphyries and basalt/dolerite sills and dykes. The EL also incorporates a slice of Dundas Group sediments on the western and northern margins. The major contact in the SW of the EL between the Central Volcanic Sequence and the Dundas Group is the Rosebery Fault, which strikes north–south and dips between 40° and 46° to the east at surface. This structure either shallows or flowers into the Henty Fault at depth and was an active thrust fault for at least part of its history. In the northwest and north of the EL the CVS–Dundas Group contact is conformable, but may be, in part, fault controlled also.

The Henty Fault Zone, which forms the eastern boundary of the CVS and trends NNE lies just outside the eastern boundary of the Burns Peak EL.

Units generally trend north–south in the southern and western parts of the EL but turn to a NE–SW trend in the area to the east of the Pinnacles workings. A north–south trend is also apparent along the Pinnacles "Axis" (formerly Pinnacles "Anticline") in the far north of the EL. A proposed stratigraphy is outlined in Rosenhain and Mathison (1989) but this is continually under review.

Numerous sub–economic base metal sulphide deposits occur on the western side of the EL, in a 2km wide belt of mineralised rocks including the Pinnacles, Thomas' Tunnel, Brown's Tunnel and Leo's Find workings. The large Chester massive pyrite deposit occurs in the southwest of the EL. A number of smaller gold, base metals or pyrite workings are also documented, mainly along the western side of the EL, within the CVS rocks.

During the period covered by this report, exploration has concentrated on the areas of known sulphide mineralisation, around the Pinnacles–Leo's Find area as well as in the Chester Dam area, at Hollway/Summit and near the Cone Hill and Railway gravity and magnetic anomalies (figure 4).

041012

PASMINCO EXPLORATION

A Division of Pasminco Australia Limited

COMPILED :
DATE :
DRAWN : G.M.B.
REF:
REVISIONS :

E.L. 44/88 – BURNS PEAK J.V.

REGIONAL GEOLOGY

(FROM MAP 6
MT. READ VOLCANICS PROJECT)

DRAWING No.

SCALE 0 2 4 km

FIG. No. 3

ACKNOWLEDGEMENT: Mt. Read Volcanics Project
Map adopted from Map 6 : Geological Compilation Map of the Mt. Read Volcanics and Associated Rocks,from Hellyer to South Darwin Peak.
K.D. Corbett B Sc (Hon), PhD and A.W. McNeill B Sc (Hons), 1988.

5 cm

QUATERNARY
Q — Glacial deposits, alluvium, etc.

TERTIARY
Tb — Basalt.

DEVONIAN
Dol — Dolerite

DEVONIAN – SILURIAN
S-D: Db — Bell Shale; Df — Florence Sandstone; S — Silurian

ORDOVICIAN
Ogl — GORDON GROUP limestone.

EARLY ORDOVICIAN – LATE CAMBRIAN
€Oou — Upper sandstone sequence including Pioneer Beds (€Oou).
€Oo — Undifferentiated conglomerate and sandstone (€Oo).
€Oon — Newton Creek Sandstone (€Oon) — interbedded sandstone siltstone and conglomerate with marine fossils.

CRIMSON CREEK FORMATION
Ccc — Mafic greywacke, mudstone, tholeiitic basalt.

UNASSIGNED CAMBRIAN UNITS
Cvs — Volcano-sedimentary sequence.
Cs — Sedimentary sequence.
Cbe — Basaltic-andesitic volcanics.

SUCCESS CREEK GROUP
Csc — Quartz sandstone, mudstone, siltstone with minor conglomerate and carbonate.

PRECAMBRIAN
Pz — Quartzite-slate sequences — correlates of Gonah Formation.
Pm — Metamorphosed sequences of Tyennan Region. Major lithological boundary trends shown.

CAMBRIAN

DUNDAS GROUP AND CORRELATES
Cp — Quartz-feldspar porphyry, mostly intrusive.
Cds — Mostly sedimentary rocks — greywacke, siltstone, conglomerate.
Cdts — Interbedded tuffs and sedimentary rocks.
Cd — Quartzwacke-slate-siltstone units, e.g. Stitt Quartzite.
Cdv — Mostly felsic volcanics — mainly tuffs.
Cdm — Mixed felsic and mafic volcanics and epiclastic breccias, Que-Hellyer area.
Cdbe — Basaltic to andesitic volcanics.

CENTRAL VOLCANIC COMPLEX
Ccv — Mainly feldspar-phyric volcanics — dacite, rhyolite, minor andesite (€cv)
Cp — Felsic porphyry, mainly intrusive.
Ccvp — Mainly pyroclastic rocks.
Ccm — Sedimentary rocks, mainly shale and sandstone.
Ccva — Andesitic volcanics.

MT. READ VOLCANICS

CAMBRIAN INTRUSIVE ROCKS
Cgr — Granite.
Cp — Felsic porphyry.
Cg — Gabbro.
Cum — Ultramafic rocks and serpentinite.

TYNDALL GROUP AND CORRELATES
Ct — Mainly quartz-feldspar-phyric volcanic and volcaniclastic rocks (€t)
Ctm — Mainly sedimentary rocks, including Farrell Slates.
Ctc — Mainly volcaniclastic conglomerate and sandstone.
Cmb — Sticht Range Beds — sandstone, siltstone, siliciclastic congl

041015

E.L. 44/88 BOUNDARY

SHALE BASIN

Pinnacles Data Review Area

Hollway/Summit Project
(mapping, sampling, lithogeochemistry, data review, re-logging, interpretation, structure, drilling)

Gravity In-fill

Gravity In-fill

SUMMIT

PINNACLES

CONE HILL

HOLLWAY

RAILWAY

MACKINTOSH BLUFFS

PIEMAN ROAD

CHESTER

MT. KERSHAW

ROSEBERY MINE

LAKE ROSEBERY

LAKE MACKINTOSH

BPD71
BPD72
BPD69
BPD76
BPD75
BPD74
BP073

Leo's Find
Brown's
Thomas'
BURNS PEAK
Pinnacles
Chester
MT. KERSHAW

Creek
Lynch
John
Boco
Road
Lines
Transmission
River
Rivulet
Bay
Hollway
Marionoak
HEC
Emu
Pieman
Dam
Mackintosh
Murchison

375 000mE
380 000mE
385 000mE
5 385 000mN
5 380 000mN
5 375 000mN

5 cm

LEGEND

- New DDH's drilled
- Existing DDH's
- * DDH EM Survey completed
- HOLLWAY — Prospect name

PASMINCO EXPLORATION
A Division of Pasminco Australia Limited

COMPILED : L.W.K.	E.L. 44/88 - BURNS PEAK JV
DATE : Oct., 1992	**WORK PROGRAM COMPLETED NOVEMBER 1991 to OCTOBER 1992**
DRAWN : G.M.B.	
REF. :	
REVISIONS :	
DRAWING No.	SCALE 1:50.000 500 0 500 m — FIG. No. 4

5. PREVIOUS EXPLORATION

The extensive history of exploration and mining in the area covered by the current Burns Peak EL 44/88 was summarised by Rosenhain and Mathison (1989) and this has been modified, below, as Table 1. The Burns Peak Joint Venture was initiated on granting of the licence in December 1988, and is currently reaching the end of its fourth year of operation. Details of these activities are documented in the past three annual reports (Rosenhain and Mathison 1989; Lorrigan 1990; Kirsner, Lorrigan and Rae 1991) as well as this volume.

TABLE 1

History of Exploration on EL 44/88

1896	Discovery of alluvial gold in Morionoak River by Tom Strong. (Strong's Alluvial Workings)
1896	Discovery of Pinnacles Lodes by McGuiness Bros.
1899	Discovery of Chester by F Kershaw and H Sanderson. (Kershaw's Iron Blow)
1899	Brown's Tunnel driven (Brown's Workings) est. production 300t @ 2% Zn, 2g/t Au, 44g/t Ag.
1899	Southern Workings est. production 55t @ +10% Zn, +8% Pb, 8g/t Au, 38g/t Ag.
1899	Thomas' Tunnel driven (Thomas' workings) est. production 50t @ 4% Zn, 7% Pb, 1g/t Au, 240g/t Ag.
1908	Mt Lyell Mining and Railway Co Ltd secured Chester Leases.
1908–1913	Intensive exploration and mining development at Chester. Production 36 000t @ 37% S.
1918–1920	Minor production from Chester by Cuming Smith & Co. Production 700t @ +25% S.
1947–1950	Electrolytic Zinc Company created foot and vehicle access to Pinnacles area. 14 small diameter diamond drill holes (PP31, 34, 36, 39, 40, 41, 42, 45, 46, 48, 50, 51, 52, 59) completed and workings and topography surveyed. Geophysical test surveys at the Pinnacles (SP, ground magnetics and resistivity).
1959–1960	EL 4/59 Rio Tinto Australia (?EZ Joint Venture)

	Geochemical, geological and geophysical surveys over Pinnacles and Chester. Techniques included Sharp vertical loop EM, Turam, ground magnetics (vertical field), gravity. "The significant feature of this coverage is that Pinnacles Mine Mineralisation is non-conducting".
1963	Comstaff acquires EL 5/63 which included the Burns Peak area.
1968-1972	Initial phase of gridding, geochemical sampling, geophysics (IP and EM), mapping and 3DDH at Chester (CH1-3) by Comstaff.
1973-1976	Second phase of gridding, geochemical sampling, etc. 10 DDH drilled (plus CP2 redrilled) at Pinnacles and 13 DDH at Chester (CP1-23). (New metric grid, new soil sampling, new IP). Airborne EM.
1976-1979	Preussag entered into Joint Venture with Comstaff. Detailed mapping and structural synthesis completed. C horizon soil geochemistry, 2 DDH, (PIN1 & 2) trial PEM and IP over Leo's Find.
1980-1983	Exploration of East Chester area. New grid, grid extensions, C horizon soil geochemistry, ground magnetics. IP, DIGHEM. Four DDH (EAB1-4) drilled at East Chester.
1984-1985	New grid at Pinnacles (EAF) mapped, C horizon soil sampling, ground magnetics and UTEM. 19 DDH-discovery (ESB1 & EAF 1-18) of small lenses of massive sulphides and patchy gold mineralisation. New geological interpretation.
1986-1988	BHP entered Joint Venture. Reinterpretation and compilation of exploration results. "Blanket" UTEM and downhole SIROTEM. New geological interpretation. Petrological studies. Wacker sampling.
1988-1991	Pasminco-Noranda-Plutonic Joint Venture on new EL 44/88. Extensive geological mapping, re-appraisal of previous data, Wacker sampling, geochemistry, petrology, DHEM, CSAMT, DH-SIROTEM, Mise-a-la-Masse, aeromagnetic survey, regional and local gravity surveys, drilling of 12 DDH (BPD62-73) Rehabilitation of old tracks, costeans and workings.

To date 81 diamond drill holes have been drilled for a total of 17 753m on the area now covered by EL 44/88, including 78 in the period prior to October 1991, and three in the current period (BPD74 – 76).

55 of theses drill holes were in the Pinnacles area (10 775m) 20 were at Chester (5 178m) and 6 in the Hollway – East Chester area (1 800m).

In addition, more than 9km of costeans, 42km of tracks, 70 line km of IP, almost "blanket" UTEM coverage, numerous smaller EM surveys, over 600 gravity stations, at least two generations of aeromagnetics, some ground magnetics, tens of thousands of soil, auger and wacker sample analyses, petrological studies, whole rock and isotope geochemistry and innumerable generations of geological mapping have been completed on the EL area. In today's dollars, this equates to over 6½ million dollars (conservatively) having been spent on the Burns Peak EL areas since 1947. The process of incorporating this data set into computerised, readily useable form, is well under way.

6. RESULTS OF EXPLORATION PROGRAMME - NOVEMBER 1991 TO OCTOBER 1992

Work undertaken on EL 44/88 during 1991-92 has included:

* Completion of drill hole **BPD74** (352.0m) (begun in previous period) near **Chester Dam.**
* Drilling of **BPD75** (349.5m) near the southeast contact of the **Hollway** Andesite.
* Drilling of **BPD76** (532.5m) near the **Summit** of Burns Peak itself.
* Geological mapping and sampling on the Hollway-Summit prospects.
* Re-logging and sampling of drill holes EAB1-4 drilled by Comstaff on the Hollway-Summit prospects (formerly "East Chester").
* Lithogeochemical and petrographic studies at Chester and Hollway. (BPD73 and BPD75)
* Gravity infill and interpretation, incorporating processed aeromagnetic data, at Cone Hill and Railway.
* Reinterpretation of gravity and magnetics at Chester Dam in light of the BPD74 results.
* Assessment and re-presentation of data from the Pinnacles area, putting it into regional structural contact.
* Receipt of assay results from drill holes BPD73, 74 & 75.
* Drill hole EM surveys on BPD69, and 71 to 75.
* Processing of pre-existing UTEM data into a useful mapping aid.
* Computerisation of a significant proportion of the historic geochemical data from both surface surveys and drill core sampling.
* Production of a revised set of geological interpretation maps and sections.

6.1 Drill Hole BPD73

Diamond drill hole BPD73, near Mt Kershaw, was completed during the previous period and reported in last year's Annual Report (Kirsner et al., 1991), although assay results and accurate collar coordinates only became available after the report was finalised. These are included with an "updated" drill log for BPD73 in Appendix 1. Also included is the fully interpreted drill section (figure 19), and some petrographic descriptions from thin sections (Appendix 5).

The assay results confirm the presence of low-grade chalcopyrite mineralisation, with 9.35 metres at 0.22% Cu from 236.4 to 245.75 metres down-hole (peak was 1.7m at 0.36%). This mineralisation is within rhyodacitic lava breccias and pumice breccias and is associated with minor faults, joints and carbonate filled tensional gashes. It goes some way towards explaining the anomalous Wacker geochemical results (reported last year) that the drill hole was partially based upon.

In addition, the dip of the Rosebery Fault was confirmed at about 40° to the east in BPD73 (figure 19), and the presence of fine-grained ash horizons, similar to those at Chester, were intersected, but found to be unmineralised. Drill hole EM was conducted on BPD73 utilising two loops with no anomalies recorded (see Appendix 2, and section 6.4, below).

Petrography carried out by J Stolz, of the University of Tasmania (Appendix 5) on rocks from BPD73, has altered the interpretation of the massive feldspathic acid volcanics from lavas and lava breccias to being dominated by pumiceous breccias and sandstones, based on thin sections. This is similar to the interpretation of the Mt Black Volcanics immediately above the Rosebery deposit.

6.2 Drill Hole BPD74

The programme that led to the proposal to drill a hole near Chester Dam is outlined in last year's Annual Report (Kirsner et al., 1991). In summary, BPD74 was drilled to test the proposed down-plunge extension along an anticlinal axis of the favourable horizon equivalent to the Chester Host sediments. This position coincided with a broad area of anomalously high gravity response and a major character change (?structure) evident in the aeromagnetics.

The results of BPD74 were disappointing, with no base metal mineralisation, or even any strong pyrite-silica-sericite alteration (similar to the Chester zone) being intersected. The lithologies were as expected, with rhyolitic to dacitic lavas, lava breccias and associated epiclastics dominating the sequence. An uphole-fining volcaniclastic pumiceous ashfall and an underlying finer grained ashy siltstone were intersected at 265.5 to 288.6 metres down-hole, and are interpreted to be the target horizon, equivalent lithologically to the horizon that hosts the extensive pyrite mineralisation at the Chester Mine. These rocks

seen elsewhere are favourable for massive sulphide replacement-style mineralisation where they intersect major sulphide-bearing fluid conduits, such as at Chester. The gravity and magnetic features at BPD74 are similar those at the Chester mine itself and a satisfactory explanation for the poor drilling results was sought.

Leaman's follow up report (Appendix 3) addresses the problems and result of BPD74, and states that limitations in critical areas of gravity coverage and three incomplete terrain corrections for old gravity stations led to a misleading basis upon which the drill hole was targeted. Clues in the magnetics data set were also overlooked, which may have led to a different target being recommended. After correcting the problems, the gravity anomaly shifts to the east and becomes more diffuse. Leaman concludes that faulting and fluids in the region of BPD74, if present are likely to be post-Cambrian. This down-rates the prosect for "traditional" Rosebery or Hellyer style mineralisation, considering their genesis is currently considered to be wholly (or at least dominantly) Cambrian in age.

Further drilling to the north of Chester is not recommended by the author at this stage, unless new evidence for mineralisation becomes apparent.

A full drill log and assay results for BPD74 are included in Appendix 1, and the interpreted geology as drill sections in figures 16 (summary) and 20.

Drill hole EM was completed on BPD74, utilising two loops, but no conductors were recorded (See Appendix 2, and section 6.4 below).

6.3 Hollway & Summit Prospects

6.3.1 PROJECT SUMMARY

Mapping, rock chip sampling, compilation and assessment of existing data and re-logging of existing core in the **Hollway - Summit** area has culminated in the production of a new 1:5 000 scale interpretative geology map (figures 7 & 8), the drilling of two diamond drill holes (BPD75 & 76) and the identification of a "new" prospect area just east of the **Summit** of Burns Peak itself. The area covered by the project is indicated in figure 4.

The data compilation and assessment included the manual data entry into "Techbase" of C-horizon and Wacker sample data collected by Comstaff and BHP in the 1980's from the EAB grid and the northern part of the EAD grid. About 1000 samples, assayed for Cu, Pb, Zn, Ag, Au, Mn, Ba and As were included. This data was re-plotted, contoured, statistically analysed and anomalies identified. Also assessed was the IP coverage and anomalism in the area, utilising both raw data pseudosections and the image processed data compiled in 1991 (see: Kirsner et al., 1991). Gravity and magnetics data were used as an aid to mapping and drill targeting, and UTEM data was briefly reviewed to assess targets in the vicinity of weak conductors previously identified by BHP.

6.3.2 DRILL HOLE BPD75

The geological interpretation of the southeastern side of the Hollway prospect was for northwest dipping and younging andesitic lavas and hyaloclastites overlying micaceous sediments intercalated with thin dacites lavas, and in turn overlying massive dacite lavas and associated volcanics. This sequence has been drilled in EAB4 (figures 7 & 23, & Appendix 1) by Comstaff in 1982/3 and was well established near the drill hole from mapping.

Along strike to the southwest the story was less well known. No drilling had been carried out to the south of EAB4 and what outcrop existed was patchy and discontinuous. While no sediments had been mapped, there were indications that the andesite-dacite contact persisted in similar form for some kilometres to the southwest. Some low level base metal sulphides were drilled in EAB4 (which was based on patchy C-horizon base metal soil

anomalies) and it was proposed that this level in the sequence may hold a greater accumulation of base metals along strike, considering there were fine-grained sediments (trap rocks/sedimentary basin) a change in magma chemistry (from acid to intermediate), some structures mapped (?fluid conduits), and patchy, anomalous base metals in soils and rock chips.

The best of the untested C-horizon soil anomalies was near costean 2750 (EAB grid) (up to 3050ppm Zn) and was backed up by some very high values in rock chips (up to 2000ppm Zn & 940ppm Pb) and costean "channel" samples (from the weathered side wall of the costean, up to 960ppm Zn & 1250ppm Pb). The main detracting factor in the area was the presence of manganese oxides in the weathering environment which may have been scavenging metals form nearby rocks, although not all anomalous base metal values came from samples with high manganese content. Also on line 2750, at 550mS, is a weak UTEM "anomaly" backed up by weak SIROTEM anomalies, but not considered to be worth drilling in their own right by both BHP (previously) and Pasminco geophysicists. These conductive features were however, the **only** ones in the whole area and were thus of some interest. A drill hole (BPD75) was proposed based on the above synthesis of the geology (see Appendix 7 for the interpreted geological section prior to drilling, and full drilling proposal for BPD75).

Diamond drill hole BPD75 was drilled in June/July 1992 and completed at 349.5m having failed to intersect substantial mineralisation. The drill log (Appendix 1), summary drill section (figure 17), detailed drill section (figure 21) and an interpretive "stratigraphic" column (figure 23) for BPD75 have been included in this report, summarising the results of the hole. In addition, petrographic analyses of 12 samples taken from BPD75, using thin section and hand specimen have been carried out, in conjunction with whole rock geochemical data, and an interpretation made (Crawford, Appendix 5; see section 6.6, below).

BPD75 encountered a sequence of interfingered pillowed basaltic andesite lavas and hyaloclastites (the Hollway Andesite), rhyolitic lavas and pumice breccias, with minor intercalations of clastic sediment (sandstones and gravels). No micaceous sediments were intersected. Near the base of the hole, some minor tensional gash veins near a brittle fault contain minor amounts of sphalerite and galena, in a gravelly sandstone host lithology. A

narrow zone of strong sericite alteration is also present in the vicinity of the veins and fault. This mineralisation style can explain the soil and rock chip anomalies recorded at surface, if it continues up-dip from the hole. The conductive features picked up by UTEM and SIROTEM equated with clay-rich, brittle faults intersected in BPD75, with up-dip extensions causing the near-surface conductors.

Whole rock geochemical analyses examined by Crawford in conjunction with thin sections (Appendix 5) have shown most of the basaltic andesites in BPD75 to have "Shoshonitic affinities" and are thus geochemically analogous to the Hellyer hangingwall basalts. This important observation has not been fully analysed or interpreted, but may have important implications for further exploration in the Hollway - Burns Peak area.

Following the drilling of BPD75, some re-interpretation of the geology both locally and licence wide was needed. At this point in the programme the interpreted geological map was completely revised (figures 7 & 8). The "disappearance" of the micaceous sediments encountered in EAB4 had to be explained, as well as the now well established interfingering of rhyolite and basaltic andesite lavas, postulated to occur further south from mapping results, but not seen further north. It quickly became apparent that a sub-east-west cross-structure, previously unmapped, but clearly present in gravity and magnetics data sets (see section 6.5, below, and Appendix 4), was apparently having a major influence on the geology. This structure occurs between drill holes EAB4 and BPD75 on about 5 383 900N and extends from well past the Rosebery Fault, to the west, and at least as far east as the eastern extremity of the Hollway Andesite (figures 7 & 12). The nature of this structure is not yet fully understood, but it may be an early basin feature, which had far more deposition on its northern side, thus the presence of a thicker sequence of andesites and sediments on that side. Conversely, the structure may be a late-stage steep fault, with the southern side up-thrown, exposing a deeper level in the stratigraphy, where the micaceous sediments weren't deposited, near the edge of the basaltic andesite lava pile where it was interfingering with rhyolites. Either way, it is an important control on current geometries and must be taken into account in any geological interpretation in the Hollway to Cone Hill area. A synthesis of the geology of this area is presented in Appendix 7 as a reprint of an internal monthly report for EL 44/88.

6.3.3 DRILL HOLE BPD76 - SUMMIT PROSPECT

CORE LOGGING - EAB1 & 2

A major influence on the revised interpretation of the geology in the 1:5 000 scale geological map (figures 7 & 8) was the re-logging of two diamond drill holes, drilled by Comstaff in 1982, EAB1 and EAB2, just east of the Burns Peak Summit. Summary logs of these two holes are included in Appendix 1.

EAB1 was collared in coarse quartz and feldspar porphyritic rhyolitic intrusive sills and minor extrusive lavas and mass flow breccias. The hole passed down through an interval of uphole-fining, coarse, rhyolite-dominated epiclastic mass flows and finer siltstones which overlie pyritic, graphitic black shales. The shales coarsen down-hole to become grey sandstones, before passing into a narrow interval of coarse, uphole-fining mass flows, again rhyolite dominated, but with andesite clasts in the basal flows. Below these mass flows are hyaloclastic to pillowed amygdaloidal basaltic andesite lavas which persist to the end of the hole (figure 22 & Appendix 2). All units young up-hole and dip northwest. Throughout this sequence is disseminated and veinlet, low-level pyrite-sphalerite mineralisation, peaking immediately above the shales, where 3 metres at 3.1% Zn, 0.8% Pb is present. Immediately below the shales and sandstones is a zone of lower level mineralisation, where 6.6 metres at 0.67% Zn, 0.18% Pb, 0.7% Ba occurs.

EAB2, drilled 600 metres southwest along strike from EAB1, encountered a slightly different sequence, although it was collared in what was assumed to be a similar stratigraphic position. Drill hole EAB2 was collared in coarse rhyolitic mass flows and interbedded ashy sediments which overlie a thick sequence of ashy siltstones and sandstones. Immediately below the siltstones is a massive feldspathic sill or lava, (or possibly a recrystallised pumice breccia), which overlies an interval of andesite-dominated mass flows above pillowed and hyaloclastic basaltic andesite lavas. This sequence youngs uphole and dips between northwest and northeast (Appendix 2 & Figure 7). EAB2 is interpreted to have been drilled in rocks equivalent to the lower part of the sequence intersected EAB1. The ashy siltstones, mass flows and rhyolite sills in EAB2 are thus lateral equivalents of the grey sandstone and lower mass flows intersected in EAB1. This relationship is shown in schematic stratigraphic columns in figure 23 (Along with BPD76, discussed below). The common feature at the base of EAB1 and 2 is the Hollway

Andesite, allowing the correlation of the sequence between the two drill holes, 600m apart. The thick shale and porphyry seen in EAB1 are absent from EAB2 due to them being folded around the axis of a north-plunging syncline and thus lying stratigraphically above the EAB2 collar position (see figure 7 -map). EAB2 was drilled near the core of the syncline, hence the varying dip and strike of beds encountered in it.

There are some compelling lithological similarities between hole EAB1 and the stratigraphy in the Que-Hellyer Volcanics near the Hellyer mine. Part of the Hollway Andesite is geochemically similar to the Hellyer hangingwall basalts (Appendix 5, Crawford et al., 1992; and above), and has a series of mass flows and a thick shale lying directly above it. The shale could be a Que River Shale equivalent, even to the degree that the mass flows overlying it are very similar texturally and compositionally to the Southwell Subgroup rocks, seen near Hellyer to overlie the Que River Shale (Waters & Wallace, 1992). These similarities require further proof before firm conclusions about regional correlations can be drawn.

MAPPING

Mapping in the Hollway-Boco Road-Summit area has tightened up the interpretation of the local geology, and has put it into a regional context. Building on the framework established by logging EAB1 & 2 the map (figures 7 & 8) was generated. The Hollway Andesite, about 400m thick in its main body further south, is absent at surface by the northing of the Boco Road - only coarse mass flow sediments and siltstones are present at the Boco Road. These are lateral equivalents of the andesites and contain occasional clasts of andesitic material. Confirming this interpretation is the position of the locally distinct micaceous sediment marker horizon which occurs at the base of the Hollway Andesite, seen in EAB4. The micaceous sediments are traceable to the northeast along strike from EAB4 to the Boco Road, where they underlie the mass flows and other sediments laterally equivalent to the andesites. The micaceous sediment horizons seen near the Que River and Hellyer mines are known as the Animal Creek Greywacke and underlie the Hellyer Footwall andesites (Waters & Wallace, 1992). The micaceous sediments at Burns Peak are potentially equivalent to the Animal Creek Greywacke (Figures 7 & 8).

The above interpretation begs the questions - does the Hollway Andesite have affinities

with (a) the Hellyer hangingwall basalts, as was established geochemically in drill hole BDP75 (see above & Appendix 5) or (b) Hellyer footwall andesites, as it appears to have, based on stratigraphic grounds in EAB4 and from mapping? The reality may be that the Hollway Andesite has two distinct portions – (1) the southern part, (south of the east–west cross structure) where all of the geochemical samples have come from to date (Appendix 5, this report & Coutts' Honours Thesis – University of Tasmania, 1990), which has Shoshonitic, Hellyer hangingwall, affinities, and (2) the northern part, drilled in EAB 4 and mapped near its southeastern contact with the micaceous sediments. If this is the case, which of these two distinct "parts" do the basaltic andesites at the base of the drill holes EAB1 and 2 fall into? Samples from each of these holes as well as EAB4 have been taken for whole rock geochemical analysis to answer these questions, on geochemical grounds at least.

If two distinct mafic to intermediate lava suites are "stacked" to form the "Hollway Andesite" in its northern part, then the change in whole rock chemistry will be equivalent to the Hellyer & Que River mineralisation stratigraphic positions. This position may be a target worth following up, if it can be shown to exist. If not, the area still remains highly prospective, particularly above the Hollway Andesite.

Another feature of note on the interpreted geology map (Figure 7) is the syncline which cuts the Boco Road east of the Burns Peak Summit. This syncline can be mapped in sediments on the Boco Road which overlie the Hollway Andesite. The southeastern limb of the syncline was drilled in EAB1 and EAB2. The nose of the syncline, at surface has been dragged around the Burns Peak Shear (Figure 7) to trend more west–southwest at its southern most extremity, where some chaotic bedding has been mapped in bedded ashy silstones.

The geology drilled in EAB1 and 2 and the syncline itself have been recently named the **Summit** prospect, due to the proximity to the Burns Peak Summit.

DRILLING PROPOSAL

A C–horizon barium and base metal soil anomaly exists in the core of the syncline on the Summit prospect. The barium values are extremely high, with a peak of 1.3% Ba from two adjacent samples on one line that includes 8 adjacent samples above 700ppm Ba at 20m

spacing over a 140m interval (see figures included as part of the BPD76 drilling proposal, Appendix 7). Ten adjacent samples, at 20m spacing, of over 1 000ppm and with a peak of 1.1% Ba occur on the next line, to the south west. Peak base metal values in the high barium samples are 530ppm Pb & 220ppm Zn. Rock chips taken from near the two high barium zones peak at 405ppm Pb, 1600ppm Zn and 290ppm Cu. The Burns Peak Shear, which trends northeast, is a steep pyritic, sericitic shear zone at surface (at 378 520E, 5 384 620N, figure 7) and cuts off the western limb of the syncline. The presence of the soil anomaly, pyritic shear zone, pyritic black shales, andesitic rocks and rhyolitic rocks in the one small area became the focus of attention, and a drilling proposal to test for the source of the geochemical anomalies in this geologically favourable area was prepared (Appendix 7).

The main features of the geology (apart from the geochemistry described above) which indicate the possibility of a major base metal accumulation in the area are: the presence of the sulphide – bearing shear zone, which may have been a conduit for mineralising fluids; the proximity to the nose of a fold, indicating a flexural weakness (caused by alteration?) or dilational zones in the fold nose; the presence of pyritic black shales which indicate quiet water for preservation of an exhalative sulphide mound **or** could act as a good cap rock to sub–surface replacement style sulphide mineralisation; and the good base metal values obtained in drilling similar geology in EAB1 (see above).

Based on these factors, diamond drill hole **BPD76** was drilled in October 1992, and completed at **532.5 metres**. The hole was designed to test the interpreted position of the **western** limb of the syncline near the nose of the fold, based on bedding angles from outcrop and drill hole EAB1, which intersected the south eastern limb of the fold.

RESULT

BPD76 in fact intersected the southeastern limb of the syncline (based on oriented core; see figure 22) which had flattened off west of EAB1, and the western limb is now interpreted to be more overturned and further west than anticipated, at least in this northing, so close to the Burns Peak Shear.

The geology encountered in BPD76 is equivalent to the full sequence through this part of the fold, drilled in part in each of EAB1 & 2 (see figure 23 – stratigraphic columns). From

the top of the hole, major lithologies intersected in BPD76 were coarse quartz-feldspar porphyric rhyolitic sills, extrusive lavas and breccias, overlying finer-grained rhyolitic hyaloclastites and lava breccias, a moderate thickness of black shales which coarsen down-hole to a grey sandstone. These overlie a thick sequence of ashy siltstones and coarser grained volcaniclastic mass flows with minor grey mudstones and rhyolite lavas. Beneath these are andesitic hyaloclastites and epiclastics, which are truncated by the steep Burns Peak Shear. Below the shear, rhyolite lavas and associated clastics occur, in which the hole was terminated. Detailed descriptions of the drill hole are in Appendix 1 (drill log) and the interpreted geology is included in figures 18 and 22 (drill sections).

MINERALISATION

The hole contains a small amount of low-level mineralisation, especially within and immediately above and below the black shales where pyrite and sphalerite occur in clots and veinlets and as fine disseminations.

Other mineralisation is contained in a gravelly sandstone within the andesitic volcaniclastics where matrix replacement and veinlets of galena/sphalerite occur for about a one metre interval (468m). Preliminary assay results show greater than 2% Pb + Zn in this zone. 3 metres of strong fuchsite/sericite alteration occurs immediately below this zone (469-472m) and is reminiscent of the hangingwall style of alteration immediately above the Hellyer orebody.

The Burns Peak Shear, where it is intersected in BPD76 (510m) has a 2.3m wide zone of sub-massive, fine grained pyrite (up to 40% of the rock's volume) in a sericite matrix, directly below it. This fine sulphide may also contain minor amounts of base metals. Most of the length of BPD76 has low-level pyrite and sphalerite mineralisation disseminated through it, particularly in the upper part of the ashy siltstones, immediately below the shales (figures 18 and 22).

A series of whole rock, barium and base metal analyses have been requested for BPD76 and should help the interpretation locally and licence wide. Results were not available at the time of writing this report.

FOLLOW UP

A drill hole EM survey will be carried out on BPD76 in November 1992, and in conjunction with results from this survey, geochemistry and surface mapping, another drill hole, following up the encouraging results from BPD76, should be drilled into the western limb of the syncline or near its core, and near the northern extension of the Burns Peak shear. A drill hole sited near 378 950E 5 384 850N and drilling at about -75° towards the west – northwest, is proposed as an initial test of this exciting prospect.

6.4 Drill Hole EM

Two separate drill hole electromagnetic programmes were completed on EL 44/88 during the current period. The first was a five hole programme conducted by Crone Geophysics in January 1992, in which diamond drill holes BPD69, 71, 72, 73 and 74 were surveyed using Crone's Pulse EM system. All holes were surveyed using an axial-component (z-component) probe, but no off-hole conductors were recorded.

BPD69 had been surveyed previously, by down-hole SIROTEM, and a small anomaly recorded. This was re-assessed by Pasminco (R Smith, Appendix 2) and although the response was considered to be inconsequential it was decided that re-surveying the hole would confirm or disprove the existence of the response. The new survey of BPD69, utilising slightly different loop locations, produced no anomalies at all, and the SIROTEM response is now confirmed to have been spurious.

BPD71 and 72 were surveyed utilising three separate loops (the same three for each hole), but no responses were recorded. BPD73 and 74 were surveyed using two loops each, and again no responses were recorded.

The second programme, conducted by Lamontagne Geophysics in September 1992, utilising their drill hole UTEM system surveyed BPD75, using two loops. No conductors were recorded.

Memoranda from R Smith (Pasminco Geophysicist) to the author discussing the drill hole SIROTEM previously carried out, and the results of the two DHEM programmes, are included in Appendix 2, along with the DHEM profiles for all holes and loops utilised during the current period. Loop and drill hole locations are included in Appendix 2 as figure 1.

6.5 Gravity Surveys & Aeromagnetic Data Processing

Infill of gravity coverage to a nominal station spacing of 200m over the Cone Hill and Railway prospects was completed during December 1991 and January 1992 by Department of Mines contractors. These surveys were designed to better define regions of anomalous gravity response identified in previous, more regional surveys. Consultant Dr D

E Leaman has reviewed the data gathered in these surveys and produced an integrated preliminary gravity and magnetic interpretation for the areas (see Appendix 4).

In addition, aeromagnetic data gathered in 1990 has been re-processed to produce a "residual" magnetic data set, which better approximates a near-surface response. The processing is a direct subtraction of a 1300m RL, upward continued data set (approximating a "regional response" magnetic data set) from a 120m terrain clearance (drape) data set (see Kirsner et al., 1991). The resulting data has been plotted in coloured contour format (by the Department of Mines) as well as processed coloured images (by Pasminco Exploration). The data presented this way has proven a useful aid to mapping of units and interpretation of the structure of the area.

Much more useful information can be gained from this data, especially as part of an integrated, multi disciplinary approach to computer-aided geological interpretation, and should be carried out as part of future programmes.

Leaman's work on the gravity and aeromagnetic data sets at **Cone Hill** and **Railway** (see Appendix 4) has led to the identification of important sub-east-west trending features, which have not been mapped previously, nor were they as clearly evident in the "normal" 120m drape magnetic data or regional gravity data.

At **Railway**, the trend of Boco Creek is thought to be associated with Post-Cambrian (? Devonian) structures, which have the base metal-barren pyrite-silica-sericite deposits of Chester and Boco at either end. The trend changes from NNE to NE at Railway, and appears to be in part caused by the east-west feature. Also present at Railway, just southeast of the creek, is a 2 or 3 mGal "anomaly" which should be followed up with some ground checking. With this mind, Railway is a low-priority but clearly anomalous area worthy of further work.

At **Cone Hill/Pinnacles** an area just north of drill hole BPD63 has been the subject of interest, considering some outcropping narrow but high-grade (41% Zn) massive sulphides. Leaman (Appendix 4) was asked to comment on the area by Lorrigan in a letter dated 3 December 1991. Leaman's reply, dated 9 December 1991, did not identify the area immediately north of BPD63 as worthy of follow-up on gravity/magnetics grounds,

but did produce an "alteration signature" or relative low, using an approximation to the residual magnetic field, immediately south and east of Thomas' Tunnel. Subsequent gravity surveying at Cone Hill, and the production of the new residual magnetic data set (described above) has better defined the gravity and magnetic features in the Cone Hill/Thomas' Tunnel area. In particular, a strong north-south gradient in gravity data to the north of Cone Hill is re-aligned to the south. This easterly disruption can be seen in all data sets, especially the residual magnetics, and is believed to be a sub-east-west, deep seated structure, at about 5 383 700N. This east-west structure manifests itself as a set of minor, brittle faults and joints in a costean just north-east of Cone Hill itself, and is also believed to be responsible for the change of character of the Hollway Andesite from north to south across it (see figures 7 and 12).

The full implications of this east-west structure are not yet understood, but it is evident that mineralisation occurs in the rocks to its north, while very little exists to its south, and the geology changes in character across it, particularly in the Hollway area. (See Appendix 4 for Leaman's full discussion of Cone Hill and Railway Prospects).

6.6 Petrography, thin sections and lithogeochemistry

Two separate petrographic reports based on thin section and hand specimen analysis were received from consultants at the University of Tasmania. The first report, by J Stolz, includes descriptions of 14 samples taken from drill hole BPD73. The second report, by AJ Crawford, includes descriptions of 12 samples taken from drill hole BPD75. Crawford's report also includes comments about and plots of the whole rock geochemistry of some of the samples that were described. The petrographic descriptions have been incorporated into core logs and interpretations where appropriate. Location depth data for the samples is included in the relevant drill logs in Appendix 1, and the two separate petrographic reports are reproduced in Appendix 5.

Further work is required to fully appreciate the implications of the lithogeochemical "fingerprinting" of the magmatic rocks from Burns Peak. Initial analysis of whole rock results from BPD75, compared with the Crawford et al. (1992) subdivision of the Mt Read Volcanics into five "suites" gives some interesting (and unexpected) results. These are discussed in Crawford's report (Appendix 5), but it is important to note that basaltic

andesites and basalts from BPD75 have a "conclusively established" link with the Hellyer hangingwall sequence which are within the "shoshonitic" Group III field. Also, one sample which is indistinguishable from the others on textural grounds has a distinct Henty Fault Wedge/Henty Dyke Swarm geochemical fingerprint (Group IV.). This implies a quite different tectonic setting for emplacement from the Group III rocks, but mesoscopically, the rocks appear to be part of an extrusive lava pile. Finally, the interfingering of rhyolite lavas with basaltic andesites in BPD75 is conclusively established on both mesoscopic textural evidence, and lithogeochemical evidence. If the rhyolites are indeed CVC - equivalent calc-alkaline Group I rocks, and the basaltic andesites are Shoshonites of Group III the tectonic implications of their essentially coeval interdigitating are profound. Further discussions with Crawford are needed, as well as additional lithogeochemistry, to better understand this complex set of relationships.

At Chester, many of the feldspathic rocks logged as lavas or lava breccias in BPD73 are in fact pumiceous breccias or sandstones, often extensively sericitized. This observation by Stolz (Appendix 5) has important genetic implications for much of the CVC in the Chester area, and may lead to some direct correlations with the sequnce above the Rosebery Mine, in the Mt Black Volcanics.

6.7 Pinnacles Data Review

Existing drill hole, geophysical, geochemical, geological and other data from the Pinnacles Prospect (figure 4) was reviewed in two separate programmes during the current period, with the aims of assessing the current geological model for soundness and whether enough room exists close to known mineralisation for the presence of a significant tonnage (>>2 million) of economic auriferous base metal mineralisation.

The initial study, in December 1991, undertaken by Pasminco's TC Lees was in the form of a one-week overview, putting the Pinnacles into a regional structural geology context, and assessing the known mineralisation's style and potential for greater volume. Key conclusions from this study were:

(a) REGIONAL GEOLOGY

* Pinnacles mineralisation occurs close to the western margin of the Mt Read

Volcanic Belt (MRVB), in a similar structural and stratigraphic setting to the Rosebery and Hercules deposits.

* Complex structure in the Pinnacles area is in part due to the major bend in the MRVB.
* During the Devonian deformation this bend has acted to apportion the total shortening along the zone onto different structures. It is therefore a transfer zone, and is partly the reason for complex geology.
* Some structures of the earlier (Cambrian?) deformation can still be seen.

(b) PINNACLES MINERALISATION

(Thomas' Tunnel, Brown's Tunnel to Leo's Find)

* Mineralisation occurs within a shear zone, and is structurally complex. Any further mapping/interpretation will need to address structure first if the volcano-sedimentary sequence containing the mineralisation is to be deciphered.
* Mineralisation is disseminated replacement, vein/stringer and minor massive sulphide.
* Strong resemblance to South Hercules in metal values, distribution and ore textures.
* Resource figures (110 000t @ 1.26% Cu, 6.6% Pb, 18.8% Zn, 122g/t Ag and 4.1g/t Au) (Shaw and Roberts, 1985) considerably overstate grade.
* Alteration signature identified by D Leaman (1991) just south of Thomas' Tunnel may warrant follow up (note - this is near the Cone Hill cross-structure-Appendix 4).
* Limited potential for up to 2-3 mt @ South Hercules grades (3% Zn, 1% Pb, 0.3% Cu, 2g/t Au, 50g/t Ag) on Pinnacles line.
* A chance intersection in BPD63 (27-31m) @ 6.4% Zn, which is probably a similar style of mineralisation to the Pinnacles; initial follow up of this intersection should focus on UTEM coverage in the vicinity.

The second study undertaken by the author in early 1992 was aimed at producing a set of simplified geological cross sections through the Pinnacles area. These sections draw together the current model of the geology, since a number of generations of revisions have been completed over the last few years but have not been reproduced in one set, at one scale, using standard nomenclature and symbols stretching from Cone Hill in the south to

Leo's Find in the north. It was not intended as a major, back-to-basics data review, but as a study of the state of the thinking at Pinnacles.

The stacked sections from this compilation are reproduced here at 1:10 000 scale (as figures 13, 14 and 15) and are numbered 1 to 12, from south to north, and can be located on the geological plan (figure 7) from the location of the drill collars and major structures. The sections are not evenly spaced along the belt, and are often a compromise or simplification in zones of intense drilling and complex geology. They do, however, show the structural style and state of understanding of the Pinnacles area, from a broad point of view.

Recommendations following the compilation of these cross sections, and in the light of Lees' conclusions are for an intense review of available core and other data at Pinnacles by 3 or 4 geoscientists over a 4 to 6 week period, concentrating on structural geology, if the area is to be better understood and further mineralisation discovered within or outside the Pinnacles belt.

6.8 Computerisation of Data

Most of the historic drill hole geochemical data from the 81 drill holes at Burns Peak has been entered into Pasminco's Techbase database during the current period, allowing manipulation of the 5 000 samples, analysed for a variety of elements, to be readily carried out. In addition, 1 000 of the over 10 000 soil, Wacker and rock chip samples collected and analysed for many elements have been manually entered into the database along with their accurate northings and eastings. The programme of data entry is continuing, with the aim of having all geochemical, geophysical, drilling and geological data available on database to be integrated in a way not achieved previously at Burns Peak.

In addition to the above, image processing of existing data sets, particularly magnetics, gravity and UTEM has progressed with some very useful preliminary results already achieved, particularly "pseudo-sections" of UTEM data, which may be an aid to mapping.

6.9 Rehabilitation & Environmental Disturbance

The on-going programme of monitoring in the Pinnacles area sites that have had topsoil replaced and have been re-seeded is continuing, with most sites progressing well. The test area, near the Boco Road (reported in Kirsner et al., 1991), has yielded good, useable results, and has formed the basis for much of the planning of further rehabilitation.

The major earthworks carried out in the current period include:

* Upgrading of the first 200m of the costean trending north-northwest leading to the drill site for BPD75, for vehicle access.
* Recontouring and topsoil replacement on the 350m long costean trending south-southeast from AMG 378 650E 5 384 520N (the "John Wally Cut"), near the collar of BPD76, as well as the access track to the BPD65 drill site.

Gridding and track cutting during the period has been restricted to the cutting of nine loops for drill hole EM surveys. These loops utilised existing tracks and grid lines where appropriate.

Three drill sites were established on the Burns Peak EL, for BPD74, 75 and 76, during the period. Vehicle access has been left open to all holes for drill hole geophysical surveys.

The location of all of these works can be found in figure 1 from Appendix 2 of this report.

375 000mE

383 000mE

WEST

EAST

A

B

ROSEBERY FAULT(S)

Thomas' Tunnel

Southern Trenches

Browns' Tunnel

PINNACLES AXIS

Leo's Find

BURNS PEAK SHEAR

BOCO ALTERATION ZONE

~400mR.L

MARIONOAK THRUST

P€

CHESTER - BOCO FAULT

?

5 cm

LEGEND

lithological contact (major)

fault/shear

significant mineralisation

abandoned mine

A / A — basaltic andesite (Hollway Andesite)

micaceous sandstone (Animal Creek Greywacke)

Chester host sediments (cvc)

rhyodacitic lavas and volcaniclastics (cvc)

undifferentiated Oonah and Crimson Creek (P€ to €)

undifferentiated clastic sediments (Dundas Group)

rhyolite lava

shales-sandstones

rhyolitic epiclastics (mass flow and tuff)

pinnacles host rocks (cherty seds; andesites; acid volcanics)

GENERALISED SECTION

Facing north (mineralisation projected onto section) showing structural style and relative positions of mineralisation.

PASMINCO EXPLORATION
A Division of Pasminco Australia Limited

COMPILED: L.W.K.	BURNS PEAK - BOCO AREA
DATE: 2-12-'92	INTERPRETED GEOLOGICAL SECTION
DRAWN: N.W.D.S.	ON 5 385 000mN A.M.G.
REF.:	
REVISIONS:	
DRAWING No.	SCALE 1:25,000 (0 — 500m)
	FIG. No. 11

041037

Silver Falls
2km.

5 386 000mN

5 382 000mN

376 000mE

380 000mE

THRUST

MARIONOAK

ROSEBERY FAULT

CHESTER-BOCO FAULT

BOCO CREEK FAULT

BURNS PEAK SHEAR

PINNACLES AXIS

BOCO ROAD

"PINNACLES" (Zn-Pb-Au)

Browns

Thomas

Leo's

Burns Peak

Southern Trenches

CHESTER (Fe-Si)

BOCO (Fe-Si)

Section line

75°

38°

43°

56°

80°

85°

40°

45°

5cm

(A.M.G.) N

(MAG.) N

12°

LEGEND

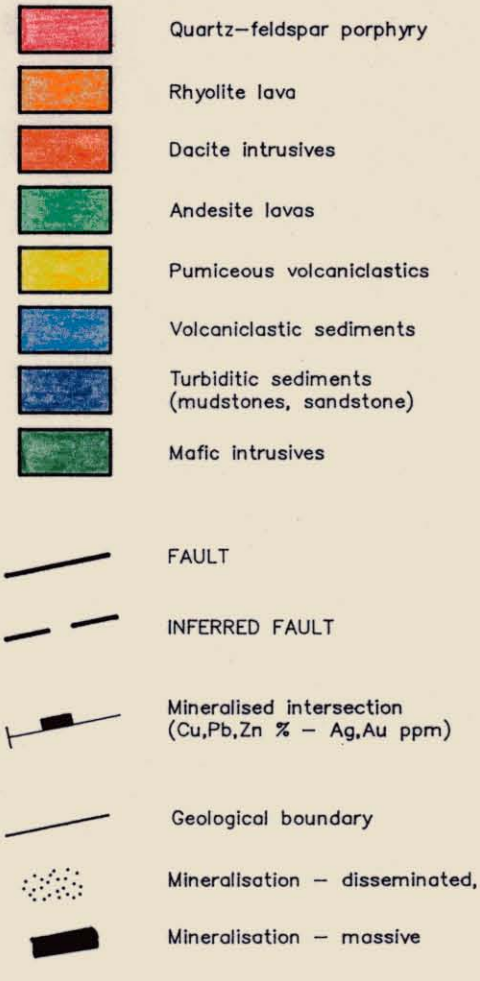
- lithological contact (major)
- fault/shear
- significant mineralisation
- abandoned mine
- basaltic andesite (Hollway Andesite)
- micaceous sandstone (Animal Creek Greywacke)
- Chester host sediments (cvc)
- rhyodacitic lavas and volcaniclastics (cvr)
- undifferentiated Oonah and Crimson Creek (P€ to €)
- undifferentiated clastic sediments (Dundas Group)
- rhyolite lava
- shales-sandstones
- rhyolitic epiclastics (mass flow and tuff)
- pinnacles host rocks (cherty seds; andesites; acid volcanics)

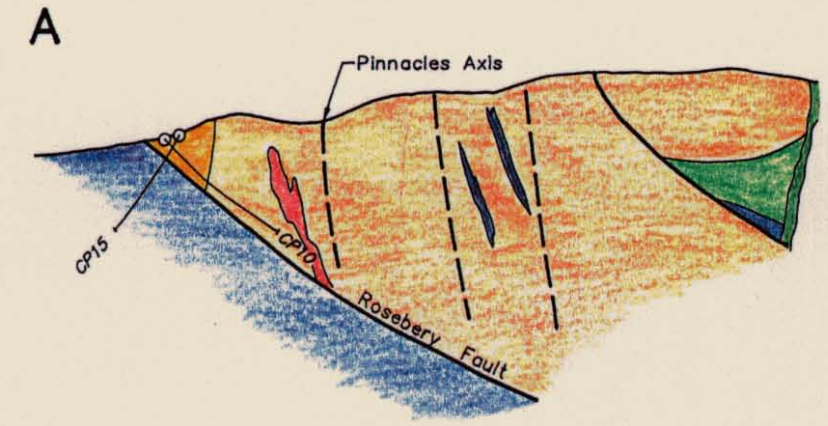
PASMINCO EXPLORATION
A Division of Pasminco Australia Limited

COMPILED: L.W.K.	BURNS PEAK- BOCO AREA
DATE: 1-12-'92	SIMPLIFIED GEOLOGY
DRAWN: N.W.D.S.	
REF.:	
REVISIONS:	
DRAWING No.	SCALE 1:25,000 0 500m
	FIG. No. 12

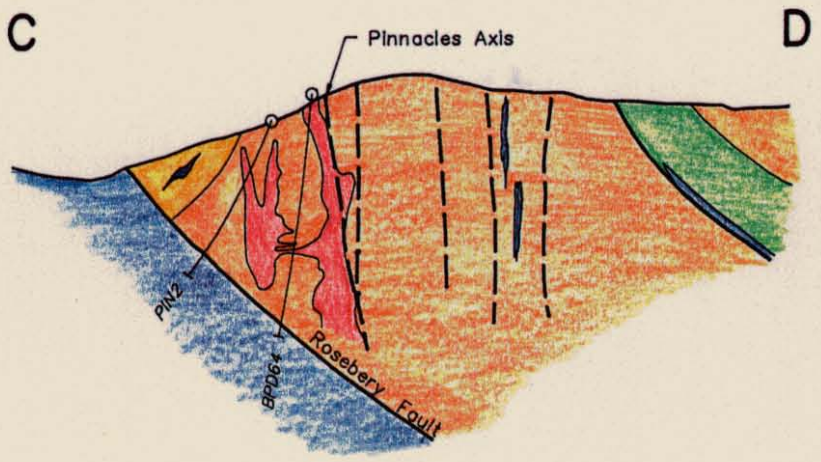
041038

LEGEND

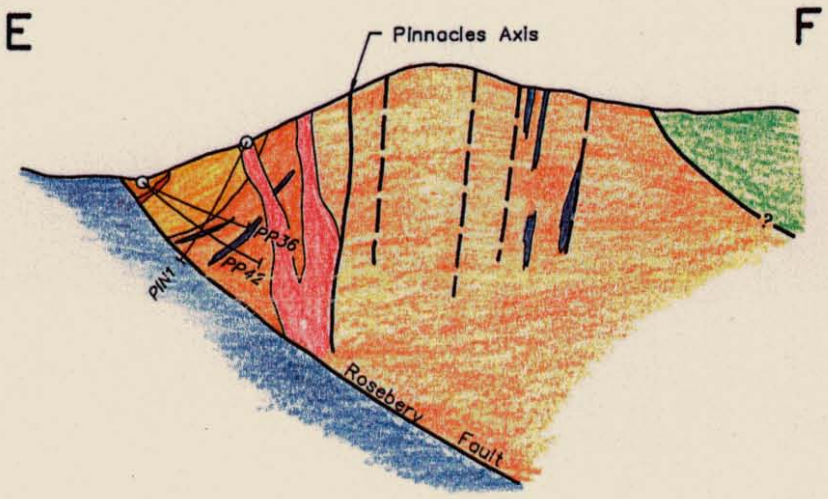




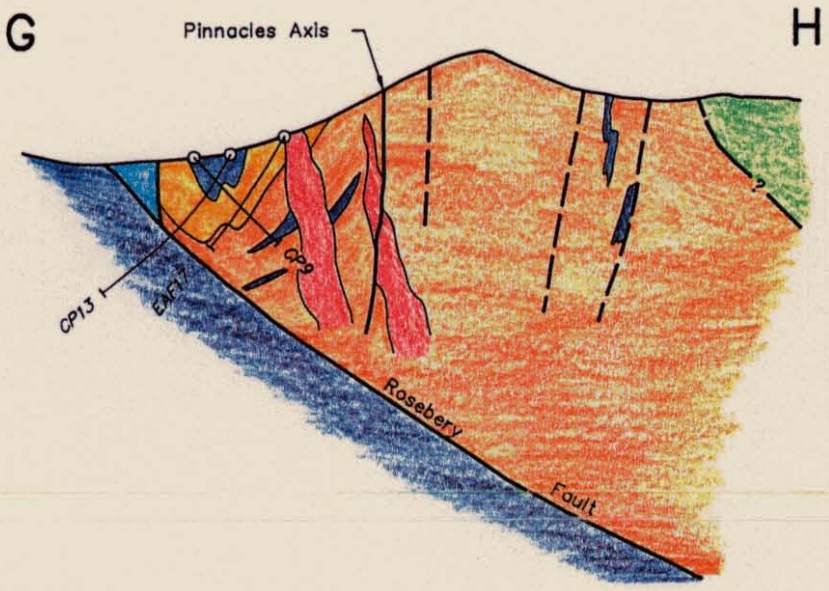
SECTION 1



SECTION 2

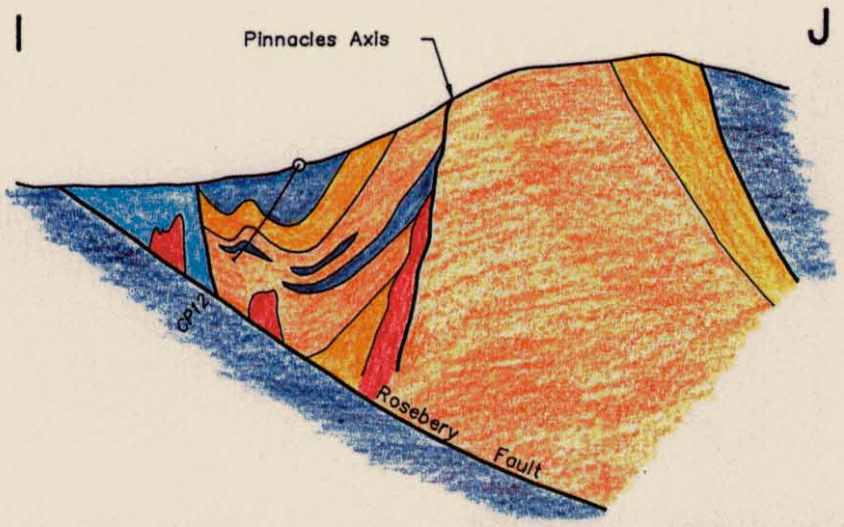


SECTION 3



SECTION 4

5 cm



SECTION 5

NOTE : See individual sections for LEGEND

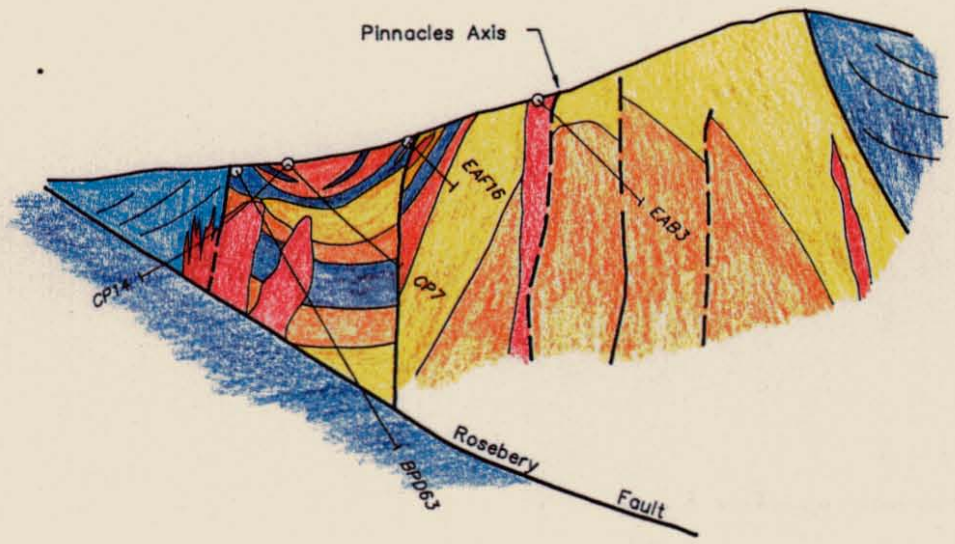
PASMINCO EXPLORATION
A Division of Pasminco Australia Limited

COMPILED : L.W.K.	E.L. 44/88 – BURNS PEAK JV
DATE : May, 1992	PINNACLES
DRAWN : G.M.B.	STACKED SECTIONS 1 – 5
REFERENCE :	
REVISIONS :	
DRAWING No.	SCALE 1:10,000 (0 – 200 m)
	FIG. No. 13

041039

K

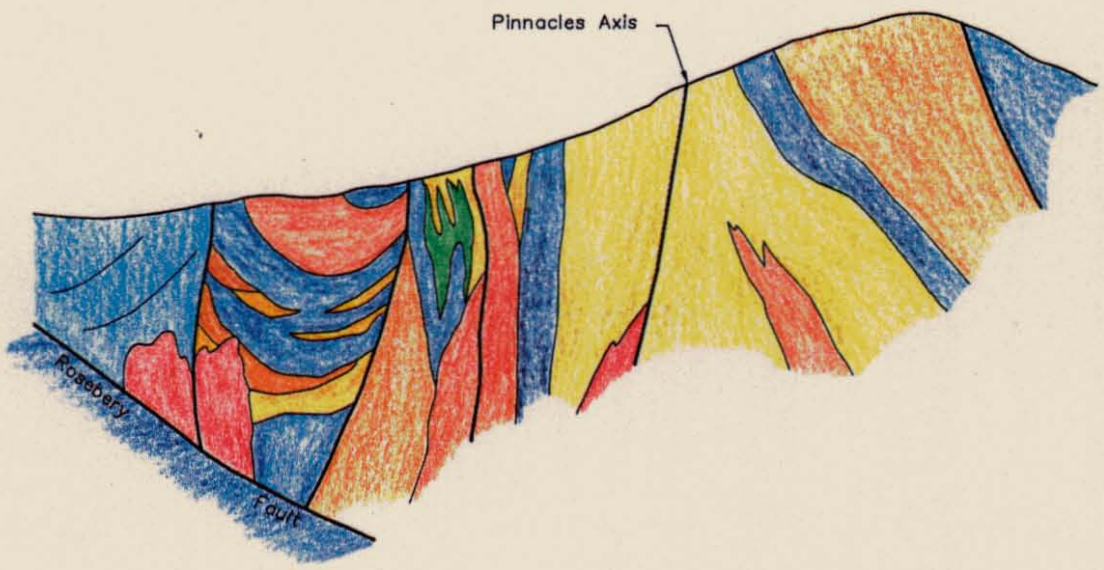
L



SECTION 6

M

N



SECTION 7

O

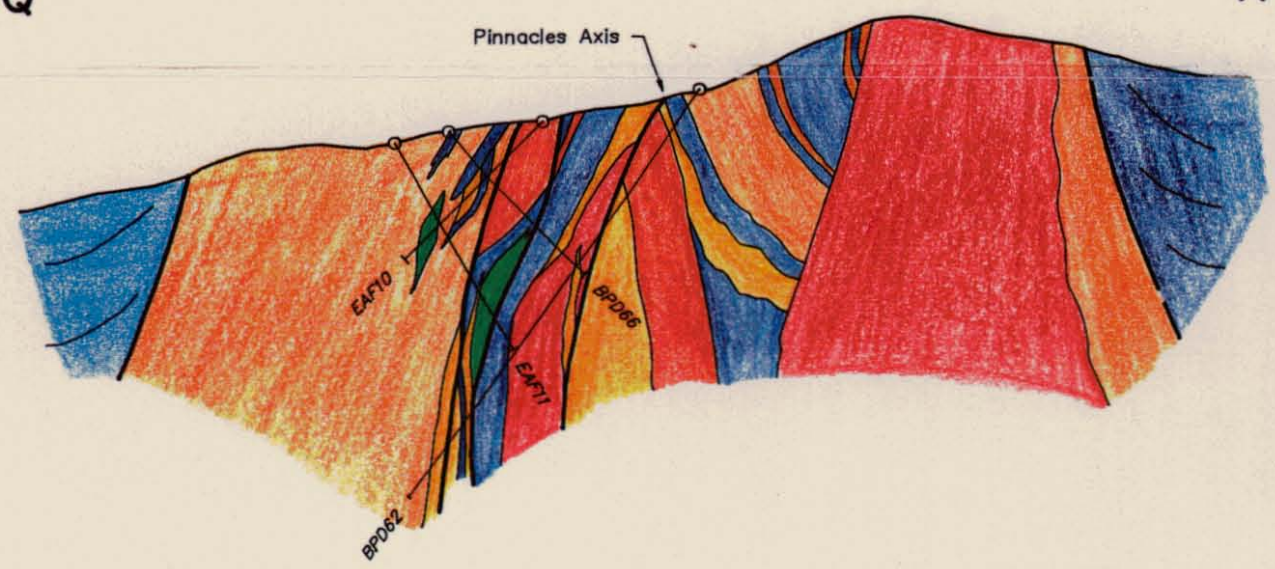
P



SECTION 8

Q

R



SECTION 9

5 cm

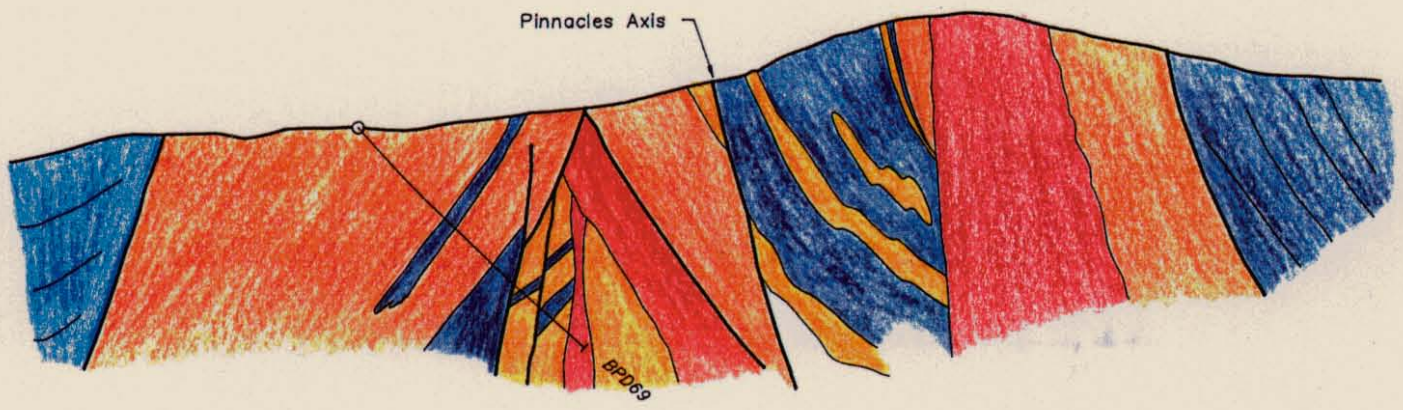
NOTE : *See individual sections for LEGEND*

PASMINCO EXPLORATION
A Division of Pasminco Australia Limited

COMPILED : L.W.K.	E.L. 44/88 – BURNS PEAK JV
DATE : May, 1992	PINNACLES
DRAWN : G.M.B.	STACKED SECTIONS
REFERENCE :	6 – 9
REVISIONS :	
DRAWING No.	SCALE 1:10,000 (0 – 200 m)
	FIG. No. 14

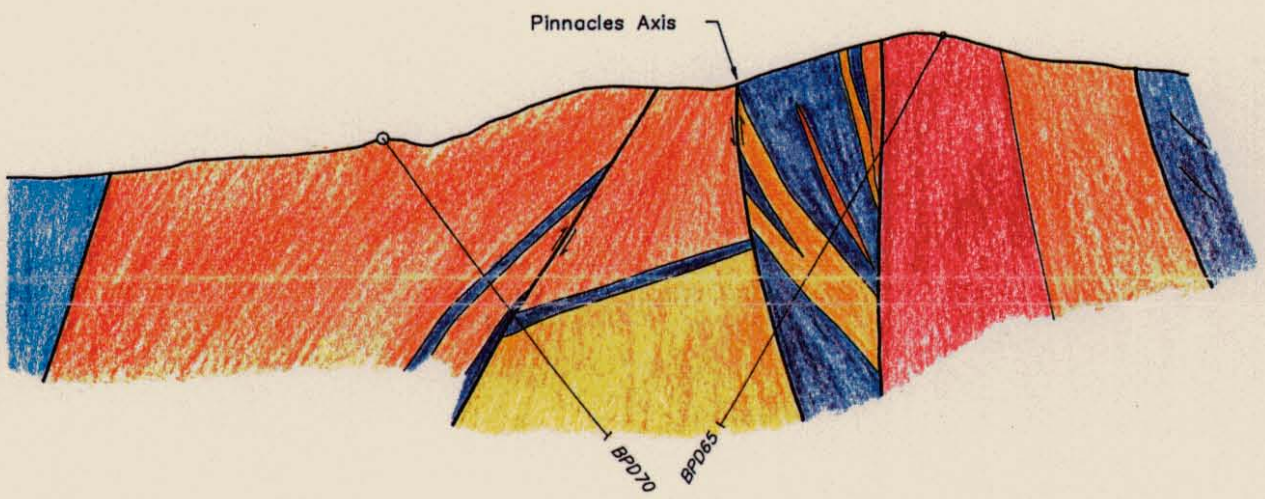
0411040

S · T



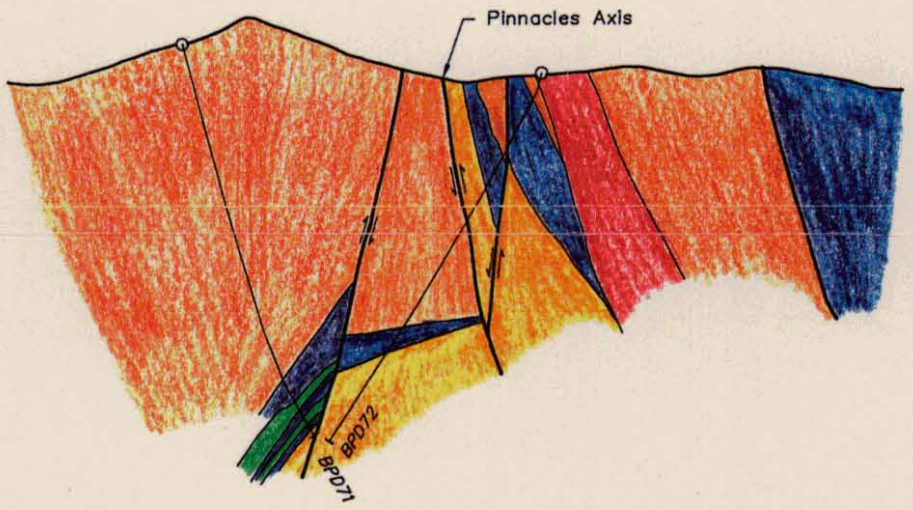
SECTION 10

U V



SECTION 11

W X



SECTION 12

5 cm

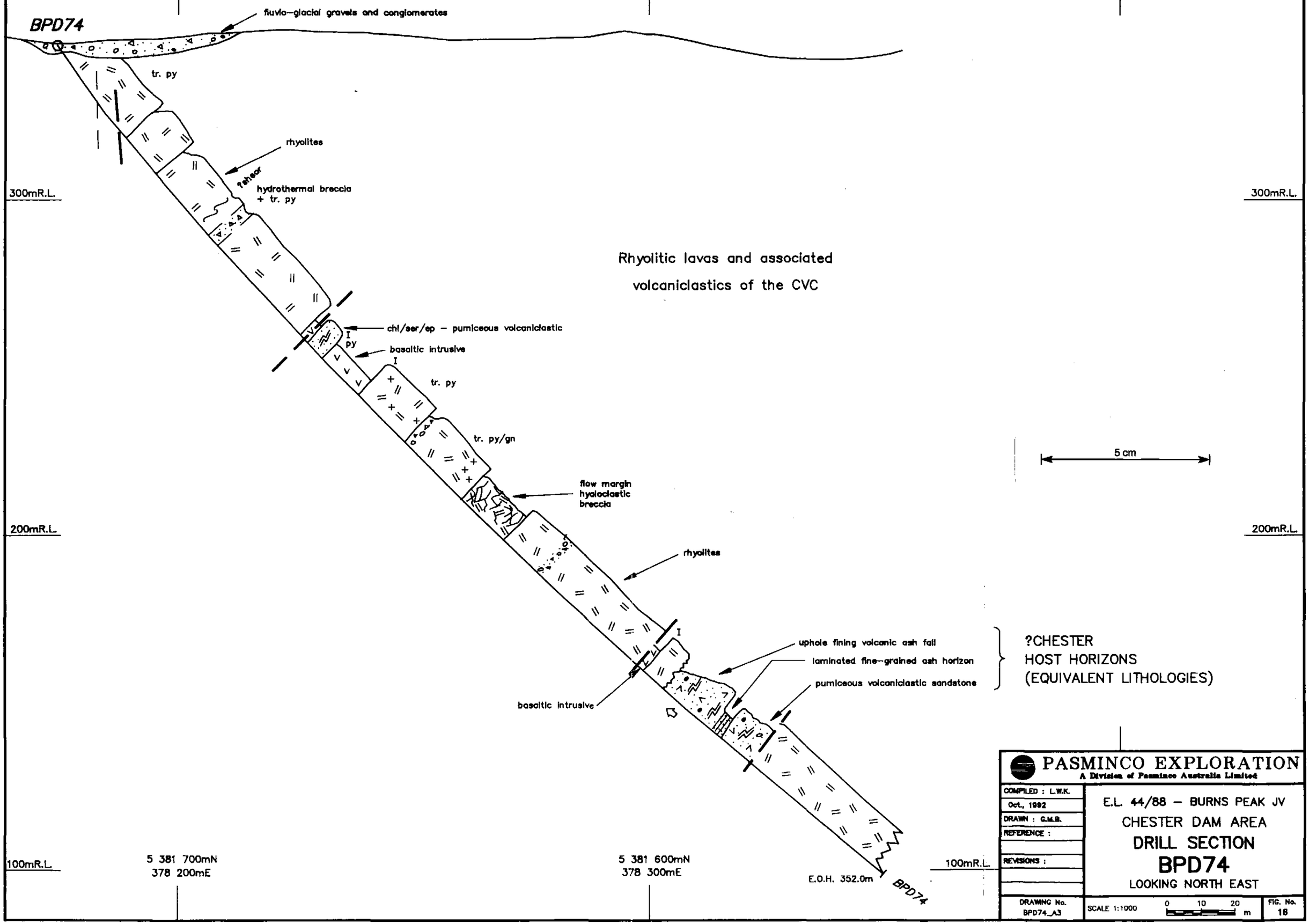
NOTE : *See individual sections for LEGEND*

PASMINCO EXPLORATION
A Division of Pasminco Australia Limited

COMPILED : L.W.K.	E.L. 44/88 – BURNS PEAK JV
DATE : May, 1992	PINNACLES
DRAWN : G.M.B.	STACKED SECTIONS
REFERENCE :	10 – 12
REVISIONS :	
DRAWING No.	SCALE 1:10,000 (0 – 200 m)
	FIG. No. 15

041041

041042



PASMINCO EXPLORATION
A Division of Pasminco Australia Limited

COMPILED : L.W.K.	E.L. 44/88 – BURNS PEAK JV
Oct., 1992	CHESTER DAM AREA
DRAWN : G.M.B.	**DRILL SECTION**
REFERENCE :	**BPD74**
REVISIONS :	LOOKING NORTH EAST
DRAWING No. BPD74_A3	SCALE 1:1000 (0 10 20 m) — FIG. No. 16

5 383 600mN

378 900mE

BPD75

Polymict epiclastics/peperites
(flow margin deposits)

(clay pug) SIROTEM FEATURE ?

400mR.L.

py

flow base

py

rhyolites

peperitic flow
base

py

chl/sil

basaltic
andesites

300mR.L.

Zone of interfingered rhyolite and basaltic andesite lavas, hyaloclastites, peperites and minor pumice breccias

HOLLWAY ANDESITE AND
AND
CENTRAL VOLCANIC
COMPLEX

300mR.L.

200mR.L.

(clay pug) ? EXPLAINS
SIROTEM AND UTEM FEATURES

sericitic alteration and
sphalerite/galena
gash veinlets

sp/gn

E.O.H. 349.5m

100mR.L.

5 cm

378 800mE

5 383 700mN

PASMINCO EXPLORATION
A Division of Pasminco Australia Limited

COMPILED : L.W.K.	E.L. 44/88 – BURNS PEAK JV
DATE : Oct., 1992	HOLLWAY AREA
DRAWN : G.M.B.	DRILL SECTION
REFERENCE :	BPD75
REVISIONS :	LOOKING EAST NORTH EAST
DRAWING No. BPD75_A3	SCALE 1:1000 0 10 20 m
	FIG. No. 17

0411043

378 500mE | 378 600mE | 5 384 500mN | 378 700mE | 378 800mE | 378 900mE

600mR.L.
500mR.L.
400mR.L.
300mR.L.
200mR.L.
100mR.L.

BPD76

COARSE QUARTZ–FELDSPAR PORPHYRITIC INTRUSIVES, LAVAS, HYALOCLASTITES AND MONOMICT COARSE EPICLASTICS

sphalerite blebs in matrix and veinlets

RHYOLITE LAVA/SILL

py

SHALE

minor sphalerite in matrix

RHYOLITE HYALOCLASTITE & LAVA BRECCIA

sphalerite/pyrite dissem and veinlets

RHYOLITE LAVA/SILL

py 2–5%

BLACK SHALE/SILTSTONE – graphitic pyritic

sp/gn veins

GREY SANDSTONES & ASHY SILTSTONES

322.6m 014/55° W
320.5m 074/52° NW
352.2m 032/48° NW
350.4m 062/38° NW
(oriented core)

minor sp/py throughout interval

BURNS PEAK SHEAR

ASHY VOLCANICLASTIC SANDSTONES & COARSE GRAINED MASS FLOWS (Minor rhyolite lavas and black/grey mudstones)

sericite (+ py/sp)

sphalerite/galena in gravelly sandstone (in matrix & veinlets)

strong fuchsite–sericite alteration

ANDESITIC HYALOCLASTITE AND EPICLASTICS (minor fine sediments)

fault zone at base of andesite sequence

semi–massive pyrite (2.3m thick) (fine grained + sphalerite/galena)

E.O.H. 532.5m

5 cm

PASMINCO EXPLORATION
A Division of Pasminco Australia Limited

COMPILED : L.W.K.	E.L. 44/88 – BURNS PEAK JV
DATE : Nov., 1992	SUMMIT PROSPECT
DRAWN : G.M.B.	DRILL SECTION
REFERENCE :	BPD76
REVISIONS :	LOOKING NORTH NORTHEAST
DRAWING No. BPD76_A3	SCALE 1:2000 (0 20 40 m)
	FIG. No. 18

0411044

EAB 2

>35m — coarse rhyolitic epiclastics and sandstones

50m — ashy siltstones and sandstones

76m — rhyolite/dacite lava or shallow intrusive

andesitic epiclastics

~400m — pillowed basaltic andesite and hyaloclastite

TOP OF HOLLWAY ANDESITE

BPD 76

>50m — coarse qtz-fsp porphyry lava/sills and clastics

9m — rhyolitic lava breccias

<2m — black shale

42m — rhyolitic hyaloclastite and lavas

26m — black shale

94m — ashy sandstones and siltstones with minor black mudstones and rhyolite lava breccias

50m — gravelly sandstone; pillowed basaltic andesite lava, hyaloclastite and epiclastics

F

>50m — rhyolitic lava/sills

EAB 1

>55m — coarse quartz-feldspar porphyry

26m — coarse quartz-feldspar porphyry-volcaniclastic mass flows

36m — rhyolitic epiclastic mass flows and sandstones

pyritic and graphitic black shale/mudstone

84m

grey bedded sandstone

17m — rhyolitic to andesitic epiclastics

pillowed basaltic andesite

(~400m)

BASAL PORTION OF HOLLWAY ANDESITE

BPD 75

pillowed basaltic andesite hyaloclastite and peperites

F

rhyolite lava and pumiceous volcaniclastics

F

pillowed basaltic andesite and peperites

177m — pumiceous volcaniclastic

F

interfingered basaltic andesite and rhyolite lava

F

rhyolite lava and associated lava breccias (CVC)

LITTLE OR NO CORRELATION POSSIBLE

EAB 4

(~400m) — pillowed basaltic andesite

>15m — micaceous sandstone

62m — coarse feldspar andesite/dacite

39m — micaceous sandstone

≥37m — pillowed andesite

F

rhyolite lavas (CVC)

TOP OF CVC RHYOLITES

5 cm

PASMINCO EXPLORATION
A Division of Pasminco Australia Limited

COMPILED: L.W.K.
DATE: NOV. '92
DRAWN: N.W.O.S.
REF.:
REVISIONS:

DRAWING No.

BURNS PEAK EL.44/88
SCHEMATIC STRATIGRAPHIC COLUMNS IN THE BURNS PEAK SUMMIT-HOLLWAY AREA
DDH # EAB 1,2 & 4; BPD 75 & 76

SCALE N.T.S.

FIG. No. 23

041045

7. CONCLUSIONS & RECOMMENDATIONS

Three diamond drill holes were completed on EL 44/88 during the past year for a total of 1234.0 metres. Drill hole BPD74 (352.0m) drilled near **Chester Dam** was entirely within CVC rocks, and although it struck equivalent lithologies to the Chester host horizons, it did not intersect any mineralisation.

Drill hole BPD75 (349.5m) drilled in the southeastern margin of the **Hollway** andesite intersected a series of interfingered basaltic andesites and rhyolites with only minor tension gash base metal sulphide mineralisation. This hole helped to significantly advance the interpretation of the geology east of the Pinnacles line.

Drill hole BPD76 (532.5) drilled on the eastern side of the Burns Peak **Summit** intersected porphyries, rhyolitic and ashy volcaniclastics, black shales, andesitic hyalocatites and epiclastics, and rhyolite lavas. It also intersected a major steep-dipping, sulphide-bearing shear zone (Burns Peak Shear) and minor base metal sulphides throughout the hole, with narrow zones of slightly higher base metals. Strong fuchsite/sericite alteration in the andesitic volcaniclastics near one of the better mineralised zones is a promising sign that a larger base metal-bearing alteration system may not be far away.

The results of BPD76 along with the new geological interpretation of the **Summit** prospect form the basis for a sustained programme in the area immediately north of BPD76 in the core of the down-plunge extension of the major syncline. This area is a large, untested and mostly unassessed volume of rock with the space to hold a major pollymetalic base metal sulphide deposit the size of Rosebery or Hellyer (>17 million tonnes?). Persistent deep drilling is strongly recommended to fully test this zone.

Other recommendations for the coming year are:

* To carry out a full review and appraisal of the **Pinnacles** prospect in a 4 to 6 week period, utilising 3 or 4 geoscientists;
* To follow up IP and geochemical anomalies in the **Hollway** and **Chester/Bastyan** areas with further IP, geochemical sampling and geological mapping;
* To assess lower-priority targets on the eastern half of the licence, including the **Railway** Prospect with a view to identifying 50% of the licence area to be

relinquished by December 1993;

* To continue to upgrade the computer database to include all historic data and have all data sets available to be usefully integrated;
* To better characterise the volcanic lithologies on lithogeochemical and petrographic grounds;
* To continue the ongoing environmental rehabilitation programmes already underway.

8. REFERENCES

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

Kirsner, L.W., Lorrigan, A.N. and Rae, H.C., 1992, Burns Peak EL 44/88 Annual Report November 1990-October 1991, Pasminco Exploration, Unpublished Report No. T91-13.

Rosenhain, A.N., and Mathison, I.J., 1989, EL 44/88 Burns Peak, Annual Report on Exploration Activity January 1989-October 1989, Geopeko, Unpublished Report No. T242

Waters, J.C. and Wallace, D.B., 1992, Volcanology and Sedimentology of the Host Succession to the Hellyer and Que River Volcanic-Hosted Massive Sulphide Deposits, Northwestern Tasmania, Econ. Geol., v.87, pp.650-666.

KEYWORDS:

LEAD, ZINC, SULPHIDE, MT READ VOLCANICS, GEOLOGY, GRAVITY, DOWNHOLE ELECTROMAGNETICS, BURNS PEAK, HOLLWAY, CHESTER, PINNACLES, CAMBRIAN.

LOCALITY:

SOPHIA	1:100 000	SHEET 8014
BURNIE	1:250 000	SHEET SK55

APPENDICES

APPENDIX 1.

DRILL LOGS:

BPD73

BPD74

BPD75

BPD76

SUMMARY LOGS:

EAB1

EAB2

EAB4

HOLE No. BP073

PASMINCO EXPLORATION
DIAMOND DRILL CORE RECORD

LOCATION	TASMANIA
PROJECT	BURNS PEAK
PROSPECT	CHESTER-MT KERSHAW
DESIGNED BY	L W KIRSNER
LOGGED BY	L W KIRSNER
RELOGGED	
COMMENCED	26 SEPTEMBER 1991
COMPLETED	17 OCTOBER 1991
DRILLED BY	DIAMOND DRILLING TASMANIA
DRILL RIG	LONGYEAR 44

OBJECTIVE

To test favourable stratigraphic horizon, equivalent to the Chester Host position, to the west of Chester, near Mt Kershaw. To test the source of bedrock & soil geochemical anomalies. To intersect the Rosbery Fault.

RESULT

Contact zone between lavas (0-138.5) and volcaniclastics (147.0-393.9) contained brecciated mix of fine-grained, ash/sediments and volcanic-derived fragments. Minor elevation of Zn contnt (to 650ppm) in the interval 138.5-147.0. Chalcopyrite occurs in the interval 203.0-205.95. RosberyFault 393.9m, Dundas Sediments 393.9-417.9.

LOCATION/SURVEY DATA (AMG)

Grid	AMG		RL Collar m 520.5
Northing m	5 380 595.7		Bearing Collar 270°
Easting m	377 428.7		Dip Collar -60°
DH Survey Type	Eastman Camera		Length Hole m 417.9m

Depth m	Bearing	Dip	Depth m	Bearing	Dip
50	269.5	-58.5			
100	269	57			
150	270	56			
200	268	54.5			
250	266	52			
300	268	51.5			
350	267	49.5			
400	268	48			

SIGNIFICANT INTERSECTIONS

From m	To m	Interval m	Cu	Pb	Zn	Ag	Au	Comments
236.4	245.75	9.35	2228	27	111	1.13	< 0.008	*0.22% Cu in altered lavas.

SIGNIFICANT CORE LOSS

From m	To m	% Lost
113.7	119.6	-11%
119.6	125.1	+10%
151.0	154.5	-23%

POOR GROUND CONDITION ZONES

CORE LOSS

From m	To m	%LOST
171.6	173.4	-14%
331.7	333.4	+14%

HOLE SIZE

Size	Depth m
HQ	0 - 79.8
NQ	79.8 - 417.9

HOLE CONDITIONS AFTER COMPLETION

Collar	PVC
Steel Casing	-
PVC Casing	0 - 417.9 (for DHEM)
Ground Water	-
Wedge	-
Drill Pad	Sump filled in & topsoil replaced.

041052

PASMINCO EXPLORATION
SUMMARY DIAMOND DRILL CORE LOG

HOLE No. BPD 73

PROJECT: BURNS PEAK - MT KERSHAW

Graphic Scale 1: 1000

From m	Interval m	Code	Description
0·0	138·5		DACITE LAVAS/SILLS.
			- variably flowbanded, sericitic & chloritic with traces of pyrite; Perlitic & slightly foliated.
138·5	2·9		PUMICEOUS SANDSTONE
			- fine, sericitic, pyritic, "ashfall" deposit.
141·4	0·4		SILICEOUS SANDSTONE
			- bedded, ashy.
141·8	5·2		LAVA BRECCIA / EPICLASTIC
			- sericitic, brecciated, primary clastic or redeposited coarse breccia.
147·0	118·95		PUMICEOUS VOLCANICLASTICS.
			- Pumice breccia, feldspathic, sericitic, variably "brecciated" (2°)
			- chalcopyrite mineralised at 227–260 m.
265·95	3·8		DACITE LAVA/SILL
			- massive, pyritic, feldspathic.
269·75	1·15		- SILICEOUS SILTSTONE.
			- bedded, sericitic.
270·9	3·9		DACITE LAVA/SILL
			- massive, glassy.
274·8	1·0		SILTSTONE
			- bedded (?sheared)
275·8	0·9		ACID LAVA?
276·7	3·6		SILICEOUS SILTSTONE
			- re-worked ash deposit
280·3	9·6		LAVA BRECCIA/LAVA.
289·9	28·7		PUMICEOUS VOLCANICLASTICS
			- massive, feldspathic.
318·6	7·1		DACITE LAVA.
325·7	3·3		BASIC DYKE
329·0	9·4		LAVA / ? PUMICE BRECCIA.
			- feldspathic.
338·4	0·2		BASIC DYKE
338·6	6·5		PUMICE BRECCIA
			- recrystallised pumice.
345·1	1·3		BASIC DYKE
346·4	30·1		DACITE TO INTERMEDIATE LAVA
			- variably brecciated, more mafic than higher in the hole.
376·5	3·9		DACITE LAVA
			- feldspathic
380·4	13·5		VOLCANICLASTIC SANDSTONE
			- lithic-rich, quartz & feldspar bearing, (2° qtz) sericitic.
393·9	—		ROSEBERY FAULT
			- deformed zone from 393·7 to 398·0
393·9	4·1		BLACK SHALE
			- laminated, broken core, foliated, deformed
398·0	5·2		SANDSTONE
			- with detrital quartz ⇒ sedimentary origin.
403·2	14·7		BLACK SHALE
			- laminated folded, deformed (? Chamberlain Shale equivalent)
417·9	—		END OF HOLE

Depth: 100m, 138·5, 141·8, 147·0, 200m

Graphic: 265·95, 269·75, 276, 280·3, 289·9, 300m, 325·7, 329·0, 338·4, 345·1, 346·4, 376·5, 380·4, 393·9, 398·0, 400m, 403·2, 417·9m EOH, F, F, F, ROSEBERY FAULT

041053

PASMINCO EXPLORATION
DIAMOND DRILL CORE LOG

HOLE No. BPD 73

PROJECT: BURNS PEAK

Graphic Scale 1: 200

CORE RECOVERY				DESCRIPTION						CODES			
From m	Interval m	%	RQD	From m	Interval m	(incl. LITHOLOGY, STRUCTURE & ALTERATION)	Depth	Graphic Lithology	Struct.	MINERALISATION	LITHO	STRUCT	ALTN	MIN
0.0	2.8	70		0.0	1385	DACITE LAVA & SHALLOW INTRUSIVES (SILLS).								
4.0	2.85	95		0.0	13.0	- chloritised, pale cream to grey, poorly to								
7.0	2.95	98				moderately foliated, chloritic wisps in places			clvd @ ~30° to LCA					
10.0	3.0	100				reminiscent of flow banding, some preferred align-								
13.0	2.9	97				ment of feldspar and chloritised crystals (up to			fb at					
16.0	5.65	97				3mm across) parallel to regional cleavage	10		~50° to LCA.					
21.8	3.3	103				@ 30° to core, generally partially elongate								
25.0	2.95	98				in cleavage. Some larger patches of								
28.0	2.95	98				fine-grained chloritic material, possibly originally								
31.0	2.9	97				devitrified glass. Some "blotchy" cream/pink								
34.0	2.75	92				zones interspersed with pale green chloritic			qtz/cb/py veins					
37.0	2.9	97				zones. Minor chlorite/cb veins at 30° to core.	20							
40.0	2.0	95				Some fine-grained disseminated pale cream sericite?								
42.1	3.05	98				in first few metres. Weathered out vughs throughout.				traces of disem. pyrite				
45.2	2.3	96				* 44.2m - chlorite-carbonate vein @ 30°			trace					
47.6	2.1	95				- occasional fine grained grey partially chloritised								
49.8	2.95	98				zones that appear to be "clasts" enveloped by								
52.8	2.15	98				regional cleavage.	30							
55.0	2.95	98				* 6.4m - patch of possible primary lava flow								
58.0	2.9	97				brecciation - "clasts" of pale cream rock surrounded								
61.0	2.75	98				by chloritised (devitrified glass?) ground mass. 5mm								
63.8	3.05	98				to 25mm across			Minor F.					
66.9	3.1	100				* 9.7m - regional cleavage at 28° to core								
70.0	1.5	94				* 10.8-12.0m veins of chlorite incorporating fragments	40							
71.6	3.0	100				of pale cream lava, up to 8mm wide (? hydro-								
74.6	3.05	98				thermal fracturing?)								
77.7	2.0	100				* 12.2m - possible primary layering - chlorite								
79.7	2.1	91				altered flow banding? @ 50° to core.								

041054

PASMINCO EXPLORATION
DIAMOND DRILL CORE LOG

HOLE No. BPD 73

PROJECT: BURNS PEAK

Graphic Scale 1: 200

CORE RECOVERY				DESCRIPTION							CODES			
From m	Interval m	%	RQD	From m	Interval m	(incl. LITHOLOGY, STRUCTURE & ALTERATION)	Depth	Graphic Lithology	Struct.	MINERALISATION	LITHO	STRUCT	ALTN	MIN
82.0	3.0	100		13.0	8.9	- more patchy, possibly flow banded &								
85.0	2.0	95				variably chloritised. Some patches unchloritised								
87.1	2.25	98				with no phenocrysts in pale cream rock.								
89.4	3.6	100				* 17.1m - narrow (2-3mm) qtz vein containing								
93.0	6.85	98				galena & pyrite crystals, @ 10° to core.								
100.0	6.0	100				17.5 - 2mm pyrite vein on break in core								
106.0	3.5	97				18.0 - 4mm qtz + gn + py vein @ 30°								
109.6	4.1	100				18.4 - 3mm qtz + chl vein @ 45°								
113.7	5.25	89	+			18.4-19.0 - 2mm qtz vein @ 0° to core								
119.6	6.05	110	+			(qtz veins blocky white brittle fracture fill-type)								
125.1	6.05	98				quartz + chl veins: 21.0m - 4mm wide @ 45°								
131.3	1.7	100				21.2m - 20mm wide @ 40°								
133.0	2.0	100				* 21.45m - galena-pyrite vein on alteration front/								
135.0	3.8	95				edge of flow banded glassy patch, in vugh-filling								
139.0	2.8	93				position, associated with quartz veins, (in zone								
142.0	4.05	96				of patchy chl ± ser alteration).								
146.2	4.75	99				21.9 - qtz vein with two or more growth periods								
151.0	2.7	77	+			incorporating chlorite blebs.								
154.5	5.5	100												
160.0	3.0	100		21.9	4.4	- medium grey-green, wispy to flow banded, chloritic								
163.0	2.5	96				(after feldspar) phyric, with zones of massive								
165.6	5.95	99				to moderately cleaved lava (devitrified glass)								
171.6	1.55	86	+			interspersed with patchy / wispy flowbanded								
173.4	6.0	100				& moderately sericitic cream-yellow lavas.								
179.4	5.6	100				occasional blebs of pinkish coloured mineral								
185.0	3.7	97				(iron oxide? @ 22.8m)								
188.8	7.2	100				22.6 - vugh filled with pyrite crystals								
196.0	6.0	100				23.4 - chlorite veins ± qtz								

SEE PAGE 6 FOR CONTINUATION

041053

PASMINCO EXPLORATION
DIAMOND DRILL CORE LOG

HOLE No. BPD 73

PROJECT: BURNS PEAK

Graphic Scale 1:

CORE RECOVERY				DESCRIPTION						CODES			
From m	Interval m	%	RQD	From m	Interval m	(incl. LITHOLOGY, STRUCTURE & ALTERATION)	Depth	Graphic Lithology	Struct.	MINERALISATION	LITHO	STRUCT	ALTN	MIN
202.0	3.5	97				24.0 - minor aggregates of dissem. pyrite								
205.6	3.2	97				24.75 - qtz vein with vughs filled with galena ± pyrite ± chalcopyrite. Blocky qtz in variable width veins (2mm → 15mm).								
208.9	4.9	96												
214.0	11.95	99												
226.0	5.25	99				25.5 - py + gn in small vughs near 45° fracture. Phenocrysts of feldspar + chl become less dominant from here on.								
231.3	1.8	100												
233.1	4.45	101												
237.5	6.2	100		26.3	4.7	-sericitised flow bands ± disseminated py in								
243.7	6.15	99		26.3	4.7	pale green/grey poorly chloritic, generally								
249.9	3.05	98				massive to weakly foliated dacite lava. Small								
253.0	6.0	100				vughs containing py scattered intermittently								
259.0	6.0	100				with some larger qtz phenocrysts or vesicle fill.								
265.0	4.95	99		31.0	1.0	-disseminated pyrite in pale green chloritic lava.								
270.0	2.5	100		31.0	1.0	-occasional fractures with quartz/carbonate								
272.5	2.55	98				veining contain gn ± py. Qtz/carb. blebs								
275.1	3.6	97				also associated with aggregated pyrite.								
278.8	5.3	100		32.0	3.3	- rock takes on blotchy pink/orange appearance								
284.1	2.6	96		32.0	3.3	& still contains disseminated pyrite (<< 1%)								
286.8	3.7	97				32.4 - pyrite on veins & joints & sutures (?								
290.6	2.2	100				clast boundaries?)								
292.8	3.0	100		35.3	1.7	- fine fracture-fill (1mm) chlorite veins								
295.8	5.15	99		35.3	1.7	in tectonically brecciated pale green-cream massive								
301.0	2.95	98				dacite lava. Patchy quartz vugh-fill.								
304.0	4.65	101		37.0	0.5	- broken ground; massive white quartz vein								
308.6	3.35	96				with chl-filled vesicles, a number of								
312.1	0.9	100				different generations of growth recorded								
313.0	5.0	98				(MINOR FAULT)								
318.1	3.8	103		37.5	1.7	- pale green & grey, fine grained, blotchy, patchily								

SEE PAGE 6 FOR CONTINUATION

041056

PASMINCO EXPLORATION
DIAMOND DRILL CORE LOG

HOLE No. BPD 73

PROJECT: BURNS PEAK

Graphic Scale 1:

CORE RECOVERY				DESCRIPTION							CODES			
From m	Interval m	%	RQD	From m	Interval m	(incl. LITHOLOGY, STRUCTURE & ALTERATION)	Depth	Graphic Lithology	Graphic Struct.	MINERALISATION	LITHO	STRUCT	ALTN	MIN
321·8	3·7	103				sericitised; disseminated fine-grained (1/8mm?)								
325·4	1·2	109				pyrite in grey (siliceous) patches. Hints of	48·4		flow margin contact @ 80° to LCA					
326·5	1·7	113				flow banding. Patches of feldspar	50		F					
328·0	3·8	103				phenocrysts irregularly distributed. Common			clotQ ~40° to LCA					
331·7	1·9	112				chlorite-breccia veins. (38·0-5cm qtz vein)								
333·4	4·3	98				38·9 - qtz + py - filled vugh.			flow bands 60° to LCA					
337·8	3·1	100		39·2	0·7	- Pinkish-orange colouration (DEVONIAN								
340·9	3·0	107				OVERPRINT?) becomes apparent in feldspar-								
343·7	2·3	100				phyric, fine to medium grained - POSSIBLE	60		Fa 40° to LCA					
346·0	4·6	102				SHALLOW INTRUSIVE.								
350·5	4·5	100				39·6 - chl veinlets & vughs filled with carbonate + py + qtz								
355·0	6·0	100				39·95m - Chloritised breccia zone (MINOR FAULT).								
361·0	3·0	100		39·9	8·5	pale green-yellow, fine-med grained, msv, vuggy (weathered)			← fr py.					
364·0	3·3	103				with chloritised patches up to 10mm (possible devitrified								
367·2	2·9	104				glass). Patchy pink albitisation. Fine	70							
370·0	4·2	100				chlorite veinlets @ 20° → 45° to core throughout								
374·2	2·0	95				(average 3-4 veinlets per metre). Some carbonate								
376·3	1·7	106				veining associated with chlorite veinlets. Pervasively								
377·9	5·3	96				sericitised, but low levels (1-2%). Dissem.								
383·4	1·7	106				pyrite on some vughs & in more sericitised patches.	80							
385·0	3·95	101				Feldspar phenocrysts iron-oxide stained throughout.								
388·9	2·3	100		48·4	-	- CONTACT- Irregular surface in unbroken								
391·2	2·7	100				core ⇒ flow margin? @ ~80° to core.								
393·9	2·7	100		48·4	1·45	- dark, medium grained, massive; with								
396·6	6·4	100				some fine grained chloritic matrix; sericitised								
403·0	4·0	100				feldspar phenocrysts up to 2mm across, undeformed,	90							
407·0	2·0	100				comprise ~1% of rock. Some hints of								
409·0	3·95	99				regional cleavage at ~40° to core (possibly								

041057

PASMINCO EXPLORATION
DIAMOND DRILL CORE LOG

HOLE No. BPD 73

PROJECT: BUENS PEAK

Graphic Scale 1:

CORE RECOVERY				DESCRIPTION						CODES			
From m	Interval m	%	RQD	From m	Interval m	(incl. LITHOLOGY, STRUCTURE & ALTERATION)	Depth	Graphic Lithology / Struct	MINERALISATION	LITHO	STRUCT	ALTN	MIN
413.0	4.9	100				flow bands?) Patchy quartz & carbonate vugh							
417.9	EOH.					fill; Similar lithology to above but without							
						pink/orange zones.							
				49.6	0.2	- MINOR FAULT - broken core, chl + ser + clayey							
						coating on some fragments.							
				49.85	–	- CONTACT / ALTERATION FRONT?							
				49.85	1.35	- pale yellow - cream, coarser grained, chloritic							
						crystals with well developed cleavage. fine grained							
						sericite - disseminated or patchy.							
						Strong regional cleavage @ 35° – 45°.							
						50.6 · 40mm qtz + chl + ser vugh fill.							
				51.2	0.15	- FAULT - 15 cm zone @ 50° to core. Clayey							
						pug zone incorporating fragments of surrounding rock.							
				51.35	4.95	- pale green-yellow, sericitised, rare quartz & feld-							
						spar phenocrysts. Massive Rhyolite lava.							
						Variably iron-oxide stained in patches containing							
						higher chlorite & more phenocrysts.							
						52.7 Regional Cleavage moderately developed @ 40°							
						56.1 " " " " @ 35°							
				56.3	5.15	- Lava contains zones of fine grained chlorite							
						(possibly devitrified glass) after flow bands, ~~in~~							
						@ 60° to core. Matrix is chloritic pale green/							
						cream/pink sericitic with chloritised feldspars.							
				61.45	0.35	- FAULT ZONE – @ 40° to core. quartz							
						veins + pug zone. Brecciated & chloritised in							
						randomly developed dilational openings.							
				61.8	5.2	- medium grained, with mid-green to orange/pink matrix,							
						chloritised feldspar phenocrysts, small sericite							

SEE PAGE 9

041058

PASMINCO EXPLORATION
DIAMOND DRILL CORE LOG

HOLE No. BPD 73

PROJECT:

Graphic Scale 1: 200

CORE RECOVERY				DESCRIPTION							CODES			
From m	Interval m	%	RQD	From m	Interval m	(incl. LITHOLOGY, STRUCTURE & ALTERATION)	Depth	Graphic Lithology	Struct.	MINERALISATION	LITHO	STRUCT	ALTN	MIN
						patches, some wispy sericite veinlets on joints.								
						qtz 'eyes' - associated with joints or veins variably								
						developed & up to 4mm across, euhedral secondary qtz.								
						Hints of flowbanding at 53° to core (62.45m)								
				67.0	–	- broken ground, possible fault zone or flow-top?								
				67.0	1.1	-medium to dark green chloritised flow banded								
						lava. Medium grained. Secondary quartz ± pyrite.								
						-67.6 - pyrite on joint // to core								
						67.9 - strong development of blebby secondary qtz								
						up to 8mm x 40mm long.								
				68.1	2.6	- pink-orange, (Devonian) altered, massive, fine to								
						med grained lavas with chloritised feldspars.				PETROGRAPHY & THIN SECT:				
				70.7	9.1	-patchily sericitised, flow-banded (40° to core), with				(J. Stolz):				
						almost "pumiceous" look, otherwise similar to previous				*31768 - 75.5m :-				
						interval. Plus qtz-carbonate vugh fill ± pyrite.				DACITE LAVA - perlitic;				
						Disseminated fine grained sericite alteration.				sericitic; foliated;				
						Includes "spots" of carbonate + qtz. with increased				overprinted ± carbonate				
						pyrite. Flowbands @ 70° to core (71.1m)				alteration.				
				78.8	2.2	- Pink-orange colour (DEVONIAN) dominates matrix,								
						with dark chloritised crystals (after feldspar)								
				82.0	2.9	- Pseudoclastic appearence with chloritised feldspar								
						dominated areas interspersed with massive pale								
						buff-orange matrix. Possibly alteration controlled.								
				84.9	0.1	- Small scale faulting & chlorite veining on faults @ 50°								
				85.0	6.4	- Weakly sericitised, pale buff colour, dacite lava,								
						variably feldspar phyric with patchy chlorite alteration								
						Sericitisation picks out flow banding in places (eg @								
						Carbonate veining (eg: @ 90.4m).								

SEE PAGE 9

5 cm

041059

PASMINCO EXPLORATION
DIAMOND DRILL CORE LOG

HOLE No. BPD73

PROJECT:

Graphic Scale 1: 200

CORE RECOVERY				DESCRIPTION						CODES			
From m	Interval m	%	RQD	From m	Interval m	(incl. LITHOLOGY, STRUCTURE & ALTERATION)	Depth	Graphic Lithology / Struct.	MINERALISATION	LITHO	STRUCT	ALTN	MIN
				91.4	24.6	· Chlorite alteration creating "pseudo-clastic" appearance in otherwise similar dacite lava – (flow banded, pink alteration, qtz-carb. vughfill etc)							
						109.6 – veining (chl + qtz) on tectonically "disturbed zone"	100						
				116.0	14.0	· massive, fine to med. grained, pink/grey/pale green DACITE LAVA. Qtz-carb blebs developed sporadically. qtz-carb veinlets @ 40° to core, 3 mm wide, at ~1m intervals. Minor py in veins & vugs.			5 cm				
				130.0	1.9	· increase in disseminated py in pink/grey lavas. Chlorite blebs & feldspar phenocrysts. fine dissem. ser.	110						
						131.45 – small alteration/fault zone (4mm) + chl tec							
						131.9 – carbonate vein/vugh fill.							
				131.9	5.9	· pyrite – disseminated & along veins in increasingly altered & broken core. Chl. veining on joints ⇒ breakage lines. Patchy chl alt^n persists.							
						132.2 – pyrite veins along joints sub-parallel to core	120						
				137.8	0.7	– clastic appearance. Sharp boundaries between grey fine-grained pyritic zones & medium grained buff coloured chloritically altered lavas. Much sericitisation & broken ground – fault zone? Possible lava breccia with later tectonic disturbance?			tr. pyrite				
						138.1 – qtz vein, 3cm wide @ 90° to core, connected by thinner (0.5cm) veins // to core.	130						
						138.4 – qtz vein, 2cm wide @ 80° to core.							
							138.5		tr py				

041060

PASMINCO EXPLORATION
DIAMOND DRILL CORE LOG

HOLE No. BPD 73

PROJECT:

Graphic Scale 1: 200

CORE RECOVERY				DESCRIPTION						CODES			
From m	Interval m	%	RQD	From m	Interval m	(incl. LITHOLOGY, STRUCTURE & ALTERATION)	Depth	Graphic Lithology / Struct.	MINERALISATION	LITHO	STRUCT	ALTN	MIN
				138.5	8.5	FINE-GRAINED, PUMICEOUS SEDIMENTS & LAVA FRAGMENTS.	138.5		PETROGRAPHY & THIN SECT.-				
				138.5	2.9	- grey, siliceous, fine-grained, ? brecciated sediments ? glassy lava. Wavy banding - possibly disturbed bedding in less intensely brecciated & broken zones. Pyrite (≤5%) and minor disseminated sphalerite (≪1%). Possible galena. 'Blebs' of fine grained sulphide in matrix up to 4mm across, mostly pyrite.	140		138.5-138.75m :- #31765 "PUMICEOUS SANDSTONE;" sericitic; carbonatised + pyritic.				
							141.4 m.B						
				141.4	0.4	- unequivocal sediment, bedded, cream colour, fine grained, wavy bedding @ ~32° to core & bedding parallel and vein controlled pyrite bands (fine grained, discontinuous, 1mm wide).	147.0	F 90° to CA	Pyritic.				
							150						
									PETROG:				
									141.6-141.8m :- #31766:- "SILICEOUS SANDSTONE;" qtz-sericite; bedded ? ash.				
				141.8	5.2	- much sericitisation & chloritisation in green/yellow broken core, some brecciation evident, generally similar to 138.5-141.4 interval but more brecciated/primary clastic? lava breccia appearance. High sulphide (pyrite ± sp.) content - up to 6-8% locally. Pyrite replaces clasts & formed along joints & fractures in random orientation. Generally pale grey-green siliceous "clasts" (? lava).	160						
							170	F					
						144.8 - quartz-carb. vein // to core + sp + gn							
						145.1 - flow bands? at 15° to core	180						
						145.75 - carb. veins with py along them @ 20° to core in chl/ser altered glassy ? brecciated lava.							
						146.0 - flow bands? @ 90° to core with clasts of							

5 cm

041061

PASMINCO EXPLORATION
DIAMOND DRILL CORE LOG

HOLE No. BPD 73

PROJECT :

Graphic Scale 1: 200

CORE RECOVERY				DESCRIPTION						CODES			
From m	Interval m	%	RQD	From m	Interval m	(incl. LITHOLOGY, STRUCTURE & ALTERATION)	Depth	Graphic Lithology	Struct.	MINERALISATION	LITHO	STRUCT	ALTN	MIN
						fine grained grey ?lava breccia.								
						146·2 - Flow bands? @ 40° to core								
						146·25 - 20mm massive barren quartz vein								
						146·5 - 10mm qtz vein with sphalerite + galena selvages, in sericitised, soft unsilicified breccia (?lava?).	190							
						BRECCIA / EPICLASTIC — PUMICEOUS.								
				147·0	565	- conformable (?) upper boundary to pale orange/pink devonian altered lava breccias.				PETROG / THIN SECTION				
						Massive, occasionally qtz-carbonate veined, usually barren (except 149·9 - galena on qtz vein & 159·3 increased pyrite in 10mm qtz vein).	200			163·5m # 31769 :- "PUMICEOUS SANDSTONE"				
						Clasts are chloritic devitrified glass, probably lava fragments? Matrix is massive crm/ pink/orange, massive; with <0·1% disseminated pyrite. Iron stained, 1mm - sized feldspar phenocrysts comprise ~1%				- pumice frags 0·3 - 3mm; recrystallised; sericitic;				
						Clasts 2mm - 30 mm across, average 10mm.	210							
						154·6 - qtz vein on fault at 90° to core.				5 cm				
						Clasts often angular, non-jigsaw fit with hints of pumice...	220							
						170·6 - quartz vein, 35mm wide @ 35° to core								
						172·0 - FAULT ZONE (pug)								
						194·9 - 195·0 - carbonate + chlorite veins in random orientation in ? fault zone.				qtz-carb veins have chalcopyrite & pyrite 227 - 260m				
						196·0 - 50mm massive qtz vein @ 30° to core contains carbonate blebs.	230							

041062

PASMINCO EXPLORATION
DIAMOND DRILL CORE LOG

HOLE No. BPD 73

PROJECT:

Graphic Scale 1: 200

CORE RECOVERY				DESCRIPTION						CODES			
From m	Interval m	%	RQD	From m	Interval m	(incl. LITHOLOGY, STRUCTURE & ALTERATION)	Depth	Graphic Lithology / Struct.	MINERALISATION	LITHO	STRUCT	ALTN	MIN
				203.5	62.45	- Marked increase in quartz-carbonate veins from ~1 per 10 metres to 2 to 3 per metre, usually 2-3mm wide & @ ~40° to core. Some with pyrite developed along margins.			PETROG & THIN SECTION.				
						220.7 - quartz-carbonate vein with pyrite and chalcopyrite developed.			237.5 - # 31770 "PUMICEOUS SANDSTONE" - strongly altered.				
						227-260 - qtz-carb. veins have chalcopyrite + pyrite ± minor sphalerite & traces of galena.	240						
						236.9 - large (10mm) bleb of chalcopyrite in tectonically disturbed zone 30 cm wide, containing joints & fractures & small faults.			246.6m - # 31771 "BRECCIATED" PUMICEOUS SST - pseudo-fragmental texture.				
				265.95	1.45	- sharp "intrusive" contact with massive, pale green/grey, fine grained ? lava flow with massive fine grained pyrite blebs, up to 7mm across and minor chl. altered veins. Pale pink colour in patches.	250		264.6m - # 31772 "PUMICEOUS SANDSTONE" - sericitised.				
				267.4	2.35	FAULT ZONE - pug/broken core.	260		Chalcopyrite mineralis" in cb. veinlets & matrix (~9m at 0.22% Cu)				
				269.75	1.15	= grey, fine grained, banded, veined, mylonitic appearence?, no sense of movement observed (sediments?) ✓✓ Patchy chlorite & sericite alteration - SILICEOUS SILTSTONE	265.8	F					
							267.4						
							270						
				270.9	3.9	DACITE LAVA - massive pink, feldspar-absent, much jointing/anastomosing fine lines of chlorite ⇒ high strain indicated? Includes ~~the~~ pyrite along fine fracture planes.	270.9		5 cm				
							273.8						
							275.8						
							276.3						
							276.7						

041063

PASMINCO EXPLORATION
DIAMOND DRILL CORE LOG

HOLE No. BPD 73

PROJECT :

Graphic Scale 1: 200

CORE RECOVERY				DESCRIPTION						CODES			
From m	Interval m	%	RQD	From m	Interval m	(incl. LITHOLOGY, STRUCTURE & ALTERATION)	Depth	Graphic Lithology	Struct.	MINERALISATION	LITHO	STRUCT	ALTN	MIN
				274·8	1·0	-grey, siliceous, dk grey spotted, with thin fractures, (generally @ ~63° to core). Strong tectonic(?) brecciation appearance in places with schistose anastamosing possible SHEARED fabric; Disseminated pyrite ~ 0·5 %. - SILTSTONE.	276·3 276·7 280 280·3 289·9 290 300 310 365 318·6 320			PETROGRAPHY: ·275·0m #31773:- "TUFFACEOUS SILTSTONE" -extremely fine grained, silicic ash.				
				275·8	0·5	-euhedral, terra-cotta coloured feldspar phenocrysts in grey-white strongly foliated matrix with green-grey chloritic veins // to cleavage. Disseminated pyrite <0·5%. Cleavage @ 45° to core. Faulted lower boundary - distinct "line" with chlorite on it at ~80° to core. ACID LAVA? PUMICE BRECCIA?				5 cm				
				276·3	0·4	-grey, massive, LAVA?, with minor sphalerite mineralisation (<<0·1%) ± pyrite. Chlorite veinlets randomly oriented. FAULTS?								
				276·7	3·6	-pale grey, finely banded, siliceous sediment? Finely mineralised (py <1%) SHEAR ZONE? Anastamosing pattern, varies into pink/grey colour with occasional sprinklings of terra cotta coloured feldspar phenocrysts. Banding @ 60° to core 277·7 - qtz veins - massive ± carbonate. - apparent grain size variations appear controlled by intensity of the "shear zone"..? or sediment variations?				·279.4 #31767 "SILICEOUS SILTSTONE" - reworked ash deposit.				
				280·3	1·2	- massive to moderately foliated dark green/grey lava Breccia? Terra cotta feldspars variably developed. Pyrite 1-2% ± cpy ± sp (@ 280·8) Foliation @ 50° to core 281·1m								

041064

PASMINCO EXPLORATION
DIAMOND DRILL CORE LOG

HOLE No. BPD 73

PROJECT :

Graphic Scale 1: 200

CORE RECOVERY				DESCRIPTION						CODES			
From m	Interval m	%	RQD	From m	Interval m	(incl. LITHOLOGY, STRUCTURE & ALTERATION)	Depth	Graphic Lithology	Struct.	MINERALISATION	LITHO	STRUCT	ALTN	MIN
				281·5	2·6	- dark green, massive, with pink feldspars and chlorite veinlets @ 40° to core LAVA?								
				284·1	3·2	- pink, siliceous BRECCIA, variably brecciated with chloritised layers and some grey/green bands. Pyrite < 0·5%. Broken core with hints of faulting/shearing fabric in fragments (eg. 286·6 - 287·3).	325·7		I					
				287·3	2·6	- massive pink feldspar-phyric acid ? LAVA with chlorite veinlets. Minor quartz/carb. veining. Takes on increasing BRECCIATED appearence (quench fabric?) down-hole and increased grey-green colour.	329·0		I					
				289·9	25·6	- terra-cotta coloured feldspar± phenocrysts in grey/pink ? quench brecciated matrix, criss-crossed by fine diffuse chlorite veinlets (HYDROTHERMAL BRECCIA?) Minor sericitisation. Varies down-hole between chlorite-feldspar, buff coloured zones and pink, siliceous terracotta-feldspar zones.	330							
				315·5	3·1	As above, but becomes less feldspar-phyric & takes on fine grained matrix and green-grey colour. Less brecciated. Only fine chlorite veins. Some disseminated pyrite.	340			PETROGRAPHY: 305·8 # 31774 "BRECCIATED PUMICEOUS SST" - tube pumice 1-3 mm,				
				318·6	7·1	Massive pink/orange LAVA with minor chlorite veinlets 321·6 - 322·3 - FAULT ZONE - broken ground, leached	350							
				325·7	3·3	- BASALTIC DYKE	360							
				329·0	4·5	- grey/pink/green siliceous lava with chlorite veinlets								

5 cm

C41065

PASMINCO EXPLORATION
DIAMOND DRILL CORE LOG

HOLE No. BPD 73

PROJECT :

Graphic Scale 1: 200

CORE RECOVERY				DESCRIPTION						CODES			
From m	Interval m	%	RQD	From m	Interval m	(incl. LITHOLOGY, STRUCTURE & ALTERATION)	Depth	Graphic Lithology	Struct.	MINERALISATION	LITHO	STRUCT	ALTN	MIN
				333·5	4·9	- Strongly BRECCIATED, chloritised, with terra cotta coloured feldspars & grey/pink massive groundmass.	370			5 cm				
				338·4	0·2	- BASALTIC DYKE				PETROGRAPHY:-				
				338·6	6·5	- varied pink-grey, BRECCIATED, chloritised(calc) (as above 333·5 – 338·4) PUMICE BRECCIA.	376·5		F	341·4 #31775 "PUMICEOUS SANDSTONE" - recrystallised pumice.				
				345·1	1·3	- BASALTIC DYKE	380							
				346·4	28·5	- pink-grey, brecciated, chloritised, some massive siliceous zones, mainly chaotic chl. veinlets, feldspar phenocrysts. 357·5 – qtz-carb. veining – BASIC LAVA.	390			·363·9 #31776 "BRECCIATED BASALTIC LAVA" - plag + actinolite + chl + FeO_x Matrix of chl/carb/qtz. Hydrothermal breccia.				
				374·9	1·6	- dark grey-green, feldspar & quartz phyric? Sericitised ACID LAVA? foliated variably... → BASIC LAVA?	393·9							
				376·5	—	FAULT	398·0		ROSEBERY FAULT					
				376·5	3·9	- pink, massive, siliceous, LAVA?	400							
				380·4	10·3	- massive, quartz-phyric, feldspathic VOLCANICLASTIC? SANDSTONE. Weakly sericitised. Disseminated pyrite < 1%. Dark grey colour.	403·2			·384·8 #31777 "VOLCANICLASTIC SANDSTONE" - lithic frags; ser/chl altered.				
				390·7	3·2	- as above, paler yellow/green with pink patches → VOLCANICLASTIC SANDSTONE.	410							

041066

PASMINCO EXPLORATION
DIAMOND DRILL CORE LOG

HOLE No. BPD 73

PROJECT :

Graphic Scale 1: 200

CORE RECOVERY				DESCRIPTION						CODES			
From m	Interval m	%	RQD	From m	Interval m	(incl. LITHOLOGY, STRUCTURE & ALTERATION)	Depth	Graphic Lithology	Struct.	MINERALISATION	LITHO	STRUCT	ALTN	MIN
				393.9	–	ROSEBERY FAULT (Fault "zone" = 393.7 – 398.0)								
				393.9	4.1	BLACK SHALE - black, massive to finely laminated shale. quartz + feldspar + carbonate "eyes" in zone 395.6 – 397.6. (Tectonically derived?) Much brecciation, broken ground, some foliation @ ~75° to core.	EOH 417.9 HQ			5 cm				
				398.0	5.2	VOLCANICLASTIC SANDSTONE - yellow-grey, fine to medium grained, massive sericitic, with quartz and lithic clasts Sediment origin – with detrital quartz.				PETROGRAPHY: ·402.7m · #31778 "VOLCANICLASTIC SANDSTONE" - detrital quartz ⇒ different origin to any other sample in the suite. - Clearly sedimentary origin.				
				403.2	14.7	BLACK SHALE - finely laminated, with varied bedding to core angle, many small joints & faults, grey layers, minor carbonate veining. Most bedding @ ≈ 85° to core Some bedding subparallel to core!								
				417.9	–	END OF HOLE.								

