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PASMINCO EXPLORATION

YOLANDE JV EL 11/85
& YOLANDE RIVER JV EL 25/91
ANNUAL REPORT
FOR THE YEAR ENDING
JUNE 1994

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AUTHOR: PM Quayle

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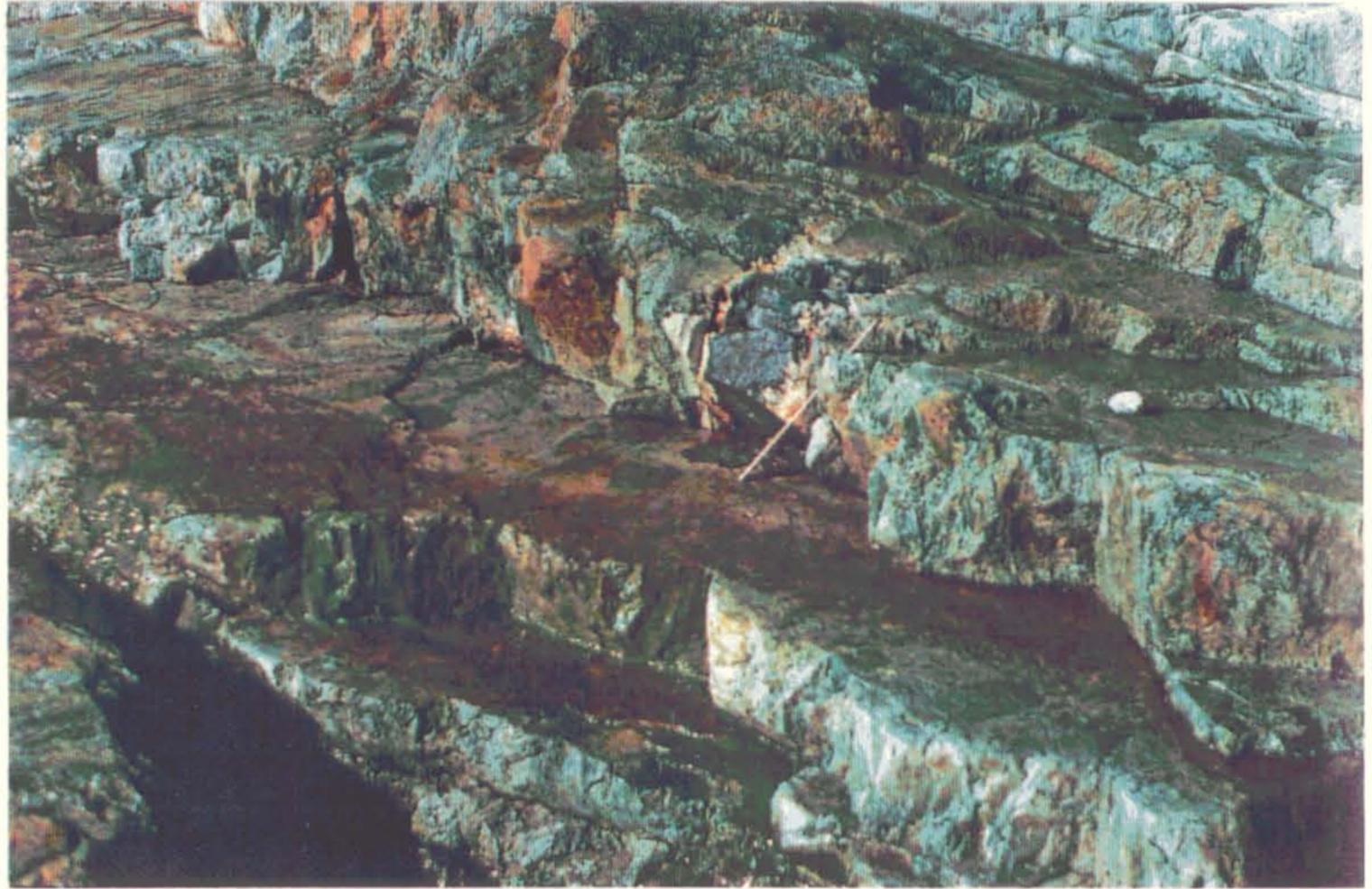
Australian Resources & Mining - Sydney
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SUBMITTED BY:

ACCEPTED BY:

BURNIE
JULY 1994



**CONGLOMERATE: NOTE SULPHIDE CLAST.
DACITE HYALOCLASTITE IN POLYMICT BRECCIA.**

NEWTON CREEK SPILLWAY

IN FLOOD LOOKING SOUTH



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SUMMARY

Exploration conducted on the Yolande EL 11/85 Joint Venture during the period from July 1993 to June 1994 has been principally concerned with detailed investigations of the most prospective areas as defined during the previous year.

The principal target horizon at Newton Creek has been identified, placed in geological context and traced 1.8km north and 400m south of the spillway. Although only minor alteration and mineralisation has been intersected during this period, advances in geological understanding of the area have revealed several significant targets. These targets will be tested during the coming year.

Drilling in the White Spur Canal area of a geological target with coincident anomalous geochemical and IP response produced disappointing results downgrading the prospectivity of the area.

An IP/Resistivity survey over the Henty Valley massive pyrite occurrence has indicated a continuation of the mineralised horizon both to the north and the south concealed by shallow dipping thrust cover.

Exploration conducted on the Yolande River EL 25/91 comprises the creation of a base map with access, rivers and creeks, existing geochemistry and mineral occurrences.

Total exploration costs for the two licences for the 12 months ending June 1994 was \$409 501.

1 INTRODUCTION

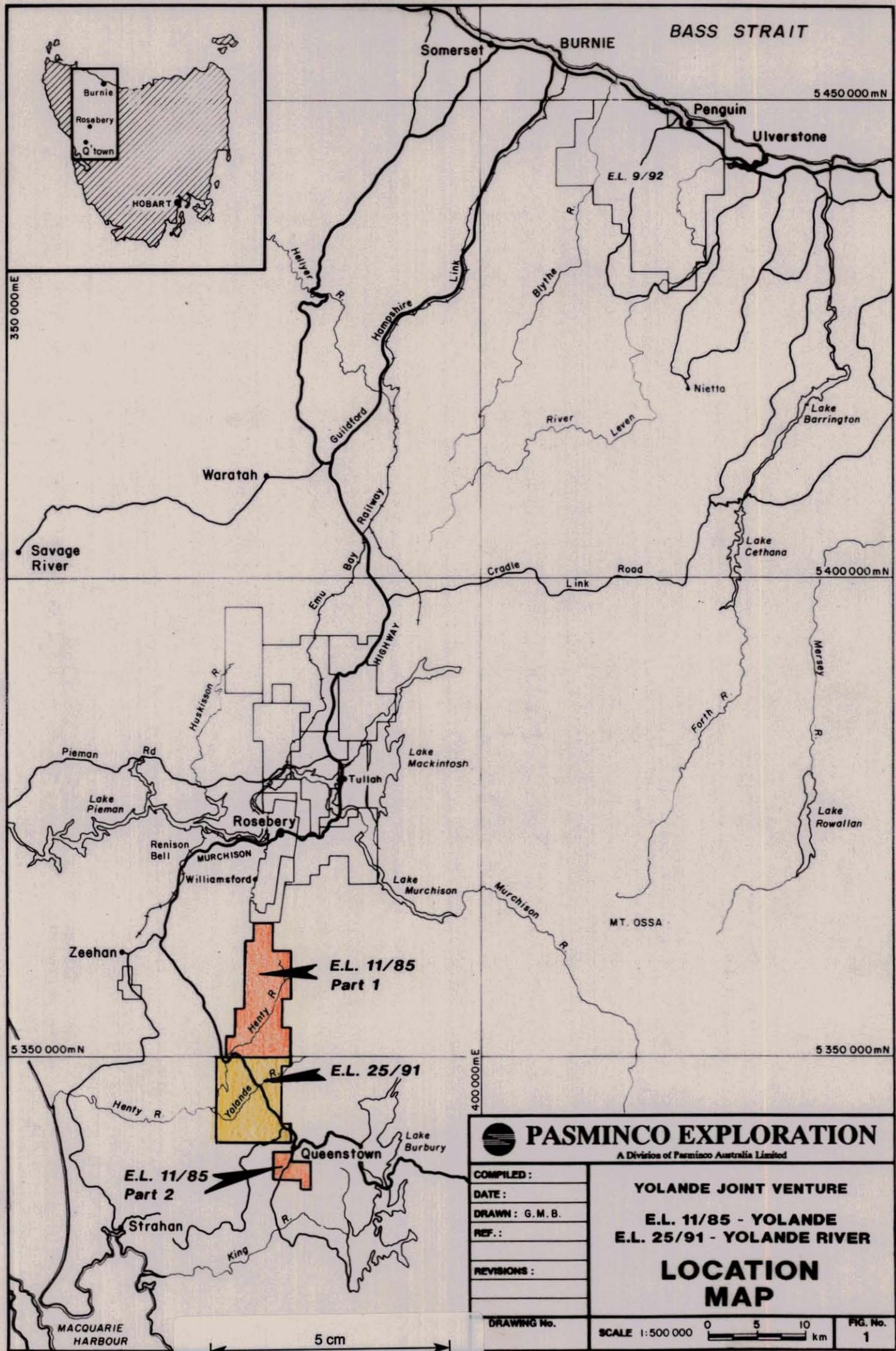
EL's 11/85 and 25/91 cover areas of 74 and 66km² respectively. Combined they extend from Lynchford south of Queenstown, northwards to the southern boundary of the Consolidated Rosebery Mine Leases (see Fig.1) covering the western part of the Mount Read Volcanic belt. The licences are continuous over this area except for a strip one kilometre wide between the Yolande River licence and the Lynchford block of the Yolande licence.

This report details exploration undertaken by Pasminco Exploration in the twelve months to June 1994. Work conducted during this period focussed on detailed investigations of a number of prospect areas, principally Newton Creek/Henty Canal, White Spur and Henty Valley.

Access to the Yolande Licence is by the Zeehan Highway and the Anthony Road in the south and east and a network of all weather HEC roads and 4WD old logging tracks in the west and north. The least accessible area is the Henty River Valley where steep and rugged topography is covered by temperate rain forest. Higher ground to the north is more open with sparse sub-alpine vegetation.

Apart from access restrictions in steep and forested areas, other exploration difficulties include extensive coverage of bedrock by glacial moraine and skeletal and transported soils overlying felsic volcanics in much of the remaining areas. These factors restrict the use of soil and stream geochemistry.

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PASMINCO EXPLORATION
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COMPILED :	YOLANDE JOINT VENTURE E.L. 11/85 - YOLANDE E.L. 25/91 - YOLANDE RIVER LOCATION MAP		
DATE :			
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DRAWING No.	SCALE 1:500 000	0 5 10 km	FIG. No. 1

2 TENURE

Exploration Licence 11/85, Yolande was granted to Amoco Minerals Australia on 21 August 1985 covering an area of 150km². Since that time title has been transferred to Cyprus Minerals Australia Company (11 December 1985), then Cyprus Gold Australia Company (March 1988), then Hudspeth and Company Pty Limited (23 October 1990), and finally to Arimco Mining Pty Limited, the current title holder. Arimco have recently changed their corporate name to Australian Resources and Mining Company NL.

The area of the licence was amended to 151km² on 22 May 1988. In compliance with Mines Department regulations the licence was reduced in area to 70km² on 20 February 1991. The area of the tenement was amended again by the Department on 15 April 1992 by the addition of 4km² to the western part of the Henty Block. The current area of EL 11/85 is 74km².

During the period of tenure the licence has been the subject of two Joint Venture Agreements. The initial Agreement was between Cyprus and the Electrolytic Zinc Company of Australia. The EZ interest was subsequently transferred to Norgold Ltd, part of North Broken Hill-Peko Limited. A new Joint Venture Agreement was concluded on 4 December 1990 between Hudspeth, Norgold and Pasminco Australia Limited. Under the terms of this Agreement Pasminco Exploration, a division of Pasminco Australia, are operators and managers of the Joint Venture. Pasminco earned a 50% interest in the tenement on 31 December, 1991. All three parties contributed to exploration expenditure for the remainder of 1991-92 in the proportion: Pasminco (50%), Norgold (25%) and Arimco (25%).

Exploration Licence 25/91, Yolande River was granted to Pasminco Australia Limited on 30 November 1991 covering an area of 66km². Under the terms of the Yolande Joint Venture this licence was included in the Agreement. All parties contributed to the exploration expenditure from 1 January - 30 June 1992 on EL 25/91 in the same proportion as for EL 11/85. Since that time Pasminco has been sole funding the exploration expenditure on both tenements. The current equity of each partner, as at 30 June 1994 is: Pasminco (66.7%); Norgold (16.65%) and Australian Resources (16.65%).

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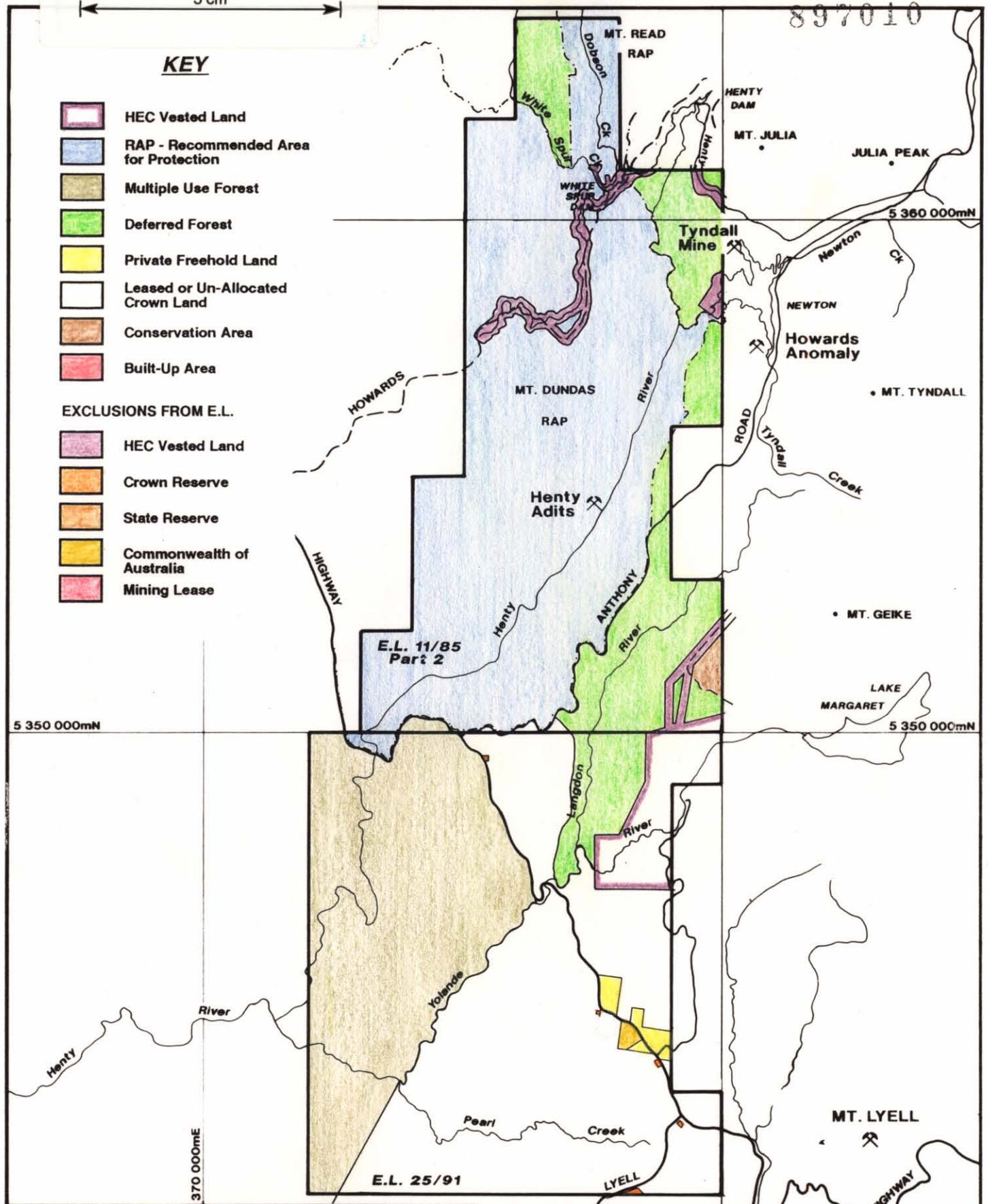
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KEY

-  HEC Vested Land
-  RAP - Recommended Area for Protection
-  Multiple Use Forest
-  Deferred Forest
-  Private Freehold Land
-  Leased or Un-Allocated Crown Land
-  Conservation Area
-  Built-Up Area

EXCLUSIONS FROM E.L.

-  HEC Vested Land
-  Crown Reserve
-  State Reserve
-  Commonwealth of Australia
-  Mining Lease



5 350 000mN

5 350 000mN

370 000mE

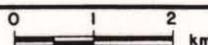
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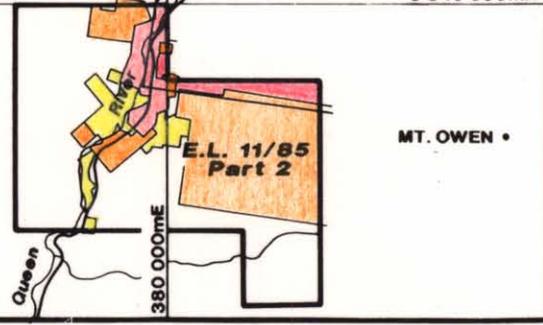
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 DATE: July, 1992
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 REF.:
 REVISIONS:

YOLANDE JOINT VENTURE
E.L. 11/85 - YOLANDE
E.L. 25/91 - YOLANDE RIVER
LAND TENURE

DRAWING No.

SCALE 1:100,000  FIG. No. 2

5 340 000mN



Following a meeting with the Mines Department approval was given on 11 May 1992 to amalgamate the Annual Report and Licence Renewal Dates for both EL's 11/85 and 25/91 to reduce the administrative burden. Both licences are now due for renewal on 20 August 1994.

The land tenure of EL's 11/85 and 25/91 comprises the following (see Fig 3).

1. Multiple Use Forest Land
2. Deferred Forest Land
3. Recommended Areas for Protection (Mt Dundas & Mt Read)
4. SW Conversation Area
5. HEC Vested Land
6. Uncommitted Crown Land
7. Private Property
8. Queenstown Urban Conversation Area
9. Crown Reserves

3 PREVIOUS EXPLORATION

Previous mineral exploration has been undertaken by Rio Tinto Australia Exploration, Cyprus Mines, Pickands Mather and the Mt Lyell Company. A comprehensive review of past exploration and prospecting has been compiled by Purvis (1983).

Early prospecting and exploration activity is summarised in Poltock and FitzGerald (1991).

Recent work conducted by Pasminco includes; extensive gridding, soil/Wacker sampling, geological mapping aeromagnetic, radiometric, gravity, IP and UTEM surveys.

Work completed during the previous year is summarised below:

One line cut, pegged and soil/Wacker sampled in Newton Creek;

Geological mapping at Newton Creek, Henty Valley and White Spur;

Diamond drilling: six DDH totalling 851.65m at Newton Creek and Henty Valley;

Down-hole EM survey;

Detailed lithogeochemical studies;

Aeromagnetic and radiometric survey of 432 line kilometres at Yolande River.

4 REGIONAL GEOLOGY

The basement in Western Tasmania is a sequence of Proterozoic greenschist facies metasediments. Basement is exposed in the Sticht Range east of the Henty area, and to the west of Dundas.

During the Cambrian a crustal rift developed forming the Dundas Trough, which was the focus for the emplacement of the Mount Read Volcanics.

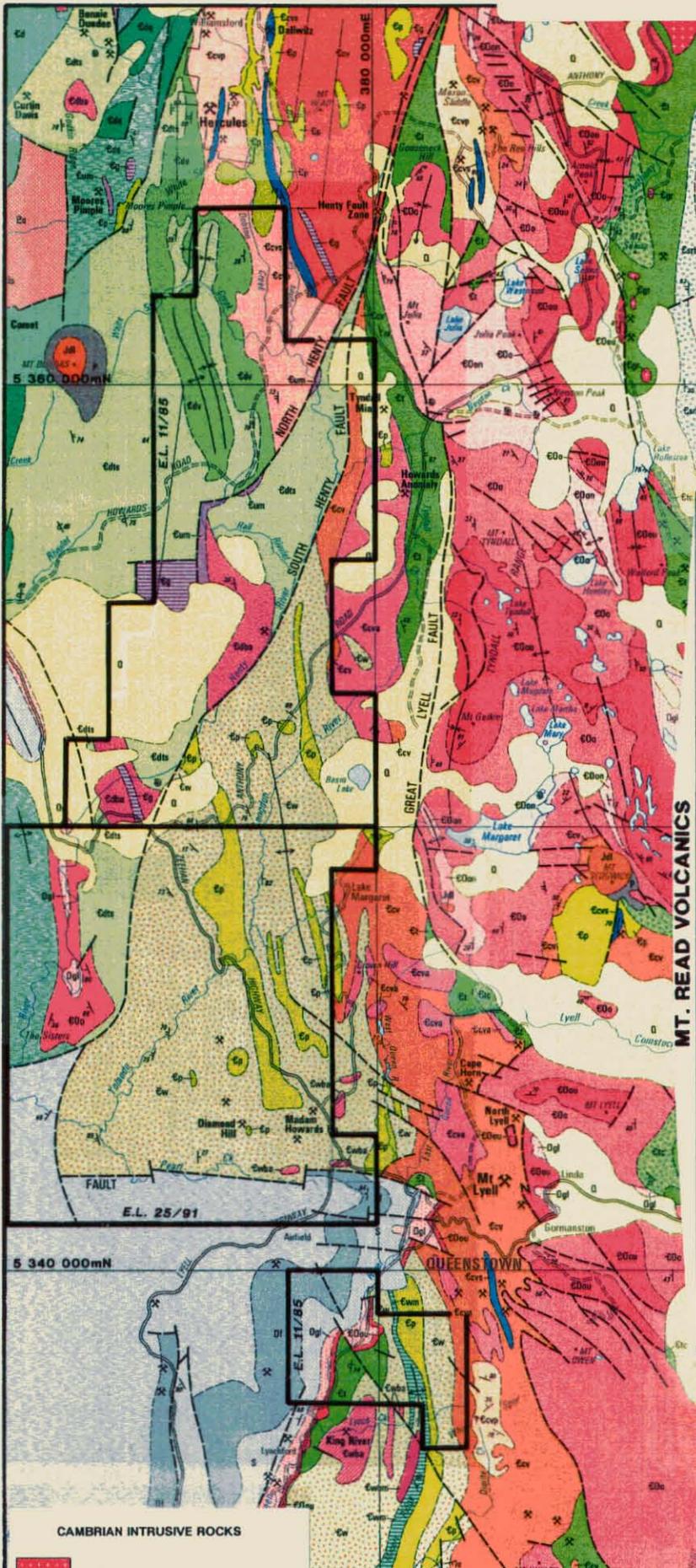
The Mount Read Volcanics form a belt extending 200km in length by 20km in width along the eastern side of the Dundas Trough. These mid to upper Cambrian volcanics, which are subdivided on the basis of geochemistry into three calc-alkaline suites and one tholeiitic suite include intermediate to felsic lavas, subvolcanic porphyries and granites (Crawford et. al., 1992).

The Mount Read Volcanics are the host to several significant volcanogenic sulphide bodies including:

- Rosebery
- Hercules
- Hellyer
- Que River
- Mt Lyell

Other significant ore deposits in Western Tasmania include:

- Renison
- Mt Bischoff
- Henty
- Oceana
- Zeehan Field



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

DUNDAS GROUP AND CORRELATES	Cp	Quartz-feldspar porphyry, mostly intrusive
	COu	Mostly sedimentary rocks - greywacke, siltstone, conglomerate
	COm	interbedded tuffs and sedimentary rocks
	COs	Quartzwacke-slate-siltstone units, e.g. Stitt Quartzite
	COv	Mostly felsic volcanics - mainly tuffs
	COw	Mixed felsic and mafic volcanics and epiclastic breccias, Que-Hellyer area
	COba	Basaltic to andesitic volcanics

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

CENTRAL VOLCANIC SEQUENCE	COv	Mainly feldspar-phyric volcanics - dacite, rhyolite, minor andesite (COv)
	COp	Felsic porphyry, mainly intrusive
	COpy	Mainly pyroclastic rocks
	COs	Sedimentary rocks, mainly shale and sandstone
	COva	Andesitic volcanics

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

CAMBRIAN INTRUSIVE ROCKS	
Cp	Granite
Cp	Felsic porphyry
Cg	Gabbro
Cum	Ultramafic rocks & serpentinite

PRECAMBRIAN	
COs	Quartzite-slate sequences - correlates of Onah Formation
COm	Metamorphosed sequences of Tyennan Region. Major lithological boundary trends shown

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

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 REVISIONS :
 DRAWING No.

YOLANDE JOINT VENTURE
 E.L. 11/85 - YOLANDE
 E.L. 25/91 - YOLANDE RIVER
REGIONAL GEOLOGY
 FROM MAP 6 OF THE
MT. READ VOLCANICS PROJECT

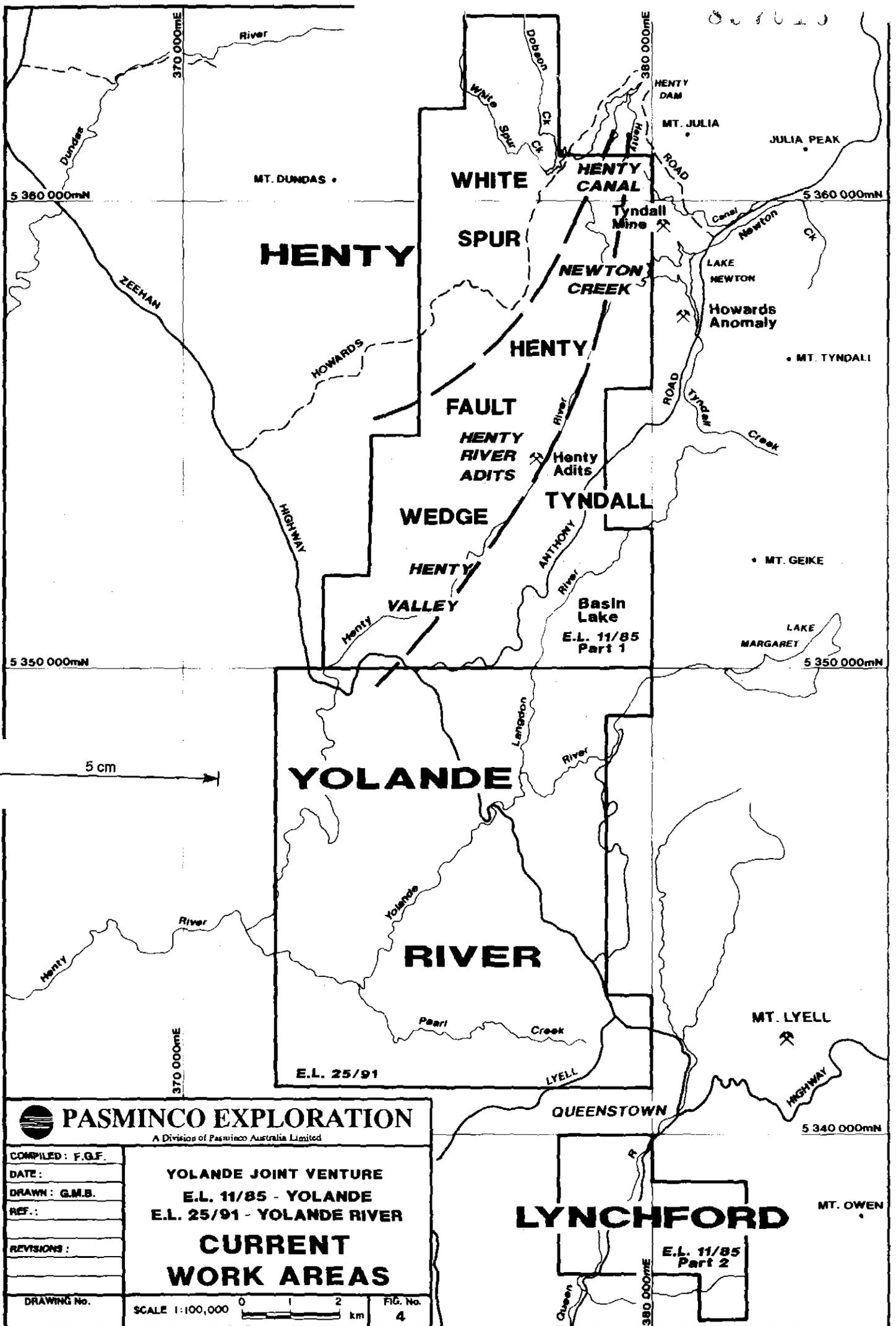
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 FIG. No. 3

There is evidence for at least one period of Cambrian deformation during which time regional structures such as the Henty and Rosebery Faults were active and appear to have influenced volcanism, sedimentation and mineralisation.

Sedimentation continued in the Dundas Trough after the cessation of volcanism in the late Cambrian. Initially these sediments were partly derived from the volcanics, but during the Ordovician, extensive sediments predominantly derived from *Precambrian metamorphics* were deposited. This period of sedimentation culminated in the wide spread deposition of a shelf limestone sequence.

The late Devonian Tabberabberan Orogeny in Western Tasmania resulted in the development of predominantly open NNW trending folds in the Ordovician-Devonian cover sequence. Underlying Cambrian structures were significantly modified by this event. Extensive granite emplacement occurred in the latter stages of the Orogeny and were associated with structurally controlled and carbonate replacement tin-tungsten and gold mineralisation.

The Devonian was followed by erosion and glaciation. Younger Palaeozoic sediments were intruded by Jurassic dolerites and extensive uplift and erosion followed. Much of the prospective sequences north of Hellyer were later covered by the extrusion of Tertiary flood basalts.



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YOLANDE JOINT VENTURE
E.L. 11/85 - YOLANDE
E.L. 25/91 - YOLANDE RIVER
CURRENT
WORK AREAS

DRAWING No. SCALE 1:100,000 0 1 2 km FIG. No. 4

5 WORK COMPLETED JULY 1993 – JUNE 1994

5.1 Summary

Geological Mapping

Geological mapping consisted of detailed logging of the Newton Creek Spillway, and several traverses in specific areas to determine stratigraphic correlation.

Diamond Drilling

Five diamond drill holes have been drilled during the year totalling 1715.7m. Of these, four were drilled in the Newton Creek – Henty Canal area, and one in the White Spur area.

To date eleven DDH totalling 2567.6m have been drilled during the current programme. This includes nine DDH totalling 2071.4m in the Newton Creek/Henty Canal area. Drilling statistics are summarised in 3 and drill logs (Appendix 4).

Geochemistry

Geochemical analysis was done on 150 samples of either drillcore or surface outcrop, 38 of which were assayed for the whole rock suite, and 47 for lithogeochemical suite. Twelve thin sections were produced and reported on by Crawford (Appendix 7).

A set of 70 lithogeochemical analyses were acquired from the Department of Mineral Resources, a similar set of 61 analyses were acquired from Billiton. The Yolande lithogeochemical set now contains 242 analyses.

TABLE 1

Diamond Drilling Statistics
1993 - 1994

HOLE_ID	AMG_N	AMG_E	EOH
YNC6	5360396.10	379802.50	451.6
YNC7	5359662.40	379953.60	289.6
YNC8	5359892.00	379810.10	282.0
YNC9	5360192.20	379657.40	262.0
YWS1	5360063.90	377226.50	430.5
total	=	1715.7	

Newton Creek Recent Drilling

HOLE_ID	AMG_N	AMG_E	EOH
YNC1	5357909.00	379662.00	61.2
YNC2	5358062.00	379360.00	53.5
YNC3	5358052.00	379320.00	35.0
YNC4	5359959.08	379961.67	272.0
YNC5	5360194.09	379917.53	364.5
YNC6	5360396.10	379802.50	451.6
YNC7	5359662.40	379953.60	289.6
YNC8	5359892.00	379810.10	282.0
YNC9	5360192.20	379657.40	262.0
total	=	2071.4	

Yolande Recent Drilling

HOLE_ID	AMG_N	AMG_E	EOH
YNC1	5357909.00	379662.00	61.2
YNC2	5358062.00	379360.00	53.5
YNC3	5358052.00	379320.00	35.0
YNC4	5359959.08	379961.67	272.0
YNC5	5360194.09	379917.53	364.5
YNC6	5360396.10	379802.50	451.6
YNC7	5359662.40	379953.60	289.6
YNC8	5359892.00	379810.10	282.0
YNC9	5360192.20	379657.40	262.0
YWS1	5360063.90	377226.50	430.5
YHV1	5351000.00	375042.00	65.7
total	=	2567.6	

Geophysics

Aeromagnetic data acquired through an exchange with Aberfoyle covering the area between the South Henty Fault and the Great Lyell Fault in the Newton Creek area has been reviewed (Appendix 11a & 11b).

DHEM has been conducted on YNC4, YNC5, YNC7 and YNC9 (Appendix 12 & 13).

A ground magnetic survey of 11.4 line kilometres was completed at Newton Creek (Appendix 15).

An IP/Resistivity survey of 2.3 line kilometres was completed at Henty Valley (Appendix 14).

Magnetic susceptibility and specific gravity data have been collected from all recent drilling. The values are appended to individual drill logs and are summarised in table 6.

5.2 Newton Creek

The Newton Creek area lies between the South Henty Fault and the Great Lyell Fault, which are major north-south trending structures. It is also close to an east-west trending structure that is a prominent magnetic and gravimetric feature. This east-west structure is reflected in both the geometry of geological units and topography.

Lithologies in the Newton Creek area indicate rapid deposition in an active and changing volcanic environment.

A study combining volcanic facies analysis and lithogeochemistry together with interpretation of regional magnetic data has greatly enhanced geological understanding of the area.

The source of the spillway massive sulphide clasts has been linked to a very specific association of rock types that form an excellent marker horizon (Fig 12).

5.2.1 GEOLOGICAL MAPPING

The Newton Creek Spillway has been logged in detail by RL Allen. Results are reported in appendix 8 and are summarised, from the base up, as follows:

- a. The lowest unit in the spillway is a magnetite bearing, hornblende-phyric andesite which is in intrusive contact with the overlying lithologies;
- b. Pumice breccias similar to those of the "Rosebery-Hercules Footwall Sequence" but relatively unaltered from the base of the sequence;
- c. Dark green, massive to upwards fining, monomict, stratified mafic breccias overlie the pumice breccias;
- d. Altered pyritic, normally graded, polymict, subaqueous mass flow breccias and sandstones overlie the mafic breccia;
- e. Sub-aqueous mass flow breccias grading to sandstone overlain by polymict breccias. These breccias are composed dominantly of dacite clasts with hyaloclastite shapes and lesser vesicular basalt, white altered siliceous lava, pink altered dacite, siltstone and occasional massive sulphide clasts;
- f. Massive feldspar phyric dacites form the top of the sequence.

Specific locations were mapped and sampled in order to correlate key locations with the developing stratigraphy.

Extensive outcrop of pumice breccia was identified in the Newton Creek around 379,600mE 5,358,200mN. Pumice breccia was also located at 379,620mE 5,357,950mN, in Newton Creek below the dam, and to the west of YNC7 and YNC8. Stratified mafic breccia has been found in a creek bed near the South Henty Fault at 379,290mE 5,360,410mN.

5.2.2 DIAMOND DRILLING

A series of four diamond drill holes were drilled in the Newton Creek/Henty Canal area (Table 1). The first two holes were drilled to test the prospective zone intersected in YNC4 and YNC5 along strike to the north and south. Results from YNC7 indicated that the principal target

horizon lay to the west of the above drilling. YNC8 and YNC9 were then drilled to extend YNC4 and YNC5 respectively. An attempt to re-enter and extend YNC4 was unsuccessful.

YNC6 (451.6m in length)

YNC6 was drilled 250m to the north of YNC5 to test for the northern continuation of an interesting zone of mineralisation and alteration intersected at the base of YNC5. An apparent *eastward swing of features which is evident in: aeromagnetics, IP, and UTEM* influenced the siting and the dip of the drill hole.

The target zone was not intersected and it is now thought that a syn-depositional fault occurred between the two drill holes with YNC6 being in the upthrown (eastern) block. Part of the evidence for syn-depositional faulting is the excellent correlation of distinctive sedimentary units intersected in the top of both holes, and the lack of correlation between the lower units of YNC5 and either YNC9 or YNC6.

Two main sequences were encountered:

- A. *Howards Anomaly type andesites and sediments;*
 - B. *Newton Creek dacites and sediments.*
- A. The Howards Anomaly type zone comprises:
- 1. minor autoclastic andesites;
 - 2. minor reworked andesitic material;
 - 3. sediments grading from: coarse grained, poorly sorted, polymict breccia (containing pyrite clasts) to laminated black shales and siltstones, and white fine grained sacharoidal stylolitic limestones.

Minor haematite alteration occurs throughout.

The association of *andesites with black shale, limestone and mineralised polymict breccia with a notable haematite and barite component* is typical of the setting for Howards Anomaly mineralisation.

SUMMARY OF NEWTON CREEK STRATIGRAPHY

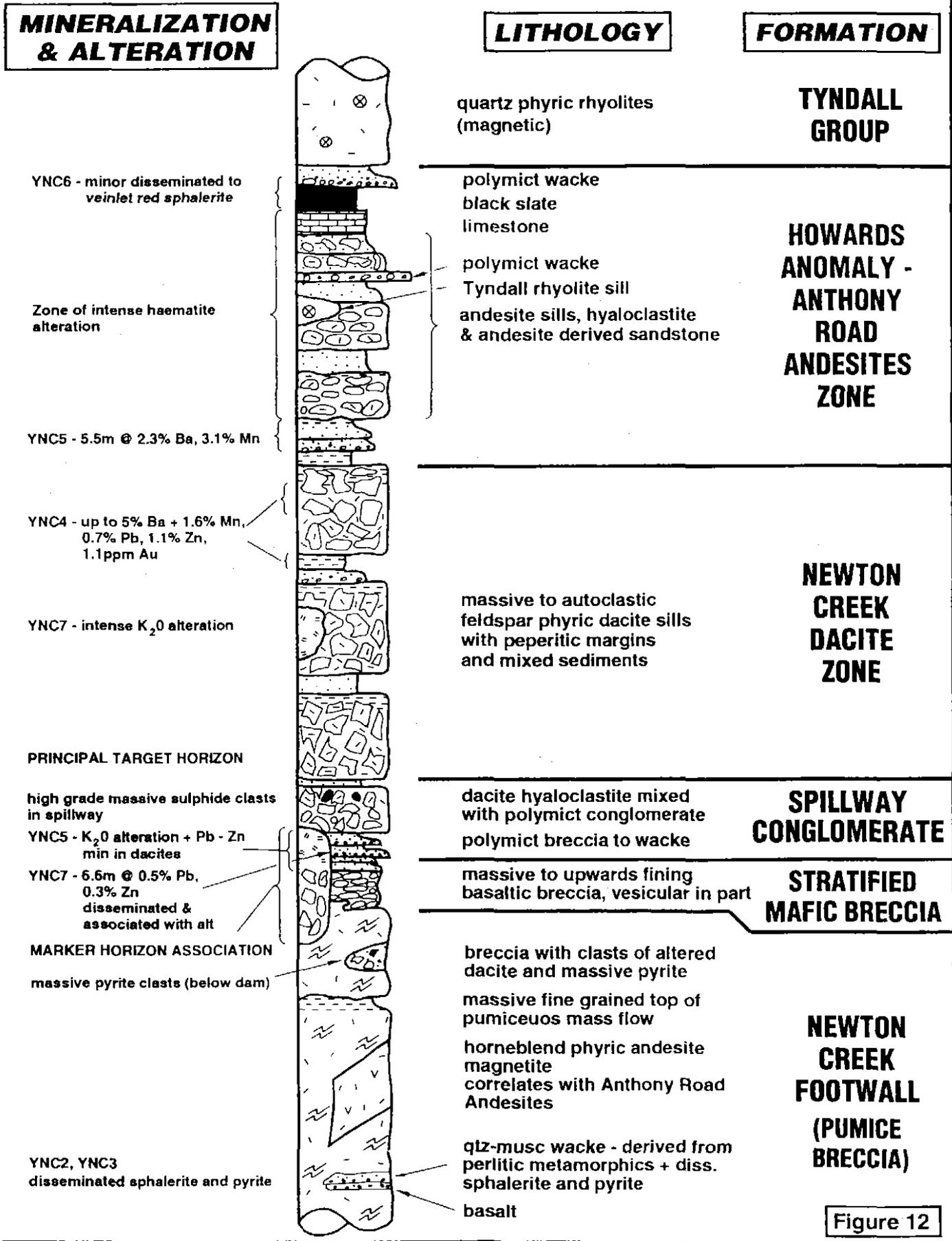


Figure 12

TABLE 2

Significant Mineralised Intersections

YNC5

from	to	Interval	Pb%	Zn%	Ag(g/t)	Au(g/t)	Ba%	Mn%	K2O%	Al
158.5	164.0	5.5					2.30	3.1		
322.3	340.5	18.2						2.4		
327.1	327.4	0.3							7.38	92
333.0	335.0	2.0	0.60	1.39	7	0.04	0.14	6.1		

YNC7

56.6	58.5	1.9							7.46	98
183.4	186.2	2.8	0.95	0.40	6	0.13				

B. The Newton Creek dacite and sediment zone comprises:

1. massive to autoclastic feldspar phyric dacites;
2. minor sandstone, siltstone, and polymict breccia.

All contacts are distinctly peperitic, because of this the dacites are interpreted as sills or cryptodomes intruded into unconsolidated sediments.

Minor bleached pink alteration occurs throughout the dacite zone.

YNC5 (364.5m in length)

Logging and sampling of YNC5 was completed during this period.

Four main sequences were encountered:

- A. Tyndall Group rhyolites;
 - B. Howards Anomaly type andesites and sediments;
 - C. Newton Creek dacites and sediments;
 - D. Newton Creek spillway type conglomerates.
- A. Tyndall Group rhyolites are distinct magnetic, pink to red, quartz phyric, dense glassy lavas and sills.
 - B. The Howards Anomaly type zone comprises: autoclastic and reworked andesites, and mineralised polymict wackes, black shales and limestones. Intense haematite alteration occurs throughout and a zone of 5.5m contained 2.3% Ba and 3.1% Mn 2431ppm Zn and 4ppm Ag.
 - C. The Newton Creek dacite and sediment zone comprises: massive to autoclastic feldspar phyric dacites with intense pink alteration in part, and minor polymict breccias to sandstones and shale.
 - D. A distinctive autoclastic/hyaloclastic dacite breccia is tentatively correlated with Newton Creek spillway type conglomerates. This conglomerate lacks the polymict nature of spillway type conglomerate but is texturally very similar, and is associated with sandstones and cherty siltstones.

A significant zone of mineralisation and alteration occurs in dacite immediately below the spillway type conglomerate.

This zone is typified by K₂O (7.4%) and Mn (2.4% over 18.2m) alteration and 2m of :

29ppm Cu, 5960ppm Pb, 1.4% Zn, 7ppm Ag,
0.04ppm Au, 9.8% Fe, 1400ppm Ba, 6.1% Mn

YNC7 (289.6m in length)

YNC7 was drilled to test the along strike continuation of mineralisation intersected in YNC4 and also to test for spillway type conglomerate extrapolated between YNC5 and the spillway.

Four main sequences were encountered:

- A. Newton Creek dacites;
 - B. Newton Creek spillway type conglomerates;
 - C. Stratified Mafic Breccia;
 - D. Pumice Breccias.
- A. YNC7 was collared in strongly cleaved, augen textured, bleached dacites. Shear textures give way down hole to autoclastic textures enhanced by alteration. A zone of bleaching and intense alteration (K₂O 7.46%, Alteration Index 98) appears to emanate from faults and fractures within these dacites. A second less altered dacite body underlies the above dacite. The second dacite is dark green, massive to autoclastic and feldspar phyrlic, 2mm feldspars comprising 10 – 15% of the rock. A distinct peperitic upper contact and intrusive mixed lower contact indicates that this dacite is a sill.
- B. The "spillway type conglomerates" intersected comprise two distinct units.

The upper unit is a zone of mixed dacite hyaloclastite and polymict conglomerate grading to sandstone and siltstone. The dacite component is similar to the above dacite and in places displays jigsaw fit textures, the clasts however generally seem to have been partially rounded. The polymict component is coarser grained (up to 40cms) than the lower unit and appears to be more rounded. Clasts types include: vesicular basalt; altered pink dacites; altered white siliceous rhyolitic? lava; and siliceous siltstone.

The lower unit is polymict, angular, poorly sorted, may be clast or matrix supported and grades from 30mm clast size to siltstone. Clast types include: abundant dark green vesicular basalt clasts derived from the underlying unit; feldspar phyric dacites; fine grained, siliceous microspherulitic felsic lavas; minor siltstones; and minor quartz phyric rhyolites? Minor sphalerite and galena rich massive sulphide patches which may be clasts occur in this unit. This unit is quartz sericite altered and contains disseminated pyrite, sphalerite and galena.

Both units are distinctive in appearance.

The band of sediments that separate the two dacite units (sequence A above) are similar to, and possibly represent the graded top of the upper conglomerate unit.

- C. The stratified mafic breccia is a dark green, monomict, reworked, basaltic hyaloclastic, weakly vesicular or amygdaloidal in part. The matrix is composed of fine grained basaltic fragments, and the unit is well sorted and finely graded in part.
- D. This unit comprises massive to upwards fining, feldspar phyric, rhyodacitic pumice breccia with sparse monomict clasts. Feldspars are typically 1 to 3mm comprising 10 – 15% of the rock. The clasts which make up 5 – 10% of the rock are orange to pink, dense, perlitic finely feldspar-phyric dacite, and show upwards (coarse tail) grading. The rock is relatively unaltered, with minor sericitisation of pumice and secondary pink feldspar alteration of feldspars.

This intersection is important as it represents the first direct correlation with the section exposed in the spillway, and was instrumental in understanding the spillway lithologies and their relevance.

YNC8 (282.0m in length)

YNC8 was drilled continue the YNC4 section to the west in the light of the information provided by YNC7.

Four main sequences were encountered:

- A. Newton Creek dacites;
- B. Newton Creek spillway type conglomerates;
- C. Stratified Mafic Breccia;
- D. Pumice Breccias.

- A. Two dacite sills with distinct peperitic tops were intersected. These dacites are grey to pink massive to autoclastic with 10 to 15% 1 to 3mm feldspars. The lower dacite sill contains zones of buff to pink potassic? alteration. A distinct blue grey mudstone unit which occurs at the top of one of the dacite sills is correlated with a similar unit in YNC4.
- B. Both the upper and lower spillway type conglomerates are present but are thinner here than in YNC7.

The underlying stratified mafic breccia grades conformably up into black shale which is in turn overlain by typical lower spillway type breccia. This breccia is coarse grained, poorly sorted, packed and comprises dominantly basalt and siltstone clasts. Disseminated pyrite, sphalerite and galena, and fine patches of massive pyrite 2 to 5mm occur throughout. Some of the sulphide occurrence may be clastic.

The upper conglomerate (mixed with dacite hyaloclastite) grades into siltstone, and is overlain by pumice breccia.

Sediment bands separating the above dacite sills are possibly a continuation of these sediments.

- C. This unit is composed of monomict fragmental basaltic material. It differs from the intersection in YNC7 in that it is finer grained and occurs as a series of upwards fining beds. The finer grain size and delicate sedimentary textures in YNC8 possibly indicate that it is further from source than YNC7.

- D. Massive, feldspar phyric pumice breccia containing monomict dacite clasts. Essentially identical to pumice breccias intersected in YNC7.

YNC9 (262.0m in length)

YNC9 was drilled to intersect the target horizon north and west of YNC5. The collar was positioned so that the drill hole would also intersect the zone of interesting alteration and mineralisation encountered in YNC5.

The target horizon, ie., the association of pumice breccias overlain by stratified mafic breccia in turn overlain by distinct polymict breccias does occur, but 200m east of the expected position.

The distinctive zone of alteration and mineralisation in YNC5 was not intersected.

The drill hole ended in a dacite body at least 100m thick which was overlain by "footwall" pumice breccias. The contact and thus the relationship between this dacite and the pumice breccias remains ambiguous.

These results indicate an east/west trending structure between YNC5 & YNC9. The excellent correlation between distinct sedimentary units at the top of YNC5 and YNC6 suggests that this was probably an early syn-depositional feature.

5.2.3 GEOCHEMISTRY

During this period 104 samples of either drill core or outcrop were assayed for the base metal suite, 35 for whole rock suite and 47 for the lithogeochemical suite.

The Newton Creek lithogeochemical set now contains 109 samples.

Significant mineralised intersections are summarised in table 4.

Notable results include:

1. A zone (YNC5) rich in Ba and Mn (5.5m at 2.3 and 3.1% respectively) within mineralised, carbonate altered, sandstones derived from mixed andesitic and terrigenous detritus. This zone is correlated with a similar zone in YNC4.
2. A zone of Mn rich carbonate alteration (18.2m at 2.4%) in YNC5. This zone includes potassic alteration (up to 7.4% K₂O with Alteration Index of 92) and is associated with encouraging mineralisation. This zone occurs in a dacite sill immediately below upper spillway type conglomerates.

A sample was taken from the spillway stratified mafic breccia zone to test for anomalous levels of platinum and palladium with the following disappointing results:

37186 Pt 8 ppb Pd 7.4 ppb

A line of channel sampling (9 samples over 12m) from the spillway straddling the mineralised polymict wacke produced the following results:

Table 3

NEWTON CREEK SPILLWAY

Chip sampling over mineralised wacke zone

LGC_SAMP	Cu	Pb	Zn	Ag	Au	Fe%	Mn	Ba	As	Bi	Mo	Sn	W
37489	84	26	161	1	0.01	6.93	1164	1862	19	<10	<5	10	<5
37490	36	61	204	7	0.01	3.58	540	1030	36	<10	9	14	<5
37491	62	183	522	1	0.01	4.68	633	1683	41	<10	9	11	<5
37492	165	1234	3402	4	0.08	5.30	749	1542	90	<10	5	12	<5
37493	93	525	505	2	0.04	4.92	612	1207	26	<10	6	8	<5
37494	16	11	63	<1	<0.008	2.52	410	612	7	<10	<5	10	5.0
37495	23	59	166	<1	<0.008	3.75	388	1487	15	<10	<5	10	<5
37496	24	155	199	1	0.01	3.24	443	1233	16	<10	6	8	<5
37497	15	176	254	1	<0.008	2.56	467	831	100	<10	6	10	7.0

These results show minor but consistent enhancement of Cu, Pb, Zn, Ag and Au over the particular horizon of interest (37491, 37492, 37493).

5.2.3.1 Lithogeochemical Study of Newton Creek.

In the Newton Creek vicinity five volcanic rock types have been determined. The identification of these volcanic types has played a major role in understanding the complex geology and in directing exploration. A scatter plot of the immobile elements titanium and zirconium (Figure 16) best depicts these rock types. Note that the ratio of TiO₂ to Zr remains constant for different volcanic types whilst differences in amount of these elements reflects alteration (that is mass loss or mass gain of mobile elements). Comparison of Ti : Zr with V, Rb, Nb, P₂O₅ and Al₂O₃ (Appendix 9) all show the same pattern.

Lithogeochemistry has enabled the following correlations:

- a. mafic rocks in the top of YNC5 and YNC6 with mafics associated with Howards Anomaly, the Anthony Road Andesites and with the spillway footwall magnetic andesites.
- b. dacites hangingwall to the spillway with clasts within the spillway, the top of YNC1 and sills within YNC4, YNC5, and YNC7.
- c. the spillway clastic mafic (fire fountain basalt) with vesicular basalt clasts associated with the spillway sulphide clasts, and the stratified mafic breccias in YNC7 and YNC8.
- d. spillway pumice breccias with pumice breccias in the bed of Newton Creek, in YNC1, YNC7 and YNC8.

A combination of lithogeochemistry and volcanic facies analysis has identified the principal target horizon as being between "footwall" pumice breccias and stratified mafic breccia, and "hangingwall" dacites. These dacites appear to be high level sills with features indicating interaction with unconsolidated sediments.

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NEWTON CREEK VOLCANIC LITHOLOGIES

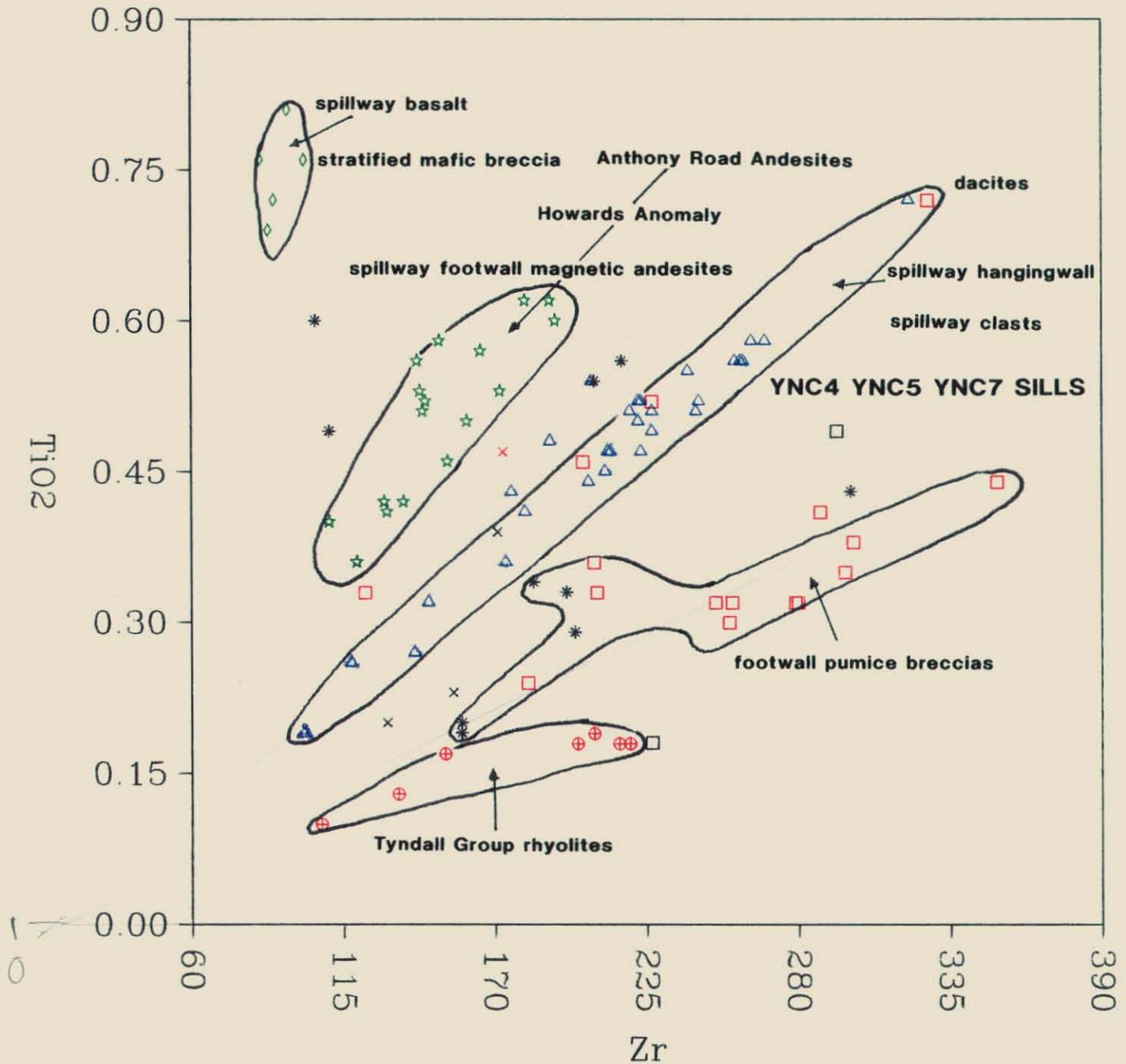


figure 18

E.L. 11/85 YOLANDE

NEWTON CREEK VOLCANIC LITHOLOGIES

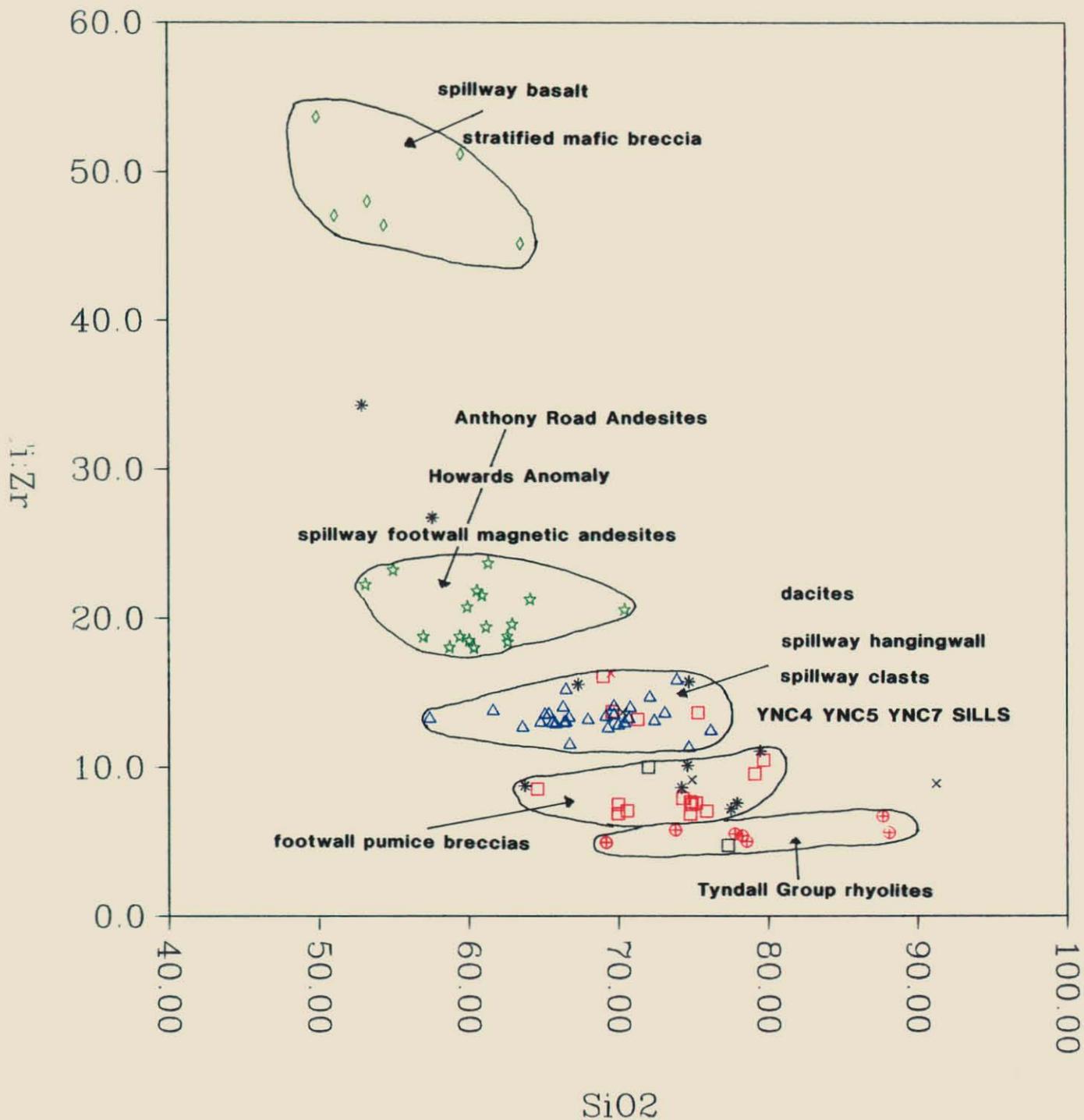


figure 19

5.2.3.2 Lithogeochemical comparison of Rosebery/Hercules Footwall pumice breccias and Newton Creek Pumice Breccias

Pumice breccias form the footwall to the horizon that is the source of the massive sulphide clasts found in conglomerates in the Newton Creek (NC) spillway. Visually these pumice breccias are similar to the Rosebery/Hercules (R/H) footwall pumice breccias. Comparisons of TiO_2 against Zr, and Ti:Zr against SiO_2 (Figures 18 & 19) for:

R/H footwall pumice breccias;

R/H footwall augen schists;

NC pumice breccias;

NC dacites;

indicate the following:

- a. lithogeochemical similarities between these pumice breccias;
- b. a similarity between NC dacites and R/H footwall pumice breccias indicating the presence of unrecognised and similar dacite sills within the R/H footwall pumice breccias.

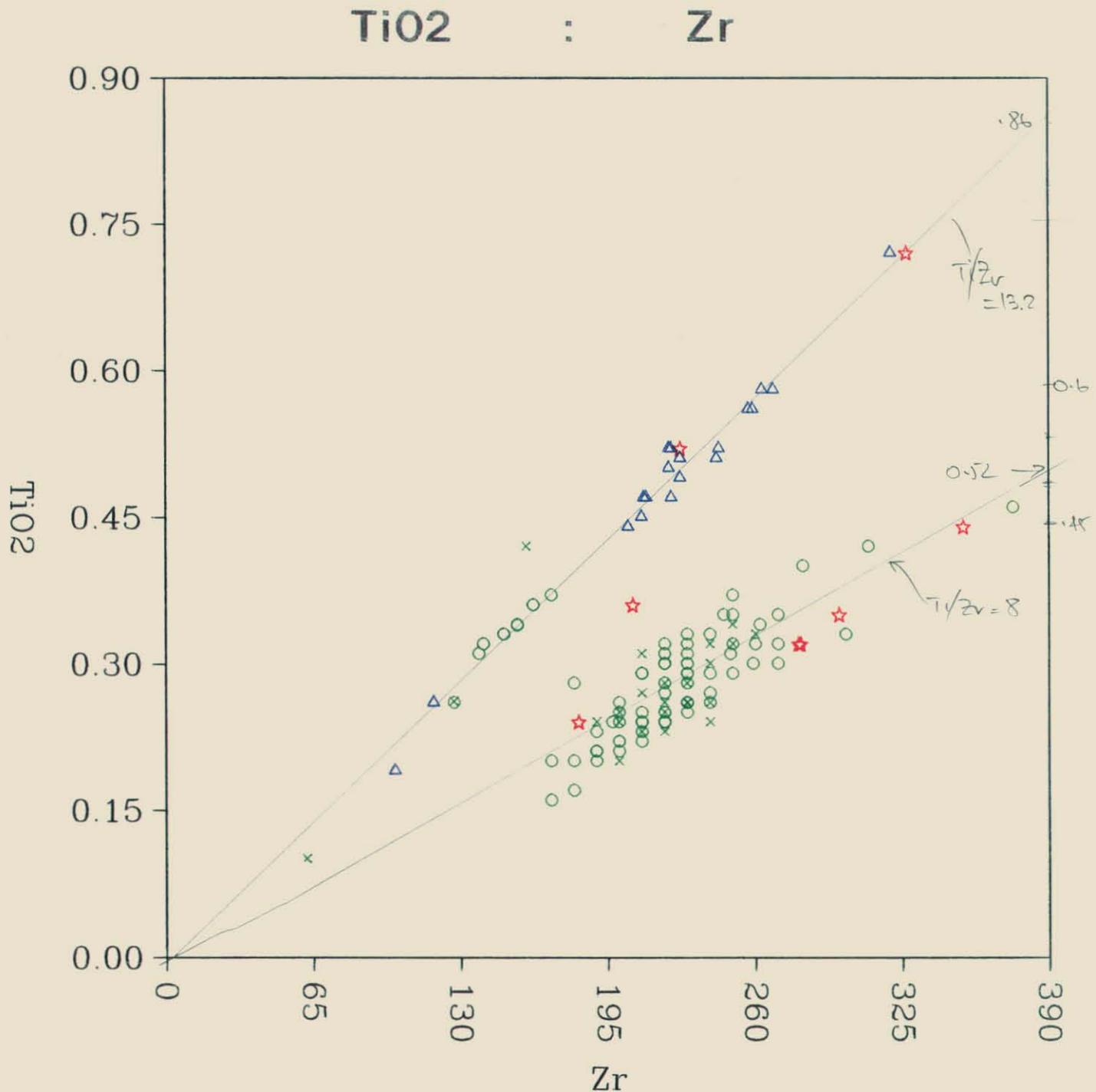
Pumice breccias are a relatively uncommon rock type, they are rapidly deposited and tend to be extensive. The above comparison between pumice breccias may result in a rare and important correlation of units across the Henty Fault and may have significant implications for exploration for Rosebery Hercules style deposits across the Henty Fault.

5.2.4 PETROLOGY

A set of 12 petrographic samples of sediments and clasts taken from the spillway were reported on by Crawford (Appendix 7).

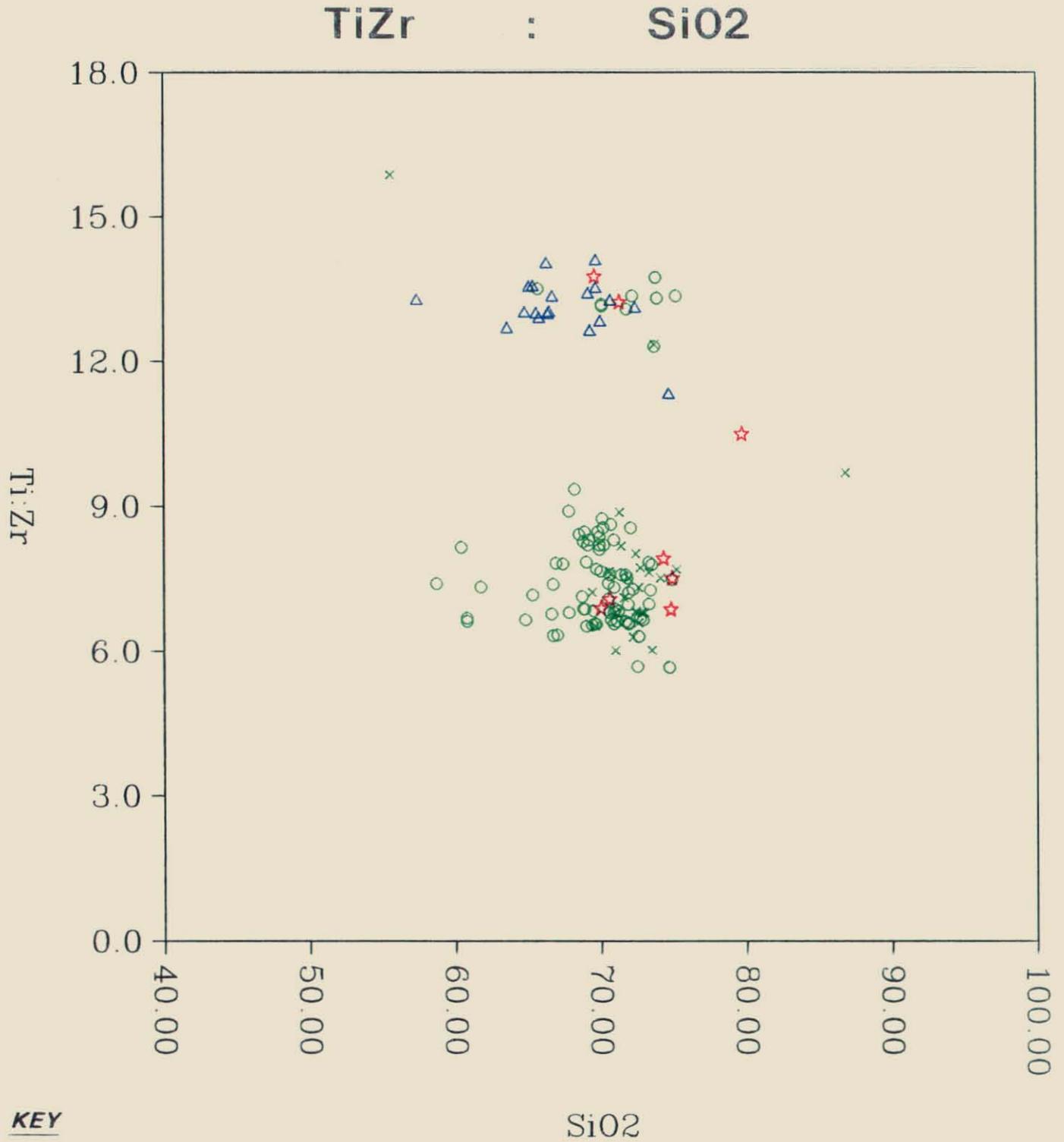
Crawford's reports the following observations which were pertinent to unravelling the spillway stratigraphy:

COMPARISON OF PUMICE BRECCIAS FROM
ROSEBERY FOOTWALL AND NEWTON CREEK WITH
NEWTON CREEK DACITES AS CONTEXT

**KEY**

- Rosebery/Hercules Footwall pumice breccias
- × Rosebery/Hercules Footwall schist
- ☆ Newton Creek pumice breccia
- △ Newton Creek dacite (for context)

COMPARISON OF PUMICE BRECCIAS FROM
ROSEBERY FOOTWALL AND NEWTON CREEK WITH
NEWTON CREEK DACITES AS CONTEXT



KEY

- Rosebery/Hercules Footwall pumice breccias
- × Rosebery/Hercules Footwall schist
- ☆ Newton Creek pumice breccia
- △ Newton Creek dacite (for context)

figure 17

1. The siltstone associated with the polymict wacke unit is bimodal in composition being derived from both Precambrian pelitic metamorphics (detrital muscovite), and felsic volcanics;
2. The matrix of the sandstone part of the spillway conglomerate is pumiceous and has strong sericite alteration;
3. The spillway conglomerate contains zones of monomict dacitic lava breccia (with strong hydrothermal carbonate alteration);

Other clast types include:

- a. silica-sericite-pyrite altered dacite;
- b. plagioclase-quartz phyric rhyolite lavas with mild hydrothermal alteration;
- c. vesicular basalt strongly sericite altered (tentatively correlated with the Henty Dyke Swarm type basalts);
4. The stratified mafic breccia zone comprises very strongly altered basalt possibly similar to the above mentioned vesicular clast;
5. Clasts within the stratified mafic breccia include rhyolite with distinct perlitic cracking.

5.2.5 GEOPHYSICS

5.2.5.1 Aeromagnetic Review

A magnetic and radiometric data exchange was conducted with Aberfoyle in the Newton Creek area during the previous year.

This data has been assessed by Leaman (Appendix 11a & 11b).

The initial report dated August 1993 deals with the area from 5,354,000 to 5,359,000mN. A second study was commissioned to cover the area to the north of the first report, from 5,358,500 to 5,361,000mN including the results of recent work.

Key points to come from Leaman's first report are as follows:

1. The data indicates a distinct local structural pattern superimposed on the regional pattern;
2. The data indicates a complex geometry of zones of positive and negative magnetism. Normally magnetised material appears to wrap around negatively magnetised material. Leaman suggests that this pattern, which must reflect a significant lithological change, represents a primary volcanic feature. Such a feature could be an uplifted lava pool or dome within a caldera, or a folded caldera margin.
3. All base metal sites lie adjacent to the main magnetically distinctive andesite pile which Leaman postulates as a major rock type change.

Key point to come from Leaman's second report are as follows:

1. A major structural boundary has been postulated to the west of the South Henty Fault at the eastern contact of the zone dominated by ultramafic response. Here Leaman proposes the western marginal wall of an early Cambrian rift, and further that the South Henty Fault may represent a rejuvenated internal rift fault. This would imply active extension and structural migration to the east during Cambrian evolution.
2. A change in magnetic sign has been identified in the Newton Creek Dacites, in variations of the Andesitic sequence, and in the base of the Tyndall Group. This may correlate with the zone of negative magnetism identified to the south of the spillway and may provide a magnetic "marker horizon".
3. Leaman has identified systematic changes along strike changes in magnetic responses (alteration) of distinct rock units. He notes that changes which correlate through the sequence must reflect later events, whereas patterns that migrate through the sequence indicate syn-depositional change. A response reflecting syn-depositional change occurs at 5,359,000 to 5,359,500mN. Leaman suggests that whatever the cause these systematic changes must reflect fundamental intra-sequence events.

4. Leaman has identified a change in dip of units in the Tyndall group. This he suggests reflects, or is in response to the "Cambrian" position of the Great Lyell Fault.

Leaman concludes that with the coincidence of several major structures within the area and the indication of alteration further exploration is justified.

5.2.5.2 Ground Magnetic Survey

The objective of the survey was to firstly identify the magnetic signature of lithologies (and thus to determine the geometry of geological units and structures), and secondly to identify zones of alteration within favourable horizons.

The survey was conducted to the following specifications:

Instrument:	Geo-Instruments G-856 magnetometer and base station;
length:	15 line km;
station spacing:	10m
line spacing:	200m

Results:

Different lithologies have sufficiently contrasting magnetic character, and magnetic response correlates well with interpreted geology.

Results are discussed in detail by Basford (Appendix 15) and include:

1. The Tyndall rhyolite sill signature has been identified, and the presence of further sills have been indicated. Modelling indicates spherical bodies;
2. The signature of the stratified mafic breccia (fire fountain basalt) intersected by YNC7 has been identified and a similar basalt has been indicated to the south-west. Modelling indicates dyke like bodies;
3. A swing in the strike of both rhyolites and basalts was indicated;

4. Remnant magnetism was invoked to explain responses in the vicinity of the spillway footwall andesite intrusive;
5. The distinct magnetic low observed in aeromagnetic data was not reproduced, however this low may correlate with the magnetic gradient in the south west edge of the survey;
6. The presence of a basalt body to the south-west of the spillway footwall andesite is indicated by a broad anomalous response not observed in the aeromagnetic data.

5.2.5.3 DHEM

DHEM surveys have been carried out on four drill holes; YNC4, YNC5, YNC7 and YNC9. Specifications and results from these surveys are documented in Appendices 12 and 13.

In summary, with the exception of loop1 on YNC9, no anomalous EM response, either in-hole or off-hole was revealed for any of the drill holes tested. Very resistive terrain was indicated by similarities in the profiles of the primary and secondary fields. Significant noise was encountered in the surveys.

Loop 1 (YNC9) was designed to test for a postulated fault perpendicular in strike to the drill hole. The results appear to indicate conductive material in a fault zone, however they could also be explained by a combination of "self response" and normal half space response.

TABLE 4

SUMMARY STATISTICS FOR PHYSICAL PROPERTIES

TYNDALL GROUP QUARTZ PHYRIC RHYOLITE LAVAS

	magnetic susceptibility	S.G.
Number	67	4
Mean	2.4533	2.6775
Std Dev	3.3048	0.0760
Variance	10.92	0.01
Maximum	12.60	2.79
Minimum	0.00	2.59
Range	12.60	0.20
Coef Var	134.7092	2.8367

ANTHONY ROAD ANDESITES AND MIXED SEDIMENTS

Number	138	9
Mean	0.6591	2.8089
Std Dev	1.6556	0.1138
Variance	2.74	0.01
Maximum	14.10	3.09
Minimum	0.00	2.70
Range	14.10	0.39
Coef Var	251.1827	4.0503

NEWTON CREEK DACITES AND MIXED SEDIMENTS

Number	483	30
Mean	0.1711	2.6283
Std Dev	0.0877	0.1341
Variance	0.0	.02
Maximum	0.6	2.81
Minimum	0.0	2.30
Range	0.65	0.51
Coef Var	51.2330	5.1017

NEWTON CREEK FOOTWALL STRATIFIED MAFICS

Number	14	3
Mean	0.2464	2.6833
Std Dev	0.1267	0.1327
Variance	0.02	0.02
Maximum	0.56	2.81
Minimum	0.10	2.50
Range	0.46	0.31
Coef Var	51.4123	4.9472

TABLE 4 continued..

NEWTON CREEK FOOTWALL PUMICE BRECCIA

Number	112	18
Mean	0.1491	2.5939
Std Dev	0.1585	0.1721
Variance	0.0253	0.03
Maximum	0.87	2.84
Minimum	0.00	2.26
Range	0.87	0.58
Coef Var	106.5762	6.6329

WHITE SPUR FORMATION MIXED SEDIMENTS

	magnetic susceptibility	<i>units?</i> S.G.
Number	150	5
Mean	0.1454	2.4820
Std Dev	0.8656	0.2693
Variance	0.75	0.07
Maximum	7.62	2.75
Minimum	0.00	1.98
Range	7.62	0.77
Coef Var	595.34080	10.8511

CENTRAL VOLCANIC COMPLEX

Number	230
Mean	0.0078
Std Dev	0.0169
Variance	0.00
Maximum	0.06
Minimum	0.00
Range	0.06
Coef Var	216.3102

SUMMARY OF MEAN VALUES

	magnetic susceptibility	SG
TYNDALL GROUP QUARTZ PHYRIC RHYOLITE LAVAS	2.45	2.68
ANTHONY ROAD ANDESITES AND MIXED SEDIMENTS	0.66	2.81
NEWTON CREEK DACITES AND MIXED SEDIMENTS	0.17	2.63
NEWTON CREEK FOOTWALL STRATIFIED MAFICS	0.25	2.68
NEWTON CREEK FOOTWALL PUMICE BRECCIA	0.15	2.59
WHITE SPUR FORMATION MIXED SEDIMENTS	0.15	2.48
CENTRAL VOLCANIC COMPLEX PUMICE BRECCIAS	0.008	

5.2.5.4 Physical Properties

Specific gravity and magnetic susceptibility data from diamond drilling undertaken during this period are listed with the drill logs (Appendix 4) and physical property data to date is summarised in table 4.

Physical property data is also discussed by Leaman (Appendix 11a & 11b).

The information collected to date indicates that significant contrasts exist in the physical properties between the specific lithologies of interest to enable detailed magnetics/stratigraphic interpretation.

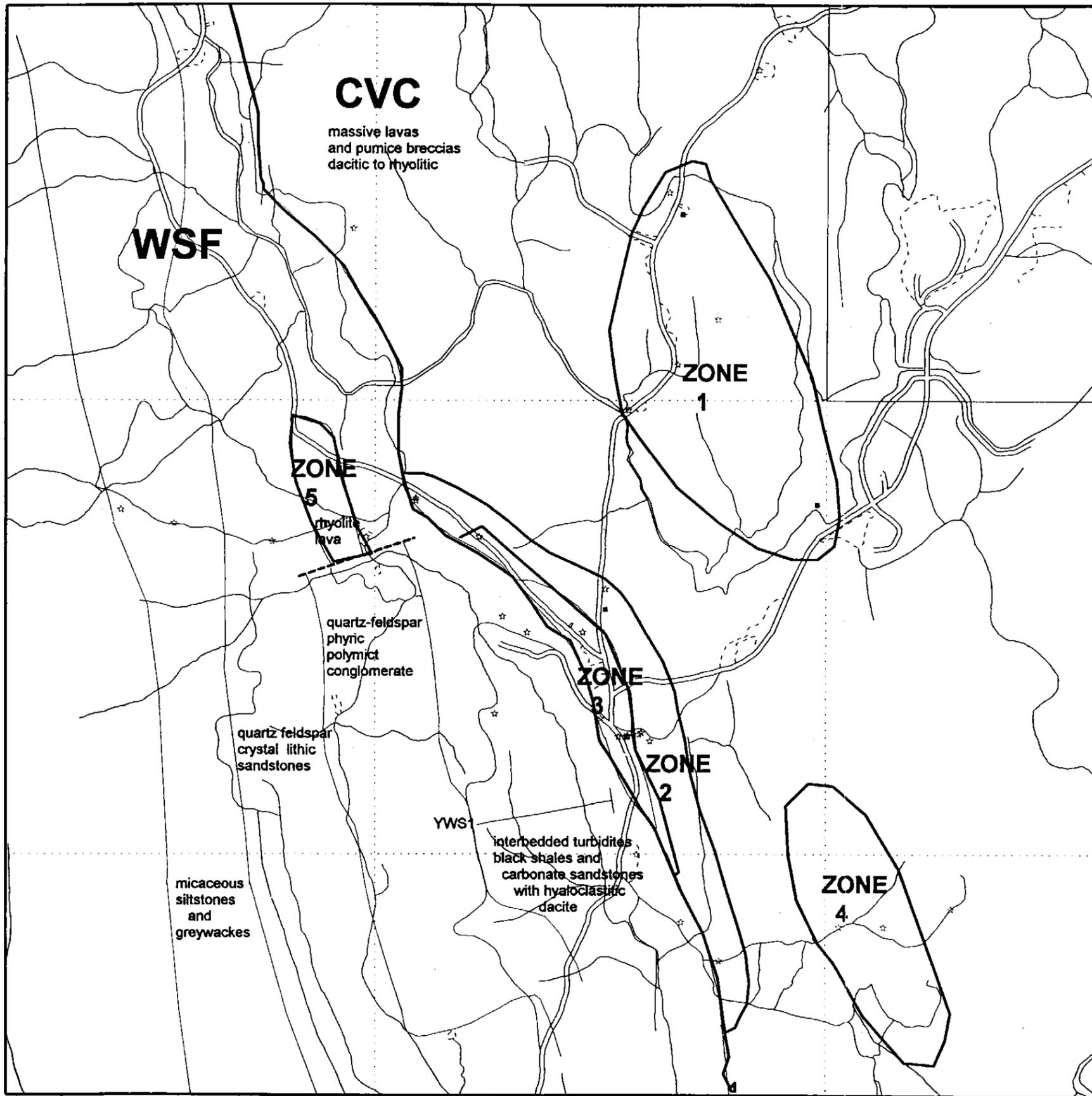
5.3 White Spur

The White Spur area refers to the along strike contact between the Central Volcanic Complex (CVC), and the White Spur Formation (WSF). The contact is important as both the Rosebery and Hercules ore bodies lie in this position. Approximately 6 km of this contact zone lies on Yolande EL starting from 2 km to the south of the old Hercules Mine. The area is well covered with IP and soil geochemistry dating from the 1970's, but there are only 5 DDH in this zone. The stratigraphy of the CVC in this area is not well understood.

5.3.1 DIAMOND DRILLING

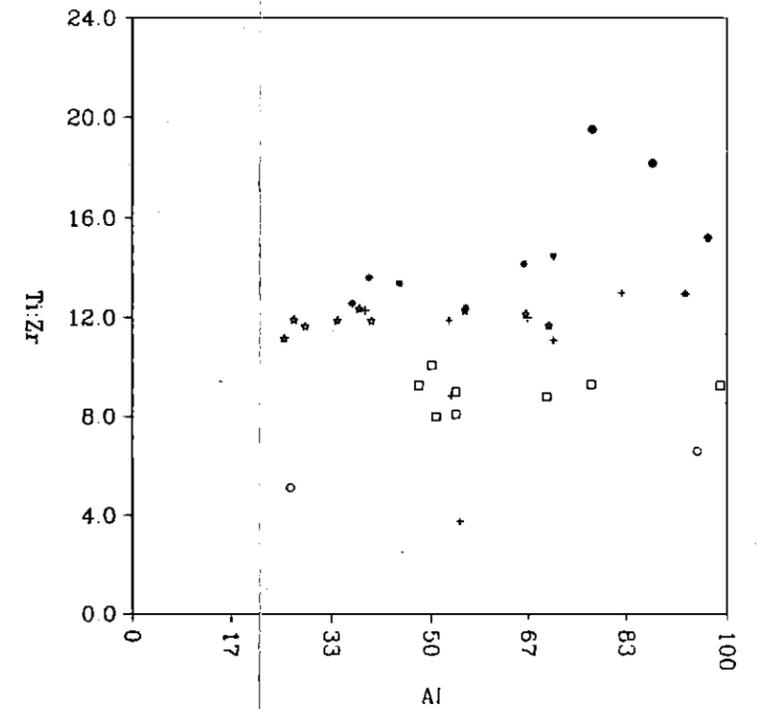
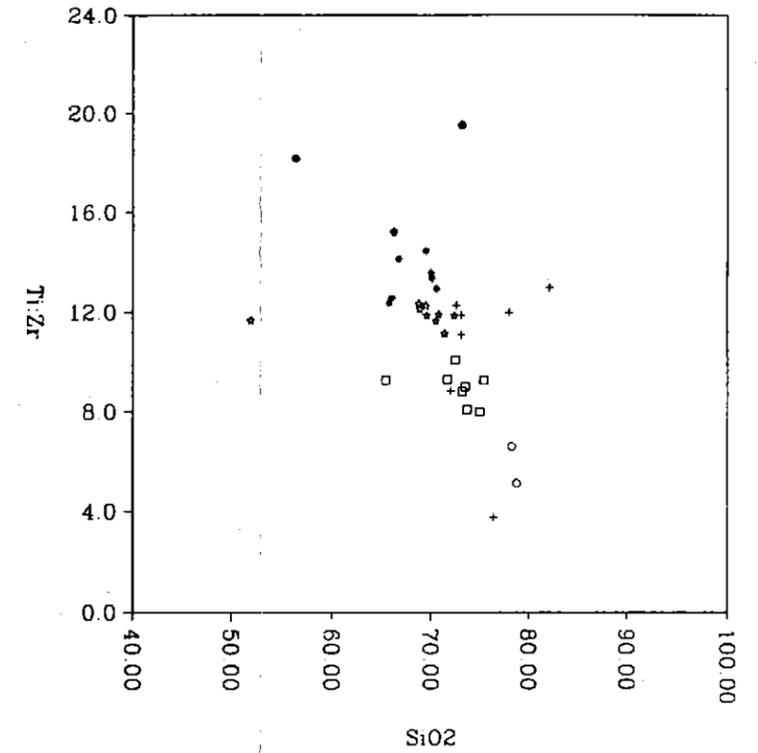
YWS1(430.5m in length)

YWS1 was collared 6.8kms to the south of the Hercules mine. The target was mineralisation and alteration within Rosebery/Hercules Footwall Sequence type pumice breccias overlain by White Spur Formation (WSF) shales, turbidites and polymict breccias (equivalent to Hangingwall Sequence and Black Slates at Rosebery and Hercules). The structural position is within parasitic folds on the west limb of an anticline. The Hercules mineralisation occurs in parasitic folds on the east limb of possibly the same anticline. The target was immediately beneath a zone of intense hydrothermal alteration and anomalous base metal values in black shale and was coincident with a distinctive IP/Resistivity anomaly.



KEY

- ZONE 1
- ☆ ZONE 2
- * ZONE 3
- + ZONE 4
- ZONE 5



PASMINCO EXPLORATION <small>A Division of Pasminco Australia Limited</small>	
COMPILED: P.M.O.	E.L. 11/85 - YOLANDE WHITE SPUR SIMPLIFIED GEOLOGY AND GEOCHEMICAL ZONATION
DATE: July, 1994	
DRAWN:	
REF.:	
REVISIONS:	
DRAWING No.	SCALE 1:10,000
FIG. No. 14	

The drill hole intersected the expected sequence of White Spur Formation black shales, turbidites, polymict breccias and carbonate rich sandstones, and confirmed the predicted fold style. The Central Volcanic Complex rocks encountered were relatively unaltered pumice breccias with minor sandstones and dacite sills. A detailed drill log is presented in Appendix 4.

Three main sequences were encountered:

- A. WSF polymict micaceous wackes and interbedded black shales disrupted by hyaloclastite;
- B. WSF massive carbonate rich sandstones and interbedded black shales;
- C. CVC pumice breccias with minor sandstones siltstones and dacite sills.

A. This zone would appear to represent background black shale deposition interbedded with polymict micaceous wackes and disrupted by slumps of hyaloclastic debris. The black shales are similar to those throughout the drill hole. The polymict wackes appear to be upwards fining beds in an overall coarsening upwards sequence grading towards the overlying quartz-phyric polymict breccia zone. Main clast types are: quartz porphyry, black shale, white siliceous siltstone and/or white siliceous volcanic, and massive feldspar phyric volcanic. The hyaloclastic debris occurs throughout, but no cohesive sills or jigsaw fit clasts were intersected. The confusing and unusual textures developed are thought to represent re-deposition of hyaloclastic debris, overprinting the mixed sediment sequence.

B. This zone is dominated by black to grey massive to laminated shales and bands of massive to graded carbonate rich sandstone.

The black shales contain abundant carbonate/pyrite and carbonate/pyrrhotite bedding parallel laminae which are remobilised into axial plane cleavage in part. The main carbonate sandstone body, which is 35m thick, appears to be a single upwards fining bed, and is banded with carbonate rich and carbonate poor layers.

Zones A & B appear to part of a conformable sequence, however the contact between zones B & C is faulted and defines a change in rock type and formation.

The contact zone is 10cm wide and consists of fault pug, brecciated white quartz and yellow carbonate with minor chlorite and trace galena.

- C. This zone is dominated by pumice breccias and dacite sills. Pink-green, coarse grained, feldspar-phyric pumice breccias are separated from dark grey pumice breccias by a thin massive pumiceous sandstone. Both pumiceous beds contain minor lithic clasts which include pale green possibly mafic clasts, and fine grained silicified possibly sediment clasts.

The top of the pumice breccias seem to be in peperitic contact with very fine grained siliceous siltstone. This is overlain by a fine grained sandstone with sharp upper and lower margins which is in turn overlain by dacite sills. The dacites are massive, dark grey and feldspar-phyric with distinctly peperitic upper margins. Lithogeochemically the dacites and pumice breccias are similar.

The CVC pumice breccias intersected were relatively unaltered (Alteration Index = 38, 37 & 28), and only traces of sphalerite, galena and pyrite occur close to the contact. These disappointing results down-grade the prospectivity of this area.

