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1 SUMMARY

Exploration Licence 12/88 covers 20km² immediately north and east of the Rosebery Mine Leases and is being explored for polymetallic massive sulphide deposits. Activities during the period August 1992 to July 1993 have focussed on the Bastyan area, north of Lake Rosebery and 4km along strike from the world class Rosebery deposit. Work completed during this period has included:

- 1 Geological mapping and sampling, especially over the North Bastyan alteration zone, identified in 1991-92.
- 2 Minor rock chip geochemistry in this area.
- 3 Surveying two lines (78 700N and 78 900N) with pole-dipole IP, as part of a larger program on the adjacent EL 44/88.
- 4 Surveying drill hole BY2 (completed in March, 1992) with down-hole EM, using both UTEM and Crone multi-component PEM systems.

The results of this program have been disappointing. No significant off-hole conductors were detected in hole BY2, abnormal responses in the top of the hole are probably due to interference from the HEC transmission station nearby. No responses indicative of significant sulphide mineralisation were recorded by the IP survey. The strongest anomalies were recorded as chargeability highs immediately west of the Rosebery Fault, in folded shales. No anomalous rock geochemical assays were received. The geological mapping has shown that the North Bastyan hydrothermal alteration zone is restricted in extent and does not form part of the much stronger South Kershaw alteration zone within EL 44/88.

Expenditure on EL 12/88 during the twelve months to 30 June 1993 was **\$32 098**, bringing the total expenditure on the licence since its inception to **\$722 325**. No significant mineralisation has been detected during this relatively intense exploration program and the potential for the discovery of economic mineralisation within several hundred metres of the surface has been significantly down-graded.

No active field work is proposed for the forthcoming year. However the results of major ongoing exploration on adjacent tenements, including the Rosebery Mine Leases, will be

continually assessed, in particular their implication for future deep drilling within the Mt Black tenement area.

An application to relinquish 10km² of EL 12/88, in compliance with Mines Department regulations, has been submitted to the Department.

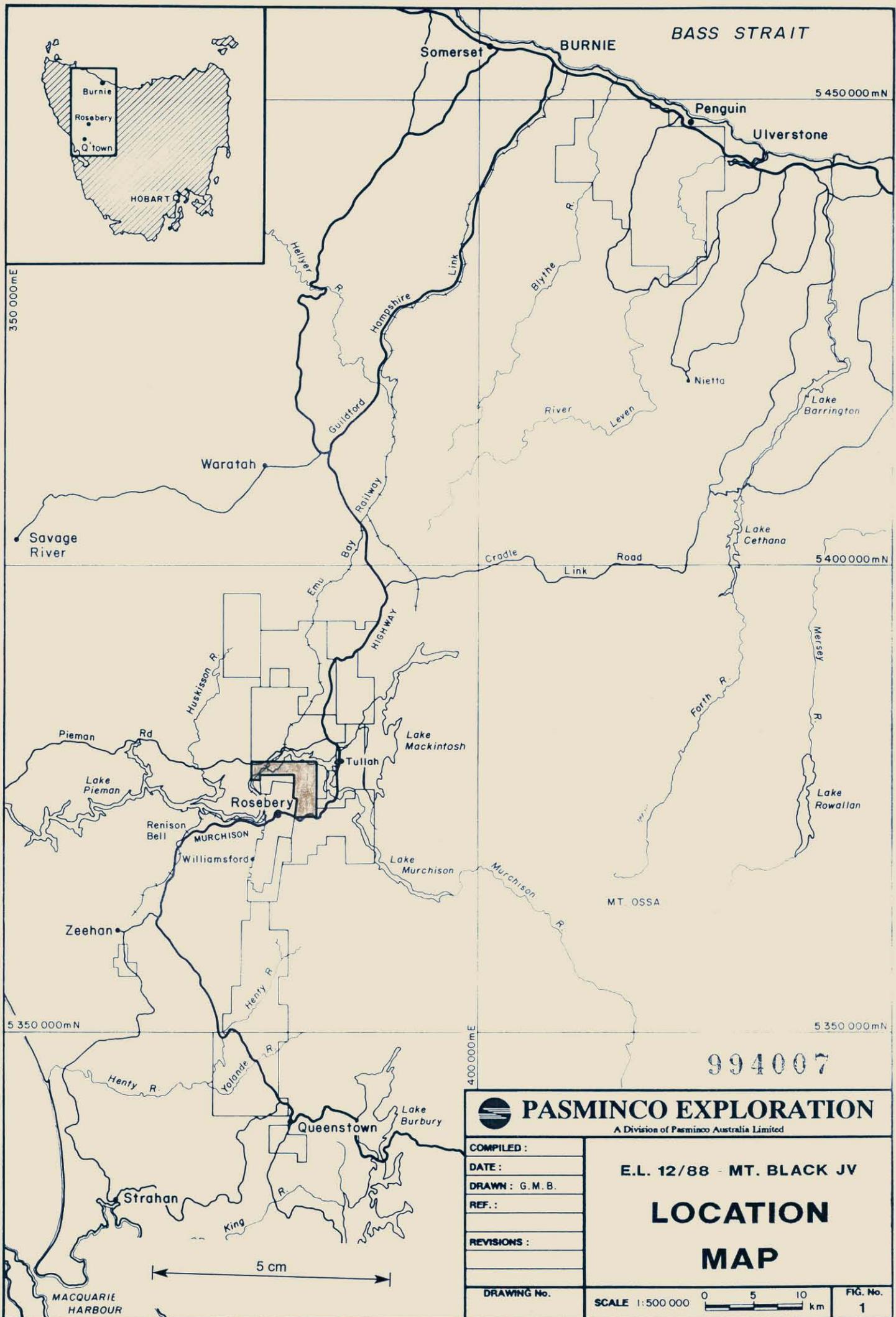
2 INTRODUCTION

This report details work completed on EL 12/88, Mt Black during the period August 1992 to July 1993. The tenement covers an area of 26km² immediately north and west of the consolidated Rosebery Mine Leases in Western Tasmania (see Figure 1). The actual area available for exploration is approximately 20km², because of the exclusion of parts of the Rosebery Mine Lease and land vested in the HEC.

The Mt Black licence is the subject of a Joint venture between Austmin Resources NL (the title holders) and Pasminco Australia Limited (operator and managers of the exploration program). The licence area straddles the very rugged and thickly vegetated Mt Read massif, which rises to an elevation of 929m above the HEC impoundment of Lake Rosebery, at 159m above sea level. Vehicular access is restricted to the western parts of the area, principally around the Bastyan Dam and related HEC infrastructure. Elsewhere access is limited to foot, principally along a network of old grid lines and tracks, or by helicopter.

The Mt Black licence is mostly underlain by Cambrian Mt Read Volcanics, which are host to several world class massive sulphide deposits including Rosebery (less than 3km to SW) and Hellyer (25km to the NE). The principal exploration target is a similar gold-rich polymetallic massive sulphide deposit.

Exploration undertaken during 1992-93 has focussed on the Bastyan Dam area, which is interpreted to occur along strike of the Rosebery deposit and where rafts and large blocks of high grade massive sulphides in a Cambrian mass flow deposit were exposed by the HEC during construction of the Bastyan Dam in the early 1980's. Work completed during the current period has included geological mapping, lithogeochemistry, gridding, a pole-dipole IP survey and down-hole EM surveying of hole BY2, drilled in March 1992.



BASS STRAIT

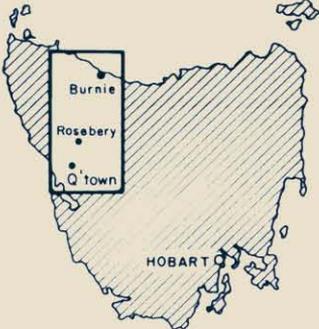
Somerset

BURNIE

5 450 000 mN

Penguin

Ulverstone



HOBART

350 000 mE

Hellyer R.

Hampshire Link

Blythe R.

Nietta

Lake Barrington

Waratah

River Leven

Savage River

Emu Bay Railway

Cradle Link Road

5 400 000 mN

Emu Bay Highway

Huskisson R.

Pieman Rd

Lake Mackintosh

Lake Pieman

Tullah

Rosebery

Lake Rowallan

Renison Bell

MURCHISON

Lake Murchison

Zeehan

Murchison R.

MT. OSSA

5 350 000 mN

Henty R.

Forth R.

5 350 000 mN

994007

PASMINGO EXPLORATION
A Division of Pasmingo Australia Limited

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

E.L. 12/88 - MT. BLACK JV

LOCATION MAP

5 cm

DRAWING No. SCALE 1:500 000 0 5 10 km FIG. No. 1

MACQUARIE HARBOUR

3 TENURE

Exploration Licence 12/88 was granted to Austmin Resources NL and Climax Mining Limited on 3 September 1988, following their successful joint tender for part of ETA31, formerly part of EL 1/62 (held by the EZ Co.) Climax withdrew from the Joint Venture in March 1990 and sole title to the licence was transferred to Austmin on 29 May 1990.

Pasminco Australia Limited signed a Heads of Agreement to Joint Venture the tenement with Austmin on 28 May 1990. Under the terms of this Agreement, Pasminco Exploration, a division of Pasminco Australia Limited, could earn a 60% equity in the tenement by spending \$300 000 within two years. Pasminco reached this point in April 1992 and have continued to manage and sole fund the exploration program ever since.

The current equity is as follows:

Pasminco	64.5%
Austmin	35.5%

Austmin transferred their interest and management of the Mt Black Joint Venture to Majestic Resources NL in 1992.

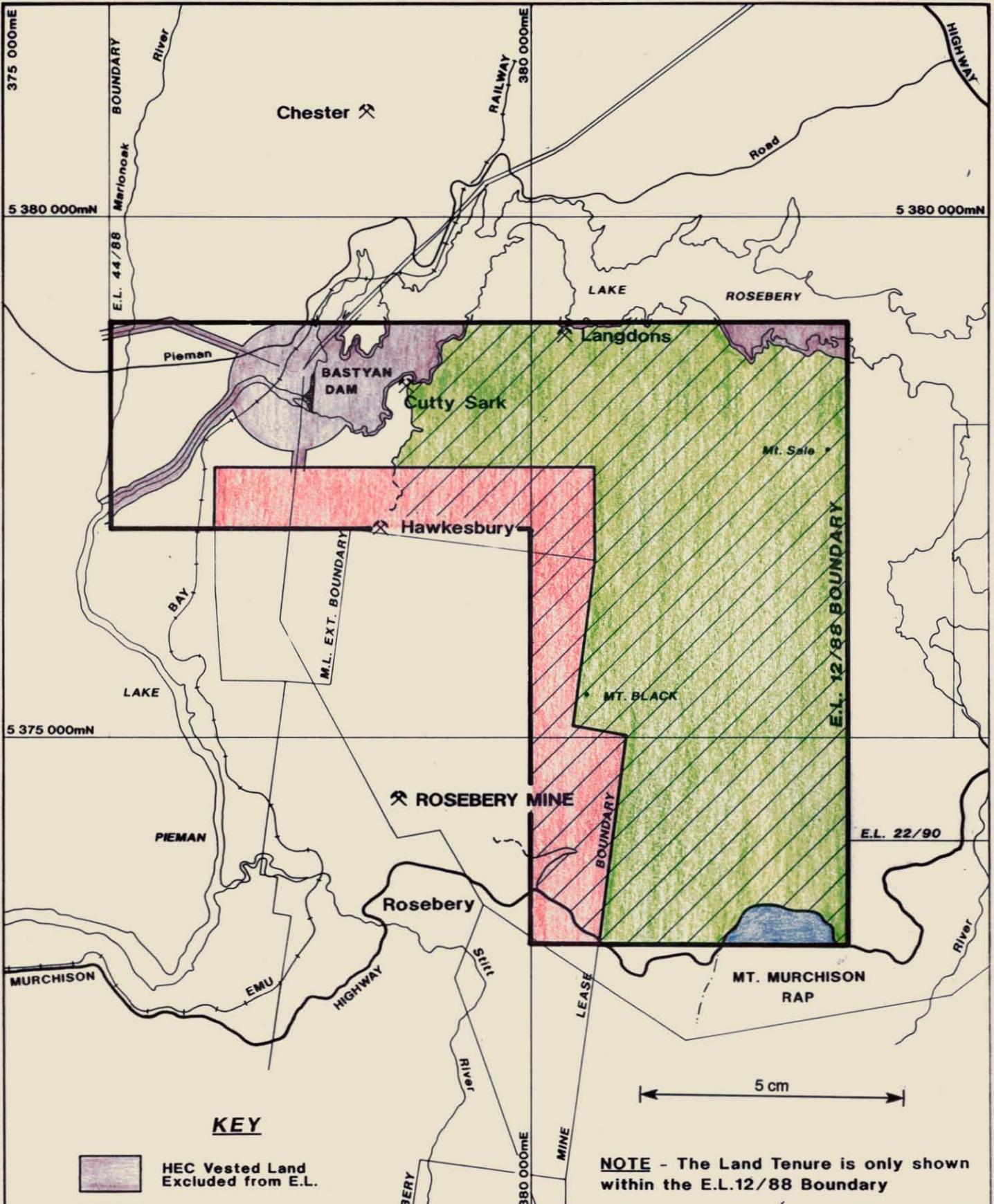
The boundary of EL 12/88 was amended on 17 May 1993 following the revocation of the Murchison Highway State Reserve. The total area of 26km² of the licence currently excludes the following (see Figure 2):

- 5km² in Mining Leases
- 2km² land vested in the HEC

The land comprises the following tenure classifications:

- Crown Land
 - Deferred Forest Land
 - Mt Murchison RAP
 - Unallocated
- State Forest
 - Multiple Use Forest Land
- HEC
 - Land vested in the HEC

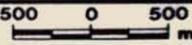
An application to relinquish 10km² of EL 12/88 by 2 September 1993, in compliance with Mines Department regulations, has been submitted to the Department. The area proposed for relinquishment forms two blocks, shown in Figure 4.



KEY

-  HEC Vested Land Excluded from E.L.
-  RAP - Recommended Area for Protection
-  Deferred Forest
-  Uncommitted Crown Land
-  Nomination for National Estate
-  Mine Lease Excluded from E.L.

NOTE - The Land Tenure is only shown within the E.L.12/88 Boundary

 PASMINCO EXPLORATION <small>A Division of Pasminco Australia Limited</small>	
COMPILED : G.M.B. DATE : DRAWN : REF. : REVISIONS :	E.L. 12/88 - MT. BLACK J.V. <h1 style="margin: 0;">LAND TENURE</h1>
DRAWING No.	SCALE 1: 50,000 
	FIG. No. 2

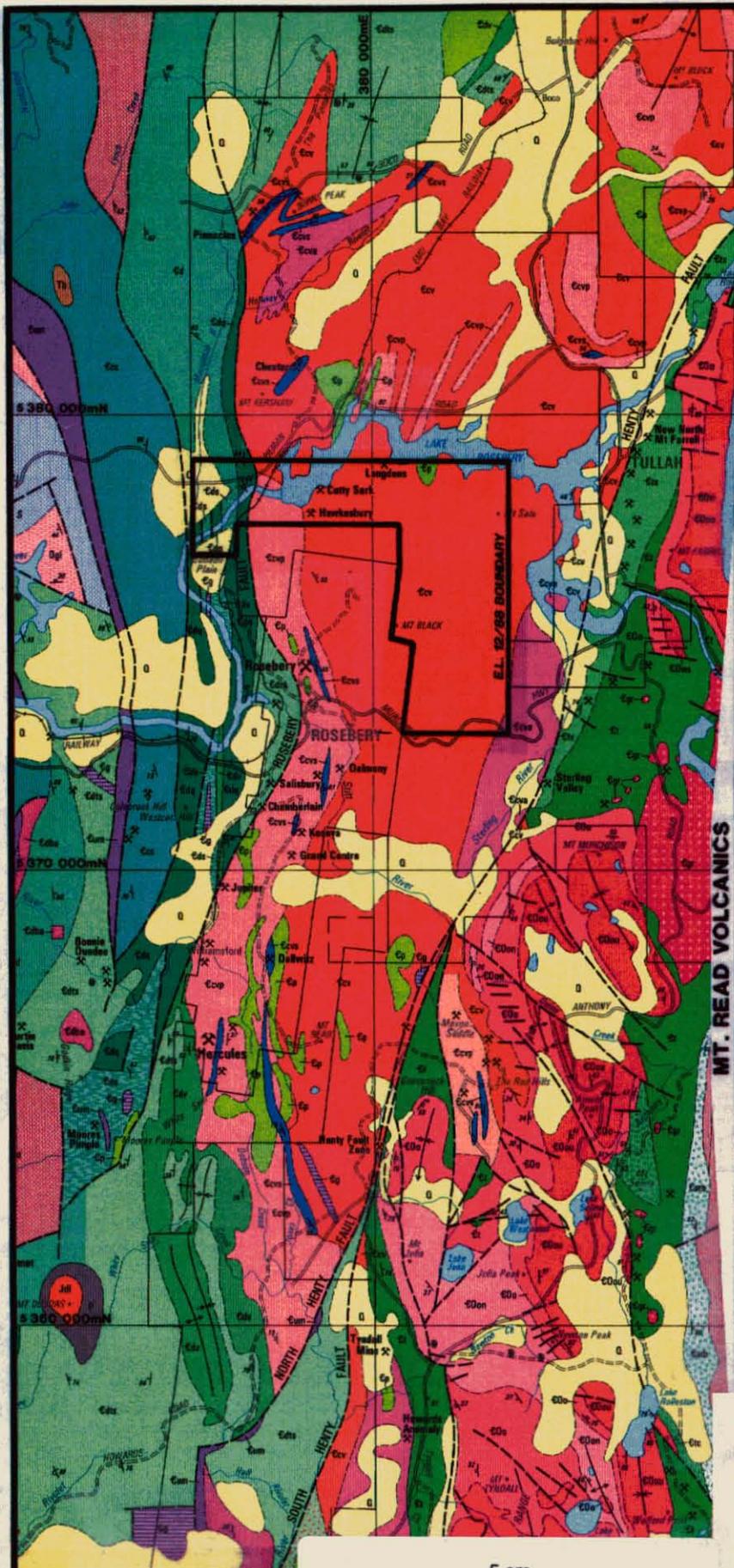
994009

4 REGIONAL GEOLOGY

The Mt Black tenement, EL 12/88, lies entirely within the Middle Cambrian Mt Read Volcanics in Western Tasmania, as part of the 1 000km wide Tasman Fold Belt of Eastern Australia. The Mt Read Volcanics form a belt approximately 200km long and 20 km wide on the western and northern margin of a Proterozoic basement block, known as the Tyennan region (see Figure 3). Recent geochemical studies have identified three calc-alkaline to shoshonitic suites and two tholeiitic suites within the Volcanics, which are interpreted to have formed in a post-collisional tectonic setting (Crawford et al, 1992).

The volcanic belt comprises a stratigraphically and structurally complex series of predominantly massive lava-rich sequences and abundant intrusives along the eastern zone and a broader western zone of volcano-sedimentary sequences, especially submarine mass flow deposits, known variously as the Dundas Group, Yolande River Sequence and Mt Charter Group (Corbett, 1992). The relationship between different units is complicated by rapid facies variations, at least two phases of major deformation in the late Cambrian - early Ordovician and the Devonian and by generally poor exposure. Lower greenschist facies regional metamorphism and syn to post-kinematic granitoid intrusion accompanied the Devonian Tabberabberan Orogeny, which over printed the earlier hydrothermal alteration and deformation features.

The bulk of EL 12/88 is underlain by the Mt Black Volcanics, a sequence of felsic lavas, and subvolcanic intrusives, which are dacitic to andesitic in composition, and massive volcanoclastics, especially breccias (see Figure 4). Fine grained epiclastic units are uncommon within the Mt Black Volcanics, which structurally and possibly stratigraphically over lies the Rosebery Mine Sequence. The Mt Black volcanics are generally weakly altered and unmineralised, apart from scattered vein-style magnetite-haematite and minor pyrite and a zone of strong chlorite-quartz-carbonate alteration associated with patchy magnetite, lesser pyrite and minor copper-gold mineralisation, near the base of the volcanics. This zone, which includes the old Cutty Sark and Hawksberry prospects extends for 3-4km north along strike from Rosebery but does not appear to have any economic potential (Purvis, 1992).