041067

HOLE No. BPD 73

PASMINCO EXPLORATION
DIAMOND DRILL CORE ASSAY DATA

PROJECT: BURNS PEAK

SAMPLE						ASSAYS (ppm unless specified)														COMMENTS
Number	Type	From m	To m	Interval m	Recovered m	Cu	Pb	Zn	Ag	Au	Au(R)	Au(S)								
032553	½ CORE	16.0	17.0	1m	1.0	13	16	533	<0.5	<0.008										
032554	"	17.0	18.0	1.0	1.0	13	16	511	"	"										
032555	"	18.0	19.0	1.0	1.0	14	<5	342	"	"										
032556	"	19.0	20.0	1.0	1.0	16	21	697	"	"		<0.008								
032557	"	20.0	20.5	0.5	0.5	7	33	882	"	"										
032558	"	20.5	21.0	0.5	0.5	8	29	538	"	"										
032559	"	21.0	22.0	1.0	1.0	7	25	315	"	"										
032560	"	22.0	23.0	1.0	1.0	<5	12	383	"	"										
032561	"	23.0	24.0	1.0	1.0	8	12	279	"	"										
032562	"	24.0	25.0	1.0	1.0	22	333	404	"	"										
032563	"	25.0	26.0	1.0	1.0	7	161	261	"	"										
032564	"	71.7	72.6	0.9	0.9	6	6	106	"	"	<0.008									
032565	"	72.6	73.6	1.0	1.0	6	12	94	"	"										
032566	"	73.6	74.6	1.0	1.0	<5	8	93	"	"										
032567	"	74.6	75.6	1.0	1.0	<5	<5	84	"	"										
032568	"	75.6	76.6	1.0	1.0	<5	30	85	"	"										
032569	"	76.6	77.6	1.0	1.0	20	655	310	"	"										
032570	"	77.6	78.6	1.0	1.0	<5	37	107	"	"										
032571	"	78.6	80.0	1.4	1.4	<5	<5	113	"	"										
032573	"	130.0	132.0	2.0	2.0	<5	<5	81	"	"										
032574	"	132.0	134.0	2.0	2.0	<5	<5	73	"	"										
032575	"	134.0	136.0	2.0	2.0	<5	<5	94	"	"	<0.008									
032576	"	136.0	138.0	2.0	2.0	<5	<5	98	"	"										
032577	"	138.0	140.0	2.0	2.0	<5	<5	252	0.6	0.029										
032578	"	140.0	142.0	2.0	2.0	29	684	239	1.7	0.010										
032579	"	142.0	144.3	2.3	2.3	161	185	652	1.7	0.020										
Laboratory	ANALABS			Analytical Method		GA140 AAS	GA140 AAS	GA140 AAS	GA140 AAS	FS309 FA/AAS	FS309 FA/AAS	FS309 FA/AAS								
Job No.	111310.60.08432	Date	3.12.91	Detection Limit		5	5	5	0.5	0.008	0.008	0.008								

041068

PASMINCO EXPLORATION
DIAMOND DRILL CORE ASSAY DATA

HOLE No. BPD 73

PROJECT: BURNS PEAK

SAMPLE						ASSAYS (ppm unless specified)														COMMENTS
Number	Type	From m	To m	Interval m	Recovered m	Cu	Pb	Zn	Ag	Au	Au(f)	Au(s)								
032580	½ core	144.3	146.1	1.8	1.8	22	55	230	<0.5	0.018										
032581	"	146.1	148.0	1.9	1.9	14	50	514	"	0.012										
032582	"	148.0	150.0	2.0	2.0	8	496	55	1.4	0.008		0.008								
032585	"	158.2	160.0	1.8	1.8	13	64	442	<0.5	0.008										
032901	"	160.0	161.9	1.9	1.9	10	84	304	"	<0.008										
032902	"	161.9	163.8	1.9	1.9	10	131	423	"	"										
032903	"	163.8	165.7	1.9	1.9	13	65	557	"	"										
032904	"	218.2	220.0	1.8	1.8	200	51	93	"	"										
032905	"	220.0	221.9	1.9	1.9	312	63	141	"	"										
032906	"	221.9	224.0	2.1	2.1	490	89	203	"	"										
032907	"	230.25	232.2	1.95	1.95	23	10	70	"	"	<0.008									
032908	"	232.2	234.3	2.1	2.1	735	62	235	"	"										
032909	"	234.3	236.4	2.1	2.1	233	16	87	"	"										
032910	"	236.4	238.1	1.7	1.7	3623	13	63	1.1	"										9.35m at 0.22% Cu
032911	"	238.1	240.1	2.0	2.0	2509	22	105	0.8	"										
032912	"	240.1	241.9	1.8	1.8	1491	28	106	0.7	"										
032913	"	241.9	243.6	1.7	1.7	2151	41	97	1.3	0.008										
032914	"	243.6	245.75	2.15	2.15	1542	29	171	1.7	0.011										
032915	"	245.75	247.5	1.75	1.75	542	24	79	0.6	<0.008										
032916	"	247.5	249.6	2.1	2.1	9	11	49	<0.5	"										
032917	"	249.6	251.5	1.9	1.9	5	5	44	"	"	<0.008									
032918	"	251.5	253.5	2.0	2.0	121	13	44	"	"										
032919	"	253.5	255.5	2.0	2.0	941	7	62	1.0	"		<0.008								
032920	"	255.5	257.5	2.0	2.0	93	<5	43	<0.5	"										
032921	"	274.0	276.0	2.0	2.0	5	13	94	"	"										
032922	"	276.0	278.0	2.0	2.0	13	136	411	1.0	0.008										
Laboratory	ANALABS			Analytical-Method		AA148 AAS	AA148 AAS	AA148 AAS	AA148 AAS	FA/AAS	FA/AAS	FA/AAS								
Job-No.	IN 310.60-08432	Date	3.12.92	Detection-Limit		5	5	5	0.5	0.008	0.008	0.008								

041069

HOLE No. BPD 73

PASMINCO EXPLORATION
DIAMOND DRILL CORE ASSAY DATA

PROJECT: BURNS PEAK

SAMPLE						ASSAYS (ppm unless specified)														COMMENTS
Number	Type	From m	To m	Interval m	Recovered m	Cu	Pb	Zn	Ag	Au	Au(R)	Au(S)								
032923	½ CORE	278·0	280·0	2·0	2·0	<5	115	304	0·5	<0·008										
032924	"	280·0	281·9	1·9	1·9	24	27	356	0·5	"										
032925	"	281·9	283·9	2·0	2·0	77	27	371	<0·5	"										
032926	"	283·9	285·6	1·7	1·7	14	<5	136	"	"										
032927	"	285·6	288·8	3·2	3·2	<5	"	59	"	"										
032928	"	288·8	289·9	1·1	1·1	"	"	48	"	"										
032929	"	388·3	389·8	1·5	1·5	"	"	69	"	"										
032930	"	389·8	391·75	1·95	1·95	"	"	37	"	"										
032931	"	391·75	394·0	2·25	2·25	"	"	30	"	"		<0·008								
31765	THIN SECTION	138·5	138·75																	
31766	"	141·6	141·8																	
31767	"	279·4	279·5																	
31768	"	75·5	–																	
31769	"	163·5	–																	
31770	"	237·5	–																	
31771	"	246·6	–																	
31772	"	264·6	–																	
31773	"	275·0	–																	
31774	"	305·8	–																	
31775	"	341·4	–																	
31776	"	363·9	–																	
31777	"	384·8	–																	
31778	"	402·7	–																	
Laboratory	ANALABS			Analytical Method		GA 140 AAS	GA140 AAS	GA140 AAS	GA140 AAS	SS309 FA/AAS	SS309 FA/AAS	SS309 FA/AAS								
Job-No.	11310·60·08432	Date	3·12·'91	Detection Limit		5	5	5	0·5	0·008	0·008	0·008								

Thin Section & Petrographic Description – by J. Stolz University of Tasmania. (14 Samples)

041070

PASMINCO EXPLORATION
DIAMOND DRILL HOLE SUPPLEMENTARY DATA

HOLE No. BPD 73

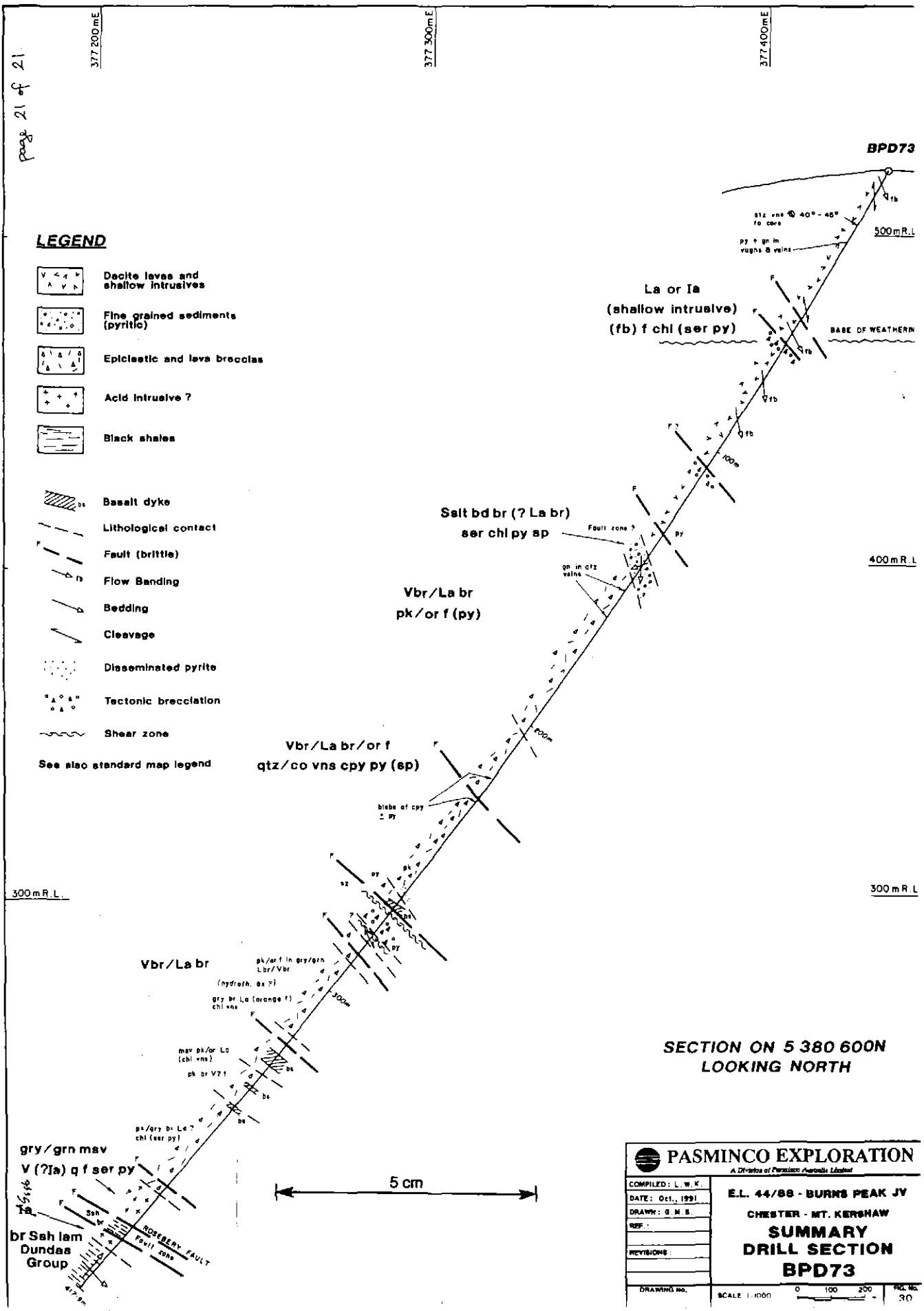
PROJECT: Burns Peak

depth	mag.sus (SI x .001)	depth	s.g.	sample type
0.0	0.01			HQ whole
7.0	0.04			HQ whole
10.0	0.21			HQ whole
13.0	0.23			HQ whole
16.0	0.15			HQ whole
19.0	0.26			HQ whole
21.8	0.44			HQ whole
25.0	0.22			HQ whole
28.0	0.81			HQ whole
31.0	0.12			HQ whole
34.0	0.28			HQ whole
37.0	0.24			HQ whole
40.0	0.29			HQ whole
42.1	0.23			HQ whole
45.2	0.18			HQ whole
47.6	0.53			HQ whole
49.8	0.31	50.0	2.53	HQ whole
52.8	0.45			HQ whole
55.0	0.21			HQ whole
58.0	0.21			HQ whole
61.0	0.17			HQ whole
63.8	0.54			HQ whole
66.9	0.22			HQ whole
70.0	0.33			HQ whole
71.6	0.36			HQ whole
74.6	0.24			HQ whole
77.7	0.23			HQ whole
79.7	0.25			HQ whole
82.0	0.20			NQ whole
85.0	0.16			NQ whole
87.1	0.20			NQ whole
89.4	0.11			NQ whole
93.0	0.14			NQ whole
100.0	0.20	100.0	2.70	NQ whole
109.6	0.27			NQ whole
113.7	0.18			NQ whole
119.6	0.10			NQ whole
125.1	0.17			NQ whole
131.3	0.18			NQ whole
133.0	0.13			NQ whole
135.0	0.17			NQ whole
139.0	0.09			NQ whole
142.0	0.02			NQ whole
146.2	0.11	150.0	2.67	NQ whole
151.0	0.07			NQ whole
154.5	0.07			NQ whole
160.0	0.07			NQ whole
163.0	0.08			NQ whole
165.6	0.07			NQ whole
171.6	0.06			NQ whole
173.4	0.09			NQ whole
179.4	0.08			NQ whole
185.0	0.12			NQ whole
188.8	0.08			NQ whole
196.0	0.06	200.0	2.70	NQ whole
202.0	0.10			NQ whole
205.6	0.09			NQ whole
208.9	0.12			NQ whole
214.0	0.07			NQ whole
226.0	0.12			NQ whole
231.3	0.11			NQ whole
233.1	0.10			NQ whole
237.5	0.12			NQ whole
243.7	0.07			NQ whole
249.9	0.10	249.9	2.75	NQ whole
253.0	0.13			NQ whole
259.0	0.09			NQ whole
265.0	0.10			NQ whole
270.0	0.11			NQ whole
272.5	0.19			NQ whole
275.1	0.08			NQ whole
278.8	0.05			NQ whole
284.1	0.11			NQ whole
286.8	0.25			NQ whole
290.6	0.08			NQ whole
292.8	0.14			NQ whole
295.8	0.10	300.0	2.68	NQ whole
301.0	0.12			NQ whole
304.0	0.12			NQ whole
308.6	0.10			NQ whole
312.1	0.09			NQ whole
313.0	0.08			NQ whole
318.1	0.31			NQ whole
321.8	0.45			NQ whole
325.4	0.17			NQ whole
326.5	0.30			NQ whole
328.0	0.39			NQ whole
331.7	0.10			NQ whole
333.4	0.11			NQ whole
337.8	0.18			NQ whole
340.9	0.07			NQ whole
343.7	0.12			NQ whole
346.0	0.33	350.0	2.64	NQ whole
350.5	0.10			NQ whole
355.0	0.11			NQ whole
361.0	0.12			NQ whole
364.0	0.25			NQ whole
367.2	0.17			NQ whole
370.0	0.11			NQ whole
374.2	0.14			NQ whole
376.2	0.09			NQ whole
377.9	0.07			NQ whole
383.4	0.09			NQ whole
385.0	0.19			NQ whole
388.9	0.18			NQ whole
391.2	0.08			NQ whole
393.9	0.12			NQ whole
396.6	0.16	400.0	2.72	NQ whole
403.0	0.08			NQ whole
407.0	0.15			NQ whole
409.0	0.19			NQ whole
413.0	0.24			NQ whole
417.9	0.15			NQ whole
EOH				

041071

041072

page 21 of 21



SECTION ON 5 380 600N
LOOKING NORTH

PASMINCO EXPLORATION
A Division of Pasminco Australia Limited

COMPILED : L. W. K.	E.L. 44/88 - BURNS PEAK JV
DATE : Oct., 1991	CHESTER - MT. KERSHAW
DRAWN : G. M. B.	SUMMARY DRILL SECTION
REF. :	BPD73
REVISIONS :	
DRAWING No.	SCALE 1:1000 0 100 200 — FIG. No. 30

HOLE No. BPD74

PASMINCO EXPLORATION
DIAMOND DRILL CORE RECORD

LOCATION	TASMANIA
PROJECT	BURNS PEAK
PROSPECT	CHESTER
DESIGNED BY	L W KIRSNER
LOGGED BY	L W KIRSNER
RELOGGED	
COMMENCED	24 OCTOBER 1991
COMPLETED	13 NOVEMBER 1991
DRILLED BY	DIAMOND DRILLING TASMANIA
DRILL RIG	LONGYEAR 44

OBJECTIVE

*To test a large excess mass anomaly, equivalent in extent to that over the Chester deposit, north of the mine, in the inferred position of Chester host sediments. * To follow up minor soil base metal anomalies in a previously untested extension of the Chester Mine.

RESULT

*No base metals were intersected. *Dacitic lavas and lava breccias cross-cut by mafic dykes/sills predominate. *Mass anomaly unexplained by drilling, but follow up interpreation found errant data in old gravity surveys.

LOCATION/SURVEY DATA (AMG)

Grid	AMG		RL Collar m	348.9m
Northing m	5 381 710.4		Bearing Collar	135°
Easting m	378 158.6		Dip Collar	-50°
DH Survey Type	Eastman Camera		Length Hole m	352m

Depth m	Bearing	Dip	Depth m	Bearing	Dip
50	135°	-49°			
100	138°	-47°			
150	138°	-45°			
200	140°	-44°			
250	141°	-42°			
300	143°	-39½°			

SIGNIFICANT INTERSECTIONS

From m	To m	Interval m						Comments

SIGNIFICANT CORE LOSS

From m	To m	% Lost
100.0	106.2	-6%
197.7	199.0	-39%
256.0	258.4	+13%

POOR GROUND CONDITION ZONES

From m	To m	Condition
256.7	256.8	Clayey Pug Zone/Fault.
32.2	32.5	Broken ground.

HOLE SIZE

Size	Depth m
HQ	0 - 50
NQ	50 - 352

HOLE CONDITIONS AFTER COMPLETION

Collar	PVC with aluminium tag affixed
Steel Casing	-
PVC Casing	0 - 352m
Ground Water	-
Wedge	-
Drill Pad	Topsoil replaced, filled in sump.

041073

HOLE No. BPD 74

PASMINCO EXPLORATION
SUMMARY DIAMOND DRILL CORE LOG

PROJECT: BURNS PEAK

Graphic Scale 1: 1000

From m	Interval m	Code	Description
0.0	3.5		• FLUVIO-GLACIAL OVERBURDEN •
3.5	109.9		• RHYODACITIC LAVAS •
			• At least three flow units of feldspar-phyric, generally massive, variably sericitic/chloritic/pyritic with flow breccia/brecciated flow tops. Minor flow banding, blotchy pseudo clastic alteration, and intermittent cleavage. Some hydrothermal brecciation and qtz-carbonate veins.
113.4	3.2		• MAFIC INTRUSIVE •
			• fine grained, massive, grey-green colour. Intrusive/chilled lower margin @ 50° to core. Pyrite below contact
116.6	7.0		• ? PUMICEOUS VOLCANICLASTIC •
			• chloritised & sericitised pumiceous clasts & possible 'tubules' preserved.
123.6	14.8		• MAFIC INTRUSIVE •
			• as at 113.4. Has chilled upper & lower margins.
138.4	44.7		• RHYODACITIC LAVA & LAVA BRECCIA •
			• possibly 2 distinct flows with brecciated tops. Pseudo clastic alteration; feldspar phyric; variably chloritised & sericitised, disseminated py.
183.1	17.3		• HYALOCLASTITE / AUTOBRECCIA ?
			• clasts of rhyodacitic lava, flow banded in a chloritic groundmass. Jigsaw fit predominates.
200.4	56.3		• RHYODACITIC LAVA & LAVA BRECCIA •
			• flow banded, variably sericitic/chloritic, some "clasts" near margins.
256.7	0.1		• FAULT • (45° to core)
256.8	1.7		• MAFIC INTRUSIVE •
			• Chilled, intrusive lower contact.
258.5	7.0		• RHYODACITIC LAVA •
265.5	–		• IRREGULAR EROSIONAL CONTACT •
265.5	20.05		• VOLCANICLASTIC ASHFALL •
			• Upward fining pumiceous ashfall. Has a gradational lower contact to laminated ash horizon
285.55	3.05		• LAMINATED ASH HORIZON •
			• sharp lower erosional contact.
288.6	11.9		• VOLCANICLASTIC SANDSTONE •
			• pumiceous sandstone with lava fragments.
300.5	51.5		• RHYODACITIC LAVA •
352.0	EOH		• END OF HOLE.

Depth: 100, 200, 300, 352 (EOH)

Graphic: 5 cm

041074

PASMINCO EXPLORATION
DIAMOND DRILL CORE LOG

HOLE No. BPD 74

PROJECT: BURNS PEAK

Graphic Scale 1: 200

CORE RECOVERY				DESCRIPTION						CODES			
From m	Interval m	%	RQD	From m	Interval m	(incl. LITHOLOGY, STRUCTURE & ALTERATION)	Depth	Graphic Lithology / Struct.	MINERALISATION	LITHO	STRUCT	ALTN	MIN
0.0	2.6	65		0.0	3.5	• FLUVIO-GLACIAL OVERBURDEN •							
4.0	7.2	120				- rounded to well rounded clasts < 5mm across							
10.0	3.0	100				interspersed with boulders of crs ?dacitic lavas.	3.5						
13.0	2.9	97				comprise: massive chloritic (after glass) lavas;		Jigsaw breccia					
16.0	3.0	100				feldspar phyric lavas; pink/green/grey chlorite-		Joints 0° to core					
19.0	3.0	100				albite altered lavas.	10	wkly clvd 35°					
22.0	3.2	107											
25.0	2.9	97		3.5	32.0	• RHYODACITIC LAVA • (single flow unit)			•13.3m - Pyrite < 0.1%				
28.0	3.0	100				• massive, fine-grained, "devitrified", feldspar-phyric			disseminated & on joints				
31.0	3.0	100				(1-5% feldspar), grey to orange (weathered/iron							
34.0	3.0	100				stained). Jointing parallel to core. Some (~1%)							
37.0	2.7	100				secondary porosity (vughs/voids) due to weathering	20		•19.0-20.0 - Pyrite on				
39.7	2.5	100				• Weak cleavage at 35° to core.			joints & veins.				
42.2	3.5	103				- Colour varies from pale green to grey in patches.							
45.6	3.4	100				- Possible flow banding / chloritic wisps preserved.							
49.0	1.0	100				7.8-7.9 - chloritised "jigsaw" breccia at 30° to core.							
50.0	4.5	90				7.9-8.4 - quartz-chlorite veins - create "crazed" look							
55.0	3.3	110				10.4-10.8 - chloritic flow banding ~30° to 60° to core	30		SZ/F @ 30°				
58.0	2.4	96				• Pale green & dark green chloritic "flecks" common.			SZ/F				
60.5	3.1	100				11.6 - Jointing at 45° to core							
63.6	3.5	103				13.3 - fine grained disem. pyrite & pyrite on joints	35.5						
67.0	3.0	100				14.4 - flow banding at 50° to core. Sericitised.			* THIN SECTION /				
70.0	4.0	100				• Blotchy sericitic & pink "albitic" alteration			PETROGRAPHY 35.7				
74.0	2.1	105				below 15.1m	40		* 031784				
76.0	3.0	100				• "Pseudo clastic" alteration effect patchily developed.							
79.0	4.4	100				31.0-31.4 - Strong cleavage at 30° to core							
83.4	1.6	100				⇒ Chloritised shear zone / fault.							
85.0	3.0	100				32.2-32.5 - cleaved, broken core, ? fault.	46						

5 cm

041075

PASMINCO EXPLORATION
DIAMOND DRILL CORE LOG

HOLE No. BPD 74

PROJECT: BURNS PEAK

Graphic Scale 1: 200

CORE RECOVERY				DESCRIPTION					CODES			
From m	Interval m	%	RQD	From m	Interval m	(incl. LITHOLOGY, STRUCTURE & ALTERATION)	Depth	Graphic Lithology / Struct.	MINERALISATION	LITHO	STRUCT	ALTN	MIN
38.0	4.3	98		35.5	13.5	• RHYODACITIC LAVA • (single flow)							
92.4	1.3	100				·35.5-35.9 - Lava fragmental / flow top. clasts	49.0						
93.7	3.1	100				of fine-grained, Massive lava in fine to medium	50						
96.8	3.15	98				grained matrix. Quartz & feldspar fragments.							
100.0	2.55	94	x			·35.9 - 49.0 - Massive, medium to dark grey,			• (50.0m - Change from				
102.7	3.3	94				feldspar-phyric rhyodacitic lava. Some patchy			HQ to NQ core)				
106.2	4.0	105				pink alteration (eg: 43.2-44.5 ; 46.0-46.5).							
110.0	1.9	95				Variable intensity cleavage at 25°-30° to core.							
112.0	2.7	96					60						
114.8	4.2	98		49.0	25.5	• RHYODACITIC LAVA • (single flow)							
119.1	1.9	100				·49.0-49.9 - brecciated flow top / lava breccia.							
121.0	2.8	100				·49.9-74.5 - massive grey/pink feldspar phyric							
123.8	2.4	96				rhyodacitic lava. Patchily sericitised in zones							
126.3	3.5	100				of moderate foliation.		?SZ					
129.8	6.1	100				·68.9-69.4 - sericitic foliated dark grey zone.	70						
135.9	4.7	100											
140.6	1.7	94		74.5	0.3	• HYDROTHERMAL BRECCIA •	74.5		·Pyrite in hydrothermal(?)				
142.4	3.5	103				? Possibly hydrothermal or tectonic breccia. Disseminated			breccia.				
145.8	5.1	98				blebs of pyrite up to 3mm across in dark			(SPLIT 74.0 → 76.0)				
151.0	6.0	100				grey matrix with cream coloured siliceous breccia	80		In intervals				
157.0	3.1	103				clasts.							
160.0	6.0	100											
166.0	3.0	100		74.8	38.6	• RHYODACITIC LAVA •							
169.0	2.8	98				· Pale grey to pink massive lava.							
171.85	6.1	100							5 cm				
177.95	4.8	103		113.4	3.2	• MAFIC DYKE/SILL •	90						
182.6	2.3	105				·mafic dyke. fine grained massive grey/							
184.8	4.0	100				green colour Faulted at 114.7-115.6							

041076

PASMINCO EXPLORATION
DIAMOND DRILL CORE LOG

HOLE No. BPD 74

PROJECT: BURNS PEAK

Graphic Scale 1: 200

CORE RECOVERY				DESCRIPTION					CODES			
From m	Interval m	%	RQD	From m	Interval m	(incl. LITHOLOGY, STRUCTURE & ALTERATION)	Depth	Graphic Lithology / Struct.	MINERALISATION	LITHO	STRUCT	ALTN	MIN
188·8	4·7	104		116·6	–	• INTRUSIVE CONTACT •		Bainsize					
193·3	4·6	104				- Chilled margin in mafic intrusive, at 50° to core.							
197·7	1·4	61				Pyrite developed in country rock outside dyke/sil and							
199·0	3·0	100				on the contact. Medium to coarse pyrite (~3mm							
202·0	3·4	100				blebs) extend to ~20mm into country rock ⇒ Pyrite	100						
205·4	4·0	110				"juiced" out of felsic rocks locally.							
209·0	2·1	105											
211·0	3·0	100		116·6	7·0	• PUMICEOUS VOLCANICLASTIC • (?)							
214·0	6·0	100				Chloritised & sericitised clasts with possible "tubules"			- Pyrite blebs on and				
220·0	3·1	103				preserved. Pink/cream colour, crossed by pale			near intrusive contact.				
223·0	3·0	100				epidote / chlorite alteration. Wisps and banding	110						
226·0	3·2	100				in ground mass between clasts.							
229·2	2·2	100					113·4		(121m – 124m – split 1m				
231·4	6·2	103		123·6	14·8	• MAFIC DYKE / SILL •		F F Fault zone	intervals)				
237·6	1·2	100				- 123·6 – Intrusive contact (as at 116·6), with	116·6	py					
238·6	2·3	96				pyrite associated.							
241·0	3·0	100				- Dark grey, fine grained, massive, some quartz	120						
244·0	5·9	98				veins, monotonous unit.							
250·0	6·0	100				- 138·4 – Intrusive contact, with pyrite below it	123·6	I Intrusive contact					
256·0	2·7	113				in country rock.							
258·4	4·1	98							5 cm				
262·6	4·7	107		138·4	20·3	• RHYODACITIC LAVA / LAVA BRECCIA •							
267·0	4·0	100				- grey-green and pink blotchy alteration giving	130						
271·0	6·1	102				"pseudo-clastic" appearance. Some zones feldspar							
277·0	6·1	102				phyric with crystals crossing "clast" boundaries.							
283·0	2·9	104				Some possible "true" clasts – fine grained, grey,							
285·8	6·1	98				feldspar-absent. Very fine grained disseminated							
292·0	4·9	102				pyrite (<0·1%) Pale white [illegible] (qtz?) common.	138·4	I					

0410171

PASMINCO EXPLORATION
DIAMOND DRILL CORE LOG

HOLE No. BPD 74

PROJECT: BURNS PEAK

Graphic Scale 1: 200

CORE RECOVERY				DESCRIPTION						CODES			
From m	Interval m	%	RQD	From m	Interval m	(incl. LITHOLOGY, STRUCTURE & ALTERATION)	Depth	Graphic Lithology	Struct.	MINERALISATION	LITHO	STRUCT	ALTN	MIN
296·8	6·2	103				· below 142·1 - less pseudo clastic texture, massive,	139·4		I					
302·8	1·2	100				occasional flow banding, rhyodacitic lava. Some	140			* 157·3 PETROLOGY/				
304·0	6·0	100				disseminated pyrite; epidote (?) / chlorite altered devit-				THIN SECTION.				
310·0	6·0	100				rified glass in patches.			py					
316·0	6·0	100												
322·0	5·9	98		158·7	24·4	· RHYODACITIC LAVA · (single flow?)								
328·0	6·1	102				158·7 - 159·1 - flow breccia / lava breccia. Top of lava	150							
334·0	6·0	100				flow. Much pyrite & minor other sulphide, up to								
340·0	3·0	100				1% locally. Fine grained disseminated generally.				5 cm				
343·0	6·0	100				159·1 - 183·1 - variably sericitic & chloritic								
349·0	3·0	100				rhyodacitic lava with minor ? primary			py					
352·0	EOH					breccia zones. Feldspar phyric (varies).								
						Green-grey colour, fine grained groundmass, some	158·7							
						flow banding, occasional ? pumice clasts.	160		py	* PETROLOGY/THIN SECTION				
						Some alteration enhanced "pseudo clastic"				178·5 - 178·7				
						zones, generally massive. Includes				* 031790				
						"cherty" / silicified ash zones (minor).								
						(175 - 180m - traces of Pb/Zn/Ag sulphides?)								
							170							
				183·1	17·3	· HYALOCLASTITE / AUTO BRECCIA (?) ·								
						· margin of dacitic lava flow? Clasts of								
						pink to green silica/albite/sericite altered, flow								
						banded lava with a chloritic ground mass								
						between. Jigsaw fit predominates. Some ? pumice			gn	* 175 - 180 - traces of				
						Variable intensity of alteration. Some randomly	180			disseminated galena?				
						oriented flow-banded clasts sericitic ground								
						mass between.	183·1							

041078

PASMINCO EXPLORATION
DIAMOND DRILL CORE LOG

HOLE No. BPD 74

PROJECT: BURNS PEAK

Graphic Scale 1: 200

CORE RECOVERY				DESCRIPTION					CODES			
From m	Interval m	%	RQD	From m	Interval m	(incl. LITHOLOGY, STRUCTURE & ALTERATION)	Depth	Graphic Lithology / Struct.	MINERALISATION	LITHO	STRUCT	ALTN	MIN
				200.4	14.6	• RHYODACITIC LAVA & LAVA BRECCIA.							
						• Green-grey, massive, feldspar phyric, flow banded, sericitic/chloritic, "pseudo clastic".							
						Some "silicified ash" clasts intercalated in flow margins (eg: 209.5-215.0) as contorted flow banding or bedded zone with sericite/chlorite altered ? glass between them.	190						
				215.0	41.7	• Pseudoclastic, altered rhyodacitic lava; feldspar phenocrysts, albite/sericite pink/green alteration. Patchy silicification. Quartz veins at 225m.	200						
							200.4						
				256.7	0.1	• FAULT •							
						• Clayey pug zone ± small gravel clasts at 45° to core; 10cm wide. Late feature.	210						
				256.8	1.7	• MAFIC DYKE / SILL •							
						• Intrusive, lower contacts (45°) contains randomly oriented carbonate veinlets.	250						
								5 cm					
				258.5	7.0	• RHYODACITIC LAVA •							
						• Pink albitic, feldspar phyric, devitrified glassy, flow-banded — much "detexturing" has left only hints of flow banding.	220						
						• Carbonate veins and blebs irregularly throughout.		qtz vns.					
				265.5	—	• IRREGULAR (CONFORMABLE) CONTACT •	230						

041079

PASMINCO EXPLORATION
DIAMOND DRILL CORE LOG

HOLE No. BPD 74

PROJECT: BURNS PEAK

Graphic Scale 1: 200

CORE RECOVERY				DESCRIPTION						CODES			
From m	Interval m	%	RQD	From m	Interval m	(incl. LITHOLOGY, STRUCTURE & ALTERATION)	Depth	Graphic Lithology	Struct.	MINERALISATION	LITHO	STRUCT	ALTN	MIN
				265·5	20·05	• VOLCANICLASTIC ASHFALL •	230							
						· Upward-fining volcaniclastic/pumiceous ashfall. Grey, variably chloritic, with pumiceous clasts and hydrothermal brecciation, particularly at top of interval.								
				285·55	—	· Gradational contact from coarse pumiceous volcaniclastic (base of above unit) to laminated fine grained ash horizon.	240							
				285·55	3·05	• LAMINATED ASH HORIZON •								
						· fine to medium grained, laminated ash fall volcaniclastic with minor pumice clasts.	250							
				288·6	—	· Sharp contact incorporating a dark grey, fine grained ? shale block on a generally irregular, disrupted ? unconformity.	256·7		F (p-g)					
							258·5							
				288·6	11·9	• VOLCANICLASTIC SANDSTONE •	260		I 30° to core	5 cm				
						· medium grained, pumiceous, brecciated volcaniclastic sandstone ± lava fragments. Grey-green colour with little chlorite-sericite alteration. Some hydrothermal brecciation.	265·5							
							270							
				300·5	0·3	• BRECCIA ZONE •								
						· Strongly brecciated, carbonate-filled tectonically disturbed zone. Includes angular fragments of country rock. Zone at 30° to core								

041080

PASMINCO EXPLORATION
DIAMOND DRILL CORE LOG

HOLE No. BPD 74

PROJECT: BURNS PEAK

Graphic Scale 1: 200

CORE RECOVERY				DESCRIPTION						CODES			
From m	Interval m	%	RQD	From m	Interval m	(incl. LITHOLOGY, STRUCTURE & ALTERATION)	Depth	Graphic Lithology	Struct.	MINERALISATION	LITHO	STRUCT	ALTN	MIN
				300.8	51.2	• RHYODACITIC LAVA •								
						• feldspar - phyric, rhyodacitic lava with few carbonate veinlets and some "pseudo-clastic" altered zones. Possible lava breccias disguised by pervasive alteration.	280							
						• Similarities to volcaniclastics (composition, alteration) higher in hole, but lavas differ by being feldspar present versus the volcaniclastics with pumice present, and the lavas have less chlorite & sericite.	285.55							
							288.6							
							290							
				352.0	EOH	— EOH —								
							300.5		?F 30° to CAE					
							300							
							300.8							
										5 cm				
							340							
							320							

041081

PASMINCO EXPLORATION
DIAMOND DRILL CORE LOG

HOLE No. BPD 74

PROJECT: BURNS PEAK

Graphic Scale 1: 200

CORE RECOVERY				DESCRIPTION						CODES			
From m	Interval m	%	RQD	From m	Interval m	(incl. LITHOLOGY, STRUCTURE & ALTERATION)	Depth	Graphic Lithology	Struct.	MINERALISATION	LITHO	STRUCT	ALTN	MIN
							330							
							340							
							350			5 cm				
							352 EOH							

041082

HOLE No. BPD 74

PASMINCO EXPLORATION
DIAMOND DRILL CORE ASSAY DATA

PROJECT: Burns Peak

SAMPLE						ASSAYS (ppm unless specified)														COMMENTS
Number	Type	From m	To m	Interval m	Recovered m	Cu	Pb	Zn	Ag	Au	Al_2O_3 %	SiO_2 %	TiO_2 %	Fe_2O_3 %	MnO %	CaO / K_2O %	MgO / P_2O_5 %	S / Na_2O %	LOI / TOTAL %	
31779	½ core	74·0	75·0	1·0	1·0	8	18	100	<1	<0·008	13·10	69·1	0·21	3·84	0·21	2·72 / 3·63	1·27 / 0·034	0·65 / 0·89	4·63 / 100·33	
31780	"	75·0	76·0	1·0	1·0	7	4	44	<1	<0·008										
31781	"	121·0	122·0	1·0	1·0	15	43	77	<1	<0·008	13·02	74·8	0·28	1·79	0·04	0·63 / 4·94	0·90 / 0·031	1·15 / 1·52	2·22 / 101·32	
31782	"	122·0	123·0	1·0	1·0	15	37	60	<1	<0·008										
31783	"	123·0	124·0	1·0	1·0	8	5	90	<1	<0·008										
31784	½ core	35·7	35·9	0·2	0·2															
31790	½ core	178·5	178·7	0·2	0·2															
Laboratory	ANALABS			Analytical Method		4A 140 AAS	4A 140 AAS	4A 140 AAS	5A 140 AAS	4S 309 FA/MS	0X408 XRF	0X408 XRF	0X408 XRF	0X408 XRF	0X408 XRF	0X408 XRF	0X408 XRF	0X408 XRF	0X408 XRF	
Job-No. 111510-60-0868		Date 27/3/92		Detection Limit		2	3	2	1	0·008	0·05	0·1	0·01	0·01	0·01	0·01 / 0·01	0·01 / 0·01	0·01 / 0·05	0·01 / 0·01	

0411083

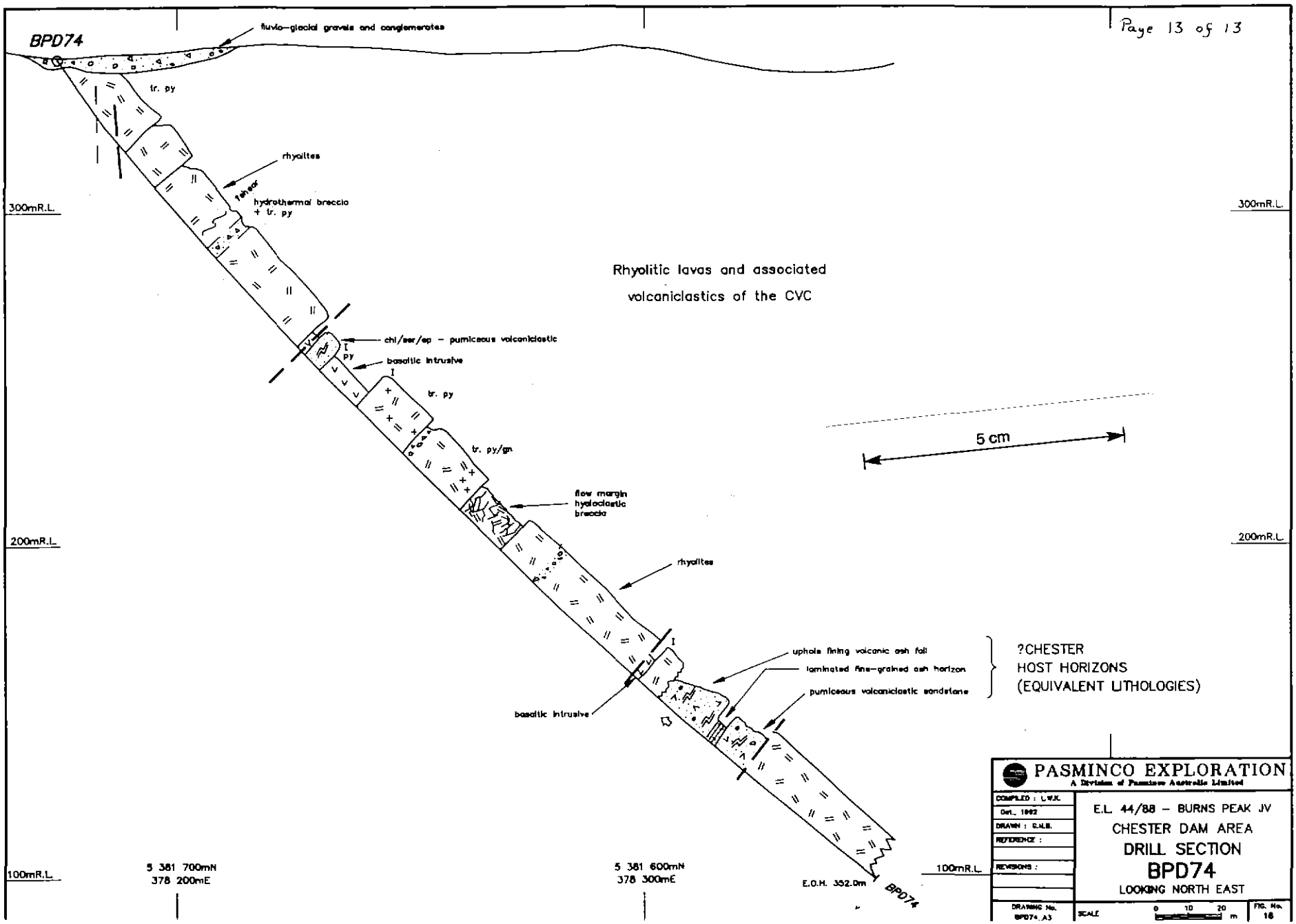
PASMINCO EXPLORATION
DIAMOND DRILL HOLE SUPPLEMENTARY DATA

PROJECT: Burns Peak

HOLE No. BPD 74

depth	mag.sus (SI x .001)	depth	s.g.	sample type
0.1	0.05			HQ whole
4.0	0.20			HQ whole
10.4	0.14			HQ whole
13.0	0.15			HQ whole
16.0	0.03			HQ whole
19.6	0.07	20.0	2.69	HQ whole
22.0	0.10			HQ whole
25.0	0.09			HQ whole
28.0	0.12			HQ whole
31.0	0.17			HQ whole
34.0	0.13			HQ whole
37.0	0.32			HQ whole
39.7	3.07	41.0	2.68	HQ whole
42.2	1.23			HQ whole
45.6	0.69			HQ whole
49.0	0.19			HQ whole
50.0	0.09	50.0	2.71	NQ whole
55.0	0.18			NQ whole
58.0	0.19			NQ whole
60.5	0.27			NQ whole
63.6	0.32			NQ whole
67.0	0.27			NQ whole
70.0	0.30			NQ whole
74.0	0.18	75.0	2.72	NQ whole
76.0	0.13			NQ whole
79.0	0.19			NQ whole
83.4	0.03			NQ whole
85.0	0.15			NQ whole
88.0	0.10			NQ whole
92.4	0.15			NQ whole
93.7	0.22			NQ whole
96.8	0.13			NQ whole
100.0	0.18			NQ whole
102.7	0.23	100.0	2.68	NQ whole
106.2	0.17			NQ whole
110.0	0.19			NQ whole
112.0	0.13			NQ whole
114.8	0.32	114.7	2.60	NQ whole
119.1	0.03			NQ whole
121.0	0.08	121.0	2.73	NQ whole
123.8	0.33			NQ whole
126.3	0.22			NQ whole
129.8	22.60	130.0	2.80	NQ whole
135.9	26.60			NQ whole
140.6	0.11			NQ whole
142.4	0.06			NQ whole
145.8	0.07	150.0	2.72	NQ whole
151.0	0.08			NQ whole
157.0	0.05			NQ whole
160.0	0.10			NQ whole
166.0	0.05			NQ whole
169.0	0.04			NQ whole
171.8	0.01	175.0	2.72	NQ whole
177.9	0.04			NQ whole
182.6	0.08			NQ whole
184.8	0.05			NQ whole
188.8	0.03	190.5	2.78	NQ whole
193.3	0.04	195.5	2.66	NQ whole
197.7	0.03			NQ whole
199.0	0.04			NQ whole
202.0	0.03			NQ whole
205.4	0.05			NQ whole
209.0	0.07			NQ whole
211.0	0.07			NQ whole
214.0	0.03			NQ whole
220.0	0.04	220.2	2.73	NQ whole
223.0	0.05			NQ whole
226.0	0.07			NQ whole
229.2	0.05			NQ whole
231.4	0.10			NQ whole
237.4	0.04			NQ whole
238.6	0.07			NQ whole
244.0	0.04			NQ whole
250.0	0.05	250.0	2.72	NQ whole
256.0	0.04			NQ whole
258.4	0.12			NQ whole
262.6	0.04			NQ whole
267.0	0.05	269.2	2.74	NQ whole
271.0	0.13			NQ whole
277.0	0.21			NQ whole
283.0	0.24			NQ whole
285.8	0.16			NQ whole
292.0	0.18			NQ whole
296.8	0.10	300.0	2.74	NQ whole
302.8	0.14			NQ whole
304.0	0.11			NQ whole
310.0	0.15			NQ whole
316.0	0.26			NQ whole
322.0	0.16	325.6	2.75	NQ whole
328.0	0.17			NQ whole
334.0	0.12			NQ whole
340.0	0.21			NQ whole
343.0	0.22			NQ whole
349.0	0.28	351.9	2.66	NQ whole
352.0	0.27			NQ whole
EOH				

041084



PASMINCO EXPLORATION
A Division of Pasminco Australia Limited

COMPILED : L.W.K.	E.L. 44/88 – BURNS PEAK JV
Oct., 1992	CHESTER DAM AREA
DRAWN : R.M.B.	DRILL SECTION
REFERENCE :	BPD74
REVISIONS :	LOOKING NORTH EAST
DRAWING No. BPD74_A3	SCALE 0 10 20 m
	FIG. No. 16

041085

HOLE No. BPD75

PASMINCO EXPLORATION
DIAMOND DRILL CORE RECORD

LOCATION	TASMANIA
PROJECT	BURNS PEAK
PROSPECT	HOLLWAY
DESIGNED BY	LINDSAY W KIRSNER
LOGGED BY	LINDSAY W KIRSNER
RELOGGED	
COMMENCED	15 JUNE 1992
COMPLETED	10 JULY 1992
DRILLED BY	DIAMOND DRILLING TAS.
DRILL RIG	LONGYEAR 38

OBJECTIVE

To test the source of anomalous base metal geochemistry at the surface, near the contact between the Hollway Andesite and dacites of the CVC & to intersect that contact.

To test down-dip extensions of weak, near surface EM conductors.

RESULT

Minor, vein-gash style sphalerite and galena mineralisation in sericitic intermediate lavas was intersected over 2 to 3 metres, from 302m down-hole. Minor disseminated pyrite throughout the length of the hole. Andesite lavas and breccias dominate and inter-finger with dacites near the base of the hole.

LOCATION/SURVEY DATA (AMG)

Grid	AMG		RL Collar m 415.8
Northing m	5 383 744.1		Bearing Collar 145°
Easting m	378 804.4		Dip Collar -60°
DH Survey Type	EASTERN CAMERA		Length Hole m 349.5m

Depth m	Bearing	Dip	Depth m	Bearing	Dip
50	148	-58.5			
100	152	-58			
150	153	-57			
199	152	-56			
250	155	-56			
301	156	-55			
349	156	-56			

SIGNIFICANT INTERSECTIONS

From m	To m	Interval m	Cu	Pb	Zn			Comments
303.0	304.0	1.0	34	2100	9300			gash veinlets

SIGNIFICANT CORE LOSS

From m	To m	% Lost

POOR GROUND CONDITION ZONES

From m	To m	Condition

HOLE SIZE

Size	Depth m
HW	0-3m
HQ	3-51.5m
NQ	51.5-349.5m

HOLE CONDITIONS AFTER COMPLETION

Collar	PVC-HW SIZE 0-3.0 metres
Steel Casing	
PVC Casing	32mm, Class 9, "Vinidex" 0-349.5 (for DHEM)
Ground Water	Nil
Wedge	Nil
Drill Pad	Vehicular Access Maintained

041086

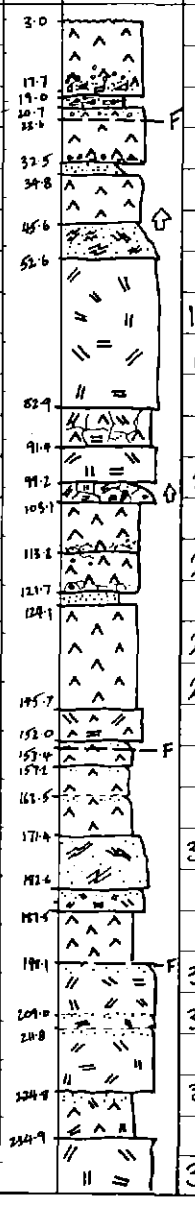
HOLE No. BPD 75

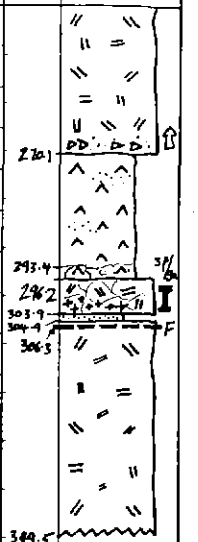
MASMINCO EXPLORATION
SUMMARY DIAMOND DRILL CORE LOG

PROJECT: Burns Peak

Graphic Scale 1: 1000

From m	Interval m	Code	Description
0·0	3·0	—	No Core
3·0	16·0		• Pillowed Andesite Lava
			– feldspar & pyroxene porphyritic; variably amygdaloid-
			al; some hyaloclastic zones (inter-pillow); basal
			breccia from 17·7 to 19·0m.
19·0	1·7		• Polymict Medium/coarse Epiclastic
			– dacitic clasts; feldspar crystals & some andesitic
			content. Clasts up to 5 cm across. Minor pyrite.
20·7	2·9		• Pillowed Andesite Lava
			– amygdaloidal; hyaloclastic & massive; ±pyrite.
23·6	0·1		• Fault – pug & gravel – at 48° to LCA.
23·7	8·8		• Pillowed Andesite Lava
			– amygdaloidal; feldspar + pyroxene crystalline; ±pyrite;
			Mostly massive, but with hyaloclastic flow base from 320.
32·5	2·3		• Polymict Medium/coarse Epiclastic
			– uphole fining; lmm to 100mm clasts. Pyritic.
34·8	10·8		• Pillowed Andesite Lava.
45·6	7·0		• ?Pumiceous Mass Flow
			– pyritic; "wispy" texture; matrix-supported; feldspathic
52·6	50·5		• Dacite Lavas & Lava Breccia.
			– strongly silicified locally, pale pink/white colour,
			destextured; some flow banding; traces of pyrite; some
			inter-flow breccia zones; minor chlorite-sericite alteration.
103·1	18·6		• Pillowed Andesite Lava.
121·7	2·4		• Polymict Epiclastic/Peperite
			– pillow margin zone/between flows. Incorporates silic-
			eous clasts up to 3mm size.
124·1	21·6		• Pillowed Andesite Lava
			– amygdaloidal, feldspathic, some silicification.
145·7	6·3		• Andesite/Dacite? Lava
			– feldspathic; non-amygdaloidal; less mafics.
152·0	1·4		• Hyaloclastic Andesite
153·4	0·1		• Fault – clay & gravel – at 35° to LCA.
153·5	17·9		• Pillowed Andesite Lava
171·4	11·2		• ?Pumiceous Mass Flow
			– variably silicified; feldspathic; wispy clasts;
182·6	4·9		• Dacitic Lava & Lava Breccia.
187·5	10·6		• Pillowed Andesite Lava
198·1	0·1		• Fault – clay pug & gravel.
198·2	26·6		• Dacitic Lava & Lava Breccia
224·8	10·1		• Andesite/Dacite? Lava
			– siliceous, amygdaloidal lava.
234·9	35·2		• Dacite Lava.
			– feldspathic; some flow banding;
270·1	26·1		• Pillowed Andesite Lava
296·2	7·7		• Dacitic Breccia – ?mass flow
			– sericite altered; particularly 301-305m.
			Sphalerite & Galena in gash veins 303·2-304·2m
			forms ≈ 2% locally. Minor pyrite.
303·9	1·0		• Gravelly Sandstone
			– epiclastic; poorly sorted; andesite & dacite clasts,
			mainly feldspathic. Sericite altered.
304·9	0·7		• Dacitic Breccia
305·6	0·7		• Fault Zone
			– clay pug & gravel, sericitic.
306·3	43·2		• Dacitic Lavas & Lava Breccias.
			– variably silicified; feldspathic; minor flow banding.
349·5	EOH		





5 cm

041087

PASMINCO EXPLORATION
DIAMOND DRILL CORE LOG

HOLE No. BPD 75

PROJECT: Burns Peak

Graphic Scale 1: 100

CORE RECOVERY				DESCRIPTION						CODES			
From m	Interval m	%	RQD	From m	Interval m	(incl. LITHOLOGY, STRUCTURE & ALTERATION)	Depth	Graphic Lithology	Struct.	MINERALISATION	LITHO	STRUCT	ALTN	MIN
				0.0	3.0	NO CORE RECOVERED (TRICONE BIT)		NO CORE						
				3.0	14.7	ANDESITE LAVA & HYALOCLASTIC BRECCIA.								
						- highly weathered to clayey; feldspar crystal-rich; green to beige coloured; manganese/iron oxide stained (particularly on joints); some massive lava intervals; some coarse breccia characterised by pale pink feldspathic clasts up to 3cm across in a fine-grained green matrix; mafic crystals (? pyroxene) occur sporadically throughout the interval, particularly within the lava zones. Quartz ± carbonate amygdales; up to 4mm across; spherical & some slightly elongate, from ≈ 14 metres onward.	3.0							
							10m							
				17.7	1.3	ANDESITIC HYALOCLASTITE - FLOW BASE								
						- less weathered & broken core than above, better recovery. Generally dark green feldspar-porphyritic, non-amygdaloidal andesite hyaloclastic breccia - possibly the base of a lava flow (above). Includes ≈ 3% crystallite ? pyroxene and 25 to 30% feldspar crystals. Maximum crystal size ~ 2mm. Some quartz-chlorite veining & crystal-filled vughs (brittle, late stage). Upper and lower contacts at low angle to LCA (long core axis) & conformable.								
										5 cm				
				19.0	1.7	POLYMICT MEDIUM TO COARSE EPICLASTIC	19.0							
						- incorporates pink quartz & feldspar-phyric dacitic to rhyolitic clasts up to 5cm across in a dark green, fine grained feldspathic matrix. Unit is a possible flow-margin epiclastic, incorporating clasts	20m		Z	1-2% pyrite-dissem; on fractures & as blebs or aggregates (20.0m)				
							20.7							

041088

PASMINCO EXPLORATION
DIAMOND DRILL CORE LOG

HOLE No. BPD 75

PROJECT: Burns Peak

Graphic Scale 1:100

CORE RECOVERY				DESCRIPTION						CODES			
From m	Interval m	%	RQD	From m	Interval m	(incl. LITHOLOGY, STRUCTURE & ALTERATION)	Depth	Graphic Lithology	StrucL	MINERALISATION	LITHO	STRUCT	ALTN	MIN
						of local rock types. Disseminated pyrite 1 to 2% at 20.0m; also pyrite on thin fractures & small blebs of aggregated pyrite up to 3mm across (eg 20.3m)	23.6	F	Fault @ 48° to LCA.	<1% fine dissem. pyrite 23.7 to 25.0m				
				20.7	2.9	PILLOWED ANDESITE LAVA - mostly massive, dark grey-green feldspar phyric andesite lava. Amygdaloidal - from 20.7m - 21.6m - with qtz ± carbonate fill, 1-5mm across, spherical to slightly elongate or flattened, form 1-3% of volume of rock. Higher concentration and larger amygdales near pillow margins. Monomict lava breccias - hyalo-clastite - form inter-pillow breccias, and contain up to 2% pyrite (eg: 21.6 - 21.7).	30m							
							32.0			<1% disseminated pyrite + coarser pyrite on clast boundaries				
							32.5							
				23.6	0.1	FAULT - 48° to LCA. - grey clay & gravel pug zone with associated chlorite-epidote alteration. Little to no ductile deformation outside clay zone ⇒ late stage, brittle (This structure may explain the SIROTEM feature)	34.8			traces of pyrite on veinlets				
				23.7	8.3	MASSIVE ANDESITE LAVA. - dark grey, unaltered, quartz-carbonate amygdaloidal (2-5%; 1 to 10 mm across typically), feldspar + pyroxene crystalline - fine grained ~ 0.25 to 0.5 mm crystals. Includes fine grained disseminated pyrite down to 25.0m (<1%). Fine carbonate ± chlorite veinlets criss-cross core. No pillow margins or brecciation evident. Feldspar crystals become coarser and more prominent (≈1-2mm) below ~ 27.6m and	40m			5 cm				
							45.6							

041089

FALCONBRIDGE EXPLORATION
DIAMOND DRILL CORE LOG

HOLE No. BPD 75

PROJECT: Burns Peak

Graphic Scale 1: 100

Page 5 of 21

CORE RECOVERY				DESCRIPTION						CODES			
From m	Interval m	%	RQD	From m	Interval m	(Incl. LITHOLOGY, STRUCTURE & ALTERATION)	Depth	Graphic Lithology / Struct.	MINERALISATION	LITHO	STRUCT	ALTN	MIN
						become finer again below ~28.9m.							
						29.6 to 29.7m :- brittle carbonate vein incorporating angular fragments of andesite lava (in unbroken core).							
						(lithogeochem & thin section sample # 032996 @ 29.7→30.3m)							
				32.0	0.5	ANDESITIC HYALOCLASTITE – FLOW BASE.	50m						
						- quench fragmented lava breccia. Monomict, amygdaloidal andesitic lava fragments in massive grey/green matrix. Broken							
						core with iron oxide stains on breaks. Many unfilled	52.6						
						vughs (weathered out) in paler leached zone. Lower							
						contact has a vein at 35° to LCA on it.							
				32.5	2.3	POLYMICT MEDIUM TO COARSE EPICLASTIC.							
						- on lower margin of overlying lava. Unsorted, subangular							
						clasts ranging in size from 100mm across to < 1mm.							
						Generally 3–10mm in size. Hints of upward fining							
						with a larger proportion of clasts >25mm near the base.							
						Minor fine-grained disseminated pyrite & some coarser	60m						
						pyrite on clast boundaries. Traces of chalcopyrite.							
						Clasts comprise: 20% Dacitic Lava							
						10% qtz-fsp porphyry							
						10% amygdaloidal andesite							
						10% pale grey silica							
						10% massive orange siliceous clasts							
						5% feldspar crystals (<2mm)							
						5% dark green chloritic clasts							
						30% matrix (too fine grained to identify).							
						- Lower contact is veined at ~20° to LCA.							

5 cm

041090

FALCONBRIDGE EXPLORATION
DIAMOND DRILL CORE LOG

HOLE No. BPD 75

PROJECT: Burns Peak

Graphic Scale 1: 100

CORE RECOVERY				DESCRIPTION						CODES			
From m	Interval m	%	RQD	From m	Interval m	(Incl. LITHOLOGY, STRUCTURE & ALTERATION)	Depth	Graphic Lithology	Struct.	MINERALISATION	LITHO	STRUCT	ALTN	MIN
				34.8	10.8	PILLOWED ANDESITE LAVA.								
						-Amygdaloidal, fine-grained feldspar ± pyroxene phyric, intermediate lava, with inter-pillow hyaloclastic breccias. Some paler clasts with fine quartz amygdales (eg: 35.3–38.1m). Minor pyrite on veins that form ~ 2% of rock. Lava becomes less amygdaloidal below 42.9m & coarser grained in this zone, with a less "glassy" look to it (⇒ possibly approaching the base of the flow?). Base incorporates deformed clasts of underlying unit. (⇒ upward younging).	70m							
				45.6	7.0	MEDIUM GRAINED ? PUMICEOUS MASS FLOW								
						-pyritic (1–2%), coarse (~1mm) & disseminated plus veinlet-controlled. Minor chalcopyrite in ? acid–intermediate clastic rock.	80m							
						-Texturally, a "wispy" appearence, matrix-supported, grey medium grained (1–4mm) volcaniclastic of possible pyroclastic origin. Likely pumiceous mass flow, but discrete pumice clasts hard to identify. Clasts include irregular, deformed (while hot) glassy, black & up to 5cm long, forming 2–5% and contain crystal feldspars. Upper contact is conformable, with minor erosion; Lower contact is obscured by massive silicification (from 50.5m). Contact possibly sub-parallel to core, from 50.5m to 52.6m. (Lithogeochem & thin section sample # 032997 @ 490–494)	82.9			5 cm				
				52.6	30.3	DACITE LAVA (& LAVA BRECCIA).	90m							
						- variably silicified, (generally strongly), pale pink to white ?acid–intermediate volcanic... Detextured by massive silicification, with few hints of precursor lithol-	91.9							

0411091

FASMINCO EXPLORATION
DIAMOND DRILL CORE LOG

HOLE No. BPD 75

PROJECT: Burns Peak

Graphic Scale 1: 100

CORE RECOVERY				DESCRIPTION						CODES			
From m	Interval m	%	RQD	From m	Interval m	(incl. LITHOLOGY, STRUCTURE & ALTERATION)	Depth	Graphic Lithology	Struct.	MINERALISATION	LITHO	STRUCT	ALTN	MIN
						ogy. Less silicified zones are minor and appear as grey sericitic, possibly flow-banded feldspathic ? dacite lavas. (eg: 53.3m, 57.8m, 59.6m) Minor pyrite on tiny gashes and veins. Silicified feldspars present locally. Some hints of primary brecciation.			chl-sil					
						(lithogeochem & thinsection sample #032998 @ 78.15→78.55m)								
				82.9	8.5	• ?DACITE LAVA BRECCIA.								
						- Conformable contact at ~20° to LCA juxtaposes overlying dacite lava with coarse monomict lava breccia that includes grey silicified matrix between pink massive lava clasts. Base is a coarser, possibly andesitic breccia (91.2 – 91.4m). Basal contact at ~35° to LCA	99.2							
							100m							
							100.3							
							103.1							
				91.4	7.8	• DACITE LAVA.								
						- grey/green colour, "sandy" appearence (altered glassy zones?) blotchy colouration in patches due to varied chlorite – silica alteration. Blotchy silicification emphasises possible flow bands. Quartz veinlets criss-cross core. Some hints of brecciation at the 2–5cm scale; fine-grained feldspar phenocrysts throughout (<5%). Variable pink silica–albite alteration associated with larger brittle quartz veins. Sharp lower contact at 40° to LCA.	110m							
						• DACITE LAVA BRECCIA – ?EPICLASTIC BASE.								
				99.2	3.9	- poorly sorted, sub-angular, silicified, pink-grey, feldspathic lava breccia. Variably oriented flow-banded clasts. (includes FAULT – brittle/gravel/clay at 100.3–100.4m)	113.2							
						- finer grained epiclastic base with sub-rounded quartz-silica fragments; indicates upward-younging.								

5 cm

5 cm

041092

FALCONBRIDGE EXPLORATION
DIAMOND DRILL CORE LOG

HOLE No. BPD 75

PROJECT: Burns Peak

Graphic Scale 1:100

CORE RECOVERY				DESCRIPTION						CODES			
From m	Interval m	%	RQD	From m	Interval m	(Incl. LITHOLOGY, STRUCTURE & ALTERATION)	Depth	Graphic Lithology / Struct.	MINERALISATION	LITHO	STRUCT	ALTN	MIN
				103·1	10·1	ANDESITE LAVA - ?PILLOWED.							
						- sharp upper contact at 40° to LCA. 1mm-sized mafic crystals in green-grey feldspathic, fine-grained matrix. Becomes silicified, pink, possibly flow banded and detextured below ~104.0m. No apparent discontinuities in rock type, but brecciated coarse (hyaloclastic) in part.	120	hem/alb	pyritic ~119.8m in inter-pillow zone.				
				113·2	8·5	PILLOWED ANDESITE LAVA.							
						- similar contact at 113·2 to that at 103·1m ⇒ conformable lava flow / pillow margin. Non-amygdaloidal, but includes mafic & feldspar crystals in a fine-grained matrix.	121·7	chl/sil					
						- Again, a coarser breccia base with clasts of underlying lithology ⇒ upward younging. Variably silicified, but contains distinct pillow margins with dark chlorite staining eg: 113·8m, 115·0m, 119·5m etc. Highly pyritic at 119·8m in one of the hyaloclastic inter-pillow zones. Strong pink hematite/albite alteration 119·7–121·0m in a ?more permeable inter-pillow zone (channels hydrothermal fluids).	124·1						
						(lithogeochem & thin section sample #032999 @ 118·6–118·9m)	130		5 cm				
				121·7	2·4	POLYMICT EPICLASTIC / PEPERITE.							
						- some epiclastic content in a pillow margin zone. Chlorite-silica altered, with andesitic and siliceous clasts; angular and up to 3mm across.							
				124·1	21·6	PILLOWED ANDESITE LAVA.							
						- grey, unaltered, contains mafic crystals (?pyroxene), fine-grained feldspars. A few small amygdales ~1–2mm across, & more concentrated on pillow margins - silicified typically. Pink colour in silicified pillow margin zones eg: 127·8–128·0; 129·5–129·9; 132·7–133·2. Clast-rich pillow margins contain flow-banded &							

041093

FASMINCO EXPLORATION
DIAMOND DRILL CORE LOG

HOLE No. BPD 75

PROJECT: Burns Peak

Graphic Scale 1:100

CORE RECOVERY				DESCRIPTION					CODES			
From m	Interval m	%	RQD	From m	Interval m	(incl. LITHOLOGY, STRUCTURE & ALTERATION)	Depth	Graphic Lithology / Struct.	MINERALISATION	LITHO	STRUCT	ALTN	MIN
						amygdaloidal angular clasts in dark grey-green, chloritic matrix. Qtz-carbonate veining throughout interval							
				145.7	6.3	• ANDESITE / DACITE ? LAVA * (sample *033000)	140						
						- Non-amygdaloidal andesite to dacite lava - with coarse feldspar & less prominent mafic crystals. Pinkish grey colouration. Some jointed - broken core & chlorite alteration on minor quartz veinlets. 150.2m - alteration front & ? flow banding / flow boundary between massive siliceous dacite lava above and feldspathic dacite lava below. "Contact" at 20° to LCA.	145.7						
				152.0	1.4	• HYALOCLASTIC ANDESITE BRECCIA							
						- Mafic crystal-rich clasts, often pink (albitised) in dark grey chloritic matrix. Some flow banded clasts.							
				153.4	0.1	• FAULT ZONE							
						- at 35° to LCA. Brittle, with some quartz & chlorite veining developed. Zone filled with clay & gravel clasts.	150		* (lithogeochem & thin section sample * 033000 @ 151.2-151.5)				
				153.5	3.7	• ANDESITE LAVA.							
						- massive, variably amygdaloidal, grey, mafic & feldspar crystal-bearing, much quartz-carbonate veining & brittle deformation (⇒ proximity to Fault). Conformable lower contact.	152.0						
				157.2	6.3	• PILLOWED ANDESITE LAVA.	153.4	F					
						- bleached & weakly altered with coarse brecciated top. Silicified down first 10 cm. Pale cream/pink colour, with sericite alteration. Flow banding and minor brecciation near base of first pillow (~163.0m). (lithogeochem. & thin section sample *032391 @ 161.2-161.8)	157.2						
				163.5	7.9	- Zone of overlapped pillows with hyaloclastic / brecciated top, incorporating ? dacite clasts. Quartz & feldspar coarse amygdales at 164.5m in inter-pillow zone. Variably amygdaloidal	160						

5 cm

041094

PASMINCO EXPLORATION
DIAMOND DRILL CORE LOG

HOLE No. BPD 75

PROJECT: Burns Peak

Graphic Scale 1: 100

CORE RECOVERY				DESCRIPTION						CODES			
From m	Interval m	%	RQD	From m	Interval m	(incl. LITHOLOGY, STRUCTURE & ALTERATION)	Depth	Graphic Lithology	Struct.	MINERALISATION	LITHO	STRUCT	ALTN	MIN
						and brecciated with hyaloclastic zones between massive pillows. Basal 30cm has prominent coarse clastic breccia.								
				171·4	11·2	? PUMICEOUS MASS FLOW								
						- Detextured by silicification down to 180·6m. Cream coloured, blotchy appearance, siliceous, massive, coarse brecciated top (~1·5m). No mafics evident, but silicified feldspars prominent. Hints of flow banding, no amygdales. Below 180·6m randomly oriented, faintly banded pale clasts of possible tube pumice. Unit is continuous 171·4 to 182·6 so textures at base assumed to be present but masked higher up...	163·5							
				182·6	3·2	MASS FLOW LAVA BRECCIA (PEPERITIC TOP) DACITIC	170							
						- medium grained, epiclastic mass flow with some coarse angular siliceous lava fragments. Varied silicification throughout. Some more mafic & quartz fragments near top (sediment matrix?) grading to a coarser, more prominent lava content down-hole ⇒ upward coarsening. Feldspar phenocrysts from 185·8 onward indicate the top of the dacite lava proper.	171·4							
				185·8	1·7	DACITE LAVA.								
						- Variably silicified, pink, feldspathic, massive lava. Some quartz-carbonate veining.	180							
				187·5	10·6	PILLOWED ANDESITE LAVA.	180·6							
						- Dominantly hyaloclastic andesite lava breccias, with occasional "foreign" clasts (siliceous) - generally coarse, angular, mafic-crystal-bearing, dark grey, pink and cream colouration in clasts. Minor massive amygdaloidal lava zones	182·6							

5 cm

041095

FASMINCO EXPLORATION
DIAMOND DRILL CORE LOG

HOLE No. BPD 75

PROJECT: Burns Peak

Graphic Scale 1: 100

CORE RECOVERY				DESCRIPTION						CODES			
From m	Interval m	%	RQD	From m	Interval m	(incl. LITHOLOGY, STRUCTURE & ALTERATION)	Depth	Graphic Lithology	Struct.	MINERALISATION	LITHO	STRUCT	ALTN	MIN
						(eg. 189.9 – 191.3 m). Some sericitic zones giving a "sandy" appearence in breccia zones. More pink and siliceous near base of unit.	185.8							
				198.1	0.1	FAULT ZONE	187.5							
						- clay pug zone with gravel-sized clasts in a grey sheared soft to semiconsolidated rock.	190							
				198.2	10.8	DACITE LAVA FLOW								
						- coarse lava breccia at top of interval, with pink feldspathic & siliceous clasts in grey, fine-grained matrix. Grades down to a more massive feldspar-phyric lava, containing up to 40% feldspars (at 2–3 mm diameter). Whole unit is crossed by fine carbonate-quartz veinlets								
				209.0	2.8	DACITE LAVA FLOW	198.1		F	5 cm				
						- coarse brecciated top (209.0 – 210.1m) grades into a massive lava with variable pink silicification & minor sericite alteration.	198.2 200							
				211.8	14.0	DACITE LAVA FLOW								
						- Dacitic hyaloclastic lava breccia down to 217.7m, overlying a grey, massive, feldspathic, occasionally flow-banded dacite lava. (thin section & lithogeochem sample # 032392 @ 220.7 to 221.15m)								

041096

PROJECT: Burns Peak

PASMINCO EXPLORATION
DIAMOND DRILL CORE LOG

HOLE No. BPD 75

Graphic Scale 1:100

Page 12 of 21

CORE RECOVERY				DESCRIPTION						CODES			
From m	Interval m	%	RQD	From m	Interval m	(incl. LITHOLOGY, STRUCTURE & ALTERATION)	Depth	Graphic Lithology	Struct.	MINERALISATION	LITHO	STRUCT	ALTN	MIN
				224·8	10·1	• DACITE / ANDESITE? PILLOWED LAVA.								
						- some mafic cryptals and amygdales below a coarse to medium-grained (gravel-sized (3mm)) flow top - possibly peperitic. Main lava is massive, grey, feldspathic, possibly pillowed, with pink-clast bearing zones between more massive zones.	209·0							
							210							
							211·8							
				234·9	35·2	• DACITE LAVA.								
						- Dotextured, feldspathic, pink-albitised, variable degree of primary brecciation; some pale sericitic zones. Chlorite on some joints, and minor carbonate veinlets. Feldspars are silicified & some appear as quartz. Possible (minor) primary quartz phenocrysts.								
							220							
						- Flow-banded and variably silicified from 267.3 onward. Minor chlorite, some "gravelly" brecciation near base, which incorporates andesite lava clasts. Sharp lower contact which is conformable ⇒ uphole younging. (at 270.1m)								
						*(thin section & lithogeochem sample # 032393 @ 254.5 to 255.1 m).	224·8		⇧					
							230							

5 cm

041097

PROJECT: Burns Peak

PASMINCO EXPLORATION
DIAMOND DRILL CORE LOG

HOLE No. BPD 75

Graphic Scale 1: 100

CORE RECOVERY				DESCRIPTION						CODES			
From m	Interval m	%	RQD	From m	Interval m	(incl. LITHOLOGY, STRUCTURE & ALTERATION)	Depth	Graphic Lithology	Struct.	MINERALISATION	LITHO	STRUCT	ALTN	MIN

SEE PREVIOUS PAGE

230

234.9

240

250

5 cm

0411098

PROJECT: Burns Peak

PASMINCO EXPLORATION
DIAMOND DRILL CORE LOG

HOLE No. BPD 75

Graphic Scale 1: 100

CORE RECOVERY				DESCRIPTION							CODES			
From m	Interval m	%	RQD	From m	Interval m	(incl. LITHOLOGY, STRUCTURE & ALTERATION)	Depth	Graphic Lithology	Struct.	MINERALISATION	LITHO	STRUCT	ALTN	MIN
							260							
				270.1	23.3	• PILLOWED ANDESITE LAVA - pale to dark grey, mostly non-amygdaloidal feldspar + pyroxene phenocrysts, very fine grained matrix. Variable amounts of interpillow "mixed breccia" near the more pink-coloured zones. Variable, but minor amount of fine amygdales in massive zones. Some fine disseminated pyrite. Fine carbonate veinlets throughout. (thin section & lithogeochem. samples numbered: - 032394 @ 278.0 to 278.5 - 032395 @ 286.5 to 286.95)	267.3 270 270.1			5 cm				

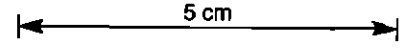
041099

FASMINCO EXPLORATION
DIAMOND DRILL CORE LOG

HOLE No. BPD 75

PROJECT: Burns Peak

Graphic Scale 1: 100

CORE RECOVERY				DESCRIPTION						CODES			
From m	Interval m	%	RQD	From m	Interval m	(incl. LITHOLOGY, STRUCTURE & ALTERATION)	Depth	Graphic Lithology	Struct.	MINERALISATION	LITHO	STRUCT	ALTN	MIN
				293.4	2.8	ANDESITIC LAVA BRECCIA. - Hyaloclastic, coarse, basal to lava flows above. Silicified, with stronger veining and incorporating brittle tectonic breccias.	280 290 293.4 296.2							

0411100

FmSMINCO EXPLORATION
DIAMOND DRILL CORE LOG

HOLE No. BPD 75

PROJECT: Burns Peak

Graphic Scale 1: 100

CORE RECOVERY				DESCRIPTION						CODES			
From m	Interval m	%	RQD	From m	Interval m	(Incl. LITHOLOGY, STRUCTURE & ALTERATION)	Depth	Graphic Lithology	Struct.	MINERALISATION	LITHO	STRUCT	ALTN	MIN
				296.2	7.7	DACITIC LAVA BRECCIA - MASS FLOW?	300							
						- grey, soft, clayey, feldspathic brecciated dacite lava, possibly mass-flow emplaced. Chlorite-sericite alteration dominates silica alteration to peak in the interval :- 301.0 to 305.0 m.							
						- 303.2 to 304.2 m - Sphalerite & Galena on gashes and veins, forming up to 2% over some 10-20 cm intervals. Minor pyrite. No disseminated mineralisation. (samples* 032991 → 032995, 1 m intervals, from 300.0 m to 305.0 m, assayed for Cu, Pb, Zn, Ag, Au).	303.4		Sp, Gn ± Py	Sphalerite & Galena on gashes & veins ± pyrite.				
							304.9							
							305.6		F					
							306.3		F					
							310							
				303.9	1.0	GRAVELLY SANDSTONE.			ser/sil					
						- Epiclastic, gravelly sandstone, poorly sorted, with clasts of ?andesite & dacite, mainly feldspathic. Sericite altered. Some mineralisation.							
				304.9	0.7	DACITE LAVA BRECCIA.								
						- as above (in the interval 296.2-303.9) but unmineralised.								
				305.6	0.7	FAULT ZONE.								
						- clay- & gravel-rich, pale, sericitic brittle fault. (The extension of this feature to surface may explain the coincident VTEM/SIROTEM features on line 2750.)	320						
						- This fault is possibly "the contact"								

5 cm

041101

PROJECT: Burns Peak

PASMINCO EXPLORATION
DIAMOND DRILL CORE LOG

HOLE No. BPD 75

Graphic Scale 1: 100

CORE RECOVERY				DESCRIPTION						CODES			
From m	Interval m	%	RQD	From m	Interval m	(incl. LITHOLOGY, STRUCTURE & ALTERATION)	Depth	Graphic Lithology	Struct.	MINERALISATION	LITHO	STRUCT	ALTN	MIN
						between CVC dacites below & the Hollway Andesite, above...								
				306.3	43.2	• DACITE LAVAS & HYALOCLASTIC LAVA BRECCIAS.								
						- variably silicified, with minor sericite alteration, feldspar-phyric, pink to grey, massive, (minor) flow banded or brecciated "typical" central volcanic Complex dacitic (to rhyolitic) lavas and lava breccias....	330			5 cm				
				349.5	-	END OF HOLE								
							340							

041102

HOLE No. BPD 75

FASMINCO EXPLORATION
DIAMOND DRILL CORE LOG

PROJECT: Burns Peak

Graphic Scale 1: 100

CORE RECOVERY				DESCRIPTION						CODES			
From m	Interval m	%	RQD	From m	Interval m	(incl. LITHOLOGY, STRUCTURE & ALTERATION)	Depth	Graphic Lithology	Struct.	MINERALISATION	LITHO	STRUCT	ALTN	MIN
							349.5 EOH			5 cm				

041103

HOLE No. BPD 75

PASMINCO EXPLORATION
DIAMOND DRILL CORE ASSAY DATA

PROJECT: Burns Peak

SAMPLE						ASSAYS (ppm unless specified)															COMMENTS
Number	Type	From m	To m	Interval m	Recovered m	Cu	Pb	Zn	Ag	Au	Rb / Sr	Y / Zr	Ba / V	Al_2O_3 / SiO_2	TiO_2 / Fe_2O_3	MnO / CaO	K_2O / MgO	P_2O_5 / SO_3	Na / LOI		
032991	½ core	300·0	301·0	1·0	1·0	6	25	100	<1	<0·008				% / %	% / %	% / %	% / %	% / %	% / %		
032992	"	301·0	302·0	1·0	1·0	12	28	83	<1	<0·008											
032993	"	302·0	303·0	1·0	1·0	5	56	235	<1	<0·008											
032994	"	303·0	304·0	1·0	1·0	34	2100	9300	2	<0·008											
032995	"	304·0	305·0	1·0	1·0	11	50	290	<1	<0·008											
										TOTAL %											
032996	½ core	29.7	30·3	0·6	0·6					100·08	85 / 150	30 / 140	360 / 320	16·90 / 47·8	0·93 / 13·33	0·39 / 4·44	1·83 / 3·92	0·469 / 8·06	3·06 / 6·99		thin section & petrography undertaken for samples 032996 to 033000 & 032391 to 032397 (Dr. AJ Crawford, Tas Uni, August/Sept 1992)
032997	"	49·0	49·4	0·4	0·4					100·11	140 / 90	35 / 220	410 / <5	10·69 / 72·7	0·22 / 3·14	0·27 / 2·67	2·65 / 1·62	0·023 / 0·22	1·60 / 4·31		
032998	"	78·15	78·55	0·4	0·4					99·93	120 / 130	35 / 240	360 / <5	12·47 / 79·1	0·25 / 1·98	0·11 / 1·84	2·76 / 0·38	0·024 / 0·10	3·08 / 3·30		
032999	"	118·6	118·9	0·3	0·3					100·29	70 / 190	35 / 85	530 / 320	11·66 / 53·2	1·21 / 10·24	0·36 / 2·20	1·87 / 2·64	0·239 / 0·77	4·80 / 5·07		
033000	"	151·2	151·5	0·3	0·3					100·36	50 / 360	20 / 95	520 / 270	17·34 / 48·5	0·74 / 10·92	0·41 / 4·89	1·39 / 3·20	0·221 / 0·10	5·47 / 7·22		
032391	"	161·2	161·8	0·6	0·6					100·01	140 / 50	25 / 180	1700 / <5	9·82 / 78·2	0·19 / 2·56	0·07 / 0·75	4·87 / 0·62	0·020 / 0·03	0·47 / 2·41		
032392	"	220·7	221·15	0·45	0·45					100·35	35 / 320	35 / 110	320 / 40	17·54 / 52·6	1·05 / 9·66	0·34 / 3·41	0·77 / 2·39	0·353 / 0·02	6·92 / 5·27		
032393	"	254·5	255·1	0·6	0·6					100·36	100 / 75	30 / 300	200 / 6	14·39 / 71·6	0·95 / 1·55	0·11 / 1·37	2·09 / 0·50	0·047 / 0·06	5·32 / 5·00		
032394	"	278·0	278·5	0·5	0·5					100·19	65 / 220	35 / 170	310 / 360	16·76 / 44·5	1·16 / 15·98	0·31 / 3·79	1·06 / 4·79	0·528 / 0·07	4·43 / 6·83		
032395	"	286·5	286·95	0·45	0·45					100·26	35 / 270	45 / 180	260 / 100	17·03 / 55·2	0·81 / 9·09	0·24 / 2·89	0·86 / 2·18	0·359 / 0·16	6·93 / 4·97		
032396	"	310·0	310·4	0·4	0·4					100·37	190 / 70	40 / 210	580 / 55	15·70 / 58·2	0·68 / 8·69	0·27 / 2·76	4·12 / 2·32	0·245 / 0·29	0·91 / 6·71		
032397	"	333·7	334·3	0·6	0·6					100·15	140 / 130	35 / 240	470 / <5	12·95 / 73·4	0·25 / 1·85	0·12 / 1·66	2·64 / 0·54	0·024 / 0·10	3·75 / 2·90		
										(0X408 0·01%)											
Laboratory	ANALABS			Analytical Method		GA140	GA140	GA140	GA140	9S309	9X401	9X401	9X401	0X409	0X408	0X408	0X408	0X408	0X408		
Job-No.	111310·60·08912	Date	24/8/92	Detection Limit		2	3	2	1	0·008	5 / 5	5 / 5	10 / 5	0·05% / 0·1%	0·01% / 0·01%	0·01% / 0·01%	0·01% / 0·01%	0·005% / 0·01%	0·05 / 0·01%		

041104

PASMINCO EXPLORATION
DIAMOND DRILL HOLE SUPPLEMENTARY DATA

PROJECT : Burns Peak

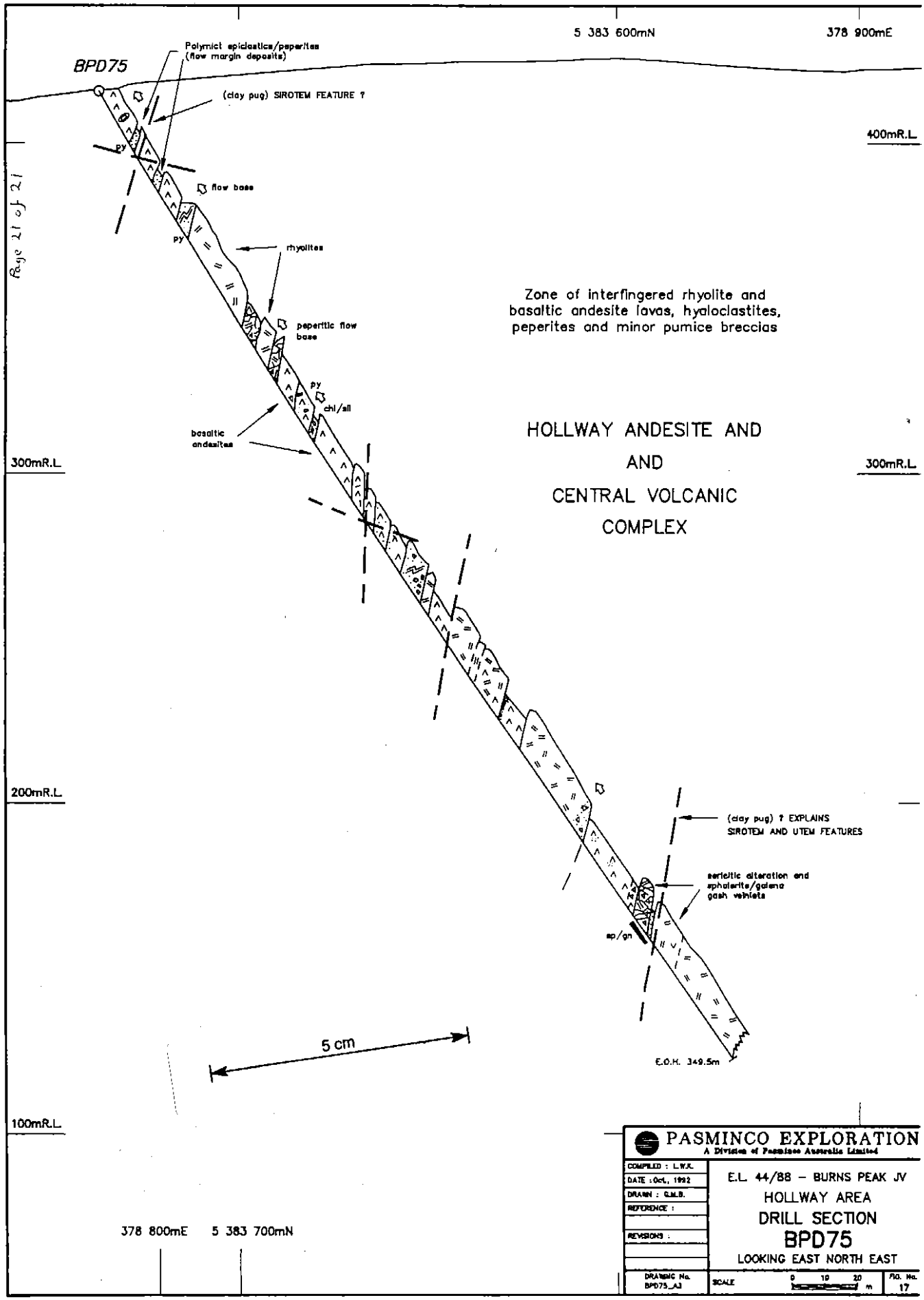
HOLE No. BPD 75

CORE PROCESSING RESULTS				DRILL HOLE		BPD-75		PROCESSED BY		C. ARCHER		
CORE RECOVERY				M.SUS ($SI \times 10^{-3}$)		S.G		ENTERED BY		C. ARCHER		
										SAMPLING INTERVALS		
FROM	TO	REC	%REC	DEPTH	M.SUS	DEPTH	WEIGHT	VOL	S.G	FROM	TO	TICKET #	COMMENTS
3	6	1.1	36.67	6	NIL				0.00				
6	7.8	0.8	44.44	7.8	NIL				0.00				
7.8	9	0.9	75.00	9	NIL				0.00				
9	11	1.9	95.00	11	NIL				0.00				
11	14.7	3.7	100.00	14.7	0.28				0.00				
14.7	18	2.5	75.76	18	0.13				0.00				
18	19	0.9	90.00	19	NIL				0.00				
19	20.6	1.7	106.25	20.7	1.48				0.00				
20.6	23.1	2.4	96.00	23.1	0.39				0.00				
23.1	24	0.80	88.89	24	2.18				0.00				
24	27	3	100.00	27	2.95				0.00				
27	30	3	100.00	30	2.45				0.00	29.7	30.3	32996	SPLIT-CORE-HQ
30	33	3	100.00	33	0.03				0.00				
33	35.7	2.7	100.00	35.7	0.04				0.00				
35.7	38.8	3.1	100.00	38.8	0.06	40.25	1075	386	2.78				
38.8	42	3.1	96.87	42	1.43				0.00				
42	45	3	100.00	45	0.36				0.00				
45	48	3	100.00	48	0.02				0.00	49	49.4	32997	SPLIT-CORE-HQ
48	51	3	100.00	51	0.02				0.00				
51	51.5	0.4	80.00	51.5	0.02				0.00				
51.5	54.6	3.1	100.00	54.6	0.01				0.00				
54.6	55.5	0.9	100.00	55.5	0.02				0.00				
55.5	58.5	2.9	96.67	58.5	0.01				0.00				
58.5	61.4	3	103.45	61.4	0.01				0.00				
61.4	64.4	3	100.00	64.4	0.01				0.00				
64.4	67.5	2.95	95.16	67.5	0.01				0.00				
67.5	70.5	3.1	103.33	70.5	0.01				0.00				
70.5	73.5	3	100.00	73.5	0.01				0.00				
73.5	76.5	2.95	98.33	76.5	0.01				0.00				
76.5	79.5	3	100.00	79.5	0.01	80.1	591	223	2.65	78.15	78.55	32998	SPLIT-CORE-NQ
79.5	82.5	3	100.00	82.5	0.02				0.00				
82.5	85.5	3	100.00	85.5	0.02				0.00				
85.5	88.5	3	100.00	88.5	0.02				0.00				
88.5	91.5	3	100.00	91.5	0.02				0.00				
91.5	94.5	3	100.00	94.5	0.02				0.00				
94.5	97.5	3	100.00	97.5	0.02				0.00				
97.5	100.5	3	100.00	100.5	0.02				0.00				
100.5	103.5	3	100.00	103.5	0.06				0.00				
103.5	106.5	3	100.00	106.5	0.01				0.00				
106.5	109.5	3	100.00	109.5	0.01				0.00				
109.5	112.5	3	100.00	112.5	0.02				0.00				
112.5	115.5	3	100.00	115.5	0.03				0.00				
115.5	118.5	3	100.00	118.5	0.05	119.85	395	148	2.67				
118.5	121.5	3	100.00	121.5	0.08				0.00	118.6	118.9	32999	SPLIT-CORE-NQ
121.5	124.5	3	100.00	124.5	2.24				0.00				
124.5	127.5	3	100.00	127.5	0.08				0.00				
127.5	130.5	3	100.00	130.5	0.04				0.00				
130.5	133.5	3	100.00	133.5	0.6				0.00				
133.5	136.5	3	100.00	136.5	0.06				0.00				
136.5	139.5	3	100.00	139.5	0.1				0.00				
139.5	142.5	3	100.00	142.5	0.46				0.00				
142.5	145.5	3	100.00	145.5	2.49				0.00				
145.5	148.5	3	100.00	148.5	0.32				0.00				
148.5	151.2	2.7	100.00	151.2	1.37				0.00	151.2	151.5	33000	SPLIT-CORE-NQ
151.2	154	2.8	100.00	154	0.07				0.00				
154	157.1	3.1	100.00	157.1	0.07	160	616	234	2.64				
157.1	160.2	3.1	100.00	160.2	0.02				0.00				
160.2	163.3	3.1	100.00	163.3	0.05				0.00	161.2	161.8	32391	SPLIT-CORE-NQ
163.3	166.2	2.9	100.00	166.2	0.03				0.00				
166.2	169.3	3.1	100.00	169.3	0.07				0.00				
169.3	172.4	3.1	100.00	172.4	0.03				0.00				
172.4	175.5	3.1	100.00	175.5	0.04				0.00				
175.5	178.5	3	100.00	178.5	0.01				0.00				
178.5	181.5	3	100.00	181.5	0.02				0.00				
181.5	184.5	3	100.00	184.6	0.04				0.00				
184.5	187.5	3	100.00	187.5	0.03				0.00				

CORE PROCESSING RESULTS				DRILL HOLE		BPD-75		PROCESSED BY		C. ARCHER		
CORE RECOVERY				M.SUS ($SI \times 10^{-3}$)		S.G		ENTERED BY		C. ARCHER		
										SAMPLING INTERVALS		
FROM	TO	REC	%REC	DEPTH	M.SUS	DEPTH	WEIGHT	VOL	S.G	FROM	TO	TICKET #	COMMENTS
187.5	190.5	2.95	98.33	190.5	0.06				0.00				
190.5	193.5	3	100.00	193.5	0.05				0.00				
193.5	196.5	3	100.00	196.5	0.05				0.00				
196.5	199.5	3	100.00	199.5	0.04	200	692	254	2.72				
199.5	202.5	3	100.00	202.5	0.08				0.00				
202.5	205.5	3	100.00	205.5	0.64				0.00				
205.5	208.5	3	100.00	208.5	0.07				0.00				
208.5	211.5	3	100.00	211.5	0.05				0.00				
211.5	214.5	3	100.00	214.5	0.06				0.00				
214.5	217.5	3	100.00	217.5	0.04				0.00				
217.5	220.5	3	100.00	220.5	1.04				0.00				
220.5	223.5	2.95	98.33	220.5	2.63				0.00	220.7	221.15	32392	SPLIT-CORE-NQ
223.5	226.5	3	100.00	226.5	1.95				0.00				
226.5	229.5	3	100.00	229.5	1.35				0.00				
229.5	232.5	3	100.00	232.5	0.4				0.00				
232.5	235.5	3	100.00	235.5	0.02				0.00				
235.5	238.3	2.8	100.00	238.3	0.02	240	412	156	2.64				
238.3	240.4	2.05	97.62	240.4	NIL				0.00				
240.4	242.1	1.7	100.00	242.1	0.02				0.00				
242.1	243.6	1.4	93.33	243.6	0.01				0.00				
243.6	244.5	0.9	100.00	244.5	NIL				0.00				
244.5	245.7	1.2	100.00	245.7	0.01				0.00				
245.7	248.8	3.2	103.23	248.8	0.01				0.00				
248.8	250.4	1.7	106.25	250.4	0.01				0.00				
250.4	253.5	3	96.77	253.5	0.02				0.00	254.5	255.1	32393	SPLIT-CORE-NQ
253.5	256.5	3.1	103.33	256.5	0.01				0.00				
256.5	259.5	3	100.00	259.5	0.01				0.00				
259.5	262.5	3	100.00	262.5	0.02				0.00				
262.5	265.5	3	100.00	265.5	0.02				0.00				
265.5	267.8	2.3	100.00	267.8	0.01				0.00				
267.8	270.9	3.1	100.00	270.9	0.04				0.00				
270.9	274	3.1	100.00	274	0.07				0.00				
274	277.1	3.1	100.00	277.1	1.68	280	520	193	2.69				
277.1	280.2	3.1	100.00	280.2	1.14				0.00	278	278.5	32394	SPLIT-CORE-NQ
280.2	283	2.8	100.00	283	0.02				0.00				
283	285.5	2.5	100.00	285.5	0.75				0.00				
285.5	286.7	1.2	100.00	286.7	0.65				0.00	288.5	286.95	32395	SPLIT-CORE-NQ
286.7	289	2.2	95.65	289	0.31				0.00				
289	291.9	2.9	100.00	291.9	0.06				0.00				
291.9	295.1	3.1	96.87	295.1	0.02				0.00				
295.1	297.7	2.6	100.00	297.7	0.08				0.00				
297.7	300.7	3	100.00	300.7	0.02				0.00	300	301	32991	SPLIT-CORE-NQ
300.7	303.7	3	100.00	303.7	0.01				0.00	301	302	32992	SPLIT-CORE-NQ
303.7	307.5	3.6	94.74	307.5	0.01				0.00	302	303	32993	SPLIT-CORE-NQ
307.5	310.5	3	100.00	310.5	0.02				0.00	303	304	32994	SPLIT-CORE-NQ
310.5	313.5	2.95	98.33	313.5	0.02				0.00	304	305	32995	SPLIT-CORE-NQ
313.5	316.5	3	100.00	316.5	0.01				0.00	310	310.4	32396	SPLIT-CORE-NQ
316.5	319.5	3	100.00	319.5	0.01	320	670	253	2.65				
319.5	322.5	3	100.00	322.5	0.01				0.00				
322.5	325.5	3	100.00	325.5	0.03				0.00				
325.5	328.5	3	100.00	328.5	0.05				0.00	333.7	334.3	32397	SPLIT-CORE-NQ
328.5	331.5	3	100.00	331.5	0.05				0.00				
331.5	334.5	3	100.00	334.5	0.02				0.00				
334.5	337.5	3	100.00	337.5	0.02				0.00				
337.5	340.5	3	100.00	340.5	0.02				0.00				
340.5	343.5	3	100.00	343.5	0.02				0.00				
343.5	346.5	3	100.00	346.5	0.01				0.00				
346.5	349.5	3	100.00	349.5	0.02				0.00				

041105

041106



Page 21 of 21

HOLE No. BPD 76

PASMINCO EXPLORATION
DIAMOND DRILL CORE RECORD

LOCATION	TASMANIA
PROJECT	BURNS PEAK
PROSPECT	SUMMIT
DESIGNED BY	LINDSAY W KIRSNER
LOGGED BY	LINDSAY W KIRSNER
RELOGGED	
COMMENCED	1 OCTOBER 1992
COMPLETED	3 NOVEMBER 1992
DRILLED BY	DIAMOND DRILLING TAS.
DRILL RIG	LONGYEAR 38

OBJECTIVE

To test the western limb of a northeast plunging syncline, immediately east of the Burns Peak Summit, for base metal mineralisation in a sequence that includes shales, andesites and rhyolites, near a northeast trending shear zone. To test for the source of barium and base metal soil anomalies.

RESULT

An uphole-younging sequnce of rhyolitic, shaley, ashy and andesitic lithologies with low-level sphalerite/galena/pyrite mineralisation throughout. Strong sericite/pyrite and sericite/fuchsite alteration in restricted zones associated with minor mineralisation (esp.468-472m). Sub-massive pyrite (up to 40% of rock) near faults/shear zone at 510m (Burns Peak Shear).

SIGNIFICANT INTERSECTIONS

From m	To m	Interval m						Comments
								(Results not yet available)

SIGNIFICANT CORE LOSS

From m	To m	% Lost

POOR GROUND CONDITION ZONES

From m	To m	Condition

HOLE SIZE

Size	Depth m
HQ	0-34
NQ	34-532.5

HOLE CONDITIONS AFTER COMPLETION

Collar	PVC CASES & PERMA-TAGGED
Steel Casing	NIL
PVC Casing	0-532.5m 40mm Class 9 (Vinidex)
Ground Water	-
Wedge	-
Drill Pad	Sump filled in & topsoil partly replaced.

LOCATION/SURVEY DATA (AMG)

Grid	AMG		RL Collar m 550.7
Northing m	5 384 472.5		Bearing Collar 285°
Easting m	378 757.4		Dip Collar -60°
DH Survey Type	EASTMAN CAMERA		Length Hole m 532.5

Depth m	Bearing	Dip	Depth m	Bearing	Dip
50	283.5	-59°			
100	286	-59°			
150	286.5	-58.25°			
200	288	-58°			
250	289	-59°			
300	290.5	-59°			
350	292.25	-58.26°			
400	293	-57.7°			
450	295	-58°			
500	296.75	-57.5°			
530	297.25	-57°			

041107

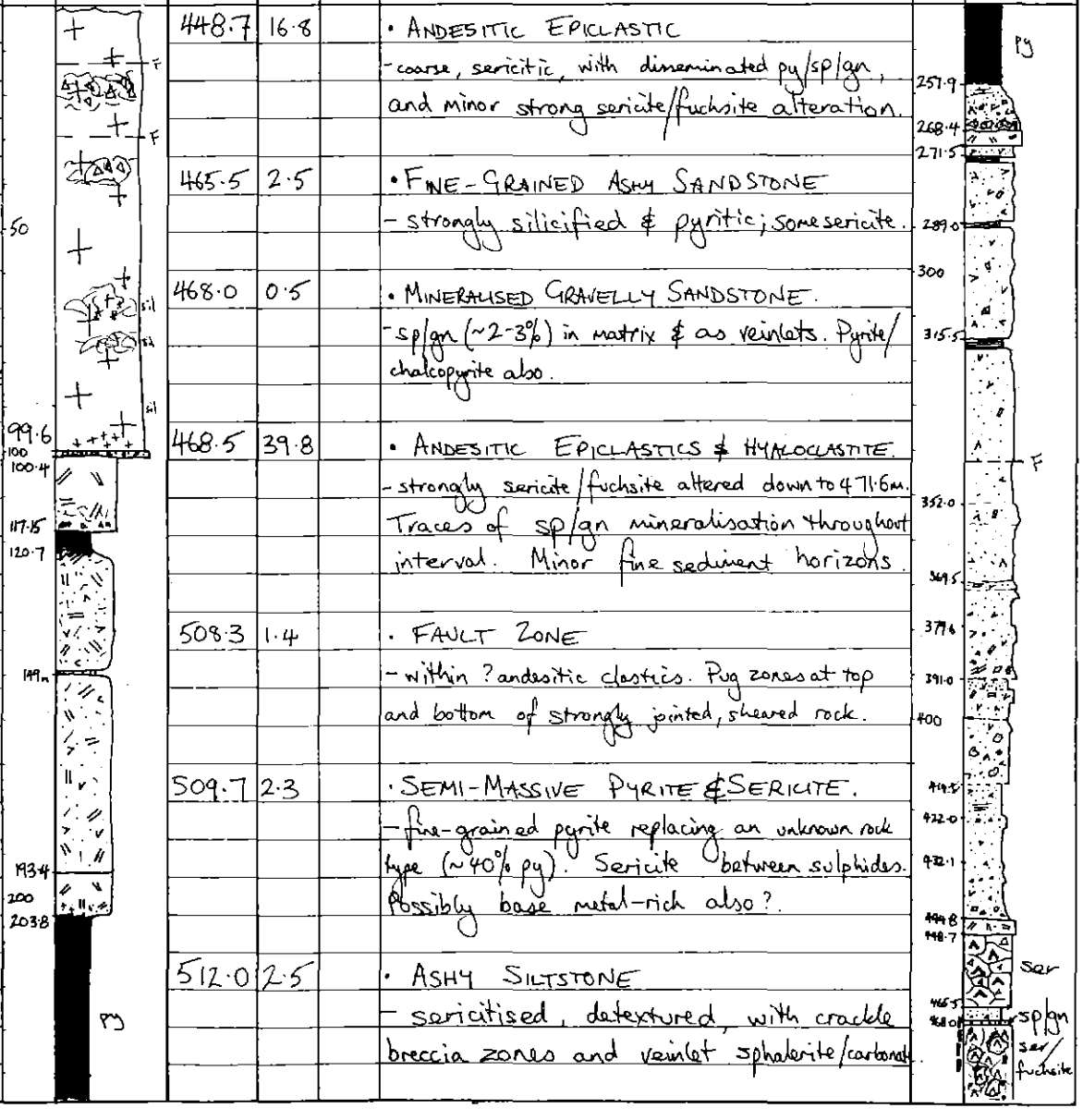
PASMINCO EXPLORATION
SUMMARY DIAMOND DRILL CORE LOG

HOLE No. BPD 76

PROJECT: Burns Peak

Graphic Scale 1: 1000

From m	Interval m	Code	Description
2.4	97.2		• QUARTZ-FELDSPAR PORPHYRITIC SILLS, LAVAS, LAVA BRECCIAS & MINOR EPICLASTICS.
99.6	0.8		• RHYOLITIC EPICLASTIC MASS FLOW - coarse, flow banded rhyolite clasts in a sericite matrix
100.4	17.1		• RHYOLITE LAVA, HYALOCLASTITE & LAVA BRECCIA. - variably siliceous, pyritic, sericitic with tr. sphalerite
117.15	3.55		• BLACK SHALE - laminated, pyritic with minor sphalerite.
120.7	83.1		• RHYOLITIC HYALOCLASTITE & LAVA BRECCIA, ABOVE A MASSIVE RHYOLITE LAVA - epiclastic & reworked at top; minor pyrite & sph.
203.8	54.1		• BLACK SHALE - laminated, pyritic, graphitic, with traces of sphalerite on veinlets. Grades down-hole into a coarser grey sandstone.
257.9	190.8		• ASHY VOLCANICLASTIC SANDSTONES WITH MINOR BLACK/GREY MUDSTONES & RHYOLITE LAVAS INTERCALATED. - variably feldspathic; some graded mass flows some pyritic/sericitic zones and traces of base metal sulphides, especially on veinlets.
448.7	16.8		• ANDESITIC EPICLASTIC - coarse, sericitic, with disseminated py/sp/gn, and minor strong sericite/fuchsite alteration.
465.5	2.5		• FINE-GRAINED ASHY SANDSTONE - strongly silicified & pyritic; some sericite.
468.0	0.5		• MINERALISED GRAVELLY SANDSTONE. - sp/gn (~2-3%) in matrix & as veinlets. Pyrite/chalcopyrite also.
468.5	39.8		• ANDESITIC EPICLASTICS & HYALOCLASTITE. - strongly sericite/fuchsite altered down to 471.6m. Traces of sp/gn mineralisation throughout interval. Minor fine sediment horizons.
508.3	1.4		• FAULT ZONE - within ? andesitic clastics. Pyg zones at top and bottom of strongly jointed, sheared rock.
509.7	2.3		• SEMI-MASSIVE PYRITE & SERICITE. - fine-grained pyrite replacing an unknown rock type (~40% py). Sericite between sulphides. Possibly base metal-rich also?
512.0	2.5		• ASHY SILTSTONE - sericitised, detextured, with crackle breccia zones and veinlet sphalerite/carbonate



PASMINCO EXPLORATION
SUMMARY DIAMOND DRILL CORE LOG

HOLE No. BPD 76

PROJECT :

Graphic Scale 1:1000

From m	Interval m	Code	Description	Depth	Graphic
514.5	18.0		· RHYOLITIC TO DACITIC LAVA/SHALLOW INTRUSIVE. -feldspathic, with minor sericite/epidote zones.	498.5 500 507.6 512.3 514.5 532.5	F F Py (mod) F
532.5	–		END OF HOLE.		