5.3.2 GEOCHEMISTRY

During this period 13 samples of either drill core or outcrop were assayed for whole rock and lithogeochemical suites.

The White Spur lithogeochemical set now contains 48 samples.

The objective of lithogeochemical studies in the area is to produce a volcanic stratigraphy that can be used to correlate with lithologies hosting the Rosebery and Hercules orebodies, and to identify areas of favourable hydrothermal alteration.

E.L. 11/85 - YOLANDE

WHITE SPUR VOLCANIC LITHOLOGIES

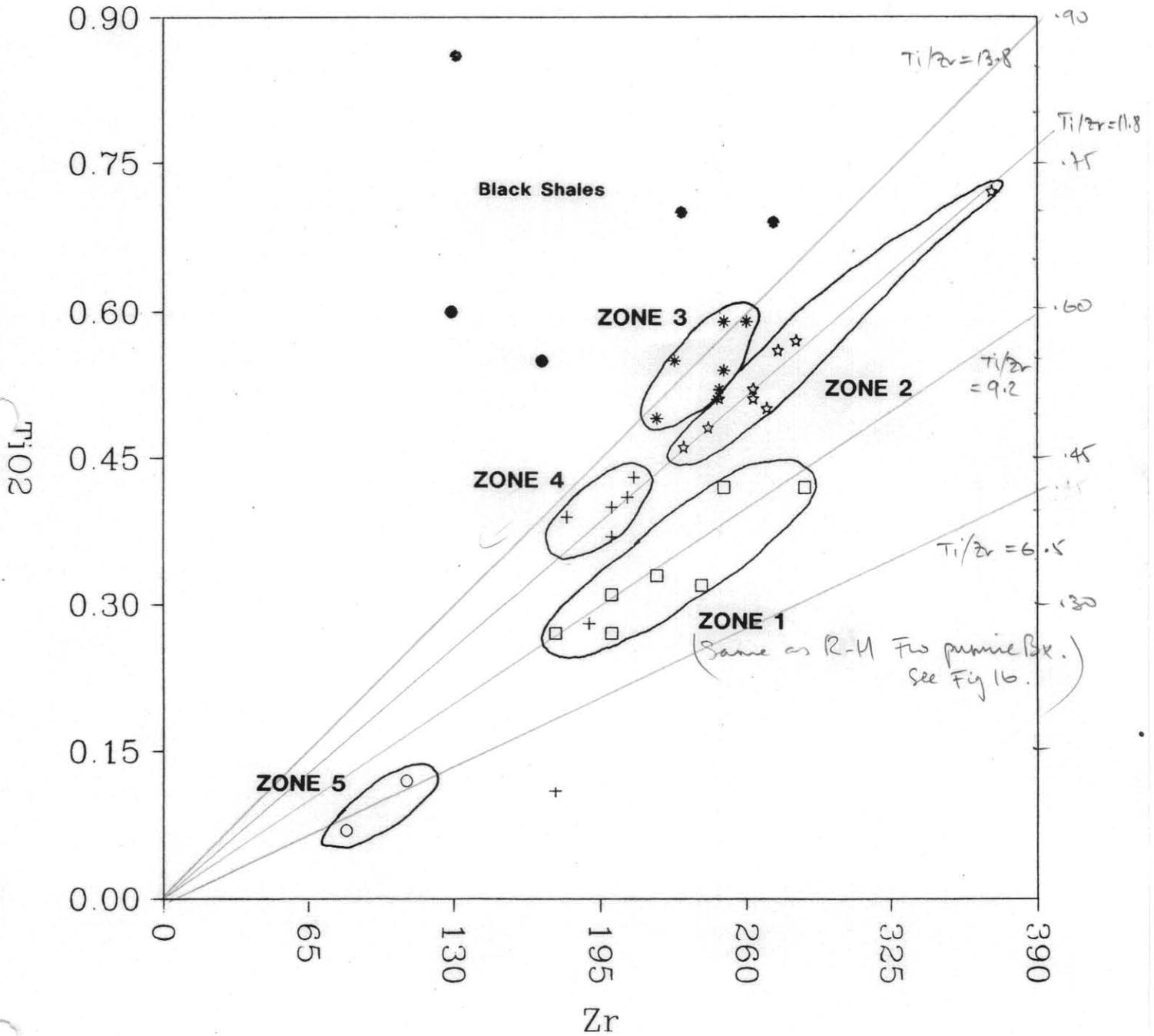


figure 15

Volcanic lithologies in the area comprise pumice breccias, lavas and sills. A scatter plot of TiO₂ v Zr (Figure 15) defines five groups of volcanic lithologies. These trend from rhyolitic to dacitic in composition up stratigraphy and towards the White Spur contact.

Zones 1 + 2 (Figure 14 & 15) appear to be pumice breccia, zones 3 + 4 are lavas or syn depositional sills. The compositional difference between zones 2, 3 & 4 are not great suggesting a common origin

Zone 5, which occurs within the White Spur Formation, has a significantly different geochemical signature.

5.3.3 GEOPHYSICS

Physical Properties

Specific gravity and magnetic susceptibility data from diamond drilling undertaken during this period are listed with the drill logs (Appendix 4) and physical property data to date is summarised in table 6.

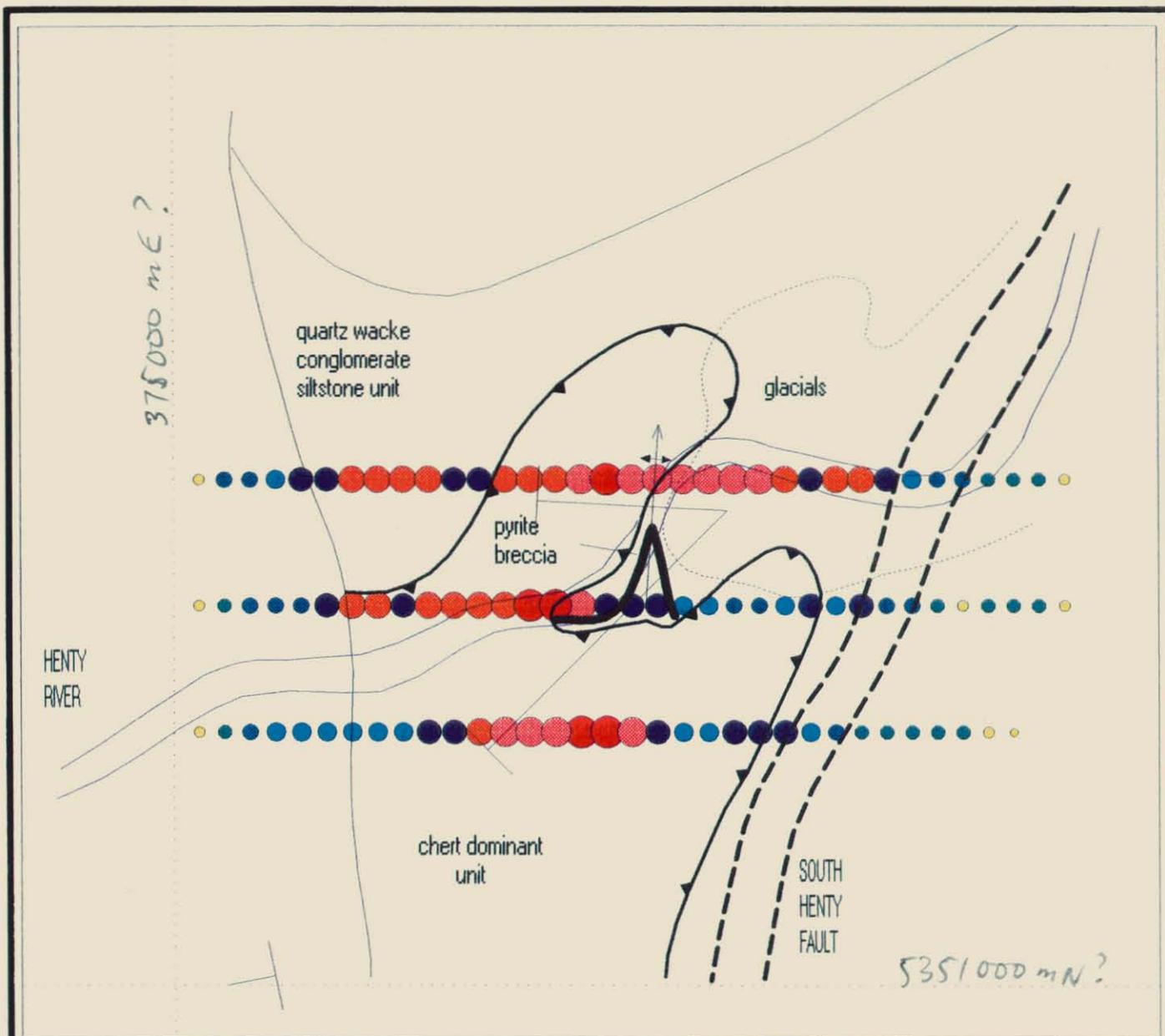
Magnetic susceptibility data from YWS1 indicate low to variable values for the White Spur Formation whereas the values recorded for the CVC pumice breccias are extremely low. This contrasts with high values recorded on the surface for this lithology (Quayle 1993).

5.4 Henty Valley

5.4.1 GEOPHYSICS-IP/RESISTIVITY

Four lines of pole – dipole IP/Resistivity data totalling 2.3 line kilometres were collected at Henty Valley. Specifications and results from this survey are documented in Appendices 14.

Massive pyrite outcrops of limited extent occur in the bed of the Henty River. Values up to 50ppm Cu, 1.23% Pb, 7700ppm Zn, 12ppm Ag, <0.008ppm Au, 37.8% Fe, and 25ppm Ba, have been recorded from these outcrops.

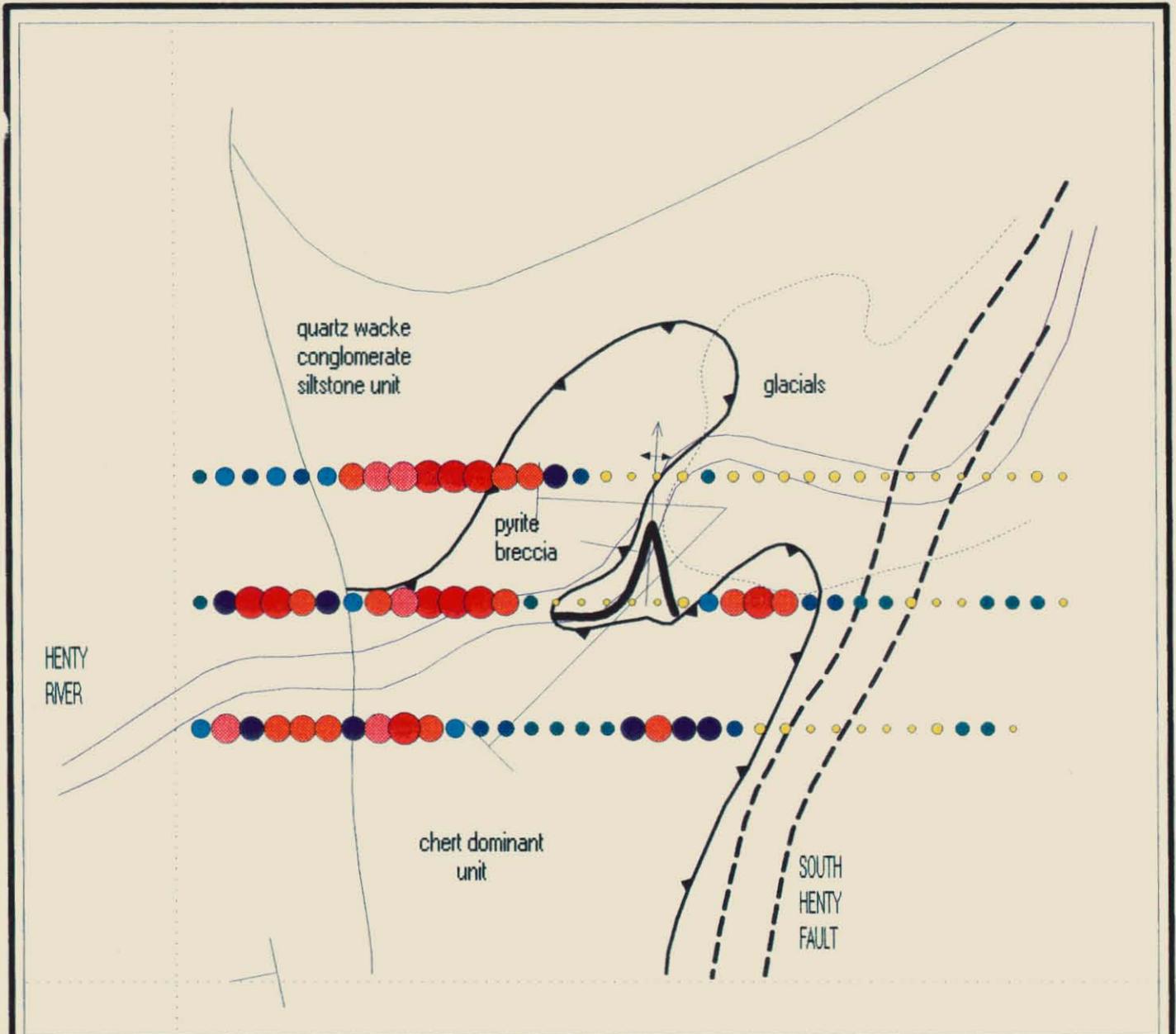


MSUM by _COL3

- 45 to 55 (5)
- 40 to 45 (12)
- 35 to 40 (17)
- 30 to 35 (19)
- 25 to 30 (15)
- 20 to 25 (13)
- 15 to 20 (14)
- 10 to 15 (7)
- 5 to 10 (1)

5 cm

PASMINCO EXPLORATION <small>A Division of Pasminco Australia Limited</small>	
COMPILED : P.M.Q. DATE : July 1994 DRAWN : REF. : REVISIONS :	E.L. 11/85 - YOLANDE HENTY VALLEY I.P. MSUM SUPERIMPOSED ON SIMPLIFIED GEOLOGY WITH PROPOSED DIAMOND DRILLING
DRAWING No.	SCALE 1:10,000 <div style="display: inline-block; text-align: center; margin: 0 10px;"> 0 m 20 </div>
	FIG. No. 20

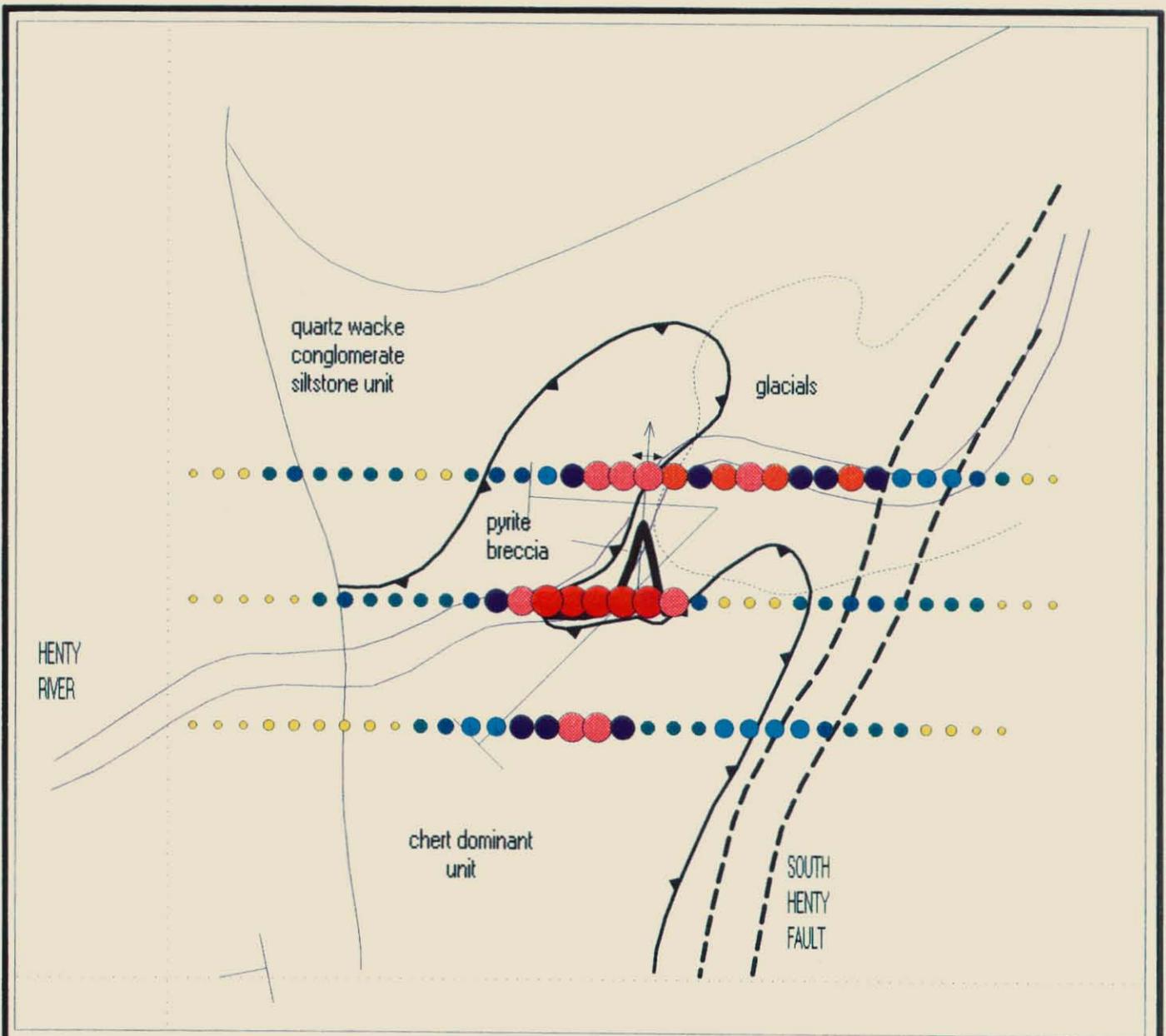


RES by _COL3

- 3000 to 4000 (10)
- 2750 to 3000 (5)
- 2500 to 2750 (13)
- 2250 to 2500 (8)
- 2000 to 2250 (7)
- 1750 to 2000 (8)
- 1500 to 1750 (15)
- 1250 to 1500 (14)
- 1000 to 1250 (16)
- all others (8)

5 cm

PASMINCO EXPLORATION <small>A Division of Pasminco Australia Limited</small>		
COMPILED : P.M.Q. DATE : July 1994 DRAWN : REF. : REVISIONS :	E.L. 11/85 - YOLANDE HENTY VALLEY I.P. RESISTIVITY SUPERIMPOSED ON SIMPLIFIED GEOLOGY WITH PROPOSED DIAMOND DRILLING	
DRAWING No.	SCALE 1:10,000 <div style="display: inline-block; text-align: center; margin: 0 10px;"> 0 20 ──── m </div>	FIG. No. 21



MF by _COL3

	80 to 100 (5)
	60 to 80 (8)
	50 to 60 (4)
	40 to 50 (9)
	30 to 40 (10)
	25 to 30 (11)
	20 to 25 (25)
	15 to 20 (15)
	0 to 15 (16)

5 cm

PASMINCO EXPLORATION <small>A Division of Pasma Australia Limited</small>	
COMPILED : P.M.Q. DATE : July 1994 DRAWN : REF. : REVISIONS :	E.L. 11/85 - YOLANDE HENTY VALLEY I.P. METAL FACTOR SUPERIMPOSED ON SIMPLIFIED GEOLOGY WITH PROPOSED DIAMOND DRILLING
DRAWING No.	SCALE 1:10,000
	FIG. No. 22

The pyrite occurrence appears to be stratabound in a sequence of folded wackes and sandstones. Geological mapping reported during the previous year has indicated that this sequence is buried by a chert-conglomerate dominant unit. The contact between the overlying, older chert-conglomerate dominant unit and the sandstone-wacke dominant unit is a shallow thrust.

Results of this survey (Figures 20,21 & 22) are consistent with the continuation of mineralisation both to the north and south beneath overthrust cherts. An antiform to the north east is indicated by the data.

The mineralised horizon will be diamond drill tested during the coming year.

5.5 Yolande River

Exploration conducted on the Yolande River EL 25/91 comprises computerisation and review of existing geochemical data and the creation of a base map with access, drainage, existing geochemistry and mineral occurrences (Figure 13).

6 RGC TAILINGS EASEMENT PROPOSAL

The application for a depth-limited easement over part of EL 11/85, lodged by Renison Goldfields in 1991 as part of their proposed Henty Gold Mine Development, has still not been finalised. Negotiations about the terms of such an easement, especially the scope and timing of a condemnation drilling program have continued with RGC, Aberfoyle (exploration managers of adjacent EL 5/85) and the Mines Department during 1993-94.

At the same time the Yolande Joint Venture has been actively exploring within the Easement Application area, including the completion of drill holes directly within the area proposed for the tailings ponds. As a consequence of this work the requirement for condemnation investigations has been significantly reduced, with the eastern portion straddling the tenement boundary being the only section not to have been drill tested at this stage.

It is anticipated that RGC might undertake condemnation work, including drilling a relatively short diamond drill hole during the next six months. Depending upon the results of this work and the results of the next phase of exploration within the Newton Creek area of EL 11/85, it is possible that the Yolande Joint Venture will be in a position to accept the Henty Tailings Easement Application and thus enable the Mines Department to proceed with its' processing early in 1995.

7 ENVIRONMENTAL DISTURBANCE & REHABILITATION

Environmental Disturbance on Yolande EL 11/85 and Yolande River EL 25/91 during 1993-94 comprised four diamond drill sites each with a vehicle access track. These tracks were each approximately 250m long and were constructed on button grass plains. An excavator was used to peel back grass and soil in such a way that they can be replaced with minimum disturbance.

To date only one of these tracks has been rehabilitated. The remainder will be done when they are no longer required.

Where possible work is carried out using existing access. DDH YWS1 was drilled from an existing road, and grid based geophysics was done on existing grids.

8 EXPENDITURE

Total expenditure on EL 11/85 during the twelve month period to 30 June 1994, was \$396 611 bringing the total expenditure on licence since it's inception on 21 August 1985 to \$1586 015. Similarly, total expenditure on EL 25/91 during the twelve months to 30 June 1994, was \$12 890 bringing the total expenditure since it's inception on 30 November 1991 to \$58 850.

Detailed of the 1993-94 expenditure are as follows:

	EL 11/85	EL 25/91
Personnel: Salaries, Wages & Oncosts	113 795	3 930
Travel & Accommodation	6 086	527
Geological Consultants	830	
Petrology	1 018	
Analytical Services	5 410	
Geophysical Consultants	4 860	3 330
Geophysical Surveys		
- I.P.	4 243	
- DHEM	4 742	
Drilling: inc. access & core process./storage	159 950	35
Other Contractors	6 696	207
Stores & Supplies	4 603	615
Vehicles & Equipment	11 497	403
Computing	3 460	67
Tenement Costs	2 520	1 290
Office Running Costs	30 845	1 315
Total Direct Costs	360 555	11 718
Administration/Management Fee	36 056	1 172
TOTAL EXPENDITURE	396 611	12 890

9 CONCLUSIONS

Newton Creek – Henty Canal

The principal target zone (that is the source of the spillway massive sulphide clasts) has been identified.

It lies at the transition between:

underlying pumice breccias (similar to Rosebery–Hercules Footwall pumice breccias);

and:

overlying series of dacite sills with textures indicating intrusion into unconsolidated sediments.

The position is marked by an unusual stratified mafic breccia, identified as a sub–aqueous fire–fountain deposit. Such deposits are excellent marker horizons, also they appear to be spatially associated with some massive sulphide ore bodies.

White Spur

The most promising geological target within the White Spur Area was drilled with disappointing results. Whilst this down grades the prospectivity of the immediate area, the contact zone between the Rosebery Hercules Footwall pumice breccias and the White Spur Formation remains a zone of interest.

Henty Valley

IP/Resistivity data collected during the period are consistent with the stratiform pyrite body exposed in the bed of the Henty River continuing both to the north and south, concealed beneath a shallow dipping thrust sequence.

10 RECOMMENDATIONS 1994-95

It is proposed to continue the major program of evaluation and exploration of key prospects during the forthcoming year. The major emphasis will be along the identified target horizon in the vicinity of Newton Creek.

The major aspects of the proposed program are as follows:

10.1 Newton Creek - Henty Canal

Geology: Detailed mapping to trace the identified target horizon south from the spillway to the Basin Lake area. Further structural analysis correlating magnetic and gravity data with stratigraphy and alteration studies.

Geochemistry: Extend the lithogeochemical study to refine the volcanic-stratigraphic interpretation and to focus on areas of favourable alteration. To conduct an orientation MMI survey over the target horizon and if results are favourable to extend the survey to further identify targets along the horizon.

Drilling: Four diamond drill holes are to be drilled each approximately 500m in length as follows:

- A. The intersection of the target horizon with the South Henty Fault, coincident with anomalous geochemical, IP and UTEM responses;
- B. Below and to the south of encouraging alteration and mineralisation in YNC5;
- C. To intersect the target horizon in a zone of low magnetic response south west of the spillway;
- D. To intersect the target horizon interpreted from the magnetic data to the south of the spillway.

10.2 Henty Valley

Drilling: Two diamond drill holes of 300 and 250m length are to be drilled to test encouraging results from the 1994 IP/Resistivity survey and the developing geological model. Helicopter support would be necessary.

10.3 White Spur

Geochemistry: Extend the lithogeochemical study to identify alteration within the Central Volcanic Complex along its contact with the White Spur Formation.

10.4 Yolande River (EL 25/91)

Geology: Undertake semi-regional mapping and sampling across the tenement.

Geochemistry: Lithogeochemical sampling to assist with stratigraphic correlations and to identify areas of favourable hydrothermal alteration.

KEYWORDS

LEAD, ZINC, GOLD, BLACK SHALE, CONGLOMERATE, ACID VOLCANICS, ANDESITE, BASALT, FACIES MARINE SHALLOW, FAULT, FOLD, THRUST, VOLCANOGENIC, CAMBRIAN, DRILL DIAMOND, GEOCHEM ROCK, GEOPHYS DHEM, GEOPHYS IP, GEOPHYS MAGNETICS, PETROLOGY.

LOCATION

QUEENSTOWN SK5505, HENTY RIVER, NEWTON CREEK, WHITE SPUR, YOLANDE RIVER

REFERENCES

- Crawford, A.J., Corbett, K.D., Everard, J.L., 1992. Geochemistry of the Cambria Volcanic-Hosted Massive Sulphide -rich Mt Read Volcanics, Tasmania, and some tectonic implications. *Econ. Geol.* 87 (3): 597-620
- Dugdale, J.S., 1992. *Lithostratigraphy of the White Spur area, Western Tasmania*. Honours Thesis Geology Dept. Univ. Tas.
- Gibson, R.P., 1991. The geology of the Mount Read Volcanics in the Anthony Road - Newton Creek area Western Tasmania. Honours Thesis Geology Dept. Univ. Tas.
- McPhie, J., Allen R.A., 1992. Facies Architecture of Mineralised Submarine Volcanic Sequences: Cambrian Mount Read Volcanics, Western Tasmania. *Econ. Geol.* 87 (3): 587-597
- Poltock, R.A., & FitzGerald, F.G., 1991. EL 11/85 Yolande JV Annual Report to for 12 months to July 1991. Pasmenco Exploration Report No. T91/5
- ., 1992a. EL 11/85 & EL 25/91 Yolande JV Annual Report to June 1992. Pasmenco Exploration Report No. T92/11
- ., 1992b. *Geology of the Henty Fault Wedge, Western Tasmania*. Master of Economic Geology Thesis Univ. Tas.
- Purvis, J.G., 1983. Relinquishment report, Henty - Yolande and West Huxly Areas, Tyndall EL9/66, Western Tasmania. Goldfields Exploration Pty Ltd Unpublished Report.
- Quayle, P.M., 1993 Annual Report Yolande EL 11/85 & Yolande River EL 25/91. Pasmenco Exploration Report No. T93/7.

APPENDICES

APPENDIX 1
ANALYTICAL REPORTS



ANALABS

A Division of Incharge Testing Services (Australia) Pty. Ltd.
A.C.N. 004 591 664

897062

Phone (004) 316837

14 Thirkell St. COOEE TAS 7320

Fax (004) 318890

ANALYTICAL REPORT No. 111310.60.10169

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

INVOICE TO:

Pasminco Exploration
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12/05/94

1

12

SAMPLE NUMBERS	SAMPLE DESCRIPTION	ELEMENT/METHOD
Various 34199-35075	PU Prep :	Rb, Sr, V, Nb, Y, Zr / GX401

RESULTS TO

Mr N Quayle
Pasminco Exploration
P.O. Box 886
BURNIE TAS 7320

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12/05/94

1440

1 OF 1

	SAMPLE No.	Rb	Sr	V	Nb	Y	Zr			
METHOD		GX401	GX401	GX401	GX401	GX401	GX401			
1	31499	114	84	68	12	35	216			
2	31500	76	65	35	9	26	176			
3	35012	167	17	84	10	26	205			
4	35037	95	56	35	9	30	181			
5	35042	118	39	33	5	23	171			
6	35043	81	87	24	7	31	131			
7	35057	125	191	14	9	28	288			
8	35064	237	22	282	14	16	272			
9	35066	227	195	134	13	34	231			
10	35068	200	19	172	10	17	129			
11	35070	132	47	99	14	24	169			
12	35075	155	15	154	13	36	131			
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
24	DETECTION	5	5	5	3	5	5			
	UNITS	ppm	ppm	ppm	ppm	ppm	ppm			

Results in ppm unless otherwise specified
- element not determined

IS = insufficient sample

AUTHORISED OFFICER





ANALABS

Division of Inshore Trading Services (Australia) Pty. Ltd.
A.C.N. 004 591 684

YUC 8, + YUC 9

897064

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4	06/05/94	1	6

SAMPLE NUMBERS	SAMPLE DESCRIPTION	ELEMENT/METHOD
37469/71 37904/06	DC Prep : 6P029,F1	Cu,Pb,Zn,Ag,Fe,Mn/GA140 Au,Au(S)/GG309 Ba/GX401 Whole Rock/OA406 LG1/OM615 Rb,Sr,V,Nb,Y,Zr/GX401

RESULTS TO
 Mr M Quayle
 Pasminco Exploration
 P.O. Box 886
 BURNIE TAS 7320

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06/05/94

1439

1 OF 4

METHOD	SAMPLE No.	Cu	Pb	Zn	Ag	Fe	Mn	Au	Au(S)	Ba
		GA140	GA140	GA140	GA140	GA140	GA140	GG309	GG309	GX401
1	37469	8	<3	113	<1	4.67	855	<0.008	-	477
2	37470	50	11	118	<1	4.04	581	<0.008	<0.008	461
3	37471	82	14	108	<1	3.44	571	<0.008	-	339
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
16										
17										
18										
19										
20										
21										
22										
24	DETECTION	2	3	2	1	0.01	3	0.008	0.008	10
25	UNITS	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm

Results in ppm unless otherwise specified
 -- = element not determined

IS = insufficient sample
 SNR = sample not received

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SAMPLE PREFIX REPORT No. REPORT DATE CLIENT ORDER No. PAGE

111310.60.10126 06/05/94 1439 2 OF 4

METHOD	SAMPLE No.	Rb	Sr	V	Nb	Y	Zr	Al2O3	SiO2	TiO2
		GX401	GX401	GX401	GX401	GX401	GX401	OX40B	OX40B	OX40B
1	37904	65	75	38	8	19	123	13.69	69.0	0.33
2	37905	119	136	64	10	28	190	13.74	66.5	0.48
3	37906	72	120	102	7	21	131	13.36	71.6	0.34
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
16										
17										
18										
19										
20										
21										
22										
24	DETECTION	5	5	5	3	5	5	0.05	0.1	0.01
25	UNITS	ppm	ppm	ppm	ppm	ppm	ppm	%	%	%

Results in ppm unless otherwise specified
 - = element not determined

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1439

3 OF 4

	SAMPLE No.	Fe2O3	MnO	CaO	K2O	MgO	Na2O	P2O5	SO3	TOTAL
METHOD		OX408								
1	37904	3.85	0.07	1.89	3.46	1.68	1.22	0.047	0.15	99.56
2	37905	4.74	0.06	2.01	3.80	0.83	1.80	0.129	0.35	99.85
3	37906	3.77	0.05	1.03	2.60	2.03	1.76	0.051	0.19	99.84
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
16										
17										
18										
19										
20										
21										
22										
24	DETECTION	0.01	0.01	0.01	0.01	0.01	0.05	0.005	0.01	0.01
25	UNITS	%	%	%	%	%	%	%	%	%

Results in ppm unless otherwise specified
-- = element not determinedIS = insufficient sample
SNR = sample not received

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REPORT DATE

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PAGE

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06/05/94

1439

4 OF 4

METHOD	SAMPLE No.	LOI							
1	37904	4.15							
2	37905	5.39							
3	37906	3.06							
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									
21									
22									
23									
24									
25	DETECTION	0.01							
	UNITS	%							

Results in ppm unless otherwise specified
 - element not determined

IS = insufficient sample
 SNR = sample not received

AUTHORISED OFFICER



Phone (004) 316837

14 Thirkell St. CODEE TAS 7320

Fax (004) 316890

ANALYTICAL REPORT No.

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1

36

SAMPLE NUMBERS

SAMPLE DESCRIPTION

ELEMENT/METHOD

37466/97,37578/600,37197,37468

Prep : 6P029,P1

Prep :

Prep :

Prep :

Cu,Pb,Zn,Ag,Fe,Mn,Bi,Mo/GA140

Fe,Mn/GA104

As/HA140,GA140

Au,Au(R),Au(E)/66309

Ba,Sr,W,Rb,Sr,V,Nb,Y,Zr/GX401

Whole Rock Analysis/OX408

RESULTS
TO

Mr M Quayle
Pasminco Exploration
P.O. Box 886
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RESULTS
TO

Mr F Fitzgerald
Pasminco Exploration
P.O. Box 886
BURNIE TAS 7320

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SAMPLE PREFIX

REPORT No.

REPORT DATE

CLIENT ORDER No.

PAGE

		111310.60.10051				29/03/94		1435		1 OF 7	
	SAMPLE No.	Cu	Pb	Zn	Ag	Fe	Fe	Mn	Mn	Bi	
METHOD		GA140	GA140	GA140	GA140	GA140	GA104	GA140	GA104	GA140	
1	37466 YMS	33	597	1156	1	4.32	-	1724	-	<10	
2	37467 YMS	39	6	147	1	>5.00	7.08	1282	-	<10	
3	37489	84	26	161	1	>5.00	6.93	1164	-	<10	
4	37490	36	61	204	7	3.58	-	540	-	<10	
5	37491	62	183	522	1	4.68	-	633	-	<10	
6	37492	165	1234	3402	4	>5.00	5.30	749	-	<10	
7	37493	93	525	505	2	4.92	-	612	-	<10	
8	37494	16	11	63	<1	2.52	-	410	-	<10	
9	37495	23	59	166	<1	3.75	-	388	-	<10	
10	37496	24	155	199	1	3.24	-	443	-	<10	
11	37497	15	176	254	1	2.56	-	467	-	<10	
12	37578 YMS	41	213	408	1	2.54	-	1462	-	<10	
13	37579	21	178	199	1	2.40	-	582	-	<10	
14	37580	13	149	336	1	2.62	-	1975	-	<10	
15	37581	16	239	409	1	3.14	-	1906	-	<10	
16	37582	47	534	210	4	3.27	-	1146	-	<10	
17	37583	11	60	425	1	>5.00	5.72	>5000	0.57	<10	
18	37584	30	1513	1301	5	3.30	-	738	-	<10	
19	37585	22	686	735	3	3.46	-	855	-	<10	
20	37586	15	116	205	1	3.07	-	1317	-	<10	
21	37587	40	63	452	1	3.11	-	1537	-	<10	
22	37588	6	7	84	<1	1.56	-	817	-	<10	
23	37589	3	19	279	<1	2.38	-	1480	-	<10	
24	37590	10	304	1425	1	4.74	-	2321	-	<10	
25	37591	20	229	1040	1	4.23	-	1966	-	<10	



ANALYTICAL DATA

SAMPLE PREFIX REPORT No REPORT DATE CLIENT ORDER No PAGE

		111310.60.10051				29/03/94		1435		2 OF 7	
	SAMPLE No.	Cu	Pb	Zn	Ag	Fe	Fe	Mn	Mn	Bi	
METHOD		GA140	GA140	GA140	BA140	GA140	GA104	GA140	GA104	SA140	
1	37592 <i>YVCS</i>	12	107	562	<1	3.20	-	1207	-	<10	
2	37593 <i>YVCS</i>	12	675	1754	2	3.35	-	767	-	<10	
3	37594	10	242	713	1	4.57	-	1370	-	<10	
4	37595	117	44	140	<1	3.29	-	776	-	<10	
5	37596	38	148	699	<1	2.99	-	660	-	<10	
6	37597	130	634	1538	2	>5.00	6.40	1050	-	<10	
7	37598	40	295	898	1	3.77	-	845	-	<10	
8	37599	32	1587	1994	2	3.77	-	572	-	<10	
9	37600	31	753	355	2	3.45	-	911	-	<10	
10											
11											
12	<i>YVCS</i>										
13											
14											
15											
16											
17											
18											
19											
20											
21											
22											
23											
24	DETECTION	2	3	2	1	0.01	0.01	3	0.01	10	
25	UNITS	ppm	ppm	ppm	ppm	%	%	ppm	%	ppm	

ANALYTICAL DATA

SAMPLE PREFIX

REPORT No.

REPORT DATE

CLIENT ORDER No.

PAGE

		111310.60.10051			29/03/94		1435		3 OF 7	
	SAMPLE No.	Mo	As	As	Au	Au(R)	Au(S)	Ba	Sn	W
METHOD		GA140	HA140	GA140	GG309	GG309	GG309	GX401	GX401	GX401
1	37466	32	>100.0	460	0.030	-	-	607	12	<5
2	37467	6	14.0	-	<0.008	-	-	694	9	<5
3	37489	<5	19.0	-	0.008	-	-	1862	10	<5
4	37490	9	36.0	-	0.009	-	-	1030	14	<5
5	37491	9	41.0	-	0.015	-	-	1683	11	<5
6	37492	5	90.0	-	0.078	-	-	1542	12	<5
7	37493	6	26.0	-	0.039	-	-	1207	8	<5
8	37494	<5	7.0	-	<0.008	-	-	612	10	5
9	37495	<5	15.0	-	<0.008	-	-	1487	10	<5
10	37496	6	16.0	-	0.011	-	-	1233	8	<5
11	37497	6	>100.0	100	<0.008	-	-	831	10	7
12	37578	5	38.0	-	<0.008	<0.008	-	719	13	<5
13	37579	5	28.0	-	0.019	-	-	450	13	<5
14	37580	<5	16.0	-	0.014	-	-	385	12	5
15	37581	<5	14.0	-	0.012	-	-	394	12	<5
16	37582	5	43.0	-	0.023	-	0.014	351	18	<5
17	37583	<5	11.0	-	0.009	-	-	309	13	<5
18	37584	7	80.0	-	0.021	-	-	672	13	<5
19	37585	5	18.0	-	<0.008	-	-	657	11	<5
20	37586	<5	10.0	-	<0.008	-	-	593	14	<5
21	37587	<5	8.0	-	<0.008	-	-	490	11	7
22	37588	<5	5.0	-	<0.008	<0.008	-	858	9	<5
23	37589	<5	7.0	-	<0.008	-	<0.008	799	9	<5
24	37590	7	18.0	-	<0.008	-	-	696	6	<5
25	37591	5	14.0	-	<0.008	-	-	519	11	<5



ANALYTICAL DATA

SAMPLE PREFIX

REPORT No.

REPORT DATE

CLIENT ORDER No.

PAGE

		111310.60.10051			29/03/94		1435		4 OF 7	
	SAMPLE No.	Mo	As	As	Au	Au(R)	Au(S)	Ba	Sn	W
METHOD		GA140	HA140	GA140	GG309	GG309	GG309	GX401	GX401	GX401
1	37592	<5	11.0	-	<0.008	-	-	791	10	8
2	37593	44	40.0	-	<0.008	-	-	505	12	<5
3	37594	9	17.0	-	<0.008	-	-	465	11	<5
4	37595	<5	11.0	-	<0.008	-	-	404	11	<5
5	37596	<5	17.0	-	<0.008	-	-	613	11	<5
6	37597	5	>100.0	120	0.037	-	-	679	12	<5
7	37598	7	70.0	-	<0.008	-	-	545	10	<5
8	37599	9	>100.0	170	<0.008	-	-	818	14	<5
9	37600	61	>100.0	120	<0.008	-	-	575	12	<5
10										
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23										
24	DETECTION	5	0.5	50	0.008	0.008	0.008	10	3	5
25	UNITS	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm

ANALYTICAL DATA

SAMPLE PREFIX

REPORT No.

REPORT DATE

CLIENT ORDER No.

PAGE

		111310.60.10051			29/03/94		1435		5 OF 7	
	SAMPLE No.	Rb	Sr	V	Nb	Y	Zr	Al2O3	SiO2	TiO2
METHOD		GX401	GX401	GX401	GX401	GX401	GX401	DX408	DX408	DX408
1	37197	118	34	44	8	37	227	15.06	69.6	0.52
2	37468	85	276	47	10	37	223	14.79	63.6	0.47
3										
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23										
24	DETECTION	5	5	5	3	5	5	0.05	0.1	0.01
25	UNITS	ppm	ppm	ppm	ppm	ppm	ppm	%	%	%



ANALYTICAL DATA

SAMPLE PREFIX REPORT NO. REPORT DATE CLIENT ORDER NO. PAGE

111310.60.10051 29/03/94 1435 6 OF 7

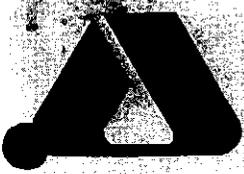
	SAMPLE No.	Fe2O3	MnO	CaO	K2O	MgO	P2O5	SO3	Na2O	TOTAL
METHOD		DX408								
1	37197	4.27	0.01	0.09	3.58	0.93	0.100	0.04	1.72	100.34
2	37468	4.17	0.11	3.58	1.94	0.80	0.130	0.01	4.81	98.66
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23										
24	DETECTION	0.01	0.01	0.01	0.01	0.01	0.005	0.01	0.05	0.01
25	UNITS	%	%	%	%	%	%	%	%	%



ANALYTICAL DATA

SAMPLE PREFIX REPORT No. REPORT DATE CLIENT ORDER No. PAGE

		111310.60.10051			29/03/94		1435		7 OF 7	
	SAMPLE No.	LOI								
METHOD		DM615								
1	37197	4.39								
2	37468	4.24								
3										
4										
5										
6										
7										
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22										
23										
24	DETECTION	0.01								
25	UNITS	%								



ANALABS
ANALYTICAL LABORATORIES
 A.C.N. 008 587 884

Phone (004) 316837

14 Thirkell St. CODEE TAS 7320

Fax (004) 318890

ANALYTICAL REPORT No.

111310.60.10001

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

1431

3003

DATE RECEIVED

RESULTS REQUIRED

07/02/94

ASAP

No. OF PAGES
OF RESULTSDATE
REPORTEDNo.
OF COPIESTOTAL No.
OF SAMPLES

4

18/03/94

1

6

SAMPLE NUMBERS

SAMPLE DESCRIPTION

ELEMENT/METHOD

37178,37186,37187,37192

RK Prep : GP033,P1

Al2O3,SiO2,TiO2,Fe2O3,MnO,CaO,K2

37178,37186,37187,37192

RK Prep :

Ba,Rb,Sr,V,Nb,Y,Zr/6X401

37178 & others

RK Prep :

Au,Au(R)/66309

37178 & others

RK Prep : P1

Cu,Pb,Zn,Ag,Fe/6A140

37195/96

RK Prep :

Ba/6X401
Au,Pt,Pd/6S333RESULTS
TO

Mr M Quayle
 Pasminco Exploration
 P.O. Box 886
 BURNIE TAS 7320

REMARKS

This report replaces our report number
 111310.60.10001, dated 17/03/1994.
 Please discard the outdated report.

RESULTS
TORESULTS
TO

AUTHORIZED OFFICER



ANALYTICAL DATA

SAMPLE PREFIX

REPORT No.

REPORT DATE

CLIENT ORDER No.

PAGE

		111310.60.10001			18/03/94		1431		1 OF 4	
	SAMPLE No.	Cu	Pb	Pb	Zn	Zn	Ag	Fe	Fe	Au
METHOD		GA140	GA140	GA104	GA140	GA104	GA140	GA140	GA104	GG309
1	37178	13	105	-	321	-	<1	2.37	-	<0.008
2	37186	80	7	-	80	-	<1	>5.00	6.46	<0.008
3	37187	55	14	-	61	-	<1	1.94	-	<0.008
4	37192	13	169	-	630	-	<1	1.92	-	<0.008
5	37195	48	602	-	1082	-	1	2.35	-	0.008
6	37196 <i>ferrous</i>	2443	>5000	1.30	>5000	12.90	41	1.60	-	0.267
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22										
23										
24	DETECTION	2	3	0.01	2	0.01	1	0.01	0.01	0.008
25	UNITS	ppm	ppm	%	ppm	%	ppm	%	%	ppm

Results in ppm unless otherwise specified

IS = insufficient sample
 SNF = sample not received

AUTHORISED OFFICER



ANALYTICAL DATA

SAMPLE PREFIX

REPORT No.

REPORT DATE

CLIENT ORDER No.

PAGE

111310.60.10001

18/03/94

1431

2 OF 4

	SAMPLE No.	Pb	Pb(R)	Al2O3	SiO2	TiO2	Fe2O3	MnO	CaO	K2O
METHOD		GS333	GG309	DX408						
1	37178	-	-	14.70	70.8	0.51	4.01	0.01	0.14	3.51
2	37186	<1	<0.008	15.34	51.1	0.69	8.96	0.20	6.47	0.82
3	37187	-	-	12.94	70.0	0.32	3.06	0.08	2.91	1.66
4	37192	-	-	13.29	70.6	0.35	3.39	0.06	0.66	2.89
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23										
24	DETECTION	1	0.008	0.05	0.1	0.01	0.01	0.01	0.01	0.01
25	UNITS	ppb	ppm	%	%	%	%	%	%	%

Results in ppm unless otherwise specified
 - element not determined

IS - insufficient sample
 SNR - sample not received

AUTHORISED OFFICER



ANALYTICAL DATA

SAMPLE PREFIX

REPORT No.

REPORT DATE

CLIENT ORDER No.

PAGE

111310.60.10001

18/03/94

1431

3 OF 4

	SAMPLE No.	MgO	P2O5	SO3	Na2O	LOI	TOTAL	Ba	Rb	Sr
METHOD		DX408	DX408	DX408	DX408	DM615	DX408	GX401	GX401	GX401
1	37178	0.73	0.140	3.29	2.70	2.88	103.46	1252	117	43
2	37186	4.44	0.088	0.08	5.08	6.82	100.06	982	19	410
3	37187	0.71	0.055	0.12	5.82	2.65	100.30	758	69	502
4	37192	1.15	0.068	0.17	4.87	2.44	99.93	937	125	140
5	37195	-	-	-	-	-	-	663	-	-
6	37196	-	-	-	-	-	-	663	-	-
7										
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23										
24	DETECTION	0.01	0.005	0.01	0.05	0.01	0.01	10	5	5
25	UNITS	%	%	%	%	%	%	ppm	ppm	ppm



ANALYTICAL DATA

SAMPLE PREFIX

REPORT No.

REPORT DATE

CLIENT ORDER No.

PAGE

		111310.60.10001				18/03/94		1431		4 OF 4	
	SAMPLE No.	V	Nb	Y	Zr	Pt	Pd				
METHOD		GX401	GX401	GX401	GX401	G5333	G5333				
1	37178	49	9	29	219	-	-				
2	37186	243	<3	22	88	8.0	7.4				
3	37187	11	11	37	279	-	-				
4	37192	10	15	34	297	-	-				
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20											
21											
22											
23											
24	DETECTION	5	3	5	5	0.5	0.5				
25	UNITS	ppm	ppm	ppm	ppm	ppb	ppb				

Results in ppm unless otherwise specified.
- element not determined.

IS = insufficient sample
SNF = sample not received

AUTHORISED OFFICER

YNCF

897082

Phone (004) 316837

14 Thirkell St. COOEE TAS 7320

Fax (004) 318890

ANALYTICAL REPORT No.

111310.60.02884

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

1427

3003

DATE RECEIVED

RESULTS REQUIRED

29/11/93

ASAP

No. OF PAGES
OF RESULTS

DATE
REPORTED

No.
OF COPIES

2

17/12/93

1

TOTAL No.
OF SAMPLES

6

SAMPLE NUMBERS	SAMPLE DESCRIPTION	ELEMENT/METHOD
37543/48	SC Prep : 6P029.F1	Cu,Pb,Zn,Ag,Fe/6A140
37543/48	SC Prep :	Au,Au(R),Au(S)/6G309
37543/49	SC Prep :	Ba/6X401

Handwritten signature/initials

RESULTS
TO

Mr M Quayle
Pasminco Exploration
P.O. Box 886
BURNIE TAS 7320

RESULTS
TO

[Empty box for recipient address]

RESULTS
TO

[Empty box for recipient address]

REMARKS

Handwritten signature
AUTHORISED OFFICER

ANALABS
ANALYTICAL LABORATORIES
 A.C.N. 004 591 664

YNC7

ANALYTICAL DATA

SAMPLE PREFIX REPORT No. REPORT DATE CLIENT ORDER No. PAGE

		111310.60.09884				17/12/93		1427		1 OF 2	
TUBE No.	SAMPLE No.	Cu	Pb	Pb	Zn	Zn	Ag	Fe	Fe	Au	
1	37543	36	143	-	121	-	<1	1.65	-	0.019	
2	37544	276	2125	0.23	4944	0.54	4	>5.00	5.04	0.110	
3	37545	293	>5000	1.14	3521	-	7	>5.00	5.42	0.127	
4	37546	167	750	-	2283	-	3	4.58	-	0.073	
5	37547	208	1607	-	4018	-	5	>5.00	5.22	0.087	
6	37548	182	1424	-	3448	-	4	4.26	-	0.083	
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22											
23	DETECTION	2	3	0.01	2	0.01	1	0.01	0.01	0.008	
24	UNITS	ppm	ppm	%	ppm	%	ppm	%	%	ppm	
25	METHOD	GA140	GA140	GA104	GA140	GA104	GA140	GA140	GA104	GA104	

Results in ppm unless otherwise stated
 T = element present but concentration not measured
 X = element concentration is below detection limit
 - = element not determined

AUTHORISED OFFICER

[Handwritten Signature]

ANALABS

ANALYTICAL LABORATORIES
A.C.N. 004 591 684

YWKZ

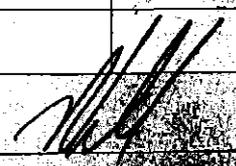
ANALYTICAL DATA

SAMPLE PREFIX REPORT No. REPORT DATE CLIENT ORDER No. PAGE

SAMPLE PREFIX		REPORT No.	REPORT DATE	CLIENT ORDER No.	PAGE
		111310.60.09884	17/12/93	1427	2 OF 2
TUBE No.	SAMPLE No.	Au (S)	Ba		
1	37543	0.020	85		
2	37544	-	842		
3	37545	-	1103		
4	37546	-	616		
5	37547	-	700		
6	37548	-	756		
8					
9					
10					
11					
12					
13					
14					
15					
17					
18					
19					
20					
21					
22					
24	DETECTION	0.008	10		
24	UNITS	ppm	ppm		
25	METHOD	GG309	GX401		

Results in ppm unless otherwise specified
 T = element present but concentration too low to measure
 X = element concentration is below detection limit
 - = element not determined

AUTHORISED OFFICER





100
 YNCF
 1/11/93

897085

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

ANALYTICAL REPORT No. 111310.60.09859

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
1426	3003
DATE RECEIVED	RESULTS REQUIRED
12/11/93	ASAP

No. OF PAGES OF RESULTS	DATE REPORTED	No. OF COPIES	TOTAL No. OF SAMPLES
4	30/11/93	1	14

SAMPLE NUMBERS	SAMPLE DESCRIPTION	ELEMENT/METHOD
7158,37532/542	SC Prep : 6P029.P1 <i>MFB</i>	Cu,Pb,Zn,Ag,Fe/GA140 Au,Au(R),Au(S)/GG309 Ba/GX401 Rb,Sr,V,Nb,Y,Zr/GX401 WHOLE ROCK ANALYSIS/DX408

RESULTS TO

Mr M Quayle
 Pasminco Exploration
 P.O. Box 886
 BURNIE TAS 7320

RESULTS TO

RESULTS TO

REMARKS

N.B. FOR SAMPLES CONTAINING SIGNIFICANT SULPHIDE, S/OX408 IS NOT RECOMMENDED

[Signature]
 AUTHORISED OFFICER

Volande
 YNG7

ANALYTICAL DATA

897086

SAMPLE PREFIX REPORT No. REPORT DATE CLIENT ORDER No. PAGE

TUBE No.	SAMPLE No.	Cu	Pb	Zn	Ag	Fe	Au	Au(R)	Au(S)	Ba
111310.60.09859		30/11/93		1426		1		OF 4		
1	37158 <i>spilling like the</i>	217	1209	3504	4	4.75	0.088	-	-	1312
2	37532	45	319	568	<1	2.05	<0.008	-	-	563
3	37533	30	161	521	1	2.95	<0.008	-	<0.008	577
4	37534	40	506	1587	2	1.64	0.014	-	-	717
5	37535	7	11	249	<1	2.39	<0.008	-	-	978
6	37536	23	45	204	3	2.99	<0.008	-	-	1086
7	37537	22	634	1775	1	3.13	0.013	-	-	969
8	37538	24	468	1470	<1	1.41	<0.008	-	-	1235
9	37539	21	122	315	<1	2.82	0.013	-	-	1268
10	37540	6	91	296	<1	2.45	<0.008	-	-	1413
11	37541	48	591	1184	2	0.92	<0.008	-	-	1626
12	37542	118	1496	1602	4	1.06	0.044	0.037	-	1527
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23	DETECTION	2	3	2	1	0.01	0.008	0.008	0.008	10
24	UNITS	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm
25	METHOD	GA140	GA140	GA140	GA140	GA140	GG309	GG309	GG309	GX401

Results in ppm unless otherwise specified
 T = element present, but concentration too low to measure
 X = element concentration is below detection limit
 - = element not determined

AUTHORISED
 MEMBER

[Handwritten signature]

ANALYTICAL DATA

SAMPLE PREFIX

REPORT No

REPORT DATE

CLIENT ORDER No.

PAGE

111310.60.09859

30/11/93

1426

2 OF 4

TUBE No.	SAMPLE No.	Rb	Sr	V	Nb	Y	Zr	Al2O3	SiO2	TiO2
1	37159 <i>SPX in YNCF</i>	85	153	303	3	18	85	15.51	49.9	0.76
2	37160 <i>YNCF</i>	140	150	8	12	37	327	13.37	71.3	0.34
3	37541	305	9	93	15	49	320	20.01	65.1	0.72
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22										
23	DETECTION	5	5	5	3	5	5	0.05	0.1	0.01
24	UNITS	ppm	ppm	ppm	ppm	ppm	ppm	%	%	%
	METHOD	GX401	GX401	GX401	GX401	GX401	GX401	OX408	OX408	GX408

Results in ppm unless otherwise specified
 T = element present, but concentration too low to measure
 X = element present, but concentration is below detection limit
 - = element not determined

AUTHORISED OFFICER

[Handwritten Signature]

YOLAN
YNC7

ANALYTICAL DATA

897088

SAMPLE PREFIX

REPORT No.

REPORT DATE

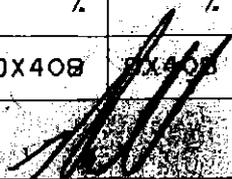
CLIENT ORDER No.

PAGE

		111310.60.09859				30/11/93		1426		3 OF 4	
TUBE No.	SAMPLE No.	Fe2O3	MnO	CaO	K2O	MgO	P2O5	SO3	Na2O	TOTAL	
1	37159 <i>YNC7</i>	11.520	0.190	5.73	1.69	3.82	0.062	0.16	2.46	99.98	
2	37160 <i>YNC7</i>	3.150	0.080	1.96	3.02	1.24	0.049	<0.01	1.71	99.86	
3	37541	2.240	0.040	0.02	7.46	0.70	0.045	0.88	0.14	100.52	
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23	DETECTION	0.005	0.005	0.01	0.01	0.01	0.005	0.01	0.05	0.01	
24	UNITS	%	%	%	%	%	%	%	%	%	
	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



JULE 1993
 YMC7

897089

ANALYTICAL DATA

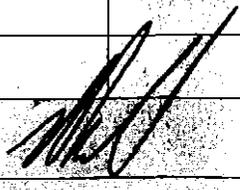
SAMPLE PREFIX REPORT No. REPORT DATE CLIENT ORDER No. PAGE

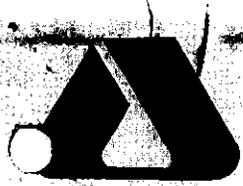
111310.60.09859 30/11/93 1426 4 OF 4

TUBE No.	SAMPLE No.	LOI							
1	37159 YMC7 0.1	8.16							
2	37160 YMC7	3.65							
3	37541	3.16							
4									
5									
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8									
9									
10									
11									
13									
14									
15									
17									
18									
19									
20									
21									
22									
23	DETECTION	0.01							
24	UNITS	%							
	METHOD	OM615							

Results in ppm unless otherwise specified
 T = element present, but concentration too low to measure
 X = element concentration below detection limit
 - = element not determined

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ANALABS

A Division of Incharge Testing Services (Australia) Pty Ltd.
A.C.N. 004 591 664

897090

Phone (004) 316637

14 Thirkell St. CODEE TAS 7320

Fax (004) 318890

ANALYTICAL REPORT No.

D1310.80.09801

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
1423	3003
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14/10/93	ASAP

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3	29/10/93	1	4

SAMPLE NUMBERS	SAMPLE DESCRIPTION	ELEMENT/METHOD
37154/157	RB Prep : GP029-P1 <i>[Handwritten Signature]</i>	Cu, Pb, Zn, Ag, Fe/6A140 Au, Au15/66309 Ba, Pb, Sr, V, Nb, Y, Zr/6X401 Whole Rock Analysis/UX408

RESULTS TO

Mr H Quayle
Pasminco Exploration
P.O. Box 886
BURNIE TAS 7320

RESULTS TO

RESULTS TO

REMARKS

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A Division of Inductrap, Testing & Services Pty. Ltd.
A.C.N. 004 591 004

897091

ANALYTICAL DATA

SAMPLE PREFIX

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PAGE

111310.60.09801

29/10/93

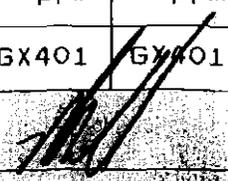
1423

1 OF 3

No.	SAMPLE No.	Cu	Pb	Zn	Ag	Fe	Au	Au(S)	Ba	Rb
1	37154 <i>alt</i>	6	92	32	<1	1.03	<0.008	-	479	-
2	37155 <i>3 vol</i>	14	688	147	2	3.95	<0.008	-	414	163
3	37156 <i>alt</i>	7	8	73	<1	1.90	<0.008	-	544	99
4	37157 <i>alt</i>	-	-	-	-	-	<0.008	<0.008	-	-
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23	DETECTION	2	3	2	1	0.01	0.008	0.008	10	5
24	UNITS	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm
	METHOD	GA140	GA140	GA140	GA140	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

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A Division of Incharge Testing Services (Australia) Pty. Ltd.
A.C.N. 004 591 664

897092

ANALYTICAL DATA

SAMPLE PREFIX

REPORT No.

REPORT DATE

CLIENT ORDER No.

PAGE

SAMPLE PREFIX		REPORT No.				REPORT DATE		CLIENT ORDER No.		PAGE	
		111310.60.09801				29/10/93		1423		2 OF 3	
TUBE No.	SAMPLE No.	Sr	V	Nb	Y	Zr	Al2O3	SiO2	TiO2	Fe2O3	
1	37155	<5	6	13	28	182	11.35	74.3	0.24	6.35	
2	37156	56	32	10	26	206	10.10	79.7	0.36	2.96	
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22											
23	DETECTION	5	5	3	5	5	0.05	0.1	0.01	0.01	
24	UNITS	ppm	ppm	ppm	ppm	ppm	%	%	%	%	
25	METHOD	GX401	GX401	GX401	GX401	GX401	OX408	OX408	OX408	OX408	

Results in ppm unless otherwise specified
 T = Element present but concentration too low to measure
 X = Element concentration below detection limit
 - = Element not present

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A.C.N. 004 591 664

897003

ANALYTICAL DATA

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REPORT No.

REPORT DATE

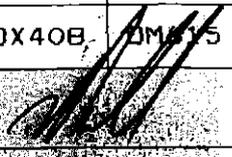
CLIENT ORDER No.

PAGE

SAMPLE PREFIX		REPORT No.				REPORT DATE		CLIENT ORDER No.		PAGE	
		111310.60.09801				29/10/93		1423		3 OF 3	
TUBE No.	SAMPLE No.	MnO	CaO	K2O	MgO	P2O5	SO3	Na2O	TOTAL	LOI	
1	37155	0.01	0.01	3.95	0.65	0.035	0.16	0.36	100.29	2.82	
2	37156	0.03	0.10	1.99	0.47	0.064	0.12	2.05	99.75	1.85	
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23	DETECTION	0.01	0.01	0.01	0.01	0.005	0.01	0.05	0.01	0.01	
24	UNITS	%	%	%	%	%	%	%	%	%	
25	METHOD	DX40B	DX40B	DX40B	DX40B	DX40B	DX40B	DX40B	DX40B	DM515	

Results in ppm unless otherwise specified
 T = element present, but concentration too low to measure
 X = element concentration is below detection limit
 - = element not determined

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ANALABS

A Division of Incharge Testing Services (Australia) Pty. Ltd.
A.C.N. 104 891 894

YOLANDE
VNC6

897094

Phone (004) 316837

14 Thirkell St. COOEE TAS 7320

Fax (004) 318890

ANALYTICAL REPORT No.

111310.60.09800

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INVOICE TO:

Pasminco Exploration
P.O. Box 886
BURNIE TAS 7320

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PROJECT

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VNC6

SAMPLE NUMBERS	SAMPLE DESCRIPTION	ELEMENT/METHOD
37334/43	DC Prep : 6P029-P1	Cu, Pb, Zn, Ag, Fe/6A140 Au, Au(S)/6B309 Ba/GX401

RESULTS TO

Mr M Quayle
Pasminco Exploration
P.O. Box 886
BURNIE TAS 7320

RESULTS TO

RESULTS TO

REMARKS

AUTHORISED OFFICER

ANALABS

A Division of Incharge Testing Services (Australia) Pty. Ltd.
A.C.N. 004 581 684

YOLANDE
YNC6

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REPORT DATE

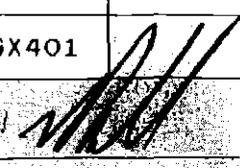
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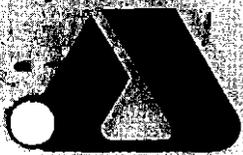
PAGE

TUBE No.	SAMPLE No.	Cu	Pb	Zn	Ag	Fe	Au	Au(S)	Ba	
		111310.60.09800			02/11/93		1422		1	OF 1
1	37334	18	725	2702	2	2.95	0.009	-	449	
2	37335	13	165	398	1	3.22	<0.008	-	1140	
3	37336	21	267	775	1	3.20	0.013	-	856	
4	37337	8	466	2419	1	2.50	<0.008	-	757	
5	37338	17	246	716	<1	2.34	<0.008	-	849	
6	37339	16	37	1381	<1	2.86	0.008	-	1217	
	37340	29	76	116	<1	2.83	<0.008	<0.008	1326	
8	37341	32	90	226	2	3.78	0.014	-	1306	
9	37342	48	148	104	8	4.11	0.024	-	1614	
10	37343	23	37	98	1	2.12	<0.008	-	715	
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21										
22										
23	DETECTION	2	3	2	1	0.01	0.008	0.008	10	
24	UNITS	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	
25	METHOD	GA140	GA140	GA140	GA140	GA140	GG309	GG309	GX401	

Results in ppm unless otherwise specified
 T = element present, but concentration too low to measure
 X = element concentration is below detection limit
 - = element not determined

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ANALABS

A Division of Inchcape Testing Services (Australia) Pty. Ltd.
A.C.N. 004 591 664

*Nanta Creek
class*

897096

Phone (004) 318837

14 Thirkell St. COOEE TAS 7320

Fax (004) 318890

ANALYTICAL REPORT No.

111310.60.09762

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INVOICE TO:

Pasminco Exploration
P.O. Box 886
BURNIE TAS 7320

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1420

3003

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27/09/93

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OF SAMPLES

3

19/10/93

1

9

SAMPLE NUMBERS

SAMPLE DESCRIPTION

ELEMENT/METHOD

37138,41,44/46,50/53

RD Prep : 6P029,P1

Rb,Sr,V,Nb,Y,Zr/6X401

WHOLE ROCK ANALYSIS/OX40E

KTB.

REMARKS

RESULTS
TO

Mr H Quayle
Pasminco Exploration
P.O. Box 886
BURNIE TAS 7320

RESULTS
TO

RESULTS
TO

[Signature]
AUTHORISED OFFICER

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A Division of Incharge Testing Services (Australia) Pty. Ltd.
A.C.N. 004 601 664

Newport Creek
clay

897097

ANALYTICAL DATA

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REPORT No.

REPORT DATE

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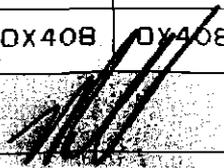
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SAMPLE PREFIX		REPORT No.				REPORT DATE		CLIENT ORDER No.		PAGE	
		111310.60.09762				19/10/93		1420		1 OF 3	
TUBE No.	SAMPLE No.	Rb	Sr	V	Nb	Y	Zr	Al2O3	SiO2	TiO2	
1	37138	111	158	47	9	31	206	13.00	74.7	0.54	
2	37141	136	139	349	6	25	119	20.26	54.4	0.92	
3	37144	111	190	22	8	28	196	11.57	74.6	0.33	
4	37145	32	370	9	7	27	207	12.33	79.1	0.33	
5	37146	6	347	26	10	41	256	11.93	70.0	0.32	
6	37150	154	32	9	12	31	158	13.04	77.5	0.19	
	37151	152	26	7	14	25	158	12.34	77.9	0.20	
8	37152	169	67	17	12	31	299	14.27	74.2	0.43	
9	37153	111	59	6	16	38	255	13.77	75.9	0.30	
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22											
23	DETECTION	5	5	5	3	5	5	0.05	0.1	0.01	
24	UNITS	ppm	ppm	ppm	ppm	ppm	ppm	%	%	%	
25	METHOD	GX401	GX401	GX401	GX401	GX401	GX401	OX408	OX408	OX408	

HTB

Results in ppm unless otherwise specified
 T = element present, but concentration too low to measure
 X = element concentration is below detection limit
 -- = element not determined

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A.C.N. 004 591 664

*Newport Creek
Clash*

ANALYTICAL DATA

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REPORT No.

REPORT DATE

CLIENT ORDER No.

PAGE

111310.60.09762

19/10/93

1420

2 OF 3

TUBE No.	SAMPLE No.	Fe2O3	MnO	CaO	K2O	MgO	P2O5	SO3	Na2O	TOTAL
1	37138	2.74	0.03	0.24	2.47	0.48	0.140	0.85	2.65	100.20
2	37141	11.90	0.12	0.26	3.14	2.01	0.153	0.02	2.20	99.65
3	37144	1.31	0.04	3.05	2.66	0.35	0.075	0.30	2.09	100.01
4	37145	0.87	0.01	0.42	0.73	0.14	0.078	0.07	5.06	100.00
5	37146	2.19	0.07	4.94	0.20	0.39	0.132	0.18	5.97	99.92
6	37150	1.25	0.01	0.03	3.91	0.66	0.027	0.02	1.21	99.76
	37151	1.54	<0.01	0.02	3.64	0.61	0.024	0.02	1.60	99.81
8	37152	2.66	0.02	0.04	3.85	0.97	0.043	0.01	0.88	99.73
9	37153	2.07	0.01	0.02	2.23	0.84	0.017	0.01	2.18	100.09
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23	DETECTION	0.01	0.01	0.01	0.01	0.05	0.005	0.01	0.05	0.01
	UNITS	%	%	%	%	%	%	%	%	%
25	METHOD	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

[Signature]

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A.C.N. 004 591 664

*Heath Creek
Clay*

ANALYTICAL DATA

897099

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REPORT DATE

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19/10/93

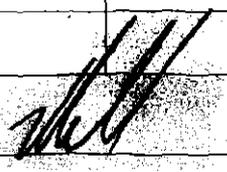
1420

3 OF 3

TUBE No.	SAMPLE No.	LOI							
1	37138	2.35							
2	37141	4.27							
3	37144	3.63							
4	37145	0.86							
5	37146	3.60							
6	37150	1.91							
	37151	1.92							
8	37152	2.36							
9	37153	2.74							
10									
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18									
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22									
23	DETECTION	0.01							
24	UNITS	%							
	METHOD	OM615							

Results in ppm unless otherwise specified
 T = element present, but concentration too low to measure
 X = element concentration is below detection limit
 - = element not determined

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ANALABS

A Division of Indcapse Testing Services (Australia) Pty. Ltd.
A.C.N. 004 591 664

YWSI

897100

Phone (004) 316837

14 Thirkell St. CODEE TAS 7320

Fax (004) 318890

ANALYTICAL REPORT No.

111310.60.09748

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INVOICE TO:

Pasminco Exploration
P.O. Box 886
BURNIE TAS 7320

ORDER No.

1419

PROJECT

3003

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17/09/93

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SAMPLE NUMBERS

SAMPLE DESCRIPTION

ELEMENT/METHOD

37460/64

dc Prep : GP029,P1

Cu,Pb,Zn,Ag,Fe/GA140 Fe/GA104

Au,Au/Si/GG309

Ba,Rb,Sr,V,Nb,Y,Zr/GX401

Whole Rock Analysis/OX408

RESULTS
TO

Mr M Quayle
Pasminco Exploration
P.O. Box 886
BURNIE TAS 7320

RESULTS
TO

Empty box for results recipient

RESULTS
TO

Empty box for results recipient

REMARKS

Yolande
DDH YWSI

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A.C.N. 004 591 664

ywsj

897101

ANALYTICAL DATA

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REPORT No.

REPORT DATE

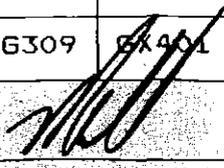
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PAGE

SAMPLE PREFIX		REPORT No.				REPORT DATE		CLIENT ORDER No.		PAGE	
		111310.60.09748				06/10/93		1419		1 OF 4	
TUBE No.	SAMPLE No.	Cu	Pb	Zn	Ag	Fe	Fe	Au	Au(S)	Ba	
1	37460	18	55	81	<1	2.34	-	<0.008	-	1236	
2	37461	107	21	93	<1	>5.00	7.12	<0.008	-	303	
3	37464	10	110	375	<1	2.34	-	<0.008	<0.008	906	
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23	DETECTION	2	3	20	1	0.01	0.01	0.008	0.008	10	
	UNITS	ppm	ppm	ppm	ppm	%	%	ppm	ppm	ppm	
	METHOD	GA140	GA140	GA140	GA140	GA140	GA104	GG309	GG309	GA140	

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



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A Division of Incharge Testing Services (Australia) Pty. Ltd.
A.C.N. 004 591 664

897102

ANALYTICAL DATA

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REPORT No.

REPORT DATE

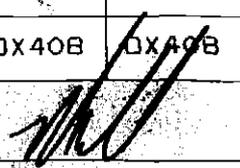
CLIENT ORDER No.

PAGE

SAMPLE PREFIX		REPORT No.				REPORT DATE		CLIENT ORDER No.		PAGE	
		111310.60.09748				06/10/93		1419		2 OF 4	
TUBE No.	SAMPLE No.	Rb	Sr	V	Nb	Y	Zr	Al2O3	SiO2	TiO2	
1	37462	69	191	55	12	30	248	15.47	66.0	0.52	
2	37463	136	375	36	13	39	248	14.05	68.8	0.51	
3	37464	62	262	36	12	33	232	13.90	70.8	0.46	
4											
5											
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11											
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15											
17											
18											
19											
20											
21											
22											
23	DETECTION	5	5	5	3	5	5	0.05	0.1	0.01	
24	UNITS	ppm	ppm	ppm	ppm	ppm	ppm	%	%	%	
25	METHOD	GX401	GX401	GX401	GX401	GX401	GX401	OX40B	OX40B	OX40B	

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



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A Division of Incoape Testing Services (Australia) Pty. Ltd.
A.C.N. 104 501 664

897103

ANALYTICAL DATA

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REPORT DATE

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111310.60.0974B

06/10/93

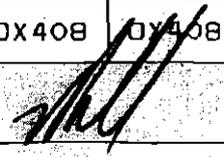
1419

3 OF 4

TUBE No.	SAMPLE No.	Fe2O3	MnO	CaO	K2O	MgO	P2O5	SO3	Na2O	TOTAL
1	37462	4.21	0.06	1.26	2.47	1.58	0.113	0.06	5.70	100.17
2	37463	3.44	0.09	3.53	2.87	1.08	0.106	0.10	2.93	99.98
3	37464	3.15	0.07	1.70	1.53	1.06	0.092	0.54	5.17	100.17
4										
5										
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11										
12										
13										
14										
15										
17										
18										
19										
20										
21										
22										
23	DETECTION	0.01	0.01	0.01	0.01	0.01	0.005	0.01	0.05	0.01
	UNITS	%	%	%	%	%	%	%	%	%
	METHOD	OX408								

Results in ppm unless otherwise specified
 T = element present, but concentration too low to measure
 X = element concentration is below detection limit
 - = element not determined

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A.C.N. 004 591 664

897104

ANALYTICAL DATA

SAMPLE PREFIX

REPORT No.

REPORT DATE

CLIENT ORDER No.

PAGE

111310.60.09748

06/10/93

1419

4 OF 4

TUBE No.	SAMPLE No.	LOI								
1	37462	2.68								
2	37463	2.47								
3	37464	1.68								
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23	DETECTION	0.01								
	UNITS	%								
	METHOD	OM615								

Results in ppm unless otherwise specified
T = element present, but concentration too low to measure
X = element concentration is below detection limit
- = element not determined

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A Division of Inspeco Inspection and Testing Services Australia Pty. Ltd.
A.C.N. 004 591 554

897105

Phone (004) 316837

14 Thirkell St. COOEE TAS 7320

Fax (004) 318890

ANALYTICAL REPORT No. 111310.60.09700

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

1418

3003

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09/09/93

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7

SAMPLE NUMBERS

SAMPLE DESCRIPTION

ELEMENT/METHOD

37120/26

DC Prep : GP029,P1

Cu,Pb,Zn,Ag,Fe,Mn/6A140

Fe,Mn/6A104

Au,Au(R),Au(S)/6B309

Ba/6X401,Ba/6X403

10 Tb

REMARKS

N.B. The Mn result for sample 37123 is above the recommended detection limit for method 6A104. The value was obtained by dilution.

YANCE

RESULTS TO

Mr M Quayle
Pasminco Exploration
P.O. Box 886
BURNIE TAS 7320

RESULTS TO

Mr F Fitzgerald
Pasminco Exploration
P.O. Box 886
BURNIE TAS 7320

RESULTS TO

AUTHORISED OFFICER

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A.C.N. 004 691 664

ANALYTICAL DATA

897106

SAMPLE PREFIX

REPORT No.

REPORT DATE

CLIENT ORDER No.

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111310.60.09700

09/09/93

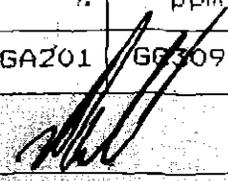
1418

1 OF 2

TUBE No.	SAMPLE No.	Cu	Pb	Zn	Ag	Fe	Fe	Mn	Mn	Au
1	37120	196	73	131	2	2.89	-	634	-	0.021
2	37121	171	585	1659	4	>5.00	6.84	>5000	0.93	<0.008
3	37122	12	992	2440	3	3.07	-	>5000	1.11	<0.008
4	37123	32	562	2210	2	>5.00	8.00	>5000	8.06	<0.008
5	37124	38	653	2409	7	4.15	-	>5000	2.48	<0.008
6	37125	13	114	488	1	>5.00	5.92	1972	-	0.038
7	37126	152	936	3690	1	2.78	-	2388	-	0.055
8										
9										
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11										
12										
13										
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15										
16										
17										
18										
19										
20										
21										
22										
23	DETECTION	2	3	2	1	0.01	0.01	3	0.01	0.008
24	UNITS	ppm	ppm	ppm	ppm	%	%	ppm	%	ppm
	METHOD	GA140	GA140	GA140	GA140	GA140	GA201	GA140	GA201	GA309

Results in ppm unless otherwise specified
 T = element present, but concentration too low to measure
 X = element concentration is below detection limit
 - = element not determined

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897107

ANALYTICAL DATA

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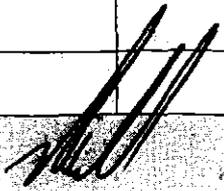
CLIENT ORDER No.

PAGE

TUBE No.	SAMPLE No.	Au (S)	Ba	Ba					
		111310.60.09700			09/09/93		1418		2 OF 2
1	37120	- >10000		2.07					
2	37121	- >10000		3.35					
3	37122	- >10000		2.41					
4	37123	<0.008	>10000	2.74					
5	37124	- >10000		1.34					
6	37125	-	1264	-					
7	37126	-	1270	-					
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									
21									
22									
23	DETECTION	0.008	10	0.01					
24	UNITS	ppm	ppm	%					
	METHOD	GG309	GX401	GX403					

Results in ppm unless otherwise specified.
 T = element present, but concentration too low to measure.
 X = element concentration is below detection limit.
 - = element not determined.

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Testing Services Australia Pty. Ltd.
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897108

Phone (004) 316837

14 Thirkeil St. COOEE TAS 7320

Fax (004) 318890

ANALYTICAL REPORT No.

111310.60.09698

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

1417

3003

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OF SAMPLES

3

09/09/93

1

12

SAMPLE NUMBERS

SAMPLE DESCRIPTION

ELEMENT/METHOD

35099,35100,37110/119

RD Prep : 6F029.91

Rb, Sr, V, Nb, Y, Zr/Bx401

35099,35100,37110/119

Whole Rock/Ox408

REMARKS

RESULTS

TO

Mr M Quayle
Pasminco Exploration
P.O. Box 886
BURNIE TAS 7320

RESULTS

TO

Mr F Fitzgerald
Pasminco Exploration
P.O. Box 886
BURNIE TAS 7320

RESULTS

TO

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YNCS
17/10

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897109

ANALYTICAL DATA

SAMPLE PREFIX

REPORT No.

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CLIENT ORDER No.

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111310.60.09698

09/09/93

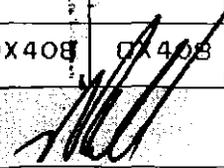
1417

1 OF 3

TUBE No.	SAMPLE No.	Rb	Sr	V	Nb	Y	Zr	Al2O3	SiO2	TiO2
1	35099	162	115	11	12	40	379	14.89	71.3	0.44
2	35100	59	178	271	4	33	90	17.34	53.3	0.72
3	37110	167	427	33	12	39	274	15.28	69.5	0.56
4	37111	62	208	31	10	40	263	15.26	69.6	0.52
5	37112	178	187	71	4	33	228	14.38	69.5	0.55
6	37113	280	356	48	13	61	370	21.60	52.0	0.72
7	37114	177	229	9	10	40	272	13.68	73.3	0.34
8	37115	173	412	43	13	38	247	16.16	65.8	0.51
9	37116	121	134	41	6	29	207	13.17	73.1	0.41
10	37117	247	44	45	8	17	109	10.93	78.3	0.12
11	37118	156	212	43	10	25	282	15.87	68.9	0.57
12	37119	183	45	25	8	38	286	15.18	73.2	0.42
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23	DETECTION	5	5	5	3	5	5	0.05	0.1	0.01
24	UNITS	ppm	ppm	ppm	ppm	ppm	ppm	%	%	%
25	METHOD	GX401	GX401	GX401	GX401	GX401	GX401	OX408	OX408	OX408

Results in ppm unless otherwise specified
 T = element present but concentration too low to measure
 X = element concentration is below detection limit
 - = element not determined

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REPORT DATE

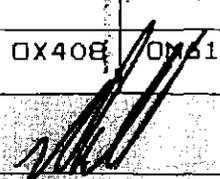
CLIENT ORDER No.

PAGE

TUBE No.	SAMPLE No.	Fe2O3	MnO	CaO	K2O	MgO	P2O5	SO3	Na2O	LOI	
		111310.60.09698				09/09/93		1417		2 OF 3	
1	35099	2.80	0.05	0.86	3.41	1.21	0.061	0.09	1.84	3.05	
2	35100	9.94	0.17	2.42	1.14	4.65	0.081	0.01	4.17	5.74	
3	37110	4.02	0.06	1.53	2.93	1.22	0.106	0.03	1.76	2.96	
4	37111	3.73	0.07	0.69	2.06	1.05	0.109	0.03	5.26	1.54	
5	37112	3.43	0.05	0.35	5.11	1.25	0.085	0.57	2.24	2.33	
6	37113	5.65	0.09	2.50	5.07	4.13	0.148	2.62	1.39	4.98	
7	37114	2.23	0.04	0.99	3.81	1.14	0.067	0.08	2.17	1.79	
8	37115	3.76	0.07	2.17	2.66	2.49	0.103	0.09	1.88	4.47	
9	37116	3.01	0.04	0.86	4.08	0.65	0.084	0.02	3.32	1.06	
10	37117	2.04	0.02	0.01	6.73	0.23	0.011	0.01	0.35	1.49	
11	37118	2.81	0.04	1.31	2.66	1.65	0.084	0.02	0.88	5.36	
12	37119	1.89	0.01	0.06	3.84	0.53	0.066	0.02	1.82	2.87	
13											
14											
15											
16											
17											
18											
19											
20											
21											
22											
23	DETECTION	0.01	0.01	0.01	0.01	0.01	0.005	0.01	0.05	0.01	
24	UNITS	%	%	%	%	%	%	%	%	%	
25	METHOD	OX408	OX408	OX408	OX408	OX408	OX408	OX408	OX408	OX415	

Results in ppm unless otherwise specified
 T = element present, but concentration too low to measure
 X = element concentration is below detection limit
 - = element not determined

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897111

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09/09/93

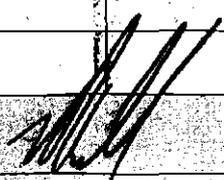
1417

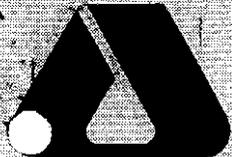
3 OF 3

TUBE No.	SAMPLE No.	TOTAL								
1	35099	99.94								
2	35100	99.67								
3	37110	99.90								
4	37111	99.96								
5	37112	99.87								
6	37113	100.87								
7	37114	99.68								
8	37115	100.15								
9	37116	99.82								
10	37117	100.24								
11	37118	100.14								
12	37119	99.92								
13										
14										
15										
17										
18										
19										
20										
21										
22										
23	DETECTION	0.01								
24	UNITS	%								
25	METHOD	OX40B								

Results in ppm unless otherwise specified
T = element present, but concentration too low to measure
X = element concentration is below detection limit
- = element not determined

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

897112

Phone (004) 315837

14 Thirkell St. COOEE TAS 7320

Fax (004) 318890

ANALYTICAL REPORT No.

111310.60.09645

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INVOICE TO:

Pasminco Exploration
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0239

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16/08/93

1

33

SAMPLE NUMBERS	SAMPLE DESCRIPTION	ELEMENT/METHOD
037301/323	SC Prep : SP029,P1	Cu,Pb,Zn,Ag,Mn,Fe/6A140
037301/327		Pb,Zn,Mn,Fe/6A104
037301/323		Au,Au(R),Au(S)/66309
037301/323		Ba/6X40i

11 Tb

REMARKS

RESULTS
TO

Mr F Fitzgerald
Pasminco Exploration
P.O. Box 886
BURNIE TAS 7320

RESULTS
TO

Mr M Quayle
Pasminco Exploration
P.O. Box 886
BURNIE TAS 7320

RESULTS
TO

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N.B. Mn RESULTS FOR SAMPLES 037316/317,037
WERE OBTAINED BY DILUTION, AS THEY WERE
ABOVE THE RECOMMENDED DETECTION LIMIT
FOR METHOD 6A104

YWCS

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A Division of Incharge Testing Services (Australia) Pty. Ltd.
A.C.N. 004 591 684

ANALYTICAL DATA

897113

SAMPLE PREFIX

REPORT No.

REPORT DATE

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PAGE

		111310.60.09645				16/08/93		0239		1 OF 4	
TUBE No.	SAMPLE No.	Cu	Pb	Pb	Zn	Zn	Ag	Mn	Mn	Fe	
1	037301	12	309	-	560	-	1	>5000	1.66	2.94	
2	037302	40	1601	-	2041	-	3	>5000	1.27	2.36	
3	037303	113	4287	0.52	>5000	0.81	8	>5000	0.73	2.05	
4	037304	17	627	-	1404	-	1	>5000	1.68	2.87	
5	037305	20	382	-	961	-	1	>5000	1.33	2.93	
6	037306	12	668	-	2140	-	1	>5000	1.41	3.16	
7	037307	14	81	-	238	-	<1	>5000	1.07	3.25	
8	037308	21	380	-	610	-	1	>5000	0.87	2.57	
9	037309	21	690	-	1412	-	1	>5000	1.50	2.76	
10	037310	71	949	-	2169	-	2	>5000	1.78	4.08	
11	037311	42	252	-	606	-	3	>5000	1.35	3.35	
12	037312	31	618	-	1039	-	3	>5000	1.24	2.97	
13	037313	119	>5000	0.68	3161	-	7	>5000	1.52	3.06	
14	037314	97	2504	-	1278	-	4	>5000	1.84	2.37	
15	037315	33	1050	-	2524	-	1	>5000	1.20	2.58	
16	037316	35	>5000	0.64	>5000	1.39	7	>5000	4.88	>5.00	
17	037317	21	4608	0.53	>5000	1.38	6	>5000	7.83	>5.00	
18	037318	13	1702	-	3284	-	3	>5000	1.90	4.09	
19	037319	114	4127	-	3065	-	6	>5000	4.10	>5.00	
20	037320	52	1436	-	829	-	7	>5000	1.72	3.10	
21	037321	144	92	-	403	-	1	2252	-	>5.00	
22	037322	50	1100	-	1433	-	3	2494	-	>5.00	
23	037323	12	24	-	71	-	<1	2392	-	4.26	
24											
25											

Results in ppm unless otherwise specified
 T = element present, but concentration too low to measure
 X = element concentration below detection limit
 - = element not determined

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A Division of Inchcape Testing Services (Australia) Pty. Ltd.
A.C.N. 004 591 664

897114

ANALYTICAL DATA

SAMPLE PREFIX

REPORT No.

REPORT DATE

CLIENT ORDER No.

PAGE

111310.60.09645

16/08/93

0239

2 OF 4

TUBE No.	SAMPLE No.	Cu	Pb	Pb	Zn	Zn	Ag	Mn	Mn	Fe
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
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14										
15										
16										
17										
18										
19										
20										
21										
22										
23	DETECTION	2	3	0.01	2	0.01	1	3	0.01	0.01
24	UNITS	ppm	ppm	%	ppm	%	ppm	ppm	%	%
25	METHOD	GA140	GA140	GA104	GA140	GA104	GA140	GA140	GA104	GA140

tb

175

Results in ppm unless otherwise specified
 T = element present, but concentration too low to measure
 X = element concentration is below detection limit
 - = element not determined

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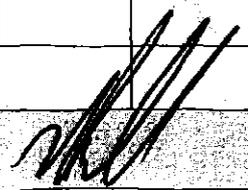
CLIENT ORDER No.

PAGE

TUBE No.	SAMPLE No.	Fe	Au	Au (R)	Au (S)	Ba				
		111310.60.09645				16/08/93	0239		3	OF 4
1	037301	-	0.012	-	-	1312				
2	037302	-	0.037	-	-	1336				
3	037303	-	0.075	-	-	1078				
4	037304	-	0.010	-	-	1163				
5	037305	-	<0.008	-	-	1238				
6	037306	-	0.013	-	0.014	1356				
7	037307	-	<0.008	-	-	1451				
8	037308	-	<0.008	-	-	1505				
9	037309	-	<0.008	-	-	1414				
10	037310	-	0.009	-	-	1662				
11	037311	-	<0.008	-	-	1473				
12	037312	-	<0.008	-	-	1056				
13	037313	-	0.009	-	-	1511				
14	037314	-	<0.008	-	-	1503				
15	037315	-	<0.008	-	-	2246				
16	037316	8.39	0.040	-	-	1420				
17	037317	12.00	0.044	-	-	1446				
18	037318	-	0.024	-	-	2382				
19	037319	6.14	<0.008	-	-	1452				
20	037320	-	0.053	-	-	1268				
21	037321	9.17	0.013	-	-	1307				
22	037322	5.26	<0.008	<0.008	<0.008	1190				
23	037323	-	<0.008	-	-	993				
24										
25										

Results in ppm unless otherwise specified
 T = element present, but concentration too low to measure
 X = element concentration is below detection limit
 - = element not determined

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ANALABS

A Division of Incharge Testing Services (Australia) Pty. Ltd.
A.C.N. 004 591 664

897116

ANALYTICAL DATA

SAMPLE PREFIX

REPORT No.