QUATERNARY	Q	Glacial deposits, alluvium, etc.
JURASSIC	Jd	Dolerite
PERMIAN - CARBONIFEROUS	P	Undifferentiated
DEVONIAN - SILURIAN	Bs	Bell Shale
	Fs	Florence Sandstone
	S	Silurian
ORDOVICIAN	Gg	GORDON GROUP limestone
EARLY ORDOVICIAN - LATE CAMBRIAN	COu	Upper sandstone sequence including Pioneer Beds (COu)
	CO	Undifferentiated conglomerate and sandstone (CO)
	COm	Newton Creek Sandstone (COm) - interbedded sandstone siltstone and conglomerate with marine fossils

DUNDAS GROUP AND CORRELATES	Cp	Quartz-feldspar porphyry, mostly intrusive
	Cs	Mostly sedimentary rocks - greywacke, siltstone, conglomerate
	Cts	Interbedded tuffs and sedimentary rocks
	Csq	Quartzwacke-slate-siltstone units, e.g. Silt Quartzite
	Cv	Mostly felsic volcanics - mainly tuffs
	Cvb	Mixed felsic and mafic volcanics and epiclastic breccias, Quo-Hellyer area
	Cvt	Basaltic to andesitic volcanics

TYNDALL GROUP AND CORRELATES	Ct	Mainly sed. rocks, incl Farrell Slates
	Ct	Mainly quartz-feldspar-phyric volcanic and volcanoclastic rocks (St)
	Ct	Mainly volcanoclastic congl. and sandstone
	Ct	Sticht Range Beds - sandstone, siltstone, siliciclastic conglomerate

CENTRAL VOLCANIC SEQUENCE	Cv	Mainly feldspar-phyric volcanics - dacite, rhyolite, minor andesite (Cv)
	Cv	Felsic porphyry, mainly intrusive
	Cv	Mainly pyroclastic rocks
	Cs	Sedimentary rocks, mainly shale and sandstone
	Cv	Andesitic volcanics

WESTERN SEQUENCE	Cv	Interbedded crystal and vitric tuff, shale, greywacke & qtz-feld-phyric lavas & intr. (Cw)
	Cp	Felsic - porphyry, mainly intrusive
	Cs	Miners Ridge Sandstone - quartzwacke & siltstone
	Cvt	Basaltic-andesitic volcanics and intrusives
	Cvt	Tholeiitic basalt at Miners Ridge

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 (HON) 1988

CAMBRIAN INTRUSIVE ROCKS

Cp	Granite
Cp	Felsic porphyry
Cg	Gabbro
Cm	Ultramafic rocks & serpentinite

PRECAMBRIAN

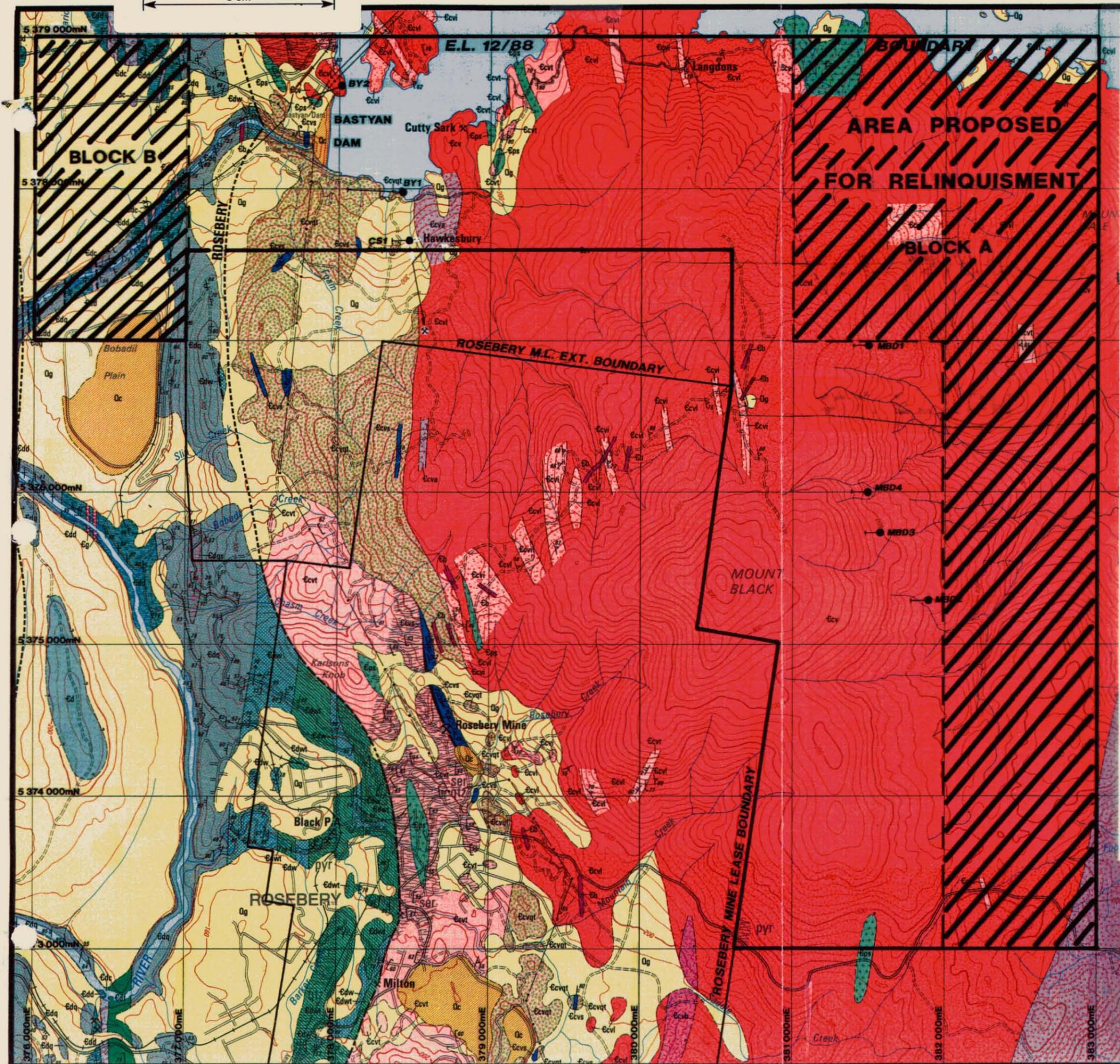
Ek	Quartzite-slate sequences - correlates of Oonah Formation
Em	Metamorphosed sequences of Tyennan Region. Major lithological boundary trends shown

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COMPILED : G.M.B.
 DATE :
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 REVISIONS :
 DRAWING No. SCALE 0 2 4 km FIG. No. 3

E.L. 12/88 - MT. BLACK JV
REGIONAL GEOLOGY
 FROM MAP 6 OF THE
MT. READ VOLCANICS PROJECT

5 cm



LEGEND

- QUATERNARY**
- Qc Cultural features - waste dumps, dams, etc
 - Qg Glacial deposits, mostly till. Moraine ridge crests indicated (• •). Occurrences of granite erratics indicated (Qgg ⊕)

- DUNDAS GROUP**
- Eda Dolomitic siltstone and sandstone with minor conglomerate
 - Edq Quartzwacke interbedded with black phyllitic mudstone, grey siltstone, minor conglomerate (Edq). Some dominantly siltstone units (Edqs) and conglomerate units (Edqc) indicated.
 - Edw Lower sequence of interbedded lithicwacke, siltstone, mudstone and quartz-feldspar-phyric tuff of White Spur Formation (Edw). Some tuff units (Edwt) indicated.

- CENTRAL VOLCANIC SEQUENCE**
- Felsic porphyry, generally intrusive. Quartz-feldspar porphyry (Ep); spherulitic feldspar-quartz porphyry (Eps)
 - Felsic pyroclastic rocks, including tuff, breccia, vitric ash. Generally feldspar-phyric (Ecvf).
 - Fiamme-bearing outatitic tuff of ignimbrite type. Some block-and-ash flow units shown (Ecvib).
 - Lithic breccia and agglomerate.
 - Crystal tuff, crystal-lithic tuff, commonly bedded.
 - Fine grained vitric tuff.
 - Quartz-feldspar-phyric tuff, often with lithic clasts.
 - Shale, siltstone, sandstone, minor tuff. Units of chert or chert-pyrite rock as indicated (Ecvsc)
 - Dominantly feldspar-phyric lava of rhyolitic, dacitic or andesitic composition (Ecvl). Some units of andesitic lava (Ecvva) and quartz-feldspar-phyric lava (Ecvq) shown. Sequence of hornblende-phyric lava and minor tuff at Mackintosh Bridge area indicated (Ecvlm)
 - Basaltic lava.

- CAMBRIAN INTRUSIVE ROCKS**
- Basalt

- OVERPRINTS AND MINERALISATION**
- pyr Alteration in volcanic rocks, usually with strong schistosity. ser=sericite, pyr=pyrite, chl=chlorite, qtz=quartz
 - Area of strongly cleaved or disrupted rocks, usually associated with fault zones
 - Massive sulphide lens

PASMINCO EXPLORATION
A Division of Pasminco Australia Limited

COMPILED: G.M.B.	E.L. 12/88 - MT. BLACK J.V.
DATE: July, 1991	
DRAWN:	
REF.:	
REVISIONS:	GEOLOGY (FROM MAP 2 MT. READ VOLCANICS PROJECT)
DRAWING No.	
SCALE 1:25,000	250 0 250 m
	FIG. No. 4

The Rosebery Mine Sequence has been most recently described by M^cPhie and Allen (1992). It comprises an east facing sequence of quartz-feldspar crystal and lithic-rich volcanoclastics (the Hangingwall Epiclastics) overlying black pyritic mudstones, which in turn overlie thick and massive feldspar-bearing tube pumice breccias (the Footwall Sequence). The fine grained graded top of the Footwall Sequence appears, in part, to host the massive sulphide lenses which form the Rosebery deposit. The remainder of the Host Rocks comprise fine grained epiclastics, which probably form the base of the Hangingwall sequence. The composition and volcanic facies of the Footwall Sequence is quite similar to the Mt Black Volcanics, whereas the Hangingwall Epiclastics are similar to the west facing White Spur Formation, previously classified with the Dundas Group west of the Rosebery Fault. Structural models involving post volcanic folding and west-directed thrusting have been developed to explain these possible relationships.

The main focus of exploration activity within EL 12/88 since 1990 has been in the Bastyan Dam area, where massive quartz-bearing debris flows with intercalated tuffaceous sediment lenses and rafts outcrop. These are related to the Hangingwall Epiclastics at Rosebery. Rafts and large clasts of high grade massive sulphide occur within the debris flows near the Bastyan Dam. The sequence is truncated to the west by the Rosebery Fault, a shallow east dipping probable Cambrian structure, which has been re-activated in later, principally Devonian, deformations. The Rosebery Fault separates the Rosebery Mine Sequence from pyritic black shales, grey siltstones and quartzose sandstones of the middle Cambrian Dundas Group, derived predominantly, but not entirely from the Precambrian basement (see Purvis, 1991).

5 PREVIOUS EXPLORATION

The area of EL 12/88 was vigorously prospected last Century during the initial minerals boom in western Tasmania. Despite these efforts and the close proximity to the world class Rosebery massive sulphide deposit, less than half a dozen minor base metal showings were found. These all occur in the general area of the Bastyan Dam, either within the strike extensions of the Rosebery Mine Sequence or in the basal part of the overlying Mt Black Volcanics.

Modern exploration commenced in earnest within EL1/62, held by the Electrolytic Zinc Company of Australasia (EZ). During the period between 1962 and 1988 the area was systematically surveyed with regional geology; stream, soil and rock chip geochemistry ground magnetic, IP and EM surveys; and airborne magnetic and EM surveys. Detailed investigations by Getty Oil (in Joint Venture with EZ from 1978–1985) and Billiton (JV with EZ from 1985–1988) culminated in drilling six diamond drill holes, only one of which, CS1, falls in the current area of EL 12/88. Hine and Scott (1989) summarised the previous exploration, including significant results and Hine (1990) prepared compilation maps of the geology, geochemistry and geophysical surveys undertaken prior to the grant of EL 12/88.

Since the inception of EL 12/88, the Climax – Austmin Joint Venture has investigated a zone of weak UTEM anomalies (from the 1986 Billiton survey) east of the summit of Mt Black with soil geochemistry, brief geological mapping and sampling and the completion of 4 helicopter-supported drill holes, for a total of 869m. In mid 1990 Pasminco commenced systematic exploration over adjacent tenements. This work has included: photogrammetry and preparation of digital topographic base sheets; high resolution aeromagnetic and radiometric survey; semi-regional gravity surveys; detailed geological mapping and petrography; litho-geochemistry and stable isotope studies; drilling two holes (total 975m) in the vicinity of high grade massive sulphide clasts in the Bastyan Dam area and down hole EM surveys.

The results of this relatively intense exploration over the last 30 years has been generally quite disappointing. No significant mineralisation has been detected and the potential for the discovery of economic mineralisation within several hundred metres of the surface has been significantly down-grade. However, a much better understanding of the subsurface geology, especially the structural framework, has resulted from this work. At the same time extensive exploration on adjacent tenements controlled by Pasminco has indicated that potentially mineralised horizons may exist at depth (>500m) with the Mt Black JV area.

6 WORK COMPLETED AUGUST 1992 – JULY 1993

6.1 Introduction

Exploration undertaken during the current period was restricted to the Bastyan area, immediately north of Lake Rosebery. The focus of this relatively low key program was to investigate the North Bastyan alteration zone, identified last season by Purvis (1992). At the same time down-hole EM surveying of hole BY2, drilled in March 1992, was finally completed.

The ill-defined North Bastyan alteration zone occurs 500m north of the Bastyan Dam and appears to straddle the northern boundary of the tenement. Consequently, it was planned to co-ordinate the activities with a much larger exploration program on the adjacent Burns Peak EL 44/88. The work included reclearing and extending the existing 200m spaced AMG E-W grid lines; geological mapping and sampling, undertaken by Mark Saxon; limited lithochemistry and the surveying of lines 78 700N and 78 900N with pole-dipole IP.

There was no active field work undertaken elsewhere within the Mt Black JV tenement during this period.

6.2 Geology

During the course of geological mapping of the North Bastyan area in 1992, Purvis discovered a zone of very strong hydrothermal alteration within probable dacitic volcanoclastics of the Mt Black Volcanics. The zone is poorly defined, but appears to be at least 300 x 300m in size within EL 12/88 (see Figure 5) and is associated with minor, but widespread pyritic mineralisation. Purvis showed that the alteration is as intense as the strongest parts of the Footwall Sequence, beneath the Rosebery deposit. He recommended that additional lithochemistry, as well as detailed mapping, systematic soil sampling and oxygen isotope studies be undertaken to better define the mineral potential of the alteration zone.

Geological mapping during the summer months of 1993 was concentrated along the refurbished grid lines. The relatively massive featureless character of the felsic lavas and volcanoclastics and poor outcrop in this area limited stratigraphic correlation of units between the Bastyan Dam area and the Chester - Mt Kershaw area in EL 44/88. However, it is apparent that the alteration at North Bastyan is a discrete zone, **not** continuous with the major South Kershaw - Chester alteration zone. This observation, coupled with the lack of geochemistry and IP responses, (see later discussion) have down-graded interest in the area.

6.3 Geochemistry

During the course of mapping, Saxon collected a small suite of six rock chip outcrop samples, mostly from within the North Bastyan alteration zone. The samples (numbers 34839, 34845-49) are located on Figure 6 and described in Appendix 1. In the event only two of the weakly pyritic samples were analysed for a "path finder" suite of elements (Cu, Pb, Zn, Ag, Mn, Bi, As, Sb, V and Ba) as well as whole rock and trace elements (Rb, Sr and Zr). The analyses were performed by Analabs at Coose and Perth and are reported in Appendix 1, along with the analytical methods and detection limits.

The results are not encouraging. No significant "path-finder" elements values were obtained, the most interesting value being only 100ppm Zn in sample 34845. Similarly Alteration Index (AI) and McKay Index (MI), defined as:

$$AI = 100 \times (K_2O + MgO) / (Na_2O + K_2O + MgO)$$

$$MI = 100 \times (Na_2O + CaO) / (Fe_2O_3 + MgO)$$

values for the samples are not particularly encouraging. Sample number 34845, AI = 89 and MI = 80 is moderately altered but sample number 34848, AI = 47, and MI = 163 is only weakly altered, especially in comparison to samples collected last year by Purvis, which had AI values >95 and MI values <5.

6.4 DHEM Surveys, Hole BY2

Hole BY2 was drilled to a total depth of 412.5m in March 1992 beneath the northern abutment of the Bastyan Dam (see Figure 5). The hole was designed to test for the source of massive sulphide clasts within the Rosebery Hangingwall Sequence near the dam. Details of the drill hole were presented in Purvis (1992). The hole did not encounter any significant mineralisation with a best intersection of only 1.05m at 0.12% Pb and 0.16% Zn. The hole drilled through a sequence of weakly altered and pyritic dacitic lavas and volcanoclastics of the Mt Black Volcanics (0–178.6m) above a moderately altered and deformed sequence of crystal–lithic rich epiclastics with minor sulphide veinlets, forming the Hangingwall Epiclastics (178.6 – 365.7m) before passing through the Rosebery Fault to end in a sequence of highly deformed intercalated black pyritic shale and fine grained quartzose sandstone of the Dundas Group (366.6–412.5m).

An initial attempt to survey the hole with down hole EM using the new bore–hole UTEM system was attempted by Lamontagne Geophysics in September 1992. Unfortunately the diameter and length of the probe was such that it was not possible to survey below 170m, where a slight kink or constriction in the PVC effectively blocked the hole. Subsequently, the hole was successfully surveyed to the end of hole using the slightly slimmer Crone Geophysics PEM down hole probe in November 1992. Memos on the results of these two surveys by Smith and Hughes, respectively are presented in Appendices 2 and 3. Each memo also has a plan showing the transmitter loop locations (the same two loops were used for both surveys) as well as plots of the survey results.

Considerable electromagnetic noise was expected with the surveys due to the close proximity of the HEC transmission yard and numerous high voltage powerlines associated with the Bastyan power station (see Figure 5). In the event, the surveys were able to largely overcome this problem by allowing sufficient stacking time and by using multiple strands of wire around the transmitter loop.

Even though the results in the upper 140m of the hole are quite noisy, both Smith and Hughes concluded that no "good" off–hole conductors were present in the two surveys. Hughes (Appendix 3) also observed a shallow negative response from the western loop and increased shallow positive response from the eastern loop of the Crone survey.

Although this could be attributed to slightly higher conductivity in top of the hole Hughes thought that it was more likely due to surface and transmission line currents from the HEC power station and related infrastructure. The uninteresting geology intersected in the hole supports this explanation.

6.5 IP Survey

It was decided to survey two grid lines across the North Bastyan alteration zone with Induced Polarisation (IP) and Resistivity to determine whether the zone was associated with a significant accumulation of disseminated and/or massive sulphide mineralisation. IP was chosen in favour of large loop TEM because of recent experiences using EM over the relatively poorly conductive massive sulphide lenses at Rosebery and Hercules.

The survey was undertaken during February 1993 by Scintrex Ltd as part of a much larger program for Pasminco in western Tasmania. Two lines, 78900N and 78700N, (actually the Lower Pieman Dam road west of the HEC transmission yard) were surveyed for a total of 2.6 line km using a pole-dipole array separation of 50m (see Figure 5). Details of the survey specifications and equipment are given in a memo by Hughes (Appendix 4). Hughes also discusses the results of the survey, which are presented as stacked pseudosections in Figures 1 and 2 in Appendix 4.

The most prominent feature on both pseudosections is the chargeability high and slight resistivity low associated with the Rosebery Fault. The cause of this anomaly is probably a marked increase in clay minerals and pyritic black shales of the Chamberlain Shales in the Dundas Group immediately west of the fault. An increase in chargeabilities, up to two times above background, near 7850E on line 78700N and 7900E on line 78900N coincides with the North Bastyan alteration zone. This appears to be due to the slight increase in disseminated pyrite and alteration clay minerals in the zone, but is not indicative of a significant sulphidic body here.

Line 78900N was also read across the water at Chester Inlet on Lake Rosebery. This technique is routinely used in Canada across both frozen and open lakes. Whilst there appears to be several spurious chargeability data points, a weak anomaly was recorded on the western edge of the lake, coincident with a resistivity low. Despite the proximity of the

powerlines and a large diameter metal pipe, similar responses on adjacent lines further north (within EL 44/88) away from these cultural effects, suggests that the response is real and possibly associated with a north east trending shear zone along the Chester Rivulet.

Whilst no results of potential economic significance have been obtained from the IP survey, the successful application of the method across Lake Rosebery has opened up the possibilities to cover other prospective areas in Tasmania that are covered with relatively shallow water.