5 cm

0411109

PASMINCO EXPLORATION
DIAMOND DRILL CORE LOG

HOLE No. BPD 76

PROJECT: BURNS PEAK

Graphic Scale 1: 200

SEE ATTACHED DATA SHEETS.

CORE RECOVERY				DESCRIPTION						CODES			
From m	Interval m	%	RQD	From m	Interval m	(incl. LITHOLOGY, STRUCTURE & ALTERATION)	Depth	Graphic Lithology / Struct.	MINERALISATION	LITHO	STRUCT	ALTN	MIN
				0·0	2·4	NO CORE RECOVERED							
				2·4	12·4	QUARTZ - FELDSPAR PORPHYRY (RHYOLITIC ? SILL)							
						Euhedral quartz-crystals, some sub-rounded, 0·5 — 5mm across mostly ~ 2-3mm diameter. Prismatic feldspars ~ 1-4mm long, ½ - 2 mm wide.							
						- Rock is variably bleached near-surface with feldspars weathered to clay. Much jointing at varying angles to LCA (long core axis) with MnOx & FeOx strongly developed on them.	10						
						Dominant joint set at ~30° to LCA.	13·2	F					
						- Matrix is fine grained siliceous to chloritic (green) with probable fine ? feldspar laths or devitrification textures.	14·8						
						- composition: quartz ~ 25%, feldspar ~ 30%, matrix ~ 45% } locally more crystal-rich	15·9						
							17·8						
						- weathering has created vughs/voids in matrix.	20						
						- colour varies from white to dark green/grey.			5 cm				
						- chloritic patches give pseudo-clastic appearence in some zones (eg: 6·8 - 7·2m).		F					
						13·2m FAULT - minor gravel/pug at 30° to LCA.	30						
				14·8	1·1	FELDSPAR CRYSTAL-RICH PORPHYRY							
						- feldspar forms 40-50% of rock. Little quartz. "Blebby" chloritic matrix. Crystals 1mm — 5mm long.							
				15·9	1·9	QUARTZ-FELDSPAR PORPHYRY - EPICLASTIC							
						- large (3-30mm) coarse quartz (3-4mm) - bearing clasts (white) in a partially chloritic, feldspathic (1-2mm x'lls) matrix. Ragged to angular clast shapes - in a possibly alteration-enhanced texture.	40						

Struct: 30° joints; 30° fault pug

0411110

PASMINCO EXPLORATION
DIAMOND DRILL CORE LOG

HOLE No. BPD 76

PROJECT: Burns Peak

Graphic Scale 1: 200

CORE RECOVERY				DESCRIPTION						CODES			
From m	Interval m	%	RQD	From m	Interval m	(incl. LITHOLOGY, STRUCTURE & ALTERATION)	Depth	Graphic Lithology	Struct.	MINERALISATION	LITHO	STRUCT	ALTH	MIN
				17.8 to 99.6	81.8	• RHYOLITIC, QUARTZ-FELDSPAR PORPHYRITIC SILLS, LAVAS AND ASSOCIATED EPICLASTICS. Interval includes:-								
				17.8	1.3	-massive grey qfp. 1-4mm feldspars. ≈3mm quartz. bleached and coarser interval ~18.7-19.1m.	50							
				19.1	1.4	- qfp pseudo-clastic/clastic? Ragged contact at 19.1m is conformable (part of flow & flowbreccia qfp pile which is partly extrusive, partly intrusive/sills)			faintly magnetic					
				20.5	1.5	- massive qfp - qtz 1-5mm 30% fsp ½-3mm 30% matrix 40%	60							
				22.0	1.2	- feldspar-rich zone ~50% crystalline feldspar in dark matrix.			sil sp	63.6-64.2 - traces of sp. on tiny veinlets in silicified zone.				
				23.2	4.3	- massive qfp, white, bleached, silicified; qtz 2-5mm. pseudo-clastic textures 23.6-27.5. Some banded clasts.								
				27.5	0.1	- FAULT - brittle ± clay & gravel pug zone.	70							
				27.6	11.0	- Grey, qfp lava/subvolcanic shallow intrusive (?dome) Clastic & massive textures; varied feldspar (½-2mm) and quartz size (1-4mm) and content %. Clastic zones have flow-banded clasts with euhedral qtz crystals wrapped by the fabric. (eg: 34.0-34.2m.)			sil/qp sil	70.7-71.4 - silicified zone ± tr. sphal. veinlets				
						39.1-39.8m - Massive qfp bleached white ? brecciated - evidence of primary coarse breccias.	80							
						- Domainal development of coarser feldspar crystals (~2mm) in clots & patches (possibly indicative of juvenile 'clasts? during emplacement, 'hot' ser/chl altd matrix between initially?)								
						- More massive from 42.4m down hole: Fine white ? leucoxene crystals throughout.								
						57.5-57.8 - Bleached, faintly magnetic zone (? ~ 1mm long magnetite crystals in QFP host)	90		sil					

5 cm

041111

PASMINCO EXPLORATION
DIAMOND DRILL CORE LOG

HOLE No. BPD 76

PROJECT :

Graphic Scale 1:200

CORE RECOVERY				DESCRIPTION						CODES			
From m	Interval m	%	RQD	From m	Interval m	(incl. LITHOLOGY, STRUCTURE & ALTERATION)	Depth	Graphic Lithology / Struct.	MINERALISATION	LITHO	STRUCT	ALTN	MIN
						63.6–64.2 — white/pale grey silicified qfp ± traces of sphalerite on tiny veinlets							
						70.7–71.4 — silicified zone with traces of sphalerite as blebs & veinlet fill.	97.4	sil	99.2–99.6 :- - small blebs of sphalerite in sericitic matrix				
						74.9–75.0 — silicified/vein? with fragments of unsilicified qfp	99.6 DO	sp/ser					
						89.9–90.2 — silicified/bleached qfp & epiclastic.	100.4		99.6–100.4 :- - traces of dissem sp/py in sericite matrix.				
						94.5–95.1 - " " " "		sil ± py					
						- Character of rock begins to change from 97.4m to a finer-grained (< 2mm) and less crystal-rich massive rhyolitic lava/sill. Some sericite alteration of matrix and blebs of sphalerite (~0.5% locally) especially near base of unit at 99.2–99.6m		35° to 39° FLOW BANDS					
							106.8	sil ± py	- veinlet sphalerite (tr)				
							110	ser py	- dark sp in carbonate veins				
								sil					
								sil					
				99.6	0.8	COARSE MASS FLOW EPICLASTIC		fbe @ 20° to LCA					
						- matrix supported, non-graded, siliceous (rhyolitic) flow banded clasts (pale cream to pink colour), in a completely chlorite/sericite altered matrix containing 0.5mm feldspar laths. Composition: feldspar crystals ~ 20%	117.15						
						clasts ~ 40% (10–50mm)	120		119.4–119.8m - sphalerite in veins & fractures				
						matrix ~ 40%	120.7 121.8		- pyrite throughout shale				
						- traces of sp/py in matrix & fine leucoxene throughout.			herd/albite (? pale sphalerite)				
									- chocolate brown sph. blebs in matrix (121–123m) (traces)				
				100.4	6.4	RHYOLITE LAVA	130						
						- feldspathic, flow banded to massive, grey to pale grey/green, variably silicified, sericitic & pyritic.							
						- feldspar crystals ~ 1mm across form ~ 5% of rock both in the flow bands & wrapped by bands.			5 cm				
						- strongly silicified and detextured in the intervals :-							

041112

PASMINCO EXPLORATION
DIAMOND DRILL CORE LOG

HOLE No. BPD 76

PROJECT :

Graphic Scale 1: 200

CORE RECOVERY				DESCRIPTION						CODES			
From m	Interval m	%	RQD	From m	Interval m	(incl. LITHOLOGY, STRUCTURE & ALTERATION)	Depth	Graphic Lithology	Struct.	MINERALISATION	LITHO	STRUCT	ALTN	MIN
						100·8 – 102·8 ; 105·2 – 105·5 ; 105·8 – 106·5.								
						- Pyrite mineralisation especially in the silicified zones, as coarse gash & joint fill and finer (½ mm) disseminated pyrite	140							
						- late-stage brittle carbonate veins also contain vugh-fill pyrite. About 1% total over entire interval.								
						- local dark brown sphalerite on brittle joints and veinlets (eg: 106·1 – 106·4 m).			149m So 25° to LCA.					
						- So/flowbands :– 101·2m 36° to LCA	150							
						102·8 m 39° " "								
						105·3 m 39° " "								
				106·8	10·35	RHYOLITIC HYALOCLASTITE / LAVA BRECCIA.								
						- Primary lava breccia / edge of lava pile hyaloclastite with well preserved jigsaw-fit textures. Sericitic inter-clast zones. Clasts ~2mm to 50mm, average 5–10mm.	160							
						Feldspar crystals 1-2mm form ~5% of rock & clasts & in the matrix. Occasional flow banded clasts.				5 cm				
						- Irregular, wispy sericite matrix zones rich in feldspar have a somewhat chaotic appearence (eg: 109·2 – 109·7m).								
						- Pyrite up to 2% locally & common throughout interval, as minor fine disseminations, coarser vein & joint fill & coarse replacement of matrix locally.	170							
						- Dark sphalerite intimately associated with carbonate veining (eg 110·1m)								
						- Strong silicification & detexturing from 110·9 – 111·3m and 111·8 – 114·2 with up to 5% py in fractures & geodes, possibly picking out a more massive lava zone, with hints of flow banding & some 2mm black crystals (sub rounded ? amygdales).	180							
						- 'text book' hyaloclastic jigsaw textures on joint faces at 112·9m								

041113

PASMINCO EXPLORATION
DIAMOND DRILL CORE LOG

HOLE No. BPD 76

PROJECT :

Graphic Scale 1: 200

CORE RECOVERY				DESCRIPTION						CODES			
From m	Interval m	%	RQD	From m	Interval m	(incl. LITHOLOGY, STRUCTURE & ALTERATION)	Depth	Graphic Lithology	Struct.	MINERALISATION	LITHO	STRUCT	ALTN	MIN
						-Possible flow bands at 20° to LCA at 114.0m.								
						- large (>50mm) plastically deformed shale raft in the base of the unit (117.1 – 117.15m) "ripped up" from the underlying massive to bedded shale unit ⇒ up-hole younging	190							
				117.15	3.55	BLACK SHALE / MUDSTONE.	193.4							
						-dark grey to black, with highly disrupted bedding. Contains sedimentary bands/laminae ~¼ to ½ mm thick ⇒ soft sediment slump folds. ½ to 2mm feldspar crystals in very fine grained (clay/silt sized) carbonaceous (graphitic) sediment. Highly Pyritic as vfg. laminae // to bedding and as coarser clots up to 20mm across.	200		• fb@ 5°-25° to LCA • cleaved // to LCA S0/LCA 37°	-sp on carbonate veinlets -202.0 – 203.8 – py/ser strongly developed.				
						-2-3mm carbonate blebs form ~2% of rock in more disturbed zones. Unit is contains slightly more feldspar crystals and lithic fragments towards base, especially in a "mixed zone" at 120.2 – 120.7.	203.8		40°	5 cm				
						-Sphalerite occurs as vein & fracture fill especially 119.4 – 119.8m	210	py	69° 50° 75° 20°					
						-Conformable contact at ~25° to LCA at 120.7 – 120.8m with underlying epiclastic unit.			60°	- pyrite 2-5% in shales (as fine disseminations, coarser blebs on bedding planes and as beds/laminations themself)				
				120.7	1.1	COARSE EPICLASTIC WITH BLACK MUDSTONE MATRIX.			47° 56°					
						- mixed/disrupted zone at the top of underlying massive epiclastic ⇒ reworked "loose" angular clasts with overlying mudstone having been disturbed & redeposited within this clast supported turbidite.	220		35° 39°					
						-Clasts: angular, up to 200mm, mostly fsp phyric, flow banded rhyolite lava (pale cream/green) chlorite/sericite altered,		py	30° 30°					
						-Decreasing mudstone matrix down-hole, to be absent by 121.8m.	230		39°					

041114

PASMINCO EXPLORATION
DIAMOND DRILL CORE LOG

HOLE No. BPD76

PROJECT :

Graphic Scale 1: 200

CORE RECOVERY				DESCRIPTION						CODES			
From m	Interval m	%	RQD	From m	Interval m	(incl. LITHOLOGY, STRUCTURE & ALTERATION)	Depth	Graphic Lithology / Struct.	MINERALISATION	LITHO	STRUCT	ALTN	MIN
				121·8	71·6	RHYOLITIC AUTOBRECCIA (HYALOCLASITE & LAVA BRECCIA)		39° 36°					
						- flow banded, feldspathic, rhyolite lava clasts in a feldspathic, chloritic sericitic matrix (containing wisps & blebs of hydrothermally altered material)		30° 22°	5 cm				
						⇒ Primary auto breccia on the edge of a subaqueously emergent acid lava pile. Hyaloclastic jigsaw textures throughout.		py 40°					
						- Clasts - size: 2mm – 300mm, generally ≈ 5–40mm.	240	30°					
						clasts - angular, primary breccia textured, "proximal" source.		36°	- pyrite ~2–5% in shales, (as				
						from 50% to 10% { ~90% flow banded, feldspathic rhyolite lava clasts; 10% silica & feldspar crystals.		sp vn	fine disseminations, blebs along beds & fine beds themself).				
						- Matrix – chlorite/biotite – dark grey/green.		45°					
						- feldspar crystals mostly ½–2mm long. Minor quartz also.		46°					
						- more massive (?lava) zones exist but infrequently/narrow	250	py 44°	- carbonate/sp/gn veins: at				
						- Minor sediment – med. grained grey sandstones – interbedded		49°	50° to LCA at 252·0 (15cm				
						/intercalated at 149.6 – 149.8m at ~25° to LCA –		sp vn	wide) and 245·0 (5cm)				
						deformed & slumped.			in sub // to LCA.				
						- Traces of fg. disseminated pyrite throughout interval.		34° 57° 62°					
						- Pale brown/pink matrix "bloom" in the matrix near the	259·9						
						top of interval (121–125m) – hematite/albite alteration (?sph)	259·2 260	Sil LCA					
						- fine carbonate veinlets occur throughout interval (planar, brittle, unmin)							
						- traces of chocolate brown sphalerite as blebs in matrix above			· pyrite ~ 1%				
						~133m. Variable but weak ser/sil alteration.	265·8						
				193·4	10·4	FELDSPAR PHYRIC RHYOLITE LAVA.	268·4						
						- flow banded, dark grey, feldspathic. Pyritic & increasingly bleached (ser)	270						
						towards base of interval (esp: 202·0 – 203·8). Flow bands at 5°–25°	271·5	70°	tr. py clots 271·5m.				
						to LCA, somewhat distorted & deformed. Feldspars ¼–2mm, pink	273·2	sil					
						to white, form ~2%. Carbonate veins & veinlets throughout.							
						- Dramatic increase in pyrite content in lowest 30cm.	277						

041117

PASMINCO EXPLORATION
DIAMOND DRILL CORE LOG

HOLE No. BPD 76

PROJECT :

Graphic Scale 1: 200

CORE RECOVERY				DESCRIPTION									CODES			
From m	Interval m	%	RQD	From m	Interval m	(incl. LITHOLOGY, STRUCTURE & ALTERATION)							LITHO	STRUCT	ALTN	MIN
						Some cleavage developed // to LCA.										
						- Coarser veins contain coarse sphalerite eg: 203.7m										
						- 203.75 - 203.85 - interfingered/intermixed zone of bleached sericitic/ pyritic lava & black mudstone wisps and injections, stretched // to a strong cleavage at 40° to LCA (basal contact of unit).										
				203.8	54.1	BLACK SHALE / MUDSTONE.										
						- carbonaceous, down-hole coarsening to become an ashy grey sandstone. Strongly cleaved. Main cleavage is sub-parallel to LCA. Well bedded/thinly laminated, with much pyrite on bedding planes as both very fine laminae and as coarser aggregates and blebs, irregularly distributed along beds.										
						- carbonate veinlets throughout, often // to beds.										
						- core breaks // to beds or // to cleavage predominantly.										
						MEASUREMENTS:				So ANGLE TO LCA:						
						depth(m):	feature:	angle to LCA:		219.0	50°	247.2	45°			
						204.65	S_0	37°		221.5	35°	249.2	46°			
						205.6	S_0	40°		223.3	39°	250.9	44°			
						205.6	S_1	17°	same place	226.1	30°	253.0	49°			
						205.6	intersection of S_0 & S_1 ≡ L_1	32°		227.8	30°	256.0	34°			
						209.5	S_0	69°		230.1	39°	258.8	57°			
						209.5	S_1	30°		231.9	36°	257.4	62°			
						210.2	S_0	50°		234.7	30°					
						211.0	S_0	75°		236.0	22°					
						213.3	S_0	20°		238.3	40°					
						215.0	S_0	60°		239.7	30°					
						217.1	S_0	47°		241.6	36°					

Depth: 277.0, 279.9, 280, 289.0, 289.9, 298.2, 299.7, 300, 301.0, 301.4, 307.3, 307.45, 310, 315.5, 317.7, 320

Graphic Lithology / Struct.

MINERALISATION

- 281.0 - 289.0 - pyrite blebs throughout interval ± veinlet sp/gn (esp. 283.8 to 285.4m)
- 288.5 - 288.9 - ? barite veins ± sp/gn mineralisation
- 289.5 - 289.8 - sp/gn on qtz/carb. veinlets ± fuchsite?
- 292.6 - pyrite blebs & aggregates
- 300.2m - pale sphalerite on carb. veinlets
- 301.7 - sphal. on beds in 15cm thick silty grey unit
- 301.7 - 315.5 - variably silicified ± sp/gn "spots" (2mm) & veinlets & py aggregates (up to 15mm across)
- 315.5 - 317.7 - sp on qtz/cb veinlets, py in clots on S_0 surfaces

5 cm

041116

PASMINCO EXPLORATION
DIAMOND DRILL CORE LOG

HOLE No. BPD 76

PROJECT :

Graphic Scale 1: 200

CORE RECOVERY				DESCRIPTION						CODES			
From m	Interval m	%	RQD	From m	Interval m	(incl. LITHOLOGY, STRUCTURE & ALTERATION)	Depth	Graphic Lithology	Struct.	MINERALISATION	LITHO	STRUCT	ALTN	MIN
						-a second cleavage is present but difficult to determine overprinting relationship between it and the major cleavage.	322		So(new)	CORE ORIENTATION:
						-soft sediment deformation indicates a consistent up-hole youngging, particularly in the sandier units from 252.0 to 257.9m. Interval is highly pyritic but may contain fine sphalerite also.	330			319.5 & 322.5 ⇒ GOOD DATA depth: So: 320.5 AMS 074/52° NW 322.6 AMS 014/55° W
						* CORE ORIENTATION SPEAR RUN AT :- 247.1m & 259.3m MARKS ON CORE DID NOT MATCH (out by ≈ 50°) ⇒ DATA REJECTED.				• sp/py aggregates, gn/sp spots & veinlets throughout interval, especially at 319.0 - 328.0 334.3 - 342.0 349.5 - 352.0 354.5 - 359.0
				257.9	13.6	VOLCANICLASTIC SANDSTONE TO LAVA BRECCIAS.	340			
						-down-hole coarsening sequence of feldspar & quartz crystal-rich volcaniclastic sandstone, coarser epiclastic conglomerate, "primary" volcaniclastic lava breccia and massive rhyolite lava. INTERVALS:	343.0		FAULT 15cm wide chloritic	
						• Volcaniclastic sandstone : ~ 257.9 - 259.2 - chl. matrix	350			5 cm
						• Volcaniclastic mass flow conglom.: ~259.2 - 265.8	352.8			
						• Lava breccia (rhyolitic) : 265.8 - 268.4	354.4			
						• Rhyolite lava : 268.4 - 271.5 - bleached.	356.0			
						- Pyrite ~ 1% disseminated throughout interval.	358.5			CORE ORIENTATION:- 349.5 & 352.5 ⇒ GOOD MATCH. depth: So: 350.4 AMS 062/38° NW 352.2 032/48° NW
				271.5	1.7	ASHY SANDSTONE	360			
						- Interbedded coarse feldspar crystal volcaniclastic sandstone and fine ashy sandstone with quartz crystals (½mm) & pyclasts				
				273.2	0.5	GREY/BLACK SILT/SANDSTONE. (So @ 70°/ca)				
						- grey/black, laminated, ashy mudstone to sandstone with contorted beds at base, incorporating clasts of underlying unit.				

04111

PASMINCO EXPLORATION
DIAMOND DRILL CORE LOG

HOLE No. BPD 76

PROJECT :

Graphic Scale 1:200

CORE RECOVERY				DESCRIPTION							CODES			
From m	Interval m	%	RQD	From m	Interval m	(incl. LITHOLOGY, STRUCTURE & ALTERATION)	Depth	Graphic Lithology	Struct.	MINERALISATION	LITHO	STRUCT	ALTN	MIN
				273.7	15.3	FINE ASHY SANDSTONES TO GRAVELLY CRYSTAL SANDSTONES	369.5							
						-pale cream/grey/green fine ashy sandstones interbedded with gravelly feldspar-quartz crystal-rich volcaniclastic sandstones.	370							
						- variably silicified (eg: 274.5–276.0 -strong) and sericitic	371.3							
						in patches. Finer grained zones are well bedded.	373.4							
						eg: 277.0–278.9 (-So at 60° to LCA at 278.3m)	374.2		ser/ep/ cl					
						* CORE ORIENTATION AT 283.3 & 286.4 - don't match ⇒ REJECT DATA	379.6			· traces of sphalerite				
						- Coarse, massive ? barite veins at base of unit	380		sp/ca 30°	as clots in carbonate/silica				
						from 288.5m to 288.9m associated with sp/gn				gashes & alteration patches				
						mineralisation. Rock is yellow/green around the veins	383.9			(379.6–383.9				
						(⇒ ? epidote/fuchsite?) and turns bright apple green								
						with conc. HCl. The veins don't fizz, but have	388.1		ep/py					
						a brown weathering coating that comes off with conc. HCl.	390							
						* NEED TO TEST SG! & GEOCHEMISTRY.	391.0			· traces of sp. blebs on				
						- vein material is a white to very pale cream/buff	392.4			veinlets.				
						colour, with a strong mineral cleavage.	393.5							
										5 cm				
				289.0	0.9	GREY/BLACK SILTSTONE.	399.1							
						- bedded/laminated shale to siltstone. Upper contact is	400							
						conformable at 30° to LCA; So at 289.2 is 52° to LCA				CORE ORIENTATION:				
						- much veining at 289.5 – 289.8 ± gn/sp mineralisation				403.5 & 406.5				
						Veins aren't carbonate (no fizzing) but not qtz ⇒ feldspar?/barite?				⇒ GOOD MATCH				
						⇒ Apple green colour ± HCl ⇒ chrome rich? fuchsitic?				(no bedding to measure!)				
						Reworked sandstone/breccia at base ± 15cm laminated clasts at			cl/ser					
						varying attitudes. Conformable lower contact.	410			· pyrite on joints &				
									(ep)	veins. Minor epidote alt°				
				289.9 to 444.8	154.9	VOLCANICLASTIC SANDSTONES, GRAVELLY SANDSTONES								
						AND COARSER MASSFLOW UNITS WITH MINOR GREY/BLACK	419.3			CONTINUED ON PAGE 13				

0411118

PASMINCO EXPLORATION
DIAMOND DRILL CORE LOG

HOLE No. BPD 76

PROJECT :

Graphic Scale 1:200

CORE RECOVERY				DESCRIPTION							CODES			
From m	Interval m	%	RQD	From m	Interval m	(incl. LITHOLOGY, STRUCTURE & ALTERATION)	Depth	Graphic Lithology	Struct.	MINERALISATION	LITHO	STRUCT	ALTH	MIN
				(289.9 to 449.8)	cont'd	MUDSTONES AND ASHY UNITS.								
						-interval varies from feldspar/quartz crystal volcaniclastic sandstones with a chloritic matrix to cream coloured ash fall siltstones with fine qtz/fsp crystals and grey laminated carbonaceous mudstones.								
						-often grades from one unit to the others.								
						-variable low-level sericitisation & silicification throughout.								
						-some pyritic zones (~1% py) which contain blebs of sphalerite in the matrix, especially associated with "shaley" zones and carbonate veinlets. Detailed intervals :-								
				289.9	25.6	BEDDED ASHY SANDSTONE								
						-fine-sand, grey/cream colour, with a coarse sand unit interbedded at : 298.2 – 299.7 ; 301.0 – 301.4 ; 307.3 – 307.45								
						-gradational zone / interbedded zone between pale siliceous sandstone above and grey carbonaceous mudstone below:-								
				315.5	2.2	GREY CARBONACEOUS MUDSTONE								
						-well bedded / laminated, with much soft sediment deformation and quartz/carbonate veining.								
						-Chocolate brown sphalerite along veinlets. Pyrite dots // to bedding.								
						-S_0 between 40° & 10° to LCA. Average ~35°.								
						-Gradational/interbedded basal contact with underlying pale volcaniclastic sandstone.								
					*	CORE ORIENTATION AT 319.5 & 322.5 – MATCH UP → GOOD DATA (See mineralisation column, on p. 14/15)								
				317.7	51.8	VOLCANICLASTIC SANDSTONE.								
						-interbedded grey sandstones and pale yellow/green								

CONTINUED P. 15

5 cm

041119

PASMINCO EXPLORATION
DIAMOND DRILL CORE LOG

HOLE No. BPD 76

PROJECT :

Graphic Scale 1:

CORE RECOVERY				DESCRIPTION							CODES			
From m	Interval m	%	RQD	From m	Interval m	(incl. LITHOLOGY, STRUCTURE & ALTERATION)	Depth	Graphic Lithology	Struct.	MINERALISATION	LITHO	STRUCT	ALTN	MIN
						sandstones with minor feldspar crystal-rich coarser units at:								
						352·8–354·4; 356·0–356·5. (FAULT at 343·0. 15cm wide, chloritic.								
					*	CORE ORIENTATION @ 349.5 & 352.5 - GOOD MATCH ⇒ GOOD DATA (see p. 11)								
				369·5	1·8	CRYSTAL "MASS FLOW" SANDSTONES & MINOR CONGLOMERATES:								
						- uphole-fining feldspar crystal mass flow from ≈3-4mm at base to								
						1-2mm at top. Cream/green colour, ε fsp x'lls & lithics.								
				371·3	2·1	- mass flow fining up-hole from 10mm–1mm feldspar crystals								
				373·4	0·8	- massive pale cream/green volcaniclastic sandstone.								
						- Uphole younging, graded bed boundaries at 371.3 & 373.4m								
				374·2	5·4	- Pale greenish/yellow, ser/ep/chl altered volcaniclastic sandstone								
						Some bedding preserved eg: 375·6 & 376·6m. Minor internal hydrothermal								
						brecciation. Grainsize: med to coarse sst (½-1mm) ε fsp & qtz x'lls.								
				379·6	4·3	- Gravelly sand-sized, crystal-lithic "tuff". Ser/ep/sil (low level.								
						So at 30° to LCA.								
				383·9	4·2	- Volcaniclastic sandstone ε contorted beds; med to fine sandsize,								
						pale cream/grey colour; Minor silicification & coarser fsp. zones.								
						ep/ser alt^ at the base of unit.								
				388·1	2·9	- Crystal-Lithic CONGLOMERATE. Faint upward-fining. Mass								
						debris slide deposit. Clasts: 1mm to 20mm. Average 5–8mm								
						at base and 3–5mm at top. Chl/ser matrix. Clasts								
						are: fsp. x'lls; msv. silica & pumiceous. Epidote alt^n in top 50cm.								
				391·0	1·4	- massive to bedded, med grained (< ½ mm) pale volcanicl. sst. (trsp)								
				392·4	1·1	- feldspar crystal-rich volcanicl. sandstone. ≈2mm x'lls.								
				393·5	5·6	- Volcanicl. sst. with contorted (softsed defm) beds & blebs of sp on veinlets								
				399·1	15·2	- Coarse, feldspar crystal-rich volcaniclastic mass flow units. Some								
						uphole fining, mostly massive. Includes lithic clasts. Grain size								
						generally 2 to 20mm, rare clasts up to 150mm. Chl/ser								
						matrix. Lithics are msv. silica or bedded sediments.								

CONTINUED p. 15

5 cm

041120

PASMINCO EXPLORATION
DIAMOND DRILL CORE LOG

HOLE No. BPD 76

PROJECT :

Graphic Scale 1: 200

CORE RECOVERY				DESCRIPTION						CODES			
From m	Interval m	%	RQD	From m	Interval m	(incl. LITHOLOGY, STRUCTURE & ALTERATION)	Depth	Graphic Lithology	Struct.	MINERALISATION	LITHO	STRUCT	ALTN	MIN
						Uphole fining units at top of interval eg: 399.1 – 400.8m. Pyrite on joints & veins. Minor epidote alteration.	414.3							
				414.3	7.7	- Volcaniclastic sandstone - fine – med sand size; grey/yellow colour; bedded at 25° to LCA (average) Minor coarser zones & contorted beds.	420		S₀/LCA 25°					
				422.0	1.7	- Coarser epiclastic breccia, with py/ser alteration. Angular lithic clasts upto 40mm in a grey sericitic matrix	422.0 / 423.7							
				423.7	8.4	- Pale cream/buff/grey med. grained Volc. sandstone. Some broken core (? Fault) and tr. galena/sphalerite on veinlets				5 cm				
				432.1	12.7	- Coarse to gravelly volcaniclastic sandstone with crystals of feldspar ± qtz & lithic (pale siliceous) clasts. Grey to cream colour. Clasts generally 1–2mm, up to 20mm. Chl/ep. alteration on joints at top of unit. Dissem. py & traces of sphalerite in better sorted units. Qtz/carb. veinlets contain sphalerite.	430 / 432.1		chl/ep	• qtz/carb veinlets contain sphalerite				
						Uphole fining units at 433.7 —— 435.4 44.2 – 444.8	440							
				444.8	3.9	RHYOLITE LAVA? - pink/grey, feldspathic, massive to slightly banded. Chloritic "patches"/alteration zones. Pyritic (~1%) disseminations & sericitic patches.	444.8 / 448.7		cer	• traces of py				
				448.7 to 508.3	49.6	ANDESITIC VOLCANICLASTICS:- - includes epiclastic mass flows, hyaloclastite & pillowed lavas with minor sandstone to gravelly peperites intercalated:	450			• 453.8 - galena clots • 451.5 – 460.3 – sphal (fg) • strong ser/fuchsite alt^n 457.5 – 457.7				
				448.7	16.8	- Coarse epiclastic andesitic mass flow deposit. Large basaltic andesite, feldspathic/amygdaloidal clasts in a variably sericitic to fuchsitic matrix.	460		ser / ser					

0411121

PASMINCO EXPLORATION
DIAMOND DRILL CORE LOG

HOLE No. BPD 76

PROJECT :

Graphic Scale 1:

CORE RECOVERY				DESCRIPTION						CODES			
From m	Interval m	%	RQD	From m	Interval m	(incl. LITHOLOGY, STRUCTURE & ALTERATION)	Depth	Graphic Lithology	Struct.	MINERALISATION	LITHO	STRUCT	ALTN	MIN
						Generally pink/grey colour in less altered patches; cream to green colour when altered. Pale brown sphalerite in altered patches.				tr. sphalerite & pyrite				
						ALTERATION:- sericite/pyrite strong to variable with galena clots (esp. 453.8) and fine grained sphalerite at 457.5 to 460.3, plus 1% disseminated pyrite – mainly in matrix in coarser andesitic epiclastic zones.	465.5	ser	sil	clots of py.				
						– especially strong alteration (fuchsite/sericite) at 457.5 to 457.7. (similar style to Hellyer Hanging Wall alteration?)	468.0			galena/sphalerite matrix				
							468.5			Veins of galena/sphalerite fine gr. dissem py/cpy (~ 5% total sulphides)				
							470		ser/fuchsite					
							471.6							
				465.5	2.5	– Sandstone – silicified, pink/grey, with clots of pyrite, in a fine-grained (? ashy) sandstone, with a brecciated base. (Alteration (ser) increases gradually from moderate to strong from 460.3 to 465.5.)				• Strong sericite/fuchsite alteration 468.5 to 471.6				
							480		ser	(• moderate/weak ser/alt^n 471.6 – 508.5)				
				468.0	0.5	Gravelly Sandstone – siliceous pink sandstone with a sulphide matrix – mainly a silver/grey mineral (? galena). Coarse/moderate sphalerite/galena veins cross-cut interval. Disseminated pyrite & chalcopyrite (fine) also.				• traces of sp/gn.				
							490							
				468.5	39.8	Andesitic epiclastics & hyaloclastite. – coarse andesitic epiclastic mass flows and hyaloclastic breccias. Strongly sericite/fuchsite altered (yellow/green) from 468.5 to 471.6m. (Striking similarities to Hellyer Hanging Wall-style alteration!) – sericite alteration moderate to weak (variably) from 471.6 to 508.3m. Dark grey/green colour & much carbonate veining also. Traces of sp/gn mineralisation – Generally coarse, amygdaloidal andesite clasts but some fine grained, sandy bedded zones (498.5 to 500.5)								
							498.5							
							500							
							500.5							
							505.9		F	45° to LCA				

5 cm

041122

PASMINCO EXPLORATION
DIAMOND DRILL CORE LOG

HOLE No. BPD 76

PROJECT :

Graphic Scale 1:

CORE RECOVERY				DESCRIPTION						CODES			
From m	Interval m	%	RQD	From m	Interval m	(incl. LITHOLOGY, STRUCTURE & ALTERATION)	Depth	Graphic Lithology	Struct.	MINERALISATION	LITHO	STRUCT	ALTN	MIN
						Clasts are more massive, dark grey, feldspathic and non-amygdaloidal from 500.5 – 508.3m	507.6 508.3 509.7 510 512.0 512.3 514.5 520 530 532.5			• 509.7 – 512.3m: – up to 40% fine-grained pyrite (replacing silica/sericite) – sp/gn in carbonate blebs & veinlets. – fg. sp/gn w/in pyrite? – sphalerite in veinlets & cleavage at 513.4m.				
						(brittle FAULT @ 45° to LCA at 505.9m (puggy)								
						" " " ≈50° " " " 508.3m.								
						- Gravelly sand unit (base of Lava pile?) at 507.6 – 508.3								
				508.3	1.4	FAULT ZONE								
						- broken core below a narrow pyg zone ∃ strong sericite/pyrite alteration and cleavage developed. Rock is pink to yellow/green, siliceous to andesitic breccia.								
				509.7	–	– FAULT PUGG 45° to LCA (pyrite below it)								
				509.7	2.3	"SERICITE / PYRITE ROCK" (TYPE UNKNOWN)								
						- fine-grained pyrite, replacing the silicates, forms ≈ 40% of rock volume. The rest is cleaved sericite, with black (?chlorite) zones developed in minor amounts.								
						- Zone is possibly high base metals? Some fine sp/gn in small carbonate blebs and veinlets as well as w/in the pyrite.								
				512.0	0.3	- brecciated / mixed between sulphide zone and pale massive sericite/silica rock below.								
				512.3	2.2	SERICITIC ? ASH? ZONE.								
						- silicified, very fine grained pale sericitic rock, with zones of "crackle" breccia and veins of sphalerite/carbonate (513.4m)								
				514.5	18.0	- RHYOLITIC TO DACITIC LAVA / SHALLOW INTRUSIVE.								
						- grey to pink, feldspathic (2-3mm crystals). Massive. Minor sericitic/epidote zones at 426.9 – 429.0 & 431.0 – 432.5m								
				532.5	EOH	- Brittle fault at 532.3m								

041123

PASMINCO EXPLORATION
DIAMOND DRILL HOLE SUPPLEMENTARY DATA

PROJECT: Burns Peak

HOLE No. BPD 76

CORE PROCESSING RESULTS — DRILL HOLE BPD76 — PROCESSED BY SW — MAG.SUS — ENTERED BY SW

CORE RECOVERY (UNITS: SIx0.01) — S.G & CHECK S.G — SAMPLING INTERVALS

FROM	TO	REC	%REC	DEPTH	M.SUS	DEPTH	WEIGHT	VOL	S.G	FROM	TO	TICKET #	COMMENTS
0	4	1.8	45.00	4	0				0.00				HQ
4	8.9	5.7	116.33	8.9	0				0.00				HQ
8.9	13.2	3.1	72.09	13.2	0.01				0.00				HQ
13.2	16.5	3.5	106.06	16.5	0.02				0.00				NQ
16.5	19.5	3.2	106.67	19.5	0				0.00				HQ
19.5	22.5	3.2	106.67	22.5	0.04				0.00				HQ
22.5	25.5	3.4	113.33	25.5	0.03				0.00				HQ
25.5	27.6	1.2	57.14	27.6	0.01				0.00				HQ
27.6	29.7	2.3	109.52	29.7	0				0.00				HQ
29.7	34.2	4.40	97.78	34.2	0.02				0.00				HQ
34.2	35.8	1.6	100.00	35.8	0				0.00				NQ
35.8	37.8	1.8	90.00	37.8	0				0.00				NQ
37.8	39.9	2.2	104.76	39.9	0.02				0.00				NQ
39.9	42.8	3.2	110.34	42.8	0				0.00				NQ
42.8	45.1	2.5	108.70	45.1	0.01				0.00				NQ
45.1	46.7	1.7	106.25	46.7	0.01				0.00				NQ
46.7	48.7	2.2	110.00	48.7	0.01				0.00				NQ
48.7	52.2	3.9	111.43	52.2	0				0.00				NQ
52.2	54.8	3	115.38	54.8	0.01	50	530	211	2.51				NQ
54.8	57.6	3.1	110.71	57.6	0.04	50	527	209	2.52				NQ
57.6	60.3	3.1	114.81	60.3	0				0.00				NQ
60.3	64.5	3.6	85.71	64.5	0				0.00				NQ
64.5	67.5	3.2	106.67	67.5	0.02				0.00				NQ
67.5	70.3	3.1	110.71	70.3	0.01				0.00				NQ
70.3	75	4.9	104.26	75	0.03				0.00				NQ
75	77.3	2.3	100.00	77.3	0.06				0.00				NQ
77.3	79.5	2.2	100.00	79.5	0.04				0.00				NQ
79.5	82.2	2.9	107.41	82.2	0.09				0.00				NQ
82.2	85.3	3.3	106.45	85.3	0				0.00				NQ
85.3	87.1	2	111.11	87.1	0.01				0.00				NQ
87.1	90.1	3.7	123.33	90.1	0.01				0.00				NQ
90.1	92.2	2.8	133.33	92.2	0.11				0.00				NQ
92.2	95.4	3.8	118.75	95.4	0.06				0.00				NQ
95.4	97.2	1.8	100.00	97.2	0.03				0.00				NQ
97.2	102.1	5.1	104.08	102.1	0.02				0.00				NQ
102.1	104	2	105.26	104	0.02	100	451	175	2.58				NQ
104	106.2	2.7	122.73	106.2	0.01	100	195	84	2.32				NQ half
106.2	109.5	3.4	103.03	109.5	0.01				0.00				NQ
109.5	112.5	3	100.00	112.5	0.02				0.00				NQ
112.5	115.5	3	100.00	115.5	0.01				0.00				NQ
115.5	118.5	3	100.00	118.5	0				0.00				NQ
118.5	120.5	2.3	115.00	120.5	0.01				0.00				NQ
120.5	123.3	2.8	100.00	123.3	0.01				0.00				NQ
123.3	125.6	2.5	108.70	125.6	0.01				0.00				NQ

CORE PROCESSING RESULTS — DRILL HOLE BPD76 — PROCESSED BY SW — MAG.SUS — ENTERED BY SW

CORE RECOVERY (UNITS: SIx0.01) — S.G & CHECK S.G — SAMPLING INTERVALS

FROM	TO	REC	%REC	DEPTH	M.SUS	DEPTH	WEIGHT	VOL	S.G	FROM	TO	TICKET #	COMMENTS
125.6	127.3	1.5	88.24	127.3	0.01				0.00				NQ
127.3	129.2	2.1	110.53	129.2	0.02				0.00				NQ
129.2	132.3	3.1	100.00	132.3	0.01				0.00				NQ
132.3	135.4	3.1	100.00	135.4	0.06				0.00				NQ
135.4	138.5	3.3	106.45	138.5	0.01				0.00				NQ
138.5	141.3	2.9	103.57	141.3	0.01				0.00				NQ
141.3	144.3	3.1	103.33	144.3	0				0.00				NQ
144.3	147.4	3.1	100.00	147.4	0.01				0.00				NQ
147.4	148.5	1.1	100.00	148.5	0.01				0.00				NQ
148.5	151.5	3.1	103.33	151.5	0.01	150	458	264	1.73				NQ
151.4	154.4	2.9	96.67	154.4	0.01	150	458	181	2.53				NQ
154.4	157.4	3.2	106.67	157.4	0.01				0.00				NQ
157.4	159.6	2.2	100.00	159.6	0				0.00				NQ
159.6	161.8	2.6	109.09	161.8	0.02				0.00				NQ
161.8	163.5	1.6	94.12	163.3	0.02				0.00				NQ
163.5	166.3	2.8	100.00	166.3	0.03				0.00				NQ
166.3	167.1	0.9	112.50	167.1	0.01				0.00				NQ
167.1	170.2	3.1	100.00	170.2	0.02				0.00				NQ
170.2	174.2	4	100.00	174.2	0.04				0.00				NQ
174.2	176.9	2.9	107.41	176.9	0				0.00				NQ
176.9	178.5	1.5	93.75	178.5	0.01				0.00				NQ
178.5	182.7	4.3	102.38	182.7	0.04				0.00				NQ
182.7	185.7	3.3	110.00	185.7	0.02				0.00				NQ
185.7	188.8	3.1	100.00	188.8	0.01				0.00				NQ
188.8	191.9	3.1	100.00	191.9	0.02				0.00				NQ
191.9	195	3.1	100.00	195	0.01				0.00				NQ
195	198.1	3	96.77	198.1	0.01				0.00				NQ
198.1	199.5	1.6	114.29	199.5	0.01				0.00				NQ
199.5	202.4	2.3	79.31	202.4	0.01	200	434	166	2.61				NQ
202.4	205.1	2.8	103.70	205.1	0.01	200	437	174	2.51				NQ
205.1	207.4	2.3	100.00	207.4	0				0.00				NQ
207.4	208.9	1.7	113.33	208.9	0.01				0.00				NQ
208.9	211.5	3	115.38	211.5	0				0.00				NQ
211.5	214	2.5	100.00	214					0.00				NQ
214	215.7	1.9	111.76	215.7	0				0.00				NQ
215.7	217.5	2	111.11	217.5	0.01				0.00				NQ
217.5	220.5	2.9	96.67	220.5	0.02				0.00				NQ
220.5	223.5	3	100.00	223.5	0.01				0.00				NQ
223.5	226.5	3	100.00	226.5	0.01				0.00				NQ
226.5	229.5	3.1	103.33	229.5	0.01				0.00				NQ
229.5	232.5	3	100.00	232.5	0				0.00				NQ
232.5	235.5	3	100.00	235.5	0				0.00				NQ
235.5	237.9	2.4	100.00	237.9	0				0.00				NQ
237.9	240.9	3	100.00	240.9	0				0.00				NQ
240.9	244	3	96.77	244	0				0.00				NQ
244	247.1	3.1	100.00	247.1	0				0.00				NQ
247.1	250.1	3	100.00	250.1	0.01	250	337	160	2.11				NQ
250.1	253.1	3	100.00	253.1	0	250	234	96	2.44				NQ half
253.1	256.2	3	96.77	256.2	0.01				0.00				NQ
256.2	259.3	3	96.77	259.3	0.01				0.00				NQ

041124

PASMINCO EXPLORATION
DIAMOND DRILL HOLE SUPPLEMENTARY DATA

PROJECT: Burns Peak

HOLE No. BPD 76

CORE PROCESSING RESULTS — DRILL HOLE BPD76 — PROCESSED BY SW — MAG.SUS — ENTERED BY SW

CORE RECOVERY | UNITS: SIx0.01 | S.G & CHECK S.G | SAMPLING INTERVALS

FROM	TO	REC	%REC	DEPTH	M.SUS	DEPTH	WEIGHT	VOL	S.G	FROM	TO	TICKET #	COMMENTS
259.3	262.4	3.2	103.23	262.4	0.01				0.00				NQ
262.4	265.5	3.1	100.00	265.5	0.02				0.00				NQ
265.5	268.5	3	100.00	268.5	0				0.00				NQ
268.5	271.5	3	100.00	271.5	0.01				0.00				NQ
271.5	274.5	3	100.00	274.5	0				0.00				NQ
274.5	277.5	3	100.00	277.5	0				0.00				NQ
277.5	280.2	2.6	96.30	280.2	0.01				0.00				NQ
280.2	283.3	3.1	100.00	283.3	0				0.00				NQ
283.3	286.4	3.2	103.23	286.4	0	288.5	369	137	2.69				NQ half
286.4	289.5	3.1	100.00	289.5	0.02	288.7	171	71	2.41				NQ half
289.5	292.4	2.8	96.55	292.4	0.02	288.9	367	145	2.53				NQ half
292.4	294	1.8	112.50	294	0				0.00				NQ
294	295.7	1.6	94.12	295.7	0				0.00				NQ
295.7	298.4	3	111.11	298.4	0.02				0.00				NQ
298.5	301.4	2.9	100.00	301.4	0				0.00				NQ
301.4	304.4	3.1	103.33	304.4	0	300	390	157	2.48				NQ
304.4	307.5	3	96.77	307.5	0.01	300	401	160	2.51				NQ
307.5	310.5	3	100.00	310.5	0.01				0.00				NQ
310.5	313.5	3	100.00	313.5	0.01				0.00				NQ
313.5	316.5	3	100.00	316.5	0.01				0.00				NQ
316.5	319.5	3.1	103.33	319.5	0				0.00				NQ
319.5	322.5	3	100.00	322.5	0				0.00				NQ
322.5	325.5	3	100.00	325.5	0.02				0.00				NQ
325.5	328.5	3	100.00	328.5	0.02				0.00				NQ
328.5	331.5	3	100.00	331.5	0.01				0.00				NQ
331.5	334.5	3	100.00	334.5	0.01				0.00				NQ
334.5	337.5	3.1	103.33	337.5	0.01				0.00				NQ
337.5	340.5	3.1	103.33	340.5	0.01				0.00				NQ
340.5	343.5	3	100.00	343.5	0.01				0.00				NQ
343.5	346.5	3	100.00	346.5	0.02				0.00				NQ
346.5	349.5	3.1	103.33	349.5	0.01	350	677	253	2.68				NQ
349.5	352.5	3	100.00	352.5	0.02	350	564	223	2.55				NQ
352.5	355.5	3	100.00	355.5	0.01				0.00				NQ
355.5	358.5	3	100.00	358.5	0.01				0.00				NQ
358.5	361.5	3	100.00	361.5	0.03				0.00				NQ
361.5	364.5	3	100.00	364.5	0.04				0.00				NQ
364.5	367.5	3	100.00	367.5	0				0.00				NQ
367.5	370.5	3	100.00	370.5	0.03				0.00				NQ
370.5	373.5	3	100.00	373.5	0.05				0.00				NQ
373.5	376.5	3	100.00	376.5	0.03				0.00				NQ
376.5	379.5	3	100.00	379.5	0.03				0.00				NQ
379.5	382.5	3	100.00	382.5	0.03				0.00				NQ
382.5	385.5	3	100.00	385.5	0.02				0.00				NQ
385.5	388.4	3	103.45	388.4	0.03				0.00				NQ
388.4	391.5	3	96.77	391.5	0.02				0.00				NQ
391.5	394.5	3	100.00	394.5	0.03				0.00				NQ
394.5	395.6	1.15	104.55	395.6	0				0.00				NQ
395.6	397.5	1.8	94.74	397.5	0				0.00				NQ
397.5	400.5	3	100.00	400.5	0	400	649	248	2.62				NQ
400.5	403.5	3	100.00	403.5	0	400	649	257	2.52				NQ

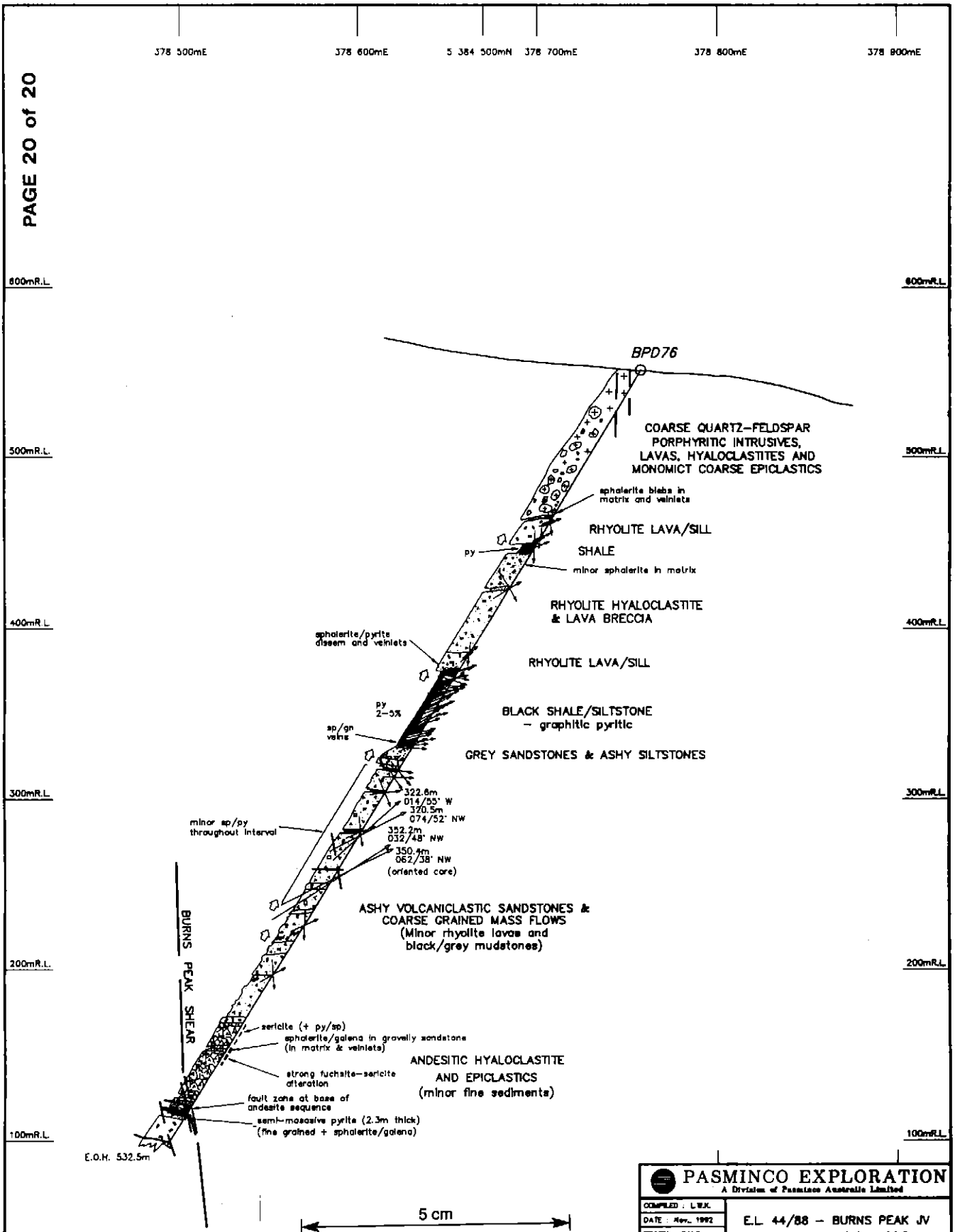
CORE PROCESSING RESULTS — DRILL HOLE BPD76 — PROCESSED BY SW — MAG.SUS — ENTERED BY SW

CORE RECOVERY | UNITS: SIx0.01 | S.G & CHECK S.G | SAMPLING INTERVALS

FROM	TO	REC	%REC	DEPTH	M.SUS	DEPTH	WEIGHT	VOL	S.G	FROM	TO	TICKET #	COMMENTS
403.5	406.5	3	100.00	406.5	0.01				0.00				NQ
406.5	409.5	3	100.00	409.5	0.01				0.00				NQ
409.5	412.5	3	100.00	412.5	0				0.00				NQ
412.5	415.5	3	100.00	415.5	0.01				0.00				NQ
415.5	418.5	3	100.00	418.5	0.01				0.00				NQ
418.5	421.5	3	100.00	421.5	0.01				0.00				NQ
421.5	424.5	3	100.00	424.5	0.02				0.00				NQ
424.5	427.5	3	100.00	427.5	0.02				0.00				NQ
427.5	430.5	3	100.00	430.5	0.01				0.00				NQ
430.5	433.5	3	100.00	433.5	0				0.00				NQ
433.5	436.5	3	100.00	436.5	0.02				0.00				NQ
436.5	439.5	3	100.00	439.5	0.01				0.00				NQ
439.5	442.5	3	100.00	442.5	0				0.00				NQ
442.5	445.5	3	100.00	445.5	0.01				0.00				NQ
445.5	448.5	3	100.00	448.5	0.02				0.00				NQ
448.5	451.5	3	100.00	451.5	0.06	450	672	264	2.55				NQ
451.5	454.5	3	100.00	454.5	0.03	450	567	222	2.55				NQ
454.5	457.5	3	100.00	457.5	0.02				0.00				NQ
457.5	460.5	3	100.00	460.5	0.02				0.00				NQ
460.5	463.5	3	100.00	463.5	0.78				0.00				NQ
463.5	466.5	3	100.00	466.5	0.02				0.00				NQ
466.5	469.5	3	100.00	469.5	0.05				0.00				NQ
469.5	472.5	3	100.00	472.5	0.04				0.00				NQ
472.5	475.5	3	100.00	475.5	0.04				0.00				NQ
478.5	481.5	2.9	96.67	481.5	0.02				0.00				NQ
481.5	484.5	2.9	96.67	484.5	0.04				0.00				NQ
484.5	487.5	3	100.00	487.5	0.05				0.00				NQ
487.5	490.5	3	100.00	490.5	0.05				0.00				NQ
490.5	493.5	3	100.00	493.5	0.04				0.00				NQ
493.5	496.5	3	100.00	496.5	0.05				0.00				NQ
496.5	499.5	3	100.00	499.5	0.02				0.00				NQ
499.5	502.5	3	100.00	502.5	0.02	500	744	268	2.78				NQ
502.5	505.5	2.8	93.33	505.5	0.05	500	395	153	2.58				NQ half
505.5	508.5	3	100.00	508.5	0.04				0.00				NQ
508.5	511.3	3	107.14	511.3	0.02				0.00				NQ
511.3	514.5	3	93.75	514.5	0.04				0.00				NQ
514.5	517.5	3	100.00	517.5	0				0.00				NQ
517.5	520.5	3	100.00	520.5	0				0.00				NQ
520.5	523.5	3	100.00	523.5	0.01				0.00				NQ
523.5	526.5	3	100.00	526.5	0.01				0.00				NQ
526.5	529.5	2.9	96.67	529.5	0.02				0.00				NQ
529.5	532.5	3	100.00	532.5	0.01				0.00				NQ
E.O.H.	E.O.H.	E.O.H.	E.O.H.	E.O.H.	E.O.H.	E.O.H.	E.O.H.	E.O.	E.O.H.	E.O.H.	E.O.H.	E.O.H.	E.O.H.

041125

041126



PASMINCO EXPLORATION
A Division of Pasminco Australia Limited

COMPILED : L.W.K.	E.L. 44/88 – BURNS PEAK JV
DATE : Nov., 1992	SUMMIT PROSPECT
DRAWN : G.M.B.	DRILL SECTION
REFERENCE :	BPD76
REVISIONS :	LOOKING NORTH NORTHEAST
DRAWING No. BPD76_A3	SCALE 0 20 40 m
	FIG. No. 18

HOLE No. EAB 1

HASMINCO EXPLORATION
SUMMARY DIAMOND DRILL CORE LOG

PROJECT: Burns Peak | RE-LOGGED: AUGUST 1992 L.W. Kirsner

Graphic Scale 1: 500 Page 1 of 1

From m	Interval m	Code	Description
0.0	6.0	—	No Core
6.0	55.9	Iafq	- Quartz-feldspar porphyry intrusive - coarse spherical quartz "eyes" (~5mm) and crystal feldspars
61.9	26.1		- Coarse "monomict" epiclastic breccia - clasts of the overlying (up-hole) QFP and individual crystals of quartz & feldspar ⇒ MASS FLOW on the edge of an emergent QFP body ≡ syn- or post-intrusive. Base (87.5-88.0m) contains clasts of the underlying lithology ⇒ up hole younging.
88.0	8.8		- GRADED MASS FLOW - coarse sandstone with quartz & feldspar crystal fragments (≤2mm) in a grey/buff coloured fine-grained matrix. Incorporates lithic & shale clasts (up to 10cm) (eg. 91.9 & 96.6m). Some black shale matrix between clasts. Unit coarsens down-hole to incorporate QFP clasts near base.
96.8	6.5		- GRADED MASS FLOW - coarse, polymict, and similar to above, with shale & QFP clasts near base
103.3	5.2		- COARSE MASS FLOW - less obvious grading to above; more "siliceous" dacitic clasts; QFP clasts also
108.5	3.4		- DARK GREY SILTSTONE - massive, incorporating lithic clasts in places, generally lower energy than above. Some pyritic clasts. Base incorporates QFP clasts.
111.9	9.9		- COARSE, GRADED MASS FLOW - Polymict top, grading down-hole to very coarse (up to 30cm!) QFP dominated zone ⇒ QFP was outcropping at this stage...
121.8	3.1		- SANDSTONE MASS FLOW - poorly sorted, immature pebbly sandstone / breccia sediment. Angular clasts.
124.9	53.7		* SHALE / SILTSTONE - massive to weakly bedded, dark grey to black, fine grained sediments. Weakly graphitic. Coarse blebs (? clasts) of pyrite, particularly near top of unit. Fine disseminated pyrite throughout. Long core axis / bedding angles:
			138.7m 80° | 175.9m 70° | 191.7m 45°
			159.9m 80° | 179.9m 68° | 196.4m 85°
			163.4m 80° | 180.8m 70° | 198.5m 70°
			169.6m 71°
178.6	33.8		* SANDSTONE - grey, bedded, conformably under the shales ⇒ coarsening of sequence. Fine-medium sand, some "cherty" (silicified?) zones; soft sedim. deformation. Coarser & more altered (silica/sericite) near base.
		*	(The shale/sandstone sequence is a possible Quelriver Shale equivalent?)
212.4	5.4		- GRADED MASS FLOW - coarse, polymict ± sandy carbonate matrix; "onion skin" alteration on clasts of: - siltstone, QFP, "hyabreccia", andesite; Lower contact (at 30° to LCA) incorporates clasts of the underlying mass flow.
217.8	1.6		- COARSE MASS FLOW - Siliceous, grey, non-carbonate matrix, andesitic & sediment fragments incorporated.
219.4	6.3		- SANDSTONE MASS FLOWS - variably silicified, sericitic, bedded, grey-black colour; some coarser zones; some mineralisation, particularly in the coarser breccias (eg: 222.7-222.8m) which are the base of individual turbidites. Carbonate alteration in the breccias accompanies mineralisation.
225.7	4.7		- COARSE MASS FLOW - clastic, polymict ± grey matrix. Some galena in matrix (replacing it). Some sphalerite blebs in matrix. Gains andesitic content down-hole. (? replacement)
230.4	65.1		PILLOWED ANDESITE LAVA - brecciated top with fragments incorporated in overlying mass flow. Variably amygdaloidal, variably brecciated (hyaloclastic) in pillow margins. Unaltered & unmineralised...
295.5	EOH		

Depth: 80 QFP 88.0 96.8 100 103.3 108.5 111.9 120 121.8 124.9 140 160 176.6 180 200 212.4 217.8 219.4 225.7 230.4 240 260 280 295.5 EOH 300

Graphic: LCA 30° ANGLE; 80° 80° 71° 70° 68° 30°

Graphic: 70° 45° 85° 70°

Graphic: 253.9-254.35m LITHOFOAM SAMPLE # 032898

5 cm

041127

HOLE No. EAB 2

PASMINCO EXPLORATION
SUMMARY DIAMOND DRILL CORE LOG

PROJECT: Burns Peak (RE-LOGGED: August 1992 L.W. Kirsner)

Graphic Scale 1: 500

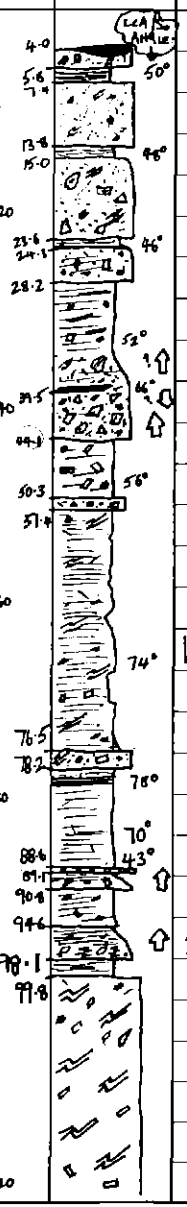
Page 1 of 1

From m	Interval m	Code	Description
0·0	4·0	–	No Core
4·0	95·8		- Sequence of interbedded coarse mass flows and fine-grained sediments. - Bedded sandstones, siltstones and shales comprise the "sedimentary" part of the sequence, with ash, feldspar crystals and pumiceous clasts making up a significant proportion of it. - The coarse mass flows show an upward-fining direction generally, but some ambiguous relationships exist. The mass flows are made up of angular rhyolitic to andesitic fragments; minor pumice & porphyry and quartz & feldspar crystals. Finer sandy to silty matrix occurs between clasts. Overlying most of the mass flows is a finer, bedded sedimentary horizon, indicating lower-energy deposition between mass flows. - Minor pyrite, sericite & carbonate alteration occurs throughout the sequence. - Bedding to LCA measurements:-

6·8m	50°	49·0m	56°
14·0m	48°	71·5m	74°
24·0m	46°	79·0m	78°
35·0	52°	86·75m	70°
39·0	66°	88·2m	43°

			- Mass flows dominate above 44·1m - ashy siltstones dominate from 44·1 to 99·8m.
99·8	81·3		- PUMICEOUS MASS FLOW / FELDSPATHIC LAVA/SILL. - feldspathic, with a minor amount of lithic clasts, (particularly near top). Wispy, randomly oriented? pumice clasts visible in paler/less silicified zones. No grading evident. Monotonous grey colour with pink feldspars. Some pyrite on joints. Chlorite altered locally. Possibly a lava/sill (shallow)?
181·1	17·6		- ANDESITE-DOMINATED MASS FLOW. - dominantly amygdaloidal andesite clasts plus minor mudstone clasts in a fine grained green matrix ⇒ Top/edge of lava flow.
198·7	30·8		- PILLOWED ANDESITE LAVA" HOLLUM/ANDESITE - feldspar & pyroxene porphyritic, highly amygdaloidal, variably brecciated (hyaloclastic "autobreccia") with some strongly bleached zones (superficially similar to QFP clasts!).
229·5	EOH		* Thin Sections - (? Geopeko) at: - 168·5m - 124·9m - 172·5m - 181·2m * Lithogeochem Samples (Pasminco) at: 124·85 → 125·25m * 032399. 213·77 → 214·5m * 032400.

Depth / Graphic





5 cm

0411128

HOLE No. EAB 4

PASMINCO EXPLORATION
SUMMARY DIAMOND DRILL CORE LOG

PROJECT: Burns Peak - Holloway. Re-log by L.W. Kirsner 21.5.92

Graphic Scale 1: 500 Page 1 of 1

From m	Interval m	Code	Description
0.0	15.0	S_{sst}	(No Core) – "micaceous sandstone, siltstone & shale"
15.0	62.7	Ld	(No Core to 59.95) – Dacite lava – intrusive – compris- mostly unconsolidated, weathered, brown clayey, feldspar- phyric, massive. Lower contact not preserved.
77.7	40.0	$S_{sst/slt}$	Predominantly bedded, fine to medium grained, micaceous sandstone with minor interbedded silt and shale laminae; increased shale/silt proportion down-hole. Faulted lower contact.
			• DEPTH: CORE/BEDDING ANGLE: 81.0 60°; 81.5 71°; 87.3 75°; 87.7 80°; 88.8 80°; 91.2 76°; 96.2 85°; 96.6 85°; 99.1 80°; 102.1 85°; 104.3 85°; 105.9(a) 65°; 105.9(b) 75°; 107.6 85°; 111.0 85° (YOUNGING – See graphic log →)
117.7	0.7		• Andesitic Hyaloclastic Breccia – carbonate and chlorite altered, carbonate veinlets, brittle deformation (joints, minor faults). Minor sphalerite & galena on veinlets. Faulted upper contact.
118.4	1.0		• Fine – med. grained micaceous sandstone; massive well sorted with occasional veinlets of carbonate. Minor pyrite on veinlets.
119.4	0.1		• Shear Zone – strong fabric at 45° to long core axis. Juxtaposed andesite breccia below with sediments above. Andesite lava clasts occur on either side of this shear zone
119.5	9.6		• Andesite hyaloclastite – lava flow margin. Contains quartz-amygdaloidal, feldspar-phyric clasts in dark grey matrix. Jigsaw-fit textures. Fine-grained disseminated pyrite, plus black ? hornblende in matrix. Incorporates black shale(?) clast -deformed- at 121.4 – 121.5m. Moderate foliation /cleavage at 50° to LCA (120.8m). – Variable sericite alteration ± carbonate and disseminated sphalerite – pyrite. Chloritised in patches.
129.1	15.9		• Andesite lava – massive, chloritised, variable sericitisation & bleaching. Some qtz/carb. & amygdales. Minor carbonate & pyrite veinlets + >1% dissem. py. Some zones possibly pillowed vesicular andesite (eg. 135.8 – 145.0)
145.0	4.3		• Andesite hyaloclastite – sericite & bleached (silica) alteration ± chlorite.
149.3	6.75		• Andesite lava – massive to amygdaloidal, pink silicified zones & ser-chl alteration. Some ? pillowing. Minor qtz – carbonate veining.
156.05	–		• Faulted contact at 156.05 at 40° to LCA
156.05	10.95		• Dacitic lava or intrusive; (possibly silicified pumiceous mass flow?). Chlorite – altered feldspars, spotty silica alteration and massive silica flooding.
167.0	11.0		• Pink, haematitically altered, silica spotted, dacitic lava or pumice breccia...
178.0	EOH		

Depth / Graphic: 15m; 20; 30; 40; NO CORE RECOVERED; 50; 60; 77.7 Faulting; 80; DEPTH OF YOUNGING MEASURED; 96.6; 97.7; 99.1; 102.1; 102.6; 104.3; 105.9; 107.6; 111.0; 117.7 F; 120; 130; 140; 150; 160; 170; 175m EOH

Graphic: sl/PJ; chl/ser PJ; sil/ser; sil/chl; F; sil; hem/sil

5 cm

041129

PASMINCO EXPLORATION

STANDARD LEGEND FOR SUMMARY DIAMOND DRILL CORE LOG

Graphic Scale 1:

From m	Interval m	Code	Description	Depth	Graphic
			Massive Siliceous Lavas		
			gradational or vague contact		
			Massive Banded Chloritic Lavas		
			flow banding		
			spherulites or lithophysal hyaloclastite breccia		
			Shales		
			laminated or massive		
			Black Shale/Slate		
			Volcaniclastic Graded		
			arrow shows way up evidence		
			cloudy silica altn.		
			rafts of shale		
			mylonitic contact	M	
			Sericite Schist/Shear Zone		
			sheared contact	S	
			Crystal-Rich Volcaniclastic		
			feldspar crystals		
			quartz crystals		
			Graded Sandstone		
			internal brecciation		
			chloritic stylolites		
			tube pumice		
			disseminated sulphides		
			Black bars down right side of log denote mineralised intervals		
			unconformable contact		
			Reverse Graded Unit		
			porphyritic clasts and lithic clasts		
			brittle fault contact	F	
			cherty altn. with augen texture		

From m	Interval m	Code	Description	Depth	Graphic
			break in logged interval		
			augen textured		
			alteration with skarns	sk	
				sk	
			intrusive contact		
			mafic dyke/sill		
			fault zone (in broken core)		
			fault breccia		
			Massive carbonate (limestone/marble		
			5 cm		

041130

APPENDIX 2

DRILL HOLE EM REPORTS & DATA

Memorandum from R. Smith – DH SIROTEM, 17 December 1991

Memorandum from R. Smith – Crone PEM, 12 February 1992

Crone Borehole PEM data:

BPD69 loops 17 & 18

BPD71 loops 21, 22 & 23

BPD72 loops 21, 22 & 23

BPD73 loops 73–2 & 73–2

BPD74 loops 74–1 & 74–2

Memorandum from R. Smith – DH UTEM, 17 October 1992.

DH UTEM data – BPD75 loops 24–92 & 25–92

FIGURE 1 – loop locations

041132

PASMINCO
EXPLORATION

A Division of Pasminco Australia Limited,
A.C.N. 004 074 962

Level 2, The Atrium,
290 Burwood Road,
Hawthorn, Australia, 3122

MEMORANDUM

TO: Lindsay Kirsner

FROM: Richard Smith

DATE: 17 December 1991

SUBJECT: **DHEM Burns Peak**

BPD69

The anomalous SIROTEM response at 370m is quite small and decays away by 1 millisecond, making it a relatively poor conductor. The removal of a background response is very difficult and depending on the type of background chosen, can result in vastly different residual responses. The "simple" straight-line background Bishop has assumed gave a residual response characteristic of a local off-hole conductor. If another residual had been chosen, the anomalous response would be of less exploration significance and would not have the characteristics of an "off-hole" conductor. For example, the anomalous response could equally well be due to current being channelled into a relatively more conductive unit.

A repeat survey with CRONE requirement will probably not resolve whether or not the conductor is "off-hole" or not, but if it is an off-hole conductor then its position could be determined from the off-axis components. A station spacing of 10m would be adequate, except in the vicinity of 320-400m downhole, where 5m intervals would help resolve the anomaly shape. Using loop 17 as the transmitter should be adequate, but the lines for loop 18 should be cleared in case this loop is required.

BPD67

There is little interest in the DHEM data from hole BPD67. When logged initially, there was one anomalous point at 60m depth, but this turned out to be noise. A good operator (or a supervising geophysicist) could have identified the anomalous reading and any subsequent attempts to detail the anomaly or repeat the reading would have shown the reading to be erroneous. This would have saved relogging the hole and resulted in a financial saving.

PASMINCO
EXPLORATION

A Division of Pasminco Australia Limited,
A.C.N. 004 074 962

Level 2, The Atrium,
290 Burwood Road,
Hawthorn, Australia, 3122

MEMORANDUM

TO: LW Kirsner

FROM: RS Smith

DATE: 12 February 1992

SUBJECT: Interpretation of Drill-hole EM (DHEM) data from Burns Peak EL 44/88

BPD 69

This hole was originally surveyed with SIROTEM Mark II drill-hole EM equipment (Bishop, 1991). Two transmitter loops 17 and 18, were used to survey the hole. In both cases the shape of the measured response was identical to the shape of the primary field, implying that the measurements could be attributed to the "self-response" of the probe containing the receiver coil. However, for the loop 17 data, there was a change in the magnitude of the response at about 370m. One possible explanation for this is that the response of an off-hole conductor is superimposed on the self-response (Bishop, 1991).

The Crone system has been used by Pasminco to relog the hole. Loop 17 was laid in the same position but loop 18 was slightly different. It was hoped the Crone system would detect the response at 370m, with the off-axis components being used to determine the position of the conductor. The response measured by the Crone system also shows a response with a shape identical to the primary field, but there is no change in the response at 370m, from either the loop 17 or the loop 18 data. The mysterious reduction in the SIROTEM response below 370m in the loop 17 data could perhaps be due to the primary field decreasing, maybe the current in the transmitter was less than expected. This argument is supported by the fact that the percent reduction in the response is fixed as a function of delay time.

BPD 71

This hole was logged with Crone drill-hole EM using transmitter loops 21, 22 and 23, each loop being designed to couple well to different parts of the interpreted geology.

The data from loops 21 and 22 show only a self response, with the shape of the profile being identical to the primary field in each case. An off-hole conductor cannot be inferred, as there is no visible anomalous response superimposed onto the self response.

The primary field from loop 23 is an order of magnitude less than from 21 or 22. Therefore, there is no self-response evident, only a flat profile devoid of the response from an off-hole conductor.

BPD 72

Drill-hole BPD 72 was logged with the same loops as BPD 71 (loops 21, 22 and 23).

Loop 21, being furtherest from the hole shows only a weak self-response and there is no indication of an off-hole conductor, the response being flat at late times. Loop 22 and 23 are closer to the hole, so the primary field is stronger. Accordingly, a large self response is seen, but there are no other anomalous features superimposed on the data.

BPD 73

Two transmitter loops were laid out for drill-hole EM surveying of BPD 73. Loop 73-1 is strongly coupled to the interpreted bedding, while loop 73-2 is weakly coupled.

The response from loop 73-1 shows no features except the probe self response. The primary field from loop 73-2 is weak so there is a weak self response, but again, there are no other additional features visible in the data.

BPD 74

BPD 74 was drilled to intersect the interpreted source of a gravity anomaly. Two transmitter loops (74-1 and 74-2) were laid out to test for any conductive zones in the vicinity of the borehole. As the dips were not known at the time of survey design, the two loops were designed to cover the possibility of dips parallel or perpendicular to the drill-hole.

The primary field from loop 74-1 is strong, so the self response of the probe is strong; however, no other anomalies can be seen in the data.

Loop 74-2 has a weaker primary field at the drill-hole, so the probe self-response is less. Again, there are no anomalies in the data, the response profile being flat down the drill-hole.

Notes on the self response of the probe

Comparable measurements taken at surface with the Crone surface coil and the drill-hole receiver probe shows markedly different results. The probe response is larger and appears to be proportional to the time rate of change of the primary field. This spirious response has been termed the "self response" of the probe.

A self response is not seen when there is conductive material between the transmitter and the probe, apparently because the time rate of change of the primary field at the probe is attenuated by current induced in the intervening conductive material. There is a possibility that the phenomenon may be non-linear, in which case reducing the current or moving the transmitter loop away from the hole will substantially reduce the effect. If the effect is linear, this will be of no advantage, because both the probe response and the response of anomalous conductors (generally found to depend linearly on the time rate of change of the primary field) will decrease proportionally. If the Crone system is to be used in future, it may be worth checking the linearity of the self response.

The SIROTEM II system, used to log BPD 69 in 1990, also used a probe which has a self response. A comparison of the relative magnitudes of each self response at a point 220m down the hole shows that the SIROTEM self response is larger at times earlier than 0.7 milliseconds but less at later times.

In both cases, the self response could be masking the response of conductive bodies in the vicinity of the hole. However, if the conductor is very significant it should be possible to see some response superimposed on the self response. The Crone system could also detect the effect of the conductor in the primary pulse (measured at very early time).

Reference

Bishop, J.R., 1991. Report on DHEM surveys Burns Peak (EL 44/88) DDH's BPD 67-70: Mitre Geophysics report PET/MG91/03

Richard Smith

RSS120SR

CRONE GEOPHYSICS & EXPLORATION LTD

BOREHOLE PEM

041136

Client	: Pasminco Exploration	Hole	: BPD69
Grid	: Burns Peak	Tx Loop	: 17
Date	: Jan 18, 1992	File name	: bpd69117.new
Time Base	: 10.00 ms	# Readings	: 53
Ramp Time	: 0.50 ms	Stn Units	: Metric
# Channels	: 8	Coil Area	: 6500 sq m
Sync Type	: Cable	Polarity	: +
Loop Size	: 300m X 400m	Receiver	: Digital #120
Current	: 2 Amps	Operator	: N.H.

Channel Times (usec)

Ch	Start	End	Center	Ch	Start	End	Center	Ch	Start	End	Center
PP	-198	-99	-149	1	76	131	104	2	131	225	178
3	225	378	302	4	378	639	508	5	639	1075	857
6	1075	1809	1442	7	1809	3046	2428	8	3046	5121	4084

CRONE GEOPHYSICS & EXPLORATION LTD

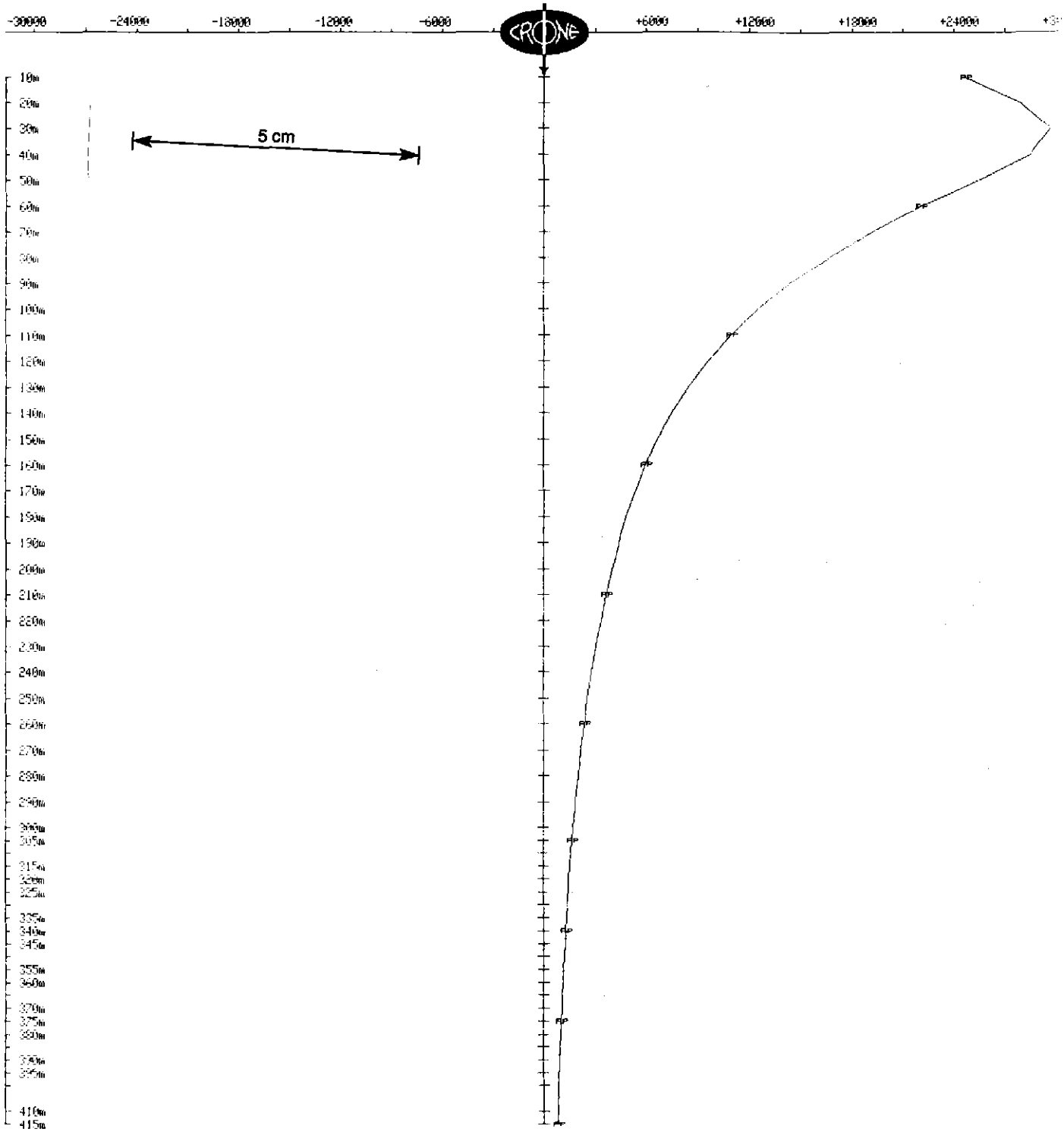
BOREHOLE PEM

041137

Client	: Pasminco Exploration	Hole	: BPD69
Grid	: Burns Peak	Tx Loop	: 17
Date	: Jan 18, 1992	File name	: bpd69117.new

Z COMPONENT dBz/dt nanoVolt/Amp-m² - 8 channels and PP

Scale: 1:2000 Unit Scale: 1cm = 3000



CRONE GEOPHYSICS & EXPLORATION LTD

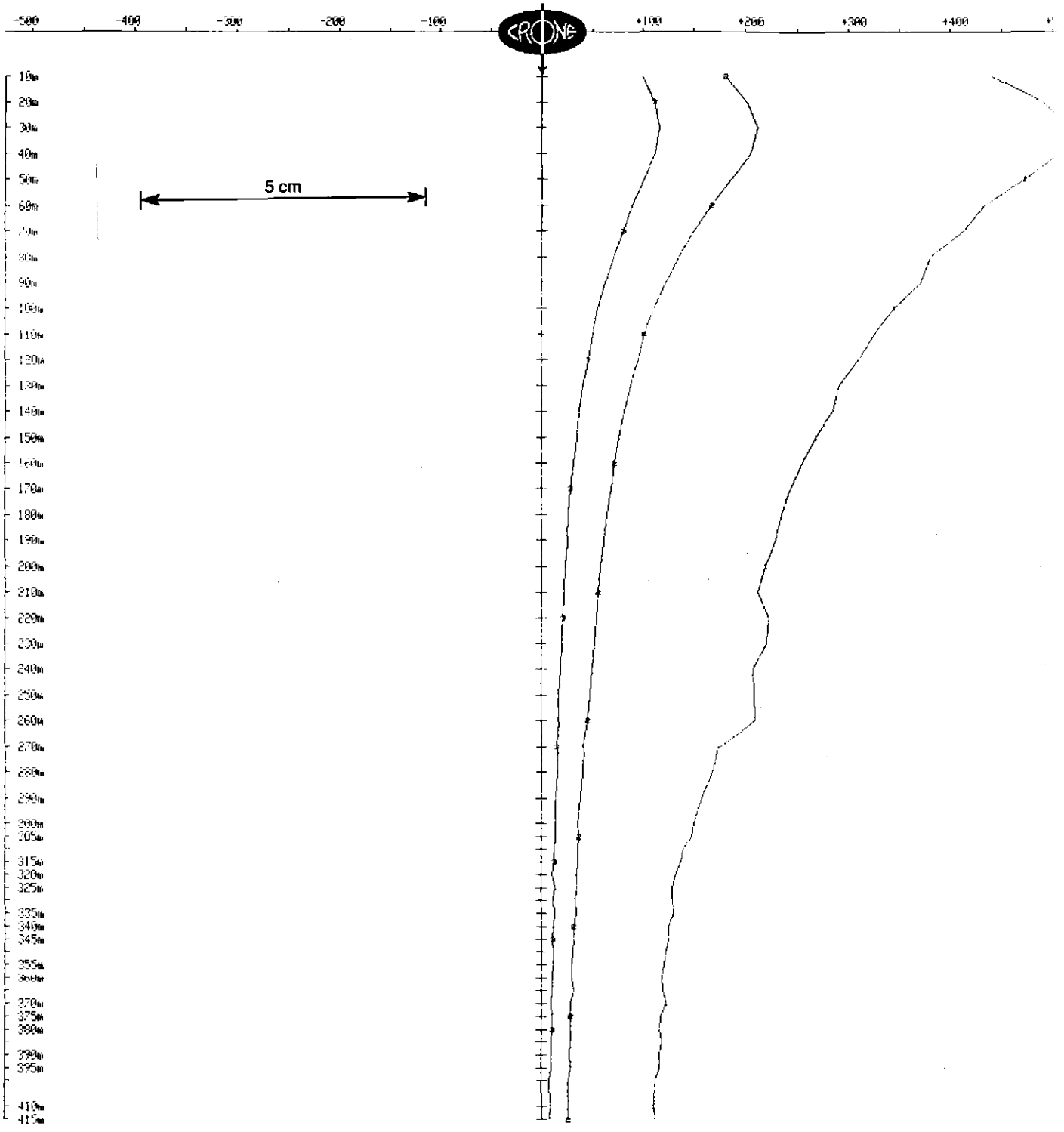
BOREHOLE PEM

041138

Client	: Pasminco Exploration	Hole	: BPD69
Grid	: Burns Peak	Tx Loop	: 17
Date	: Jan 18, 1992	File name	: bpd69117.new

Z COMPONENT dBz/dt nanoVolt/Amp-m² - 8 channels

Scale: 1:2000 Unit Scale: 1cm = 50



CRONE GEOPHYSICS & EXPLORATION LTD

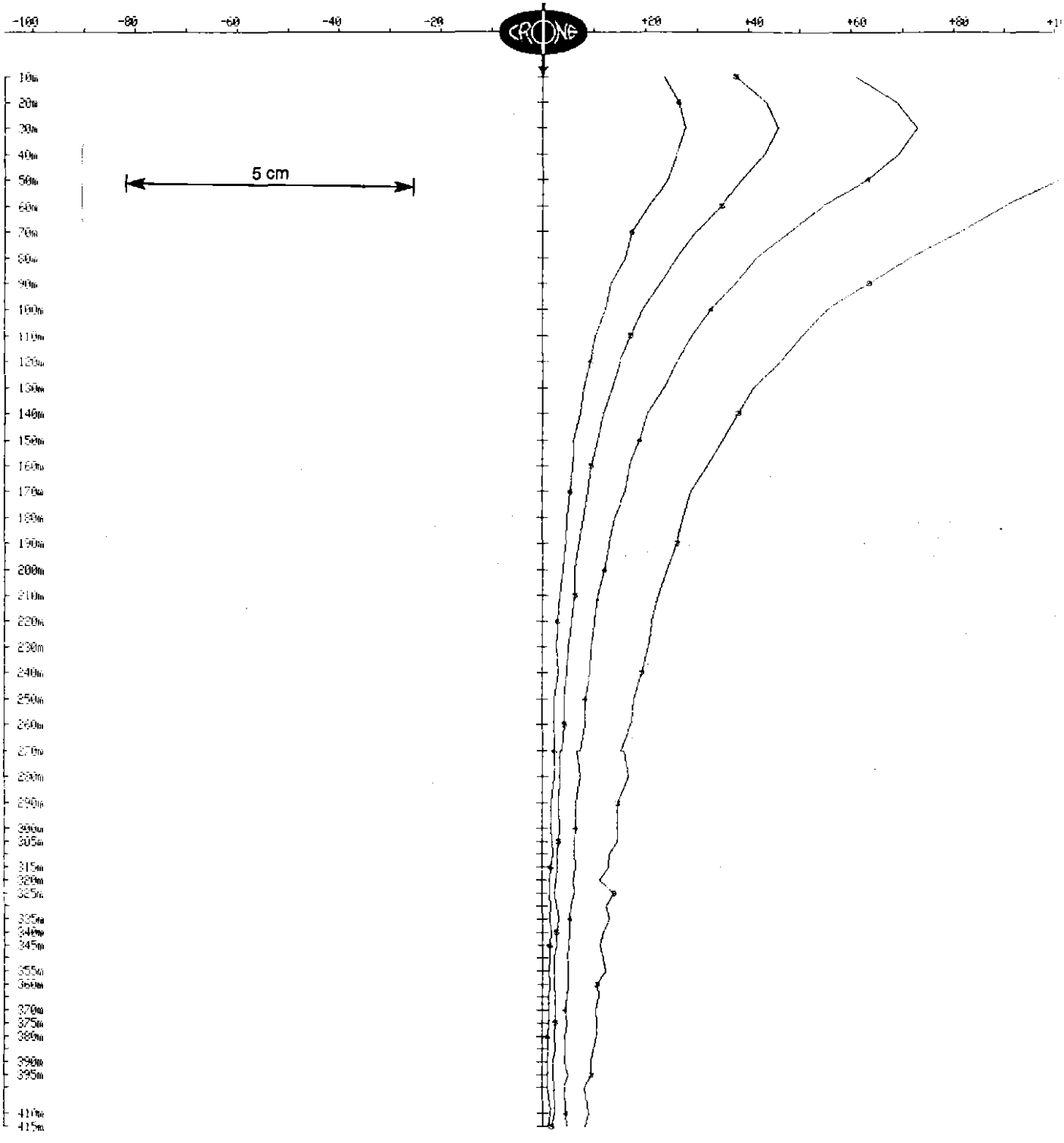
BOREHOLE PEM

041139

Client	: Pasminco Exploration	Hole	: BPD69
Grid	: Burns Peak	Tx Loop	: 17
Date	: Jan 18, 1992	File name	: bpd69117.new

Z COMPONENT dBz/dt nanoVolt/Amp-m² - 8 channels

Scale: 1:2000 Unit Scale: 1cm = 10



CRONE GEOPHYSICS & EXPLORATION LTD

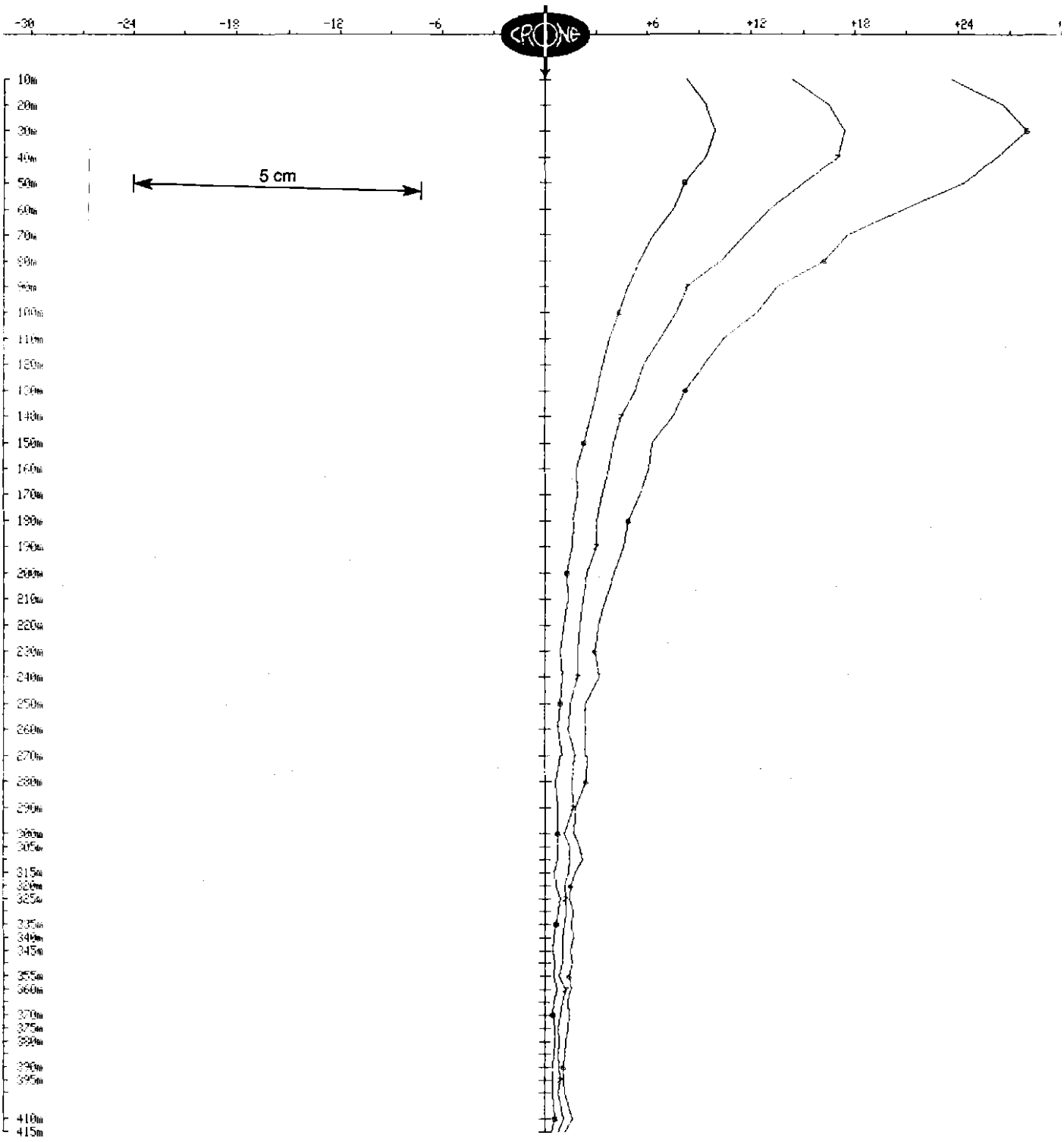
BOREHOLE PEM

041140

Client	: Pasminco Exploration	Hole	: BPD69
Grid	: Burns Peak	Tx Loop	: 17
Date	: Jan 18, 1992	File name	: bpd69117.new

Z COMPONENT dBz/dt nanoVolt/Amp-m² - 8 channels

Scale: 1:2000 Unit Scale: 1cm = 3



CRONE GEOPHYSICS & EXPLORATION LTD
BOREHOLE PEM

041141

Client	: **Pasminco Exploration**	Hole	: **BPD69**
Grid	: **Burns Peak**	Tx Loop	: **18**
Date	: Jan 18, 1992	File name	: bpd69118.new
Time Base	: 10.00 ms	# Readings	: 53
Ramp Time	: 0.50 ms	Stn Units	: Metric
# Channels	: 8	Coil Area	: 6500 sq m
Sync Type	: Cable	Polarity	: +
Loop Size	: 300m X 200m	Receiver	: Digital #120
Current	: 5 Amps	Operator	: N.H.

Channel Times (usec)

Ch	Start	End	Center	Ch	Start	End	Center	Ch	Start	End	Center
PP	-198	-99	-149	1	76	131	104	2	131	225	178
3	225	378	302	4	378	639	508	5	639	1075	857
6	1075	1809	1442	7	1809	3046	2428	8	3046	5121	4084

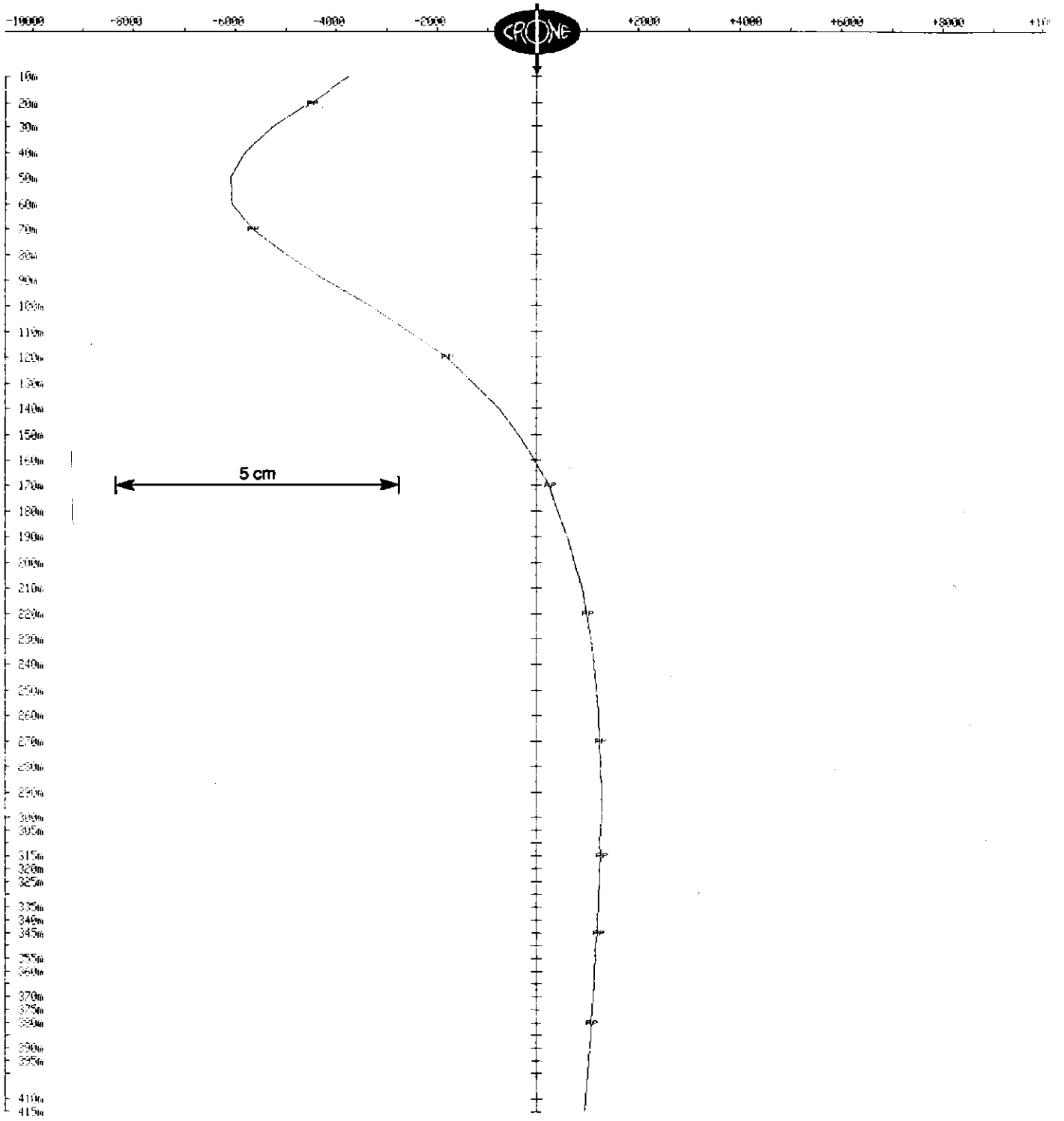
CRONE GEOPHYSICS & EXPLORATION LTD
BOREHOLE PEM

041142

Client	: Pasminco Exploration	Hole	: BPD69
Grid	: Burns Peak	Tx Loop	: 18
Date	: Jan 18, 1992	File name	: bpd69118.new

Z COMPONENT dBz/dt nanoVolt/Amp-m² - 8 channels and PP

Scale: 1:2000 Unit Scale: 1cm = 1000



CRONE GEOPHYSICS & EXPLORATION LTD

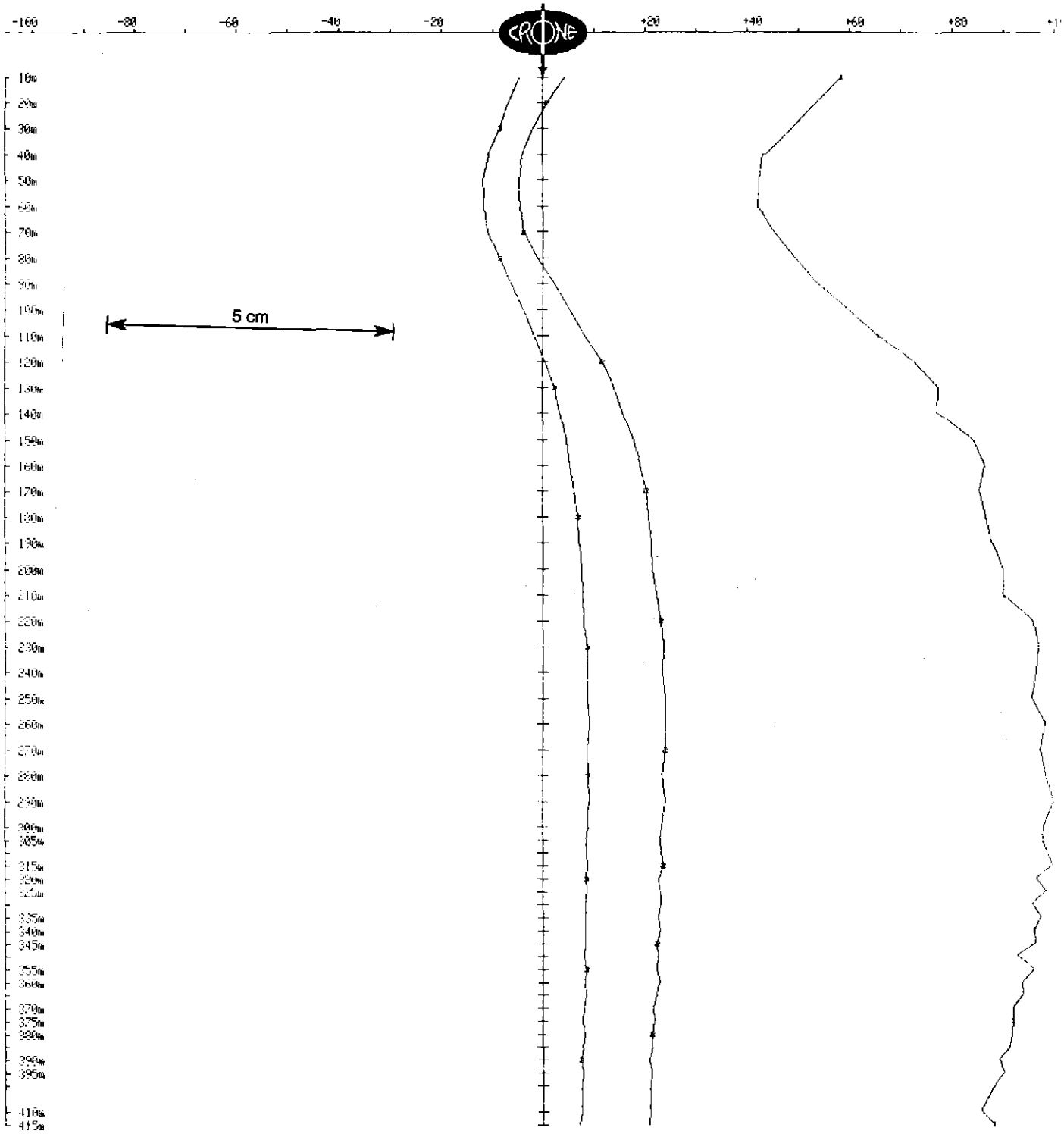
BOREHOLE PEM

041143

Client	: Pasminco Exploration	Hole	: BPD69
Grid	: Burns Peak	Tx Loop	: 18
Date	: Jan 18, 1992	File name	: bpd69118.new

Z COMPONENT dBz/dt nanoVolt/Amp-m² - 8 channels

Scale: 1:2000 Unit Scale: 1cm = 10



CRONE GEOPHYSICS & EXPLORATION LTD

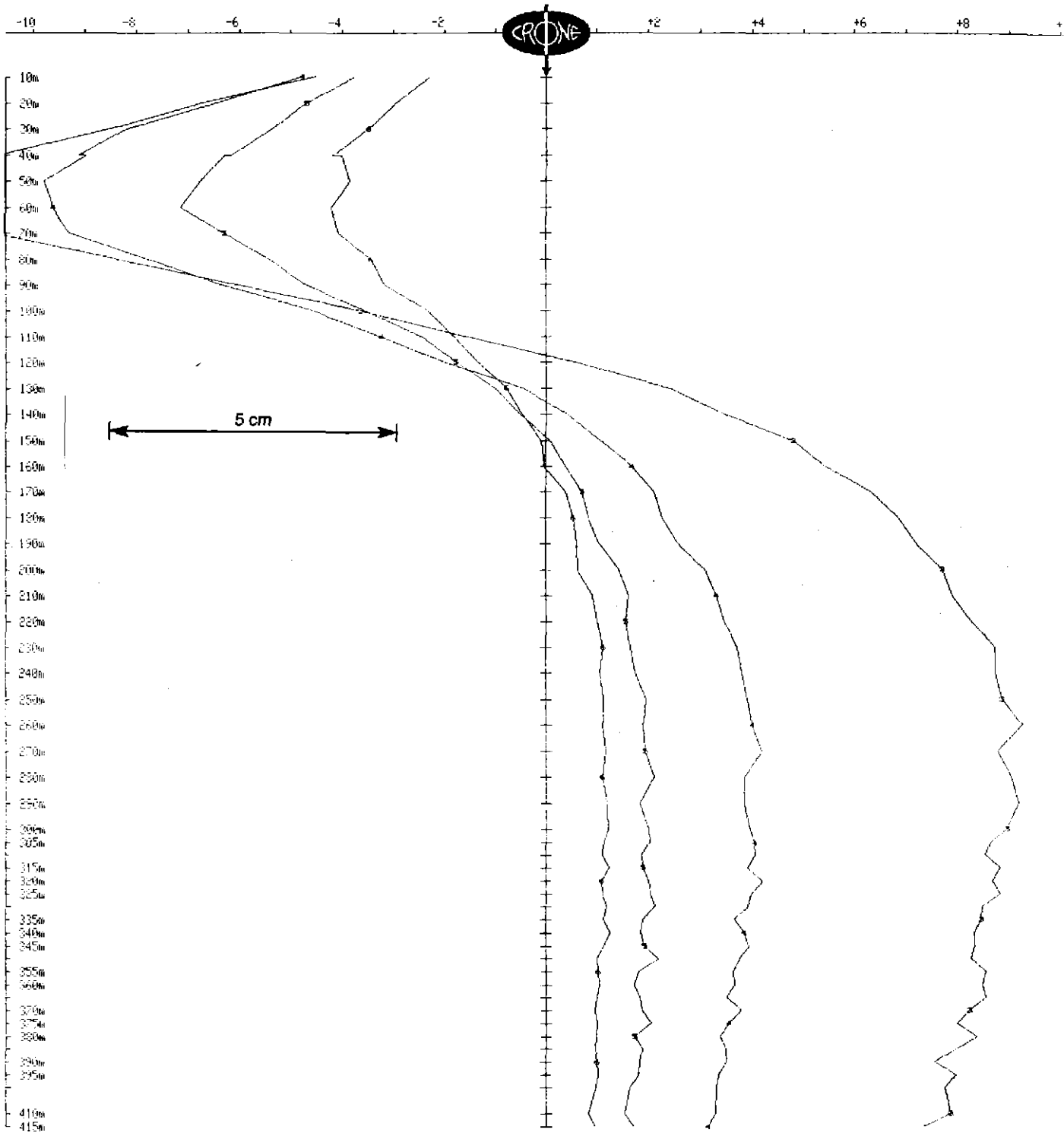
BOREHOLE PEM

041144

Client	: Pasminco Exploration	Hole	: BPD69
Grid	: Burns Peak	Tx Loop	: 18
Date	: Jan 18, 1992	File name	: bpd69118.new

Z COMPONENT dBz/dt nanoVolt/Amp-m² - 8 channels

Scale: 1:2000 Unit Scale: 1cm = 1



CRONE GEOPHYSICS & EXPLORATION LTD
BOREHOLE PEM

041145

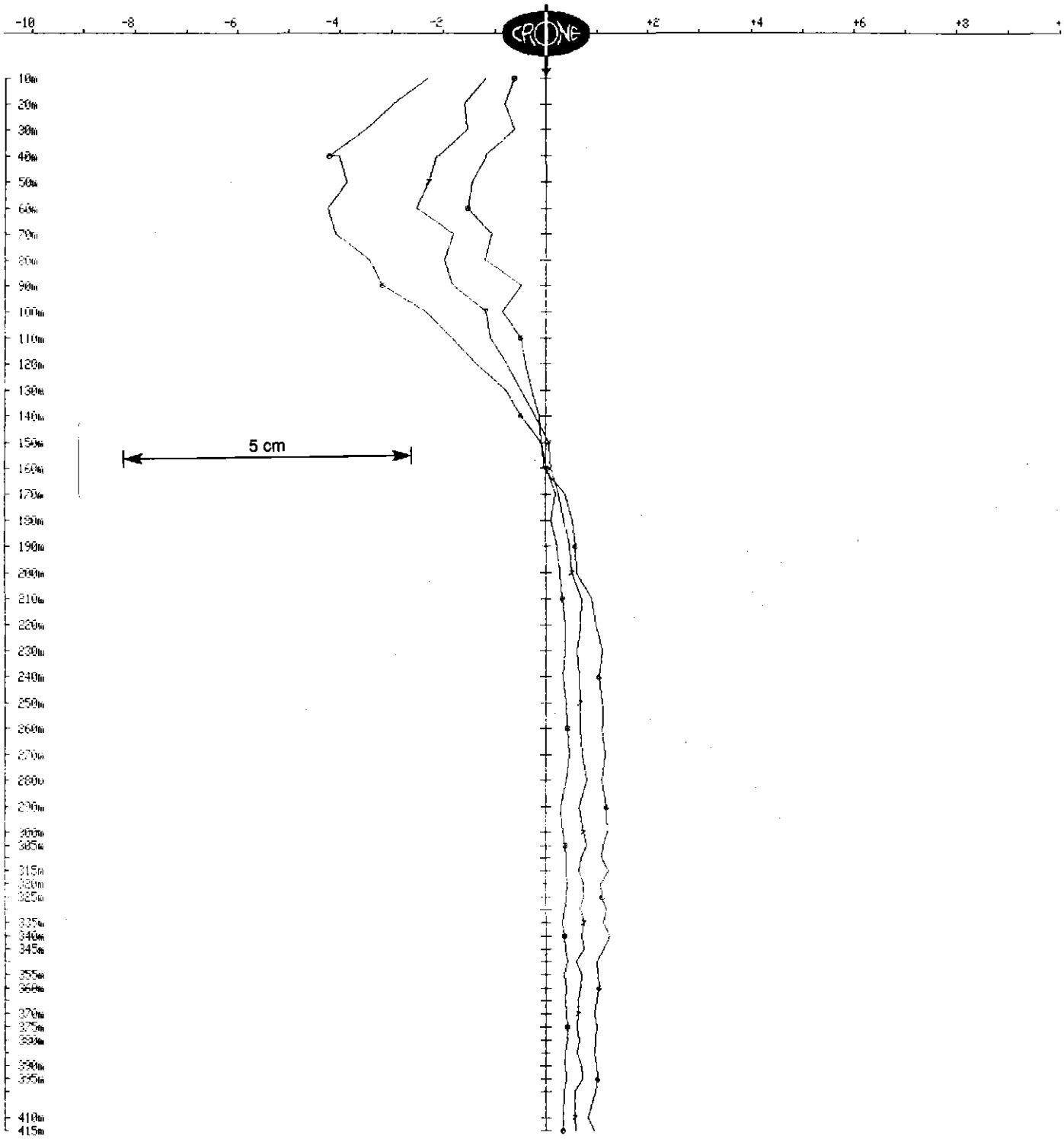
Client : Pasminco Exploration
Grid : Burns Peak
Date : Jan 18, 1992

Hole : BPD69
Tx Loop : 18
File name : bpd69118.new

Z COMPONENT dBz/dt nanoVolt/Amp-m² - 8 channels

Scale: 1:2000

Unit Scale: 1cm = 1



CRONE GEOPHYSICS & EXPLORATION LTD
BOREHOLE PEM

041146

Client	: **Pasminco Exploration**	Hole	: **BPD71**
Grid	: **Burns Peak**	Tx Loop	: **21**
Date	: Jan 20, 1992	File name	: bpd71121.new
Time Base	: 10.00 ms	# Readings	: 58
Ramp Time	: 0.50 ms	Stn Units	: Metric
# Channels	: 8	Coil Area	: 6500 sq m
Sync Type	: Cable	Polarity	: +
Loop Size	: 300m X 300m	Receiver	: Digital #120
Current	: 5 Amps	Operator	: N.H.