REPORT DATE

CLIENT ORDER No.

PAGE

111310.60.09645

16/08/93

0239

4 OF 4

TUBE No.	SAMPLE No.	Fe	Au	Au(R)	Au(S)	Ba			
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									
21									
22									
23	DETECTION	0.01	0.008	0.008	0.008	10			
	UNITS	%	ppm	ppm	ppm	ppm			
25	METHOD	GA104	GG309	GG309	GG309	GX401			

Results in ppm unless otherwise specified
 T = element present, but concentration too low to measure
 X = element concentration is below detection limit
 - = element not determined

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APPENDIX 2
SAMPLE RECORD SHEET

FORMATIONS

TG	Tyndall Group
AA	Anthony Road Andesites
NCD	Newton Creek Dacites
NCS	Newton Creek Spillway
NCF	Newton Creek Footwall
CVC	Central Volcanic Complex
HFV	Henty Fault Wedge
WSF	White Spur Formation
YRS	Yolande River Sequence

LITHOLOGIES

Lavås	L	a	acid	Sediments	S	bsh	black shale
Intrusives	I	i	intermediate	or		sh	shale
or				Volcaniclastics	V	slt	siltstone
Volcaniclastics	V	b	basic			sst	sandstone
		u	ultrabasic			w	greywacke
		r	rhyolite			cong	conglomerate
		d	dacite			bx	breccia
		n	andesite			tbd	turbidite
		ba	basalt			msf	mass flow
		g	granite			cht	chert
		di	diorite			lst	limestone
		do	dolerite			dol	dolomite
		gb	gabbro			Fe	iron formation
		s	serpentinite			.gl	glacial deposits
						fgl	fluvioglacial deposits
						alv	alluvial deposits
						cvl	colluvial deposits (talus)
						qzt	quartzite
Metamorphic and Tectonic Rocks	M	sht	schist	Unassigned	?		Use alone or as a qualifier to other rock types where uncertain
		qzt	quartzite				
		hf	hornfels				
		sk	skarn				
		mb	marble				
		m	mylonite				
		fz	fault breccia (pug)				

 PASMINCO EXPLORATION <small>A Division of Pasminco Australia Limited</small>		
COMPILED : P.M.Q.	YOLANDE FORMATION AND LITHOLOGY CODES	
DATE : June 1994		
DRAWN : G.M.B.		
REFERENCE :		
REVISIONS :		
DRAWING No. Y_FLCODE	SCALE	FIG. No.

YOLANDE EL 11/85

LITHOGEOCHEMISTRY LOCATIONS

1993 -1994

sample	east/DDH	north/from	fmn	lth
35100	379600	5360174	CVC	Lba
35764	YHV1	15.20	HFW	Ln
37110	377590	5360268	CVC	
37111	377585	5360265	CVC	
37112	377560	5360262	CVC	
37113	377560	5360260	CVC	
37114	377558	5360260	CVC	
37115	377554	5360260	CVC	
37116	377540	5360260	CVC	
37117	376950	5360740	WSF	
37118	377090	5360785	CVC	
37119	377760	5361180	CVC	
37138	380038	5358340	NCS	?
37141	380037	5358338	NCS	Lba
37144	380019	5358319	NCS	?
37145	379978	5358302	NCS	Vpm
37146	379980	5358300	NCS	Vpm
37150	379500	5358800	CVC	?
37151	379360	5358800	CVC	?
37152	379580	5358800	CVC	?
37153	379720	5359000	NCF	Vpm
37155	379460	5359760	CVC	Vpm
37156	379660	5359815	CVC	Vpm
37159	YNC7	201.90	NCF	Lba
37160	YNC7	260.30	NCF	Vpm
37178	379308	5360430	NCD	Ld
37186	379988	5358306	NCF	Lba
37187	379954	5358294	NCF	Vpm
37192	379535	5358182	NCF	Vpm
37197	379861	5358835	NCF	Vpm
37462	YWS1	387.20	CVC	Ld
37463	YWS1	427.90	CVC	pmf
37464	YWS1	409.50	CVC	pmf
37468	YNC8	190.40	NCD	Ld
37541	YNC7	56.60	NCD	Ld

YOLANDE EL 11/85
LITHOGEOCHEMISTRY LOCATIONS

897120

pre June 1993

sample	east/DDH	north/from	fmn	lth
216481.2	379404	5360858	NCD	Ld
30175.2	375352	5351193		
30195	373541	5351197		
30985.2	373505	5350485		
31437	DCP235	134.00		
31438	DCP235	142.50		
31483	379385	5358398	CVC	Ln
31484	379285	5358398	CVC	Ln
31488	379924	5358394	CVC	Vpm
31490	380061	5358345	NCS	Ld
31491	379940	5358300	AA	Ln
31492	379993	5358308	NCS	Vsst
31494	379875	5358680	CVC	Ld
31495	379400	5357970	CVC	Vs1t
31496	379636	5357920	CVC	Ss1t
31497	380680	5357400	AA	Ln
31499	380350	5360000	CVC	?
31500	379400	5360830	CVC	Ld
31584.2	377282	5360525		
31686.2	375059	5351010		
31687.1	375074	5350972		
31688.1	375080	5350863		
32149	379284	5357760	NCF	Vpm
35009	379800	5358870	CVC	Ld
35010	379700	5359000	NCF	Vpm
35011	380075	5359150	CVC	Ld
35012	380080	5359150	CVC	Ld
35037	379425	5360720	CVC	Ld
35039	379880	5360610	CVC	Ld
35041	379540	5360715	CVC	Ld
35042	379837	5360680	CVC	Scong
35043	379840	5360674	CVC	Scong
35046	YNC1	10.20	NCD	Ld
35049	YNC1	51.60	NCF	Vpm
35057	YNC3	18.60	NCF	Vpm
35064	377500	5360300	WSF	Sbsh
35066	377337	5360490	WSF	Sbsh
35068	377265	5360310	WSF	Sbsh
35069	377765	5359765	CVC	Vpm
35070	377580	5360000	WSF	Sbsh
35071	377610	5360250	CVC	Vpmf
35073	377510	5360585	CVC	Vpmf
35075	376980	5360700	WSF	Sbsh
35076	379877	5359912	CVC	Ld
35077	379896	5359892	CVC	Ld
35084	YNC4	159.90	AA	Ld
35087	YNC4	244.80	NCD	Ld
35099	YNC3	9.70	NCF	Va
37219	YNC5	128.60	TG	Lr
37220	YNC5	145.10	AA	Ln
37221	YNC5	218.50	AA	Ld
37222	YNC5	269.60	NCD	Ld
37223	YNC5	327.10	NCD	Ld
37224	YNC5	350.40	NCD	Ld

YOLANDE EL 11/85
LITHOGEOCHEMISTRY LOCATIONS

897121

GIBSON SAMPLE LOCATIONS

sample	east	north	fmn	lth
75828	379300	5352800	AA	Ln
75834	380040	5358338	NCS	Lba
75836	379925	5358000	?	?
75844	378300	5352750	YRS	
75845	378530	5353590	YRS	
75847	379050	5354350	YRS	
75848	380400	5358200	NCD	Ld
75849	380240	5359100	TG	Lr
75850	380650	5359550	TG	Lr
75851	380500	5359400	TG	Lr
75852	379915	5358240	AA	Ln
75853	380040	5358330	CVC	Ld
75864	381075	5354630	TG	?
75865	381050	5357300	TG	Lr
75866	381100	5358100	TG	Lr
75867	381095	5358095	TG	Lr
75868	380850	5355250	AA	Ln
75869	380470	5356220	AA	Ln
75870	380050	5355550	AA	Ln
75871	380050	5358350	NCS	Lba
75872	380050	5358350	NCS	Ld
75873	380050	5358350	NCS	Ld
75874	379957	5358280	NCF	Vpm
75875	380050	5358350	NCS	Ld
75876	380003	5358314	NCS	?

MINES DEPARTMENT SET SAMPLE LOCATIONS

sample	east	north	fmn	lth
401023	375820	5350040		TUFF
401024	376100	5350040		SILTSTONE
401025	376220	5351020		TUFF
401026	376540	5350040		LAVA
401027	376760	5350330		LAVA
401028	376880	5350520		TUFF
401029	377180	5350470		SILTSTONE
401030	377140	5350980		SHALE
401031	377060	5351260		SHALE
401032	377180	5351500		GREYWACKE
401033	377180	5351710		GREYWACKE
401034	377340	5351740		TUFF
401035	377420	5351720		SILTSTONE
401036	377460	5351680		SILTSTONE
401037	377660	5351740		TUFF
401064	377660	5351800		TUFF
401065	377700	5351860		TUFF
401066	377750	5351950		TUFF
401067	377750	5351950		TUFF
401068	377880	5352180		SILTSTONE
401069	378070	5352380		LAVA
401070	378120	5352580		TUFF
401071	378280	5352820		LAVA
401072	378380	5352910		LAVA
401073	378460	5353010		LAVA
401074	378540	5353200		TUFF

401075	378560	5353360	PHYLLITE
401076	378520	5353600	TUFF
401077	378510	5353760	TUFF
401078	378540	5353880	TUFF
401079	378580	5353960	TUFF
401080	378860	5354160	TUFF
401081	378920	5354220	TUFF
401082	379100	5354440	NCD
401083	379240	5354600	AA
401084	379600	5354840	AA
401085	379760	5355100	AA
401086	380180	5355280	AA
401087	380500	5355600	AA
401088	380580	5355840	?
401089	380740	5356560	?
401090	380880	5356980	?
401091	381080	5357320	?
401092	381080	5357540	?
401093	381100	5357800	?
401094	381140	5358160	?
401095	381060	5358540	?
401096	381100	5358840	?
401097	381180	5359010	?
401098	381340	5359240	?
401099	381440	5359360	?
401100	381550	5359420	?
401142	371800	5355120	SILTSTONE
401143	372780	5355900	SHALE
401144	373800	5356720	SHALE
401145	374220	5356980	MUDSTONE
401146	374680	5357000	TUFF
401147	375190	5357350	SHALE
401148	375220	5357835	SHALE
401149	375250	5357860	SHALE
401150	375560	5358030	MUDSTONE
401151	375840	5358230	ARGILLITE
401152	376020	5358320	ARENITE
401153	376600	5358040	TUFF
401154	376960	5357690	GREYWACKE
401155	377370	5358490	GREYWACKE
401156	377510	5360540	LAVA
401158	377680	5361410	LAVA
401159	377980	5360770	TUFF?
401160	377980	5360770	TUFF

BILLITON 93 SET SAMPLE LOCATIONS

sample	east	north	fmn	lth
120531	376890	5360730		
120532	376430	5360760		
120533	376550	5360730		
120534	376770	5360690		
120535	377090	5360780		
120536	377230	5360700		
120537	377460	5360490		
120538	376420	5361920		
120539	375870	5362170		
120540	375680	5362180		
120541	375440	5362160		
120542	375280	5362070		
120543	377680	5359850		
120544	377540	5359920		

120545	377560	5360980		
120546	377670	5361080		
120547	377650	5361460		
120548	377850	5361730		
120559	376950	5361380		
120560	376600	5362110		
120561	376720	5362070		
120562	377560	5358280		
120563	377400	5358260		
120564	377050	5357800		
120565	376990	5357710		
120566	376660	5357980		
120567	376770	5357860		
120568	376540	5358090		
120569	376380	5358140		
120570	376090	5358270		
120718	375110	5362050		
120731	378030	5359840		
120732	378280	5359880		
120733	378130	5359840		
120734	376160	5358770		
120735	376160	5359010		
120736	376050	5359160		
120737	375800	5359790		
120738	375650	5359930		
120739	375980	5359310		
120784	375275	5357330		
120785	375370	5357240		
120786	375503	5357130		
120787	375600	5357050		
120788	375800	5356870		
120789	375790	5356650		
120790	376000	5356410		
120791	376100	5356290		
120792	376300	5356210		
120793	376450	5356100		
120794	376510	5355880		
120795	376550	5355740		
120796	376850	5355500		
120797	377280	5355160		
120798	377130	5355210		
120799	376870	5355310		
120800	376750	5355700		
120801	380025	5356600	AA	Ln
120802	380000	5356640	AA	Ln
120803	380000	5356760	?	?
120804	380000	5356950	?	?

LITHOGEOCHEMISTRY COMMENTS

sample	comments
31437	DCP235 close to RHS/FW WSF contact alteration?
31438	DCP235 close to RHS/FW WSF contact alteration?
31483	Andesite: from west of spillway footwall close to S.H. Fault
31484	Andesite: from west of spillway footwall close to S.H. Fault
31488	White siliceous altered clast from conglomerate in Newton Cr
31490	Dacite: spillway hangingwall.
31491	Andesite: hornblend phyrlic spillway footwall.
31492	Siltstone: laminated, from within the spillway sediments.
31494	? : road outcrop north of spillway.
31495	Siltstone: laminated from bed of Newton Creek line 5358000mN
31496	Siltstone: laminated from base of spur near YNC1.
31497	Andesite: Howards Anomaly, cleaved pyritic.
31499	?: Henty Canal pyrite altered zone in Tyndal Rhyolites.
31500	?: Henty Canal pyrite altered zone near Henty Fault.
31584.2	WSP
31686.2	HV
31687.1	HV
31688.1	HV
32149	?: south of Newton Creek towards Henty Fault.
35009	Dacite: road outcrop north of spillway.
35010	: fine grained cleaved altered cream in colour (cf alt ync5)
35011	Dacite: sheared conglomerate (autobreccia?) near gate.
35012	Dacite: pyrite augen schist from near gate.
35037	?: Henty Canal pyrite altered zone near South Henty Fault.
35039	Dacite: autobreccia from Henty Canal near sediment zone.
35041	Dacite: from Henty Canal.
35042	?: pyrite altered conglomerate/autobreccia from canal.
35043	Polymict Conglomerate: from Henty Canal sediment zone.
35046	Dacite: (HW YNC1) near pumice breccia contact.
35049	Pumice Breccia: (FW YNC1) NC FW pumice breccia type.
35057	?: feldspar phyrlic, pumiceous volcanoclastic.
35064	Bsh lam with fld xtl sst near lower WSF ct in canal.
35066	White Spur Canal alt zone grn pyritic folded fld xtl sst.
35068	Bsh alt from below hyaloclastite in White Spur Canal.
35069	WSP Vpm in CVC below ct south of canal
35070	Bsh along strike from WSP canal alt zone to south.
35071	CVC Vpm magnetic from canal road below WSF ct.
35073	CVC Vpm from north of canal for comparison + alt.
35075	Bsh alt from north of WSP canal alt zone.
35076	Dacite: altered-cleaved from line 30 pit (note
35077	Dacite: sil-py altered-cleaved from line 30 pit.
35084	YNC4: dacite
35087	YNC4: dacite
35099	YNC3: pumiceous volcanoclastic.
35100	Fire Fountain Basalt: outcrop west of YNC5.
35764	?
37110	WSP: 20m below WSF/CVC ct blotchy fld phy?
37111	WSP: 15m below WSF/CVC ct blotchy red green.
37112	WSP: flow banded feld phy immediately below peperite.
37113	WSP: msv fld phy lava from within peperite.
37114	WSP: cherty siltstone from within peperite.
37115	WSP: lava fld phy 2m above peperite.
37116	WSP: hb phyrlic intrusive? 10m above ct.
37117	WSP: autobrecciated pumiceous? lava in WSF north of canal?
37118	WSP: CVC north of canal to test for FW v MTB?
37119	WSP: CVC pumiceous? fld phy near White Spur Dam.
37138	NCS clast: alt feld/phy near sulphide clasts.

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37141 NCS clast: vesicular basalt near sulphide clasts.
37144 NCS clast: siliceous close to sulphide clasts.
37145 Perlite: pink clast from spillway fire fountain basalt.
37146 Perlite: pink clast from spillway fire fountain basalt.
37150 ?Pumice Breccia: felsic lam north of FW andesite near SHF
37151 ?Pumice Breccia: ser alt in creek near SHF north of FW Ln.
37152 ?Pumice Breccia: cleaved feldspar phyric clastic.
37153 ?Pumice Breccia: fine grained white? (cf high K20 in YNC5)
37155 ?Pumice Breccia: ser-sil-py alt white fine grained?
37156 ?Dacite clastic: altered
37159 Fire Fountain Basalt: from YNC7 TYPE.
37160 Pumice Breccia: base of YNC7 TYPE.
37178 Dacite: from near Henty Fault line 5360400 note diss py.
37186 Fire Fountain Basalt: spillway TYPE
37187 Pumice Breccia: from spillway TYPE
37192 Pumice Breccia: from Newton Creek bed TYPE
37219 Rhyolite: pink siliceous quartz phyric typical Tyndall Rhyol
37220 Andesite: dark green feld/phy to red hematitic volcanic.
37221 Dacite: moderate K20 (pink) alteration.
37222 Dacite: massive feldspar phyric low alteration.
37223 Dacite: very altered + min cream coloured, high K20 + MnO.
37224 Dacite: massive feldspar phyric, from base of YNC5.
37462 ?
37463 ?
37464 ?
37541 Dacite: very bleached high K20 alteration, (cf Ti:Zr Vpm?)

APPENDIX 3

YOLANDE DDH COLLAR COORDINATES & DOWNHOLE SURVEYS

YOLANDE EL 11/85

RELEVANT DDH COLLAR LOCATIONS

DDH	AMG E	AMG N	RL	EOH
BR1	374929.50	5350434.00	272.40	502.0
DCP235	376244.00	5363466.00	732.00	161.4
HA1				
HA2				
HA3				
HA4				
HA5				
HA6				
HA7	380617.00	5358501.00	458.30	233.5
HA8	380624.00	5358621.00	472.80	251.5
HEC3091	380481.80	5358768.00	477.80	20.1
HEC3181	380075.15	5358434.28	462.46	18.3
HEC3183	380068.70	5358424.10	466.55	20.5
HEC3185	380008.10	5358546.05	462.81	17.6
HEC3187	380498.86	5358669.92	469.88	20.5
HEC3190	380419.30	5358725.82	471.58	20.1
HEC3193	380400.57	5358823.64	475.26	20.2
HFZ1				
HFZ2				
HFZ3	379797.50	5362917.80	547.30	552.0
HFZ4	379710.40	5362717.20	546.50	708.0
HFZ5				
HFZ6	380030.50	5363801.20	587.19	523.0
HFZ7	379750.00	5362195.00		260.6
HFZ8	379500.00	5361905.00	517.00	233.2
HFZ9	379884.66	5363838.14	616.92	268.0
HFZ10	379918.96	5363725.72	594.97	250.2
HFZ11	380108.02	5363990.25	585.61	88.2
HFZ12	379810.00	5363504.30	587.20	469.5
HR1	377895.00	5354674.00	132.00	371.0
HR2	377686.00	5354360.00	126.00	230.5
HR3	377946.00	5354864.00	136.00	616.7
HR4	377420.00	5355010.00	445.00	310.0
HR5	377421.00	5355010.00	445.00	421.5
JC1	378200.00	5363500.00	665.00	188.6
MMR1	377043.00	5362227.00	609.80	108.7
YHV1	375042.00	5351000.00	192.00	65.7
* YHV2	375435.00	5351375.00	107.00	200.0
* YHV3	375435.00	5351375.00	107.00	350.0
YNC1	379662.00	5357909.00	512.50	61.2
YNC2	379360.00	5358062.00	302.00	53.5
YNC3	379320.00	5358052.00	285.00	35.0
YNC4	379961.67	5359959.08	516.42	272.0
YNC5	379917.53	5360194.09	517.74	364.5
YNC6	379802.50	5360396.10	510.70	451.6
YNC7	379953.60	5359662.40	518.50	289.6
YNC8	379810.10	5359892.00	512.00	282.0
YNC9	379657.40	5360192.20	510.90	262.0
YWS1	377226.50	5360063.90	533.80	430.5

* proposed

YOLANDE EL 11/85
RELEVANT DDH DOWNHOLE SURVEYS

DDH	DEPTH	DIP	AMG_AZ
BR1	0.0	-50.00	138.90
BR1	152.0	-49.00	141.90
BR1	264.0	-45.00	143.90
BR1	363.0	-36.00	149.90
BR1	469.0	-29.00	128.90
DCP235	0.0	-45.00	322.00
DCP235	35.0	-46.00	320.00
DCP235	77.0	-46.50	324.00
DCP235	119.0	-46.00	327.50
DCP235	161.0	-44.00	331.00
DCP235	161.4	-44.00	331.00
HA7	0.0	-50.00	262.00
HA7	52.0	-50.50	258.00
HA7	140.0	-47.00	258.00
HA7	230.0	-41.00	258.00
HA8	0.0	-50.00	282.00
HA8	50.0	-48.50	278.00
HA8	98.0	-47.00	280.00
HA8	146.0	-45.00	282.00
HA8	200.0	-43.00	282.00
HA8	270.0	-41.00	283.00
HEC3181	0.0	-90.00	0.00
HEC3183	0.0	-90.00	0.00
HEC3185	0.0	-90.00	0.00
HEC3187	0.0	-90.00	0.00
HEC3190	0.0	-90.00	0.00
HEC3191	0.0	-90.00	0.00
HEC3193	0.0	-90.00	0.00
HFZ3	0.0	-55.00	102.00
HFZ3	12.2	-56.00	102.00
HFZ3	24.4	-56.00	102.00
HFZ3	36.6	-55.50	102.00
HFZ3	42.7	-55.00	102.00
HFZ3	54.9	-54.50	102.00
HFZ3	61.0	-54.00	102.00
HFZ3	67.1	-53.50	102.00
HFZ3	79.2	-53.00	102.00
HFZ3	85.3	-53.00	106.00
HFZ3	97.5	-52.00	106.00
HFZ3	115.8	-51.50	106.00
HFZ3	128.0	-51.50	105.00
HFZ3	140.2	-51.00	103.00
HFZ3	152.4	-49.00	103.00
HFZ3	158.5	-48.50	102.00
HFZ3	164.6	-48.00	101.00
HFZ4	0.0	-60.00	102.00
HFZ4	12.2	-60.00	102.00
HFZ4	18.6	-59.50	102.00
HFZ4	24.4	-60.00	102.00
HFZ4	31.7	-59.00	104.00
HFZ4	39.6	-60.00	102.00
HFZ4	48.8	-60.50	102.00
HFZ4	73.2	-59.50	102.00
HFZ4	97.5	-58.00	101.00
HFZ4	103.6	-57.00	101.00
HFZ6	0.0	-60.00	102.00
HFZ6	6.1	-60.00	102.00
HFZ6	12.2	-60.00	102.00
HFZ6	12.2	-59.00	102.00
HFZ6	12.2	-60.50	102.00
HFZ6	12.2	-57.50	102.00
HFZ6	27.4	-58.50	102.00
HFZ6	27.4	-59.00	102.00
HFZ6	27.4	-55.50	94.00
HFZ6	27.4	-60.50	102.00
HFZ9	0.0	-53.00	102.00
HFZ9	123.2	-52.00	102.00
HFZ9	154.2	-49.00	100.30
HFZ9	184.2	-46.30	99.00
HFZ9	214.2	-45.00	100.00
HFZ9	244.2	-40.00	100.00
HFZ10	0.0	-57.00	102.00
HFZ10	55.2	-57.00	99.00

HFZ10	85.2	-57.00	98.30
HFZ10	115.2	-56.00	97.00
HFZ10	145.2	-54.00	96.00
HFZ10	174.2	-53.00	95.30
HFZ10	204.2	-51.00	95.00
HFZ10	234.2	-49.00	94.00
HFZ11	0.0	-63.00	102.00
HFZ11	23.2	-60.00	98.00
HFZ11	53.2	-58.30	97.00
HFZ11	84.0	-57.00	98.30
HFZ12	0.0	-75.00	102.00
HFZ12	60.0	-75.30	103.00
HFZ12	99.0	-75.00	104.00
HFZ12	129.0	-74.00	102.00
HFZ12	207.0	-72.00	107.00
HFZ12	322.0	-71.30	117.00
HFZ12	387.0	-70.30	114.30
HFZ12	448.0	-69.00	113.00
HR1	0.0	-58.00	291.50
HR1	371.0	-14.00	291.50
HR2	0.0	-51.00	281.50
HR2	230.5	-43.00	281.50
HR3	0.0	-50.00	291.50
HR3	616.7	-15.00	291.50
HR4	0.0	-71.00	111.50
HR4	310.0	-79.00	111.50
HR5	0.0	-54.00	111.50
HR5	421.5	-51.00	111.50
JC1	0.0	-56.00	283.50
JC1	30.0	-55.00	281.50
JC1	61.5	-54.00	278.00
JC1	100.0	-48.50	277.00
JC1	150.0	-41.50	276.50
JC1	188.6	-37.00	276.50
MMR1	0.0	-60.00	98.50
MMR1	108.7	-60.00	98.50
YHV1	0.0	-55.00	78.50
YHV1	65.7	-55.00	78.50
*YHV2	0.0	-45.00	273.00
YHV2	200.0	-38.00	273.00
*YHV3	0.0	-45.00	225.00
YHV3	350.0	-35.00	225.00
YNC1	0.0	-60.00	285.00
YNC1	61.2	-60.00	285.00
YNC2	0.0	-75.00	258.00
YNC2	53.2	-75.00	258.00
YNC3	0.0	-90.00	258.00
YNC3	35.0	-90.00	258.00
YNC4	0.0	-45.00	239.50
YNC4	31.0	-45.90	238.00
YNC4	61.0	-45.00	238.50
YNC4	100.0	-44.50	239.00
YNC4	151.0	-42.00	239.25
YNC4	199.0	-39.90	239.25
YNC4	270.0	-35.00	239.25
YNC5	0.0	-45.00	239.50
YNC5	50.0	-43.00	238.50
YNC5	100.0	-42.20	241.50
YNC5	150.0	-39.00	243.25
YNC5	200.0	-33.20	241.50
YNC5	250.0	-26.30	244.00
YNC5	300.0	-20.00	246.00
YNC5	364.5	-17.50	246.50
YNC6	0.0	-60.00	259.50
YNC6	40.0	-59.20	258.50
YNC6	82.0	-58.80	259.50
YNC6	121.0	-57.00	258.50
YNC6	160.0	-56.00	258.00
YNC6	199.0	-55.00	258.00
YNC6	241.0	-54.40	257.50
YNC6	280.0	-53.50	258.50
YNC6	320.0	-53.00	259.00
YNC6	360.0	-52.00	261.00
YNC6	400.0	-51.00	260.50
YNC6	450.0	-50.00	260.00
YNC7	0.0	-45.00	246.00
YNC7	40.0	-44.30	245.00
YNC7	80.0	-44.00	244.75
YNC7	120.0	-43.50	244.75
YNC7	160.0	-42.00	245.00

YNC7	200.0	-41.70	245.50
YNC7	240.0	-40.80	246.00
YNC7	280.0	-39.00	246.00
YNC7	289.6	-39.00	246.00
YNC8	0.0	-45.00	240.00
YNC8	52.0	-39.00	242.00
YNC8	100.0	-36.20	239.00
YNC8	124.0	-35.00	240.50
YNC8	157.0	-33.90	239.50
YNC8	190.0	-32.20	241.00
YNC8	220.0	-31.20	241.50
YNC8	271.0	-29.00	246.00
YNC8	282.0	-28.30	247.00
YNC9	0.0	-45.00	240.00
YNC9	60.0	-43.00	236.50
YNC9	90.0	-43.00	236.00
YNC9	121.0	-42.00	235.50
YNC9	160.0	-41.00	236.00
YNC9	190.0	-41.00	237.00
YNC9	250.0	-39.50	239.00
YNC9	262.0	-39.00	239.00
YWS1	0.0	-60.00	74.50
YWS1	40.0	-56.20	78.50
YWS1	80.0	-54.00	80.50
YWS1	121.0	-51.00	80.50
YWS1	160.0	-45.00	81.00
YWS1	199.0	-42.30	80.50
YWS1	241.0	-42.00	79.50
YWS1	280.0	-40.00	79.50
YWS1	322.0	-37.00	79.50
YWS1	361.0	-35.50	78.50
YWS1	418.0	-35.30	80.50

* proposed

APPENDIX 4

DIAMOND DRILL HOLE LOGS

PRSMINCO EXPLORATION
DIAMOND DRILL CORE LOG

HOLE No. **YNCS**

PROJECT: YOLANDE: NEWTON CREEK

Vertical Scale 1 : 200

Page 1 of 14

DESCRIPTION				GRAPHIC			STRUCTURES
From	To	LITHOLOGY	ALTERATION	MINERALISATION	Depth	Lith	Structures
0.00	58.10	RHYOLITE Red, Grey, Coarse grained, Porphyritic, Quartz phyrlic, Feldspar phyrlic, Typical Tyndall quartz phyrlic lava. Generally massive but chloritic patches give a brecciated appearance in part. CONTACT: Gradational, Defined by colour change and start of flow banding.			0 10 20		

5 cm

FRacture, Moderatly broken core oxidised and with

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PASMINCO EXPLORATION
DIAMOND DRILL CORE LOG

HOLE No. **YNC5**

PROJECT: YOLANDE: NEWTON CREEK

Vertical Scale 1 : 200

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DESCRIPTION				GRAPHIC				
From	To	LITHOLOGY	ALTERATION	MINERALISATION	Depth	Lith	Structures	STRUCTURES
					30			<p>FRACTURE. Moderately broken core oxidised and with abundant chlorite filled fine fractures.</p>
					40			<p>FALLT. Zone of oxidation quartz veining and broken core.</p>
					50			<p>FRRACTURE. Zone of oxidation quartz veining and broken core.</p>

5 cm

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PASMINCO EXPLORATION
DIAMOND DRILL CORE LOG

HOLE No. **YNC5**

PROJECT: VOLANDE: NEWTON CREEK

Vertical Scale 1 : 200

Page 3 of 14

DESCRIPTION				GRAPHIC			STRUCTURES
From	To	LITHOLOGY	ALTERATION	MINERALISATION	Depth	Lith	Structures
58.10	70.20	RHYOLITE Pale, Grey, Flow banded, Porphyritic, Quartz phytic, Feldspar phytic, Pumiceous, Flow banding at 70 to 75 degrees to LCA. CONTACT: Conformable mixed, Mixed with unconsolidated sediments	Slightly Silicified.		50		
					70		PRIMARY FABRIC, D 75.
70.20	74.40	BRECCIA Green, Coarse grained, Very coarse grained, Poorly sorted, Matrix supported, Polymict, Lithic, Irregular appearance may be due to contact effect with overlying lavas and/or andesite volcanoclastic content. Note siderite? altered clasts. CONTACT: Conformable abrupt,	Slightly Carbonatised.	CLAST, abundant siderite trace galena disseminated, trace sphalerite in veinlets, Siderite? altered clasts. Sphalerite is red brown..			FRACTURE, Broken core.
74.40	82.50	BRECCIA Pale, Grey, Very coarse grained, Poorly sorted, Polymict, Zone of banded breccias, sandstones, wackes and siltstones. The wackes are approx .9m poorly sorted polymict, angular, upto 10mm clast size with notable pyrite clasts. Massive sandstone in 10cm bands and irregular minor dark siltstones. Trace chert possibly a clast. CONTACT: Missing,	Moderately Silicified,	DISSEMINATED, minor pyrite disseminated, trace sphalerite in veinlets, trace galena disseminated, within large siliceous clasts and silicified breccia.. CLAST, very minor pyrite massive, 3 to 10mm massive pyrite clasts scattered in polymict wacke..	80		
82.50	88.50	BLACK SHALE Black, Grey, Fine grained, Massive, Cleaved, Very broken zone with much core loss. Minor quartz veins. CONTACT: Missing,	Moderately Chloritised,				

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PASMINCO EXPLORATION
DIAMOND DRILL CORE LOG
Vertical Scale 1 : 200

HOLE No. **YNCS**

PROJECT: VOLANDE: NEWTON CREEK

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DESCRIPTION				GRAPHIC			STRUCTURES	
From	To	LITHOLOGY	ALTERATION	MINERALISATION	Depth	Lith		Structures
		Very broken zone with much core loss. Minor quartz veins. CONTACT: Missing,						
88.50	94.40	LIMESTONE White, Irregular zone with massive calcite and quartz veining and with abundant irregular textured carbonate rock with at least in part sedimentary clastic textures. CONTACT: Conformable mixed,				90		<p>FRACTURE, Black shale, broken core zone possibly associated with major fault (drilling water loss and abundant fine black pug wash.</p> <p>VEIN, Carbonate, Chlorite, BEDDING, D 65.</p>
94.40	113.30	INTERMEDIATE VOLCANICLASTIC Green, Red, Very coarse grained, Feldspar phyric, Zone of andesite and reworked andesite derived clastics, minor silty clasts or patches, abundant bands or patches of irregular white granular carbonate. Zone is typified by intense haematite alteration and abundant carbonate bands/patches/veins. CONTACT: Conformable mixed,	Oxidised, Highly Oxidised.	STRONGER, haematite abundant carbonate associated with alteration, Zone of intense haematite / carbonate alteration..		100		
						110		<p>FALLT, D 65. Brittle, Chlorite.</p>
		SANDSTONE Grey, Green, Medium grained, Bedded, Lithic, Bands from 2 to 10cms of well sorted sand size andesitic debris, with irregular feldspar crystals and carbonate alteration of feldspars, and minor bands with well sorted terrigenous derived sediments including						

5 cm

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PRSMINCO EXPLORATION
DIAMOND DRILL CORE LOG

HOLE No. **YNCS**

PROJECT: YOLANDE: NEWTON CREEK

Vertical Scale 1 : 200

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DESCRIPTION				GRAPHIC			
From	To	LITHOLOGY	ALTERATION	MINERALISATION	Depth	Lith	STRUCTURES
119.80	122.80	<p>carbonate alteration of feldspars, and minor bands with well sorted terrigenous derived sediments including quartz grains. CONTACT: Conformable mixed, MIXED WITH ANDESITE MIXED WITH SANDSTONE Green, Red, Porphyritic, Poorly sorted, Zone of haematitic / carbonate alteration of andesite and andesite derived coarse sediments. White feldspar crystal rich. Haematite as ragged alteration patches or discrete alteration of clasts and crystals, white carbonate as a mesh of fine irregular veinlets. CONTACT: Conformable abrupt,</p>	<p>Slightly Chloritised. Slightly Oxidised. Highly Oxidised. Moderately Chloritised.</p>		120		BEDDING, D 60.
122.30	129.40	<p>SANDSTONE Pale, Green, Very coarse grained, Poorly sorted, Lithic, CONTACT: Conformable abrupt, MIXED WITH RHYOLITE MIXED WITH SANDSTONE Pink, Massive, Quartz phytic, Feldspar phytic, Zone of mixed silicified Tyndall rhyolite and sandstone. Sequence seems to be conformable with mixed contacts. CONTACT: Conformable mixed,</p>	<p>Moderately Chloritised, Highly Silicified.</p>		130		BEDDING, D 65.
		<p>← 5 cm →</p>					
133.40	138.50	<p>SANDSTONE Grey, Pink, Very coarse grained, Poorly sorted, Matrix supported, Feldspar phytic, Lithic, Irregular patches of dark chlorite packed with 1mm pink feldspar crystals. Abundant sub-rounded variably sized pink siliceous lithics. 20cm chert band at 138.2m. CONTACT: Faulted, at 55 degrees to LCA. Ten mm of stretched carbonate with slickenlines horizontal.</p>		<p>VEIN, quartz minor galena in veins, Minor coarse grained galena in Devonian? massive white quartz chlorite veins...</p>			VEIN, Chlorite.
138.50	148.10	<p>ANDESITE Green, Red, Massive, Feldspar phytic, Haematitic massive andesite. Intensity of haematitic alteration decreasing downhole, abundance of feldspars increasing</p>	<p>Moderately Oxidised,</p>	<p>STRINGER, minor haematite as stringers, Zone of haematite / carbonate alteration...</p>	140		BEDDING, D 45.

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PASMINCO EXPLORATION
DIAMOND DRILL CORE LOG

HOLE No. **YNC5**

PROJECT: YOLANDE: NEWTON CREEK

Vertical Scale 1 : 200

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DESCRIPTION				GRAPHIC			
From	To	LITHOLOGY	ALTERATION	MINERALISATION	Depth	Lith	Structures
		massive andesite. intensity of haematitic alteration decreasing downhole, abundance of feldspars increasing uphole. Abundant irregular white carbonate veinlets throughout. CONTACT: Conformable abrupt,		Zone of haematite / carbonate alteration..	140		
		← 5 cm →					
148.10	151.50	SANDSTONE Pale, Cream, Very coarse grained, Fine grained, Poorly sorted, Matrix supported, Polymict, Lithic, Indistinctly banded fine and medium grained sandstone with abundant sub-angular variably sized pink and grey siliceous lithics. CONTACT: Conformable abrupt, at 60 degrees to LCA.	Moderately Sericitised,	DISSEMINATED, minor pyrite disseminated.	150		
151.50	158.70	ANDESITE MIXED WITH SANDSTONE Dark, Green, Brecciated, Massive, Irregular zone of minor massive andesite, brecciated andesite, and andesite derived sediments. Breccia associated with a West over East low angle thrust. CONTACT: Conformable abrupt,	Moderately Chloritised, Slightly Sericitised.	DISSEMINATED, minor pyrite disseminated.			BEDDING, D 55, FAULT, D 0. Very sharp horizontal displacement. FAULT, D 15. Brittle, Pug, Fault dips at about 45 degrees N/S. Possibly thrust west to east.
158.70	163.90	SANDSTONE Pale, Green, Fine grained, Coarse grained, Poorly sorted, This zone is straw coloured Fe/Mn carbonate altered and perhaps equates with mineralized interval in DDH YNC4. The zone is an irregular mix of andesite derived and terrigenous sediments. There are two generations of carbonate veining, a white cb with fluorite, and a Fe/Mn cb +/- quartz. CONTACT: Conformable abrupt, at 55 degrees to LCA.	Moderately Carbonatised, Slightly Sericitised.	STRONGER, abundant carbonate in veins, minor pyrite disseminated, very minor galena associated with alteration. Zone of Fe/Mn carbonate alteration and veining, also minor white carbonate / fluorite veining..	160		BEDDING, D 45. FOLD, Axis. Open synform with axial plane cleavage, possibly steep plunging northwards. FIRST CLEAVAGE, D 45. Sub parallel to bedding.
163.90	167.40	SANDSTONE Cream, Green, Medium grained, Bedded, Poorly sorted, Feldspar phyrlic, Zone banded on a 10 to 20cm scale of pale cream sericitic feldspar phyrlic sediments and pale to dark green feldspar phyrlic sediments. The primary textures are indistinct, the bands possibly reflect terrigenous and andesitic provenance. CONTACT: Faulted,	Slightly Sericitised.				VEIN, Carbonate, Chlorite, Galena. Mineralised vein cross cutting earlier carbonate alteration. BEDDING, D 55.
167.40	169.80	SILTSTONE Pale, Grey, Fine grained, Laminated, Zone of faulting, pug and broken core, and irregular quartz	Slightly Oxidised, Slightly Sericitised.				FAULT, Pug, Shear, Zone of broken core intense

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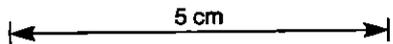
PASMINCO EXPLORATION
DIAMOND DRILL CORE LOG

HOLE No. **YNCS**

PROJECT: YOLANDE: NEWTON CREEK

Vertical Scale 1 : 200

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DESCRIPTION				GRAPHIC			STRUCTURES
From	To	LITHOLOGY	ALTERATION	MINERALISATION	Depth	Lith	Structures
167.40	169.80	SILTSTONE Pale, Grey, Fine grained, Laminated, Zone of faulting, pug and broken core, and irregular quartz veining. Dominant lithology is pale grey siltstone. CONTACT: Faulted,	Slightly Oxidised, Slightly Sericitised.				Fault, Pug, Shear, Zone of broken core intense cleavage development and pug.
169.80	170.90	FAULT ZONE (PUG) WITH MINOR SANDSTONE Yellow, Green, Brecciated, Sheared, Zone of breccia, pug, quartz veining and broken core. Straw coloured carbonate present in quartz veins. CONTACT: Faulted,	Moderately Sericitised, Moderately Chloritised.		170		Fault, Breccia.
170.90	183.70		Slightly Carbonatized, Slightly Sericitised.		180		
		ANDESITE AND SANDSTONE Pale, Green, Brecciated, Massive, Zone of mixed massive andesite derived sandstone and indistinct angular 1 to 10cm andesite clasts in andesite derived sediments. Abundant fine leucoxene. Common irregular Fe/Mn carbonate veins. Minor pink quartz veins. CONTACT: Conformable mixed,					
							
183.70	190.00	ANDESITE Dark, Green, Brecciated, Zone of disrupted and brecciated andesite. CONTACT: Conformable abrupt,					
				DISSEMINATED, very minor pyrite disseminated.			
190.00	208.00	ANDESITE AND CONGLOMERATE Green, Brecciated, Poorly sorted, Zone of andesite clasts in andesite derived sediments. Matrix and clast grain size decrease down hole, and terrigenous content in matrix and lithics increases. Minor pale grey fine grained siliceous clasts from 198 to 205m. Minor Fe/Mn carbonate throughout. CONTACT: Gradational,	Slightly Sericitised,		190		
				STRONGER, minor carbonate very minor pyrite disseminated.			

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PASMINCO EXPLORATION
 DIAMOND DRILL CORE LOG

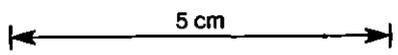
HOLE No. **YNCS**

PROJECT: YOLANDE: NEWTON CREEK

Vertical Scale 1 : 200

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DESCRIPTION					GRAPHIC		
From	To	LITHOLOGY	ALTERATION	MINERALISATION	Depth	Lith	Structures
					200		FOLD, Possible slump folding? indistinct antiform.
				STRINGER, minor carbonate as stringers, very minor pyrite associated with alteration.			
208.00	212.90	ANDESITE Dark, Green, Brecciated, Zone of irregular indistinct andesite clasts in andesite derived sediments. Shear marks significant rock-type change. CONTACT: Faulted, at 20 degrees to LCA. Faulted contact is bleached over 1m, is sericitised, contains qtz veins and horizontal slickenlines.	Slightly Sericitised,		210		
212.90	224.50	DACITE Pale, Grey, Feldspar phyric, Ghost lava breccia texture in part. Bleached near upper faulted contact. Abundant 1mm feldspars altered to sericite? CONTACT: Gradational,	Moderately Bleached,		220		FAULT, D 20. Shear. Contact of different rocktypes. Fibres in the fault plane are horizontal and perpendicular to the LCA, suggesting a N/S movement on fault.



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PASMINCO EXPLORATION
DIAMOND DRILL CORE LOG
Vertical Scale 1 : 200

HOLE No. **YNC5**

PROJECT: YOLANDE: NEWTON CREEK

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DESCRIPTION				GRAPHIC			
From	To	LITHOLOGY	ALTERATION	MINERALISATION	Depth	Lith	Structures
224.50	239.20	DACITE Pink, Massive, Silicified detextured rock, but gradational change recognisable through to overlying dacite. Note common irregular lilac amorphous quartz veins. CONTACT: Faulted, at 80 degrees to LCR.	Moderately Silicified.		230		
239.20	243.20	DACITE Buff, Zone of alteration, detexturing and faulting. Resembles in part texture in altered dacites (331m) above mineralisation. CONTACT: Faulted,	Moderately Silicified. Moderately Sericitised.	VEIN, minor pyrite disseminated, trace galena in veinlets, trace chalcopyrite in veinlets, Brecciated zone with mineralisation in irregular Mn carbonate veinlets..	240		FALLT. 0 80. Pug. FALLT. 0 80. Pug. FALLT. 0 55. Pug.
243.20	245.20	DACITE Dark, Green, Zone of disrupted dacite and dacite derived sediments. CONTACT: Conformable abrupt,					FALLT. Pug, Breccia. Significant structure as rock-type change.
245.20	246.80	CONGLOMERATE CONTAINING CLASTS OF DACITE Cream, Black, Very coarse grained, Poorly sorted, Matrix supported, Resembles Newton Creek spillway conglomerate.	Slightly Sericitised. Slightly Chloritised.				
246.80	253.10	SANDSTONE MIXED WITH DACITE Grey, Green, Medium grained, Feldspar phytic, Zone of massive dacite derived sediments. Minor irregular carbonate veining, and minor siliceous clasts. CONTACT: Conformable abrupt,	Slightly Chloritised. Slightly Carbonatised.	STRINGER, abundant carbonate as	250		FALLT. 0 60. Pug.

5 cm

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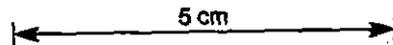
PASMINCO EXPLORATION
DIAMOND DRILL CORE LOG
Vertical Scale 1 : 200

HOLE No. **YNCS**

PROJECT: YOLANDE: NEWTON CREEK

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DESCRIPTION				GRAPHIC			STRUCTURES
From	To	LITHOLOGY	ALTERATION	MINERALISATION	Depth	Lith	Structures
253.10	255.50	SILTSTONE CONTAINING CLASTS OF DACITE Grey, Cream, Brecciated, Zone of indistinct pale grey siltstone, patches of cream sericite/carbonate altered dacite? and dacite clasts. Mineralisation and alteration indicative of proximity to massive sulphides. CONTACT: Gradational,	Moderately Carbonatised, Slightly Sericitised.	STRONGER, abundant carbonate as stringers, minor pyrite associated with alteration, trace galena associated with alteration. Zone with irregular Mn carbonate alteration, resembles alteration proximal to massive sulphides..			
255.50	260.80	BRECCIA AND DACITE Dark, Green, Zone of disrupted dacite and dacite derived sediments. CONTACT: Faulted, at 65 degrees to LCA. Several bands of pug surround the contact, but the main fault is a significant rock-type change.					
260.80	265.60	BRECCIA AND DACITE Pink, Grey, Very coarse grained, Feldspar phyrlic, Lithic, Zone of angular conglomerate derived from underlying dacite. CONTACT: Conformable abrupt, at 75 degrees to LCA.					FRACURE. Zone of broken core and minor pug bands. FAULT, Pug, Breccia. Significant fault as rock-type change. FAULT, Breccia.
265.60	274.70	DACITE Grey, Pink, Massive, Feldspar phyrlic, Typified by 1 to 2mm pink feldspars. CONTACT: Conformable abrupt,	Slightly Carbonatised.				
274.70	279.70	DACITE Pink, White, Brecciated, Feldspar phyrlic, Zone with abundant irregular milky white amorphous quartz veining grading to breccia cement in part. CONTACT: Gradational,	Moderately Silicified.				FAULT, D 40, Breccia.
279.70	284.00	DACITE Grey, Massive, Feldspar phyrlic, CONTACT:	Slightly Silicified.				



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PASMINCO EXPLORATION
DIAMOND DRILL CORE LOG

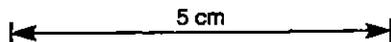
HOLE No. **YNCS**

PROJECT: YOLANDE: NEWTON CREEK

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DESCRIPTION				GRAPHIC			STRUCTURES
From	To	LITHOLOGY	ALTERATION	MINERALISATION	Depth	Lith	Structures
279.70	284.00	DACITE Grey, Massive, Feldspar phyrlic, CONTACT: Gradational.	Slightly Silicified.		280		
		DACITE Pink, Massive, Detextured pink alteration. Resembles zone at 230m. CONTACT: Gradational.	Moderately Silicified.				
284.20	288.20	DACITE Grey, Green, Massive, Feldspar phyrlic, CONTACT: Conformable abrupt,	Slightly Silicified.				
288.20	290.40	DACITE Dark, Green, Massive, Feldspar phyrlic, Resembles dacite at end of hole. CONTACT: Faulted, at 60 degrees to LCA. Significant fault as rock-types are different.	Slightly Carbonatised.				
290.40	290.80	CONGLOMERATE Yellow, Grey, Coarse grained, Brecciated, Sheared, Lithic, Zone resembles underlying conglomerate. CONTACT: Faulted,	Moderately Sericitised.		290		FALLT, D 60. Pug. Rock-type change.
292.00	311.00	SANDSTONE Grey, Medium grained, Massive, Lithic, Abundant 0.5mm quartz grains and fine lithics. Seems to be unrelated to surrounding lithologies? CONTACT: Conformable abrupt,	Slightly Sericitised. Slightly Carbonatised.			FALLT, D 25,	
		CONGLOMERATE Green, Yellow, Poorly sorted, Polymict, Zone of unusual and distinct conglomerate, resembles Newton Creek spillway conglomerate. Dominantly dacite clasts from 2 to 15cms, in fine-grained sericitic sandstone matrix. Minor siliceous and siltstone clasts present. Mn carbonate altered. CONTACT: Gradational,				FALLT, D 50. Brittle.	
					300	FIRST CLEAVAGE, D 75, Cleavage and axis of elongation of clasts.	



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DESCRIPTION				GRAPHIC			
From	To	LITHOLOGY	ALTERATION	MINERALISATION	Depth	Lith	Structures
311.00	314.40	SILTSTONE CONTAINING LAMINAE OF CHERT INTERBEDDED WITH SANDSTONE Pale, Grey, Fine grained, Coarse grained, Bedded, Zone of cherty siltstone and minor irregular patches of fine-grained sandstone. Zone is silicified and contains minor red brown sphalerite as spots to disseminations and in quartz veinlets. CONTACT: Gradational,	Highly Silicified.	VEIN, very minor sphalerite in veins, very minor galena in veins, very minor pyrite in veins. Sphalerite occurs as red brown coarse grains in irregular veins and fractures, galena tends to occur as selvages on sphalerite. Sphalerite also occurs as 2 by 1mm spots and minor disseminations..	310		
314.40	333.10	DACITE Cream, Augen, Massive, Irregular zone of manganese carbonate altered dacite. Texture is massive with abundant irregular fine carbonate veinlets in part, and augen carbonate in part, and minor clastic texture in part. High in K2O. CONTACT: Conformable abrupt, at 40 degrees to LCA.	Highly Carbonatised, Moderately Sericitised.	VEIN, sphalerite in veins, trace in veinlets, trace galena in veinlets, Zone of trace coarse grained sphalerite in irregular carbonate/quartz veinlets..	320		
333.10	335.60	BRECCIA Buff, Very coarse grained, Poorly sorted, Matrix supported, Polymict, Irregular conglomerate with siliceous siltstone clasts, siliceous volcanic clasts and quartz? phytic cream carbonate clasts, and abundant 3mm red brown sphalerite clasts/spots. Matrix is grey fine grained sandstone and cherty siltstone, carbonate altered in part.	Highly Carbonatised, Moderately Silicified.		330		VEIN, 0.25,
335.60	340.50	CONTACT: Conformable abrupt,	Moderately Carbonatised,				VEIN, Clear mineralized quartz vein with normal 10mm offset white quartz vein.

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PRSMINCO EXPLORATION
DIAMOND DRILL CORE LOG

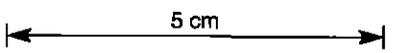
HOLE No. **YNCS**

PROJECT: YDLANDE; NEWTON CREEK

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DESCRIPTION				GRAPHIC			
From	To	LITHOLOGY	ALTERATION	MINERALISATION	Depth	Lith	Structures
335.60	340.50	<p>in part. CONTACT: Conformable abrupt,</p> <p>DACITE Cream, Zone of Mn carbonate alteration and abundant fine irregular carbonate veinlets in massive dacite. CONTACT: Gradational,</p>	<p>Moderately Carbonatised. Moderately Sericitised.</p>		340		
340.50	344.40	<p>DACITE Green, Brecciated, Zone of massive dacite in part, autbrecciated adacite in part, and minor lithic clasts in part. CONTACT: Gradational,</p>	<p>Slightly Carbonatised.</p>				
344.40	345.80	<p>DACITE Cream, Massive, Augen, Zone of massive Mn carbonate altered dacite, with fine augen texture in part, and feldspar phyrlic in part. CONTACT: Gradational,</p>	<p>Moderately Carbonatised. Moderately Silicified.</p>				<p>VEIN, Carbonate, Zone of irregular fine manganese carbonate veining.</p>
345.80	364.50	<p>DACITE Green, Grey, Massive, Feldspar phyrlic, Zone of massive dacite, with abundant fine irregular Mn carbonate veinlets. Minor carbonate altered feldspars.</p>	<p>Slightly Carbonatised. Slightly Silicified.</p>		350		
					360		<p>VEIN, trace sphalerite in veins. Two 3mm red brown sphalerite crystals in white carbonate vein..</p>
							<p>VEIN, Carbonate, Zone of irregular fine manganese carbonate veining.</p>



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PRSMINCO EXPLORATION
 DIAMOND DRILL CORE LOG
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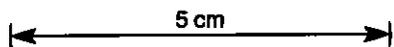
HOLE No. **YNCS**

PROJECT: YOLANDE: NEWTON CREEK

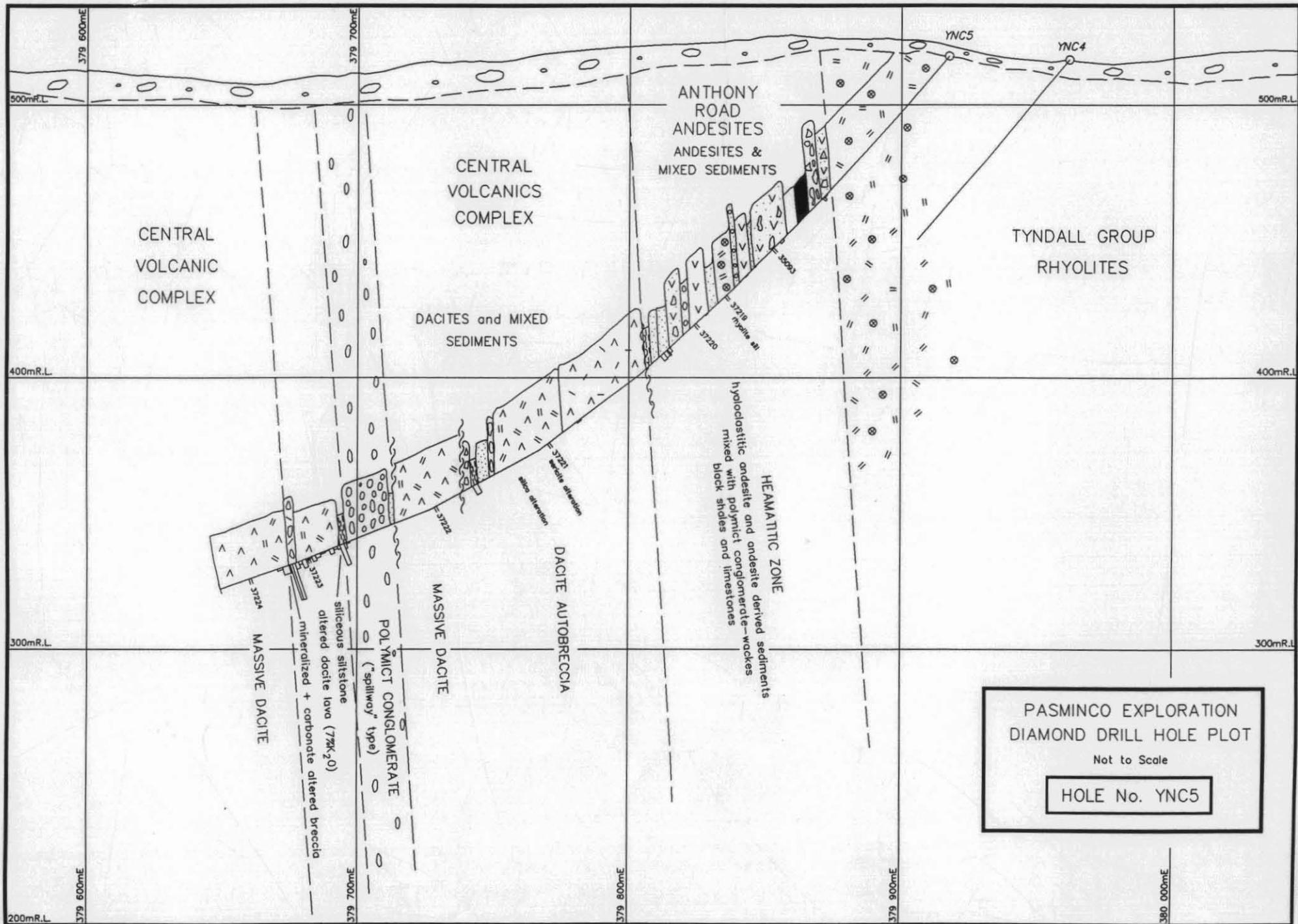
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DESCRIPTION					GRAPHIC			
From	To	LITHOLOGY	ALTERATION	MINERALISATION	Depth	Lith	Structures	STRUCTURES
								irregular fine manganese carbonate veining.
					370			
					380			
					390			

5 cm



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ASSAY RESULTS YNCS

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(values in ppm)

FROM	TO	int	SAMPLE	Cu	Pb	Zn	Ag	Au	Fe%	Ba	Mn
72.90	74.40	1.5	37321	144	92	403	1	0.01	9.17	1307	2252
74.40	75.30	0.9	37322	50	1100	1433	3	<0.008	5.26	1190	2494
79.20	80.00	0.8	37323	12	24	71	<1	<0.008	4.26	993	2392
97.50	99.20	1.7	37215	30	35	840	<1	<0.008	3.97	124	1250
112.50	113.30	0.8	37216	125	14	193	<1	0.01	6.50	348	948
117.00	118.50	1.5	37217	12	10	213	<1	<0.008	13.90	199	757
138.80	140.20	1.4	37218	4	5	254	<1	<0.008	3.01	161	3110
158.50	159.20	0.7	37120	196	73	131	2	0.02	2.89	20700	634
159.20	160.30	1.1	37121	171	585	1659	4	<0.008	6.84	33500	9300
160.30	160.90	0.6	37122	12	992	2440	3	<0.008	3.07	24100	11100
160.90	162.30	1.4	37123	32	562	2210	2	<0.008	8.00	27400	80600
162.30	164.00	1.7	37124	38	653	2409	7	<0.008	4.15	13400	24800
204.20	206.30	2.1	37125	13	114	488	1	0.04	5.92	1264	1972
253.00	255.20	2.2	37126	152	936	3690	1	0.06	2.78	1270	2388
309.40	311.00	1.6	37301	12	309	560	1	0.01	2.94	1312	16600
311.00	311.90	0.9	37302	40	1601	2041	3	0.04	2.36	1336	12700
311.90	313.60	1.7	37303	113	5200	8100	8	0.07	2.05	1078	7300
313.60	314.80	1.2	37304	17	627	1404	1	0.01	2.87	1163	16800
314.80	316.50	1.7	37305	20	382	961	1	<0.008	2.93	1238	13300
316.50	318.30	1.8	37306	12	668	2140	1	0.01	3.16	1356	14100
318.30	320.00	1.7	37307	14	81	238	<1	<0.008	3.25	1451	10700
320.00	322.30	2.3	37308	21	380	610	1	<0.008	2.57	1505	8700
322.30	324.30	2.0	37309	21	690	1412	1	<0.008	2.76	1414	15000
324.30	325.80	1.5	37310	71	949	2169	2	0.01	4.08	1662	17800
325.80	327.10	1.3	37311	42	252	606	3	<0.008	3.35	1473	13500
327.40	328.40	1.0	37312	31	618	1039	3	<0.008	2.97	1056	12400
328.40	330.10	1.7	37313	119	6800	3161	7	0.01	3.06	1511	15200
330.10	331.50	1.4	37314	97	2504	1278	4	<0.008	2.37	1503	18400
331.50	333.00	1.5	37315	33	1050	2524	1	<0.008	2.58	2246	12000
333.00	334.20	1.2	37316	35	6400	13900	7	0.04	8.39	1420	48800
334.20	335.00	0.8	37317	21	5300	13800	6	0.04	12.00	1446	78300
335.00	335.60	0.6	37318	13	1702	3284	3	0.02	4.09	2382	19000
335.60	338.20	2.6	37319	114	4127	3065	6	<0.008	6.14	1452	41000
338.20	340.50	2.3	37320	52	1436	829	7	0.05	3.10	1268	17200

(values in %)

FROM	TO	SAMPLE	Al2O3	SiO2	TiO2	Fe2O3	MnO	CaO	K2O	MgO	P2O5	Na2O	SO3	LOI	AI
128.60	128.90	37219	15.38	73.80	0.13	0.62	0.03	0.31	0.33	0.12	0.01	8.70	0.11	0.79	5
145.10	145.60	37220	17.07	53.10	0.53	7.39	0.74	3.66	0.65	4.31	0.21	6.27	0.01	5.68	33
218.50	218.90	37221	13.33	66.70	0.47	2.75	0.20	4.90	4.14	0.45	0.13	0.19	<0.01	6.27	47
269.60	270.40	37222	16.40	64.80	0.56	5.37	0.12	2.27	2.08	1.00	0.16	4.85	0.13	1.97	30
327.10	327.40	37223	16.20	57.40	0.58	6.90	2.61	0.62	7.38	0.64	0.13	0.06	0.26	6.79	92
350.40	350.70	37224	12.98	66.40	0.44	9.06	0.29	1.38	2.23	0.87	0.12	2.57	0.20	3.19	44

(values in ppm)

FROM	TO	SAMPLE	Rb	Sr	V	Nb	Y	Zr
128.60	128.90	37219	14	332	5	10	17	135
145.10	145.60	37220	31	349	173	5	19	143
218.50	218.90	37221	148	96	61	13	29	212
269.60	270.40	37222	101	156	61	10	34	259
327.10	327.40	37223	218	19	50	9	29	263
350.40	350.70	37224	76	54	39	<3	25	204

SPECIFIC GRAVITY

depth	value	formation	lithology
51.00	2.63	TG	Lr
102.00	2.74	AA	Vi
151.00	2.88	AA	sst
199.50	2.77	AA	Ln
250.50	2.81	NCD	sst
301.50	2.68	NCD	cong
349.50	2.75	NCD	Ld

MAGNETIC SUSCEPTIBILITY (x10³ cgs units)

depth	value	formation	lithology
3.00	0.18	TG	Lr
4.50	0.08	TG	Lr
6.30	0.18	TG	Lr
9.00	0.03	TG	Lr
12.30	0.18	TG	Lr
13.50	0.15	TG	Lr
14.70	0.39	TG	Lr
15.60	0.19	TG	Lr
15.80	0.34	TG	Lr
18.30	1.12	TG	Lr
19.50	0.73	TG	Lr
21.60	0.08	TG	Lr
23.40	0.73	TG	Lr
26.70	0.19	TG	Lr
28.50	0.11	TG	Lr
30.30	0.29	TG	Lr
31.50	0.62	TG	Lr
33.70	2.67	TG	Lr
36.80	2.06	TG	Lr
38.30	3.13	TG	Lr
39.70	0.10	TG	Lr
40.70	0.25	TG	Lr
41.80	1.99	TG	Lr
43.50	5.15	TG	Lr
46.40	0.35	TG	Lr
49.10	0.10	TG	Lr
51.40	0.19	TG	Lr
52.50	0.19	TG	Lr
55.10	0.20	TG	Lr
58.10	0.11	TG	Lr
60.30	0.02	TG	Lr
61.50	0.23	TG	Lr
64.50	0.23	TG	Lr
67.50	0.83	TG	Lr
70.50	0.20	AA	bx
71.90	0.37	AA	bx
72.90	2.10	AA	bx
78.70	0.12	AA	bx
82.50	0.10	AA	bsh
85.50	2.56	AA	bsh
88.50	0.13	AA	1st
91.50	0.13	AA	1st
94.50	0.28	AA	Vi
97.50	0.13	AA	Vi
100.50	14.10	AA	Vi
103.50	5.23	AA	Vi
106.50	2.81	AA	Vi
109.50	1.34	AA	Vi
112.50	3.31	AA	Vi
115.50	4.60	AA	Ln
118.50	6.41	AA	Ln
121.50	2.01	AA	Ln
124.50	0.29	AA	sst
127.50	0.09	AA	Lr
130.50	0.16	AA	Lr
133.50	0.38	AA	sst
136.50	0.14	AA	sst
139.50	1.69	AA	Ln
142.50	8.25	AA	Ln
145.50	3.84	AA	Ln
148.50	0.25	AA	sst

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151.50	0.84	AA	Ln
154.50	0.23	AA	Ln
157.50	0.46	AA	Ln
160.50	0.36	AA	sst
163.50	0.21	AA	sst
166.50	0.40	AA	sst
167.10	0.15	AA	sst
169.30	0.19	AA	slt
172.40	0.40	AA	Ln
175.50	0.28	AA	Ln
178.50	3.20	AA	Ln
181.50	0.17	AA	Ln
184.50	0.43	AA	Ln
187.50	0.54	AA	Ln
190.50	0.14	AA	Ln
193.50	0.20	AA	Ln
196.50	0.22	AA	Ln
199.50	0.19	AA	Ln
202.50	0.13	AA	Ln
205.50	0.21	AA	Ln
208.50	0.28	AA	Ln
211.50	0.13	AA	Ln
214.50	0.05	NCD	Ld
217.50	0.08	NCD	Ld
220.50	0.23	NCD	Ld
223.50	0.25	NCD	Ld
226.50	0.11	NCD	Ld
229.50	0.13	NCD	Ld
232.50	0.12	NCD	Ld
235.50	0.08	NCD	Ld
238.50	0.11	NCD	Ld
242.90	0.15	NCD	Ld
244.50	0.16	NCD	Ld
247.50	0.19	NCD	sst
250.50	0.23	NCD	sst
253.50	0.15	NCD	slt
256.50	0.19	NCD	bx
258.80	0.16	NCD	bx
260.90	0.14	NCD	bx
263.70	0.15	NCD	bx
266.70	0.15	NCD	Ld
268.50	0.25	NCD	Ld
271.50	0.19	NCD	Ld
274.50	0.14	NCD	Ld
277.50	0.14	NCD	Ld
280.50	0.13	NCD	Ld
283.50	0.16	NCD	Ld
286.50	0.13	NCD	Ld
289.50	0.19	NCD	Ld
292.50	0.16	NCD	cong
295.50	0.14	NCD	cong
298.50	0.14	NCD	cong
301.50	0.14	NCD	cong
304.50	0.16	NCD	cong
307.50	0.10	NCD	cong
310.50	0.20	NCD	cong
313.50	0.07	NCD	slt
316.50	0.21	NCD	Ld
319.50	0.20	NCD	Ld
322.50	0.15	NCD	Ld
325.50	0.58	NCD	Ld
328.50	0.20	NCD	Ld
331.50	0.22	NCD	Ld
334.50	0.66	NCD	bx
337.50	0.65	NCD	Ld
340.50	0.43	NCD	Ld
343.50	0.35	NCD	Ld
346.50	0.19	NCD	Ld
349.50	0.37	NCD	Ld
352.50	0.24	NCD	Ld
355.50	0.44	NCD	Ld
358.50	0.14	NCD	Ld
361.50	0.13	NCD	Ld
364.50	0.18	NCD	Ld

PASMINCO EXPLORATION
DIAMOND DRILL CORE LOG

HOLE No. **YNC6**

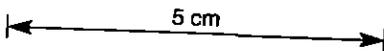
PROJECT: YOLANDE: NEWTON CREEK

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DESCRIPTION				GRAPHIC			STRUCTURES
From	To	LITHOLOGY	ALTERATION	MINERALISATION	Depth	Lith	
0.00	3.50	GLACIAL DEPOSITS			0		
3.50	24.20	BRECCIA CONTAINING CLASTS OF ANDESITE AND RHYOLITE Grey, Green, Very coarse grained, Poorly sorted, Matrix supported, Polymict, Lithic, Very weathered zone with ghost clasts and shearing or elongation fabric increasing towards the faulted zone. CONTACT: Faulted, With broken quartz chlorite veining.	Highly Oxidised,		10		
					20		
24.20	28.00	FAULT ZONE (PUG) MIXED WITH SANDSTONE AND SILTSTONE Pale, Grey, Fine grained, Brecciated, Broken zone of quartz veining, silicification, pug and sandstone and siltstone. CONTACT: Faulted,	Moderately Silicified,				BROKEN CORE. Broken weathered zone.
				VEIN, minor pyrite in veins.			
28.00	35.90	BRECCIA Grey, Green, Very coarse grained, Poorly sorted,	Highly Oxidised,				FAULT, Zone of quartz veining and brecciation.

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PASMINCO EXPLORATION
DIAMOND DRILL CORE LOG

HOLE No. **YN66**

PROJECT: VOLANDE: NEWTON CREEK

Vertical Scale 1 : 200

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DESCRIPTION				GRAPHIC			
From	To	LITHOLOGY	ALTERATION	MINERALISATION	Depth	Lith	Structures
28.00	35.90	BRECCIA Grey, Green, Very coarse grained, Poorly sorted, Matrix supported, Polymict, Crystal, Lithic, Very weathered rock, clasts are indistinct but appear to include siltstone, shale, siliceous volcanics and intermediate volcanics. CONTACT: Gradational,	Highly Oxidised.	VEIN, minor pyrite in veins.	30		Fault, Zone of quartz veining and brecciation.
35.90	39.30	SANDSTONE Grey, Green, Coarse grained, Cleaved, Lithic, Crystal, Similar in colour and components to previous interval. CONTACT: Missing,	Moderately Oxidised.				
39.30	43.60	BLACK SHALE INTERBEDDED WITH SILTSTONE Black, Fine grained, Laminated, CONTACT: Missing,			40		
43.60	46.20	SANDSTONE Grey, Green, Coarse grained, Poorly sorted, Polymict, Lithic, Crystal, Similar to previous intervals. CONTACT: Missing,	Slightly Oxidised.	DISSEMINATED, very minor pyrite disseminated, very minor pyrite on fractures.			BEDDING, D 50.
46.20	53.50	BLACK SHALE INTERBEDDED WITH SANDSTONE Black, Fine grained, Laminated, INTERBEDDED WITH SANDSTONE Grey, Coarse grained, Bedded, Lithic, Crystal, Minor clasts upto 20mm include shale, cherty siltstone and white fine grained siliceous volcanic. Sandstone is white saccharoidal (non carbonate) in part baritic? CONTACT: Conformable abrupt, at 45 degrees to LCR.	Slightly Carbonatised.	STRONGER, sphalerite in veinlets, very minor disseminated, minor pyrite disseminated, Red brown sphalerite coarse grained in white carbonate veinlets, to fine grained disseminated in sedimentary banding..	50		Fault, Breccia, Pug, Fault, D 0, Reverse movement. Several micro thrusts west over east parallel to core axis.
53.50	54.20	GREYWACKE Grey, Very coarse grained, Upwards fining sequence, Polymict, Lithic, Crystal, Grading uphole (to the east). Clast types grade from 30mm to 1mm including abundant black shale, abundant pale siliceous fine grained clasts with disseminated pyrite, and trace pyrite clasts. Fine carbonate in matrix. CONTACT: Conformable abrupt, at 45 degrees to LCR.		CLAST, very minor pyrite massive, Minor 5mm clasts of pyrite in a wacke bed..			BEDDING, D 45, Grading uphole.
54.20	58.70	BLACK SHALE Black, Fine grained, Bedded, Calcareous, Bedding picked out by disseminated pyrite and carbonate bands is at a high angle to cleavage ie, fold position. Abundant fine carbonate veinlets. CONTACT: Faulted, at 45 degrees to LCR. The shale is drag folded near the contact.	Slightly Carbonatised.	DISSEMINATED, very minor pyrite in veins, trace sphalerite in veinlets, pyrite from disseminated in sedimentary			FIRST CLEAVAGE, D 50, FOLD,

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68
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PRSMINCO EXPLORATION
DIAMOND DRILL CORE LOG

HOLE No. **YNC6**

PROJECT: VOLANDE: NEWTON CREEK

Vertical Scale 1 : 200

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DESCRIPTION		GRAPHIC						
From	To	LITHOLOGY	ALTERATION	MINERALISATION	Depth	Lith	Structures	STRUCTURES
		CONTACT: Faceted, at 45 degrees to LCA. The shale is drag folded near the contact.		veins, trace sphalerite in veinlets, pyrite from disseminated in sedimentary banding to transposed in cleavage, and in fine white carbonate veinlets..				FOLD, Drag folded vein?
		LIMESTONE White, Fine grained, Stylolites, CONTACT: Gradational,						FOLD.
58.70	61.00	LIMESTONE MIXED WITH SHALE Grey, White, Fine grained, Calcareous, Laminated and banded limestone and shale disrupted and brecciated in part, minor flat faults with upper block west to east sense of movement. CONTACT: Conformable abrupt, at 35 degrees to LCA.			60			
61.00	65.00	SANDSTONE Dark, Green, Medium grained, Bedded, Reworked andesite derived sediment mixed with limestone bands. CONTACT: Indistinct,						
65.00	67.30	FAULT ZONE (PUG) Pink, Grey, Very coarse grained, Brecciated, Zone of Brecciated buff coloured feldspar phyruc dacite with interstitial quartz and chlorite. Abundant fine disseminated pyrite throughout. CONTACT: Unassigned,	Slightly Carbonatised.					
67.30	69.30	BRECCIA Pink, Grey, Very coarse grained, Poorly sorted, Matrix supported, Polymict, Lithic, Clasts include rhyolite, siliceous altered and pyritic in a reworked dacite/andesite derived matrix. Clast size: 11 to 61 mm. CONTACT: Gradational.	Moderately Chloritised.					FAULT, Breccia. Quartz healed indistinct breccia.
69.30	70.70	SANDSTONE MIXED WITH SILTSTONE Grey, Medium grained, Fine grained, Irregular patchy mix of reworked dacite/andesite derived sandstone and fine grained cherty siltstone. CONTACT: Conformable abrupt,	Slightly Sericitised.	DISSEMINATED, minor pyrite disseminated, Minor pyritic clasts..	70			
70.70	72.90	SANDSTONE MIXED WITH SILTSTONE Grey, Medium grained, Fine grained, Irregular patchy mix of reworked dacite/andesite derived sandstone and fine grained cherty siltstone. CONTACT: Conformable abrupt,	Slightly Chloritised.					
72.90	76.00	ANDESITE Dark, Green, Medium grained, Coarse grained, Flow brecciated, Ragged angular jigsaw fit andesite? clasts in reworked andesite derived matrix. CONTACT: Indistinct,	Highly Sericitised, Slightly Silicified.	DISSEMINATED, abundant pyrite disseminated, Aligned in sedimentary bands.				FAULT, Shear. Pyrite sericite schist.
76.00	79.70	SCHIST Cream, Grey, Coarse grained, Sheared, Augen, Zone of siltstone to wacke with intense sericite and pyrite alteration overprinted with sheared to augen texture. CONTACT: Missing,	Slightly Chloritised.					
		ANDESITE Dark, Green, Coarse grained, Flow brecciated, Feldspar phyruc, CONTACT: Conformable abrupt,						
79.70	80.30	BRECCIA Grey, Coarse grained, Brecciated, CONTACT: Gradational,	Moderately Silicified,		80			
80.30	85.70	DACITE Grey, Pink, Coarse grained, Reworked, Cleaved, Feldspar phyruc, CONTACT: Gradational,	Moderately Sericitised.					FIRST CLEAVAGE. D 45.
		BRECCIA Grey, Pink, Very coarse grained, Cleaved, Matrix supported, Polymict, Reworked dacite with 5 to 100mm angular stretched? clasts of silicified dacite, siliceous						

5 cm

897152

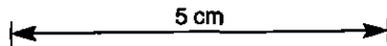
PRSMINCO EXPLORATION
DIAMOND DRILL CORE LOG
Vertical Scale 1 : 200

HOLE No. **YN66**

PROJECT: YBLANDE: NEWTON CREEK

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DESCRIPTION				GRAPHIC			
From	To	LITHOLOGY	ALTERATION	MINERALISATION	Depth	Lith	Structures
		supported, Polymict, Reworked dacite with 5 to 100mm angular stretched? clasts of silicified dacite, siliceous fine grained sediment, aggregates of oolitic? carbonate, and minor very fine grained massive pyrite. Clast size and abundance increasing downhole.					FIRST CLEAVAGE, D 45,
85.70	86.40	CONTACT: Gradational,	Highly Sericitised.	DISSEMINATED, pyrite disseminated, abundant associated with alteration, Pyrite sericite schist, NOTE pyrite massive banded pyrite clast..			FALT. D 40, Breccia,
86.40	89.60		Intensely Sericitised.				FALT. Shear, Pyrite sericite schist.
		SCHIST Pale, Grey, Fine grained, Medium grained, Cleaved, Pyrite sericite schist indistinct pyritic compositional banding? CONTACT: Conformable abrupt.	Moderately Carbonatised, Moderately Sericitised.		90		
89.60	90.30	BRECCIA Grey, Yellow, Very coarse grained, Brecciated, Polymict, Feldspar phytic, The base of this unit is carbonate altered and haematitic with minor pyrite grains, the upper part is a cleaved wacke with 3 to 30mm clasts of silicified dacite, fine grained siliceous sediment, chlorite/pyrite, and sericite altered clasts. CONTACT: Conformable abrupt.	Slightly Carbonatised.				FOLD, Indistinct high angle cleavage to bedding.
90.30	92.10		Slightly Oxidised, Slightly Chloritised.				FALT. D 45, Pug.
92.10	95.70	SANDSTONE Dark, Green, Coarse grained, Reworked, Feldspar phytic, Reworked dacite/andesite derived sandstone. CONTACT: Conformable abrupt, at 48 degrees to LCA.					
95.70	97.90	LIMESTONE White, Medium grained, Granular carbonate with wisps of chlorite and haematite throughout. Indistinct folded bedding. CONTACT: Conformable abrupt, at 35 degrees to LCA.	Slightly Sericitised.				
97.90	106.90	SANDSTONE MIXED WITH SILTSTONE Pink, Grey, Fine grained, Medium grained, Feldspar phytic, Reworked dacite derived sandstone with mixed disrupted patches of siltstone. CONTACT: Missing,			100		FIRST CLEAVAGE, D 85, BEDDING, D 55, BEDDING, D 72,
		SANDSTONE MIXED WITH DACITE Green, Very coarse grained, Bedded, Reworked, Feldspar phytic, Reworked dacite derived sandstone with abundant 1mm pink feldspars. Indistinctly bedded. CONTACT: Conformable abrupt, at 40 degrees to LCA.					FIRST CLEAVAGE, D 45.
106.90	107.50	SANDSTONE Dark, Green, Medium grained, Coarse grained, Massive, Lithic, Crystal, Massive quartz/feldspar sandstone with abundant leucoxene. CONTACT: Conformable abrupt.	Slightly Chloritised.				
107.50	108.70						
108.70	112.20	SHALE WITH MINOR LIMESTONE MIXED WITH DACITE Grey, Green, Hyaloclastitic, Irregular zone of hyaloclastite grading to reworked dacite to shale and minor limestone. CONTACT: Conformable mixed,					
112.20	115.20	DACITE MIXED WITH SILTSTONE Dark, Green, Hyaloclastitic,					



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PRSMINCO EXPLORATION
DIAMOND DRILL CORE LOG

HOLE No. **YNCS**

PROJECT: YOLANDE: NEWTON CREEK

Vertical Scale 1 : 200

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DESCRIPTION					GRAPHIC			
From	To	LITHOLOGY	ALTERATION	MINERALISATION	Depth	Lith	Structures	STRUCTURES
					140			
145.70	148.60	DACITE Red, Brecciated, Feldspar phyrlic, Zone of alteration in similar rock type. CONTACT: Conformable abrupt,	Moderately Silicified,					
148.60	163.70	DACITE Dark, Green, Flow brecciated, Feldspar phyrlic, Autoclastic lavas, clasts from 10 to 60mm matrix similar composition but paler in colour and finer grained. CONTACT: Conformable abrupt, at 40 degrees to LCA. Contact very sharp with clasts of underlying lava in overlying lava.			150			
163.70	165.00	RHYOLITE Red, Massive, Porphyritic, Feldspar phyrlic, Very siliceous rock, could be silicified dacite, but (silicified) feldspar abundance is greater and more regular, also clasts occur in the overlying lava breccias. Resembles spillway lower rhyolite clasts. CONTACT: Conformable mixed,	Moderately Silicified,		160			
165.00	176.60	DACITE CONTAINING CLASTS OF RHYOLITE Dark, Green, Very coarse grained, Flow brecciated, Zone consists of angular to ragged 10 to 60mm clasts of dark green dacite in a paler matrix of a similar composition. Minor pink	Slightly Sericitised,					

5 cm

897155

PASMINCO EXPLORATION
DIAMOND DRILL CORE LOG

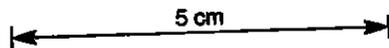
HOLE No. **YNCS**

PROJECT: YOLANDE: NEWTON CREEK

Vertical Scale 1 : 200

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DESCRIPTION					GRAPHIC			STRUCTURES
From	To	LITHOLOGY	ALTERATION	MINERALISATION	Depth	Lith	Structures	STRUCTURES
		to ragged 10 to 60mm clasts of dark green dacite in a paler matrix of a similar composition. Minor pink siliceous clasts possibly rhyolite are present. CONTACT: Gradational, at 50 degrees to LCA.			170			
176.60	195.70	DACITE Dark, Green, Flow brecciated, Reworked, Massive possibly reworked dacite, ragged dacite clasts smaller and more sparse. Minor fine carbonate veinlets. CONTACT: Conformable mixed,			180			FIRST CLEAVAGE, D 42.
					190			
195.70	202.90	DACITE Green, Pink, Massive, Porphyritic, Feldspar	Moderately Silicified.					



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PASMINCO EXPLORATION
DIAMOND DRILL CORE LOG
Vertical Scale 1 : 200

HOLE No. **YNCS**

PROJECT: YOLANDE: NEWTON CREEK

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DESCRIPTION				GRAPHIC			
From	To	LITHOLOGY	ALTERATION	MINERALISATION	Depth	Lith	Structures
195.70	202.90	DACITE Green, Pink, Massive, Porphyritic, Feldspar phyrnic, Irregular zone of dacites massive to autobrecciated, silicified in part and typically 2mm pink feldspar phyrnic. CONTACT: Conformable mixed,	Moderately Silicified.		200		
202.90	231.50	DACITE Green, Pink, Medium grained, Zone of reworked to autoclastic dacite. Feldspars fine and sparse. Minor patches of pink alteration? CONTACT: Indistinct,	Slightly Sericitised.		210		FALLT. D 30. Carbonate chlorite vein infill with minor pug.
					220		VEIN. D 55, Quartz,

5 cm

897157

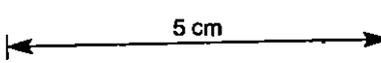
PRSMINCO EXPLORATION
DIAMOND DRILL CORE LOG

HOLE No. **YNCE**

PROJECT: YOLANDE: NEWTON CREEK

Vertical Scale 1 : 200

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DESCRIPTION				GRAPHIC			STRUCTURES
From	To	LITHOLOGY	ALTERATION	MINERALISATION	Depth	Lith	Structures
					230		
231.50	235.00	DACITE Green, Pink, Massive, Feldspar phyrlic, Irregular zone typified by abundant 2mm pink feldspars. Massive in part and with pervasive pink alteration in part. Minor carbonate veining. CONTACT: Indistinct,	Slightly Carbonatised.				
235.00	248.80	DACITE Pale, Green, Massive, Zone of autobrecciated to reworked dacite. Abundant fine pink feldspars in part. Pink altered patches around irregular carbonate veinlets. CONTACT: Indistinct,	Slightly Sericitised.		240		FRACTURE, Zone of broken core on low angle fracture.
							
248.80	262.30	DACITE Green, Pink, Massive, Flow brecciated, Feldspar phyrlic, Zone of massive to autobrecciated feldspar phyrlic dacites. Pink K feldspar alteration in part, and fine white carbonate veinlets in part. CONTACT: Indistinct,	Slightly Sericitised. Slightly Silicified.		250		

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PASMINCO EXPLORATION
DIAMOND DRILL CORE LOG

HOLE No. **YNCG**

PROJECT: YOLANDE: NEWTON CREEK

Vertical Scale 1 : 200

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DESCRIPTION					GRAPHIC			
From	To	LITHOLOGY	ALTERATION	MINERALISATION	Depth	Lith	Structures	STRUCTURES
		CONTACT: Indistinct,		VEIN, carbonate trace pyrite associated with alteration.				
262.30	268.30	DACITE Pale, Green, Medium grained, Reworked, CONTACT: Conformable mixed,	Slightly Sericitised,	VEIN, carbonate as stringers, trace pyrite in veins.	260			
268.30	285.10	DACITE MIXED WITH SILTSTONE Pale, Green, Hyaloclastitic, Massive dark green feldspar phyric dacite to ragged dacite fragments in fine grained pale green siltstone? matrix. Minor pink siliceous band? rhyolite clast?, and minor pink felsic patches.			270			
					280			

5 cm

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PRSMINCO EXPLORATION
DIAMOND DRILL CORE LOG

HOLE No. **YNCS**

PROJECT: YOLANDE: NEWTON CREEK

Vertical Scale 1 : 200

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DESCRIPTION					GRAPHIC			STRUCTURES
From	To	LITHOLOGY	ALTERATION	MINERALISATION	Depth	Lith	Structures	STRUCTURES
					280			FAULT, D 25, Breccia, Quartz, Chlorite. Zone of brecciated massive quartz chlorite veining infilling fault.
285.10	301.50	DACITE Green, Massive, Massive to reworked dacite. Minor pink alteration. CONTACT: Indistinct,	Slightly Sericitised,		290			FAULT, D 29, Sericite, Quartz, Chlorite. Zone of shearing around brecciated vein.
301.50	341.60	DACITE Grey, Pink, Massive, Zone of irregular to massive feldspar phyrlic dacite with abundant bands of pink felsic? alteration throughout. CONTACT: Indistinct,	Moderately Deformed.		300			

5 cm

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PASMINCO EXPLORATION
DIAMOND DRILL CORE LOG

HOLE No. **YNCS**

PROJECT: VOLANDE: NEWTON CREEK

Vertical Scale 1 : 200

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DESCRIPTION				GRAPHIC			STRUCTURES
From	To	LITHOLOGY	ALTERATION	MINERALISATION	Depth	Lith	
					310		
					320		
					330		
							<p>FAULT. Brittle, Zone of very broken core, minor pug and minor quartz carbonate veining.</p>

5 cm

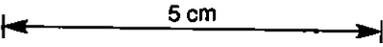
897161

PASMINCO EXPLORATION
 DIAMOND DRILL CORE LOG
 Vertical Scale 1 : 200

HOLE No. **YNCS**

PROJECT: VOLANDE: NEWTON CREEK

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DESCRIPTION					GRAPHIC			STRUCTURES
From	To	LITHOLOGY	ALTERATION	MINERALISATION	Depth	Lith	Structures	STRUCTURES
					340			BROKEN CORE. FALLT. D 10. Breccia, Pug, Chlorite. FALLT. D 15. Pug, Quartz, Carbonate.
341.60	354.60	DACITE Green, Pink, Massive, Feldspar phyrlic, Massive dacite with prominent abundant 2mm phyrlic feldspars, no autobreccia texture. CONTACT: Indistinct.	Slightly Sericitised.					
					350			
354.60	376.60	DACITE Dark, Green, Massive, Feldspar phyrlic, Feldspars reducing in size and abundance downhole. CONTACT: Faulted.						
					360			FALLT. D 5. Carbonate.
								

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PRSMINCO EXPLORATION
DIAMOND DRILL CORE LOG

HOLE No. **YNC6**

PROJECT: YOLANDE: NEWTON CREEK

Vertical Scale 1 : 200

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DESCRIPTION				GRAPHIC			STRUCTURES
From	To	LITHOLOGY	ALTERATION	MINERALISATION	Depth	Lith	Structures
					370		
376.60	379.60	FAULT ZONE (PUG) Cream, Sheared, Brecciated, Very broken zone with several bands of pug, shearing, brecciation and quartz/carbonate/chlorite veining. A significant structure. CONTACT: Faulted,	Highly Sericitised,				FAULT, Breccia, Pug, Zone of very broken cone, minor pug, breccia, and carbonate veining.
379.60	380.90	DACITE MIXED WITH SILTSTONE Green, Pale, Hyaloclastitic, Irregular mixing of dacite and fine grained siltstone? CONTACT: Faulted, at 55 degrees to LCR.	Slightly Sericitised,		380		FAULT, Pug, Breccia, Bleached broken zone with pug breccia and minor quartz veining.
380.90	391.00	DACITE Green, Massive, Feldspar phyrlic, Feldspar size and abundance decreasing downhole. CONTACT: Faulted,		VEIN, carbonate quartz very minor pyrite disseminated,	390		
391.00	395.00	BRECCIA					

5 cm

897163

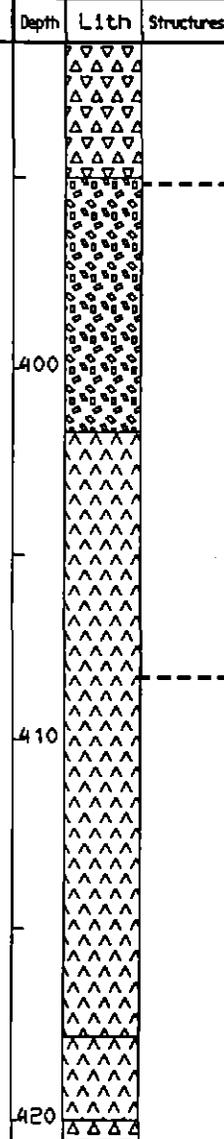
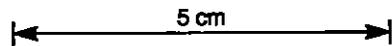
PASMINCO EXPLORATION
DIAMOND DRILL CORE LOG
Vertical Scale 1 : 200

HOLE No. **YN06**

PROJECT: VOLANDE: NEWTON CREEK

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DESCRIPTION				GRAPHIC			
From	To	LITHOLOGY	ALTERATION	MINERALISATION	Depth	Lith	Structures
351.00	355.00	BRECCIA					
395.00	401.70	DACITE Green, Grey, Medium grained, Massive, Cleaved, Feldspar phyrlic, Reworked? dacite, abundant 2mm pink feldspars in pale to dark green sericitic matrix? minor highly sericitic detextured zones occur. CONTACT: Conformable abrupt,	Moderately Sericitised.				FALLT. D 45, Pug. Bleached sericitized zone with minor pug.
401.70	417.80	ANDESITE GRADING TO BRECCIA Green, Very coarse grained, Hyaloclastitic, Brecciated, Autoclastic andesite grading to andesite derived breccia and sandstone at top of interval. Minor bands of pink and white silicification. CONTACT: Indistinct,	Slightly Sericitised.				FALLT. D 35, Pug.
417.80	420.00	ANDESITE Dark, Green, Fine grained, Massive, CONTACT: Conformable abrupt,					
420.00	422.40	BRECCIA MIXED WITH ANDESITE Green, Pink, Very coarse grained, Brecciated, Variably pink and white siliceous	Slightly Silicified.				