7 ENVIRONMENTAL DISTURBANCE & REHABILITATION

Exploration activities undertaken during 1992-93 on EL 12/88 that impacted on the natural environment were restricted to reclearing and extending grid line 78900N immediately north of the Bastyan Dam and Lake Rosebery. The work involved minimal new cutting and was carried out under the Code of Practice guidelines.

Complete rehabilitation of drill site BY2 and the short access track from the Bastyan Dam road was deferred, pending the successful completion of down-hole geophysical surveys. It is expected that topsoil, which has been carefully placed to one side, will be returned. The slope will be recontoured and slash vegetation placed to facilitate natural re-vegetation.

Austmin have continued their program of monitoring rehabilitation of vegetation at drill site 5 and associated egress track on the NE slopes of Mt Black. This work has been carried out by Environmental and Botanical Consultants AM and DJ Gray of Hobart, who inspected the site in December 1992. Revegetation of this sub-alpine area is progressing slowly with new seedlings only re-establishing close to the periphery of the cleared areas. Austmin has advised that they have now concluded their monitoring program.

The Mines Department, who also visited the site during the year have retained part of the Austmin bond and will use these funds to complete rehabilitation by additional seeding and possible application of fertiliser over the next couple of years.

9 CONCLUSIONS & RECOMMENDATIONS

Exploration undertaken during 1992-93 has focussed in the Bastyan area of EL 12/88. The work was planned specifically to follow-up the occurrence of high grade massive sulphide rafts and clasts within felsic mass debris flow units, equated with the Rosebery Hangingwall Sequence, and a zone of strong hydrothermal alteration identified north of Bastyan Dam. The program was carried out in conjunction with a much larger exploration program on the adjacent EL 44/88.

The results of this work have been disappointing. No off-hole conductors were detected in hole BY2, drilled on the northern shore of Lake Rosebery in March 1992. Similarly, no significant chargeability or resistivity anomalies were identified by the IP survey. Geological mapping has shown that the North Bastyan hydrothermal alteration zone is restricted in extent and does not form part of the much stronger South Kershaw alteration zone within EL 44/88. Initial rock geochemistry across the former alteration zone has failed to locate any base metal anomalies.

Exploration completed during this period marks the culmination of almost 30 years of relatively intense exploration over the area covered by EL 12/88. Despite the proximity to the world class volcanic-hosted massive sulphide deposit at Rosebery, only minor mineralisation has been discovered with the tenement area. It is now considered unlikely that economic mineralisation occurs within the top few hundred meters of the surface. However, the results of these investigations and extensive work on the adjacent tenements has given a much better understanding of the subsurface geology. These studies suggest that potentially mineralised horizons may exist at depths greater than 500 within the Mt Black Joint Venture area.

It is recommended that no immediate exploration is undertaken during the forthcoming year on EL 12/88. However the results of active investigations on adjacent tenements should be closely monitored, in so far as they impact on the potential to identify deep targets within the tenement.

An area of 10km² has been proposed for relinquishment, in compliance with Mines Department regulations. The area recommended to be retained covers the along strike extensions of the Rosebery Mine Sequence in the Bastyan Dam area and the down dip extensions of the ore horizon beneath the Mt Black Volcanics, immediately east of the Rosebery Mine Lease.

10 KEYWORDS & LOCATION

Keywords

BASEMETALS, GOLD, VOLCANICS, THRUST, VOLCANOGENIC, CAMBRIAN, GEOCHEMISTRY, GEOL MAPPING, GEOPHYS IP, ALTERATION.

Location

QUEENSTOWN SK5505, MT BLACK, ROSEBERY.

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APPENDICES

APPENDIX 1

Rock Geochemical Sample Results

APPENDIX 2

Down-hole UTEM Survey Results, Hole BY2

- Memo, RS Smith

**PASMINCO
EXPLORATION**

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

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

MEMORANDUM

TO: J Gerald Purvis
FROM: Richard S Smith
DATE: 16 November 1992
SUBJECT: Drill-hole UTEM BY2 - Mt Black

During September 1992, drill-hole UTEM measurements were made in BY2. Two transmitter loops, the positions of which are shown in figure 1, were used to survey the hole. Loop 1-92 was to the east, crossing Lake Rosebery and loop 2-92 was to the west. The primary fields from these loops are shown in plan and section on figures 2, 3, 4 and 5.

The hole could unfortunately only be logged to 170m depth because the UTEM borehole probe is too large to get down the hole. If possible, future holes should be lined with larger diameter plastic. In the short-term, the hole could be resurveyed using the Crone system which has a narrower probe. The data from loop 1-92 (figure 6) looks relatively noise free, so this loop should be used again. However, the data from loop 2-92 (figure 7) is noisy and if possible, a larger loop or multiple strands of wire around the loop should be used for re-surveying.

Richard

RSS322SR

5379 000mN

MT. BLACK VOLCANICS

HEC HEC POWERLINES

LOOP 1-92

LOOP 2-92

DUNDAS GROUP SEDIMENTS

LAKE ROSEBERY

BASTYAN DAM

Transmission Yard

5 cm

Plemon Bridge

PASMINCO EXPLORATION
A Division of Pasminco Australia Limited

COMPILED: J.G.P.

DATE: 4-12-92

DRAWN: N.W.D.S.

REF.:

REVISIONS:

DRAWING No.

SCALE 1:5000

0 50 100m

FIG. No.

HANGINGWALL EPICLASTICS

EMU FAULT

Numerous flat-lying

Power Station Fault (HEC)

Fault 'B' (HEC)