Channel Times (usec)

Ch	Start	End	Center	Ch	Start	End	Center	Ch	Start	End	Center
PP	-198	-99	-149	1	76	131	104	2	131	225	178
3	225	378	302	4	378	639	508	5	639	1075	857
6	1075	1809	1442	7	1809	3046	2428	8	3046	5121	4084

CRONE GEOPHYSICS & EXPLORATION LTD

BOREHOLE PEM

041147

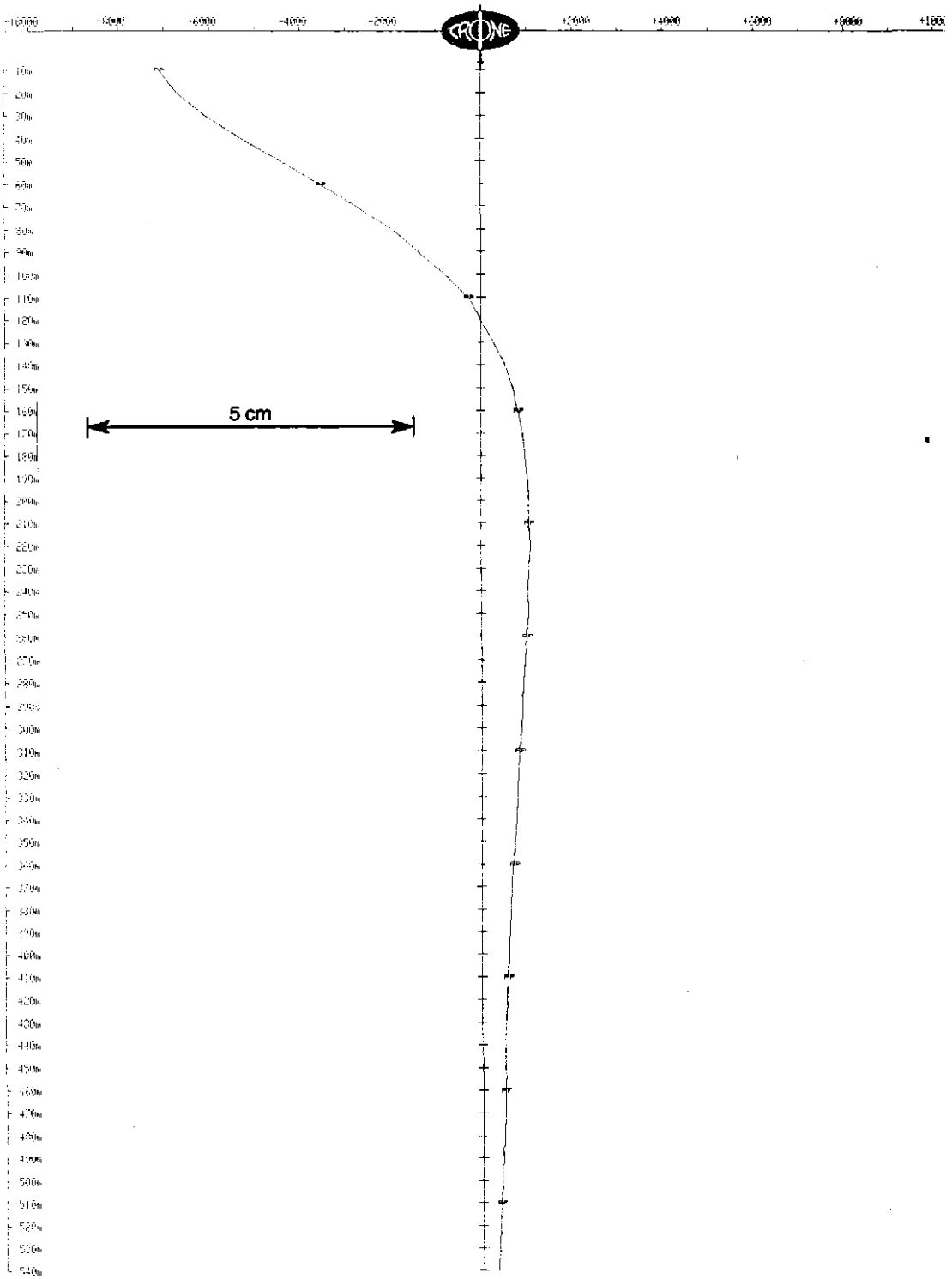
Client : Pasminco Exploration
Grid : Burns Peak
Date : Jan 20, 1992

Hole : BPD71
Tx Loop : 21
File name : bpd71121.new

Z COMPONENT dBz/dt nanoVolts/Amp-m² - 8 channels and PP

Scale: 1:2000

Unit Scale: 1cm = 1000



CRONE GEOPHYSICS & EXPLORATION LTD

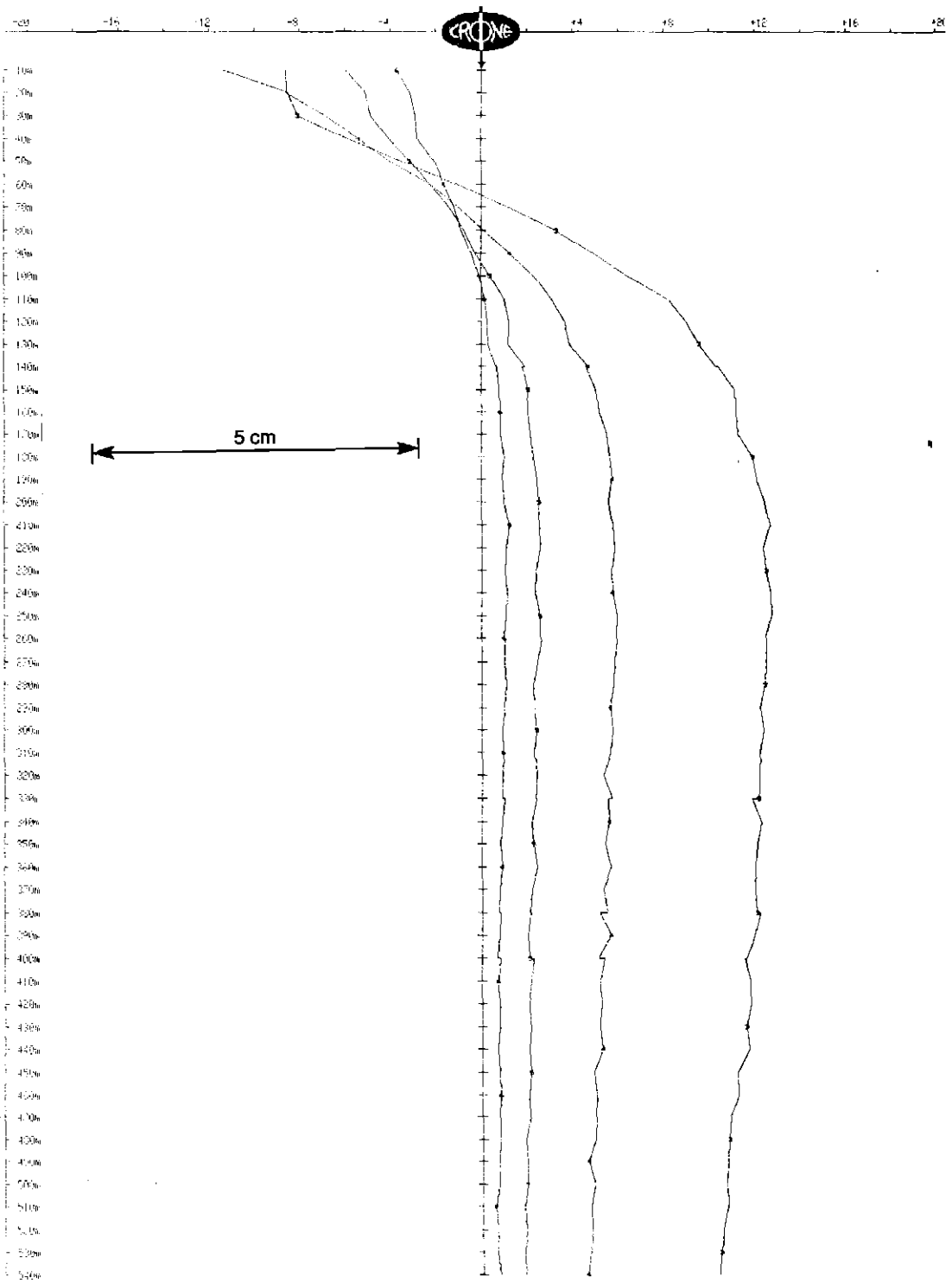
BOREHOLE PEM

041148

Client	: Pasminco Exploration	Hole	: BPD71
Grid	: Burns Peak	Tx Loop	: 21
Date	: Jan 20, 1992	File name	: bpd71121.new

Z COMPONENT dBz/dt nanoVolts/Amp-m² - 8 channels

Scale: 1:2000 Unit Scale: 1cm = 2



CRONE GEOPHYSICS & EXPLORATION LTD

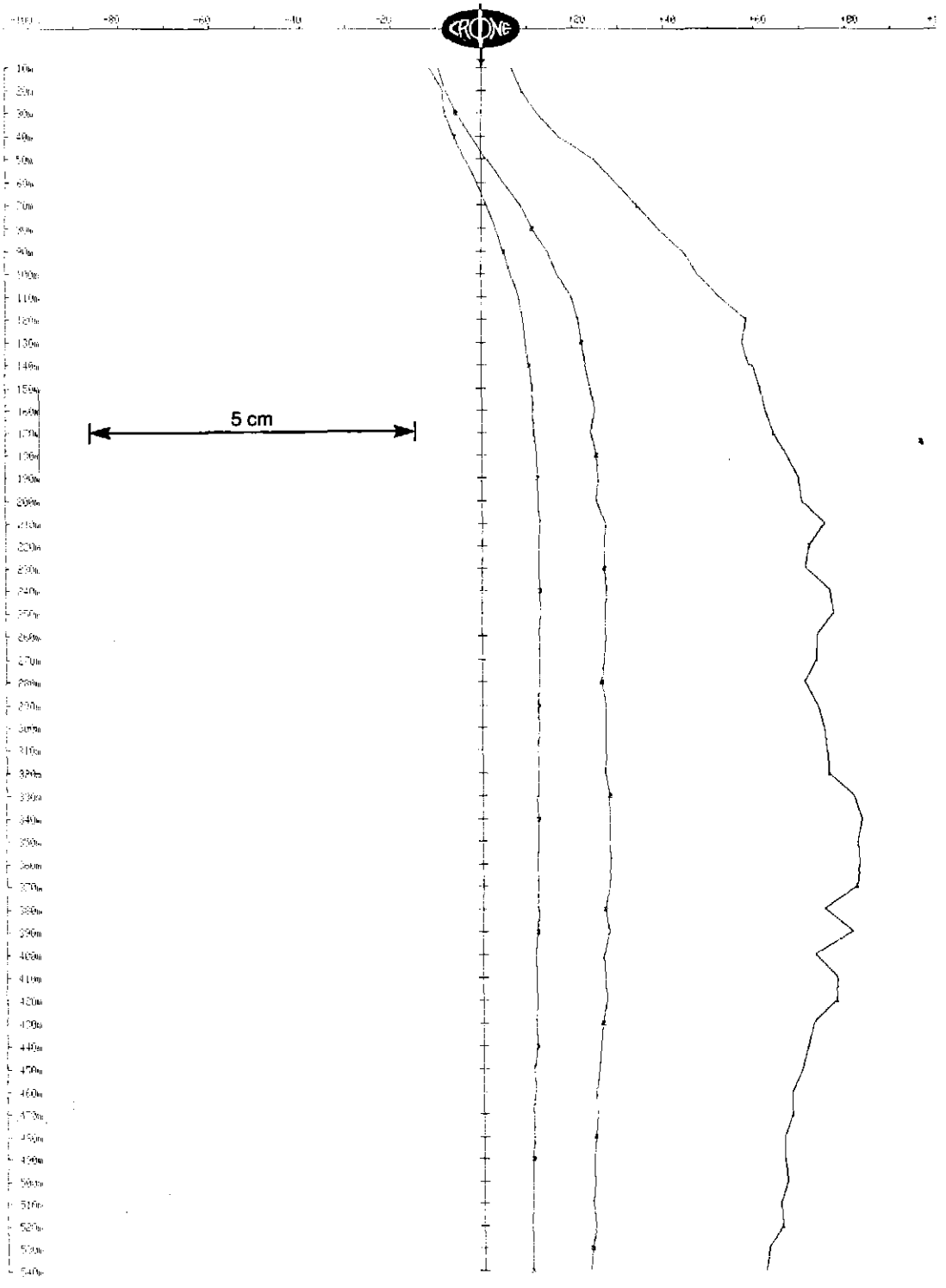
BOREHOLE PEM

041149

Client	: Pasminco Exploration	Hole	: BPD71
Grid	: Burns Peak	Tx Loop	: 21
Date	: Jan 20, 1992	File name	: bpd71121.new

Z COMPONENT dBz/dt nanoVolts/Amp-m² - 8 channels

Scale: 1:2000 Unit Scale: 1cm = 10



041150

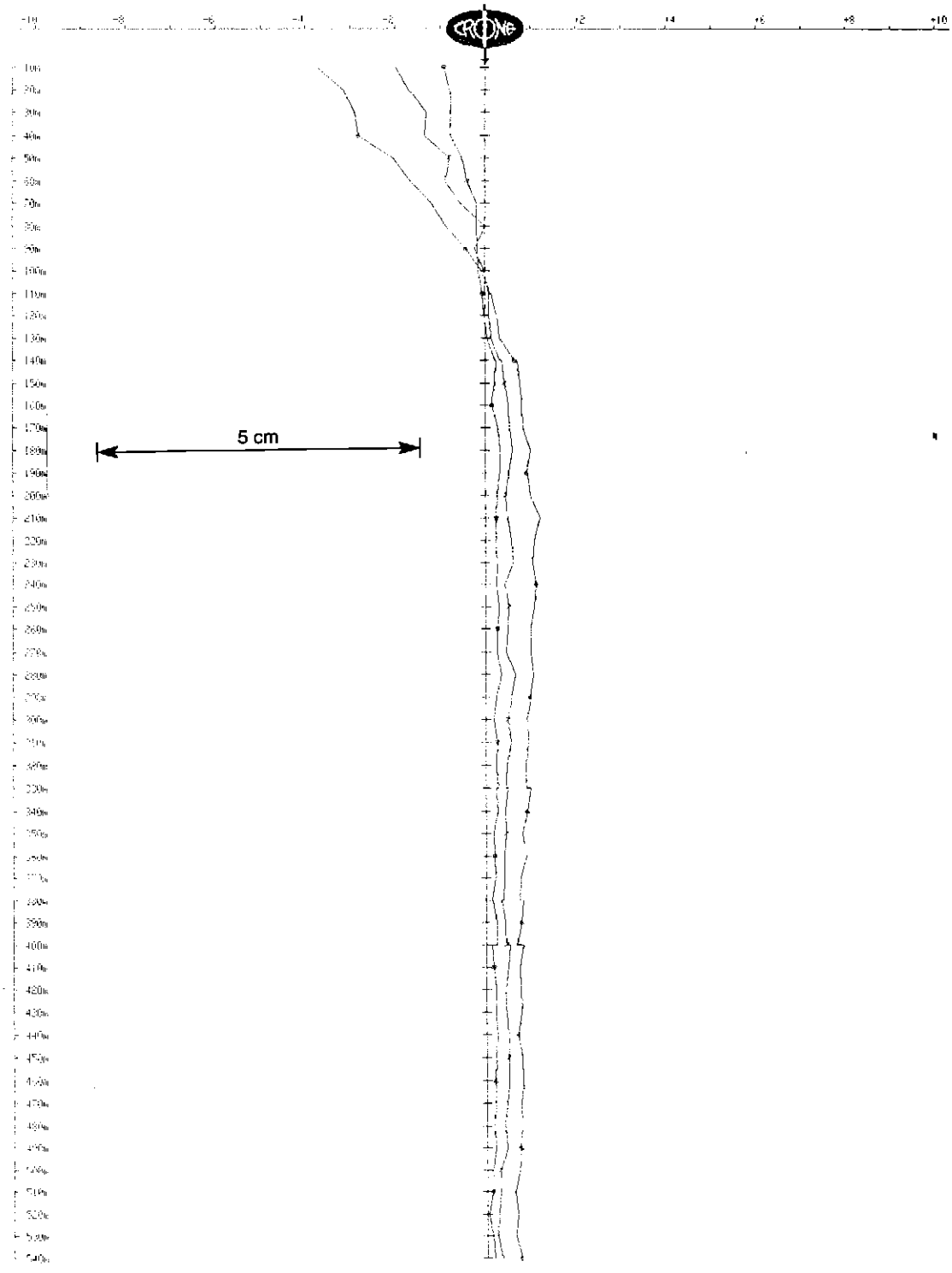
CRONE GEOPHYSICS & EXPLORATION LTD

BOREHOLE PEM

Client	: Pasminco Exploration	Hole	: BPD71
Grid	: Burns Peak	Tx Loop	: 21
Date	: Jan 20, 1992	File name	: bpd71121.new

Z COMPONENT dBz/dt nanoVolts/Amp-m² - 8 channels

Scale: 1:2000 Unit Scale: 1cm = 1



CRONE GEOPHYSICS & EXPLORATION LTD
BOREHOLE PEM

041151

Client	: **Pasminco Exploration**	Hole	: **BPD71**
Grid	: **Burns Peak**	Tx Loop	: **22**
Date	: Jan 20, 1992	File name	: BPD71L22.NEW
Time Base	: 10.00 ms	# Readings	: 63
Ramp Time	: 0.50 ms	Stn Units	: Metric
# Channels	: 8	Coil Area	: 6500 sq m
Sync Type	: Cable	Polarity	: +
Loop Size	: 300m X 300m	Receiver	: Digital #120
Current	: 5 Amps	Operator	: N.H.

Channel Times (usec)

Ch	Start	End	Center	Ch	Start	End	Center	Ch	Start	End	Center
PP	-198	-99	-149	1	76	131	104	2	131	225	178
3	225	378	302	4	378	639	508	5	639	1075	857
6	1075	1809	1442	7	1809	3046	2428	8	3046	5121	4084

041152

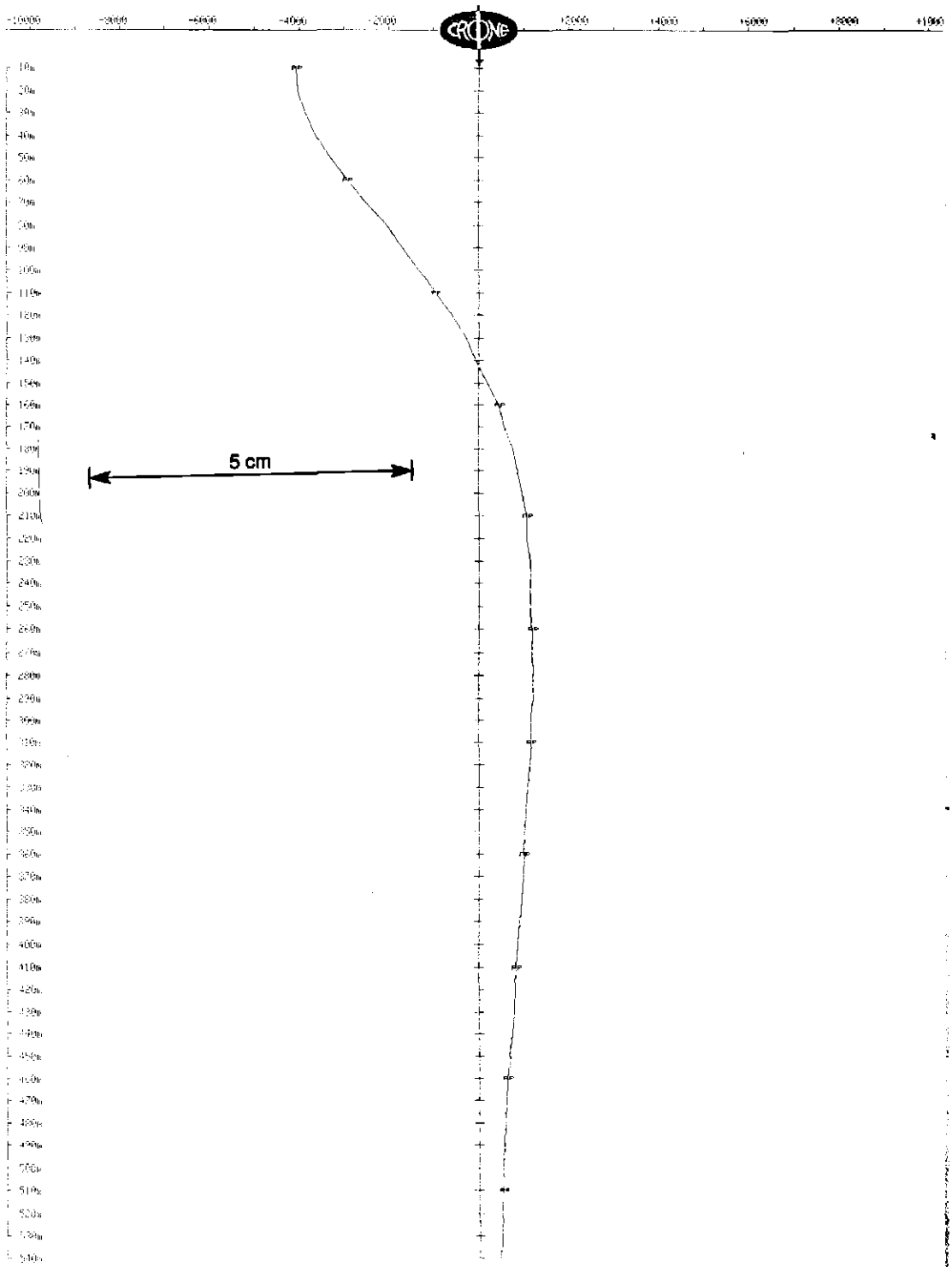
CRONE GEOPHYSICS & EXPLORATION LTD

BOREHOLE PEM

Client	: Pasminco Exploration	Hole	: BPD71
Grid	: Burns Peak	Tx Loop	: 22
Date	: Jan 20, 1992	File name	: BPD71L22.NEW

Z COMPONENT dBz/dt nanoVolts/Amp-m² - 8 channels and PP

Scale: 1:2000 Unit Scale: 1cm = 1000



041153

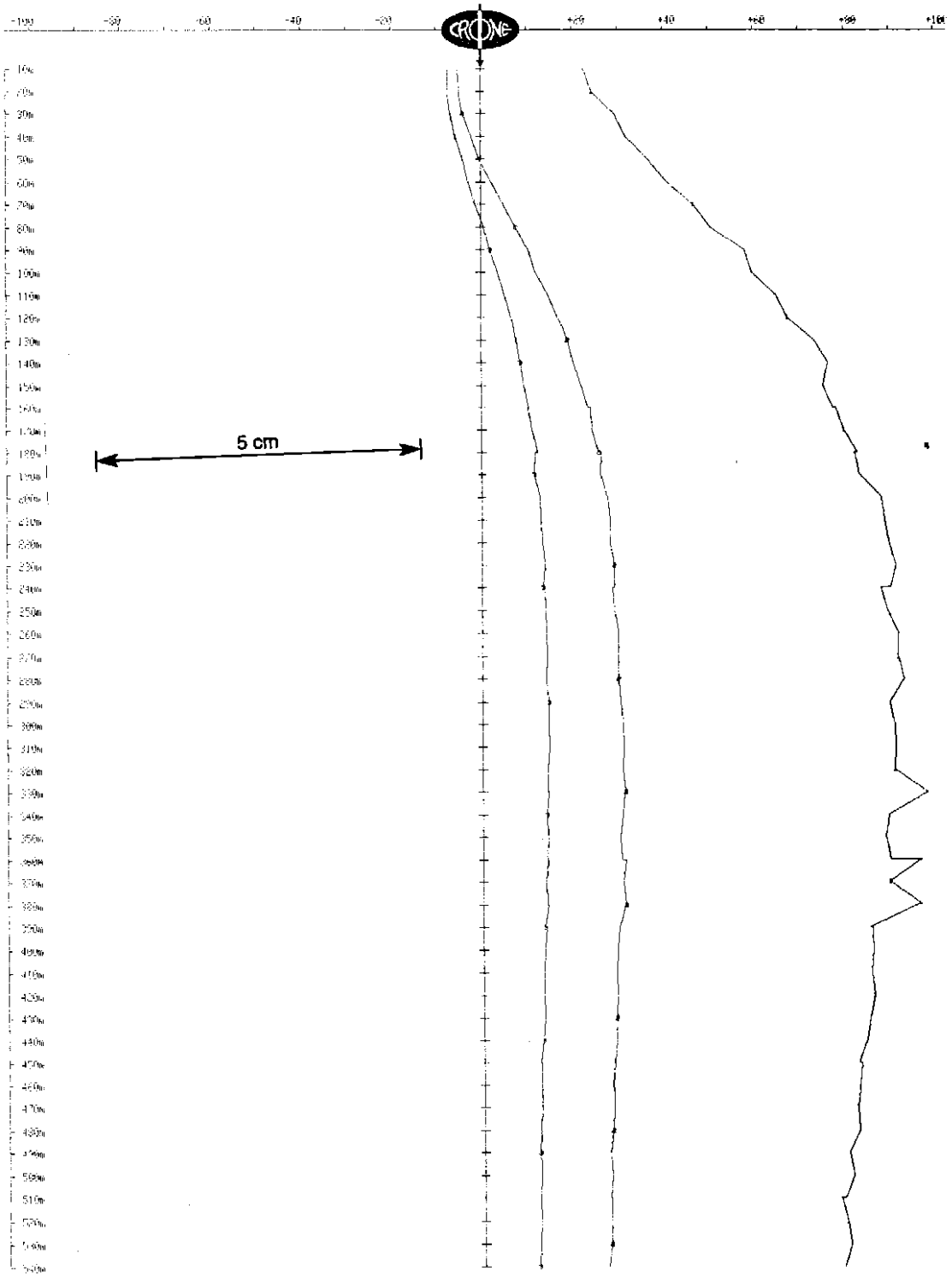
CRONE GEOPHYSICS & EXPLORATION LTD

BOREHOLE PEM

Client	: Pasminco Exploration	Hole	: BPD71
Grid	: Burns Peak	Tx Loop	: 22
Date	: Jan 20, 1992	File name	: BPD71L22.NEW

Z COMPONENT dBz/dt nanoVolts/Amp-m² - 8 channels

Scale: 1:2000 Unit Scale: 1cm = 10



041154

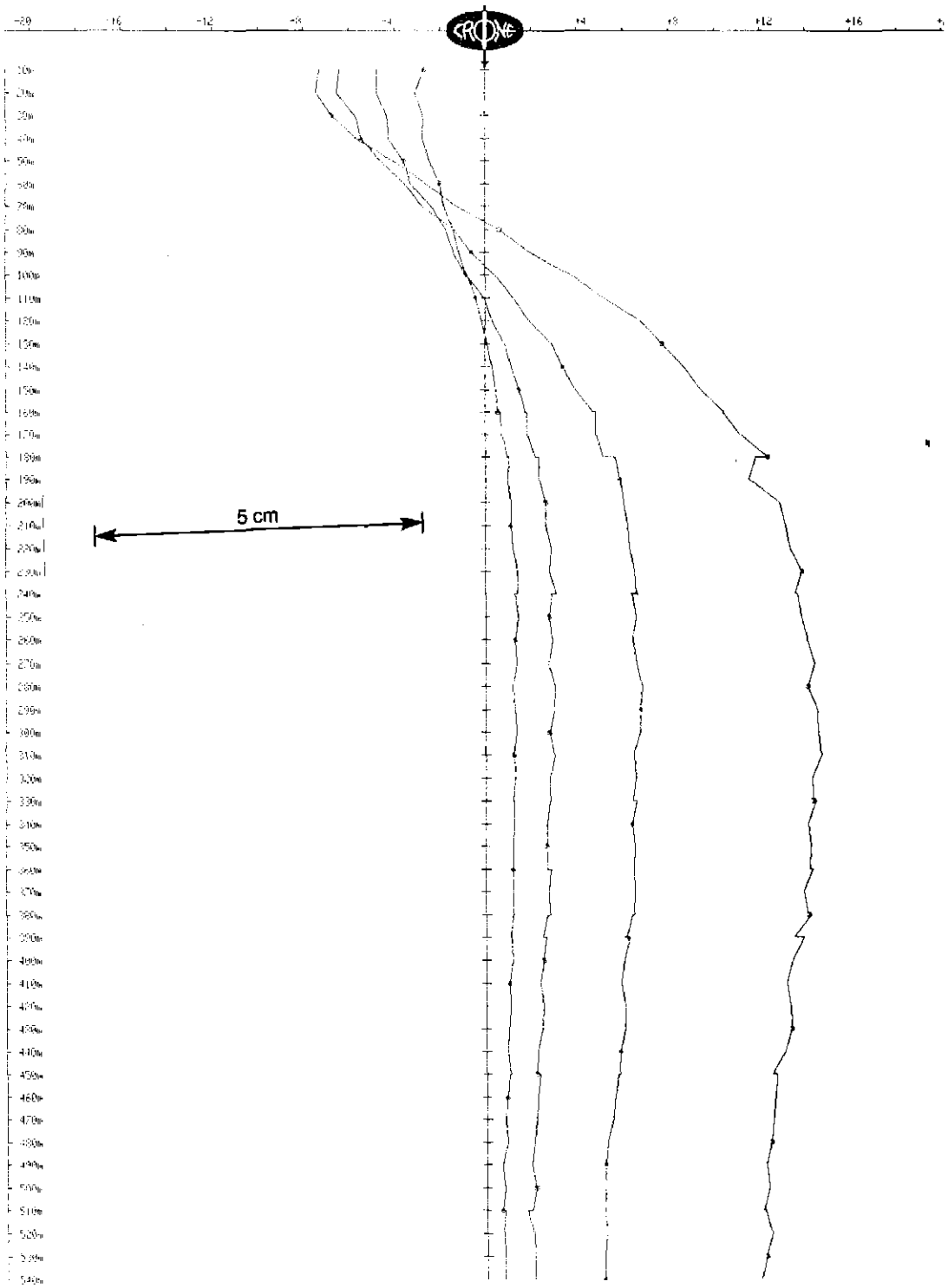
CRONE GEOPHYSICS & EXPLORATION LTD

BOREHOLE PEM

Client	: Pasminco Exploration	Hole	: BPD71
Grid	: Burns Peak	Tx Loop	: 22
Date	: Jan 20, 1992	File name	: BPD71L22.NEW

Z COMPONENT dBz/dt nanoVolts/Amp-m² - 8 channels

Scale: 1:2000 Unit Scale: 1cm = 2



041155

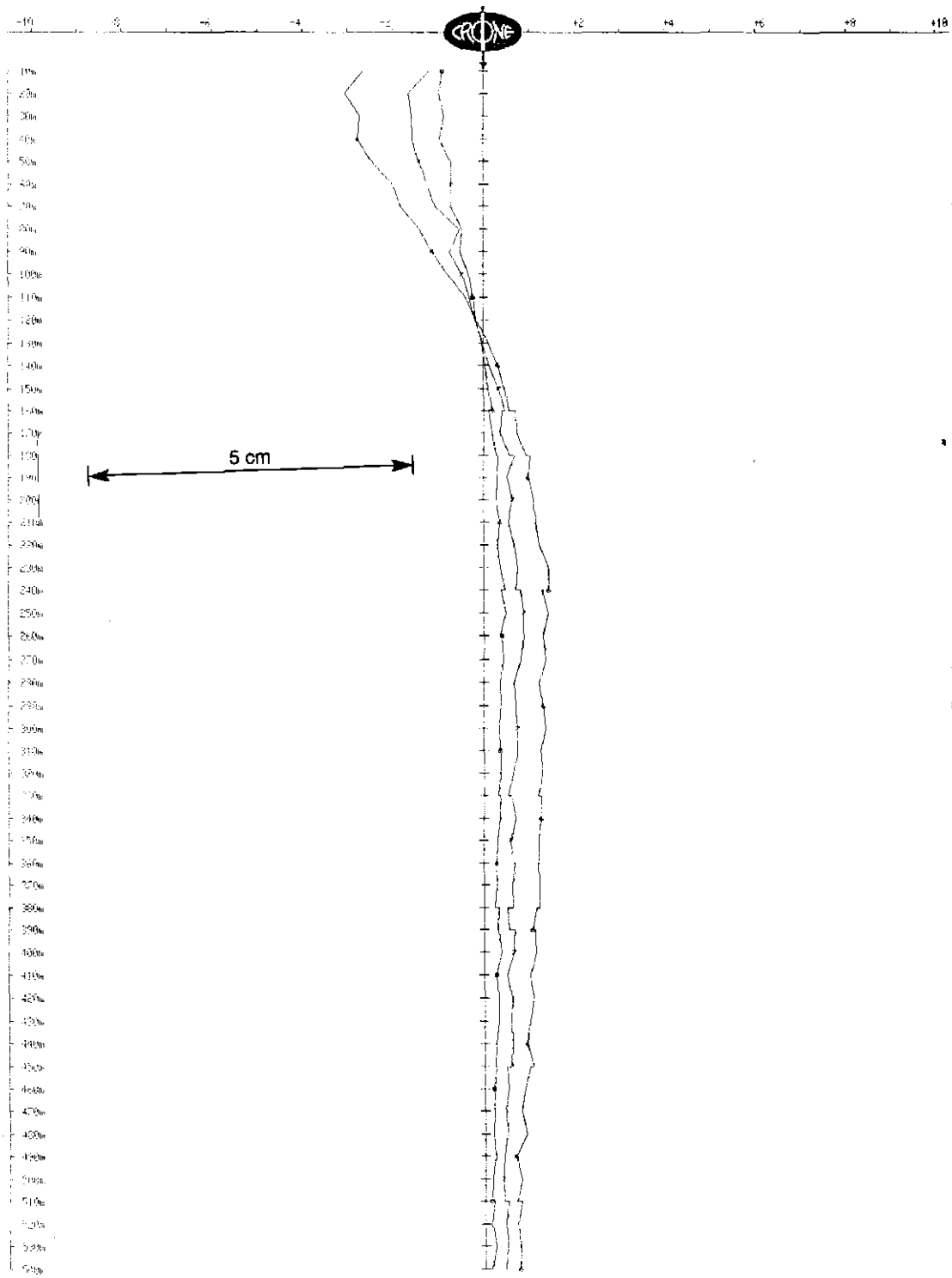
CRONE GEOPHYSICS & EXPLORATION LTD

BOREHOLE PEM

Client	: Pasminco Exploration	Hole	: BPD71
Grid	: Burns Peak	Tx Loop	: 22
Date	: Jan 20, 1992	File name	: BPD71L22.NEW

Z COMPONENT dBz/dt nanoVolts/Amp-m² - 8 channels

Scale: 1:2000 Unit Scale: 1cm = 1



CRONE GEOPHYSICS & EXPLORATION LTD

BOREHOLE PEM

041156

Client	: Pasminco Exploration	Hole	: BPD71
Grid	: Burns Peak	Tx Loop	: 23
Date	: Jan 20, 1992	File name	: bpd71123.new
Time Base	: 10.00 ms	# Readings	: 56
Ramp Time	: 0.50 ms	Stn Units	: Metric
# Channels	: 8	Coil Area	: 6500 sq m
Sync Type	: Crystal	Polarity	: +
Loop Size	: 300m X 300m	Receiver	: Digital #109
Current	: 5 Amps	Operator	: N.H.

Channel Times (usec)

Ch	Start	End	Center	Ch	Start	End	Center	Ch	Start	End	Center
PP	-198	-99	-149	1	76	131	104	2	131	225	178
3	225	378	302	4	378	639	508	5	639	1075	857
6	1075	1809	1442	7	1809	3046	2428	8	3046	5121	4084

041157

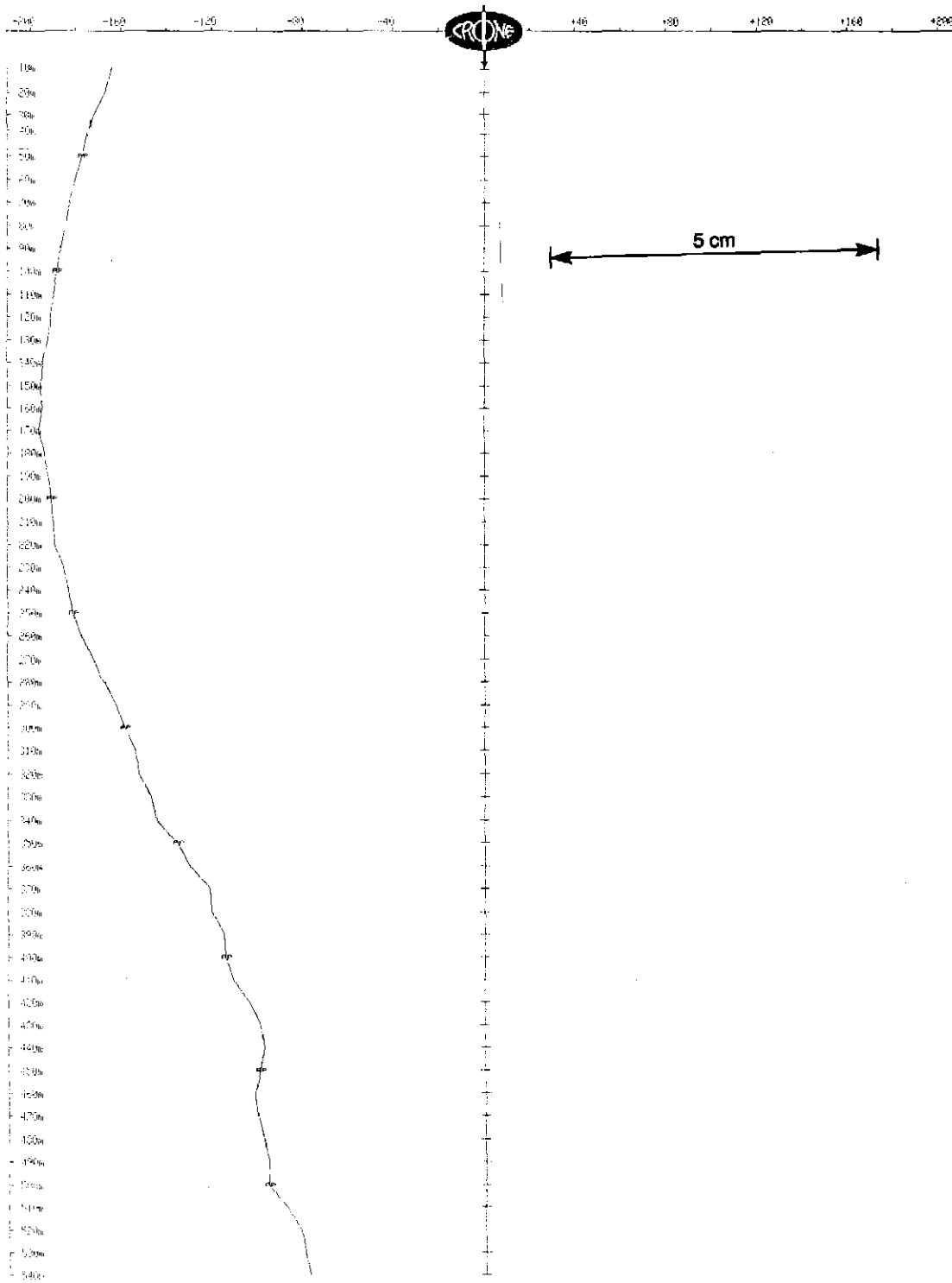
CRONE GEOPHYSICS & EXPLORATION LTD

BOREHOLE PEM

Client	: Pasminco Exploration	Hole	: BPD71
Grid	: Burns Peak	Tx Loop	: 23
Date	: Jan 20, 1992	File name	: bpd71123.new

Z COMPONENT dBz/dt nanoVolts/Amp-m² - 8 channels and PP

Scale: 1:2000 Unit Scale: 1cm = 20



041158

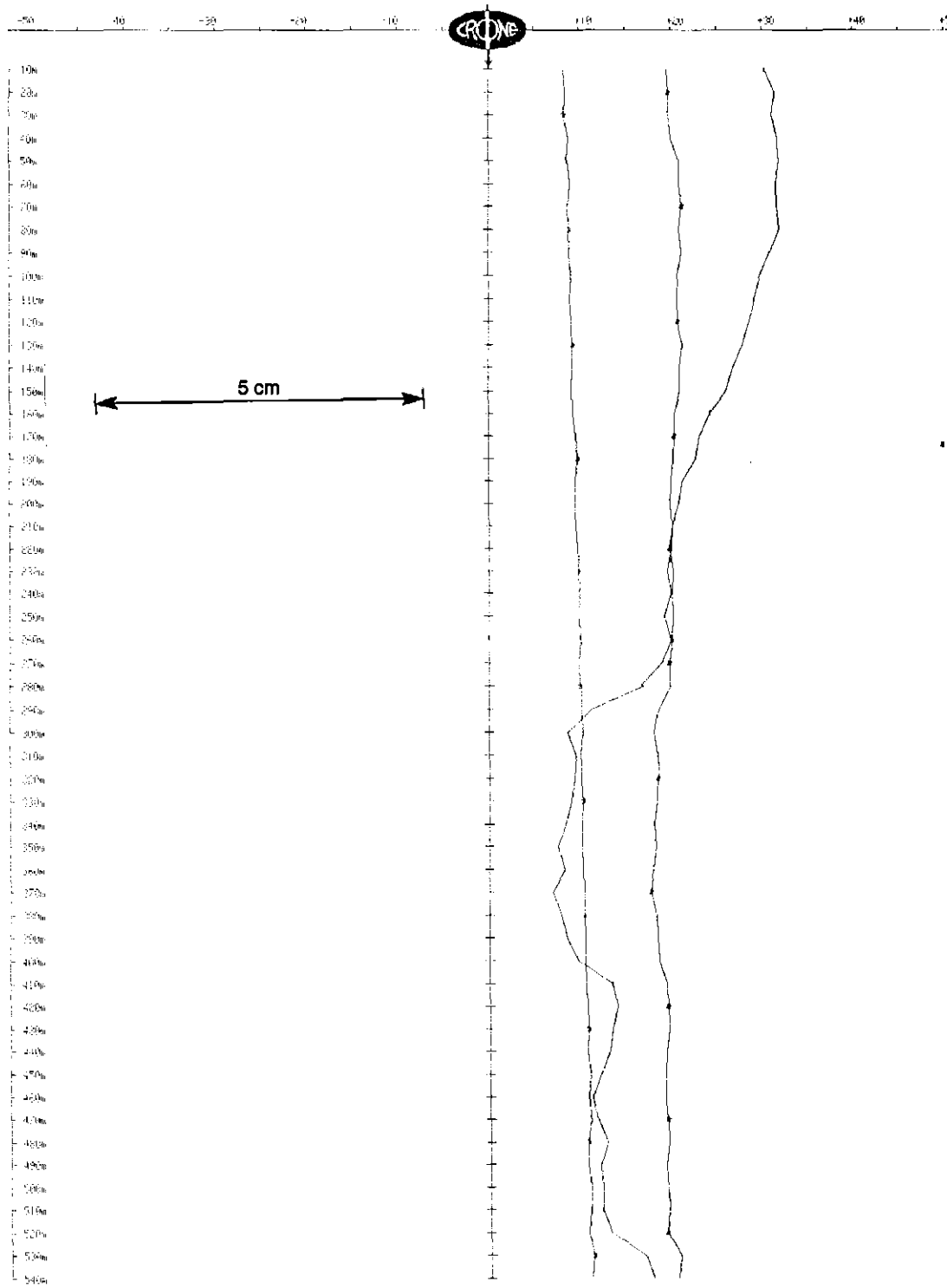
CRONE GEOPHYSICS & EXPLORATION LTD

BOREHOLE PEM

Client	: Pasminco Exploration	Hole	: BPD71
Grid	: Burns Peak	Tx Loop	: 23
Date	: Jan 20, 1992	File name	: bpd71123.new

Z COMPONENT dBz/dt nanoVolts/Amp-m² - 8 channels

Scale: 1:2000 Unit Scale: 1cm = 5



041159

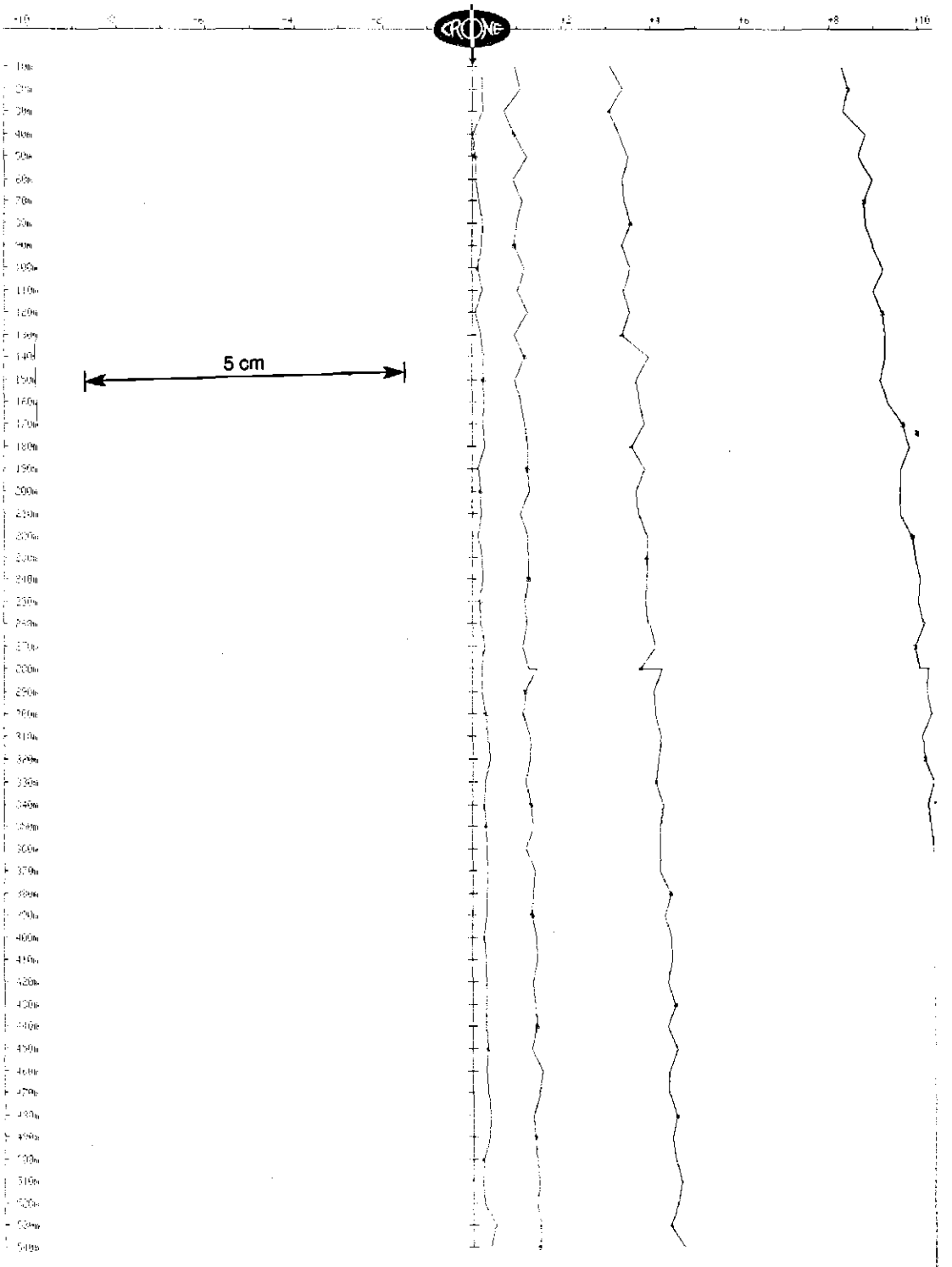
CRONE GEOPHYSICS & EXPLORATION LTD

BOREHOLE PEM

Client	: Pasminco Exploration	Hole	: BPD71
Grid	: Burns Peak	Tx Loop	: 23
Date	: Jan 20, 1992	File name	: bpd71123.new

Z COMPONENT dBz/dt nanoVolts/Amp-m² - 8 channels

Scale: 1:2000 Unit Scale: 1cm = 1



041160

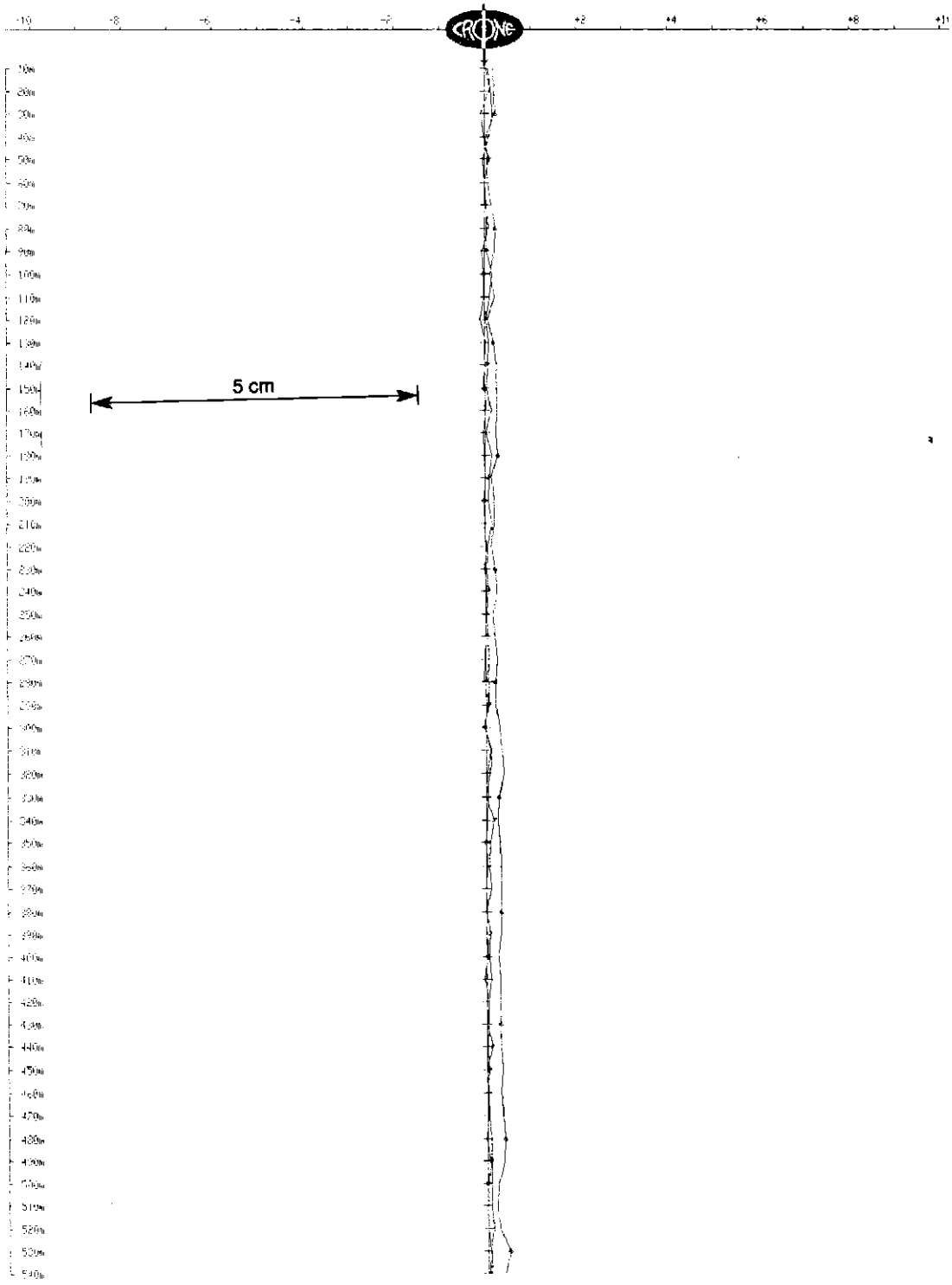
CRONE GEOPHYSICS & EXPLORATION LTD

BOREHOLE PEM

Client	: Pasminco Exploration	Hole	: BPD71
Grid	: Burns Peak	Tx Loop	: 23
Date	: Jan 20, 1992	File name	: bpd71123.new

Z COMPONENT dBz/dt nanoVolts/Amp-m⁴ - 8 channels

Scale: 1:2000 Unit Scale: 1cm = 1



CRONE GEOPHYSICS & EXPLORATION LTD
BOREHOLE PEM

041161

Client	: **Pasminco Exploration**	Hole	: **BPD72**
Grid	: **Burns Peak**	Tx Loop	: **21**
Date	: Jan 19, 1992	File name	: BPD72L21.NEW
Time Base	: 10.00 ms	# Readings	: 61
Ramp Time	: 0.50 ms	Stn Units	: Metric
# Channels	: 8	Coil Area	: 6500 sq m
Sync Type	: Crystal	Polarity	: -
Loop Size	: 300m X 300m	Receiver	: Digital #109
Current	: 5 Amps	Operator	: N.H.

Channel Times (usec)

Ch	Start	End	Center	Ch	Start	End	Center	Ch	Start	End	Center
PP	-198	-99	-149	1	76	131	104	2	131	225	178
3	225	378	302	4	378	639	508	5	639	1075	857
6	1075	1809	1442	7	1809	3046	2428	8	3046	5121	4084

041162

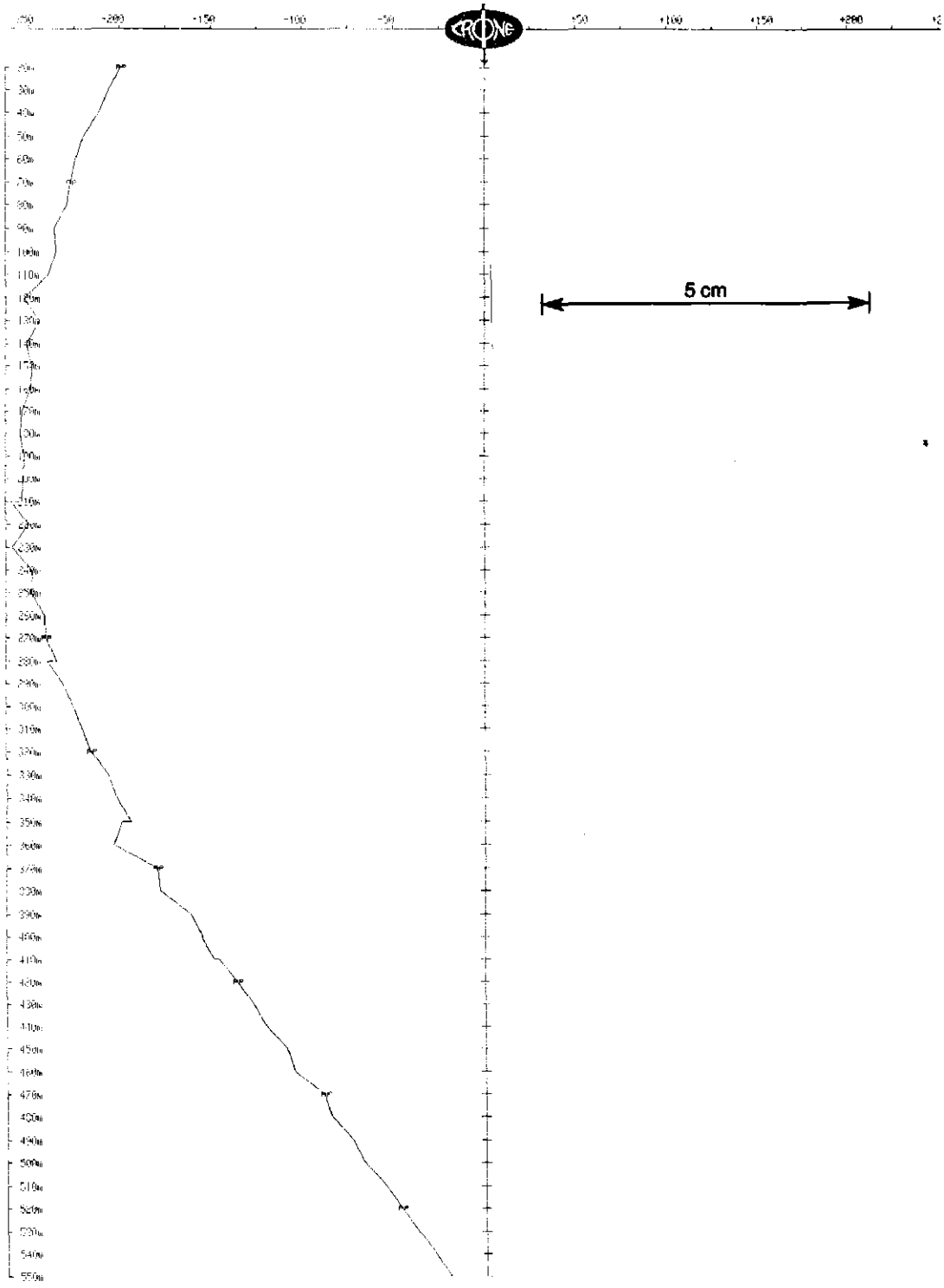
CRONE GEOPHYSICS & EXPLORATION LTD

BOREHOLE PEM

Client	: Pasminco Exploration	Hole	: BPD72
Grid	: Burns Peak	Tx Loop	: 21
Date	: Jan 19, 1992	File name	: bpd72121.new

Z COMPONENT dBz/dt nanoVolts/Amp-m² - 8 channels and PP

Scale: 1:2000 Unit Scale: 1cm = 25



041163

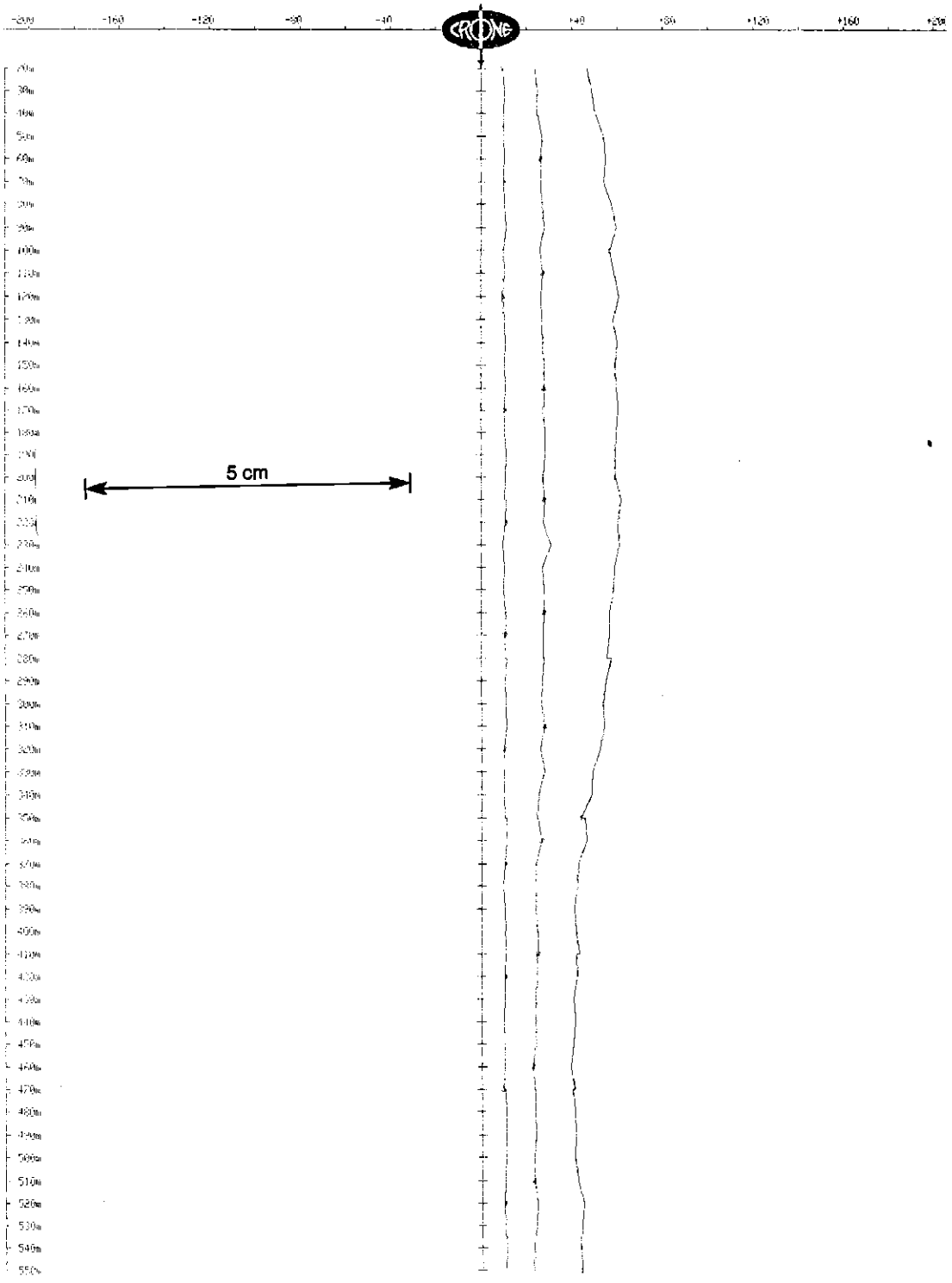
CRONE GEOPHYSICS & EXPLORATION LTD

BOREHOLE PEM

Client	: Pasminco Exploration	Hole	: BPD72
Grid	: Burns Peak	Tx Loop	: 21
Date	: Jan 19, 1992	File name	: BPD72L21.NEW

Z COMPONENT dBz/dt nanoVolts/Amp-m² - 8 channels

Scale: 1:2000 Unit Scale: 1cm = 20



041164

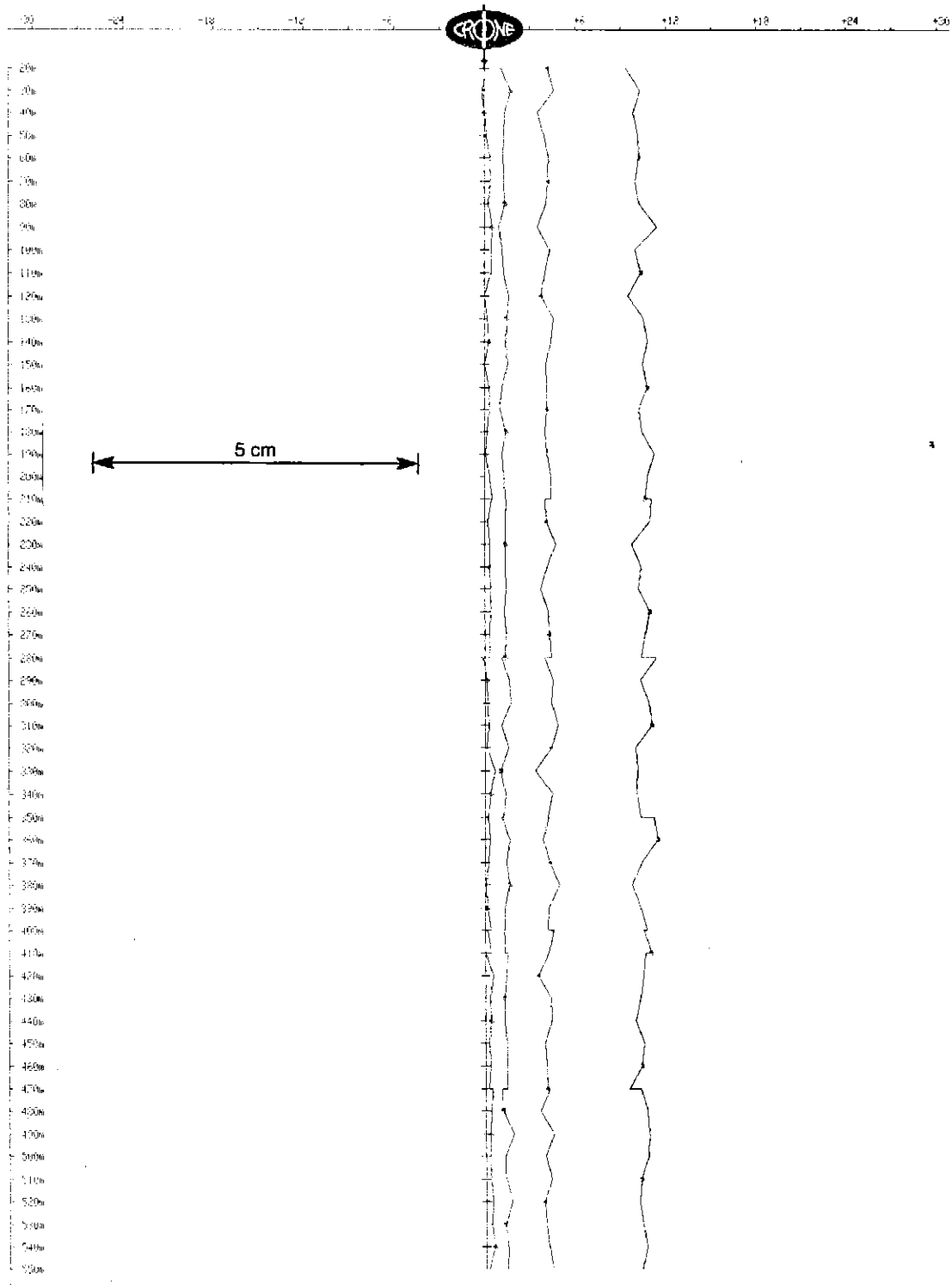
CRONE GEOPHYSICS & EXPLORATION LTD

BOREHOLE PEM

Client	: Pasminco Exploration	Hole	: BPD72
Grid	: Burns Peak	Tx Loop	: 21
Date	: Jan 19, 1992	File name	: BPD72L21.NEW

Z COMPONENT dBz/dt nanoVolts/Amp-m² - 8 channels

Scale: 1:2000 Unit Scale: 1cm = 3



041165

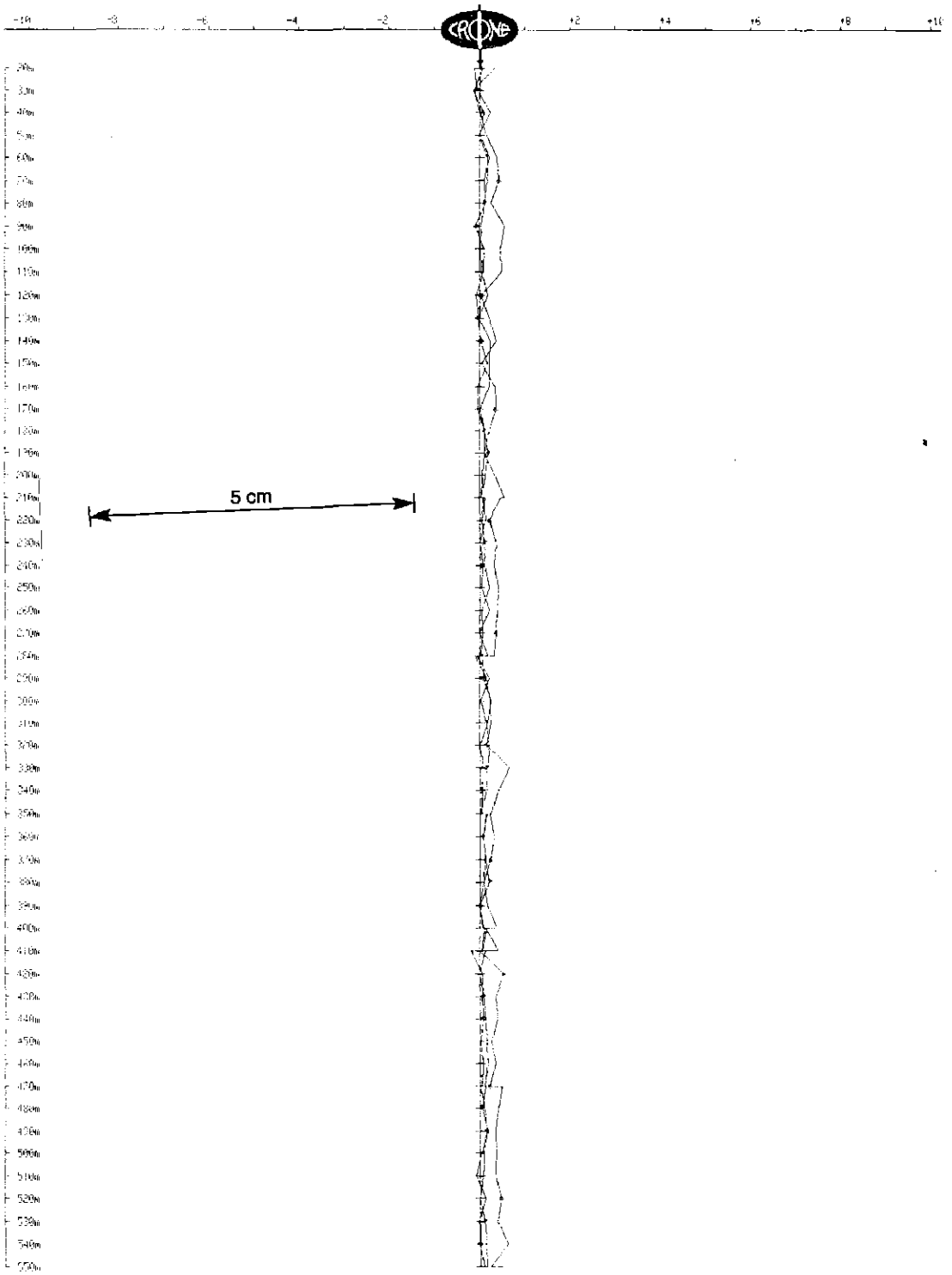
CRONE GEOPHYSICS & EXPLORATION LTD

BOREHOLE PEM

Client	: Pasminco Exploration	Hole	: BPD72
Grid	: Burns Peak	Tx Loop	: 21
Date	: Jan 19, 1992	File name	: BPD72L21.NEW

Z COMPONENT dBz/dt nanoVolts/Amp-m² - 8 channels

Scale: 1:2000 Unit Scale: 1cm = 1 .



CRONE GEOPHYSICS & EXPLORATION LTD
041166

BOREHOLE PEM

Client	: **Pasminco Exploration**	Hole	: **BPD72**
Grid	: **Burns Peak**	Tx Loop	: 22
Date	: Jan 19, 1992	File name	: BPD72L22.NEW
Time Base	: 10.00 ms	# Readings	: 57
Ramp Time	: 0.50 ms	Stn Units	: Metric
# Channels	: 8	Coil Area	: 6500 sq m
Sync Type	: Crystal	Polarity	: -
Loop Size	: 300m X 300m	Receiver	: Digital #109
Current	: 5 Amps	Operator	: N.H.

Channel Times (usec)

Ch	Start	End	Center	Ch	Start	End	Center	Ch	Start	End	Center
PP	-198	-99	-149	1	76	131	104	2	131	225	178
3	225	378	302	4	378	639	508	5	639	1075	857
6	1075	1809	1442	7	1809	3046	2428	8	3046	5121	4084

041167

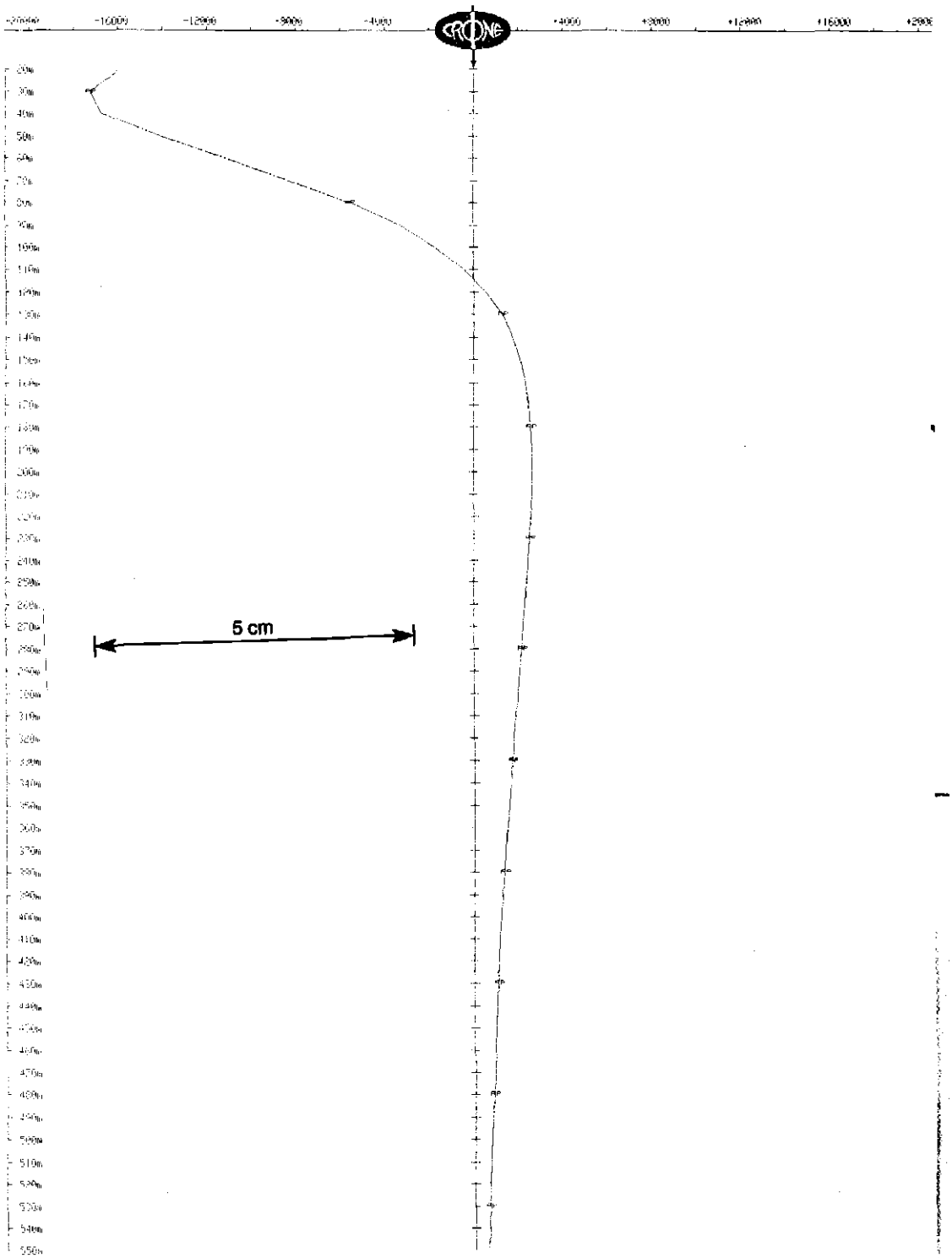
CRONE GEOPHYSICS & EXPLORATION LTD

BOREHOLE PEM

Client	: Pasminco Exploration	Hole	: BPD72
Grid	: Burns Peak	Tx Loop	: 22
Date	: Jan 19, 1992	File name	: bpd72122.new

Z COMPONENT dBz/dt nanoVolts/Amp-m² - 8 channels and PP

Scale: 1:2000 Unit Scale: 1cm = 2000



041168

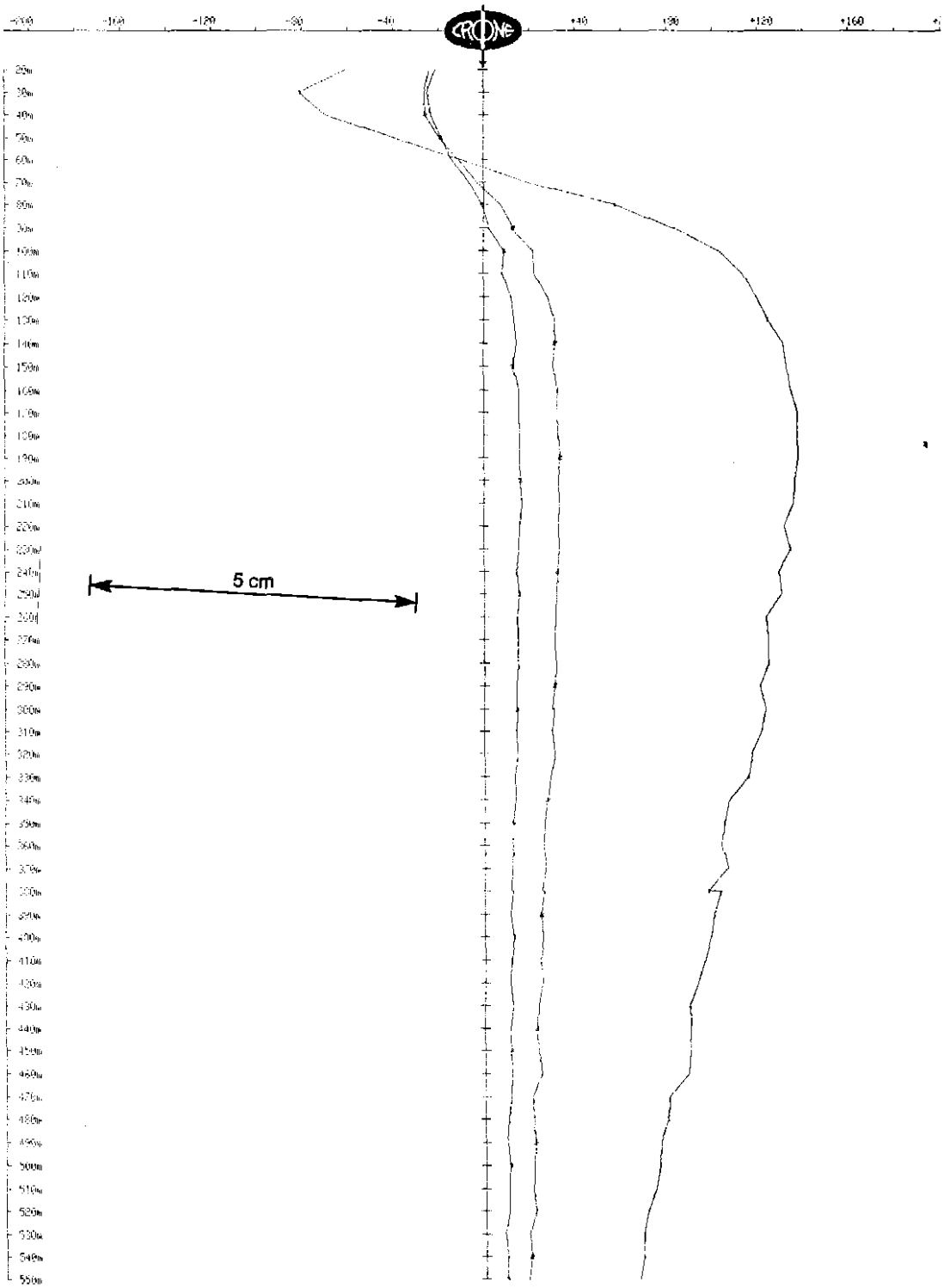
CRONE GEOPHYSICS & EXPLORATION LTD

BOREHOLE PEM

Client	: Pasminco Exploration	Hole	: BPD72
Grid	: Burns Peak	Tx Loop	: 22
Date	: Jan 19, 1992	File name	: BPD72L22.NEW

Z COMPONENT dBz/dt nanoVolts/Amp-m² - 8 channels

Scale: 1:2000 Unit Scale: 1cm = 20



041169

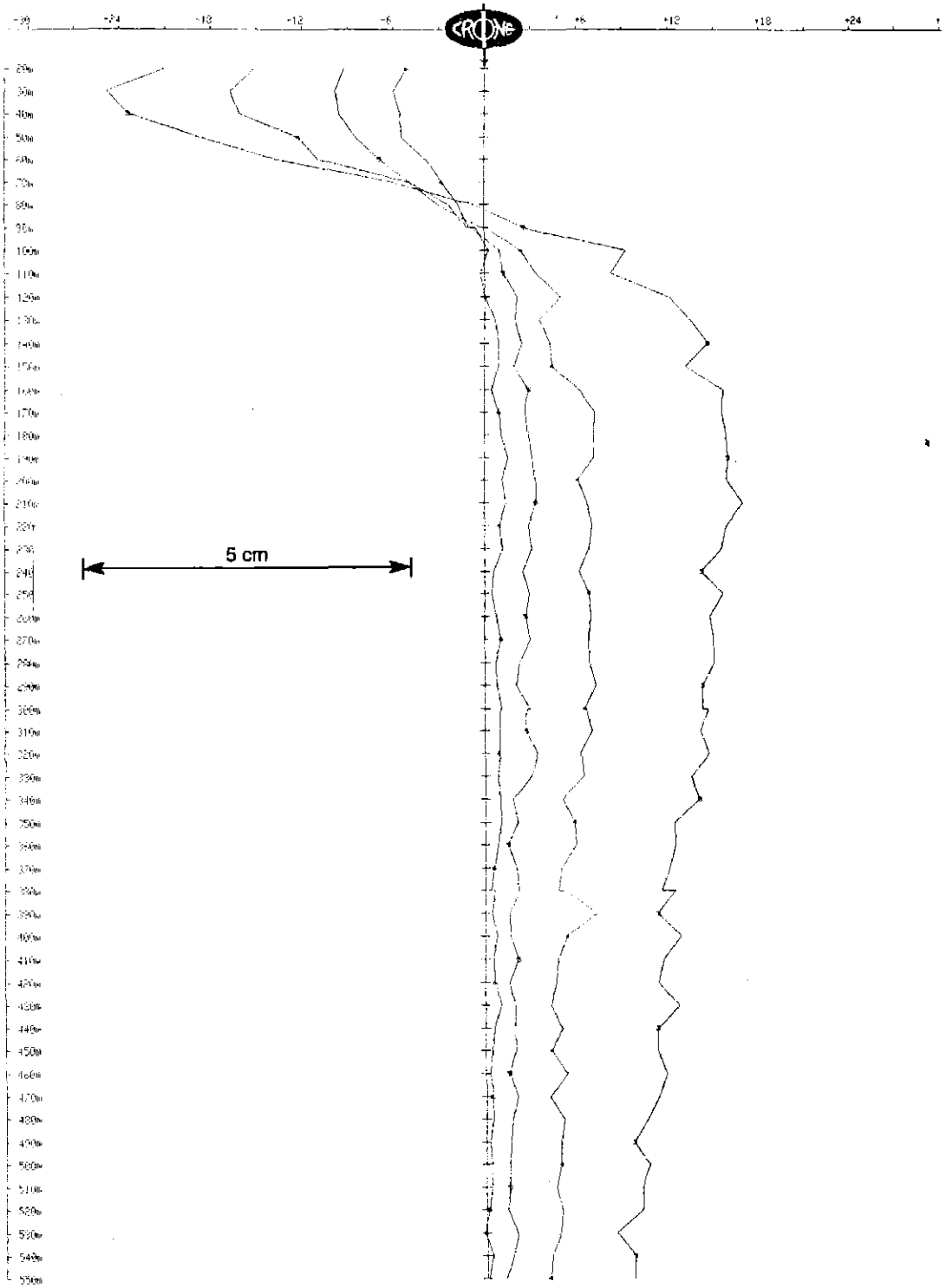
CRONE GEOPHYSICS & EXPLORATION LTD

BOREHOLE PEM

Client	: Pasminco Exploration	Hole	: BPD72
Grid	: Burns Peak	Tx Loop	: 22
Date	: Jan 19, 1992	File name	: BPD72L22.NEW

Z COMPONENT dBz/dt nanoVolts/Amp-m² - 8 channels

Scale: 1:2000 Unit Scale: 1cm = 3



041170

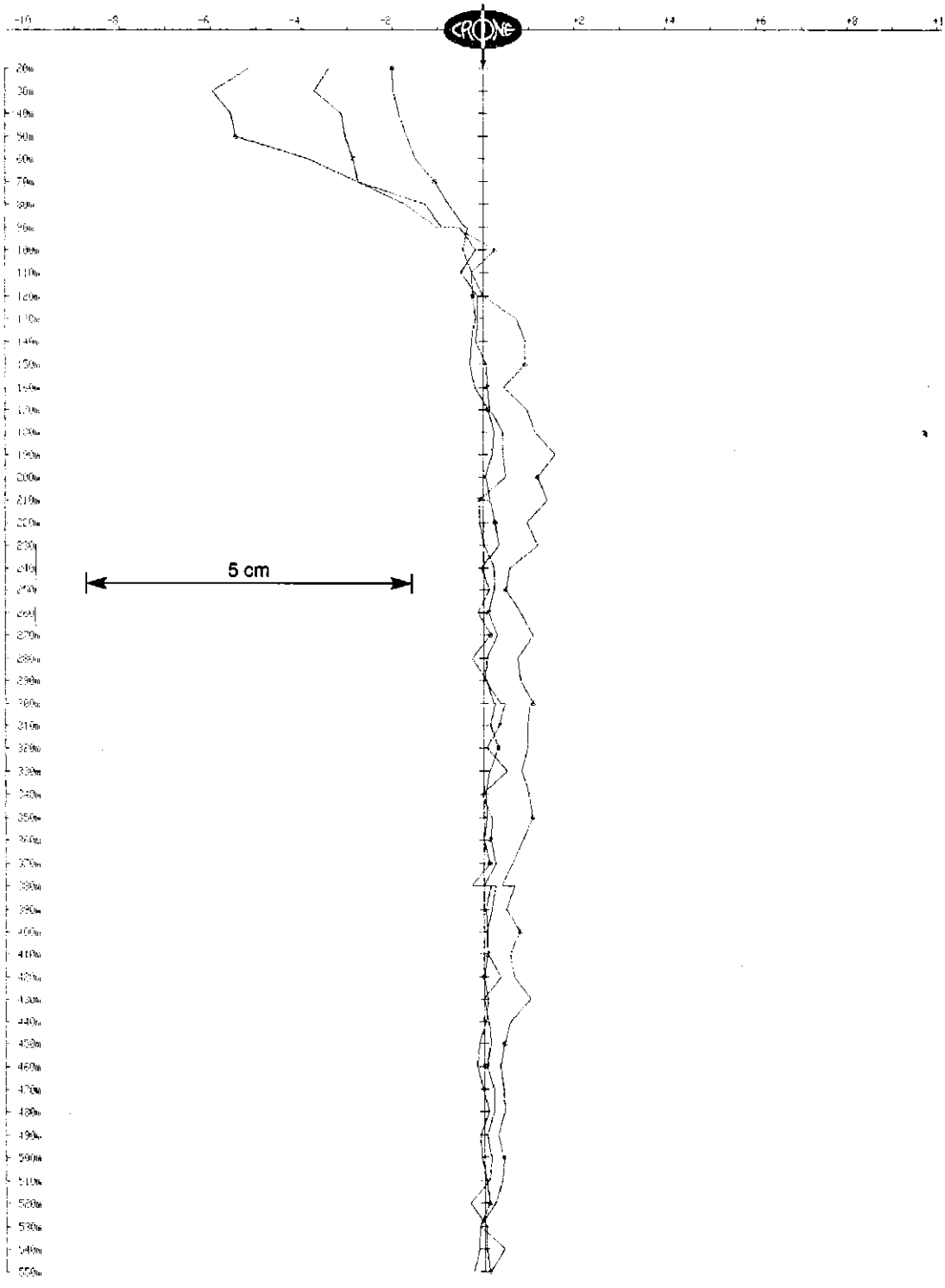
CRONE GEOPHYSICS & EXPLORATION LTD

BOREHOLE PEM

Client	: Pasminco Exploration	Hole	: BPD72
Grid	: Burns Peak	Tx Loop	: 22
Date	: Jan 19, 1992	File name	: BPD72L22.NEW

Z COMPONENT dBz/dt nanoVolts/Amp-m² - 8 channels

Scale: 1:2000 Unit Scale: 1cm = 1



CRONE GEOPHYSICS & EXPLORATION LTD

041171

BOREHOLE PEM

Client	: **Pasminco Exploration**	Hole	: BPD72
Grid	: **Burns Peak**	Tx Loop	: 23
Date	: Jan 19, 1992	File name	: BPD72L23.NEW
Time Base	: 10.00 ms	# Readings	: 61
Ramp Time	: 0.50 ms	Stn Units	: Metric
# Channels	: 8	Coil Area	: 6500 sq m
Sync Type	: Crystal	Polarity	: -
Loop Size	: 300m X 300m	Receiver	: Digital #109
Current	: 5 Amps	Operator	: N.H.

Channel Times (usec)

Ch	Start	End	Center	Ch	Start	End	Center	Ch	Start	End	Center
PP	-198	-99	-149	1	76	131	104	2	131	225	178
3	225	378	302	4	378	639	508	5	639	1075	857
6	1075	1809	1442	7	1809	3046	2428	8	3046	5121	4084

041172

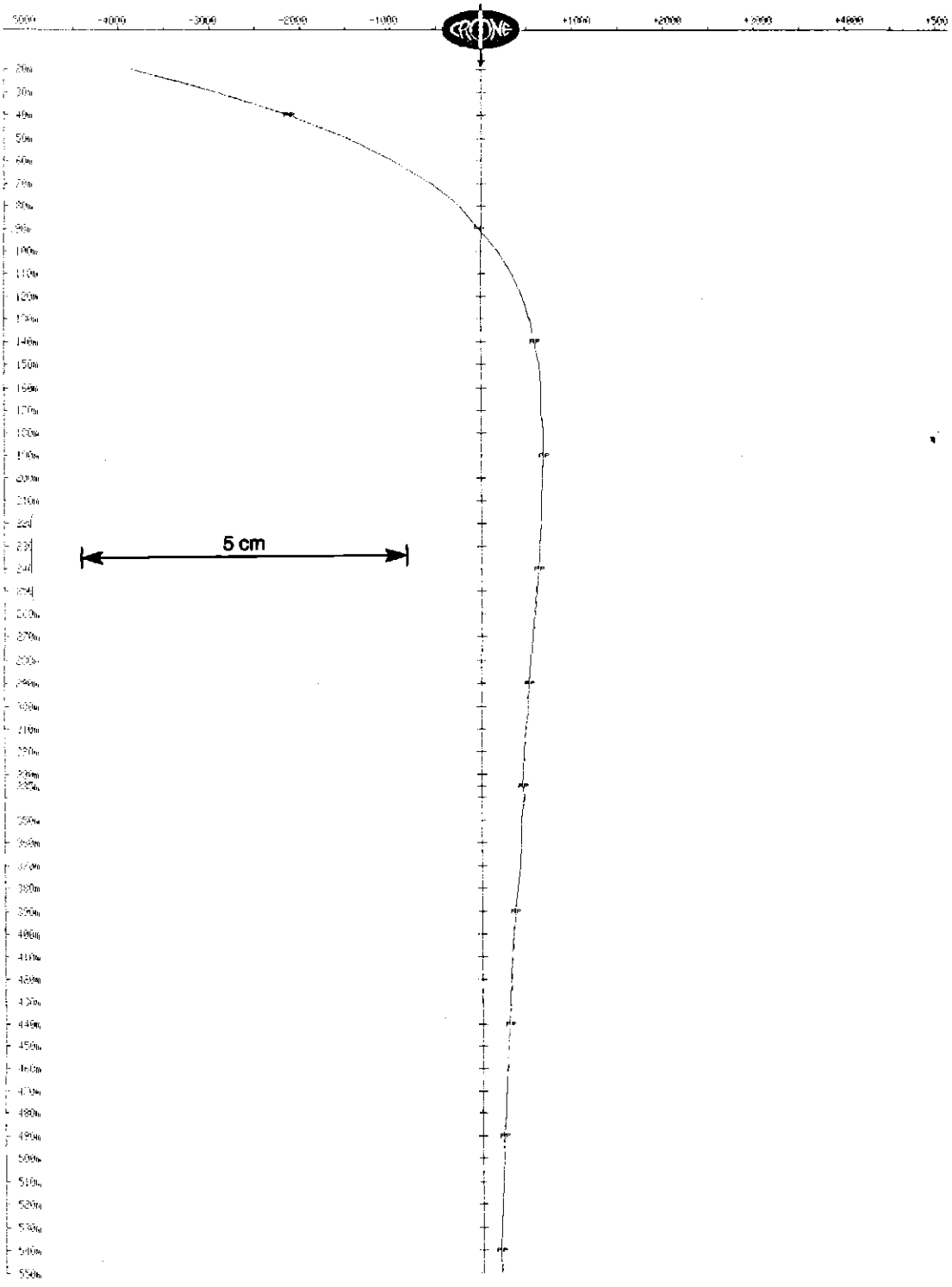
CRONE GEOPHYSICS & EXPLORATION LTD

BOREHOLE PEM

Client	: Pasminco Exploration	Hole	: BPD72
Grid	: Burns Peak	Tx Loop	: 23
Date	: Jan 19, 1992	File name	: bpd72123.new

Z COMPONENT dBz/dt nanoVolts/Amp-m² - 8 channels and PP

Scale: 1:2000 Unit Scale: 1cm = 500



041173

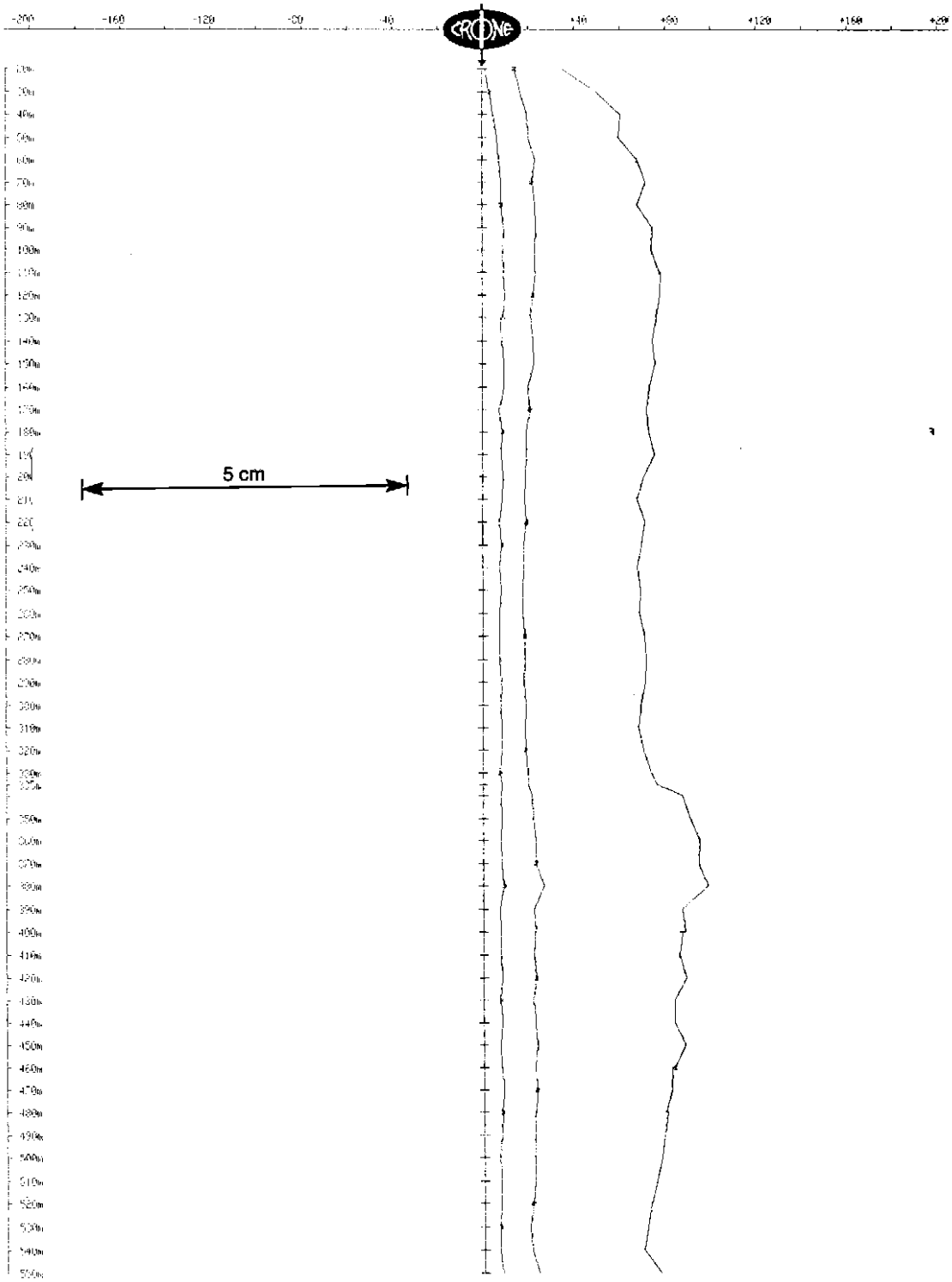
CRONE GEOPHYSICS & EXPLORATION LTD

BOREHOLE PEM

Client	: Pasminco Exploration	Hole	: BPD72
Grid	: Burns Peak	Tx Loop	: 23
Date	: Jan 19, 1992	File name	: BPD72L23.NEW

Z COMPONENT dBz/dt nanoVolts/Amp-m² - 8 channels

Scale: 1:2000 Unit Scale: 1cm = 20



041174

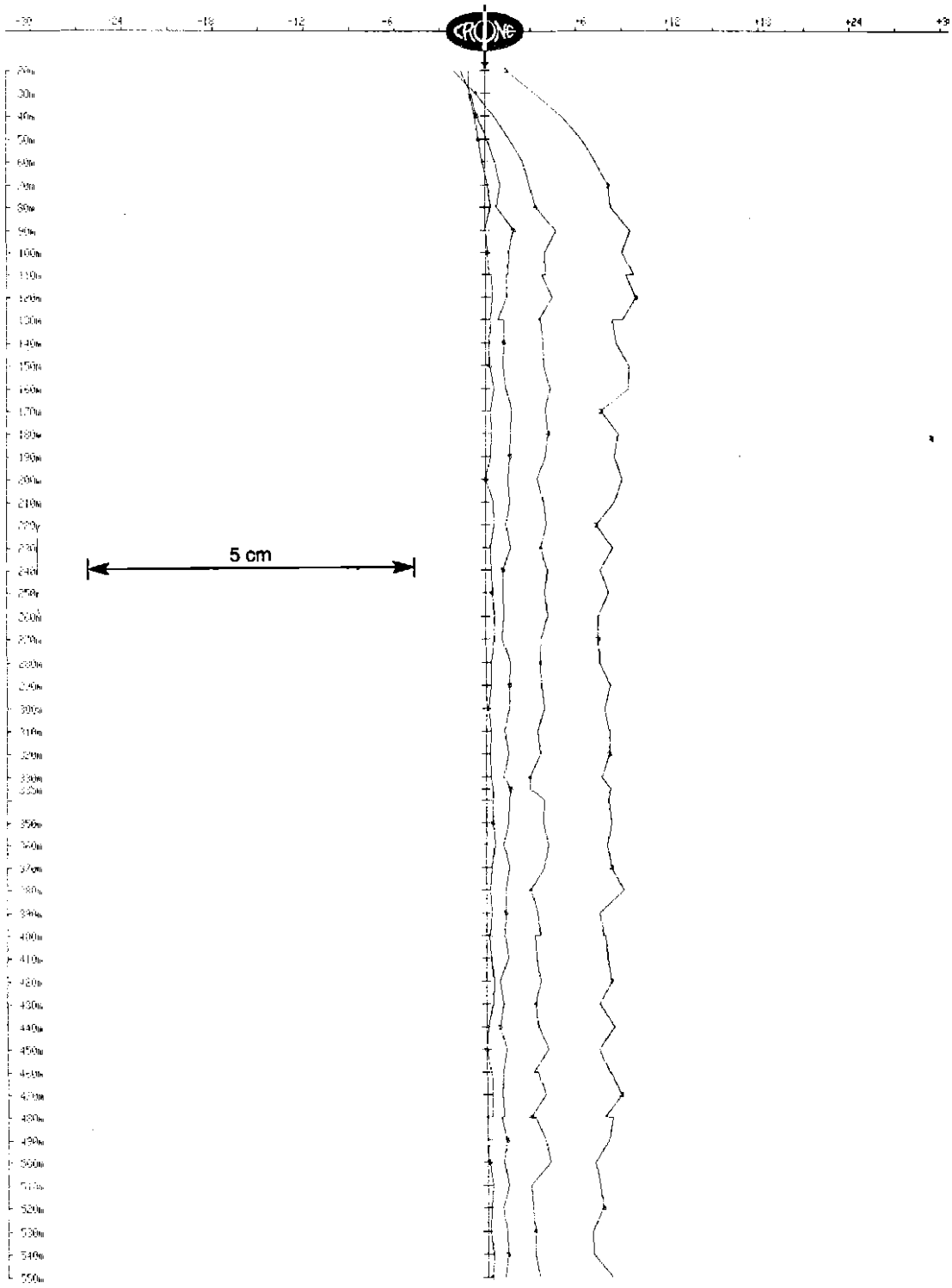
CRONE GEOPHYSICS & EXPLORATION LTD

BOREHOLE PEM

Client	: Pasminco Exploration	Hole	: BPD72
Grid	: Burns Peak	Tx Loop	: 23
Date	: Jan 19, 1992	File name	: BPD72L23.NEW

Z COMPONENT dBz/dt nanoVolts/Amp-m² - 8 channels

Scale: 1:2000 Unit Scale: 1cm = 3



041175

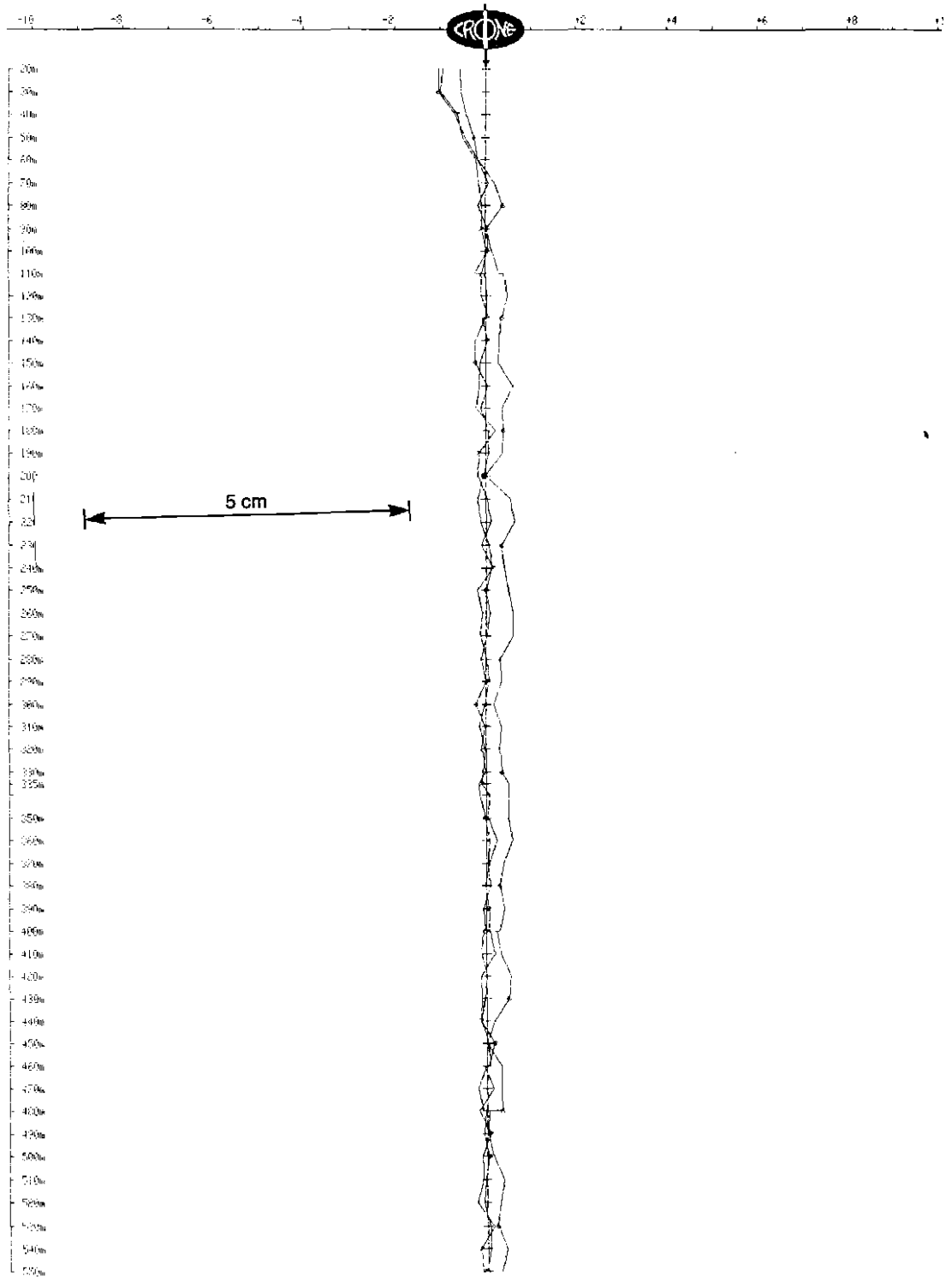
CRONE GEOPHYSICS & EXPLORATION LTD

BOREHOLE PEM

Client	: Pasminco Exploration	Hole	: BPD72
Grid	: Burns Peak	Tx Loop	: 23
Date	: Jan 19, 1992	File name	: BPD72L23.NEW

Z COMPONENT dBz/dt nanoVolts/Amp-m² - 8 channels

Scale: 1:2000 Unit Scale: 1cm = 1



CRONE GEOPHYSICS & EXPLORATION LTD

041176

BOREHOLE PEM

Client	: **Pasminco Exploration**	Hole	: **BPD73**
Grid	: **Burns Peak**	Tx Loop	: **73-1**
Date	: Jan 30, 1992	File name	: bpd7311.new
Time Base	: 10.00 ms	# Readings	: 41
Ramp Time	: 0.50 ms	Stn Units	: Metric
# Channels	: 8	Coil Area	: 6500 sq m
Sync Type	: Crystal	Polarity	: +
Loop Size	: 200m X 200m	Receiver	: Digital #109
Current	: 2.5 Amps	Operator	: N.H.