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PASMINCO EXPLORATION
DIAMOND DRILL CORE LOG

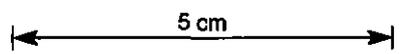
HOLE No. **YNCS**

PROJECT: YOLANDE: NEWTON CREEK

Vertical Scale 1 : 200

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DESCRIPTION				GRAPHIC			
From	To	LITHOLOGY	ALTERATION	MINERALISATION	Depth	Lith	Structures
420.00	422.40	BRECCIA MIXED WITH ANDESITE Green, Pink, Very coarse grained, Brecciated, Variably pink and white siliceous altered andesite or dacite clasts in andesite ground mass. CONTACT: Conformable abrupt,	Slightly Silicified,	DISSEMINATED, very minor pyrite disseminated.	420		
422.40	423.60	ANDESITE Dark, Green, Fine grained, Massive, CONTACT: Conformable abrupt,					
423.60	428.40	BRECCIA Green, Pink, Very coarse grained, Brecciated, Feldspar phynic, Zone of pink silicified dacite? andesite in green reworked andesite derived matrix. CONTACT: Faulted,	Slightly Silicified, Slightly Sericitised.				
428.40	446.80	ANDESITE Green, Pink, Fine grained, Zone of dark green chloritic or pale pink silicified massive andesite. Siliceous alteration appears to emanate from abundant fine faults. CONTACT: Conformable abrupt,		STRINGER, very minor pyrite associated with alteration.	430		<p>FAULT, D 45, Pug, Bleached zone</p> <p>FAULT, D 45, Pug, Bleached zone with minor pug bands.</p> <p>FAULT, D 40, Pug.</p> <p>FAULT, D 45, Pug, Bleached and broken zone with minor bands of pug.</p>
446.80	451.60	BRECCIA MIXED WITH ANDESITE Cream, Pink, Brecciated, Clastic or pseudoclastic andesite or dacite. Note typical pink silicified volcanic clasts.	Moderately Carbonatised, Moderately Silicified.		440		<p>FAULT, D 45, Pug.</p>



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PRSMINCO EXPLORATION
DIAMOND DRILL CORE LOG

HOLE No. **YNCB**

PROJECT: YOLANDE: NEWTON CREEK

Vertical Scale 1 : 200

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DESCRIPTION					GRAPHIC			STRUCTURES
From	To	LITHOLOGY	ALTERATION	MINERALISATION	Depth	Lith	Structures	
		Clastic or pseudoclastic andesite or dacite. Note typical pink silicified volcanic clasts. CONTACT: Conformable abrupt,	Moderately Silicified.		450		FALLT, D 45, Pug.	
					460			
					470			

5 cm

897166

SPECIFIC GRAVITY

depth	value	formation	lithology
58.70	2.70	AA	lst
83.10	2.74	AA	Ld
105.00	2.75	AA	sst
169.60	2.70	NCD	Ld
227.10	2.73	NCD	Ld
287.20	2.72	NCD	Ld
361.60	2.73	NCD	Ld
422.80	2.75	NCD	Ln

MAGNETIC SUSCEPTIBILITY ($\times 10^{-3}$ cgs units)

depth	value	formation	lithology
6.90	0.16	AA	bx
8.60	0.20	AA	bx
13.40	0.23	AA	bx
16.40	0.23	AA	bx
18.00	0.18	AA	bx
19.40	0.06	AA	bx
21.10	0.18	AA	bx
22.40	0.26	AA	bx
24.70	0.02	AA	fz
25.30	0.22	AA	fz
26.60	0.03	AA	fz
28.30	0.35	AA	bx
29.90	0.27	AA	bx
31.60	0.26	AA	bx
33.40	0.31	AA	bx
35.80	0.31	AA	bx
37.20	0.23	AA	sst
40.60	0.24	AA	bsh
42.60	0.21	AA	bsh
43.60	0.12	AA	sst
44.60	0.22	AA	sst
45.90	0.46	AA	sst
46.90	0.01	AA	bsh
49.50	0.13	AA	bsh
51.00	0.02	AA	bsh
52.60	0.05	AA	bsh
53.20	0.06	AA	bsh
55.60	0.09	AA	bsh
58.60	0.04	AA	bsh
61.60	0.13	AA	lst
63.00	0.11	AA	lst
64.60	0.05	AA	lst
67.60	0.10	AA	fz
70.60	0.09	AA	sst
73.60	0.03	AA	sht
76.00	0.23	AA	Ln
79.00	0.23	AA	Ln
79.60	0.06	AA	Ln
82.60	0.16	AA	Ld
85.60	0.10	AA	Ld
88.60	0.13	AA	sht
91.60	0.21	AA	sst
94.60	0.14	AA	lst
97.60	0.16	AA	sst

897169

100.60	0.13	AA	sst
103.60	0.14	AA	sst
106.60	0.13	AA	sst
109.60	0.15	NCD	Ld
112.60	0.15	NCD	Ld
115.60	0.11	NCD	Ld
118.60	0.14	NCD	Ld
121.60	0.13	NCD	Ld
124.60	0.16	NCD	Ld
127.60	0.10	NCD	Ld
130.60	0.17	NCD	Ld
133.60	0.15	NCD	Ld
136.60	0.46	NCD	Ld
139.60	0.15	NCD	Ld
142.60	0.12	NCD	Ld
145.60	0.24	NCD	Ld
148.60	0.28	NCD	Ld
151.30	0.19	NCD	Ld
154.40	0.18	NCD	Ld
157.50	0.19	NCD	Ld
160.60	0.10	NCD	Ld
163.60	0.16	NCD	Ld
166.60	0.10	NCD	Ld
169.60	0.17	NCD	Ld
172.60	0.09	NCD	Ld
175.60	0.23	NCD	Ld
178.60	0.15	NCD	Ld
181.60	0.12	NCD	Ld
184.60	0.15	NCD	Ld
187.60	0.15	NCD	Ld
190.60	0.12	NCD	Ld
193.60	0.12	NCD	Ld
194.80	0.20	NCD	Ld
196.60	0.09	NCD	Ld
199.60	0.21	NCD	Ld
202.60	0.06	NCD	Ld
205.60	0.17	NCD	Ld
208.60	0.15	NCD	Ld
211.60	0.16	NCD	Ld
214.60	0.21	NCD	Ld
217.60	0.18	NCD	Ld
220.60	0.26	NCD	Ld
223.60	0.17	NCD	Ld
226.60	0.19	NCD	Ld
229.60	0.21	NCD	Ld
232.60	0.10	NCD	Ld
235.60	0.16	NCD	Ld
238.60	0.17	NCD	Ld
241.60	0.18	NCD	Ld
244.60	0.20	NCD	Ld
247.60	0.15	NCD	Ld
250.60	0.06	NCD	Ld
253.40	0.09	NCD	Ld
256.40	0.09	NCD	Ld
259.50	0.31	NCD	Ld
262.60	0.10	NCD	Ld
265.60	0.28	NCD	Ld
268.60	0.16	NCD	Ld
271.60	0.16	NCD	Ld
274.60	0.17	NCD	Ld
277.60	0.18	NCD	Ld
280.60	0.12	NCD	Ld
283.60	0.15	NCD	Ld
286.60	0.15	NCD	Ld
289.60	0.17	NCD	Ld
292.60	0.16	NCD	Ld

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295.60	0.18	NCD	Ld
298.60	0.16	NCD	Ld
301.60	0.08	NCD	Ld
304.60	0.14	NCD	Ld
307.60	0.08	NCD	Ld
310.60	0.21	NCD	Ld
313.60	0.10	NCD	Ld
316.60	0.14	NCD	Ld
319.60	0.16	NCD	Ld
322.60	0.13	NCD	Ld
323.80	0.12	NCD	Ld
325.60	0.24	NCD	Ld
328.60	0.24	NCD	Ld
330.20	0.06	NCD	Ld
331.60	0.16	NCD	Ld
336.70	0.14	NCD	Ld
338.30	0.10	NCD	Ld
340.30	0.08	NCD	Ld
343.60	0.16	NCD	Ld
346.60	0.30	NCD	Ld
349.60	0.16	NCD	Ld
352.60	0.16	NCD	Ld
355.60	0.17	NCD	Ld
358.60	0.16	NCD	Ld
361.60	0.19	NCD	Ld
364.60	0.24	NCD	Ld
367.60	0.22	NCD	Ld
370.60	0.18	NCD	Ld
373.20	0.14	NCD	Ld
375.50	0.16	NCD	Ld
376.60	0.23	NCD	Ld
379.60	0.11	NCD	fz
382.60	0.20	NCD	Ld
385.60	0.15	NCD	Ld
388.60	0.17	NCD	Ld
391.60	0.14	NCD	Ld
394.60	0.13	NCD	bx
397.60	0.13	NCD	bx
400.60	0.17	NCD	Ld
403.60	0.09	NCD	Ld
406.60	0.12	NCD	Ln
409.60	0.06	NCD	Ln
412.60	0.27	NCD	Ln
415.60	0.02	NCD	Ln
418.60	0.08	NCD	Ln
421.00	0.10	NCD	Ln
421.50	0.11	NCD	bx
424.60	0.12	NCD	bx
427.60	0.09	NCD	bx
430.60	0.18	NCD	bx
433.60	0.20	NCD	Ln
436.60	0.12	NCD	Ln
439.60	0.23	NCD	Ln
442.60	0.14	NCD	Ln
443.50	0.21	NCD	Ln
445.60	0.39	NCD	Ln
448.60	0.11	NCD	Ln
451.60	0.14	NCD	bx

ASSAY RESULTS YNC6

(values in ppm)

FROM	TO	int	SAMPLE	Cu	Pb	Zn	Ag	Au	Fe%	Ba
46.90	48.20	1.3	37334	18	725	2701	2	0.01	2.95	449
48.20	49.30	1.1	37335	13	165	398	1	<0.008	3.22	1140
49.30	50.50	1.2	37336	21	267	775	1	0.01	3.20	856
50.50	51.80	1.3	37337	8	466	2419	1	<0.008	2.50	757
51.80	53.50	1.7	37338	17	246	716	<1	<0.008	2.34	849
53.50	54.20	0.7	37339	16	37	138	<1	0.01	2.86	1217
73.00	76.00	3.0	37340	29	76	116	<1	<0.008	2.83	1326
86.60	87.80	1.2	37341	32	90	226	2	0.01	3.78	1306
87.80	89.60	1.8	37342	48	148	104	8	0.02	4.11	1614
89.60	90.30	0.7	37343	23	37	98	1	<0.008	2.12	715

PASMINCO EXPLORATION
DIAMOND DRILL CORE LOG

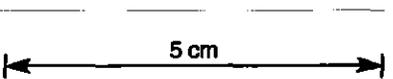
HOLE No. **YNC7**

PROJECT: YOLANDE: NEWTON CREEK

Vertical Scale 1 : 200

Page 1 of 11

DESCRIPTION				GRAPHIC			
From	To	LITHOLOGY	ALTERATION	MINERALISATION	Depth	Lith	Structures
0.00	8.30	DACITE Pale, Green, Sheared, Augen, Dacitic lava or reworked dacitic debris. Weathered pits of knotty quartz/carbonate augen wrapped by sericite/chlorite. Abundant 0.5mm white altered feldspars. The rock is probably dacitic in composition but may be lava or reworked lava derived sediment. CONTACT: Indistinct,	Moderately Oxidised. Moderately Sericitised.	DISSEMINATED. trace pyrite associated with alteration, trace galena Disseminated mineralization associated with sericite and carbonate alteration..	0		FIRST CLEAVAGE, D 40.
8.30	13.80	DACITE White, Similar to above interval but more intensely altered. CONTACT: Indistinct,	Moderately Oxidised. Highly Sericitised.		10		
13.80	26.10	DACITE Pale, Green, Sheared, Augen, Fragmented knotty Mn carbonate augen wrapped by sericite. Lava or dacite derived sediment? Highly cleaved rock with fine pyrite smeared in cleavage in part. CONTACT: Faulted,	Moderately Sericitised. Moderately Carbonatised.	DISSEMINATED. minor pyrite disseminated, trace galena in veinlets, trace galena on fractures, Minor sulphide wisps aligned in cleavage. Mineralization associated with augen type carbonate, sericite and quartz alteration..	20		
26.10	40.40	DACITE Pale, Green, Medium grained, Cleaved, Similar to above but with decreased augen texture, less cleaved and more massive. CONTACT: Gradational,	Moderately Bleached. Moderately Sericitised.				



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PASMINCO EXPLORATION
DIAMOND DRILL CORE LOG
Vertical Scale 1 : 200

HOLE No. **YNC7**

PROJECT: YOLANDE: NEWTON CREEK

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DESCRIPTION				GRAPHIC			STRUCTURES	
From	To	LITHOLOGY	ALTERATION	MINERALISATION	Depth	Lith	Structures	
		more massive. CONTACT: Gradational,			30			
40.40	50.70	DACITE Buff, Green, Brecciated, Autoclastic; dark green chloritic angular 1 to 5cm feldspar phytic clasts in buff medium grained bleached matrix of quartz, sericite, altered feldspars and weathering pits. Resembles pull apart texture in part, autoclastic dacite. CONTACT: Gradational,	Bleached, Sericitised.	DISSEMINATED, very minor galena in veinlets. Very altered bleached detextured volcanic with disseminated galena. Note very heavy?.	40			FIRST CLEAVAGE, D 50, Zone of bleaching alteration and increased cleavage possibly surrounding fault or shear.
		 5 cm		STRONGER, minor pyrite as stringers, very minor sphalerite as stringers, Minor red coarse sphalerite..	50			
50.70	69.20	DACITE White, Zone of intense bleaching and alteration with minor sulphides. Ghost autoclastic texture is identical to surrounding autoclastic dacite texture. Alteration appears to emanate from faults and fractures. CONTACT: Gradational,	Moderately Oxidised, Moderately Sericitised.	DISSEMINATED, very minor pyrite very minor galena disseminated, very minor sphalerite associated with alteration. Very bleached detextured zone with patchy disseminated bands and possibly more abundant weathering pits?.				

897173

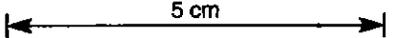
PASMINCO EXPLORATION
DIAMOND DRILL CORE LOG

HOLE No. **YNC7**

PROJECT: YOLANDE: NEWTON CREEK

Vertical Scale 1 : 200

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DESCRIPTION					GRAPHIC			
From	To	LITHOLOGY	ALTERATION	MINERALISATION	Depth	Lith	Structures	STRUCTURES
				partly disseminated bands and possibly more abundant weathering pits?				
								
69.20	75.90	DACITE Cream, Green, Brecciated, Autoclastic texture, identical to two previous intervals. CONTACT: Conformable mixed,	Moderately Bleached, Slightly Sericitised.		60			
					70			BROKEN CORE. Zone of bleaching, intense alteration and detexturing, minor friable zones, minor pug and minor quartz veining.
75.90	81.20	DACITE MIXED WITH SANDSTONE Grey, Green, Coarse grained, Zone of indistinct mixed dacite and terrigenous sandstone. CONTACT: Conformable mixed,	Slightly Sericitised, Slightly Chloritised.	DISSEMINATED, very minor pyrite associated with alteration, trace sphalerite associated with alteration. Associated with carbonate and lesser chlorite, sericite and silica alteration..				FALLT, D 68.
					80			BEDDING, D 58.
81.20	84.20	SANDSTONE CONTAINING LAMINAE OF SHALE Buff, Grey, Medium grained, Cleaved, Bedded, Terrigenous sediment, no dacite component. CONTACT: Conformable abrupt,	Moderately Sericitised.	DISSEMINATED, very minor pyrite associated with alteration, trace sphalerite associated with alteration, Minor S by 15mm carbonate/sulphide? altered augen patches..				
84.20	86.50	BLACK SHALE Black, Fine grained, Bedded, Minor sandstone						

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PASMINCO EXPLORATION

DIAMOND DRILL CORE LOG

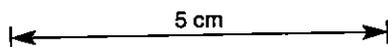
HOLE No. **YNC7**

PROJECT: VOLANDE: NEWTON CREEK

Vertical Scale 1 : 200

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DESCRIPTION					GRAPHIC			STRUCTURES
From	To	LITHOLOGY	ALTERATION	MINERALISATION	Depth	Lith	Structures	STRUCTURES
84.20	86.50	BLACK SHALE Black, Fine grained, Bedded, Minor sandstone bands throughout, minor 2cm carbonate rounded patches. Possible minor folding? CONTACT: Conformable abrupt,	Slightly Carbonatised,					FOLD, Indistinct drag fold?
86.50	93.10	SANDSTONE Buff, Medium grained, Massive, With a breccia or pseudo breccia in part, texture may be due to preferential carbonate - silica alteration. Note pyrite/galena clast? and red sphalerite spots. CONTACT: Conformable abrupt,	Slightly Carbonatised,	STRONGER, very minor pyrite associated with alteration, trace sphalerite associated with alteration. Mineralisation associated with carbonate altered patches, insipient sphalerite replacement..	90			
93.10	94.60	SILTSTONE Pale, Grey, Fine grained, Laminated, Minor sandstone bands. Disseminated pyrite in part, and minor Mn carbonate in fractures. CONTACT: Conformable mixed,	Slightly Sericitised,					BEDDING, 0.55,
94.60	101.70	DACITE MIXED WITH SILTSTONE Grey, Green, Hyaloclastitic, Minor Mn carbonate alteration, and minor chlorite/sphalerite patches in siliceous alteration patches. CONTACT: Gradational,	Slightly Silicified,	VEIN, abundant carbonate minor pyrite trace galena Brecciated vein carbonate with spotty pyrite and minor interstitial galena. Minor sphalerite/chlorite associated with patchy silica alteration..	100			
101.70	147.60	DACITE Green, Coarse grained, Massive, Feldspar phytic, Zone of massive dacites with minor autobreccia texture throughout. Minor zone of reworking at 130.4m. Minor irregular white carbonate veining throughout. Minor flow banding at base of interval. CONTACT: Conformable abrupt,			110			



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PASMINCO EXPLORATION
DIAMOND DRILL CORE LOG

HOLE No. **YNC7**

PROJECT: YOLANDE: NEWTON CREEK

Vertical Scale 1 : 200

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DESCRIPTION			GRAPHIC					
From	To	LITHOLOGY	ALTERATION	MINERALISATION	Depth	Lith	Structures	STRUCTURES
					120			VEIN, Quartz, Chlorite. Minor zone of veining.
				VEIN, minor pyrite associated with alteration, very minor sphalerite associated with alteration, trace galena associated with alteration.				
				VEIN, minor pyrite disseminated, very minor sphalerite associated with alteration, trace galena as stringers, minor carbonate in veinlets, Zone of alteration associated with quartz/chlorite vein; brecciated Mn carbonate and spotty disseminated pyrite, sphalerite and galena..	130			VEIN, D 40, Quartz, Chlorite.
					140			

5 cm

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PRSMINCO EXPLORATION
DIAMOND DRILL CORE LOG

HOLE No. **YNC7**

PROJECT: YOLANDE: NEWTON CREEK

Vertical Scale 1 : 200

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DESCRIPTION				GRAPHIC			STRUCTURES
From	To	LITHOLOGY	ALTERATION	MINERALISATION	Depth	Lith	Structures
					140		
147.50	148.70	BLACK SHALE Black, Fine grained, Massive, CONTACT: Faulted, at 50 degrees to LCA.					
148.70	150.50	SILTSTONE Pale, Grey, Fine grained, Laminated, CONTACT: Gradational,	Slightly Silicified,		150		
150.50	152.00	SANDSTONE CONTAINING CLASTS OF DACITE Buff, Grey, Coarse grained, Upwards fining sequence, Micaceous, Upwards fining sandstone with isolated 3cm dacite clasts. CONTACT: Gradational,					BEDDING, D 48.
152.00	157.70	CONGLOMERATE Dark, Green, Very coarse grained, Matrix supported, Polymict, Clasts sub rounded to angular, 3mm to 100mm predominantly dark green feldspar phyric dacite, next most abundant type is fine grained olive green vesicular or non vesicular andesite (some pale altered and pyritic andesite clasts) and minor fine grained sediment. CONTACT: Conformable abrupt,	Slightly Sericitised, Slightly Chloritised.	CLAST, very minor pyrite massive.			
157.70	167.50	CONGLOMERATE Pink, Grey, Very coarse grained, Brecciated, Polymict, Similar to above interval but clast size, abundance and type and roundness is more varied. Sediment clasts are more abundant. Dacite clasts are orange altered. CONTACT: Conformable abrupt,	Moderately Sericitised, Moderately Silicified.		160		Fault, D 35. Pug.
167.50	168.00	SILTSTONE Grey, Fine grained, Massive, Fine upwards fining sets of fine grained sandstone and siltstone. CONTACT: Conformable abrupt,					BEDDING, D 68.
168.00	179.40						

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PASMINCO EXPLORATION
DIAMOND DRILL CORE LOG
Vertical Scale 1 : 200

HOLE No. **YNC7**

PROJECT: YOLANDE: NEWTON CREEK

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DESCRIPTION				GRAPHIC			STRUCTURES
From	To	LITHOLOGY	ALTERATION	MINERALISATION	Depth	Lith	Structures
157.50	168.00	fining sets of fine grained sandstone and siltstone. CONTACT: Conformable abrupt,					
168.00	179.40	CONGLOMERATE Grey, Pink, Very coarse grained, Brecciated, Polymict, Overall indistinct upwards fining. Dacite clasts tend to be largest, abundant 1cm pale fine grained sediment clasts, minor pyritic andesite clasts. CONTACT: Gradational,		CLAST, very minor pyrite disseminated, Minor andesite/dacite clasts with abundant disseminated pyrite..	170		BEDDING, D 60. FAULT, D 35, Pug.
179.40	186.20	BRECCIA Grey, Pink, Coarse grained, Clast supported, Polymict, Clasts are smaller and more packed. Clasts types include siltstone, andesite, dacite. This zone contains abundant fine grained pyrite clasts, frequent pyrite/galena/sphalerite and common 1 to 4mm red brown sphalerite clasts. Many clasts are attenuated. Minor 40cm altered dacite clasts. CONTACT: Conformable abrupt,		CLAST, minor pyrite massive, very minor sphalerite massive, very minor sulphide massive, Minor attenuated 1 by 2cm clasts of galena, sphalerite and minor pyrite, minor 2 to 5mm red brown massive sphalerite clasts, and minor massive pyrite clasts..	180		
186.50	198.30	SILTSTONE Grey, Fine grained, Laminated, at 88 degrees to 172. BRECCIA Grey, Pink, Coarse grained, Brecciated, Polymict, Lithic, Similar to above interval but with increasing andesite clast abundance. Note 4m white siliceous altered ? clast, and pyrite clasts still common. CONTACT: Conformable abrupt, at 7 degrees to LCA.		DISSEMINATED, very minor pyrite disseminated, Minor pyrite clasts..	190		
							BROKEN CORE, Minor sericite and minor pug on broken faces.

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PRSMINCO EXPLORATION
DIAMOND DRILL CORE LOG
Vertical Scale 1 : 200

HOLE No. **YNC7**

PROJECT: YOLANDE: NEWTON CREEK

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DESCRIPTION				GRAPHIC			STRUCTURES
From	To	LITHOLOGY	ALTERATION	MINERALISATION	Depth	Lith	Structures
							BROKEN CORE, Pug, Breccia, Zone of pug, crush breccia, quartz carbonate veining and disruption.
225.50	230.80	ANDESITE Green, Medium grained, Massive, Similar to previous andesite interval. CONTACT: Faulted, Very sharp contact with minor rotated wedge, but no associated cleavage or shearing.	Slightly Sericitised, Slightly Oxidised.				FIRST CLEAVAGE, 0 45,
230.80	237.30	PUMICEOUS MASS FLOW Pink, Grey, Massive, Feldspar phytic, Abundant 1-3mm salmon pink feldspars in fine grained pale grey sericite altered groundmass. CONTACT: Conformable abrupt,	Moderately Albitised, Moderately Sericitised.				
237.30	237.70	SILTSTONE Pale, Grey, Fine grained, Massive, CONTACT: Conformable abrupt, at 50 degrees to LCA.					
237.70	253.40	PUMICEOUS MASS FLOW Grey, Green, Massive, Cleaved, Feldspar phytic, Abundant pink feldspars, minor pink rounded altered dacite? clasts in pale grey sericite matrix, cleavage increasing down hole. CONTACT: Gradational,	Moderately Sericitised.				FAULT, 0 35, Pug, Quartz, Chlorite.

5 cm

897180

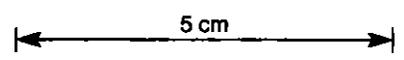
PASMINCO EXPLORATION
 DIAMOND DRILL CORE LOG
 Vertical Scale 1 : 200

HOLE No. **YNC7**

PROJECT: YOLANDE: NEWTON CREEK

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DESCRIPTION				GRAPHIC			STRUCTURES
From	To	LITHOLOGY	ALTERATION	MINERALISATION	Depth	Lith	Structures
253.40	289.40	PUMICEOUS MASS FLOW Grey, Green, Cleaved, Feldspar phyrlic, Lithic, Zone of uniform highly cleaved sericitic matrix, feldspar phyrlic with sporadic rounded 2 to 5cm pink siliceous altered dacite clasts, and abundant 1 to 3mm similar clasts. Note clasts resemble those found in dark green (basaltic) matrix in Newton Creek spillway.	Highly Sericitised, Slightly Silicified.				
					260		FIRST CLEAVAGE, D 90,
					270		
					280		FIRST CLEAVAGE, D 90,



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PASMINCO EXPLORATION
 DIAMOND DRILL CORE LOG
 Vertical Scale 1 : 200

HOLE No. **YNC7**

PROJECT: YOLANDE: NEWTON CREEK

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DESCRIPTION					GRAPHIC			
From	To	LITHOLOGY	ALTERATION	MINERALISATION	Depth	Lith	Structures	STRUCTURES
					280			FIRST CLEAVAGE, 0 00,
					290			
					300			

5 cm

897182

PHYSICAL PROPERTIES YNC7

SPECIFIC GRAVITY

depth	SG	formation	lithology
103.40	2.74	NCD	Ld
142.70	2.72	NCD	Ld
183.50	2.79	NCD	bx
202.90	2.90	NCF	Ln
237.80	2.81	NCF	pmf
274.00	2.72	NCF	pmf

MAGNETIC SUSCEPTIBILITY

depth	value	formation	lithology
3.50	0.08	NCD	Ld
5.10	0.07	NCD	Ld
7.40	0.10	NCD	Ld
8.30	0.15	NCD	Ld
9.50	0.05	NCD	Ld
10.50	0.07	NCD	Ld
11.70	0.03	NCD	Ld
12.40	0.06	NCD	Ld
13.30	0.02	NCD	Ld
16.40	0.07	NCD	Ld
18.80	0.16	NCD	Ld
19.40	0.11	NCD	Ld
21.50	0.04	NCD	Ld
23.60	0.04	NCD	Ld
25.40	0.07	NCD	Ld
28.40	0.08	NCD	Ld
30.40	0.10	NCD	Ld
31.90	0.11	NCD	Ld
34.40	0.25	NCD	Ld
36.00	0.29	NCD	Ld
37.40	0.43	NCD	Ld
40.10	0.09	NCD	Ld
43.20	0.09	NCD	Ld
45.70	0.08	NCD	Ld
48.70	0.13	NCD	Ld
49.40	0.06	NCD	Ld
52.40	0.09	NCD	Ld
55.40	0.06	NCD	Ld
61.40	0.03	NCD	Ld
65.60	0.05	NCD	Ld
67.40	0.11	NCD	Ld
69.20	0.02	NCD	Ld
70.40	0.24	NCD	Ld
73.40	0.33	NCD	Ld
76.40	0.11	NCD	Ld
79.40	0.05	NCD	Ld
80.60	0.14	NCD	Ld
82.40	0.09	NCD	sst
85.40	0.05	NCD	bsh
88.40	0.16	NCD	sst
91.40	0.03	NCD	sst
94.40	0.19	NCD	slt
97.40	0.18	NCD	Ld

897185

100.40	0.19	NCD	Ld
103.40	0.22	NCD	Ld
106.40	0.13	NCD	Ld
109.40	0.04	NCD	Ld
112.40	0.15	NCD	Ld
115.40	0.10	NCD	Ld
118.40	0.15	NCD	Ld
121.40	0.10	NCD	Ld
124.40	0.21	NCD	Ld
127.40	0.11	NCD	Ld
130.40	0.15	NCD	Ld
133.40	0.21	NCD	Ld
136.40	0.09	NCD	Ld
139.40	0.22	NCD	Ld
142.40	0.20	NCD	Ld
145.40	0.28	NCD	Ld
148.40	0.06	NCD	bsh
151.40	0.23	NCD	sst
154.40	0.17	NCD	cong
157.40	0.26	NCD	cong
160.40	0.16	NCD	cong
163.40	0.12	NCD	cong
166.40	0.08	NCD	cong
169.40	0.17	NCD	cong
172.40	0.12	NCD	cong
175.40	0.16	NCD	cong
178.40	0.14	NCD	cong
181.40	0.13	NCD	bx
184.40	0.12	NCD	bx
187.40	0.12	NCD	bx
190.40	0.04	NCD	bx
193.40	0.17	NCD	bx
196.40	0.08	NCF	Ln
198.80	0.37	NCF	Ln
201.90	0.42	NCF	Ln
205.00	0.25	NCF	Ln
208.10	0.26	NCF	Ln
211.20	0.33	NCF	Ln
214.30	0.31	NCF	Ln
217.40	0.26	NCF	Ln
221.40	0.21	NCF	Ln
226.40	0.29	NCF	Ln
229.40	0.31	NCF	Ln
232.40	0.09	NCF	pmf
235.40	0.05	NCF	pmf
238.40	0.16	NCF	pmf
241.40	0.17	NCF	pmf
244.40	0.09	NCF	pmf
247.40	0.32	NCF	pmf
250.40	0.14	NCF	pmf
253.40	0.20	NCF	pmf
256.40	0.17	NCF	pmf
259.40	0.10	NCF	pmf
262.40	0.13	NCF	pmf
265.40	0.10	NCF	pmf
268.40	0.11	NCF	pmf
271.40	0.23	NCF	pmf
274.40	0.12	NCF	pmf
277.40	0.11	NCF	pmf
280.40	0.12	NCF	pmf
283.40	0.09	NCF	pmf
286.40	0.09	NCF	pmf
289.40	0.12	NCF	pmf

ASSAY RESULTS YNC7

(values in ppm)

FROM	TO	int	SAMPLE	Cu	Pb	Zn	Ag	Au	Fe%	Ba
20.00	21.50	1.5	37532	45	319	568	<1	<0.008	2.05	563
21.50	23.00	1.5	37533	30	161	521	1	<0.008	2.95	577
23.00	24.50	1.5	37534	40	506	1587	2	0.01	1.64	717
24.50	26.00	1.5	37535	7	11	249	<1	<0.008	2.39	978
26.00	27.50	1.5	37536	23	45	204	3	<0.008	2.99	1086
27.50	29.00	1.5	37537	22	634	1775	1	0.01	3.13	969
29.00	30.50	1.5	37538	24	468	1470	<1	<0.008	1.41	1235
38.70	40.40	1.7	37540	6	91	296	<1	<0.008	2.45	1413
45.70	46.70	1.0	37539	21	122	35	<1	0.01	2.82	1268
56.60	58.50	1.9	37541	48	593	1184	2	<0.008	0.92	1626
58.50	61.80	3.3	37542	118	1496	1602	4	0.04	1.06	1527
179.40	180.90	1.5	37546	167	750	2283	3	0.07	4.58	616
180.90	182.10	1.2	37547	208	1607	4018	5	0.09	5.22	700
182.10	182.90	0.8	37548	182	1424	3448	4	0.08	4.26	756
182.90	183.40	0.5	37543	36	143	121	<1	0.02	1.65	85
183.40	184.00	0.6	37544	276	2300	5400	4	0.11	5.04	842
184.00	186.20	2.2	37545	293	11400	3521	7	0.13	5.42	1103

(values in %)

FROM	TO	SAMPLE	Al2O3	SiO2	TiO2	Fe2O3	MnO	CaO	K2O	MgO	P2O5	Na2O	SO3	LOI	AI
56.60	58.50	37541	20.01	65.10	0.72	2.24	0.04	0.02	7.46	0.70	0.05	0.14	0.88	3.16	98
201.90	202.20	37159	15.51	49.90	0.76	11.52	0.19	5.73	1.69	3.82	0.06	2.46	0.16	8.16	40
260.30	260.80	37160	13.37	71.30	0.72	3.15	0.08	1.96	3.02	1.24	0.05	1.71	<0.01	3.65	54

(values in ppm)

FROM	TO	SAMPLE	Rb	Sr	V	Nb	Y	Zr
56.60	58.50	37541	305	9	93	15	49	320
201.90	202.20	37159	85	53	303	3	18	85
260.30	260.80	37160	140	150	8	12	37	327

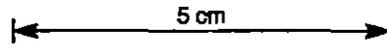
PASMINCO EXPLORATION
DIAMOND DRILL CORE LOG

HOLE No. **YNCB**

PROJECT: YOLANDE: NEWTON CREEK

Vertical Scale 1 : 200

Page 1 of 11

DESCRIPTION				GRAPHIC			
From	To	LITHOLOGY	ALTERATION	MINERALISATION	Depth	Lith	Structures
0.00	8.10	DACITE MIXED WITH BRECCIA AND SANDSTONE Pale, Green, Very coarse grained, Hyaloclastitic, Reworked, Lithic, Autoclastic dacite mixed with sandstone and polymict? breccia. Contains clasts of underlying sandstone, rounded white siliceous clasts, and sericitised patches. Rock has a flattened appearance. CONTACT: Indistinct.	Slightly Sericitised,	DISSEMINATED, very minor pyrite associated with alteration.	0		FIRST CLEAVAGE, A 40.
8.10	10.00	SANDSTONE CONTAINING CLASTS OF DACITE Grey, Medium grained, Massive, Composed of well sorted lithic fragments with abundant disseminated pyrite. CONTACT: Gradational,	Slightly Oxidised.	DISSEMINATED, abundant pyrite disseminated, Homogenous distribution. Assay for gold..	10		BEDDING, A 40.
10.00	38.50	BRECCIA MIXED WITH DACITE Green, Gray, Very coarse grained, Poorly sorted, Polymict, Hyaloclastitic dacite mixed with upwards fining breccia to sandstone. Common disseminated pyrite. Matrix pumiceous in part. CONTACT: Conformable abrupt, at 50 degrees to LCR.	Moderately Silicified, Moderately Sericitised.	DISSEMINATED, trace pyrite disseminated.	20		FAULT. Breccia, Quartz, Chlorite. Infilled with white quartz, and chlorite veining.
							
				BROKEN CORE.			

897187

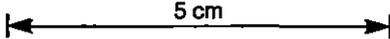
PRSMINCO EXPLORATION
DIAMOND DRILL CORE LOG

HOLE No. **YNCB**

PROJECT: YOLANDE: NEWTON CREEK

Vertical Scale 1 : 200

Page 2 of 11

DESCRIPTION					GRAPHIC			
From	To	LITHOLOGY	ALTERATION	MINERALISATION	Depth	Lith	Structures	
								
		BLACK SHALE Dark, Grey, Fine grained, Laminated. Upwards fining sequence, The graded top of the underlying breccia unit. Contains fine bands of pyritic sandstone. CONTACT: Gradational,				30		<p>FAULT, A 65. Brittle. Quartz, Carbonate. Approximately vertical striking NW (from angle to cleavage).</p> <p>BEDDING, A 70.</p>
38.50	39.30	BRECCIA MIXED WITH DACITE Buff, Very coarse grained, Hyaloclastic, Polymict, Pyritic altered polymict breccia with minor large (30cm) dacite clasts. Clasts are typically pale green basalt?, pink siliceous dacite? and sandstone with abundant feldspar and minor quartz crystals. CONTACT: Faulted, White quartz - carbonate vein at contact.	Moderately Sericitised.	DISSEMINATED, very minor pyrite disseminated.		40		<p>FAULT, A 65. Brittle, 30mm breccia to pug no rock type change, sub-vertical (from angle to cleavage).</p> <p>FIRST CLEAVAGE, A 40,</p> <p>FAULT, Shear, Reverse movement. West side up approximate dip 30, strike NW-SE.</p>
44.00	47.20	BRECCIA MIXED WITH DACITE Buff, Green, Very coarse grained, Hyaloclastic, Upwards fining sequence, Polymict, Minor dacite clasts of uniform size mixed in an upwards fining poorly sorted polymict breccia. Sediment is pyritic and sericitic. CONTACT: Gradational,	Moderately Sericitised.			45		<p>VEIN, Quartz, Carbonate, Chlorite. Massive white quartz with minor carbonate and chlorite, lower contact broken.</p>
47.20	48.80	SILTSTONE MIXED WITH DACITE Blue, Grey, Fine grained, Hyaloclastic, Grey siltstone grading to distinct blue grey mudstone mixed with dacite with cusped to feathered boundaries.	Slightly Sericitised.			48		
48.80	50.00	CONTACT: Conformable mixed,	Moderately Bleached,			50		<p>BEDDING, A 45,</p>
50.00	63.80	SILTSTONE Buff, Grey, Fine grained, Massive, DACITE MIXED WITH SILTSTONE Green, Grey, Medium grained, Peperitic, Monomict dacite jigsaw clasts with pale grey mudstone patches. Carbonate pyrite irregular veins at contact. CONTACT: Gradational,				55		<p>FAULT, A 45. Brittle. Quartz, Pyrite.</p>

897188

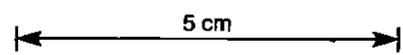
PASMINCO EXPLORATION
 DIAMOND DRILL CORE LOG
 Vertical Scale 1 : 200

HOLE No. **YNC8**

PROJECT: YOLANDE: NEWTON CREEK

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DESCRIPTION				GRAPHIC				
From	To	LITHOLOGY	ALTERATION	MINERALISATION	Depth	Lith	Structures	STRUCTURES
					60			FAULT, R 45, Brittle, Quartz, Pyrite. Sub-vertical N-S from cleavage.
63.80	132.40	DACITE Grey, Pink, Medium grained, Massive, Feldspar phyrlic, Massive dacite with abundant 1 to 3mm pink feldspars. Minor zones of flow banding at 79 to 84m, and autobrecciation at 73 to 75, 102 to 105, and 118 to 123m. Minor zones of pink alteration surrounding faults at 89 to 115m.	Slightly Silicified.					FAULT, Shear, Carbonate, Sub-vertical. VEIN, Carbonate, Pyrite, Galena. Trace galena in irregular vein emanating from but oblique to shear.
					70			FAULT, R 40, Brittle.
					80			PRIMARY FABRIC, R 82, Possibly flow banding.



897180

PASMINCO EXPLORATION
DIAMOND DRILL CORE LOG

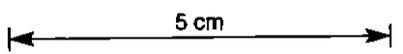
HOLE No. **YNCB**

PROJECT: YOLANDE: NEWTON CREEK

Vertical Scale 1 : 200

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DESCRIPTION				GRAPHIC			STRUCTURES
From	To	LITHOLOGY	ALTERATION	MINERALISATION	Depth	Lith	
					90		
				VEIN, abundant carbonate in veins, abundant in veins, trace sphalerite disseminated, very minor fluorite on fractures.			
					100		
							BROKEN CORE, Chlorite, Quartz, Carbonate. Zone of pink alteration emanating from irregular stringer veindark chlorite, minor qtz-cb-pyrite and abundant soft white fibrous material? trace fluorite.
							FIRST CLEAVAGE, D BS.
					110		



897190

PRSMINCO EXPLORATION
DIAMOND DRILL CORE LOG

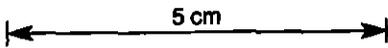
HOLE No. **YNCR**

PROJECT: YOLANDE: NEWTON CREEK

Vertical Scale 1 : 200

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DESCRIPTION			GRAPHIC					
From	To	LITHOLOGY	ALTERATION	MINERALISATION	Depth	Lith	Structures	STRUCTURES
					120			VEIN, Zone of pink alteration emanation from minor carbonate veining.
								FIRST CLEAVAGE, D 90,
					130			
132.40	135.50	BRECCIA GRADING TO SANDSTONE Buff, Grey, Very coarse grained, Poorly sorted, Upwards fining sequence, Polymict, Crystal, Clasts include black shale, siltstone, and pumice breccia, but no dacite? Zone consists of four graded beds. CONTACT: Conformable abrupt,	Slightly Sericitised, Slightly Carbonatised.	DISSEMINATED, very minor pyrite disseminated, trace sphalerite disseminated.				
135.50	136.40	BLACK SHALE Grey, Black, Fine grained, Cleaved, Graded top of underlying unit. CONTACT: Missing,	Slightly Sericitised,	DISSEMINATED, trace pyrite associated with alteration.				
136.40	138.30	BRECCIA Buff, Grey, Very coarse grained, Feldspar phytic, Polymict, Dominated by dacite fragments towards the base, becoming more polymict upwards. Fault at 137.7 within lithology. CONTACT: Conformable mixed,	Slightly Sericitised, Slightly Silicified.					FIRST CLEAVAGE, A 60, FAULT, A 65, Breccia.
138.30	215.00	DACITE Green, Grey, Medium grained, Massive, Feldspar			140			FRACTURE, Carbonate, Pyrite, Galena. Zone of green alteration



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PASMINCO EXPLORATION
DIAMOND DRILL CORE LOG

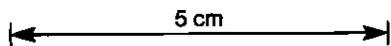
HOLE No. **YNCB**

PROJECT: YOLANDE: NEWTON CREEK

Vertical Scale 1 : 200

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DESCRIPTION				GRAPHIC			STRUCTURES
From	To	LITHOLOGY	ALTERATION	MINERALISATION	Depth	Lith	Structures
		<p>CONTACT: Conformable mixed,</p> <p>DACITE Green, Grey, Medium grained, Massive, Feldspar phyrlic, Massive dacite with abundant ubiquitous 1 to 3mm feldspars. Intensely altered (cream potassic?) at upper contact. Minor zones of salmon pink alteration throughout. Minor zones with autoclastic texture. Flow banding at 184m at 15 degrees to long core axis. Minor fine carbonate filled fractures throug</p>			140		
					150		
					150		



897192

PASMINCO EXPLORATION
DIAMOND DRILL CORE LOG

HOLE No. **YNC8**

PROJECT: YOLANDE: NEWTON CREEK

Vertical Scale 1 : 200

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DESCRIPTION					GRAPHIC			STRUCTURES
From	To	LITHOLOGY	ALTERATION	MINERALISATION	Depth	Lith	Structures	
					170			
					180			
					190			

897193

PASMINCO EXPLORATION
DIAMOND DRILL CORE LOG

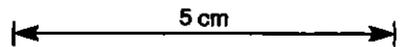
HOLE No. **YNCB**

PROJECT: YOLANDE: NEWTON CREEK

Vertical Scale 1 : 200

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		DESCRIPTION			GRAPHIC		
From	To	LITHOLOGY	ALTERATION	MINERALISATION	Depth	Lith	STRUCTURES
225.10	226.00	Poorly sorted, clast supported, polymict, two upwards fining beds. Clasts dominated by basalt and siltstone, are angular and packed. Minor sphalerite, sphalerite and galena and pyrite 2 to 5mm patches. CONTACT: Conformable abrupt,		minor galena disseminated, Minor spots (possible clasts) of pyrite, sphalerite, and sphalerite/galena..		▽▽▽▽ △△△△ ▽▽▽▽ △△△△ ▽▽▽▽	
226.00	228.10	BRECCIA GRADING TO BLACK SHALE Grey, Black, Medium grained, Upwards fining sequence, Polymict, Irregular upwards fining bed grading to black shale. CONTACT: Conformable abrupt,	Slightly Carbonatised.	DISSEMINATED, very minor pyrite disseminated.			FALLT. Brittle. In black slate parallel to bedding.
228.10	242.80	BLACK SHALE Grey, Black, Fine grained, Cleaved, Bedded, Irregular carbonate filled fractures throughout. Tectonic breccia at 227.5m. CONTACT: Conformable abrupt,			230		↑↑ BEDDING, A 70. Grading uphole. Younging uphole. Graded bedding in fine fountain basalt fine debris.
		BASALT GRADING TO SILTSTONE Green, Medium grained, Fine grained, Laminated, Brecciated, Typical spillway "fire fountain basalt" in part but occurring in three beds with grading and laminations towards the top of each bed. CONTACT: Faulted, 5mm band of carbonate at contact.		DISSEMINATED, trace pyrite disseminated.			
242.80	282.00	PUMICEOUS MASS FLOW CONTAINING CLASTS OF DACITE Grey, Pink, Coarse grained, Pumiceous, Feldspar phyric, Typical spillway pumice breccia, abundant 1 to 3mm pink feldspars and 5 to 15mm pink perlitic dacite clasts in pumiceous matrix. Minor carbonate pyrite band at 280.6 to 281m.	Slightly Bleached.		240		FIRST CLEAVAGE, D 80.
					250		FIRST CLEAVAGE, Zone of increased cleavage development and alteration.



897105

PRSMINCO EXPLORATION
 DIAMOND DRILL CORE LOG
 Vertical Scale 1 : 200

HOLE No. **YNCB**

PROJECT: YOLANDE: NEWTON CREEK

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DESCRIPTION					GRAPHIC			
From	To	LITHOLOGY	ALTERATION	MINERALISATION	Depth	Lith	Structures	STRUCTURES
					260			
					270			VEIN, Carbonate, Quartz, Chlorite. 2cm vein running along long axis of core, banded pink vfg silica? and granular carbonate and dendritic chlorite.
								FIRST CLEAVAGE, D 75.
					280			VEIN, Carbonate, Pyrite. Irregular vein/alteration

5 cm

VEIN abundant carbonate in veins

897196

PASMINCO EXPLORATION
 DIAMOND DRILL CORE LOG
 Vertical Scale 1 : 200

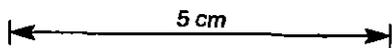
HOLE No. **YNCB**

PROJECT: YDLANDE: NEWTON CREEK

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DESCRIPTION					GRAPHIC			STRUCTURES
From	To	LITHOLOGY	ALTERATION	MINERALISATION	Depth	Lith	Structures	STRUCTURES
				VEIN, abundant carbonate in veins, very minor pyrite in veinlets.	280			VEIN, Carbonate, Pyrite. Irregular vein/alteration carbonate with minor pyrite.
					290			
					300			

5 cm



897197

SPECIFIC GRAVITY

depth	value	formation	lithology
34.60	2.65	NCD	bx
79.60	2.74	NCD	Ld
148.70	2.51	NCD	Ld
189.50	2.70	NCD	Ld
222.40	2.40	NCD	bx
233.40	2.74	NCF	Lba
240.20	2.81	NCF	Lba
256.70	2.68	NCF	pmf
279.20	2.62	NCF	pmf

MAGNETIC SUSCEPTIBILITY (X10⁻³ cgs units)

depth	value	formation	lithology
5.30	0.08	NCD	Ld
6.80	0.07	NCD	Ld
8.30	0.19	NCD	sst
9.90	0.15	NCD	sst
11.50	0.24	NCD	bx
14.50	0.27	NCD	bx
16.00	0.15	NCD	bx
17.50	0.16	NCD	bx
19.00	0.09	NCD	bx
20.50	0.12	NCD	bx
21.70	0.16	NCD	bx
23.20	0.20	NCD	bx
26.50	0.17	NCD	bx
28.00	0.23	NCD	bx
29.50	0.28	NCD	bx
32.50	0.17	NCD	bx
35.50	0.35	NCD	bx
38.50	0.18	NCD	bsh
39.00	0.10	NCD	bsh
40.00	0.12	NCD	bx
43.00	0.15	NCD	bx
46.00	0.26	NCD	bx
49.00	0.12	NCD	slt
52.00	0.14	NCD	Ld
55.00	0.25	NCD	Ld
58.00	0.16	NCD	Ld
61.00	0.14	NCD	Ld
64.00	0.11	NCD	Ld
67.00	0.18	NCD	Ld
70.00	0.20	NCD	Ld
73.00	0.28	NCD	Ld
76.00	0.12	NCD	Ld
79.00	0.23	NCD	Ld
82.00	0.29	NCD	Ld
85.00	0.13	NCD	Ld
88.00	0.17	NCD	Ld
91.00	0.11	NCD	Ld
94.00	0.07	NCD	Ld
97.00	0.11	NCD	Ld
100.00	0.17	NCD	Ld
103.00	0.15	NCD	Ld

897200

106.00	0.07	NCD	Ld
109.00	0.09	NCD	Ld
112.00	0.12	NCD	Ld
115.00	0.28	NCD	Ld
118.00	0.18	NCD	Ld
121.00	0.23	NCD	Ld
124.00	0.14	NCD	Ld
127.00	0.31	NCD	Ld
130.00	0.22	NCD	Ld
133.00	0.21	NCD	bx
136.00	0.15	NCD	bsh
139.00	0.10	NCD	Ld
142.00	0.16	NCD	Ld
145.00	0.30	NCD	Ld
148.00	0.17	NCD	Ld
151.00	0.28	NCD	Ld
154.00	0.14	NCD	Ld
157.00	0.16	NCD	Ld
160.00	0.21	NCD	Ld
163.00	0.23	NCD	Ld
166.00	0.22	NCD	Ld
169.00	0.13	NCD	Ld
172.00	0.15	NCD	Ld
175.00	0.17	NCD	Ld
178.00	0.19	NCD	Ld
181.00	0.46	NCD	Ld
184.00	0.27	NCD	Ld
187.00	0.20	NCD	Ld
190.00	0.21	NCD	Ld
193.00	0.13	NCD	Ld
196.00	0.19	NCD	Ld
199.00	0.23	NCD	Ld
202.00	0.16	NCD	Ld
205.00	0.17	NCD	Ld
208.00	0.11	NCD	Ld
211.00	0.21	NCD	Ld
214.00	0.34	NCD	Ld
217.00	0.10	NCD	slt
220.00	0.05	NCD	bx
223.00	0.18	NCD	bx
226.00	0.14	NCD	bsh
229.00	0.41	NCF	Lba
232.00	0.32	NCF	Lba
235.00	0.32	NCF	Lba
238.00	0.31	NCF	Lba
241.00	0.32	NCF	Lba
244.00	0.17	NCF	pmf
247.00	0.12	NCF	pmf
250.00	0.18	NCF	pmf
253.00	0.13	NCF	pmf
256.00	0.09	NCF	pmf
259.00	0.13	NCF	pmf
262.00	0.17	NCF	pmf
265.00	0.08	NCF	pmf
268.00	0.13	NCF	pmf
271.00	0.19	NCF	pmf
274.00	0.14	NCF	pmf
277.00	0.12	NCF	pmf
280.00	0.15	NCF	pmf
282.00	0.12	NCF	pmf

ASSAY RESULTS YNCB

897201

(values in ppm)

FROM	TO	int	SAMPLE	Cu	Pb	Zn	Ag	Au	Fe%	Ba	As	Mn
0.00	5.00	5.0	37578	41	213	408	1	<0.008	2.54	719	38	1462
5.00	6.50	1.5	37579	21	178	199	1	0.02	2.40	450	28	582
6.50	7.50	1.0	37580	13	149	336	1	0.01	2.62	385	16	1975
7.50	8.40	0.9	37581	16	239	409	1	0.01	3.14	394	14	1906
8.40	9.80	1.4	37582	47	536	210	4	0.02	3.27	351	43	1146
16.50	18.20	1.7	37583	11	60	425	1	0.01	5.72	309	11	5700
38.50	39.30	0.8	37584	30	1513	1301	5	0.02	3.30	672	80	738
39.30	40.80	1.5	37585	22	686	735	3	<0.008	3.46	657	18	855
40.80	41.50	0.7	37586	15	116	205	1	<0.008	3.07	593	10	1317
41.50	43.70	2.2	37587	40	63	452	1	<0.008	3.11	490	8	1537
94.00	95.50	1.5	37588	6	7	84	<1	<0.008	1.56	858	5	817
95.50	96.50	1.0	37589	3	19	279	<1	<0.008	2.38	799	7	1480
132.50	133.30	0.8	37590	10	304	1425	1	<0.008	4.74	696	18	2321
133.30	134.60	1.3	37591	20	229	1040	1	<0.008	4.23	519	14	1966
134.60	135.50	0.9	37592	12	107	562	<1	<0.008	3.20	791	11	1207
135.50	136.30	0.8	37593	12	675	1754	2	<0.008	3.35	505	40	767
136.30	137.80	1.5	37594	10	242	713	1	<0.008	4.57	465	17	1370
139.70	141.10	1.4	37595	117	44	140	<1	<0.008	3.29	404	11	776
221.10	222.10	1.0	37596	38	148	699	<1	<0.008	2.99	613	17	660
222.10	223.70	1.6	37597	130	634	1538	2	0.04	6.40	679	120	1050
223.70	225.20	1.5	37598	40	295	898	1	<0.008	3.77	545	70	845
225.20	226.00	0.8	37599	32	1587	1994	2	<0.008	3.77	818	170	572
226.00	227.10	1.1	37600	31	735	355	2	<0.008	3.45	575	120	911
227.10	228.20	1.1	37466	33	597	1156	1	0.03	4.32	607	460	1724
239.00	240.00	1.0	37467	39	6	147	1	<0.008	7.08	694	14	1282

(values in %)

FROM	TO	SAMPLE	Al2O3	SiO2	TiO2	Fe2O3	MnO	CaO	K2O	MgO	P2O5	Na2O	SO3	LOI	AI
190.40	191.00	37468	14.79	63.60	0.47	4.17	0.11	3.58	1.94	0.80	0.13	4.81	0.01	4.24	25

(values in ppm)

FROM	TO	SAMPLE	Rb	Sr	V	Nb	Y	Zr
190.40	191.00	37468	85	276	47	10	37	223

PRSMINCO EXPLORATION
DIAMOND DRILL CORE LOG

HOLE No. **YNC9**

PROJECT: YOLANDE: NEWTON CREEK

Vertical Scale 1 : 200

Page 1 of 10

DESCRIPTION					GRAPHIC			STRUCTURES
From	To	LITHOLOGY	ALTERATION	MINERALISATION	Depth	Lith	Structures	
0.00	27.50	DACITE Pale, Grey, Feldspar phynic, Possibly autoclastic in part. CONTACT: Indistinct,	Moderately Oxidised,		0			
					10			
					20			
27.50	32.50	DACITE Pink, Grey, Feldspar phynic, Zone of bleaching and detexturing associated with faults.	Moderately Bleached,					

BROKEN CORE, Zone of broken core, oxidised zone.

FALL. R 75, Brittle.

897202

PASMINCO EXPLORATION
DIAMOND DRILL CORE LOG

HOLE No. **YNCS**

PROJECT: VOLANDE: NEWTON CREEK

Vertical Scale 1 : 200

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DESCRIPTION					GRAPHIC			STRUCTURES	
From	To	LITHOLOGY	ALTERATION	MINERALISATION	Depth	Lith	Structures		
27.50	32.50	DACITE Pink, Grey, Feldspar phyrlic, Zone of bleaching and detexturing associated with faults. CONTACT: Indistinct,	Moderately Bleached.		30			FALLT, A 75, Brittle.	
32.50	40.00	DACITE Pink, Zone of pink alteration and detexturing associated with stockworking of quartz, carbonate and (very coarse grained dark green) chlorite. Core loss at 38.5 to 40m. CONTACT: Missing,	Highly Bleached.	VEIN, abundant in veins, abundant carbonate in veins.					FALLT, A 60, Brittle.
40.00	54.40	DACITE Dark, Grey, Feldspar phyrlic, Zone of minor irregular carbonate veinlets minor breccia texture in part and minor irregular alteration throughout. CONTACT: Indistinct,	Slightly Bleached.		40				FRACTURE, Chlorite, Carbonate, Quartz. Zone with abundant stockwork chlorite-carbonate-quartz veining. Core is bleached pink. Core missing from 38.5 to 40m. Carbonate, Minor white carbonate veining in moderately broken core. FALLT, Brittle, Pug.
					50			FALLT, A 75, Brittle, Pug.	

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PASMINCO EXPLORATION
DIAMOND DRILL CORE LOG

HOLE No. **YNCS**

PROJECT: YOLANDE: NEWTON CREEK

Vertical Scale 1 : 200

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DESCRIPTION					GRAPHIC			STRUCTURES
From	To	LITHOLOGY	ALTERATION	MINERALISATION	Depth	Lith	Structures	
					60			
64.40	75.80	DACITE Pink, Zone of red pink alteration and detexturing emanating from stockwork quartz carbonate chlorite veining. CONTACT: Gradational,	Highly Bleached.	VEIN. abundant in veins, abundant carbonate in veins.				<div data-bbox="1867 721 2042 799"> <p>Abundant fine white carbonate veins and fracture fillings.</p> </div>
					70			<div data-bbox="1867 956 2085 1121"> <p>VEIN. Chlorite, Carbonate, Quartz. Abundant irregular dark green chlorite with carbonate and quartz veining in pink altered rock.</p> </div>
75.80	80.30	DACITE Pink, Zone of red alteration and detexturing emanating from a fault. CONTACT: Gradational,	Highly Bleached.					<div data-bbox="1867 1238 2042 1270"> <p>FALLT. Brittle, Pug.</p> </div>
80.30	84.30	DACITE Pink, Grey, Feldspar phyrlic, Zone with minor pink bleaching associated with fractures. CONTACT: Gradational,	Slightly Bleached.		80			

5 cm

897204

PASMINCO EXPLORATION
DIAMOND DRILL CORE LOG

HOLE No. **YNCS**

PROJECT: YOLANDE: NEWTON CREEK

Vertical Scale 1 : 200

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DESCRIPTION				GRAPHIC			STRUCTURES	
From	To	LITHOLOGY	ALTERATION	MINERALISATION	Depth	Lith		Structures
84.30	101.40	DACITE Green, Grey, Massive, Feldspar phyrlic, Ubiquitous 1 - 3mm white feldspars, minor autobrecciation in part, minor carbonate veinlets throughout. CONTACT: Faulted.						
		DACITE Grey, Brecciated, Zone of faulting with pug at 35 degrees to LCR, and fracturing and white carbonate veining along the core. CONTACT: Faulted.						
		PUMICEOUS MASS FLOW CONTAINING CLASTS OF DACITE Pink, Grey, Coarse grained, Pumiceous, Lithic, Abundant 1 - 3mm pink feldspars and 3 - 5mm pink dacite clasts in a pale grey wispy pumiceous matrix. Minor 20cm grey dacite clasts. Possible fold at 105.8m. CONTACT: Conformable abrupt.						
101.40	108.40	SANDSTONE Pale, Green, Medium grained, Massive, Pumiceous, Pumiceous sandstone with only minor fine feldspars in bands. CONTACT: Conformable abrupt.						
108.40	109.10	BRECCIA Green, Grey, Coarse grained, Poorly sorted, Polymict, Pumiceous, Clasts include abundant green mafics from underlying unit, also siliceous siltstones and white altered volcanics. Irregular gradation uphole into pumiceous sandstone and downhole into mafic derived sandstone.	Slightly Sericitised.					
109.10	110.00	CONTACT: Gradational.	Slightly Sericitised.					
110.00	114.00	BRECCIA CONTAINING CLASTS OF DACITE Green, Grey, Very coarse grained, Poorly sorted, Matrix supported, CONTACT: Gradational.						
				DISSEMINATED, very minor barite				FOLD, Possible fold closure. BEDDING, R 60. Grading

5 cm

897205

PASMINCO EXPLORATION
DIAMOND DRILL CORE LOG

HOLE No. **YNCS**

PROJECT: YOLANDE: NEWTON CREEK

Vertical Scale 1 : 200

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DESCRIPTION				GRAPHIC			STRUCTURES	
From	To	LITHOLOGY	ALTERATION	MINERALISATION	Depth	Lith		
		BRECCIA CONTAINING CLASTS OF DACITE Green, Grey, very coarse grained, Poorly sorted, Matrix supported, Polymict, Pumiceous, Clasts (from 5 to 50mm) include dacite, white siliceous altered volcanic, fine grained siltstone and pyritic siltstone. Matrix is pumiceous in part but grades up into massive mafic derived sandstone. Note 20cm siliceous white altered dacite clast. CONTACT: Conformable abrupt,		DISSEMINATED, very minor pyrite disseminated. Minor clasts of very fine grained massive pyrite..			Closure. BEDDING, A 60. Grading uphole.	
114.00	115.00	BRECCIA Grey, Green, Coarse grained, Clast supported, Polymict, Clasts (from 3 to 20mm) include mafics, white altered siliceous (quartz phyrlic?) volcanic, altered dacite and pumice. Grading upwards to thin shale band, mixed with pumice/feldspar layer. CONTACT: Conformable abrupt, BASALT Green, Medium grained, Coarse grained, Brecciated, Irregular monomict mafic clastic, clasts are of irregular size and distribution, fine grained in part. CONTACT: Faulted,			120			
115.00	122.80							Abundant patchy carbonate. FAULT, A 40. Brittle, Pug.
122.80	133.40		PUMICEOUS MASS FLOW Grey, Pink. Pumiceous, Feldspar phyrlic, Abundant 1 - 3mm pink feldspars and minor diffuse chloritic patches in pale grey wispy pumiceous matrix. Minor 3 - 5mm pink dacite clasts. Minor irregular Mn carbonate veinlets throughout. CONTACT: Conformable mixed,	Slightly Sericitised.				FIRST CLEAVAGE, A 60.
		BRECCIA Cream, Green, Coarse grained, Irregular altered mafic breccia. CONTACT: Faulted,		DISSEMINATED, very minor pyrite associated with alteration, Minor 10mm spots of massive fine grained pyrite associated with carbonate alteration and veining..	130		FAULT, A 73. Brittle, Pug. Minor sub horizontal slickenlines.	
133.40	133.90	DACITE Grey, Pink, Feldspar phyrlic, Altered on micro-fractures from faulted contact, becoming massive downhole.					FAULT, Brittle, Pug.	
133.90	137.30			Moderately Carbonatised, Slightly Bleached.				
137.30	148.10	DACITE Pink, Massive, Feldspar phyrlic, Zone of pink potassic? alteration in massive feldspar phyrlic dacite with ghost perlitic texture. minor carbonate veinlets throughout. CONTACT: Gradational,	Highly Bleached.		140			

5 cm

807206

PRSMINCO EXPLORATION
DIAMOND DRILL CORE LOG
Vertical Scale 1 : 200

HOLE No. **YNC9**

PROJECT: YOLANDE: NEWTON CREEK

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DESCRIPTION					GRAPHIC			
From	To	LITHOLOGY	ALTERATION	MINERALISATION	Depth	Lith	Structures	STRUCTURES
		throughout. CONTACT: Gradational,			140			
148.10	159.70	DACITE Grey, Massive, Feldspar phyrlic, Minor carbonate veinlets throughout. CONTACT: Gradational,			150			FALLT, A 50, Brittle.
159.70	164.00	DACITE Pink, Massive, Feldspar phyrlic, Zone of pink alteration including alteration of feldspars. CONTACT: Gradational, .	Moderately Bleached.		160			FIRST CLEAVAGE, A 60,
164.00	180.90	DACITE Grey, Massive, Feldspar phyrlic, Autobreccia in part. Minor carbonate veinlets throughout. CONTACT: Gradational,						

5 cm

897207

PASMINCO EXPLORATION
DIAMOND DRILL CORE LOG

HOLE No. **YNCS**

PROJECT: YOLANDE: NEWTON CREEK

Vertical Scale 1 : 200

Page 7 of 10

DESCRIPTION					GRAPHIC			STRUCTURES
From	To	LITHOLOGY	ALTERATION	MINERALISATION	Depth	Lith	Structures	
					170			
180.90	184.30	DACITE Buff, Pink, Massive, Feldspar phyrlic, CONTACT: Gradational,	Moderately Bleached.		180			
184.30	188.20	DACITE Grey, Massive, Feldspar phyrlic, Minor auto-breccia texture in part. CONTACT: Gradational,						
188.20	193.10	DACITE Pink, Grey, Sheared, Feldspar phyrlic, Zone of irregular bleaching around a fault and associated fractures. CONTACT: Gradational,	Highly Bleached.		190			Minor fine white carbonate veining.
193.10	195.00	DACITE Pink, Massive, Feldspar phyrlic, CONTACT: Gradational,	Moderately Bleached.					BROKEN CORE, Possible crush zone with abundant chlorite and carbonate filled fractures.
195.00	209.40	DACITE Grey, Massive, Feldspar phyrlic, Minor irregular carbonate veining throughout. Zone of bleaching						

5 cm

807208

PASMINCO EXPLORATION
DIAMOND DRILL CORE LOG

HOLE No. **YNC9**

PROJECT: YOLANDE: NEWTON CREEK

Vertical Scale 1 : 200

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DESCRIPTION				GRAPHIC		STRUCTURES	
From	To	LITHOLOGY	ALTERATION	MINERALISATION	Depth		Lith
195.00	209.40	DACITE Grey, Massive, Feldspar phytic, Minor irregular carbonate veining throughout. Zone of bleaching surrounding quartz carbonate and chlorite vein. CONTACT: Gradational.			200		VEIN. Chlorite, Carbonate, Quartz. Massive dark green chlorite.
209.40	219.80	DACITE Pink, Massive, Feldspar phytic, Minor irregular carbonate veinlets. CONTACT: Gradational.	Moderately Bleached,	DISSEMINATED, very minor pyrrhotite associated with alteration. Minor disseminated to patchy pyrrhotite associated with alteration (possibly potassic?)..	210		
219.80	223.00	DACITE Grey, Massive, Feldspar phytic, CONTACT: Gradational.			220		
223.00	245.90	DACITE Buff, Pink, Massive, Feldspar phytic, Minor carbonate and potassic? alteration. CONTACT: Gradational.	Slightly Carbonatised. Moderately Bleached.				

5 cm

897209

PASMINCO EXPLORATION
DIAMOND DRILL CORE LOG

HOLE No. **YNC9**

PROJECT: YOLANDE: NEWTON CREEK

Vertical Scale 1 : 200

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DESCRIPTION					GRAPHIC			STRUCTURES
From	To	LITHOLOGY	ALTERATION	MINERALISATION	Depth	Lith	Structures	STRUCTURES
223.00	243.50	ORCITE buff, pink, massive, Feldspar phytic, minor carbonate and potassic? alteration. CONTACT: Gradational,	Slightly Carbonised. Moderately Bleached.		230			
245.90	262.00	ORCITE Grey, Massive, Feldspar phytic, Minor fine chlorite flecks throughout.			240			
					250			

VEIN, Quartz, Chlorite, Carbonate.

5 cm

897210

PASMINCO EXPLORATION
 DIAMOND DRILL CORE LOG
 Vertical Scale 1 : 200

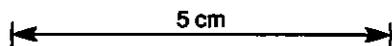
HOLE No. **YNCS**

PROJECT: YDLANDE: NEWTON CREEK

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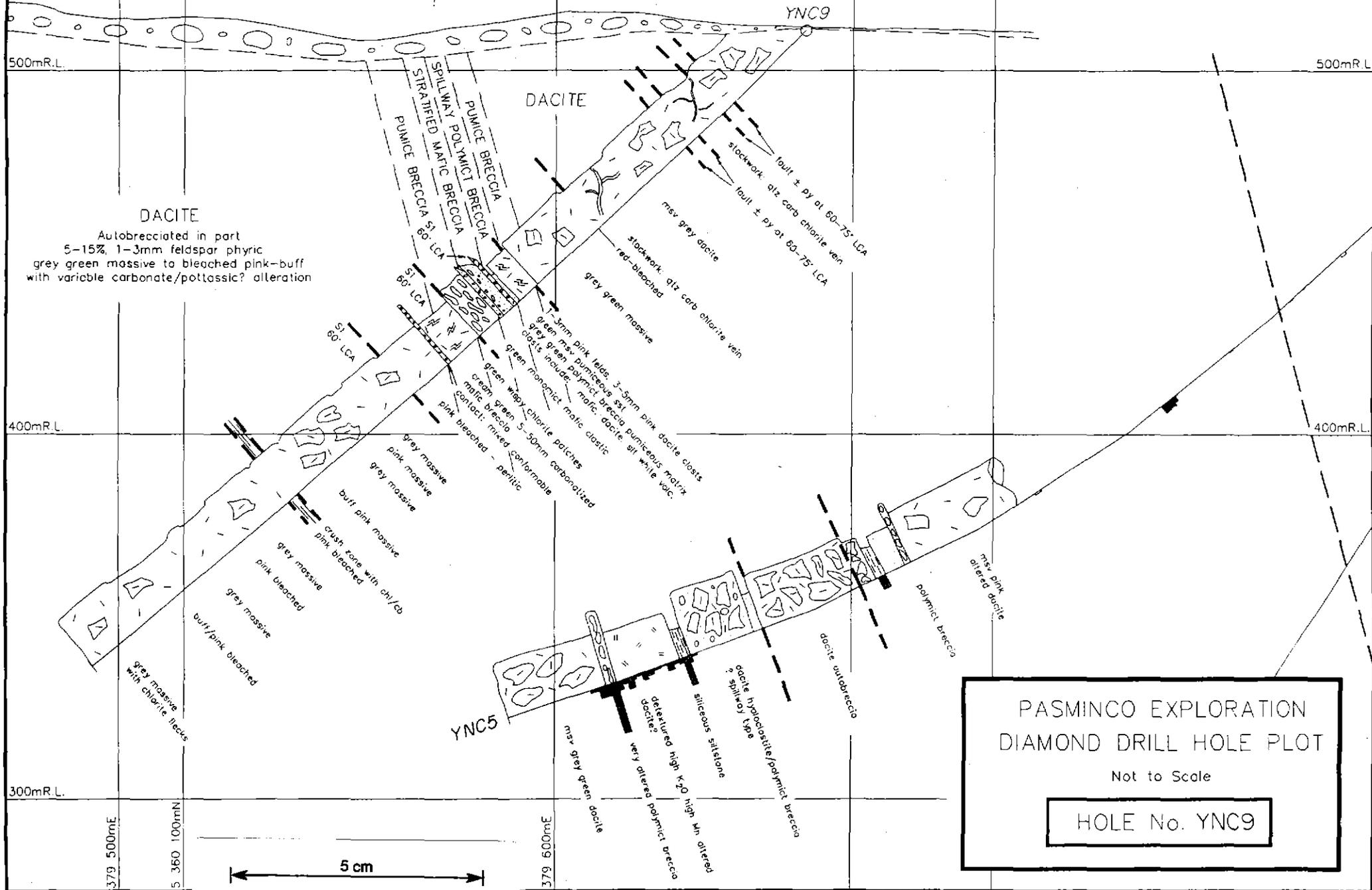
DESCRIPTION				GRAPHIC			STRUCTURES
From	To	LITHOLOGY	ALTERATION	MINERALISATION	Depth	Lith	
					260		Minor fine white carbonate veinlets.
					270		
					280		

5 cm



897211

NEWTON CREEK DACITES AND SEDIMENTS



PASMINGO EXPLORATION
 DIAMOND DRILL HOLE PLOT
 Not to Scale
 HOLE No. YNC9

897212

SPECIFIC GRAVITY

depth	value	formation	lithology
86.00	2.52	NCD	Ld
119.30	2.50	NCF	Lba
129.70	2.56	NCF	pmf
151.60	2.57	NCD	Ld
208.60	2.56	NCD	Ld
259.90	2.54	NCD	Ld

MAGNETIC SUSCEPTIBILITY

depth	value	formation	lithology
5.50	0.20	NCD	Ld
8.50	0.14	NCD	Ld
11.50	0.18	NCD	Ld
14.50	0.19	NCD	Ld
17.50	0.16	NCD	Ld
20.50	0.19	NCD	Ld
23.50	0.31	NCD	Ld
26.50	0.22	NCD	Ld
29.50	0.13	NCD	Ld
32.50	0.09	NCD	Ld
35.50	0.16	NCD	Ld
38.50	0.16	NCD	Ld
41.50	0.19	NCD	Ld
44.50	0.19	NCD	Ld
47.50	0.20	NCD	Ld
50.50	0.19	NCD	Ld
53.50	0.17	NCD	Ld
56.50	0.20	NCD	Ld
59.50	0.21	NCD	Ld
61.00	0.16	NCD	Ld
64.00	0.21	NCD	Ld
67.00	0.20	NCD	Ld
70.00	0.09	NCD	Ld
73.00	0.15	NCD	Ld
76.00	0.14	NCD	Ld
79.00	0.19	NCD	Ld
82.00	0.19	NCD	Ld
85.00	0.16	NCD	Ld
88.00	0.29	NCD	Ld
91.00	0.21	NCD	Ld
94.00	0.21	NCD	Ld
97.00	0.25	NCD	Ld
100.00	0.12	NCD	Ld
103.00	0.41	NCD	pmf
106.00	0.22	NCD	pmf
109.00	0.11	NCD	sst
112.00	0.15	NCD	bx
115.00	0.16	NCF	Lba
118.00	0.19	NCF	Lba
121.00	0.56	NCF	Lba
124.00	0.16	NCF	pmf
127.00	0.13	NCF	pmf
130.00	0.14	NCF	pmf
133.00	0.14	NCD	pmf
136.00	0.17	NCD	Ld
139.00	0.18	NCD	Ld

897214

142.00	0.17	NCD	Ld
145.00	0.30	NCD	Ld
148.00	0.22	NCD	Ld
151.00	0.28	NCD	Ld
154.00	0.17	NCD	Ld
157.00	0.27	NCD	Ld
160.00	0.60	NCD	Ld
163.00	0.14	NCD	Ld
166.00	0.18	NCD	Ld
169.00	0.20	NCD	Ld
172.00	0.20	NCD	Ld
175.00	0.19	NCD	Ld
178.00	0.15	NCD	Ld
181.00	0.23	NCD	Ld
184.00	0.17	NCD	Ld
187.00	0.16	NCD	Ld
190.00	0.17	NCD	Ld
193.00	0.20	NCD	Ld
196.00	0.19	NCD	Ld
199.00	0.16	NCD	Ld
202.00	0.13	NCD	Ld
205.00	0.23	NCD	Ld
208.00	0.23	NCD	Ld
211.00	0.45	NCD	Ld
214.00	0.18	NCD	Ld
217.00	0.16	NCD	Ld
220.00	0.15	NCD	Ld
223.00	0.19	NCD	Ld
226.00	0.29	NCD	Ld
229.00	0.17	NCD	Ld
232.00	0.18	NCD	Ld
235.00	0.17	NCD	Ld
238.00	0.16	NCD	Ld
241.00	0.16	NCD	Ld
244.00	0.17	NCD	Ld
247.00	0.16	NCD	Ld
250.00	0.22	NCD	Ld
253.00	0.23	NCD	Ld
256.00	0.21	NCD	Ld
259.00	0.21	NCD	Ld
262.00	0.19	NCD	Ld

Assay Results YNC9

(values in ppm)

FROM	TO	SAMPLE	Cu	Pb	Zn	Ag	Au	Fe%	Ba	Mn
69.00	71.00	37469	8	<3	113	<1	<0.008	4.67	477	855
113.00	113.90	37470	50	11	118	<1	<0.008	4.04	461	581
113.90	115.00	37471	82	14	108	<1	<0.008	3.44	339	571

(values in %)

			Al2O3	SiO2	TiO2	Fe2O3	MnO	CaO	K2O	MgO	P2O5	Na2O	SO3	LOI	AI
130.00	130.40	37904	13.69	69.00	0.33	3.85	0.07	1.89	3.46	1.68	0.05	1.22	0.15	4.15	62
227.70	228.10	37905	13.74	66.50	0.48	4.74	0.07	2.01	3.80	0.83	0.13	1.80	0.35	5.39	55

(values in ppm)

			Rb	Sr	V	Nb	Y	Zr
130.00	130.40	37904	65	75	38	8	19	123
227.70	228.10	37905	119	136	64	10	28	190

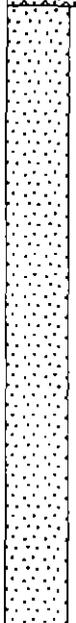
PASMINCO EXPLORATION
DIAMOND DRILL CORE LOG

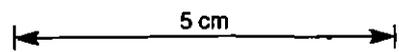
HOLE No. **YWS1**

PROJECT: YOLANDE: WHITE SPUR

Vertical Scale 1 : 200

Page 1 of 16

DESCRIPTION				GRAPHIC			STRUCTURES
From	To	LITHOLOGY	ALTERATION	MINERALISATION	Depth	Lith	
0.00	3.00	GLACIAL DEPOSITS Pink, Grey, Coarse grained, Massive, Polymict, Owen Conglomerate? quartzitic sandstone. CONTACT: Missing,			0		
3.00	30.20	SANDSTONE Pale, Grey, Medium grained, Coarse grained, Bedded, Lithic, Micaceous, Gradual upwards (uphole) fining bed with minor bedding in part. CONTACT: Conformable abrupt, at 65 degrees to LCR. Clasts of unconsolidated black shale at contact indicate younging uphole.	Slightly Silicified.		10		<p>BEDDING. R 40,</p> <p>JOINT. Zone of oxidised joints</p> <p>FOLI. Pa</p>



897216

PASMINCO EXPLORATION
DIAMOND DRILL CORE LOG
Vertical Scale 1 : 200

HOLE No. **YWS1**

PROJECT: YOLANDE: WHITE SPUR

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DESCRIPTION					GRAPHIC			STRUCTURES
From	To	LITHOLOGY	ALTERATION	MINERALISATION	Depth	Lith	Structures	STRUCTURES
								JOINTS
								FALLT. Pug.
30.20	34.00	BLACK SHALE INTERBEDDED WITH SANDSTONE Black, Fine grained, Laminated, Lithic, Finely laminated in part and disrupted with minor 2 to 5mm polymict? clasts in part. CONTACT: Conformable abrupt, at 50 degrees to LCR.		DISSEMINATED. very minor pyrite disseminated.	30			
34.00	36.00	SANDSTONE Buff, Medium grained, Massive, Lithic, Micaceous, Minor irregular spotty sericite texture. CONTACT: Conformable abrupt,						BEDDING. R 45.
36.00	43.00	BRECCIA Pale, Grey, Very coarse grained, Brecciated, Lithic, Grading uphole from 15 to 5mm angular clasts with minor clasts upto 100mm throughout. Clast types include black slate, siliceous siltstone and quartz porphyry, and massive pyrite. Several 50mm sericitized, altered feldspar phyruc clasts resembling Footwall pseudo-fiamme occur at the base. CONTACT: Conformable mixed,	Slightly Silicified.	CLAST. pyrite 20mm massive pyrite clast..	40			
43.00	44.40	BLACK SHALE Black, Fine grained, Peperitic, Minor sandstone bands, and abundant 10mm siliceous clasts, minor 10mm elongate very fine grained pyrite spots, and minor weathering pits. CONTACT: Conformable mixed,						
44.40	46.20	BRECCIA Grey, Very coarse grained, Poorly sorted, Lithic, Polymict, Similar to above ploymict breccia. CONTACT: Conformable mixed,						
46.20	48.30	SANDSTONE Yellow, Grey, Medium grained, Massive, Feldspar phyruc, Micaceous, Quartz phyruc, Fine grained quartz matrix with abundant .5mm feldspars and silicified feldspars. Rock is stained, possibly minor Fe or Mn content. CONTACT: Conformable mixed,						
48.30	56.00	BRECCIA Grey, Very coarse grained, Matrix supported, Lithic, Clasts are dominantly white siliceous fine grained porphyry with abundant 0.5mm phyruc quartz. Other clast types include black slate, minor sericite with phyruc feldspars and trace pyrite. CONTACT: Conformable abrupt, at 35 degrees to LCR.	Slightly Silicified.	CLAST. pyrite 10mm massive pyrite clast..	50			
56.00	61.90	SANDSTONE INTERBEDDED WITH BLACK SHALE Pale, Grey, Medium	Slightly Silicified.					

5 cm

897217

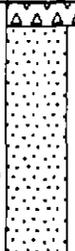
PASMINCO EXPLORATION
DIAMOND DRILL CORE LOG

HOLE No. **YWS1**

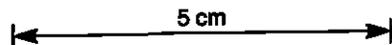
PROJECT: YOLANDE: WHITE SPUR

Vertical Scale 1 : 200

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DESCRIPTION				GRAPHIC			STRUCTURES
From	To	LITHOLOGY	ALTERATION	MINERALISATION	Depth	Lith	Structures
56.00	61.90	SANDSTONE INTERBEDDED WITH BLACK SHALE Pale, Grey, Medium grained, Massive, Sandstone is massive siliceous in part resembling volcanic?, and micaceous and bedded in part? CONTACT: Missing, Corresponds with 100% water loss.	Slightly Silicified.		60		BEDDING, A 61.
61.90	65.00	BLACK SHALE CONTAINING CLASTS OF UNASSIGNED Black, Fine grained, Peperitic, Abundant spattering of 0.5 to 3mm siliceous, and siderite? altered clasts throughout. Disrupted banding. CONTACT: Conformable abrupt,					
65.00	71.10	BLACK SHALE Black, Fine grained, Massive, Minor fine grained irregular pyrite with white carbonate veining. CONTACT: Conformable abrupt, at 20 degrees to LCA.		STRINGER, pyrite on selvages, as stringers, very minor disseminated.	70		BEDDING, A 40.
71.10	73.30	BLACK SHALE CONTAINING CLASTS OF UNASSIGNED Black, Fine grained, Peperitic, Abundant 5mm spattered? siliceous clasts. CONTACT: Conformable mixed,					
73.30	86.70	BRECCIA Pale, Grey, Very coarse grained, Clast supported. Clasts (5 to 10mm) dominantly fine grained white siliceous, with minor black shale, and trace sericite/feldspar type. Minor band of massive fine grained siliceous rock at base of interval. CONTACT: Conformable abrupt,	Slightly Silicified.		80		

5 cm



897218

PRSMINCO EXPLORATION
DIAMOND DRILL CORE LOG
Vertical Scale 1 : 200

HOLE No. **YWS 1**

PROJECT: VOLANDE: WHITE SPUR

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DESCRIPTION					GRAPHIC			STRUCTURES
From	To	LITHOLOGY	ALTERATION	MINERALISATION	Depth	Lith	Structures	STRUCTURES
86.70	89.70	BLACK SHALE Black, Grey, Fine grained, Brecciated, Zone of disrupted and faulted shales. CONTACT: Conformable abrupt,						
89.70	95.40	SANDSTONE Buff, Very coarse grained, Brecciated, Irregular zone of sandstone and sedimentary breccia with mineralised quartz veins. CONTACT: Conformable mixed,	Slightly Sericitised, Slightly Silicified.	VEIN, trace galena in veins, trace sphalerite in veins, Coarse grained galena and sphalerite in massive white quartz vein..	90			Fault, Breccia, Pug, VEIN, Zone of minor mineralised white quartz veining.
95.40	108.80	BRECCIA Grey, Very coarse grained, Clast supported, Massive, Polymict, Clast type and abundance similar to above breccias. CONTACT: Conformable abrupt, at 45 degrees to LCR.	Slightly Silicified,					
108.80	114.00	BLACK SHALE Black, Fine grained, Massive, Massive in part, and with 1 to 3mm carbonate and siliceous patches and clasts in part. Abundant pyrite/carbonate patches and veinlets. CONTACT: Conformable abrupt, at 50 degrees to LCR.	Slightly Carbonatised,	DISSEMINATED, very minor pyrite massive, Two generations of pyrite, very fine grained massive elongate spots (2x0mm), and coarse grained associated with saccharoidal carbonate patches..	110			BEDDING, A 40.

5 cm

897219

PASMINCO EXPLORATION
DIAMOND DRILL CORE LOG

HOLE No. **YWS1**

PROJECT: YOLANDE: WHITE SPUR

Vertical Scale 1 : 200

Page 5 of 16

DESCRIPTION				GRAPHIC			
From	To	LITHOLOGY	ALTERATION	MINERALISATION	Depth	Lith	Structures
		CONTACT: Conformable abrupt, at 50 degrees to LCA.		sacharoidal carbonate patches..			
114.00	128.20	BRECCIA Buff, Grey, Very coarse grained, Matrix supported, Poorly sorted, Lithic, Similar to above breccias but siliceous clasts more resemble siltstones. CONTACT: Conformable abrupt, at 35 degrees to LCA.	Slightly Silicified.				
128.20	133.90	SILTSTONE INTERBEDDED WITH SANDSTONE Buff, Grey, Fine grained, Massive, Zone of banded massive siliceous siltstone, fine grained sandstone, and laminated cherty siltstones. CONTACT: Gradational.	Slightly Silicified.				
		BLACK SHALE CONTAINING CLASTS OF SILTSTONE Black, Fine grained, Peperitic, Black shales with spattered? fine siltstone and coarse porphyry clasts. CONTACT: Conformable abrupt,					
133.90	137.10	BRECCIA Buff, Coarse grained, Poorly sorted, Lithic, CONTACT: Conformable abrupt,					
		BLACK SHALE Black, Fine grained, Zone of disrupted and veined blackshales. CONTACT: Gradational.					
137.10	137.70		Slightly Silicified.				
137.70	139.20	BLACK SHALE Black, Fine grained, Massive, CONTACT: Gradational, at 45 degrees to					
139.20	144.60			DISSEMINATED, minor pyrite in veinlets. Abundant fine veinlets, fractures and fine wisps and spots elongate in cleavage..			

BEDDING, R 45.

BEDDING, D 73, Grading uphole.

FIRST CLEAVAGE, D 85.

BEDDING, D 78.

BROKEN CORE, Carbonate, Minor broken zone with abundant fine carbonate

5 cm

897220

PASMINCO EXPLORATION
DIAMOND DRILL CORE LOG
Vertical Scale 1 : 200

HOLE No. **YWS1**

PROJECT: VOLANDE: WHITE SPUR

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DESCRIPTION				GRAPHIC			
From	To	LITHOLOGY	ALTERATION	MINERALISATION	Depth	Lith	Structures
139.20	144.60	SILTSTONE INTERBEDDED WITH SANDSTONE Buff, Grey, Fine grained, Medium grained, Bedded, Zone of laminated cherty siltstone and massive fine grained sandstone. CONTACT: Conformable abrupt,		cleavage..	140		Minor broken zone with abundant fine carbonate veinlets.
144.60	146.60	BRECCIA Buff, Grey, Coarse grained, Poorly sorted, Cleaved, Lithic, Irregular breccia with clasts elongate in cleavage. CONTACT: Conformable mixed,	Slightly Silicified,				BEDDING, D 88.
146.60	147.50	SHALE Grey, Fine grained, Laminated, CONTACT: Conformable abrupt,					VEIN. Carbonate, Pyrite. Trace pyrite within several 2 to 10cm white quartz with lesser carbonate veins.
147.50	149.80	BLACK SHALE CONTAINING CLASTS OF SILTSTONE Black, Fine grained, Zone of massive black shales, and black shale mixed with 5mm siliceous clasts, irregular 30mm elongate patches of granular carbonate with intergranular pyrite, and minor 100mm carbonate sandstone clasts. CONTACT: Conformable abrupt,		CLAST. minor pyrite associated with alteration, carbonate Irregular Mn carbonate clast like patches containing disseminated to semi massive pyrite. Also abundant altered siliceous clasts in shale matrix..	150		
149.80	152.50	BRECCIA Pale, Grey, Very coarse grained, Matrix supported, Poorly sorted, Lithic, Zone of irregular 20mm white siliceous siltstone, porphyry, quartz and sericitised clasts. CONTACT: Conformable abrupt,	Slightly Silicified.	CLAST. very minor pyrite associated with alteration, Intriguing siliceous altered clasts with minor disseminated pyrite..			
152.50	153.20	SANDSTONE Grey, Coarse grained, Fine grained, Massive, Zone of irregular massive feldspar phyrlic sandstone, grading to fine grained laminated sandstone. CONTACT: Conformable abrupt,					
153.20	154.10	SHALE MIXED WITH INTERBEDDED WITH SANDSTONE Black, Grey, Fine grained, Coarse grained, Bedded, CONTACT: Gradational,		DISSEMINATED. very minor pyrite disseminated, Minor ubiquitous pyrite in bands parallel to bedding usually associated with carbonate, often remobilised int veinlets, fractures or spots..	160		BEDDING, D 90.
154.10	156.00	BLACK SHALE MIXED WITH CONTAINING CLASTS OF SILTSTONE Black, Fine grained, Laminated, Zone of shales with minor siliceous, sericite/feldspar-phyric and carbonate/pyrite clasts. CONTACT: Gradational,					
156.00	158.20	BLACK SHALE WITH MINOR SANDSTONE Black, Fine grained, Massive, Laminated, Massive to laminated black shales with minor sandstone beds, and minor bands of irregular feldspar phyrlic patches. CONTACT: Conformable abrupt, at 55 degrees to LCA.					
158.20	163.80	SILTSTONE INTERBEDDED WITH SHALE Grey, Black, Fine grained, Bedded, Zone of interbedded 2 to 20cm beds of black shale, siltstone and carbonate sandstone. CONTACT: Conformable abrupt, at 55 degrees to LCA.					BEDDING, D 78.
163.20	166.90						
166.90	225.40						

5 cm

897221

PASMINCO EXPLORATION
 DIAMOND DRILL CORE LOG
 Vertical Scale 1 : 200

HOLE No. **YWS1**

PROJECT: YOLANDE: WHITE SPUR

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DESCRIPTION			GRAPHIC					
From	To	LITHOLOGY	ALTERATION	MINERALISATION	Depth	Lith	Structures	STRUCTURES
		black shale, siltstone and carbonate sandstone. CONTACT: Conformable abrupt, at 55 degrees to LCA.			170			
		BLACK SHALE Black, Grey, Fine grained, Laminated, Massive, CONTACT: Gradational,			180			BEDDING, D 60.
				DISSEMINATED, very minor pyrite disseminated. Ubiquitous, in bedding parallel bands associated with carbonate, or in veinlets or carbonate spots..	190			BROKEN CORE. Pug, Folded. Minor pug bands, abundant tight folding, slickenlines, and carbonate veinlets.