Power Station

Numerous flat-lying

quartz-

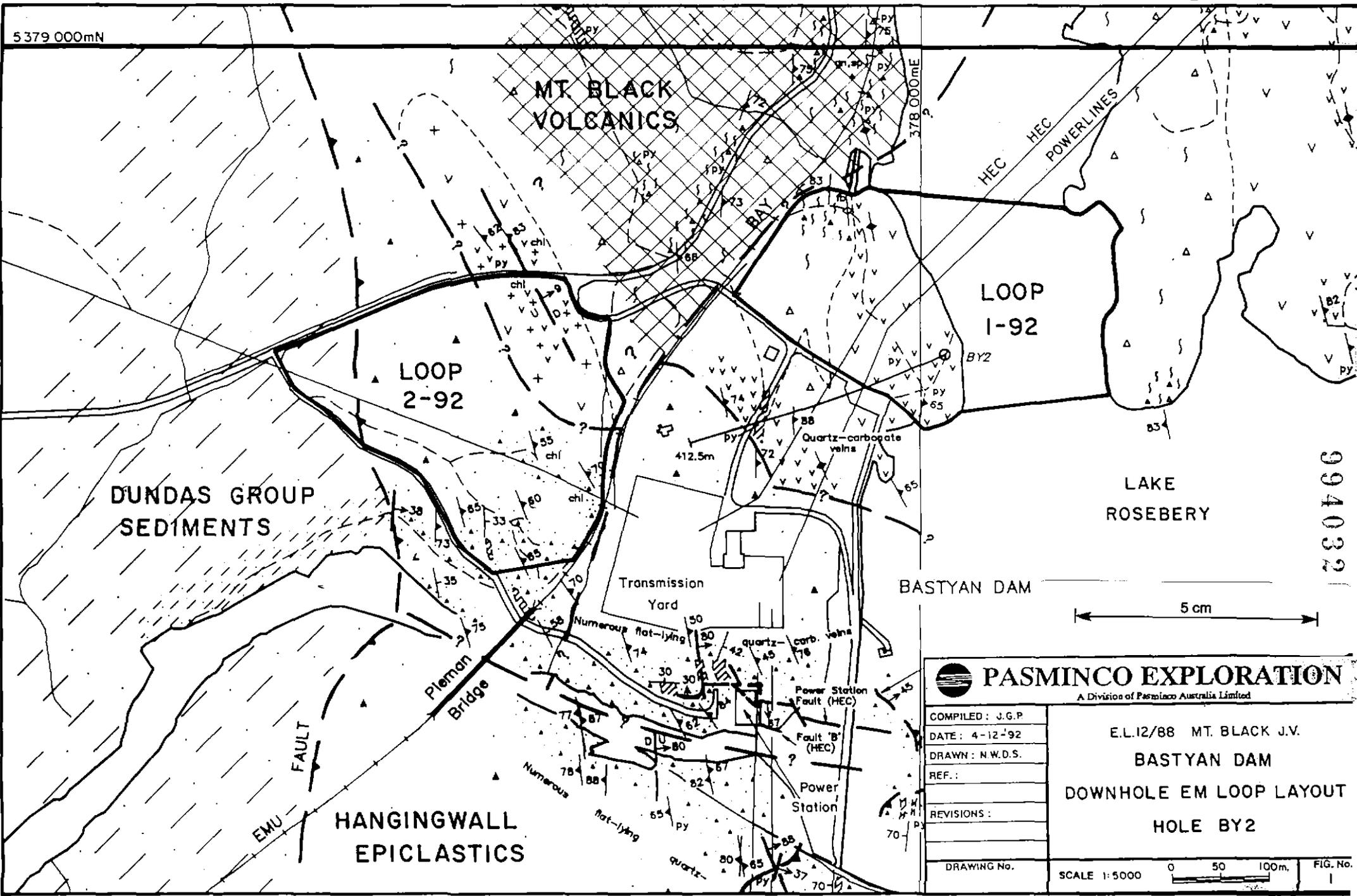
Quartz-carbonate veins

412.5m

994032



E.L.12/88 MT. BLACK J.V.
BASTYAN DAM
DOWNHOLE EM LOOP LAYOUT
HOLE BY2



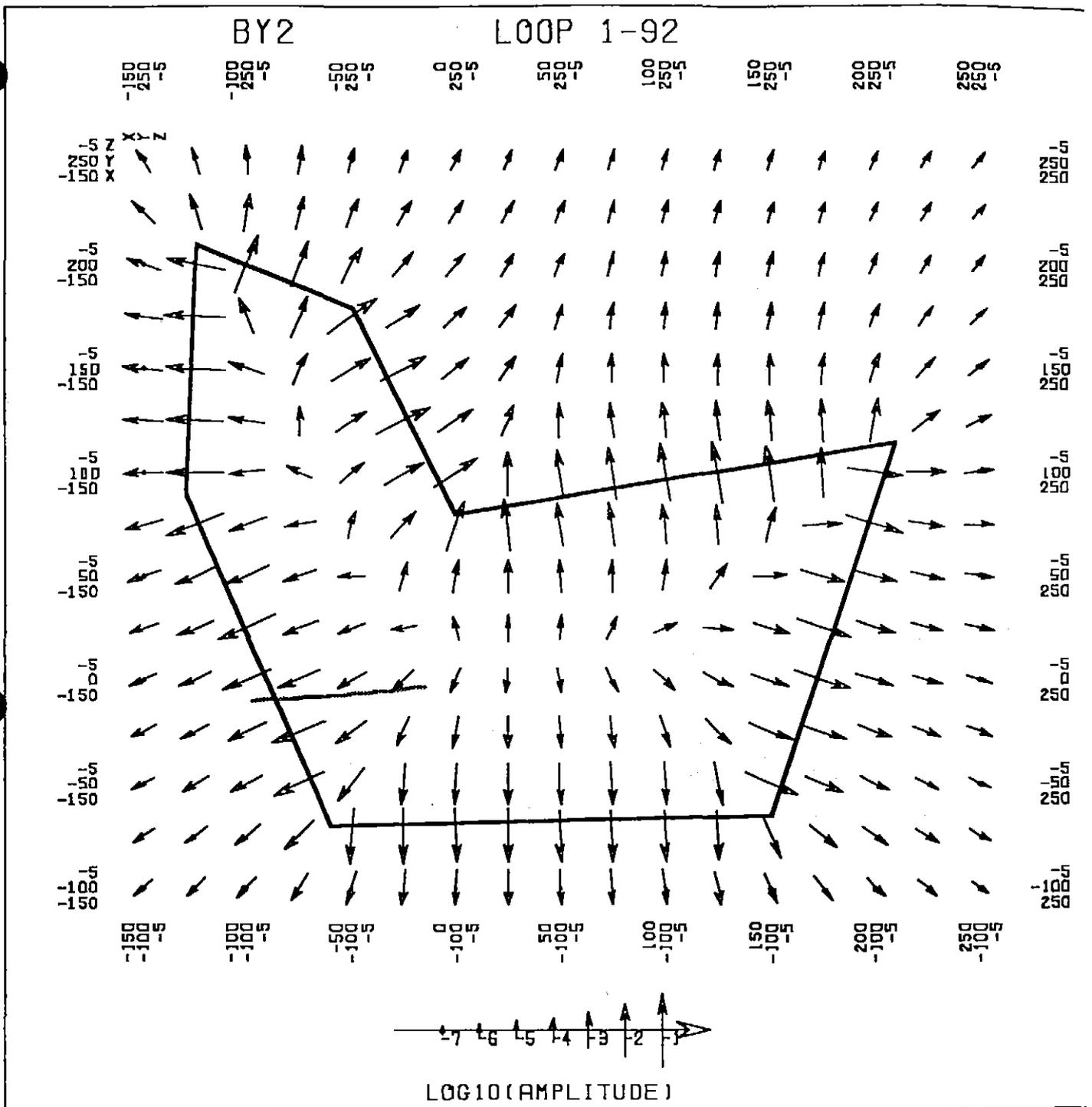


Figure 2

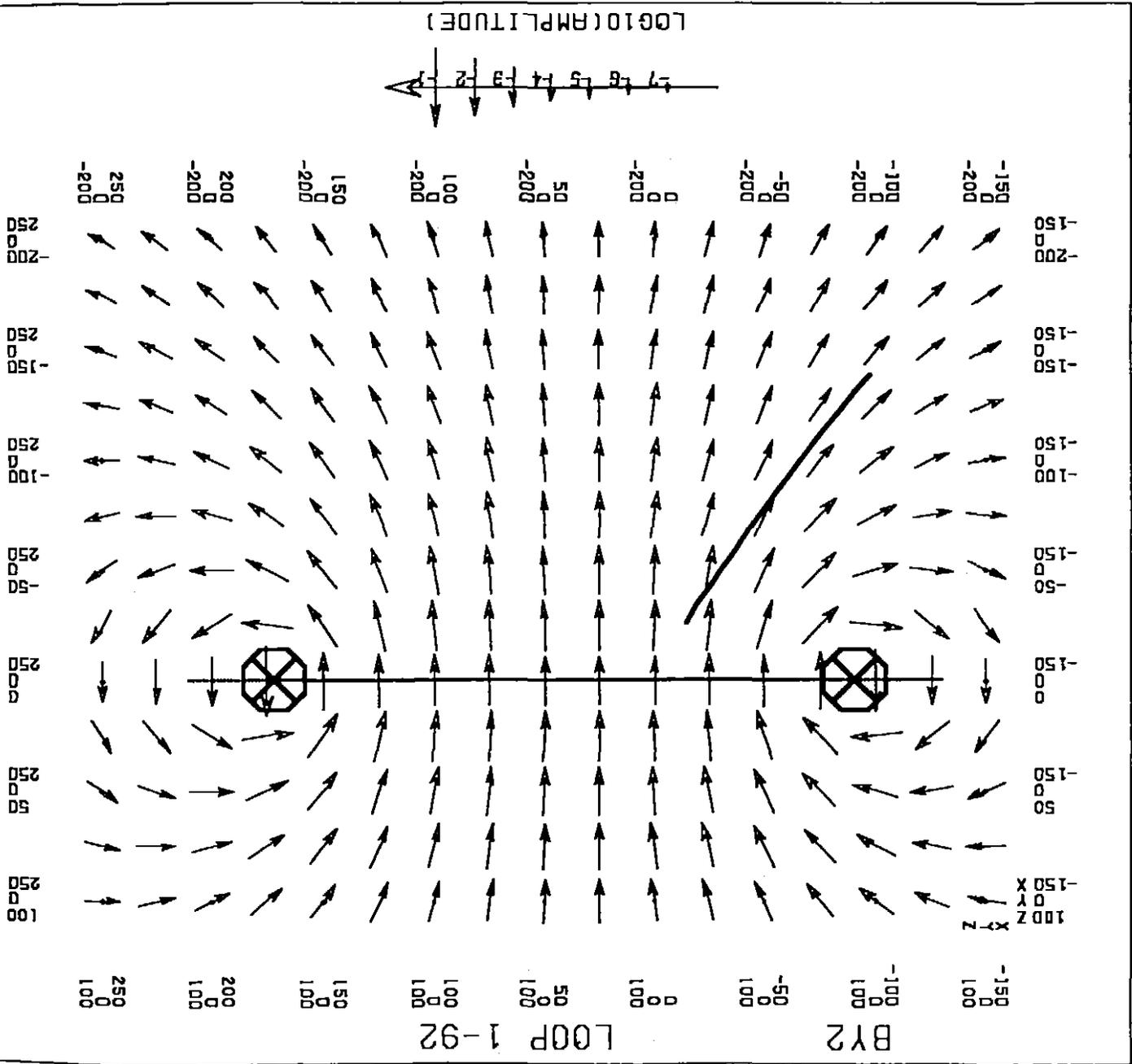


Figure 3

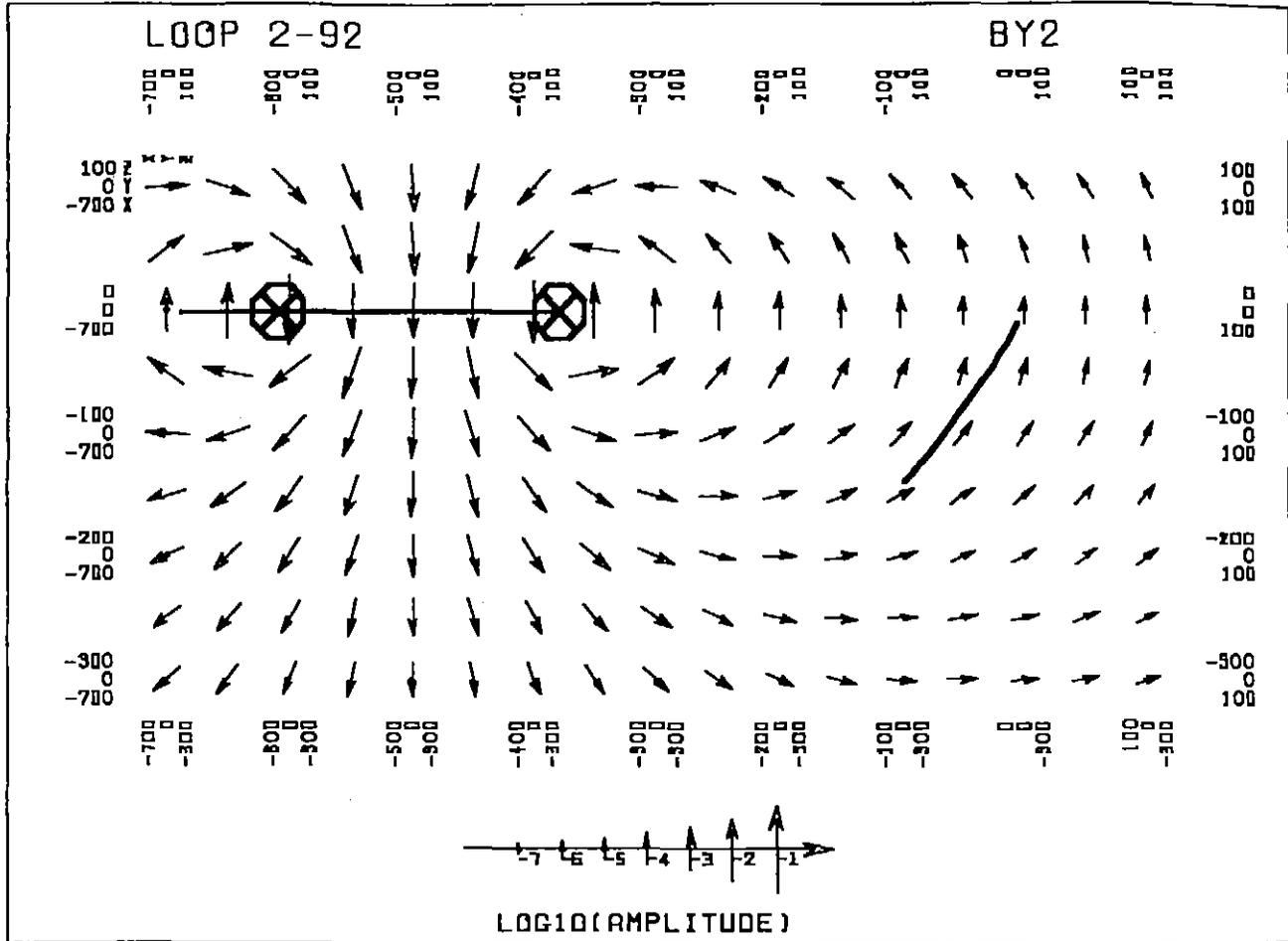


Figure 4

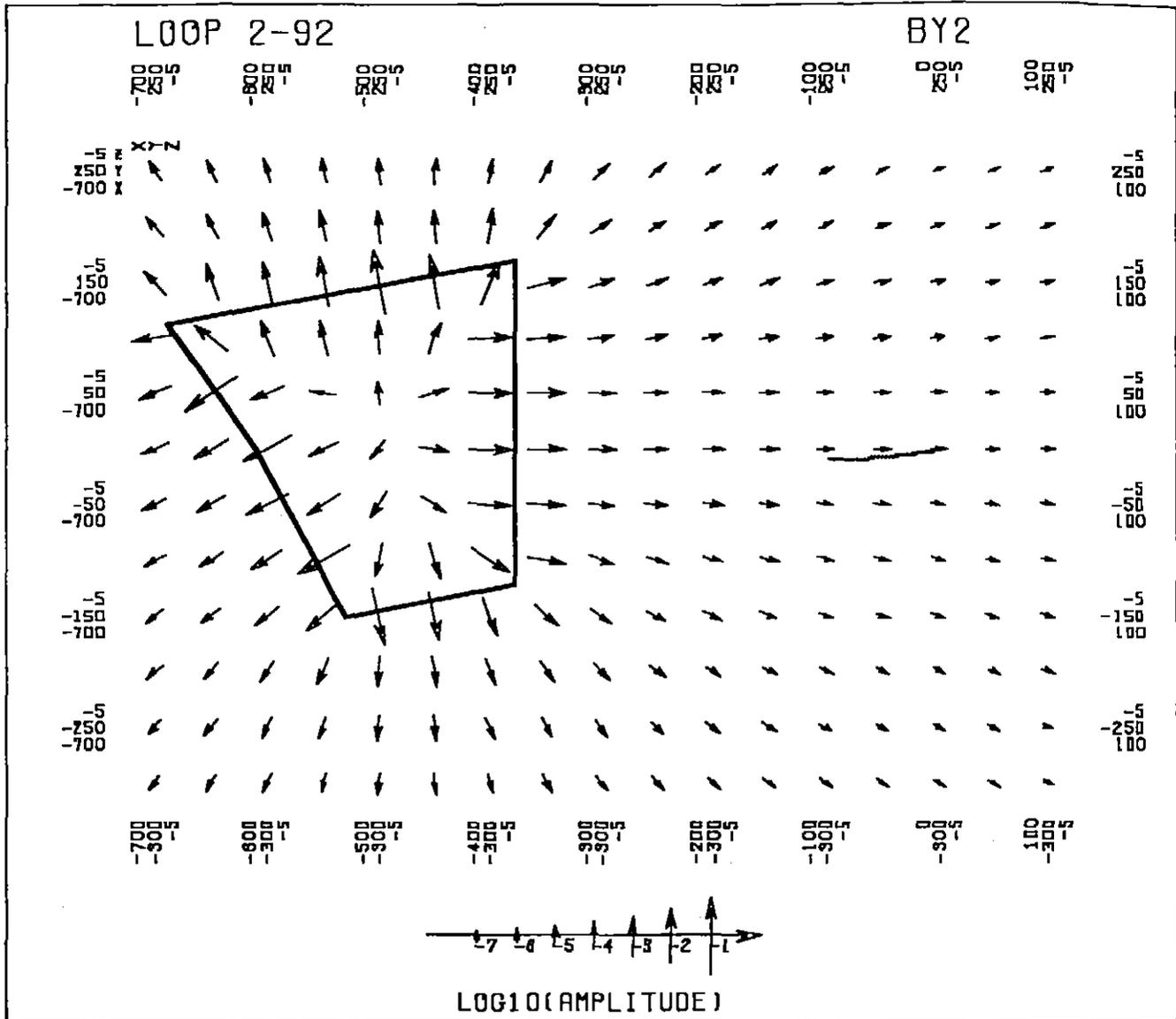
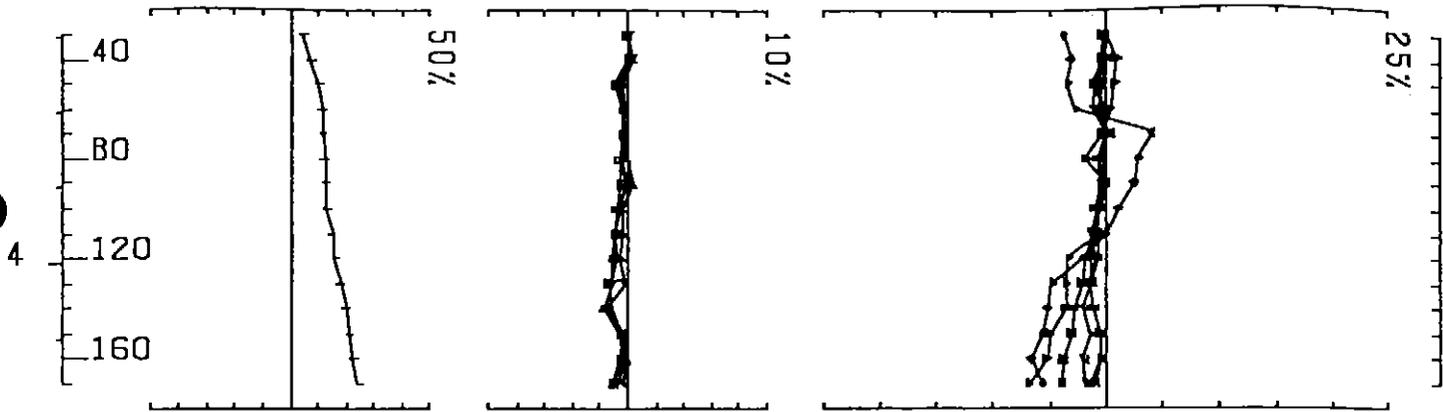
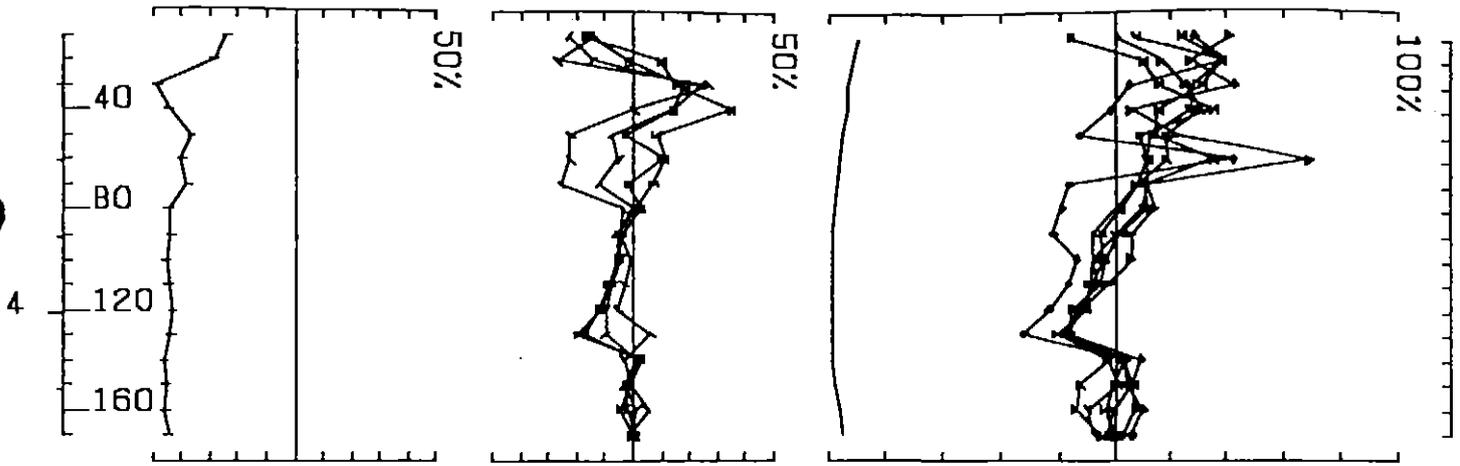


Figure 5



UTEM SURVEY AT MT BLACK FOR PASMINDO EXPLORATION SEPTEMBER 1992
CONDUCTED BY LAMONTAGNE GEOPHYSICS LTD JOB 0207 BASE FREQ (HZ) 53.65
LOOP NO 1-92 HOLE BY2 AXIAL COMPONENT SECONDARY FIELD CH1 CONTIN. NORM.

Figure 6



UTEM SURVEY AT MOUNT BLACK FOR PASMINGO EXPLORATION SEPTEMBER 1992
 CONDUCTED BY LAMONTAGNE GEOPHYSICS LTD JOB 9207 BASE FREQ (HZ) 53.65
 LOOP NO 2-92 HOLE BYZ AXIAL COMPONENT SECONDARY FIELD CH1 CONTIN. NORM.

Figure 7

APPENDIX 3

**Down-hole EM Survey, using Crone PEM System, Hole BY2
- Memo, NA Hughes**



**PASMINCO
EXPLORATION**

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

Level 7
380 St Kilda Road
Melbourne, Australia 3004
G.P.O. Box 1291K
Melbourne, Australia 3001

MEMORANDUM

TO: G Purvis
FROM: NA Hughes
DATE: 14 April 1993
FILE: EP/02/3005
SUBJECT: **Bastyan Dam DHEM, BY2**

Drill-hole BY2 was read from two transmitter loops (Figure 1) using the Crone DHEM system. The hole is close to the HEC transmission yard and consequently the data is noisy, especially for the west loop where the signal to noise ratio is much lower than for the east loop. Data for the west loop is collected at 20m intervals to allow for increased stacking time and to act as a short wavelength filter. No obvious in-hole or off-hole conductors were detected from either loop.

The data for the east loop shows an overload condition for the top 140m. This is evidenced by the erratic behaviour of the PP (primary pulse) profile and an increase in the slope of the secondary field values. This type of behaviour occurs when the dynamic range of the signal to be measured is greater than the system is able to accommodate for the chosen sensitivity. Although this should not effect the ability of the system to detect "good" conductors it may obscure poor conductors.

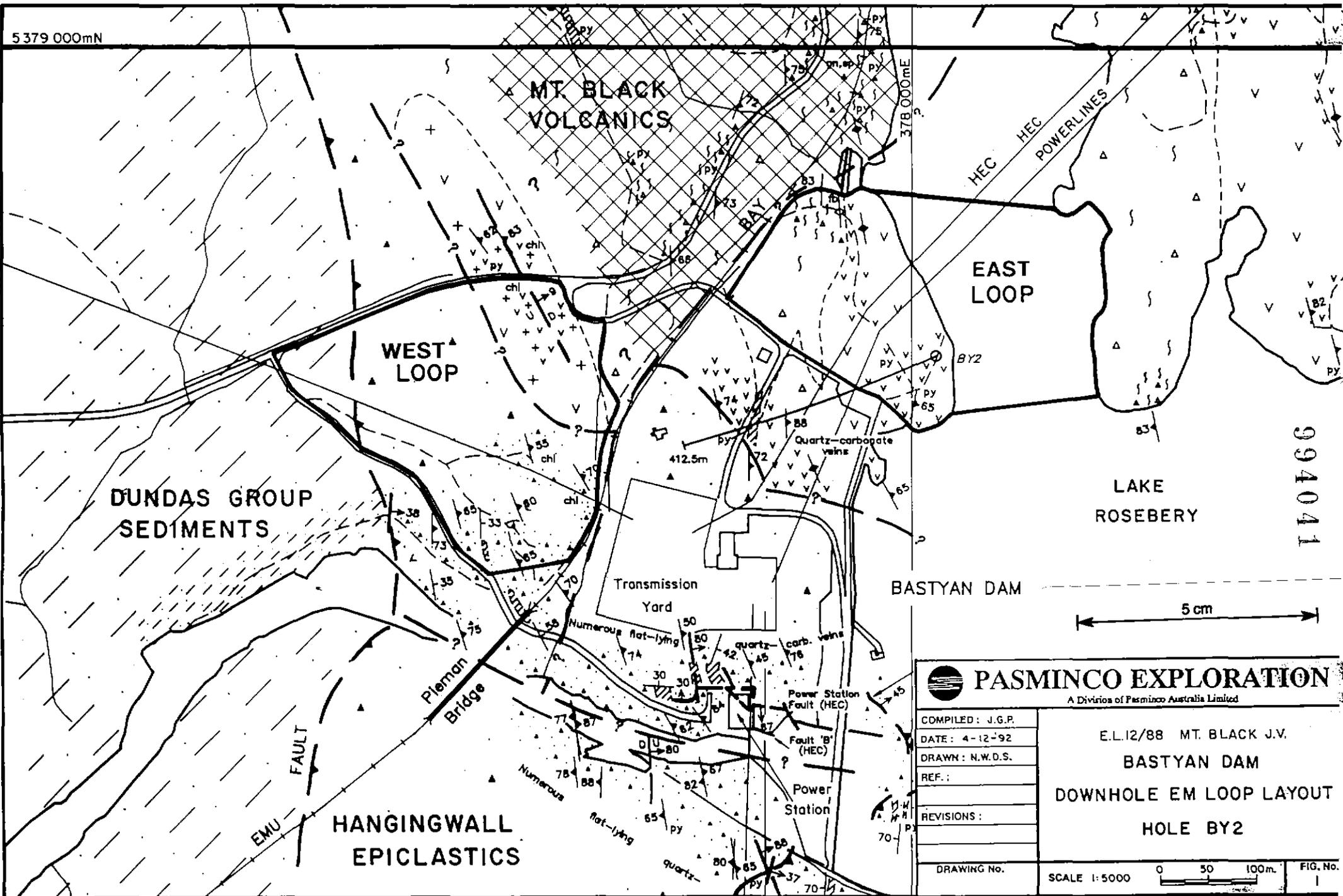
The shallow negative responses recorded from the west loop are difficult to resolve. I have attributed them to surface and transmission line currents from the HEC transmission yard. I do not think they are inductive coupling of the loop to the HEC fences etc. as the sense of the response is reversed.

Another possibility for the shallow negatives from the west loop and increased shallow positives from the east loop is that the top 100-140m of the hole is more conductive. This is raised as a weak alternative to the explanation offered.

Neil

NAH_3.SAM/SR

5 379 000mN



994041

PASMINCO EXPLORATION
 A Division of Pasminco Australia Limited

COMPILED: J.G.P.
DATE: 4-12-92
DRAWN: N.W.D.S.
REF.:
REVISIONS:
DRAWING No.