Channel Times (usec)

Ch	Start	End	Center	Ch	Start	End	Center	Ch	Start	End	Center
PP	-198	-99	-149	1	76	131	104	2	131	225	178
3	225	378	302	4	378	639	508	5	639	1075	857
6	1075	1809	1442	7	1809	3046	2428	8	3046	5121	4084

CRONE GEOPHYSICS & EXPLORATION LTD

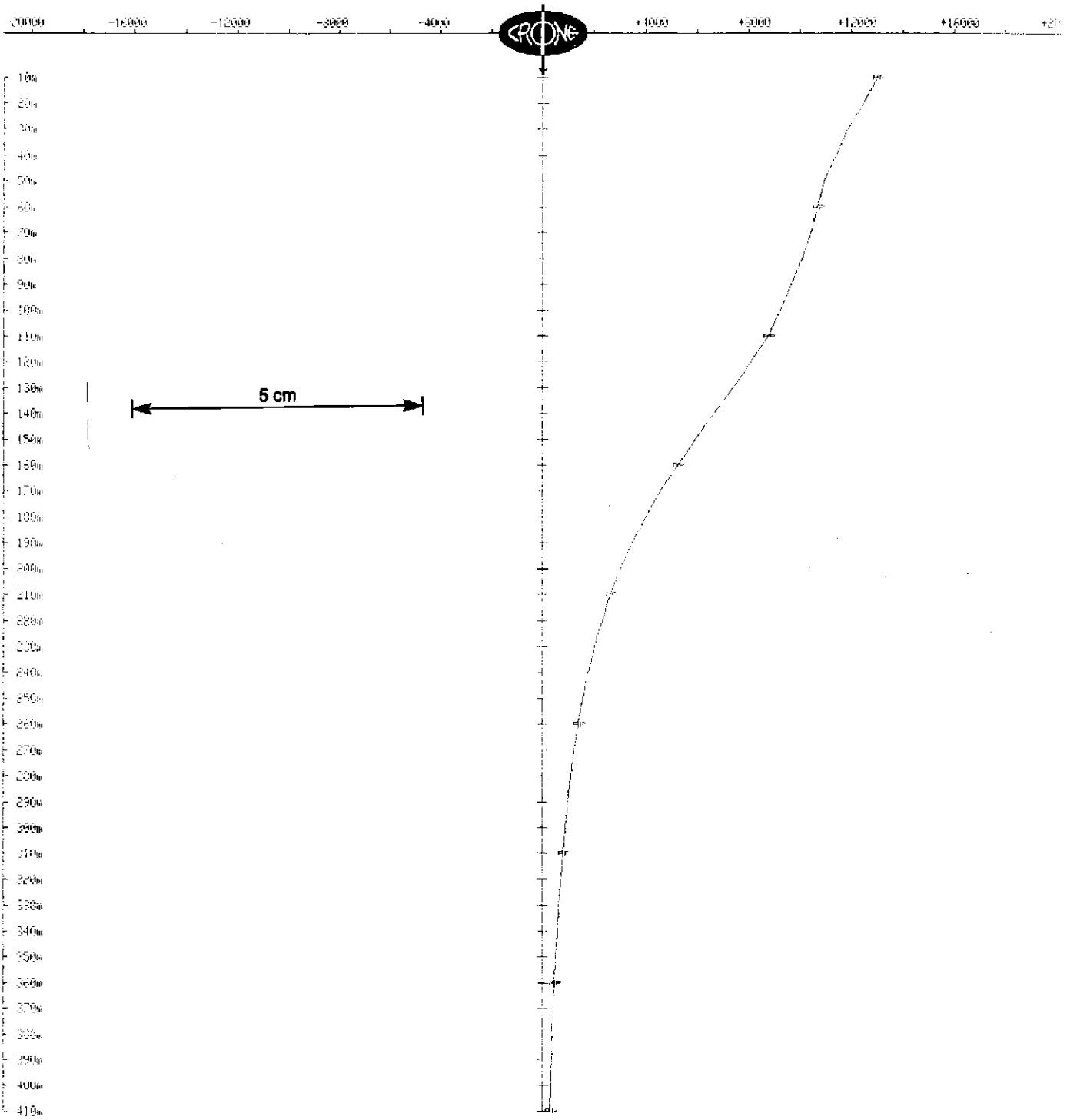
BOREHOLE PEM

041177

Client	: Pasminco Exploration	Hole	: BPD73
Grid	: Burns Peak	Tx Loop	: 73-1
Date	: Jan 30, 1992	File name	: bpd7311.new

Z COMPONENT dBz/dt nanoVolts/Amp-m² - 8 channels and PP

Scale: 1:2000 Unit Scale: 1cm = 2000



CRONE GEOPHYSICS & EXPLORATION LTD

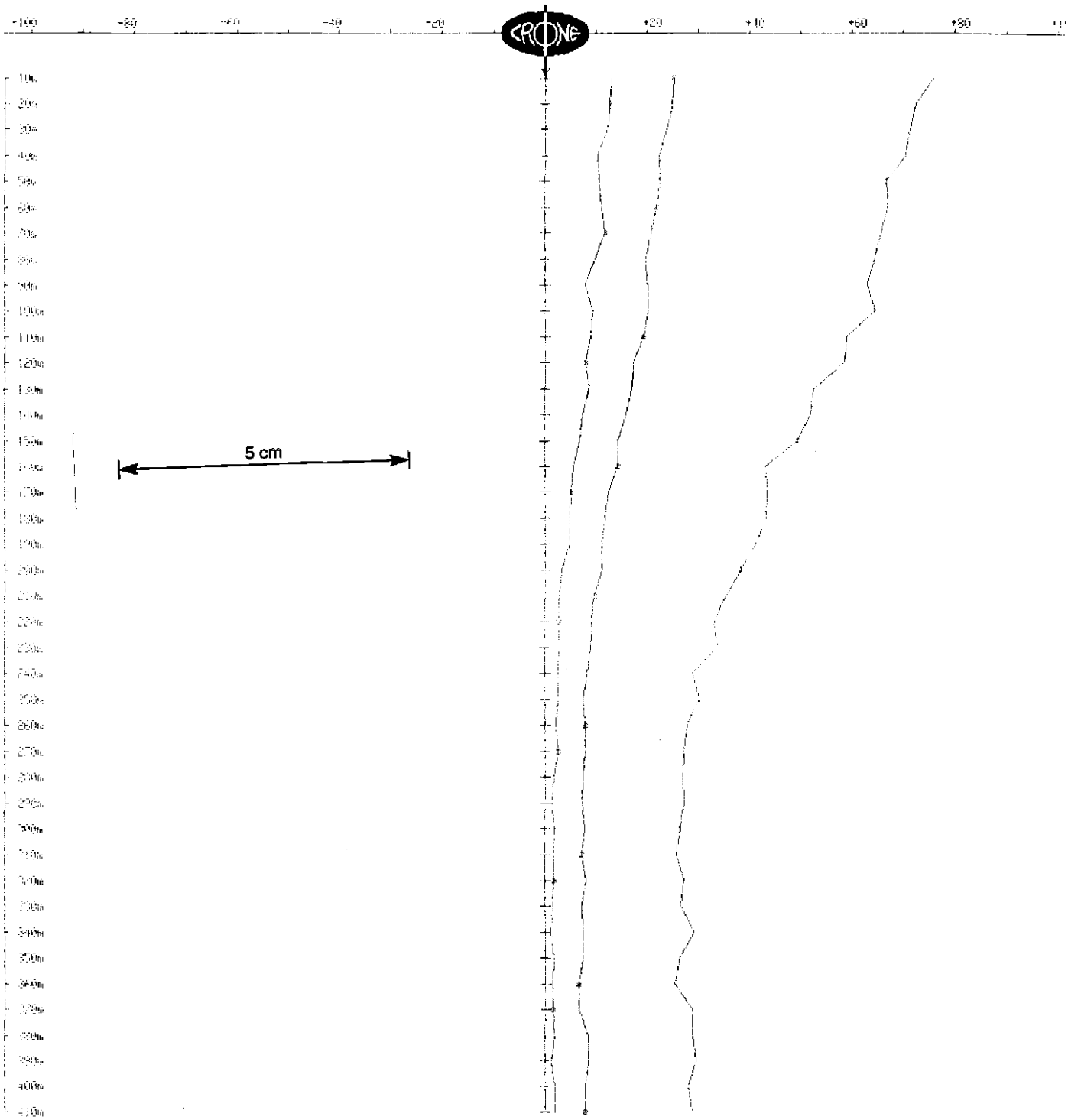
041178

BOREHOLE PEM

Client	: Pasminco Exploration	Hole	: BPD73
Grid	: Burns Peak	Tx Loop	: 73-1
Date	: Jan 30, 1992	File name	: bpd7311.new

Z COMPONENT dBz/dt nanoVolts/Amp-m² - 8 channels

Scale: 1:2000 Unit Scale: 1cm = 10



041179

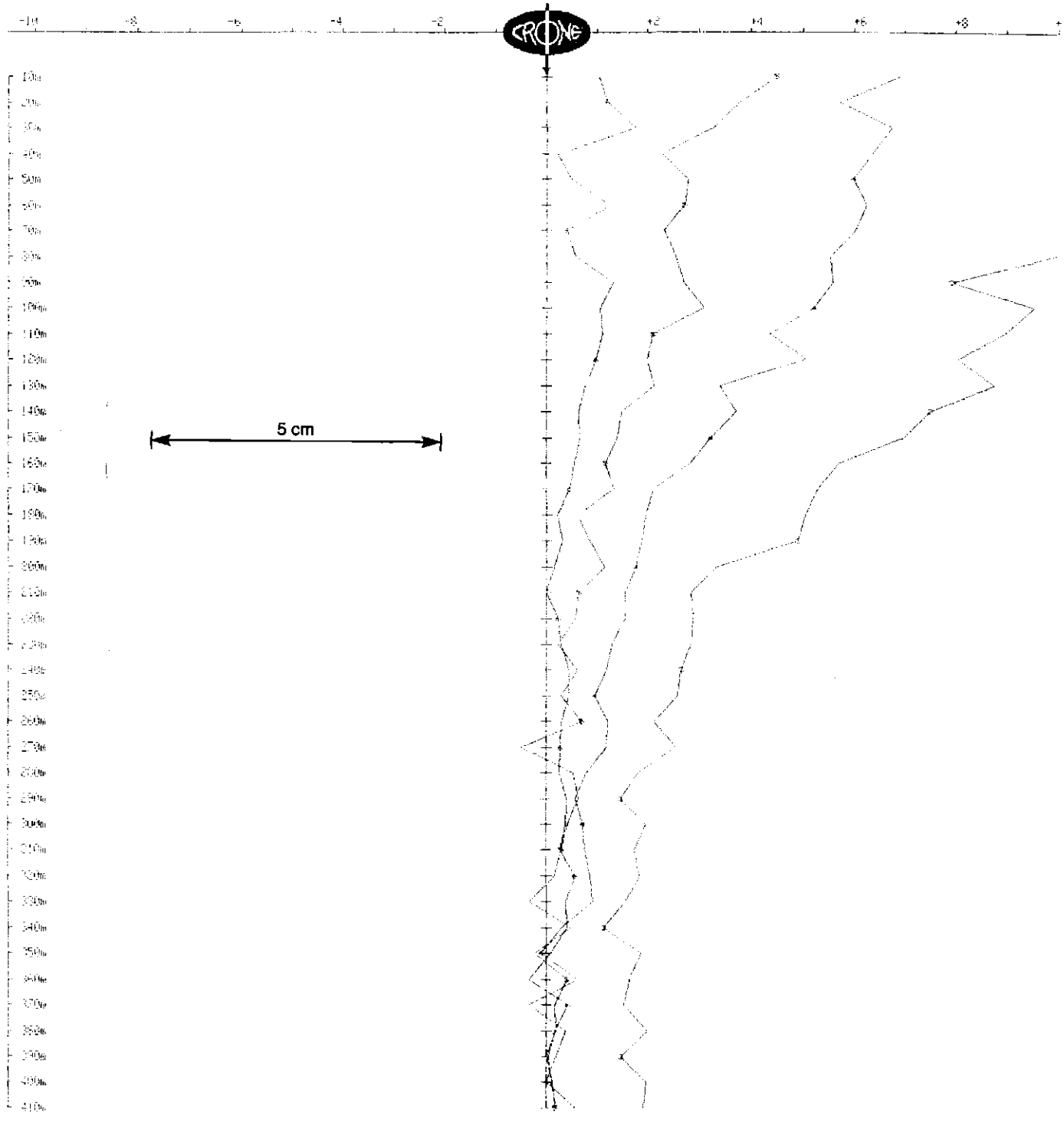
CRONE GEOPHYSICS & EXPLORATION LTD

BOREHOLE PEM

Client	: Pasminco Exploration	Hole	: BPD73
Grid	: Burns Peak	Tx Loop	: 73-1
Date	: Jan 30, 1992	File name	: bpd7311.new

Z COMPONENT dBz/dt nanoVolts/Amp-m² - 8 channels

Scale: 1:2000 Unit Scale: 1cm = 1



041180

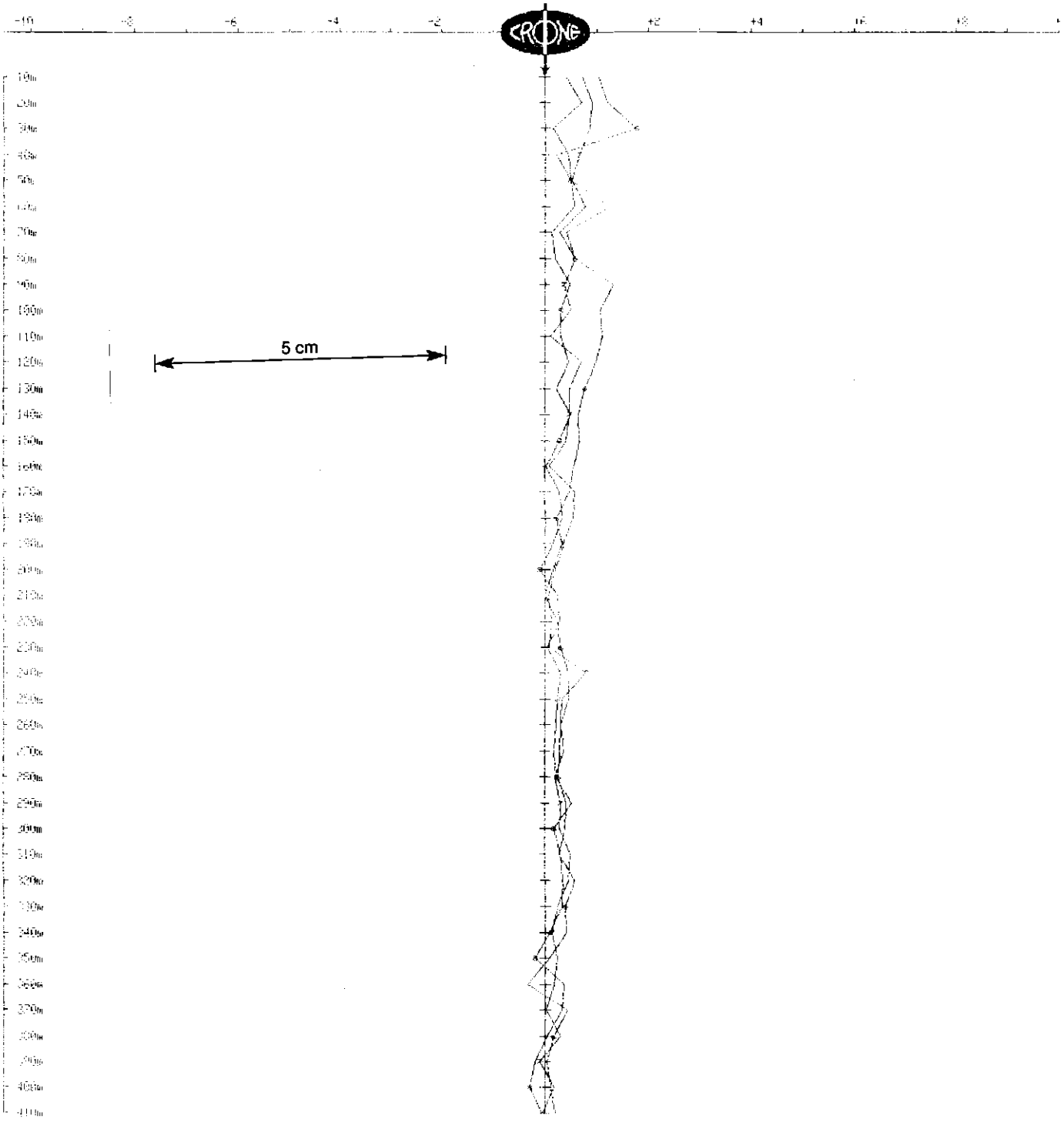
CRONE GEOPHYSICS & EXPLORATION LTD

BOREHOLE PEM

Client	: Pasminco Exploration	Hole	: BPD73
Grid	: Burns Peak	Tx Loop	: 73-1
Date	: Jan 30, 1992	File name	: bpd7311.new

Z COMPONENT dBz/dt nanoVolts/Amp-m² - 8 channels

Scale: 1:2000 Unit Scale: 1cm = 1



CRONE GEOPHYSICS & EXPLORATION LTD

041181

BOREHOLE PEM

Client	: **Pasminco Exploration**	Hole	: **BPD73**
Grid	: **Burns Peak**	Tx Loop	: 73-2
Date	: Jan 30, 1992	File name	: bpd7312.new
Time Base	: 10.00 ms	# Readings	: 39
Ramp Time	: 0.50 ms	Stn Units	: Metric
# Channels	: 8	Coil Area	: 6500 sq m
Sync Type	: Crystal	Polarity	: +
Loop Size	: 200m X 200m	Receiver	: Digital #109
Current	: 2.5 Amps	Operator	: N.H.

Channel Times (usec)

Ch	Start	End	Center	Ch	Start	End	Center	Ch	Start	End	Center
PP	-198	-99	-149	1	76	131	104	2	131	225	178
3	225	378	302	4	378	639	508	5	639	1075	857
6	1075	1809	1442	7	1809	3046	2428	8	3046	5121	4084

041182

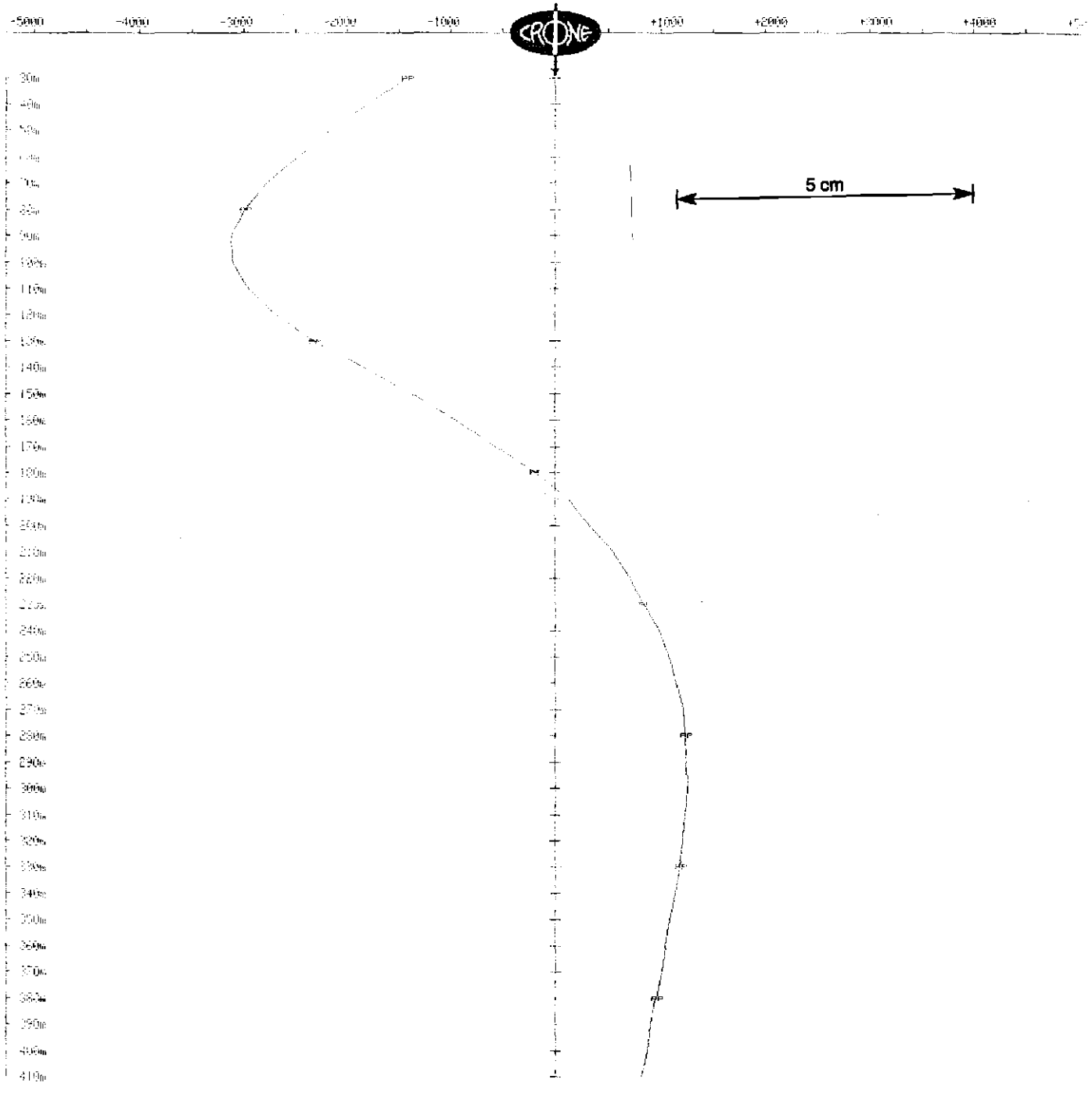
CRONE GEOPHYSICS & EXPLORATION LTD

BOREHOLE PEM

Client	: Pasminco Exploration	Hole	: BPD73
Grid	: Burns Peak	Tx Loop	: 73-2
Date	: Jan 30, 1992	File name	: bpd7312.new

Z COMPONENT dBz/dt nanoVolts/Amp-m² - 8 channels and PP

Scale: 1:2000 Unit Scale: 1cm = 500



041183

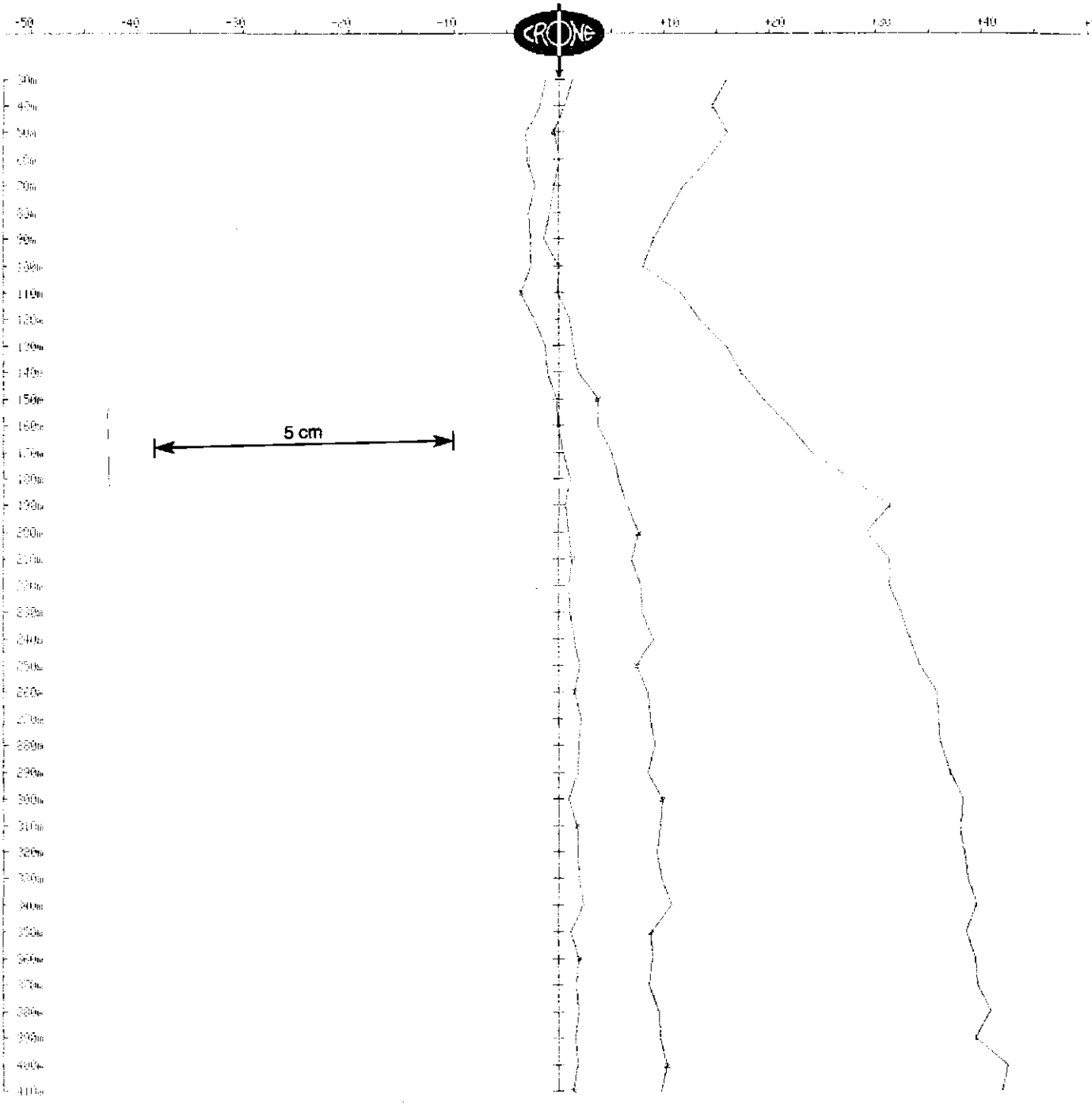
CRONE GEOPHYSICS & EXPLORATION LTD

BOREHOLE PEM

Client	: Pasminco Exploration	Hole	: BPD73
Grid	: Burns Peak	Tx Loop	: 73-2
Date	: Jan 30, 1992	File name	: bpd7312.new

Z COMPONENT dBz/dt nanoVolts/Amp-m² - 8 channels

Scale: 1:2000 Unit Scale: 1cm = 5



CRONE GEOPHYSICS & EXPLORATION LTD

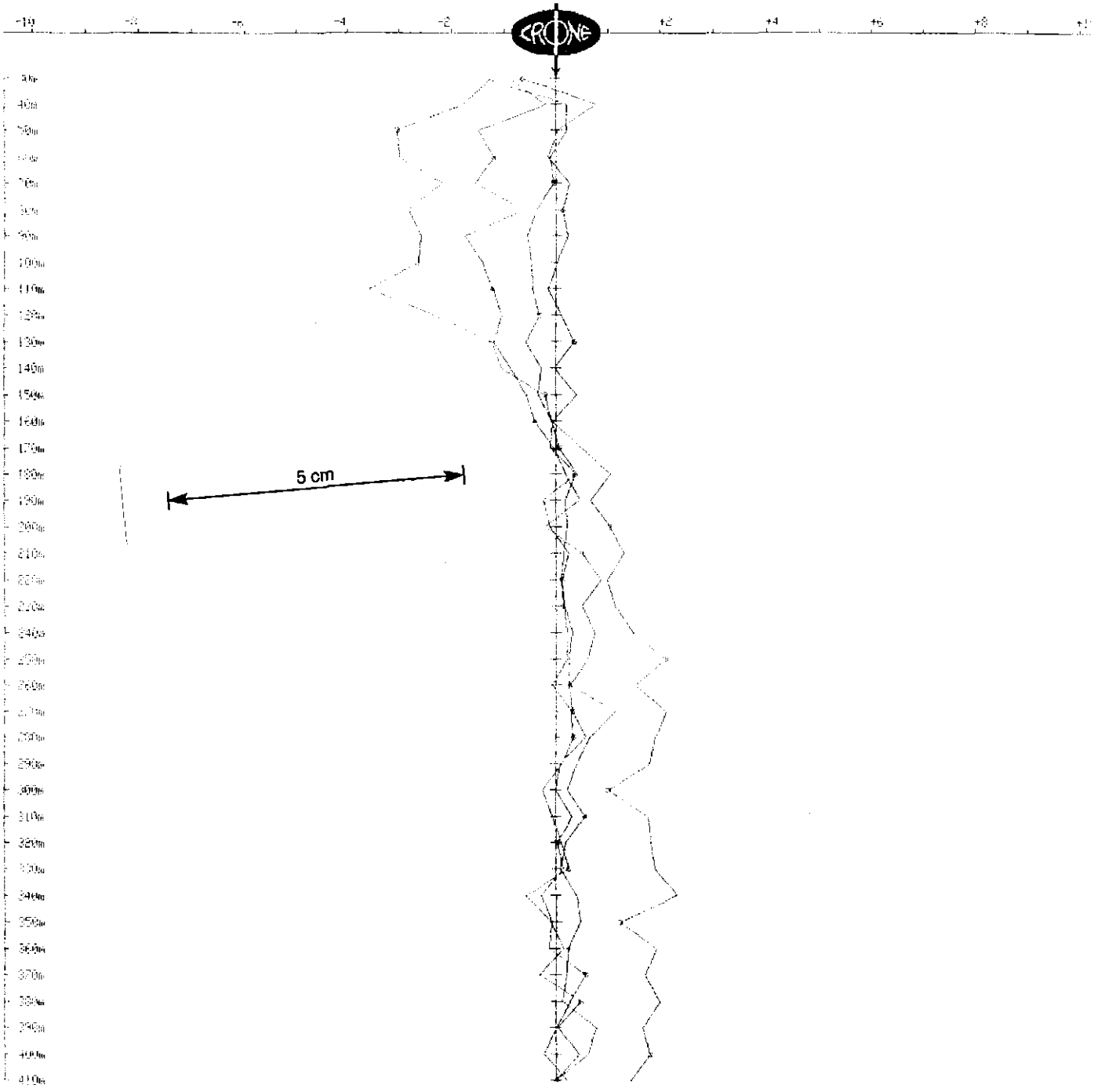
BOREHOLE PEM

041184

Client	: Pasminco Exploration	Hole	: BPD73
Grid	: Burns Peak	Tx Loop	: 73-2
Date	: Jan 30, 1992	File name	: bpd7312.new

Z COMPONENT dBz/dt nanoVolts/Amp-m² - 8 channels

Scale: 1:2000 Unit Scale: 1cm = 1



CRONE GEOPHYSICS & EXPLORATION LTD

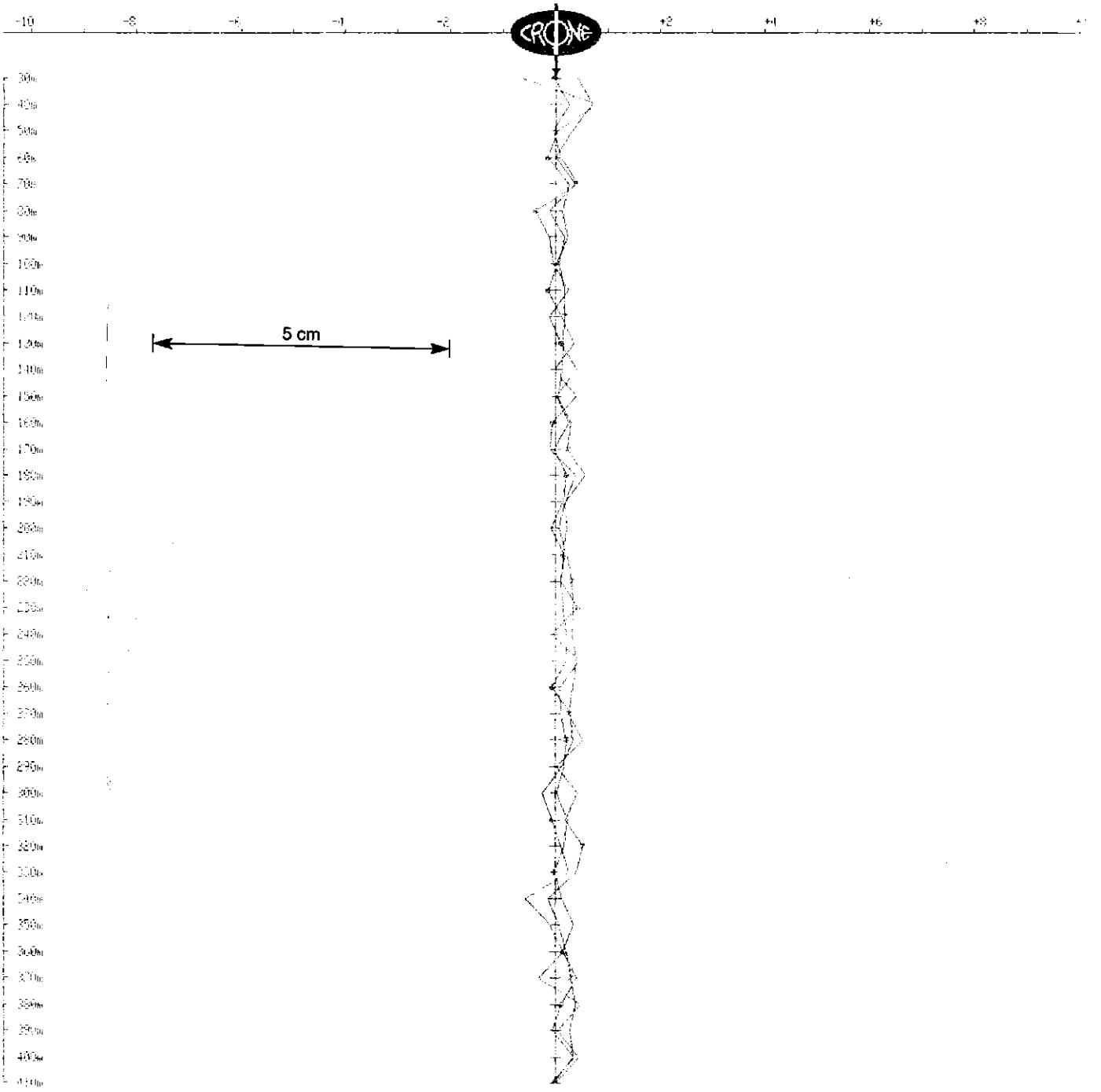
BOREHOLE PEM

041185

Client	: Pasminco Exploration	Hole	: BPD73
Grid	: Burns Peak	Tx Loop	: 73-2
Date	: Jan 30, 1992	File name	: bpd7312.new

Z COMPONENT dBz/dt nanoVolts/Amp-m² - 8 channels

Scale: 1:2000 Unit Scale: 1cm = 1



CRONE GEOPHYSICS & EXPLORATION LTD

041186

BOREHOLE PEM

Client	: **Pasminco Exploration**	Hole	: **BPD74**
Grid	: **Burns Peak**	Tx Loop	: **74-1**
Date	: Jan 20, 1992	File name	: bpd7411.new
Time Base	: 10.00 ms	# Readings	: 35
Ramp Time	: 0.50 ms	Stn Units	: Metric
# Channels	: 8	Coil Area	: 6500 sq m
Sync Type	: Cable	Polarity	: -
Loop Size	: 400m X 300m	Receiver	: Digital #120
Current	: 2 Amps	Operator	: N.H.

Channel Times (usec)

Ch	Start	End	Center	Ch	Start	End	Center	Ch	Start	End	Center
PP	-198	-99	-149	1	76	131	104	2	131	225	178
3	225	378	302	4	378	639	508	5	639	1075	857
6	1075	1809	1442	7	1809	3046	2428	8	3046	5121	4084

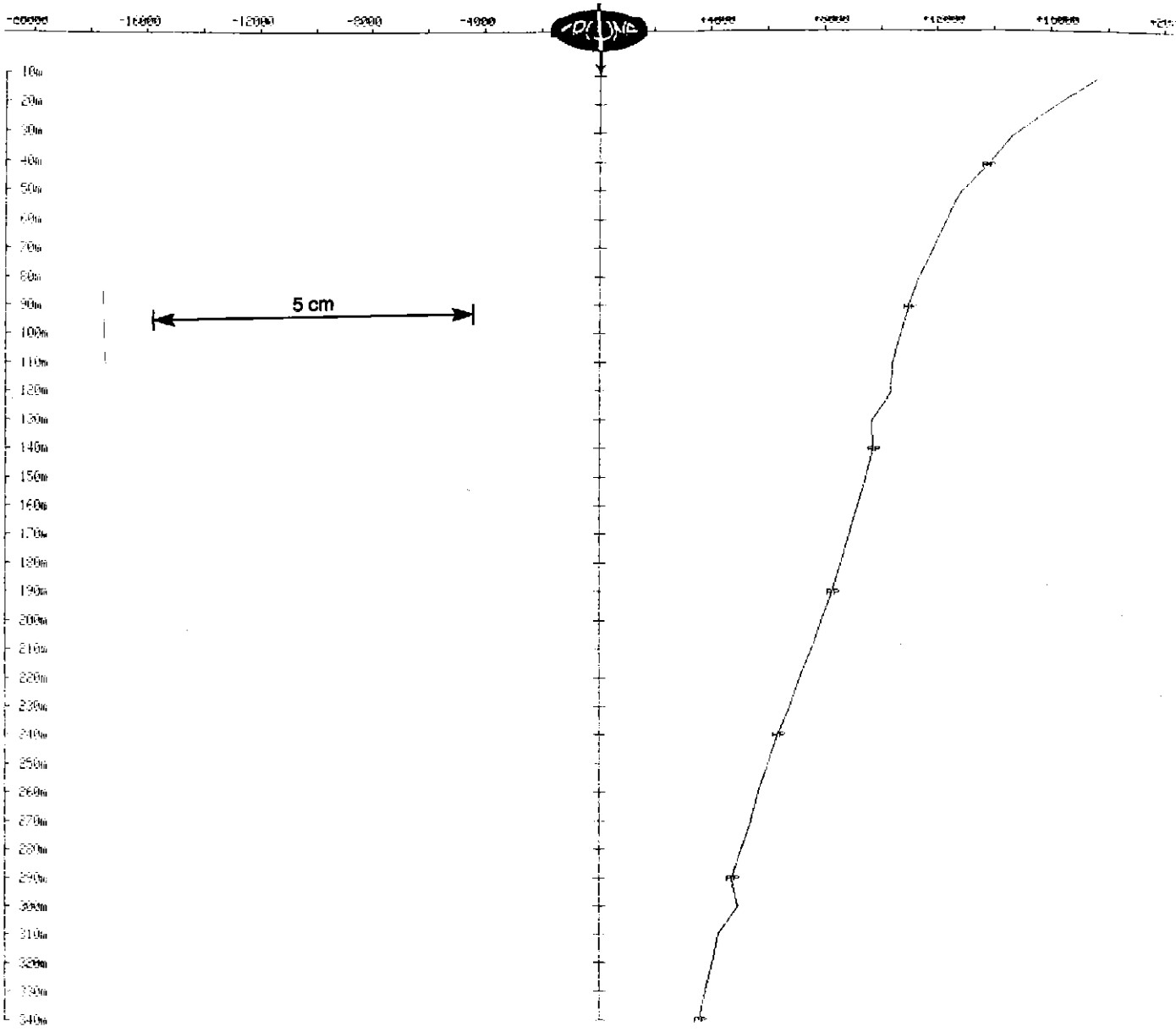
CRONE GEOPHYSICS & EXPLORATION LTD
BOREHOLE PEM

041187

Client	: Pasminco Exploration	Hole	: BPD74
Grid	: Burns Peak	Tx Loop	: 74-1
Date	: Jan 20, 1992	File name	: bpd7411.new

Z COMPONENT dBz/dt nanoVolts/Amp-m² - 8 channels and PP

Scale: 1:2000 Unit Scale: 1cm = 2000 .



041188

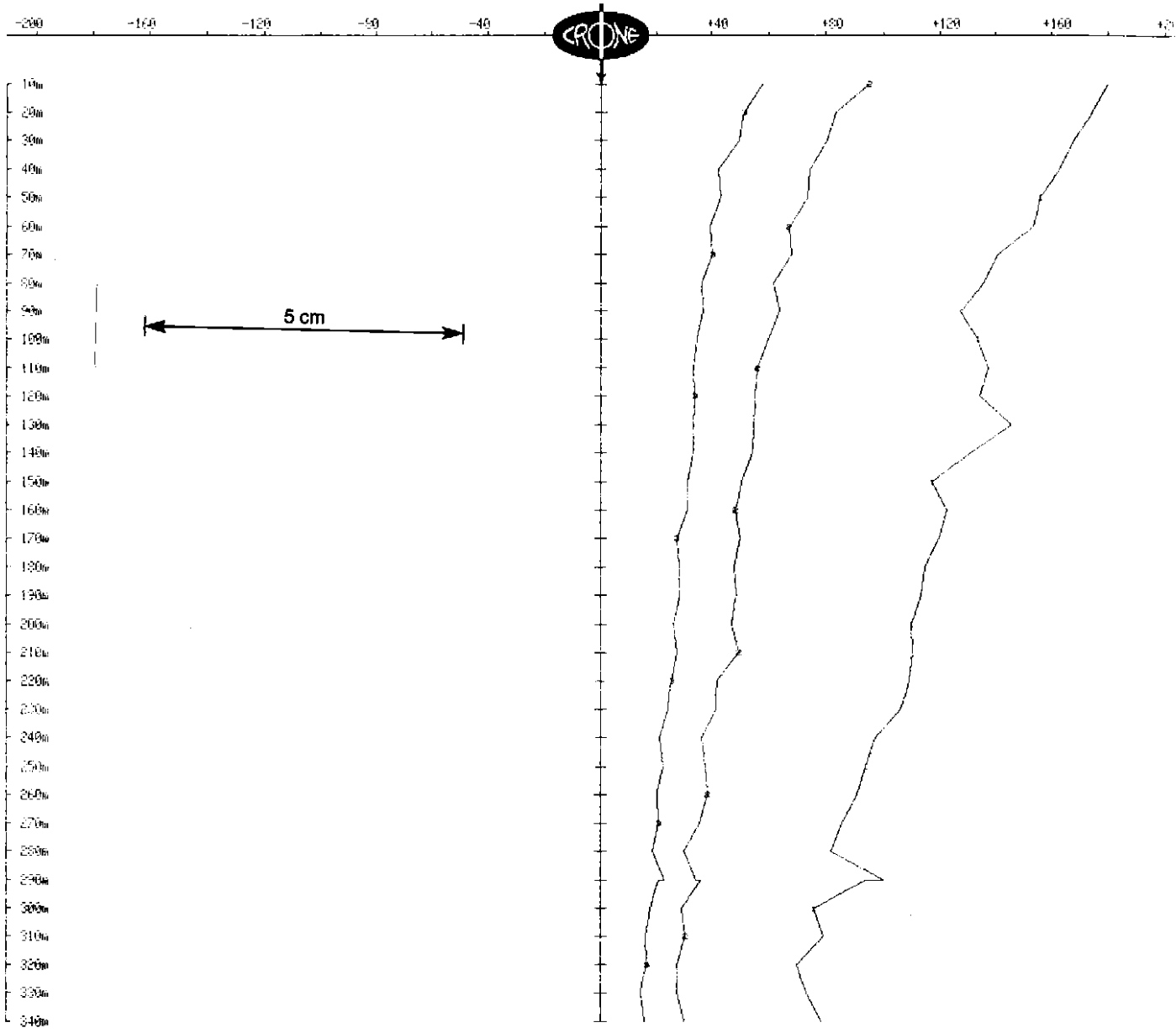
CRONE GEOPHYSICS & EXPLORATION LTD

BOREHOLE PEM

Client	: Pasminco Exploration	Hole	: BPD74
Grid	: Burns Peak	Tx Loop	: 74-1
Date	: Jan 20, 1992	File name	: bpd7411.new

Z COMPONENT dBz/dt nanoVolts/Amp-m² - 8 channels

Scale: 1:2000 Unit Scale: 1cm = 20



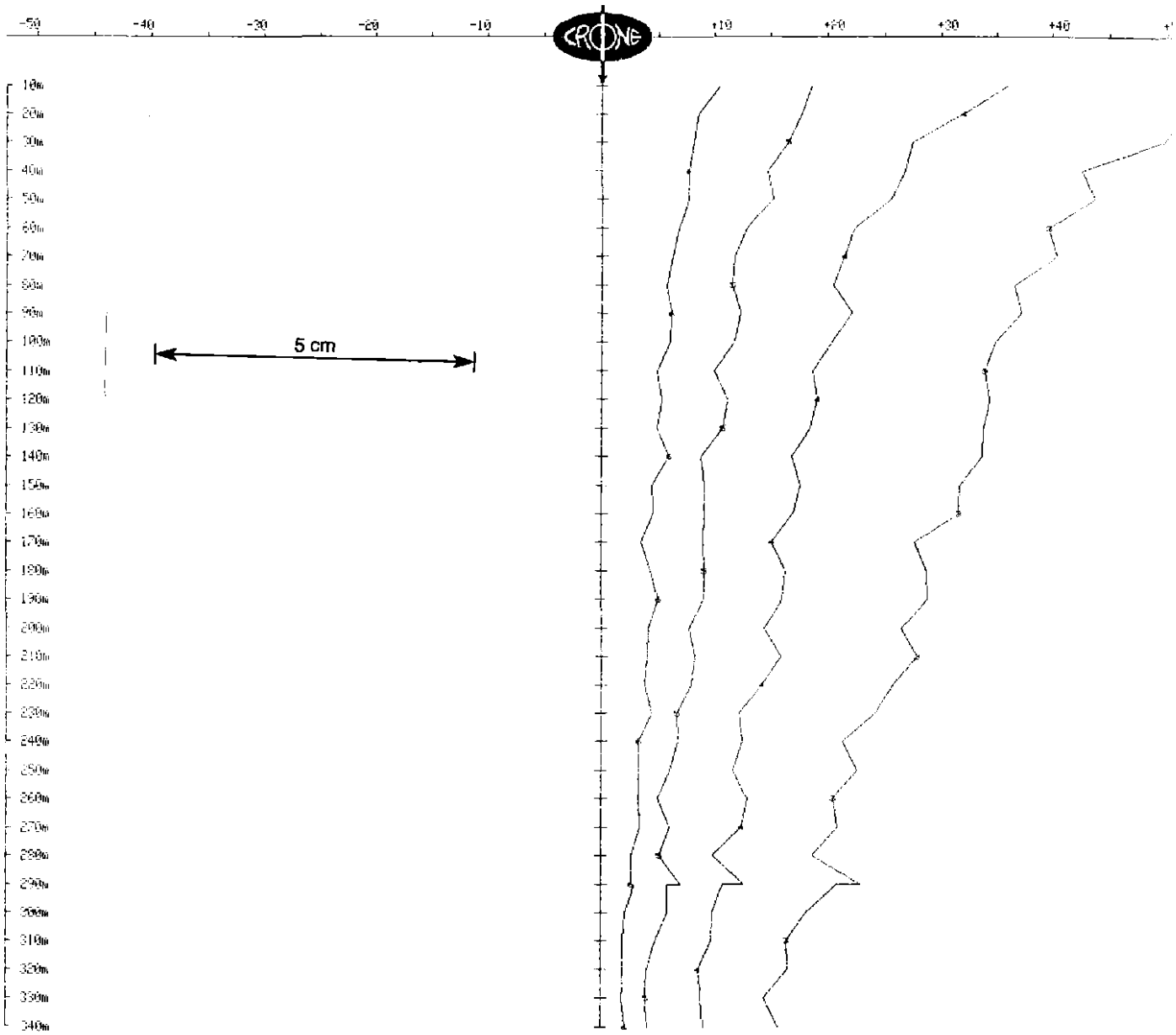
0411189

CRONE GEOPHYSICS & EXPLORATION LTD
BOREHOLE PEM

Client	: Pasminco Exploration	Hole	: BPD74
Grid	: Burns Peak	Tx Loop	: 74-1
Date	: Jan 20, 1992	File name	: bpd7411.new

Z COMPONENT dBz/dt nanoVolts/Amp-m² - 8 channels

Scale: 1:2000 Unit Scale: 1cm = 5



CRONE GEOPHYSICS & EXPLORATION LTD

BOREHOLE PEM

041190

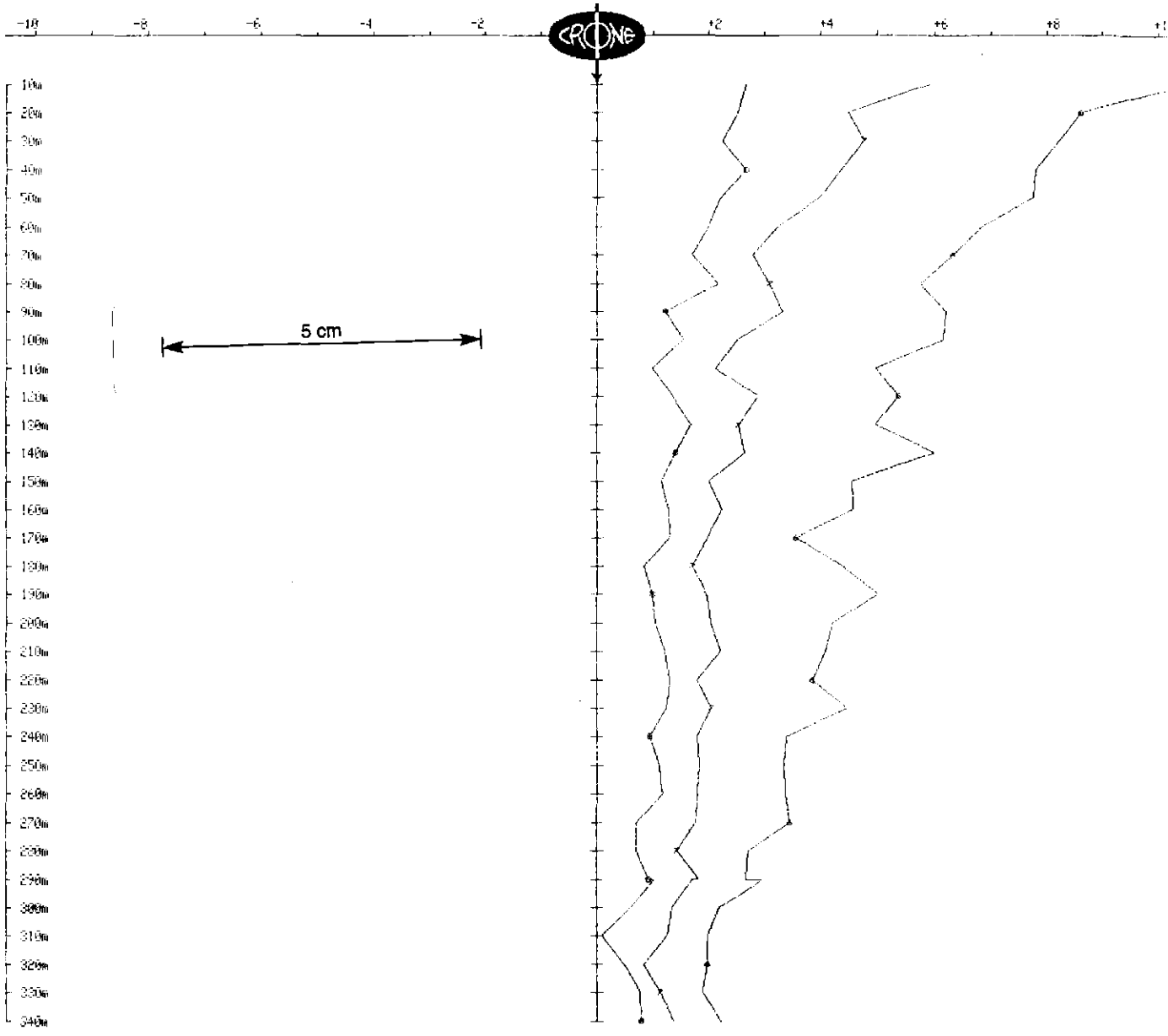
Client : Pasminco Exploration
Grid : Burns Peak
Date : Jan 20, 1992

Hole : BPD74
Tx Loop : 74-1
File name : bpd7411.new

Z COMPONENT dBz/dt nanoVolts/Amp-m² - 8 channels

Scale: 1:2000

Unit Scale: 1cm = 1



CRONE GEOPHYSICS & EXPLORATION LTD

041191

BOREHOLE PEM

Client	: **Pasminco Exploration**	Hole	: **BPD74**
Grid	: **Burns Peak**	Tx Loop	: **74-2**
Date	: Jan 21, 1992	File name	: BPD74L2.NEW
Time Base	: 10.00 ms	# Readings	: 34
Ramp Time	: 0.50 ms	Stn Units	: Metric
# Channels	: 8	Coil Area	: 6500 sq m
Sync Type	: Crystal	Polarity	: +
Loop Size	: 400m X 400m	Receiver	: Digital #109
Current	: 2 Amps	Operator	: N.H.

Channel Times (usec)

Ch	Start	End	Center	Ch	Start	End	Center	Ch	Start	End	Center
PP	-198	-99	-149	1	76	131	104	2	131	225	178
3	225	378	302	4	378	639	508	5	639	1075	857
6	1075	1809	1442	7	1809	3046	2428	8	3046	5121	4084

CRONE GEOPHYSICS & EXPLORATION LTD

BOREHOLE PEM

041192

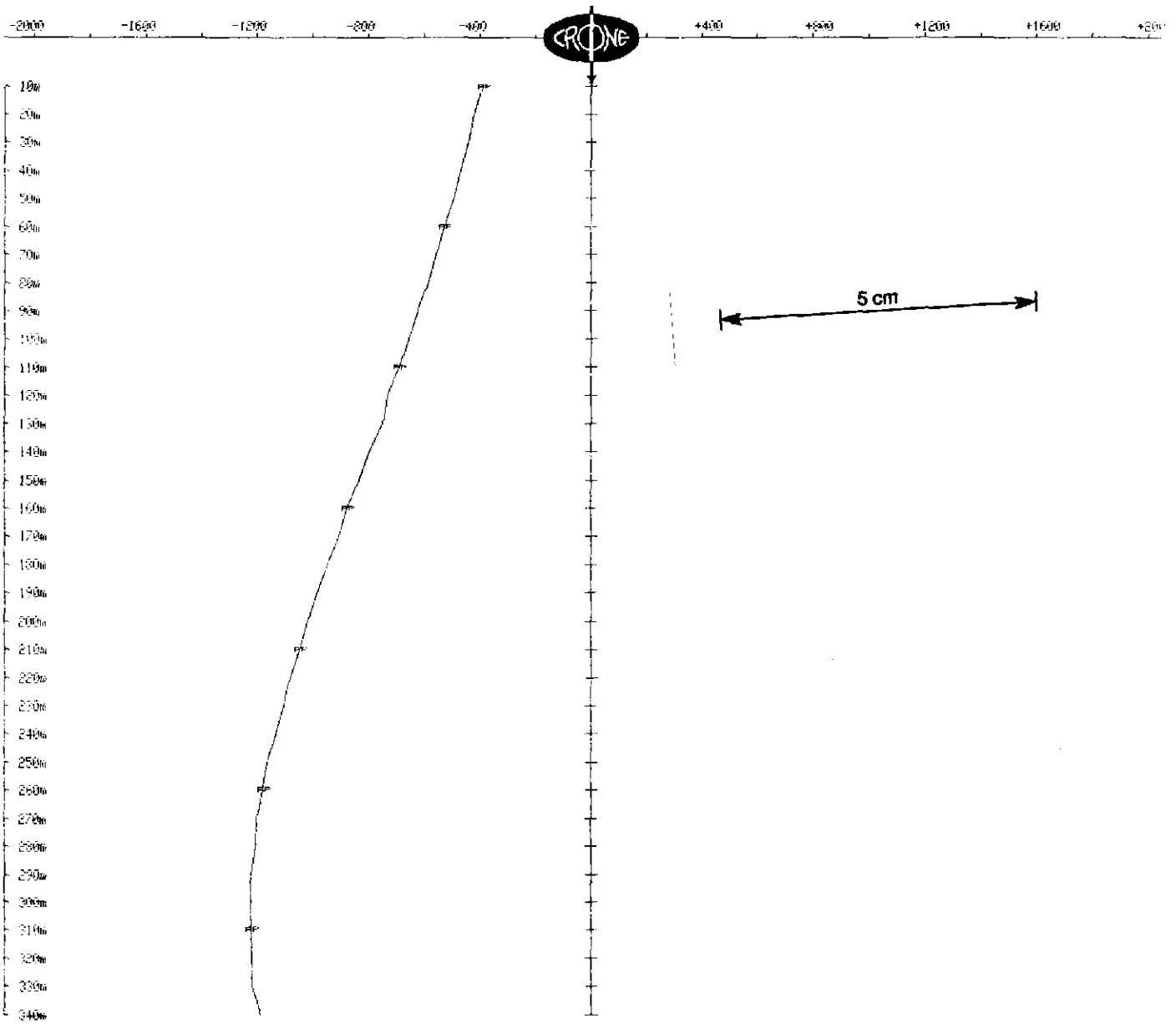
Client : Pasminco Exploration
Grid : Burns Peak
Date : Jan 21, 1992

Hole : BPD74
Tx Loop : 74-2
File name : BPD74L2.NEW

Z COMPONENT dBz/dt nanoVolts/Amp-m² - 8 channels and PP

Scale: 1:2000

Unit Scale: 1cm = 200



CRONE GEOPHYSICS & EXPLORATION LTD

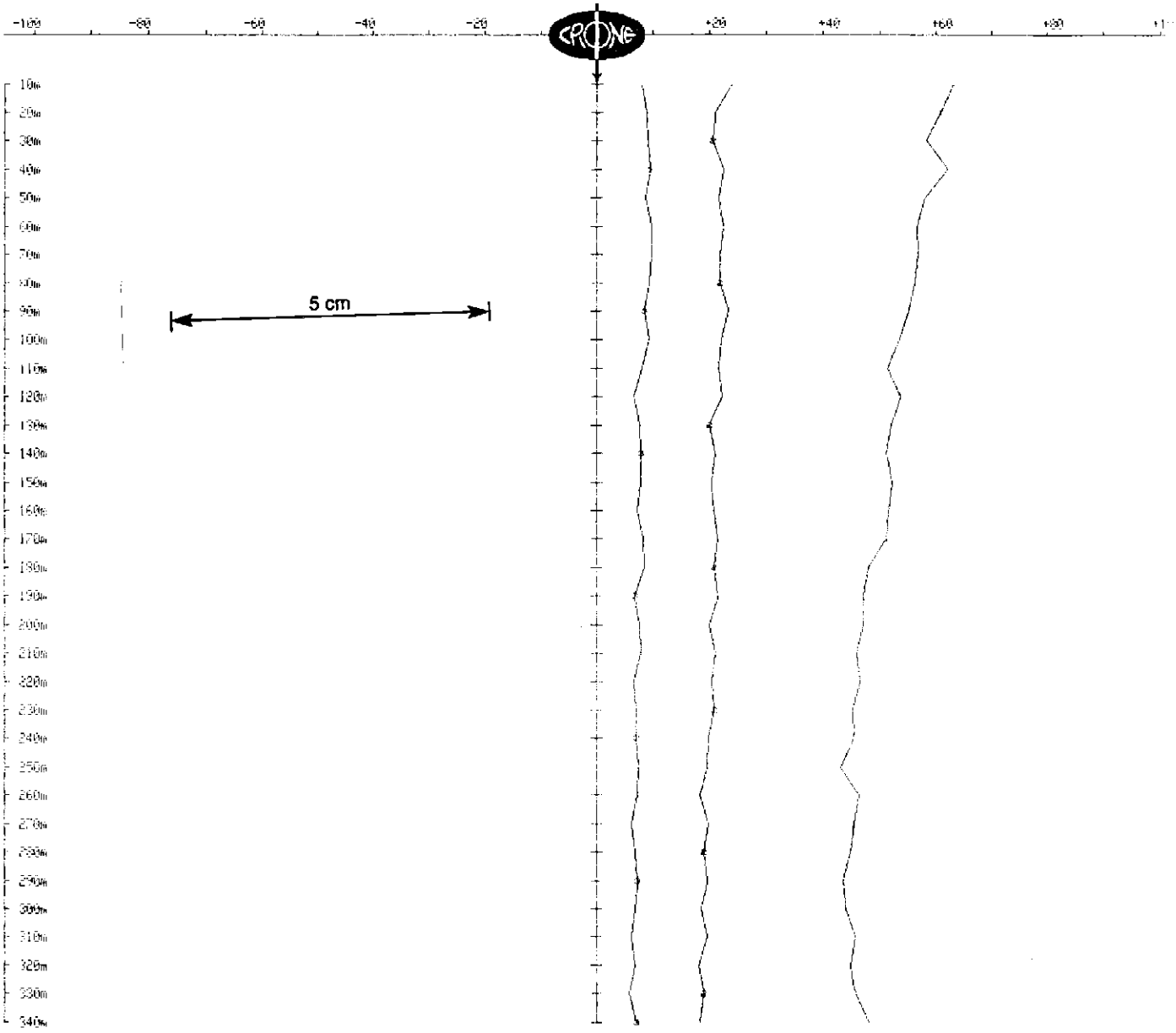
BOREHOLE PEM

041193

Client	: Pasminco Exploration	Hole	: BPD74
Grid	: Burns Peak	Tx Loop	: 74-2
Date	: Jan 21, 1992	File name	: BPD74L2.NEW

Z COMPONENT dBz/dt nanoVolts/Amp-m² - 8 channels

Scale: 1:2000 Unit Scale: 1cm = 10



CRONE GEOPHYSICS & EXPLORATION LTD

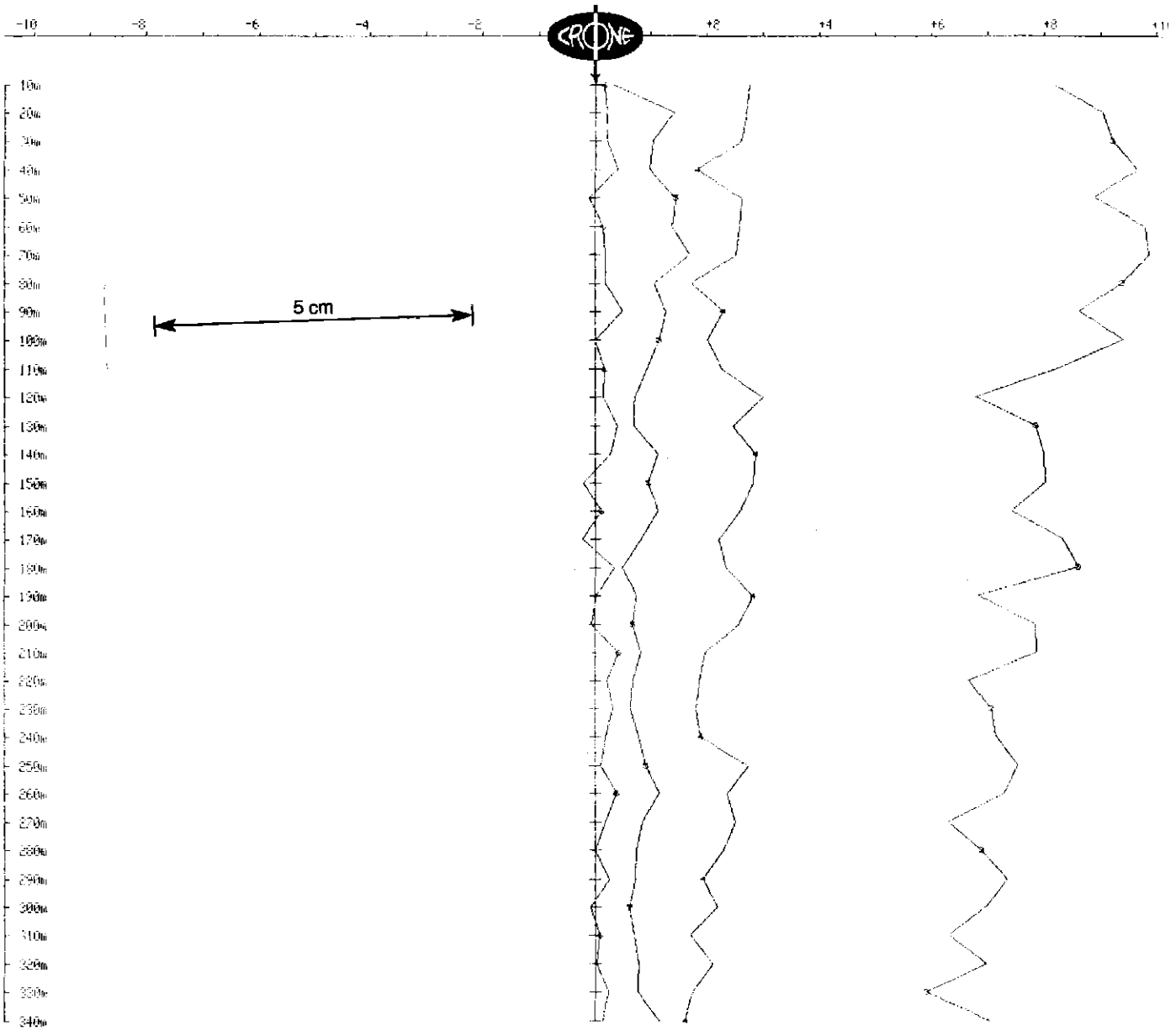
BOREHOLE PEM

041194

Client	: Pasminco Exploration	Hole	: BPD74
Grid	: Burns Peak	Tx Loop	: 74-2
Date	: Jan 21, 1992	File name	: BPD74L2.NEW

Z COMPONENT dBz/dt nanoVolts/Amp-m² - 8 channels

Scale: 1:2000 Unit Scale: 1cm = 1



CRONE GEOPHYSICS & EXPLORATION LTD

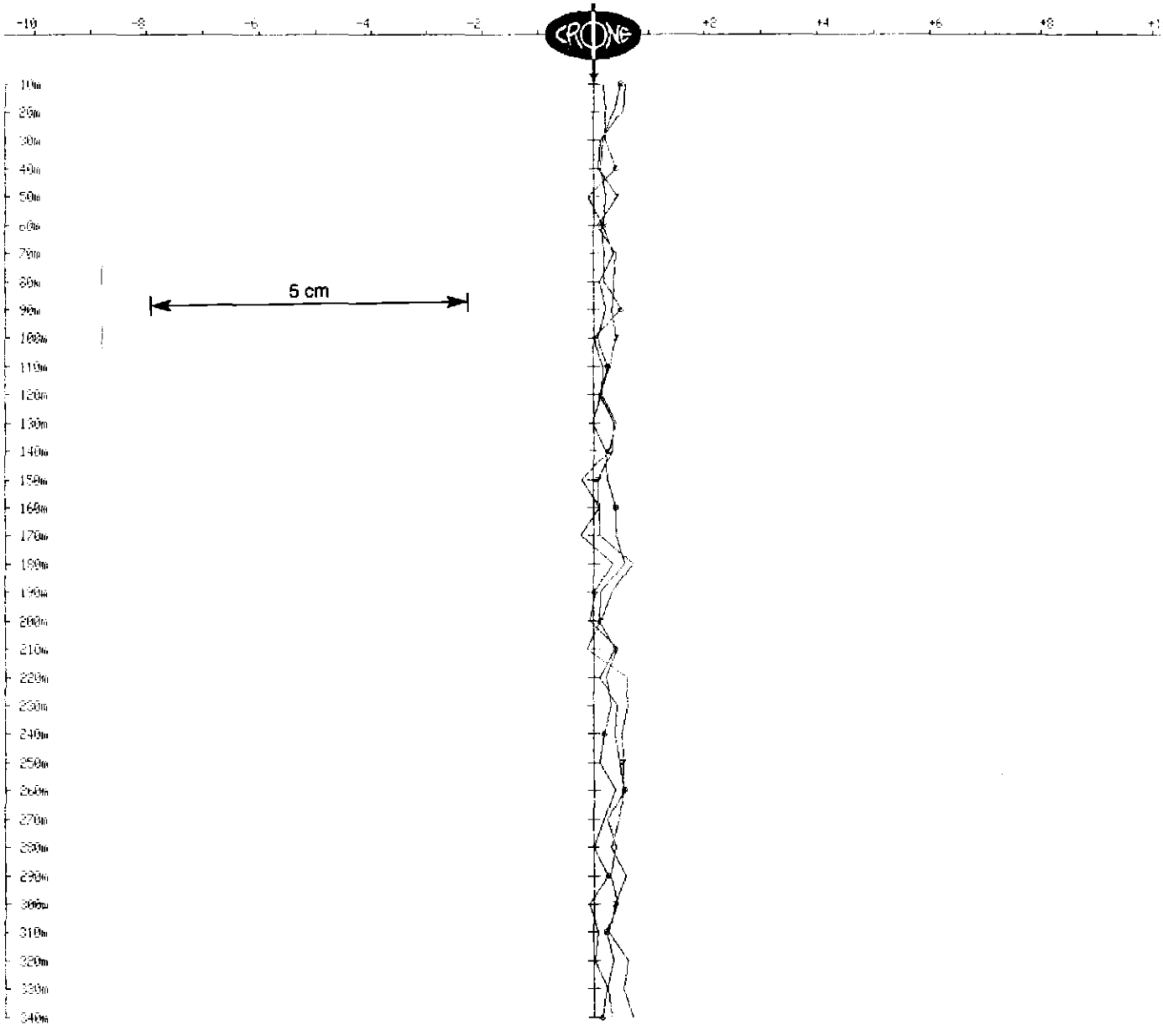
BOREHOLE PEM

041195

Client	: Pasminco Exploration	Hole	: BPD74
Grid	: Burns Peak	Tx Loop	: 74-2
Date	: Jan 21, 1992	File name	: BPD74L2.NEW

Z COMPONENT dBz/dt nanoVolts/Amp-m² - 8 channels

Scale: 1:2000 Unit Scale: 1cm = 1



041196

PASMINCO
EXPLORATION

A Division of Pasminco Australia Limited,
A.C.N. 004 074 962

Level 2, The Atrium,
290 Burwood Road,
Hawthorn, Australia, 3122

MEMORANDUM

TO: LW Kirsner

FROM: RS Smith

DATE: 27 October 1992

SUBJECT: **Burns Peak Drill-hole UTEM Survey, BPD-75**

Drill-hole BPD-75 was surveyed during September 1992 with the bore-hole UTEM system to test for off-hole conductors. Two transmitter loops 24-92 and 25-92, the position of which are shown on figure 1, were used to excite the ground. The primary fields are shown in plan on figures 2 and 4 and in section on figures 3 and 5. The field from loop 24-92 couples strongly with conductors perpendicular to the drill-hole and loop 25-92 is coupled with bodies which are: i) oriented parallel to the hole and ii) near the bottom of the hole.

The response measured using loop 24-92 (figure 6) shows a generally flat positive response, indicating that the current system induced in the conductive overburden is roughly the same size as the transmitter loop. The negative channel 2 and 3 response is characteristic of data which has not been deconvolved. The channel 10 and 9 data show some strange effects, which may also be because the deconvolution has not been done. The anomalous measurement at 310m is believed to be due to the probe resting on the bottom of the hole and changing the relative position of the two housings which make up the receiver probe.

There is a slight bow in the channel 1 response, which could conceivably be due to a long time constant conductor that is distant from the hole; however, it is more likely to be due to an error in the position of the loops or the drill-hole.

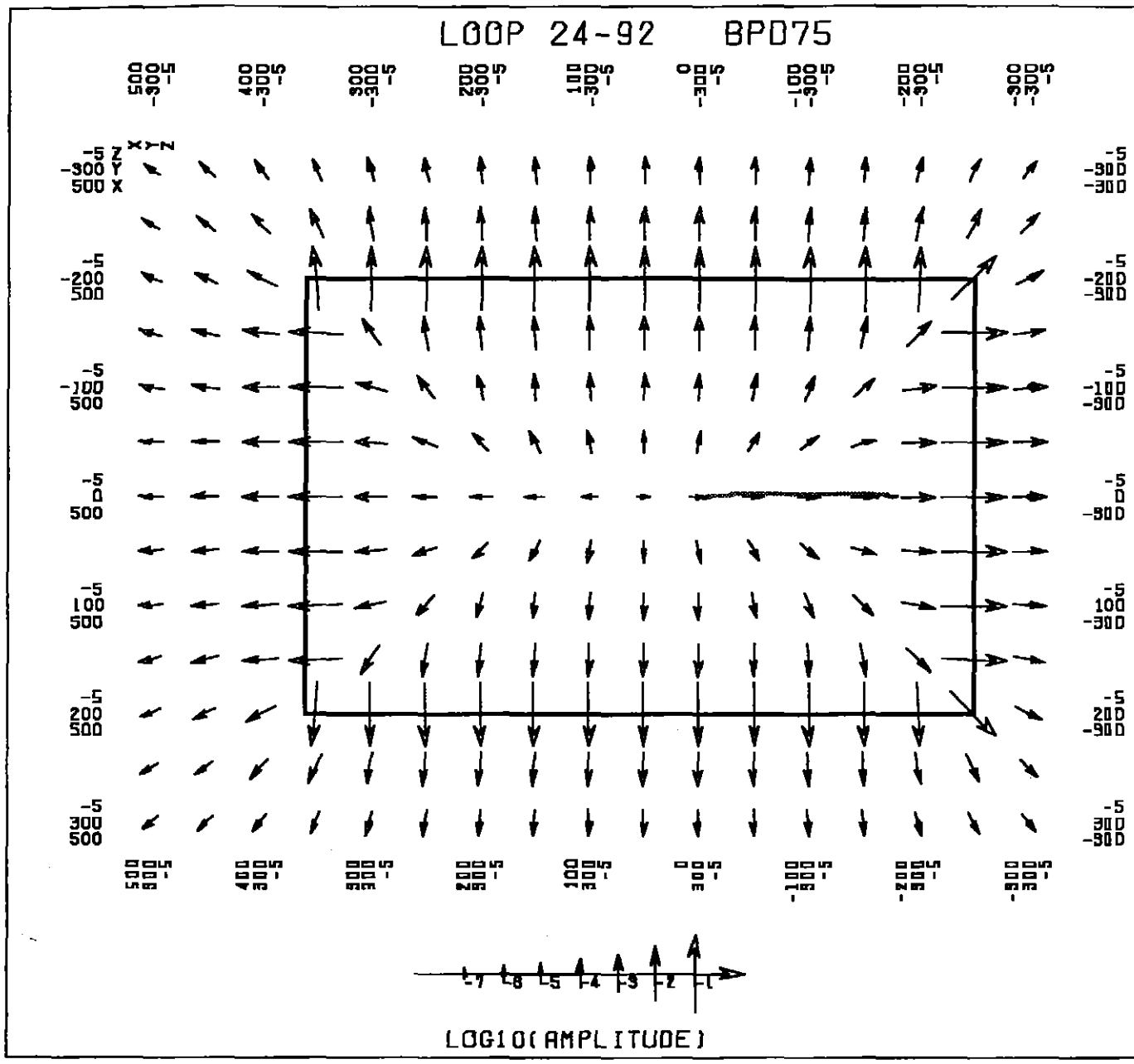
The data measured using loop 25-92 (figure 7) shows a negative response, indicating the current has not migrated away from the loop and past the drill-hole. This may imply there is a conductor below or to the north east of BPD-75. The continuously normalised response decreases towards the bottom of the hole because the magnitude of the primary field is increasing with depth. There is also a broad channel 1 response, most likely due to some form of position errors.

Richard

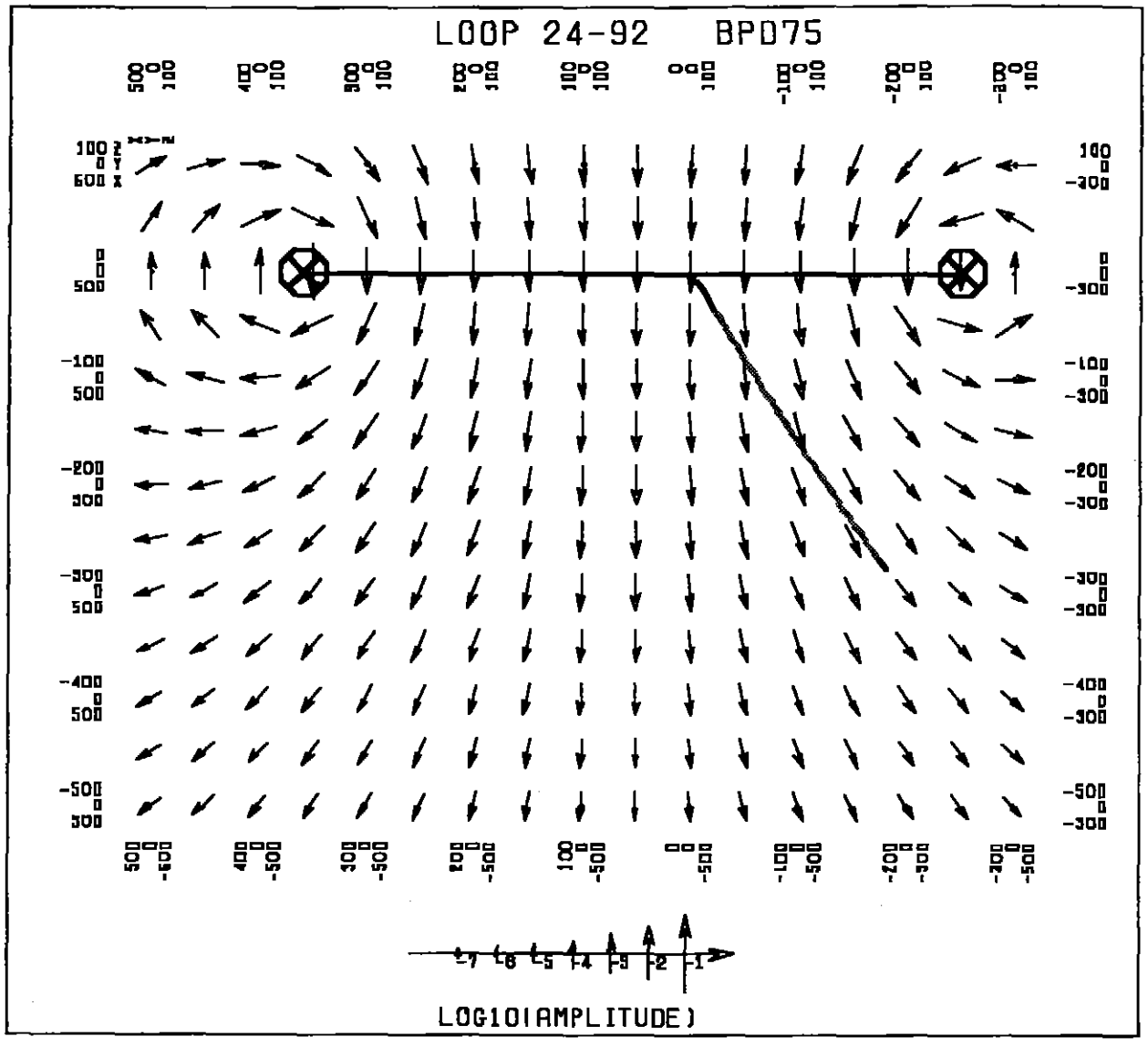
RSS218SR

Telephone (03) 818 0044 Facsimile (03) 818 0040

041197

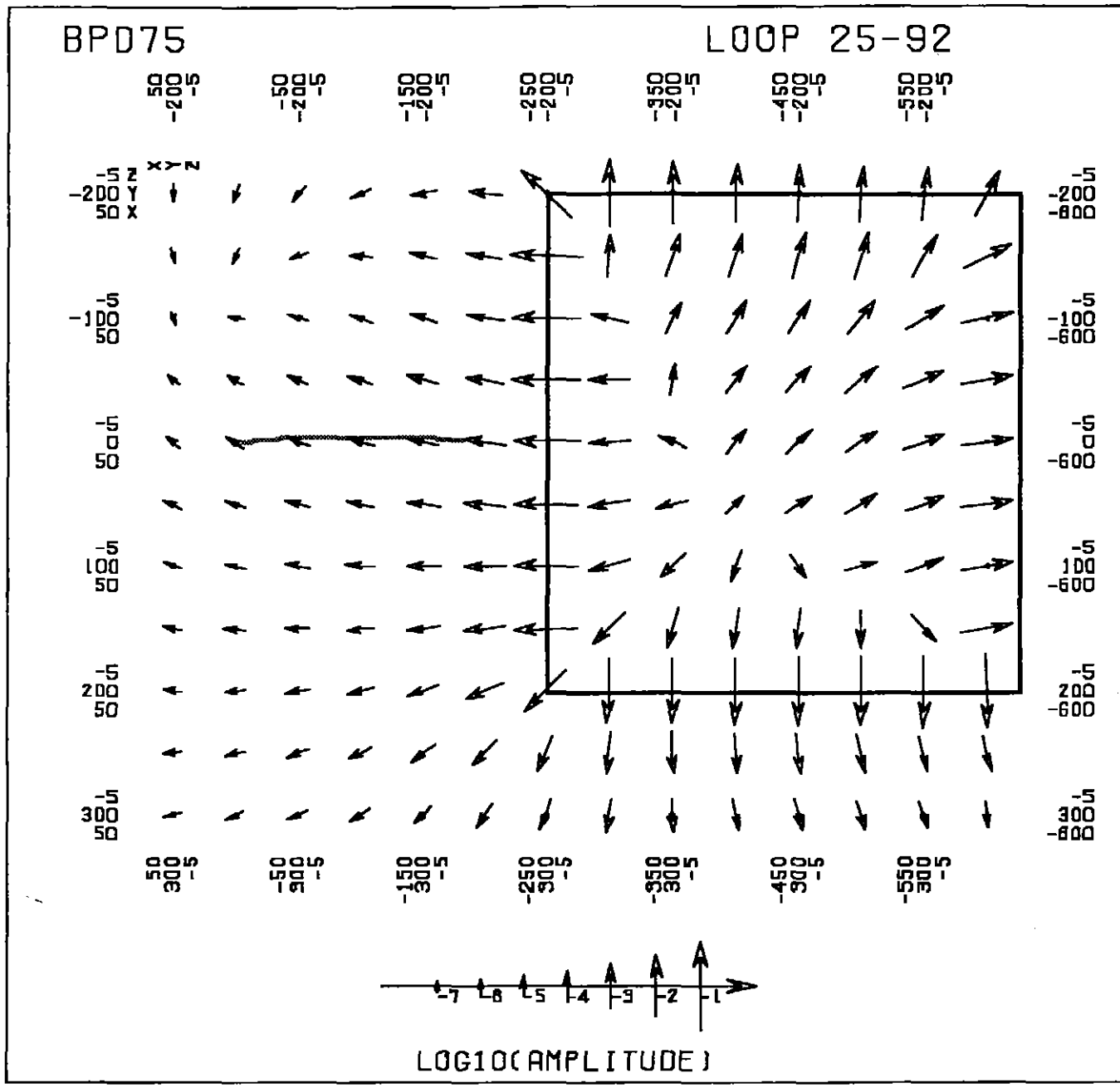


PASMINCO EXPLORATION A Division of Pasminco Australia Limited		
COMPILED :	E.L. 44/88 - BURNS PEAK JV	
DATE :	DRILL HOLE UTEM 1992	
DRAWN :	LOOP 24-92	
REF. :	POSITION & FIELD DIRECTION	
REVISIONS :	PLAN - BPD75	
DRAWING No.	SCALE	FIG. No. 2

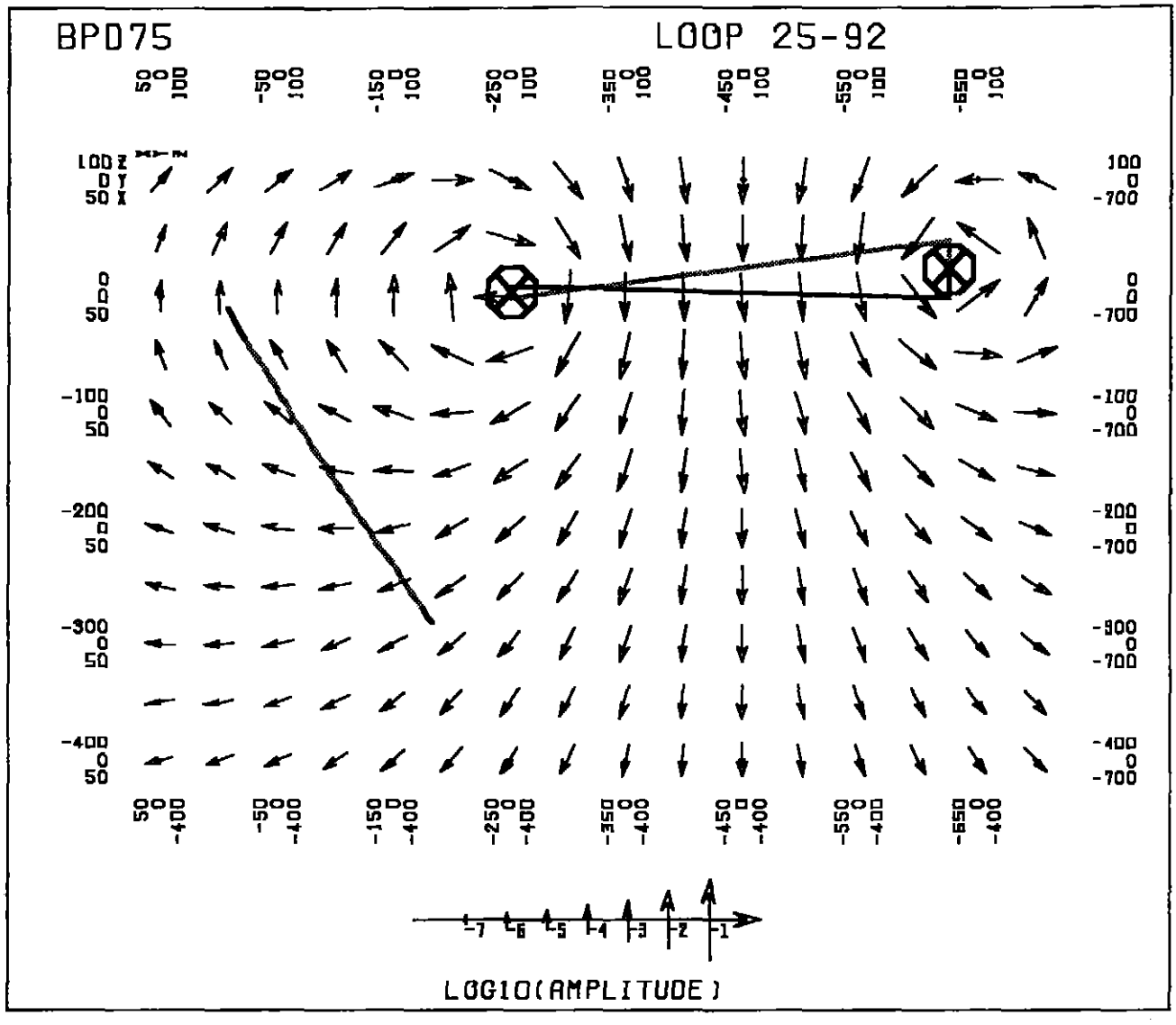


PASMINCO EXPLORATION A Division of Pasminco Australia Limited	
COMPILED :	E.L. 44/88 - BURNS PEAK JV
DATE :	DRILL HOLE UTEM 1992
DRAWN :	LOOP 24-92
REF. :	POSITION & FIELD DIRECTION
REVISIONS :	SECTION - BPD75
DRAWING No.	SCALE / FIG. No. 3

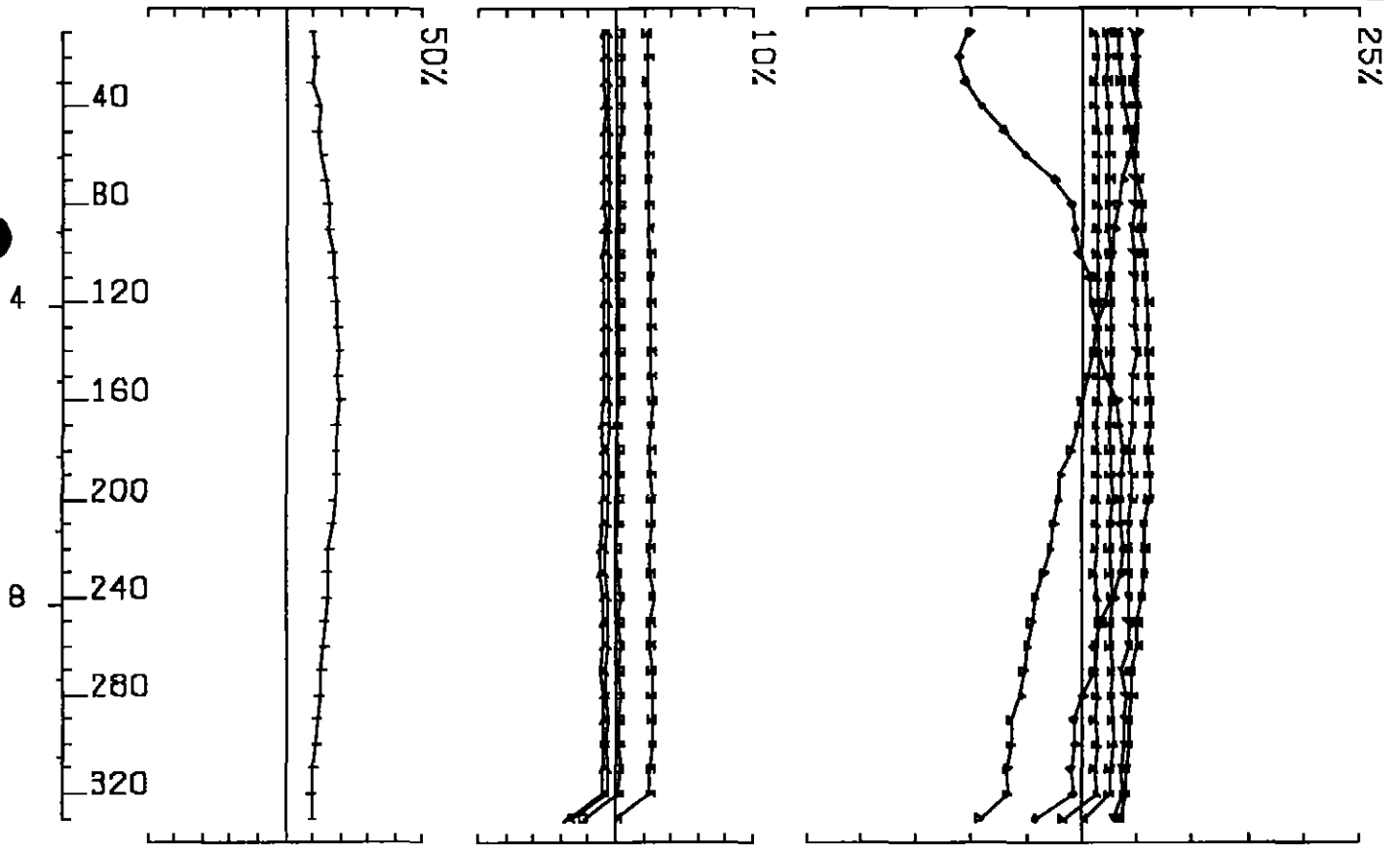
041199



PASMINCO EXPLORATION A Division of Pasminco Australia Limited		
COMPILED :	E.L. 44/88 - BURNS PEAK JV	
DATE :	DRILL HOLE UTEM 1992	
DRAWN :	LOOP 25-92	
REF. :	POSITION & FIELD DIRECTION	
REVISIONS :	PLAN - BPD75	
DRAWING No.	SCALE	FIG. No. 4

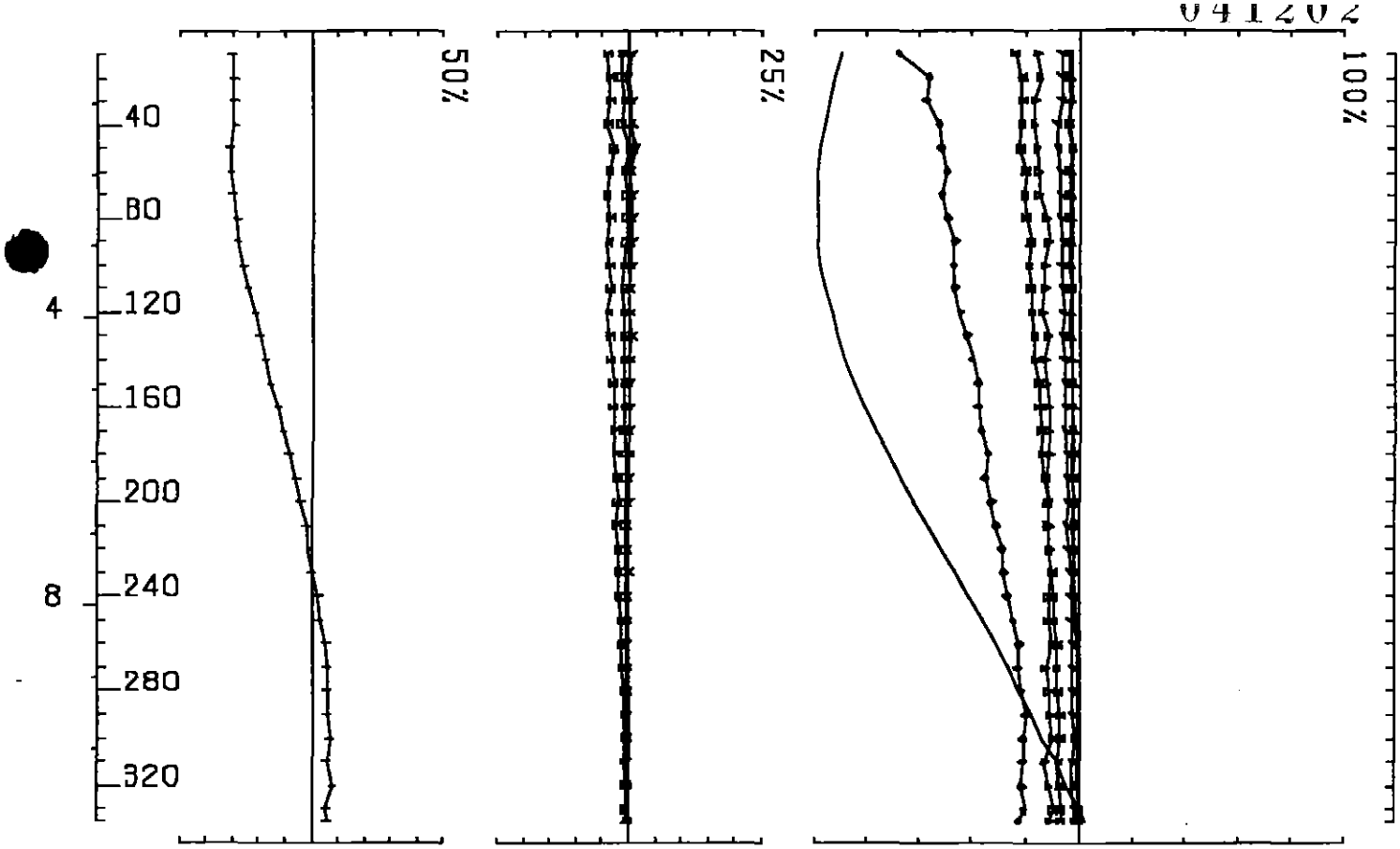


PASMINCO EXPLORATION A Division of Pasminco Australia Limited		
COMPILED : DATE : DRAWN : REF. : REVISIONS :	E.L. 44/88 - BURNS PEAK JV DRILL HOLE UTEM 1992 LOOP 25-92 POSITION & FIELD DIRECTION SECTION - BPD75	
DRAWING No.	SCALE	FIG. No. 5



UTEM SURVEY AT BURNS PEAK FOR PASMINCO EXPLORATION SEPTEMBER 1992
CONDUCTED BY LAMONTAGNE GEOPHYSICS LTD JOB 9207 BASE FREQ (HZ) 53.85
LOOP NO 24-92 HOLE BPD75 AXIAL COMPONENT SECONDARY FIELD CH1 CONTIN. NORM.

PASMINCO EXPLORATION A Division of Pasminco Australia Limited		
COMPILED :	E.L. 44/88 - BURNS PEAK JV DRILL HOLE UTEM 1992 LOOP 24-92 DATA PROFILES BPD75	
DATE :		
DRAWN :		
REF. :		
REVISIONS :		
DRAWING No.	SCALE	FIG. No. 6



UTEM SURVEY AT BURNS PEAK FOR PASMINCO EXPLORATION SEPTEMBER 1992
CONDUCTED BY LAMONTAGNE GEOPHYSICS LTD JOB 9207 BASE FREQ (HZ) 53.65
LOOP NO 25-92 HOLE BPD75 AXIAL COMPONENT SECONDARY FIELD CH1 CONTIN. NORM.

PASMINCO EXPLORATION A Division of Pasminco Australia Limited		
COMPILED :	E.L. 44/88 - BURNS PEAK JV DRILL HOLE UTEM 1992 LOOP 25-92 DATA PROFILES BPD75	
DATE :		
DRAWN :		
REF. :		
REVISIONS :		
DRAWING No.	SCALE	FIG. No. 7

loop 21
BPD 71
loop 22
loop 17
BPD 69
BPD 72
loop 18
loop 23
200m (towards)
loop 24-92
BPD 75
800S
loop 25-92
1000S
1200S
E.L. 44/88
8190ON
loop 74-1
BPD 74
8170ON
8150ON
8130ON
loop 74-2
8110ON
8070ON
BPD 73
loop 73-2
loop 73-1
8050ON
E.L. 44/88
LAKE ROSEBERY
Burnie
Penguin
Ulverstone
Devonport
Deloraine
Launceston
Hobart
Queenstown
Strahan
Zeehan
Smithton
Wynyard
Stanley
Port Sorell
Latrobe
Ulverstone
Sheffield
Railway
Dismal Swamp
Mt Roland
Mt Black
Mt Claude
Mt Dial
Mt Gnomon
Mt Hall
Mt Hampton
Mt Montgomery
Mt Murchison
Mt Oakleigh
Mt Pelion West
Mt Read
Mt Roland
Mt Sedgwick
Mt Tyndall
Mt Vandyke
Mt Wilmot
Mt Yolla
Pine Hill
Pine Tier
Pinnacle
Pipers River
Port Sorell
Preservation Bay
Quamby Bluff
Quoin Hill
Rocky Cape
Rosebery
Round Hill
Rubicon
Sassafras
Savage River
Scotchtown
Sheffield
Shelley
Smithton
Somerset
Spreyton
Stanley
Strahan
Sumac
Table Cape
Tarleton
Tasman Highway
Tayatea
Tea Tree
Tullah
Turners Beach
Ulverstone
Upper Castra
Upper Natone
Upper Scotchtown
Upper Wilmot
Waratah
Wesley Vale
West Ridge
Westbury
Wilmot
Wilmot River
Winnaleah
Wynyard
Yolla
Zeehan
N 386000
N 384000
N 382000
N 380000
N 378000
E 395500
E 396000
E 396500
E 397000
E 397500
E 398000
E 398500
E 399000
E 399500
E 400000
E 400500
E 401000
E 401500
E 402000
E 402500
E 403000
E 403500
E 404000
E 404500
E 405000
E

APPENDIX 3

Gravity & Magnetics Interpretation Update: Chester Area

Leaman Geophysics, January 1992.

041205

LEAMAN GEOPHYSICS
Survey Review, Specification, Reduction, Interpretation
Gravity, Magnetic and Seismic Methods
Structure and Prospect Evaluation

Registered office:
3 MALUKA STREET, BELLERIVE, TAS. 7018
All correspondence to:
GPO BOX 320 D, HOBART, TAS. 7001
Telephone: (002) 44 1233
Fax: (002) 44 6674

INTERPRETATION UPDATE: CHESTER AREA
EL 44/88 BURNS PEAK

for
PASMINCO EXPLORATION
by
Dr. D.E. Leaman

January 1992

CHESTER2

SUMMARY

Further examination of gravity and magnetic data in the Chester - Chester Dam region following drilling of a barren hole west of the dam has shown that an unfortunate limitation in gravity coverage coupled with three incomplete old station corrections has led to a misleading basis upon which to target drilling. Important clues in the magnetic data, indicating caution, were not appreciated.

Removal of the errant corrections, while not obviating the need for additional gravity cover - but only if the area NW of Chester retains prospectivity in the company's view (no longer in the writer's) - has clarified issues of trend and structural relationships.

Several penetrative faults can be recognised within the volcanics above the Rosebery Fault. One of these was drilled. At least one fault is similar in form to the Rosebery Fault but most seem to be sub vertical. The largest structures lie along Boco Creek (NNE trending) and adjacent to Chester (N-S).

Chester lies at the southern end of a small triangular fault block which forms the southern tip of a larger fault block and the known mineralisation occurs near the intersection of the N-S eastern face and an apparently subordinate sub E-W structure immediately north of Chester.

Alteration effects trend and diffuse to the NNE from a little south of Chester. Mineralisation may be restricted to the zone near the confluence of the trends described and the NNE - trending alteration axis a little NE of Chester. This zone has not been drilled and a single test hole near 378 750 mE, 5381 400 mN would indicate the potential of this area. Unaltered or unmineralised material might well downrate the entire prospect given the possibility that the faulting and fluids, and consequent mineralisation, at the site are post Cambrian.

INTRODUCTION

Leaman (1991) reported the character of the gravity and magnetic fields observed in the region of the Chester Mine and suggested a possible interpretation.

This interpretation was based on concepts and sketches provided by Pasminco Exploration but revised to allow for essential elements of the field. It was essentially uncontrolled but did include realistic properties although the amount of such information available was limited. Aside from any structural or lithological assessment and inference the data did define unexpected character; in particular a near N-S trending feature which was evident in both data sets. This anomaly was most pronounced near the Chester workings, and terminated a little south of them, but extended for some distance to the north. Although not completely defined it was thought that this feature might correlated with extensions of possible host rocks in a fold limb and that the anomaly represented alteration of that limb. A drill hole was proposed to test this hypothesis. No previous drilling had been undertaken in the region of the Chester Dam north of the mine.

Hole BPD74 (see location in Figures 1 to 4) drilled mainly unaltered dacitic lavas and breccias, a fault, and some thin volcaniclastics which might correlate with potential host rocks. There was no indication of mineralisation.

These results, in particular the lack of alteration or evidence of any mineralisation so close to Chester, have posed several questions.

1. Was the hole well located?
   It had been sited at short notice and to minimise any need for preparation while directed at the expected target depth near the anomaly axis. An angled hole on a gravity target is always risky in the first instance.
2. Was the hole deep enough?
   Were the lavas drilled simply the equivalent of the Mt Black Volcanics and structurally displaced over the target sequence? Does the target remain untested?
3. Just what is the source of the gravity anomaly?
   Is the association with Chester fortuitous or does it reflect other issues and structures? Are these relevant to further exploration? The extent of the anomalous effect indicates a complex association.
4. Are the anomalies well defined?
   Is there any chance uneven coverage might have obscured proper evaluation? It has been noted that, while the Chester area has always appeared gravimetrically anomalous, evolution of the survey over three years has changed the appearance of the details.

This update report considers all these issues, the implications of the hole, additional property measurements, the nature of the origin of both fields and concentrates on the area about Chester Dam.

STATEMENT OF KNOWN FACTS

Before considering the issues raised by drill hole BPD74 it is necessary to clearly define what is known and to separate inferences from facts.

GRAVITY

1. There is a N-S trending gravity anomaly in the region. It has a total relief of perhaps 3 mGal.

2. The anomaly extends from a little south of Chester where it has its maximum development.

3. The anomaly is not regional.

4. The anomaly correlates with known alteration and sulphides at Chester.

5. The anomaly is terminated near 5380 500 mN and may display a NW trend on its southern face (needs more data). It is also possible to read an ENE regional trend into the northing of the termination (see Figure 3).

6. The anomaly north of Chester is broader with about half the amplitude of the Chester response.

7. A marked change in amplitude occurs immediately north of Chester and a sub E-W axis in indicated.

MAGNETICS

8. An essentially N-S gradient matches the eastern side of the gravity anomaly (see Figures 1,2 and 4).

9. The magnetic field to the west of this gradient is smooth and subtle in character while to the east it is of distinctly higher relief.

10. The magnetic gradient is not terminated south of Chester (compare gravity #2).

11. The magnetic gradient is offset to the SW near 378 000 mE, 5382 000 mN. (No comparable gravity effect is known but the coverage does not permit definition of one)

12. There is regional support for the trend patterns (see original report and Figure 3).

GEOLOGY

13. Mapped elements trend NE overall.

14. There is evidence from some local N-S and NW elements in both

structure and lithology which can be associated with the magnetic gradient and the eastern side of the gravity crest.

15. DDH BPD74 entered a fault zone at 257 m.

Some direct inferences may be drawn from these observations.
These are of unknown validity but include the direct conclusion that the gravity source is related to mineralisation and alteration while the magnetic character reflects changes in the overall composition and nature of the volcanics.

The original interpretation (Leaman, 1991) did not presume such a conclusion but attempted to explain both fields in terms of limited properties known and reasonable inferences about the structure of the area (based on mapping and sections by A. Lorrigan and L. Kirsner).

The primary interpretation provided an outline of the regional setting of the area and suggested that it was possible to explain the fields with the types of concepts proposed - with some modifications. This analysis showed that the volcanics were variable in properties and character with distinct discontinuities displaying an array of attitudes. Using the primary concepts some aspects of the mass anomaly could not be explained and drilling was proposed to assess possible continuity of the mineralised (?) zone.

It is also important to consider the location of BPD74 with respect to the defined features of the potential fields.
Figures 1 to 4 show the hole position and projection.
It will be noted that the entire length of the hole remains west of the eastern gradient of the gravity anomaly and within the apparent crest of the effect near a local maximum.
The position with respect to the magnetic field is quite different, and this is an element not recognised either by the original work or during subsequent discussions about hole location. The hole slips across the magnetic gradient.
If we now note that the hole drilled a significant fault at depth (including a basaltic dyke) then one has to ask, is the magnetic gradient and the eastern side of the gravity trend related to this fault or something equivalent?
Can this be established? If so, what are the implications for the entire gravity anomaly - is it as it appears?
And what are the implications for further exploration?

The original interpretation recognised the possibility of faulting, in terms of marked breaks in properties or trend alignments, but did not stress such features within the volcanics above the Rosebery Fault - other than in the east of the Chester area where marked changes were associated with thrusting or low angle reverse faulting. Most high angle changes within the Chester block were associated, within the terms of initial concepts, with folding.

DISCUSSION

GENERAL

The introductory outline given above has summarised some of the evolution in thinking and data application and has suggested the two primary issues which must be reviewed.
Are all anomalies essentially structurally controlled changes in lithology or is there some scope for unaccounted anomalous alteration at depth?

Figure 3 presents the summary interpretation diagram from the original report. This figure also shows the values of the residual gravity field (observed Bouguer anomaly less the regional effects of ocean and mantle) and the station distribution. The symbols indicate up to five generations of survey. Note that the coverage is generally weak west of Chester.

Figure 2 presents the detailed aeromagnetic coverage for a drape at 120 m clearance. The contours of the magnetic field have been superimposed on the sketch geological basemap compiled by L. Kirsner. The lack of immediate correlation with the obvious geological trends is evident.

Figure 4 provides a superposition of these two data sets and allows direct correlation of all features. The five modelled profiles which have been considered below are also shown. These profiles were among several modelled and discussed in the original interpretation.

Consideration of the facts outlined in the previous section of this report the issues may be crystallized as follows:
Does the magnetic gradient simply represent a major fault - trending N-S? If so, why does the gravity anomaly present a crest rather than a gradient also?
Examination of Figure 4 suggests that the magnetic field does include elements which suggest the possibility of a triangular, fault-bounded block which could be proposed as extending from about 378 700 mE, 5380 250 mN to 377 600, 5381 300 to 378 400, 5382 150. An additional, but sinistrally offset, block could be inferred to the north on the basis of the magnetic data. (The incomplete gravity coverage would allow a dextral offset but this may be an illusion). The magnetic data would suggest that the eastern face of this block is the most significant.
The gravity data would certainly support this view but do not support the entire view of a fault block. Or do they?

THE GRAVITY DATA

Figures 1 and 3 clearly indicate the distribution of data points in the Chester area, or the general lack of them west of Chester. Stations have been occupied west of Chester but the spacing is very irregular and there are large gaps. Most such stations are older than the relatively dense Chester coverage (x).

In view of the importance of data quality appraisal for the present discussion each of these stations has been re-examined, where data exists or permits, to ensure that the nature of any deficiencies can be defined.

The irregular and generally wide station spacing is an obvious deficiency which clearly limits detailed correlations with the much more extensive and refined magnetic coverage. In regional terms, for both gross structural setting and identification of anomalous regions, the coverage is adequate. The insertion of a more detailed data block adds to specific definition but exposes the area covered more poorly to risky inference.

This is not the major problem, however. All things being equal any properly undertaken gravity surveys can be evolved and integrated with any previous data sets. This has been generally shown to be the case in this EL. Small discrepancies due to levelling or survey assumptions have been noted and removed by checking and linking assumed base values. More serious discrepancies were noted in terrain corrections at some stations. The latest survey has had the benefit of the most detailed topographic maps yet produced in the area and these, coupled with an observing team (DMMR) which has fully described local features about the meter, have meant that the terrain corrections are also more reliable.
All terrain corrections are underestimates, a fact of their nature and means of calculation as well as our usually imperfect knowledge of the terrain. The aim is to make the underestimate as small as possible. Older stations based on poorer maps, and contractors who did not fully describe the station, have less complete corrections in some cases. The extent of undercorrection depends on the actual site and is neither uniform nor particularly predictable. It should be noted that some terrain correction is far better than none at all but when the issues become critical and local rather than regional it is important that the correction be as good as is possible.

If one considers the inferred nature of the gravity field, as presented in Figure 3, then any flaw in the few stations west of Chester will be magnified. The re-entrant in the contour pattern, which surrounds station 3201, is a key element in giving the impression that the field contains a positive axis starting a little south of Chester itself. Note that the coverage does unambiguously show that the feature is terminated and probably has a NW-trending south face. Many other stations SW of BPD74 suggest that the re-entrant is itself anomalous - a fact which would accord with the magnetic implications, if true.
This entire element of the contoured field is actually dependent on three stations (3157, 3201 and 8084). All have been found to be suspect in terms of the terrain correction. An example is provided by the 1.4 mGal offset between 6088 and 8084 just west of Chester. Recalculation using the latest detailed topographic maps confirms the general magnitude of the newer station. Similar recalculations adjust the other two stations which, due to absence of notes local to the meter, are still believed to be slight underestimates. Changes to these stations remove the pinched gradients which suggest shallow

sources. The result of the present adjustments is shown in Figure 1 where contours have been redrawn. The peak effect remains clearly at Chester but much of the steepness of western gradients has been removed and a possible transformation of the entire form of the gravity field indicated. The figure suggests where additional coverage would resolve any doubt were it to be considered relevant after the analysis described below. It is apparent that a few more stations might well sharpen the NW trend of the southern part of the anomaly while removing the NE trending (now low amplitude) re-entrant at 378, 5381 since this is really based on very little information.

A block solution might well be possible if the anomaly does not crest as strongly as seems in these contour presentations. Fault or block margin anomalies rarely display a sharpening at the contact.

Figure 5 presents a section showing the concept which was drilled. Unfortunately the entire diagram is misleading due to the manner in which the gravity profile has been shown. The profile has been shown to have a clear maximum but the data, such as they are, along this orientation do not support this. A truer representation has been marked as a correction in the diagram. When this is done the effect is seen to be more that of a plateau with an eastern gradient margin. This revision is not related to any problem in data reduction or correction but would be more definite with better coverage. Figure 15 in Leaman (1991) clearly shows the plateau-like character of the field in this area north and west of Chester Dam.

Review of the gravity data and their presentation thus shows that the appearance of a gravity ridge is just that, an appearance, although there are some crestal effects of modest amplitude adjacent to the gradient on the eastern face. The overall effect is one of a plateau. This leaves the association with Chester untouched; there clearly is some correlation with the boundaries of a particular block, or the origin of those boundaries, and the presence of sulphides and alteration do produce an excess gravimetric response.

It may be noted here just how important it is to obtain sufficient gravity data (and coverage) and to guarantee their quality. Gravity data sets are rarely able to define features as well as the ubiquitous and detailed magnetic data sets - and this should not be expected unless many stations are observed.
The present case is an example where a critical change in density of coverage roughly corresponds to major geological changes which are not evident or suspected at surface - but which do produce clues in the magnetic field.
Crucial deficiencies in the key stations at the change in coverage density have been more important in disguising the hints of important structural change and definition.
The evolution in understanding and definition which has followed each accretion to the survey will clearly continue with more data, but perhaps a true view is now becoming apparent.
It may also be remarked that corners should not be cut, or coverage arbitrarily restricted, in such surveys and that the best maps and contractor procedures must be used.

RE-INTERPRETATION

The implications of the direct observations, in each data set, especially in light of actual and probable (given extra data) revision of the gravity data set, are now virtually self evident and have in fact been confirmed by the drilling.

There would have been no cause to review these issues of data quality and definition, nor consider the implications of the magnetic gradients without the information provided by a drillhole in a previously undrilled area.

This hole, coupled with review of the interpretation, has enabled creation of a new view of the Chester site and its associated mineralisation.

Five sections within the Chester-Chester Dam area have been modelled. Each was previously described in Leaman (1991). Refer to Figures 1 or 4 for location.

Comparison with figures in Leaman (1991) will reveal some significant differences.
The gravity profile is not the same in any case. In order to minimise any ambiguity the effect of the Pine Hill - Tor Granite has been removed directly using the current 3D model for this intrusion. This was done by calculating its effect at the actual points on the profile and adjusting the residual. This means that it is no longer necessary to include some estimate of the effect in the model as some on line equivalent source, albeit one beyond the frame of special interest. The residual values thus exclude the effect of mantle, ocean and granite and are the effect of other materials only.
Each model also considers, consistent with the emergent regional view of the area, a Precambrian base level. Detailed forms of this surface are not reliably defined in short 2D profiles but its inclusion does make for a better model geologically and physically.
Thus, apart from any consideration of local re-interpretation forced by drilling or data revision, the models represent a substantial improvement in quality of interpretation.