5 cm

897222

PASMINCO EXPLORATION
DIAMOND DRILL CORE LOG

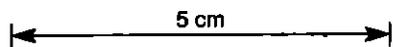
HOLE No. **YWS1**

PROJECT: YOLANDE: WHITE SPUR

Vertical Scale 1 : 200

Page 9 of 16

DESCRIPTION				GRAPHIC				
From	To	LITHOLOGY	ALTERATION	MINERALISATION	Depth	Lith	Structures	STRUCTURES
225.40	259.30	SANDSTONE GRADING TO SHALE Grey, Medium grained, Fine grained, Upwards fining sequence, Calcareous, Grossely one upwards (uphole) fining bed of banded carbonate and non carbonate rich sandstone to siltstone. Folded at 258m CONTACT: Conformable abrupt, at 70 degrees to LCA.						
					230			BEDDING, D 60. FIRST CLEAVAGE, D 43.
					240			BEDDING, D 82.
					250			BEDDING, D 90, C FIRST CLEAVAGE, D 70.



897224

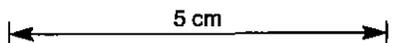
PASMINCO EXPLORATION
DIAMOND DRILL CORE LOG
Vertical Scale 1 : 200

HOLE No. **YWS1**

PROJECT: YOLANDE: WHITE SPUR

Page 10 of 16

DESCRIPTION				GRAPHIC			
From	To	LITHOLOGY	ALTERATION	MINERALISATION	Depth	Lith	Structures
							<p>BEDDING, D 90.</p> <p>BEDDING, D 80, Folded.</p> <p>FIRST CLEAVAGE, D 80, Axis, Folded.</p> <p>BEDDING, D 90, Axis.</p>
259.30	263.90	BLACK SHALE Black, Fine grained, Massive, Massive black slate (with massive white quartz veining), within carbonate sandstone sequence. CONTACT: Conformable abrupt, at 85 degrees to 157.		VEIN, very minor pyrite in veins, trace galena in veins, trace chalcopyrite in veins. Trace cg galena in massive white quartz with lesser carbonate veining..	260		<p>VEIN, D 40, Carbonate.</p>
263.90	269.40	SANDSTONE INTERBEDDED WITH BLACK SHALE Pale, Grey, Coarse grained, Massive, Bedded, Lithic, Calcareous, CONTACT: Conformable abrupt, at 85 degrees to 157.		DISSEMINATED, minor pyrite disseminated, very minor pyrrhotite disseminated. Ubiquitous pyrite, pyrrhotite in bedding planes with carbonate becoming transixed into cleavage..			<p>BEDDING, D 80.</p> <p>BEDDING, D 85.</p>
269.40	273.70	BLACK SHALE Black, Fine grained, Massive, Minor beds of Sandstone display parasitic "S" type folding, bedding cleavage relationships, (ie., east limb of anticline of west limb of syncline; neither of which is expected?). CONTACT: Conformable abrupt,			270		<p>FIRST CLEAVAGE, D 55.</p> <p>FOLD, Z type parasitic fold</p>
273.70	283.50	SANDSTONE INTERBEDDED WITH BLACK SHALE Pale, Grey, Coarse grained, Abundant folded shale beds. CONTACT: Conformable abrupt,					



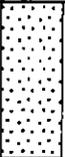
897225

PASMINCO EXPLORATION
DIAMOND DRILL CORE LOG
Vertical Scale 1 : 200

HOLE No. **YWS1**

PROJECT: YOLANDE: WHITE SPUR

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DESCRIPTION					GRAPHIC			
From	To	LITHOLOGY	ALTERATION	MINERALISATION	Depth	Lith	Structures	STRUCTURES
					280			
283.50	293.00	BLACK SHALE WITH MINOR SANDSTONE Black, Fine grained, Bedded, Massive black slates with minor carbonate sandstone bands. Folding still very evident. CONTACT: Conformable abrupt,						FOLD, Z type parasitic fold
293.00	356.70	BLACK SHALE Black, Fine grained, Laminated, Massive black slate with minor carbonate/pyrite or carbonate/pyrrhotite laminae (with variable to perpendicular cleavage/bedding angles), becoming white carbonate po/py spots and patches down-hole. Note location of massive po spots aligned in cleavage in axial positions... CONTACT: Gradational,		DISSEMINATED, minor pyrite disseminated, very minor pyrrhotite disseminated. As vfg layers in laminated black shale..			 	BEDDING, D 40. FIRST CLEAVAGE, D 85. BEDDING, D 20. FIRST CLEAVAGE, D 80.

5 cm

897226

PASMINCO EXPLORATION
 DIAMOND DRILL CORE LOG
 Vertical Scale 1 : 200

HOLE No. **YWS1**

PROJECT: YOLANDE: WHITE SPUR

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DESCRIPTION					GRAPHIC			STRUCTURES
From	To	LITHOLOGY	ALTERATION	MINERALISATION	Depth	Lith	Structures	STRUCTURES
					310			
					320			
					330			
								BEDDING, D 15. FIRST CLEAVAGE, D 05.
				VEDM. abundant pyrrhotite disseminated, minor pyrite disseminated. Abundant pyrite/pyrrhotite remobilised into elongate carbonate spots or patches or bands, may be massive. Also vfg bedding				

5 cm

897227

PASMINCO EXPLORATION
DIAMOND DRILL CORE LOG

HOLE No. **YWS1**

PROJECT: YOLANDE: WHITE SPUR

Vertical Scale 1 : 200

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DESCRIPTION				GRAPHIC			STRUCTURES	
From	To	LITHOLOGY	ALTERATION	MINERALISATION	Depth	Lith		Structures
				elongate carbonate spots or patches or bands, may be massive. Also vfg bedding parallel bands and as fine fracture fill..	340			VEIN, D 45, Carbonate, Carbonate pyrrhotite vein set.
356.70	364.60	SANDSTONE Grey, Coarse grained, Massive, Calcareous, Minor very fine grained pale grey siliceous patches towards contact? CONTACT: Faulted, at 85 degrees to LCR. Silica heale			350			BEDDING, D 50, Cleavage/bedding at high angle.
		FAULT ZONE (PUG) Brecciated white quartz and yellow			360			

5 cm

897228

PASMINCO EXPLORATION
DIAMOND DRILL CORE LOG

HOLE No. **YWS1**

PROJECT: YOLANDE: WHITE SPUR

Vertical Scale 1 : 200

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DESCRIPTION					GRAPHIC			STRUCTURES
From	To	LITHOLOGY	ALTERATION	MINERALISATION	Depth	Lith	Structures	STRUCTURES
364.60	368.70	<p>FAULT ZONE (PUG) Brecciated white quartz and yellow carbonate with minor chlorite infilling and trace galena.</p> <p>DACITE MIXED WITH SILTSTONE Grey, Peperitic, Massive dacite? at 372.4m becoming increasingly fragmented towards 364.7m. Irregular textures towards 364.7m possibly peperitic dacite mixed with interbedded sandstone/siltstone. Also trace clasts of consolidated cherty sediment. CONTACT: Gradational,</p>			370			FAULT, D 70, Breccia,
372.40	401.30	<p>DACITE Grey, Massive, Porphyritic, Feldspar phyrlic, Massive dark grey dacite with abundant 1 to 3mm white feldspars. Silicified towards each contact with associated chloritisation of feldspats. Minor phyrlic quartz? CONTACT: Conformable mixed,</p>	<p>Slightly Silicified, Slightly Chloritised.</p>		380			FIRST CLEARAGE, D 80,
				<p>VEIN, trace pyrite in veinlets, trace sphalerite in veinlets, In irregular fine carbonate veinlets..</p>	390			

5 cm

897229

PRSMINCO EXPLORATION
DIAMOND DRILL CORE LOG
Vertical Scale 1 : 200

HOLE No. **YWS1**

PROJECT: YOLANDE: WHITE SPUR

Page 15 of 16

DESCRIPTION		GRAPHIC				
From	To	LITHOLOGY	ALTERATION	MINERALISATION	Depth Lith Structures	STRUCTURES
				MASSIVE, pyrrhotite massive, trace in veins.	400	BEDDING, D SS.
401.30	402.90	SANDSTONE Grey, Fine grained, Massive, Unusual occurrence in that there is no mixing between the fine grained sediment and the surrounding rock. There is an indistinct banding at 80 deg to LCA. Trace fine wispy shale or chlorite specks. CONTACT: Conformable abrupt, Very sharp, no mixing.	Slightly Silicified.	DISSEMINATED, trace pyrite disseminated, trace sphalerite in veinlets. Trace fine grained pyrite in seds below contact, and trace fine sphalerite disseminated or in fine irregular carbonate veinlets..		
402.90	406.20	PUMICEOUS MASS FLOW WITH MINOR SILTSTONE Grey, Black, Coarse grained, Peperitic, Porphyritic, Pumiceous, Feldspar phyrlic, Patchy grey black feldspar phyrlic pumiceous volcanoclastic with minor irregular cherty siltstone patches, possible mixing of pumiceous flow and unconsolidated ash or silt. CONTACT: Gradational,	Slightly Silicified.	DISSEMINATED, trace pyrite disseminated.	410	
406.20	414.80	PUMICEOUS MASS FLOW Grey, Black, Coarse grained, Porphyritic, Pumiceous, Feldspar phyrlic, Indistinct banding on a 10 to 20cm scale, with pale siliceous bands, and dark bands. Abundant 1 to 4mm white feldspars throughout, pumice becoming more prominent uphole. CONTACT: Gradational,	Slightly Silicified.	DISSEMINATED, trace sphalerite disseminated. Trace fine grained disseminated sphalerite in fine irregular fractures..		
414.80	415.70	PUMICEOUS MASS FLOW Grey, Coarse grained, Lithic, Similar rock to above but containing minor 1 to 4cm fine grained sediment clasts. CONTACT: Conformable abrupt,	Slightly Silicified.		420	
415.70	418.20	PUMICEOUS MASS FLOW Grey, Feldspar phyrlic, Pumiceous, Similar to above rock but finer grained, and feldspars becoming sparse, appears to fine down-hole. CONTACT: Gradational,	Slightly Silicified.			
418.20	419.80	SANDSTONE Grey, Medium grained, Massive, Appears to be a finer grained, feldspar poor equivalent of surrounding rock, grading both up and down hole.			420	
419.80	421.50	CONTACT: Gradational.	Slightly Silicified.			

5 cm

807230

PRSMINCO EXPLORATION
DIAMOND DRILL CORE LOG

HOLE No. **YWS1**

PROJECT: YOLANDE: WHITE SPUR

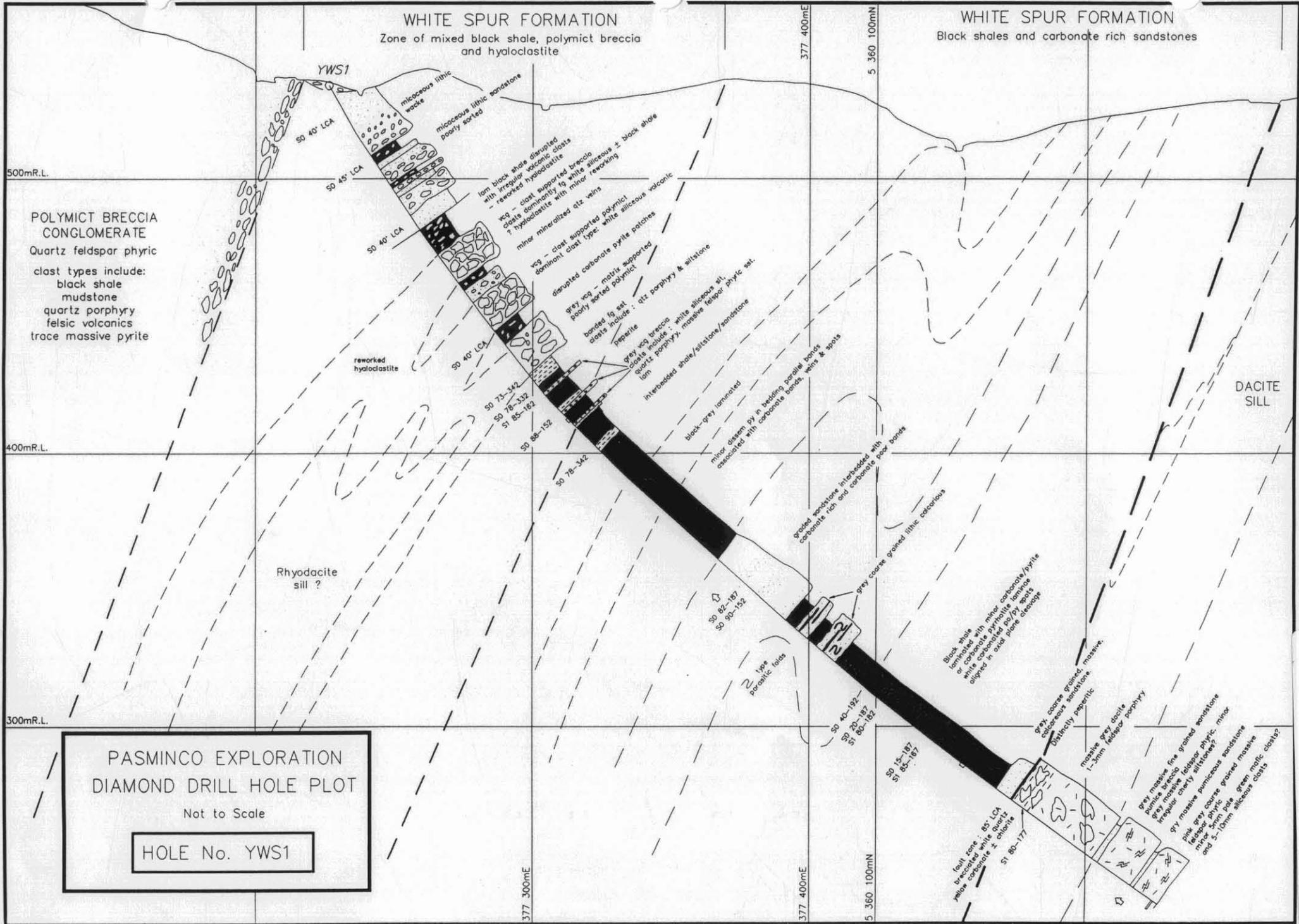
Vertical Scale 1 : 200

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DESCRIPTION				GRAPHIC			STRUCTURES
From	To	LITHOLOGY	ALTERATION	MINERALISATION	Depth	Lith	Structures
419.80	421.50	Rock, grading down up and down hole. CONTACT: Gradational,	Slightly Silicified,		420		FIRST CLEAVAGE, D 55.
421.50	430.50	PUMICEDUS MASS FLOW Grey, Porphyritic, Feldspar phytic, Pumiceous, Appears to be a transition zone between underlying feldspar phytic pumice breccia and overlying volcaniclastic sandstone. CONTACT: Gradational,	Slightly Silicified,		430		
		PUMICEDUS MASS FLOW Pink, Grey, Coarse grained, Porphyritic, Massive, Feldspar phytic, Pumiceous, Patchy pink - dark green matrix with abundant white (pink rimmed in part) 1 to 4mm feldspars. Minor 5mm pale green clasts, mafic?, and minor 5 to 10mm siliceous clasts.			440		

5 cm

897231



PASMINCO EXPLORATION
DIAMOND DRILL HOLE PLOT
Not to Scale
HOLE No. YWS1

897232



SPECIFIC GRAVITY

depth	prop_sg	properties_nul	prop_fcode	prop_lcode
21.10	1.98		WSF	sst
49.90	2.75		WSF	bx
70.50	2.47		WSF	bsh
123.50	2.54		WSF	bx
160.60	2.67		WSF	bsh
182.20	2.63		WSF	bsh
233.70	2.58		WSF	sst
283.10	2.59		WSF	sst
332.90	2.61		WSF	bsh
386.50	2.49		CVC	Ld
430.50	2.60		CVC	Vpmf

MAGNETIC SUSCEPTIBILITY (x10³ cgs units)

depth	prop_sg	properties_nul	prop_fcode	prop_lcode
3.00	0.02		WSF	sst
4.10	0.01		WSF	sst
5.60	0.02		WSF	sst
9.00	0.03		WSF	sst
10.50	0.03		WSF	sst
13.50	0.04		WSF	sst
16.50	0.01		WSF	sst
17.70	0.01		WSF	sst
19.50	0.01		WSF	sst
22.50	0.01		WSF	sst
25.50	0.02		WSF	sst
34.50	0.10		WSF	sst
37.00	0.01		WSF	bx
38.00	0.01		WSF	bx
43.30	0.01		WSF	bsh
49.30	0.01		WSF	bx
49.50	0.01		WSF	bx
58.50	0.01		WSF	sst
60.30	0.01		WSF	sst
61.50	0.04		WSF	sst
64.50	0.08		WSF	bsh
67.50	7.00		WSF	bsh
76.20	0.01		WSF	bx
78.80	0.01		WSF	bx
79.50	0.01		WSF	bx
81.30	0.01		WSF	bx
88.00	0.01		WSF	bsh
94.10	0.01		WSF	sst
97.50	0.01		WSF	bx
103.50	0.01		WSF	bx
112.50	0.02		WSF	bsh
121.50	0.03		WSF	bx
123.60	0.01		WSF	bx
127.50	0.04		WSF	bx
133.50	0.18		WSF	slt
136.50	0.18		WSF	bsh
139.40	0.02		WSF	bsh
141.00	0.02		WSF	bsh
145.50	0.01		WSF	slt
148.50	0.03		WSF	sh
150.60	0.04		WSF	bsh
154.50	0.01		WSF	sh

897234

157.50	0.03	WSF	bsh
160.50	0.12	WSF	bsh
163.50	0.02	WSF	slt
166.50	0.04	WSF	slt
169.50	0.13	WSF	bsh
188.40	0.05	WSF	bsh
202.10	0.01	WSF	bsh
205.50	0.01	WSF	bsh
208.50	0.06	WSF	bsh
211.50	0.03	WSF	bsh
214.50	0.01	WSF	bsh
223.50	0.01	WSF	bsh
244.50	0.01	WSF	sst
250.50	0.01	WSF	sst
253.50	0.03	WSF	sst
259.50	0.01	WSF	bsh
265.50	1.44	WSF	sst
268.50	0.04	WSF	sst
274.50	0.01	WSF	sst
292.50	0.03	WSF	bsh
295.50	0.01	WSF	bsh
310.50	0.02	WSF	bsh
316.50	0.03	WSF	bsh
319.50	0.02	WSF	bsh
322.50	0.60	WSF	bsh
328.50	0.37	WSF	bsh
340.50	0.14	WSF	bsh
341.20	0.01	WSF	bsh
343.50	7.62	WSF	bsh
349.50	2.18	WSF	bsh
352.50	0.52	WSF	bsh
355.50	0.01	WSF	bsh
364.50	0.01	WSF	sst
376.50	0.02	CVC	Ld
382.50	0.01	CVC	Ld
391.50	0.01	CVC	Ld
394.50	0.01	CVC	Ld
397.50	0.06	CVC	Ld
400.50	0.06	CVC	Ld
406.50	0.01	CVC	pmf

ASSAY RESULTS YWS1

(values in ppm)

FROM	TO	int	SAMPLE	Cu	Pb	Zn	Ag	Au	Fe%	Ba
149.60	151.30	1.7	37460	18	55	81	<1	<0.008	2.34	1236
341.60	343.50	1.9	37461	107	21	93	<1	<0.008	7.12	303
427.90	428.60	0.7	37463	10	110	375	<1	<0.008	2.34	906

(values in %)

FROM	TO	SAMPLE	Al2O3	SiO2	TiO2	Fe2O3	MnO	CaO	K2O	MgO	P2O5	Na2O	SO3	LOI	AI
387.20	387.80	37462	15.47	66.00	0.52	4.21	0.06	1.26	2.47	1.58	0.11	5.70	0.06	2.68	37
409.50	410.70	37464	14.05	68.80	0.51	3.44	0.09	3.53	2.87	1.08	0.11	2.93	0.10	2.47	38
427.90	428.60	37463	13.90	70.80	0.46	3.15	0.07	1.73	1.53	1.06	0.09	5.17	0.54	1.68	27

(values in ppm)

FROM	TO	SAMPLE	Rb	Sr	V	Nb	Y	Zr
387.20	387.80	37462	69	191	55	12	30	248
409.50	410.70	37464	136	375	36	13	39	248
427.90	428.60	37463	62	262	36	12	33	232

APPENDIX 5
SELECTED LITHOGEOCHEMICAL RESULTS

YOLANDE EL 11/85
 samples sorted on SiO2
 (values in %)

897237

SAMPLE	formation	lithology	SiO2	Al2O3	TiO2	P2O5	Fe2O3	MnO	CaO	K2O	MgO	Na2O
401098	?	Scong	91.25	3.94	0.23	0.01	0.42	0.01	0.01	1.09	0.51	0.27
75867	TG	Lr	88.11	5.94	0.10		0.74	0.03	0.13	1.73	0.32	1.87
75866	TG	Lr	87.68	6.18	0.17		0.69	0.02	0.05	0.85	0.36	3.01
401100	?	Msht	86.08	6.73	0.36	0.01	0.71	0.01	0.07	1.77	0.97	0.31
120559		4	82.20	10.20	0.39	0.02	0.53	0.00	0.09	2.56	0.35	0.52
120561			82.10	11.20	0.27	0.00	0.56	0.00	0.00	1.87	0.36	0.04
401099	?	Msht	81.83	9.14	0.43	0.01	1.20	0.01	0.01	2.63	1.04	0.37
120788			79.80	11.50	0.31	0.01	0.92	0.00	0.00	2.94	0.41	1.30
37156	CVC	Vpm	79.70	10.10	0.36	0.06	2.96	0.03	0.10	1.99	0.47	2.05
75876	NCS	?	79.46	12.28	0.34	0.08	0.30	0.00	0.40	0.63	0.00	5.40
401067		TUFF	79.16	9.68	0.11	0.11	0.25	0.05	1.86	3.29	0.23	2.59
120792			79.10	12.40	0.32	0.01	1.46	0.00	0.03	3.90	0.94	0.06
37145	NCS	Vpm	79.10	12.33	0.33	0.08	0.87	0.01	0.42	0.73	0.14	5.06
120562			78.90	11.70	0.24	0.01	1.10	0.00	0.07	3.50	0.53	1.75
120531		5	78.80	11.10	0.07	0.00	0.71	0.00	0.05	1.68	0.00	4.56
120796			78.60	12.40	0.24	0.03	1.52	0.00	0.07	3.42	0.75	0.94
75851	TG	Lr	78.56	11.89	0.18	0.06	0.83	0.00	0.03	2.69	0.13	4.44
401065		TUFF	78.40	11.21	0.15	0.10	1.41	0.01	<0.01	2.25	0.44	3.27
120734			78.30	12.10	0.34	0.02	1.75	0.04	0.15	2.24	0.46	3.30
37117	WSF	5	78.30	10.93	0.12	0.01	2.04	0.02	0.01	6.73	0.23	0.35
75850	TG	Lr	78.27	11.18	0.18	0.01	1.56	0.02	0.22	3.58	0.17	3.77
120797			78.10	11.20	0.23	0.00	1.93	0.03	0.27	2.64	0.57	2.92
120731	?	4	78.00	10.30	0.40	0.02	2.02	0.01	0.47	2.38	0.51	0.98
37151	CVC	?	77.90	12.34	0.20	0.02	1.54	<0.01	0.02	3.64	0.61	1.60
75849	TG	Lr	77.77	11.69	0.19	0.08	2.24	0.02	0.07	1.98	0.46	4.69
75845	YRS		77.69	11.60	0.18	0.05	0.63	0.01	0.05	2.01	0.29	2.95
120785			77.60	11.40	0.32	0.01	1.42	0.00	0.03	2.82	0.43	2.62
120563			77.60	12.40	0.22	0.00	1.33	0.00	0.05	2.30	0.37	3.42
37150	CVC	?	77.50	13.04	0.19	0.03	1.25	0.01	0.03	3.91	0.66	1.21
31495	CVC	Vsit	77.30	10.86	0.18	0.03	3.05	0.07	1.19	2.90	1.03	0.56
120564			77.20	11.40	0.23	0.02	1.69	0.00	0.07	1.98	0.35	2.98
120799			76.70	12.00	0.25	0.00	1.45	0.00	0.05	3.66	0.76	1.04
401034		TUFF	76.66	12.15	0.25	0.17	2.22	0.02	0.20	2.93	0.76	1.92
401025		TUFF	76.54	11.85	0.36	0.14	1.11	0.01	0.05	3.99	0.99	0.20
401064		TUFF	76.51	12.61	0.23	0.12	1.47	0.09	<0.01	2.84	0.36	3.94
401073		LAVA	76.44	13.15	0.15	0.10	1.03	0.01	<0.01	3.19	0.44	2.25
401158		L	76.41	10.93	0.11	0.00	0.83	0.03	0.50	3.79	0.43	2.97
401037		TUFF	76.30	12.85	0.18	0.02	0.51	<0.01	0.28	1.77	0.57	3.75
75875	NCS	Ld	76.15	11.42	0.36	0.05	4.09	0.05	0.28	0.90	0.82	3.79
401074		TUFF	76.00	13.69	0.19	0.00	0.58	0.01	0.09	3.35	0.91	1.90
37153	NCF	Vpm	75.90	13.77	0.30	0.02	2.07	0.01	0.02	2.23	0.84	2.18
401078		TUFF	75.83	13.86	0.31	0.05	0.91	0.51	0.20	2.92	0.50	0.09
401159		Vsst	75.41	13.17	0.27	0.00	1.34	0.01	0.07	2.56	0.73	3.50
401079		TUFF	75.41	12.38	0.31	0.05	0.57	<0.01	<0.01	2.96	0.52	2.45
75874	NCF	Vpm	75.32	12.89	0.46	0.13	1.87	0.03	0.58	1.55	0.41	5.14
32149	NCF	Vpm	75.20	13.47	0.38	0.03	2.56	0.01	0.04	3.88	0.77	0.94
401068		SILTSTONE	75.19	11.15	0.18	0.10	3.67	0.01	0.31	4.34	0.86	1.77
401089	?	TUFF	75.08	13.44	0.20	0.05	0.25	0.05	0.14	1.59	0.99	5.63
401077		TUFF	75.02	13.67	0.20	0.10	1.51	0.49	0.05	3.01	0.37	0.56
120546		1	75.00	13.00	0.32	0.02	1.88	0.03	0.90	4.10	0.25	3.30
35043	CVC	Scong	74.90	10.90	0.20	0.04	3.25	0.14	1.39	1.93	0.95	2.78
35049	NCF	Vpm	74.90	11.59	0.44	0.06	2.87	0.06	0.89	3.10	0.79	2.45
401153		TUFF	74.81	12.15	0.18	0.01	2.23	0.03	0.09	2.51	0.49	3.53
401030		SHALE	74.80	13.75	0.40	0.15	1.77	0.07	0.02	4.96	0.98	0.18
31488	CVC	Vpm	74.80	13.34	0.32	0.05	1.93	0.04	0.49	0.82	0.50	5.98
35010	NCF	Vpm	74.80	13.77	0.32	0.02	2.45	0.02	0.02	2.09	0.84	1.87
37138	NCS	?	74.70	13.00	0.54	0.14	2.74	0.03	0.24	2.47	0.48	2.65
35077	CVC	Ld	74.70	7.40	0.19	0.06	11.59	0.25	0.07	0.67	0.90	0.09
37144	NCS	?	74.60	11.57	0.33	0.08	1.31	0.04	3.05	2.66	0.35	2.09
120540			74.60	12.70	0.34	0.04	2.58	0.02	0.09	2.36	0.67	2.40
401097	?	Sbx	74.51	12.78	0.27	0.01	0.86	0.03	0.07	3.30	0.82	3.90

401146		TUFF	74.48	12.57	0.09	0.01	1.09	0.01	0.12	2.93	1.12	3.66
120736		?	74.40	13.30	0.43	0.03	2.48	0.06	1.13	3.10	0.42	3.48
37155	CVC	Vpm	74.30	11.35	0.24	0.04	6.35	0.21	0.01	3.95	0.65	0.36
120568			74.20	13.30	0.37	0.00	1.86	0.03	0.06	2.68	0.43	1.67
37152	CVC	?	74.20	14.27	0.43	0.04	2.66	0.02	0.04	3.85	0.97	0.88
401066		TUFF	74.12	12.28	0.23	0.15	0.51	0.03	0.57	3.73	0.76	3.20
35012	CVC	Ld	73.90	15.03	0.54	0.11	2.51	0.04	0.10	4.47	0.47	0.05
35068	WSF	Sbsh	73.90	13.64	0.60	0.02	2.36	0.02	0.01	3.91	0.97	0.16
401029		SILTSTONE	73.81	12.77	0.46	0.20	1.93	0.05	0.15	3.85	0.89	3.30
37219	TG	Lr	73.80	15.38	0.13	0.01	0.62	0.03	0.31	0.33	0.12	8.70
120545		1	73.70	12.80	0.27	0.01	2.08	0.04	0.36	2.92	0.83	2.80
401024		SILTSTONE	73.55	12.93	0.38	0.18	0.45	0.01	0.07	2.99	0.89	4.38
120547		1	73.50	13.60	0.33	0.03	2.60	0.05	2.12	3.44	0.68	1.36
37114	CVC	?	73.30	13.68	0.34	0.07	2.23	0.04	0.99	3.81	1.14	2.17
120539			73.20	11.20	0.64	0.04	4.42	0.03	0.24	2.10	2.04	1.35
37119	CVC	1	73.20	15.18	0.42	0.07	1.89	0.01	0.06	3.84	0.53	1.82
35070	WSF	Sbsh	73.20	12.40	0.55	0.06	3.94	0.01	0.01	2.71	1.05	1.07
37116	CVC	4	73.10	13.17	0.41	0.08	3.01	0.04	0.86	4.08	0.65	3.32
120738			73.10	12.90	0.60	0.04	4.06	0.02	0.06	3.96	1.45	0.54
120548		4	73.10	13.10	0.37	0.07	2.34	0.02	0.12	4.78	0.53	2.04
35037	CVC	Ld	73.10	12.16	0.41	0.08	4.78	0.02	0.08	2.72	0.51	2.38
120789			72.80	15.50	0.32	0.02	0.72	0.00	0.02	3.20	0.26	2.12
120733	?	4	72.60	13.60	0.43	0.04	2.98	0.04	0.69	1.90	0.82	3.58
120535		1	72.50	13.90	0.42	0.05	2.60	0.04	0.72	2.70	0.96	2.92
120786			72.50	12.40	0.45	0.07	4.44	0.05	0.07	2.54	1.72	1.86
35073	CVC	2	72.40	13.58	0.48	0.08	2.53	0.04	2.25	1.74	1.08	1.99
35011	CVC	Ld	72.40	15.91	0.56	0.09	2.26	0.02	0.06	4.79	0.50	0.07
31500	CVC	Ld	72.10	12.89	0.43	0.04	3.93	0.01	0.08	1.82	0.37	4.24
401156		L	72.02	13.39	0.28	0.01	0.69	0.01	0.37	3.58	0.93	3.56
31492	NCS	Vsst	72.00	13.20	0.49	0.06	4.15	0.07	0.97	0.33	1.15	5.75
30985.2			72.00	14.63	0.30	0.04	2.44	0.05	0.05	4.91	0.26	4.28
120735		?	71.90	14.80	0.64	0.05	2.90	0.03	0.00	4.52	1.30	0.05
401080	?	TUFF	71.81	14.61	0.55	0.10	1.13	0.11	0.15	4.25	0.72	0.14
401160		1	71.68	13.97	0.31	0.00	2.71	0.02	0.03	2.61	0.70	0.93
35069	CVC	2	71.40	14.09	0.50	0.06	3.19	0.07	0.58	0.77	1.07	4.74
120566			71.40	14.80	0.43	0.06	3.34	0.03	0.22	2.38	0.60	2.66
401096	?	TUFF	71.37	13.52	0.64	0.02	3.36	0.05	0.05	5.76	1.11	0.43
35099	NCF	Va	71.30	14.89	0.44	0.06	2.80	0.05	0.86	3.41	1.21	1.84
37160	NCF	Vpm	71.30	13.37	0.72	0.05	3.15	0.08	1.96	3.02	1.24	1.71
120532		?	71.20	11.30	0.71	0.08	4.58	0.01	0.07	3.40	2.80	0.92
401155		GREYWACKE	71.13	9.48	0.62	0.02	2.17	0.05	0.64	1.38	3.26	1.46
401091	?	Sbx	71.09	14.68	0.23	0.01	0.91	0.03	0.25	1.50	0.91	8.27
37178	NCD	Ld	70.80	14.70	0.51	0.14	4.01	0.01	0.14	3.51	0.73	2.70
37463	CVC	2	70.80	13.90	0.46	0.09	3.15	0.07	1.73	1.53	1.06	5.17
35076	CVC	Ld	70.70	7.55	0.26	0.07	14.97	0.88	0.05	0.23	1.94	<0.05
120538		?	70.70	12.30	0.79	0.07	5.90	0.04	0.13	2.22	2.60	1.95
120542			70.60	14.40	0.42	0.03	3.14	0.04	0.14	3.90	0.77	1.49
120536		3	70.60	15.50	0.54	0.04	3.84	0.02	0.06	3.56	0.73	0.26
120787			70.60	15.00	0.45	0.03	2.70	0.06	0.14	3.24	0.48	3.84
37192	NCF	Vpm	70.60	13.29	0.35	0.07	3.39	0.06	0.66	2.89	1.15	4.87
35071	CVC	2	70.50	14.74	0.51	0.10	3.53	0.08	0.69	1.71	1.02	5.96
31484	CVC	Ln	70.40	9.48	0.62	0.14	11.89	0.06	0.01	2.45	0.40	<0.05
216481.2	NCD	Ld	70.40	15.01	0.56	0.14	3.52	0.02	0.16	3.77	0.74	1.84
35042	CVC	Scong	70.30	11.83	0.39	0.14	5.13	0.02	0.19	2.48	0.58	1.40
120537		3	70.10	14.50	0.49	0.08	3.18	0.04	1.58	1.95	1.11	2.22
35009	CVC	Ld	70.00	14.96	0.52	0.10	5.20	0.03	0.10	3.52	1.09	1.42
37146	NCS	Vpm	70.00	11.93	0.32	0.13	2.19	0.07	4.94	0.20	0.39	5.97
120543		3	70.00	15.10	0.59	0.05	3.28	0.07	0.65	1.78	1.13	3.80
37187	NCF	Vpm	70.00	12.94	0.32	0.05	3.06	0.08	2.91	1.66	0.71	5.82
75847	YRS		69.92	15.01	0.39		4.51	0.01	0.01	3.95	2.26	0.37
401075		PHYLLITE	69.80	16.54	0.62	0.11	3.22	0.01	<0.01	5.48	1.03	0.12
401031		SHALE	69.76	9.35	0.23	0.21	0.67	0.27	3.90	2.54	1.48	0.88
31490	NCS	Ld	69.70	14.60	0.51	0.13	5.60	0.06	1.10	2.41	0.77	2.68
35039	CVC	Ld	69.70	14.39	0.52	0.14	2.92	0.03	0.18	5.18	0.94	1.40
37197	NCF	Vpm	69.60	15.06	0.52	0.10	4.27	0.01	0.09	3.58	0.93	1.72

37111	CVC	2	69.60	15.26	0.52	0.11	3.73	0.07	0.69	2.06	1.05	5.26
31496	CVC	SsIt	69.50	11.96	0.47	0.08	4.76	0.07	1.86	2.94	1.59	2.11
120565			69.50	12.90	0.94	0.14	7.05	0.00	0.10	2.98	2.38	0.12
37110	CVC	2	69.50	15.28	0.56	0.11	4.02	0.06	1.53	2.93	1.22	1.76
37112	CVC	3	69.50	14.38	0.55	0.09	3.43	0.05	0.35	5.11	1.25	2.24
35075	WSF	Sbsh	69.30	13.83	0.86	0.04	3.71	0.02	0.01	3.31	2.20	0.10
31494	CVC	Ld	69.30	15.50	0.51	0.14	5.05	0.03	0.14	3.18	1.10	2.58
401069		LAVA	69.27	14.06	0.36	0.17	1.81	0.09	1.67	4.32	0.56	3.28
75865	TG	Lr	69.18	16.81	0.18		1.53	0.01	0.25	2.52	0.30	8.39
75873	NCS	Ld	69.16	14.26	0.47	0.13	6.16	0.08	1.02	1.24	1.08	4.70
37904	NCF	Vpm	69.00	13.69	0.33	0.05	3.85	0.07	1.89	3.46	1.68	1.22
37118	CVC	2	68.90	15.87	0.57	0.08	2.81	0.04	1.31	2.66	1.65	0.88
37464	CVC	2	68.80	14.05	0.51	0.11	3.44	0.09	3.53	2.87	1.08	2.93
120544		?	68.60	14.00	0.77	0.06	4.24	0.01	0.02	3.28	2.80	0.46
120541			68.40	15.20	0.55	0.04	3.58	0.02	0.05	3.40	1.92	0.77
401072		LAVA	68.11	14.51	0.60	0.20	1.56	0.01	0.02	2.83	2.60	3.32
120533		?	68.10	10.80	0.88	0.08	8.40	0.05	0.07	1.65	3.30	0.78
401094	?	Sbx	67.98	13.02	0.56	0.01	2.09	0.07	0.10	1.54	2.45	5.03
75848	NCD	Ld	67.96	14.91	0.32	0.20	4.00	0.06	0.44	3.44	1.33	5.64
401095	?	Sw	67.90	16.06	0.56	0.03	1.56	0.03	0.27	0.74	0.93	9.02
401028		TUFF	67.80	14.89	0.70	0.21	2.78	0.10	0.17	3.67	1.37	3.34
401081	?	TUFF	67.55	13.77	0.68	0.15	1.16	0.01	0.15	3.31	2.48	0.68
401152		ARENITE	67.50	10.22	0.52	0.01	2.44	0.02	0.02	0.97	7.25	0.62
401076		TUFF	67.33	14.94	0.09	0.09	1.61	0.07	2.84	5.05	0.64	2.76
120739			67.30	16.50	0.61	0.09	4.56	0.05	0.91	2.28	0.71	2.50
31499	CVC	?	67.30	15.15	0.56	0.14	5.44	0.05	0.23	2.71	1.73	2.18
401154		GREYWACKE	67.19	11.98	0.70	0.02	7.72	0.07	0.07	3.21	1.70	0.33
75844	YRS		67.04	14.10	0.61	0.15	5.12	0.08	0.37	4.57	2.62	2.85
120560			66.80	18.80	0.62	0.02	3.00	0.00	0.02	2.90	0.63	0.10
75872	NCS	Ld	66.74	10.27	0.27	0.10	1.98	0.12	7.50	0.86	0.43	4.10
37221	AA	Ld	66.70	13.33	0.47	0.13	2.75	0.20	4.90	4.14	0.45	0.19
120732	?	3	66.70	15.90	0.59	0.09	3.98	0.03	0.47	3.56	1.11	1.94
37905	NCD	Ld	66.50	13.74	0.48	0.13	4.74	0.07	2.01	3.80	0.83	1.80
35041	CVC	Ld	66.50	16.62	0.58	0.16	4.44	0.08	0.35	1.85	1.81	5.29
401144		SHALE	66.44	13.64	0.67	0.01	2.73	0.01	0.01	2.48	3.75	0.91
401151		ARGILLITE	66.41	14.18	0.44	0.01	1.97	0.02	0.01	3.94	3.64	0.55
37224	NCD	Ld	66.40	12.98	0.44	0.12	9.06	0.29	1.38	2.23	0.87	2.57
120737			66.30	15.70	0.72	0.08	4.82	0.08	2.10	2.50	1.04	4.64
35084	AA	Ld	66.30	14.67	0.52	0.15	8.44	0.30	0.26	3.75	1.13	0.15
120569			66.20	13.90	0.63	0.08	6.50	0.04	0.02	2.62	3.42	0.17
35064	WSF	Sbsh	66.20	17.42	0.69	0.12	3.79	0.04	<0.01	4.31	1.84	0.19
37462	CVC	3	66.00	15.47	0.52	0.11	4.21	0.06	1.26	2.47	1.58	5.70
37115	CVC	3	65.80	16.16	0.51	0.10	3.76	0.07	2.17	2.66	2.49	1.88
35087	NCD	Ld	65.80	13.39	0.45	0.13	7.02	0.35	2.49	2.66	0.80	1.92
31688.1			65.60	12.54	0.73	0.11	6.50	0.19	2.46	2.89	1.22	1.39
35046	NCD	Ld	65.60	13.76	0.49	0.12	4.53	0.09	3.57	4.06	0.69	3.09
401071		LAVA	65.47	14.31	0.57	0.20	2.11	0.03	0.12	4.01	3.02	2.72
120534		1	65.40	19.30	0.27	0.02	2.34	0.02	0.02	4.56	0.70	0.04
75853	CVC	Ld	65.36	14.49	0.50	0.13	5.81	0.08	3.13	2.32	0.77	3.76
120567			65.10	15.20	0.92	0.10	6.05	0.00	0.07	3.84	2.78	0.54
37541	NCD	Ld	65.10	20.01	0.72	0.05	2.24	0.04	0.02	7.46	0.70	0.14
120794			64.80	10.90	0.57	0.13	15.60	0.14	0.05	1.04	2.46	0.04
37222	NCD	Ld	64.80	16.40	0.56	0.16	5.37	0.12	2.27	2.08	1.00	4.85
401032		GREYWACKE	64.76	14.22	0.88	0.23	2.31	0.05	0.12	0.88	3.08	2.65
35057	NCF	Vpm	64.60	15.99	0.41	0.08	4.19	0.11	2.50	2.94	1.06	3.05
401027		LAVA	64.18	14.72	0.63	0.25	3.39	0.07	0.15	4.17	2.81	2.27
31483	CVC	Ln	64.10	15.99	0.51	0.12	7.43	0.06	0.03	3.78	2.28	1.04
401142		SILTSTONE	63.95	16.12	0.81	0.01	6.03	0.03	0.01	3.21	1.60	0.31
75836	?	?	63.75	10.74	0.29	0.20	1.70	0.09	9.56	0.27	0.34	5.73
401147		SHALE	63.72	14.43	0.63	0.01	3.39	0.05	0.01	3.43	4.59	1.01
401088	?	Sw	63.65	17.70	0.50	0.09	2.19	0.02	0.23	1.69	1.41	3.15
37468	NCD	Ld	63.60	14.79	0.47	0.13	4.17	0.11	3.58	1.94	0.80	4.81
31584.2		?	63.60	19.36	0.71	0.06	4.25	0.04	0.03	2.53	2.44	0.18
75871	NCS	Lba	63.51	16.58	0.76	0.22	6.11	0.09	1.99	2.69	1.26	3.65
401070		TUFF	63.33	14.88	0.92	0.18	1.14	0.12	1.74	2.86	2.40	3.80

401093	?	TUFF	63.11	15.73	0.73	0.03	2.15	0.15	0.81	1.75	2.18	7.61
401026		LAVA	63.09	15.50	0.73	0.25	3.52	0.03	0.05	4.03	2.70	0.87
401083	AA	Ln	62.90	17.45	0.62	0.34	2.23	0.07	0.07	2.16	4.50	0.31
31491	AA	Ln	62.60	15.10	0.42	0.18	6.60	0.10	2.51	2.45	3.36	4.63
75852	AA	Ln	62.57	15.33	0.41	0.21	6.71	0.08	2.30	2.64	2.94	5.54
401033		GREYWACKE	62.50	15.51	0.98	0.28	1.20	0.05	0.28	2.05	3.74	2.82
401092	?	TUFF	62.31	16.32	0.62	0.05	1.89	0.10	1.41	1.27	2.25	8.26
401143		SHALE	62.25	16.84	0.50	0.01	2.07	0.02	0.03	3.70	3.79	0.86
120718			61.70	17.10	0.81	0.07	5.50	0.02	0.02	4.32	3.84	0.27
401082	NCD	Ld	61.63	16.57	0.55	0.37	4.30	0.07	<0.01	2.27	4.11	0.83
31497	AA	Ln	61.30	18.01	0.56	0.25	5.90	0.10	0.83	5.10	1.67	1.25
75828	AA	Ln	61.16	15.04	0.42	0.20	6.79	0.11	3.54	2.99	3.60	3.78
401087	AA	Ln	60.88	14.35	0.52	0.20	2.38	0.12	3.02	2.25	3.56	5.71
401036		SILTSTONE	60.79	11.52	0.50	0.36	13.10	0.07	0.23	0.51	7.09	0.07
401085	AA	Ln	60.54	13.56	0.40	0.23	2.67	0.10	6.86	1.83	4.46	2.69
401084	AA	Ln	60.34	13.56	0.36	0.31	2.34	0.10	6.67	1.87	3.99	1.54
75870	AA	Ln	60.02	15.98	0.53	0.23	7.30	0.13	2.14	1.84	3.76	6.66
30195			60.00	15.38	0.76	0.12	7.26	0.11	1.99	1.22	4.29	5.42
120802	AA	Ln	59.90	15.60	0.57	0.14	7.05	0.10	1.60	2.40	3.44	1.43
401150		MUDSTONE	59.63	17.57	0.54	0.01	2.23	0.01	0.03	3.77	4.44	1.25
120793			59.60	15.80	0.82	0.11	8.95	0.10	2.34	3.10	3.50	1.35
75834	NCS	Lba	59.53	17.98	0.81	0.22	8.73	0.01	0.33	2.50	1.42	3.58
120801	AA	Ln	59.40	14.00	0.50	0.32	7.00	0.16	4.46	0.78	4.16	3.02
120784			59.00	15.80	0.52	0.06	6.70	0.04	0.18	5.20	6.40	0.54
120800			58.80	14.30	0.75	0.11	8.20	0.09	1.60	2.42	5.00	2.90
75869	AA	Ln	58.71	16.77	0.46	0.28	6.80	0.08	3.29	1.08	3.75	6.75
120795			58.40	16.00	0.87	0.06	9.70	0.10	1.29	2.00	5.55	0.43
401035		SILTSTONE	58.25	12.98	0.43	0.20	9.39	0.10	0.55	2.04	9.21	0.47
401145		MUDSTONE	57.97	18.90	0.68	0.01	7.34	0.05	0.01	3.70	2.50	0.30
31687.1			57.90	17.45	0.88	0.11	10.87	0.13	0.10	2.40	2.15	1.33
120804	?	?	57.60	15.40	0.49	0.16	8.15	0.11	3.66	2.66	3.08	1.81
37223	NCD	Ld	57.40	16.20	0.58	0.13	6.90	2.61	0.62	7.38	0.64	0.06
75868	AA	Ln	56.96	17.25	0.60	0.54	7.23	0.08	3.43	2.48	4.28	4.75
35066	WSF	Sbsh	56.50	22.90	0.70	0.17	4.29	0.04	0.15	5.04	2.61	0.93
120570			55.10	17.00	0.86	0.09	8.40	0.02	0.02	3.50	7.10	0.56
401086	AA	Ln	54.95	14.89	0.58	0.34	2.18	0.10	6.98	0.62	4.69	5.26
120791			54.50	14.40	0.40	0.05	8.90	0.08	0.45	0.26	13.80	0.31
37141	NCS	Lba	54.40	20.26	0.92	0.15	11.90	0.12	0.26	3.14	2.01	2.20
401090	?	Sw	53.50	15.15	1.23	0.05	4.33	0.20	3.30	0.69	4.65	6.30
35100	CVC	Lba	53.30	17.34	0.72	0.08	9.94	0.17	2.42	1.14	4.65	4.17
37220	AA	Ln	53.10	17.07	0.53	0.21	7.39	0.74	3.66	0.65	4.31	6.27
401148		SHALE	52.95	18.64	0.61	0.01	2.44	0.03	0.15	4.11	7.13	0.81
120803	?	?	52.90	16.40	0.60	0.20	10.20	0.18	3.36	0.15	4.66	5.45
35764	HFW	Ln	52.80	21.52		0.10	9.31	0.09	0.08	3.33	0.50	3.35
401149		SHALE	52.54	17.48	0.62	0.01	2.79	0.07	1.29	4.21	6.96	0.87
37113	CVC	2	52.00	21.60	0.72	0.15	5.65	0.09	2.50	5.07	4.13	1.39
37186	NCF	Lba	51.10	15.34	0.69	0.09	8.96	0.20	6.47	0.82	4.44	5.08
120798			50.30	15.90	1.53	0.17	13.20	0.18	3.04	1.34	4.16	4.20
37159	NCF	Lba	49.90	15.51	0.76	0.06	11.52	0.19	5.73	1.69	3.82	2.46
75864	TG	?	46.87	18.15	0.58	0.10	13.27	0.33	0.40	4.46	9.07	2.14
31686.2			45.30	16.60	1.37	0.35	22.56	0.14	0.04	3.84	0.65	0.16

SAMPLE	formation	lithology	Ti:Zr	SiO2	Al2O3	P2O5	Fe2O3	MnO	CaO	MgO	Na2O
401028		TUFF	210.0	67.80	14.89	0.21	2.78	0.10	0.17	1.37	3.34
120798			95.6	50.30	15.90	0.17	13.20	0.18	3.04	4.16	4.20
401090	?	Sw	64.2	53.50	15.15	0.05	4.33	0.20	3.30	4.65	6.30
31686.2			54.8	45.30	16.60	0.35	22.56	0.14	0.04	0.65	0.16
37159	NCF	Lba	53.6	49.90	15.51	0.06	11.52	0.19	5.73	3.82	2.46
75834	NCS	Lba	51.2	59.53	17.98	0.22	8.73	0.01	0.33	1.42	3.58
35100	CVC	Lba	48.0	53.30	17.34	0.08	9.94	0.17	2.42	4.65	4.17
37186	NCF	Lba	47.0	51.10	15.34	0.09	8.96	0.20	6.47	4.44	5.08
37141	NCS	Lba	46.4	54.40	20.26	0.15	11.90	0.12	0.26	2.01	2.20
120533		?	45.9	68.10	10.80	0.08	8.40	0.05	0.07	3.30	0.78
75871	NCS	Lba	45.1	63.51	16.58	0.22	6.11	0.09	1.99	1.26	3.65
31687.1			40.6	57.90	17.45	0.11	10.87	0.13	0.10	2.15	1.33
35075	WSF	Sbsh	39.4	69.30	13.83	0.04	3.71	0.02	0.01	2.20	0.10
401036		SILTSTONE	36.1	60.79	11.52	0.36	13.10	0.07	0.23	7.09	0.07
401155		GREYWACKE	35.4	71.13	9.48	0.02	2.17	0.05	0.64	3.26	1.46
120567			34.5	65.10	15.20	0.10	6.05	0.00	0.07	2.78	0.54
120803	?	?	34.3	52.90	16.40	0.20	10.20	0.18	3.36	4.66	5.45
120565			32.2	69.50	12.90	0.14	7.05	0.00	0.10	2.38	0.12
31688.1			31.3	65.60	12.54	0.11	6.50	0.19	2.46	1.22	1.39
35068	WSF	Sbsh	27.9	73.90	13.64	0.02	2.36	0.02	0.01	0.97	0.16
120538		?	27.9	70.70	12.30	0.07	5.90	0.04	0.13	2.60	1.95
120804	?	?	26.7	57.60	15.40	0.16	8.15	0.11	3.66	3.08	1.81
120791			26.1	54.50	14.40	0.05	8.90	0.08	0.45	13.80	0.31
30195			25.3	60.00	15.38	0.12	7.26	0.11	1.99	4.29	5.42
120544		?	25.0	68.60	14.00	0.06	4.24	0.01	0.02	2.80	0.46
120795			24.9	58.40	16.00	0.06	9.70	0.10	1.29	5.55	0.43
120793			24.6	59.60	15.80	0.11	8.95	0.10	2.34	3.50	1.35
120800			24.3	58.80	14.30	0.11	8.20	0.09	1.60	5.00	2.90
401070		TUFF	24.0	63.33	14.88	0.18	1.14	0.12	1.74	2.40	3.80
120532		?	23.7	71.20	11.30	0.08	4.58	0.01	0.07	2.80	0.92
31497	AA	Ln	23.7	61.30	18.01	0.25	5.90	0.10	0.83	1.67	1.25
120570			23.5	55.10	17.00	0.09	8.40	0.02	0.02	7.10	0.56
401086	AA	Ln	23.2	54.95	14.89	0.34	2.18	0.10	6.98	4.69	5.26
37220	AA	Ln	22.2	53.10	17.07	0.21	7.39	0.74	3.66	4.31	6.27
120718			22.1	61.70	17.10	0.07	5.50	0.02	0.02	3.84	0.27
120735		?	21.9	71.90	14.80	0.05	2.90	0.03	0.00	1.30	0.05
401093	?	TUFF	21.9	63.11	15.73	0.03	2.15	0.15	0.81	2.18	7.61
401085	AA	Ln	21.8	60.54	13.56	0.23	2.67	0.10	6.86	4.46	2.69
401154		GREYWACKE	21.5	67.19	11.98	0.02	7.72	0.07	0.07	1.70	0.33
401148		SHALE	21.5	52.95	18.64	0.01	2.44	0.03	0.15	7.13	0.81
401087	AA	Ln	21.5	60.88	14.35	0.20	2.38	0.12	3.02	3.56	5.71
120794			21.4	64.80	10.90	0.13	15.60	0.14	0.05	2.46	0.04
31483	CVC	Ln	21.2	64.10	15.99	0.12	7.43	0.06	0.03	2.28	1.04
401032		GREYWACKE	21.1	64.76	14.22	0.23	2.31	0.05	0.12	3.08	2.65
120569			21.0	66.20	13.90	0.08	6.50	0.04	0.02	3.42	0.17
120802	AA	Ln	20.7	59.90	15.60	0.14	7.05	0.10	1.60	3.44	1.43
401149		SHALE	20.7	52.54	17.48	0.01	2.79	0.07	1.29	6.96	0.87
31484	CVC	Ln	20.6	70.40	9.48	0.14	11.89	0.06	0.01	0.40	<0.05
401083	AA	Ln	19.6	62.90	17.45	0.34	2.23	0.07	0.07	4.50	0.31
35070	WSF	Sbsh	19.5	73.20	12.40	0.06	3.94	0.01	0.01	1.05	1.07
401145		MUDSTONE	19.4	57.97	18.90	0.01	7.34	0.05	0.01	2.50	0.30
75828	AA	Ln	19.4	61.16	15.04	0.20	6.79	0.11	3.54	3.60	3.78
120738			18.9	73.10	12.90	0.04	4.06	0.02	0.06	1.45	0.54
75852	AA	Ln	18.8	62.57	15.33	0.21	6.71	0.08	2.30	2.94	5.54
75868	AA	Ln	18.8	56.96	17.25	0.54	7.23	0.08	3.43	4.28	4.75
120801	AA	Ln	18.8	59.40	14.00	0.32	7.00	0.16	4.46	4.16	3.02
401088	?	Sw	18.8	63.65	17.70	0.09	2.19	0.02	0.23	1.41	3.15
75870	AA	Ln	18.5	60.02	15.98	0.23	7.30	0.13	2.14	3.76	6.66
31491	AA	Ln	18.4	62.60	15.10	0.18	6.60	0.10	2.51	3.36	4.63
35066	WSF	Sbsh	18.2	56.50	22.90	0.17	4.29	0.04	0.15	2.61	0.93
75869	AA	Ln	18.0	58.71	16.77	0.28	6.80	0.08	3.29	3.75	6.75

401084	AA	Ln	18.0	60.34	13.56	0.31	2.34	0.10	6.67	3.99	1.54
401150		MUDSTONE	17.5	59.63	17.57	0.01	2.23	0.01	0.03	4.44	1.25
120539			17.5	73.20	11.20	0.04	4.42	0.03	0.24	2.04	1.35
401151		ARGILLITE	16.5	66.41	14.18	0.01	1.97	0.02	0.01	3.64	0.55
401027		LAVA	16.4	64.18	14.72	0.25	3.39	0.07	0.15	2.81	2.27
31496	CVC	Sst	16.3	69.50	11.96	0.08	4.76	0.07	1.86	1.59	2.11
120561			16.2	82.10	11.20	0.00	0.56	0.00	0.00	0.36	0.04
401142		SILTSTONE	16.2	63.95	16.12	0.01	6.03	0.03	0.01	1.60	0.31
37904	NCF	Vpm	16.1	69.00	13.69	0.05	3.85	0.07	1.89	1.68	1.22
401094	?	Sbx	16.0	67.98	13.02	0.01	2.09	0.07	0.10	2.45	5.03
35012	CVC	Ld	15.8	73.90	15.03	0.11	2.51	0.04	0.10	0.47	0.05
401147		SHALE	15.7	63.72	14.43	0.01	3.39	0.05	0.01	4.59	1.01
37138	NCS	?	15.7	74.70	13.00	0.14	2.74	0.03	0.24	0.48	2.65
401026		LAVA	15.6	63.09	15.50	0.25	3.52	0.03	0.05	2.70	0.87
120566			15.6	71.40	14.80	0.06	3.34	0.03	0.22	0.60	2.66
401152		ARENITE	15.6	67.50	10.22	0.01	2.44	0.02	0.02	7.25	0.62
31499	CVC	?	15.6	67.30	15.15	0.14	5.44	0.05	0.23	1.73	2.18
35064	WSF	Sbsh	15.2	66.20	17.42	0.12	3.79	0.04	<0.01	1.84	0.19
75844	YRS		15.2	67.04	14.10	0.15	5.12	0.08	0.37	2.62	2.85
37905	NCD	Ld	15.2	66.50	13.74	0.13	4.74	0.07	2.01	0.83	1.80
401033		GREYWACKE	15.1	62.50	15.51	0.28	1.20	0.05	0.28	3.74	2.82
120541			15.0	68.40	15.20	0.04	3.58	0.02	0.05	1.92	0.77
120788			14.9	79.80	11.50	0.01	0.92	0.00	0.00	0.41	1.30
401071		LAVA	14.9	65.47	14.31	0.20	2.11	0.03	0.12	3.02	2.72
401096	?	TUFF	14.8	71.37	13.52	0.02	3.36	0.05	0.05	1.11	0.43
31500	CVC	Ld	14.7	72.10	12.89	0.04	3.93	0.01	0.08	0.37	4.24
37112	CVC	3	14.5	69.50	14.38	0.09	3.43	0.05	0.35	1.25	2.24
401072		LAVA	14.4	68.11	14.51	0.20	1.56	0.01	0.02	2.60	3.32
401144		SHALE	14.4	66.44	13.64	0.01	2.73	0.01	0.01	3.75	0.91
31584.2		?	14.2	63.60	19.36	0.06	4.25	0.04	0.03	2.44	0.18
120732	?	3	14.2	66.70	15.90	0.09	3.98	0.03	0.47	1.11	1.94
35039	CVC	Ld	14.1	69.70	14.39	0.14	2.92	0.03	0.18	0.94	1.40
35084	AA	Ld	14.0	66.30	14.67	0.15	8.44	0.30	0.26	1.13	0.15
37178	NCD	Ld	14.0	70.80	14.70	0.14	4.01	0.01	0.14	0.73	2.70
401092	?	TUFF	13.8	62.31	16.32	0.05	1.89	0.10	1.41	2.25	8.26
401082	NCD	Ld	13.8	61.63	16.57	0.37	4.30	0.07	<0.01	4.11	0.83
37197	NCF	Vpm	13.7	69.60	15.06	0.10	4.27	0.01	0.09	0.93	1.72
35042	CVC	Scong	13.7	70.30	11.83	0.14	5.13	0.02	0.19	0.58	1.40
75874	NCF	Vpm	13.7	75.32	12.89	0.13	1.87	0.03	0.58	0.41	5.14
120543		3	13.6	70.00	15.10	0.05	3.28	0.07	0.65	1.13	3.80
401081	?	TUFF	13.6	67.55	13.77	0.15	1.16	0.01	0.15	2.48	0.68
35037	CVC	Ld	13.6	73.10	12.16	0.08	4.78	0.02	0.08	0.51	2.38
75853	CVC	Ld	13.5	65.36	14.49	0.13	5.81	0.08	3.13	0.77	3.76
37541	NCD	Ld	13.5	65.10	20.01	0.05	2.24	0.04	0.02	0.70	0.14
120737			13.5	66.30	15.70	0.08	4.82	0.08	2.10	1.04	4.64
31490	NCS	Ld	13.5	69.70	14.60	0.13	5.60	0.06	1.10	0.77	2.68
75873	NCS	Ld	13.4	69.16	14.26	0.13	6.16	0.08	1.02	1.08	4.70
120537		3	13.4	70.10	14.50	0.08	3.18	0.04	1.58	1.11	2.22
37221	AA	Ld	13.3	66.70	13.33	0.13	2.75	0.20	4.90	0.45	0.19
401075		PHYLLITE	13.3	69.80	16.54	0.11	3.22	0.01	<0.01	1.03	0.12
120560			13.3	66.80	18.80	0.02	3.00	0.00	0.02	0.63	0.10
37223	NCD	Ld	13.2	57.40	16.20	0.13	6.90	2.61	0.62	0.64	0.06
35076	CVC	Ld	13.2	70.70	7.55	0.07	14.97	0.88	0.05	1.94	<0.05
37160	NCF	Vpm	13.2	71.30	13.37	0.05	3.15	0.08	1.96	1.24	1.71
75848	NCD	Ld	13.2	67.96	14.91	0.20	4.00	0.06	0.44	1.33	5.64
120562			13.1	78.90	11.70	0.01	1.10	0.00	0.07	0.53	1.75
35011	CVC	Ld	13.1	72.40	15.91	0.09	2.26	0.02	0.06	0.50	0.07
120559		4	13.0	82.20	10.20	0.02	0.53	0.00	0.09	0.35	0.52
35041	CVC	Ld	13.0	66.50	16.62	0.16	4.44	0.08	0.35	1.81	5.29
37222	NCD	Ld	13.0	64.80	16.40	0.16	5.37	0.12	2.27	1.00	4.85
120536		3	13.0	70.60	15.50	0.04	3.84	0.02	0.06	0.73	0.26
35046	NCD	Ld	13.0	65.60	13.76	0.12	4.53	0.09	3.57	0.69	3.09
37224	NCD	Ld	12.9	66.40	12.98	0.12	9.06	0.29	1.38	0.87	2.57
216481.2	NCD	Ld	12.9	70.40	15.01	0.14	3.52	0.02	0.16	0.74	1.84
35087	NCD	Ld	12.9	65.80	13.39	0.13	7.02	0.35	2.49	0.80	1.92

35009	CVC	Ld	12.8	70.00	14.96	0.10	5.20	0.03	0.10	1.09	1.42
37468	NCD	Ld	12.6	63.60	14.79	0.13	4.17	0.11	3.58	0.80	4.81
31494	CVC	Ld	12.6	69.30	15.50	0.14	5.05	0.03	0.14	1.10	2.58
37462	CVC	3	12.6	66.00	15.47	0.11	4.21	0.06	1.26	1.58	5.70
75875	NCS	Ld	12.4	76.15	11.42	0.05	4.09	0.05	0.28	0.82	3.79
37115	CVC	3	12.4	65.80	16.16	0.10	3.76	0.07	2.17	2.49	1.88
37464	CVC	2	12.3	68.80	14.05	0.11	3.44	0.09	3.53	1.08	2.93
120733	?	4	12.3	72.60	13.60	0.04	2.98	0.04	0.69	0.82	3.58
37110	CVC	2	12.3	69.50	15.28	0.11	4.02	0.06	1.53	1.22	1.76
120739			12.2	67.30	16.50	0.09	4.56	0.05	0.91	0.71	2.50
37118	CVC	2	12.1	68.90	15.87	0.08	2.81	0.04	1.31	1.65	0.88
120731	?	4	12.0	78.00	10.30	0.02	2.02	0.01	0.47	0.51	0.98
401143		SHALE	12.0	62.25	16.84	0.01	2.07	0.02	0.03	3.79	0.86
37463	CVC	2	11.9	70.80	13.90	0.09	3.15	0.07	1.73	1.06	5.17
37116	CVC	4	11.9	73.10	13.17	0.08	3.01	0.04	0.86	0.65	3.32
37111	CVC	2	11.9	69.60	15.26	0.11	3.73	0.07	0.69	1.05	5.26
35073	CVC	2	11.9	72.40	13.58	0.08	2.53	0.04	2.25	1.08	1.99
401024		SILTSTONE	11.7	73.55	12.93	0.18	0.45	0.01	0.07	0.89	4.38
37113	CVC	2	11.7	52.00	21.60	0.15	5.65	0.09	2.50	4.13	1.39
120792			11.6	79.10	12.40	0.01	1.46	0.00	0.03	0.94	0.06
120789			11.6	72.80	15.50	0.02	0.72	0.00	0.02	0.26	2.12
35071	CVC	2	11.6	70.50	14.74	0.10	3.53	0.08	0.69	1.02	5.96
75864	TG	?	11.5	46.87	18.15	0.10	13.27	0.33	0.40	9.07	2.14
75872	NCS	Ld	11.5	66.74	10.27	0.10	1.98	0.12	7.50	0.43	4.10
401080	?	TUFF	11.4	71.81	14.61	0.10	1.13	0.11	0.15	0.72	0.14
401025		TUFF	11.4	76.54	11.85	0.14	1.11	0.01	0.05	0.99	0.20
35077	CVC	Ld	11.3	74.70	7.40	0.06	11.59	0.25	0.07	0.90	0.09
120786			11.2	72.50	12.40	0.07	4.44	0.05	0.07	1.72	1.86
35069	CVC	2	11.2	71.40	14.09	0.06	3.19	0.07	0.58	1.07	4.74
120548		4	11.1	73.10	13.10	0.07	2.34	0.02	0.12	0.53	2.04
75876	NCS	?	11.1	79.46	12.28	0.08	0.30	0.00	0.40	0.00	5.40
401095	?	Sw	10.8	67.90	16.06	0.03	1.56	0.03	0.27	0.93	9.02
37156	CVC	Vpm	10.5	79.70	10.10	0.06	2.96	0.03	0.10	0.47	2.05
120540			10.5	74.60	12.70	0.04	2.58	0.02	0.09	0.67	2.40
401077		TUFF	10.4	75.02	13.67	0.10	1.51	0.49	0.05	0.37	0.56
120784			10.4	59.00	15.80	0.06	6.70	0.04	0.18	6.40	0.54
401029		SILTSTONE	10.2	73.81	12.77	0.20	1.93	0.05	0.15	0.89	3.30
37144	NCS	?	10.1	74.60	11.57	0.08	1.31	0.04	3.05	0.35	2.09
120535		1	10.1	72.50	13.90	0.05	2.60	0.04	0.72	0.96	2.92
31492	NCS	Vsst	10.0	72.00	13.20	0.06	4.15	0.07	0.97	1.15	5.75
401030		SHALE	10.0	74.80	13.75	0.15	1.77	0.07	0.02	0.98	0.18
120797			9.9	78.10	11.20	0.00	1.93	0.03	0.27	0.57	2.92
37145	NCS	Vpm	9.6	79.10	12.33	0.08	0.87	0.01	0.42	0.14	5.06
401069		LAVA	9.4	69.27	14.06	0.17	1.81	0.09	1.67	0.56	3.28
401160		1	9.3	71.68	13.97	0.00	2.71	0.02	0.03	0.70	0.93
401078		TUFF	9.3	75.83	13.86	0.05	0.91	0.51	0.20	0.50	0.09
401159		Vsst	9.3	75.41	13.17	0.00	1.34	0.01	0.07	0.73	3.50
120534		1	9.3	65.40	19.30	0.02	2.34	0.02	0.02	0.70	0.04
401089	?	TUFF	9.2	75.08	13.44	0.05	0.25	0.05	0.14	0.99	5.63
35043	CVC	Scong	9.2	74.90	10.90	0.04	3.25	0.14	1.39	0.95	2.78
120799			9.1	76.70	12.00	0.00	1.45	0.00	0.05	0.76	1.04
401034		TUFF	9.1	76.66	12.15	0.17	2.22	0.02	0.20	0.76	1.92
120547		1	9.0	73.50	13.60	0.03	2.60	0.05	2.12	0.68	1.36
120796			9.0	78.60	12.40	0.03	1.52	0.00	0.07	0.75	0.94
401098	?	Scong	8.9	91.25	3.94	0.01	0.42	0.01	0.01	0.51	0.27
401031		SHALE	8.9	69.76	9.35	0.21	0.67	0.27	3.90	1.48	0.88
120736		?	8.9	74.40	13.30	0.03	2.48	0.06	1.13	0.42	3.48
401156		L	8.8	72.02	13.39	0.01	0.69	0.01	0.37	0.93	3.56
37119	CVC	1	8.8	73.20	15.18	0.07	1.89	0.01	0.06	0.53	1.82
75836	?	?	8.7	63.75	10.74	0.20	1.70	0.09	9.56	0.34	5.73
120785			8.7	77.60	11.40	0.01	1.42	0.00	0.03	0.43	2.62
401068		SILTSTONE	8.6	75.19	11.15	0.10	3.67	0.01	0.31	0.86	1.77
37152	CVC	?	8.6	74.20	14.27	0.04	2.66	0.02	0.04	0.97	0.88
35057	NCF	Vpm	8.5	64.60	15.99	0.08	4.19	0.11	2.50	1.06	3.05
401079		TUFF	8.5	75.41	12.38	0.05	0.57	<0.01	<0.01	0.52	2.45

75845	YRS		8.4	77.69	11.60	0.05	0.63	0.01	0.05	0.29	2.95
120787			8.4	70.60	15.00	0.03	2.70	0.06	0.14	0.48	3.84
401074		TUFF	8.4	76.00	13.69	0.00	0.58	0.01	0.09	0.91	1.90
120564			8.4	77.26	11.40	0.02	1.69	0.00	0.07	0.35	2.98
401099	?	Msht	8.3	81.83	9.14	0.01	1.20	0.01	0.01	1.04	0.37
401100	?	Msht	8.3	86.08	6.73	0.01	0.71	0.01	0.07	0.97	0.31
401097	?	Sbx	8.1	74.51	12.78	0.01	0.86	0.03	0.07	0.82	3.90
120545		1	8.1	73.70	12.80	0.01	2.08	0.04	0.36	0.83	2.80
120546		1	8.0	75.00	13.00	0.02	1.88	0.03	0.90	0.25	3.30
37155	CVC	Vpm	7.9	74.30	11.35	0.04	6.35	0.01	0.01	0.65	0.36
35010	NCF	Vpm	7.7	74.80	13.77	0.02	2.45	0.02	0.02	0.84	1.87
120542			7.6	70.60	14.40	0.03	3.14	0.04	0.14	0.77	1.49
32149	NCF	Vpm	7.6	75.20	13.47	0.03	2.56	0.01	0.04	0.77	0.94
37151	CVC	?	7.6	77.90	12.34	0.02	1.54	<0.01	0.02	0.61	1.60
37114	CVC	?	7.5	73.30	13.68	0.07	2.23	0.04	0.99	1.14	2.17
35049	NCF	Vpm	7.5	74.90	11.59	0.06	2.87	0.06	0.89	0.79	2.45
37146	NCS	Vpm	7.5	70.00	11.93	0.13	2.19	0.07	4.94	0.39	5.97
120568			7.4	74.20	13.30	0.00	1.86	0.03	0.06	0.43	1.67
401066		TUFF	7.3	74.12	12.28	0.15	0.51	0.03	0.57	0.76	3.20
37150	CVC	?	7.2	77.50	13.04	0.03	1.25	0.01	0.03	0.66	1.21
120563			7.1	77.60	12.40	0.00	1.33	0.00	0.05	0.37	3.42
37192	NCF	Vpm	7.1	70.60	13.29	0.07	3.39	0.06	0.66	1.15	4.87
37153	NCF	Vpm	7.1	75.90	13.77	0.02	2.07	0.01	0.02	0.84	2.18
120734			7.0	78.30	12.10	0.02	1.75	0.04	0.15	0.46	3.30
35099	NCF	Va	7.0	71.30	14.89	0.06	2.80	0.05	0.86	1.21	1.84
30985.2			6.9	72.00	14.63	0.04	2.44	0.05	0.05	0.26	4.28
75847	YRS		6.9	69.92	15.01		4.51	0.01	0.01	2.26	0.37
37187	NCF	Vpm	6.9	70.00	12.94	0.05	3.06	0.08	2.91	0.71	5.82
31488	CVC	Vpm	6.9	74.80	13.34	0.05	1.93	0.04	0.49	0.50	5.98
75866	TG	Lr	6.7	87.68	6.18		0.69	0.02	0.05	0.36	3.01
401035		SILTSTONE	6.6	58.25	12.98	0.20	9.39	0.10	0.55	9.21	0.47
37117	WSF	5	6.6	78.30	10.93	0.01	2.04	0.02	0.01	0.23	0.35
401064		TUFF	6.6	76.51	12.61	0.12	1.47	0.09	<0.01	0.36	3.94
401037		TUFF	6.4	76.30	12.85	0.02	0.51	<0.01	0.28	0.57	3.75
401065		TUFF	6.0	78.40	11.21	0.10	1.41	0.01	<0.01	0.44	3.27
37219	TG	Lr	5.8	73.80	15.38	0.01	0.62	0.03	0.31	0.12	8.70
401091	?	Sbx	5.8	71.09	14.68	0.01	0.91	0.03	0.25	0.91	8.27
75867	TG	Lr	5.6	88.11	5.94		0.74	0.03	0.13	0.32	1.87
75849	TG	Lr	5.5	77.77	11.69	0.08	2.24	0.02	0.07	0.46	4.69
75850	TG	Lr	5.4	78.27	11.18	0.01	1.56	0.02	0.22	0.17	3.77
401153		TUFF	5.4	74.81	12.15	0.01	2.23	0.03	0.09	0.49	3.53
120531		5	5.1	78.80	11.10	0.00	0.71	0.00	0.05	0.00	4.56
401067		TUFF	5.1	79.16	9.68	0.11	0.25	0.05	1.86	0.23	2.59
75851	TG	Lr	5.0	78.56	11.89	0.06	0.83	0.00	0.03	0.13	4.44
75865	TG	Lr	4.9	69.18	16.81		1.53	0.01	0.25	0.30	8.39
31495	CVC	Vs1t	4.8	77.30	10.86	0.03	3.05	0.07	1.19	1.03	0.56
401076		TUFF	4.7	67.33	14.94	0.09	1.61	0.07	2.84	0.64	2.76
401158		L	3.8	76.41	10.93	0.00	0.83	0.03	0.50	0.43	2.97
401073		LAVA	3.6	76.44	13.15	0.10	1.03	0.01	<0.01	0.44	2.25
401146		TUFF	3.3	74.48	12.57	0.01	1.09	0.01	0.12	1.12	3.66
35764	HFW	Ln		52.80	21.52	0.10	9.31	0.09	0.08	0.50	3.35

samples sorted on Alteration Index

(values in %)

SAMPLE	formation	lithology	Al	SiO2	Al2O3	P2O5	Fe2O3	MnO	CaO	MgO	Na2O
120735		?	99	71.90	14.80	0.05	2.90	0.03	0.00	1.30	0.05
120534		1	99	65.40	19.30	0.02	2.34	0.02	0.02	0.70	0.04
31484	CVC	Ln	99	70.40	9.48	0.14	11.89	0.06	0.01	0.40	<0.05
120561			98	82.10	11.20	0.00	0.56	0.00	0.00	0.36	0.04
120792			98	79.10	12.40	0.01	1.46	0.00	0.03	0.94	0.06
37541	NCD	Ld	98	65.10	20.01	0.05	2.24	0.04	0.02	0.70	0.14
35075	WSF	Sbsh	98	69.30	13.83	0.04	3.71	0.02	0.01	2.20	0.10
401075		PHYLLITE	98	69.80	16.54	0.11	3.22	0.01	<0.01	1.03	0.12
35011	CVC	Ld	98	72.40	15.91	0.09	2.26	0.02	0.06	0.50	0.07
120794			97	64.80	10.90	0.13	15.60	0.14	0.05	2.46	0.04
35012	CVC	Ld	97	73.90	15.03	0.11	2.51	0.04	0.10	0.47	0.05
120569			97	66.20	13.90	0.08	6.50	0.04	0.02	3.42	0.17
35064	WSF	Sbsh	97	66.20	17.42	0.12	3.79	0.04	<0.01	1.84	0.19
401030		SHALE	97	74.80	13.75	0.15	1.77	0.07	0.02	0.98	0.18
120560			97	66.80	18.80	0.02	3.00	0.00	0.02	0.63	0.10
35068	WSF	Sbsh	97	73.90	13.64	0.02	2.36	0.02	0.01	0.97	0.16
120718			97	61.70	17.10	0.07	5.50	0.02	0.02	3.84	0.27
35076	CVC	Ld	96	70.70	7.55	0.07	14.97	0.88	0.05	1.94	<0.05
401036		SILTSTONE	96	60.79	11.52	0.36	13.10	0.07	0.23	7.09	0.07
120565			96	69.50	12.90	0.14	7.05	0.00	0.10	2.38	0.12
31584.2		?	96	63.60	19.36	0.06	4.25	0.04	0.03	2.44	0.18
31686.2			96	45.30	16.60	0.35	22.56	0.14	0.04	0.65	0.16
401145		MUDSTONE	95	57.97	18.90	0.01	7.34	0.05	0.01	2.50	0.30
401025		TUFF	95	76.54	11.85	0.14	1.11	0.01	0.05	0.99	0.20
37117	WSF	5	95	78.30	10.93	0.01	2.04	0.02	0.01	0.23	0.35
120791			95	54.50	14.40	0.05	8.90	0.08	0.45	13.80	0.31
120570			95	55.10	17.00	0.09	8.40	0.02	0.02	7.10	0.56
401083	AA	Ln	95	62.90	17.45	0.34	2.23	0.07	0.07	4.50	0.31
401080	?	TUFF	94	71.81	14.61	0.10	1.13	0.11	0.15	0.72	0.14
75847	YRS		94	69.92	15.01		4.51	0.01	0.01	2.26	0.37
120784			94	59.00	15.80	0.06	6.70	0.04	0.18	6.40	0.54
401142		SILTSTONE	94	63.95	16.12	0.01	6.03	0.03	0.01	1.60	0.31
401096	?	TUFF	93	71.37	13.52	0.02	3.36	0.05	0.05	1.11	0.43
401151		ARGILLITE	93	66.41	14.18	0.01	1.97	0.02	0.01	3.64	0.55
120536		3	93	70.60	15.50	0.04	3.84	0.02	0.06	0.73	0.26
401152		ARENITE	93	67.50	10.22	0.01	2.44	0.02	0.02	7.25	0.62
120544		?	93	68.60	14.00	0.06	4.24	0.01	0.02	2.80	0.46
37155	CVC	Vpm	93	74.30	11.35	0.04	6.35	0.01	0.01	0.65	0.36
401154		GREYWACKE	92	67.19	11.98	0.02	7.72	0.07	0.07	1.70	0.33
35084	AA	Ld	92	66.30	14.67	0.15	8.44	0.30	0.26	1.13	0.15
37223	NCD	Ld	92	57.40	16.20	0.13	6.90	2.61	0.62	0.64	0.06
401078		TUFF	92	75.83	13.86	0.05	0.91	0.51	0.20	0.50	0.09
401148		SHALE	92	52.95	18.64	0.01	2.44	0.03	0.15	7.13	0.81
401035		SILTSTONE	92	58.25	12.98	0.20	9.39	0.10	0.55	9.21	0.47
120567			92	65.10	15.20	0.10	6.05	0.00	0.07	2.78	0.54
35077	CVC	Ld	91	74.70	7.40	0.06	11.59	0.25	0.07	0.90	0.09
401099	?	Msht	91	81.83	9.14	0.01	1.20	0.01	0.01	1.04	0.37
120738			90	73.10	12.90	0.04	4.06	0.02	0.06	1.45	0.54
401143		SHALE	89	62.25	16.84	0.01	2.07	0.02	0.03	3.79	0.86
401147		SHALE	89	63.72	14.43	0.01	3.39	0.05	0.01	4.59	1.01
401082	NCD	Ld	88	61.63	16.57	0.37	4.30	0.07	<0.01	4.11	0.83
401026		LAVA	88	63.09	15.50	0.25	3.52	0.03	0.05	2.70	0.87
401100	?	Msht	88	86.08	6.73	0.01	0.71	0.01	0.07	0.97	0.31
35066	WSF	Sbsh	88	56.50	22.90	0.17	4.29	0.04	0.15	2.61	0.93
401081	?	TUFF	87	67.55	13.77	0.15	1.16	0.01	0.15	2.48	0.68
401144		SHALE	87	66.44	13.64	0.01	2.73	0.01	0.01	3.75	0.91
120541			87	68.40	15.20	0.04	3.58	0.02	0.05	1.92	0.77
401150		MUDSTONE	87	59.63	17.57	0.01	2.23	0.01	0.03	4.44	1.25
120532		?	86	71.20	11.30	0.08	4.58	0.01	0.07	2.80	0.92
120533		?	85	68.10	10.80	0.08	8.40	0.05	0.07	3.30	0.78
401098	?	Scong	85	91.25	3.94	0.01	0.42	0.01	0.01	0.51	0.27

31483	CVC	Ln	85	64.10	15.99	0.12	7.43	0.06	0.03	2.28	1.04
401077		TUFF	85	75.02	13.67	0.10	1.51	0.49	0.05	0.37	0.56
75864	TG	?	84	46.87	18.15	0.10	13.27	0.33	0.40	9.07	2.14
37152	CVC	?	84	74.20	14.27	0.04	2.56	0.02	0.04	0.97	0.88
401149		SHALE	84	52.54	17.48	0.01	2.79	0.07	1.29	6.96	0.87
120559		4	83	82.20	10.20	0.02	0.53	0.00	0.09	0.35	0.52
32149	NCF	Vpm	83	75.20	13.47	0.03	2.56	0.01	0.04	0.77	0.94
120795			81	58.40	16.00	0.06	9.70	0.10	1.29	5.55	0.43
120796			81	78.60	12.40	0.03	1.52	0.00	0.07	0.75	0.94
120799			80	76.70	12.00	0.00	1.45	0.00	0.05	0.76	1.04
35039	CVC	Ld	79	69.70	14.39	0.14	2.92	0.03	0.18	0.94	1.40
37150	CVC	?	79	77.50	13.04	0.03	1.25	0.01	0.03	0.66	1.21
35070	WSF	Sbsh	78	73.20	12.40	0.06	3.94	0.01	0.01	1.05	1.07
401160		1	78	71.68	13.97	0.00	2.71	0.02	0.03	0.70	0.93
31497	AA	Ln	76	61.30	18.01	0.25	5.90	0.10	0.83	1.67	1.25
31687.1			76	57.90	17.45	0.11	10.87	0.13	0.10	2.15	1.33
35009	CVC	Ld	75	70.00	14.96	0.10	5.20	0.03	0.10	1.09	1.42
401027		LAVA	74	64.18	14.72	0.25	3.39	0.07	0.15	2.81	2.27
120542			74	70.60	14.40	0.03	3.14	0.04	0.14	0.77	1.49
37151	CVC	?	72	77.90	12.34	0.02	1.54	<0.01	0.02	0.61	1.60
120539			72	73.20	11.20	0.04	4.42	0.03	0.24	2.04	1.35
120788			72	79.80	11.50	0.01	0.92	0.00	0.00	0.41	1.30
401068		SILTSTONE	71	75.19	11.15	0.10	3.67	0.01	0.31	0.86	1.77
37197	NCF	Vpm	71	69.60	15.06	0.10	4.27	0.01	0.09	0.93	1.72
401071		LAVA	71	65.47	14.31	0.20	2.11	0.03	0.12	3.02	2.72
120548		4	71	73.10	13.10	0.07	2.34	0.02	0.12	0.53	2.04
37112	CVC	3	71	69.50	14.38	0.09	3.43	0.05	0.35	1.25	2.24
37113	CVC	2	70	52.00	21.60	0.15	5.65	0.09	2.50	4.13	1.39
37119	CVC	1	70	73.20	15.18	0.07	1.89	0.01	0.06	0.53	1.82
120538		?	70	70.70	12.30	0.07	5.90	0.04	0.13	2.60	1.95
216481.2	NCD	Ld	69	70.40	15.01	0.14	3.52	0.02	0.16	0.74	1.84
31495	CVC	VsIt	69	77.30	10.86	0.03	3.05	0.07	1.19	1.03	0.56
75844	YRS		69	67.04	14.10	0.15	5.12	0.08	0.37	2.62	2.85
120562			69	78.90	11.70	0.01	1.10	0.00	0.07	0.53	1.75
401155		GREYWACKE	69	71.13	9.48	0.02	2.17	0.05	0.64	3.26	1.46
120786			69	72.50	12.40	0.07	4.44	0.05	0.07	1.72	1.86
401074		TUFF	68	76.00	13.69	0.00	0.58	0.01	0.09	0.91	1.90
37141	NCS	Lba	68	54.40	20.26	0.15	11.90	0.12	0.26	2.01	2.20
120731	?	4	67	78.00	10.30	0.02	2.02	0.01	0.47	0.51	0.98
37118	CVC	2	66	68.90	15.87	0.08	2.81	0.04	1.31	1.65	0.88
120732	?	3	66	66.70	15.90	0.09	3.98	0.03	0.47	1.11	1.94
120802	AA	Ln	66	59.90	15.60	0.14	7.05	0.10	1.60	3.44	1.43
35042	CVC	Scong	66	70.30	11.83	0.14	5.13	0.02	0.19	0.58	1.40
401033		GREYWACKE	65	62.50	15.51	0.28	1.20	0.05	0.28	3.74	2.82
31499	CVC	?	65	67.30	15.15	0.14	5.44	0.05	0.23	1.73	2.18
120568			64	74.20	13.30	0.00	1.86	0.03	0.06	0.43	1.67
120793			64	59.60	15.80	0.11	8.95	0.10	2.34	3.50	1.35
401034		TUFF	64	76.66	12.15	0.17	2.22	0.02	0.20	0.76	1.92
35099	NCF	Va	63	71.30	14.89	0.06	2.80	0.05	0.86	1.21	1.84
37904	NCF	Vpm	62	69.00	13.69	0.05	3.85	0.07	1.89	1.68	1.22
120800			62	58.80	14.30	0.11	8.20	0.09	1.60	5.00	2.90
401072		LAVA	62	68.11	14.51	0.20	1.56	0.01	0.02	2.60	3.32
120789			62	72.80	15.50	0.02	0.72	0.00	0.02	0.26	2.12
401073		LAVA	62	76.44	13.15	0.10	1.03	0.01	<0.01	0.44	2.25
31494	CVC	Ld	61	69.30	15.50	0.14	5.05	0.03	0.14	1.10	2.58
37114	CVC	?	61	73.30	13.68	0.07	2.23	0.04	0.99	1.14	2.17
35010	NCF	Vpm	61	74.80	13.77	0.02	2.45	0.02	0.02	0.84	1.87
37178	NCD	Ld	60	70.80	14.70	0.14	4.01	0.01	0.14	0.73	2.70
401028		TUFF	59	67.80	14.89	0.21	2.78	0.10	0.17	1.37	3.34
401032		GREYWACKE	59	64.76	14.22	0.23	2.31	0.05	0.12	3.08	2.65
401079		TUFF	59	75.41	12.38	0.05	0.57	<0.01	<0.01	0.52	2.45
37153	NCF	Vpm	58	75.90	13.77	0.02	2.07	0.01	0.02	0.84	2.18
401029		SILTSTONE	58	73.81	12.77	0.20	1.93	0.05	0.15	0.89	3.30
35037	CVC	Ld	57	73.10	12.16	0.08	4.78	0.02	0.08	0.51	2.38
37115	CVC	3	56	65.80	16.16	0.10	3.76	0.07	2.17	2.49	1.88