E.L.12/88 MT. BLACK J.V.
BASTYAN DAM
 DOWNHOLE EM LOOP LAYOUT
 HOLE BY2

SCALE 1:5000	0 50 100m.	FIG. No. 1
--------------	------------	------------

CRONE GEOPHYSICS & EXPLORATION LTD

BOREHOLE PEM

Client : PASMINCO EXPL
 Grid : BASTYAN
 Date : Nov 19, 1992

Hole : BY-2
 Tx Loop : WEST
 File name : BY2ZWEST.AM2

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

Scale: 1:2500

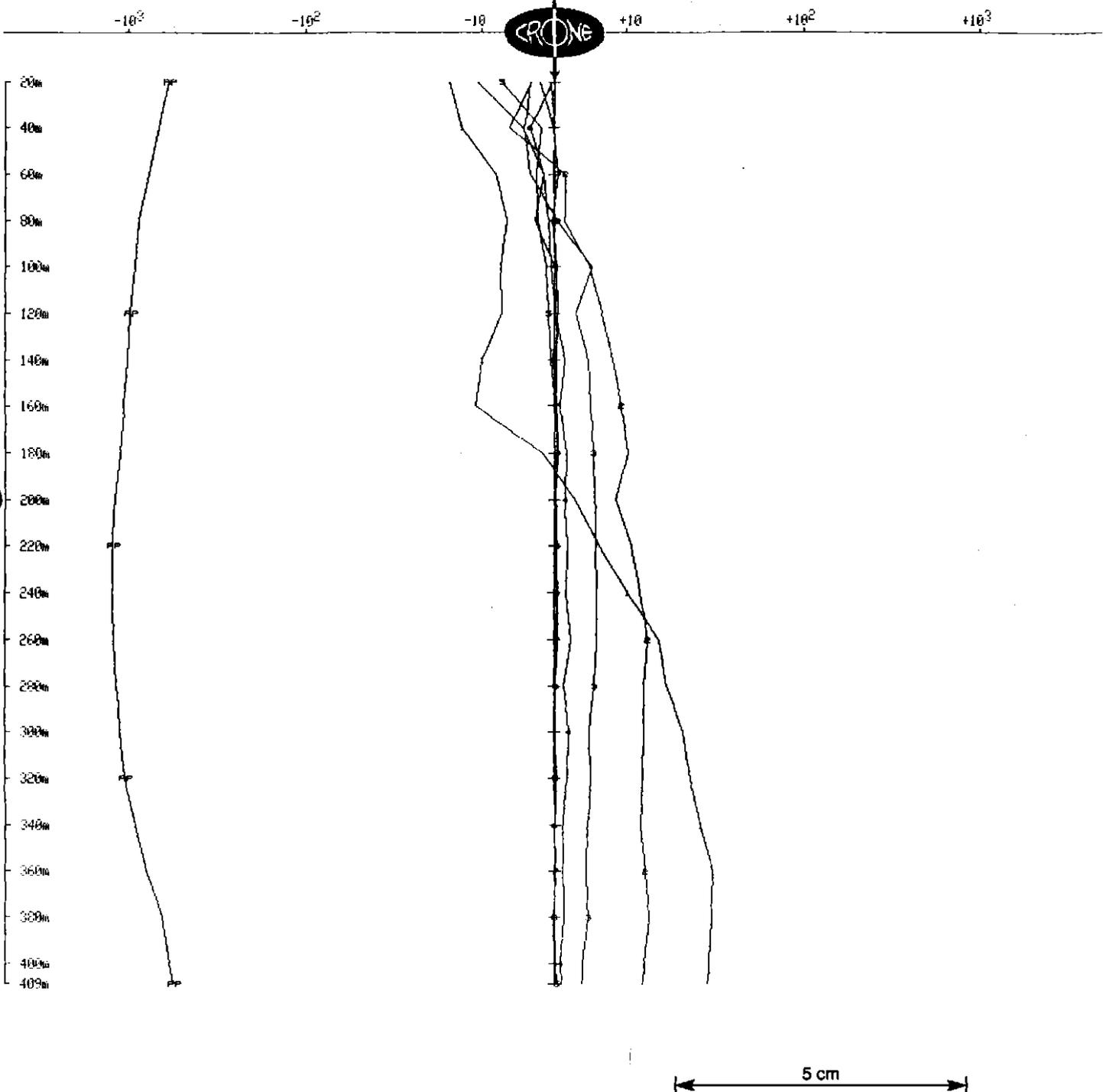


Figure 2

CRONE GEOPHYSICS & EXPLORATION LTD

BOREHOLE PEM

Client : PASMINCO EXPL
Grid : BASTYAN
Date : Nov 19, 1992

Hole : BY-2
Tx Loop : EAST
File name : BY2ZEAST.AM2

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

Scale: 1:2500

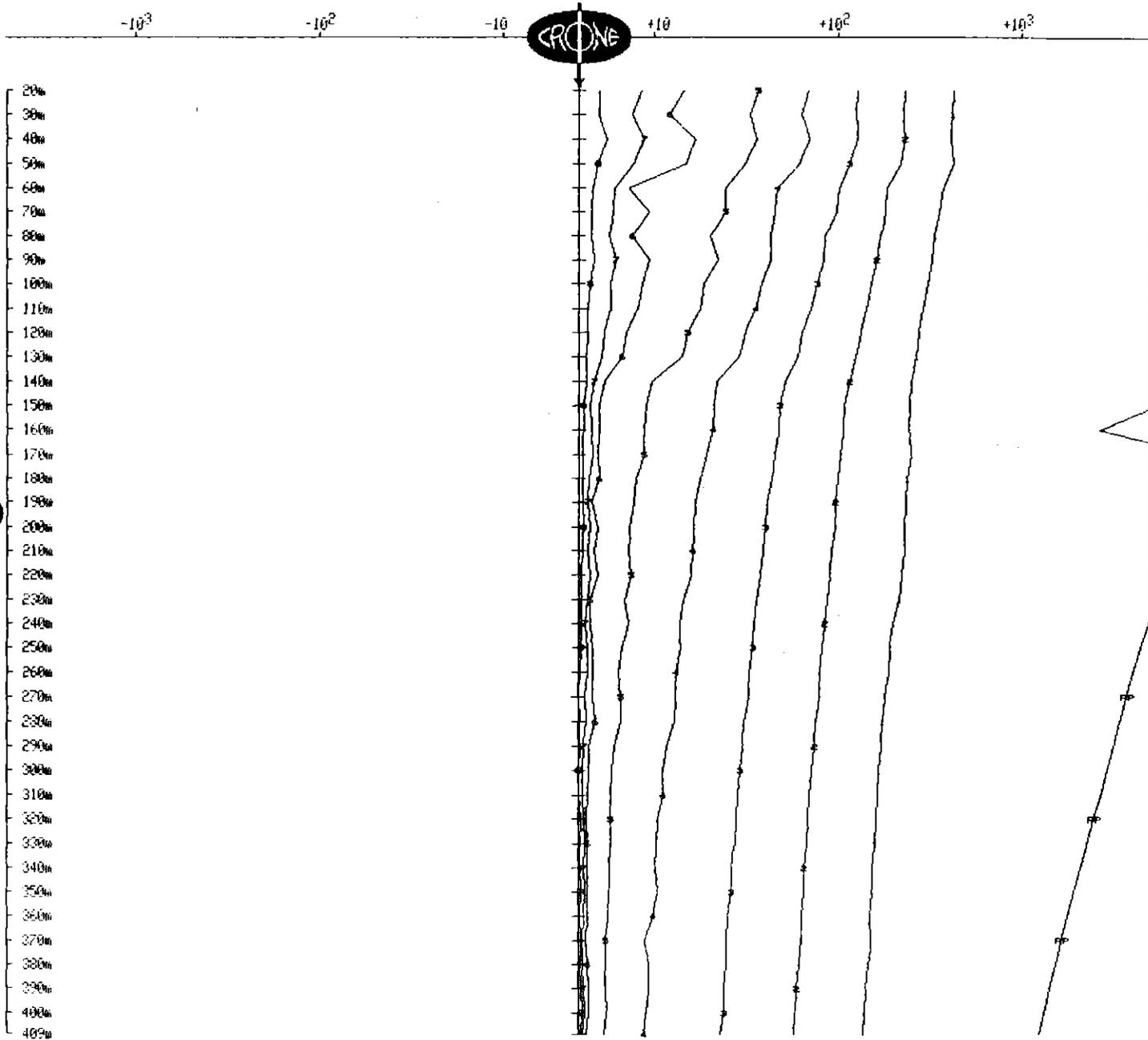


Figure 3

CRONE GEOPHYSICS & EXPLORATION LTD

BOREHOLE PEM

Client : PASMINCO EXPL
 Grid : BASTYAN
 Date : Nov 19, 1992

Hole : BY-2
 Tx Loop : WEST
 File name : BY2ZWEST.AM2

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

Scale: 1:2500

Unit Scale: 1cm = 5

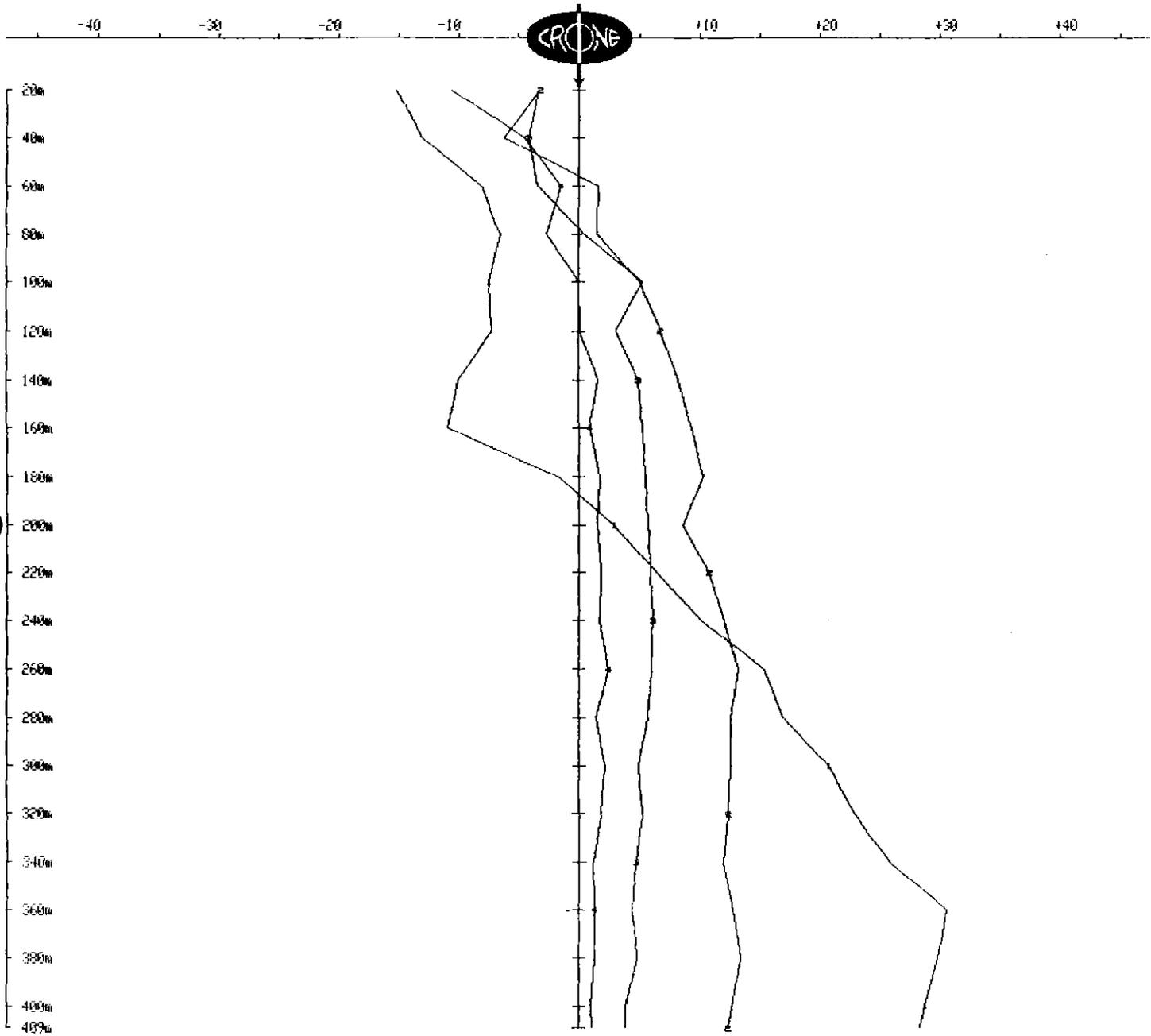


Figure 4

CRONE GEOPHYSICS & EXPLORATION LTD

BOREHOLE PEM

Client : PASMINGO EXPL
 Grid : BASTYAN
 Date : Nov 19, 1992

Hole : BY-2
 Tx Loop : WEST
 File name : BY2ZWEST.AM2

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

Scale: 1:2500

Unit Scale: 1cm = 1

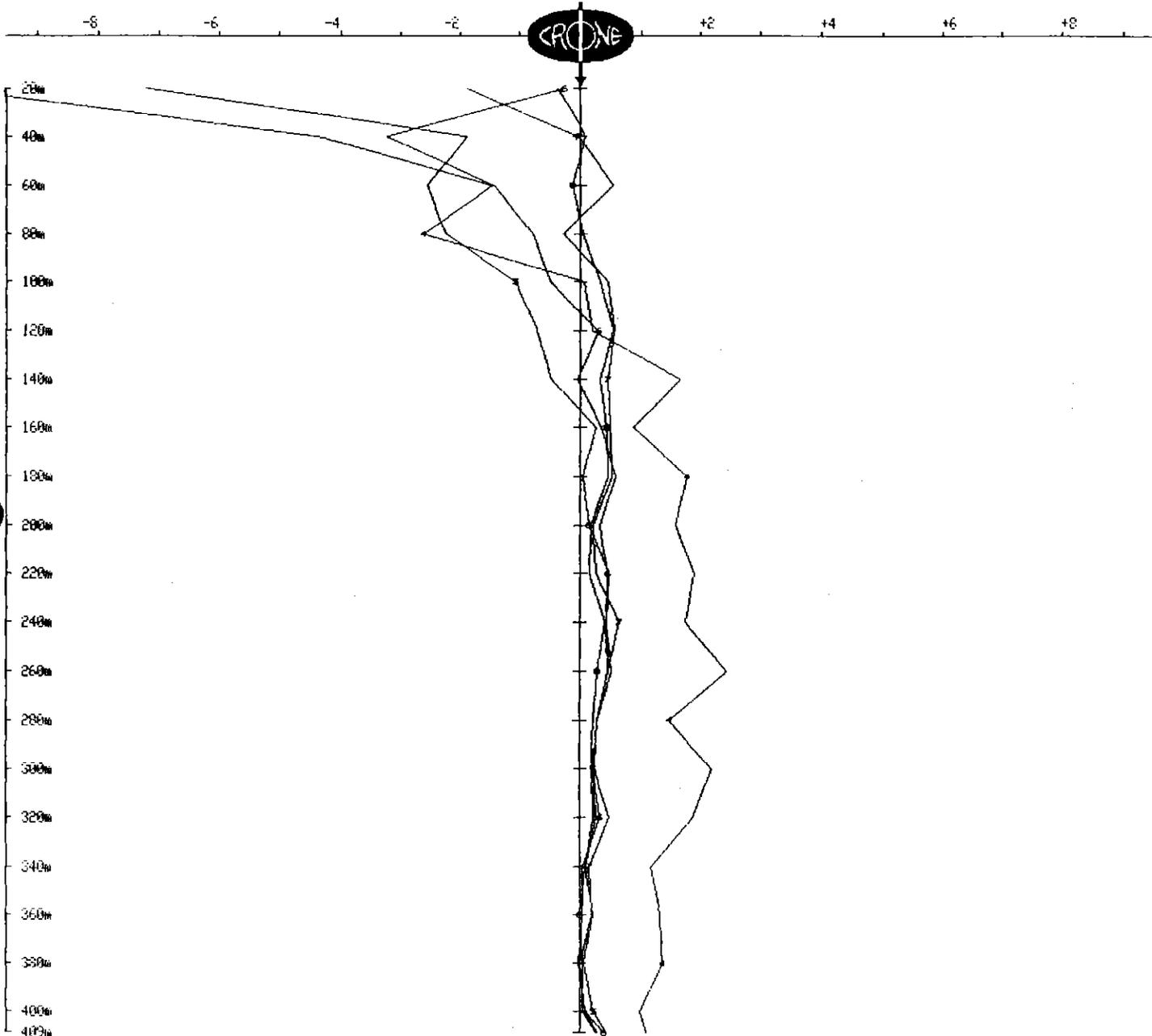


Figure 5

CRONE GEOPHYSICS & EXPLORATION LTD

BOREHOLE PEM

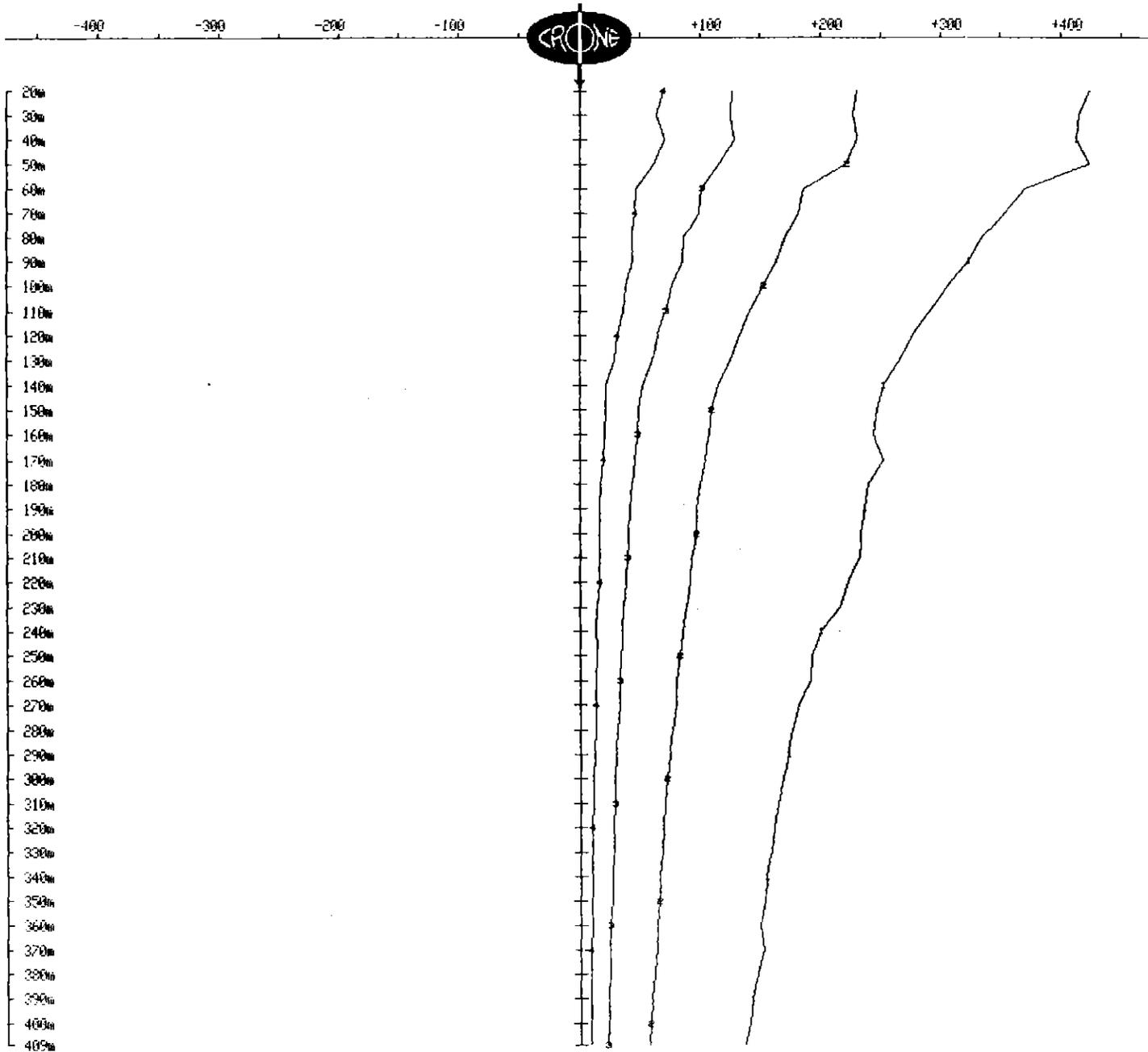
Client : PASMINGO EXPL
 Grid : BASTYAN
 Date : Nov 19, 1992

Hole : BY-2
 Tx Loop : EAST
 File name : BY2ZEAST.AM2

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

Scale: 1:2500

Unit Scale: 1cm = 50



5 cm

Figure 6

CRONE GEOPHYSICS & EXPLORATION LTD

BOREHOLE PEM

Client : PASMINGO EXPL
 Grid : BASTYAN
 Date : Nov 19, 1992

Hole : BY-2
 Tx Loop : EAST
 File name : BY2ZEAST.AM2

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

Scale: 1:2500

Unit Scale: 1cm = 10

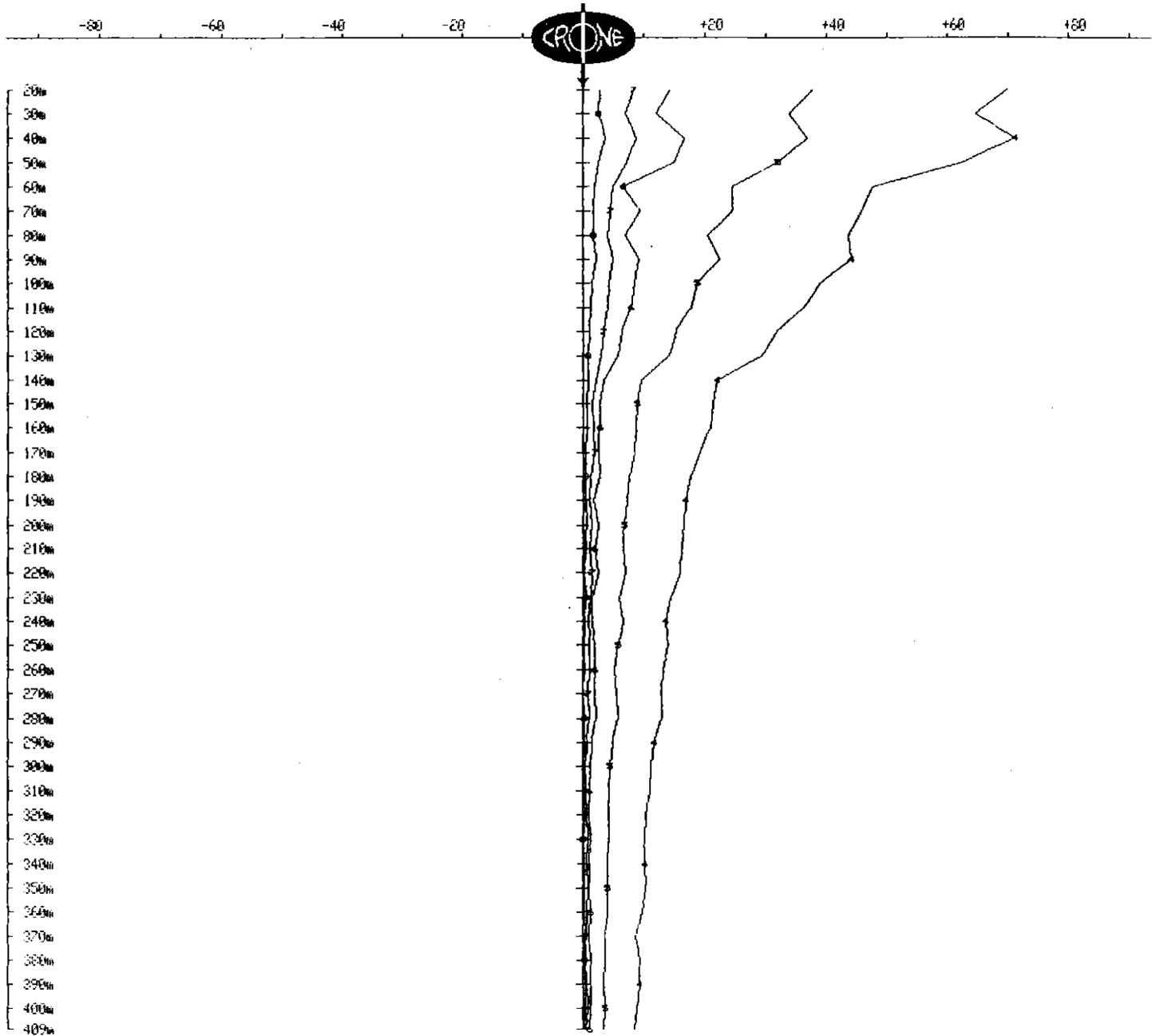


Figure 7

APPENDIX 4

**Dipole-dipole IP Survey, North Bastyan Area
- Memo, NA Hughes**



P A S M I N C O
E X P L O R A T I O N

MEMORANDUM

TO: FG Fitzgerald

FROM: NA Hughes

DATE: 25 July 1993

FILE: EP/02/3005

SUBJECT: Interpretation of Induced Polarization and Resistivity Surveys for Lines 78700N and 78900N

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

Level 7
380 St Kilda Road
Melbourne, Australia 3004
G.P.O. Box 1291K
Melbourne, Australia 3001

Introduction

During February and March 1993 Scintrex Limited of Perth were contracted by Pasma Exploration to undertake Induced Polarization and Resistivity Surveys on its Burns Peak Licence. As part of the survey, lines 78700N and 78900N on the Mt Black JV licence, EL 12/88, were also read (Map 1). The Mt Black JV is between Pasma Exploration and Ausmin. Line 78700N was read along the Pieman Road, starting from the HEC yard.

IP and Resistivity surveys were selected to detect and map alteration zones associated with increased metallic mineralization (pyrite, and hopefully economic poorly conductive massive sulphides) and clay minerals. A previous UTEM survey failed to detect any anomalies worthy of follow up.