Line 810 (Figure 6).
This line is considered in some length since all models are essentially similar. The properties of a Tyennan-style basement have been used as base reference and the contrasts implied locally and regionally are consistent with property determinations of the exposed formations. All properties used in the model are sustainable on the basis of such contrasts or direct measurements.
The magnetic and gravity models are consistent in terms of source scale and depth range and each defines a wedge of volcanics. There is some scope to vary the thickness of this wedge - using gravity data alone - and it is possible that the pile locally rests on Precambrian basement, or material with equivalent properties. Thus the gap, shown to be occupied by Dundas Group, between volcanics and basement may

in fact generally occur. It is unlikely to be much thicker than shown if real. This comment allows for the possibility of multiple slicing and wedging along the fault zone.
These two elements, the trough of Dundas Group rocks and the wedge of volcanics, account for most of the gravity effect but almost none of the magnetic effect.
While the overall form of the gravity profile reflects the interaction of trough and wedge the overall form of the magnetic profile reflects the existence of ultramafics west of the profile origin.
Variations within the volcanics of the fault wedge are superimposed on both gravity and magnetic regional responses.

Several of the modelled boundaries and the general relationships were evident in earlier interpretation but some have been emphasized and clarified. Major changes in rock type occur near Chester and at the eastern end of the section. Possible faults have been marked (F) or (TF)(thrust fault) in the figure. Most structures dip steeply and appear to penetrate the volcanic wedge. It is not possible to resolve any disruption of the Rosebery Fault by such structures with the present data or analysis. Much more knowledge of properties and some additional control would be necessary before this is feasible.

The review analysis would suggest that the positive anomaly crest near Chester merely reflects near surface changes in volcanics and alteration. but that these are adjacent to a significant fault. There is no definitive indication of any change in magnetic properties which is consistent with bulk alteration.

Line 815 (Figure 7)
Modelling of this line carries the same regional characteristics as described above. In detail, however, it emphasizes the density changes which occur as Boco Creek is approached. The lithologies vary significantly and a major fault is indicated near the exposed porphyries. The magnetic data would suggest a multiple fault zone and that this structure cuts off the inferred thrust fault system within the eastern end of the pile. Folding is not excluded as an option which could also yield the illusion of thrusting in the source distribution. A major break is also implied near Chester Dam. All breaks and contrasts penetrate the volcanic wedge.
The new models utilise all property information and ignore some of the concepts on which the original interpretation was based. Many of these were assumptions about the continuity of fold limbs.
The drillhole can be considered to have crossed one of the density and susceptibility boundaries west of Chester Dam. There is again little indication of major alteration character in either data set or inferred properties.

Line 982 (Figure 8)
Modelling of this section produces some of the greater differences from previous work. Inclusion of regional elements forces consideration of the shape of the volcanic wedge, which may either be multiple or folded. In addition, the faulted trough edge between basement (implied) and Dundas Group rocks is associated with ultra-

mafics.
The major changes which occur within the volcanic pile east and west of Chester are well defined. Previous work did not resolve both.
The model shows that the peak gravity effect near Chester is partly anomalous since its explanation depends on locally high density volcanics. These have been observed in the vicinity of Chester (see details, Leaman, 1991) and a significant volume of volcanics are affected. Note that the affected (altered) volume extends to the exposed altered rocks at 378 900, 5381 500. This development is not pronounced on any other profile and suggests the orientation of any anomalous development. The magnetic field is locally erratic near each face of this dense zone within the volcanics.

Line 780 (Figure 9)
This line reinforces some of the comments made above. Major discontinuities are evident within the volcanic wedge, especially near the northern end of the profile. This is the region in which the magnetic field becomes more disturbed and of greater intensity.
The zone with increased mass, or denser (or altered) volcanics, is much reduced beneath Chester Dam. The contrast and volume are both reduced.

The revised model reflects the changes forced by consideration of regional components and removal of any gross assumptions about the effect of granite on the alignment.

Line 782 (Figure 10)
The revised model is consistent with known rock distributions but does not assume complex fold limb continuity throughout the volcanic wedge. In most other respects it reflects an evolution and carries a consistent structural and lithological pattern. The volume of denser volcanics near Chester Dam is moderate but the contrast is less than near Chester.

CONCLUSIONS

Both gravity and magnetic data have defined major breaks within the volcanics of the Chester region. Many of these structures were defined previously on the basis of trend changes (see Figure 3) but the relative scale was not indicated. The largest structure occurs east of Chester and is now partly occupied by Boco Creek. This high angle structure, which was not recognised by earlier work due to its egional scale (and does not appear in Figure 3) appears to cut out a lower angle high level east-dipping thrust a little west of it (Figure 3). A near N-S fault extending past both Chester and Chester Dam is also not shown in Figure 3. Minor offsets in the magnetic field along this trend suggest the existence of minor cross structures. Chester is associated with the intersection of the N-S structure and a lesser sub E-W structure.
Most alteration appears to be restricted to the Chester area and to be reduced northward but to persist a little east of Chester Dam. It is not surprising that hole BPD74 did not encounter it but this is a view from hindsight once the flaws in one data set were recognised

and the relevance of the most anomalous trend in the other was appreciated.

The revised interpretation has been summarised in Figure 11.

The recognition of penetrative faulting within the volcanics raises some important issues - such as the age of faulting and whether any were part of the mineralising process. The geophysical data, of themselves, cannot answer such questions but the absence of base metals in the Chester area and the concentration of alteration about a particular intersection might well indicate a Devonian rejuvenation of an older system or source.

Some of the questions asked in Introduction can not be answered.

The hole was not well located. Its entire path was too far to the west of both the main structure and any possible alteration.

The hole, given its position, was deep enough. It has fairly tested the massive volcanics of the primary fault block. No target remains untested west of Chester Dam.

The gravity anomaly (and magnetic responses) are associated primarily with gross changes in volcanic compositions and define fault locations. Some of these structures might well be relevant to further exploration but the issue of their age (or age of fluids using them) must be considered. The forms and relationships currently implied in the magnetic models indicate disruption of the volcanic pile rather than original variations in the accumulation. This comment is made since some of the latter, more stratiform, changes are locally indicated. If it is concluded that the fluids and structures are post Cambrian then the base metal potential of this area must be reduced. Indeed, is there a correlation with Boco? Both Boco and Chester deposits lie at the ends of a linking structure, now marked by Boco Creek.

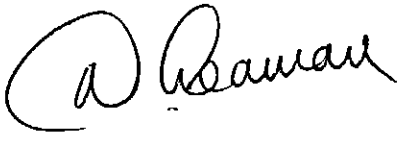
The magnetic anomalies are well defined but the gravity anomalies, even after meticulous checking and correction, leave something to be desired. This is inevitable given the inherent limitations in survey coverage and cost. Errors or omissions, now identified and repaired, have remedied many of the misleading aspects of previous presentations. There seems little case for further coverage unless the area is seen to retain potential for the style of targets sought.

REFERENCE

Leaman, D.E., 1991. Detailed review: Chester area. EL 44/88, Burns Peak. Report for Pasminco Exploration by Leaman Geophysics, September.

Report submitted on behalf of Leaman Geophysics

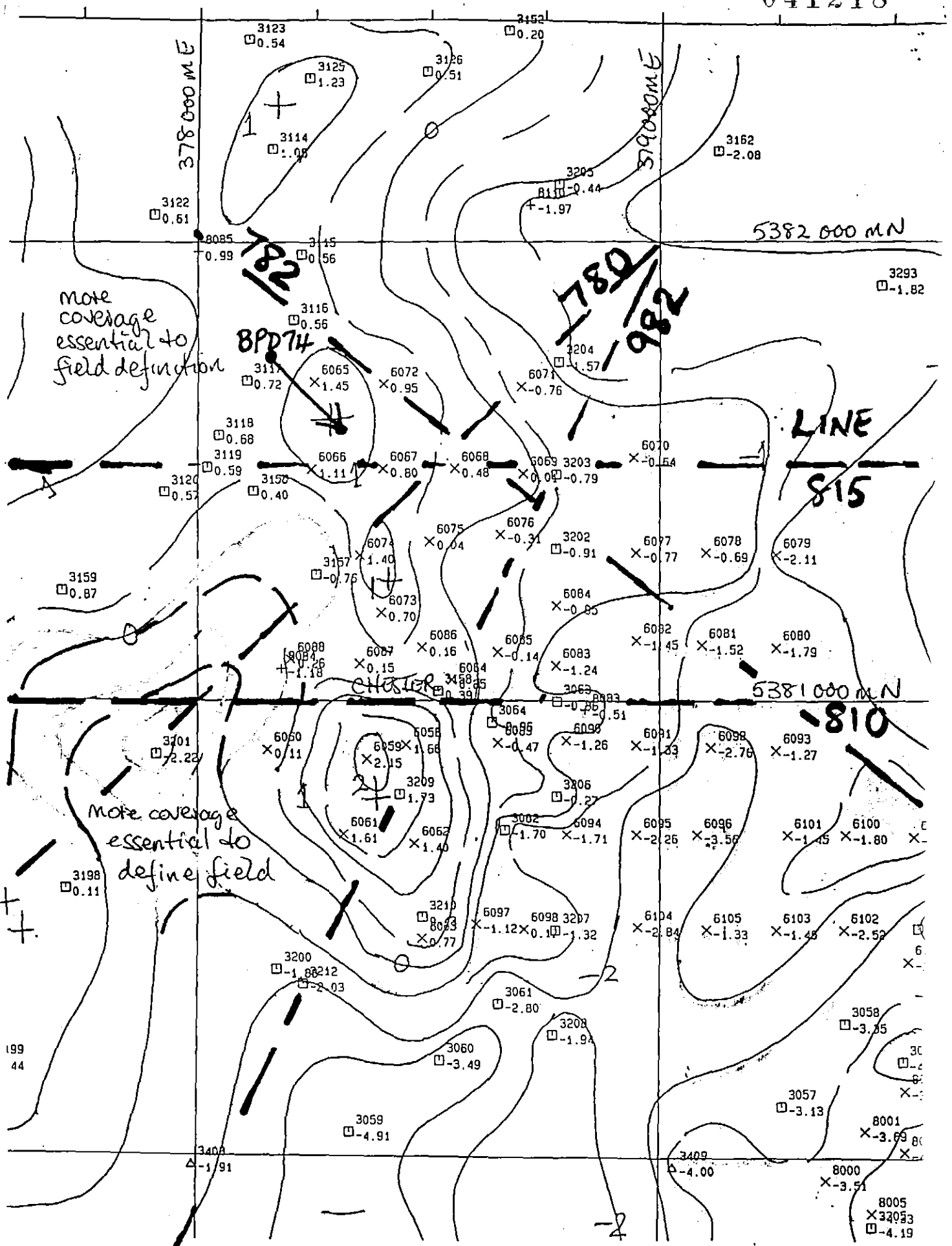
by



Dr. D. E. Leaman, B.Sc., Ph.D.,
F. Aus. I.M.M., M.M.I.C.A.

Date: 6/1/92

041218

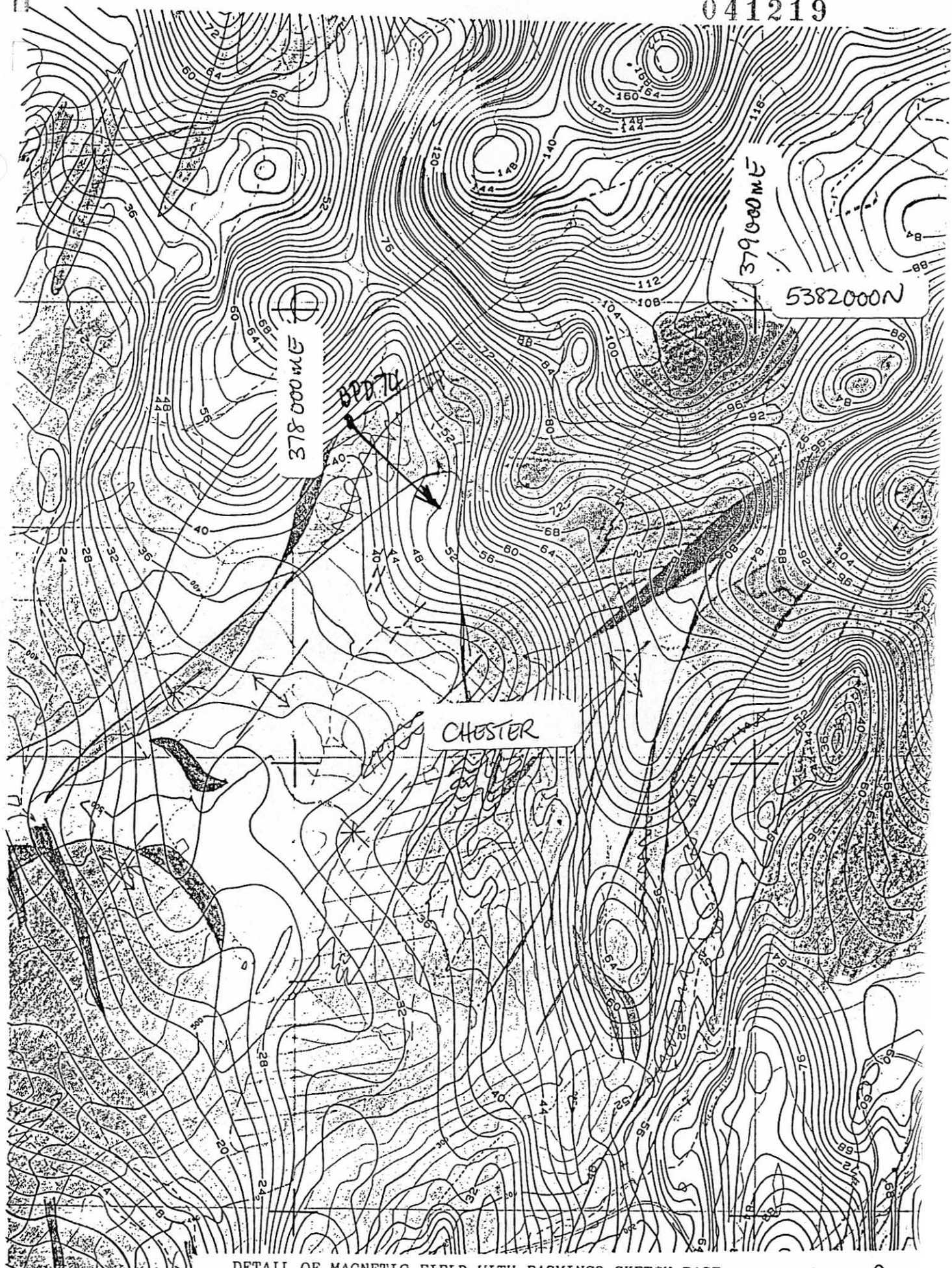


DETAIL OF RESIDUAL BOUGUER ANOMALIES CHESTER AREA FIGURE 1

Jan 92

(revised contours - this text)

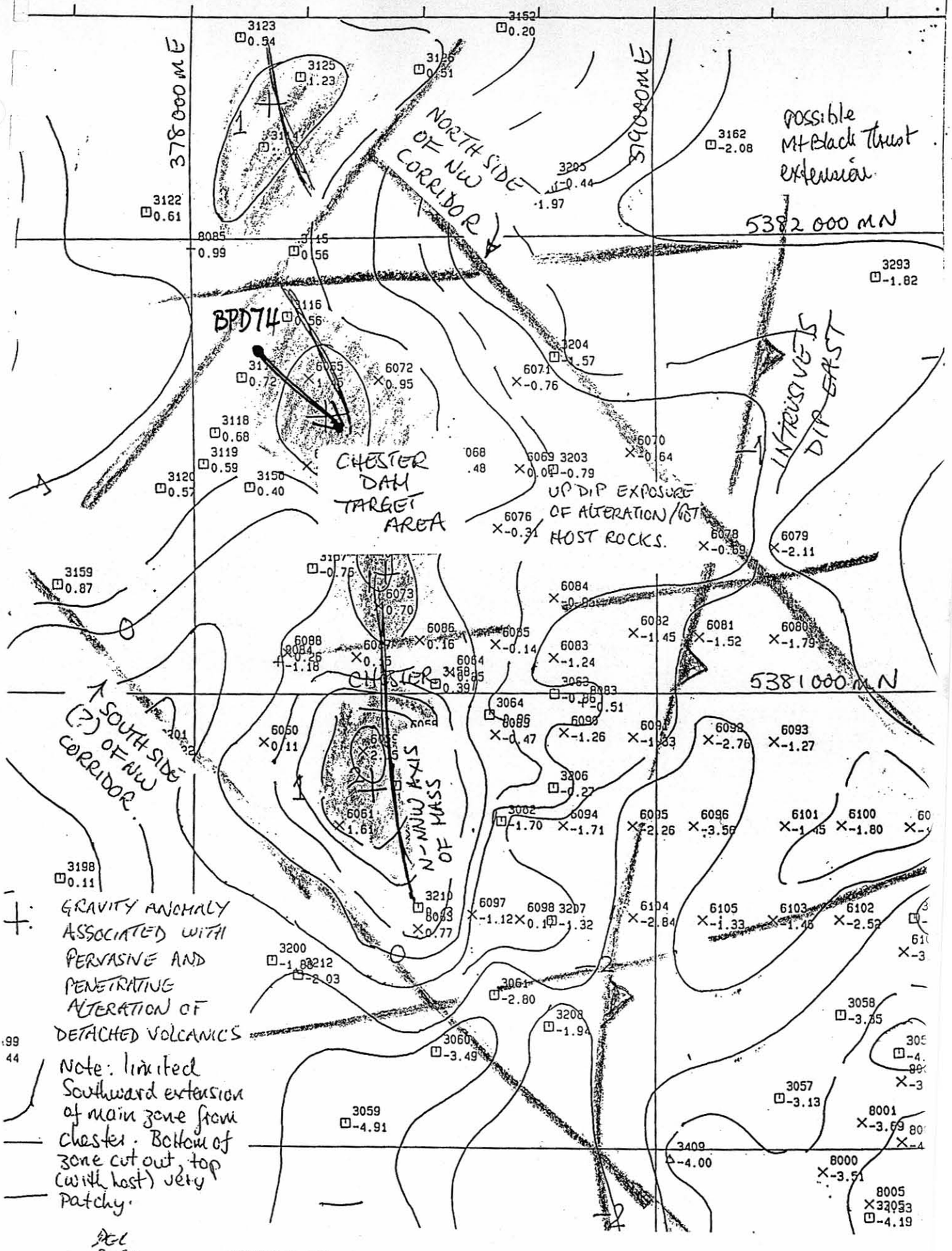
041219



DETAIL OF MAGNETIC FIELD WITH PASMINCO SKETCH BASE
CHESTER AREA

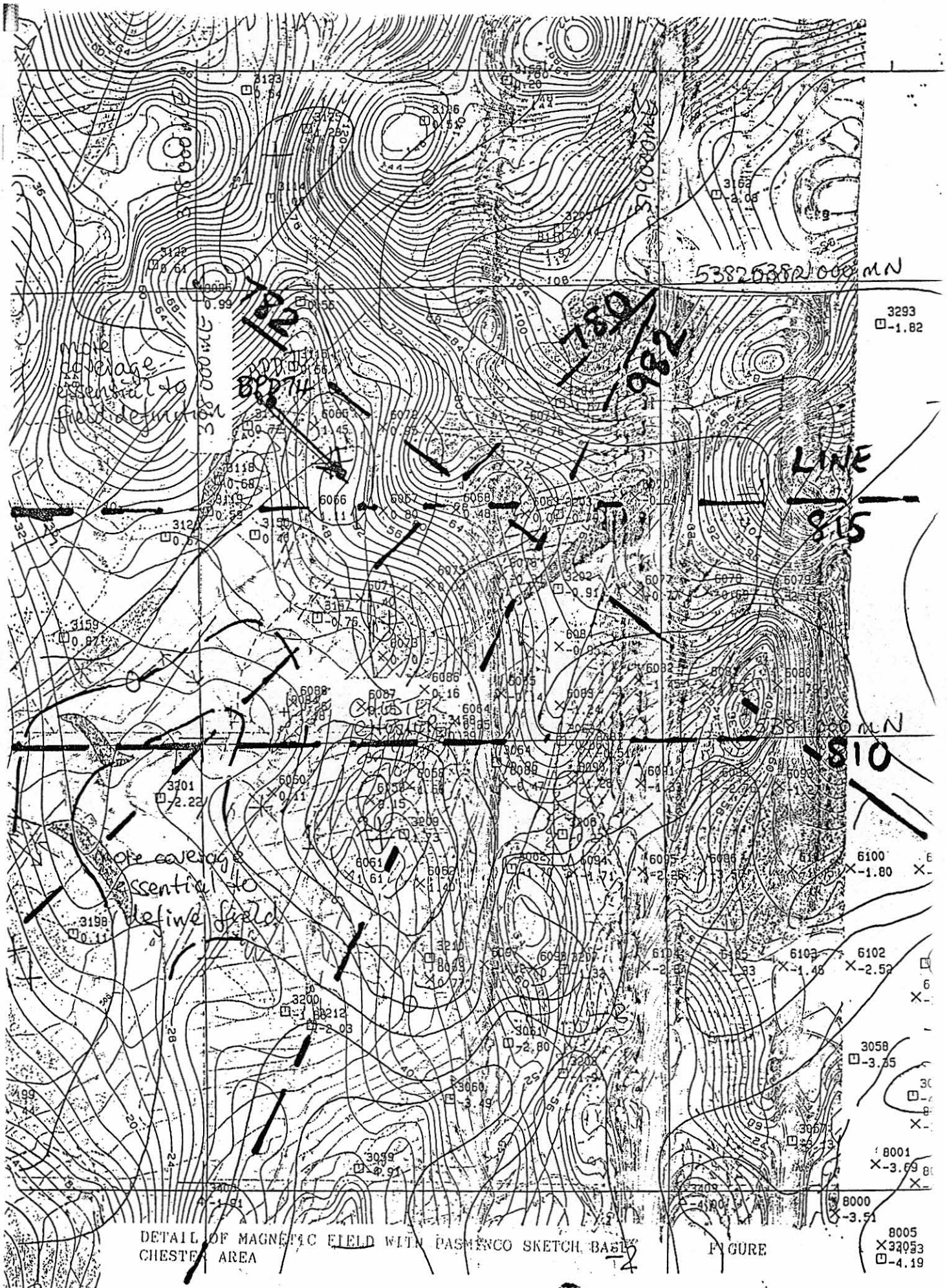
FIGURE 2

041220



SUMMARY OF INTERPRETATION AND TARGETS from Leaman (1991)

FIGURE 3

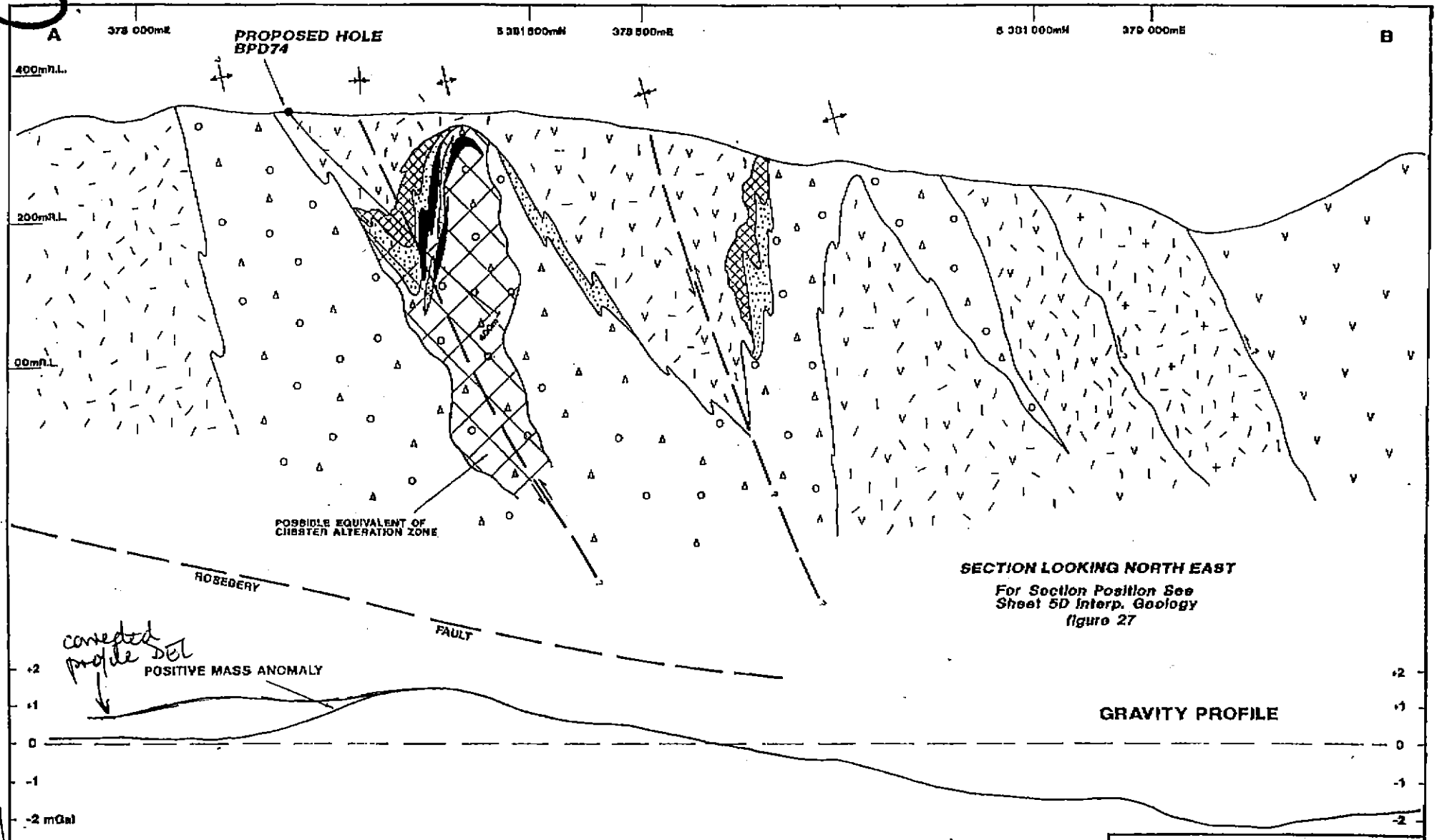


DETAIL OF MAGNETIC FIELD WITH PASMENCO SKETCH BASE CHESTER AREA FIGURE 4

DETAIL OF RESIDUAL BOUGUER ANOMALIES CHESTER AREA FIGURE 4

041221

002 PASMINCO EXPLOR. →→→ LEAMAN GEOPHYS 0004 318949 18/11 '91 09:48



LEGEND

- Rhyolite Lava and Lava Breccia
- Rhyolite - Shallow Intrusive
- Rhyodacite - Dacite Lava and Lava Breccia
- Dacite - Andesite Lava
- Coarse Epiclastic and Other Volcaniclastics
- Fine - Grained Sediments or Ash
- Possible Sulphide Position
- Pyritic Zone (±Sericite±Chlorite)
- Proposed Diamond Drill Hole
- Lithological Contact
- Fault - Inferred

PASMINCO EXPLORATION
A Division of Pasminco Australia Limited

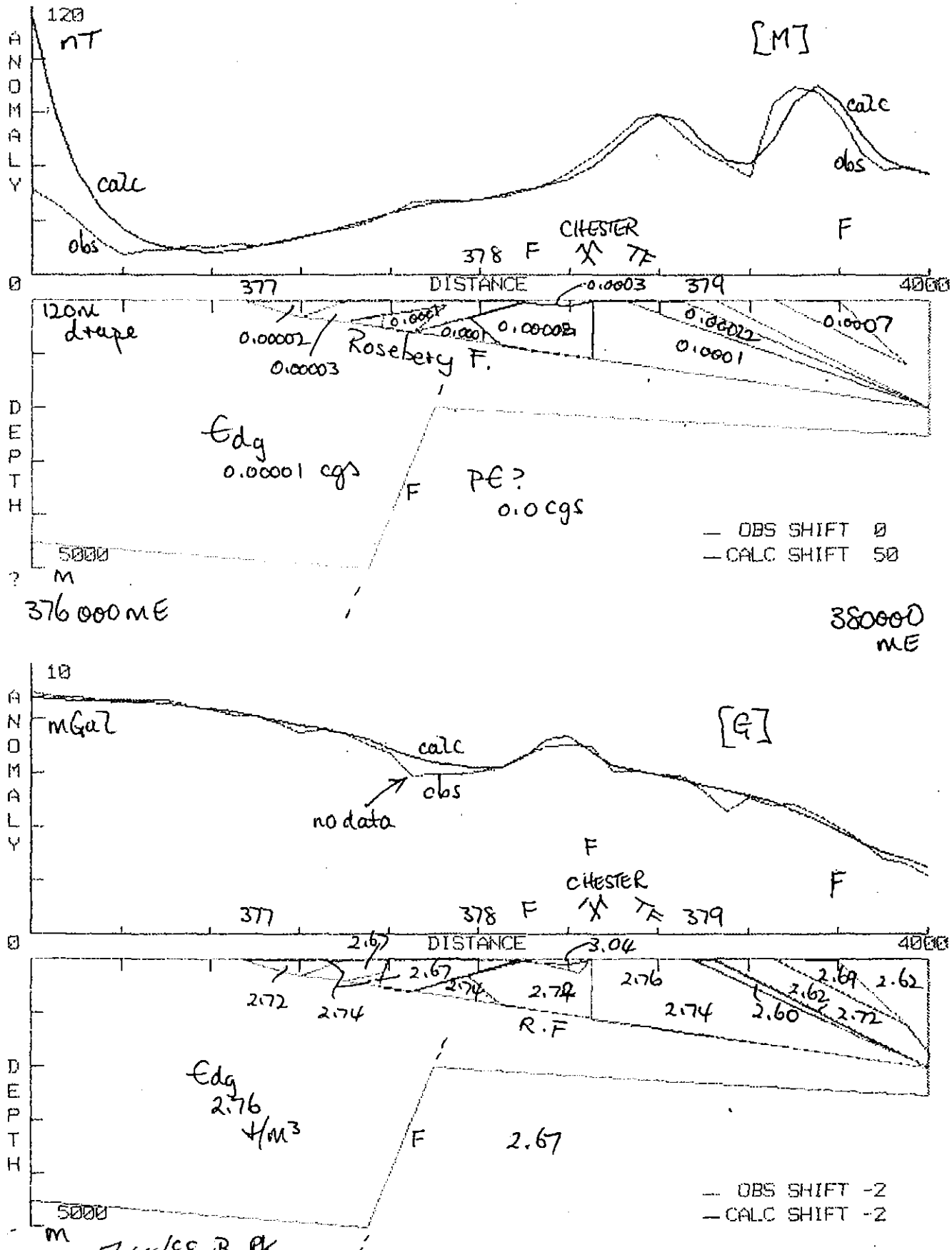
COMPILED: L.W.K.
DATE: Oct, 1991
DRAWN: G.M.B.
REF.:
REVISIONS:

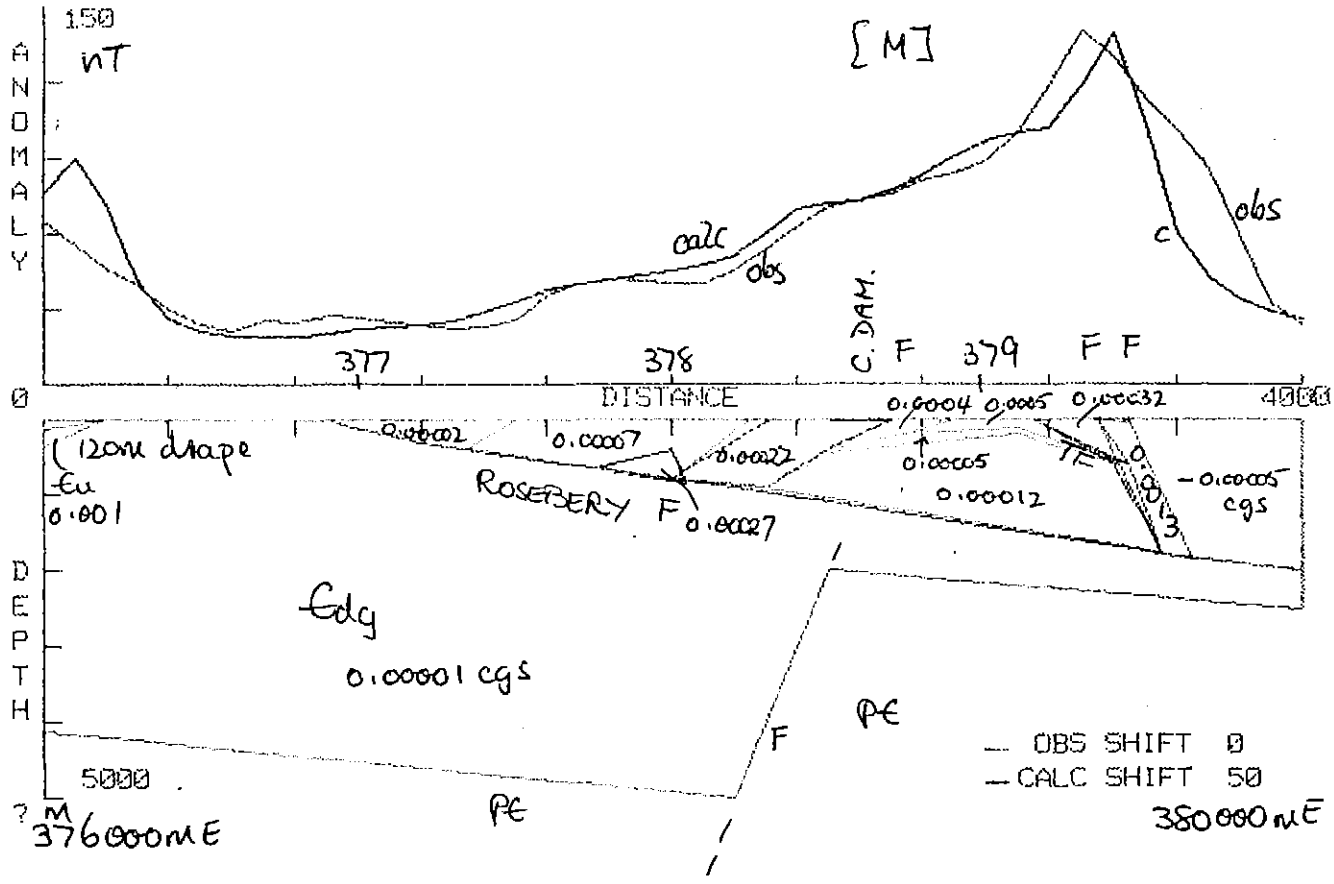
E.L. 44/86 - BURNS PEAK JV

INTERPRETED GEOLOGY FOR BPD74 DRILL PROPOSAL

FIG. No. 29

figure 5


120
nT
ANOMALY
[M]
calc
obs
CHESTER
378 F
F
0
377
DISTANCE
379
4000
120M drape
0.00002
0.00003
Rosebery F.
0.0003
0.0007
0.0001
Edg
0.00001 cgs
F
PE?
0.0 cgs
DEPTH
5000
m
— OBS SHIFT 0
— CALC SHIFT 50
376 000 mE
380000 mE
10
mGal
[G]
calc
obs
no data
F
CHESTER
377
378 F
379
2.67
3.04
2.72
2.74
2.76
2.69
2.62
2.60
R.F
Edg
2.76 t/m³
2.67
— OBS SHIFT -2
— CALC SHIFT -2
EL 44/88 B. Pk.
1/92 rev.
5381 000 mN
LINE 810
FIGURE 6


150
nT
ANOMALY
[M]
calc
obs
obs
C. DAM.
377
378
C F
379
F F
0
DISTANCE
40000
120m drape
εu
0.001
0.00002
0.00007
0.00022
0.00027
ROSEBERY F
0.00004
0.0005
0.00032
0.00005
0.00012
TF
0.00003
-0.00005 cgs
DEPTH
εdg
0.00001 cgs
5000
PE
F
PE
OBS SHIFT 0
CALC SHIFT 50
376000mE
380000mE

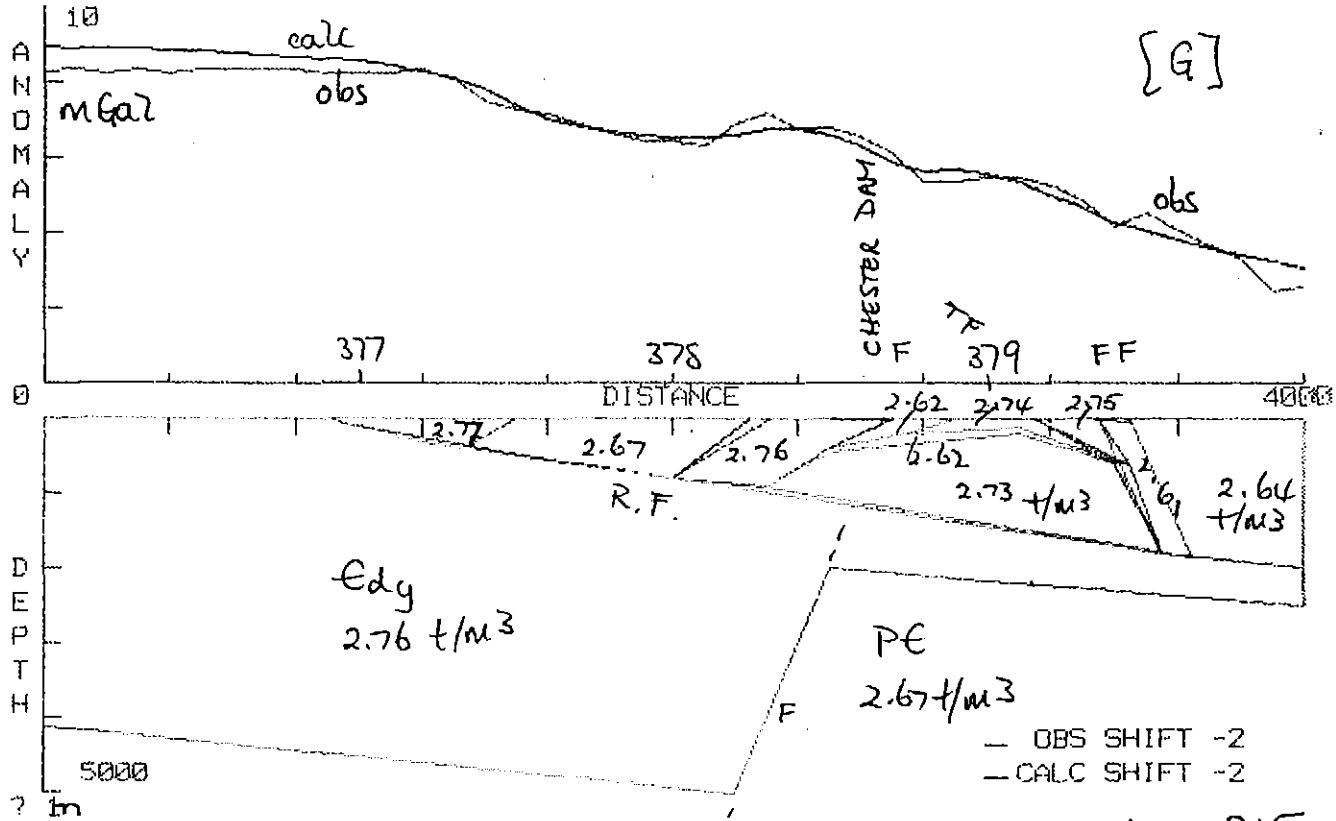
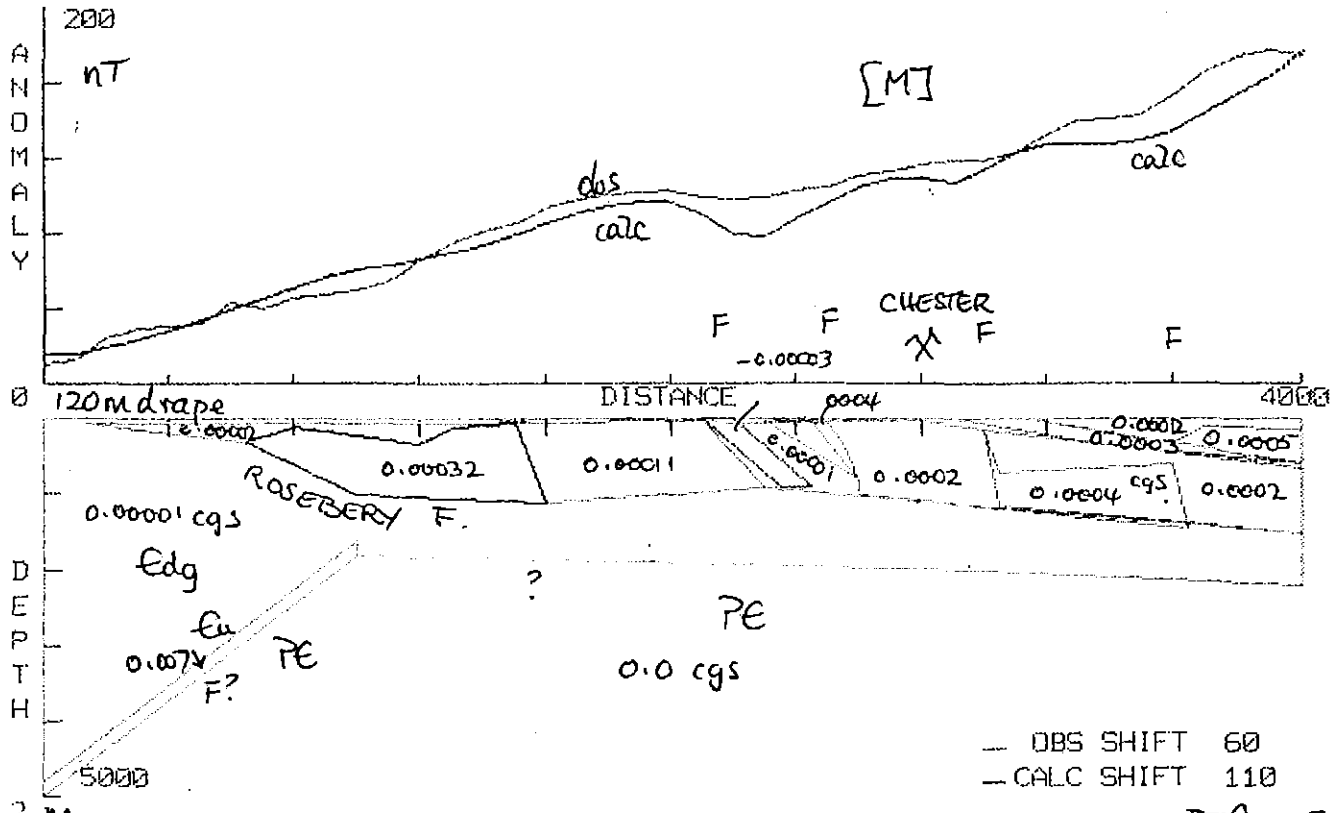
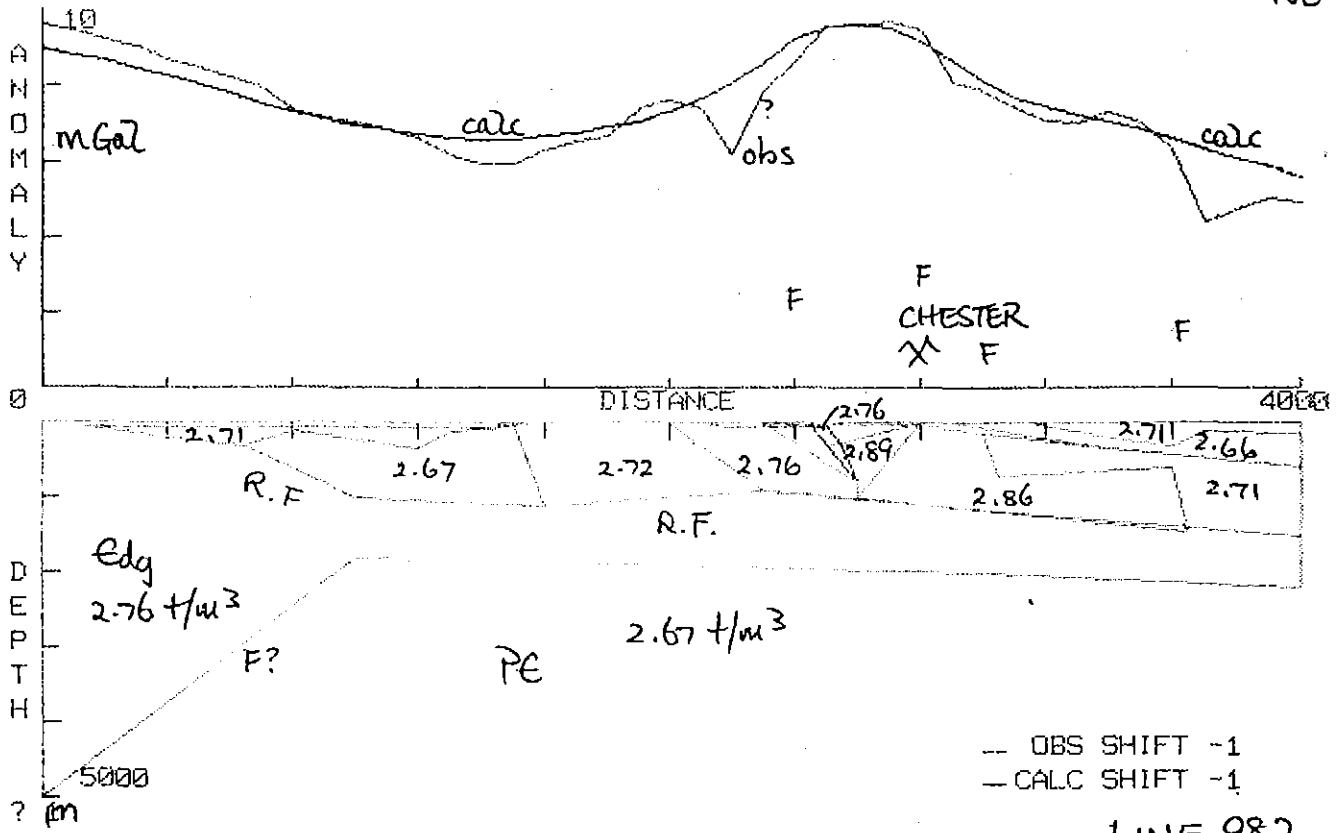

10
ANOMALY
calc
obs
mGal
[G]
obs
CHESTER DAM
377
378
F
379
FF
0
DISTANCE
40000
2.77
2.67
2.76
R.F.
2.62
2.74
2.75
2.62
2.73 t/m3
2.69
2.64 t/m3
DEPTH
εdg
2.76 t/m3
5000
PE
2.67 t/m3
F
OBS SHIFT -2
CALC SHIFT -2
EL 44/88. B.Pk.
PE 1/92 rev.
5381500mN
LINE 815

FIGURE 7



377250E
378400N
SW

379000E
382000N
NE

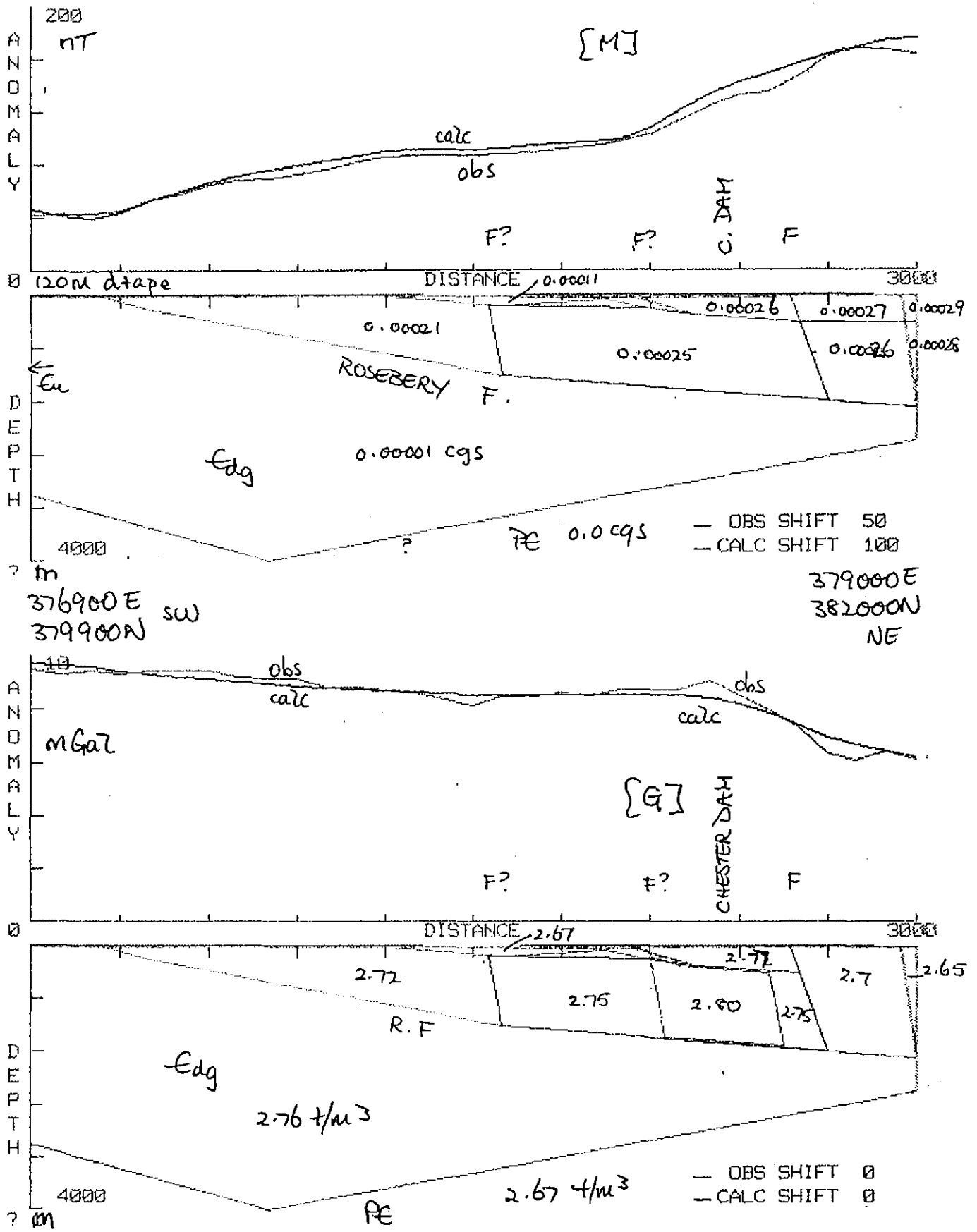


EL 44/88 B.Pk
1/92 Rev.

LINE 982
FIGURE 8

041225

041226

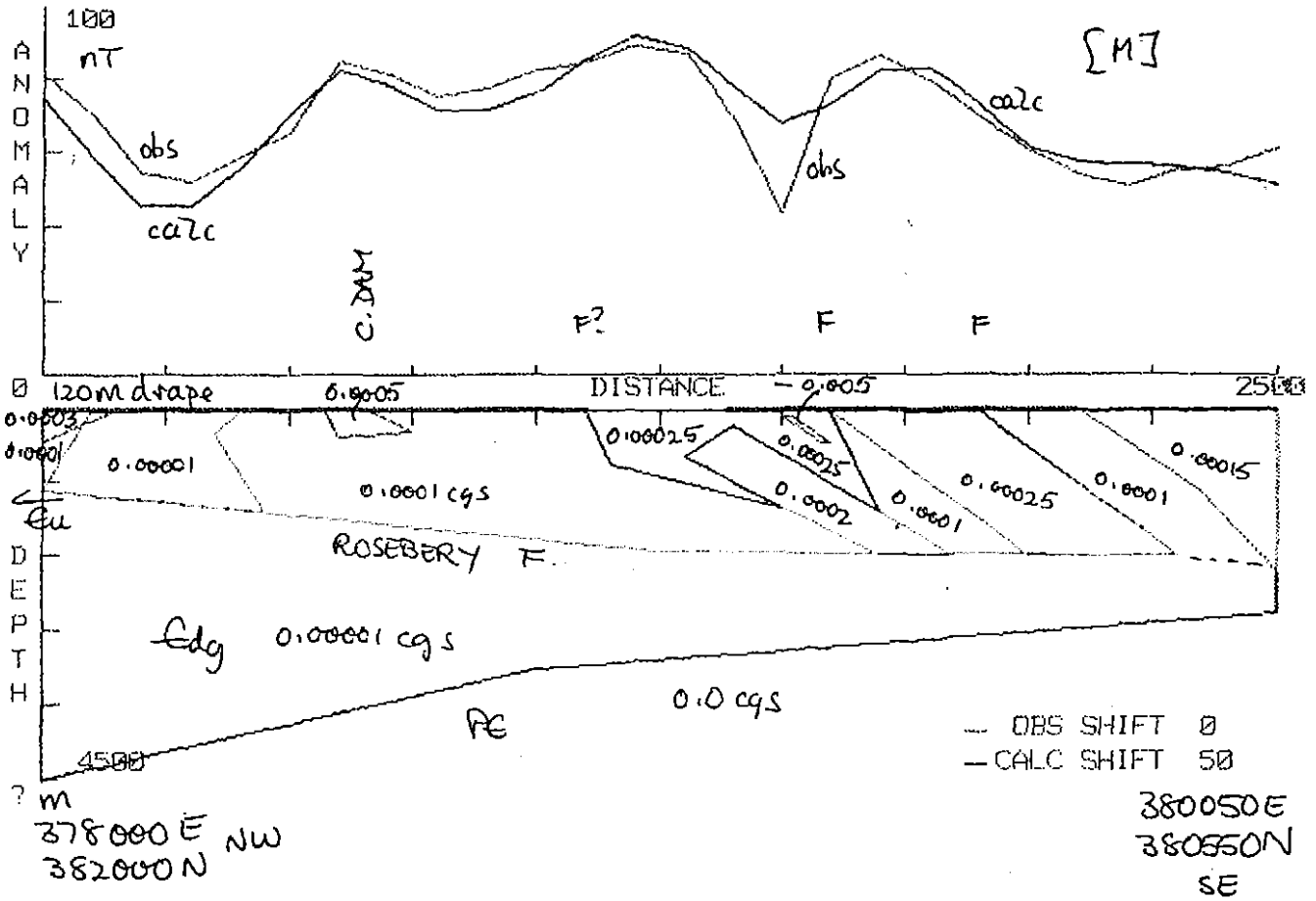


EL 44/88 B.PK
Rev 1/92 DEL.

LINE 780

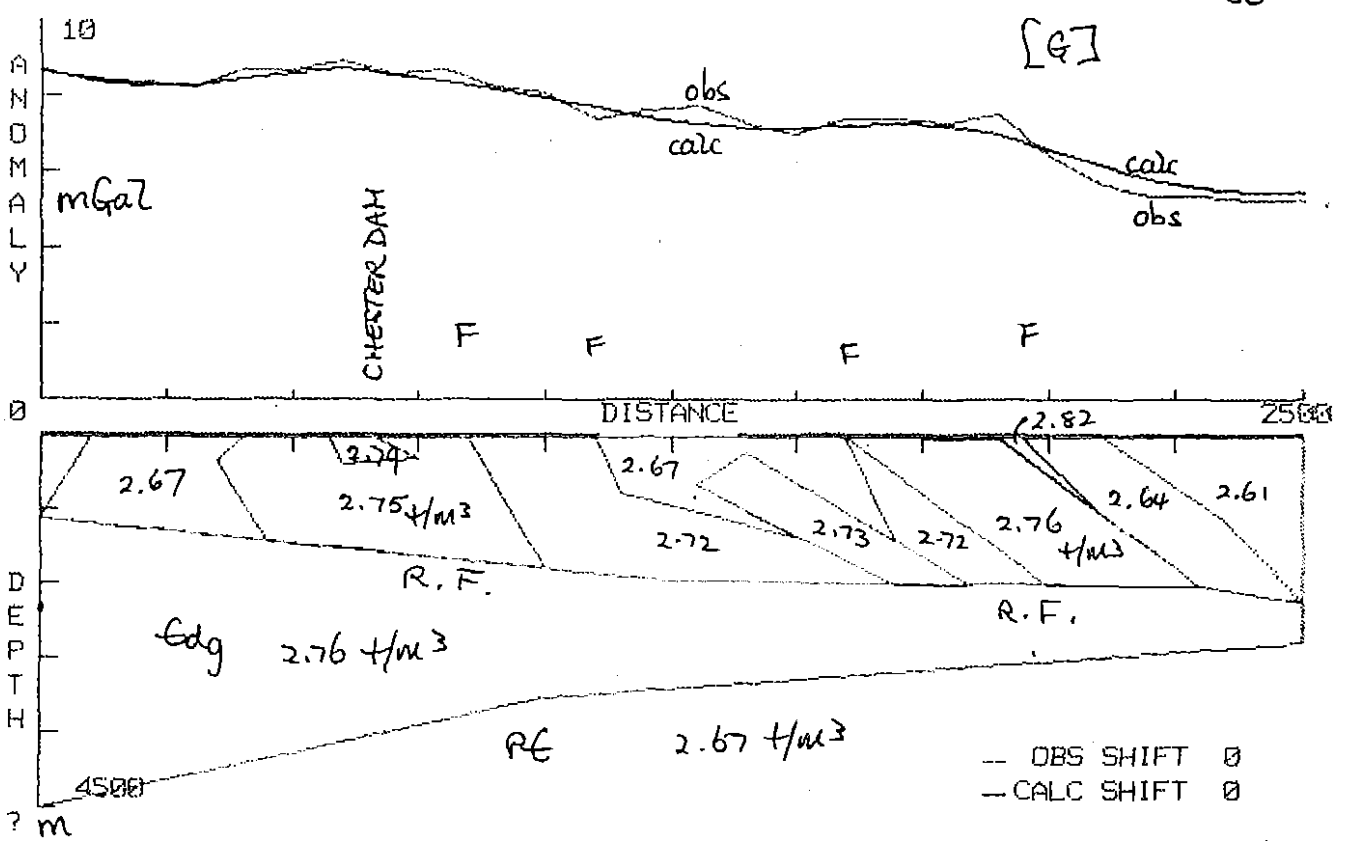
FIGURE 9

041227



378000 E NW
382000 N

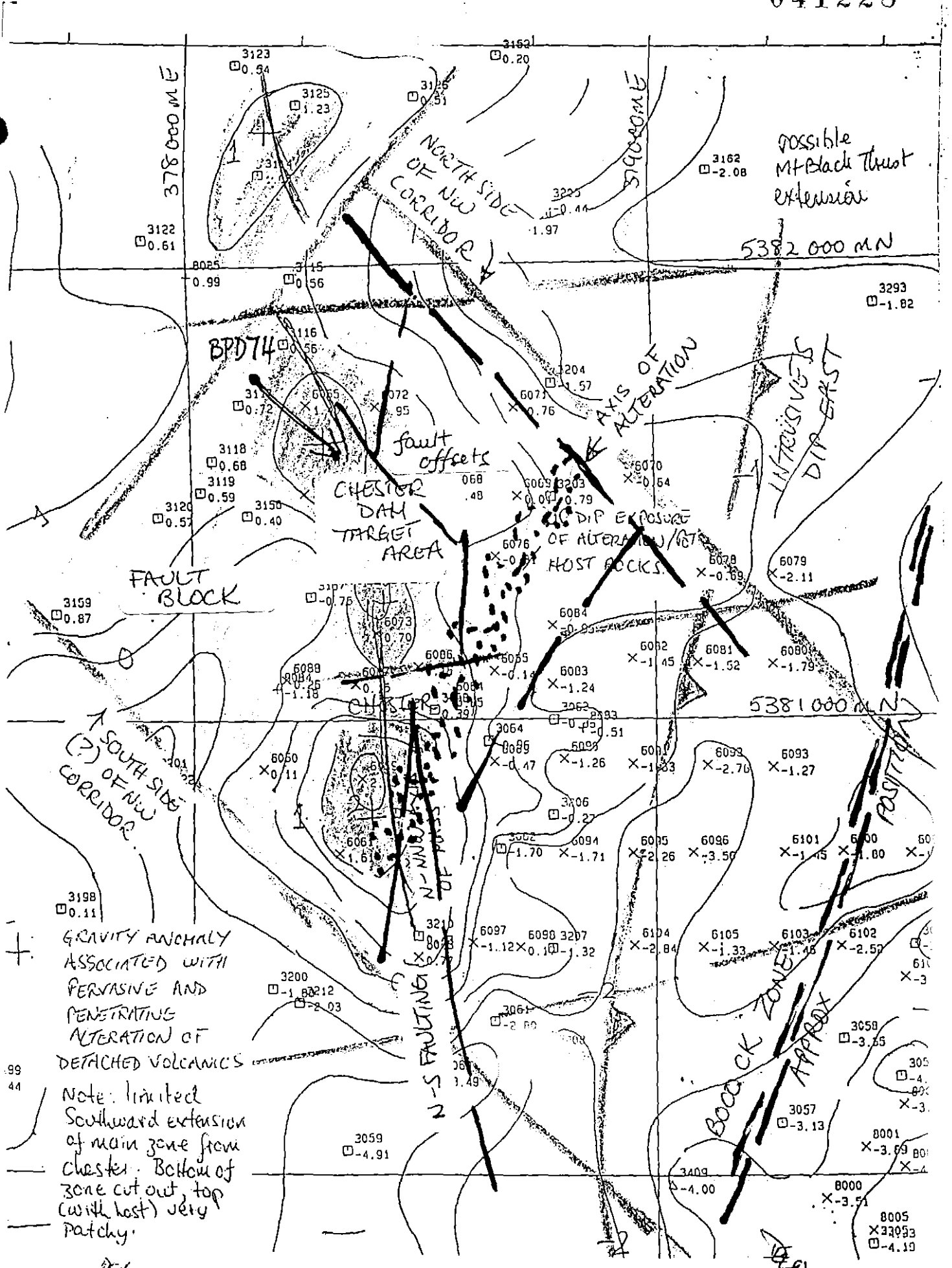
380050 E
380550 N
SE



EL 44/58 B PK
Rev 1/92 DE.

LINE 782
FIGURE 10

041228



SUMMARY OF INTERPRETATION AND TARGETS REVISED JAN 92 FIGURE 11

APPENDIX 4

Gravity and Magnetics:

Memoranda from Leaman Geophysics:

(a) Railway Prospect, 13 April 1992

(b) Cone Hill – Pinnacles Prospect, 20 April 1992

(including correspondences with Lorrigan, December 1991)

LEAMAN GEOPHYSICS
Survey Review, Specification, Reduction, Interpretation
Gravity, Magnetic and Seismic Methods
Structure and Prospect Evaluation

Registered office:
3 MALUKA STREET, BELLERIVE, TAS. 7018
All correspondence to:
GPO BOX 320 D, HOBART, TAS. 7001
Telephone: (002) 44 1233
Fax: (002) 44 6674

MEMORANDUM:

BURNS PEAK EL 44/88 WESTERN TASMANIA

ATTENTION: F. Fitzgerald
L. Kirsner

DATE: April 13, 1992

RAILWAY PROSPECT

The area near 380 000 mE, 5383 000 mN at the large bend in Boco Creek has been examined in some detail after attention had been drawn to this site on the basis sof regional studies.

The initial gravity survey suggested anomalous character along the railway but this was based on only two stations and little local confirmation. Regional magnetic data, however, indicated that some primary transverse structuring might also be present and that imposition of deeper features was responsible for the marked changes in orientation of Boco Creek. The creek trends NE from Chester then abruptly turns eastward at 5383 000 mN for about one kilometre before recovering its NE trend to Boco Siding. Some other NW-NE trends, evident in magnetic data, intersect in this same area (Leaman, 1990).

This confluence of anomalous responses suggested that the zone justified further review and survey.

In the period since this zone was identified, and now known as Railway, the detailed Burns Peak aeromagnetic survey was corrected for terrain clearance (to 120 m) and also transformed into a fixed level compilation (at 1300 m).
The gravity survey was infilled using the Department of Mines as contractor. Observations and reductions were undertaken or supervised by Dr. R.G. Richardson with subsequent correction, compilation and checking by Leaman Geophysics.

Figures 1 and 2 show the nature of the gravity field based on all available coverage. Station locations, of various survey vintages, are shown in Figure 1. The Bouguer reduction was based on a density of 2.67 gm/cc and, although most stations have been pneumatically or barometrically levelled, the results have been contoured with a 0.5 mGal interval. This is barely justified given overall precision ranges but does serve to clearly picture the general shape of the field around the prospect.
Whatever minor deficiencies may be retained in the data set - largely as a result of incomplete station descriptions in older surveys - there is no doubt that a

local gravity anomaly does exist at this site. It is of the order of 2 or 3 mGal.
The Bouguer data have been compensated for crustal sources and the residual effects are shown in Figure 2. These reveal a negative anomaly trend along Boco Creek, and ENE gradient south of 5381 000 mN, and a general bulls-eye effect near 380 500, 5382 800. The anomalous area is of the order of 2 km by 2 km and certainly associated with the changes in orientation of Boco Creek - but to the immediate southeast.

The available magnetic data compilations are shown in Figures 3, 4 and 5 for 120 m drape corrected, smoothed drape and upward continuation respectively.
Although Figures 3 and 4 indicate a subtler pattern near Railway Prospect, marked especially by truncation of anomaly ribs extending to the NE, there is a general correlation with the gravity forms. The positive anomally lies on a trough in the magnetic field which cuts off the bend in structures and creek alignment and spills across an area in which the magnetic field intensity is reduced. Both fields display strong responses along the NW side of Boco Creek.

An attempt has been made to clarify the magnetic field pattern using the upward continued data as a regional function (or smoothed data set). If this is treated in this way and subracted from, say, the complete field - as in Figure 4 - a residual plot can be produced (Figure 6). The residual presentation enhances the association with gravity data and offers discrimination between response patterns near the gravity anomaly and the area to the SE. The negative axis along Boco Creek, and <u>across</u> the bend offset, is widened and stressed.

Both data sets stress the abnormalities of the Railway Prospect.

The magnetic data suggest that the bulk of the creek follows a relatively recent NE-SW structure which extends from Chester to Boco. This is associated with barren mineralization at each end. Essentially pyritic mineralization and alteration could be associated with a positive gravity response and negative magnetic response. This pattern has been observed elsewhere in the volcanics.

On the basis of this association and experience the site might well be dismissed as anomalous, almost certainly altered and probably mineralized - with pyrite.

However, the regional grain and offsets, such as marked by the creek, and the <u>specific</u> location of the responses suggest that something else <u>may</u> be involved. If it is

argued that ENE trends (shears?) are important then this site may have had a previous incarnation and been rejuvenated during the "base metal barren" period. In such a scenario first stage mineralization processes may have produced something worthwhile. This possibility clearly needs to be reviewed and tested before the site is dismissed.

Surface checking, including perhaps some spot geochemical sampling, might well resolve this issue.

The Railway site is certainly anomalous. The crude initial gravity survey drew attention to this zone, attention justified by these follow-up studies, even though the current compilation of the gravity field is now quite different due to changes in coverage. Gravity surveys have also forced specific consideration of magnetic features to yield a coherent evaluation.

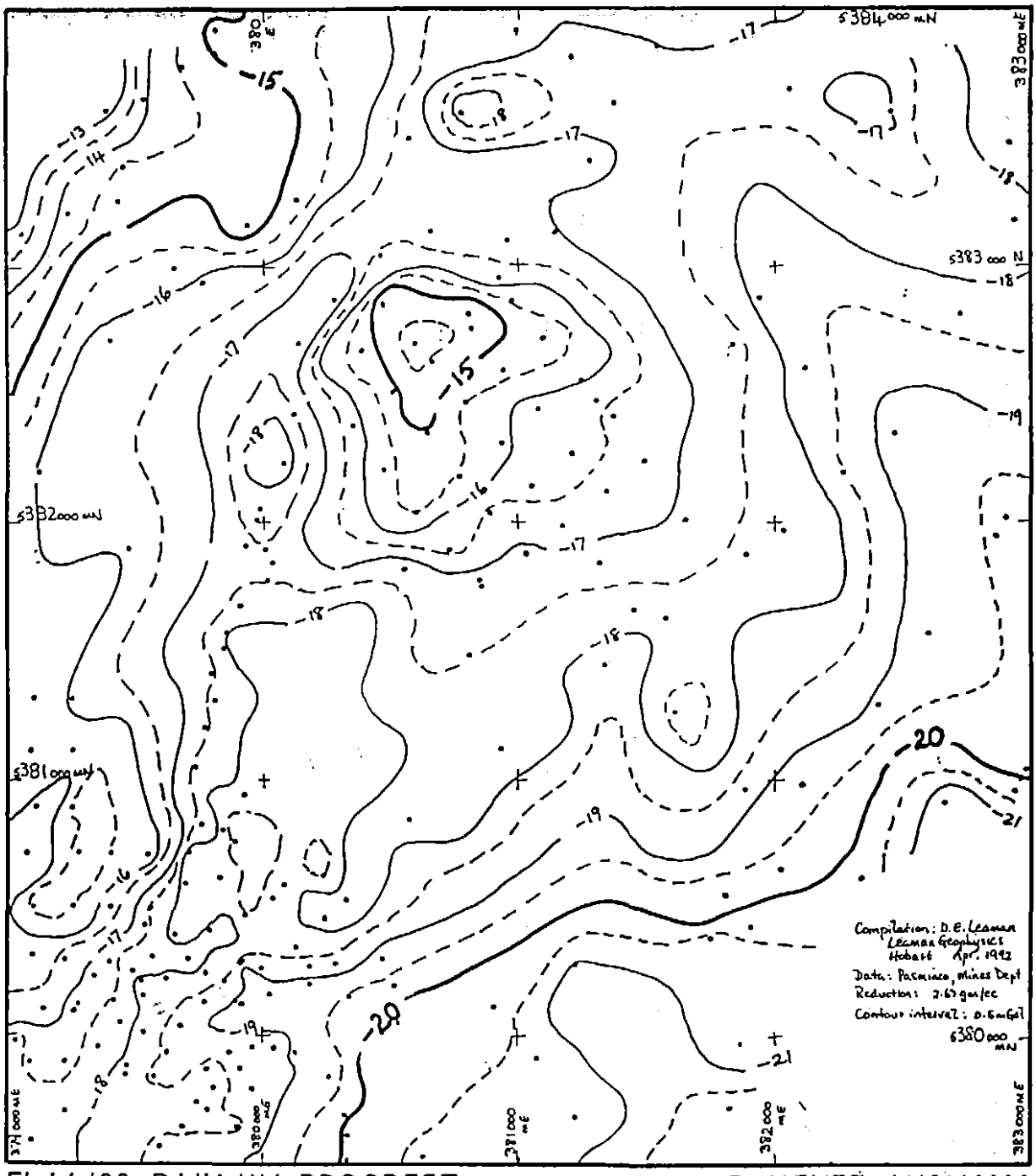
Reference:

Leaman, D.E., 1990. Integration of initial interpretation. Gravity and magnetic data. EL 44/88 Burns Peak. Report for Pasminco Mining by Leaman Geophysics, September.

Notes prepared by D.E. Leaman
on behalf of Leaman Geophysics

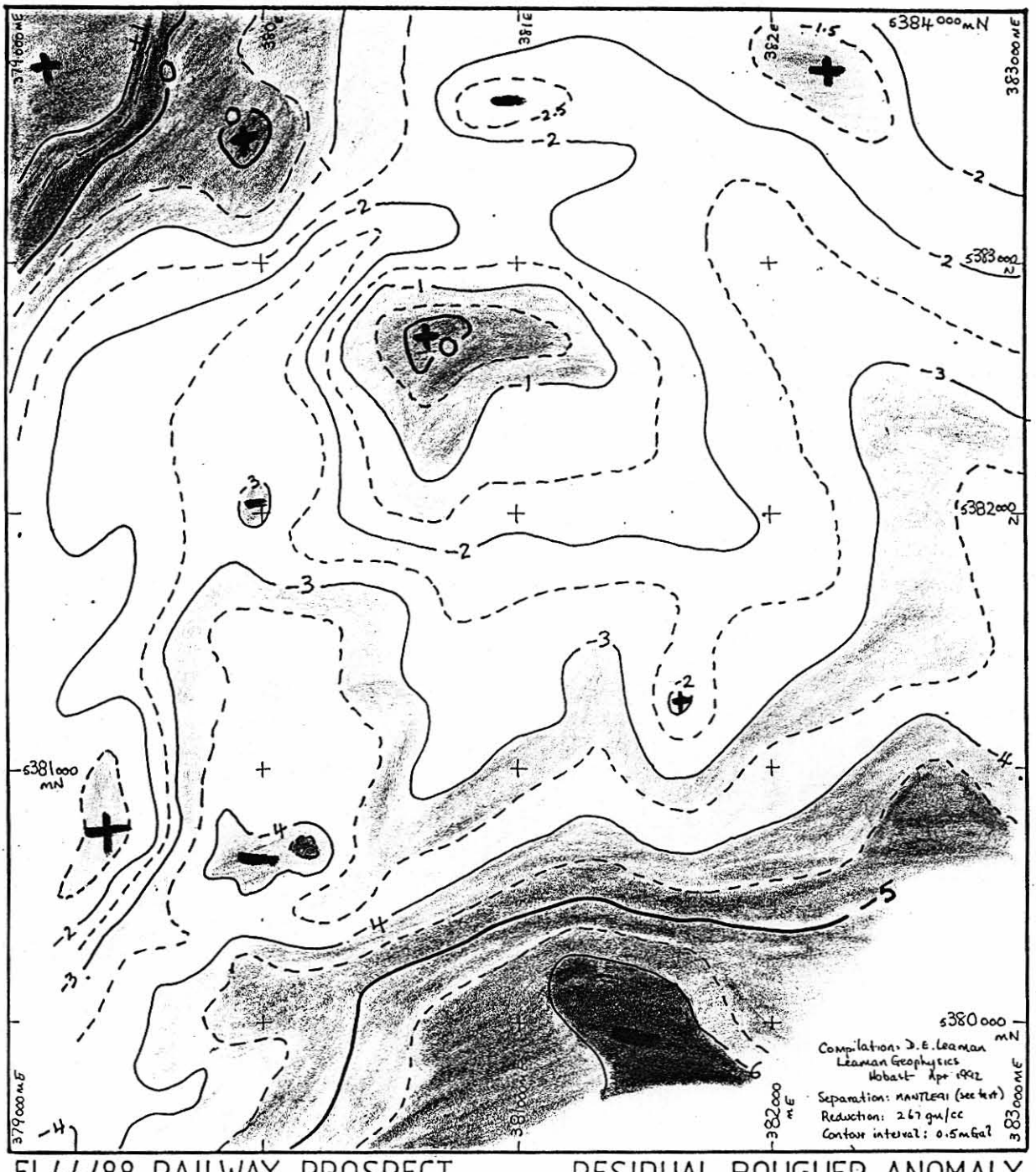


April 13, 1992



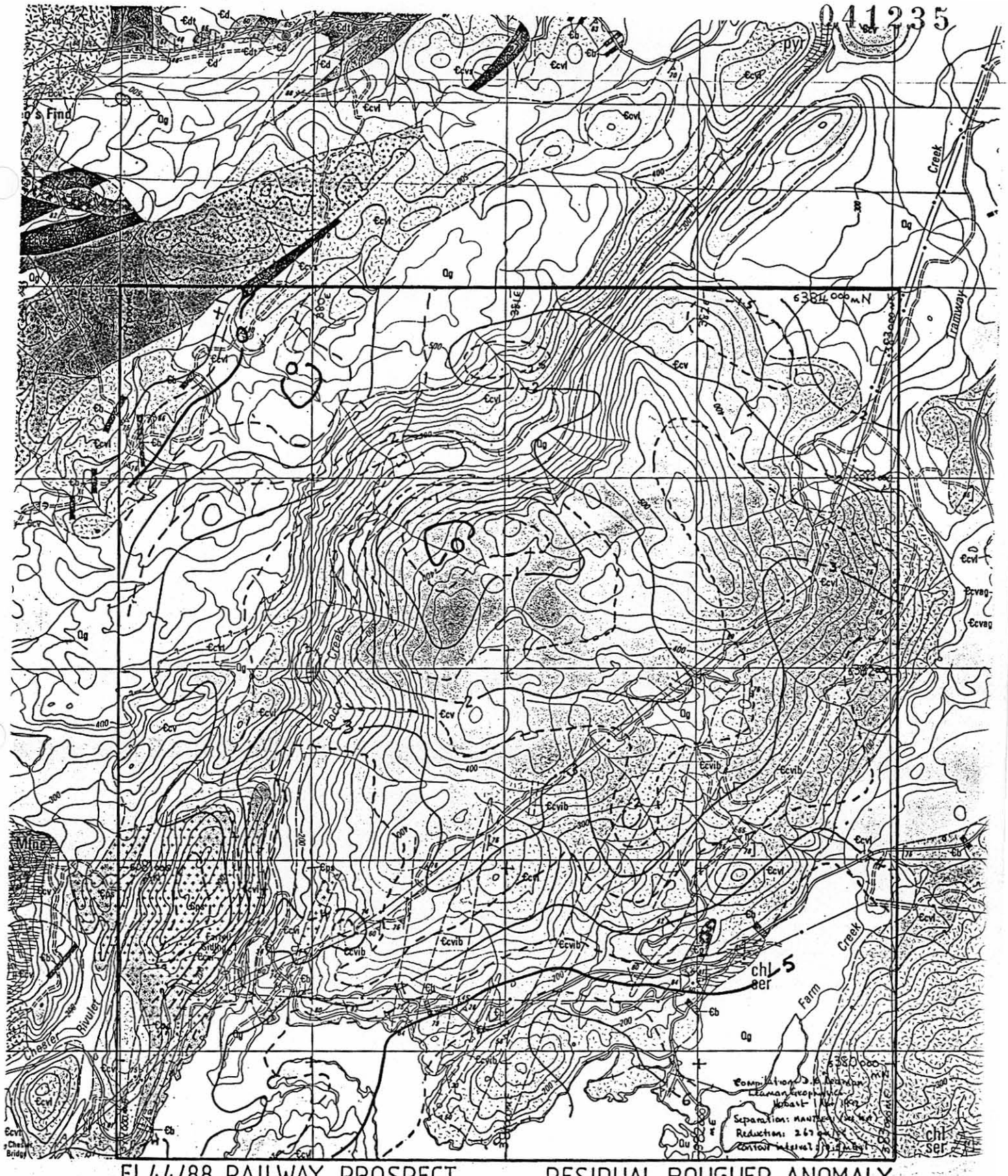
EL 44/88 RAILWAY PROSPECT BOUGUER ANOMALY

FIGURE 1

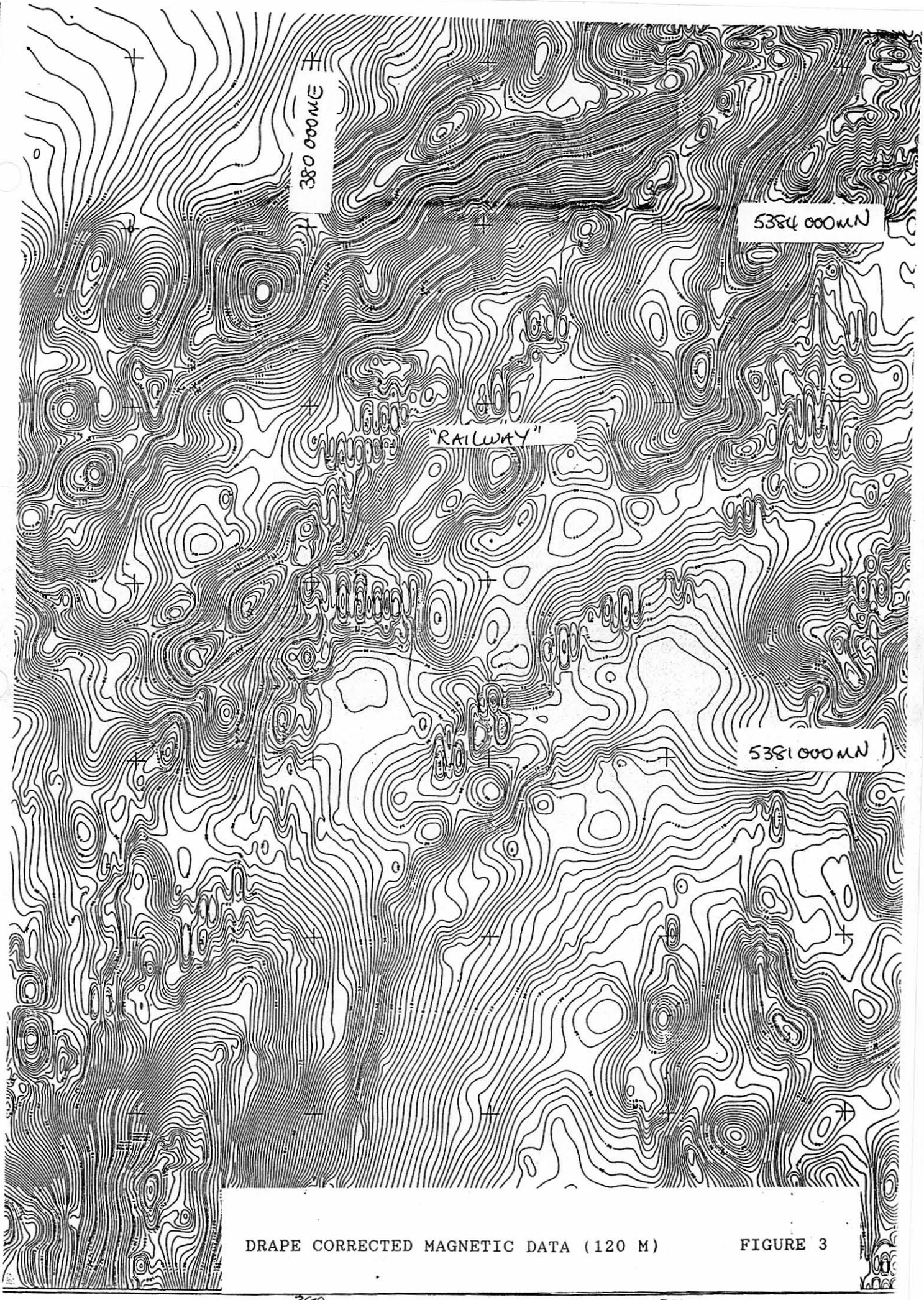


EL44/88 RAILWAY PROSPECT RESIDUAL BOUGUER ANOMALY

FIGURE 2

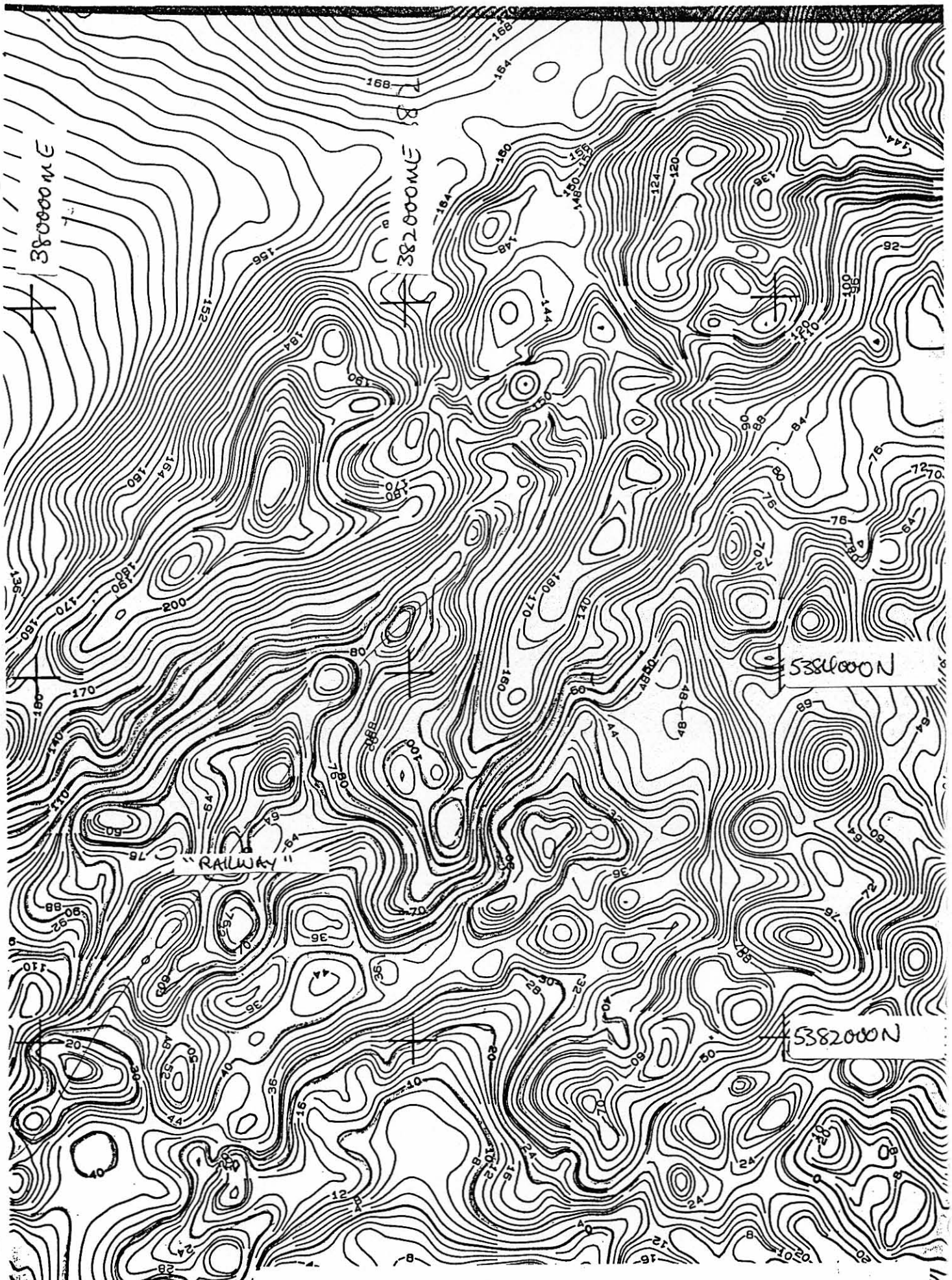


RESIDUAL BOUGUER ANOMALY AND GEOLOGY BASE FIGURE 2A
Mines Department base



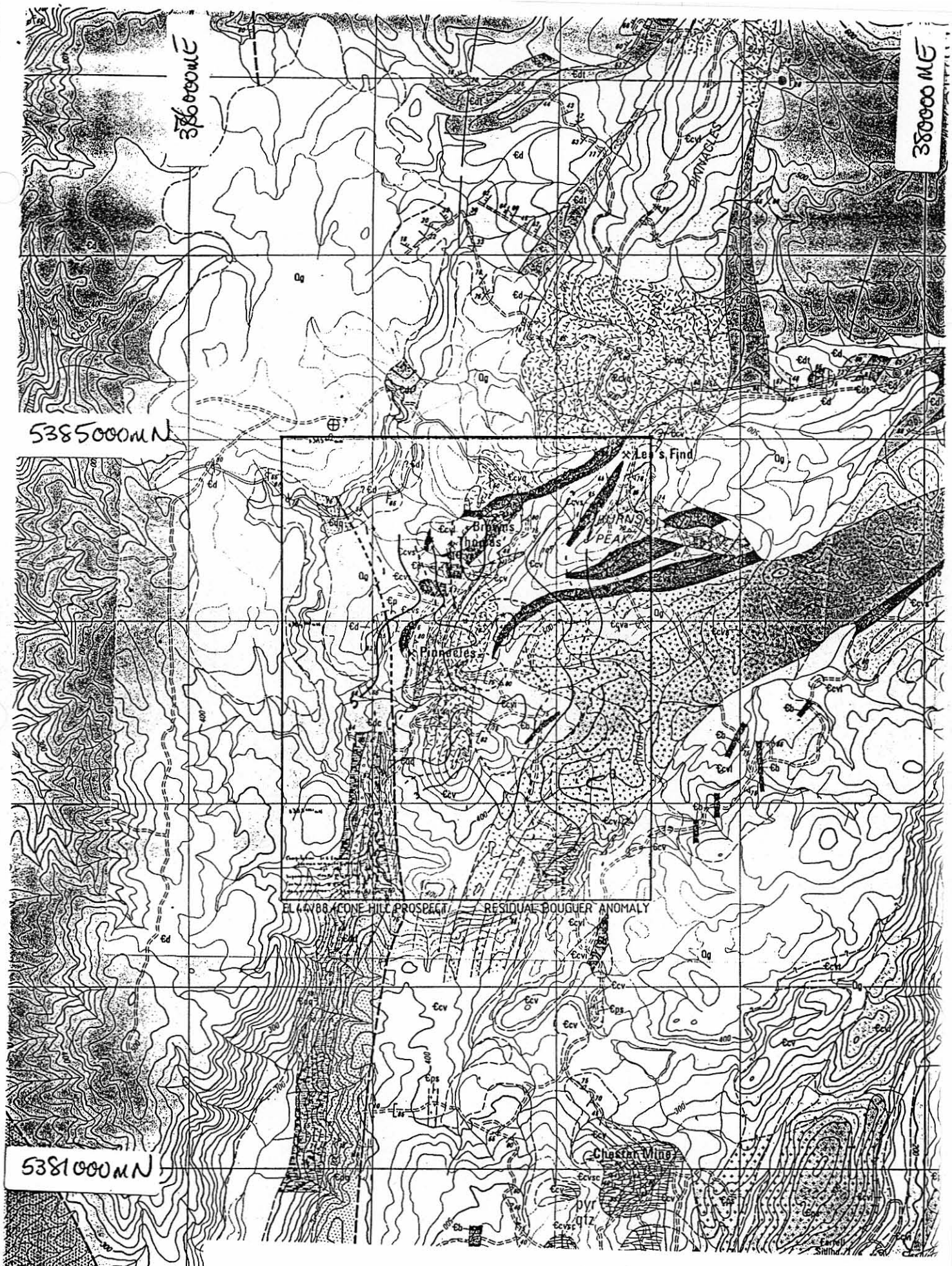
DRAPE CORRECTED MAGNETIC DATA (120 M) FIGURE 3

041236



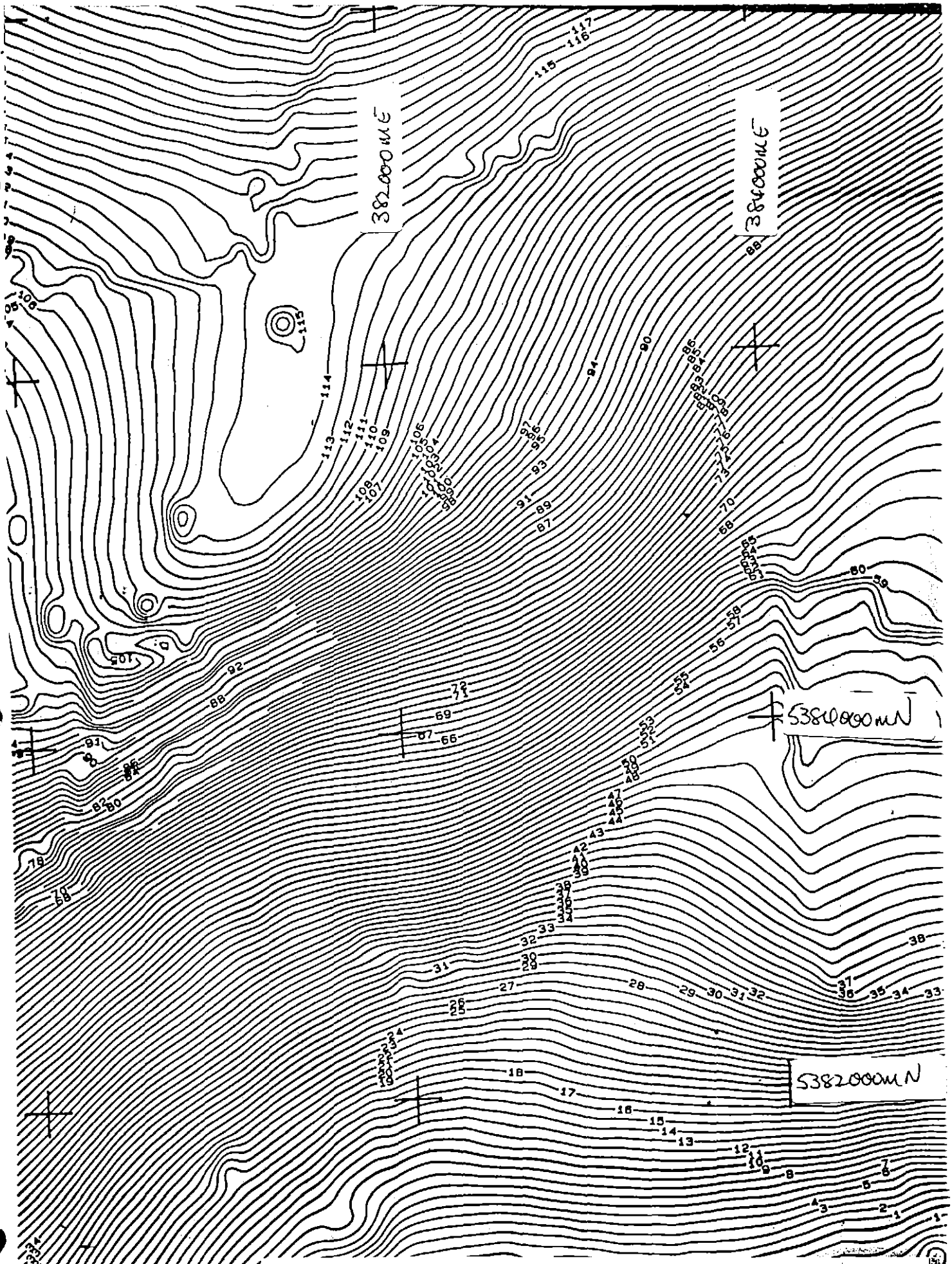
SMOOTHED DRAPE CORRECTED MAGNETIC DATA FIGURE 4

041237

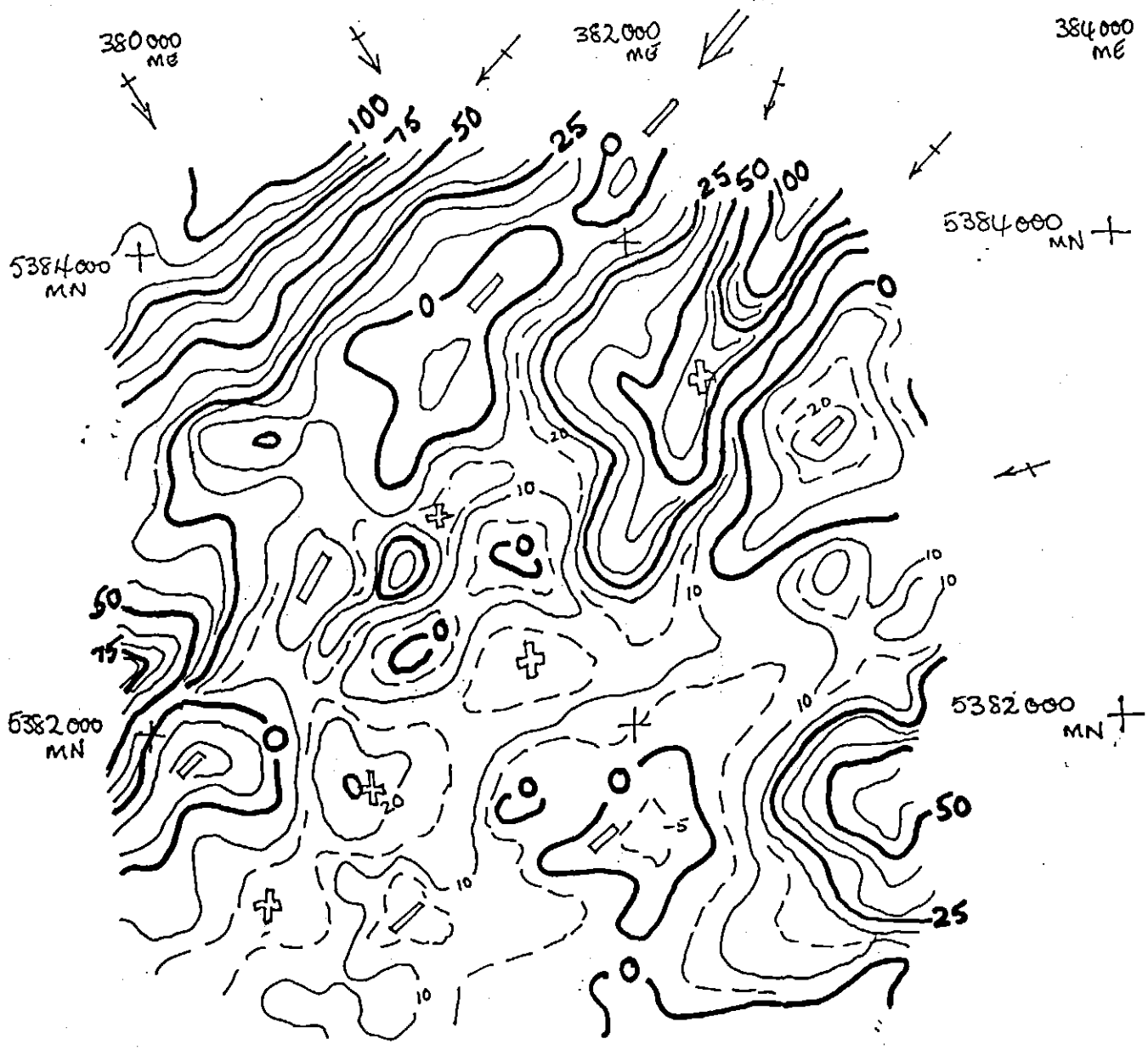


RESIDUAL BOUGUER ANOMALY AND GEOLOGY BASE FIGURE 5A
(Mines Department base)

041261

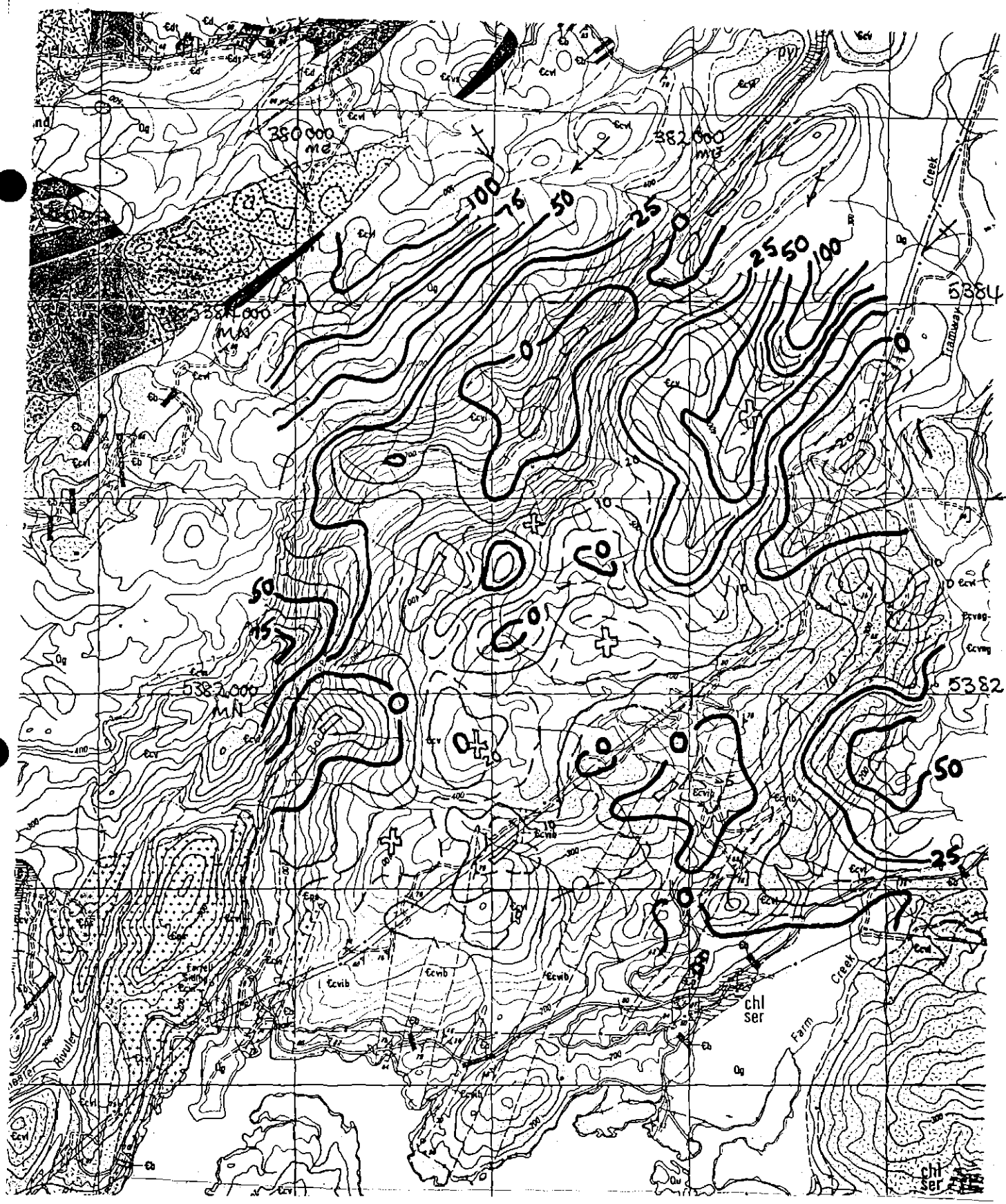


MAGNETIC DATA UPWARD CONTINUED TO 1300 M FIGURE 5

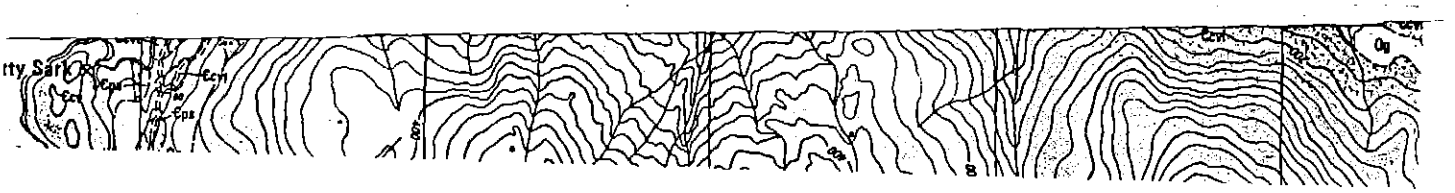


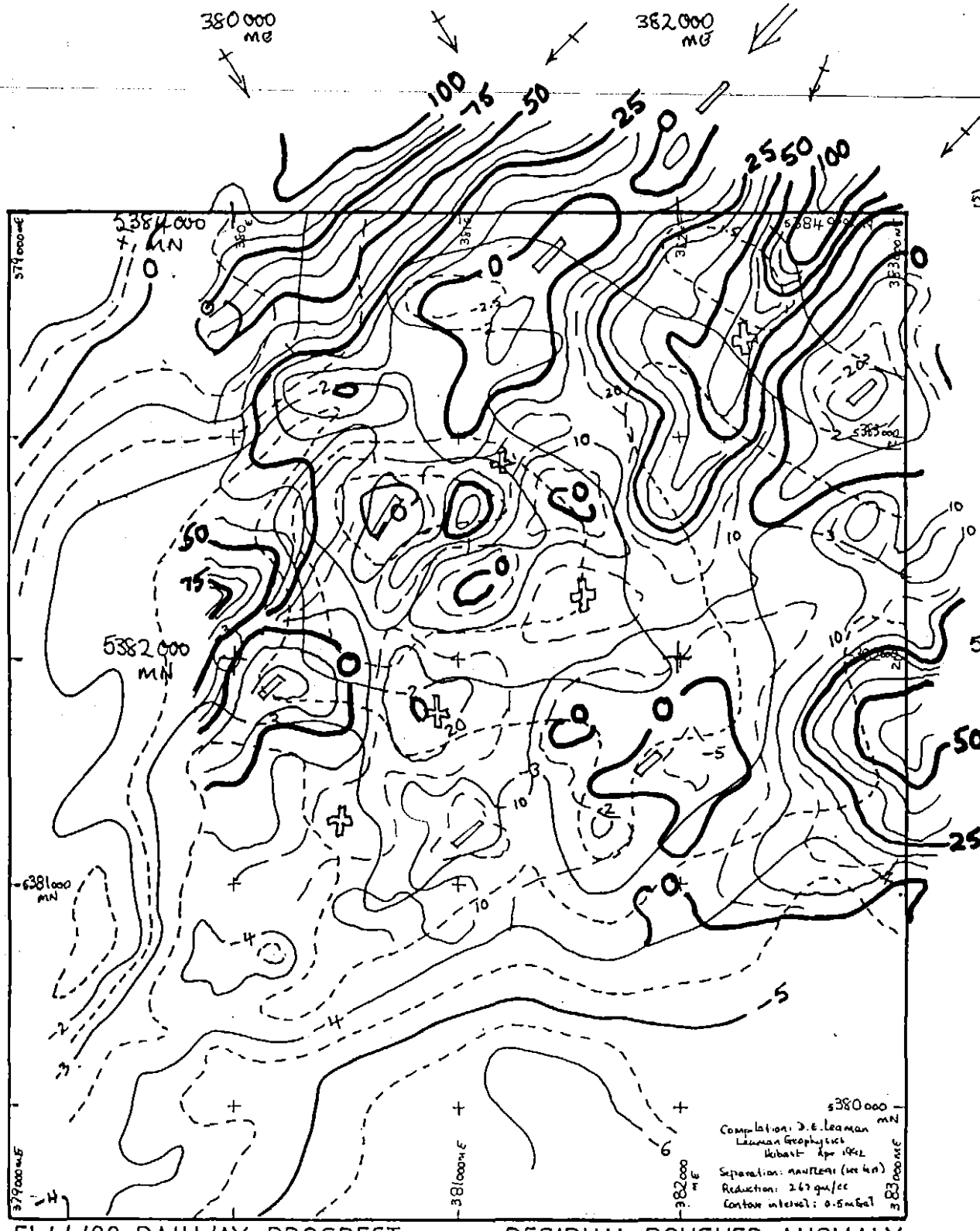
RESIDUAL MAGNETIC DATA
(Based on Figure 4 using Figure 5 as filter)

FIGURE 6



RESIDUAL MAGNETIC DATA AND GEOLOGY BASE FIGURE 6A
(Mines Department base)





EL44/88 RAILWAY PROSPECT RESIDUAL BOUGUER ANOMALY

CORRELATION OF RESIDUAL GRAVITY AND MAGNETIC ANOMALIES
FIGURE 7

EL 44/88 RAILWAY PROSPECT

BOUGUER ANOMALY

041242

Compilation: D.E. Leaman
Leaman Geophysics
Hobart Apr. 1992

Data: Pasminco, Mines Dept

Reduction: 2.67 gm/cc

Contour interval: 0.5mGal

92-3406.B

EL44/88 RAILWAY PROSPECT

RESIDUAL BOUGUER ANOMALY

379000mE
380E
381E
382E
383000mE
5384000mN
5383000mN
5382000mN
5381000mN
5380000mN

+1
0
-1.5
-2.5
-2
-1
-3
-4
-5
-6

041243

92-3406.B

Compilation: D.E. Leaman
Leaman Geophysics
Hobart Apr 1992

Separation: MANTLE91 (see text)
Reduction: 2.67 gm/cc
Contour interval: 0.5mGal

File - Burnie Area. 7-4-J

041244

3 December 1991

PASMINCO
EXPLORATION

A Division of Pasminco Australia Limited,
(Incorporated in Victoria)

Old Burnie Railway Station,
(off Marine Terrace)
Postal Address:
P.O. Box 886, Burnie
Tasmania, Australia, 7320
A.C.N. 004074962

Mr David Leaman
Leaman Geophysics
GPO Box 320D
HOBART TAS 7001

Dear David,

Enclosed are the maps, section and some mag. sus. and SG readings for an area that holds some interest for us. I was wondering if you could have a closer look at the data here before our meeting on 10 December, 1991.

The main questions we have are:

1. Is there an alteration signature in the vicinity of the area circled?
2. Could either of the faults (particularly the eastern one) be steeper than shown on the EAF 2 section? This is important in establishing the "room" available for an ore body.

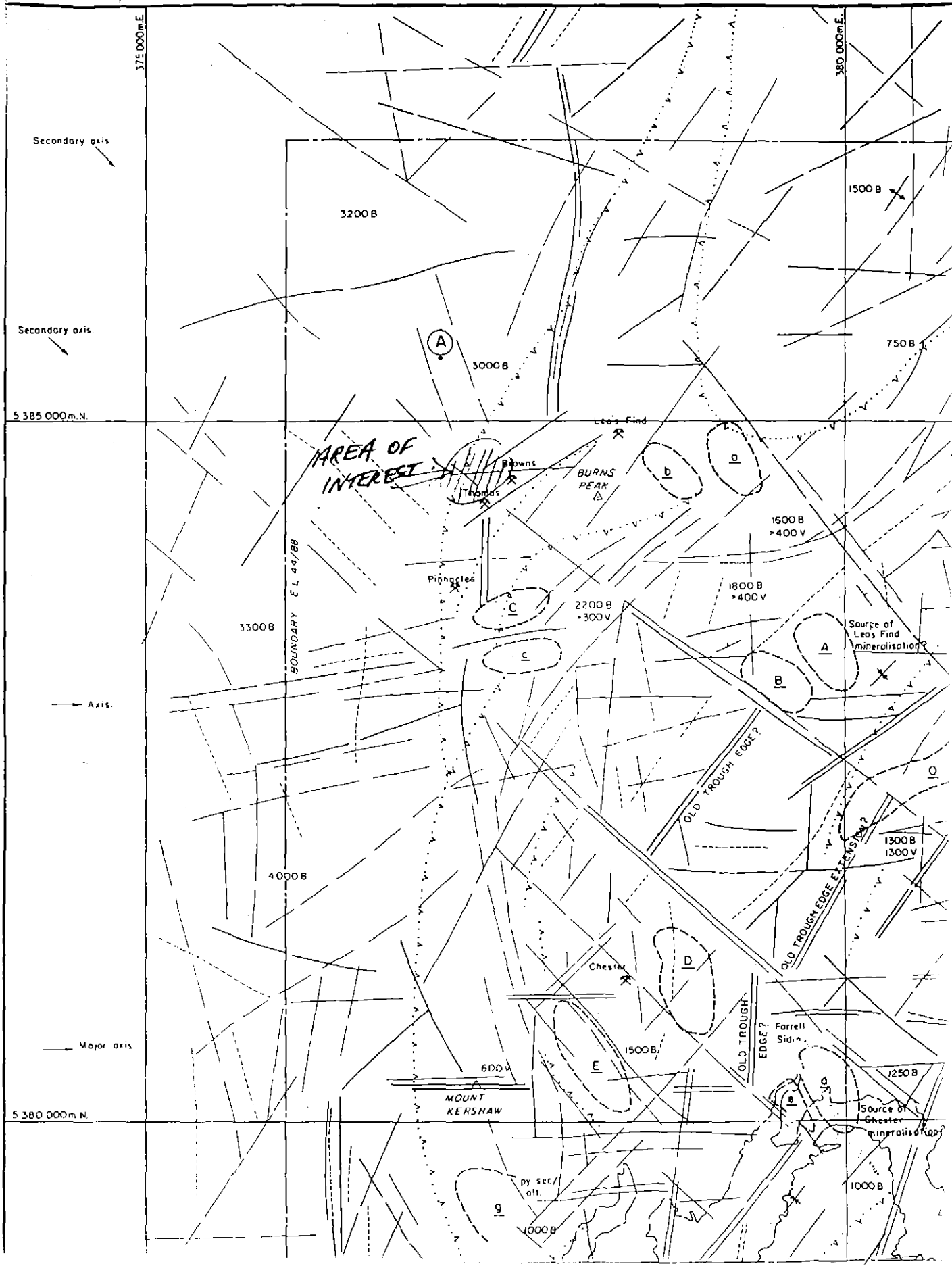
The main thing that has led us into the area is the mineralisation at the top of BPD63 and the proximately of the NW-SE structure identified on your interpretation. I think this structure truncates the Pinnacles Rhyolite south of Brown's Tunnel.