37110	CVC	2	56	69.50	15.28	0.11	4.02	0.06	1.53	1.22	1.76
120785			55	77.60	11.40	0.01	1.42	0.00	0.03	0.43	2.62
120540			55	74.60	12.70	0.04	2.58	0.02	0.09	0.67	2.40
401158		L	55	76.41	10.93	0.00	0.83	0.03	0.50	0.43	2.97
37905	NCD	Ld	55	66.50	13.74	0.13	4.74	0.07	2.01	0.83	1.80
30985.2			54	72.00	14.63	0.04	2.44	0.05	0.05	0.26	4.28
401066		TUFF	54	74.12	12.28	0.15	0.51	0.03	0.57	0.76	3.20
120545		1	54	73.70	12.80	0.01	2.08	0.04	0.36	0.83	2.80
120547		1	54	73.50	13.60	0.03	2.60	0.05	2.12	0.68	1.36
35049	NCF	Vpm	54	74.90	11.59	0.06	2.87	0.06	0.89	0.79	2.45
37160	NCF	Vpm	54	71.30	13.37	0.05	3.15	0.08	1.96	1.24	1.71
401156		L	53	72.02	13.39	0.01	0.69	0.01	0.37	0.93	3.56
37156	CVC	Vpm	53	79.70	10.10	0.06	2.96	0.03	0.10	0.47	2.05
31496	CVC	SsIt	53	69.50	11.96	0.08	4.76	0.07	1.86	1.59	2.11
37116	CVC	4	53	73.10	13.17	0.08	3.01	0.04	0.86	0.65	3.32
35764	HFV	Ln	53	52.80	21.52	0.10	9.31	0.09	0.08	0.50	3.35
401146		TUFF	52	74.48	12.57	0.01	1.09	0.01	0.12	1.12	3.66
31688.1			52	65.60	12.54	0.11	6.50	0.19	2.46	1.22	1.39
120804	?	?	51	57.60	15.40	0.16	8.15	0.11	3.66	3.08	1.81
401097	?	Sbx	51	74.51	12.78	0.01	0.86	0.03	0.07	0.82	3.90
120546		1	51	75.00	13.00	0.02	1.88	0.03	0.90	0.25	3.30
120566			51	71.40	14.80	0.06	3.34	0.03	0.22	0.60	2.66
75867	TG	Lr	51	88.11	5.94		0.74	0.03	0.13	0.32	1.87
37138	NCS	?	51	74.70	13.00	0.14	2.74	0.03	0.24	0.48	2.65
401076		TUFF	50	67.33	14.94	0.09	1.61	0.07	2.84	0.64	2.76
120797			50	78.10	11.20	0.00	1.93	0.03	0.27	0.57	2.92
120535		1	50	72.50	13.90	0.05	2.60	0.04	0.72	0.96	2.92
75834	NCS	Lba	50	59.53	17.98	0.22	8.73	0.01	0.33	1.42	3.58
401069		LAVA	50	69.27	14.06	0.17	1.81	0.09	1.67	0.56	3.28
401070		TUFF	49	63.33	14.88	0.18	1.14	0.12	1.74	2.40	3.80
75850	TG	Lr	48	78.27	11.18	0.01	1.56	0.02	0.22	0.17	3.77
120787			48	70.60	15.00	0.03	2.70	0.06	0.14	0.48	3.84
401159		Vsst	48	75.41	13.17	0.00	1.34	0.01	0.07	0.73	3.50
401088	?	Sw	48	63.65	17.70	0.09	2.19	0.02	0.23	1.41	3.15
37221	AA	Ld	47	66.70	13.33	0.13	2.75	0.20	4.90	0.45	0.19
75828	AA	Ln	47	61.16	15.04	0.20	6.79	0.11	3.54	3.60	3.78
35100	CVC	Lba	47	53.30	17.34	0.08	9.94	0.17	2.42	4.65	4.17
120739			47	67.30	16.50	0.09	4.56	0.05	0.91	0.71	2.50
401024		SILTSTONE	47	73.55	12.93	0.18	0.45	0.01	0.07	0.89	4.38
31490	NCS	Ld	46	69.70	14.60	0.13	5.60	0.06	1.10	0.77	2.68
401031		SHALE	46	69.76	9.35	0.21	0.67	0.27	3.90	1.48	0.88
401153		TUFF	45	74.81	12.15	0.01	2.23	0.03	0.09	0.49	3.53
75868	AA	Ln	45	56.96	17.25	0.54	7.23	0.08	3.43	4.28	4.75
401065		TUFF	45	78.40	11.21	0.10	1.41	0.01	<0.01	0.44	3.27
31491	AA	Ln	45	62.60	15.10	0.18	6.60	0.10	2.51	3.36	4.63
401064		TUFF	45	76.51	12.61	0.12	1.47	0.09	<0.01	0.36	3.94
120537		3	45	70.10	14.50	0.08	3.18	0.04	1.58	1.11	2.22
401067		TUFF	44	79.16	9.68	0.11	0.25	0.05	1.86	0.23	2.59
37224	NCD	Ld	44	66.40	12.98	0.12	9.06	0.29	1.38	0.87	2.57
35087	NCD	Ld	44	65.80	13.39	0.13	7.02	0.35	2.49	0.80	1.92
75848	NCD	Ld	44	67.96	14.91	0.20	4.00	0.06	0.44	1.33	5.64
120734			44	78.30	12.10	0.02	1.75	0.04	0.15	0.46	3.30
401094	?	Sbx	44	67.98	13.02	0.01	2.09	0.07	0.10	2.45	5.03
120563			43	77.60	12.40	0.00	1.33	0.00	0.05	0.37	3.42
75845	YRS		43	77.69	11.60	0.05	0.63	0.01	0.05	0.29	2.95
120564			43	77.20	11.40	0.02	1.69	0.00	0.07	0.35	2.98
120736		?	43	74.40	13.30	0.03	2.48	0.06	1.13	0.42	3.48
120798			43	50.30	15.90	0.17	13.20	0.18	3.04	4.16	4.20
30195			43	60.00	15.38	0.12	7.26	0.11	1.99	4.29	5.42
37192	NCF	Vpm	42	70.60	13.29	0.07	3.39	0.06	0.66	1.15	4.87
35057	NCF	Vpm	42	64.60	15.99	0.08	4.19	0.11	2.50	1.06	3.05
401084	AA	Ln	42	60.34	13.56	0.31	2.34	0.10	6.67	3.99	1.54
35046	NCD	Ld	42	65.60	13.76	0.12	4.53	0.09	3.57	0.69	3.09
75852	AA	Ln	42	62.57	15.33	0.21	6.71	0.08	2.30	2.94	5.54
75871	NCS	Lba	41	63.51	16.58	0.22	6.11	0.09	1.99	1.26	3.65

35043	CVC	Scong	41	74.90	10.90	0.04	3.25	0.14	1.39	0.95	2.78
37159	NCF	Lba	40	49.90	15.51	0.06	11.52	0.19	5.73	3.82	2.46
401087	AA	Ln	40	60.88	14.35	0.20	2.38	0.12	3.02	3.56	5.71
35073	CVC	2	40	72.40	13.58	0.08	2.53	0.04	2.25	1.08	1.99
120801	AA	Ln	40	59.40	14.00	0.32	7.00	0.16	4.46	4.16	3.02
401085	AA	Ln	40	60.54	13.56	0.23	2.67	0.10	6.86	4.46	2.69
120543		3	40	70.00	15.10	0.05	3.28	0.07	0.65	1.13	3.80
35041	CVC	Ld	39	66.50	16.62	0.16	4.44	0.08	0.35	1.81	5.29
120733	?	4	39	72.60	13.60	0.04	2.98	0.04	0.69	0.82	3.58
75870	AA	Ln	39	60.02	15.98	0.23	7.30	0.13	2.14	3.76	6.66
75851	TG	Lr	39	78.56	11.89	0.06	0.83	0.00	0.03	0.13	4.44
37464	CVC	2	38	68.80	14.05	0.11	3.44	0.09	3.53	1.08	2.93
37144	NCS	?	37	74.60	11.57	0.08	1.31	0.04	3.05	0.35	2.09
37462	CVC	3	37	66.00	15.47	0.11	4.21	0.06	1.26	1.58	5.70
401037		TUFF	37	76.30	12.85	0.02	0.51	<0.01	0.28	0.57	3.75
401090	?	Sw	36	53.50	15.15	0.05	4.33	0.20	3.30	4.65	6.30
120803	?	?	35	52.90	16.40	0.20	10.20	0.18	3.36	4.66	5.45
120737			34	66.30	15.70	0.08	4.82	0.08	2.10	1.04	4.64
37111	CVC	2	34	69.60	15.26	0.11	3.73	0.07	0.69	1.05	5.26
75849	TG	Lr	34	77.77	11.69	0.08	2.24	0.02	0.07	0.46	4.69
31500	CVC	Ld	34	72.10	12.89	0.04	3.93	0.01	0.08	0.37	4.24
37220	AA	Ln	33	53.10	17.07	0.21	7.39	0.74	3.66	4.31	6.27
75869	AA	Ln	32	58.71	16.77	0.28	6.80	0.08	3.29	3.75	6.75
401093	?	TUFF	32	63.11	15.73	0.03	2.15	0.15	0.81	2.18	7.61
37186	NCF	Lba	31	51.10	15.34	0.09	8.96	0.20	6.47	4.44	5.08
75853	CVC	Ld	31	65.36	14.49	0.13	5.81	0.08	3.13	0.77	3.76
401089	?	TUFF	31	75.08	13.44	0.05	0.25	0.05	0.14	0.99	5.63
401086	AA	Ln	30	54.95	14.89	0.34	2.18	0.10	6.98	4.69	5.26
37222	NCD	Ld	30	64.80	16.40	0.16	5.37	0.12	2.27	1.00	4.85
75875	NCS	Ld	30	76.15	11.42	0.05	4.09	0.05	0.28	0.82	3.79
35071	CVC	2	29	70.50	14.74	0.10	3.53	0.08	0.69	1.02	5.96
75873	NCS	Ld	29	69.16	14.26	0.13	6.16	0.08	1.02	1.08	4.70
75866	TG	Lr	28	87.68	6.18		0.69	0.02	0.05	0.36	3.01
37463	CVC	2	27	70.80	13.90	0.09	3.15	0.07	1.73	1.06	5.17
120531		5	27	78.80	11.10	0.00	0.71	0.00	0.05	0.00	4.56
401092	?	TUFF	27	62.31	16.32	0.05	1.89	0.10	1.41	2.25	8.26
35069	CVC	2	26	71.40	14.09	0.06	3.19	0.07	0.58	1.07	4.74
75874	NCF	Vpm	26	75.32	12.89	0.13	1.87	0.03	0.58	0.41	5.14
37468	NCD	Ld	25	63.60	14.79	0.13	4.17	0.11	3.58	0.80	4.81
75865	TG	Lr	25	69.18	16.81		1.53	0.01	0.25	0.30	8.39
401091	?	Sbx	22	71.09	14.68	0.01	0.91	0.03	0.25	0.91	8.27
37187	NCF	Vpm	21	70.00	12.94	0.05	3.06	0.08	2.91	0.71	5.82
31492	NCS	Vsst	18	72.00	13.20	0.06	4.15	0.07	0.97	1.15	5.75
31488	CVC	Vpm	17	74.80	13.34	0.05	1.93	0.04	0.49	0.50	5.98
401095	?	Sw	15	67.90	16.06	0.03	1.56	0.03	0.27	0.93	9.02
37145	NCS	Vpm	14	79.10	12.33	0.08	0.87	0.01	0.42	0.14	5.06
75872	NCS	Ld	10	66.74	10.27	0.10	1.98	0.12	7.50	0.43	4.10
75876	NCS	?	10	79.46	12.28	0.08	0.30	0.00	0.40	0.00	5.40
37146	NCS	Vpm	5	70.00	11.93	0.13	2.19	0.07	4.94	0.39	5.97
37219	TG	Lr	5	73.80	15.38	0.01	0.62	0.03	0.31	0.12	8.70
75836	?	?	4	63.75	10.74	0.20	1.70	0.09	9.56	0.34	5.73

YOLANDE EL 11/85
 samples sorted on P205
 (values in %)

897249

SAMPLE	formation	lithology	P205	SiO2	Al2O3	Fe2O3	MnO	CaO	K2O	Al	MgO	Na2O
75868	AA	Ln	0.54	56.96	17.25	7.23	0.08	3.43	2.48	45	4.28	4.75
401082	NCD	Ld	0.37	61.63	16.57	4.30	0.07	<0.01	2.27	88	4.11	0.83
401036		SILTSTONE	0.36	60.79	11.52	13.10	0.07	0.23	0.51	96	7.09	0.07
31686.2			0.35	45.30	16.60	22.56	0.14	0.04	3.84	96	0.65	0.16
401086	AA	Ln	0.34	54.95	14.89	2.18	0.10	6.98	0.62	30	4.69	5.26
401083	AA	Ln	0.34	62.90	17.45	2.23	0.07	0.07	2.16	95	4.50	0.31
120801	AA	Ln	0.32	59.40	14.00	7.00	0.16	4.46	0.78	40	4.16	3.02
401084	AA	Ln	0.31	60.34	13.56	2.34	0.10	6.67	1.87	42	3.99	1.54
401033		GREYWACKE	0.28	62.50	15.51	1.20	0.05	0.28	2.05	65	3.74	2.82
75869	AA	Ln	0.28	58.71	16.77	6.80	0.08	3.29	1.08	32	3.75	6.75
31497	AA	Ln	0.25	61.30	18.01	5.90	0.10	0.83	5.10	76	1.67	1.25
401026		LAVA	0.25	63.09	15.50	3.52	0.03	0.05	4.03	88	2.70	0.87
401027		LAVA	0.25	64.18	14.72	3.39	0.07	0.15	4.17	74	2.81	2.27
401085	AA	Ln	0.23	60.54	13.56	2.67	0.10	6.86	1.83	40	4.46	2.69
75870	AA	Ln	0.23	60.02	15.98	7.30	0.13	2.14	1.84	39	3.76	6.66
401032		GREYWACKE	0.23	64.76	14.22	2.31	0.05	0.12	0.88	59	3.08	2.65
75834	NCS	Lba	0.22	59.53	17.98	8.73	0.01	0.33	2.50	50	1.42	3.58
75871	NCS	Lba	0.22	63.51	16.58	6.11	0.09	1.99	2.69	41	1.26	3.65
75852	AA	Ln	0.21	62.57	15.33	6.71	0.08	2.30	2.64	42	2.94	5.54
401028		TUFF	0.21	67.80	14.89	2.78	0.10	0.17	3.67	59	1.37	3.34
37220	AA	Ln	0.21	53.10	17.07	7.39	0.74	3.66	0.65	33	4.31	6.27
401031		SHALE	0.21	69.76	9.35	0.67	0.27	3.90	2.54	46	1.48	0.88
120803	?	?	0.20	52.90	16.40	10.20	0.18	3.36	0.15	35	4.66	5.45
401087	AA	Ln	0.20	60.88	14.35	2.38	0.12	3.02	2.25	40	3.56	5.71
401071		LAVA	0.20	65.47	14.31	2.11	0.03	0.12	4.01	71	3.02	2.72
75828	AA	Ln	0.20	61.16	15.04	6.79	0.11	3.54	2.99	47	3.60	3.78
401035		SILTSTONE	0.20	58.25	12.98	9.39	0.10	0.55	2.04	92	9.21	0.47
401072		LAVA	0.20	68.11	14.51	1.56	0.01	0.02	2.83	62	2.60	3.32
401029		SILTSTONE	0.20	73.81	12.77	1.93	0.05	0.15	3.85	58	0.89	3.30
75836	?	?	0.20	63.75	10.74	1.70	0.09	9.56	0.27	4	0.34	5.73
75848	NCD	Ld	0.20	67.96	14.91	4.00	0.06	0.44	3.44	44	1.33	5.64
31491	AA	Ln	0.18	62.60	15.10	6.60	0.10	2.51	2.45	45	3.36	4.63
401070		TUFF	0.18	63.33	14.88	1.14	0.12	1.74	2.86	49	2.40	3.80
401024		SILTSTONE	0.18	73.55	12.93	0.45	0.01	0.07	2.99	47	0.89	4.38
401034		TUFF	0.17	76.66	12.15	2.22	0.02	0.20	2.93	64	0.76	1.92
35066	WSF	Sbsh	0.17	56.50	22.90	4.29	0.04	0.15	5.04	88	2.61	0.93
120798			0.17	50.30	15.90	13.20	0.18	3.04	1.34	43	4.16	4.20
401069		LAVA	0.17	69.27	14.06	1.81	0.09	1.67	4.32	50	0.56	3.28
35041	CVC	Ld	0.16	66.50	16.62	4.44	0.08	0.35	1.85	39	1.81	5.29
120804	?	?	0.16	57.60	15.40	8.15	0.11	3.66	2.66	51	3.08	1.81
37222	NCD	Ld	0.16	64.80	16.40	5.37	0.12	2.27	2.08	30	1.00	4.85
37141	NCS	Lba	0.15	54.40	20.26	11.90	0.12	0.26	3.14	68	2.01	2.20
401066		TUFF	0.15	74.12	12.28	0.51	0.03	0.57	3.73	54	0.76	3.20
401081	?	TUFF	0.15	67.55	13.77	1.16	0.01	0.15	3.31	87	2.48	0.68
37113	CVC	2	0.15	52.00	21.60	5.65	0.09	2.50	5.07	70	4.13	1.39
401030		SHALE	0.15	74.80	13.75	1.77	0.07	0.02	4.96	97	0.98	0.18
75844	YRS		0.15	67.04	14.10	5.12	0.08	0.37	4.57	69	2.62	2.85
35084	AA	Ld	0.15	66.30	14.67	8.44	0.30	0.26	3.75	92	1.13	0.15
37138	NCS	?	0.14	74.70	13.00	2.74	0.03	0.24	2.47	51	0.48	2.65
216481.2	NCD	Ld	0.14	70.40	15.01	3.52	0.02	0.16	3.77	69	0.74	1.84
401025		TUFF	0.14	76.54	11.85	1.11	0.01	0.05	3.99	95	0.99	0.20
35042	CVC	Scong	0.14	70.30	11.83	5.13	0.02	0.19	2.48	66	0.58	1.40
120802	AA	Ln	0.14	59.90	15.60	7.05	0.10	1.60	2.40	66	3.44	1.43
31499	CVC	?	0.14	67.30	15.15	5.44	0.05	0.23	2.71	65	1.73	2.18
37178	NCD	Ld	0.14	70.80	14.70	4.01	0.01	0.14	3.51	60	0.73	2.70
120565			0.14	69.50	12.90	7.05	0.00	0.10	2.98	96	2.38	0.12
31494	CVC	Ld	0.14	69.30	15.50	5.05	0.03	0.14	3.18	61	1.10	2.58
35039	CVC	Ld	0.14	69.70	14.39	2.92	0.03	0.18	5.18	79	0.94	1.40
31484	CVC	Ln	0.14	70.40	9.48	11.89	0.06	0.01	2.45	99	0.40	<0.05
75873	NCS	Ld	0.13	69.16	14.26	6.16	0.08	1.02	1.24	29	1.08	4.70
37146	NCS	Vpm	0.13	70.00	11.93	2.19	0.07	4.94	0.20	5	0.39	5.97

120794			0.13	64.80	10.90	15.60	0.14	0.05	1.04	97	2.46	0.04
37223	NCD	Ld	0.13	57.40	16.20	6.90	2.61	0.62	7.38	92	0.64	0.06
37221	AA	Ld	0.13	66.70	13.33	2.75	0.20	4.90	4.14	47	0.45	0.19
75853	CVC	Ld	0.13	65.36	14.49	5.81	0.08	3.13	2.32	31	0.77	3.76
75874	NCF	Vpm	0.13	75.32	12.89	1.87	0.03	0.58	1.55	26	0.41	5.14
37468	NCD	Ld	0.13	63.60	14.79	4.17	0.11	3.58	1.94	25	0.80	4.81
35087	NCD	Ld	0.13	65.80	13.39	7.02	0.35	2.49	2.66	44	0.80	1.92
37905	NCD	Ld	0.13	66.50	13.74	4.74	0.07	2.01	3.80	55	0.83	1.80
31490	NCS	Ld	0.13	69.70	14.60	5.60	0.06	1.10	2.41	46	0.77	2.68
35046	NCD	Ld	0.12	65.60	13.76	4.53	0.09	3.57	4.06	42	0.69	3.09
401064		TUFF	0.12	76.51	12.61	1.47	0.09	<0.01	2.84	45	0.36	3.94
30195			0.12	60.00	15.38	7.26	0.11	1.99	1.22	43	4.29	5.42
35064	WSF	Sbsh	0.12	66.20	17.42	3.79	0.04	<0.01	4.31	97	1.84	0.19
37224	NCD	Ld	0.12	66.40	12.98	9.06	0.29	1.38	2.23	44	0.87	2.57
31483	CVC	Ln	0.12	64.10	15.99	7.43	0.06	0.03	3.78	85	2.28	1.04
401075		PHYLLITE	0.11	69.80	16.54	3.22	0.01	<0.01	5.48	98	1.03	0.12
35012	CVC	Ld	0.11	73.90	15.03	2.51	0.04	0.10	4.47	97	0.47	0.05
401067		TUFF	0.11	79.16	9.68	0.25	0.05	1.86	3.29	44	0.23	2.59
120793			0.11	59.60	15.80	8.95	0.10	2.34	3.10	64	3.50	1.35
37111	CVC	2	0.11	69.60	15.26	3.73	0.07	0.69	2.06	34	1.05	5.26
120800			0.11	58.80	14.30	8.20	0.09	1.60	2.42	62	5.00	2.90
37110	CVC	2	0.11	69.50	15.28	4.02	0.06	1.53	2.93	56	1.22	1.76
31687.1			0.11	57.90	17.45	10.87	0.13	0.10	2.40	76	2.15	1.33
37464	CVC	2	0.11	68.80	14.05	3.44	0.09	3.53	2.87	38	1.08	2.93
37462	CVC	3	0.11	66.00	15.47	4.21	0.06	1.26	2.47	37	1.58	5.70
31688.1			0.11	65.60	12.54	6.50	0.19	2.46	2.89	52	1.22	1.39
37197	NCF	Vpm	0.10	69.60	15.06	4.27	0.01	0.09	3.58	71	0.93	1.72
75864	TG	?	0.10	46.87	18.15	13.27	0.33	0.40	4.46	84	9.07	2.14
401073		LAVA	0.10	76.44	13.15	1.03	0.01	<0.01	3.19	62	0.44	2.25
120567			0.10	65.10	15.20	6.05	0.00	0.07	3.84	92	2.78	0.54
401077		TUFF	0.10	75.02	13.67	1.51	0.49	0.05	3.01	85	0.37	0.56
75872	NCS	Ld	0.10	66.74	10.27	1.98	0.12	7.50	0.86	10	0.43	4.10
35009	CVC	Ld	0.10	70.00	14.96	5.20	0.03	0.10	3.52	75	1.09	1.42
35764	HFV	Ln	0.10	52.80	21.52	9.31	0.09	0.08	3.33	53	0.50	3.35
401080	?	TUFF	0.10	71.81	14.61	1.13	0.11	0.15	4.25	94	0.72	0.14
401065		TUFF	0.10	78.40	11.21	1.41	0.01	<0.01	2.25	45	0.44	3.27
401068		SILTSTONE	0.10	75.19	11.15	3.67	0.01	0.31	4.34	71	0.86	1.77
37115	CVC	3	0.10	65.80	16.16	3.76	0.07	2.17	2.66	56	2.49	1.88
35071	CVC	2	0.10	70.50	14.74	3.53	0.08	0.69	1.71	29	1.02	5.96
35011	CVC	Ld	0.09	72.40	15.91	2.26	0.02	0.06	4.79	98	0.50	0.07
37112	CVC	3	0.09	69.50	14.38	3.43	0.05	0.35	5.11	71	1.25	2.24
401076		TUFF	0.09	67.33	14.94	1.61	0.07	2.84	5.05	50	0.64	2.76
401088	?	Sw	0.09	63.65	17.70	2.19	0.02	0.23	1.69	48	1.41	3.15
120739			0.09	67.30	16.50	4.56	0.05	0.91	2.28	47	0.71	2.50
120570			0.09	55.10	17.00	8.40	0.02	0.02	3.50	95	7.10	0.56
37186	NCF	Lba	0.09	51.10	15.34	8.96	0.20	6.47	0.82	31	4.44	5.08
37463	CVC	2	0.09	70.80	13.90	3.15	0.07	1.73	1.53	27	1.06	5.17
120732	?	3	0.09	66.70	15.90	3.98	0.03	0.47	3.56	66	1.11	1.94
120569			0.08	66.20	13.90	6.50	0.04	0.02	2.62	97	3.42	0.17
35037	CVC	Ld	0.08	73.10	12.16	4.78	0.02	0.08	2.72	57	0.51	2.38
75876	NCS	?	0.08	79.46	12.28	0.30	0.00	0.40	0.63	10	0.00	5.40
35073	CVC	2	0.08	72.40	13.58	2.53	0.04	2.25	1.74	40	1.08	1.99
120537		3	0.08	70.10	14.50	3.18	0.04	1.58	1.95	45	1.11	2.22
35100	CVC	Lba	0.08	53.30	17.34	9.94	0.17	2.42	1.14	47	4.65	4.17
37118	CVC	2	0.08	68.90	15.87	2.81	0.04	1.31	2.66	66	1.65	0.88
37116	CVC	4	0.08	73.10	13.17	3.01	0.04	0.86	4.08	53	0.65	3.32
37145	NCS	Vpm	0.08	79.10	12.33	0.87	0.01	0.42	0.73	14	0.14	5.06
120532		?	0.08	71.20	11.30	4.58	0.01	0.07	3.40	86	2.80	0.92
35057	NCF	Vpm	0.08	64.60	15.99	4.19	0.11	2.50	2.94	42	1.06	3.05
120533		?	0.08	68.10	10.80	8.40	0.05	0.07	1.65	85	3.30	0.78
37144	NCS	?	0.08	74.60	11.57	1.31	0.04	3.05	2.66	37	0.35	2.09
31496	CVC	Sslt	0.08	69.50	11.96	4.76	0.07	1.86	2.94	53	1.59	2.11
75849	TG	Lr	0.08	77.77	11.69	2.24	0.02	0.07	1.98	34	0.46	4.69
120737			0.08	66.30	15.70	4.82	0.08	2.10	2.50	34	1.04	4.64
120548		4	0.07	73.10	13.10	2.34	0.02	0.12	4.78	71	0.53	2.04

37119	CVC	1	0.07	73.20	15.18	1.89	0.01	0.06	3.84	70	0.53	1.82
37114	CVC	?	0.07	73.30	13.68	2.23	0.04	0.99	3.81	61	1.14	2.17
120538		?	0.07	70.70	12.30	5.90	0.04	0.13	2.22	70	2.60	1.95
120786			0.07	72.50	12.40	4.44	0.05	0.07	2.54	69	1.72	1.86
35076	CVC	Ld	0.07	70.70	7.55	14.97	0.88	0.05	0.23	96	1.94	<0.05
37192	NCF	Vpm	0.07	70.60	13.29	3.39	0.06	0.66	2.89	42	1.15	4.87
120718			0.07	61.70	17.10	5.50	0.02	0.02	4.32	97	3.84	0.27
31584.2		?	0.06	63.60	19.36	4.25	0.04	0.03	2.53	96	2.44	0.18
75851	TG	Lr	0.06	78.56	11.89	0.83	0.00	0.03	2.69	39	0.13	4.44
35099	NCF	Va	0.06	71.30	14.89	2.80	0.05	0.86	3.41	63	1.21	1.84
35049	NCF	Vpm	0.06	74.90	11.59	2.87	0.06	0.89	3.10	54	0.79	2.45
120566			0.06	71.40	14.80	3.34	0.03	0.22	2.38	51	0.60	2.66
120544		?	0.06	68.60	14.00	4.24	0.01	0.02	3.28	93	2.80	0.46
120795			0.06	58.40	16.00	9.70	0.10	1.29	2.00	81	5.55	0.43
37159	NCF	Lba	0.06	49.90	15.51	11.52	0.19	5.73	1.69	40	3.82	2.46
37156	CVC	Vpm	0.06	79.70	10.10	2.96	0.03	0.10	1.99	53	0.47	2.05
31492	NCS	Vsst	0.06	72.00	13.20	4.15	0.07	0.97	0.33	18	1.15	5.75
120784			0.06	59.00	15.80	6.70	0.04	0.18	5.20	94	6.40	0.54
35069	CVC	2	0.06	71.40	14.09	3.19	0.07	0.58	0.77	26	1.07	4.74
35077	CVC	Ld	0.06	74.70	7.40	11.59	0.25	0.07	0.67	91	0.90	0.09
35070	WSF	Sbsh	0.06	73.20	12.40	3.94	0.01	0.01	2.71	78	1.05	1.07
37160	NCF	Vpm	0.05	71.30	13.37	3.15	0.08	1.96	3.02	54	1.24	1.71
401089	?	TUFF	0.05	75.08	13.44	0.25	0.05	0.14	1.59	31	0.99	5.63
401090	?	Sw	0.05	53.50	15.15	4.33	0.20	3.30	0.69	36	4.65	6.30
401079		TUFF	0.05	75.41	12.38	0.57	<0.01	<0.01	2.96	59	0.52	2.45
37187	NCF	Vpm	0.05	70.00	12.94	3.06	0.08	2.91	1.66	21	0.71	5.82
37904	NCF	Vpm	0.05	69.00	13.69	3.85	0.07	1.89	3.46	62	1.68	1.22
75845	YRS		0.05	77.69	11.60	0.63	0.01	0.05	2.01	43	0.29	2.95
401092	?	TUFF	0.05	62.31	16.32	1.89	0.10	1.41	1.27	27	2.25	8.26
75875	NCS	Ld	0.05	76.15	11.42	4.09	0.05	0.28	0.90	30	0.82	3.79
120735		?	0.05	71.90	14.80	2.90	0.03	0.00	4.52	99	1.30	0.05
401078		TUFF	0.05	75.83	13.86	0.91	0.51	0.20	2.92	92	0.50	0.09
120535		1	0.05	72.50	13.90	2.60	0.04	0.72	2.70	50	0.96	2.92
37541	NCD	Ld	0.05	65.10	20.01	2.24	0.04	0.02	7.46	98	0.70	0.14
31488	CVC	Vpm	0.05	74.80	13.34	1.93	0.04	0.49	0.82	17	0.50	5.98
120791			0.05	54.50	14.40	8.90	0.08	0.45	0.26	95	13.80	0.31
120543		3	0.05	70.00	15.10	3.28	0.07	0.65	1.78	40	1.13	3.80
30985.2			0.04	72.00	14.63	2.44	0.05	0.05	4.91	54	0.26	4.28
120540			0.04	74.60	12.70	2.58	0.02	0.09	2.36	55	0.67	2.40
120541			0.04	68.40	15.20	3.58	0.02	0.05	3.40	87	1.92	0.77
120539			0.04	73.20	11.20	4.42	0.03	0.24	2.10	72	2.04	1.35
35075	WSF	Sbsh	0.04	69.30	13.83	3.71	0.02	0.01	3.31	98	2.20	0.10
120733	?	4	0.04	72.60	13.60	2.98	0.04	0.69	1.90	39	0.82	3.58
37155	CVC	Vpm	0.04	74.30	11.35	6.35	0.01	0.01	3.95	93	0.65	0.36
120536		3	0.04	70.60	15.50	3.84	0.02	0.06	3.56	93	0.73	0.26
37152	CVC	?	0.04	74.20	14.27	2.66	0.02	0.04	3.85	84	0.97	0.88
35043	CVC	Scong	0.04	74.90	10.90	3.25	0.14	1.39	1.93	41	0.95	2.78
31500	CVC	Ld	0.04	72.10	12.89	3.93	0.01	0.08	1.82	34	0.37	4.24
120738			0.04	73.10	12.90	4.06	0.02	0.06	3.96	90	1.45	0.54
120796			0.03	78.60	12.40	1.52	0.00	0.07	3.42	81	0.75	0.94
120736		?	0.03	74.40	13.30	2.48	0.06	1.13	3.10	43	0.42	3.48
120787			0.03	70.60	15.00	2.70	0.06	0.14	3.24	48	0.48	3.84
120542			0.03	70.60	14.40	3.14	0.04	0.14	3.90	74	0.77	1.49
31495	CVC	Vslt	0.03	77.30	10.86	3.05	0.07	1.19	2.90	69	1.03	0.56
120547		1	0.03	73.50	13.60	2.60	0.05	2.12	3.44	54	0.68	1.36
401093	?	TUFF	0.03	63.11	15.73	2.15	0.15	0.81	1.75	32	2.18	7.61
37150	CVC	?	0.03	77.50	13.04	1.25	0.01	0.03	3.91	79	0.66	1.21
401095	?	Sw	0.03	67.90	16.06	1.56	0.03	0.27	0.74	15	0.93	9.02
32149	NCF	Vpm	0.03	75.20	13.47	2.56	0.01	0.04	3.88	83	0.77	0.94
35010	NCF	Vpm	0.02	74.80	13.77	2.45	0.02	0.02	2.09	61	0.84	1.87
401037		TUFF	0.02	76.30	12.85	0.51	<0.01	0.28	1.77	37	0.57	3.75
120546		1	0.02	75.00	13.00	1.88	0.03	0.90	4.10	51	0.25	3.30
120734			0.02	78.30	12.10	1.75	0.04	0.15	2.24	44	0.46	3.30
120560			0.02	66.80	18.80	3.00	0.00	0.02	2.90	97	0.63	0.10
37153	NCF	Vpm	0.02	75.90	13.77	2.07	0.01	0.02	2.23	58	0.84	2.18

120559		4	0.02	82.20	10.20	0.53	0.00	0.09	2.56	83	0.35	0.52
120731	?		0.02	78.00	10.30	2.02	0.01	0.47	2.38	67	0.51	0.98
401096	?	TUFF	0.02	71.37	13.52	3.36	0.05	0.05	5.76	93	1.11	0.43
401155		GREYWACKE	0.02	71.13	9.48	2.17	0.05	0.64	1.38	69	3.26	1.46
401154		GREYWACKE	0.02	67.19	11.98	7.72	0.07	0.07	3.21	92	1.70	0.33
120534		1	0.02	65.40	19.30	2.34	0.02	0.02	4.56	99	0.70	0.04
120789			0.02	72.80	15.50	0.72	0.00	0.02	3.20	62	0.26	2.12
35068	WSF	Sbsh	0.02	73.90	13.64	2.36	0.02	0.01	3.91	97	0.97	0.16
37151	CVC	?	0.02	77.90	12.34	1.54	<0.01	0.02	3.64	72	0.61	1.60
120564			0.02	77.20	11.40	1.69	0.00	0.07	1.98	43	0.35	2.98
120792			0.01	79.10	12.40	1.46	0.00	0.03	3.90	98	0.94	0.06
37117	WSF	5	0.01	78.30	10.93	2.04	0.02	0.01	6.73	95	0.23	0.35
401153		TUFF	0.01	74.81	12.15	2.23	0.03	0.09	2.51	45	0.49	3.53
120545		1	0.01	73.70	12.80	2.08	0.04	0.36	2.92	54	0.83	2.80
120788			0.01	79.80	11.50	0.92	0.00	0.00	2.94	72	0.41	1.30
401146		TUFF	0.01	74.48	12.57	1.09	0.01	0.12	2.93	52	1.12	3.66
120562			0.01	78.90	11.70	1.10	0.00	0.07	3.50	69	0.53	1.75
401094	?	Sbx	0.01	67.98	13.02	2.09	0.07	0.10	1.54	44	2.45	5.03
401148		SHALE	0.01	52.95	18.64	2.44	0.03	0.15	4.11	92	7.13	0.81
120785			0.01	77.60	11.40	1.42	0.00	0.03	2.82	55	0.43	2.62
401091	?	Sbx	0.01	71.09	14.68	0.91	0.03	0.25	1.50	22	0.91	8.27
401099	?	Msht	0.01	81.83	9.14	1.20	0.01	0.01	2.63	91	1.04	0.37
401152		ARENITE	0.01	67.50	10.22	2.44	0.02	0.02	0.97	93	7.25	0.62
401098	?	Scong	0.01	91.25	3.94	0.42	0.01	0.01	1.09	85	0.51	0.27
401144		SHALE	0.01	66.44	13.64	2.73	0.01	0.01	2.48	87	3.75	0.91
75850	TG	Lr	0.01	78.27	11.18	1.56	0.02	0.22	3.58	48	0.17	3.77
401142		SILTSTONE	0.01	63.95	16.12	6.03	0.03	0.01	3.21	94	1.60	0.31
401143		SHALE	0.01	62.25	16.84	2.07	0.02	0.03	3.70	89	3.79	0.86
37219	TG	Lr	0.01	73.80	15.38	0.62	0.03	0.31	0.33	5	0.12	8.70
401145		MUDSTONE	0.01	57.97	18.90	7.34	0.05	0.01	3.70	95	2.50	0.30
401097	?	Sbx	0.01	74.51	12.78	0.86	0.03	0.07	3.30	51	0.82	3.90
401147		SHALE	0.01	63.72	14.43	3.39	0.05	0.01	3.43	89	4.59	1.01
401156		L	0.01	72.02	13.39	0.69	0.01	0.37	3.58	53	0.93	3.56
401100	?	Msht	0.01	86.08	6.73	0.71	0.01	0.07	1.77	88	0.97	0.31
401151		ARGILLITE	0.01	66.41	14.18	1.97	0.02	0.01	3.94	93	3.64	0.55
401149		SHALE	0.01	52.54	17.48	2.79	0.07	1.29	4.21	84	6.96	0.87
401150		MUDSTONE	0.01	59.63	17.57	2.23	0.01	0.03	3.77	87	4.44	1.25
120561			0.00	82.10	11.20	0.56	0.00	0.00	1.87	98	0.36	0.04
120799			0.00	76.70	12.00	1.45	0.00	0.05	3.66	80	0.76	1.04
120568			0.00	74.20	13.30	1.86	0.03	0.06	2.68	64	0.43	1.67
120563			0.00	77.60	12.40	1.33	0.00	0.05	2.30	43	0.37	3.42
401158		L	0.00	76.41	10.93	0.83	0.03	0.50	3.79	55	0.43	2.97
401160		1	0.00	71.68	13.97	2.71	0.02	0.03	2.61	78	0.70	0.93
401074		TUFF	0.00	76.00	13.69	0.58	0.01	0.09	3.35	68	0.91	1.90
120797			0.00	78.10	11.20	1.93	0.03	0.27	2.64	50	0.57	2.92
401159		Vsst	0.00	75.41	13.17	1.34	0.01	0.07	2.56	48	0.73	3.50
120531		5	0.00	78.80	11.10	0.71	0.00	0.05	1.68	27	0.00	4.56
75867	TG	Lr		88.11	5.94	0.74	0.03	0.13	1.73	51	0.32	1.87
75865	TG	Lr		69.18	16.81	1.53	0.01	0.25	2.52	25	0.30	8.39
75866	TG	Lr		87.68	6.18	0.69	0.02	0.05	0.85	28	0.36	3.01
75847	YRS			69.92	15.01	4.51	0.01	0.01	3.95	94	2.26	0.37

APPENDIX 6

THIN SECTION LOCATIONS

YOLANDE EL 11/85

THIN SECTION LOCATIONS

sample	east/ddh	north/depth
216481		
216540	379026.0	5356875.0
216541	379288.0	5357556.0
216542		
31488	379924.0	5358394.0
31490	380061.0	5358345.0
31491	379940.0	5358300.0
31492	379993.0	5358308.0
31493	379994.0	5358309.0
31494	379875.0	5358680.0
31495	379400.0	5357970.0
31496	379636.0	5357920.0
31497	380680.0	5357400.0
31498	379975.0	5358430.0
31536	379825.0	5358750.0
32140	380000.0	5354740.0
32150	379000.0	5357800.0
32153	379149.0	5358360.0
32165	379553.0	5357960.0
32170	379039.0	5358535.0
32173	379680.0	5358798.0
32176	379306.0	5359197.0
32188	379200.0	5357563.0
32196	378730.0	5359800.0
32197	378779.0	5359595.0
32806	378770.0	5360032.0
32850.1	379295.0	5358061.0
32850.2	379295.0	5358061.0
32860	379267.0	5358061.0
32866	379266.0	5358260.0
32867	379287.0	5358261.0
35009	379800.0	5358870.0
35010	379700.0	5359000.0
35017	379985.0	5358380.0
35041	379540.0	5360715.0
35042	379837.0	5360680.0
35043	379840.0	5360674.0
35046	YNC1	10.2
35047	YNC1	29.7
35048	YNC1	44.2
35049	YNC1	51.6
35050	YNC1	56.1
35080	YNC4	88.4
35084	YNC4	160.0
35087	YNC4	244.8
35093	YNC5	104.7
37138	380038.0	5358340.0
37140	380037.0	5358339.0
37141	380037.0	5358338.0
37142.1	380047.0	5358339.0
37142.2	380047.0	5358339.0
37143	380049.0	5358338.0
37144	380019.0	5358319.0
37145	379978.0	5358302.0
37146	379980.0	5358300.0
37148	379988.0	5358304.0
37149.1	380042.0	5358351.0
37149.2	380042.0	5358351.0
37149.3	380042.0	5358351.0
37158		
37161	YNC7	27.8
37162	YNC7	73.4
37163	YNC7	135.6
37164	YNC7	180.0
37165	YNC7	184.5
37166	YNC7	201.0
37167	YNC7	280.4
37168	380040.0	5358350.0
37169	379956.0	5358295.0
37170	379958.0	5358295.0
37171	379977.0	5358300.0
37172		
37221	YNC5	218.5
37223	YNC5	288.0

THIN SECTION COMMENTS

sample	comments
216481	
216540	
216541	
216542	vesicular evolved plag-phy chl
31488	NC cong clast:white dacite weak to mod ser alt.
31490	HW dacite: similar to(31488 35046)
31491	FW magnetic andeite: plag-hb-qtz-fetiO phyric. Crown Hill type.
31492	spillway sst: volcanogenic matrix of vitric ash? (no detrital component.
31493	spillway chert: volcanoclastic detritus in vitric ash. Minor alt + sp.
31494	road north of spillway: glassy dacite-rhyodacite lava-pumice breccia???
31495	lam slt from N creek line volcanogenic slt in vitric ash. Weak alt.
31496	lam slt from hill cong: derived from pelitic metamorphics strong sil-cal-py alt.
31497	Howards Anomaly: plag-hb-qtz phyric andesite with strong ser alt
31498	spillway sst: volcanogenic , matrix vitric ash? (no detrital component.
31536	aphyric felsic lava
32140	
32150	
32153	cf MRS ACG
32185	
32170	v cb alt
32173	aphyric evolved
32176	
32188	
32196	HDS?
32197	cf Henty Dyke Swarm tholiites
32806	cf HDS tholiites
32850.1	
32850.2	cf MRS ACG
32860	
32866	
32867	
35009	road north of spillway: (31494) rhyodacite? lava-pumice breccia???
35010	rhyo-dacite crystal vitric tuff.
35017	spillway: sst derived from vitric felsic volcanics. Strong ser alt.
35041	Henty Canal: plag phy dacite.
35042	Henty Canal: vitric xtl tuff with mod sil sp ser alt.
35043	Henty Canal: conglomerate composed of 35042 material with pyritic msv sul clast.
35046	YNC1 HW dacite: (31490 31488) no qtz phy. weak alt.
35047	YNC1 dacite autobreccia mixed with ? matrix.
35048	YNC1 lam xtl slt: 34196 derived from volcs+metapelites strong ser-cal-py alt.
35049	YNC1 Vpm: monomict breccia pumiceous. Weak alt.
35050	YNC1 Vpm: (35049) no significant hydrothermal alteration.
35080	
35084	YNC4 dacite: strong chl, ser, py, sp alt
35087	YNC4 dacite: 35046 spillway HW
35093	YNC5 andesite: plag-hb phy Ln: alt chl/sil/haem/calc
37138	spillway near sulphide: Ld with moderate sil-ser-py alt.
37140	spillway volcanoclastic sandstone dacite derived, mod ser-chl alt.
37141	spillway near sulphide; vesicular basalt strongly ser alt cf HDS.
37142.1	spillway volcanoclastic sst (above cong) matrix pumiceous strong ser alt.
37142.2	spillway volcanoclastic sst strong ser alt
37143	spillway hw mudstone derived from glassy felsic volcanics.
37144	spillway near sulphides: qtz-fld rhyolite with weak ser alt.
37145	spillway from basalt: unusual perlitic rhyolite
37146	spillway basalt strongly ser-chl alt + glassy dacite clast.
37148	spillway dacite lava breccia with strong qtz-carb alt.
37149.1	spillway slt below cong bimodal felsic volcs - pelitic metamorphics.
37149.2	spillway
37149.3	spillway volcanoclastic sat weak hydrothermal alt.
37158	Spillway: polymict mineralised wacke.
37161	sheared dacite?
37162	autoclastic dacite
37163	massive dacite
37164	polymict breccia with mineralisation
37165	polymict breccia with sphalerite
37166	andesite below sediments
37167	cleaved sericitic dacite derived clastic.
37168	Spillway: float vesicular basalt with galena.
37169	Spillway: massive lava? sandstone?
37170	Spillway: autobreccia? vent rock?
37171	Spillway: basalt? containing dacite clasts.
37172	YNC7 collar quartz eye shear rock rhyolite?
37221	YNC5 aphyric dacite sil, ser, cb alt
37223	YNC5 aphyric dacite v alt k2o-ser

APPENDIX 7

PETROGRAPHIC REPORT

AJ CRAWFORD

SAMPLE NUMBER: 37138

SUMMARY: This sample is a formerly glassy sparsely plagioclase-phyric dacitic lava that has suffered moderate hydrothermal alteration (silica-sericite±pyrite).

HAND SPECIMEN:

This is a pale brown, fairly altered, sparsely plagioclase-phyric felsic lava with minor spots of pyrite.

THIN SECTION DESCRIPTION:

This is a formerly glassy, sparsely plagioclase-phyric dacitic lava with moderate hydrothermal alteration. Blocky to prismatic former albitized plagioclase phenocrysts make up about 5 modal% of the rock, but are heavily sericitized. A few former mafic phenocrysts, probably originally augite, are replaced by chalcedonic silica and chlorite; occasional small apatite phenocrysts are present. FeTi oxide phenocrysts make up < 1 modal% of the rock and are altered to leucoxenic material.

The groundmass of this rock was entirely glassy. The glass devitrified, then has crystallized to a rather coarse snowflake-textured quartzo-feldspathic material that is heavily impregnated with very fine-grained sericite. Occasional small grains and patches of secondary quartz are present.

This sample is transected by a set of subparallel quartz-pyrite veinlets. The quartz in these veins is exceptionally fine-grained, almost chalcedonic in nature, and pyrite occurs as clusters of small idiomorphic grains scattered irregularly along the margins of these veinlets.

SAMPLE NUMBER: 37141

SUMMARY: This sample is a strongly sericite-altered sparsely plagioclase+augite-phyric basaltic lava or dyke rock. A tentative correlation with the Henty Dyke Swarm basalts can be tested by the rock's trace element compositional signature (and stratigraphic location, if that is well controlled).

HAND SPECIMEN:

This is a grey, weakly vesicular and aphyric andesitic to basaltic lava or narrow dyke rock.

THIN SECTION DESCRIPTION:

This is an intensely altered, weakly vesicular, originally probably basaltic rock with around 1-2 modal% of former plagioclase phenocrysts and a few small chloritized mafic phenocrysts that were probably augite originally. The plagioclase phenocrysts are small prismatic crystals (<1mm long) that were albitized before being strongly overprinted by very fine-grained chlorite and subordinate sericite. There were apparently no former FeTi oxide phenocrysts in this sample. Vesicles are filled by chlorite and lined by quartz.

The groundmass of this rock is very strongly altered, although enough of the original texture remains to draw some conclusions about its texture and mineralogy. Most obviously, it was composed of a rather coarse-grained intergrowth of plagioclase laths, possibly set in interstitial glassy mesostasis. All groundmass plagioclase is totally replaced by sericite, and the mesostasis now consists of a very fine-grained but rather heterogeneous intergrowth of quartz, sericite, chlorite and tiny equant FeTi oxides. The groundmass is pervaded by a mesh of sericite.

This sample has some similarities to basaltic rocks of the Henty Dyke Swarm, although the alteration precludes confident correlation; this can easily be checked by Ti/Zr values, as the Henty Dykes usually have $Ti/Zr > 70$ (often around 90), much higher than any rocks in the Mount Read Volcanics proper. This basalt is unlike any basalts from within the MRV proper that I am familiar with. The chemistry should be interesting.

SAMPLE NUMBER: 37144

SUMMARY: This sample is a formerly glassy sparsely plagioclase +quartz-phyric rhyolitic lava with a very weak hydrothermal overprint.

HAND SPECIMEN:

This is a creamy-grey sparsely plagioclase-phyric felsic lava.

THIN SECTION DESCRIPTION:

This is a formerly glassy lava with phenocrysts of both plagioclase and quartz. The former are mainly 0.5-1 mm long prismatic to blocky albitized plagioclase crystals with moderate to strong sericite alteration; they often occur in clots of four or five crystals with altered former mafic phenocrysts, and make up around 3-5 modal% of the rock. The quartz phenocrysts make up around 1-2 modal% of this rock and are mainly less than 1 mm across and are resorbed subhedral crystals often containing small rounded melt inclusions. Much less abundant than either quartz or plagioclase are former augite phenocrysts that are altered to messy yellow chlorite and minor magnetite. A few well-formed small apatite microphenocrysts, and several zircon microphenocrysts are also present. FeTi oxides are present (~1 modal%) and are altered to dark leucoxenitic material, although they are often impossible to distinguish from secondary pyrite.

The groundmass of this rhyolitic lava was undoubtedly glassy. Glass devitrified, then has recrystallized to a patchy mosaic-textured intergrowth of quartz and feldspar pervaded by a very fine mesh of sericite. Veinlets of chalcedonic quartz are clearly transected by calcite veinlets. Secondary pyrite is very minor, restricted to a few small spots and streaky trains of tiny crystals. Alteration is probably of very mild hydrothermal origin, rather than being solely due to regional burial degradation.

SAMPLE NUMBER: 37140

SUMMARY: This sample is a foliated, coarse volcanoclastic sandstone derived in large part from plagioclase-phyric, probably glassy volcanics. It has suffered moderate sericite-chlorite alteration during recrystallization and foliation development.

HAND SPECIMEN:

This is a foliated volcanoclastic sandstone(?) containing some rather deformed clasts of felsic volcanics up to several cm long.

THIN SECTION DESCRIPTION:

This is clearly a coarse volcanoclastic sandstone containing occasional quite large clasts in a finer matrix. The sample is matrix-supported and strongly altered, but textural details are preserved well enough. The rock is quite strongly foliated, and the foliation pervades both the matrix and the clasts. The largest clast in thin section is an unusual formerly glassy, strongly vesicular, aphyric basalt or andesite. Slightly stretched vesicles are filled by polycrystalline quartz and minor chlorite, and the groundmass is particularly reminiscent of that of basalt 37141. Other lithic clasts include a few very fine-grained meta-siltstones or slates, but most of the detrital grain population consists of albitized plagioclase crystal debris. These are set in a foliated very fine-grained quartzo-feldspathic matrix peppered with chlorite, that I suggest has probably developed from a largely vitric ash primary matrix. Foliation through the matrix is defined by streaks and discontinuous veinlets and segregations of chlorite and sericite.

This is a coarse volcanoclastic sandstone derived from mainly felsic plagioclase-phyric, probably glassy volcanics. The tentative correlation of the foliated vesicular basaltic clast in this rock with sample 37171 may have some useful implications. This sample clearly recrystallized in a high-strain environment, possibly adjacent to a significant fault.

SAMPLE NUMBER: 37145

SUMMARY: This sample is a formerly glassy plagioclase+quartz-phyric rhyolitic lava with unusual perlitic cracking. The rhyolite is intruded by sedimentary microdykes of volcanoclastic sandstone upon which the rhyolite was probably emplaced.

HAND SPECIMEN:

This is a cream coloured rather altered rhyolitic lava with a small inclusions(?) of dark grey lava(?) in one corner of the small hand specimen.

THIN SECTION DESCRIPTION:

Thin section examination shows that this sample is a formerly glassy rhyolitic lava in which the groundmass texture is very well preserved. Phenocrysts in the main body of the section are very well-formed prismatic albitized plagioclase crystals mainly less than 1 mm long, that make up about 5 modal% of the sample. Less abundant are small euhedral quartz phenocrysts with occasional chloritized melt inclusions. There are apparently no mafic phenocrysts in this rhyolite, but small FeTi oxide phenocrysts with leucoxenitic rims are not uncommon, and small apatite crystals are also present as microphenocrysts. The groundmass of this rhyolite is very distinctive. It was undoubtedly glassy, and relic perlitic cracks are abundant, but they show a most unusual pattern. Although 'normal' curved perlitic cracks are not uncommon, many areas of the sample show rather flattened cellular shapes that strongly resemble flattened glassy lapilli. The perfectly euhedral phenocrysts suggest to me that this sample was not a crystal lapilli tuff. I have no idea why the perlitic cracking is so weird.

This glassy rhyolitic lava was probably erupted on a volcanoclastic fine sandstone, that is represented by the dark area of the hand specimen. This sandstone contains detrital plagioclase and quartz phenocrysts, and has clearly invaded or intruded along fractures into the cooling rhyolite, sometimes isolating small angular fragments of rhyolite between thin veins of sandstone.

This sample shows only regional burial metamorphic alteration.

SAMPLE NUMBER: 37146

SUMMARY: This sample is a quite silica-calcite-sericite-altered sparsely plagioclase-phyric dacitic lava with a contact against a chlorite+epidote-altered sparsely plagioclase-phyric foliated basalt.

HAND SPECIMEN:

This is a pink altered rhyolitic lava showing a contact against a dark shaley sedimentary rock(?).

THIN SECTION DESCRIPTION:

This is a sparsely plagioclase-phyric formerly glassy dacitic lava with a contact against a very altered basaltic to andesitic lava. The dacite consists of around 3 modal% of albitized plagioclase phenocrysts that are mainly overprinted by intense rather coarse sericite, and rare leucoxenitized FeTi phenocrysts set in a very altered groundmass. The latter consists now of irregular small patches of quartz set in a much finer-grained quartzo-feldspathic material after glass that is peppered with very fine-grained chlorite, and strongly overprinted by fine-grained but abundant calcite.

The dark rock adjacent to the dacite in the hand specimen is clearly a sparsely plagioclase-phyric, more mafic andesitic to basaltic composition. It is very strongly altered, especially the formerly intersertal-textured groundmass, where plagioclase laths are totally replaced by sericite, small granular epidote crystals are common, and most of the interstitial material is replaced by dense chlorite. The abundant fine-grained epidote and tiny leucoxenitized opaques, and the abundant chlorite, suggest that this rock was basaltic. It may be a very strongly altered version of the same basalt that was described as 37141. The contact between these two quite different lithologies is rather difficult to decipher, but the basalt is clearly rather foliated. Without further information (eg. from outcrop) it is not possible to decide whether this basalt is a dyke through the dacite (my preferred opinion), or simply a lava fragment incorporated in the dacite.

SAMPLE NUMBER: 37142

SUMMARY: This sample is a volcanoclastic medium-grained sandstone derived from felsic plagioclase-phyric and aphyric glassy lavas. It has suffered strong hydrothermal sericite alteration.

HAND SPECIMEN:

This is a pale grey, sericitized volcanoclastic medium-grained sandstone with occasional clasts to 3mm across.

THIN SECTION DESCRIPTION:

This is an intensely sericite-altered framework-supported volcanoclastic sandstone dominated by albitized plagioclase phenocrysts that are mainly 1-3mm across, and almost totally replaced by sericite. Less abundant, but not uncommon are clasts of formerly glassy rhyolitic lava, some possibly pumiceous, that are also thoroughly altered to sericite. Occasional small quartz phenocrysts and phenocryst fragments are present, and leucoxenitized FeTi oxide detrital grains are a minor component of this rock. If any matrix was present in this rock, it has lost its definition due to the sericite alteration. However, more likely, the matrix was eliminated by pressure solution accompanying burial metamorphism and diagenesis of this rock. Spots and streaks of olive green chlorite are not uncommon in this sample, but the key alteration feature is the pervasive and intense sericitization of the rock, which I believe is hydrothermal in origin. .

SAMPLE NUMBER: 37143

SUMMARY: This sample is a weakly foliated, strongly chlorite-altered fine siltstone-shale derived from felsic glassy volcanics.

HAND SPECIMEN:

This is a pale grey porous even-textured and thoroughly boring mudstone.

THIN SECTION DESCRIPTION:

This is a weakly foliated fine-grained pelitic detrital sedimentary rock gradational between siltstone and mudstone. It contains about 2-4 modal% of small anhedral fragments of phenocryst-derived albitized plagioclase and much less anhedral quartz phenocryst fragments, all less than 0.1mm across. These are set in a very fine-grained weakly foliated matrix composed of a mottled quartzo-feldspathic intergrowth with abundant fine-grained pale green chlorite and a streaky network of sericite best developed and defining the foliation direction. Common small clusters of tiny opaque grains cannot be identified without reflected light microscopy. They may be former detrital FeTi oxide phenocryst sites, or they may be concentrations of diagenetic colloidal pyrite.

The amount of chlorite in this rock is significant, and far more than would be expected in a pelitic sedimentary rock derived, as this one appears to be, from felsic glassy lavas with plagioclase and quartz phenocrysts. The rock is probably therefore, hydrothermally altered, with quite strong disseminated chlorite being the main expression of this alteration.

SAMPLE NUMBER: 37148

SUMMARY: This sample is a quartz-phyric dacitic to rhyolitic lava breccia that shows strong carbonate alteration.

HAND SPECIMEN:

This is a rather coarse felsic lava breccia with fragments to at least 1cm across, and strong quartz-calcite alteration and replacement.

THIN SECTION DESCRIPTION:

This is an unusual sample. It is clearly a monomict lava breccia, composed of interlocking, but not jigsaw-fit fragments of almost aphyric dacitic lava with a vitrophyric groundmass. A small amount (< 1 modal%) of mainly anhedral quartz phenocryst fragments with occasional rounded, chloritized melt inclusions, are set in this rock, and show margins that vary from highly resorbed and scalloped, to quite sharp. There are no former plagioclase or mafic phenocrysts in this rock. The groundmass of this sample consists of variably developed (from fragment to fragment) albitized plagioclase laths set in a quartzo-feldspathic fine-grained intergrowth after interstitial glass, with common very fine-grained chlorite. Patchy calcite overprints all fragments, but it is very strongly developed in places, almost replacing 100% of the fragments in these areas. Minor pyrite is associated with this carbonate alteration.

The unusual feature of this rock is that the lava fragments that make up this sample do not appear at all to be typical MRV rhyolites; they are more like formerly glassy evolved andesitic to dacitic lavas. It is possible therefore, that the quartz phenocrysts are xenocrystal in a dacitic magma. The lack of euhedral shapes among the quartz phenocrysts in this rock might support this story. The rock shows strong hydrothermal carbonate alteration.

SAMPLE NUMBER: 37149A and B

SUMMARY: These samples are essentially identical pelitic siltstones with thin sandy lamellae; both rock include a dominant detrital component derived probably from vitric ash, plus a significant amount of detrital muscovite, probably derived from pelitic metamorphics in the Precambrian sequences of western Tasmania.

HAND SPECIMEN:

Both rocks are grey-green pelitic sedimentary rocks with weak laminations.

THIN SECTION DESCRIPTION:

These rocks are identical weakly-bedded pelitic volcanoclastic siltstones in which 1-3mm thick coarser grained beds are composed of detrital 1mm-sized albitized plagioclase phenocrysts with weak to moderate sericite alteration. A few small angular volcanic quartz clasts are also present. Most of both rocks is a very fine-grained rather messy quartzo-feldspathic intergrowth riddled with fine-grained chlorite and magnetite or pyrite, but significantly, containing abundant fine-grained detrital muscovite. Perfectly round to ovoid patches of chalcedonic silica mostly less than 0.2mm across resemble vesicles, but are probably just small concretionary structures replaced by silica. Numerous subparallel stylolitic fractures cross both rocks and are defined by trails of insoluble oxides and leucoxenic material. Disseminated pyrite cubes and aggregates of cubes are quite common, and obviously developed during diagenetic alteration of these sediments.

Both these rocks probably were originally composed of a mixture of detrital vitric ash, and some component of detrital very fine-grained quartz and muscovite derived from Precambrian pelitic metamorphics, or reworked Animal Creek-type Greywacke.

SAMPLE NUMBER: 37149C

SUMMARY: This sample is a medium- to fine-grained volcaniclastic sandstone derived entirely from plagioclase+ quartz-phyric mainly glassy felsic volcanics; the rock has probably suffered weak hydrothermal alteration (chloritization).

HAND SPECIMEN:

This is a pale grey-brown fine-grained volcaniclastic sandstone.

THIN SECTION DESCRIPTION:

This is a medium- to fine-grained volcaniclastic sandstone very similar indeed petrographically to 37142. It is framework supported, and consists essentially of detrital albitized plagioclase phenocrysts and common formerly glassy felsic lava fragments in a totally recrystallized, volumetrically subordinate matrix that was probably vitric ash originally. Quite angular quartz phenocryst fragments are not uncommon also, although they are much less abundant than plagioclase. All plagioclase phenocrysts are strongly altered to fine-grained sericite and chlorite. The formerly glassy lava fragments are mainly less than 0.5 mm across and show a variety of textures composed of mainly very fine-grained quartzo- feldspathic intergrowths indicative of replacement of devitrified glass. Streaky sericite and chlorite are abundant throughout this rock, and the amount of fine-grained disseminated chlorite suggests that this rock has suffered mild hydrothermal alteration. Discrete idiomorphic grains, and occasional clusters of small pyrite grains are present throughout the rock, although they are insignificant modally.

SAMPLE NUMBER: 37142

SUMMARY: This sample is a foliated, sericite-altered medium-grained volcanoclastic sandstone derived from glassy plagioclase and quartz-phyric felsic volcanics.

HAND SPECIMEN:

This is a dark grey weakly foliated and altered volcanoclastic sandstone with 1mm-sized grains of altered detrital plagioclase quite evident in the recrystallized groundmass in the hand specimen.

THIN SECTION DESCRIPTION:

This is a quite strongly foliated and sericite-altered medium-grained volcanoclastic sandstone. The rock was matrix-supported and shows a bimodal grainsize distribution, defined by 0.3-1mm-sized detrital grains of albitized plagioclase, set in a very fine-grained, recrystallized groundmass probably largely after vitric ash. The plagioclase phenocryst detritus is often partially to completely overprinted by calcite and fine-grained sericite. An interesting feature of this sample is the relative abundance and size of detrital zircon crystals. This may simply reflect that the sample was collected from the base of a bed in which zircons had been mechanically concentrated. Detrital FeTi oxides show total alteration to messy leucoxene.

The matrix of this rock is a very fine-grained quartzo-feldspathic intergrowth that is heavily pervaded by a dense meshwork of sericite which appears to be essentially parallel to the bedding, although this is not well-defined. Fine-grained calcite is another common alteration product that overprints the groundmass. Chlorite is much less abundant in this sandstone than in sandstone 37149C.

APPENDIX 8

**INTERPRETATION OF THE VOLCANIC SEQUENCE & MINERALISATION,
YOLANDE - NEWTON CREEK AREA**

RL ALLEN

**INTERPRETATION OF THE VOLCANIC SEQUENCE AND
MINERALIZATION, YOLANDE-NEWTON CREEK AREA**

R. L. Allen, December 1993

Report to Pasmaenco Exploration, Tasmania

INTERPRETATION OF THE VOLCANIC SEQUENCE AND MINERALIZATION, YOLANDE-NEWTON CREEK AREA

Introduction

R. Allen and M. Quayle spent 3.5 days working together on the Yolande Project in December 1993. The aim was to resolve the origin and implications of volcanic facies in the Pasmenco licence area, and to correlate units between drill holes and outcrops. Volcanological-sedimentological logs were constructed for the Newton Creek Spillway and drill hole YNC7. Drill holes YNC 1, 2, 3, 4 and 5, lithochemistry, outcrop hand specimens, and thin sections were briefly reviewed.

Stratigraphy

The volcanological-sedimentological logs enable detailed correlation of the stratigraphy in the Newton Creek Spillway and YNC 7, and confirm that YNC 7 successfully intersected the sulphide bearing units that outcrop in the spillway. These two sections provide a stratigraphic framework with which the other drill holes can be compared. From base to top, the stratigraphic sequence comprises:

- Unit 1: Thick (>50 m), massive to normal graded, 15% 1.5 mm feldspar-phyric, rhyodacitic pumice breccia. Comprises one or more massive beds with normal graded tops. Bedform indicates these beds are subaqueous mass flow units. Lithic clasts increase in size and abundance toward base of beds (coarse tail grading) and are all the same clast type: orange-pink to brown, perlitic to finely spherulitic, 3% 0.5-1.5 mm feldspar-phyric felsic lava clasts with crenulate/microlobate margins. This unit occurs directly above the andesite intrusion in the spillway, and in YNC 1 and the base of YNC 7. In the spillway this unit contains spectacular megaclasts of tuffaceous siltstone-sandstone and mafic breccia up to 9 m in diameter. These megaclasts are interpreted as pieces of the overlying stratigraphy that sunk down into unconsolidated pumice breccia soon after they were deposited.
- Unit 2: Dark green, massive to upward fining and stratified, mafic breccia. Characterized by globular mafic clasts up to 30 cm in size, set in a moderately to well sorted, angular mafic hyaloclastite matrix with no extensive intervals of jigsaw-fit in situ breccia texture. Mafic component monomict, but in the spillway the unit also contains scattered orange-brown 3-5% feldspar-phyric felsic lava lithic clasts. Interpreted as basaltic subaqueous fire fountain deposit (see below). Conformably overlies unit 1.
- Unit 3: Altered, pyritic, normal graded, polymict, subaqueous mass flow breccia and sandstone. Clast types include: fine grained amygdaloidal mafic clasts identical to unit 2, 15% 1.5 mm feldspar-phyric dacite, fine grained microspherulitic felsic lava clasts, minor quartz-phyric clasts. Mineralization is mainly replacement of the matrix and some larger clasts; uncertain whether true sulphide clasts occur. Conformably overlies unit 2.

Unit 4a: Normal graded subaqueous mass flow breccias with green 20% 1.5 mm dacite clasts and less abundant white, flow banded, 5-7% 1-1.5 mm feldspar-phyric rhyolite clasts. Conformably overlies unit 3.

Unit 4b: 15% 1.5 mm feldspar-phyric dacite > mafic clast, subaqueous mass flow breccia with local massive sulphide clasts. Contains 1-4 beds with massive coarse grained base and normal graded sandy top. Matrix to breccia is siliceous, pumice-rich, and the graded top in the spillway is feldspar crystal rich. Dacite clasts are angular and many have hyaloclastite shapes; some occur in jigsaw-fit clusters implying in situ fragmentation.

Unit 5: Massive, 15% 1.5 mm feldspar-phyric dacite sills. Units vary from massive to hyaloclastic, and have intrusive hyaloclastite (peperite) margins. These units intrude at various levels of the stratigraphy, from unit 2 upwards.

Interpretation and discussion

Intrusions and location of the mineralized strata

The feldspar-hornblende-porphyritic andesite at the base of the spillway section is mineralogically and chemically similar to the Anthony Road andesites. This, the relatively fresh character and lack of hyaloclastite at the upper contact suggest the andesite is an intrusion related to the overlying Anthony Road andesites.

Feldspar-porphyritic dacite bodies (unit 5 of stratigraphy) are very abundant in the area, and where diagnostic contact relationships were observed, these contacts were intrusive hyaloclastic contacts. It can be interpreted therefore that many if not most of the dacites are sills and intrusive domes (called cryptodomes) intruded into wet unconsolidated sediments. This abundance of lava-like intrusions is expected in subaqueous volcanoclastic sequences (Aden, 1992), and recognizing the intrusions is critical to establishing a stratigraphy and to exploration. The true stratigraphy can only be established by removing intrusive units. Furthermore, in drill holes YNC 4, 5 and 7 and elsewhere, the dacite intrusions have created a greatly thickened apparent stratigraphy, in which the true stratigraphy outlined above commonly occurs as remnants or screens between dacite sills. For this reason, even though YNC 4 and 5 drilled a considerable distance, much of the core is dacite sills and correlation of the screens of volcanoclastic mass flow units between the sills with the Spillway-YNC 7 stratigraphy indicates that neither hole penetrated the prospective mineralized zone and into the Unit 1 pumice breccia.

Implications of the massive sulphide clasts and their host

Three styles of mineralization occur in the Spillway and drill cores: (1) Zn-Pb-rich massive sulphide as evidenced from clasts in Unit 4b mass flow breccia, (2) disseminated impregnation mineralization within Unit 3 mass flow breccia, and (3) mineralized hydrothermal breccia veins and patches within competent units below Unit 3. All styles of mineralization could be related to the same hydrothermal system, but this is uncertain. The source of the massive sulphide boulders in Unit 4b is considered the highest priority target.

Several massive sulphide clasts occur in the Spillway. Significantly, these clasts are all similar in composition (extremely Zn and Pb rich), they all occur at about the same level within the same mass flow bed (within 2 m of the top of the bed), and occur higher in the bed than such extremely high density clasts would be expected to occur. The similarity of these massive sulphide clasts and their position in the mass flow breccia, suggests that these clasts are the remnants of a once much larger massive sulphide block that was rafted along in the mass flow and dismembered during transport due to stresses and clast collisions in the mass flow. Due to high clast concentration in the mass flow, the massive sulphide clasts were not thoroughly mixed into the flow, but were simply strung out at the level in the flow of the original sulphide raft. This phenomenon is commonly observed with mudstone rip-up clasts in high concentration mass flow deposits.

A sulphide block the size of the parent sulphide raft is unlikely to have been picked up off the sea floor by the mass flow during transport. Consequently, the source area of the mass flow breccia must have contained a high grade massive sulphide lens at least several metres across. Furthermore, this body must have been synvolcanic and at or near the sea floor, in order to be incorporated into the mass flow. The stratigraphic horizon of the original massive sulphide deposit must be at Unit 4b or slightly below.

The abundance of monomict dacite clasts in Unit 4b, their hyaloclastic character and local in situ breccia arrangements, indicate that the source area of the mass flow unit also contained a dacite body, probably in an active state of hyaloclastic fragmentation. The pumiceous matrix and crystal-rich top of the breccia in the Spillway suggests a pyroclastic component at the source as well. Three scenarios seem most likely: (1) An intrusive dacite cryptodome or sill emerged up through the sea floor, bulging up an unstable mound of dacite hyaloclastite, dacite pyroclastic debris from a previous eruption (?Unit 1), an andesite lava, and a massive sulphide lens, and all collapsed together generating a mass flow. (2) Similar to that above, except that a new batch of vesiculated dacite magma was injected into the hyaloclastic dacite body, triggering a small pyroclastic eruption and collapse of pyroclastic debris, dacite hyaloclastite, massive sulphide and an andesite lava. (3) collapse of an active dacite cryptodome and associated massive sulphide lens, and some underlying stratigraphy was caused by generation of an active fault scarp.

In all scenarios, the source area of the Unit 4b mass flow breccia was an active volcanic centre with dacite cryptodomes, dacite sills and massive sulphides. In volcanological terms this association is a proximal (volcanic centre) facies association. This association is similar to kuroko deposits and in such associations several intrusive to partly emergent domes and sills and several massive sulphide lenses should be expected. Very significantly: (1) dacite sills are abundant in the Spillway and YNC 4, 5, 7, and this dacite is texturally, mineralogically and chemically similar to the dacite blocks in Unit 4b, (2) Unit 4b mass flow unit has the texture and bedform of a proximal to medial mass flow deposit, and (3) Unit 4b is associated with the proximal to medial facies of a mafic subaqueous fire fountain deposit (see below) in the Spillway and YNC7. Consequently, the Spillway and YNC7 are interpreted to contain a proximal to medial dacite-basalt facies association of the same volcanic centre as the source of the massive sulphide boulders. This means that the massive sulphide target is close to the Spillway-YNC7 area; I would estimate within 5 km and most likely closer.

Several examples of planar to trough cross bedding were located in the sandy graded top of the Unit 4b mass flow breccia. These suggest a flow direction from NW to SE, down the

plunge of the local fold. This is not ideal for exploration, because it suggests the source area was above present ground surface. However, travel paths of mass flows can be complex and this data should not deter exploration, especially considering there was likely more than one original massive sulphide lens.

Unit 2 basaltic fire fountain breccia

My research in Japan, Sweden, Australia and recently Canada has identified basaltic subaqueous fire fountain breccias as a major submarine volcanic facies that has not previously been appreciated. These breccias occur where extensional faults tap mafic magma, which then erupts out of the fault conduit at a high discharge rate, which in turn results in fountaining of the magma rather than passive lava effusion. As the fountain builds up discharge rate, or as discharge rate wanes, lavas may be erupted as well. Subaqueous mafic fire fountain breccias can be visualized as the underwater equivalent of a Hawaiian lava fountain eruption. The vent area of the subaqueous eruptions is marked by a thick pile of massive, coarse breccia with abundant fluidal bombs, intruded by feeder dykes and sills. Medial to distal flanks of the deposit consist of bedded, finer grained, moderately to well sorted, resedimented mafic breccia debris with broken bomb fragments and no comagmatic intrusions. These fire fountain breccias are commonly the mafic component of a bimodal felsic-mafic sequence, and the vents are synvolcanic faults. The exposures of mafic subaqueous fire fountain breccia in the Newton Creek Spillway and YNC7 are interpreted to be proximal to medial facies associations, probably no more than 2-3 km from vent.

There is an empirical relationship that in several volcanic-related sulphide districts (Benambra Australia, Hokuroku Japan, Skellefte Sweden) these mafic fire fountain breccias directly overlie (or less commonly underlie) the most prospective mineralized horizon, and are spatially associated with some massive sulphide deposits. The mafic fire fountain breccias are the immediate hangingwall unit at both massive sulphide deposits at Benambra and some Hokuroku deposits. I suspect that the mafic breccias indicate a structural environment, volcanic setting, and time in basin development very conducive to massive sulphide mineralization. The presence of mafic fire fountain breccia in the Newton Creek Spillway - YNC7 area, directly overlying a large felsic pyroclastic unit, and spatially associated with massive sulphide, is significant, and an additional plus for the prospectivity of the area.

Unit 1 pumice breccia: marker unit for the mineralized interval

Unit 1 is interpreted as a syn-eruptive mass flow package, generated from a large pumiceous pyroclastic eruption. The unit is likely to cover a large area and should be the best regional marker unit close to the mineralized stratigraphic interval. Unit 1 pumice breccia is extremely similar to the Rosebery-Hercules footwall pumice breccia in appearance, mineralogical composition, and type of lithic clasts, and could be the lateral equivalent of the Rosebery-Hercules footwall unit.

The top of Unit 1 is intersected in YNC1, which implies that the Spillway stratigraphy continues south of the complex Spillway structure and andesite intrusion, and that YNC1 was in fact drilled into the prospective part of the stratigraphy (but possibly slightly too far to the west).

Recommendations

- (1) Deepen drill holes YNC 4 and 5, because these holes have probably not intersected the prospective Spillway-YNC 7 mineralized mass flow package, and have definitely not penetrated into the footwall marker unit, Unit 1.
- (2) Step back to the east of YNC 1 and drill two deeper holes to test the spillway-YNC7 mineralized units, which are now interpreted to occur at the top of or just east of YNC1. If possible, site the holes 200 m or more along strike from each other, so as to test the prospective stratigraphy over a reasonable strike extent and to establish the trend of the prospective stratigraphy.
- (3) The structure of the Newton Creek Spillway area makes drilling of this area only effective from the east. Therefore leave drilling of the spillway until the Aberfoyle licence to the east can be used for a drill site.
- (4) If and when drilling from the Aberfoyle licence to the east is possible, drill a hole between the Spillway and YNC 7.
- (5) Drill all future holes until Unit 1 of the stratigraphy is intersected. This unit should be the best regional marker unit, and because it lies on the footwall side of the mineralized mass flow units, drilling it ensures that the prospective zone has been tested.
- (6) Use Unit 1 as a regional marker unit to trace the stratigraphy through the licence area. This marker unit should be especially useful south of the spillway and into the relatively unknown territory to the south.
- (7) Continue to investigate the similarity of Unit 1 pumice breccia to the Rosebery-Hercules footwall pumice breccia. Regional stratigraphy, petrography and litho geochemistry should be most useful for this comparison. If these units are the same, as they appear to be, this establishes the first correlation through the Central Volcanic Sequence and across the Henty Fault. It would also imply that the Rosebery-Hercules horizon occurs in the Yolande Licence and that the Spillway mineralized zone is in essentially the same stratigraphic position as Rosebery and Hercules. All of this is quite exiting, to say the least.

References

- Allen, R.L. 1992. Reconstruction of the tectonic, volcanic and sedimentary setting of strongly deformed Cu-Zn massive sulphide deposits at Benambra, Victoria. *Econ. Geol.* v. 87, pp. 825-854.

DIAMOND DRILL LOG			project	Location	hole no.	Outcrop		
			Mt. Read Volcanics	Newman Crk Spill way	page 1 of 2			
			coords					
m	structure	log	grainsize	Samples	RL	AZ	INCL	Scale 1:200
			h o n q M max mm	TIS results				Logged by Rob Allen
								date 16.12.93
50								sharp irreg? not faulted contact
40								Massive grey, sericite 15-20% 1-2mm feld-phyr. dacite rock. Rare 5-5mm pink fg felsic lithics. Possible faint pumice texture. Interp: Pumice bx.
				150-200 - green globular mafic matrix				(sharp partly faulted, partly planar conformable contact)
				orange brown 3-5-1-2mm feld-phyr				Green subaqueous basalt/andesite fire fountain bx Matrix-supported subrounded globular 20-30% 1mm feld-phyr of mafic bomb frags & orange brown angular irreg 3-5-1-2mm feld-phyr dacite (sharp, slightly irregular conformable contact)
				SP. hatched felsic lava				5 cm
30								Massive grey 15-20% 1-2mm feld-phyr subaqueous pumice bx mass flow unit.
				2m mafic fire fountain bx				Thick graded top marked by fewer & finer feld stals & smaller more isolated pumice clasts.
				9m mafic fire fountain bx				Extremely large irregular pods of mafic fire fountain bx have mixed slightly disaggregated margins against the pumice bx. Large slabs of laminated tuffaceous siltst & pumiceous sandst are also irreg plastically deformed & dismembered. Interp: Mega blocks of overlying stratigraphy that founded down into unconsolidated pumice bx unit.
20								Massive coarse tail graded 15-25% 1-2mm feld-phyr rhyolite/dacite pumice bx with abundant irreg angular to crystalline pink fg dacite/rhyolite mononitic lithics as shams. Excellent relief tube pumice textures. Conformable base with lithic concentration zone, + load & flames. creamite green vfg tuffaceous sandst at base
				7m bedded grey tuffaceous siltst + sandst				
				1m grey pumiceous sandst				
				pink 3% 1-5mm feld phyr felsic with fine leucoid 2-3mm fine splinteritic texture + perlitic				
10								sharp slightly irreg intrusive contact
				pink-orange 2-3% 0.3-1.5mm feld				Massive brown, 20-25% feld > hb-phyr andesite intrusion. Feld av 1-3mm, hb av 3-4mm & up to 1cm
				phyrit & micro-spherulitic to amorphous dacite lava clasts				fresh brown feldspathic groundmass

size grading of pumiceous matrix

subvertical 40cm intense cleav ± shear

minor shear

coarse tail grading

contacts sub-vertical

DIAMOND DRILL LOG

Project: Mt Read Volcanics
 Location: Newton Crk Spillway
 Coords:

hole no. Outcrop
 page 2 of 2

m	structure	log	grainsize mm	Samples ITS results	RL	AZ	INCL	Scale 1:200
							Logged by Rod Allen	
							date	16.12.93
100								
90	SE vertical surface	xb vectors Indicate flow direction down plunge of fold. From NW to SE						
80	xb gb	all blocks flattened & re-aligned into steep cleavage			300	large out-silled rolled dacite blocks		
70	gb	graded bedding (gb)				massive sulphide bearing dacite → mafic clast, high concentration mass flow bx unit.		
60	gb				20	Mafic clast Clasts at 1cm		
50	gb				250	mafic blob		

15% 1-2mm feld-phyrre dacite
 lava or sill Granular moderately
 amyg^l spherulitic gndmass
 sharp irregular slightly peperitic base

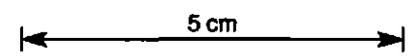
black mudst.
 Massive sulphide bearing dacite
 → mafic clast, high concentration
 mass flow bx unit.

↑ unaltered
 ↓ massive sulphide
 blocks strong
 anisotropy within
 2m of top of
 coarse by zone
 suggests derived by dispersion
 of one large mass flow
 during mass flow transport

green 20% 1-2mm lenticular dacite
 clast > 5-7% 1-1.5mm feldhyalite clast
 matrix sup to clast sup mass flow loss
 ± minor amyg^l mafic blocks. Fg cherty
 silt matrix esp. in base of upper 2
 units

↑ moderately
 pyritic
 ↓ Graded grey pyritic altered silic
 poly lithic feld & silt bearing
 mass flow units & black to grey siltst.
 sharp, conformable contact

Subaqueous basalt/andesite
 fire fountain bx Upward fining
 package of mass flow sedimented
 mafic debris comprising g to v
 bomb frags in matrix of 5-10mm
 av. hyaloclastite.

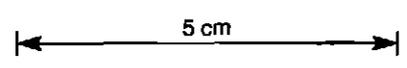


DIAMOND DRILL LOG

project: Mt. Read Volcs
 location: Newton Ck./Yolande
 coords:

hole no. YNC7
 page 1 of 6

m	structure	log	grainsize mm	Samples T/S results	RL	AZ	INCL	Scale: 1-200
					description			
0								Logged by: Rod Allkn
								date: 15.12.93
10								Massive, strongly tectonically foliated 15% 0.1-2mm feld-phyre dacite in situ hyaloclastic bx
20	↑ Strong cleavage ↓							Green fragments with cream q-ser bleaching along fractures & bx clast margins results in pseudo-matrix supported texture.
30								Top not exposed, so cannot determine whether is lava or hyaloclastic sill.
40								↓ decreasing cleavage intensity
50								



DIAMOND DRILL LOG				project	Mt Read Volcanics	hole no.	YAC7	
				location	Newton Cr / Yalanda	page	2 of 6	
				coords				
m	structure	log	grainsize min no max mm	Samples TS results	RL	AZ	INCL	Scale 1:200
					description			
50								
60	A rubby broken bleached zone							
70								
80					77.4m	contact difficult to locate exactly due to bleaching; bx		
90								
100								
110								
120								
130								
140								
150								

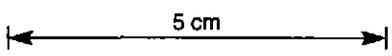
94.7m

graded mass flow units of
hyaloclastite similar to
those below the underlying
dacite/andesite sill. Correl
with Spillway bx with massive
sulfide clasts.

black mudstone interbeds

mg intrusive contact

94.7-102m: Intrusive hyaloclastite
(peperite) with baked dk grey
mudst matrix



DIAMOND DRILL LOG

project: Mt Road Volcanics
location: Newton Cr / Volande
coords:

hole no. YNC7
page 3 of 6

m	structure	log	grainsize mm	Samples TS results	RL	AZ	INCL	Scale 1:200
							Logged by Rod Allen	date 15.12.93
109								
110								
130								
140								
150								

0.2m ↑

mudst matrix

↓

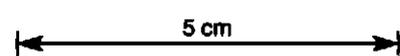
scattered mudst stringery, verhs & patches

Massive green, 10-15%
2mm feld-phytic dacite/
andesite sill. Hyaloclasti
margins is coherent to
weakly brecciated core.
Peperitic top is diagnostic
evidence that the unit is
intrusive not extensive.

Probably similar dacitic
composition as unit at
top of hole

147-8m

Irreg intrusive contact



DIAMOND DRILL LOG			project	location	coords	hole no.	page	
			Mt. Read Volcanics	Newton Cl / Yolande		YNCT	4 of 6	
m	structure	Log	grainsize	Samples	RL	AZ	INCL	Scale 1:1200
			φ n of g max mm	TIS results				Logged by Rod Allen
								date 15.12.93
150	gb ↑				57.8m			green, normal graded mass flow bx of 10-20% 1-2mm feld-phyrc? dacite/hyaloclastite and fg slightly amyg' ? andesite hyaloclastite Correlates with massive sulphide Spillway bx with massive sulphide. Spillway bx with closed.
160	gb ↑ bedding GT				167.9m ← dk gng.			diffuse contact Massive 10-20% 1-2mm feld-phyrc dacite/rhyolite hyaloclastite bx with baked mud or tuffaceous silt matrix in lower part of units & granular well sorted sandst. matrix in upper part of mass flow units Intep: peperitic hyaloclastite intruded into mass flow package of resedimented hyaloclastite of similar comp or just all mass flow bx - (very irreg? peperitic contact). sharp, slightly irregular conformable contact Oxidized with volc turbidites
170								Massive, poorly sorted, 10-20% 1-2mm feld q, phyrc dacite/rhyolite. coarse bx Matrix to clay-supported. Matrix same or similar to top of underlying mass flow package & is mud to 2-3mm av. grainsize. Large blocks all same composition & are hyaloclastite & possibly in part peperitic
180	gb ↑				250			Intep: peperitic dacite/rhyolite intrusive into top of polymict mass flow bx package. diffuse conformable contact Package of normal graded moderately sorted polymict volcaniclastic subaqueous mass flow bx units
190	gb ↑ gb ↑ gb ↑				300			strong semi-pervasive q-ser alteration with 1-2% py-gn sp. impregnation
200					5cm			Clast types include: fg green slightly amyg' andesite like unit below, 15% 1-2mm feld-phyrc? dacite, fg siliceous microspherulitic felsic lava clasts. Couple clasts have q, phenos, but are not common.
210					146.5m			sharp or slightly mixed contact. Could be top of intrusive or extrusive andesite/basalt. Clast in overlying mass flow unit suggests this matrix unit is extrusive.