A pole-dipole profiling array was used with a dipole separation of 50m, and five (5) potential dipoles read from each current setup. The travel direction for the surveys was to west with the current injection point east of the potential dipole array. The data is presented as stacked pseudosections of the M10 chargeability slice (mV/V, 450ms to 590ms) and apparent resistivity (ohm-m) at a scale of 1:5000, and also as data listings.

The pseudosections, data listings and equipment specifications is attached.

Interpretation

The most prominent feature on both pseudosections is the chargeability high and slight resistivity low associated with the Rosebery Fault. The cause of the anomalism is an increase in clay minerals and pyrite just east of the fault in the Dundas Shales. The broadness of the anomaly is at present thought due to geometric effects.

An increase in chargeabilities of 1.5 to 2 times above background near 7900E on line 78900N and 7850E on line 78700N maps the Chester Pyrite Zone to the south.

page 2

On line 78900N data was collected across Rosebery Lake. Unfortunately there appears to be several spurious chargeability data points. Nevertheless a chargeability anomaly is noted on the west edge of the lake coincident with a resistivity low. Inspection of the area shows that the line went under a high power transmission line emanating from the HEC yard at Bastyan Dam (does not appear to influence the results dramatically) and also, possibly more important, that the line on the west edge of the lake passes over a large diameter metal drainage pipe. Data further to the north, not influenced by the transmission line or a drainage pipe, indicates this is the position of a resistivity low, possibly a shear zone.

Neil

IP AND RESISTIVITY SURVEY SPECIFICATIONS

Pole-dipole Array, 50m dipole separation, 5 potential dipoles read at each current set up, 50m moves per current setup.

Input current waveform : interrupted square wave with a period of 8 seconds

Receiver Gates for 2 second receive time:
Gates 1 to 3 used only with 1 second receive time

<i>Slice</i>	<i>Start(ms)</i>	<i>End (ms)</i>
M4	20	70
M5	70	110
M6	110	150
M7	150	230
M8	230	310
M9	310	450
M10	450	590
M11	590	820
M12	820	1050
M13	1050	1410
M14	1410	1770

**Technical
Description of
TSQ-3/3000W
Time and Frequency Domain
IP and Resistivity Transmitter**



TSQ-3 transmitter with portable motor generator unit

SCINTREX

1031 WELLINGTON ST.
WEST PERTH, W.A. 6005
PHONE: (09) 321 6934
TELEX: 92353
FAX: (09) 481 1201

Geophysical and Geochemical
Instrumentation and Services

Transmitter Console	
Output Power	3000 VA maximum
Output Voltages	300, 400, 500, 600, 750, 900, 1050, 1200, 1350 and 1500 volts, switch selectable
Output Current	10 amperes maximum
Output Current Stability	Automatically controlled to within $\pm 0.1\%$ for up to 50% external load variation or up to $\pm 10\%$ input voltage variation
Digital Display	Light emitting diodes permit display up to 1999 with variable decimal point; switch selectable to read input voltage, output current, external circuit resistance. Dual current range, switch selectable
Absolute Accuracy	$\pm 3\%$ of full range
Current Reading Resolution	10 mA on coarse range (0-10A) 1 mA on fine range (0-2A)
Frequency Domain Waveform	Square wave, continuous with approximately 6% off time at polarity change
Frequency Domain Frequencies	Standard: 0.033, 0.1, 0.3, 1.0 and 3.0 Hz, switch selectable Optional: any number of frequencies in range 0 to 5 Hz.
Time Domain Cycle Timing	t:tt:1, on:off:on:off; automatic
Time Domain Polarity Change	each 2t; automatic
Time Domain Pulse Durations	Standard: t = 1, 2, 4, 8, 16 or 32 seconds Optional: any other timings
Period Time Stability	Crystal controlled to better than .01%. An optional high stability clock provides stabilization to better than 1 ppm over -20/ + 50° C.
Efficiency	.78
Operating Temperature Range	-30° C to + 50° C
Overload Protection	Automatic shut-off at 3300 VA
Underload Protection	Automatic shut-off at current below 100 mA
Thermal Protection	Automatic shut-off at internal temperature of + 85° C
Dimensions	350 mm x 530 mm x 320 mm
Weight	25.0 kg.
Power Source	
Type	Motor flexibly coupled to alternator and installed on a frame with carrying handles.
Motor	Briggs and Stratton, four stroke, 8 H.P.
Alternator	Permanent magnet type, 800 Hz, three phase 230 V AC.
Output Power	3500 VA maximum
Dimensions	520 mm x 715 mm x 560 mm
Weight	72.5 kg.
Total System	
Shipping Weight	150 kg includes transmitter console, motor generator, connecting cables and re-usable wooden crates.

Specifications

Inputs

1 to 8 dipoles are measured simultaneously.

Input Impedance

16 Megohms

SP Bucking

± 10 volt range. Automatic linear correction operating on a cycle by cycle basis.

Input Voltage (Vp) Range

50 μ volt to 14 volt

Chargeability (M) Range

0 to 300millivolt

Tau Range

1 millisecond to 1000 seconds

Reading Resolution of Vp, SP and M

Vp, 10 microvolt; SP, 1 millivolt; M, 0.01 millivolt/volt

Absolute Accuracy of Vp, SP and M

Better than 1%

Common Mode Rejection

At input more than 100db

Vp Integration Time

10% to 80% of the current on time.

IP Transient Program

Total measuring time keyboard selectable at 1, 2, 4, 8, 16 or 32 seconds. Normally 14 windows except that the first four are not measured on the 1 second timing, the first three are not measured on the 2 second timing and the first is not measured on the 4 second timing. (See diagram on page 2.) An additional transient slice of *minimum* 10 ms width, and 10ms steps, with delay of at least 40 ms is keyboard selectable.

Transmitter Timing

Equal on and off times with polarity change each half cycle. On/off times of 1, 2, 4, 8, 16 or 32 seconds. Timing accuracy of ± 100 ppm or better is required.

External Circuit Test

All dipoles are measured individually in sequence, using a 10 Hz square wave. The range is 0 to 2 Mohm with 0.1kohm resolution. Circuit resistances are displayed and recorded.

Synchronization

Self synchronization on the signal received at a keyboard selectable dipole. Limited to avoid mistriggering.

Filtering

RF filter, 10 Hz 6 pole low pass filter, statistical noise spike removal.

Internal Test Generator

1200 mV of SP; 807 mV of Vp and 30.28 mV/V of M.

Analog Meter

For monitoring input signals; switchable to any dipole via keyboard.

Keyboard

17 key keypad with direct one key access to the most frequently used functions.

Display

16 lines by 42 characters, 128 x 256 dots. Backlit Liquid Crystal Display. Displays instrument status and data during and after reading. Alphanumeric and graphic displays.

Display Heater

Available for below -15°C operation.

Memory Capacity

Stores approximately 400 dipoles of information when 8 dipoles are measured simultaneously.

Real Time Clock

Data is recorded with year, month, day, hour, minute and second.

Digital Data Output

Formatted serial data output for printer and PC etc. Data output in 7 or 8 bit ASCII, one start, one stop bit, no parity format. Baud rate is keyboard selectable for standard rates between 300 baud and 51.6 kBaud. Selectable carriage return delay to accommodate slow peripherals. Handshaking is done by X-on/X-off.

Standard Rechargeable Batteries

Eight rechargeable Ni-Cad D cells. Supplied with a charger, suitable for 110/230V, 50 to 60 Hz, 10W. More than 20 hours service at $+25^{\circ}\text{C}$, more than 8 hours at -30°C .

Ancillary Rechargeable Batteries

An additional eight rechargeable Ni-Cad D cells may be installed in the console along with the Standard Rechargeable Batteries. Used to power the Display Heater or as back up power. Supplied with a second charger. More than 6 hours service at -30°C .

Use of Non-Rechargeable Batteries

Can be powered by D size Alkaline batteries, but rechargeable batteries are recommended for longer life and lower cost over time.

Field Wire Terminator

Used to custom make cables for up to eight dipoles, using ordinary field wire.

Operating Temperature Range

-30°C to $+50^{\circ}\text{C}$

Storage Temperature Range

-30°C to $+50^{\circ}\text{C}$

Dimensions

Console: 355 x 270 x 165 mm
Charger: 120 x 95 x 55mm

Weights

Console: 5.8 kg
Standard or Ancillary Rechargeable Batteries: 1.3 kg
Charger: 1.1 kg



1031 WELLINGTON ST.
WEST PERTH, W.A. 6005
PHONE: (09) 321 6934

FAX: (09) 481 1201

1031 WELLINGTON ST.
WEST PERTH, W.A. 6005
PHONE: (09) 321 6934

FAX: (09) 481 1201

CI	C2	PI	P2	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	M13	M14	MDX	RHO	M	TAU	RES	KFACT
7950.	*	7900.	7850.	-9999.00	-9999.00	-9999.00	18.09	16.12	14.42	12.68	11.10	9.54	8.18	6.96	5.84	4.85	4.02	8.17	1278.00	97.60	16.00	1277.96	628.3
7950.	*	7850.	7800.	-9999.00	-9999.00	-9999.00	35.54	32.00	28.48	25.13	22.37	19.24	16.47	14.08	11.74	9.81	8.11	16.47	2034.00	192.40	32.00	2034.93	1885.0
7950.	*	7800.	7750.	-9999.00	-9999.00	-9999.00	30.27	27.27	25.21	22.31	19.07	16.59	14.26	11.91	10.13	8.29	6.81	14.27	1650.00	160.30	16.00	1651.22	3769.9
7950.	*	7750.	7700.	-9999.00	-9999.00	-9999.00	27.90	25.14	22.84	20.25	17.50	15.08	12.86	10.86	9.11	7.47	6.15	12.86	2241.00	147.20	16.00	2243.23	6283.2
7950.	*	7700.	7650.	-9999.00	-9999.00	-9999.00	26.90	24.10	21.69	19.13	16.57	14.23	12.14	10.27	8.56	6.98	5.76	12.13	2781.00	134.70	8.00	2784.83	9424.8
7900.	*	7850.	7800.	-9999.00	-9999.00	-9999.00	33.27	29.80	26.79	23.95	21.11	18.53	16.08	13.80	11.72	9.87	8.24	16.08	1095.00	228.70	56.00	1095.15	628.3
7900.	*	7800.	7750.	-9999.00	-9999.00	-9999.00	28.11	25.38	22.92	19.91	17.47	14.94	12.74	10.76	8.96	7.46	6.15	12.73	1298.00	141.10	8.00	1298.17	1885.0
7900.	*	7750.	7700.	-9999.00	-9999.00	-9999.00	26.16	23.51	21.22	18.55	16.16	13.85	11.77	9.90	8.28	6.91	5.69	11.77	2033.00	131.50	8.00	2034.50	3769.9
7900.	*	7700.	7650.	-9999.00	-9999.00	-9999.00	28.78	25.64	22.96	20.06	17.46	15.00	12.79	10.78	9.05	7.57	6.26	12.79	1926.00	142.30	8.00	1927.52	6283.2
7900.	*	7650.	7600.	-9999.00	-9999.00	-9999.00	21.85	19.40	17.50	15.13	13.02	11.06	9.22	7.58	6.15	5.03	3.99	9.22	3761.00	102.80	0.50	3765.45	9424.8
7850.	*	7800.	7750.	-9999.00	-9999.00	-9999.00	26.89	23.85	21.30	18.59	16.13	13.86	11.80	9.98	8.33	6.92	5.72	11.80	872.00	132.30	8.00	872.17	628.3
7850.	*	7750.	7700.	-9999.00	-9999.00	-9999.00	24.72	21.97	19.58	17.16	14.93	12.82	10.94	9.26	7.76	6.46	5.34	10.94	1855.00	123.30	8.00	1855.75	1885.0
7850.	*	7700.	7650.	-9999.00	-9999.00	-9999.00	25.79	22.97	20.47	17.95	15.61	13.42	11.47	9.71	8.15	6.79	5.63	11.47	1985.00	133.80	16.00	1985.77	3769.9
7850.	*	7650.	7600.	-9999.00	-9999.00	-9999.00	21.99	19.61	17.37	15.23	13.11	11.17	9.43	7.86	6.47	5.28	4.27	9.43	2430.00	103.00	2.00	2431.59	6283.2
7850.	*	7600.	7550.	-9999.00	-9999.00	-9999.00	24.63	21.86	19.27	16.83	14.41	12.24	10.28	8.52	6.97	5.65	4.54	10.28	3063.00	114.40	0.50	3067.31	9424.8
7800.	*	7750.	7700.	-9999.00	-9999.00	-9999.00	26.52	23.66	21.19	18.69	16.31	14.13	12.14	10.34	8.74	7.34	6.14	12.15	970.00	147.80	32.00	970.16	628.3
7800.	*	7700.	7650.	-9999.00	-9999.00	-9999.00	27.28	24.10	21.40	18.79	16.34	14.11	12.08	10.25	8.66	7.26	6.04	12.08	1376.00	140.60	16.00	1376.42	1885.0
7800.	*	7650.	7600.	-9999.00	-9999.00	-9999.00	24.43	22.02	19.80	17.45	15.15	13.05	11.10	9.33	7.82	6.48	5.32	11.10	1866.00	124.10	8.00	1866.83	3769.9
7800.	*	7600.	7550.	-9999.00	-9999.00	-9999.00	27.94	24.86	22.13	19.33	16.65	14.26	12.05	10.07	8.39	6.90	5.62	12.05	2531.00	130.10	2.00	2533.22	6283.2
7800.	*	7550.	7500.	-9999.00	-9999.00	-9999.00	28.27	25.22	22.55	19.78	17.07	14.63	12.34	10.29	8.55	7.00	5.66	12.34	2036.00	132.40	2.00	2038.43	9424.8
7750.	*	7700.	7650.	-9999.00	-9999.00	-9999.00	16.61	14.52	12.74	11.05	9.52	8.12	6.87	5.77	4.81	3.98	3.28	6.88	1234.00	77.30	2.00	1234.07	628.3
7750.	*	7650.	7600.	-9999.00	-9999.00	-9999.00	19.79	17.41	15.35	13.42	11.55	9.85	8.33	6.99	5.79	4.78	3.89	8.34	1928.00	92.30	2.00	1928.15	1885.0
7750.	*	7600.	7550.	-9999.00	-9999.00	-9999.00	22.85	20.17	17.79	15.55	13.33	11.36	9.56	8.01	6.60	5.43	4.42	9.57	2675.00	105.40	2.00	2676.09	3769.9
7750.	*	7550.	7500.	-9999.00	-9999.00	-9999.00	24.42	21.68	19.23	16.94	14.55	12.46	10.49	8.80	7.24	5.94	4.81	10.50	2135.00	114.10	2.00	2136.51	6283.2
7750.	*	7500.	7450.	-9999.00	-9999.00	-9999.00	25.75	22.63	19.98	17.49	14.97	12.76	10.69	8.93	7.26	5.97	4.81	10.70	2662.00	117.00	1.00	2665.85	9424.8
7700.	*	7650.	7600.	-9999.00	-9999.00	-9999.00	18.43	16.19	14.28	12.42	10.70	9.14	7.74	6.50	5.43	4.49	3.71	7.74	1382.00	87.60	4.00	1381.97	628.3
7700.	*	7600.	7550.	-9999.00	-9999.00	-9999.00	20.22	17.71	15.54	13.44	11.51	9.74	8.19	6.81	5.66	4.62	3.78	8.19	2227.00	91.80	1.00	2227.27	1885.0
7700.	*	7550.	7500.	-9999.00	-9999.00	-9999.00	21.34	19.02	16.85	14.71	12.69	10.79	9.10	7.60	6.31	5.14	4.22	9.10	1877.00	100.20	2.00	1877.71	3769.9
7700.	*	7500.	7450.	-9999.00	-9999.00	-9999.00	23.09	20.49	18.08	15.68	13.48	11.41	9.56	7.94	6.57	5.31	4.35	9.55	2482.00	105.80	1.00	2484.34	6283.2
7700.	*	7450.	7400.	-9999.00	-9999.00	-9999.00	31.82	29.00	26.39	20.52	16.81	13.22	10.82	8.84	5.54	4.41	3.22	10.82	1882.00	277.50	0.00	1884.46	9424.8
7650.	*	7600.	7550.	-9999.00	-9999.00	-9999.00	18.62	16.17	14.11	12.12	10.34	8.73	7.34	6.11	5.05	4.13	3.37	7.34	1500.00	84.50	0.50	1499.83	628.3
7650.	*	7550.	7500.	-9999.00	-9999.00	-9999.00	20.14	17.67	15.57	13.48	11.57	9.83	8.30	6.94	5.76	4.72	3.86	8.31	1528.00	92.60	1.00	1528.81	1885.0
7650.	*	7500.	7450.	-9999.00	-9999.00	-9999.00	20.76	18.40	16.30	14.13	12.14	10.30	8.70	7.25	6.00	4.90	3.98	8.70	2286.00	96.40	1.00	2287.48	3769.9
7650.	*	7450.	7400.	-9999.00	-9999.00	-9999.00	26.51	23.32	20.52	17.70	15.12	12.81	10.77	8.95	7.37	6.01	4.86	10.77	2093.00	120.80	0.50	2095.01	6283.2
7650.	*	7400.	7350.	-9999.00	-9999.00	-9999.00	57.85	51.22	45.28	39.25	33.71	28.66	24.21	20.20	16.72	13.68	11.13	24.21	1350.00	247.50	1.00	1351.49	9424.8
7600.	*	7550.	7500.	-9999.00	-9999.00	-9999.00	16.95	14.83	13.07	11.28	9.66	8.19	6.89	5.75	4.76	3.89	3.15	6.90	1228.00	77.60	1.00	1228.43	628.3
7600.	*	7500.	7450.	-9999.00	-9999.00	-9999.00	20.05	17.42	15.23	13.10	11.17	9.44	7.92	6.58	5.41	4.39	3.56	7.92	2119.00	90.50	0.50	2119.16	1885.0
7600.	*	7450.	7400.	-9999.00	-9999.00	-9999.00	22.64	20.03	17.71	15.32	13.10	11.11	9.33	7.76	6.37	5.17	4.18	9.33	2045.00	105.00	0.50	2046.12	3769.9
7600.	*	7400.	7350.	-9999.00	-9999.00	-9999.00	54.76	48.49	42.87	37.16	31.89	27.12	22.85	19.07	15.72	12.84	10.41	22.85	1352.00	235.20	1.00	1353.29	6283.2
7600.	*	7350.	7300.	-9999.00	-9999.00	-9999.00	69.41	61.41	54.32	47.16	40.51	34.50	29.08	24.29	20.07	16.43	13.34	29.10	1029.00	290.20	1.00	1030.29	9424.8
7550.	*	7500.	7450.	-9999.00	-9999.00	-9999.00	17.68	15.28	13.32	11.44	9.75	8.20	6.87	5.70	4.70	3.84	3.11	6.87	2233.00	82.00	0.25	2233.20	628.3
7550.	*	7450.	7400.	-9999.00	-9999.00	-9999.00	19.03	16.51	14.41	12.38	10.54	8.89	7.44	6.16	5.07	4.14	3.37	7.45	2438.00	88.40	0.25	2438.89	1885.0
7550.	*	7400.	7350.	-9999.00	-9999.00	-9999.00	47.99	42.58	37.67	32.71	28.12	23.90	20.15	16.79	13.92	11.40	9.31	20.16	1652.00	208.80	2.00	1652.87	3769.9
7550.	*	7350.	7300.	-9999.00	-9999.00	-9999.00	67.06	59.45	52.60	45.74	39.37	33.49	28.29	23.63	19.59	16.11	13.17	28.31	1224.00	280.50	2.00	1225.34	6283.2
7550.	*	7300.	7250.	-9999.00	-9999.00	-9999.00	60.88	53.68	47.34	41.04	35.16	29.86	25.15	20.92	17.29	14.19	11.56	25.15	2027.00	256.60	1.00	2030.27	9424.8
7500.	*	7450.	7400.	-9999.00	-9999.00	-9999.00	16.02	13.72	11.87	10.11	8.58	7.21	6.02	4.99	4.12	3.36	2.72	6.03	1890.00	72.70	0.25	1890.13	628.3
7500.	*	7400.	7350.	-9999.00	-9999.00	-9999.00	42.30	37.41	33.03	28.66	24.65	20.94	17.66	14.74	12.21	10.02	8.18	17.67	1482.00	187.00	1.00	1482.45	1885.0
7500.	*	7350.	7300.	-9999.00	-9999.00	-9999.00	63.56	56.59	50.16	43.68	37.65	32.09	27.12	22.75	18.83	15.53	12.71	27.12	1124.00	270.30	2.00	1124.55	3769.9
7500.	*	7300.	7250.	-9999.00	-9999.00	-9999.00	59.19	52.39	46.26	40.07	34.40	29.24	24.60	20.55	16.98	13.94	11.42	24.60	1833.00	251.90	1.00	1834.23	6283.2
7500.	*	7250.	7200.	-9999.00	-9999.00	-9999.00	87.29	77.08	67.91	58.95	50.68	43.16	36.48	30.58	25.34	20.90	17.17	36.50	1626.00	347.60	2.00	1628.22	