Have you any rabbits to offer here?

See you on the 10th.

Yours sincerely

Angela N Lorrigan
Geologist


375 000m.E.
380 000m.E.
Secondary axis
Secondary axis
5 385 000m.N.
5 380 000m.N.
Axis
Major axis
3200 B
3000 B
1500 B
750 B
AREA OF INTEREST
Leas Find
Browns
Thanos
BURNS PEAK
Pinnacles
BOUNDARY E L 44/88
3300 B
1600 B
>400 V
1800 B
>400 V
2200 B
>300 V
Source of Leas Find mineralisation?
OLD TROUGH EDGE?
OLD TROUGH EDGE EXTENSION?
1300 B
1300 V
4000 B
Chester
OLD TROUGH EDGE?
Farrell Siding
1500 B
600 V
MOUNT KERSHAW
1250 B
Source of Chester mineralisation?
py ser/ alt
1000 B
1000 B
A
B
C
D
E
a
b
c
g

041245

041246

[redacted]

Quartz-Feldspar Porphyry

Rhyolite Lava

Bedded Mudstone and Sandstone

Dacite Lava

Andesite Lava

Pumiceous Volcaniclastic

Mineralisation : Massive, Disseminated

Probable Fault

Fault

377 500mE

378 000mE

378 500mE

5 385 500mN

5 385 000mN

500mN

EAF BASELINE 5000E

5800N

Boco

Road

AXIS

PINNACLES

LEO'S FIND

BROWN'S TUNNEL

THOMAS' TUNNEL

BURNS PEAK

AREA OF INTEREST.

FAULT

BPD71

BPD70

BPD69

BPD72

BPD65

BPD66

BPD62

BPD63

EAB2

ESB1

EAF1

EAF2

EAF3,4

EAF5

EAF6

EAF7

EAF8

EAF9

EAF11

EAF12

EAF13

EAF14

EAF16

EAF18

PP31

PP45

PP46

PP50

PP51

PP52

PP59

CP7

CP14

378 500mE

378 000mE

PASMINCO EXPLORATION

A Division of Pasminco Australia Limited

COMPILED : A.N.L.

DATE : Nov. 1991

DRAWN : G.M.B.

REF. :

REVISIONS :

DRAWING No.

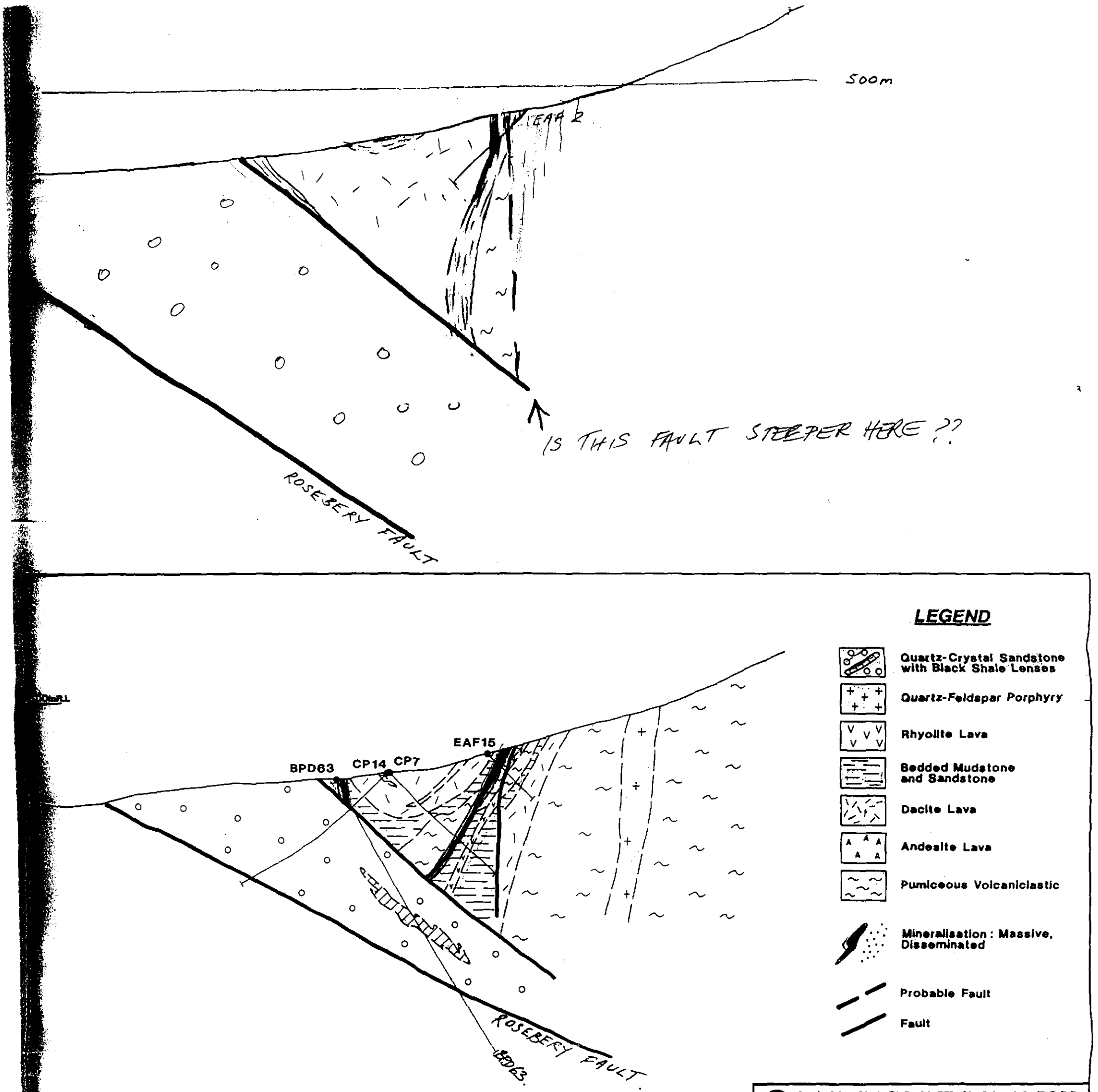
E.L. 44/88 - BURNS PEAK JV

BROWN'S TUNNEL - LEO'S FIND

INTERPRETIVE GEOLOGY

SCALE 1:5000 0 50 100

FIG. No. 11



PASMINCO EXPLORATION
A Division of Pasminco Australia Limited

COMPILED : A.N.L.	E.L. 44/88 - BURNS PEAK JV
DATE : Oct...1991	BROWN'S TUNNEL
DRAWN : G.M.B.	INTERPRETED CROSS SECTION
REF. :	ON BEARING 102°(t) THROUGH
REVISIONS :	BPD63, CP7, CP14, EAF15
	LOOKING NORTH
DRAWING No.	SCALE 1:5000 0 50 100 m — FIG. No. 12

041247

Re: Burns Peak Geophysics

041240

LEAMAN GEOPHYSICS

Survey Review, Specification, Reduction, Interpretation
Gravity, Magnetic and Seismic Methods
Structure and Prospect Evaluation

Registered office:
3 MALUKA STREET, BELLERIVE, TAS. 7018
All correspondence to:
GPO BOX 320 D, HOBART, TAS. 7001
Telephone: (002) 44 1233
Fax: (002) 44 6674

December 9, 1991

Mr. F.Fitzgerald,
Exploration Manager,
Pasminco Exploration,
PO Box 882,
BURNIE TAS 7320

Re: Magnetics near Thomas's Tunnel, Burns Peak

Attention: A.N. Lorrigan

Dear Fergus,

Angela has asked me to review magnetic character in the region north of Thomas's and west of Brown's prospects at Burns Peak. In particular - is there any alteration signature and could any of the mapped faults drilled near the prospects dip more steeply than presently indicated based on a section through hole EAF-2.

In view of the essentially non magnetic nature of the local rock suites it is not possible to answer the second question with the present aerial data sets. Some surface data specific to the profiles and sections in question would be needed to support the regional data. It should be noted that the magnetic field is very smooth in this area and changes are subtle. Surface data should amplify these.
The first question can be answered positively. The field, though smoothly varying, is not uniform and, as observed, is the result of interaction from ultramafic sources to north and west. I have attempted a regional separation which leaves the complex regional interference intact but which extracts the local changes. The result is shown in Figure 1. The local anomaly, although almost certainly imperfectly defined due to my assumptions, is clearly localised in three parts with the principal feature - of only 7 nT, located south of Thomas' Tunnel. Some of the shaping of the effect can also be related to mapped structures and features inferred from regional data - such as the NW-SE structure. This clearly terminates a structural or lithological domain.

It is apparent that the most interesting zone is south of Thomas' Tunnel and the lack of correlation of the response with known rock types or structures suggests that the source may not be exposed. The two western anomalies may well be enclosed in the fault slice west of the Pinnacles ridge. The main anomaly is thought to lie in the block south of the known mineralisation. The localisation of the effect implies local alteration. The relative sign of the response is consistent with this.

If the response does represent an alteration signature then the known mineralisation is peripheral and that the primary target has not been tested by any drilling.

The possible properties of the materials implied have been tested by modelling the response. Although the methods employed are not ideal for such a three dimensional effect they provide some measure of the source requirements.

Figure 2 outlines two possible solutions using different dips, volumes and upper source depths. The contrast employed is consistent with similar rocks in an altered state (as at Hercules and Rosebery). The source is unlikely to be thicker than about 100 m and is either vertical or dips steeply to the east or southeast. It does not appear to dip west. Dips of this sort are indicated in your Figure 12 (section through BPD63 to EAF15) east of the fault near the mineralisation. Pumiceous volcaniclastics with some quartz porphyry have been mapped in the anomalous area but the source appears to be within the clastics.
The model also suggests that the main part of the source may lie up to 150 m below surface.

This zone should be probed by drilling from west of the fault zone at Thomas' Tunnel and aim to be at 150-180 m below surface at the peak anomaly. It should also be continued to an easting consistent with the -3 nT anomaly (at least) contour in order to test the actual placement of any alteration (or mineralisation) should the zone dip east.

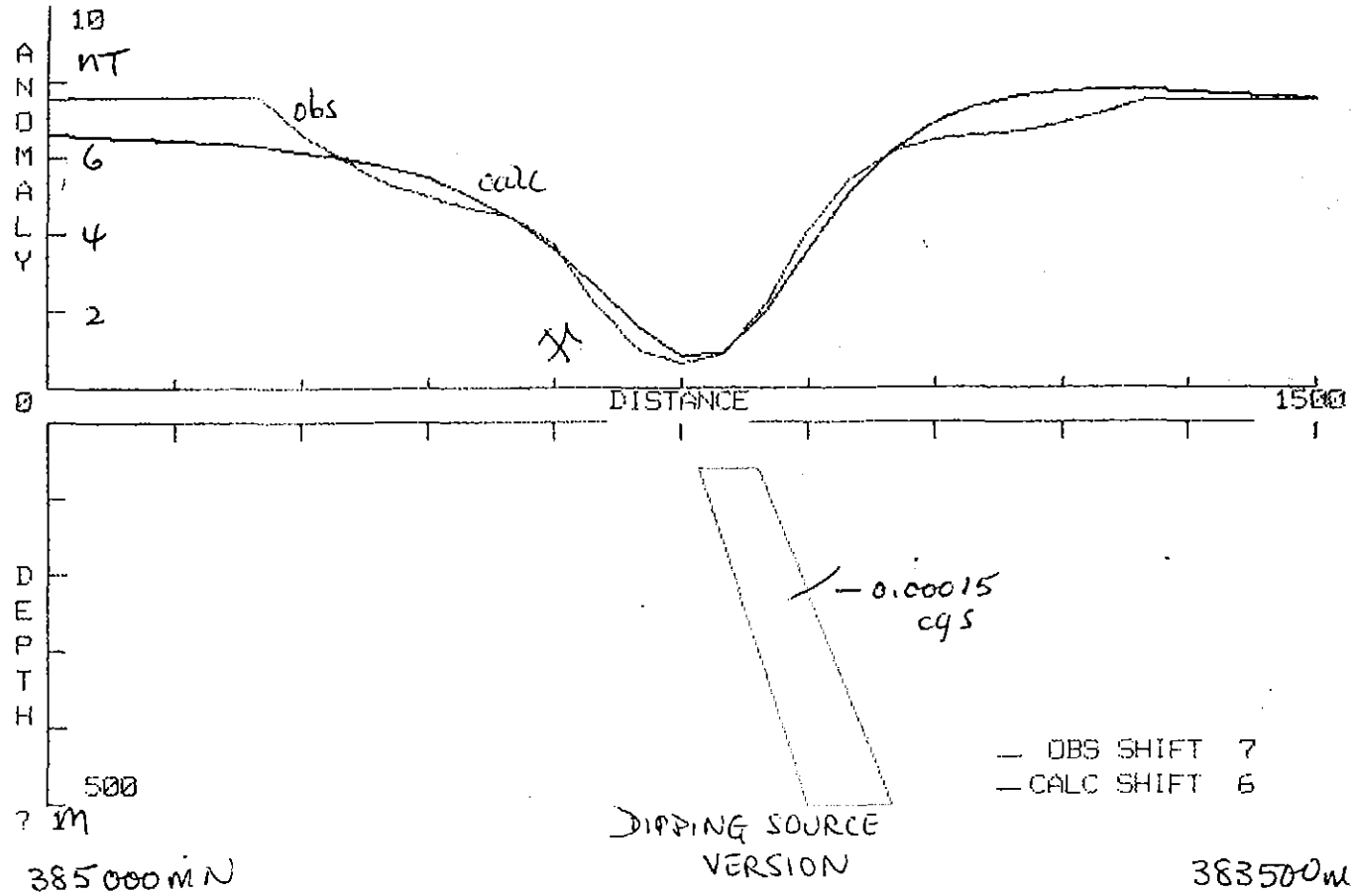
Such a hole should test whether the zone is of interest. Any local changes in alteration or mineralisation would clearly justify a return hole, perhaps drilled N-S from Thomas' Tunnel.

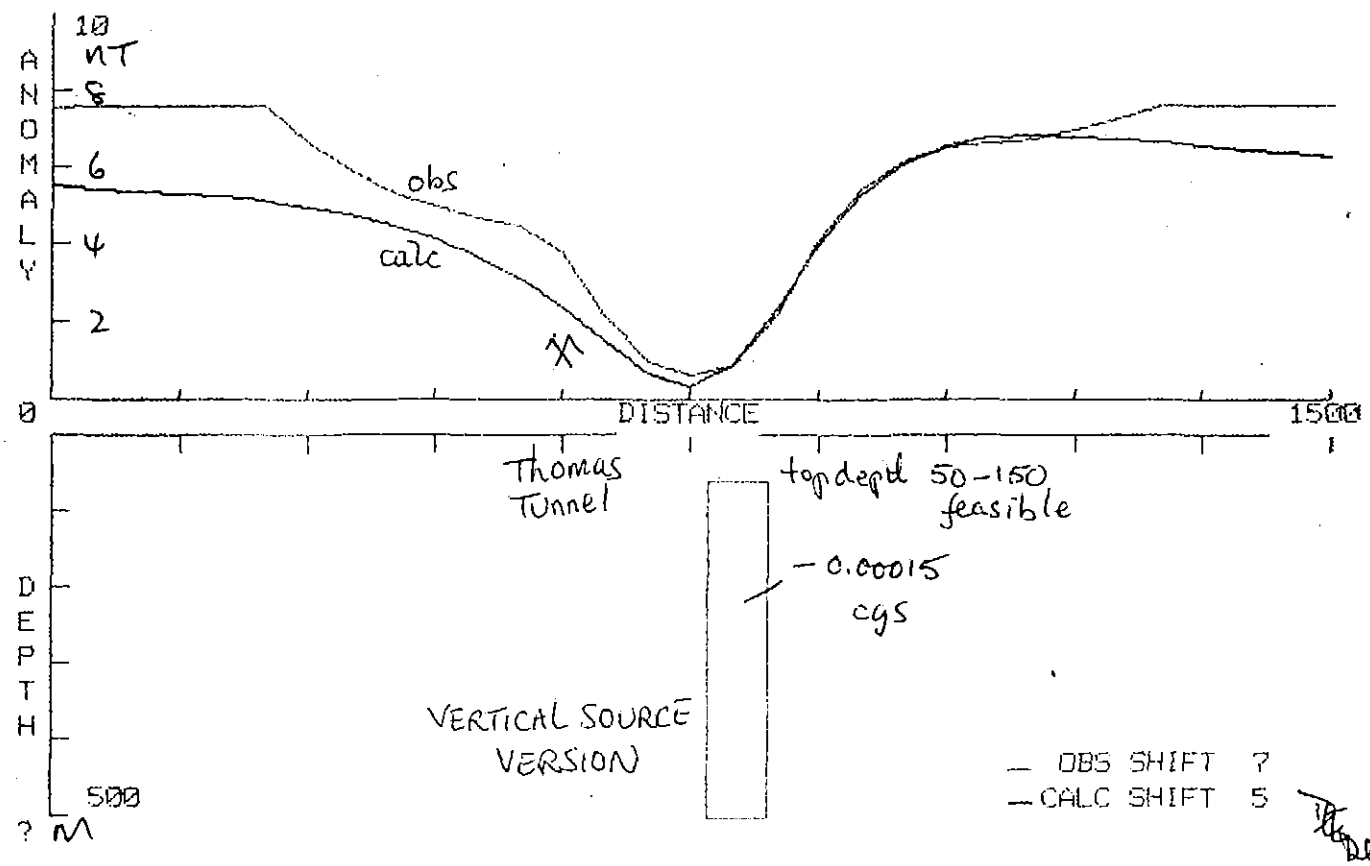
Regards,

D.Leaman

Dr. D.E. Leaman

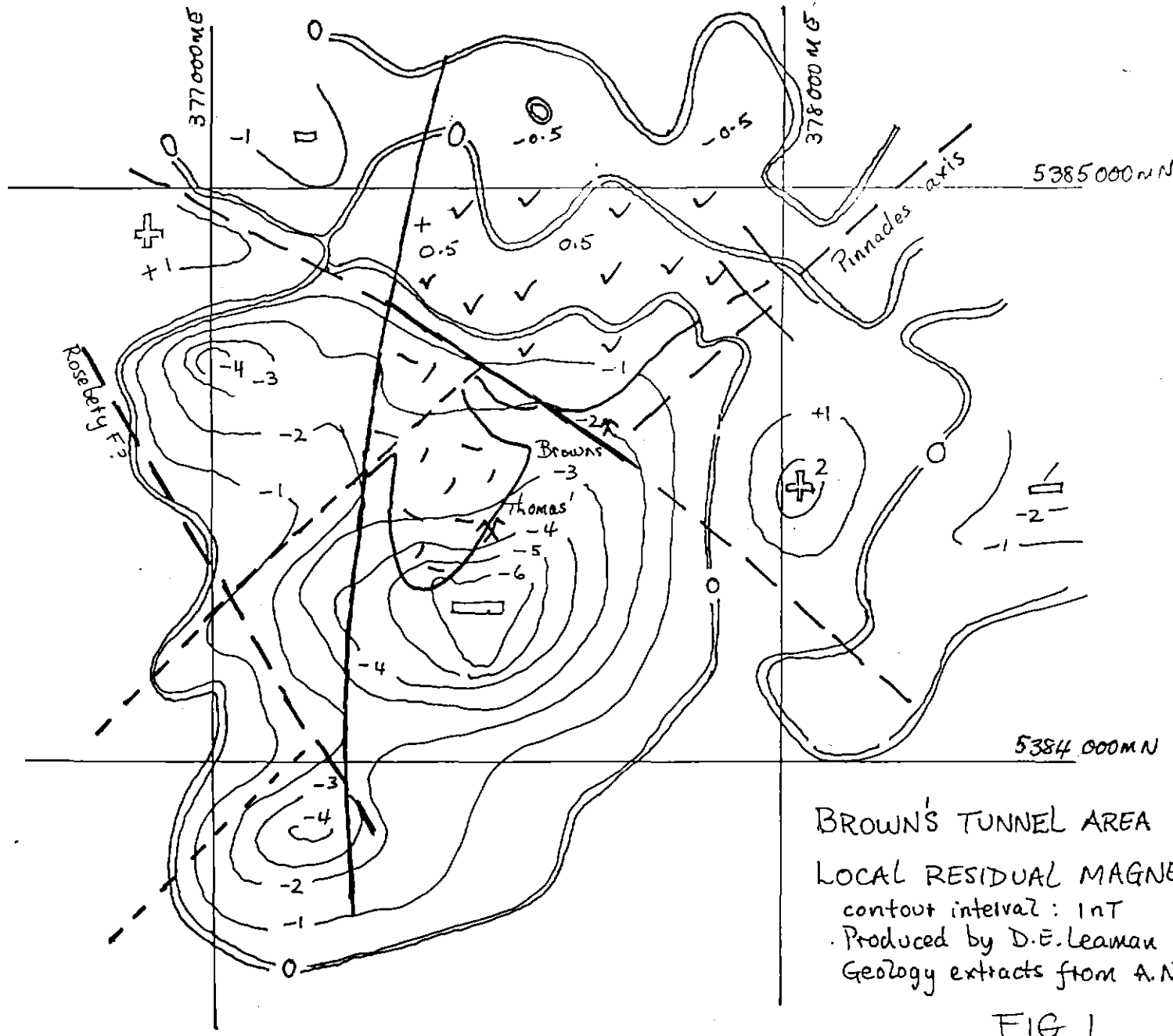
041250





PROFILE N→S AT 377500mE
THOMAS' TUNNEL

FIG 2



BROWN'S TUNNEL AREA

LOCAL RESIDUAL MAGNETIC ANOMALY

contour interval : 1nT

Produced by D.E. Leaman Dec 91

Geology extracts from A.N. Lottigan Nov 91

FIG 1

041251

MEMORANDUM:

BURNS PEAK EL 44/88 WESTERN TASMANIA

ATTENTION: F. Fitzgerald
L. Kirsner

DATE: April 20, 1992

CONE HILL - PINNACLES PROSPECT

Previous gravity and magnetic evaluations (Leaman, 1990) of the Pinnacles area have identified anomalous areas. These have not been clearly defined due to deficiencies in coverage (gravity) or interference from other, more dominant sources (magnetics).

The magnetic data base has since been corrected for deviations in terrain clearance (from 120 m as stable compromise) and also processed into a fixed level format (1300 m ASL) by upward continuation. These compilations are shown in Figures 1, 2 and 3 (drape, drape smoothed for regional compilation and upward continued).

The gravity data base has also been locally improved. Infill of existing coverage was undertaken by contracting a Mines Department team under the supervision of Dr. R.G. Richardson. Observation and primary reduction was undertaken by the contractor with terrain correction, checking and compilation by Leaman Geophysics.
Detailed compilation of this data is shown in Figure 4 using a reduction density of 2.67 gm/cc.

A residual version of the Bouguer anomalies has also been produced using the crustal separation method defined as MANTLE91. The result is shown in Figure 5.

The magnetic field in this region is dominated by the effects of strongly magnetised rocks to the west. These materials are either ultramafics or members of the Crimson Creek Formation and its correlates. There are also some marked patterns within the area of exposed volcanics. The zone between these contrasting blocks appears less magnetic but it is not possible to discriminate between some elements of the volcanics and so-called Dundas Group rocks. There are also suggestions of E-W trending features.
The linkage between the subdued field and the Dundas Group rocks is an uneasy one since many parts of the sequence across the Rosebery Fault cannot be discriminated. This poses an important question about the nature/composition/correlation/possible time equivalence etc of the volcanic, pseudo volcanic and predominantly clastic sequences.

An attempt to assess magnetic character in the Browns - Thomas Tunnel area based on subjective analysis of the nature of a smoothed 'regional' field suggested that possible alteration anomalies may be focussed south of Thomas' (Leaman, 1991).
This experimental attempt to create a residual field was based simply upon smoothing of contours for low level magnetic field. This approach is easily biassed and assumptions must be made about the significance of interfering features - or they are ignored. The experiment showed that the idea may have value when applied to this data set but that a more objective and reliable basis for separation is required.

The new gravity compilation for the Pinnacles area (Figures 4, 5) reveals an abnormal deformation in the regional gravity field (compare Figure 8). A strong regional N-S gradient passes through this area and extends many kilometres to the north but is re-aligned to the south. It presents as a simple step anomaly but the step effect is broken near Pinnacles - Cone Hill Prospect, and again near the northern tip of the Burns-Pinnacles ridge. The easterly disruption of the regional gradient (Figs 4, 5) is shown in all data although there is clearly some noise in the data set. There is, however, no doubt that this is an important site gravimetrically.
The regional gradient has been related to major changes in underlying structure and any offsets from primary trends are clearly significant - given that these are rare. In this case the offset amounts to a keyed removal since the gradient is restored north of Pinnacles.

As a consequence of these observations the magnetic data set has been further reviewed. A regional- residual separation has been attempted using a procedure similar to that used in Leaman (1991) but all subjective assumptions have been removed and the basis for the filtering has been use of the upward continued data to approximate a regional field. While this separation may also be imperfect it is comprehensive, objective and source/interpreter independent.

The resulting residual magnetic compilation is shown in Figure 6.

A major transformation in presentation has been effected. Three principal magnetic field regimes have been revealed; only one of which was evident previously (east of 378 000 mE). The difference in field character north and south of 5387 700 mN is striking and a clear sub E-W junction is evident. This magnetic boundary totally ignores the presumed differences between the volcanics east of the Rosebery Fault and the Dundas Group to the west as well as marking a north south difference.

The general characteristics of the field in each regime are also different. The field to the north of 5384 000 mN is generally smooth with positive residuals and of low relief while that to the south is irregular and negative and of high relief. To the east of 378 000 mE the field is also positive but of higher relief and much more systematic.

Several other elements are evident. The field between Leo's Find and Pinnacles is smooth and elevated and reflects trends evident in mapping. This is not the case in the region where a large pod of andesites have been mapped. The residual magnetic field displays quite erratic character with respect to this andesitic area. The eastern contact generates some responses but the effect of the andesite is very much less than the adjacent volcanics. Only the southern extremity of the andesite generates a clear, isolated response.

The strong responses in the eastern part of the studied area are not consistent with altered materials.

If the regional gravity character is compared with the observed residual magnetic responses some definite correlations may be noted. North of Pinnacles both the regional step anomaly and magnetic effects trend N-S. South of Pinnacles the predominant magnetic trend is a little east of north (NNE) and this is the prevailing gravity trend to the south and east of Pinnacles. The NNE trend appears to prevail, or be more recent, south of Pinnacles.
The fundamental change is sub E-W since the other effects appear to hinge upon it. The NNE trend overrides this control east of Pinnacles and the magnitude of other effects appears to swamp recognition of it. Dislocation or burial may also be involved.

It may be possible to argue that the fundamental trends in this part of the Burns Peak licence are N-S and E-W and that subsequent structuring is NW or NNE. This would mean that any real target prospects should be associated with the primary trends. Thus the Thomas, Browns and Pinnacles zone is of interest, the transverse feature at Pinnacles makes it of particular interest.

It would be possible to attempt some modelling of these effects, including the attitude of some boundaries, but this is recommended only after collation of available drilling results in the entire zone and surface review of the contents of the anomalous zone south of Pinnacles.

REFERENCES

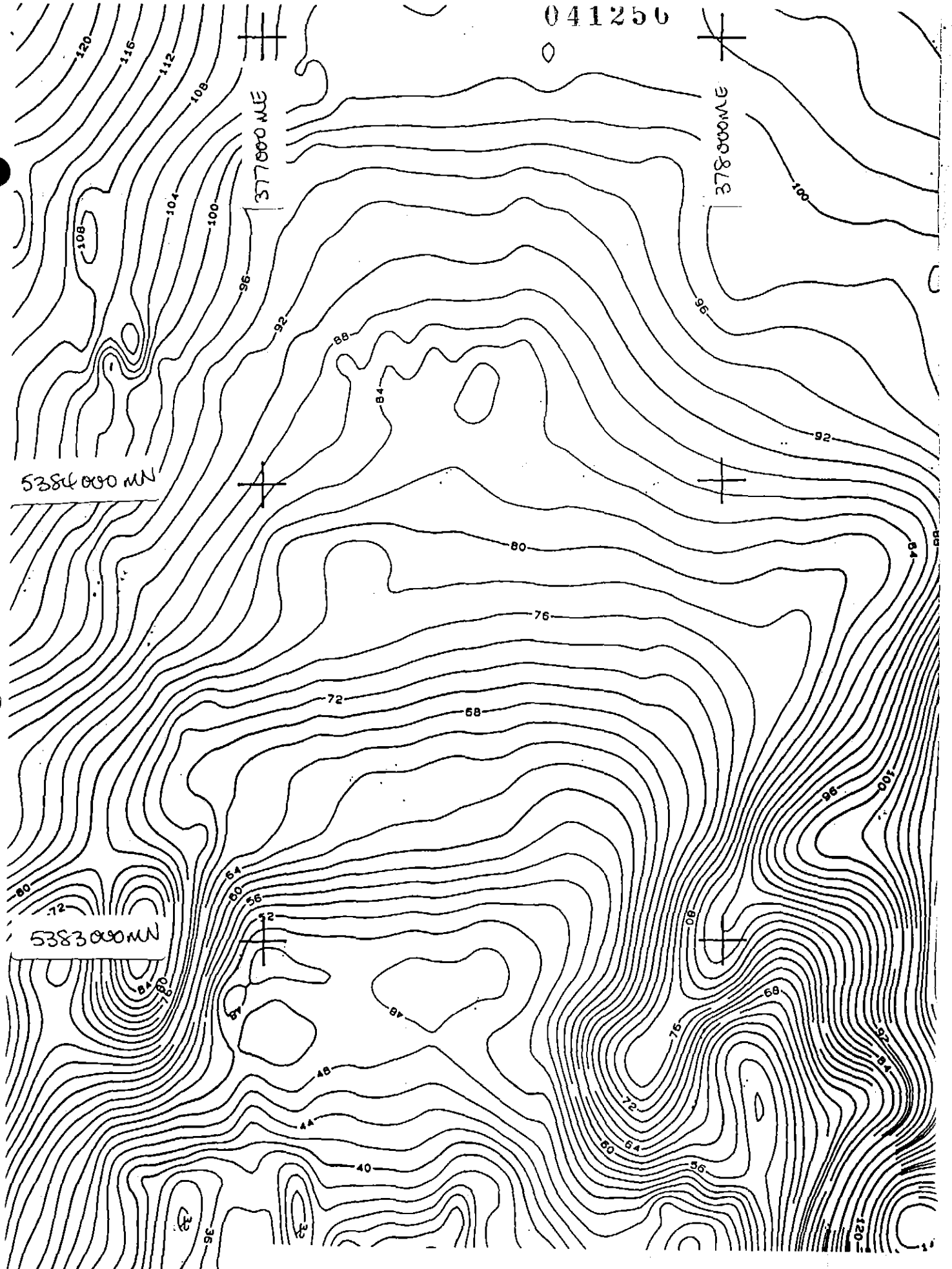
Leaman, D.E., 1990. Integration of initial interpretation. Gravity and magnetic data. EL 44/88 Burns Peak. Report for Pasminco Mining by Leaman Geophysics. September.

Leaman, D.E., 1991. Magnetics near Thomas's Tunnel, Burns Peak. Memo to Pasminco Exploration from Leaman Geophysics, December 9.

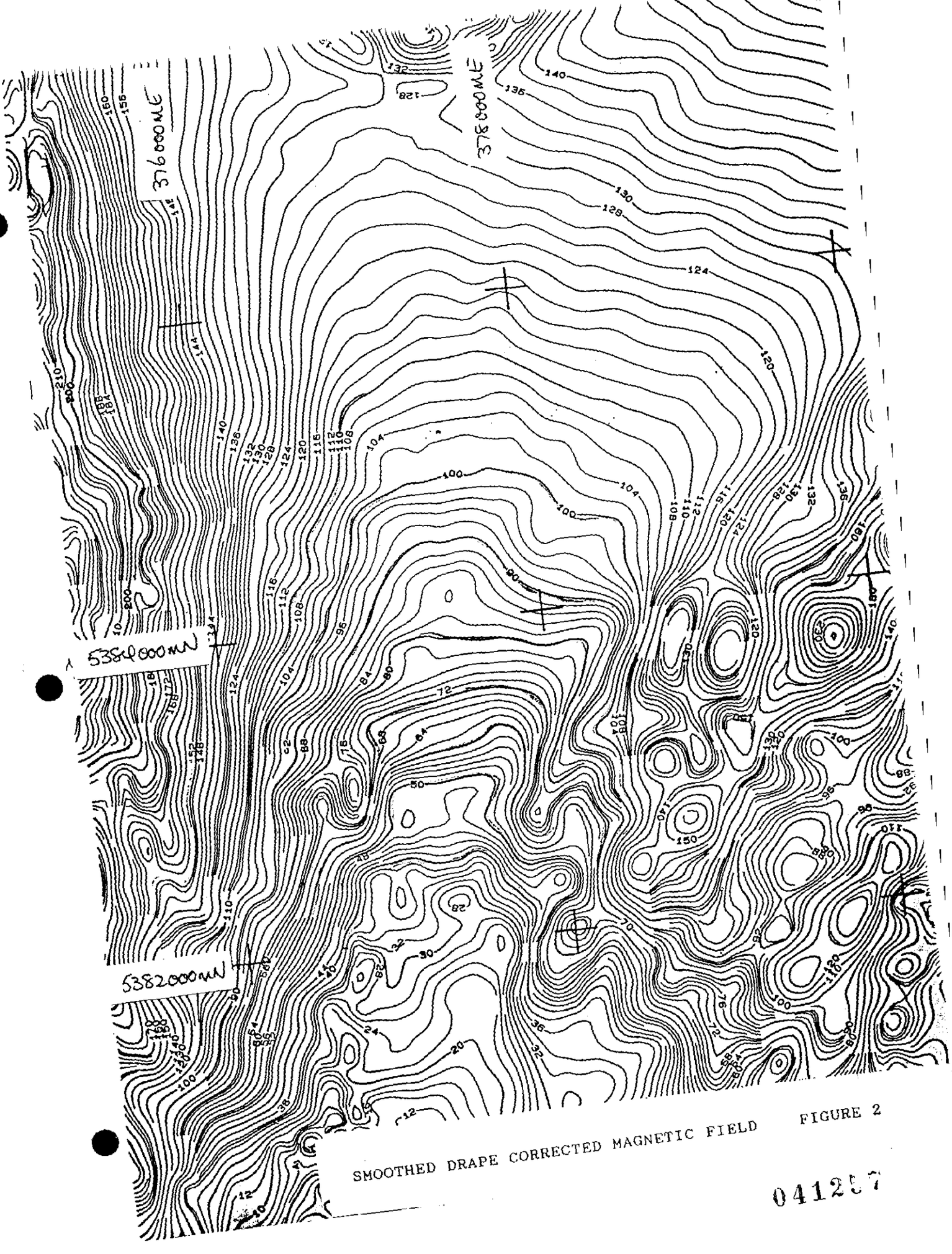
Notes prepared by D.E. Leaman
on behalf of Leaman Geophysics,



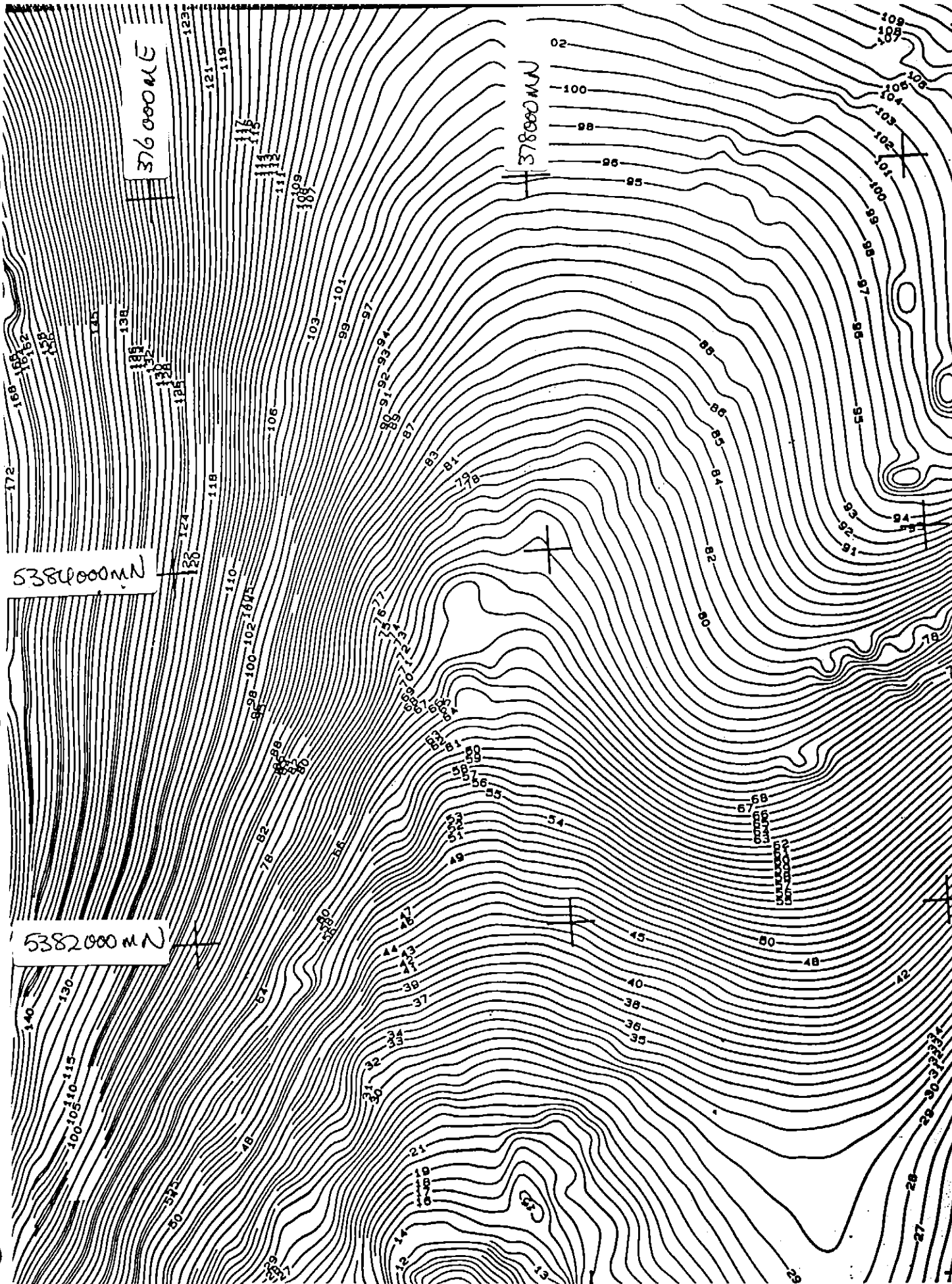
April 20, 1992



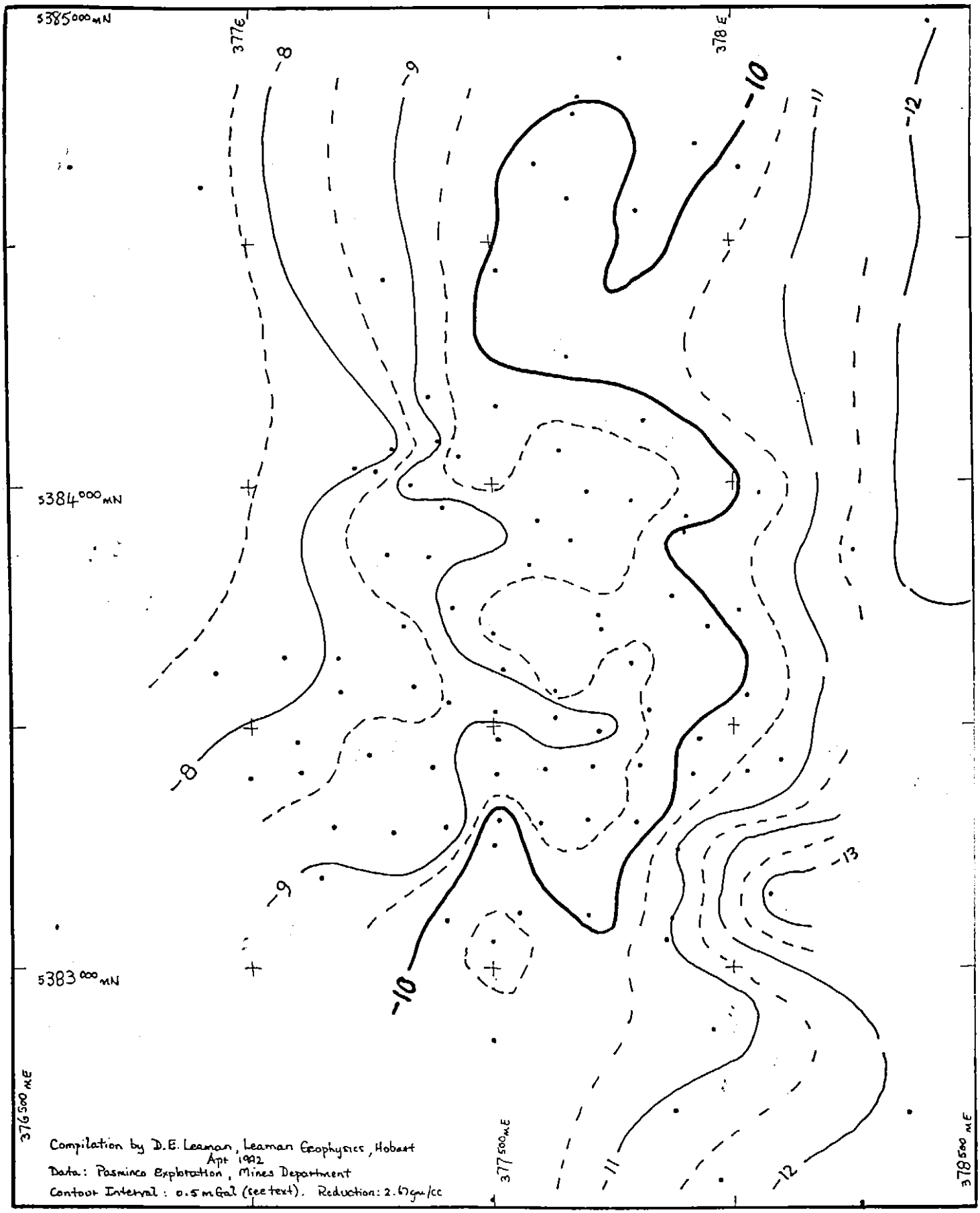
DRAPE CORRECTED MAGNETIC FIELD (120 M) FIGURE 1



SMOOTHED DRAPE CORRECTED MAGNETIC FIELD FIGURE 2

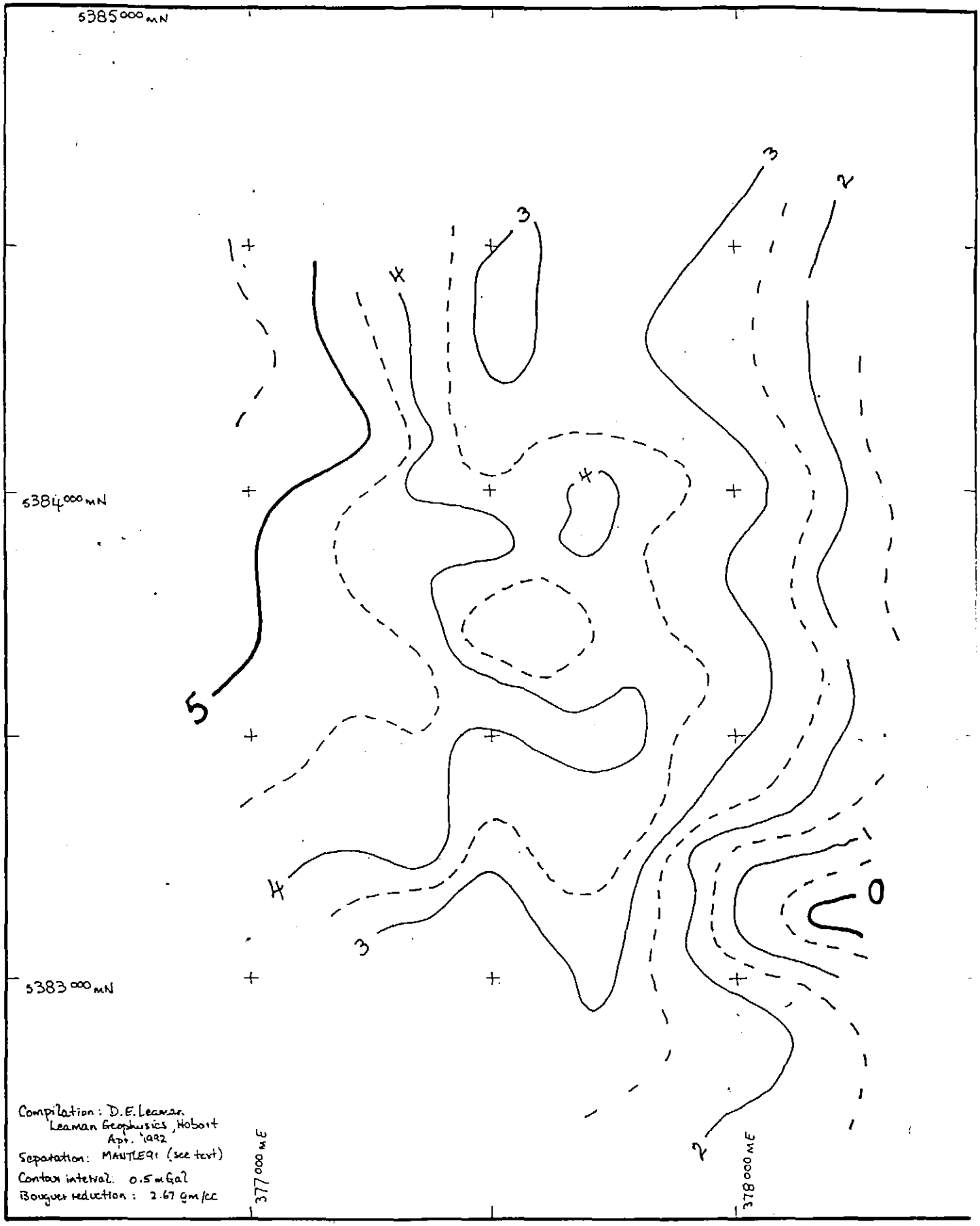


MAGNETIC DATA UPWARD CONTINUED (1300 M asl) FIGURE 3



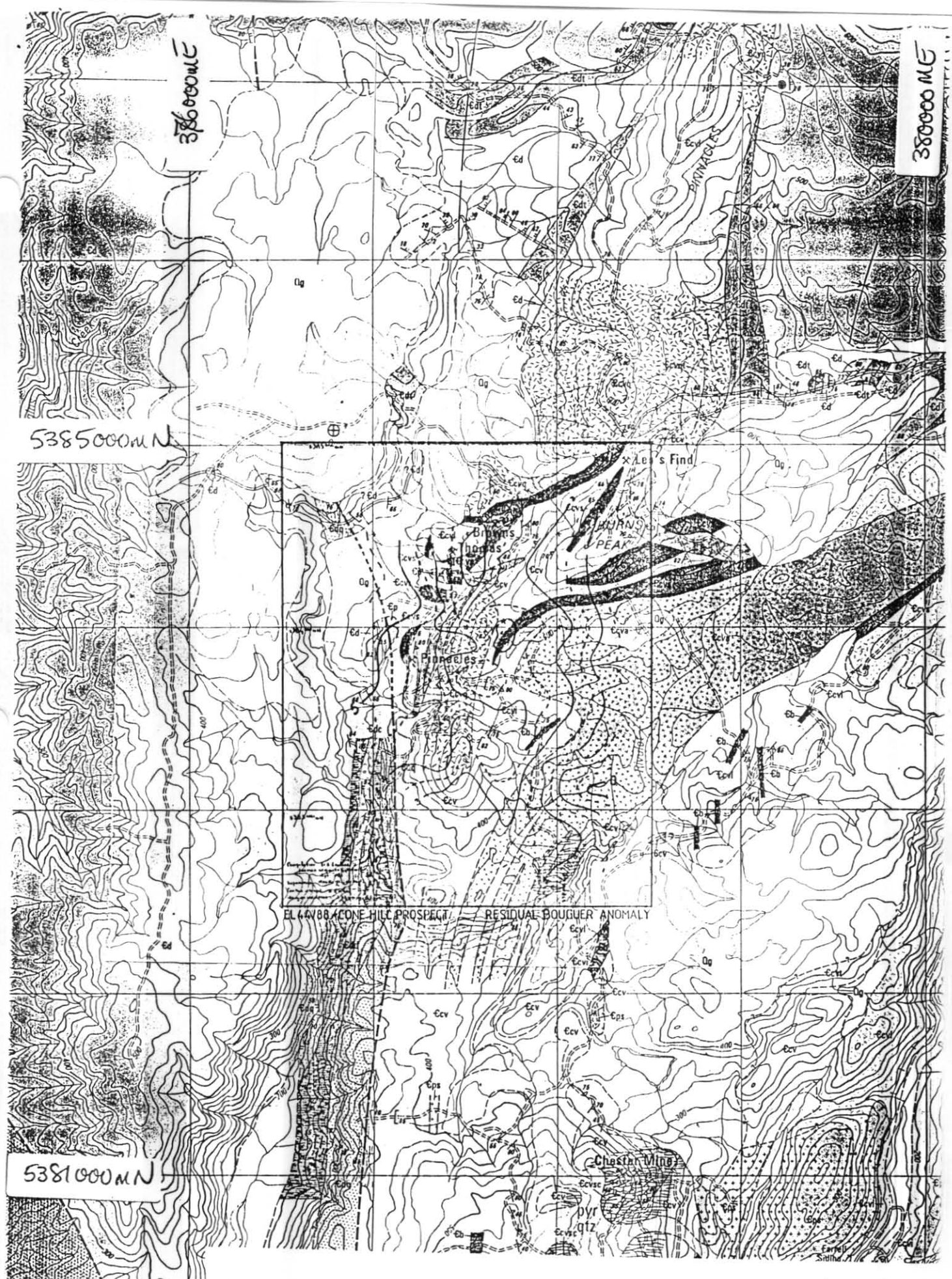
EL 44/88 BURNS PEAK - CONE HILL BOUGUER ANOMALY

FIGURE 4



EL 44/88 CONE HILL PROSPECT RESIDUAL BOUGUER ANOMALY

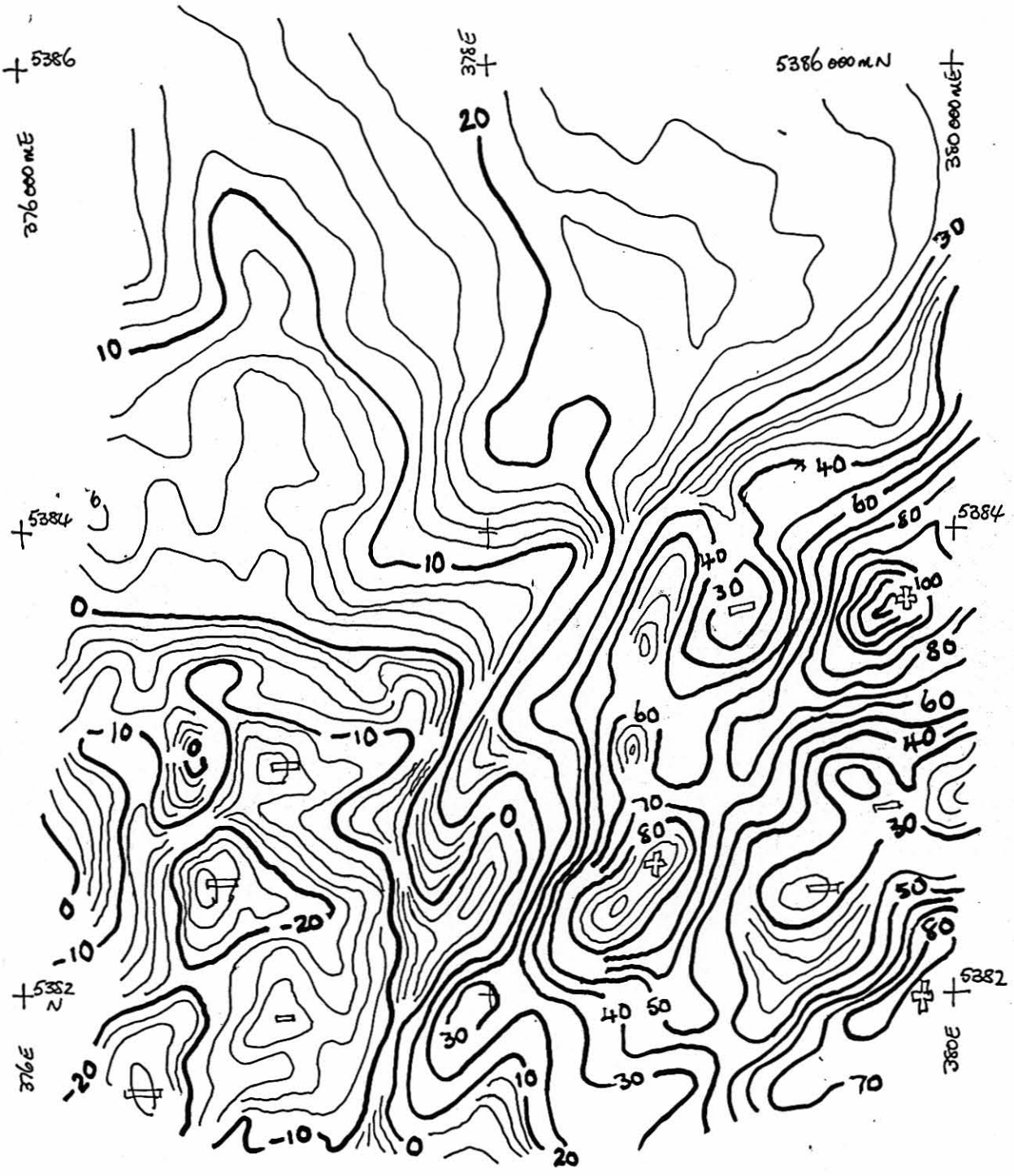
FIGURE 5



RESIDUAL BOUGUER ANOMALY AND GEOLOGY BASE
(Mines Department base)

FIGURE 5A

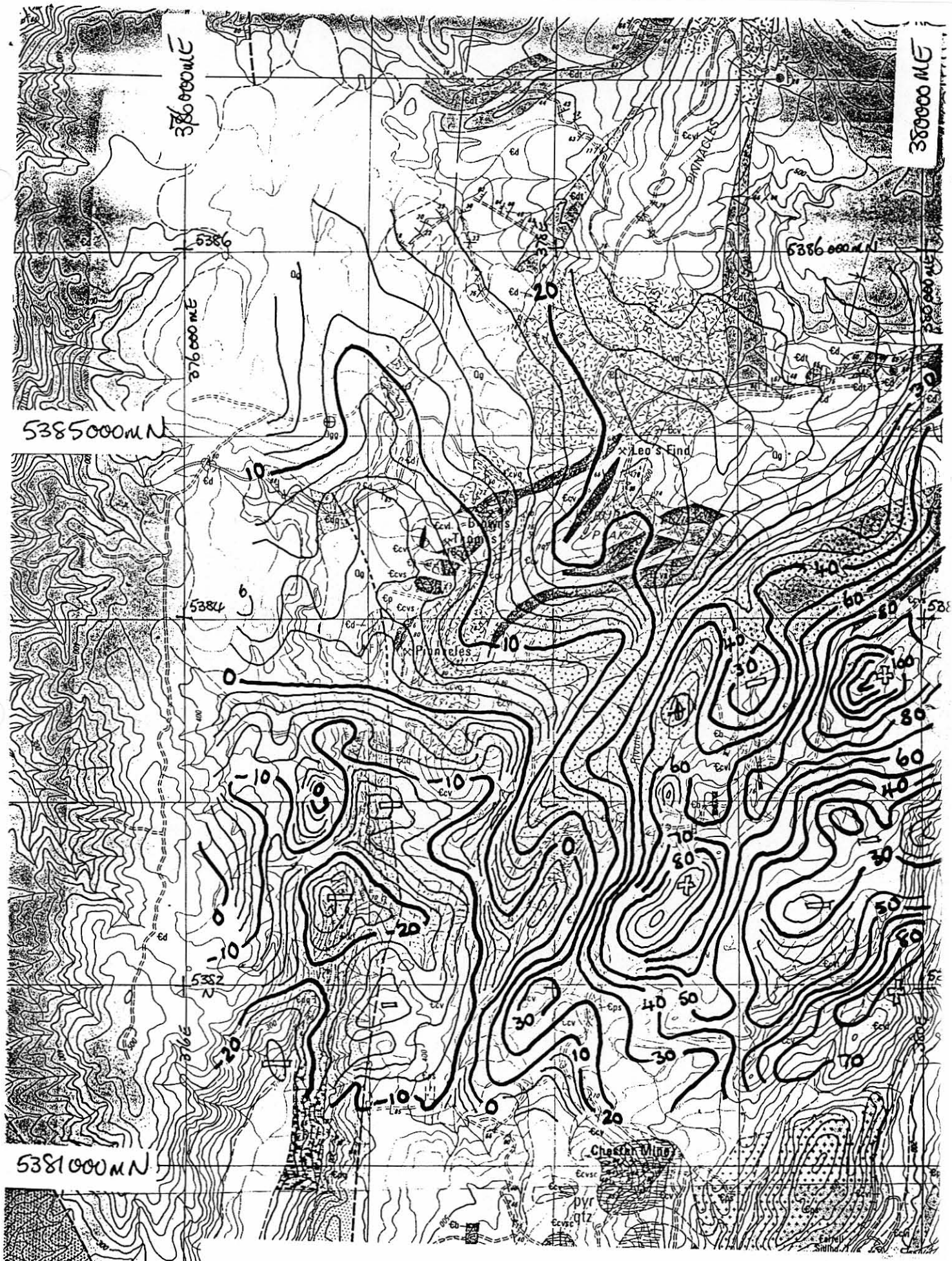
041261



RESIDUAL MAGNETIC DATA
(Based on Figure 2 using Figure 4 as filter)

FIGURE 6

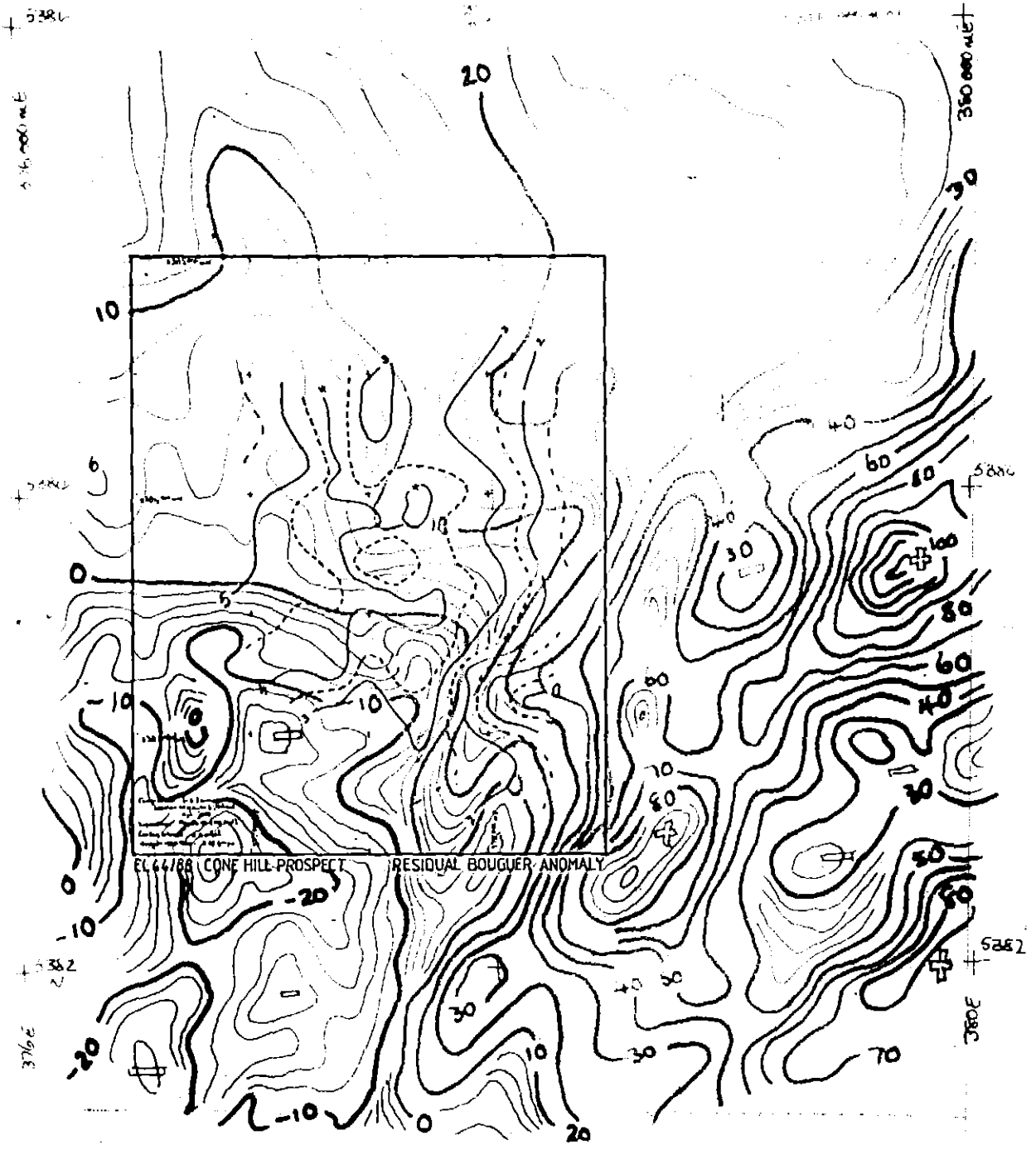
041262



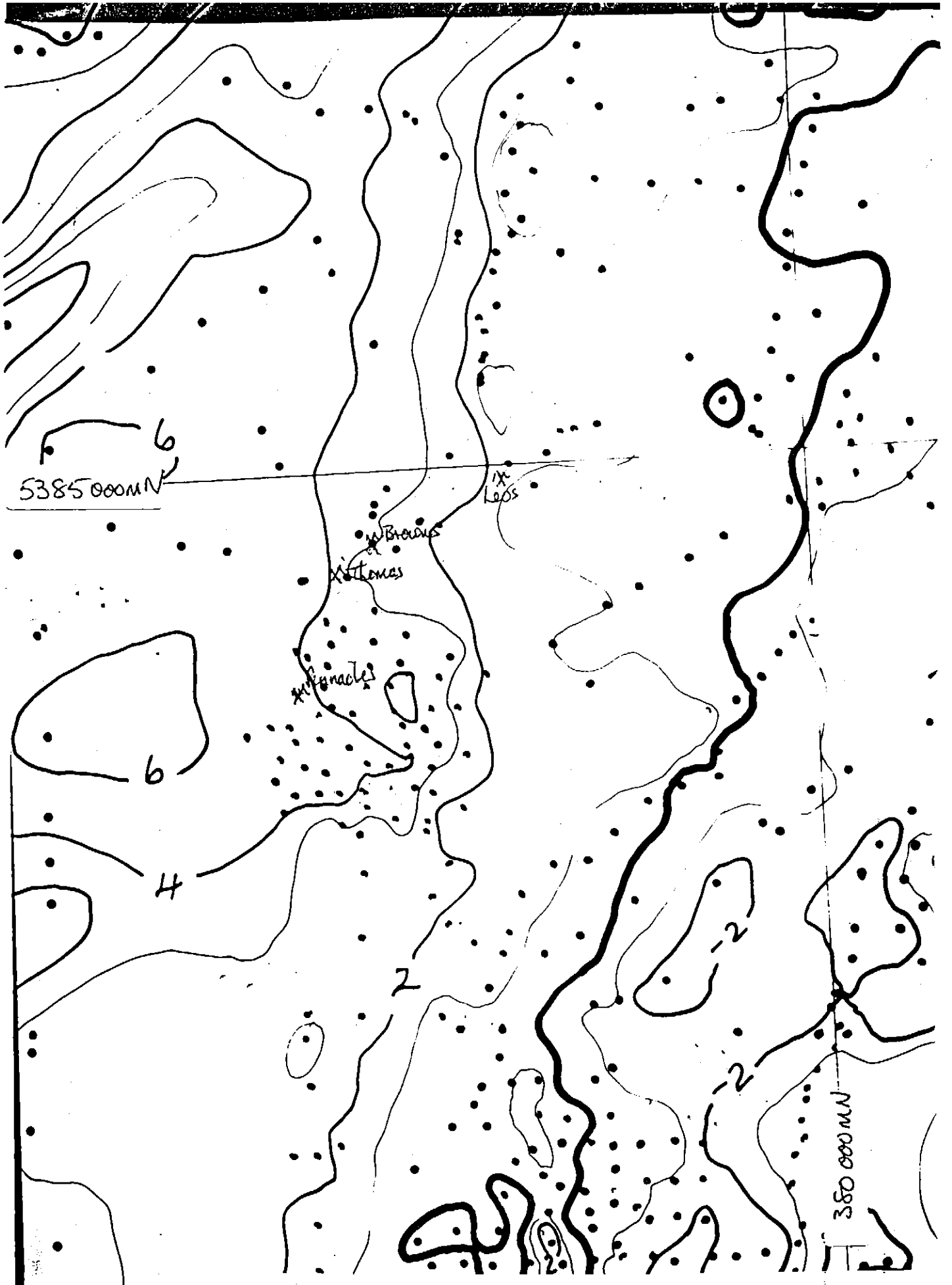
RESIDUAL MAGNETIC DATA AND GEOLOGY BASE
(Mines Department base)

FIGURE 6A

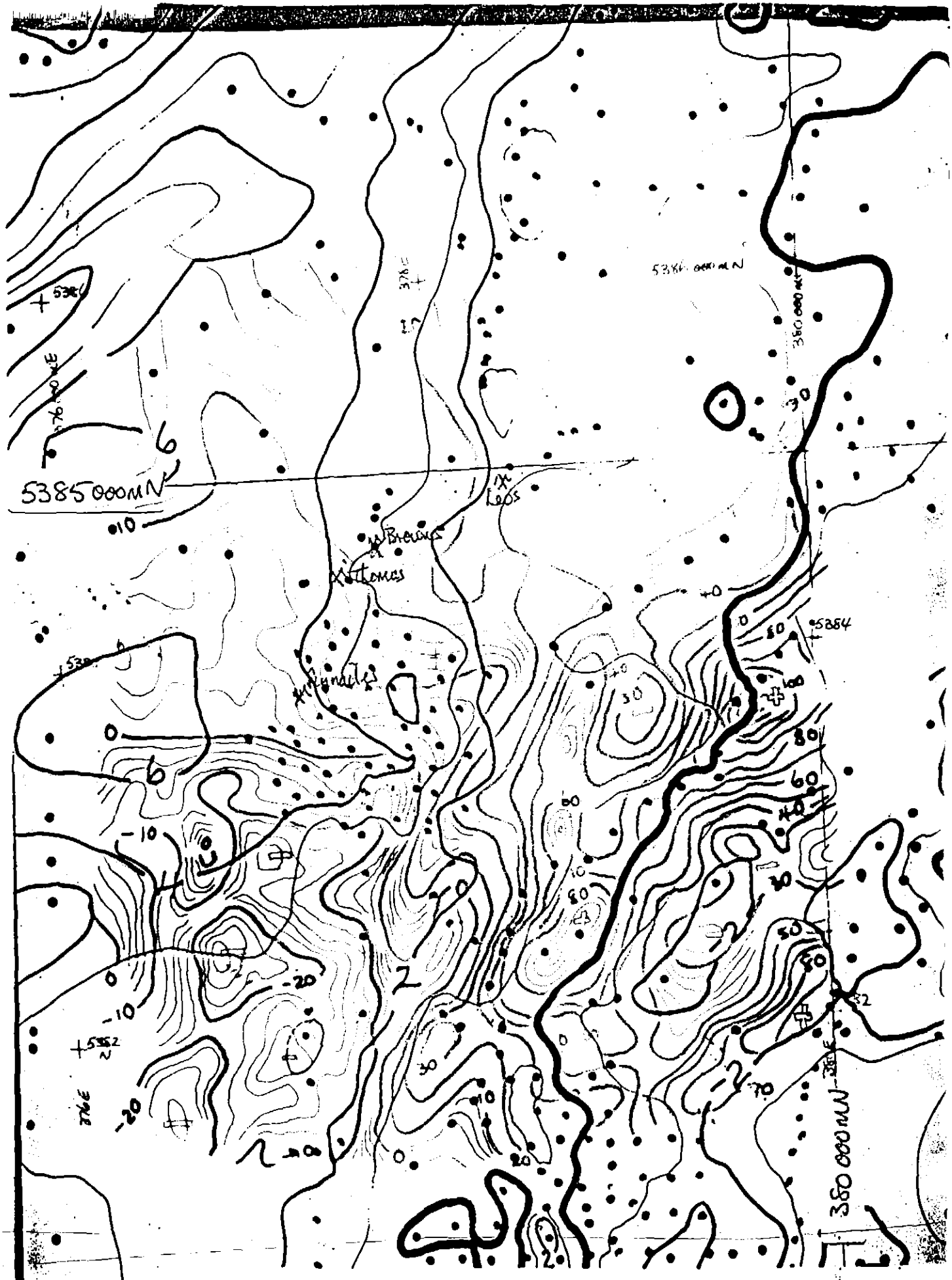
041263



CORRELATION OF RESIDUAL GRAVITY AND MAGNETIC ANOMALIES
FIGURE 7



REGIONAL GRAVITY ANOMALIES FIGURE 8



CORRELATION OF RESIDUAL MAGNETIC ANOMALIES AND REGIONAL GRAVITY ANOMALIES

FIGURE 9

041266

5385000 mN

5384 000 mN

5383 000 mN

377E

378 E

376 500 mE

377 500 mE

378 500 mE

-8

-9

-10

-11

-12

-13

041267

Compilation by D.E. Leaman, Leaman Geophysics, Hobart
Apr 1992
Data: Pasminco Exploration, Mines Department
Contour Interval: 0.5 mGal (see text). Reduction: 2.67 gm/cc

EL 44/88 BURNS PEAK - CONE HILL BOUGUER ANOMALY

5385000 mN

5384000 mN

5383000 mN

377000 mE

378000 mE

Compilation : D.E. Leaman
Leaman Geophysics, Hobart
Apr. 1992

Separation: MANTLE91 (see text)

Contour interval: 0.5 mGal

Bouguer reduction : 2.67 gm/cc

041268

EL 44/88 CONE HILL PROSPECT RESIDUAL BOUGUER ANOMALY

APPENDIX 5

PETROGRAPHY REPORTS

(a) Hollway – BPD75 – Dr. A.J. Crawford, 22 September 1992.

(b) Chester Area – BPD73 – Joe Stolz, 7 January 1992.

041270

Igneous Petrology Research Group

Geology Department
University of Tasmania
GPO Box 252C
Hobart Tasmania
Australia 7001

Phone: (002) 202490
Fax: (002) 232547

FAX COVER SHEET

To:	From:
LINDSAY KIRSNER PASMINCO BURNIE	Dr A.J. Crawford
Fax no. 004-318949	
Date: 22/9/92	No. of pages including this one: 15 + 2

Dear Lindsay: Attached are pet report and a few comments on same. I will post slides, hard copy of report plus invoice today. I will be going to Tonga for a week tomorrow, so if you want to follow up the report with me, please ring me on or after Wed next week. Best wishes Tony C

Dear Lindsay:

Attached are the petrographic descriptions of the Hollway area rocks. They are fairly straight forward, but, as you noted, the chemistry is a bit weird. I was struck with the overall petrographic similarity of the basalts and andesites, despite the fact that 999 is clearly a correlate of the Henty Dyke Swarm whereas the others are basalt lavas better correlated with the Hellyer succession. I simply couldn't pick the differences between these petrographically. Furthermore, it is touch and go whether I can pick a groundmass textural difference between the 'dyke' sample 999 and the lava samples. Anyway, I offer the following comments, all pertinent only to the andesitic to basaltic rocks.

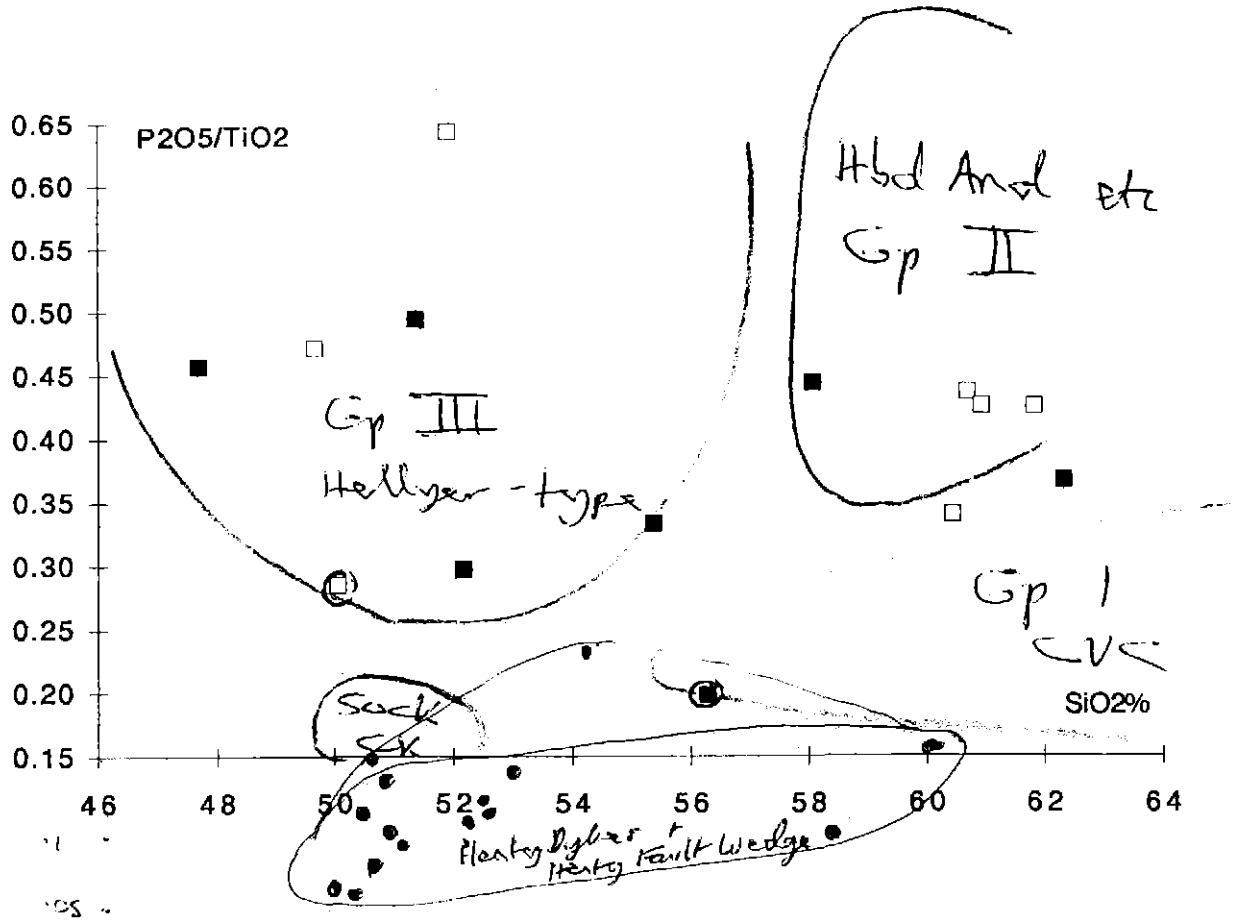
1: I have made up a Table of Coutts' and your Hollway andesites and basalts (including dykes) (attached) recalculated anhydrous. Attached also are 2 graphs showing the variation of P2O5/TiO2 and Ti/Zr versus SiO2 (see our recent Econ Geol article for fields etc). The P/Ti diagram clearly demonstrates that there are plenty of rocks in this sequence that fall within the 'shoshonitic' field of the Hellyer basalts, and the Group II transitional shoshonite field of the mainly intrusive andesites from Anthony Rd etc. The link with the Hellyer sequence is conclusively established, however important local compositional variations exist and deserve comment.

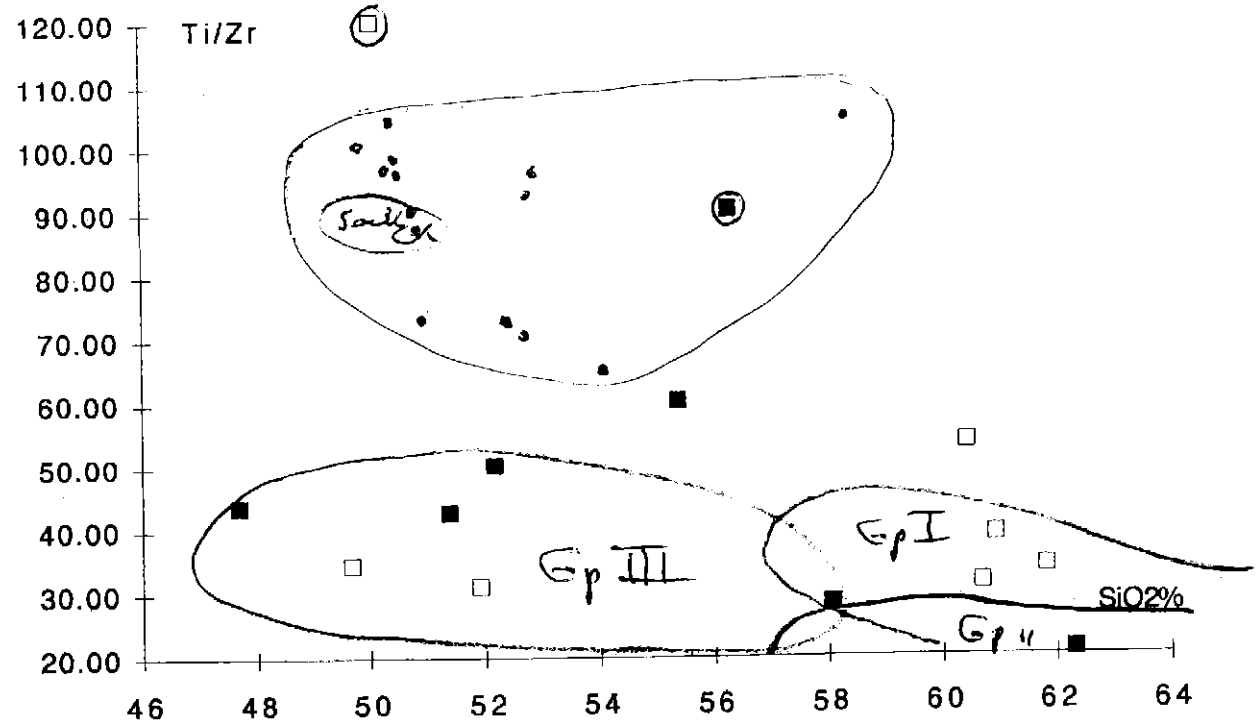
2: These lavas are typically high-Fe, high-Ti, and remarkably low Mg. Although limited Fe-enrichment may be of secondary origin, these are primary features, as the Ni and Cr contents are also very low, and the high Fe nature of the rocks persists in a variety of alteration styles. Despite the generally evident major element similarities among the suite, there exist a few profound trace element differences with important implications. Most notably, two sample (your 032999 and Coutts' 74098) have Ti/Zr values >90, and are more like Henty Dyke Swarm and Henty Fault Wedge rocks than Hellyer Basalts. These have slightly higher SiO2 and P2O5, and lower MgO contents than most Henty Dyke Swarm rocks (all from Sterling Valley and the Henty Fault Wedge), but regional variation of both extent of fractionation, and trace element signatures, can easily account for this.

3: The Hollway basaltic andesites and andesites, as for the Hellyer basalts and andesites, show a significant range of P2O5 and HFSE trace element enrichments, but carry the distinctive high-P2O5 shoshonitic signature (to 0.67%) in many analyzed samples. A few

samples have higher Ti/Zr (>50) than is typical of Hellyer basalts, although values as high as 60 do occur in Hellyer basalts, and so don't preclude this correlation.

4: It is interesting that the Sock Ck basalts are transitional in many respects between the shoshonites and the Henty Dyke Swarm, especially in the high Ti/Zr values and their P2O5/TiO2 values. I suggest that this phase of magmatism represents a rapidly evolving post-collisional rifting situation in which the Hellyer-type basalts were generated in front of an ascending MORB-type (normal asthenospheric) diapir which would eventually supply tholeiitic (Henty Dyke Swarm, Fault Wedge and Sock Ck) magmas itself to the developing rift. Given the vast heat input into this setting that must accompany the rapid transition from post-collisional shoshonitic to incipient rift tholeiitic magmatism, this setting might be very prospective for hydrothermal VHMS mineralization.


P2O5/TiO2
0.65
0.60
0.55
0.50
0.45
0.40
0.35
0.30
0.25
0.20
0.15
46
48
50
52
54
56
58
60
62
64
SiO2%
Hbd And etc
Gp II
Gp III
Hellyer-type
Gp I
Sock
Floaty Dykes
Floaty Fault Wedge


Ti/Zr
120.00
110.00
100.00
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
46
48
50
52
54
56
58
60
62
64
SiO2%
Sock
Gp III
Gp I
Gp II

SAMPLE	74098	74085	74086	74103	74078	74090	74097	32996	32999	33000	33392	33394	33395	33396
			REE											
SIO2	50.07	51.91	49.68	61.81	60.68	60.92	60.43	51.39	56.29	52.17	55.37	47.69	58.06	62.31
TIO2	0.98	0.95	1.06	0.87	0.87	0.94	0.94	1.00	1.28	0.80	1.11	1.24	0.85	0.73
AI2O3	20.86	17.46	18.43	16.36	17.9	18.54	17.93	18.17	18.73	18.61	18.42	18.00	17.88	16.81
Fe2O3	11.52	10.31	9.13	7.08	9.14	9.95	9.26	14.30	10.90	11.72	10.17	17.15	9.57	9.30
MnO	0.44	0.39	0.86	0.31	0.36	0.1	0.24	0.41	0.38	0.44	0.36	5.13	0.25	0.29
MgO	4	3.96	3.97	2.62	3.07	4.17	2.63	4.21	2.79	3.44	2.52	0.33	2.29	2.48
CaO	7.03	7.48	11.58	3.91	1.32	0.2	2.5	4.77	2.33	5.26	3.59	4.01	3.04	2.96
Na2O	2.74	4.2	2.27	4.83	2.57	0.29	2.18	3.29	5.08	5.83	7.28	4.75	6.76	0.44
K2O	2.09	2.72	2.53	1.84	3.69	4.49	3.57	1.97	1.98	1.50	0.81	1.14	0.90	4.41
P2O5	0.28	0.61	0.5	0.37	0.38	0.4	0.32	0.49	0.25	0.24	0.37	0.57	0.38	0.27
LOI	5.3	2.77	2.7	2.42	3.46	7.83	5.12	6.99	5.07	7.22	5.27	6.83	4.97	6.71
Ni		31	23	24	7		8							
Cr		17	12	115	18		27							
V		276	257	156	129		178	320	320	270	40	360	100	55
Zr	49	182	184	153	165	144	105	140	85	95	110	170	180	210
Nb	3	7	7	9	9	7	6							
Y	24	37	33	34	29	28	31	30	35	20	35	35	45	40
Sr	807	740	764	498	179	47	177							
Rb	58	52	62	40	103	138	111							
Ti/Zr	119.90	31.29	34.54	34.09	31.61	39.13	53.67	42.81	90.29	50.23	60.24	43.84	28.38	20.78
Zr/Nb	16.30	16.30	16.30	16.30	16.30	16.30	16.30	16.30	16.30	16.30	16.30	16.30	16.30	16.30
Zr/Y	2.04	4.92	5.58	4.50	5.69	5.14	3.39	4.67	2.43	4.75	3.14	4.86	4.00	5.25
PP2O5/T	0.29	0.64	0.47	0.43	0.44	0.43	0.34	0.49	0.20	0.30	0.33	0.46	0.44	0.37
PP2O5/T	0.29	0.64	0.47	0.43	0.44	0.43	0.34	0.49	0.20	0.30	0.33	0.46	0.44	0.37
TI/Zr	119.90	31.29	34.54	34.09	31.61	39.13	53.67	42.81	90.29	50.23	60.24	43.84	28.38	20.78

041274

SAMPLE NUMBER: 032996

SUMMARY:

This rock is an evolved aphyric basaltic lava with slight calcite overprinting. The compositional data provided indicate shoshonitic affinities and unambiguous correlation with the Hellyer basalts.

HAND SPECIMEN:

This is a very fine-grained dark grey-green metabasaltic lava.

THIN SECTION:

This is a quite altered, almost aphyric basaltic lava. A single rather ragged phenocryst of albitized plagioclase is present. This is set in a very intergranular to intersertal-textured groundmass, composed of small laths of totally sericitized plagioclase and much less abundant chloritized interstitial augite plates and leucoxene-altered FeTi oxide. Triangular patches of chlorite between small plagioclase laths were probably glassy mesostasis. A single veinlet cutting the rock is composed of more chlorite than elsewhere in the rock, in which tiny acicular to lath-like plagioclase crystals are set. This is probably a cooling crack in the basalt flow into which interstitial liquid drained and quenched.

The rock is fairly altered, although the alteration is of a regional burial metamorphic nature, not local hydrothermal alteration. Alteration of glassy mesostasis and chloritization of augite in the groundmass has liberated silica, which forms small ovoid and semi-circular blebs, and occasional narrow veinlets. Calcite appears to post-date the silica alteration, and overprints the rock, covering about 5 modal% of the rock.

The absence of mafic phenocrysts and the abundance of groundmass plagioclase in this rock indicate that it is an evolved basalt. This is supported by the analysis provided, with MgO being <4%. The TiO_2 and Ti/Zr values of this rock are typical of Hellyer basalts, and the P2O5 content at 0.46% indicates a shoshonitic affinity.

SAMPLE NUMBER: 032997

SUMMARY:

This rock is a felsic hyaloclastite dominated by thoroughly recrystallized aphyric glassy lava fragments and shards, including some pumiceous fragments.

HAND SPECIMEN:

This is a very unusual rock in hand specimen, with dark chloritic fragments or alteration domains to at least several cm long set in pinkish very fine-grained quartzo-feldspathic matrix.

THIN SECTION:

This is a rather difficult rock to diagnose with confidence, as it is thoroughly recrystallized and probably slightly silicified. The rock was undoubtedly fragmental, and composed of formerly glassy, possibly pumiceous lava fragments. Occasional ghost striations or streaks in some fragments are strongly reminiscent of tubular pumice, and in other places chloritic traces of former perlitic cracks are present. Some of the more chloritic fragments have textures in which poorly preserved glassy shard shapes are abundant, suggesting that perhaps these were fragments of hyaloclastite. All fragments appear to have been completely aphyric.

Most of the rock consists of a very heterogeneous-textured quartzo-feldspathic intergrowth that is fairly strongly but patchily riddled with sericite. Inter-fragment areas are probably more silica-rich and there is no textural evidence remaining to determine whether this matrix was glassy ash, or simply introduced and/or redistributed silica.

I suggest that this was a felsic hyaloclastite composed of glassy aphyric lava fragments and shards that have devitrified and recrystallized to complex quartzo-feldspathic intergrowths. Abundant groundmass silica may indicate some limited silicification. The wholerock analysis provided indicates that this is a rhyolitic hyaloclastite, with Ti/Zr <10 and V<5ppm.

SAMPLE NUMBER: 032998

SUMMARY:

This rock is a formerly entirely glassy aphyric rhyolitic lava (obsidian) that has thoroughly recrystallized to a silica-albite-sericite intergrowth.

HAND SPECIMEN:

This is a massive pinkish apparently aphyric felsic lava.

THIN SECTION:

This is another very difficult sample to diagnose. It was undoubtedly entirely glassy, and the problem centres on whether the rock was a totally glassy felsic lava, or a vitric tuff. The rock now consists of a fairly homogeneous intergrowth of ragged anhedral quartz and albite. The quartzo-feldspathic material is riddled by fine-grained sericite that shows no preferred orientation. Occasional small subhedral to euhedral albite crystals are present, and are probably microphenocrysts. Sericite dispersed throughout the quartzo-feldspathic material shows many curved boundaries that are very reminiscent of perlitic cracks. In a few places, closer spaced curved sericite intergrowths show textures rather suggestive of glassy shards, although these are even less abundant and less convincing than the perlitic cracks.

Very small anhedral and ragged-edged opaque grains are disseminated through the sample but are volumetrically insignificant; they may be hematite. Several quartz + calcite veinlets transect the sample, and contain not uncommon bladed crystals of hematite and some messy brown chlorite..

I am fairly sure that this was an essentially aphyric massive felsic lava that has suffered thorough recrystallization during burial metamorphism. The wholerock analysis provided shows the rock to be a rhyolitic composition, with Ti/Zr<6 and <5ppm V.

SAMPLE NUMBER: 032999

SUMMARY:

This rock is a sparsely vesicular plagioclase-phyric basaltic andesite with relatively abundant fine-grained FeTi oxides in the groundmass.

HAND SPECIMEN:

This is a massive fine-grained plagioclase-phyric basalt with narrow calcite veinlets.

THIN SECTION:

This is a plagioclase-phyric basalt with around 10-12 modal% of albitized plagioclase phenocrysts set in a groundmass dominated by plagioclase laths in a chloritic matrix. The plagioclase phenocrysts are up to about 2mm long and are mainly blocky euhedra up to about half replaced by sericite flakes and aggregates. There are no mafic phenocrysts in this sample.

The groundmass is a very uniform intergrowth of albitized plagioclase laths averaging about 0.2mm long set in a green chlorite-dominated matrix probably partly after glassy mesostasis, but also partly after narrow plates of augite. Small angular blebs of secondary quartz and quite abundant small altered FeTi oxide granules are scattered through the groundmass. Microshears transect the rock, and are characterized by elimination of the plagioclase laths and concentration of insoluble opaques. Concentrations of fine-grained pyrite or magnetite are also present along some fractures and microshear zones, and are difficult to differentiate from the altered FeTi oxides. Strained and aligned calcite occurs in narrow veinlets. The metamorphic grade is prehnite- pumpellyite facies.

This is an evolved basalt or basaltic andesite petrographically and texturally, as exemplified by the absence of mafic phenocrysts, yet abundant chlorite in the groundmass. The wholerock analysis provided shows that this is probably a basaltic andesite (~55% SiO2 anhydrous). Further aspects of the unusual composition of this rock are discussed in the accompanying report.

SAMPLE NUMBER: 033000

SUMMARY:

This rock is a strongly plagioclase-phyric basalt or basaltic andesite lava.

HAND SPECIMEN:

This is a quite strongly plagioclase-phyric basalt or basaltic andesite lava.

THIN SECTION:

This is a plagioclase-phyric basalt not very different from the preceding sample, except for somewhat more abundant plagioclase phenocrysts and more coarse-grained and less abundant FeTi oxides. The albitized plagioclase phenocrysts are slightly sericitized and probably make up about 20-25 modal% of this rock, and are typically clustered in multi-crystal clots of four or five crystals. Many plagioclase crystal margins are rather reacted and rounded. As for sample 032999, there are no mafic phenocrysts in this sample.

The groundmass of this rock is very similar to 032999, being composed of 0.1-0.3mm-sized albite laths that are set in a green chloritic matrix that is probably a bit less abundant in this rock. However, in this sample the groundmass opaques are larger and more euhedral, but have broken up into smaller aggregates of leucoxene-altered FeTi oxide granules. Veinlets of strained calcite cut the rock and dilate or pinch out along the length of the veinlets. This sample shows a typical prehnite- pumpellyite facies metamorphic assemblage (albite-chlorite-leucoxene -quartz-sericite).

The wholerock data provided shows that this is a basaltic andesite or low-MgO basalt, very similar to sample 032996.

SAMPLE NUMBER: 032391

SUMMARY:

This rock is an aphyric rhyolitic pumice autobreccia dominated by formerly glassy fragments of spherulitic to highly vesicular pumice.

HAND SPECIMEN:

This is a mottled greenish to pinkish felsic lava with possible autobrecciation.

THIN SECTION:

This is a formerly highly glassy, totally aphyric felsic lava with a very heterogeneous texture, clearly autobrecciated, in which fragments showing well-preserved spherulitic textures are dominant. In the spherulitic fragments, zoned spherulites averaging around 0.5mm across are composed of Kspar- or Kspar-quartz intergrowths. The spherulites vary from closely packed to more dispersed and are set in a formerly glassy groundmass that itself varies from near isotropic devitrified glass to thoroughly recrystallized quartzo-feldspathic mosaics. Other fragments appear to have been highly vesicular glassy, almost pumiceous material in which vesicles are filled by quartz, and glass has again been replaced by rather coarse-grained quartzo-feldspathic aggregates liberally speckled by fine-grained sericite. Zones of recrystallization to very fine-grained quartzose material transect the rock, and are sometimes cored by calcite. Occasional euhedral magnetite grains are present, but are volumetrically insignificant.

The absence of albite, and dominance of Kspar (after quartz) in this sample is interesting. Usually, absence of albite in felsic lavas indicates intense hydrothermal alteration, and abundant Kspar likewise, although Kspar alteration in the MRV is more commonly associated with the alteration aureole around high-level granitoids. The wholerock analysis provided shows that this is a very evolved felsic rhyolite, and the low Na2O confirms the near absence of albite observed petrographically.. The unusual texture, with pumiceous fragments and spherulitic-textured fragments, all aphyric, suggests to me derivation from the quench-fragmenting margin of a rhyolitic lava or dome.

SAMPLE NUMBER: 032392

SUMMARY:

This rock is a quite plagioclase-phyric basaltic andesite lava very similar petrographically to 032999 and 033000.

HAND SPECIMEN:

This is an almost black very fine-grained plagioclase-phyric basaltic lava.

THIN SECTION:

This rock is petrographically strikingly similar to 032999 and 033000, except being somewhat more plagioclase phenocryst-rich. It is composed of quite abundant (~20modal%) blocky euhedral albitized plagioclase phenocrysts up to 2mm long, commonly aggregated in multi-crystal clots lightly speckled by sericite and chlorite. There were no mafic phenocrysts in this rock.

As for most of the basaltic or basaltic andesite lavas described above, the groundmass of this rock is an intergrowth of abundant albite laths in chlorite; tiny equidimensional altered FeTi oxide granules are abundant. Some more coarse-grained euhedral opaque grain aggregates appear to be altered pyrite or magnetite, although without reflected light microscopy it is difficult to choose between these alternatives. As for some of the other more mafic rocks in this set, narrow microshears transect the rock, along which the groundmass is recrystallized to very fine-grained quartzo-feldspathic material.

The wholerock analysis shows that this is a basaltic andesite with around 55% SiO2, but with the low MgO content (2-4%) characteristic of these particular rocks.

SAMPLE NUMBER: 032393

SUMMARY:

This rock is a massive plagioclase-phyric formerly glassy rhyolitic lava.

HAND SPECIMEN:

This is a pinkish plagioclase-phyric felsic lava with occasional quartz veins.

THIN SECTION:

This is a petrographically very simple massive formerly glassy plagioclase-phyric lava. Rather ragged-edged and fractured phenocrysts of albitized plagioclase show strong internal strain, disaggregation and recrystallization and indicate that the sample suffered significant strain during devitrification and recrystallization. However, there is no evidence of this strain in the groundmass, which is a fairly uniform-textured very fine-grained quartzo-feldspathic intergrowth. However, irregular areas of anhedral, coarser-grained albite are not uncommon, and are commonly more sericitized than the finer-grained material, indicating that they probably represent zones of concentration of volatiles during recrystallization of devitrified glass. Occasional calcite veinlets cut the rock.

This is a massive plagioclase-phyric rhyolitic lava, a diagnosis supported by the wholerock analysis provided (72% SiO_2, Ti/Zr = 7).

SAMPLE NUMBER: 032394

SUMMARY:

This rock is a massive sparsely plagioclase-phyric evolved basaltic lava.

HAND SPECIMEN:

This is a massive, almost black near-aphyric basaltic lava.

THIN SECTION:

This is a sparsely plagioclase-phyric basaltic lava. It consists of around 2-4modal% of albitized and recrystallized small (<1mm long) plagioclase phenocrysts that are euhedral crystals which show unusual internal recrystallization. There were no mafic phenocrysts in this rock.

The groundmass is slightly different from those in the basalts and basaltic andesites described above. Most notably, plagioclase laths are larger and make up significantly less, of the groundmass of this sample compared with those described earlier. However, like those other samples, especially 032999 and 032392, the groundmass contains abundant fine-grained and equidimensional FeTi oxide granules. Rather than being set in chlorite, these groundmass plagioclase laths are set in exceptionally fine-grained, irresolvable material that is probably devitrified glassy mesostasis. Green chlorite is common and occurs as discrete small patches and spots, although in parts of the slide it has overprinted the devitrified glassy material. Chlorite veinlets and microshears are clearly cut by calcite veinlets.

This is a massive sparsely plagioclase-phyric basaltic lava, as supported by the wholerock analysis provided, which shows around 49% SiO2 and 5% MgO on an anhydrous basis.

SAMPLE NUMBER: 032395

SUMMARY:

This rock is a plagioclase-phyric basaltic andesite lava with occasional cognate microgabbroic inclusions.

HAND SPECIMEN:

This is a massive plagioclase-phyric dark grey basaltic lava.

THIN SECTION:

This is a quite plagioclase-phyric basaltic lava very similar in most respects to those described above, but particularly to 032000, to which it bears a striking resemblance. The albitized plagioclase phenocrysts make up around 15modal% of this rock, and vary from large euhedral crystals about 3mm long with abundant zones of tiny chloritized melt inclusions. Most plagioclase phenocrysts are however, smaller, free of inclusions and often in multi-crystal aggregates. A feature of this sample is the presence of a few small cognate inclusions of microgabbro, now composed of small euhedral albitized plagioclase crystals set in green chlorite, at least some of which is probably after augite, and relatively large former FeTi oxide grains with skeletal alteration. Similar FeTi oxide microphenocrysts occur throughout the rock and show alteration to leucoxene. A few small chloritized former mafic phenocryst sites were probably augite.

The groundmass is similar texturally to most of the other mafic rocks described above, being composed of masses albite laths and microlites set in chloritized devitrified glass that contains abundant tiny altered FeTi oxide granules. Veinlets of sericite cut the rock but are not common. The analysis provided shows that this is a basaltic andesite (58% SiO_2 and 2.5% MgO).

SAMPLE NUMBER: 032396

SUMMARY:

This rock is an autobrecciated and quite strongly altered formerly glassy aphyric andesitic lava.

HAND SPECIMEN:

This is an autobrecciated andesitic lava with small (<1cm) angular fragments, some of which are apparently replaced by almost black chlorite.

THIN SECTION:

The primary texture and mineralogy of this sample have been almost totally obliterated by recrystallization and alteration. The sample was originally a glassy autobrecciated andesitic lava, that was almost aphyric , carrying only a few small albitized plagioclase phenocrysts. The autobrecciated, fragmental nature of the sample is evident in thin section by the abrupt changes in texture and alteration assemblages from one fragment to another. Most abundant are fragments composed of a very messy quartzo-feldspathic intergrowth after glass, dominated by anhedral quartz and almost totally sericitized albite, and common but not abundant chlorite, all abundantly overprinted by fine-grained patchy calcite. Darker fragments are more chloritic and lack much sericite, being composed of mainly of quartz and chlorite. Very wispy meandering veinlets of quartz are common but are discontinuous from fragment to fragment, and better developed in the chlorite-poor clasts. These suggest that there has been some further brecciation and healing of this sample post- the initial development of the autobrecciated texture, which occurred during eruption of this andesite lava. Fragment boundaries are often defined by concentrations of insoluble oxides and leucoxene, presumably indicating some volume loss accompanying recrystallization and deformation (that produced the quartz veinlets). A few quite large angular patches of coarse-grained calcite, lined by chlorite are present. The alteration, dominated by chlorite-sericite-calcite-quartz, is more intense than normally developed in regional burial degradation of glassy andesites, and may be of more localized hydrothermal origin.

This is a formerly glassy almost aphyric lava breccia that has suffered quite strong and variable recrystallization and alteration. The analysis provided shows that it is andesitic, with around 60% SiO_2, Ti/Zr=19 and MgO 2.5%. The alteration of albite to sericite and quartz is reflected in the low Na_2O and high K_2O of this sample.

SAMPLE NUMBER: 032397

SUMMARY:

This rock is a devitrified and recrystallized, aphyric, formerly glassy rhyolitic lava with well-preserved perlitic cracks.

HAND SPECIMEN:

This is a massive pinkish-red almost aphyric felsic lava.

THIN SECTION:

This is a petrographically simple rock that was originally an entirely glassy aphyric, massive rhyolitic lava. It consists now of an intergrowth of mainly anhedral quartz and albite after glass. This quartzo-feldspathic intergrowth is mainly fairly fine-grained and even-textured, but occasionally albite becomes coarser-grained and lightly speckled with very fine-grained sericite, and abundant submicroscopic hematite(?), which gives the rock its reddish colour (NOTE ...it's not Kspar). In these coarser-grained domains, excellent perlitic textures are preserved, and ghosts of disrupted perlitic textures are evident over much of the slide. Small spots of olive-green chlorite are common but not abundant, and occasional disseminated pyrite grains are also present.

This rock was a massive glassy rhyolitic lava, an interpretation supported by the wholerock analysis provided, which shows around 75% SiO_2, Ti/Zr =6.2 and V < 5ppm. The style of alteration is typical of regional burial metamorphism of felsic lavas.

041287

Report To Pasminco Exploration : Samples From the Chester Area

for Lindsay Kirsner

by Joe Stolz
20 Bath St.,
Battery Point,
Tas. 7004.

7th January 1992

031765 **Pumiceous Sandstone**

Mineralogy	%
quartz	75
carbonate	7
sericite	15
pyrite	3
zircon	trace

This sample is an extensively recrystallised and hydrothermally altered, siliceous, pumice-rich rock. It is now principally composed of xenoblastic aggregates of quartz with abundant sericite and subordinate patchy carbonate and disseminated pyrite.

Individual quartz grains (0.05 - 0.1 mm) are frequently surrounded by fine veinlets or aggregates of sericite which are aligned in two directions at right angles to each other.

Within the recrystallised quartz aggregates in plane polarised light there is evidence of relict randomly oriented tubular pumice fragments. These are not apparent in cross polarised light due to the extensive recrystallisation of the quartz.

Very fine pyrite (0.01 - 0.05 mm) and some occasional larger grains (up to 0.1 mm) occur in irregular disseminated patches and concentrated along fractures. The carbonate occurs in irregular patches but also appears to be associated with fine narrow (0.1 mm wide) parallel quartz veins which traverse the rock.

There are minor secondary Fe oxides and a trace of zircon is also present.

The presence of the randomly oriented siliceous pumice fragments suggests that this rock represents some sort of volcaniclastic sandstone possibly derived by reworking of subaerial pumice deposits or explosive submarine eruptions.

The hydrothermal alteration has been moderately strong resulting in extensive sericite development at the expense of feldspar.

This rock is most closely comparable to 031769 and 031770.

031766 **Siliceous sandstone**

Mineralogy	%
quartz	85
sericite	14
pyrite	<1
carbonate	1
sphalerite	trace

This sample consists of very fine grained quartz and sericite. It is strongly banded within alternating bands relatively enriched in quartz and sericite. The quartz occurs as xenoblastic grains (typically 0.02 - 0.05 mm) and the sericite as very fine crystals which are aligned in a cleavage that is oriented at about 40° to the layering. Individual sericite layers are 0.2 to 2 mm thick and are somewhat irregular and discontinuous in nature.

The rock is traversed by fine grained narrow (0.05 mm wide) quartz veins which cut across irregular carbonate-rich veins. There are also quartz-sericite-pyrite veins, occasional patches of relatively coarse pyrite, and one vein composed of quartz, carbonate and minor sphalerite.

This rock appears to be a well bedded siltstone, which may be a deposit of fine volcaniclastic (ash) material. The greenschist facies metamorphism has produced a distinctive cleavage, and there has been minor interaction with hydrothermal fluids resulting in some veining subsequent to the deformation.

This sample is very similar to 031767.

031767 **Siliceous Siltstone**

Mineralogy	%
quartz	85
sericite	12
chlorite	<1
carbonate	3
sulphides (?pyrite)	trace
sphalerite	trace

This fine grained siliceous siltstone displays alternating parallel bands relatively enriched in quartz and sericite respectively, similar to 031766. However in this case, the sericite-rich bands appear to be related to alteration resulting from fluid movement along closely spaced parallel fractures in the rock. There is a marked decrease in the abundance of sericite away from the centre of the fractures grading into very fine grained (0.005 - 0.02 mm) xenoblastic quartz-rich bands. There are occasional angular, slightly larger quartz grains (0.05 mm) dispersed throughout this rock. The sericite within both the quartz-rich and sericite-rich layers is oriented parallel to the banding.

The rock is traversed by a variety of veins which generally cut across the banding and appear to be post-deformation in age. The most common are carbonate-quartz-rich veins (up to 0.5 mm wide) which are frequently characterised by quartz concentrations at the margins and more carbonate-rich interiors. There is also some patchy carbonate replacement of the rock adjacent to several of these veins.

The other principal vein type is composed of chlorite-carbonate-quartz with minor sulphides (including sphalerite). These veins are often zoned from chlorite at the margins to relatively quartz- and carbonate-rich interiors. The sulphides occur as anhedral aggregates and appear to be closely associated with the carbonate. Sphalerite is rimmed by another sulphide (?chalcopyrite). The chlorite in these veins appears to be partly realigned in the cleavage,

and there is some suggestion that the carbonate, some quartz and sulphides are later and partially replacing earlier vein mineralogies.

This rock has many similarities to 031766 and they probably were formed in a similar manner, as reworked sedimentary volcanic ash deposits. The banding in this sample appear to be a structurally controlled alteration feature whereas the banding in 031766 appears to be a primary sedimentary feature.

031768 Dacitic Lava

Mineralogy	%
quartz	77
carbonate	8
sericite	12
chlorite	2
secondary Fe oxides	1
sulphides	<1
apatite	<1

This is an extremely difficult rock to interpret due to its advanced state of alteration and recrystallisation. However, the most obvious feature in plane polarised light is the presence of relict perlitic fractures. These have provided a major pathway for hydrothermal fluids resulting in a concentration of sericite alteration in these structures. The areas in between these interconnecting sericite veinlets are generally dominated by xenoblastic aggregates of quartz (0.1 - 0.3 mm diameter) which are variably replaced by patches of carbonate. Minor patches of chlorite also occur in these areas but more commonly the chlorite occurs as larger aggregates (0.5 - 1.5 mm) which may be replacing original ferromagnesian phenocrysts.

There are several ovoid aggregates of quartz and carbonate which appear to represent open space filling perhaps of original vesicles.

In addition there are a few xenoblastic aggregates of quartz which may be replacing original feldspar phenocrysts, and occasional euhedral microphenocrysts of apatite (up to 0.3 mm long).

Skeletal secondary iron oxide aggregates are probably after original Fe-Ti oxide phenocrysts, and minor pyrite occurs in aggregates.

The presence of relict perlitic fractures, vesicles and euhedral apatite microphenocrysts suggests that this rock was originally a partly glassy lava. The presence of apatite phenocrysts with possible feldspar phenocryst pseudomorphs and lack of quartz phenocrysts suggests a broadly dacitic composition. Extensive hydrothermal alteration has resulted in significant sericite alteration which

displays one principal foliation direction. The irregular patchy carbonate alteration appears to post-date the sericite alteration and the subsequent deformation which produced the weak cleavage.

031769 **Pumiceous Sandstone**

Mineralogy	%
quartz and feldspar	80
sericite	15
carbonate	3
secondary Fe-oxides	1
chlorite	<1
pyrite	<1
zircon	trace

This sample is very similar to 031765 in that it is composed of predominantly randomly oriented siliceous tubular pumice fragments (0.3 - 3 mm). These pumice fragments are apparent in plane polarised light, but are not obvious in cross polarised light due to extensive subsolidus recrystallisation to fine grained (0.05 - 0.1 mm) xenoblastic aggregates of quartz and feldspar. There has been substantial sericite alteration of many of the recrystallised pumice fragments and matrix material (recrystallised silicic ash) resulting in a network of fine interconnecting veinlets frequently rimming individual quartz grains. In patches the sericite alteration is more pervasive and isolated cores of quartz grains occur in a massive sericite matrix. Throughout the rock the sericite veinlets display a subparallel alignment defining a weak cleavage.

Superimposed on this alteration is a weak carbonate alteration represented by irregular patches and veins rich in carbonate with subordinate quartz and chlorite.

There are several small aggregates of secondary Fe oxides with minor pyrite and a few angular grains of zircon.

The fragmental nature of this rock is clearly apparent and an origin similar to 031765 is proposed.

031770 **Pumiceous Sandstone**

Mineralogy	%
quartz	67
sericite	25
carbonate	5
sulphides	1
chlorite	2
zircon	trace

There is very little of the primary mineralogy and textural features of this rock remaining to assist in discerning its original character. However one of the few relatively unaltered patches evident in the thin section examined contains evidence of relict tubular pumice fragments which are now formed essentially of recrystallised xenoblastic quartz. This suggests a similar origin as 031765 and 031769.

The recrystallised quartz aggregates have a similar grain size as in the other two samples (0.05 - 0.1 mm). However this sample has experienced more extensive alteration resulting in strong sericite alteration which has been overprinted by patchy carbonate and chlorite alteration. The sericite occurs as interconnected veinlets and more pervasive patches, and subparallel alignment of the crystals imparts a weak cleavage to the rock.

The carbonate and chlorite occur in disseminated aggregates which are unaffected by the cleavage forming event.

The rock is also traversed by several veins (1 - 2 mm wide)composed of subhedral to euhedral prismatic quartz crystals and chlorite with minor sulphides. Another relatively coarse grained vein has its margins dominated by fine radiating aggregates of sericite and chlorite. This is followed by anhedral aggregates of quartz, then bladed crystals of carbonate with some intergrown sulphides, and the interior of the vein is dominated by sulphide with minor carbonate. Unfortunately the detailed mineralogy of the sulphides cannot be determined in ordinary thin section.