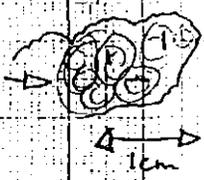
DIAMOND DRILL LOG

project: Mt. Read Volcanics
 location: Newton Cr. / Yolande
 coords:

hole no. YNC 7
 page 6 of 6

m	structure	log	grain size mm	Samples TS results	description	RL	AZ	INCL	Scale: 1:200
									Logged by Rod Allen date 15.12.193
250									
260					↑ relatively unaltered; pumice altered to sericite-rich composition Feldspars altered to orange-pink secondary feldspar ↓				
270									
280									
290									
300									

Grey-green sericite, thick, 15% - 5mm feld-phyric pumice breccia subaqueous mass flow unit with coarse tail grading of mononct. dense perlitic to fine mossy, 3-spherulitic 2-5% 1-2cm feld-phyric hyalite or dacite lithic clasts. These lithics are orange-pink with darker brown rims. Margins are cusped to crenulate-microlobate

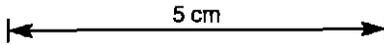


Excellent tube pumice textures in many places. Diffuse stratification in upper part due to more xtal-rich diffuse layers. Interp: syn-eruptive mass flow unit of felsic pumiceous pyroclastic debris derived from vent in glassy felsic lava (bits of which were incorporated into the mass flow as lithic clasts).

coarse tail grading

base of unit not drilled

EOH 289.4m

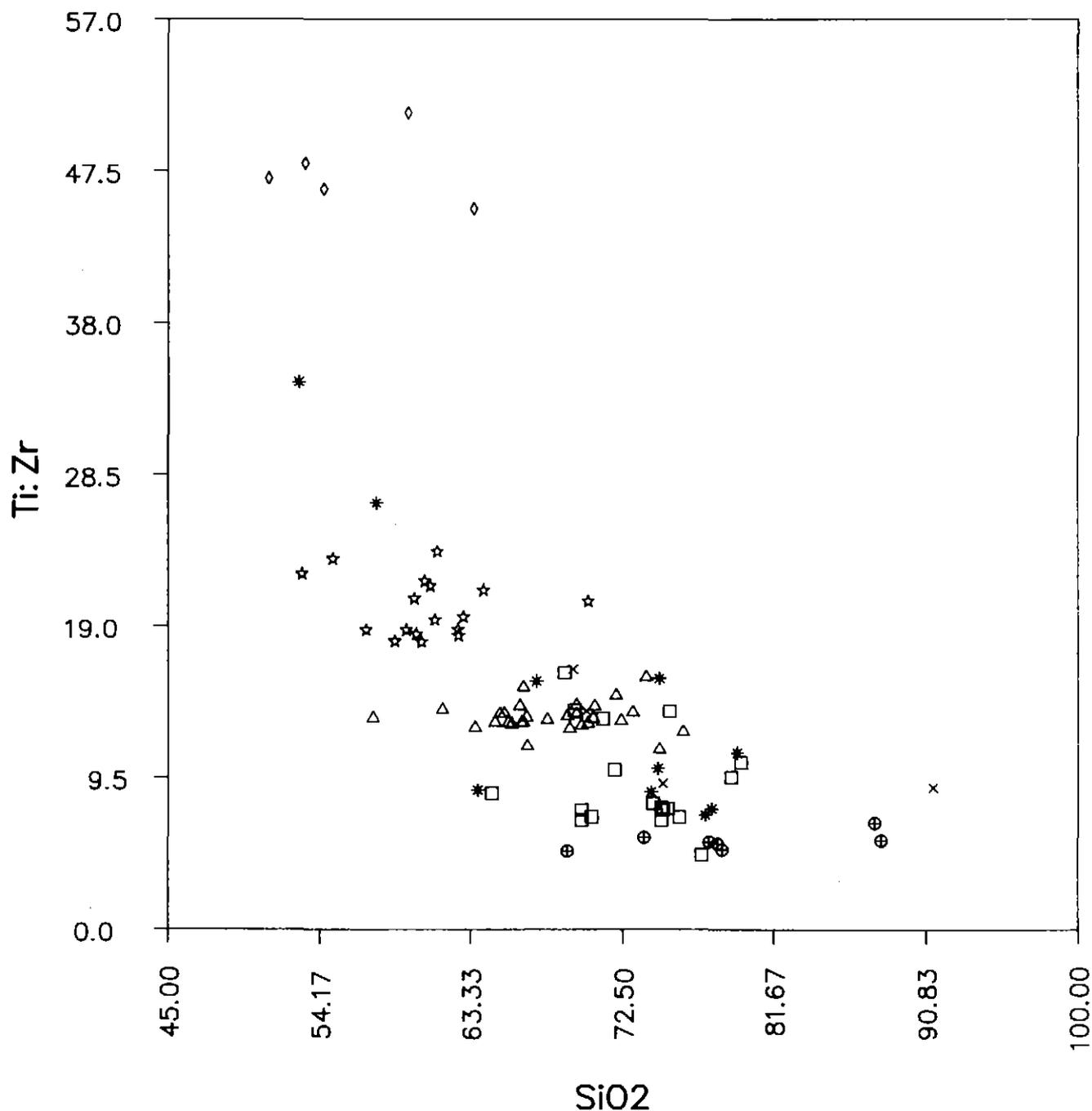


APPENDIX 9

**LITHOGEOCHEMISTRY: ADDITIONAL SCATTER PLOTS FOR
NEWTON CREEK, WHITE SPUR & YOLANDE**

E.L. 11/85 - YOLANDE

NEWTON CREEK VOLCANIC LITHOLOGIES

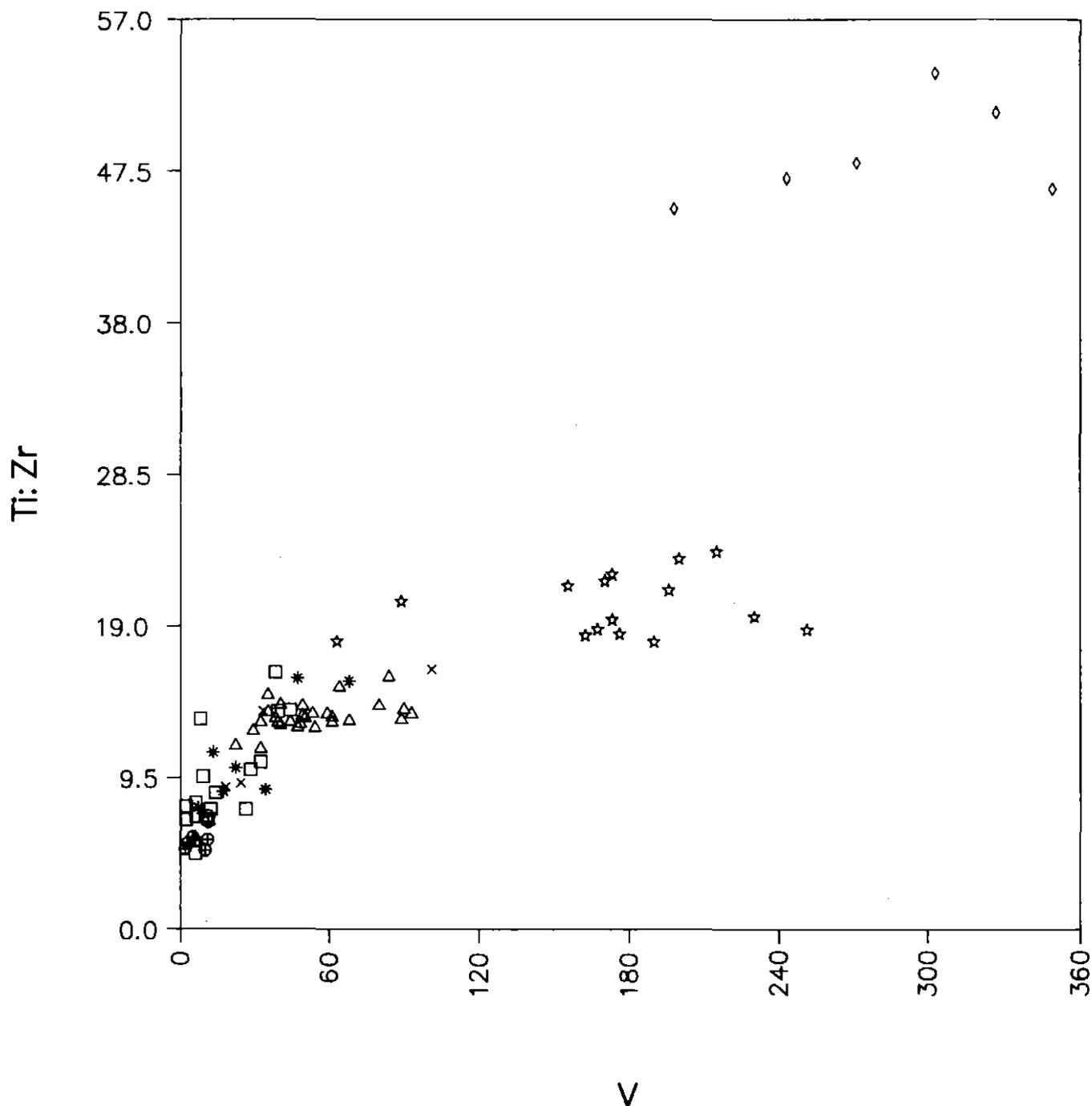
Ti:Zr v SiO₂KEY

- | | |
|------------------------------|----------------------------|
| ⊕ Tyndall Group Rhyolites | ◇ Spillway basalt |
| ☆ Anthony Road Andesites, | ◇ Stratified mafic breccia |
| ☆ Howard's Anomaly | □ Pumice Breccia |
| ☆ Spillway Footwall Andesite | * Undifferentiated |
| △ Newton Creek Dacites | x Sediments |

E.L. 11/85 - YOLANDE

NEWTON CREEK VOLCANIC LITHOLOGIES

Ti:Zr v V

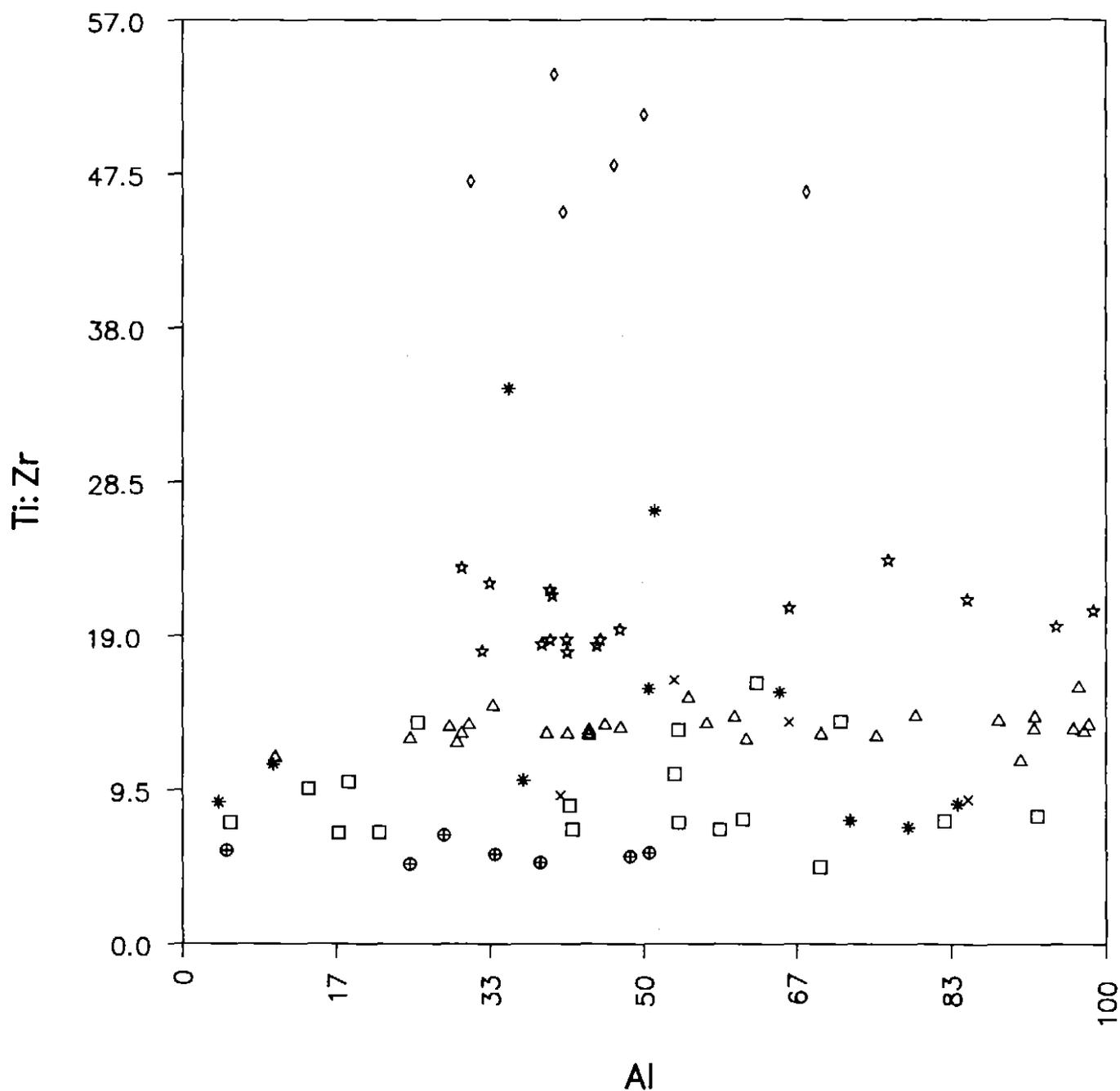
KEY

- | | |
|------------------------------|--------------------------|
| ⊕ Tyndall Group Rhyolites | ◇ Spillway basalt |
| Anthony Road Andesites, | Stratified mafic breccia |
| ★ Howard's Anomaly | □ Pumice Breccia |
| ★ Spillway Footwall Andesite | ★ Undifferentiated |
| △ Newton Creek Dacites | × Sediments |

E.L. 11/85 - YOLANDE

NEWTON CREEK VOLCANIC LITHOLOGIES

Ti:Zr v Al



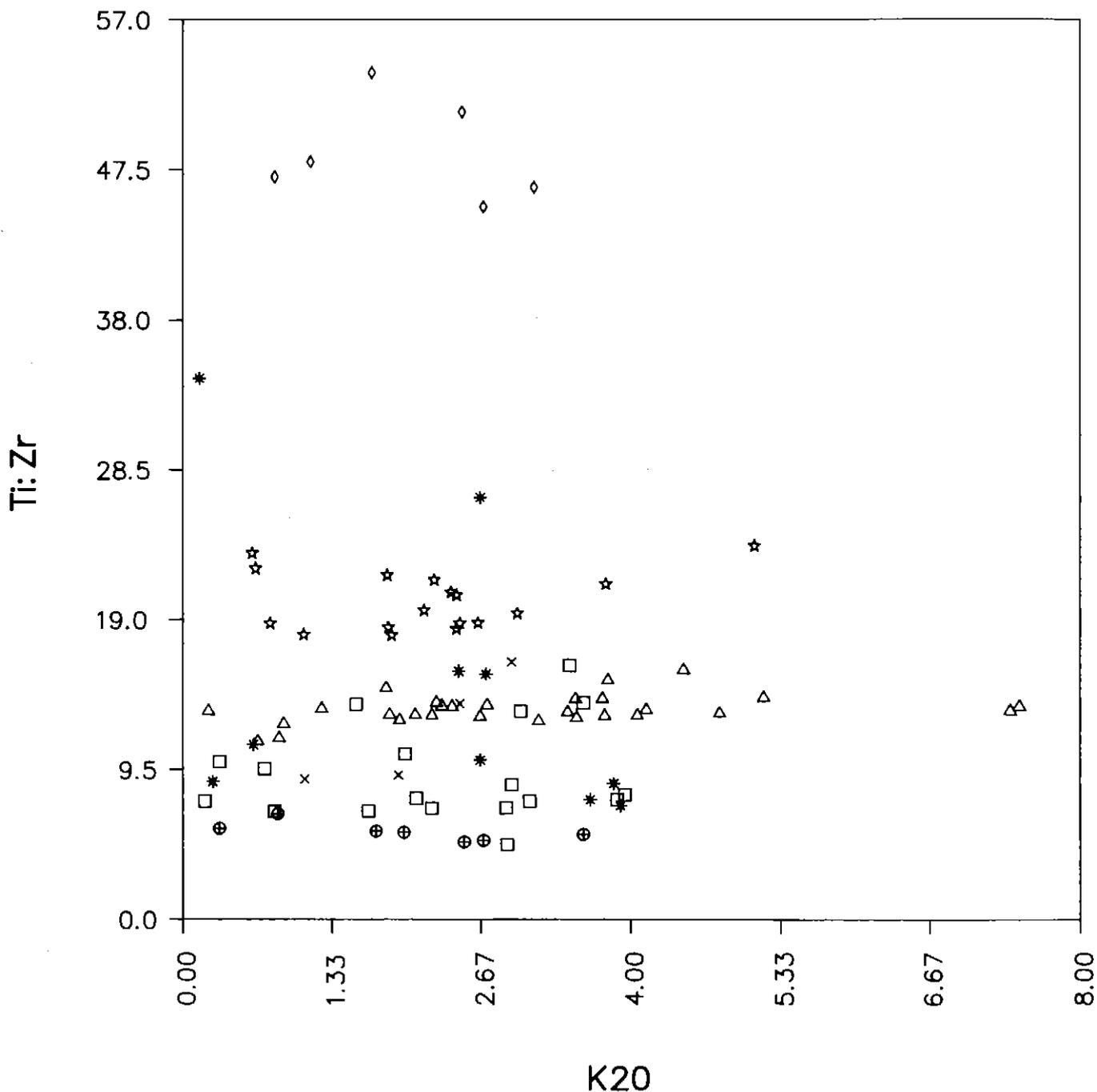
KEY

- | | |
|------------------------------|----------------------------|
| ⊕ Tyndall Group Rhyolites | ◇ Spillway basalt |
| ☆ Anthony Road Andesites, | ◇ Stratified mafic breccia |
| ☆ Howard's Anomaly | □ Pumice Breccia |
| △ Spillway Footwall Andesite | * Undifferentiated |
| △ Newton Creek Dacites | x Sediments |

E.L. 11/85 - YOLANDE

NEWTON CREEK VOLCANIC LITHOLOGIES

Ti:Zr v K20

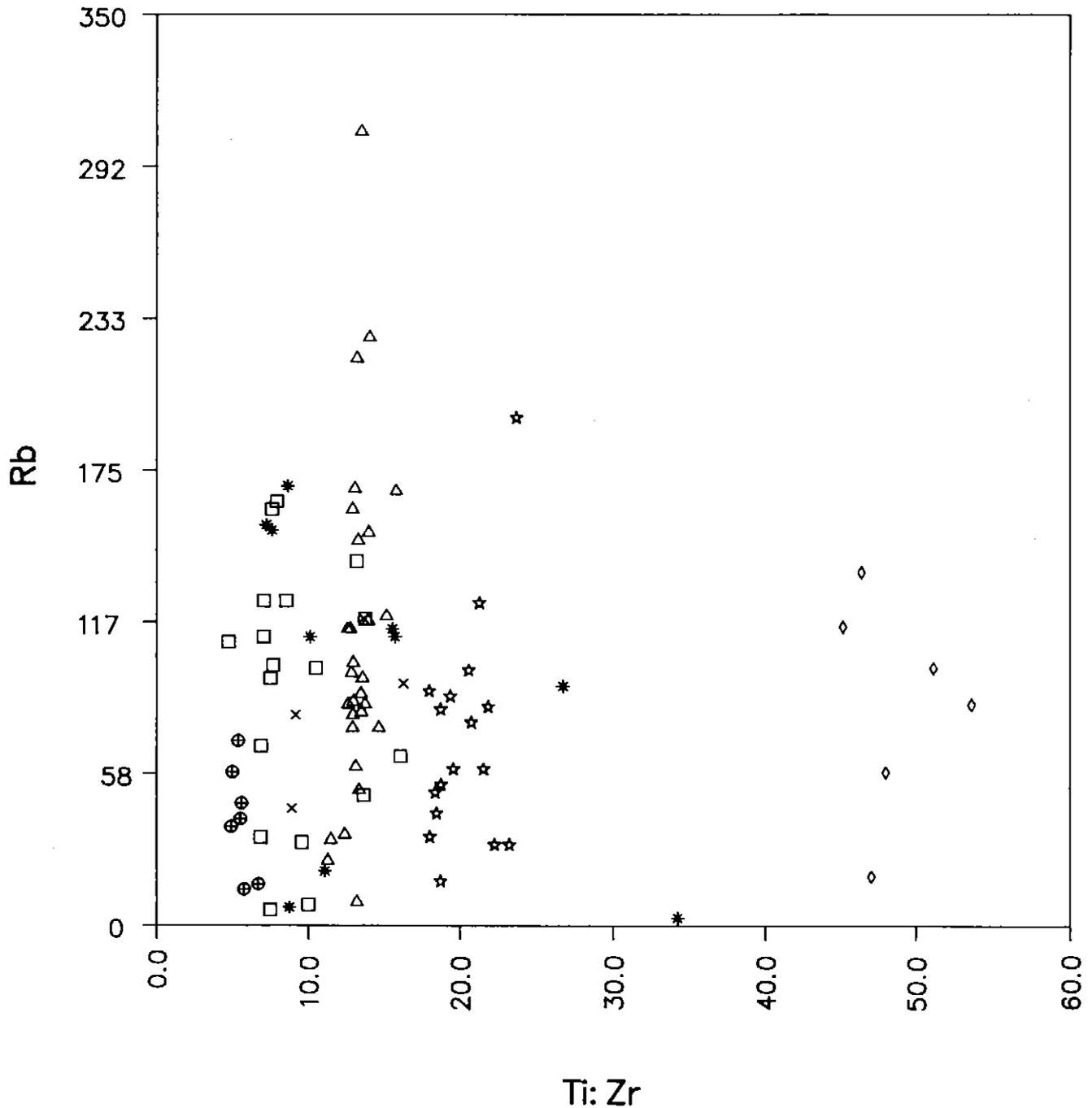
**KEY**

- | | |
|----------------------------|----------------------------|
| ⊕ Tyndall Group Rhyolites | ◇ Spillway basalt |
| Anthony Road Andesites, | ◇ Stratified mafic breccia |
| ★ Howard's Anomaly | □ Pumice Breccia |
| Spillway Footwall Andesite | * Undifferentiated |
| △ Newton Creek Dacites | × Sediments |

E.L. 11/85 - YOLANDE

NEWTON CREEK VOLCANIC LITHOLOGIES

Rb v Ti:Zr



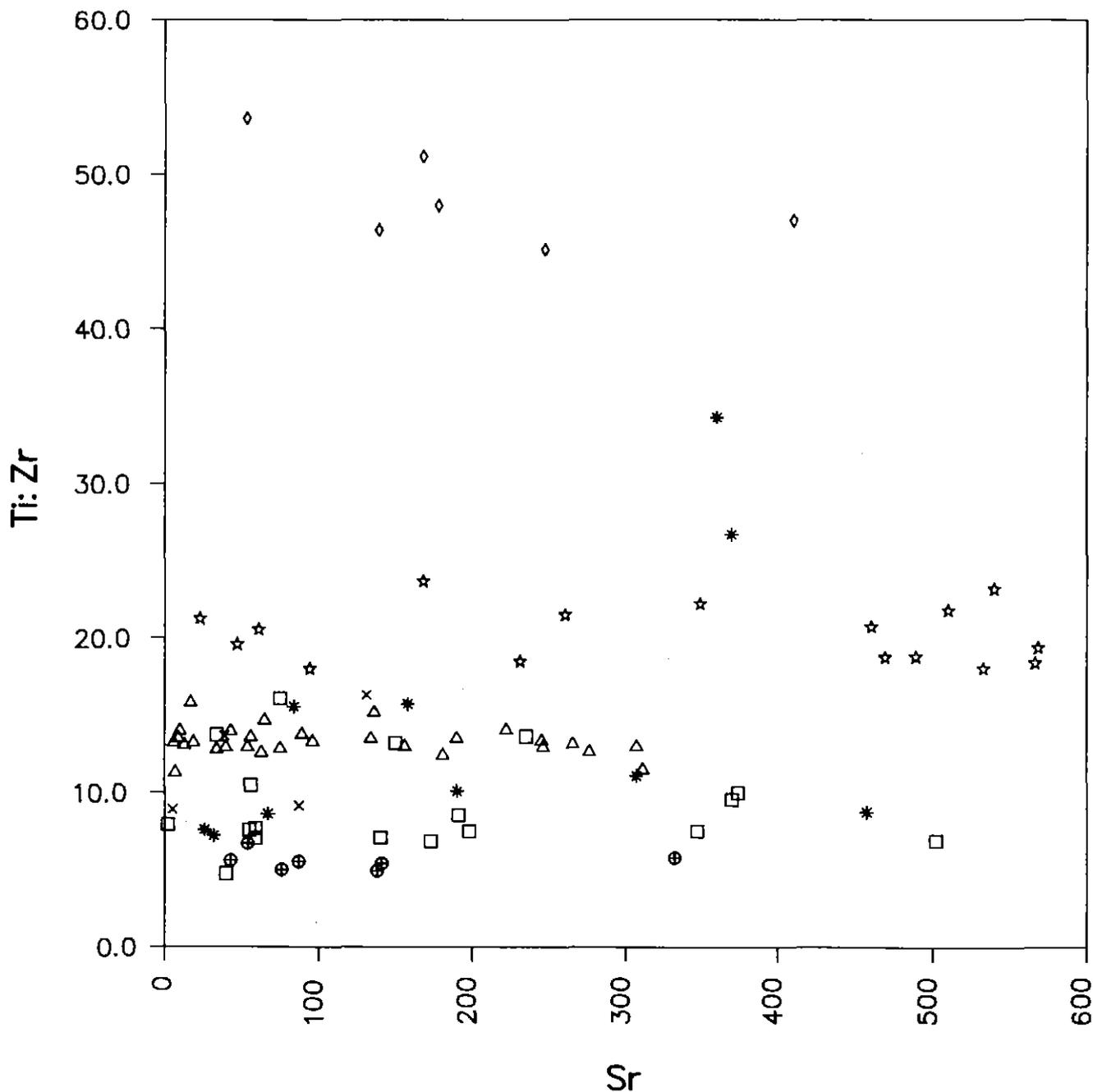
KEY

- | | |
|------------------------------|----------------------------|
| ⊕ Tyndall Group Rhyolites | ◇ Spillway basalt |
| ★ Anthony Road Andesites, | ◇ Stratified mafic breccia |
| ★ Howard's Anomaly | □ Pumice Breccia |
| ★ Spillway Footwall Andesite | ★ Undifferentiated |
| △ Newton Creek Dacites | × Sediments |

E.L. 11/85 - YOLANDE

NEWTON CREEK VOLCANIC LITHOLOGIES

Ti:Zr v Sr

KEY

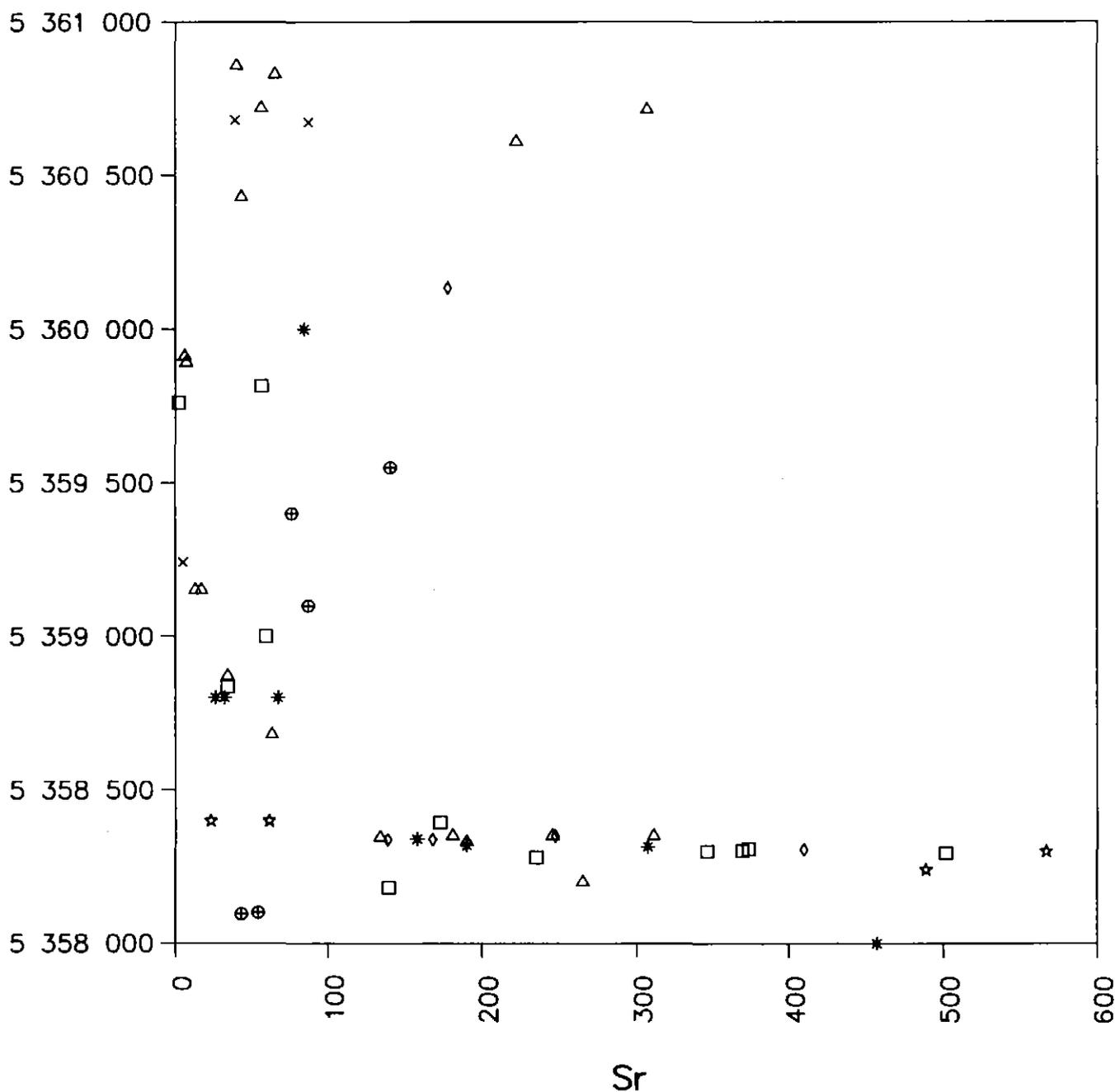
- | | |
|------------------------------|----------------------------|
| ⊕ Tyndall Group Rhyolites | ◇ Spillway basalt |
| ★ Anthony Road Andesites, | ◇ Stratified mafic breccia |
| ★ Howard's Anomaly | □ Pumice Breccia |
| ★ Spillway Footwall Andesite | * Undifferentiated |
| △ Newton Creek Dacites | × Sediments |

E.L. 11/85 - YOLANDE

NEWTON CREEK VOLCANIC LITHOLOGIES

LGC_N

LGC_N v Sr



KEY

- | | |
|------------------------------|----------------------------|
| ⊕ Tyndall Group Rhyolites | ◇ Spillway basalt |
| ☆ Anthony Road Andesites, | ◇ Stratified mafic breccia |
| ★ Howard's Anomaly | □ Pumice Breccia |
| △ Spillway Footwall Andesite | * Undifferentiated |
| △ Newton Creek Dacites | × Sediments |

APPENDIX 10

**A REVIEW OF AEROMAGNETICS, TM & FIELD RELATIONSHIPS IN THE
NEWTON CREEK/HENTY CANAL AREA**

FC MURPHY


MEMORANDUM
**PASMINCO
EXPLORATION**

TO: Mike Quayle
FROM: F.C. Murphy
DATE: 22nd December 1993
SUBJECT: EL 11/85 Yolande Joint Venture

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

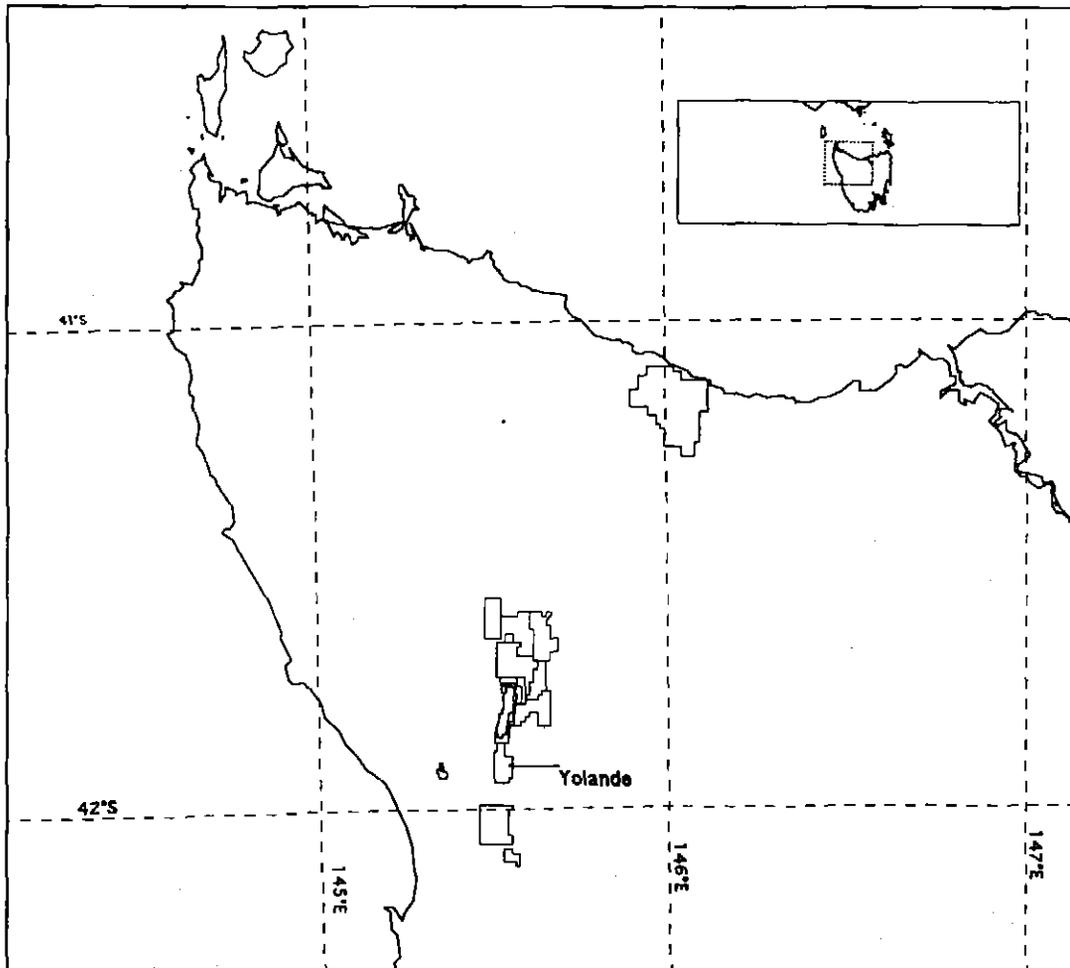
A review of aeromagnetics, TM and field relationships in the Newton Creek/Henty Canal area the Yolande Licence EL 11/85 (Fig. 1) highlights the following points:

- The North and South Henty Faults (Fig. 2) have a more complex linkage than previously realised. This is because the individual faults are segmented by a through going NW-SE zone sub-parallel to the White Spur Fault. It is particularly evident in the TM data (Fig. 3) and aeromagnetic data (Fig. 4). Figure 5 shows the combined interpretations. Figure 6 identifies the major structural features.
- The topographic expressions of the "two" Henty Faults differs across the White Spur Fault; whereas the North Henty is more pronounced topographically NE of the White Spur Fault, the South Henty Fault is the dominant structure SW of the White Spur Fault. This suggests that the relative displacements along the Henty Faults change on either side of the White Spur Fault.
- The fault geometry suggests either that the White Spur Fault is a relay ramp and it transfers displacements along the Henty Fault (Fig. 7), or the White Spur Fault offsets the Henty Faults sinistrally, such that the North Henty Fault (NE of the White Spur Fault) is offset SE to become the South Henty Fault (Fig. 6). This implies an apparent offset of almost 2 km along the White Spur Fault. Support for the offset model is provided by the distribution of magnetic signatures:
 - The boundary between high and low magnetic signatures in the SE (Fig. 4) is shifted sinistrally along a series of structures sub-parallel to the White Spur Fault. The relative shift is of a similar magnitude as the apparent offset of the Henty Faults.
 - There is an overall sinistral swing in the trend of magnetic signatures to the NE of the White Spur zone (Fig. 4).
 - The high magnetic intensity signature in the wedge shaped block between the North and South Henty Faults (SW of the White Spur Fault) is terminated where it meets the White Spur Fault (Fig. 4).
- In the offset interpretation, the Henty Faults reactivate and propagate through the White Spur Fault (Fig. 7). Note that the newly propagated strands are less pronounced in the field, probably because of smaller displacements than the parent Henty Faults.

- The relationship of the Henty and White Spur Faults suggests that they form part of a conjugate set. Dextral shear is known along the Henty Faults, in addition to high angle reverse movements. The magnetic andesite at the spillway is apparently offset dextrally along a magnetic linear trend subparallel to the South Henty Fault (Fig. 4).
- Field observations of fault zones in the Newton Creek spillway indicate approximately E-W compression during the Devonian Taberaberran deformation. This is consistent with the interpreted conjugate relationship of the White Spur and Henty Faults.
- During Cambrian extension, these faults would provide a pathway for evulsion of mineralising fluids. This is particularly the case for the fault intersections, being a focus of fluid flow.
- A major accumulation of zinc-rich mineralisation is expected to have a low magnetic signature, based on the low susceptibility of sulphide clasts in the Newton Creek spillway. Hence magnetic lows proximal to major fault intersections provide a first order target area (Fig. 6).
- The nature of the low intensity magnetic signature adjacent to the dismembered magnetic andesite in the spillway area is not presently resolved. Ground magnetic modelling (by P. Basford) suggests that at least part of the low signature is a coupled response to the subjacent andesite. In addition, the discrete, very low intensity zone to the SW has not been identified as anomalous in the ground magnetic profiles. The influence of topography on the profile should be investigated in further evaluating this prospective area. This holds interest from its structural position close to the intersection of the South Henty and White Spur Faults (Fig. 6).
- The boundary between this andesite and the spillway conglomerates at the spillway exposures has not undergone any more significant displacements than would be expected between units of differing competency undergoing deformation together. Although the boundary is sharp, a major fault is not seen. The implication is that the stratigraphy is intact, with the andesite as an intrusive plug in a proximal volcanic setting.
- A NNW trending shear zone (at Loc. 2) defines the eastern boundary of the Spillway Conglomerate sequence. This is associated with a steeply plunging stretching lineation and steeply plunging folds (suggesting high strain conditions). Asymmetric augen structures indicate high angle reverse NE side up displacement. This shear zone is evident in the magnetics as defining the western limit of magnetic anomalies within the Howards Andesite.
- Sub E-W structures are evident in all data sets (Fig. 5) although not coincidentally placed in each. These are interpreted as "ECS". In terms of their kinematic history, such structures were extensional during the Devonian deformation. They may also provide a focus for mineralising Cambrian fluids.

F.C. Murphy
F.C. Murphy

Figure 1: Location Map of Yolande, EL 11/85



5 cm

Figure 2: Mapped Faults

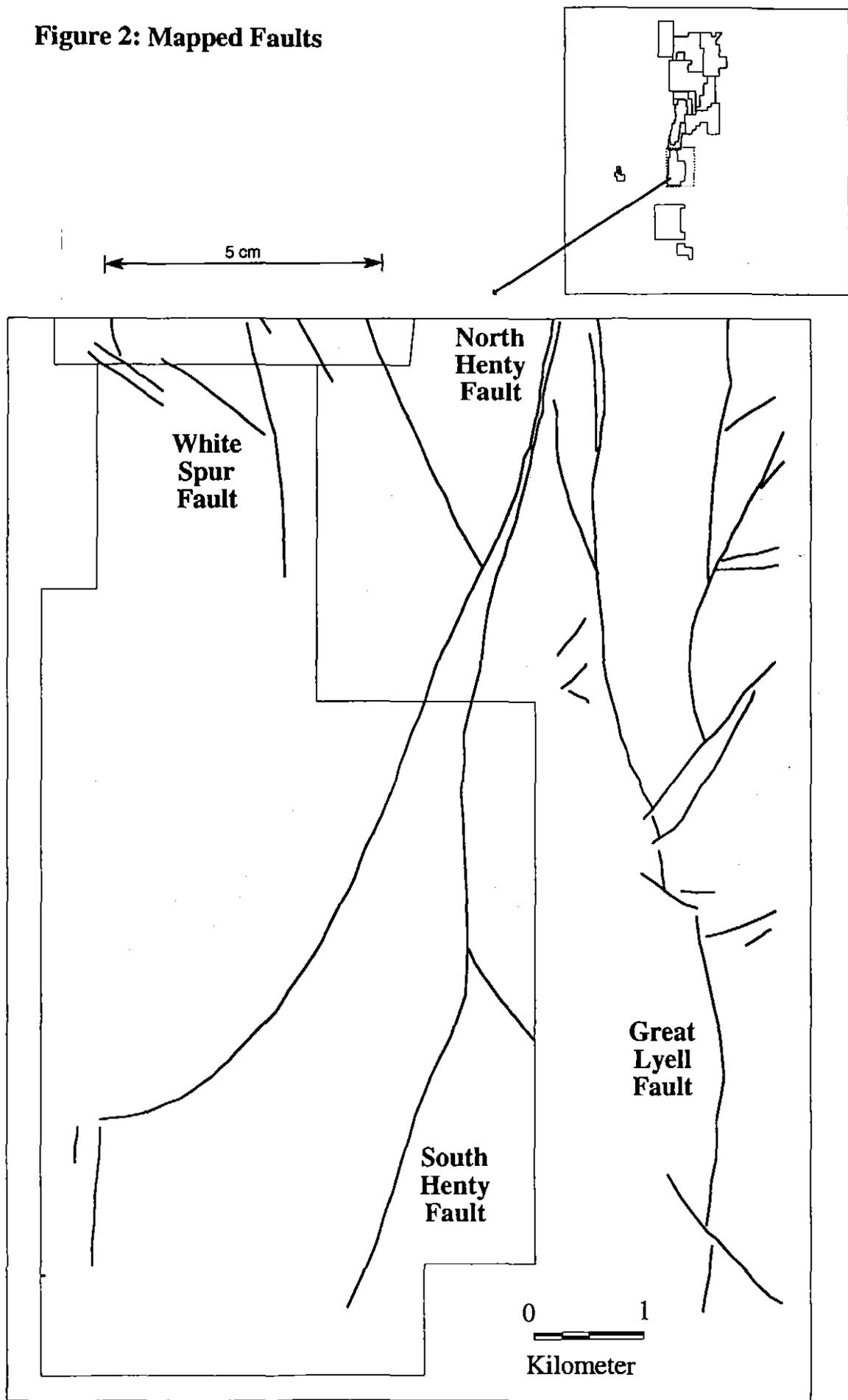


Figure 3: TM Structures

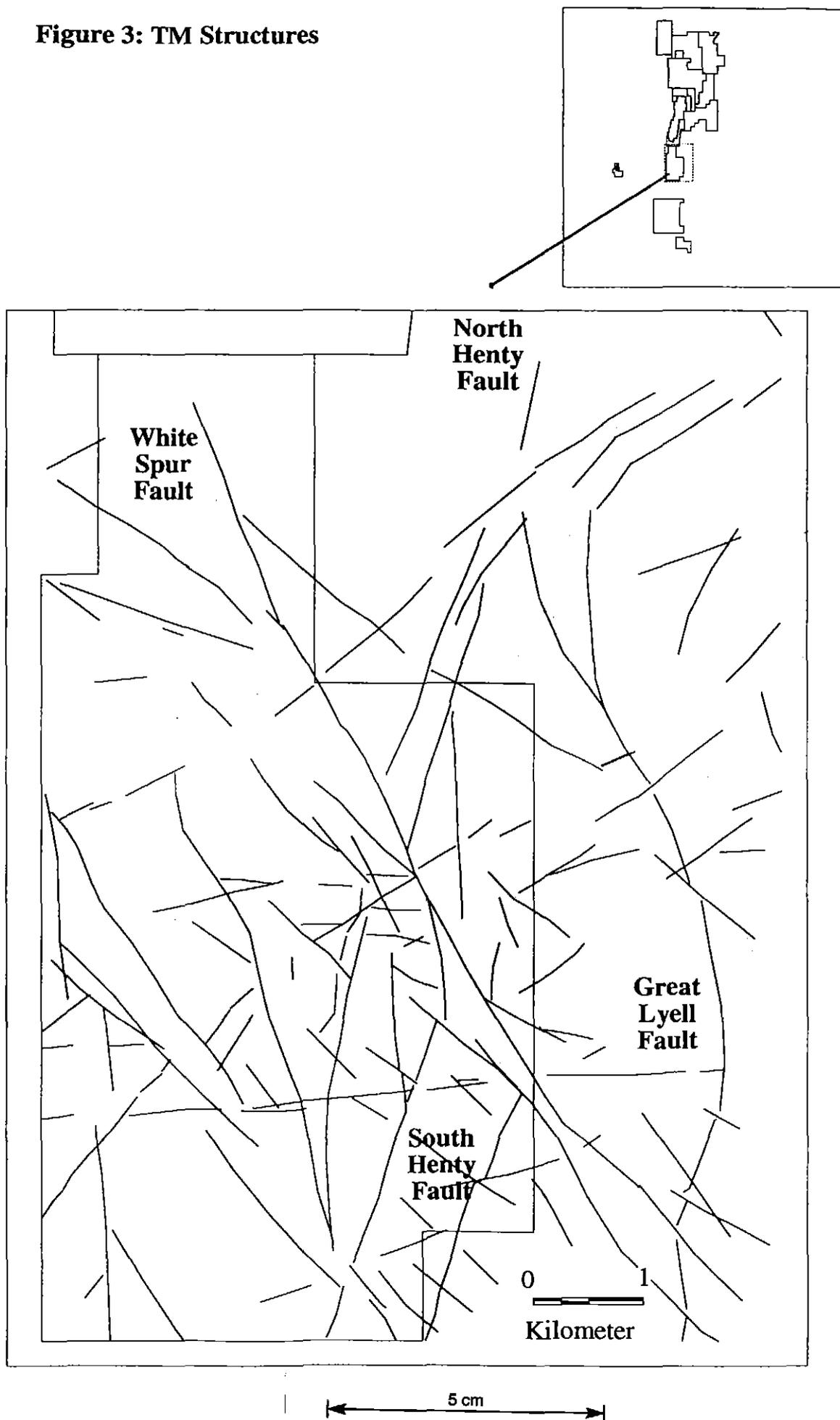
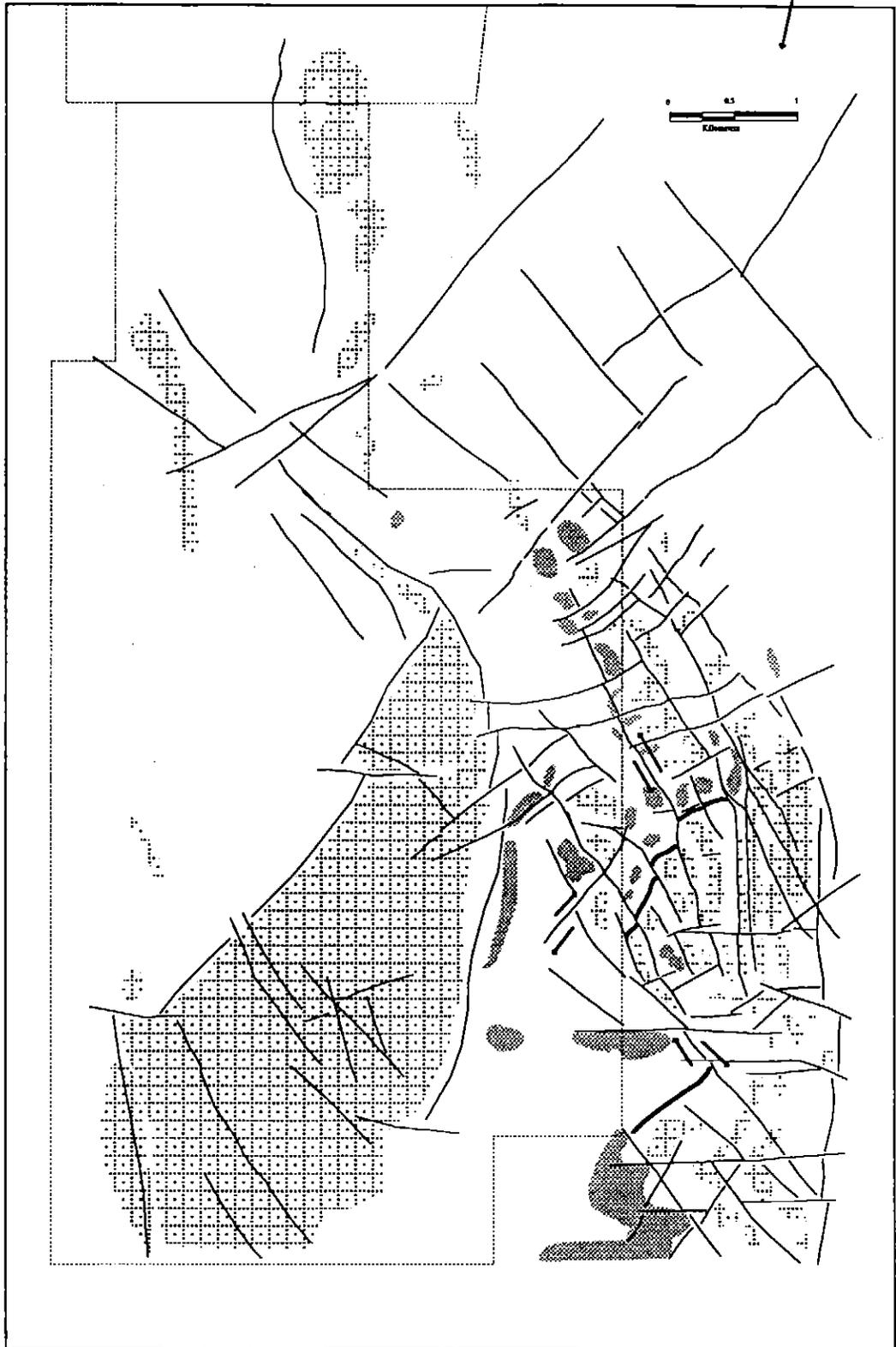
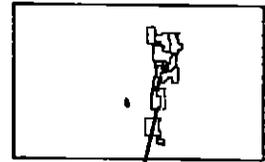


Figure 4: Aeromagnetic Interpretation

- ⊕ Magnetic High
- ⊙ Magnetic Low
- Magnetic Linear
- Signature Boundary



5 cm

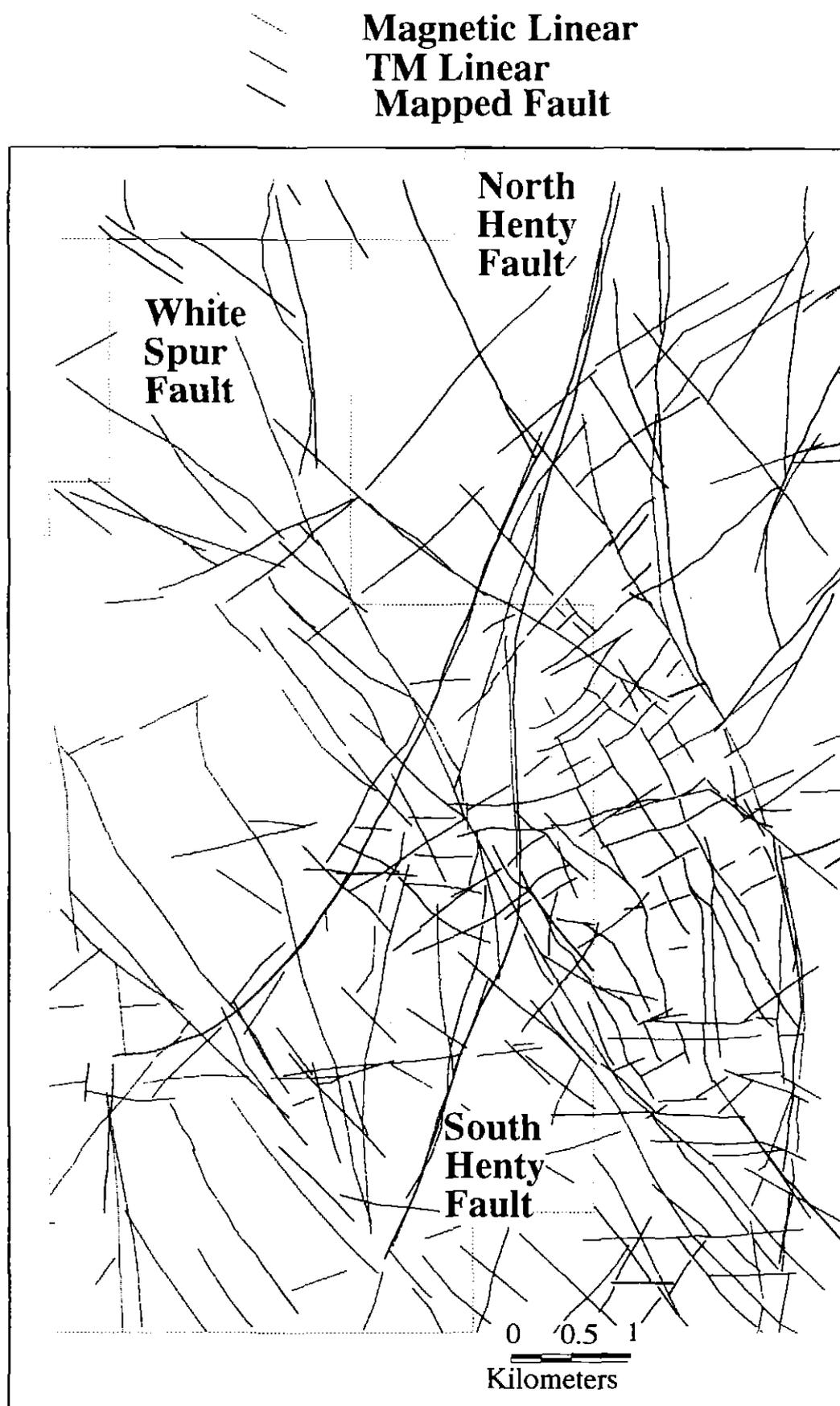
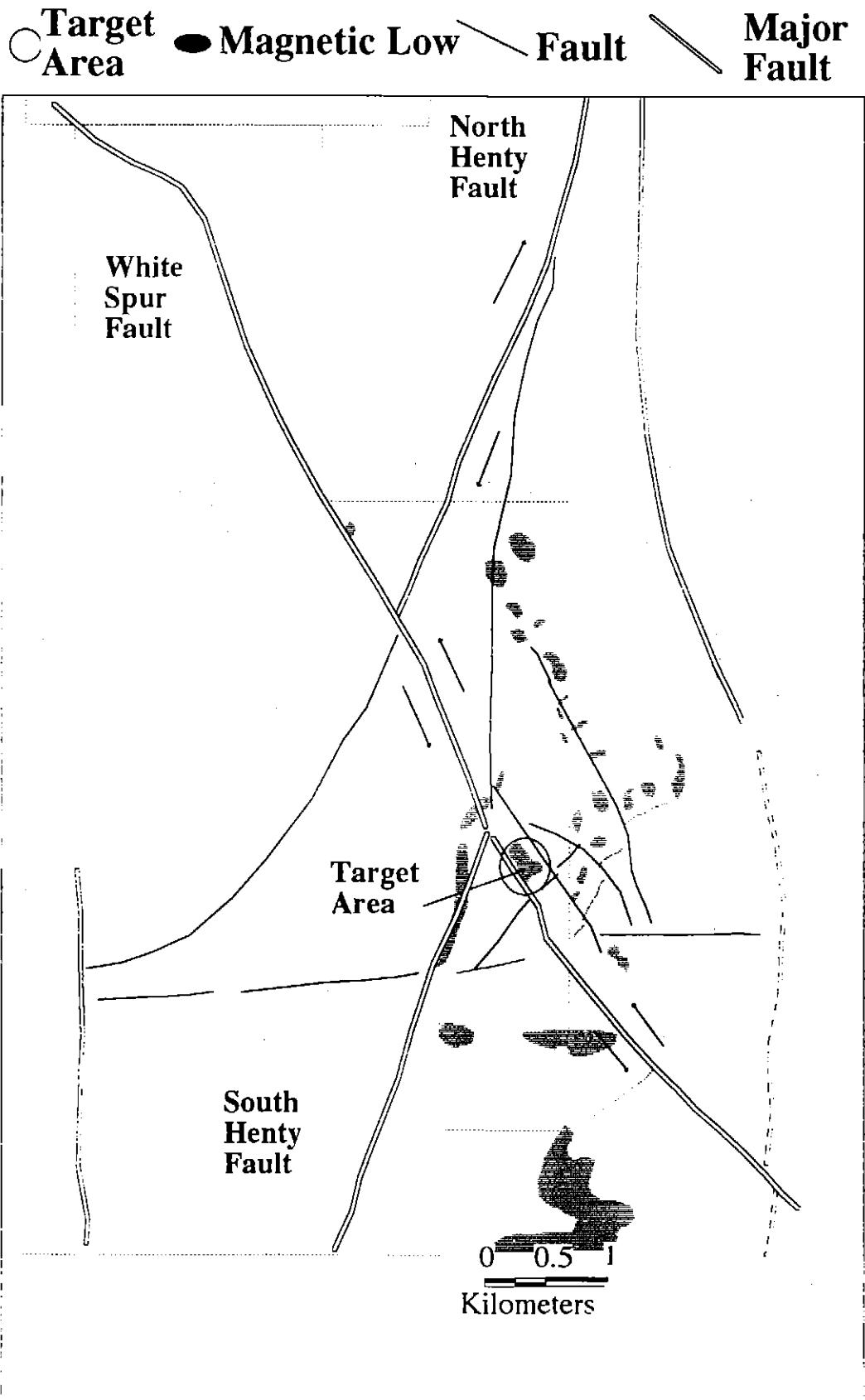
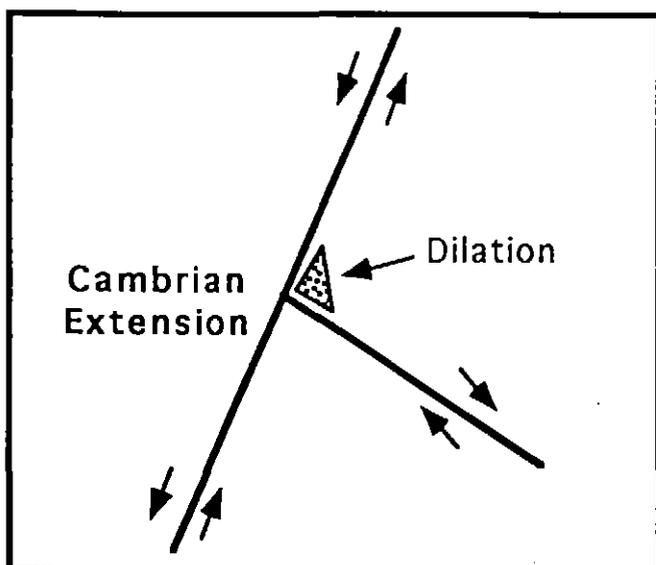
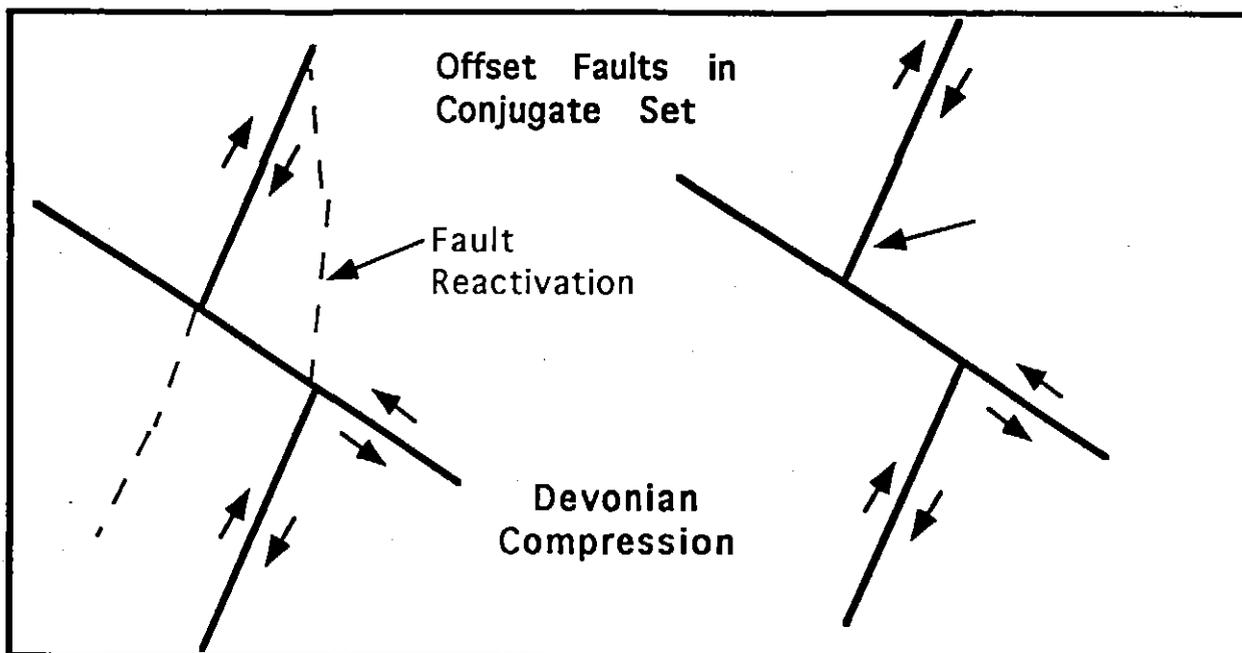
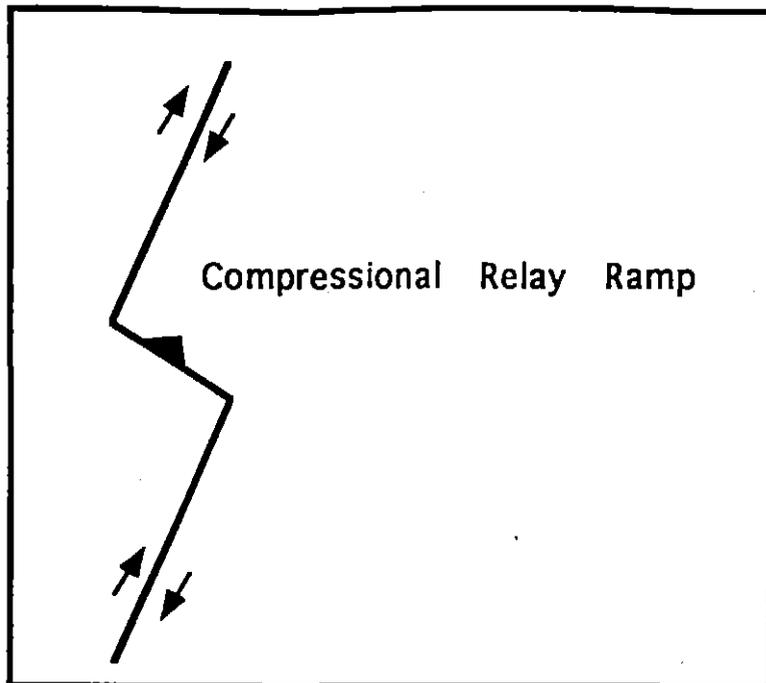
Figure 5: Combined Structural Features

Figure 6: Major Structural Features and Target Area



5 cm

Figure No. 7: Structural models of fault geometries.



APPENDIX 11A

**AN ANALYSIS OF MAGNETIC DATA - HENTY RIVER - MT TYNDALL AREA
LEAMAN GEOPHYSICS**

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:

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897303

AN ANALYSIS OF MAGNETIC DATA HENTY RIVER - MT TYNDALL AREA

for
PASMINCO EXPLORATION

by
D.E. Leaman

August 1993

HOWARDS

INTRODUCTION

The Henty River - Mt Tyndall area, as defined for this analysis, lies south of the confluence of the South and North Henty Faults and the Great Lyell Fault but between the South Henty Fault and the Great Lyell Fault. The area is north of Basin Lake and lies due east of EL 11/85, Henty River (Figure 1).

Parts of this area have been examined previously, using either regional gravity/magnetic data sets or detailed aeromagnetic coverage by Pasminco Exploration (Leaman, 1991, 1992), but it has not been possible to assess structural controls or mineralised sites between the South Henty Fault and the Great Lyell Fault due to termination of licence and high quality coverage between 379 and 380 000 mE. A recent swap of high resolution aeromagnetic data between Pasminco Exploration and Aberfoyle Resources has transformed this situation.

This report outlines a primary assessment of the overlapping data set from the Henty River to the Great Lyell Fault.

The present analysis has attempted both an extension of previous interpretations and an assessment of both the structural setting of the area and its mineralisation and the information which may be contained in the data. There may well be scope for further examination after some of the implications have been reviewed and some lithologies confirmed.

PREVIOUS INFERENCES

Previous geophysical studies have implied a significant regional difference between the northern and southern parts of this area based on gravity data (Figures 2 to 4, reproduced from Leaman, 1992).

Figure 2 suggests a major sinusoidal almost E-W zone boundary into the area. The gravity anomaly relief suggests that the source structure is crustal in scale. The arc of the Great Lyell Fault and some elements of the Henty Fault system, notably the North Henty Fault, are also shown. This interpretation did not rank the South Henty Fault as a significant structure in pre-Devonian terms.

Figure 3 provides some detail within this framework and implies a relationship between the zone boundary, splinters along it, and intersections with other elements considered to have either equivalent age or to have been active during Cambrian times. Many of these structures have combined to control intrusion of the extended Pine Hill Granite. An inferred position for the pre-Devonian location of the Great Lyell Fault is also suggested.

Figure 4 details this concept and suggests a possible relationship between known mineralisation in the area and the inferred structures. The boulder of massive sulphides found in breccia along the Newton Creek Spillway may be assessed in this context and the certain knowledge that the source must have been nearby.

Figure 5 presents an alternate, and older, view based on the limited aeromagnetic data then available to Pasminco Exploration (Leaman, 1991, Figure 16). Some additional mineralised sites, based on the mapping of R. Poltock, are also shown. The interpretation shown confirms many of the elements inferred from the available gravity data but there are some conflicts in these diagrams - especially the sense of displacement on the E-W structures. This may reflect the limited coverage of the two data sets used for earlier work or it may be real and indicate different displacements either at different times or scales or influencing deep and shallow source responses in an ambiguous manner. The diagrams may yet prove to be consistent.

Mineralisation at Tyndall Mine, near the Newton Creek Spillway, and along probable extensions of the White Spur Fault - originally defined magnetically - has been related to various shear or fracture sets (Figure 5). All known mineralisation, and alteration - such as near Leech Hill and Howards Anomaly (Figure 9) - lies some distance west of the Great Lyell Fault and this is consistent with the view defined in Figure 4; that the original Lyell Fault as its crustal impression lies between the South Henty and modern Great Lyell systems.

If these concepts are even partially valid then it might be expected that significant variations would occur in the pattern and composition of volcanics near the focus of the zonal boundary (Figure 2) and the ancient Lyell Fault (Figure 4). Although no clear focal site has been defined in earlier work, using limited data, the general site is unambiguously indicated and all known mineralisation lies within 2 km of the nominal intersection at 380 000 mE, 5358 000 mN.

This new analysis, made possible with an extension of the magnetic data set, has reviewed the possibility of defining any volcanic product, or mineralisation, foci.

GEOLOGICAL BACKGROUND

Although parts of this area were remapped by R. Poltock for Pasminco Exploration (see also Leaman, 1991) the only regional basemap in the public domain is that of Corbett (1986)(see Figure 9). This shows the area to be widely blanketed by glacials but an array of volcanic and volcanoclastic rocks are present.

Felsic volcanics occur adjacent to the South Henty Fault and members of the Tyndall Group lie west of the Great Lyell Fault. Between these suites/formations is an expanse of undifferentiated andesitic rocks. These are intruded by porphyries near the Henty River and west of Leech Hill but most porphyries are associated with more normal sedimentary rocks close to the South Henty Fault. The andesites are localised within a belt about 8 km long and up to 2 km wide with the broadest occurrence near 5355 500 mN. The felsic rocks disappear and the Tyndall Group is thinned markedly near this northing. Are these observations a function of grouped thickness combinations or is the

difference important? These changes commence on the southern face of the inferred zonal boundary shown in Figures 2 to 4. In addition, the abnormal elbow in the Great Lyell Fault, the addition of porphyries and the forking of the South Henty Fault all occur near an ENE trend axis at about 5358 000 mN (Figures 3, 4). These relationships imply some crustal base control on high level deformation and igneous emplacement.

Most mineralised sites are shown in Figures 5 and 9. Pyritic alteration also occurs at two sites west and northwest of Leech Hill near 379 500 mE, 5354 500 mN (see Figure 9). There is no obvious explanation for this distribution in the surface geological map although, as noted in the discussion above, it is possible to infer an approximate regional focus within geophysical data sets.

MAGNETIC PROPERTIES.

Some rock property determinations have been completed and supplied to Leaman Geophysics in the following form.

Unit	Tyndall Gp		Anthony Rd andesites		CVC volcanics	
	susc	dens	susc	dens	susc	dens
Number	64	6	93	7	46	9
Mean	4.4	2.69	0.30	2.85	0.18	2.59
Std dev	3.77	0.08	0.38	0.18	0.10	0.18
Variance	14.2	0.01	0.15	0.03	0.01	0.03
Max	12.6	2.79	2.62	3.09	0.51	2.76
Min	0.21	2.59	0.01	2.55	0.01	2.25
Range	12.4	0.2	2.61	0.54	0.50	0.50
Coef var	85.5	3.04	130.2	6.29	56.1	6.90
Std err	0.47	0.03	0.04	0.07	0.01	0.06

Densities are in gm/cc and susceptibilities in 10^{-3} SI.

This tabulation is misleading. The simple statistical assessment leads to a biased result. Firstly it averages all members of a group and the range of properties does not distinguish weathering or alteration. Secondly, it does not suggest the true, normal value distribution which represents the bulk property asymptote for the distribution - and the value which must be accepted as a basis for interpretation or modelling. If the actual observations are inspected and the obvious contribution due to surface alteration noted or ignored then the range is reduced and a typical value can be inferred. Exceptional values, which are included in the statistics, can then be separated as anomalous.

A revised valuation of susceptibility is
 Tyndall Group 0.3 bulk, local units 6.
 Andesites 0.15 - 0.22

Felsic volcs	0.1 - 0.15
Sed rocks	<0.1

These values may be converted into cgs units by division of 4pi. Thus 0.1×10^{-3} SI units is approximately 0.1×10^{-4} cgs units. On this basis the maximum value observed (for Tyndall Group) of 12.6 SI is equivalent to 1×10^{-3} cgs. Most values are consistent with previous determinations and modelling (see Leaman, 1991).

The values inferred have been reviewed during modelling and also compared with the direct correlations of lithology and response. A number of inconsistencies have been identified even though the observed relativities can be retained.

ANTHONY ROAD MAGNETIC DATA

The newly supplied data is shown in Figures 6, 7 and 8. It has been superimposed on the geological base map in Figure 10.

The responses indicate a much more variable suite of materials than indicated by regional mapping. Discrete and marked variations are indicated within both the andesites and Tyndall Group units. There is no clear correlation between rock type, anomaly or exposure as mapped.

Although the Tyndall Group rocks are generally associated with the largest responses, reflecting their high susceptibilities in general, this pattern is neither universal nor consistent. There are several zones in which mapped andesites produce comparable results. There is also considerable variability in the magnetic field in the region near the South Henty Fault even though felsic volcanics, porphyries and sedimentary units are present. The andesites in this zone are also subdued compared with many of the more eastern members.

The Great Lyell Fault and the contact with Ordovician conglomerates is strongly marked but the structure seems far from simple and there are many suggestions of offsets and cross structures extending SE into the Mt Tyndal region. Inspection would suggest that the fault zone is compound and consists of a series of N-S and NNW-SSE elements. The great bend near the Tyndall Mine may be a simple junction of two fault arms.

Many trends are evident in the data and these have been compiled in Figure 17. Few of these have any surface representation. The central glacials-covered zone is also full of character showing that the cover is relatively thin - probably rarely more than 20 or 30 m - and that the underlying units are variable in composition.

No qualitative inspection of this complex data set with compound magnetic field responses and limited direct correlations to mapped units and lithologies can only be sensibly appraised by direct analysis.

QUANTITATIVE ANALYSIS

Nine profiles have been selected across the data set. The location of these samples is shown in Figure 11. Each line was chosen in such a way as to provide information on a range of responses, lithologic correlations and provide inferences about mineralised sites. This work is considered very preliminary and indicative since it is clear that there are a number of important variations in magnetic responses and lithologies which have not been recognised previously and that there is a need for review of many more profiles. This may be beyond the scope of current exploration objectives and must follow some ground checking and exposure review in any event.

The models presented have been shown to be feasible and consistent solutions compatible with the surface geology - as currently understood - and base levels defined for the data set.

Not all possible solution styles have been excluded by the present analysis but those offered are considered the most likely overall, of those investigated to date. No set of viable alternatives has yet been found but these *may* exist. Further fieldwork, changed definition of rock boundaries, or additional rock property understanding may vary the solutions or conclusions offered.

The models have been depth restricted to 1500 m in order to focus attention on shallow sources and limit complex interactions from deep source effects. The latter may well exist and therefore have not been appraised. The possible impact of this factor has been discussed for those lines where it may appear to be an issue. In general, however, the magnetic data set has a shallow focus, given its close line spacing and low clearance (80-100 m). Long wavelength effects are not obvious and the interpretation has been directed at clearly shallow components. The most likely difficulty posed by these presumptions relates to dip estimates since gradients may be modified or improperly estimated. The interpretation recognises this problem and simply describes dip sense without precise definition of angle. It has been considered more important to define direction of dip than the actual dip. It is possible that the estimates are valid, this risk notwithstanding. It should also be noted that this problem may arise in any situation where several sources and their effects may interfere. The modelling approach used tends to resolve these possible ambiguities *pari-passu*.

Line 1. (Figure 12)

This profile extends across the area near the Tyndall Mine. The observed profile is dominated by the effect of mafic and ultramafic materials west of the South Henty Fault. The qualitative difference between responses east and west of the South Henty Fault is apparent. Several slices of strongly magnetised material must be present west of the fault. The effect cannot be explained by any single volume, regardless of contrast. This west dipping slice solution was also found necessary in earlier studies (Leaman, 1991).

The other major response in the profile is related to members of the Tyndall Group. The Tyndall Mine is located near the peak anomaly. Consistent with property determinations the contrast between Tyndall Group rocks and surrounding andesites and dacites is of the order of 50 times. All values used in the model are credible but lie in the upper few percent of observed values. This tends to imply that observed values of susceptibility do not adequately define the magnetic properties of these rocks or that the rocks sampled are somehow atypical. Since many determinations are based on rare drill cores or surface exposures it is possible that the latter carry a weathering element and that the former reflect bulk alteration since most holes are in areas which are either mineralised or thought to be mineralised and which are almost certainly altered. This conclusion, if true, is of considerable exploration significance and the model estimates of contrasts should be reviewed and assessed in this context since the values may be a *very reliable guide* to rock state.

The model suggests that the Great Lyell Fault dips west and this finding is virtually universal. The South Henty Fault is rarely defined but its dip also appears to be sub vertical or westward; some definition being achieved where mafics have been caught along its surface (see other lines).

Of more interest is the suggestion that dips or volumes vary within the Tyndall Group. The high contrast rocks cannot dip west. The eastern unit may be a separate selvedge or fault slice parallel to the main Lyell faulting. This is common but not universal across the area. Or is the dip change due to folding (unlikely), other structural dislocation (possible) or primary unit relationships (also possible). The latter would be of signal importance for exploration, mineralisation and perhaps preservation of ore.

The remainder of the sequence west to the South Henty Fault seems to be a rather ordinary stratification.

The Tyndall Mine may be related to an internal sequence variation within the Tyndall Group - note the thin high contrast member, or the local contrast loss (possible fault or alteration). Comparison of Figures 17 and 18 suggest that the deposit lies on a transverse fracture within these assemblages and may not be primary.

Line 2. (Figure 12)

This section passes a little south of the Spillway occurrence of ore fragments. The overall pattern is as described for Line 1 but some irregularities are evident. The andesite sequence is much more complex and not simply layered. The appearance is more that of piling. The andesites are strongly differentiated magnetically. A question may well be, which units are piled? Is the andesite piled and thickened down dip or are the felsics thickened up dip? Whatever the case the contact between these rocks carries a complex and active history. The Spillway site lies close to projections and continuations of this contact.

The opposed dips, possible selvedge effect, and altered zone response are reproduced as in Line 1. The alteration zone extends to Howards

Anomaly. The only differences between Line 1 and this section are that the alteration is more substantial and that the eastern selvage zone - if that is what it is - is within strongly magnetic tuffs seen centrally or to the west in these northern profiles. It should be noted that the alteration zone could possess some magnetisation; it is simply very low intensity when compared with the remainder of the Tyndall Group.

It may also be remarked that one of the andesites is also of high contrast and it is this unusual character which broadens and amplifies the magnetic response of the zone and generates an effect comparable with the mafic patterns west of the South Henty Fault. Although the modelling is dependent upon reasonably accurate surface widths of the lithologies any errors are unlikely to be significant and this change is anomalous. A major compositional change is almost certainly present within the andesitic sequence.

Line 3. (Figure 13)

This section is much closer to the Newton Creek spillway ore sample site.

The response pattern across the zone west of the South Henty Fault or near the Tyndall Group is similar to Lines 1 and 2. The principal difference in this model relates to some mafic material along the South Henty Fault. This appears to be very localised but is required to pull the magnetic field out of shape along the ravine. Simple problems with the survey and terrain clearance cannot produce these effects.

The main body of andesitic rocks is virtually non magnetic but the sense of piling and thickening described at line 2 remains evident. The thickening of the felsic rocks may be real or apparent as a result of fault shaping. The andesite volume is here broken by a porphyry and a magnetic andesitic variant. The spillway fragments appear to be near a disrupted portion of the contact between andesites but could be equally close to either the felsic - andesite contact or the internal andesite junction. The latter was noted as marking a major compositional change in Line 2. Either contact represents a change in volcanism but the more significant change might well be that to the felsics.

There is no clear suggestion of opposing facings within the Tyndall Group on this line but the model is not clear on this point. Some variation is possible. A shallower westerly dip for the Great Lyell Fault is also indicated.

Line 4. (Figure 13)

This sections passes close to Howards Anomaly and provides a transect of all units and the Howards Anomaly alteration zone. The alteration zone is unambiguously represented by a severe loss in magnetisation to levels at or below those defined as "normal" for Tyndall Group on the basis of core samples. Note how atypical such values are. Values as high as 30 susceptibility meter units can be expected in these

rocks. Opposing dips and a selvedge zone are again implied.

The andesitic sequence is also shown to be far from simple. While there are at least three variants or units within the Tyndall Group this section provides evidence for at least five andesitic units. Some of the Tyndall Group changes have been mapped and described as various types of tuff no such discrimination has been suggested previously for the andesites.

At least three of the andesites are strongly magnetised and the pattern of properties is consistent with previous lines. The main body of andesite is, as in Line 1 and especially 3, barely magnetised. The entire sequence appears to dip normally and in sequence although all possible combinations of the implied contrasts have not been evaluated. Most of this area is covered by glacials and any outcrop guidance could prove crucial to acceptance or revision of this model.

The felsic rocks, however, do give the appearance of a pile and certainly a change in thickness although this may be a function of the faulting along the Henty River. A narrow zone with reduced properties lies along the eastern face of the felsic rocks. This may represent the alteration associated with a possible extension of the White Spur Fault into this block east of the South Henty Fault. Other sections (below) suggest a discontinuity in unit and structural style south of this section. See also Figure 18.

Line 5. (Figure 14)

This section considers the setting of some pyritic alteration NW of Leech Hill. The altered zone displays a loss of magnetisation but may also be linked with a possible extension of the White Spur Fault. The structure, at this northing, lies within the andesitic sequence.

Dips within the andesites are not well resolved due to the very low contrasts observed. All are steep but the model indicates the preferred solution. The section also suggests a complex pattern within the Tyndall Group with a low contrast or altered core. The Tyndall Group here appears much thicker but this point should be reviewed by confirmation of surface distributions since there is a marked change in magnetic character between normal Tyndall Group and the lower unit whose properties are comparable with those of the andesites of this section. It has negative contrast.

The reversed magnetisation of the andesites is curious. It could mean that some regional effect is present but ignored resulting in a change in field levels and consequent contrast modifications in the models. Or it could be that natural remanence does occur in these rocks and that is significant with an ability to swamp pure inductive effects. The latter have been shown to be very subtle or non-existent for large volumes of this suite. The first option seems unlikely in view of the normal behaviour of most of the Tyndall Group. The change, whatever its origin as seen in this section (see below for more detail), is clear and unambiguous. Something very different has either happened to these rocks or they are .

fundamentally different compositionally.

It should also be observed that the same sign characteristics apply to the felsic rocks and porphyries sampled by this section. Do these rocks reflect a period of reversed field or local overturning of sequence? The varied dip pattern from this line to others might suggest the latter.

It should also be noted that these changes occur immediately south of the regional zone boundary defined gravimetrically (Figures 2 and 3) and a major change in character, intrusion timing or form, or composition may be indicated by this effect.

Line 6. (Figure 14)

This section provides an alternate view of the andesitic sequence in the southern part of the area and suggests some minor dip conflicts with Line 5. It is consistent, however, in its requirement for negative contrasts, and their magnitude. Altered or non magnetic zones are in similar positions. Lines 5 and 6 are also consistent in their general view of the form and relationships of the western-most andesites which appear to be piles, or to have been folded. It is very difficult to argue for the latter concept given the pattern and distribution of the materials unless some major faults are disguised in the sequence. There is no evidence for these west of the Tyndall Group and the altered segments with negligible contrast.

The porphyries appear, from their relationships on many sections, to be younger intrusives.

All discussion has emphasized the compositional variations and properties within the Cambrian rocks and yet similar changes may be inferred within the Ordovician conglomerates. These develop a modest but significant negative magnetisation southward. The actual property estimated is credible at the maximum end of the range of properties observed for these units. The major change in properties occurs near the zone boundary and confirms some major underlying cause which is pervasive. A reset of magnetisation, perhaps by warm fluids emanating from this giant crustal structure, seems the only reasonable explanation for such a regional change.

Line 7. (Figure 15)

The general pattern of the model is similar to that for Line 6 but normal sign contrasts have been returned to the andesitic sequence overall - although one member and the poprhry retain negative contrasts. This range of character is strongly supportive of true variations within the rocks and a primary difference in structure and composition. Since there is little evidence of clear overturning the latter variable coupled with a field reversal would appear to be the most likely explanation. The change in character does, however, mean that it is possible to make some true time correlations within this sequence. The negatively magnetised andesitic rocks cannot be the same age as the normally magnetised units and any interface is traceable without the uncertainties which might attach to plotting

minor differences in uni-directional magnetisations. Indeed, the very contact between the two magnetisation types may represent a time of tectonic activity and mineralisation.

The implications of the model of this profile (and 8, 9) indicate two changes in property controls; one regional which also affects the Ordovician rocks, and one local which affects parts of the Cambrian sequence and occurs within the period of andesite activity. Both appear related to a crustal zone change; the latter to a focus on it. It may also be commented that the only inference of sign reversal within the ultramafics with their extreme magnetisation occurs on Line 4, at the zone boundary.

The model also suggests that the low contrast selvedge within the Tyndall Group recurs and may be a slice structure sympathetic to the Lyell faulting.

Line 8. (Figure 15)

This section is very similar to that of Line 7 except that the Tyndall Group selvedge adjacent to the Great Lyell Fault is much thicker and that any dip opposition occurs further to the east within the rocks of the group. These oppositions may be fault effects. The remainder of the model in terms of the andesitic sequence and implied property variations is consistent with line 7. Only the lower part of the andesites is negatively magnetised even though the underlying felsic rocks are normally magnetised - a reversion to their state north of the regional zone boundary. This model indicates the very anomalous nature of the lower andesites.

The porphyries adjacent to the South Henty Fault remain negatively magnetised and this seems a common feature of these rocks in this region.

It may be commented that any imperfections in the model curve fits for lines 7 and 8d, especially, are not significant and do not modify the conclusions. In the case of line 7 many reflect omission of some minor variations within the sequence.

Line 9. (Figure 16)

This profile was selected to provide a tie line test of some of the variations indicated in previous sections and to check whether any gross regional effects derived from the intense sources and field responses west of the South Henty Fault could contribute to the mis-identification of negative, and subtle, contrasts east of the fault.

The model yields a structural and stratified character consistent with other sections in which all contrasts are relatively subtle. The variability of sign is supported and is demonstrably independent of any gross effects due to mafics or ultramafics west of the fault. Although this test legitimates previous conclusions it does not conclusively deny the possibility of some odd interference pattern. The basal andesites are shown to be reversely magnetised and a part of the Tyndall Group may be comparable (also Line 5).

SUMMARY

Trends observed within the magnetic data set have been compiled and presented in Figure 17. The diagram also shows the location of sites of known mineralisation and alteration. The trend patterns carry several consistent elements regionally but some aspects are locally controlled. For example NNW features do not extend consistently and continuously across the area. Nor do NE-trending elements. Many of the features marked have been defined from anomalies reflecting the distribution of the more magnetic members of the andesite group and Tyndall Group. Many important aspects are not defined by trend inspections. In addition, some of the large bodies of andesite or porphyry generate discontinuity due to volume and disruption. The low elevation of the magnetometer also restricts judgments about which element is the most significant since all contributors are seen too close to provide depth scaling. Gross or regional effects, with the exception of mafic dominance west of the South Henty Fault, the South Henty Fault, and parts of the Great Lyell Fault, are rarely evident. Reprocessing or continuation of this data would be required before large scale or deep elements could be assessed. In this respect the older work (Figures 2 to 5) remains usable.

Consideration of trends does not resolve questions of the location of known mineralisation or the targetting of new prospects. Nor does it really account for the Spillway occurrence other than to suggest that the rocks containing the ore boulders lie near a fracture and, in this case, that can bear no direct relationship to the original site of ore deposition or its current preservation if it remains concealed nearby. There is no doubt however that known sites either occur on or near sub E-W or NNW structures although a review of Figure 17 will indicate that the former may be more important, if far from an absolute guide.

Figure 18 represents an attempt to summarise this interpretation by displaying the distribution of interpreted lithologies, sign and magnitude of magnetisations, and apparent dip facings. These elements have been chosen in order to indicate any local sites with abnormal materials - either in terms of volume, shape or composition - or to define sites of structural significance.

The heavy lines in the figure represent either major faults or changes in facing. The heavy dots suggest possible continuations of poorly defined portions of such structures. The extension of the White Spur Fault is an example of the latter. This structure is associated with two mineralised prospects (in the north) and alteration (in the south). Most of the grain changes occur near the exposures of the Tyndall Group and some extend beyond this to join or cross the Lyell Fault system. The imbricate and connected pattern is suggestive of a single fault system which has migrated eastward. This view is consistent with the implications of Figures 4 and 5 and would place the western limit of the Lyell Fault at about 380 500 mE. The Tyndall Mine and Howards Anomaly occurrences with their associated alteration lie near this position in fundamental terms but may represent remobilised material from the volcanic suites which abut

this zone. This possibility must be considered given the clear post Cambrian nature of many of the displacements which make up the modern Lyell Fault zone. The Great Lyell Fault is also highly disrupted with several offsets and many implied extensions which can be traced onto Mt Tyndall. The surface expression of this face of the West Coast Range is consistent with the existence of several crossing and recent fractures. The Fault System consists of an interconnected N-S and NNW/NW-SE fracture system which persists across Mt Read to Rosebery.

This grain is quite different from that prevailing in the block west of the South Henty Fault where slices of mafic materials display a predominantly N-S to NNE grain.

Several quite distinct assemblages and patterns emerge within the felsic and andesitic groups. The felsic rocks are restricted to a zone near the South Henty Fault and all are generally subtly magnetised. The sign of magnetisation is marked by small + or - signs blended with the symbol for the unit. The intensity of magnetisation is indicated by the density of symbol. The sign changes at about 5356 000 mN. The same is true of the local porphyries.

The andesites are more complex as shown in the modelled sections. The most magnetic materials occur near the Newton Creek spillway and west of Howards Anomaly although an isolated patch occurs near 5356 000 mN. All are normally magnetised. Less intensely magnetised but normal material surrounds these blocks and also occurs south of 5354 000 mN where it tends to control the form of the magnetic field. Most other blocks of andesite are reversely magnetised with generally low intensity. The reversed zone is restricted to the belt between 5354 and 5358 000 mN and its greatest development occurs a little north and south of 5356 000 mN. The normally magnetised materials are thus seen to wrap around the reversed materials. Enough material has been preserved to conclude this even though faulting or onlap related to the Tyndall Group may have truncated some parts of the structure.

Does this pattern represent folded caldera margin? Does the reversed material represent an uplifted magma pool or dome within the caldera? Or does the definite and intensely magnetised pile west of Howards Anomaly represent such a dome? Whichever solution is preferred it is clear that the patterns define original and primary volcanic character and possible centres. The models have also demonstrated stratification within these units. ✓✓

If the disposition of mineralisation is also considered then it may be noted that all base metal sites lie adjacent to either the main magnetic andesite pile or a small fragment to the SW of it near 379 300 mE, 5357 000 mN. It is recommended that the margins of this pile, which are magnetically distinctive, be assessed regardless of glacial cover since it seems likely that ore formation may have been related to the major changes in composition and evolution related to this part of the sequence.

Figure 19, which superimposes Figures 17 and 18, suggests the possible relationships between trend and fracture systems and the fundamental lithological variations. When this is done the location of Howards Anomaly and the local alteration are seen to be marginal.

to the anomalous andesitic pile and local fracturing of it. The models of this northern zone also imply that this andesitic composition (pile surface) dips eastward and can underly the Howards - Tyndall Mine axis.

Additional recommendations may include a detailed gravity survey of the region in order to define or confirm dips and volcanic centre positions. The andesites offer usable contrasts in this respect. This review also suggests that care is necessary in assessment of magnetic properties and the location of sample sites. A much larger catalogue coupled with some mapping review is necessary before the present interpretation is revised. It may be possible to find some detailed alternates within each model given current constraints on unit geometry and location.

REFERENCES

- Corbett, K.D., 1986. Geology of the Henty River - Mt Read area. Map 3 Mt Read Volcanics Project Mapping Series. Mines Department Tasmania.
- Leaman, D.E., 1991. EL 11/85. Yolande River (Henty). Interpretation update. Report for Pasminco Exploration by Leaman Geophysics, September.
- Leaman, D.E., 1992. EL 11/85. Henty. Comments on implications of new gravity data. Report for Pasminco Exploration by Leaman Geophysics, April 8.