LINE 8900

C1	C2	P1	P2	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	M13	M14	MCX	RHO	M	TAU	RERS	KFACT
8650	*	8600	8350	-9999.00	-9999.00	-9999.00	29.68	25.93	22.65	19.47	16.58	13.98	11.70	9.70	8.00	6.54	5.32	11.71	2056.00	131.70	0.50	2056.18	628.3
8650	*	8550	8500	-9999.00	-9999.00	-9999.00	25.98	22.74	19.93	17.20	14.70	12.43	10.45	8.70	7.19	5.90	4.81	10.45	1399.00	115.80	1.00	1399.63	1885.0
8650	*	8500	8450	-9999.00	-9999.00	-9999.00	18.22	15.97	14.04	12.16	10.43	8.85	7.46	6.23	5.17	4.26	3.48	7.46	1980.00	83.80	1.00	1981.11	3769.9
8650	*	8450	8400	-9999.00	-9999.00	-9999.00	18.27	15.84	13.81	11.88	10.13	8.57	7.20	6.01	4.96	4.10	3.33	7.20	1904.00	83.00	0.50	1905.03	6283.2
8600	*	8550	8500	-9999.00	-9999.00	-9999.00	23.20	20.28	17.78	15.31	13.08	11.04	9.27	7.69	6.35	5.20	4.21	9.27	1214.00	105.20	0.50	1214.50	628.3
8600	*	8500	8450	-9999.00	-9999.00	-9999.00	18.27	15.94	13.96	12.01	10.30	8.69	7.29	6.07	5.01	4.10	3.33	7.30	1765.00	83.70	0.50	1765.49	1885.0
8600	*	8450	8400	-9999.00	-9999.00	-9999.00	17.83	15.53	13.57	11.66	9.93	8.37	7.01	5.81	4.78	3.91	3.18	7.00	1807.00	80.80	0.50	1807.48	3769.9
8600	*	8400	8350	-9999.00	-9999.00	-9999.00	21.18	18.47	16.16	13.91	11.88	10.04	8.40	6.98	5.79	4.70	3.81	8.39	2211.00	96.00	0.50	2212.69	6283.2
8350	*	8500	8450	-9999.00	-9999.00	-9999.00	14.33	12.52	11.02	9.52	8.16	6.92	5.83	4.86	4.03	3.30	2.70	5.83	1487.00	66.10	1.00	1486.79	628.3
8350	*	8450	8400	-9999.00	-9999.00	-9999.00	14.56	12.61	10.99	9.44	8.05	6.80	5.71	4.74	3.91	3.20	2.60	5.70	1694.00	66.20	0.50	1694.19	1885.0
8350	*	8400	8350	-9999.00	-9999.00	-9999.00	17.85	15.59	13.66	11.78	10.06	8.51	7.15	5.96	4.91	4.03	3.28	7.14	2174.00	82.10	0.50	2174.98	3769.9
8350	*	8350	8300	-9999.00	-9999.00	-9999.00	24.71	21.49	18.74	16.09	13.71	11.58	9.72	8.09	6.66	5.46	4.45	9.71	2279.00	110.50	0.50	2280.80	6283.2
8500	*	8450	8400	-9999.00	-9999.00	-9999.00	12.51	10.88	9.52	8.22	6.99	5.91	4.97	4.14	3.41	2.80	2.27	4.97	1433.00	57.80	0.50	1433.41	628.3
8500	*	8400	8350	-9999.00	-9999.00	-9999.00	15.53	13.49	11.82	10.15	8.66	7.36	6.17	5.16	4.26	3.45	2.83	6.16	1937.00	71.30	0.50	1937.07	1885.0
8500	*	8350	8300	-9999.00	-9999.00	-9999.00	22.83	19.89	17.36	14.90	12.71	10.78	9.03	7.50	6.19	5.05	4.13	9.04	2051.00	102.90	0.50	2051.92	3769.9
8500	*	8300	8250	-9999.00	-9999.00	-9999.00	26.34	22.93	20.03	17.22	14.70	12.41	10.37	8.63	7.17	5.87	4.78	10.37	1422.00	117.90	0.50	1423.37	6283.2
8450	*	8400	8350	-9999.00	-9999.00	-9999.00	14.06	12.28	10.81	9.36	8.01	6.79	5.72	4.77	3.94	3.24	2.64	5.72	1570.00	64.90	1.00	1570.56	628.3
8450	*	8350	8300	-9999.00	-9999.00	-9999.00	20.83	18.13	15.88	13.69	11.69	9.88	8.30	6.88	5.70	4.66	3.80	8.29	1804.00	94.70	0.50	1804.11	1885.0
8450	*	8300	8250	-9999.00	-9999.00	-9999.00	24.37	21.26	18.61	16.01	13.68	11.53	9.70	8.05	6.63	5.44	4.41	9.70	1320.00	109.90	0.50	1320.43	3769.9
8450	*	8250	8200	-9999.00	-9999.00	-9999.00	32.59	28.24	24.57	21.11	17.98	15.20	12.73	10.59	8.73	7.15	5.83	12.73	1441.00	142.80	0.50	1442.37	6283.2
8400	*	8350	8300	-9999.00	-9999.00	-9999.00	16.46	14.31	12.50	10.73	9.14	7.71	6.45	5.35	4.40	3.60	2.92	6.45	1483.00	74.60	0.50	1483.55	628.3
8400	*	8300	8250	-9999.00	-9999.00	-9999.00	21.17	18.40	16.06	13.79	11.74	9.90	8.30	6.88	5.67	4.64	3.78	8.29	1194.00	95.10	0.50	1194.56	1885.0
8400	*	8250	8200	-9999.00	-9999.00	-9999.00	29.62	25.82	22.53	19.35	16.48	13.91	11.65	9.66	7.96	6.50	5.30	11.65	1336.00	131.20	0.50	1336.14	3769.9
8400	*	8200	8150	-9999.00	-9999.00	-9999.00	46.22	40.43	35.34	30.25	25.93	21.90	18.38	15.27	12.63	10.33	8.43	18.37	2039.00	200.00	0.50	2040.68	6283.2
8350	*	8300	8250	-9999.00	-9999.00	-9999.00	17.23	14.97	13.08	11.24	9.58	8.08	6.76	5.60	4.61	3.77	3.07	6.76	1127.00	78.00	0.50	1127.35	628.3
8350	*	8250	8200	-9999.00	-9999.00	-9999.00	25.56	22.21	19.37	16.63	14.16	11.94	10.00	8.30	6.85	5.60	4.56	10.00	1154.00	113.70	0.50	1154.76	1885.0
8350	*	8200	8150	-9999.00	-9999.00	-9999.00	42.82	37.49	32.82	28.28	24.12	20.38	17.10	14.21	11.74	9.64	7.86	17.11	1717.00	187.20	0.50	1717.64	3769.9
8350	*	8150	8100	-9999.00	-9999.00	-9999.00	38.80	33.78	29.41	25.28	21.49	18.14	15.17	12.60	10.37	8.45	6.89	15.18	1754.00	168.10	0.50	1754.95	6283.2
8300	*	8250	8200	-9999.00	-9999.00	-9999.00	12.05	9.95	8.24	6.68	5.29	4.14	3.19	2.44	1.84	1.39	1.04	3.19	1304.00	147.60	0.00	1304.38	628.3
8300	*	8200	8150	-9999.00	-9999.00	-9999.00	73.04	65.18	58.10	51.00	44.42	38.29	32.71	27.65	23.21	19.30	15.91	32.73	1484.00	327.00	16.00	1483.97	1885.0
8300	*	8150	8100	-9999.00	-9999.00	-9999.00	38.43	33.64	29.48	25.40	21.71	18.41	15.50	13.03	10.79	8.85	7.18	15.49	1324.00	167.50	1.00	1324.21	3769.9
8300	*	8100	8050	-9999.00	-9999.00	-9999.00	36.95	31.95	27.75	23.84	20.41	17.37	14.71	12.43	10.42	8.69	7.12	14.72	954.00	159.90	2.00	954.44	6283.2
8250	*	8200	8150	-9999.00	-9999.00	-9999.00	45.09	39.59	34.69	29.87	25.47	21.49	18.01	14.94	12.30	10.05	8.18	18.02	1431.00	196.00	0.50	1431.50	628.3
8250	*	8150	8100	-9999.00	-9999.00	-9999.00	42.29	37.04	32.48	27.93	23.76	20.14	16.82	14.03	11.53	9.40	7.58	16.80	953.00	184.30	0.50	953.60	1885.0
8250	*	8100	8050	-9999.00	-9999.00	-9999.00	35.11	30.72	26.83	23.12	19.82	16.61	14.09	11.63	9.79	8.19	6.91	14.07	893.00	154.30	1.00	893.63	3769.9
8250	*	8050	8000	-9999.00	-9999.00	-9999.00	25.54	21.01	17.26	13.86	10.93	8.54	6.60	5.03	3.79	2.80	2.09	6.60	795.00	301.60	0.00	795.37	6283.2
8200	*	8150	8100	-9999.00	-9999.00	-9999.00	41.88	36.69	32.12	27.63	23.53	19.82	16.59	13.73	11.27	9.20	7.45	16.59	686.00	181.80	0.50	686.43	628.3
8200	*	8100	8050	-9999.00	-9999.00	-9999.00	40.80	35.64	31.16	26.79	22.80	19.01	15.71	13.15	10.66	8.68	6.68	15.68	463.00	190.00	0.13	463.02	1885.0
8200	*	8050	8000	-9999.00	-9999.00	-9999.00	33.45	29.06	25.24	21.60	18.40	15.67	13.26	10.99	9.07	7.39	6.20	13.25	1104.00	147.40	0.50	1104.95	3769.9
8200	*	8000	7950	-9999.00	-9999.00	-9999.00	69.74	60.91	53.20	45.91	39.36	33.33	28.12	23.48	19.39	16.01	13.03	28.11	1530.00	284.20	1.00	1531.35	6283.2
8150	*	8100	8050	-9999.00	-9999.00	-9999.00	28.12	24.68	21.67	18.67	15.96	13.48	11.30	9.40	7.76	6.35	5.17	11.30	469.00	127.10	0.50	469.22	628.3
8150	*	8050	8000	-9999.00	-9999.00	-9999.00	26.72	22.81	19.42	16.23	13.51	11.26	9.39	7.45	6.07	4.83	3.69	9.39	1014.00	160.20	0.01	1013.76	1885.0
8150	*	8000	7950	-9999.00	-9999.00	-9999.00	33.72	29.58	26.03	22.49	19.32	16.28	13.68	11.59	9.63	8.06	6.78	13.68	2152.00	150.20	2.00	2153.17	3769.9
8150	*	7950	7900	-9999.00	-9999.00	-9999.00	57.90	50.82	44.72	38.86	33.59	28.89	24.75	21.02	17.71	14.74	12.12	24.75	2789.00	255.90	8.00	2790.84	6283.2
8100	*	8050	8000	-9999.00	-9999.00	-9999.00	14.15	12.15	10.51	8.94	7.52	6.27	5.19	4.25	3.44	2.77	2.25	5.19	722.00	70.00	0.06	721.95	628.3
8100	*	8000	7950	-9999.00	-9999.00	-9999.00	23.76	20.60	17.87	15.29	12.98	10.90	9.11	7.56	6.21	5.07	4.13	9.11	1818.00	108.00	0.25	1818.06	1885.0
8100	*	7950	7900	-9999.00	-9999.00	-9999.00	29.44	25.75	22.52	19.40	16.60	14.04	11.81	9.87	8.18	6.75	5.51	11.82	2817.00	130.40	1.00	2818.49	3769.9
8100	*	7900	7850	-9999.00	-9999.00	-9999.00	32.63	28.50	24.99	21.68	18.66	15.93	13.47	11.29	9.38	7.77	6.33	13.49	1592.00	143.50	2.00	1593.04	6283.2
8050	*	8000	7950	-9999.00	-9999.00	-9999.00	16.74	14.50	12.63	10.81	9.18	7.70	6.45	5.35	4.41	3.60	2.93	6.45	1029.00	77.40	0.25	1029.01	628.3
8050	*	7950	7900	-9999.00	-9999.00	-9999.00	24.98	21.80	19.07	16.41	14.04	11.88	10.00	8.35	6.91	5.72	4.69	10.00	1950.00	111.50	1.00	1950.54	1885.0
8050	*	7900	7850	-9999.00	-9999.00	-9999.00																	

7400.	* 7400.	7400.	-9999.00	-9999.00	-9999.00	18.89	16.05	13.90	11.96	10.25	8.69	7.35	6.12	5.06	4.14	3.35	2.65	2.05	1.55	1.05	0.50	1254.01	3769.9
7600.	* 7400.	7350.	-9999.00	-9999.00	-9999.00	53.49	47.35	41.82	36.33	31.26	26.56	22.42	18.71	15.51	12.73	10.35	22.43	1135.00	229.50	2.00	1136.43	6283.2	
7600.	* 7350.	7300.	-9999.00	-9999.00	-9999.00	65.41	57.63	50.81	44.15	38.01	32.32	27.33	22.83	18.93	15.49	12.62	27.32	993.00	272.30	2.00	994.26	9424.8	
7530.	* 7500.	7450.	-9999.00	-9999.00	-9999.00	17.17	15.04	13.24	11.49	9.89	8.42	7.13	5.97	4.98	4.11	3.37	7.13	2519.00	79.90	2.00	2518.80	628.3	
7350.	* 7450.	7400.	-9999.00	-9999.00	-9999.00	18.21	15.45	13.32	11.35	9.64	8.12	6.80	5.64	4.63	3.79	3.07	6.79	1206.00	81.60	0.25	1206.57	1885.0	
7550.	* 7400.	7350.	-9999.00	-9999.00	-9999.00	49.83	43.97	38.73	33.56	28.81	24.45	20.58	17.15	14.17	11.62	9.43	20.58	1111.00	214.90	1.00	1112.07	3769.9	
7550.	* 7350.	7300.	-9999.00	-9999.00	-9999.00	62.99	55.80	49.32	42.86	36.90	31.40	26.52	22.16	18.35	15.10	12.33	26.52	995.00	265.40	2.00	996.30	6283.2	
7550.	* 7300.	7250.	-9999.00	-9999.00	-9999.00	83.56	74.14	65.63	57.12	49.25	41.97	35.52	29.74	24.64	20.32	16.58	35.50	2308.00	338.60	2.00	2311.67	9424.8	
7500.	* 7450.	7400.	-9999.00	-9999.00	-9999.00	25.23	21.79	18.89	16.15	13.69	11.54	9.65	8.02	6.63	5.43	4.43	9.65	1115.00	114.30	0.25	1114.81	628.3	
7500.	* 7400.	7350.	-9999.00	-9999.00	-9999.00	49.66	43.75	38.47	33.29	28.51	24.16	20.33	16.92	14.00	11.48	9.35	20.33	1029.00	213.10	1.00	1028.91	1885.0	
7500.	* 7350.	7300.	-9999.00	-9999.00	-9999.00	66.41	58.81	51.90	45.09	38.76	32.96	27.85	23.26	19.30	15.88	12.98	27.85	944.00	277.10	2.00	944.58	3769.9	
7500.	* 7300.	7250.	-9999.00	-9999.00	-9999.00	85.57	75.96	67.21	58.48	50.37	42.93	36.31	30.37	25.25	20.81	17.03	36.31	2181.00	345.20	2.00	2183.05	6283.2	
7500.	* 7250.	7200.	-9999.00	-9999.00	-9999.00	93.49	82.59	72.81	63.23	54.44	46.38	39.24	32.85	27.39	22.60	18.56	39.26	1309.00	368.60	2.00	1310.53	9424.8	
7450.	* 7400.	7350.	-9999.00	-9999.00	-9999.00	30.91	27.16	23.86	20.64	17.68	14.97	12.58	10.47	8.64	7.08	5.76	12.58	1374.00	137.40	1.00	1374.35	628.3	
7450.	* 7350.	7300.	-9999.00	-9999.00	-9999.00	59.73	52.89	46.73	40.60	34.92	29.70	25.08	20.94	17.38	14.28	11.67	25.07	1248.00	233.20	2.00	1248.36	1885.0	
7450.	* 7300.	7250.	-9999.00	-9999.00	-9999.00	82.25	72.88	64.41	56.01	48.22	41.06	34.71	29.02	24.11	19.85	16.25	34.71	2568.00	333.00	2.00	2569.80	3769.9	
7450.	* 7250.	7200.	-9999.00	-9999.00	-9999.00	91.08	80.76	71.38	62.15	53.56	45.68	38.68	32.42	27.01	22.31	18.32	38.70	1467.00	363.70	2.00	1468.62	6283.2	
7450.	* 7200.	7150.	-9999.00	-9999.00	-9999.00	76.30	67.61	59.65	51.93	44.65	37.98	32.15	26.92	22.42	18.42	15.10	32.16	1679.00	312.90	2.00	1681.53	9424.8	
7400.	* 7350.	7300.	-9999.00	-9999.00	-9999.00	57.57	51.07	45.18	39.30	33.85	28.84	24.38	20.40	16.93	13.94	11.41	24.37	857.00	246.80	2.00	856.98	628.3	
7400.	* 7300.	7250.	-9999.00	-9999.00	-9999.00	84.79	75.26	66.58	57.95	49.93	42.57	36.02	30.16	25.07	20.67	16.94	36.01	1874.00	343.00	2.00	1874.77	1885.0	
7400.	* 7250.	7200.	-9999.00	-9999.00	-9999.00	93.66	83.20	73.70	64.22	55.44	47.35	40.14	33.70	28.08	23.22	19.09	40.13	1154.00	373.40	4.00	1154.70	3769.9	
7400.	* 7200.	7150.	-9999.00	-9999.00	-9999.00	78.39	69.51	61.90	53.50	46.12	39.34	33.28	27.90	23.21	19.17	15.75	33.28	1396.00	321.60	2.00	1397.45	6283.2	
7400.	* 7150.	7100.	-9999.00	-9999.00	-9999.00	62.68	54.86	48.04	41.47	35.47	30.04	25.26	21.03	17.40	14.29	11.67	25.25	1646.00	259.10	1.00	1648.41	9424.8	
7350.	* 7100.	7050.	-9999.00	-9999.00	-9999.00	82.16	72.65	64.09	55.65	47.90	40.77	34.48	28.85	23.98	19.76	16.20	34.49	1294.00	331.60	2.00	1294.59	628.3	
7350.	* 7050.	7000.	-9999.00	-9999.00	-9999.00	96.94	86.41	76.70	66.96	57.90	49.52	42.04	35.32	29.49	24.40	20.09	42.05	870.00	386.40	4.00	870.25	1885.0	
7350.	* 7000.	6950.	-9999.00	-9999.00	-9999.00	83.08	73.68	65.15	56.70	48.90	41.71	35.34	29.65	24.71	20.40	16.78	35.35	1121.00	337.90	4.00	1121.95	3769.9	
7350.	* 6950.	6900.	-9999.00	-9999.00	-9999.00	65.64	58.00	51.02	44.23	37.92	32.17	27.12	22.64	18.81	15.45	12.65	27.12	1367.00	274.80	1.00	1368.81	6283.2	
7350.	* 6900.	6850.	-9999.00	-9999.00	-9999.00	63.62	56.09	49.28	42.61	36.52	30.95	26.07	21.72	18.00	14.76	12.07	26.08	1690.00	265.60	1.00	1693.01	9424.8	
7300.	* 7250.	7200.	-9999.00	-9999.00	-9999.00	90.82	80.92	71.84	62.73	54.26	46.43	39.45	33.20	27.73	22.98	18.93	39.46	637.00	367.70	4.00	637.41	628.3	
7300.	* 7200.	7150.	-9999.00	-9999.00	-9999.00	80.64	71.53	63.30	55.11	47.57	40.59	34.40	28.87	24.06	19.89	16.38	34.41	960.00	330.50	4.00	960.12	1885.0	
7300.	* 7150.	7100.	-9999.00	-9999.00	-9999.00	64.26	56.75	50.02	43.31	37.20	31.58	26.64	22.25	18.47	15.19	12.46	26.64	1284.00	267.60	2.00	1284.48	3769.9	
7300.	* 7100.	7050.	-9999.00	-9999.00	-9999.00	63.04	55.59	48.92	42.30	36.29	30.75	25.90	21.61	17.91	14.71	12.05	25.91	1480.00	264.20	1.00	1481.44	6283.2	
7300.	* 7050.	7000.	-9999.00	-9999.00	-9999.00	63.02	54.89	47.83	40.95	34.82	29.30	24.51	20.33	16.75	13.69	11.15	24.51	1520.00	270.10	0.25	1522.30	9424.8	
7250.	* 7000.	6950.	-9999.00	-9999.00	-9999.00	103.75	92.35	81.93	71.53	61.90	52.99	45.05	37.93	31.72	26.31	21.71	45.04	1181.00	407.70	4.00	1180.97	628.3	
7250.	* 6950.	6900.	-9999.00	-9999.00	-9999.00	81.74	72.57	64.17	55.82	48.12	41.04	34.75	29.13	24.27	20.05	16.49	34.75	1630.00	333.30	2.00	1630.44	1885.0	
7250.	* 6900.	6850.	-9999.00	-9999.00	-9999.00	77.58	68.62	60.54	52.55	45.21	38.46	32.51	27.20	22.62	18.66	15.31	32.51	1877.00	316.10	2.00	1878.23	3769.9	
7250.	* 6850.	6800.	-9999.00	-9999.00	-9999.00	75.88	66.77	58.59	50.54	43.22	36.57	30.75	25.61	21.19	17.40	14.22	30.75	1848.00	307.00	1.00	1849.98	6283.2	
7250.	* 6800.	6750.	-9999.00	-9999.00	-9999.00	64.37	56.43	49.41	42.53	36.31	30.66	25.73	21.40	17.67	14.50	11.82	25.74	1645.00	270.30	0.50	1647.69	9424.8	
7200.	* 7150.	7100.	-9999.00	-9999.00	-9999.00	69.46	61.36	54.06	46.86	40.25	34.21	28.88	24.14	20.04	16.51	13.52	28.90	1557.00	286.50	2.00	1557.21	628.3	
7200.	* 7100.	7050.	-9999.00	-9999.00	-9999.00	70.46	62.04	54.54	47.21	40.47	34.36	28.96	24.19	20.07	16.50	13.50	28.98	1891.00	290.90	1.00	1891.13	1885.0	
7200.	* 7050.	7000.	-9999.00	-9999.00	-9999.00	74.41	65.28	57.15	49.19	41.97	35.45	29.76	24.74	20.44	16.76	13.68	29.77	1868.00	306.80	0.50	1869.17	3769.9	
7200.	* 7000.	6950.	-9999.00	-9999.00	-9999.00	63.84	55.98	48.99	42.15	35.93	30.33	25.43	21.11	17.40	14.27	11.63	25.43	1681.00	267.50	0.50	1682.98	6283.2	
7200.	* 6950.	6900.	-9999.00	-9999.00	-9999.00	61.28	53.32	46.45	39.91	33.95	28.68	24.05	19.95	16.48	13.52	11.02	24.07	1561.00	255.20	0.50	1563.47	9424.8	
7150.	* 7100.	7050.	-9999.00	-9999.00	-9999.00	46.82	40.82	35.59	30.54	25.98	21.89	18.33	15.21	12.53	10.25	8.34	18.33	2007.00	200.00	0.50	2007.06	628.3	
7150.	* 7050.	7000.	-9999.00	-9999.00	-9999.00	60.22	52.49	45.69	39.08	33.16	27.85	23.25	19.24	15.82	12.91	10.47	23.25	1942.00	257.90	0.25	1942.34	1885.0	
7150.	* 7000.	6950.	-9999.00	-9999.00	-9999.00	53.47	46.42	40.28	34.40	29.14	24.45	20.39	16.86	13.86	11.30	9.18	20.39	1784.00	229.70	0.25	1785.36	3769.9	
7150.	* 6950.	6900.	-9999.00	-9999.00	-9999.00	50.05	43.52	37.81	32.34	27.49	23.12	19.28	15.97	13.13	10.72	8.71	19.28	1760.00	217.80	0.25	1761.41	6283.2	
7100.	* 7050.	7000.	-9999.00	-9999.00	-9999.00	50.13	43.42	37.55	31.96	26.96	22.53	18.71	15.41	12.61	10.24	8.28	18.71	1659.00	224.10	0.13	1659.06	628.3	
7100.	* 7000.	6950.	-9999.00	-9999.00	-9999.00	43.69	37.60	32.36	27.41	23.03	19.17	15.87	13.02	10.63	8.61	6.95	15.86	1694.00	206.00	0.06	1695.00	1885.0	
7100.	* 6950.	6900.	-9999.00	-9999.00	-9999.00	40.23	34.72	29.94	25.43	21.43	17.86	14.81	12.19	9.97	8.07	6.53	14.82	1863.00	192.70	0.06	1864.28	3769.9	