The textures of the sericite and chlorite in these veins clearly indicate vein emplacement was a post-deformation event.

031771 'Brecciated' Pumiceous Sandstone

Mineralogy	%
quartz	67
sericite	15
carbonate	10
chlorite	8
sulphides	<1

This is a pumiceous sandstone very similar in mineralogy to 031765, 031769 and 031770.

The tubular pumice fragments display the same textures and recrystallisation as the other samples, and patchy to vein-type sericite alteration is widespread. Patchy carbonate alteration is also present but subordinate.

The major distinguishing characteristic of this sample is the pseudo-fragmental texture which has been produced by extensive quartz-chlorite-carbonate alteration and veining. The chlorite crystals are not strongly aligned in the foliation defined by the sericite, and the quartz occurs as subhedral to euhedral prismatic crystals. The carbonate occurs as large coarsely crystalline aggregates.

These veins are extensively developed and interconnected in a fashion which imparts a distinctly brecciated appearance to the rock. If this does represent a real hydrothermal breccia, there has been effectively no rotation of the sandstone clasts as the foliation direction is comparable in most of the fragments examined. There are also occasional grains (up to 0.3 mm) of sulphide associated with these veins.

031772 **Pumiceous Sandstone**

Mineralogy	%
quartz	59
sericite	25
carbonate	15
chlorite	1
sulphides	<1

This rock is also very similar in terms of mineralogy and textures to 031765, 031769 and 031770. It contains the relict tubular pumice and has experienced similar sericitic alteration which is pervasive in patches and displays a well-defined foliation. There is also some patchy carbonate alteration. However most of the carbonate occurs as relatively coarsely crystalline aggregates in veins intergrown with relatively coarse sericite. These veins are unusual in that both the muscovite and carbonate display evidence of recrystallisation in the same stress field which produced the penetrative foliation defined by the more abundant sericite alteration.

Chlorite is only a minor component of these veins and the few disseminated sulphide grains do not appear to be associated with the vein minerals.

This sample appears to have had a similar origin to the other pumiceous sandstones, but the carbonate alteration appears to be more closely related to the sericite alteration and apparently occurred prior to the last major deformation.

031773 **Tuffaceous Siltstone**

Mineralogy

quartz
chlorite
sericite
carbonate
sulphides

This is an extremely fine grained siliceous rock which has experienced only minor sericitic alteration, but extensive veining.

The bulk of the rock is composed of cryptocrystalline quartz and feldspar which likely represents devitrified silicic volcanic ash. This contains occasional slightly larger angular quartz grains (up to 0.05 mm).

Very fine interconnecting veinlets of sericite represent a fairly widespread but weak alteration. The subparallel alignment of veinlets defines a weak cleavage. Some irregular patches are devoid of this alteration.

The sample is traversed by numerous fracture fill veins (up to 2 mm wide) composed of chlorite, quartz, minor carbonate and pyrite. They are generally zoned from chlorite at the margins to quartz and carbonate in the interior.

Another unusual feature of this rock is the presence of ovoid patches (1 - 3 mm) consisting of xenoblastic relatively coarse grained (0.05 - 0.1 mm) quartz-chlorite aggregates in the core, which are surrounded by a rim of fine matrix material that is devoid of sericite. These unusual features appear to be related to the chlorite-quartz alteration event, but how they developed is a mystery.

The fine grained host rock is considered to be a deposit of fine silicic ash, and as such is quite different to 031765, 031768 and 031772. The nearest analogue is 031766.

031774 'Brecciated' Pumiceous Sandstone

Mineralogy	%
quartz	<1
plagioclase	3
sericite	8
carbonate	3
chlorite	5
sulphides	<1
recrystallised pumice	80
rutile	<1

This rock appears to be a relatively unaltered and less deformed/recrystallised equivalent of the other pumiceous sandstone samples described earlier (eg. 0317656, 031769 etc.).

The bulk of the rock is composed of angular tubular pumice fragments (1 - 3 mm) occurring in random orientations, and only very weakly recrystallised to extremely fine grained aggregates of quartz and feldspar. These fragments display very weak sericite alteration which does not exhibit a strong preferred orientation. The sericite occurs as very fine 'wispy' veinlets.

Dispersed throughout the pumiceous material are subidiomorphic grains of plagioclase which are often broken and display patchy sericite and carbonate alteration. There are also occasional angular quartz grains scattered through the rock.

The rock is traversed by numerous interconnecting veins of chlorite and carbonate with minor quartz and sulphides, which imparts to it a fragmental appearance. Because of the lack of a well defined foliation, it is difficult to assess if there has been any significant clast rotation.

This sample represents a hydrothermal breccia in which little movement of clasts relative to each other has occurred. There are also several fine granular aggregates of rutile associated with the chlorite-rich veins.

It is interesting to note the preservation of plagioclase crystals in this sample. They may also have been present in the other pumiceous sandstones but were completely altered to sericite.

The finer grain size of the recrystallised pumice, together with the weak sericite alteration and cleavage development indicates both a lower grade of hydrothermal alteration, and metamorphism. The chlorite-carbonate alteration is later than the sericite alteration though, as the latter is restricted to clast interiors.

031775 **Pumiceous Sandstone**

Mineralogy	%
quartz	<1
plagioclase	5
sericite	10
carbonate	<1
chlorite	5
sulphides	<1
secondary Fe oxides	1
recrystallised pumice fragments	78

This sample contains subidiomorphic phenocrysts of plagioclase (0.5 - 2 mm) and rare quartz phenocrysts which frequently occur in aggregates, set in a moderately sericite-chlorite altered silicic groundmass. The plagioclase phenocrysts typically show only weak sericite and carbonate alteration. The groundmass is composed of fine grained (0.05 - 0.1 mm) xenoblastic aggregates of quartz and feldspar, with variable sericite alteration. The sericite occurs as fine interconnecting veinlets with some more pervasively altered patches, and displays two weak cleavages.

This rock displays many of the characteristics of a lava with roughly evenly distributed phenocrysts in a silicic groundmass. However, there are one or two areas within the groundmass which resemble recrystallised pumice material. It is possible that the rock represents an altered pumiceous sandstone similar to the samples described above (031774 particularly), and that the plagioclase crystals are phenocrysts within altered pumice fragments. Alternatively this sample is a pumiceous lava which has included some of its highly vesicular carapace during eruption. The alteration of the groundmass makes it difficult to be certain, but the latter alternative is preferred in this instance. The abundance of plagioclase phenocrysts together with quartz phenocrysts, and a silicic groundmass suggests a dacitic composition.

This sample is also traversed by a network of chlorite-rich veins which imparts to it a fragmental appearance. Fine disseminated pyrite occurs throughout the rock but it does not appear to be closely associated with the chlorite veining.

031776 'Brecciated' Basaltic Lava

Mineralogy

plagioclase
carbonate
chlorite
actinolite
Fe oxides

This is a basaltic lava composed of rare, tabular euhedral plagioclase microphenocrysts in a fine groundmass dominated by randomly oriented plagioclase laths (0.1 - 0.2 mm long) with interstitial chlorite, actinolite, and Fe oxides. The rock has been brecciated and the matrix is filled by chlorite, carbonate and minor quartz.

Most basalt clasts have 'bleached' margins from loss of Fe oxides and carbonate alteration. However the ghost basaltic textures are still apparent in cross polarised light. There is minor pyrite and a small amount of granular rutile associated with the chlorite alteration.

This is probably a hydrothermal breccia which has experienced only minor movement of clasts relative to each other. Much of the fragmentation appears to have been essentially in situ.

031777 **Volcaniclastic Sandstone**

Mineralogy	%
quartz	1
lithic fragments	80
sericite	8
carbonate	<1
chlorite	10
pyrite	1

This sample consists of angular to subrounded clasts (typically 1 - 2 mm, but up to 10 mm across), in a matrix composed of intergrown chlorite, sericite and recrystallised silicic volcanic ash. The lithic fragments comprise a variety of silicic rock types characterised by substantial textural variation.

Many of the fragments consist of very fine grained (0.01 mm) aggregates of quartz and feldspar, probably representing devitrified and weakly recrystallised silicic glass. Some clasts display a weak banding and are composed of recrystallised quartz, feldspar and minor chlorite. These may be fragments of flow-banded devitrified lava or relict tubular pumice fragments. Other clast types include chlorite-rich clasts, and some coarser-grained quartz-rich examples (0.1 mm diameter).

The matrix is dominated by intergrown fine chlorite and sericite with fine xenoblastic quartz. Pyrite occurs as relatively coarse cubes (0.1 - 0.3 mm) disseminated throughout the matrix and clasts. The chlorite and sericite define a weak cleavage and the larger pyrite cubes display recrystallisation of quartz and chlorite in pressure shadows adjacent to the grains. Minor carbonate occurs in cross-cutting veins with quartz.

This sample represents a volcanogenic sandstone produced by reworking of silicic volcanic detritus, probably dacitic to rhyolitic in composition. Following deposition, hydrothermal fluids percolated through the relatively permeable matrix resulting in substantial sericite and chlorite alteration, with associated development of pyrite.

Subsequent deformation and low grade regional metamorphism resulted in cleavage development and recrystallisation of originally glassy, silicic lithic fragments.

031778 **Volcaniclastic Sandstone**

Mineralogy	%
quartz	25
lithic fragments	10
silicic matrix	20
sericite	15
carbonate	20
chlorite	10
sulphides	<1
rutile	<1
zircon	trace

This is a volcaniclastic sandstone containing abundant angular quartz grains (0.5 - 2 mm), subordinate lithic fragments in a strongly carbonate-sericite altered silicic matrix. Many of the quartz grains are cracked and some display partial resorption features indicating a volcanic origin. The lithic fragments typically are angular to sub-rounded. They include recrystallised, siliceous pumice material, very fine grained silicic volcanic material and somewhat coarser grained (0.1 - 0.2 mm) quartz-feldspar-rich fragments with variable amounts of chlorite and sericite.

The matrix includes some very fine grained siliceous material, veinlets of sericite defining a weak cleavage, and widespread patchy chlorite and carbonate. The chlorite-carbonate alteration appears to be later and unaffected by the deformation.

Fine granular rutile occurs replacing an original Fe-Ti oxide phase, and there are minor fine sulphides and a few angular grains of zircon scattered throughout the rock.

This sample is clearly sedimentary in origin. It has some similarity to 031777 in the presence of silicic lithic fragments, and its alteration assemblage. However the large amount of detrital quartz in this sample differs from 031777, and in fact is not a feature of any of the other samples in this suite.

APPENDIX 6

GEOCHEMICAL LEDGERS – BPD73, 74 & 75

(Analabs Analytical Reports)

041309

Burns Peak - Chester
BPD 73

ANALABS

A Division of Inchcape Inspection and Testing Services Australia Pty Ltd

RECEIVED
4 DEC 1991

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

ANALYTICAL REPORT No.

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

INVOICE TO:

Pasminco Exploration
P.O. Box 886
BURNIE TAS 7320

ORDER No.	PROJECT
0215	3006

DATE RECEIVED	RESULTS REQUIRED
22/11/91	ASAP

No. OF PAGES OF RESULTS	DATE REPORTED	No. OF COPIES	TOTAL No. OF SAMPLES
3	03/12/91	1	61

SAMPLE NUMBERS	SAMPLE DESCRIPTION	ELEMENT/METHOD
(032,553/71,573/82,585,901/31	SC Prep : GP029,P1	Cu,Pb,Zn,Ag/SA140
(032,553/71,573/82,585,901/31	SC Prep :	Au,Au(R),Au(S)/GG309

REMARKS

RESULTS TO:

Mr L. Karsner
Pasminco Exploration
P.O. Box 886
BURNIE TAS 7320

RESULTS TO:

RESULTS TO:

AUTHORISED OFFICER

041310

ANALABS

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

ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	111310.60.08432	03/12/91	0215	1 OF 3

TUBE No.	SAMPLE No.	Cu	Pb	Zn	Ag	Au	Au(R)	Au(S)		
1	032553	13	16	533	<0.5	<0.008	-	-		
2	032554	13	16	511	<0.5	<0.008	-	-		
3	032555	14	<5	342	<0.5	<0.008	-	-		
4	032556	16	21	697	<0.5	<0.008	-	<0.008		
5	032557	7	33	882	<0.5	<0.008	-	-		
6	032558	8	29	538	<0.5	<0.008	-	-		
7	032559	7	25	315	<0.5	<0.008	-	-		
8	032560	<5	12	383	<0.5	<0.008	-	-		
9	032561	8	12	279	<0.5	<0.008	-	-		
10	032562	22	333	404	<0.5	<0.008	-	-		
11	032563	7	161	261	<0.5	<0.008	-	-		
12	032564	6	6	106	<0.5	<0.008	<0.008	-		
13	032565	6	12	94	<0.5	<0.008	-	-		
14	032566	<5	8	93	<0.5	<0.008	-	-		
15	032567	<5	<5	84	<0.5	0.008	-	-		
16	032568	<5	30	85	<0.5	<0.008	-	-		
17	032569	20	655	310	<0.5	<0.008	-	-		
18	032570	<5	37	107	<0.5	<0.008	-	-		
19	032571	<5	<5	113	<0.5	<0.008	-	-		
20	032573	<5	<5	81	<0.5	<0.008	-	-		
21	032574	<5	<5	73	<0.5	<0.008	-	-		
22	032575	<5	<5	94	<0.5	<0.008	<0.008	-		
23	032576	<5	<5	98	<0.5	<0.008	-	-		
24	032577	<5	<5	252	0.6	0.029	-	-		
25	032578	29	684	239	1.7	0.010	-	-		

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

AUTHORISED OFFICER

041311

ANALABS

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

ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No	PAGE
	111310.60.08432	03/12/91	0215	2 OF 3

TUBE No.	SAMPLE No.	Cu	Pb	Zn	Ag	Au	Au(R)	Au(S)		
1	032579	161	185	652	1.7	0.020	-	-		
2	032580	22	55	230	<0.5	0.018	-	-		
3	032581	14	50	514	<0.5	0.012	-	-		
4	032582	8	496	55	1.4	0.008	-	0.008		
5	032585	13	64	442	<0.5	0.008	-	-		
6	032901	10	84	304	<0.5	<0.008	-	-		
7	032902	10	131	423	<0.5	<0.008	-	-		
8	032903	13	65	557	<0.5	<0.008	-	-		
9	032904	200	51	93	<0.5	<0.008	-	-		
10	032905	312	63	141	<0.5	<0.008	-	-		
11	032906	490	89	203	<0.5	<0.008	-	-		
12	032907	23	10	70	<0.5	<0.008	<0.008	-		
13	032908	735	62	235	<0.5	<0.008	-	-		
14	032909	233	16	87	<0.5	<0.008	-	-		
15	032910	3623	13	63	1.1	0.008	-	-		
16	032911	2509	22	105	0.8	<0.008	-	-		
17	032912	1491	28	106	0.7	<0.008	-	-		
18	032913	2151	41	97	1.3	0.008	-	-		
19	032914	1542	29	171	1.7	0.011	-	-		
20	032915	542	24	79	0.6	<0.008	-	-		
21	032916	9	11	49	<0.5	<0.008	-	-		
22	032917	5	5	44	<0.5	<0.008	<0.008	-		
23	032918	121	13	44	<0.5	<0.008	-	-		
24	032919	941	7	62	1.0	<0.008	-	<0.008		
25	032920	93	<5	43	<0.5	<0.008	-	-		

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

AUTHORISED OFFICER

ANALABS

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

ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	111310.60.08432	03/12/91	0215	3 OF 3

TUBE No.	SAMPLE No.	Cu	Pb	Zn	Ag	Au	Au(R)	Au(S)		
1	032921	5	13	94	<0.5	<0.008	-	-		
2	032922	13	136	411	1.0	0.008	-	-		
3	032923	<5	115	304	0.5	<0.008	-	-		
4	032924	24	27	356	0.5	<0.008	-	-		
5	032925	77	27	371	<0.5	<0.008	-	-		
6	032926	14	<5	136	<0.5	<0.008	-	-		
7	032927	<5	<5	59	<0.5	<0.008	-	-		
8	032928	<5	<5	48	<0.5	<0.008	-	-		
9	032929	<5	<5	69	<0.5	<0.008	-	-		
10	032930	<5	<5	37	<0.5	<0.008	-	-		
11	032931	<5	5	30	<0.5	<0.008	-	<0.008		
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23	DETECTION	5	5	5	0.5	0.008	0.008	0.008		
24	UNITS	ppm	ppm	ppm	ppm	ppm	ppm	ppm		
25	METHOD	GA140	GA140	GA140	GA140	GG309	GG309	GG309		

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

AUTHORISED OFFICER

*31779-31783 3006 - BPD 74 - Chester

ANALABS

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

041313

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

ANALYTICAL REPORT No. 111310.60.08648

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

INVOICE TO:

Pasminco Exploration
P.O. Box 886
BURNIE TAS 7320

ORDER No.	PROJECT
0221	3006 / 3009

DATE RECEIVED	RESULTS REQUIRED
17/03/92	ASAP

No. OF PAGES OF RESULTS	DATE REPORTED	No. OF COPIES	TOTAL No. OF SAMPLES
3	27/03/92	1	11

SAMPLE NUMBERS	SAMPLE DESCRIPTION	ELEMENT/METHOD
32385/390,31779/783	SC Prep : GP029,P1	Cu,Pb,Zn,Ag/GA140
32385/390,31779/783	SC Prep :	Au,Au(R),Au(S)/GG309
31779,31781,32385	SC Prep :	Whole Rock Analysis/OX408

REMARKS

RESULTS TO

Mr F Fitzgerald
Pasminco Exploration
P.O. Box 886
BURNIE TAS 7320

RESULTS TO

Mr L Kirsner
Pasminco Exploration
P.O. Box 886
BURNIE TAS 7320

RESULTS TO

AUTHORISED OFFICER

041314

ANALABS

A Division of Inchcape Inspection and Testing Services Australia Pty. Ltd.
A.C.N. 004 581 664

ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	111310.60.08648	27/03/92	0221	1 OF 3

TUBE No.	SAMPLE No.	Cu	Pb	Zn	Ag	Au	Au(R)	Au(S)	Al2O3	SiO2
1	31779	8	18	100	<1	<0.008	-	-	13.10	69.1
2	31780	7	4	44	<1	<0.008	-	-	-	-
3	31781	15	43	77	<1	<0.008	-	-	13.02	74.8
4	31782	15	37	60	<1	<0.008	-	-	-	-
5	31783	8	5	90	<1	<0.008	-	<0.008	-	-
22										
23	DETECTION	2	3	2	1	0.008	0.008	0.008	0.05	0.1
24	UNITS	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	%
25	METHOD	GA140	GA140	GA140	GA140	GG309	GG309	GG309	OX408	OX408

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

AUTHORISED OFFICER

041315

ANALABS

A Division of Inchcape Inspection and Testing Services Australia Pty. Ltd.
A.C.N. 004 691 664

ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	111310.60.08648	27/03/92	0221	2 OF 3

TUBE No.	SAMPLE No.	TiO2	Fe2O3	MnO	CaO	K2O	MgO	P2O5	SO3	Na2O
1	31779	0.21	3.84	0.21	2.72	3.63	1.27	0.034	0.65	0.89
2	31781	0.28	1.79	0.04	0.63	4.94	0.90	0.031	1.15	1.52
19										
20										
21										
22										
23	DETECTION	0.01	0.01	0.01	0.01	0.01	0.01	0.005	0.01	0.05
24	UNITS	%	%	%	%	%	%	%	%	%
25	METHOD	OX408	OX408	OX408	OX408	OX408	OX408	OX408	OX408	OX408

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

AUTHORISED OFFICER

041316

ANALABS

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

ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	111310.60.08648	27/03/92	0221	3 OF 3

TUBE No.	SAMPLE No.	LOI	TOTAL							
1	31779	4.63	100.33							
2	31781	2.22	101.32							
19										
20										
21										
22										
23	DETECTION	0.01	0.01							
24	UNITS	%	%							
25	METHOD	OX408	OX408							

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

AUTHORISED OFFICER

041317

Burns Peak
BPD 75

ANALABS

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

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

ANALYTICAL REPORT No. 111310.60.08912

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

INVOICE TO:

Pasminco Exploration
P.O. Box 884
BURNIE TAS 7320

ORDER No.	PROJECT
0189	3006

DATE RECEIVED	RESULTS REQUIRED
05/08/92	ASAP

No. OF PAGES OF RESULTS	DATE REPORTED	No. OF COPIES
3	24/08/92	1

TOTAL No. OF SAMPLES: 17

SAMPLE NUMBERS	SAMPLE DESCRIPTION	ELEMENT/METHOD
032991/032995	DC Prep : GP033;P1	Cu,Pb,Zn,Ag/GA140
		Au,Au(S)/GG309
032996/033000,032391/032397		Rb,Sr,Y,Zr,Ba,V/GX401
		Whole Rock Analysis/GX408

REMARKS

RESULTS TO:
Mr F Fitzgerald
Pasminco Exploration
P.O. Box 884
BURNIE TAS 7320

RESULTS TO:
Mr L Kirsner
Pasminco Exploration
P.O. Box 884
BURNIE TAS 7320

RESULTS TO:

AUTHORISED OFFICER

ANALABS

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

ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	111310.60.08912	24/08/92	0189	1 OF 3

TUBE No.	SAMPLE No.	Cu	Pb	Zn	Zn	Ag	Au	Au(S)	Rb	Sr
1	032991	6	25	100	-	<1	<0.008	<0.008	-	-
2	032992	12	28	83	-	<1	<0.008	-	-	-
3	032993	5	56	235	-	<1	<0.008	-	-	-
4	032994	34	2100	>10000	0.93	2	<0.008	-	-	-
5	032995	11	50	290	-	<1	<0.008	-	-	-
6	032996	-	-	-	-	-	-	-	85	150
7	032997	-	-	-	-	-	-	-	140	90
8	032998	-	-	-	-	-	-	-	120	130
9	032999	-	-	-	-	-	-	-	70	190
10	033000	-	-	-	-	-	-	-	50	360
11	032391	-	-	-	-	-	-	-	140	50
12	032392	-	-	-	-	-	-	-	35	320
13	032393	-	-	-	-	-	-	-	100	75
14	032394	-	-	-	-	-	-	-	65	220
15	032395	-	-	-	-	-	-	-	35	270
16	032396	-	-	-	-	-	-	-	190	70
17	032397	-	-	-	-	-	-	-	140	130
18										
19										
20										
21										
22										
23	DETECTION	2	3	2	0.01	1	0.008	0.008	5	5
24	UNITS	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm
25	METHOD	GA140	GA140	GA140	GA104	GA140	GG309	GG309	GX401	GX401

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

AUTHORISED OFFICER

ANALABS

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

ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	111310.60.08912	24/08/92	0189	2 OF 3

TUBE No.	SAMPLE No.	Y	Zr	Ba	V	Al2O3	SiO2	TiO2	Fe2O3	MnO
1	032996	30	140	360	320	16.90	47.8	0.93	13.33	0.38
2	032997	35	220	410	<5	10.64	72.7	0.22	3.14	0.27
3	032998	35	240	360	<5	12.47	74.1	0.25	1.48	0.11
4	032999	35	85	530	320	17.66	53.2	1.21	10.26	0.36
5	033000	20	95	520	270	17.34	48.5	0.74	10.92	0.41
6	032391	25	180	1700	<5	9.82	78.2	0.19	2.56	0.07
7	032392	35	110	320	40	17.54	52.6	1.05	9.66	0.34
8	032393	30	300	200	6	14.39	71.6	0.35	1.55	0.11
9	032394	35	170	310	360	16.76	44.5	1.16	15.98	0.31
10	032395	45	180	260	100	17.03	55.2	0.81	9.09	0.24
11	032396	40	210	580	55	15.70	58.2	0.68	8.69	0.27
12	032397	35	240	470	<5	12.95	73.4	0.25	1.85	0.12
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23	DETECTION	5	5	10	5	0.05	0.1	0.01	0.01	0.01
24	UNITS	ppm	ppm	ppm	ppm	%	%	%	%	%
25	METHOD	GX401	GX401	GX401	GX401	OX408	OX408	OX408	OX408	OX408

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

AUTHORISED OFFICER

041320

ANALABS

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

ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	111310.60.08912	24/08/92	0189	3 OF 3

TUBE No	SAMPLE No.	CaO	K2O	MgO	P2O5	SO3	Na2O	LOI	TOTAL	
1	032996	4.44	1.83	3.92	0.464	0.06	3.06	6.99	100.08	
2	032997	2.67	2.65	1.62	0.023	0.22	1.60	4.37	100.11	
3	032998	1.84	2.76	0.38	0.024	0.10	3.08	3.30	99.93	
4	032999	2.20	1.87	2.64	0.239	0.77	4.80	5.07	100.29	
5	033000	4.89	1.39	3.20	0.221	0.10	5.42	7.22	100.36	
6	032391	0.75	4.87	0.62	0.020	0.03	0.47	2.41	100.01	
7	032392	3.41	0.77	2.39	0.353	0.02	6.92	5.27	100.35	
8	032393	1.37	2.09	0.50	0.047	0.06	5.32	3.00	100.36	
9	032394	3.74	1.06	4.79	0.528	0.07	4.43	6.83	100.19	
10	032395	2.89	0.86	2.18	0.359	0.16	6.43	4.97	100.26	
11	032396	2.76	4.12	2.32	0.245	0.29	0.41	6.71	100.37	
12	032397	1.68	2.64	0.54	0.024	0.10	3.75	2.90	100.15	
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23	DETECTION	0.01	0.01	0.01	0.005	0.01	0.05	0.01	0.01	
24	UNITS	%	%	%	%	%	%	%	%	
25	METHOD	OX408	OX408	OX408	OX408	OX408	OX408	OX408	OX408	

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

AUTHORISED OFFICER

APPENDIX 7

Drilling Proposals – L. W. Kirsner

BPD74, 75 & 76

Monthly Report for July 1992 – Project Summary

PASMINCO EXPLORATION

BURNS PEAK EL 44/88

DIAMOND DRILL HOLE PROPOSAL

CHESTER AREA:

HOLE NUMBER:	BPD 74
AMG COORDINATES:	5 381 730N
(APPROX)	378 160E
	350m ASL
COLLAR DIP"	-50°
COLLAR AZIMUTH:	135° AMG
PROPOSED DEPTH:	400m
TARGET:	Mineralised horizon coinciding with a gravity and magnetic anomaly.

The diamond drill hole described above is designed to test potentially mineralised horizons or structures within a folded sequence of coarse epiclastics, dacite lavas and lava breccias and fine grained sediments approximately 700m north of the Chester pyrite deposit. The target was defined after recent close-spaced gravity measurements were interpreted and integrated with the 1990/91 aeromagnetic survey and current geological interpretation of the area. A series of positive gravity anomalies extend northward from a main anomaly situated at the Chester pyrite workings. These anomalies were unexpected, unassessed and as yet untested. The N to NNW trend of these gravity features is identical to the trend of the magnetic contours in the area. This trend is truncated to the north of the Chester Dam by a regional-scale NW-SE trending feature, evident in magnetic, gravity and to a lesser extent geological features. Also evident in the magnetics is a regional E-W trending feature, that passes through the Chester deposit itself. These E-W features are present for most known sites of major mineralisation in Western Tasmania and are believed to indicate basement discontinuities. The zone to be drill tested is in the area of influence of the NW-SE magnetic feature, coinciding with the largest of the untested gravity anomalies.

The nature of the NW-SE feature is unknown, but it is likely to be a fundamental lithological break, defined by the complete contrast of magnetic character between its NE and SW sides. The feature may be a basement - controlled fault and may have been the pathway for mineralising fluids. Surface geological evidence for this structure is provided in the pinching of units and the disappearance of the epiclastic horizon to the NE. The drill hole will also

intersect the lithological contact between the coarse epiclastic units and the dacite lavas, that often contains fine grained sediments, particularly in the Chester and SW Chester workings, and hosts the major sulphide mineralisation in the area. This contact was recently intersected in BPD 73, west of Mt Kershaw and showed elevated sulphide levels in a complex brecciated mix of fine-grained sediment, volcaniclastics and lava fragments.

This diamond drill hole is the first on the Burns Peak licence specifically designed to test a gravity and magnetic anomaly highlighted by Dr D E Leaman, with geological input from AN Lorrigan and LW Kirsner.

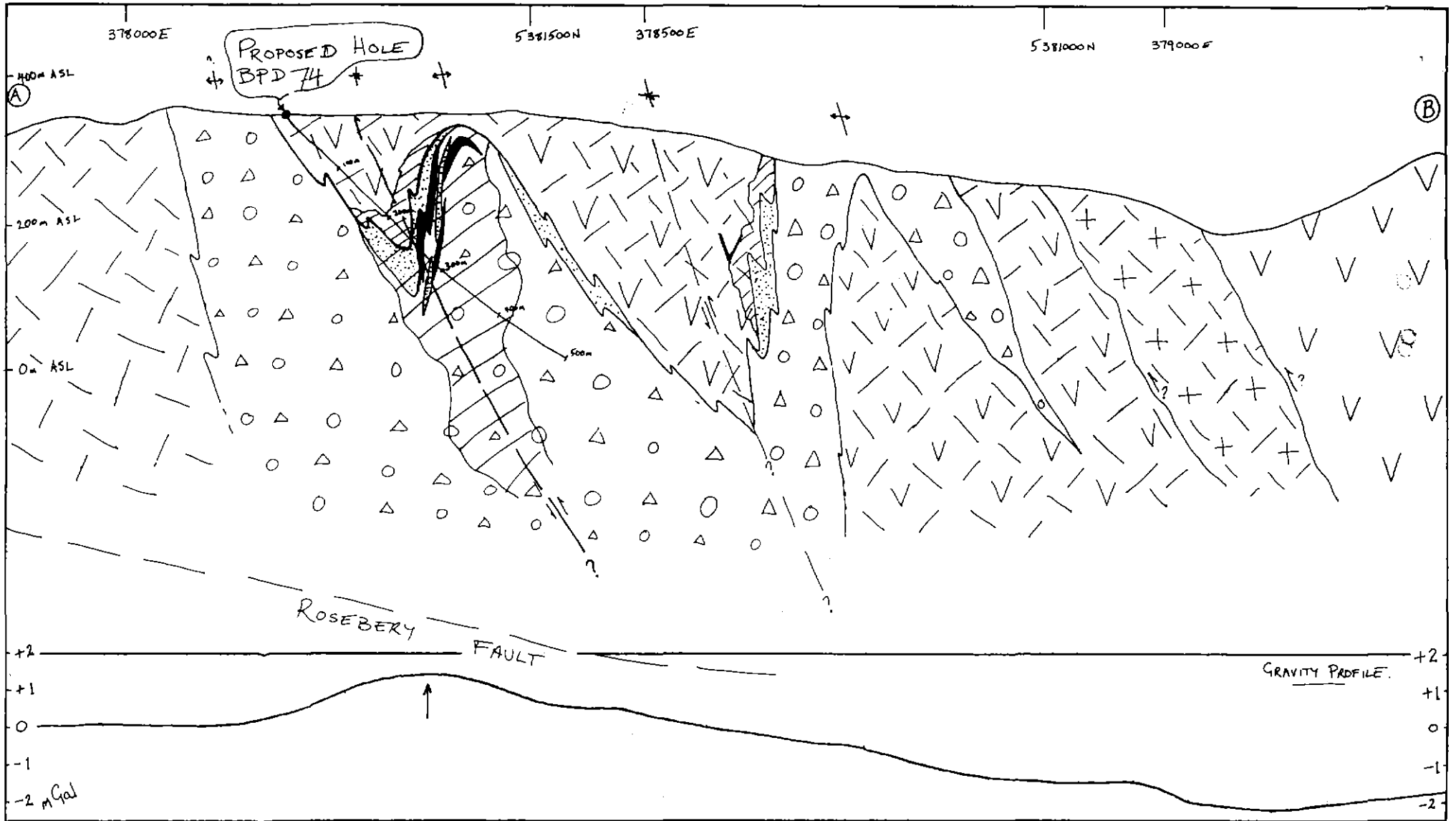
Mines department approval has been granted and collaring of this hole will occur at the completion of BPD 73 - most likely on Thursday 17th October 1991. I look forward to any comments or queries you may have regarding this proposal.

Yours sincerely

L. Kirsner

Lindsay W Kirsner
Geologist

041324



PASMINCO EXPLORATION
A Division of Pasminco Australia Limited

COMPILED: LWK	BURNS PEAK EL 44/88.
DATE: 13·10·91	Interpreted cross section through proposed DDH BPD 74
DRAWN: LWK	
REF.: DRILL PROPOSAL BPD 74	
REVISIONS:	
DRAWING No.	SCALE 1:7140

BURNS PEAK EL 44/88

DIAMOND DRILL HOLE PROPOSAL

HOLLWAY - BPD75

COLLAR (APPROX): EAB Grid:		2750E	5383770N AMG
(BHP numbering)		350S	378800E AMG
		415m ASL	
AZIMUTH:	145° AMG	DIP:	-60°
ESTIMATED TOTAL DEPTH:		350m	

1. SUMMARY

The proposed diamond drill hole, BPD75, is designed to test the source of anomalous base metal geochemistry at the surface, near the contact between the Hollway Andesite and dacites of the Central Volcanic Complex (CVC). The hole will also test the proposed down-dip extension of a weak UTEM and SIROTEM anomaly, and a north-west dipping (IP) resistivity low. The magnetic field and, to a lesser extent, the gravity field display anomalous features in the vicinity of the proposed drill hole.

2. GEOCHEMISTRY

Rock-chip, auger, soil (A° and C horizon) and costean channel samples display coincident or near coincident base metal anomalies (Pb + Zn ± Cu) for an across - strike distance of greater than 200m, particularly along (and in the grid line adjacent to) costean 2750E (local grid - EAB). Maximum values for zinc were 2000ppm in rock chips, 960ppm in costean channel samples, 3050ppm in auger samples and 1000ppm in soil samples (see figure 1). Background levels for zinc are less than 100ppm for soil, auger and costean samples with levels above 400ppm regarded as being "highly anomalous" on a statistical basis. Lead shows similarly anomalous values broadly coinciding with the zinc anomalies, and weaker but measurable copper and barium anomalies also coincide with high lead and zinc.

3. GEOPHYSICS

3.1 EM

Coincident but weak UTEM and SIROTEM anomalies exist near the contact between the andesites and dacites (550S EAB grid). The UTEM anomaly was modelled at between 50m and 100m deep. Two subsidiary SIROTEM anomalies (350S & 725S) were also detected. The SIROTEM features were recorded on three adjacent lines (2650, 2750 & 2850E) and trend NE/SW. None of the EM anomalies were considered significant enough to be drilled as

they stood, without further supporting evidence.

3.2 IP

A northwest-dipping resistivity low, possibly parallel to and above the andesite-dacite contact exists, coincident with a chargeability anomaly at about 500 to 550s on line 2750E (Comstaff, 1980)

3.3 Magnetics

A strong east-west structure exists on the northing (AMG) of the proposed hole in the residual magnetic data set (120m clearance - 1300m RL data sets). This is an unexplained and unmapped structure which extends from immediately west of the proposed site through Pinnacles to well past the position of the Rosebery Fault. There is also a strong positive/negative pair with a NNE trend in the magnetic data set at, and just east of, the position of the proposed site. The negative "thumbprint" anomaly here is the only discrete negative in a higher relief magnetic zone trending NNE.

3.4 Gravity

There are local NNW and E-W disturbances of the regional NNE grain of the gravity field in an area of only moderate to poor station coverage near the proposed hole.

4. GEOLOGY

Northwest dipping andesite lavas and hyaloclastic breccias intercalated with minor micaceous siltstones and sandstones and dacite lavas overlie dacites of the CVC in the vicinity of the proposed drill hole. The micaceous sediments are correlatives of the Animal Creek greywacke. The position of the contact between the dacites and andesite sequence is moderately well known at surface, on the tracks to the drill site for EAB4 and to the proposed drill site, but the dip of the contact is only poorly defined. In hole EAB4 the contact is interpreted to dip at about 65° to the northwest, and is either conformable or a low angle unconformity, not faulted or sheared. This contact is interpreted to be the upper margin of the CVC and the lower margin of the Dundas Group locally. The Hollway Andesite and micaceous sediments are thus part of the lower Dundas Group, and are stratigraphically just below or equivalent to the footwall andesites of the Que-Hellyer sequence, and locally directly below or time-equivalents of the Pinnacles Sequence/Browns Tunnel Sediments.

Considering the above stratigraphic relationships, the Hollway sequence would have been emplaced during or before the mineralising events that created Que River, Hellyer and the

Pinnacles mineralisation, regardless of whether these deposits are considered to be syn-depositional or post-depositional in origin.

Geochemically, the Hollway Andesite correlates well with the Hellyer Andesites with respect to rare earth elements (Coutts, 1990), but shows significant variation in trace element content, particularly Cr and Ti, where the Hollway rocks are comparatively low in chromium and high in titanium. The Ti/Zr and Cr/Y ratios at Hollway are also quite different to those in any of the Que-Hellyer Andesites (lower, upper and mixed sequence andesites, Coutts, 1990).

5. ALTERATION

Some epidote-chlorite-carbonate alteration associated with minor sphalerite-galena mineralisation occurs in the andesites in the costean near 450S to 500S on line 2750E. The dacites to the southeast of the andesite display some silification. Sericite-pyrite-silica alteration occurs 300m southwest along strike, in outcrop in the Hollway Rivulet.

The highly sericite-pyrite altered Hollway Pyrite Zone exists at surface along strike less than 1km to the southwest of the proposed hole, and is inferred to plunge shallowly to the northeast. The hole will test part of this plunging zone. Diamond drill hole EAB4, collared 1km to the northeast intersected 9 metres at 0.2% Zn in andesite breccias, below micaceous sediments, within 40 metres (down hole) of the base of the andesites. Disseminated pyrite and minor sphalerite occur in this zone, as well as carbonate veinlets containing galena and sphalerite.

6. NOTE

Strong pervasive alteration is not evident in the patchy outcrop above the proposed mineralised target zone. In addition, some of the surface base metal anomalies occur in manganese oxide stained rocks, indicating that metal scavenging may have occurred, however, it is believed that base metal sulphides may be the dominant source of Pb/Zn anomalies.

7. OTHER TARGETS

Other good targets exist within the Hollway Andesite, needing minimal further work to be considered for drilling. These are (i) in the Hollway Pyrite Zone itself and (ii) at the northwest margin of the andesitic sequence, 300-400m southwest of EAB2.

LINDSAY W KIRSNER

June 1992

041328

300S | 500S | 700S

SIROTEM FEATURE | SIROTEM FEATURE | UTEM FEATURE (50-100m deep) | SIROTEM FEATURE

GEOCHEMICAL SAMPLE TYPE (ppm)

Rock Chip (Zn/Pb) & (Zn): <100 | 940 | 820 | 2000/780 | 520 | 499 | 580 | <100 | 440 | 900 | 620 | 580 | <100 | 1550/545 | 165/35 | 45/5

Costean Channel (Zn): 1000 / 500 / 0 — 520 | 940 | 440 | 680 | 900 | 600

Costean Channel (Pb): 1000 / 500 / 0 — 520 | 1250 | 850 | 760 | 350 | 750

Auger (Zn): <100 | 1300 | 3500 | 915 | 1050 | 950 | <100 | 185 | 640 | 405 | 500 | <100

Creek

BPD 75 −60° (on 145° AMG)

SECTION LINE 155° AMG

−450m
−400m
−350m
−300m
−200m

? Fault

100
200
300

? fault

? younging

? unconformable or possibly sheared contact between (CVC) dacites and overlying (Dundas) andesites and sediments.

EM Conductor (weak!)

- Dacite Lava / Intrusives & Pumice Breccias
- A — Andesite / Basalt Lavas
- AA — (Amygdaloidal) & Hyaloclastic Lava Breccias
- Micaceous Sediments
- Possible Mineralisation - Disseminated & Massive

5 cm

COLLAR COORDS (AMG):-
5383 775 mN
378 790 mE
413 m ASL

PASMINCO EXPLORATION
A Division of Pasminco Australia Limited

COMPILED: LWK	BURNS PEAK EL 44/89. HOLLWAY.
DATE: 5·6·92	DIAMOND DRILL HOLE PROPOSAL
DRAWN: LWK	BPD 75
REF.: BPD 75 — PROPOSAL	section 2750E (EAB GRID)
REVISIONS:	Looking NORTH EAST.
DRAWING No.	SCALE 1:2000 (0 — 400m) FIG. No.

BURNS PEAK EL 44/88

MONTHLY REPORT FOR

JULY 1992

Prepared by LW Kirsner

HOLLWAY

Diamond drill hole BPD75, drilled in the Hollway area was completed at 349.5m on 13 July having failed to intersect any massive or disseminated base metal mineralisation. Small tensional gash veins containing dominantly sphalerite and some galena mineralisation were present in dacitic hyaloclastites and gravelly sandstones at a down-hole depth of 303 metres (260 metres below surface), in a 5 metre wide zone of seritic alteration. This vein-style mineralisation may be present near-surface locally, but is not seen in extant outcrop and if present would explain the anomalous soil and rock chip geochemistry that the hole was designed to test. Elsewhere in the hole massive silicification and some chloritic intervals hosting minor disseminated pyrite were the only other alteration zones intersected.

The sequence of rocks encountered comprised pillowed andesitic to dacitic lavas and hyaloclastic breccias, with minor intercalations of clastic sediments, peperitic lava/sediment contact zones and possible pumiceous mass flow. Pillowed andesite lavas dominate the upper portion of the hole, with dacitic lavas and breccias progressively increasing in proportion down hole, to be the sole volcanic constituent below 296.2 metres. Contacts between lava flows are conformable or faulted, with bedding to core angles generally at 35° to 40° to the long core axis. This gives near-vertical or near horizontal stratigraphy, assuming a northeast strike. Near vertical is the favoured attitude. Four brittle faults with clay pug zones cross-cut the sequence, and their extensions to surface account for the weak, near surface EM responses recorded in UTEM & SIROTEM surveys.

No micaceous sediments were encountered, which is contrary to expectations, as a number of micaceous units were intersected in an equivalent stratigraphic position in drill hole EAB4, one kilometre to the north east, and in a number of outcrops up-dip and along strike from EAB4. Regionally, micaceous sediments known as the Animal Creek Greywacke, occur near the base of the Que-Hellyer stratigraphy, underlying the Hellyer Footwall andesites and overlying the dacitic Central Volcanic Complex. The micaceous sediments at Hollway occupy a similar stratigraphic position, lying below the Hollway andesite and above the CVC, and are thus believed to be equivalent to the Animal Creek

Greywacke. The results of BPD75 indicate, however, that micaceous sediments do not occur for the full length of the contact between the andesites and CVC dacites. The Hollway andesite has an identical rare earth element signature to Hellyer andesites, but varies in other trace element content, and thus they may have the same source, but were not erupted coevally.

The contact zone between the overlying , dominantly andesitic sequence and underlying, dominately dacitic sequence is seen as a critical position locally. In BPD75 the contact is a complex interfingering of andesitic and dacitic lithologies. If the analogies with the Que-Hellyer sequence are correct, then there is no major time break between deposition of the underlying CVC and the overlying Que-Hellyer and Hollway sequence. This conclusion has important implications regionally. In addition, the Pinnacles sequence, west of Hollway, overlies the Hollway andesite. This puts the Pinnacles mineralisation stratigraphically above the Hellyer Footwall andesites in this interpretation, and potentially in an equivalent stratigraphic position to the Hellyer Host position.

The above interpretation leads to the possibility of the upper contact of the Hollway Andesite, where it is overlain by clastic sediments of the Pinnacles Sequence being highly prospective for base metal mineralisation. Two drill holes (EAB1 & 2) have intersected this contact previously, with a peak of 2.7m at 3.1% Zn/ 0.8% Pb/ 6.5ppm Ag recorded in EAB1 in sediments above the andesite. A number of other 3 metre intervals in EAB1 and EAB2 contain just below 1% Zn. This upper andesite contact, along strike from EAB1 & 2 is being further investigated as a possible drill target, particularly in the vicinity of an east-west cross structure (?transfer fault) which runs through the southern end of the Pinnacles area.

SUMMARY LOG BPD75

0 – 19.0	Pillowed Andesite Lavas
19.0 – 20.7	Polymict Epiclastic
20.7 – 23.6	Pillowed Andesite Lavas
23.6 – 23.7	FAULT – Pug Zone
23.7 – 32.5	Pillowed Andesite Lavas – Pyritic
32.5 – 34.8	Polymict Epiclastic
34.8 – 45.6	Pillowed Andesite Lavas
45.6 – 52.6	Acid Volcaniclastic – ? Pumiceous
52.6 – 103.1	Dacite Lavas & lava breccias – silicified locally

103.1 – 121.7	Pillowed Andesite Lavas – pyritic
121.7 – 124.1	Polymict Epiclastic
124.1 – 153.4	Pillowed Andesite Lavas
153.4 – 153.5	FAULT at 35° to Long Core Axis
153.5 – 171.4	Pillowed Andesite Lavas
171.4 – 182.6	Dacitic volcaniclastic – ? Pumiceous
182.6 – 187.5	Dacitic Lavas & Lava Breccia
187.5 – 198.1	Andesite Lavas
198.1 – 198.2	FAULT –Pug zone
198.2 – 224.8	Dacite lava & breccias
224.8 – 234.9	Pillowed Andesite lava
234.9 – 270.1	Silicified Dacite ? lava
270.1 – 296.2	Pillowed Andesite lava
296.2 – 303.9	Dacite Breccia with seriticite alteration and sphalerite/galena on gash veins.
303.9 – 304.9	Polymict gravelly Sandstone
304.9 – 305.6	Dacite lava Breccia
305.6 – 306.3	FAULT – Clayey Pug Zone
306.3 – 349.5	Dacitie Lava & Lava Breccia
349.5 – EOH	

Hole - Burns Peak

041332

BURNS PEAK EL 44/88

DIAMOND DRILL HOLE PROPOSAL

LEO'S FIND AREA

September 1992

Proposed Collar Position:	378 750E	Dip:	-60°
	5 384 470N	AZ:	285° AMG
	553m RL	Total Depth:	500 m

GEOCHEMISTRY - Two anomalous horizons each about 100m wide outlined by C-horizon auger sampling contain high concentrations of barium (1 000ppm to 1.3%), and subordinate Pb and Zn anomalies (up to 530ppm and 220ppm respectively). Above background (20ppm) Cu values are also present. There are no anomalous Mn concentrations locally, eliminating scavenging as a possible mechanism for concentrating the base metals in the weathering environment. The anomalies are present at similar levels on two adjacent grid lines, 400m apart and are thought to be related to separate stratigraphic horizons. Both C-horizon anomalies are supported by rock chip sampling, where best base metal values for Pb/Zn/Cu are 405/425/135ppm for the eastern anomaly and 275/1600/290ppm for the western anomaly.

GEOLOGY - The eastern barium-rich C-horizon coincides with a pyritic and slightly graphitic dark grey mudstone, while the western barium zone is above an ashy/tuffaceous siltstone. These sediments form part of the lower Dundas Group locally, and are interpreted to be the steep and slightly overturned northwest limb of a moderately tight syncline, that plunges to the northeast. The fold repetitions of these units on the southeastern limb of the syncline were drilled in EAB1 and EAB2 respectively. The pyritic mudstone and ashy siltstone horizons dip at about 80° to the WNW on the NW limb and are overturned. These horizons dip at about 45° to the NNW on the SE limb of the fold and are upward younging as seen in drill core (EAB 1 & 2) and outcrop. The two sediment horizons appear to be separated conformably by coarse epiclastic mass flow units and all overlie the Hollway Andesite. The ashy siltstone appears to grade laterally into one of the mass flows, to be absent from EAB 1, but present in EAB 2, along strike,

The northwest limb of the syncline is sheared out by a major NE trending shear zone that

cuts across the local stratigraphy at an angle of about 20°. This shear is interpreted to be a steepened thrust splay off the Rosebery fault which runs through Cone Hill and forms part of a westerly directed imbricate fan (Selley, 1992). This structure may be important in controlling mineralisation locally, at Leo's Find and in the proposed hole.

The shear separates the Leo's Find – Pinnacles stratigraphy from the Hollway – Dundas Group stratigraphy (described above), making correlations difficult between the two stratigraphic sections.

GEOPHYSICS – EM and IP surveys pick out the pyritic mudstone as a conductive feature, trending to the ENE, but sharply truncated in the WSW, where the trace of the syncline closure meets the surface.

Detailed magnetics show a broad area of low relief with broadly spaced contours fanning out from just south of the proposed collar position. To the SE of that zone, a higher relief area trending NE/SW occurs above the southern portion of the Hollway Andesite. An east–west structure seen in gravity and magnetic data lies 500m south of the proposed collar. The structure is believed to be a steep transfer structure and may control the presence of mineralisation north of it at Pinnacles, while none is known immediately to its south.

The Pinnacles – Leo's Find zone is the locus of a regional change in trend from north–south to a northeasterly direction. The gravity field trends NNE generally and has minor, local east–west excursions in an area of only moderate coverage.

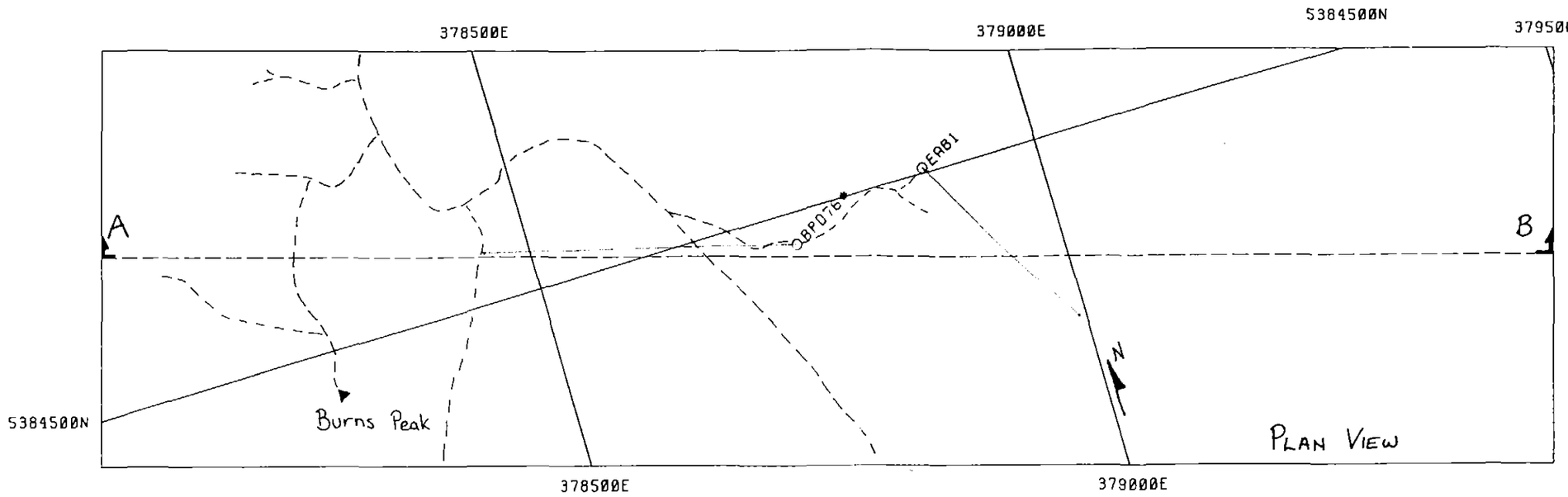
MINERALISATION MODEL – The proposed drill hole is targeted on a postulated structurally controlled stratiform massive sulphide body hosted in the coarse epiclastic horizons directly below the pyritic mudstones, and at a similar stratigraphic level to or just below the ashy siltstones which are the source of the barium anomaly. The postulated ore horizon is in a similar setting to the Hellyer and Que River ore horizons, with andesites below it, epiclastic mass flows within it and pyritic shales above it. One missing ingredient compared to Que–Hellyer is a hangingwall basalt, but this is not thought to be essential. The feeder structure for mineralising fluids may be a pre–cursor to the mapped NE trending shear zone, which tapped the deep "proto Rosebery Fault and Henty Fault" system during a Cambrian mineralising event. The pyritic mudstone formed a chemical and permeability cap for post–depositional replacement–style mineralisation which was

deposited in the coarse epiclastics.

The presence of barium may indicate the cap to the mineralisation or a stratigraphic outer limit of the postulated base metal zone. Later folding & shearing may have up-graded or recrystallised the body in a geometry which partly parallels cleavage, and partly parallels stratigraphy, similar to the style of mineralisation seen at Pinnacles, Chester, Rosebery and Hercules.

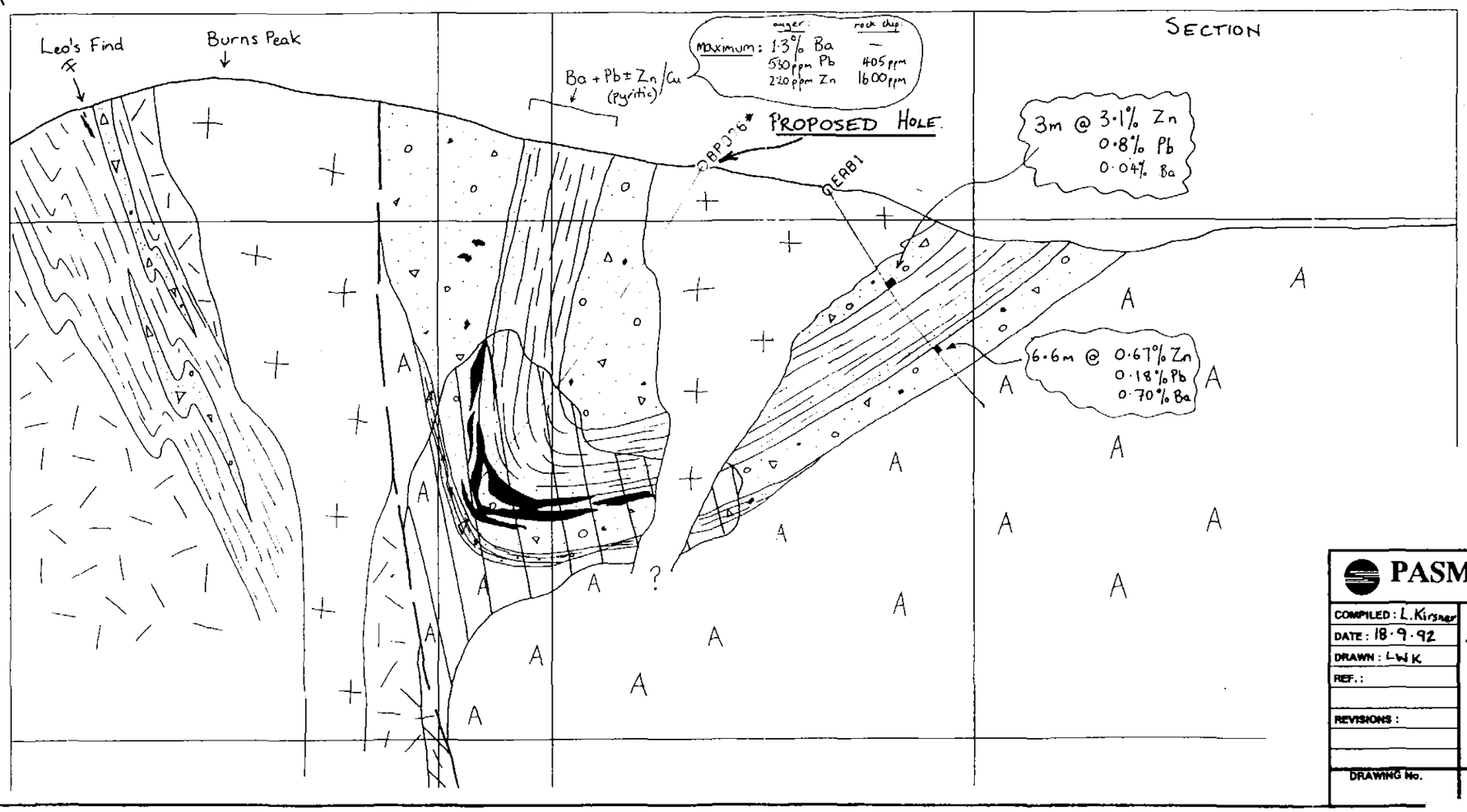
L.W. Kirsner
Geologist
September 1992.

041335



378100E
A 5384650 N

379450E
5384250 N B



LEGEND

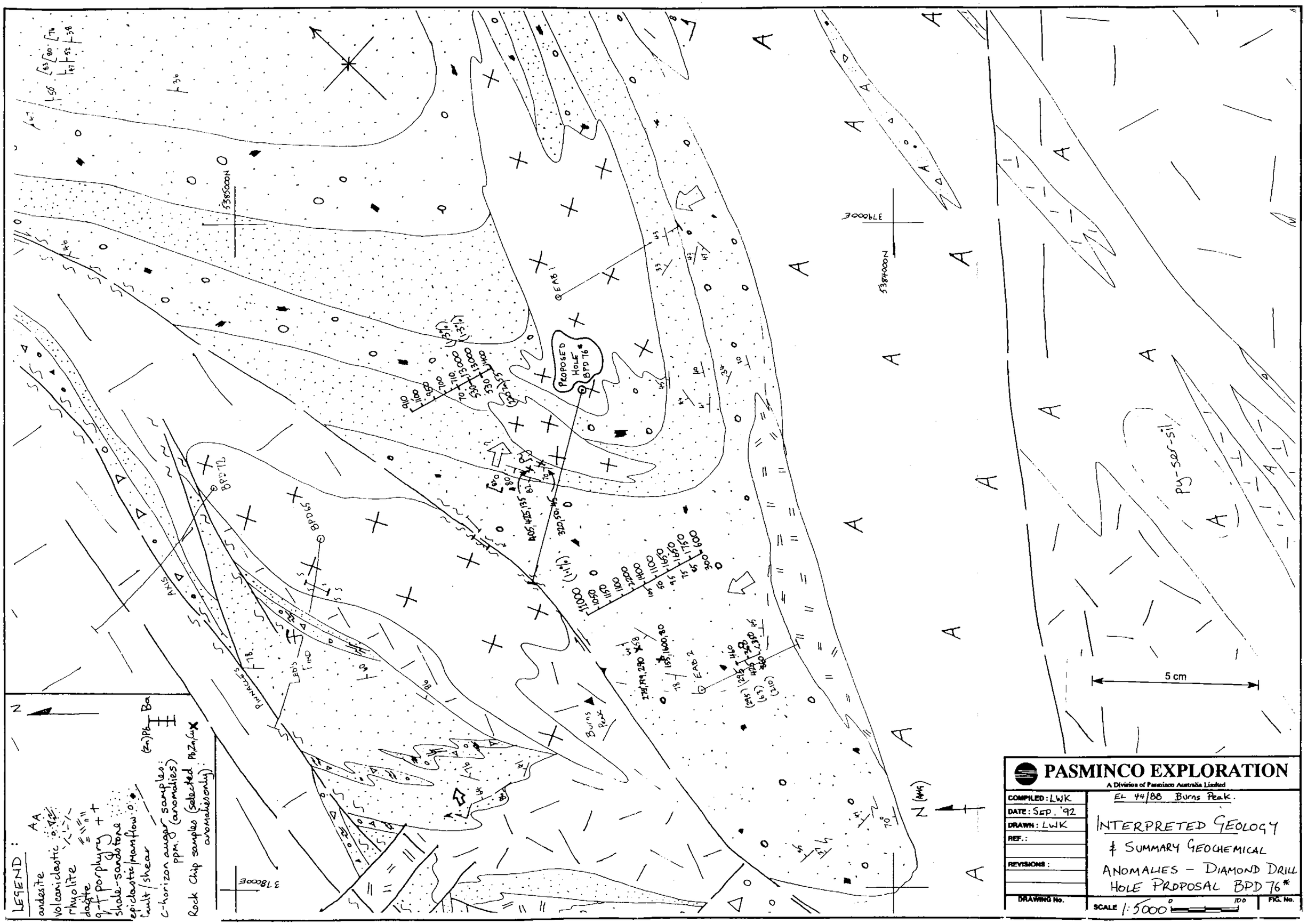
- track
- fault/shear zone
- quartz-feldspar porphyry
- volcaniclastic sediments (ash tuff, mass flows etc)
- grey to black mudstone & sandstone
- rhyolite lava
- andesite – basalt lava & hyaloclastite
- massive sulphide mineralisation (postulated)
- alteration zone (related to mineralisation)

PASMINCO EXPLORATION
A Division of Pasminco Australia Limited

COMPILED: L. Kirsner	EL 44/88 Burns Peak
DATE: 18·9·92	DIAMOND DRILL HOLE PROPOSAL
DRAWN: LWK	SEPTEMBER 1992
REF.:	(BPD 76*)
REVISIONS:	INTERPRETED GEOLOGY.
DRAWING No.	SCALE 1:5000 0 100m FIG. No.

5 cm

041336


LEGEND:
andesite
volcaniclastic
rhyolite
dacite
q-f porphyry
shale-sandstone
epiclastic/mantlow
fault/shear
C-horizon auger samples: ppm. (anomalies)
Rock chip samples (selected anomalies only)
PROPOSED HOLE BPD 76*
BPD 76
BPD 75
BPD 74
EAB1
EAB2
Burns Peak
Leo's Find
Pharaohs Find
5384000N
5385000N
378000E
379000E
N (MAG)
5 cm
PASMINCO EXPLORATION
A Division of Pasminco Australia Limited
COMPILED: LWK
DATE: SEP. '92
DRAWN: LWK
REF.:
REVISIONS:
DRAWING No.
EL 44/88 Burns Peak.
INTERPRETED GEOLOGY & SUMMARY GEOCHEMICAL ANOMALIES - DIAMOND DRILL HOLE PROPOSAL BPD 76*
SCALE 1:5000
FIG. No.

041337

MINES
FILE REF.
14 DEC 1992
DOC. REF.
OFFICER | FOR ACTION | FOR INFO.
RESUBMIT TO | DATE

012666 77

PASMINCO EXPLORATION

BURNS PEAK EL 44/88
ANNUAL REPORT

NOVEMBER 1991 – OCTOBER 1992

volume 2 of 2

AUTHOR: LW Kirsner

DATE: December 1992

REPORT No.: T92 – 15

SUBMITTED TO: Regional Exploration Manager – Tasmania

DISTRIBUTION:

Pasminco Exploration	– Burnie – Hawthorn – Rosebery
Mines Department Tasmania	– Hobart
Noranda Pty Limited	– Toronto
Plutonic Resources Limited	– Sydney – Deloraine

SUBMITTED BY: L. Kirsner

ACCEPTED BY:

Burnie
December 1992

041338

FIGURES

E.L. 44/88 BOUNDARY

5 385 000mN.

5 384 000mN.

5 383 000mN.

5 382 000mN.

376 000mE.

377 000mE.

378 000mE.

379 000mE.

380 000mE.

Higgins Creek

Marionoak

Strong

River

Crown

Holloway Rivulet

BURNS PINNACLES

BURNS PEAK

CONE HILL

FOR DETAIL IN THE PINNACLES – BROWN'S TUNNEL – LEO'S FIND AREA SEE LOUGHRAN, 1990 – OUTCROP GEOLOGY PLAN, SHEET 1, FIGURE 6.

FOR DETAIL IN CONE HILL AREA SEE SHEETS 5A-2,3&4 "OUTCROP GEOLOGY" (Figures 20,21&22) (in the 1991 ANNUAL REPORT)

BPD62 BPD63 BPD64 BPD65 BPD66 BPD67 BPD68 BPD69 BPD70 BPD71 BPD72

EAF1 EAF2 EAF3 EAF4 EAF5 EAF6 EAF7 EAF8 EAF9 EAF10 EAF11 EAF12 EAF13 EAF14 EAF15 EAF16 ESB1

EAB1 EAB2 EAB3 EAB4

CP1 CP2 CP2R CP7 CP8 CP9 CP10 CP12 CP13 CP14 CP15

PP31 PP32 PP33 PP34 PP35 PP36 PP37 PP38 PP39 PP40 PP41 PP42 PP43 PP44 PP45 PP46 PP47 PP48 PP49 PP50 PP51 PP52 PP59

LEGEND

1. General Form

Colour, grain size, overall texture, Rock Type, constituents & textures, alteration, mineralisation.

Descriptors and Rock Types to be separated by comma or slash. Derwent series 19 colours (in brackets) are intended for the Cambrian sequences.

2. Rock Types

Lavas L
- a (k) acid
- i (46) intermediate
- b (49) basaltic
- r (k) rhyolitic
- d (11) dacitic
- n (46) andesitic

Intrusives I
- a (13) acid
- i (46) intermediate
- b (49) basic
- fel felsic
- p porphyritic
- g (13) granitic
- peg pegmatitic

Volcaniclastics V
- pm (7) pumiceous mass flow
- q (32) quartz phyric mass flow
- ss (46) sandstone

Sediments S
- sh (35) shale
- sl (36) slate incl. black slate
- st (35) siltstone
- ss (36) sandstone
- ts turbidite
- w (36) wacke
- cong (36) conglomerate
- b breccia
- ch (34) chert
- ls (65) limestone
- dol (65) dolomite
- q (36) quartzite
- Fe iron formation
- gl (x) glacial deposits
- fg (x) fluvioglacial deposits
- al (x) alluvial deposits
- mst (35) mudstone

Metamorphic Rocks M
Colours should be hatched
- sh1 (34) schist
- sp (35) semi-pelite
- ps (36) psammite
- amph (46) amphibolite
- gran granulite
- sk skarn
- mb (65) marble
- m mylonite

Unassigned ?
Use alone or as a qualifier to other rock types where uncertain.

3. Descriptors

Colour:

ple	pale	bl	blue
dk	dark	wht	white
clr	clear	yel	yellow
or	orange	ol	olive
blk	black	grn	green
pk	pink	ppl	purple
rd	red	crm	cream
brn	brown		

Grainsize:

fg	fine grained
mg	medium grained
cg	coarse grained
vcg	very coarse grained

Overall Texture:

aug	augen
p	porphyritic
fol	foliated
clvd	cleaved
mav	massive
blk	blocky
bd	bedded
lam	laminated
xbd	cross bedded
xlam	cross laminated
br	brecciated
fb	flow banded
fbr	flow brecciated

Constituents & Internal Textures:

f	feldspar
q	quartz
l	lithic
pm	pumice
styl	stylolites
wsp	wisps
ves	vesicles
sph	spherulites
lph	lithophysae

Alteration:

ab	albitised
ca	carbonate alteration
chl	chloritised
ser	sericited
kao	kaolinised
ep	epidotised
sil	silicified

Mineralisation:

diss	disseminated
str	stringer
mav	massive
gos	goesan
bx	boxwork
py	pyrite
po	pyrrhotite
asp	arsenopyrite
gn	galena
sp	sphalerite
mag	magnetite
hm	haematite

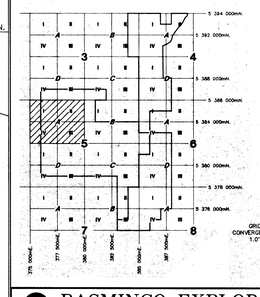
4. Mapping Symbols

- Strike and Dip of Strata (25°)
- Strike and dip of inverted strata
- Strike and dip of cleavage or foliation (60°)
- Plunge of lineation (50°)
- Geological boundary position accurate
- Geological boundary position approximate
- Mine
- Abandoned prospect or mine
- Costean or trench
- Diamond drill hole, including projection
- Shear/mylonite
- Intense regional cleavage
- Disseminated pyrite
- Unconformity
- Fault
- Thrust Fault
- Plunging antiform
- Plunging synform
- Tectonic breccia
- Manganese oxide coating on outcrop
- Mineralisation : massive, disseminated

NOTE SOURCE :-

Comstaff Mapping	1984	10%
BHP Mapping	1986	5%
Geopeko/Pasminco Mapping	1988-1991	50%
R. Reid.(Tas. Uni.)	1990	5%
B. Coutts (Tas. Uni.)	1990	10%

5 cm



PASMINCO EXPLORATION
A Division of Pasminco Australia Limited

COMPILED : L.W.K.	041139
DATE : Oct. 1991	E.L. 44/88 - BURNS PEAK JV
DRAWN : G.M.B.	OUTCROP GEOLOGY
REFERENCE :	92-3406.
REVISIONS : L.W.K. - 1992	
DRAWING No. SHEET 5A	SCALE 1:5000 (0 100 200 METRES)
	FIG. No. 5

381 000mE. 382 000mE. 383 000mE. 384 000mE. 385 000mE.

5 385 000mN. 5 384 000mN. 5 383 000mN. 5 382 000mN.

Boco Creek

E.L. 2/90 BOUNDARY

E.L. 44/88 BOUNDARY

RAILWAY COMMUNICATION LINE

Tramway

Creek

MURCHISON

HIGHWAY

Farm

BBP246 BBP247 BBP253 BBP208

TEST PITS

(RAILWAY ½ KILOMETRE POST)

(RAILWAY KILOMETRE POST)

BAY RAILWAY

LEGEND

1. General Form

Colour, grain size, overall texture, Rock Type, constituents & textures, alteration, mineralisation.

Descriptors and Rock Types to be separated by comma or slash. Derwent series 19 colours (in brackets) are intended for the Cambrian sequences.

2. Rock Types

Lavas L

a	(9)	acid
i	(44)	intermediate
b	(49)	basaltic
r	(8)	rhyolitic
d	(11)	dacitic
n	(44)	andesitic

Intrusives I

a	(12)	acid
i	(44)	intermediate
b	(49)	basic
fel		felsic
p		porphyritic
g	(12)	granitic
peg		pegmatitic

Volcaniclastics V

pm	(7)	pumiceous mass flow
q	(32)	quartz phyric mass flow
sst	(32)	sandstone

Sediments S

sh	(35)	shale
sl	(34)	slate incl. black slate
slt	(35)	siltstone
sst	(39)	sandstone
tb		turbidite
w	(39)	wacke
cong.	(39)	conglomerate
Δ		breccia
ch†	(24)	chert
lst	(65)	limestone
dol	(65)	dolomite
q	(39)	quartzite
f.s		iron formation
gl	(4)	glacial deposits
fgl	(4)	fluvioglacial deposits
alv	(4)	alluvial deposits
mst	(35)	mudstone

Metamorphic Rocks M
Colours should be hatched

sht	(38)	schist
sp	(36)	semi-pelite
pa	(38)	psammite
amph	(49)	amphibolite
gran		granulite
sk		skarn
mb	(65)	marble
m		mylonite

Unassigned ?

Use alone or as a qualifier to other rock types where uncertain.

3. Descriptors

Colour:

ple	pale	bl	blue
dk	dark	wht	white
cr	clear	yel	yellow
or	orange	ol	olive
blk	black	grn	green
pk	pink	ppl	purple
rd	red	crm	cream
brn	brown		

Grainsize:

fg	fine grained
mg	medium grained
cg	coarse grained
vcg	very coarse grained

Overall Texture:

aug	augen
p	porphyritic
fol	foliated
clvd	cleaved
mav	massive
blk	blocky
bd	bedded
lam	laminated
xbd	cross bedded
xlam	cross laminated
br	brecciated
fb	flow banded
f.Δ	flow brecciated
ufs	upwards fining sequence

Constituents & Internal Textures:

f	feldspar
q	quartz
l	lithic
pm	pumice
sty	stylolites
wsp	wisps
ves	vesicles
sph	spherulites
lph	lithophysae

Alteration:

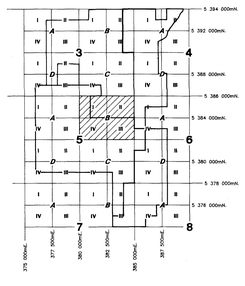
alb	albitised
ca	carbonate alteration
chl	chloritised
ser	sericited
kao	kaolinised
ep	epidotised
sil	silicified

Mineralisation:

diss	disseminated
str	stringer
mav	massive
gos	gossan
bx	boxwork
py	pyrite
po	pyrrhotite
asp	arsenopyrite
gn	galena
sp	sphalerite
mag	magnetite
hm	haematite

4. Mapping Symbols

- Strike and Dip of Strata (25°)
- Strike and dip of inverted strata
- Strike and dip of cleavage or foliation (60°)
- Plunge of lineation (50°)
- Geological boundary position accurate
- Geological boundary position approximate
- Unconformity
- Fault
- Thrust Fault
- Plunging antiform
- Plunging synform
- Mine
- Abandoned prospect or mine
- Costean or trench
- Diamond drill hole, including projection



5 cm

GN 12° MN

ORIG CONVERGENCE 1.0°

ORIG/MAGNETIC 12.0°

041340

PASMINCO EXPLORATION
A Division of Pasminco Australia Limited

COMPILED : L.W.K.	E.L. 2/90 - BOCO JV
DATE : Oct. 1991	E.L. 44/88 - BURNS PEAK JV
DRAWN :	
REFERENCE :	OUTCROP GEOLOGY
REVISIONS : L.W.K. - 1992	92-3406.
DRAWING No. SHEET 5B	SCALE 1:5000 (0 100 200 METRES)
	FIG. No. 6

92-3406.

LEGEND

1. General Form

Colour, grain size, overall texture, Rock Type, constituents & textures, alteration, mineralisation.

Descriptors and Rock Types to be separated by comma or slash. Derwent series 19 colours (in brackets) are intended for the Cambrian sequences.

2. Rock Types

Lavas L
- a (a) acid
- i (ai) intermediate
- b (ab) basaltic
- r (ar) rhyolitic
- d (ri) dacitic
- n (an) andesitic

Intrusives I
- a (ia) acid
- i (ai) intermediate
- b (ab) basic
- fel felsic
- p porphyritic
- g (ig) granitic
- peg pegmatitic

Volcaniclastics V
- pm (Y) pumiceous mass flow
- q (Xq) quartz phyric mass flow
- sst (Xs) sandstone
- mf (Xa) coarse lithic mass flows

Sediments S
- sh (Ss) shale
- t (Sw) wate incl. black slate
- slt (Ss) siltstone
- sst (Sw) sandstone
- tb turbidite
- * (Sw) wacke
- cong (Sw) conglomerate
- b breccia
- cht (Se) chert
- ls (Sd) limestone
- dol (Sd) dolomite
- q (Sw) quartzite
- Fe iron formation
- gl (Q) glacial deposits
- fg (Q) fluvioglacial deposits
- alv (Q) alluvial deposits
- mst (Sb) mudstone

Metamorphic Rocks M
Colours should be hatched
- sht (Mh) schist
- hp (Mh) semi-pelite
- ps (Mp) psammite
- amph (Mh) amphibolite
- gran (Mh) granulite
- sk (Mh) skarn
- mb (Mc) marble
- m mylonite

Unassigned ?
Use alone or as a qualifier to other rock types where uncertain.

3. Mapping Symbols

- Strike and Dip of Strata (25)
- Strike and dip of inverted strata
- Strike and dip of cleavage or foliation (80)
- Plunge of lineation (30)
- Geological boundary position accurate
- Geological boundary position approximate
- Mine
- Abandoned prospect or mine
- Costean or trench
- Diamond drill hole, including projection
- Unconformity
- Fault
- Thrust Fault
- Plunging antiform
- Plunging synform
- Shear/strong cleavage

3. Descriptors

Colour:

ple	pale	bl	blue
dk	dark	wht	white
clr	clear	yel	yellow
or	orange	ol	olive
blk	black	grn	green
pk	pink	ppl	purple
rd	red	crm	cream
brn	brown		

Grainsize:

fg	fine grained
mg	medium grained
cg	coarse grained
vcg	very coarse grained

Overall Texture:

ovg	ovgan
p	porphyritic
fol	foliated
clvd	cleaved
mav	massive
blk	blocky
bd	bedded
lam	laminated
xbd	cross bedded
xlam	cross laminated
br	brecciated
fb	flow banded
f.b.	flow brecciated
ufs	upwards fining sequence
hyt	hyalotactic
pill	pillowed
pep	peperitic

Constituents & Internal Textures:

f	feldspar
q	quartz
l	lithic
pm	pumice
styl	stylolites
wsp	wisps
ves	vesicles
sph	spherulites
lph	lithophyse
mic	micaceous

Alteration:

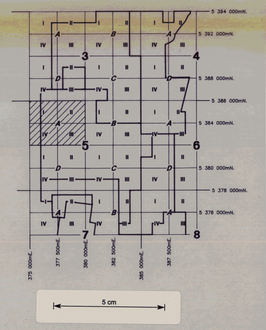
ab	albitised
co	carbonate alteration
chl	chloritised
ser	sericited
kao	kaolinised
ep	epidotised
sil	silicified

Mineralisation:

dis	disseminated
str	stringer
mav	massive
gos	gossan
bx	bioxurs
py	pyrite
po	pyrrhotite
asp	arsenopyrite
gn	galena
sp	sphalerite
mag	magnetite
hm	haematite

NOTE
Geological mapping by:- A. N. Lorrigan, L. W. Kirsner, B. P. Coutts and R. O. Reid.

Interpretation by :- L. W. Kirsner and A.N. Lorrigan



GN TN MN
GRID CONVERGENCE 1.0°
GRID/MAGNETIC 12.0°

041341

PASMINCO EXPLORATION
A Division of Pasminco Australia Limited

COMPILED : A.N.L. / L.W.K.	92-3406
DATE : October, 1992	E.L. 44/88 BURNS REA. V.
DRAWN : G.M.B.	INTERPRETIVE GEOLOGY
REFERENCE :	SHEET 5A
REVISIONS :	
DRAWING No.	SCALE 1:5000 0 100 200 m — FIG. No. 7

Boco Creek

BBP246

BBP247

BBP253

BBP208

TEST PITS

ANIMAL CREEK GREYWACKE EQUIVALENT ?

HOLLWAY ANDESITE

Smst/sh
Vmf/sst
Ssh/slt
Vmf/sst
Vmf/sst
Vsst/mf (mst)
Vsst/mf
Vmf/sst (Lr br/hyl)
Sslt/sst mic
Vmf/sst
1a f qp
Ssh/slt
Vmf/sst
Vmf/sst (Lr br/hyl)
Sslt/sst mic
Lr (br)
Ln pill
Ln pill
Vn mf
Sslt/sst mic
Lr f
Ln pill
Lr fq (br)
Lr (br, hyl)
Lr

RAILWAY COMMUNICATION LINE

Tramway

Boco Creek

Creek

MURCHISON HIGHWAY

Farm

EMU BAY RAILWAY

E.L. 2/90 BOUNDARY

E.L. 44/88 BOUNDARY

381 000mE.
382 000mE.
383 000mE.
384 000mE.
385 000mE.

5 385 000mN.
5 384 000mN.
5 383 000mN.
5 382 000mN.

LEGEND

1. General Form

Colour, grain size, overall texture, Rock Type, constituents & textures, alteration, mineralisation.

Descriptors and Rock Types to be separated by comma or slash. Derwent series 19 colours (in brackets) are intended for the Cambrian sequences.

2. Rock Types

Lavas L
- q (9) acid
- i (46) intermediate
- b (46) basaltic
- r (3) rhyolitic
- d (11) dacitic
- n (46) andesitic

Intrusives I
- a (12) acid
- i (46) intermediate
- b (49) basic
- fel felsic
- p porphyritic
- g (12) granitic
- peg pegmatitic

Volcaniclastics V
- pm (7) pumiceous mass flow
- q (32) quartz phyric mass flow
- sst (32) sandstone
- mf (32) coarse lithic mass flows

Sediments S
- sh (35) shale
- t (36) slate incl. black slate
- slt (36) siltstone
- sst (39) sandstone
- tb turbidite
- w (39) wacke
- cong (39) conglomerate
- a breccia
- cht (34) chert
- lst (65) limestone
- dol (65) dolomite
- q (39) quartzite
- fe iron formation
- gl (4) glacial deposits
- fgl (4) fluvioglacial deposits
- alv (4) alluvial deposits
- mst (36) mudstone

Metamorphic Rocks M
Colours should be hatched
- sht (38) schist
- sp (35) semi-pelite
- ps (39) psammite
- amph amphibolite
- gran granulite
- sk skarn
- mb (65) marble
- m mylonite

Unassigned ?
Use alone or as a qualifier to other rock types where uncertain.

3. Mapping Symbols

- Strike and Dip of Strata (25)
- Strike and dip of inverted strata
- Strike and dip of cleavage or foliation (60)
- Plunge of lineation (50)
- Geological boundary position accurate
- Geological boundary position approximate
- Mine
- Abandoned prospect or mine
- Costean or trench
- Diamond drill hole, including projection
- Unconformity
- Fault
- Thrust Fault
- Plunging antiform
- Plunging synform
- Shear/strong cleavage

3. Descriptors

Colour:

ple	pale	bl	blue
dk	dark	wht	white
clr	clear	yel	yellow
or	orange	ol	olive
blk	black	grn	green
pk	pink	ppl	purple
rd	red	crm	cream
brn	brown		

Grainsize:

fg	fine grained
mg	medium grained
cg	coarse grained
vcg	very coarse grained

Overall Texture:

aug	augen
p	porphyritic
fol	foliated
clvd	cleaved
mav	massive
blk	blocky
bd	bedded
lam	laminated
xbd	cross bedded
xlam	cross laminated
br	brecciated
fb	flow banded
fΔ	flow brecciated
ufs	upwards fining sequence
hyl	hyaloclastic
pill	pillowed
pep	peperitic

Constituents & internal Textures:

f	feldspar
q	quartz
l	lithic
pm	pumice
styl	stylolites
wsp	wisps
ves	vesicles
sph	spherulites
lph	lithophysae
mic	micaceous

Alteration:

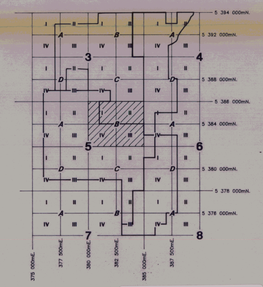
alb	albitised
ca	carbonate alteration
chl	chloritised
ser	sericited
kao	kaolinised
ep	epidotised
sil	silicified

Mineralisation:

dss	disseminated
str	stringer
mav	massive
gos	gossan
bx	boxwork
py	pyrite
po	pyrrhotite
asp	arsenopyrite
gn	galena
sp	sphalerite
mag	magnetite
hm	haematite

NOTE
Geological mapping by:— A. N. Lorrigan, L. W. Kirsner, B. P. Coutts and R. O. Reid.

Interpretation by : L. W. Kirsner and A.N. Lorrigan



5 cm

TN GN MN

GRID CONVERGENCE 1.0°

GRID/MAGNETIC 12.0°

041342

PASMINCO EXPLORATION
A Division of Pasminco Australia Limited

COMPILED :	L.W.K.
DATE :	October, 1992
DRAWN :	G.M.B.
REFERENCE :	
REVISIONS :	
DRAWING No.	

92-3406.

E.L. 44/88 - BURNS PEAK JV

INTERPRETIVE GEOLOGY

SHEET 5B

SCALE 1:5000 0 100 200 METRES

FIG. N 8



041343

PASMINCO EXPLORATION
A Division of Pasminco Australia Limited

92-3406.

EL. 44/88 - BURNS PEAK JV

SAMPLE LOCATIONS

COMPILED : L.W.K.	
DATE : 23-11-'92	
DRAWN : N.W.D.S.	
REFERENCE :	
REVISIONS :	
DRAWING No. SHEET 5A	SCALE 1:5000 0 100 200 m
	FIG. No. 9

381 000mE. 382 000mE. 383 000mE. 384 000mE. 385 000mE.

5 385 000mN.

5 384 000mN.

5 383 000mN.

5 382 000mN.

Boco Creek

BBP246 BBP247 X31785

BBP253

BBP208

31710 31711 31712 31713

31786 31787

TEST PITS

31788 31789

31798 31799 31800

32977 32978 32979 32980 32981 32982 31797

31719

31720

31721

Boco Creek

RAILWAY COMMUNICATION LINE

Tramway

Creek

E.L. 2/90 BOUNDARY

E.L. 44/88 BOUNDARY

MURCHISON Creek

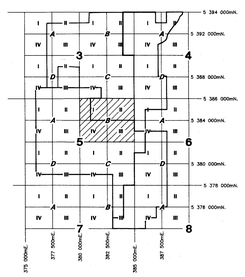
Farm

HIGHWAY

EMU BAY RAILWAY

LEGEND

X 31713 – Rock Chip Sample.



5 cm

GN
TN
MN
GRID CONVERGENCE 1.0°
GRID/MAGNETIC 12.0°

041344

PASMINCO EXPLORATION
A Division of Pasminco Australia Limited

COMPILED : L.W.K	E.L. 2/90 - BOCO JV
DATE : March, 1992	E.L. 44/88 - BURNS PEAK JV
DRAWN : N.W.D.S.	SAMPLE
REFERENCE :	LOCATIONS
REVISIONS : Nov'92	92-3406.
DRAWING No. SHEET 58	SCALE 1:5000 (0 100 200 METRES)
	FIG. No. 10

376900m E. | 377000m E. | 377100m E. | 377200m E. | 377300m E. | 377400m E. | 377500m E.

5380600m N.

BPD73
-60°

417.9m
E.O.H

600m R.L.

"CENTRAL VOLCANIC COMPLEX"
– MT. BLACK EQUIVALENTS
(Pumic Breccias and Acid Lavas)

500m R.L.

CLEAVED, FINE–GRAINED, PYRITIC
QTZ BEARING VOLCANICLASTIC
SEDIMENT

minor galena–pyrite–quartz veins (±chlorite)

DACITE
LAVAS
flow banded, variably
cleaved, pyritic

DACITE LAVA
&
LAVA BRECCIA

MnO

FINE–GRAINED
VOLCANICLASTIC SILTSTONE
(CLEAVED)

VARIABLY PYRITIC
CLEAVED, CHLORITIC, FLOWBANDED
ACID LAVA/LAVA BRECCIA ?

LAMINATED, FINE GRAINED SEDIMENT
(SILT/ASH)

LAVA BRECCIA/FLOW MARGIN

400m R.L.

CLEAVED, SERICITIC
LAVA BRECCIA ?

DACITE LAVAS
AND
PUMICE BRECCIAS

pyrite ±galena
± trace sphalerite
& chalcopyrite

trace
dissem
pyrite

minor tectonic breccia
with chalcopyrite mineralisation

DACITE LAVAS
AND
PUMICE BRECCIAS
(with minor intercalated
ashy siltstones)

conformable
? intrusive
contact

carbonate veining +
pyrite + chalcopyrite

2228,27,111 (Cu, Pb, Zn ppm)

300m R.L.

FLOW MARGIN
(hyaloclastite?)

pyrite

ROSEBERY
FAULT

FINE GRAINED
MAFIC DYKES

5 cm

CLASTIC SEDIMENTS
"DUNDAS GROUP"

VOLCANICLASTIC
SANDSTONE

200m R.L.

417.9m
E.O.H

"CHAMBERLAIN SHALE"
EQUIVALENTS

100m R.L.

LEGEND

- Bedding
- Bedding facing
- Cleavage
- Flow banding
- Dyke
- Geological contact
- Geological contact – interpreted
- Fault
- Fault – interpreted
- Inferred trend of bedding
- Anticlinal axis

041345
92-3406.

PASMINCO EXPLORATION
A Division of Pasminco Australia Limited

COMPILED : L.W.K.	E.L. 44/88 – BURNS PEAK JV
DATE : Nov., 1992	CHESTER – MT. KERSHAW
DRAWN : T.G.D.S.	DRILL SECTION AND
REFERENCE :	GEOLOGICAL INTERPRETATION
REVISIONS :	BPD73
DRAWING No. BPD73	SCALE 1:1000 (0, 20, 40 m)
	FIG. No. 19

LEGEND

1. General Form

Colour, grain size, overall texture, Rock Type, constituents & textutres, alteration, mineralisation.

Descriptors and Rock Types to be separated by comma or slash. Derwent series 19 colours (in brackets) are intended for the Cambrian sequences.

2. Rock Types

Lavas	L	a	(9)	acid
		i	(46)	intermediate
		b	(49)	basaltic
		r	(9)	rhyolitic
		d	(11)	dacitic
		n	(46)	andesitic
Intrusives	I	a	(12)	acid
		i	(48)	intermediate
		b	(49)	basic
		fel		felsic
		p		porphyritic
		g	(12)	granitic
		peg		pegmatitic
Volcaniclastics	V	pm	(7)	pumiceous mass flow
		q	(32)	quartz phyric mass flow
		sst	(32)	sandstone
		mf	(32)	coarse lithic mass flows
Sediments	S	sh	(35)	shale
		t	(36)	slate incl. black slate
		slt	(35)	siltstone
		sst	(39)	sandstone
		tb		turbidite
		w	(39)	wacke
		cong	(39)	conglomerate
		Δ		breccia
		cht	(34)	chert
		lst	(65)	limestone
		dol	(65)	dolomite
		q	(39)	quartzite
		Fe		iron formation
		gl	(4)	glacial deposits
		fgl	(4)	fluvioglacial deposits
		alv	(4)	alluvial deposits
		mst	(35)	mudstone
Metamorphic Rocks	M	aht	(38)	schist
Colours should be hatched		sp	(35)	semi-pelite
		ps	(39)	psammite
		amph		amphibolite
		gran		granulite
		sk		skarn
		mb	(65)	marble
		m		mylonite
Unassigned		?		Use alone or as a qualifier to other rock types where uncertain.

3. Descriptors

Colour:

ple	pale	bl	blue
dk	dark	wht	white
clr	clear	yel	yellow
or	orange	ol	olive
blk	black	grn	green
pk	pink	ppl	purple
rd	red	crm	cream
brn	brown		

Grainsize:

fg	fine grained
mg	medium grained
cg	coarse grained
vcg	very coarse grained

Overall Texture:

aug	augen
p	porphyritic
fol	foliated
clvd	cleaved
msv	massive
blk	blocky
bd	bedded
lam	laminated
xbd	cross bedded
xlam	cross laminated
br	brecciated
fb	flow banded
fΔ	flow brecciated
ufs	upwards fining sequence
hyl	hyaloclastic
pill	pillowed
pep	peperitic

Constituents & Internal Textures:

f	feldspar
q	quartz
l	lithic
pm	pumice
styl	stylolites
wsp	wisps
ves	vesicles
sph	spherulites
lph	lithophysae
mic	micaceous

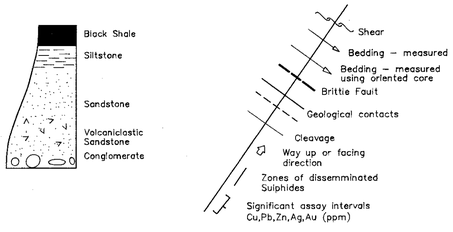
Alteration:

alb	albitised
co	carbonate alteration
chl	chloritised
ser	sericited
kao	kaolinised
ep	epidotised
sil	silicified

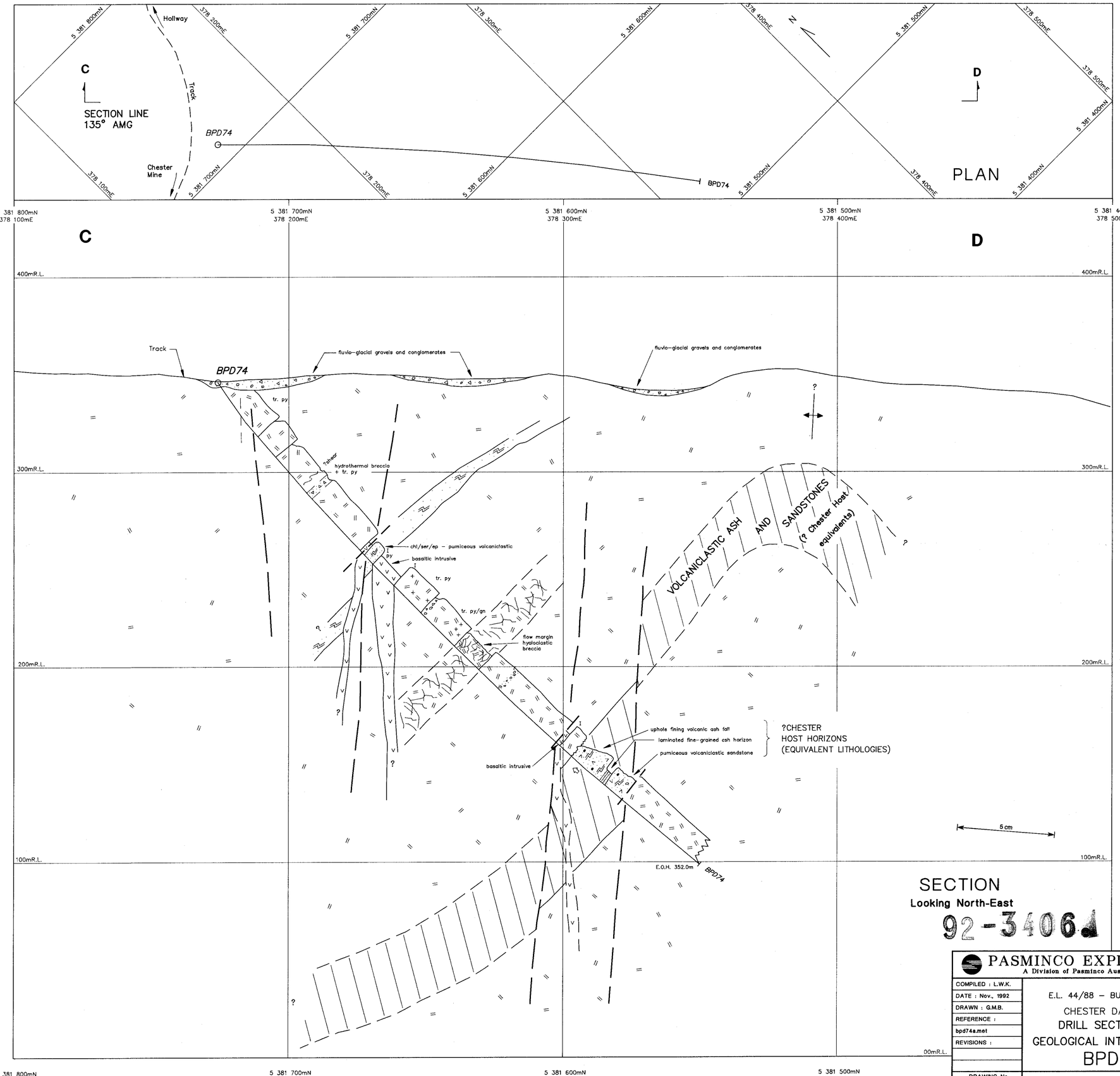
Mineralisation:

diss	disseminated
str	stringer
msv	massive
gos	gossan
bx	boxwork
py	pyrite
po	pyrrhotite
asp	arsenopyrite
gn	galena
sp	sphalerite
mag	magnetite
hm	haematite

3. Diamond Drill Hole



- Basaltic Andesitic lavas
- Siliceous (Rhyolitic to dacitic) Lavas/Sills
- Basic Dyke
- Hyaloclastite, Peperite
- Lava/sediment breccias
- Breccia
- Feldspar
- Quartz Crystals
- Lithic Clasts
- Black Mudstone Clasts
- Vesicles/Amygdales
- Spherulites
- Stylolite/"pseudo flamme"
- Pumice Breccia
- Flow Banding
- Cloudy silica or Nodular Carbonate alteration
- Skarns
- Sulphides
- Schistose
- Massive Sulphides
- Brecciation (crackle/in-situ)



SECTION

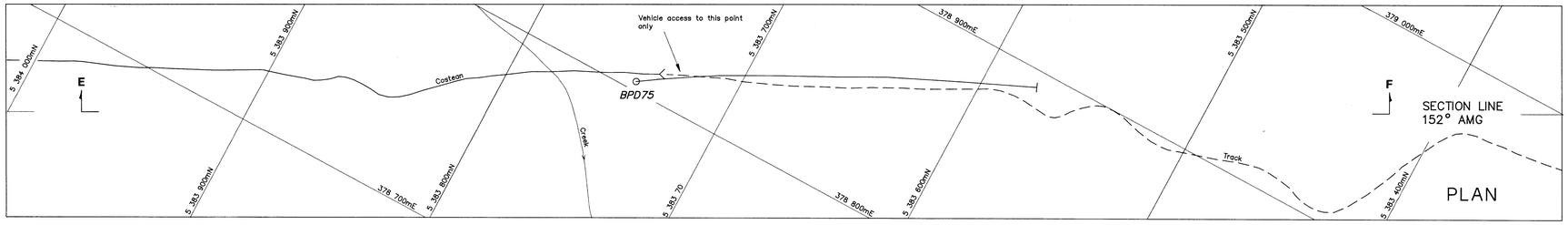
Looking North-East

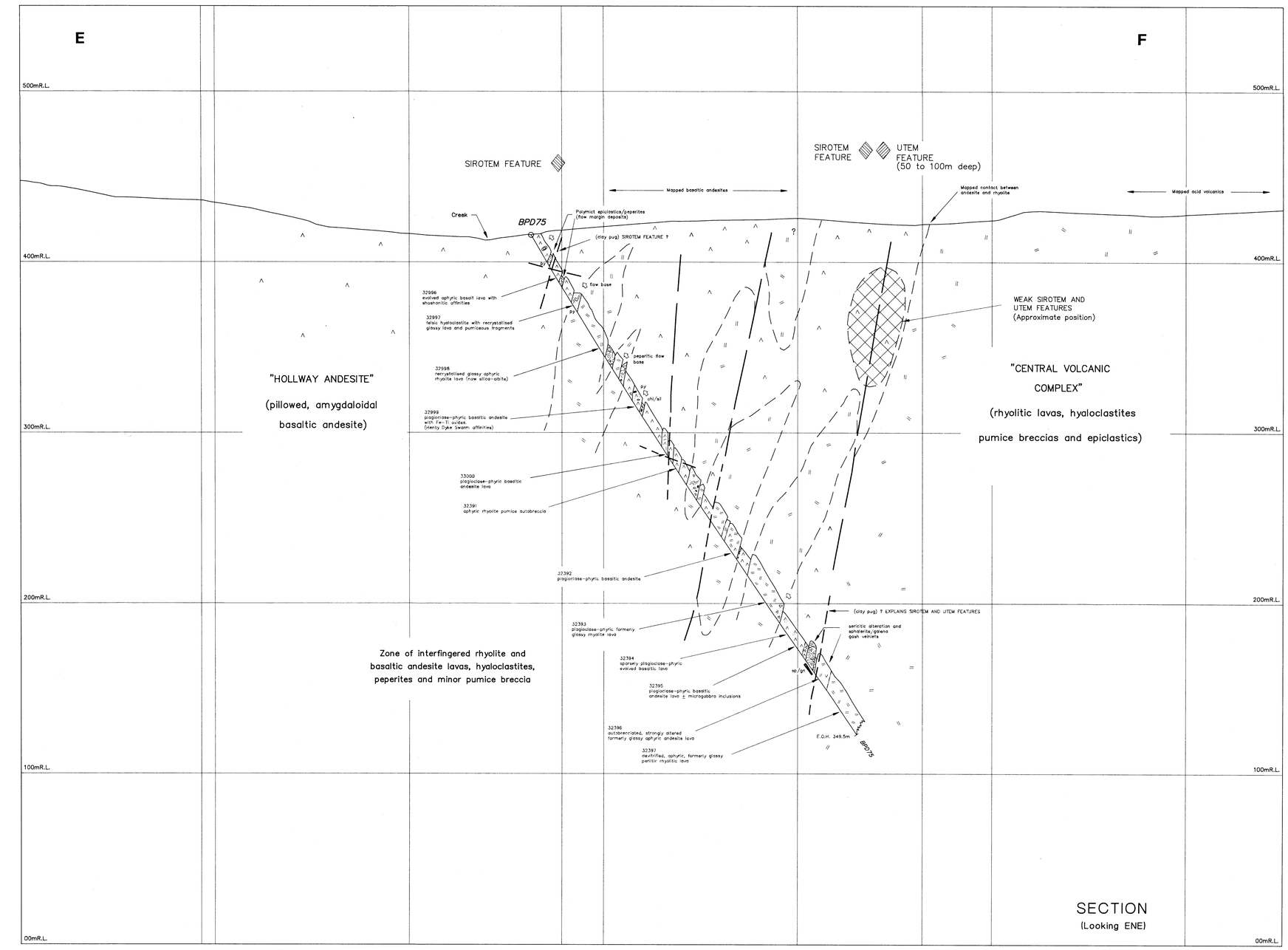
92-3406

041346

PASMINCO EXPLORATION
A Division of Pasminco Australia Limited

COMPILED : L.W.K.	E.L. 44/88 – BURNS PEAK JV
DATE : Nov., 1992	CHESTER DAM AREA
DRAWN : G.M.B.	DRILL SECTION AND
REFERENCE :	GEOLOGICAL INTERPRETATION
bpd74a.met	BPD74
REVISIONS :	
DRAWING No. BPD74	SCALE 1:1000 (0, 20, 40 m) — FIG. No. 20





LEGEND

1. General Form

Colour, grain size, overall texture, Rock Type, constituents & textutres, alteration, mineralisation.

Descriptors and Rock Types to be separated by comma or slash. Derwent series 19 colours (in brackets) are intended for the Cambrian sequences.

2. Rock Types

Lavas L
- a (9) acid
- i (46) intermediate
- b (49) basaltic
- r (9) rhyolitic
- d (11) dacitic
- n (46) andesitic

Intrusives I
- a (12) acid
- i (46) intermediate
- b (49) basic
- fel felsic
- p porphyritic
- g (12) granitic
- peg pegmatitic

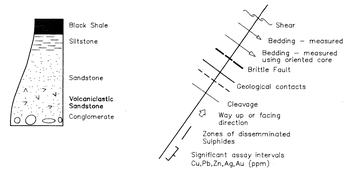
Volcaniclastics V
- pm (7) pumiceous mass flow
- q (32) quartz phyric mass flow
- sst (21) sandstone
- mf (32) coarse lithic mass flows

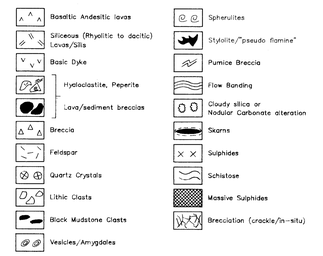
Sediments S
- sh (35) shale
- l (36) slate incl. black slate
- sil (35) siltstone
- sst (39) sandstone
- tb turbidite
- w (38) wacke
- cong (38) conglomerate
- b breccia
- cht (34) chert
- lst (65) limestone
- dol (65) dolomite
- q (39) quartzite
- Fe iron formation
- gl (4) glacial deposits
- fgl (4) fluvioglacial deposits
- alv (4) alluvial deposits
- mst (35) mudstone

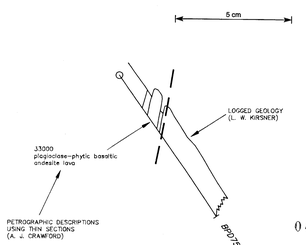
Metamorphic Rocks M (Colours should be hatched)
- sht (36) schist
- sp (35) semi-pelite
- ps (39) psammite
- amph amphibolite
- gran granulite
- sk skarn
- mb (65) marble
- m mylonite

Unassigned ?
Use alone or as a qualifier to other rock types where uncertain.

3. Diamond Drill Hole



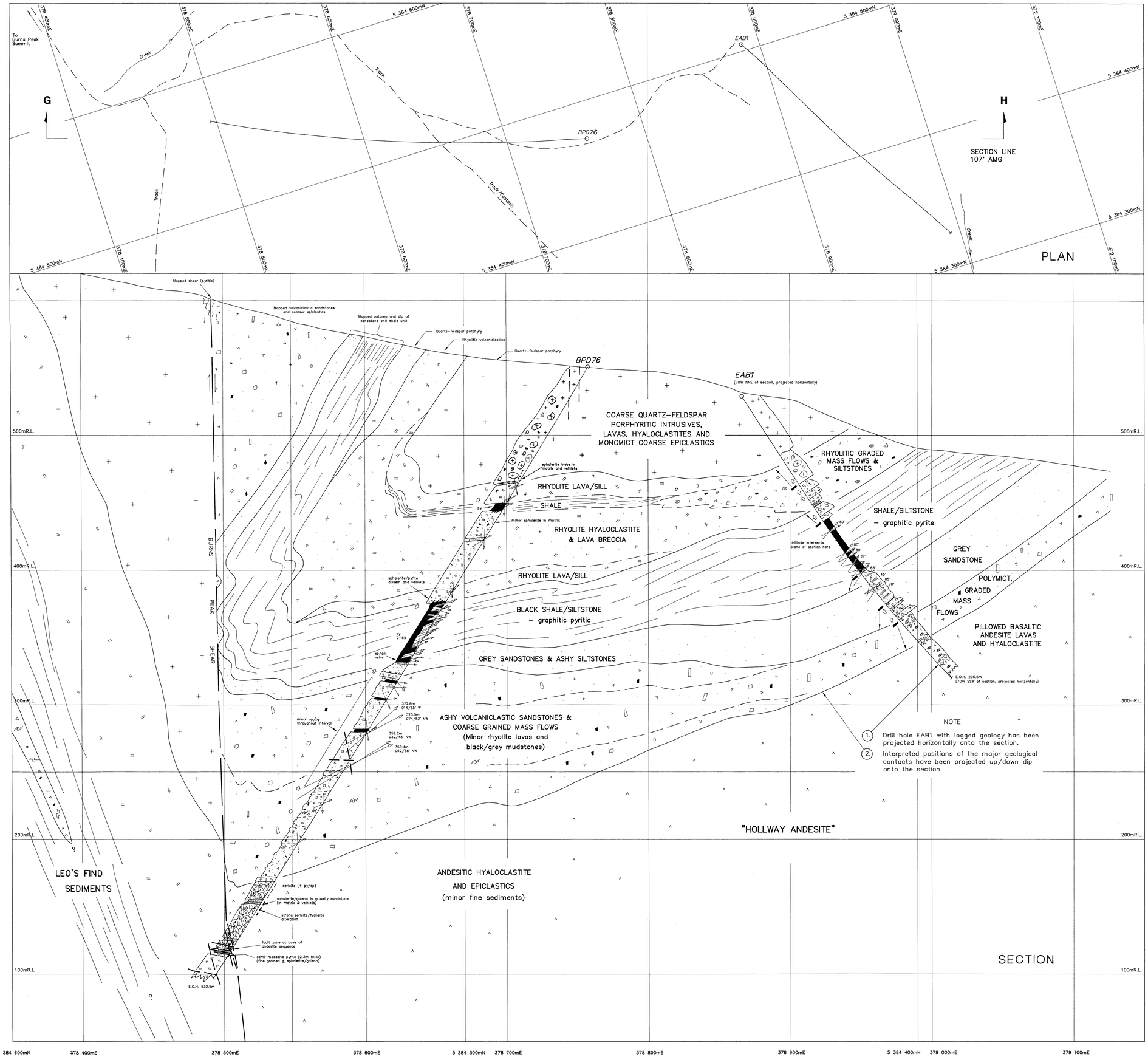




041347

92-3406.

PASMINCO EXPLORATION A Division of Pasminco Australia Limited	
COMPILED : L.W.K.	E.L. 44/88 - BURNS PEAK JV
DATE : Nov., 1992	HOLLWAY AREA
DRAWN : G.M.B.	DRILL SECTION AND GEOLOGICAL INTERPRETATION
REFERENCE : bpd75b.met	BPD75
REVISIONS :	
DRAWING No. BPD75	SCALE 1:1000 0 10 40 m — FIG. No. 21



LEGEND

1. General Form

Colour, grain size, overall texture, Rock Type, constituents & textures, alteration, mineralisation.

Descriptors and Rock Types to be separated by comma or slash. Derwent series 19 colours (in brackets) are intended for the Cambrian sequences.

2. Rock Types

Lavas L

a	(9)	acid
i	(46)	intermediate
b	(49)	basaltic
r	(9)	rhyolitic
d	(11)	dacitic
n	(46)	andesitic

Intrusives I

a	(12)	acid
i	(46)	intermediate
b	(49)	basic
fel		felsic
p		porphyritic
g	(12)	granitic
peg		pegmatitic

Volcaniclastics V

pm	(7)	pumiceous mass flow
q	(32)	quartz phyric mass flow
sst	(32)	sandstone
mf	(32)	coarse lithic mass flows

Sediments S

sh	(35)	shale
l	(36)	slate incl. black slate
st	(36)	siltstone
sst	(39)	sandstone
tb		turbidite
w	(39)	wacke
cong	(39)	conglomerate
Δ		breccia
ch	(34)	chert
ls	(65)	limestone
dol	(65)	dolomite
q	(39)	quartzite
Fe		iron formation
gl	(4)	glacial deposits
fg	(4)	fluvioglacial deposits
alv	(4)	alluvial deposits
mst	(36)	mudstone

Metamorphic Rocks M
Colours should be hatched

sht	(36)	schist
sp	(35)	semi-pelite
ps	(39)	psammite
amph		amphibolite
gran		granulite
sk		skarn
mb	(66)	marble
m		mylonite

Unassigned ?
Use alone or as a qualifier to other rock types where uncertain.

3. Descriptors

Colour:

ple	pale	bl	blue
dk	dark	wht	white
clr	clear	yel	yellow
or	orange	ol	olive
blk	black	grn	green
pk	pink	ppl	purple
rd	red	crm	cream
brn	brown		

Grainsize:

fg	fine grained
mg	medium grained
cg	coarse grained
vcg	very coarse grained

Overall Texture:

aug	augen
p	porphyritic
fol	foliated
clvd	cleaved
mav	massive
blk	blocky
bd	bedded
lam	laminated
xbd	cross bedded
xlam	cross laminated
br	brecciated
fb	flow banded
f.b.	flow brecciated
ufs	upwards fining sequence
hyk	hyaloclastic
pill	pillowed
pep	peperitic

Constituents & Internal Textures:

f	feldspar
q	quartz
l	lithic
pm	pumice
styl	stylolites
wsp	wisps
ves	vesicles
sph	spherulites
lph	lithophysae
mic	micaceous

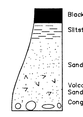
Alteration:

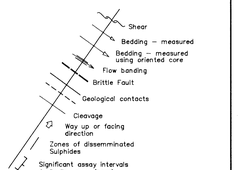
ab	albitised
co	carbonate alteration
chl	chloritised
ser	sericited
kao	kaolinised
ep	epidotised
sil	silicified

Mineralisation:

diss	disseminated
str	stringer
mav	massive
gos	gossan
bx	boxwork
py	pyrite
po	pyrrhotite
asp	arsenopyrite
gn	galena
sp	sphalerite
mag	magnetite
hm	haematite

3. Diamond Drill Hole





- Basaltic Andesitic lavas
- Siliceous (rhyolitic to dacitic) Lavas/Sills
- Basic Dyke
- Hyaloclastite, Peperite
- Lava/sediment breccias
- Breccia
- Feldspar
- Quartz Crystals
- Lithic Clasts
- Black Mudstone Clasts
- Vesicles/Amygdales
- Spherulites
- Stylolite/"pseudo flamme"
- Pumice Breccia
- Flow Banding
- Cloudy silica or Nodular Carbonate alteration
- Skarns
- Sulphides
- Schistose
- Massive Sulphides
- Brecciation (crackle/in-situ)

041348

5 cm

92-3406.

PASMINCO EXPLORATION A Division of Pasminco Australia Limited	
COMPILED : L.W.K.	E.L. 44/88 – BURNS PEAK JV
DATE : Nov., 1992	SUMMIT PROSPECT
DRAWN : G.M.B.	DRILL SECTION AND
REFERENCE : bpd75b.met	GEOLOGICAL INTERPRETATION
REVISIONS :	BPD76 & EAB1
DRAWING No. BPD76	SCALE 1:1000 0 20 40 m — FIG. No. 22