Pasminco Exploration Ltd

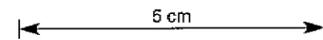
EL 12/88
Mt Black

Survey Parameters

Array : Pole-Dipole
 'a' = 50m, n = 1 to 5
 TD West : C1 East
 Equipment : IPR12/TSQ3
 Timing : 2s cycle
 Survey : February 1993

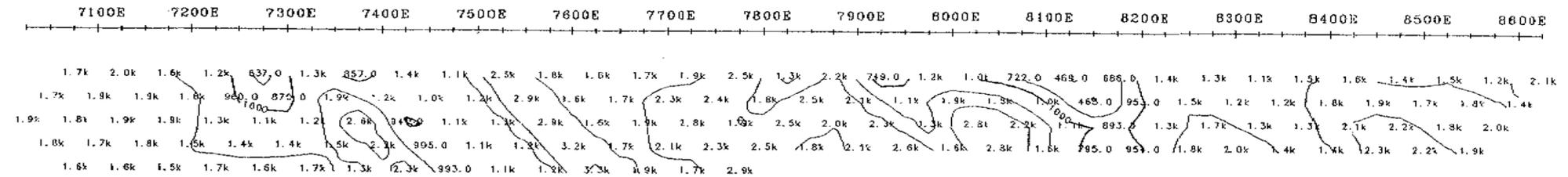
Line L78900N

Scale 1 : 5000



IP & Resistivity Survey

RHO



M10

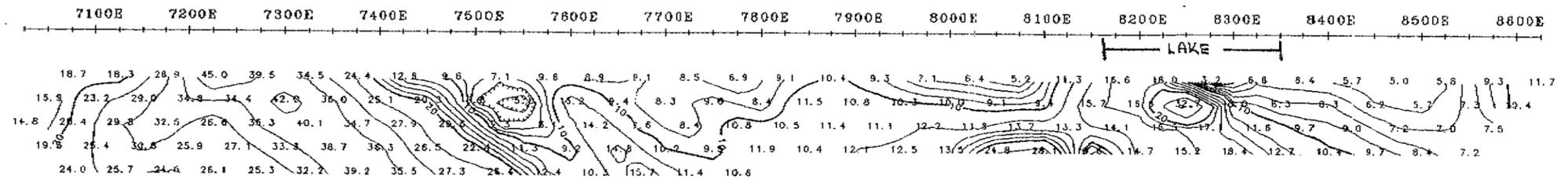


Figure 1

Pasminco Exploration Ltd

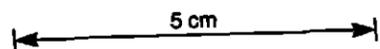
EL 12/88
Mt Black

Survey Parameters

Array : Pole-Dipole
 'a' = 50m, n = 1 to 5
 TD West : C1 East
 Equipment : IPR12/TSQ3
 Timing : 2s cycle
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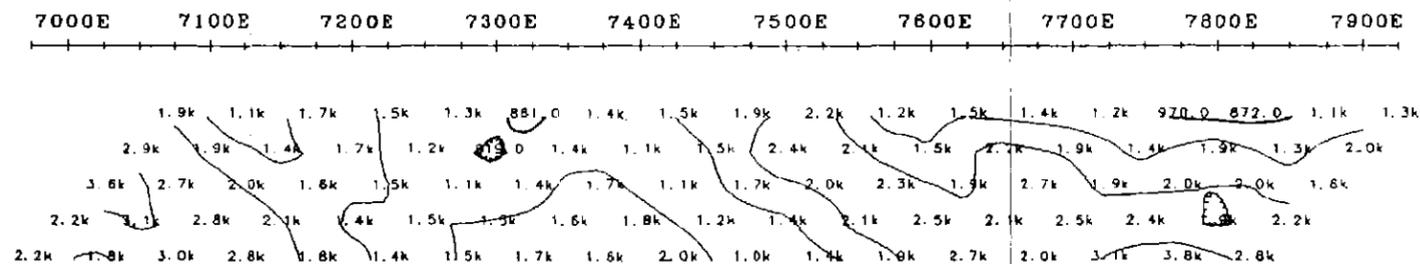
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Scale 1 : 5000



IP & Resistivity Survey

RHO



M10

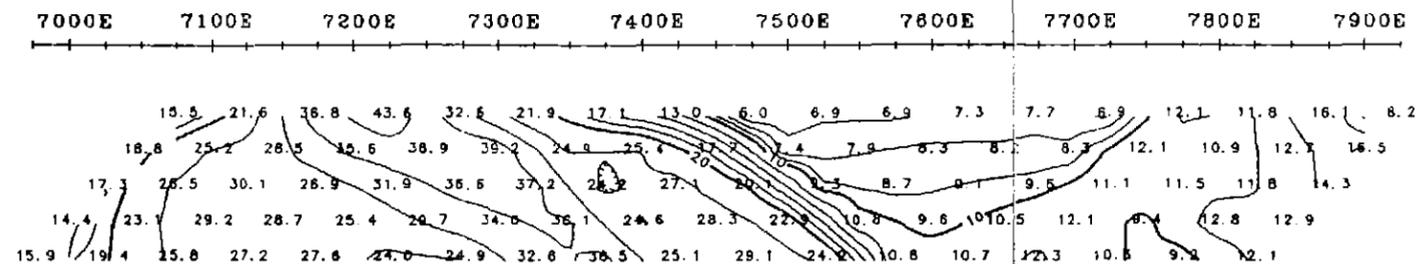
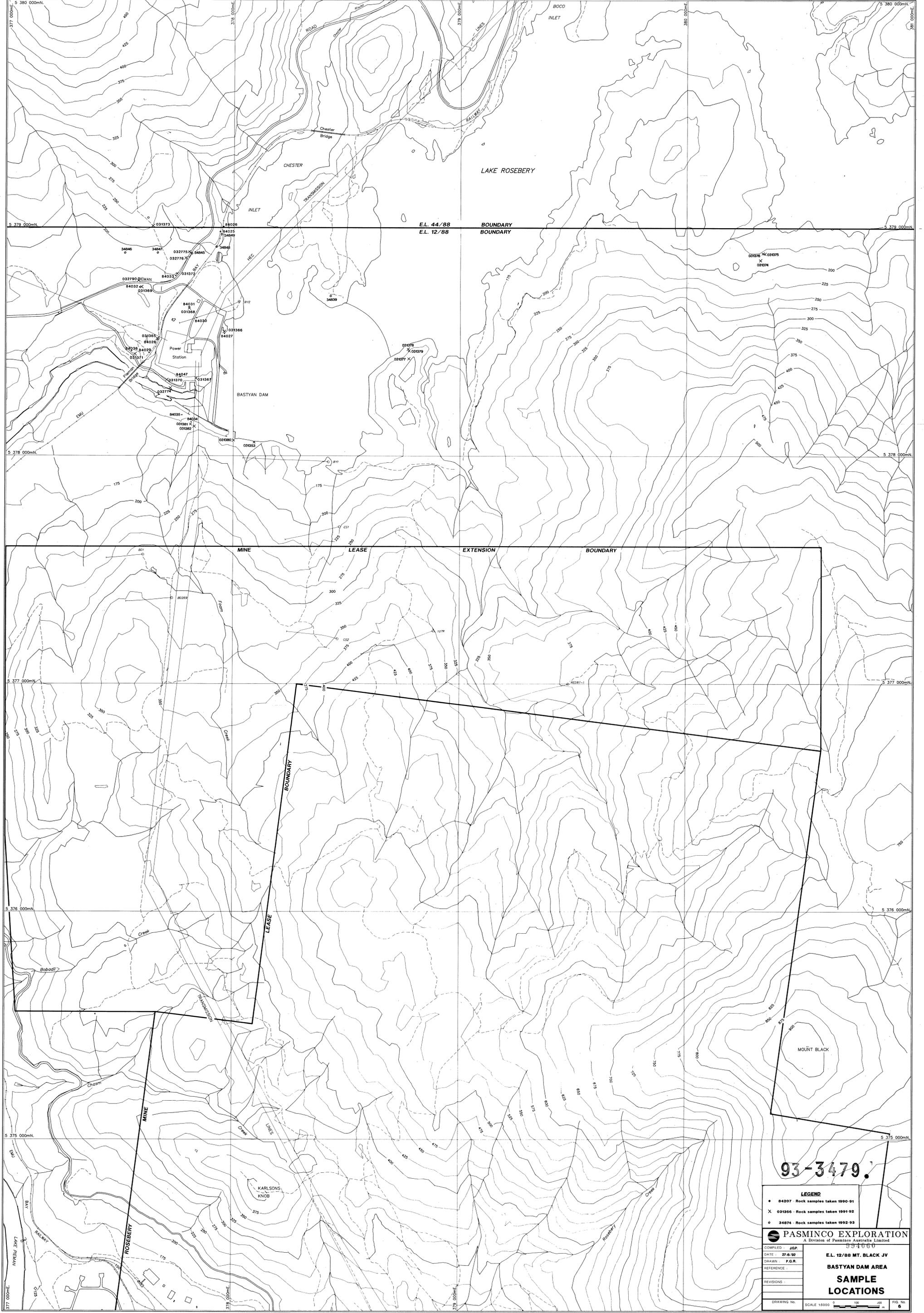


Figure 2

FIGURES



EL. 44/88
EL. 12/88

BASTYAN DAM

LAKE ROSEBERY

93-3479

LEGEND

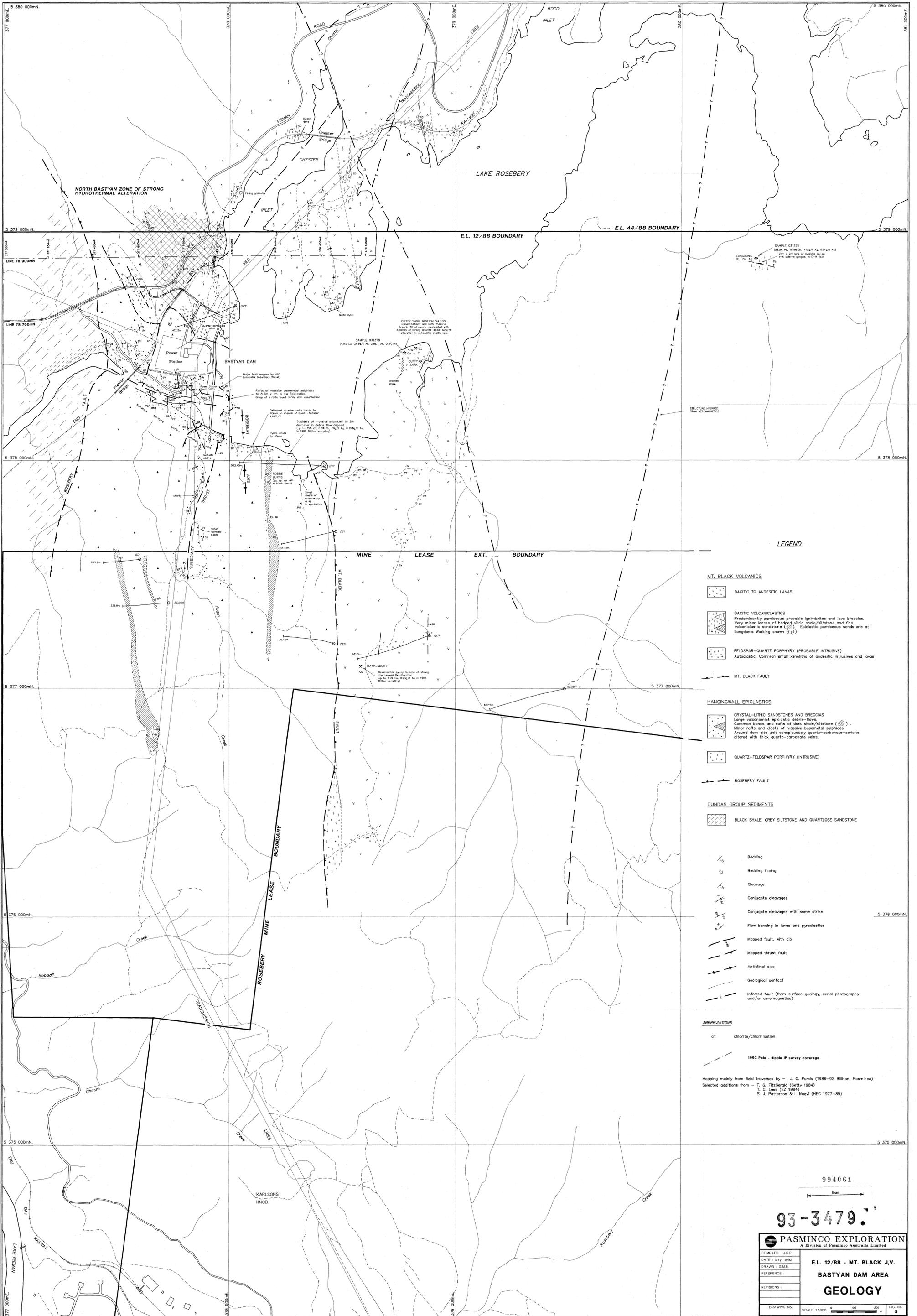
- 84207 - Rock samples taken 1990-91
- X 031366 - Rock samples taken 1991-92
- o 34874 - Rock samples taken 1992-93

PASMINCO EXPLORATION
A Division of Pasminco Australia Limited

COMPILED: JGP
DATE: 27-6-92
DRAWN: P.G.R.
REFERENCE:
REVISIONS:
DRAWING NO. SCALE: 1:5000 0 100 200 400 600 800 1000 1200 1400 1600 1800 2000
FIG. NO. 6

E.L. 12/88 MT. BLACK JV
BASTYAN DAM AREA
SAMPLE LOCATIONS

5 cm



LEGEND

MT. BLACK VOLCANICS

DACTIC TO ANDESITIC LAVAS

DACTIC VOLCANICLASTICS
Predominantly pumiceous probable lignimbrites and lava breccias. Very minor lenses of bedded vitric siltstone and fine volcaniclastic sandstone (1:1). Epilastic pumiceous sandstone at Langdon's Working shown (1:1)

FELDSPAR-QUARTZ PORPHYRY (PROBABLE INTRUSIVE)
Autoclastic. Common small xenoliths of andesitic intrusives and lavas

MT. BLACK FAULT

HANGINGWALL EPICLASTICS

CRYSTAL-LITHIC SANDSTONES AND BRECCIAS
Large volcanoclastic epiclastic debris-flows. Common bands and rafts of dark shale/siltstone (1:1). Minor rafts and clasts of massive basaltic sulphides. Around dam site unit conspicuously quartz-carbonate-sericite altered with thick quartz-carbonate veins.

QUARTZ-FELDSPAR PORPHYRY (INTRUSIVE)

ROSEBERY FAULT

DUNDAS GROUP SEDIMENTS

BLACK SHALE, GREY SILTSTONE AND QUARTZOSE SANDSTONE

Bedding

Bedding facing

Cleavage

Conjugate cleavages

Conjugate cleavages with same strike

Flow banding in lavas and pyroclastics

Mapped fault, with dip

Mapped thrust fault

Anticlinal axis

Geological contact

Inferred fault (from surface geology, aerial photography and/or aeromagnetics)

ABBREVIATIONS

chl chlorite/chloritisation

1993 Pole - dipole IP survey coverage

Mapping mainly from field traverses by - J. G. Purvis (1986-92 Blinton, Pasminco)
Selected additions from - F. C. Fitzgerald (Getty 1984)
T. C. Lees (EZ 1984)
S. J. Patterson & I. Naqvi (HEC 1977-85)

994061
5m
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E.L. 12/88 - MT. BLACK J.V.	
BASTYAN DAM AREA	
GEOLOGY	