Report submitted on behalf of Leaman Geophysics

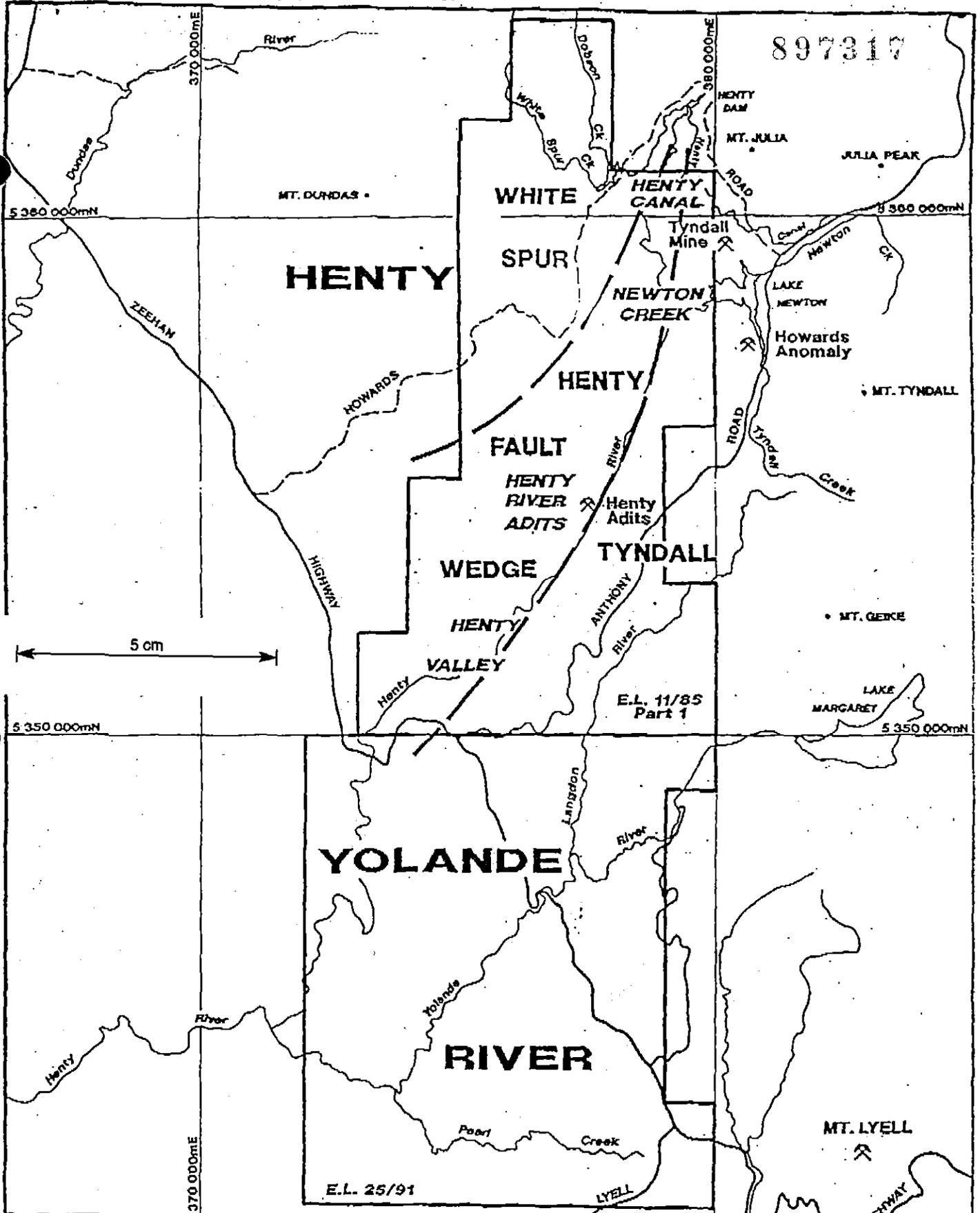
by

D. E. Leaman

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

Date:

6/8/93



897317

5 cm

5 350 000mN

5 350 000mN

370 000mE

5 340 000mN

380 000mE

PASMINCO EXPLORATION
A Division of Pasminco Australia Limited

COMPILED: F.G.F.
DATE:
DRAWN: G.M.B.
REF.:
REVISIONS:
DRAWING NO.:

YOLANDE JOINT VENTURE
E.L. 11/85 - YOLANDE
E.L. 25/91 - YOLANDE RIVER

CURRENT WORK AREAS

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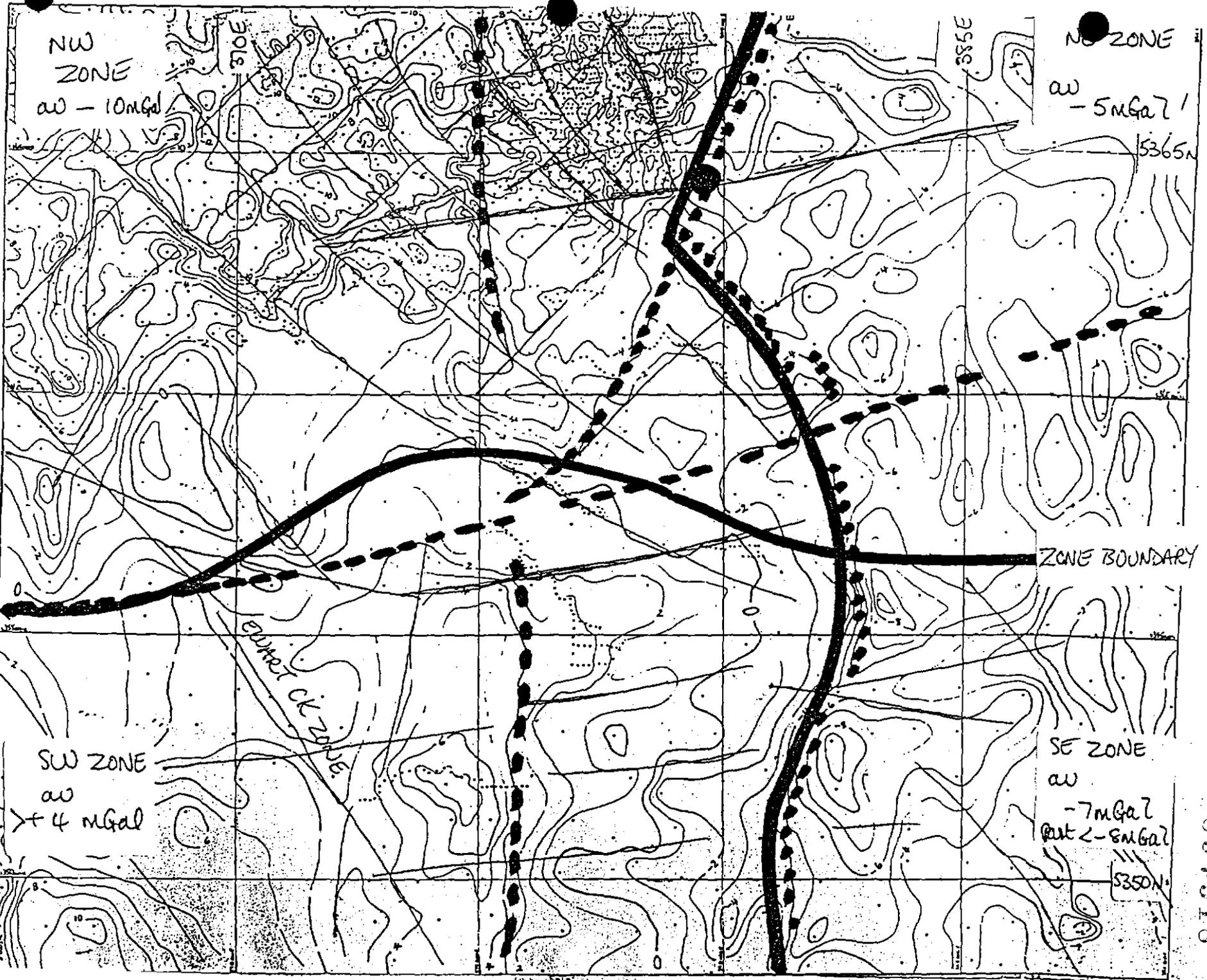
0 1 2 km

RC. No. 4

LYNCHFORD

E.L. 11/85 Part 2

FIGURE 1



RESIDUAL BOUGUER ANOMALY HENTY REGION

(from MANTON 1991 separations)

03/192

5 cm

INFERRED TRENDS
PATTERNS and ANOMALY
ZONATION
FIGURE 2

NW ZONE
 $aw = -10 \text{ mGal}$

NW ZONE

$aw = -10 \text{ mGal}$

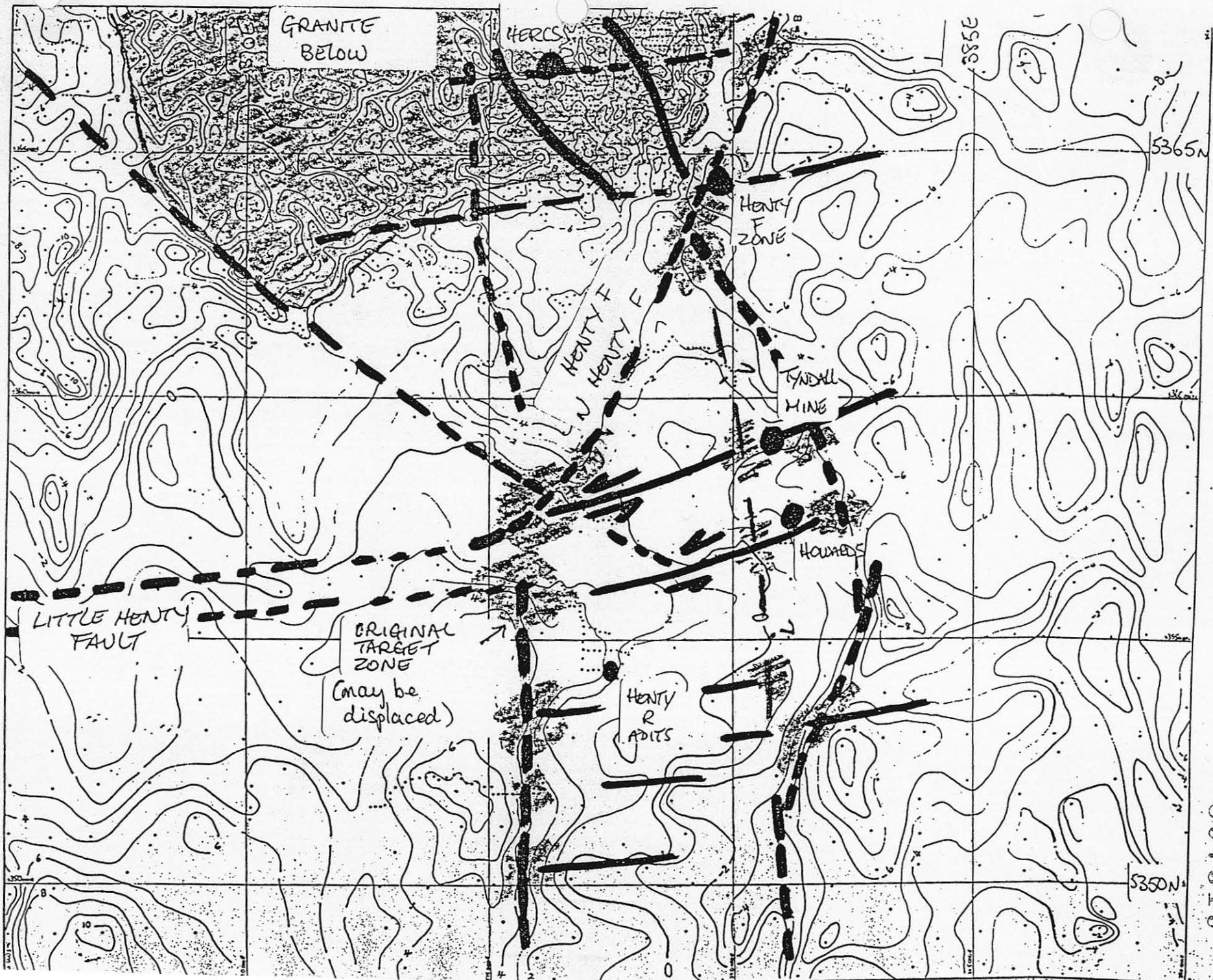
SE ZONE
 $aw = -7 \text{ mGal}$
but $< -8 \text{ mGal}$

SW ZONE
 $aw > +4 \text{ mGal}$

ZONE BOUNDARY

BURRUM CK ZONE

807318



RESIDUAL BOUGUER ANOMALY HENRY REGION
 (from MANTLE91 separation)

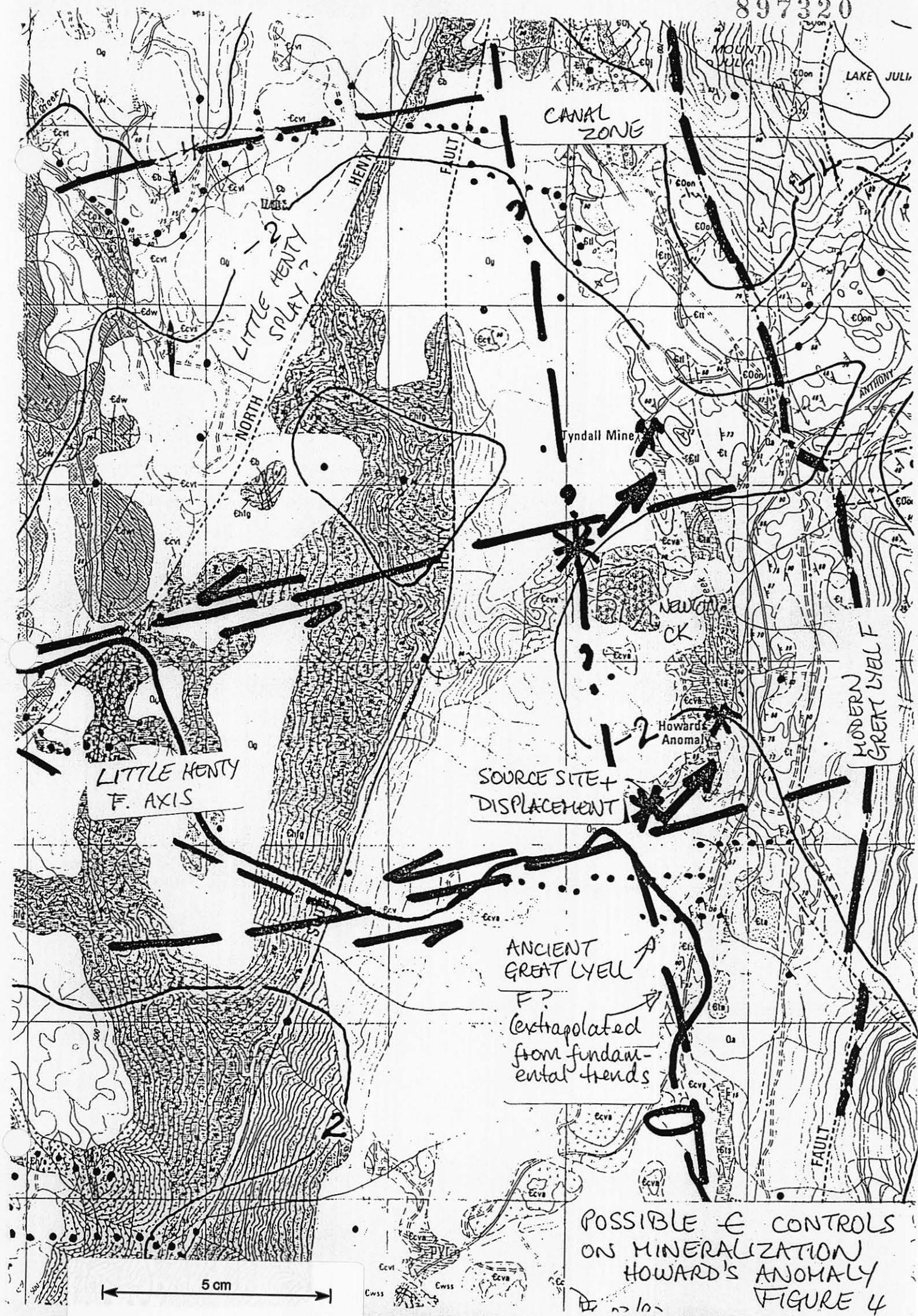
FE 03/92

5 cm

KEY STRUCTURES, GRANITE,
 PRIMARY MINERALIZED
 SITES

MAN 10/12

897319



5 cm

POSSIBLE E CONTROLS ON MINERALIZATION HOWARD'S ANOMALY FIGURE 4

897321

Mt. Julia

Lake Julia

5360 500 mN

Au

Direction change on Great Hell related

5358 500 mN

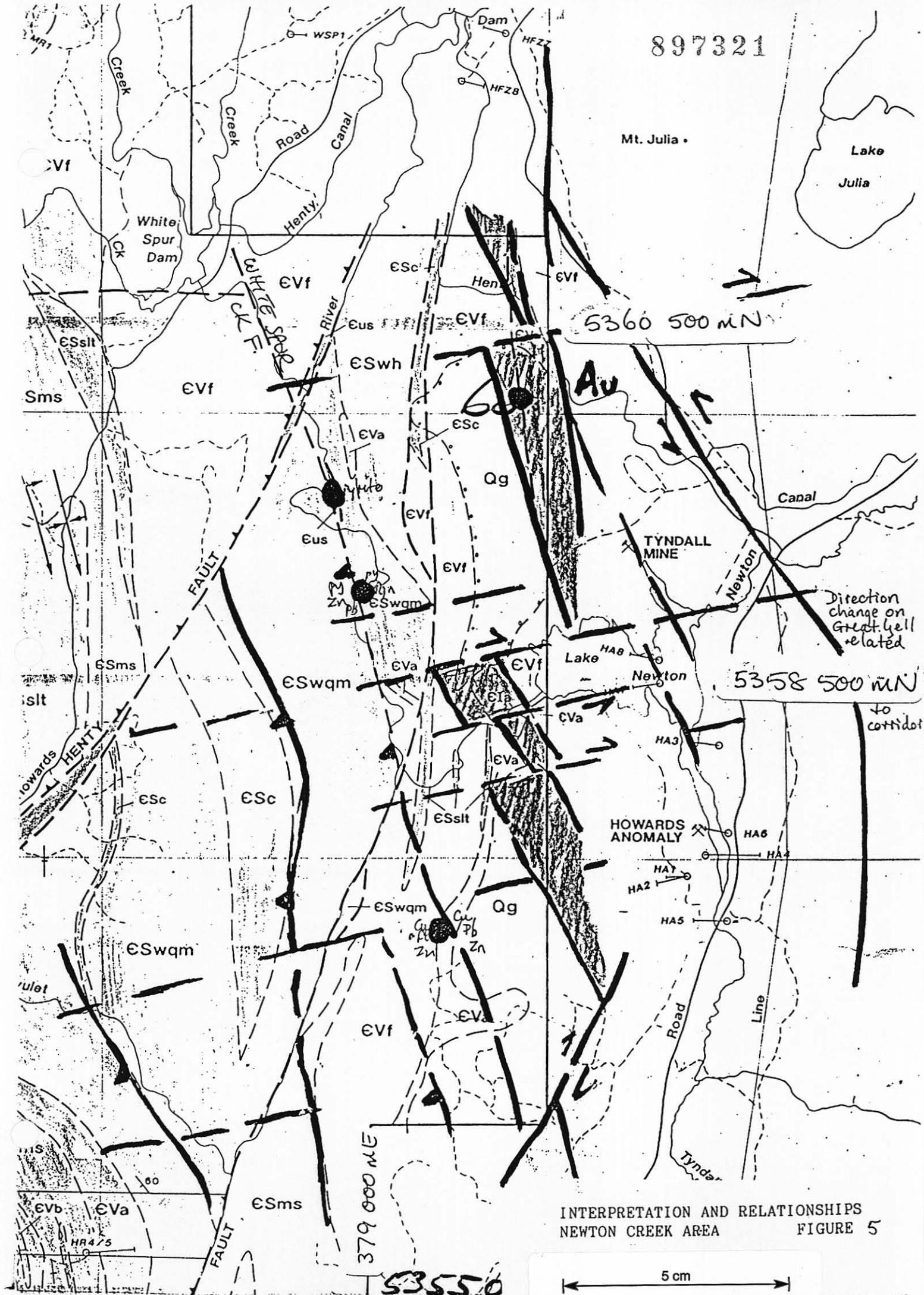
to corridor

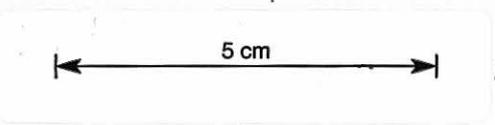
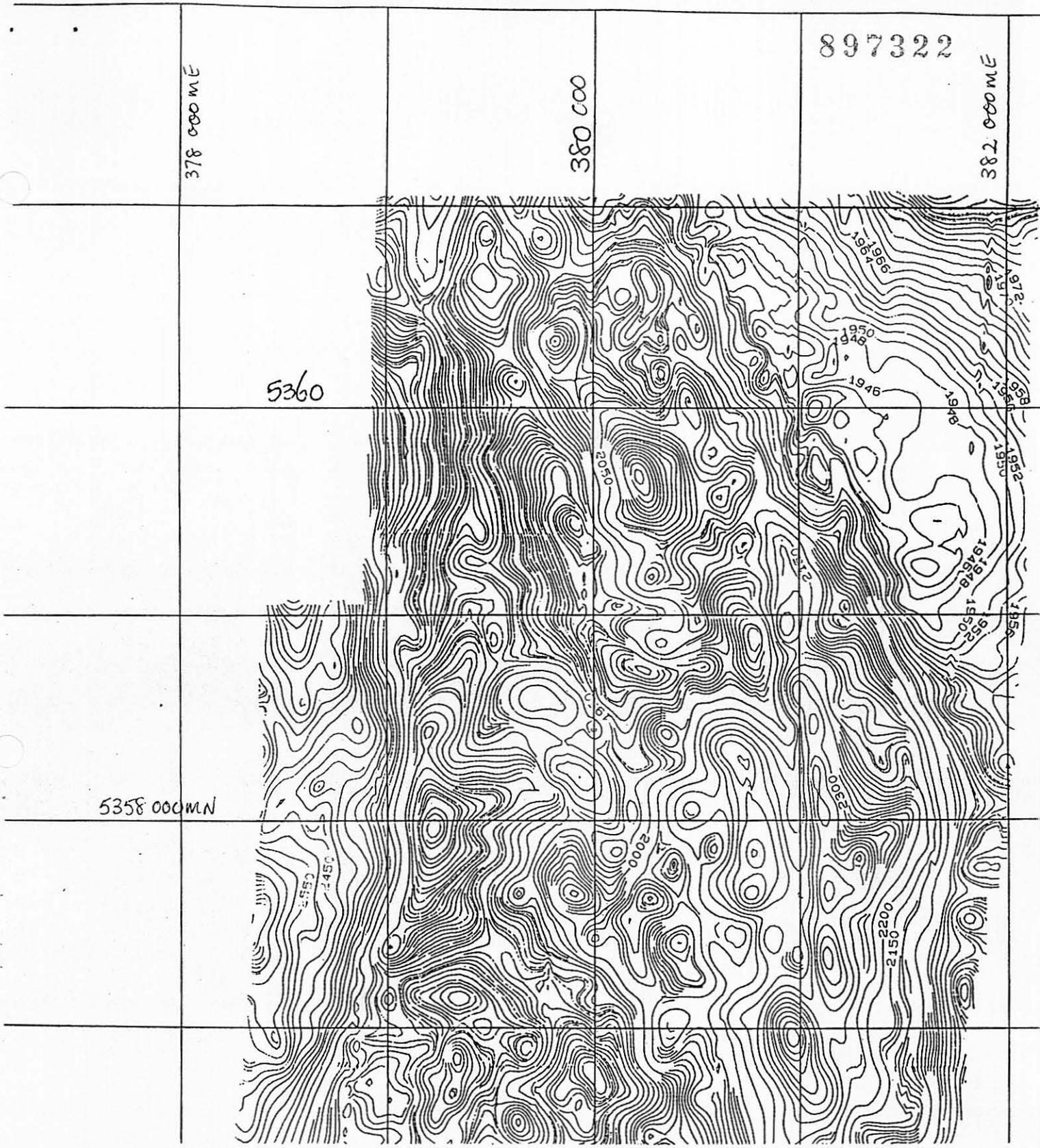
379 000 ME

53550

INTERPRETATION AND RELATIONSHIPS
NEWTON CREEK AREA FIGURE 5

5 cm

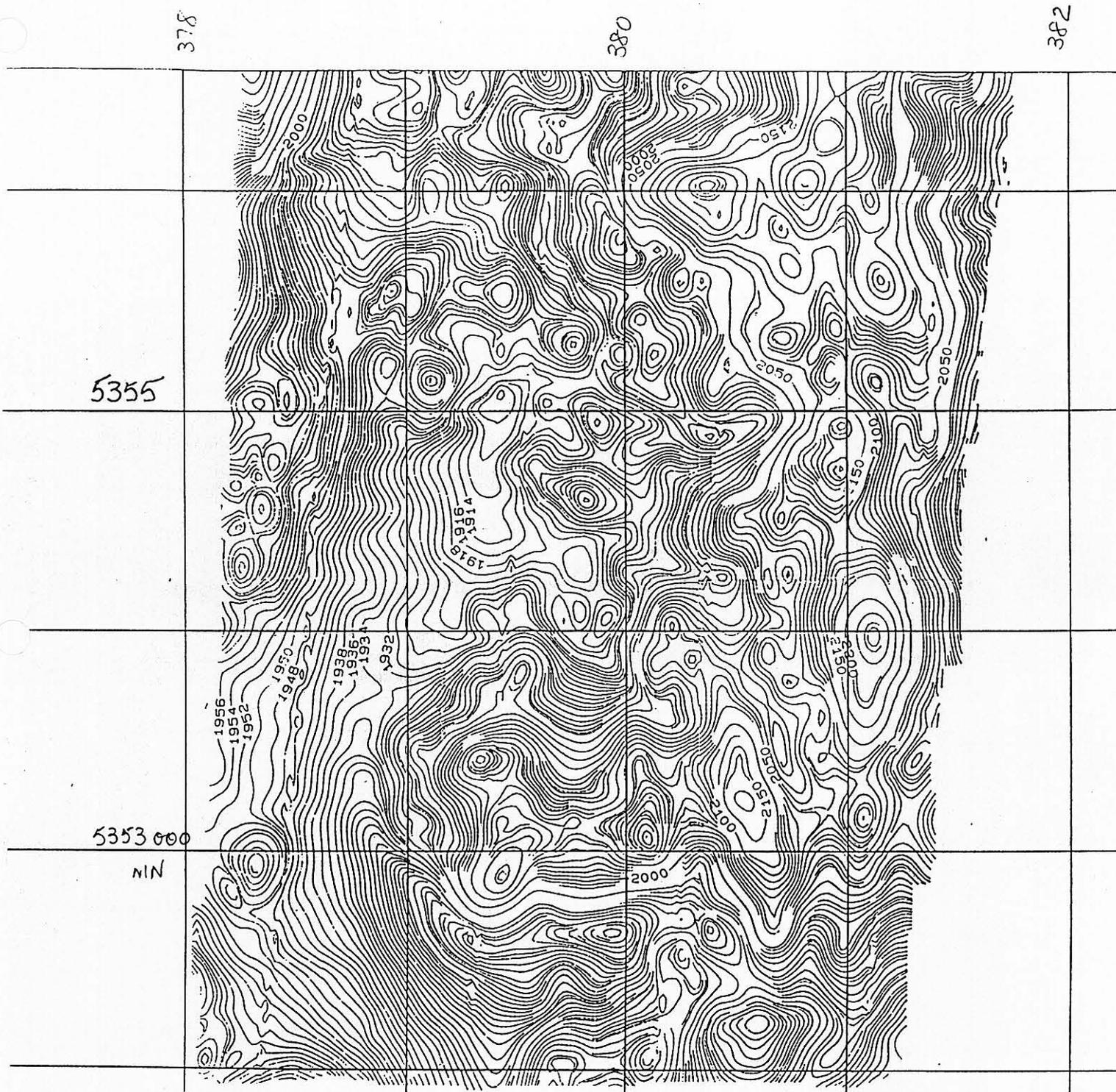




DETAILED AEROMAGNETIC SURVEY OF AREA EAST OF SOUTH HENTY FAULT
 Data from Aberfoyle Resources

NORTH PART

FIGURE 6



5360

5360 000 M N

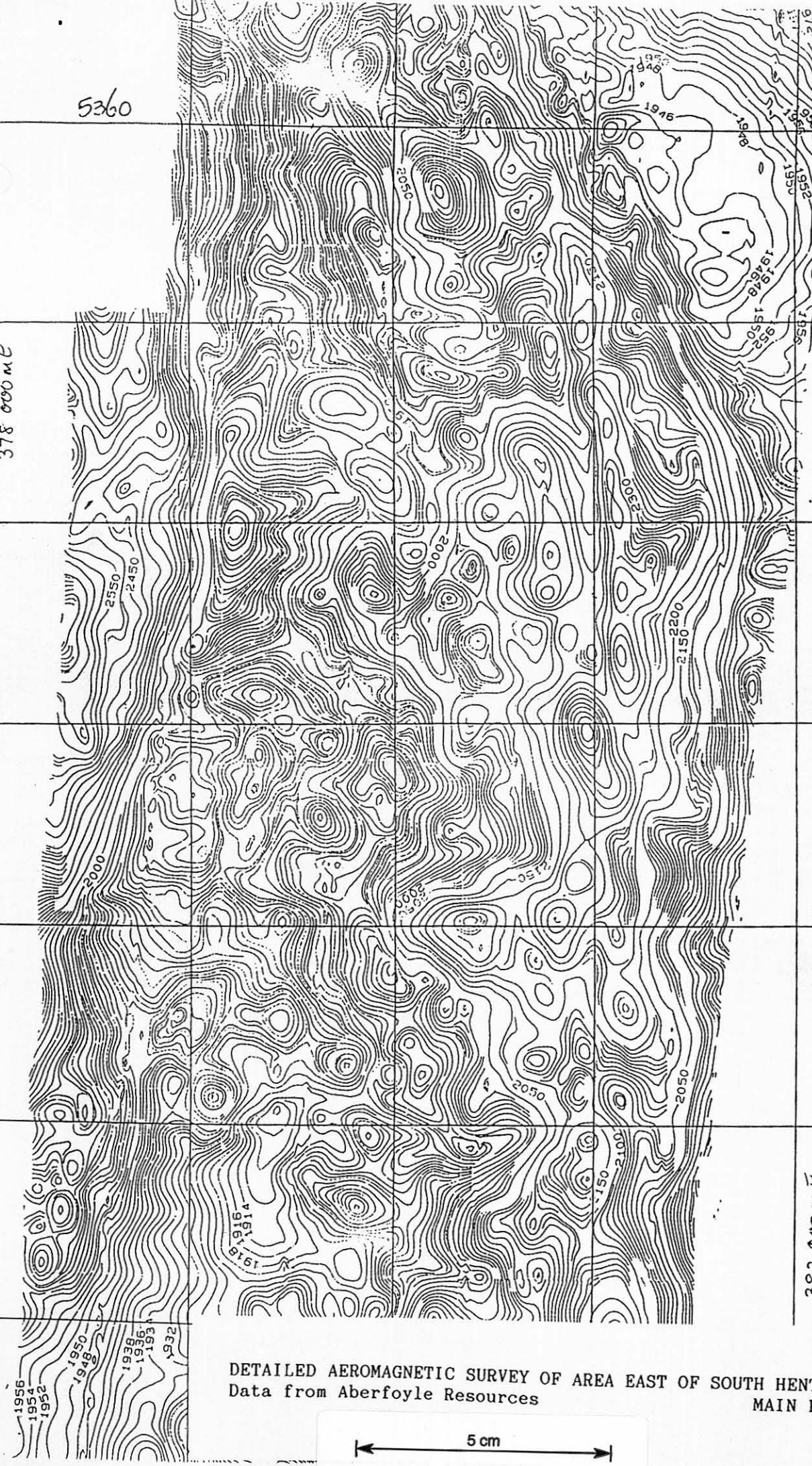
378 000 M E

5358 N

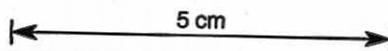
5356 N

382 000 M E

5354 N



DETAILED AEROMAGNETIC SURVEY OF AREA EAST OF SOUTH HENTY FAULT
 Data from Aberfoyle Resources
 MAIN BODY OF SURVEY
 FIGURE 8





GEOLOGICAL BASE MAP (From Corbett, 1986) 897325 FIGURE 9

5 cm



FIGURE 10

897326

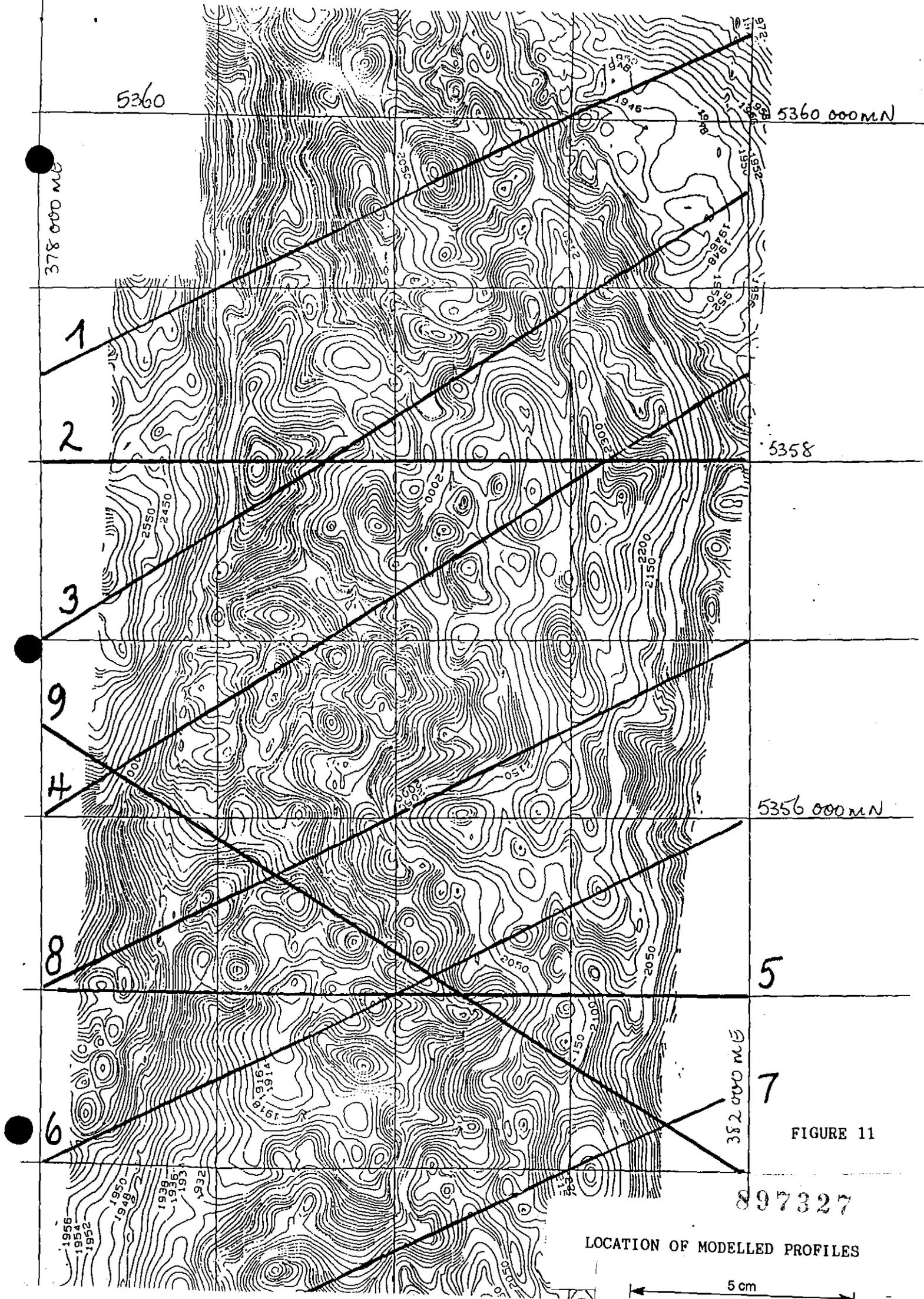
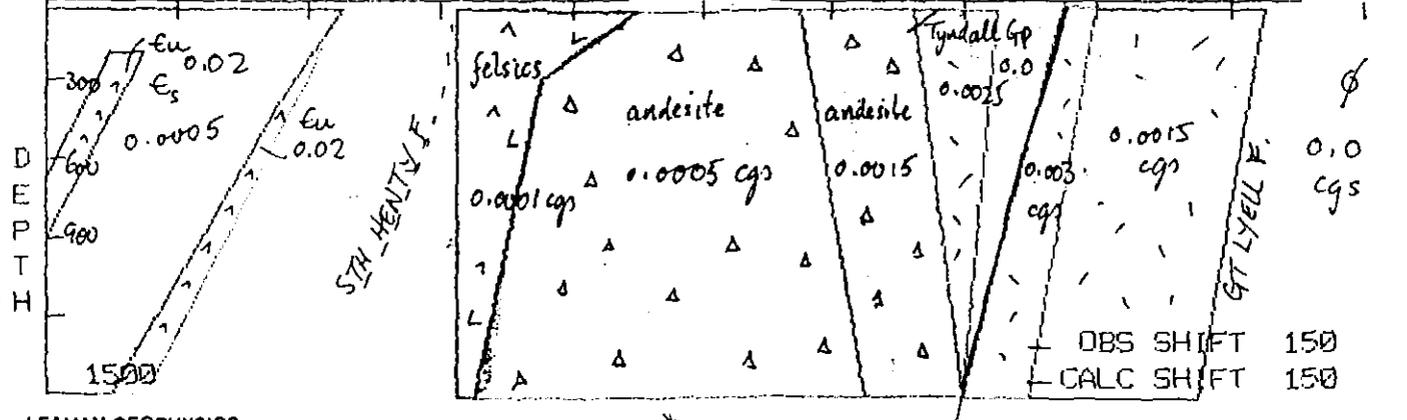
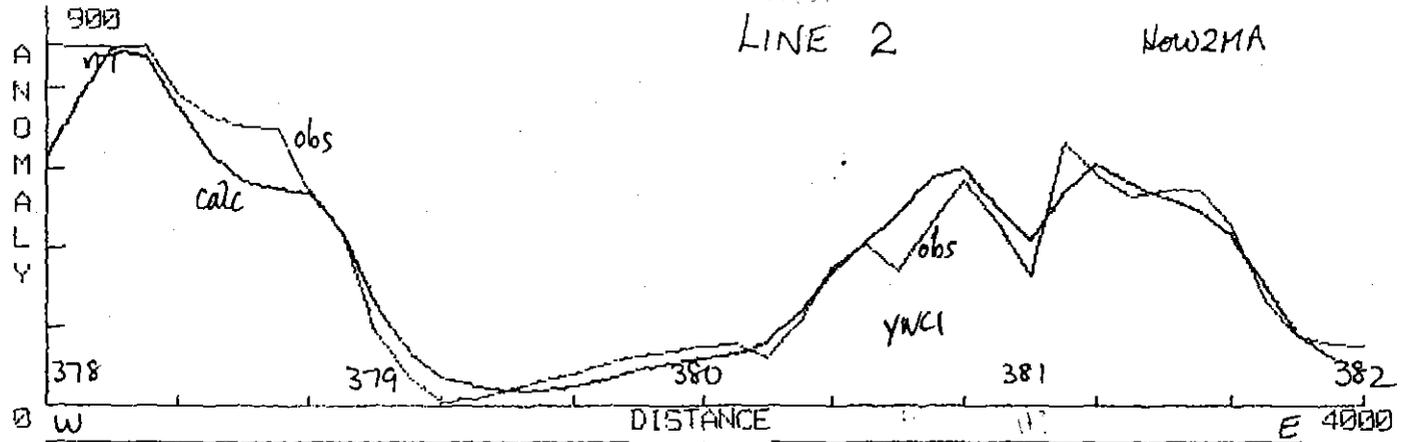
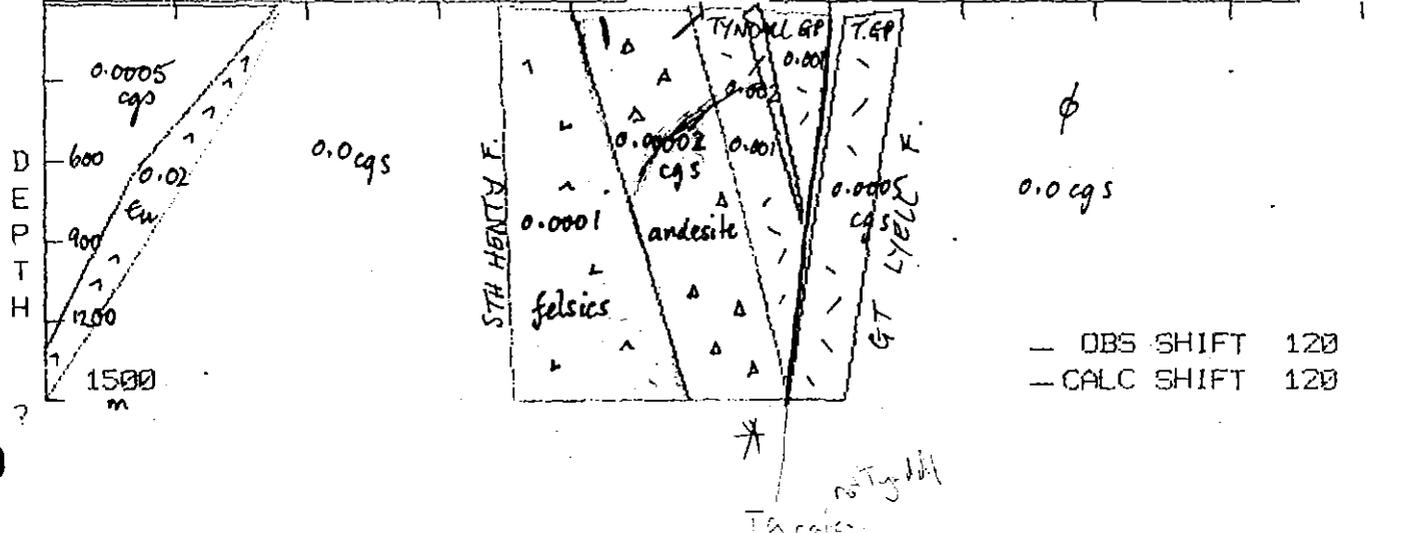
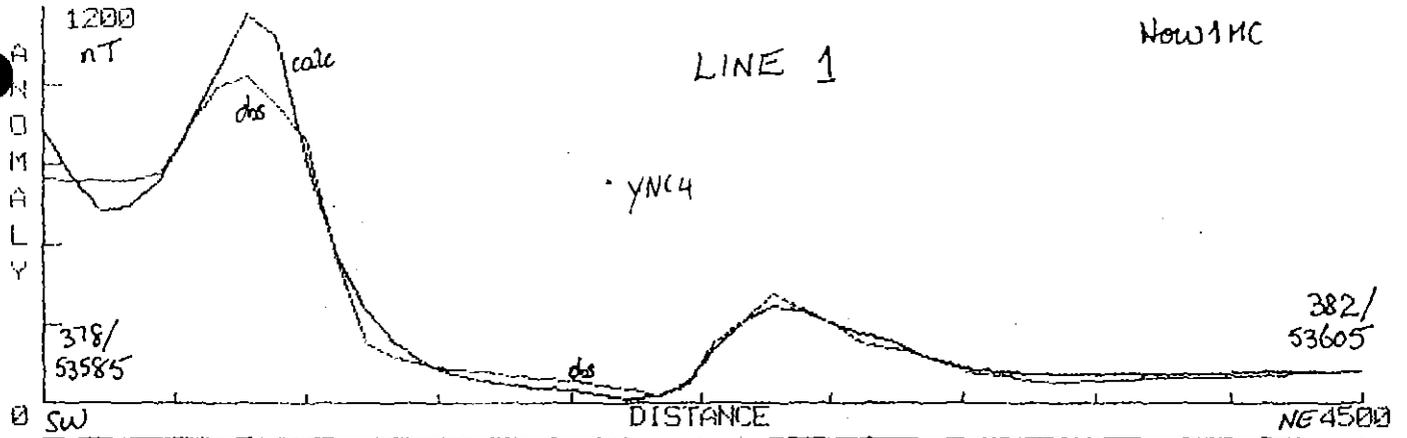


FIGURE 11

LOCATION OF MODELLED PROFILES

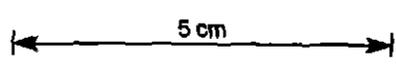
5 cm

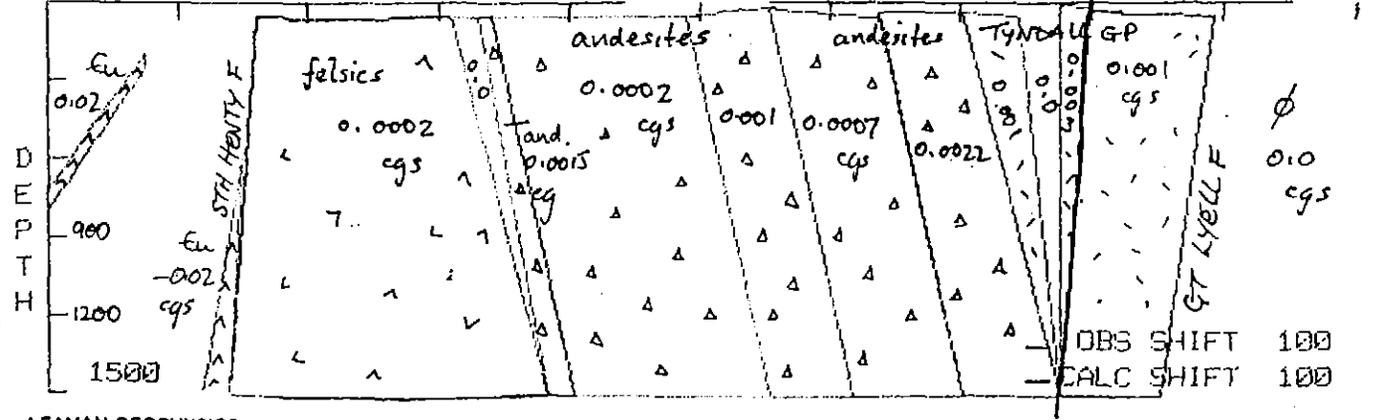
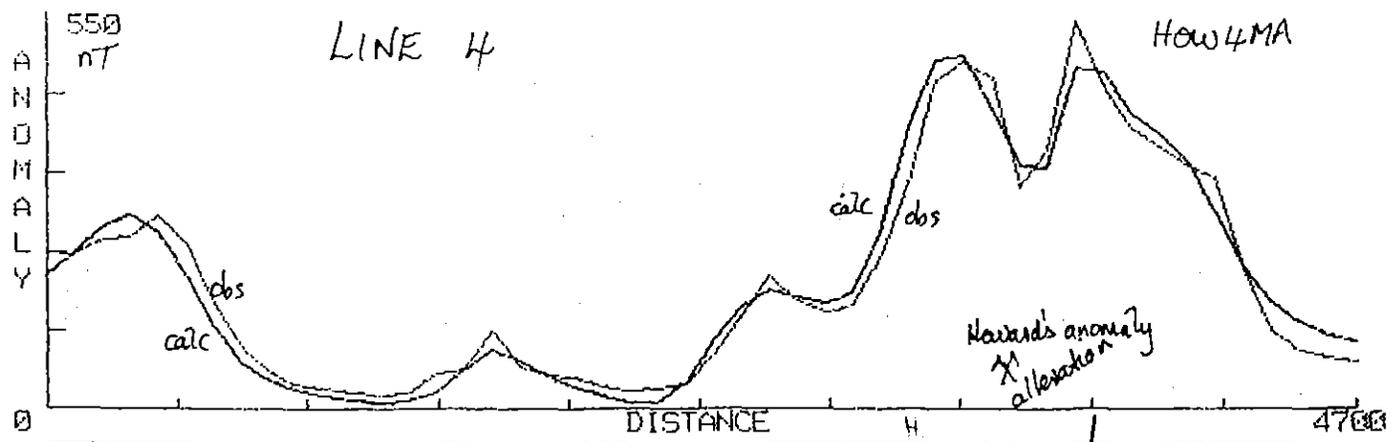
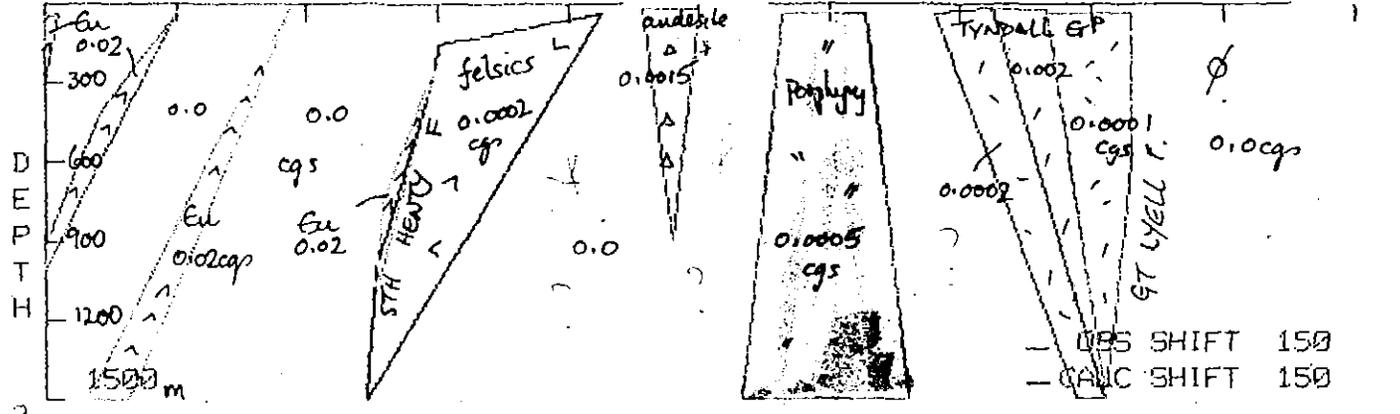
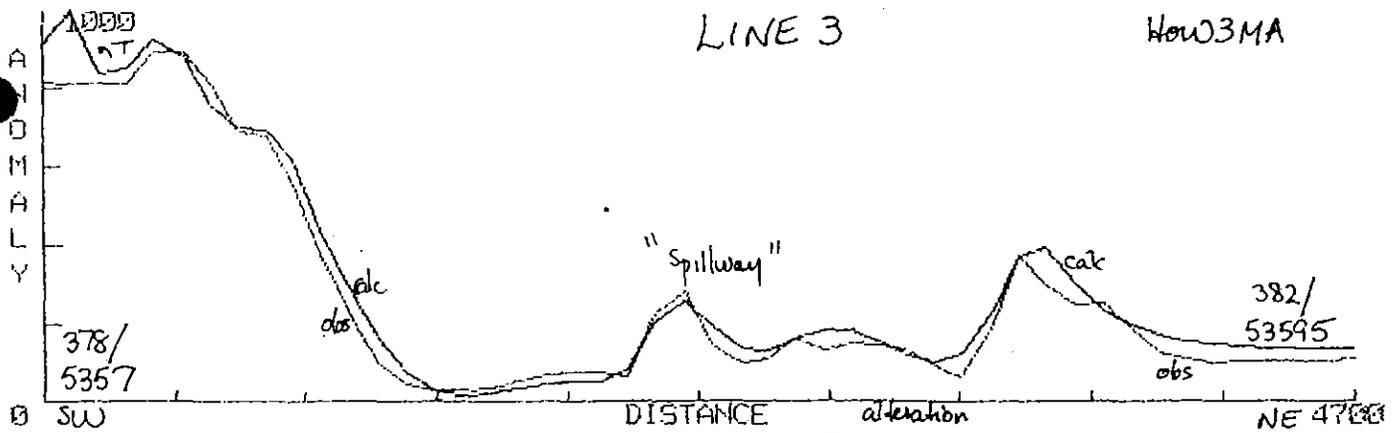


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2D MAGNETIC MODELS EAST HENTY: LINES 1 AND 2

FIGURE 12

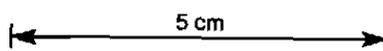


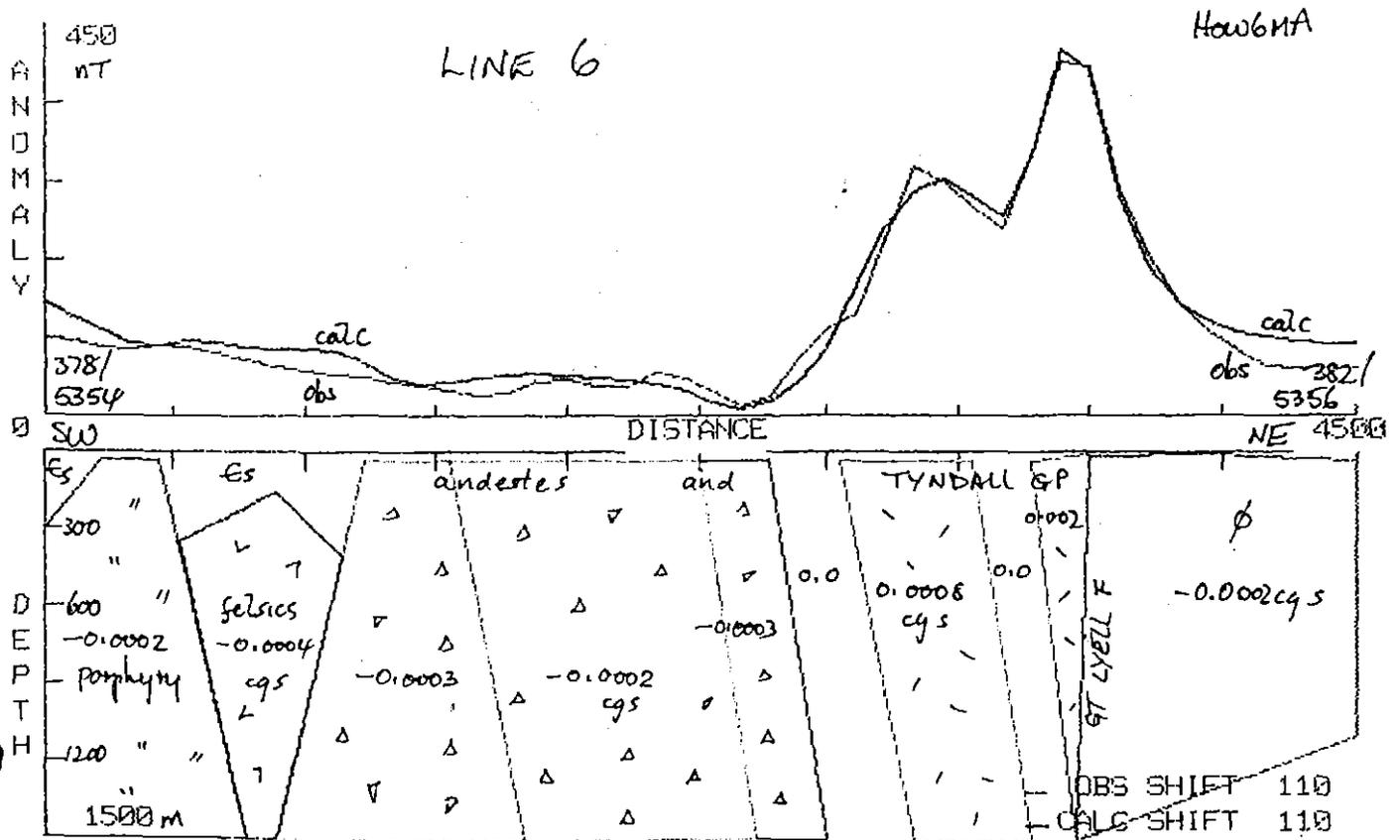
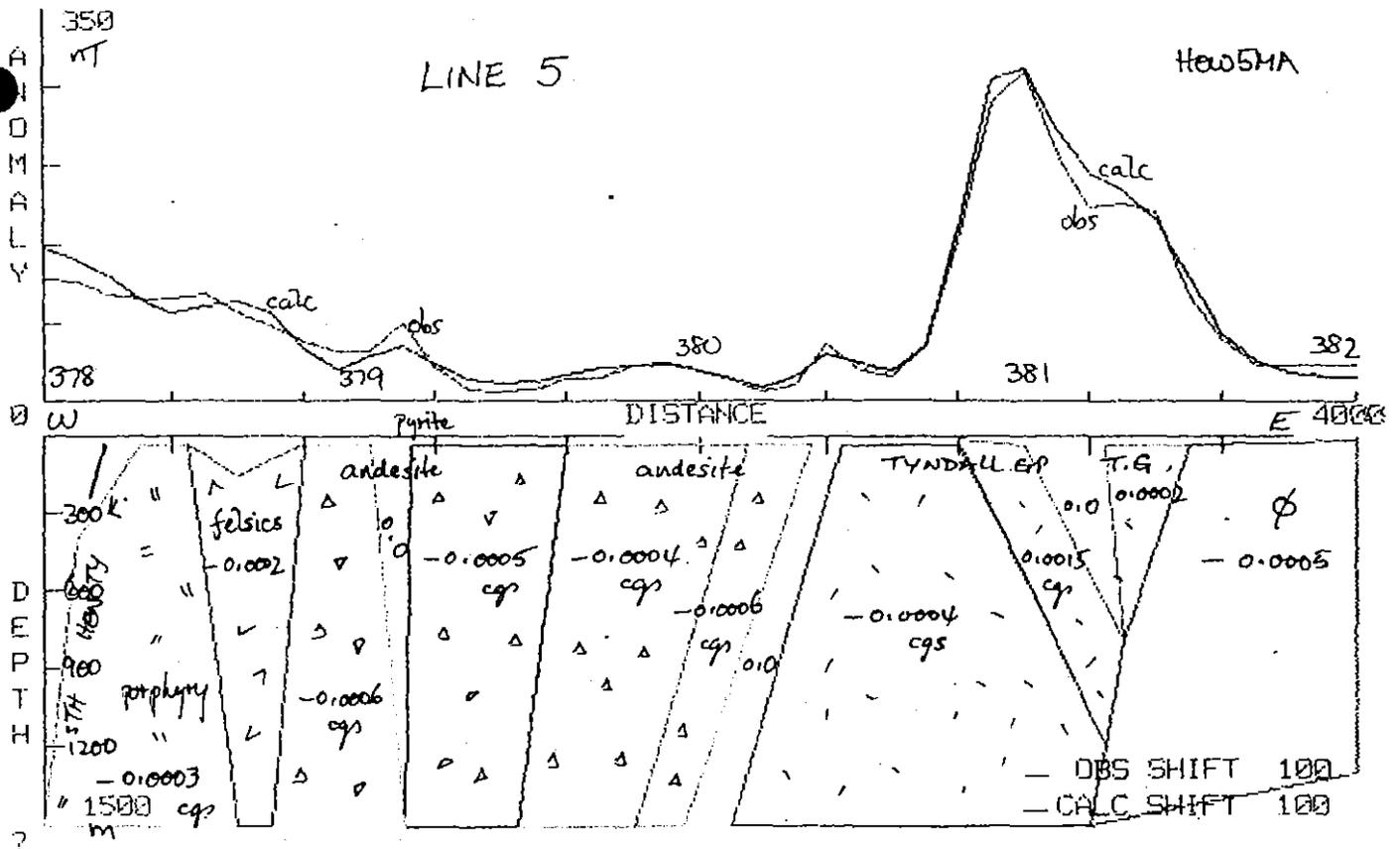


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2D MAGNETIC MODELS EAST HENTY: LINES 3 AND 4

FIGURE 13

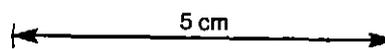


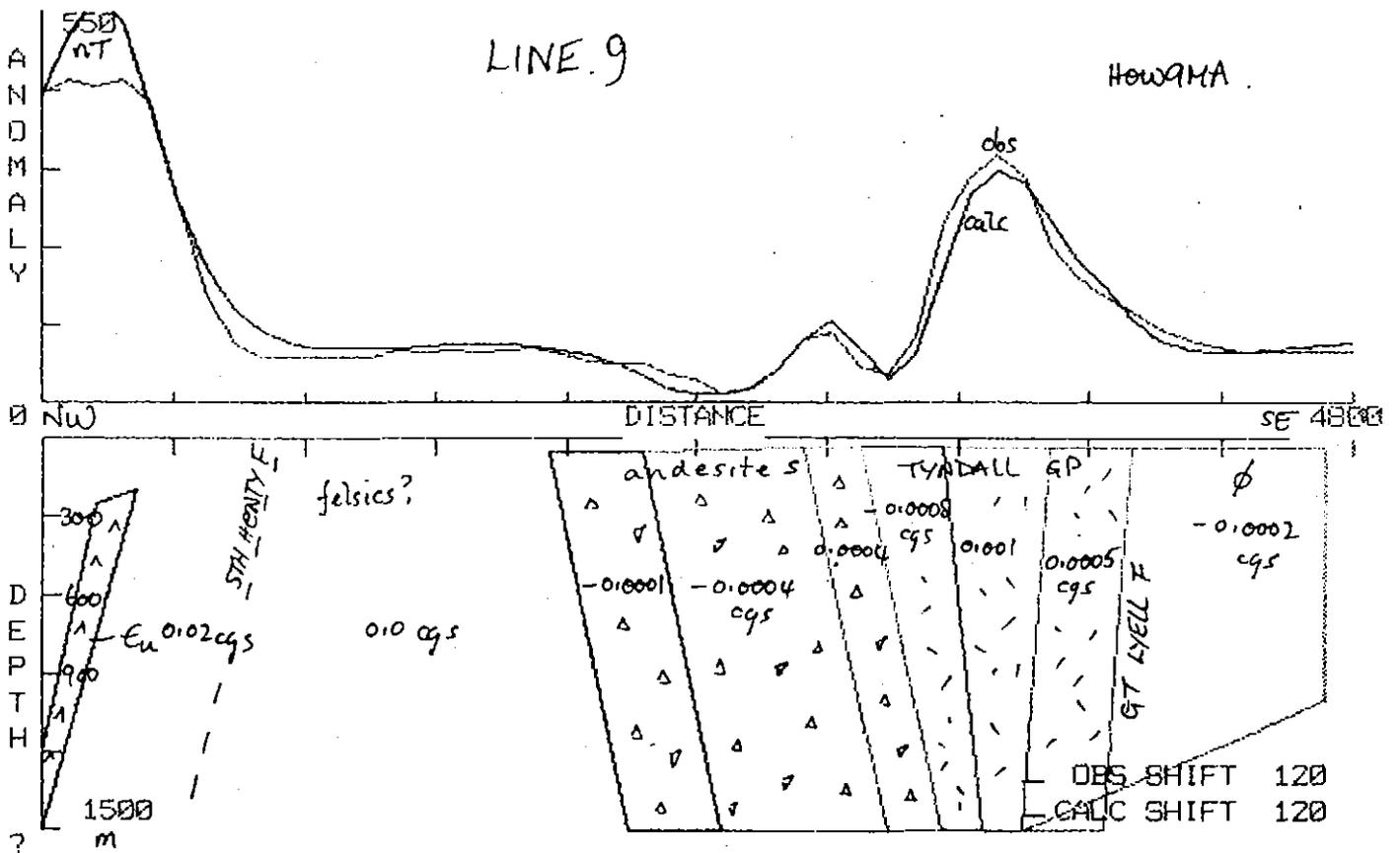


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2D MAGNETIC MODELS EAST HENTY: LINES 5 AND 6

FIGURE 14





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2D MAGNETIC MODEL: EAST HENTY

LINE 9

FIGURE 16

5 cm

378

897333

382 W regional mag trend 5360N

1:50,000 G.S. G.P.O. Box 320 D, Hobart, Tasmania 7001

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WHITE SPUR F.

Tyndall Mine

Spillway

STH HENTY F

A Howards anomaly

← gravity/magnetic trends

← main gravity axis 5358

→ Secondary gravity axis

← regional mag trend

⊗ mineralisation sites
X alteration
A alteration

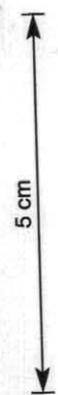
5356

← regional mag trend

5354

TRENDS INFERRED FROM MAGNETIC DATA

FIGURE 17



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897335

338000
ME

380000
ME

382000
382000
MN

regional mag trend
5355000

main granitic trends

main granitic axis

- Secondary graben
- axis
- andesite
- regional mag trend
- + Sign of susceptibility
- Susceptibility
- A alteration
- X mineralisation
- ⊗ mineralisation
- ⊗ mineralisation
- A alteration
- opposed dip
- 5355000
- inferred fault

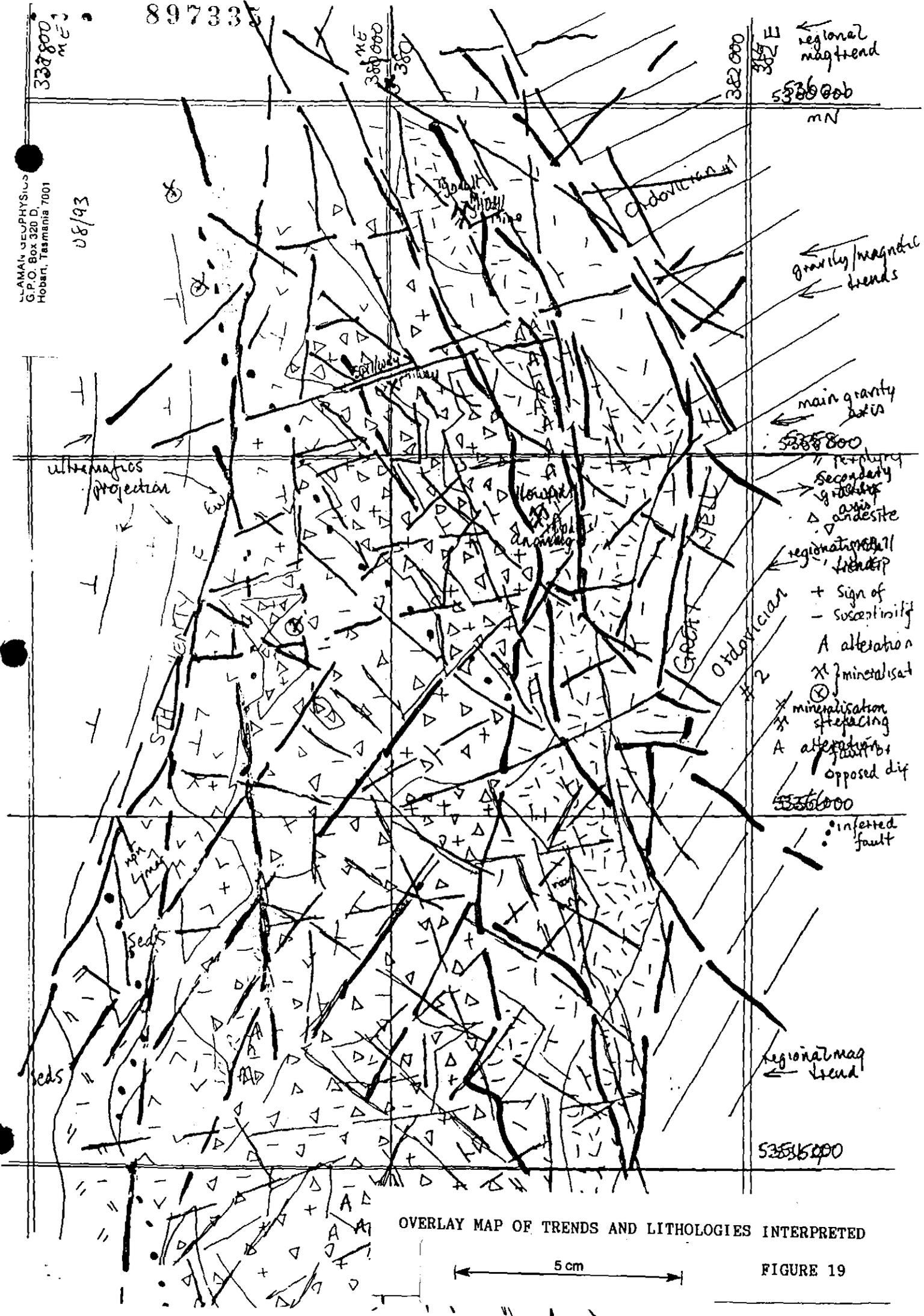
regional mag trend

5355000

OVERLAY MAP OF TRENDS AND LITHOLOGIES INTERPRETED

5 cm

FIGURE 19



APPENDIX 11 B

FURTHER ANALYSIS - MAGNETIC DATA

HENTY RIVER - MT TYNDALL AREA

LEAMAN GEOPHYSICS

897337

LEAMAN GEOPHYSICS

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Fax: (002) 44 6674

**FURTHER ANALYSIS - MAGNETIC DATA
HENTY RIVER-MT TYNDALL AREA**

for

PASMINCO EXPLORATION

by

D.E. Leaman

June 1994

HOWARDS2

INTRODUCTION

This short report extends an earlier interpretation of the Henty River - Mt Tyndall area. It considers, in particular, the area north of the Newton Creek Dam.

The previous work (Leaman, 1993; "An analysis of magnetic data, Henty River-Mt Tyndall area"; report for Pasminco Exploration, August) was focussed on the area south of Newton Creek (5358 000 mN).

Information from recent drilling and mapping, including a current view of the stratigraphy, in the area north of Newton Creek forms the basis for this review and extension. Part of the review considers the area east of the tenement boundary at 380 000 mE.

The sequence east of the South Henty Fault is thought to consist of a pumice breccia; a mafic breccia (fire fountain basalt); dacitic volcanics; andesitic volcanics/intrusives including breccias, limestones and shales; Tyndall Group rhyolites and miscellaneous volcanics.

Mineralisation occurs throughout the pre-Tyndall Group sequence.

The extension reported extends to 5361 000 mN - the limit of high quality magnetic data available.

DISCUSSION

Extracts from the earlier interpretation are shown in Figures 2 and 3. Line 2, shown in Figure 2, is at 5358 000 mN. This work defined an anomalous area, in terms of discontinuities in magnetic properties, near 379 500 mE, 5366 000 mN. A significant break in section was implied within the volcanic sequence. Although mapping control was limited to regional Mines Department maps a reversal of contrasts appeared to lie within an andesitic sequence - although newer mapping might imply that this break is within the pumice breccia sequence given the present, more refined subdivision.

This review was set several objectives:

- to extend the interpretation,
- to assess whether comparable anomalous changes occur in the north of the area,
- to define any anomalous boundaries or alteration,
- to locate any cross structures which may affect such boundaries,
- to review changes in the dacitic sequence, overlying the fire fountain basalt on the presumption that mineralised clasts found near Newton Creek were sourced above that marker.

An extract of the available magnetic data is shown in Figure 11. This data was used for the entire assessment; all other sources of data being of poorer quality and variable terrain clearance.

Six profiles have been described and solutions are presented in Figures 4 to 9. A key code for section patterns and contents is provided in Figure 10. Each profile is oriented E-W with a separation of 500 m. All allow for established rock properties and drilling results even though all holes are in the area west of the Tyndall Mine. Details of locations may be derived from the basemap included in Figure 13.

The interpretation extension is generally consistent with the previous work but many refinements are evident. This may be observed by comparison of Figures 2 and 4 for profiles only 500 m apart.

The new work has confirmed the distinct character of the geology west of the South Henty Fault. This actually consists of two blocks of material; one uniform and subtle in character, and another - further west - is dominated by ultramafic slices dipping to the west. A major structural boundary is indicated at the eastern limit of this zone and this has been ascribed, by me, as the western marginal wall of an early Cambrian rift. The South Henty Fault may represent a rejuvenated internal rift fault. The main volcanic section lies to the east of this. This argument implies an active extension and structural migration to the east during Cambrian evolution.

No marked contrasts can be assigned to any of the mafic breccias or presumed fire fountain basalts. Other units vary in their response and the area drilled is far from representative. Some drill projections are suggested in the diagrams.

The Ordovician rocks east of the Great Lyell Fault also vary subtly in properties and these changes have been suggested by differences in patterns. The changes are minor but may be significant.

The diagrams are generally patterned in two ways; by lithology and by contrast. The key is shown in Figure 10. Lithology and pattern style is applied consistently west of the Tyndall Group. Only significant lithological deviations are displayed with an individual pattern. Within the Tyndall Group, however, the units are displayed in terms of contrast since no subdivisional control is available and there are several definable property groupings.

These comments do not imply that there are no changes in magnetic character within units displayed with a constant pattern; simply that the changes are systematic and cannot be classified or combined easily.

The nature of such changes in all western units is shown in Figure 12. Thus the variations within the pumice breccia, for example, can be seen to be systematic with a general reduction in magnetisation northward.

The Tyndall Group has been included in this diagram and its curve represents a bulked average of implied properties. This sequence, presented in this way, also displays some consistent variation which is independent of any assumptions about geometry or lithology.

Figure 12 shows that each unit generally displays maximum changes in properties at different northings although there is some correlation between the andesitic, dacitic and pumiceous suites at about 5360 500 mN.

West of the South Henty Fault any equivalent correlation must occur at, or north of, 5361 000 mN.

A subsidiary variation within the lower sequence, pumice breccias and dacites may occur near 5359 000 mN.

Some tempting links to known mineralisation may be drawn. Could the Spillway and Tyndall Mine mineralisation be related to the lower alteration while the trace gold near the canal might be related to the northern, upper alteration?

However this data is interpreted the diagram does suggest some intra sequence foci for change - either in rock composition, or magnetisation, or both. These changes must be fundamental whatever their origin.

No abrupt changes are evident generally although the eastern sequence is most affected between 5358 500 and 5359 500 mN. The andesitic sequence may be involved in this as well; there is not enough analysis of this type or quality yet available to be certain. This is why the andesite property variation line displays a range at 5358 000 mN.

The changes in pumice breccia/dacitic sequence properties may indicate an early fluid phase focussed near 5359 000 mN, a slightly later one at 5360 500 and possibly a major, larger system focussed on 5362 000 mN. The more northern system may reflect nearness to the southern wall of the Devonian granitoid extending across the area.

Two dip relationships are indicated in the diagrams. These reflect limitations in definition between the upper andesitic sequence and the Tyndall Group. An east dipping sequence is indicated by drilling and confirmed by analysis. Earlier interpretation predicted this style for the lower sequence and a compound, or more complex, relationship within the overlying units. There is no doubt that an opposition of attitudes does occur in the upper sequence although this may be structural limb opposition or the result of angular unconformity. In the central portion of several sections it is simply not possible to resolve precisely which unit dips to east or west and both styles are shown.

This problem could be resolved by gravity analysis but no adequately detailed profiles are available.

Drilling will be confusing since the existing magnetic analyses east of the tenement boundary indicate some highly varied lithologies.

It may well be that the location of this change in character within section may be a crucial indicator of an older and rejuvenated structure. Figure 15 suggests that it may define the original location of the proto-Lyell Fault.

Figures 8 and 9 place some limits on the disposition and thickness of

the pumice breccias and, as drawn, do suggest a substantial thickening of the dacitic assemblages. Figure 9 should not be accepted pending gravity analysis due to the similarity of magnetic properties and the loss of resolution inevitable with interface depth.

Some of the earlier trend analysis has been reviewed in light of new ideas and the subtlety of some critical elements.

A local revision of Figure 3 (from Leaman, 1993) is shown in Figure 13.

Surface projection techniques used to identify unusual geological character have drawn attention to some features not previously noticed and re-inforced some others. Comparison of the two diagrams will illustrate this. Figure 13 also extends the previous inferences to the north. These revisions stress the Newton Creek zone and confirm an anomalous character nearby. This is consistent with the implications of Figure 12.

Alignments of those sites where geological character changes suggest underlying control structures also support the Newton Creek trends. Unfortunately too little other detail is available in the immediate region to properly define other concealed structures.

The revised trend compilation does amplify some of the ESE elements which previously appeared more minor. Trend compilations are inevitably subjective and also depend on the amount and presentation of the data involved. The geological imposed character technique forces recognition of these features which, once seen, are found to be both universal and often very subtle. ESE elements form a couple to match the previously noted ENE elements. It is likely that the latter were sinistral at the time of volcanism while the former (ESE) were dextral. Their intersection thus leads to a paired tensile gape which is virtually E-W. This system only needs an impressed N-S wrench motion to overcome the compressive couple implicit in the shear net for the entire gape to remain open for lengthy periods.

The warping of the Lyell Fault zone to the east in this region would be exactly what might be expected given the extreme local extension developed. This process will not have been restricted to the period of Cambrian volcanism but the general N-S rift system which was also active will have led to an abnormal volcanic development at such a site.

Figure 14 presents regional magnetic data centred on the Henty Region after continuation to 1500 m ASL. The continuation process has removed fine detail and only bulked, regional effects are retained. These have previously been interpreted in terms of fundamental structural change to define a complex, generally N-S rift system.

Overlooked by previous interpretation, however, are two primary lineaments. These must reflect major structures of crustal significance or they would not be evident in such a compilation.

These features trend ENE and ESE, mirror the southern face of the Granite Tor-Pine Hill Granite, and intersect a little north of the Tyndall Mine. The precise precision cannot be judged without gradient analysis and this has never been done. The intersection can be

reliably defined within an area of about 4 sq km and this area includes the Tyndall Mine, Henty Prospect zone. It should be noted that this intersection occurs at the northing of implied maximum alteration as viewed from the rocks west of the South Henty Fault (see Figure 12).

The location of these magnetic lineaments is shown in Figure 15 which presents the residual Bouguer anomalies for the region. The gravity data lacks some of the resolution and detail typical of the magnetic data set but still defines these trends. Primary intersection of the gravity trends, in many respects more poorly constrained, lies further south near Newton Creek.

The gravity data suggest a major offset in the N-S trend system at this northing. The offset is to the north-east and wholly consistent with developed extension. The local trends shown in Figure 13 are also compatible with this view and may indicate that the critical target alteration associated with the dacitic suite occurs at about 5359 000 mN (see Figure 12).

The underlying ruling factor in all these structures is the original location of the Lyell Fault. This lies a little east of 380 000 mE and may be reflected in the oppositions of dip seen in the sections.

The present work suggests that exploration should be concentrated near those northings where the presumed source or host sequences are altered markedly over a short distance and where major sub E-W structures intersect. Such sites occur a little west of the Newton Creek Spillway, about 1.5 km north of the Tyndall Mine, and possibly a little to the northeast of Howards Anomaly. Only the first of these lies clear of the nominal projected position of the ancient Lyell Fault but, conversely, given the dip rotation, may be the only site to remain of interest. This conclusion assumes that the spatial location of the primary crustal intersection remains valid through time (reasonable) but that the actual venting site will be rotated from the horizontal by deformation (fact).

The coincidence of several major structures within this small area suggests that further exploration is justified. The gravity data base as presently constituted can only respond to fundamental structures.

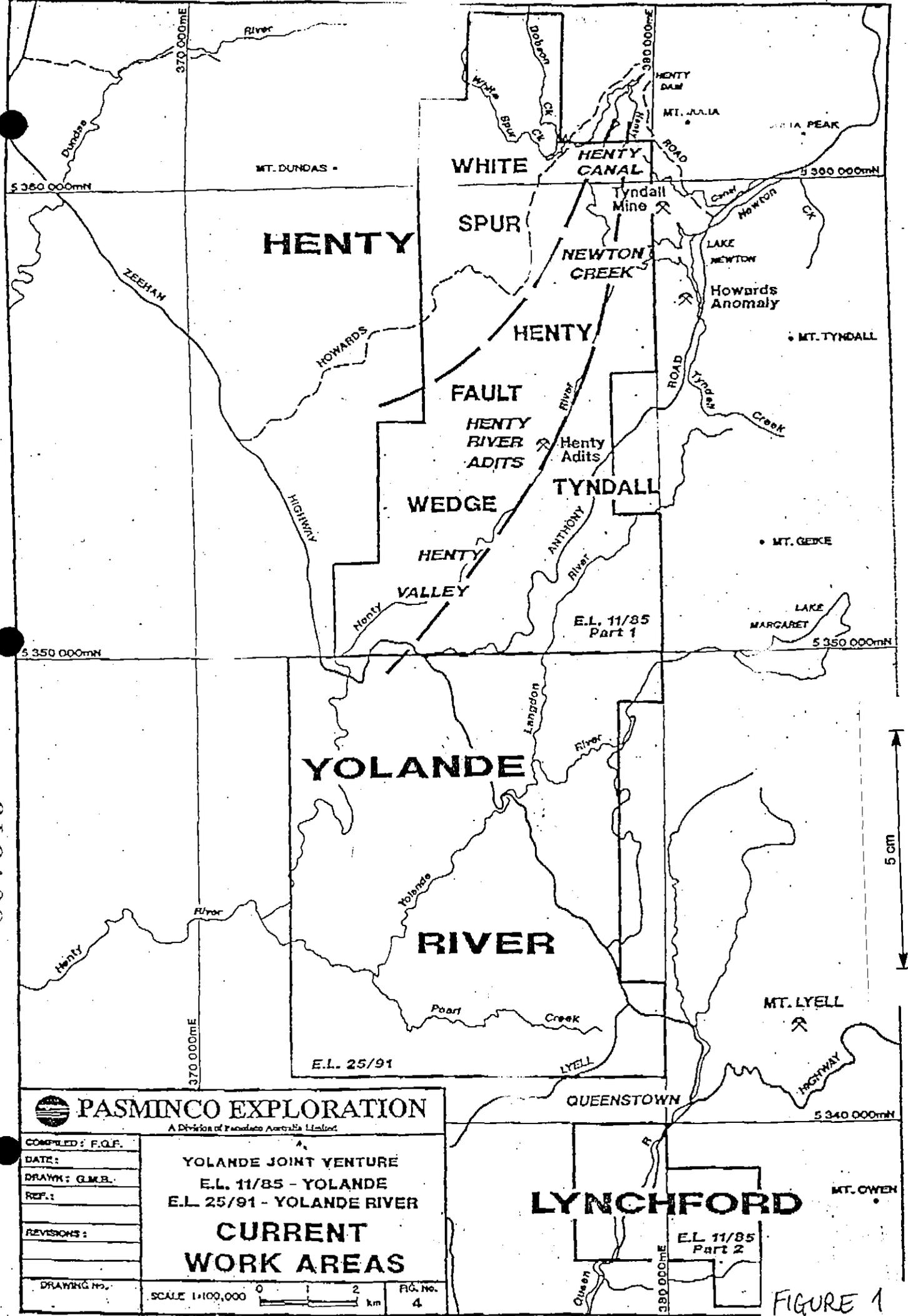
Report presented on behalf of Leaman Geophysics
by



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

June 23, 1994

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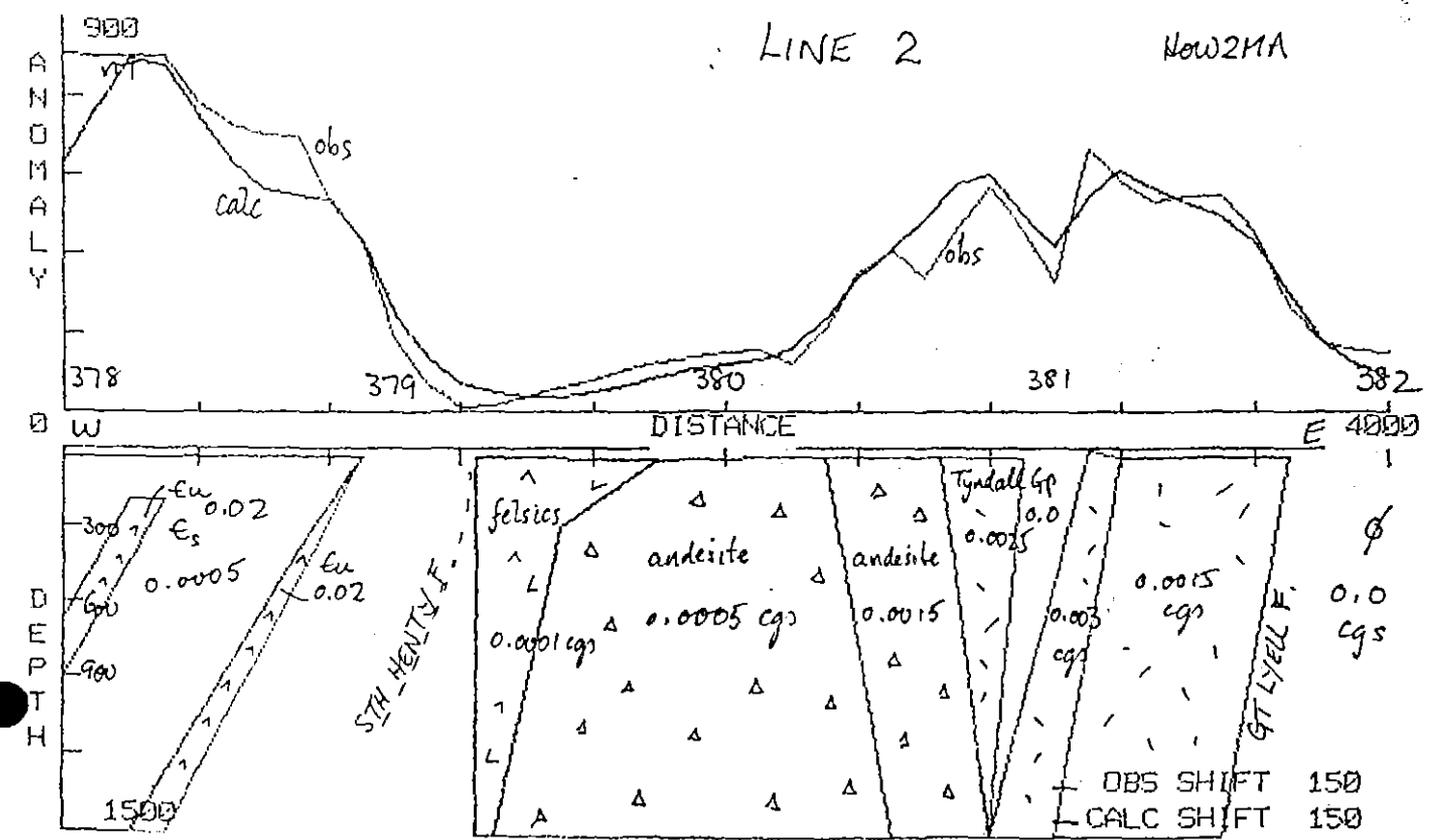
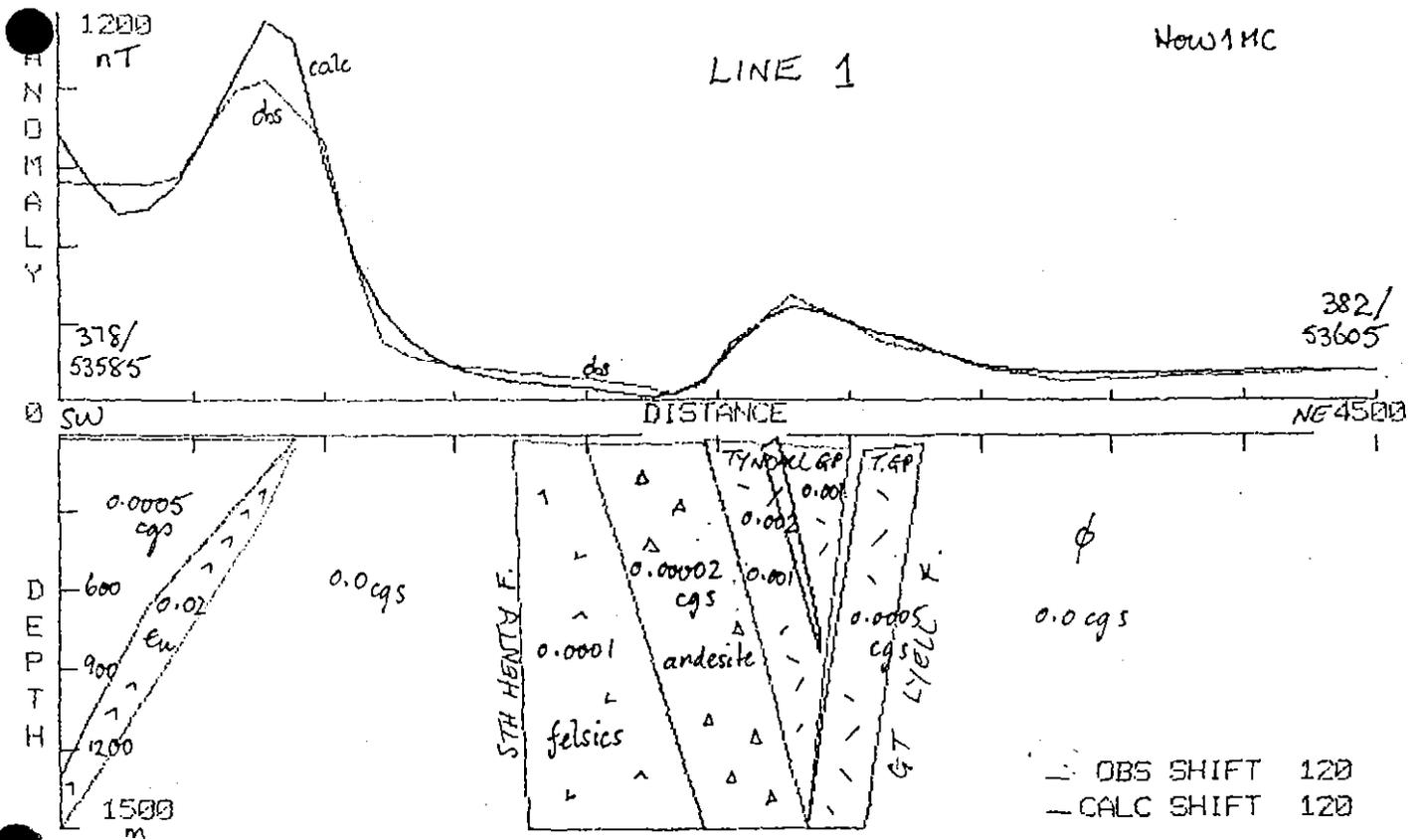
COMPILED: F.Q.F.
DATE:
DRAWN: G.M.B.
REF.:
REVISIONS:

YOLANDE JOINT VENTURE
 E.L. 11/85 - YOLANDE
 E.L. 25/91 - YOLANDE RIVER
CURRENT WORK AREAS

SCALE 1:100,000 km FIG. No. 4

FIGURE 1

5 cm



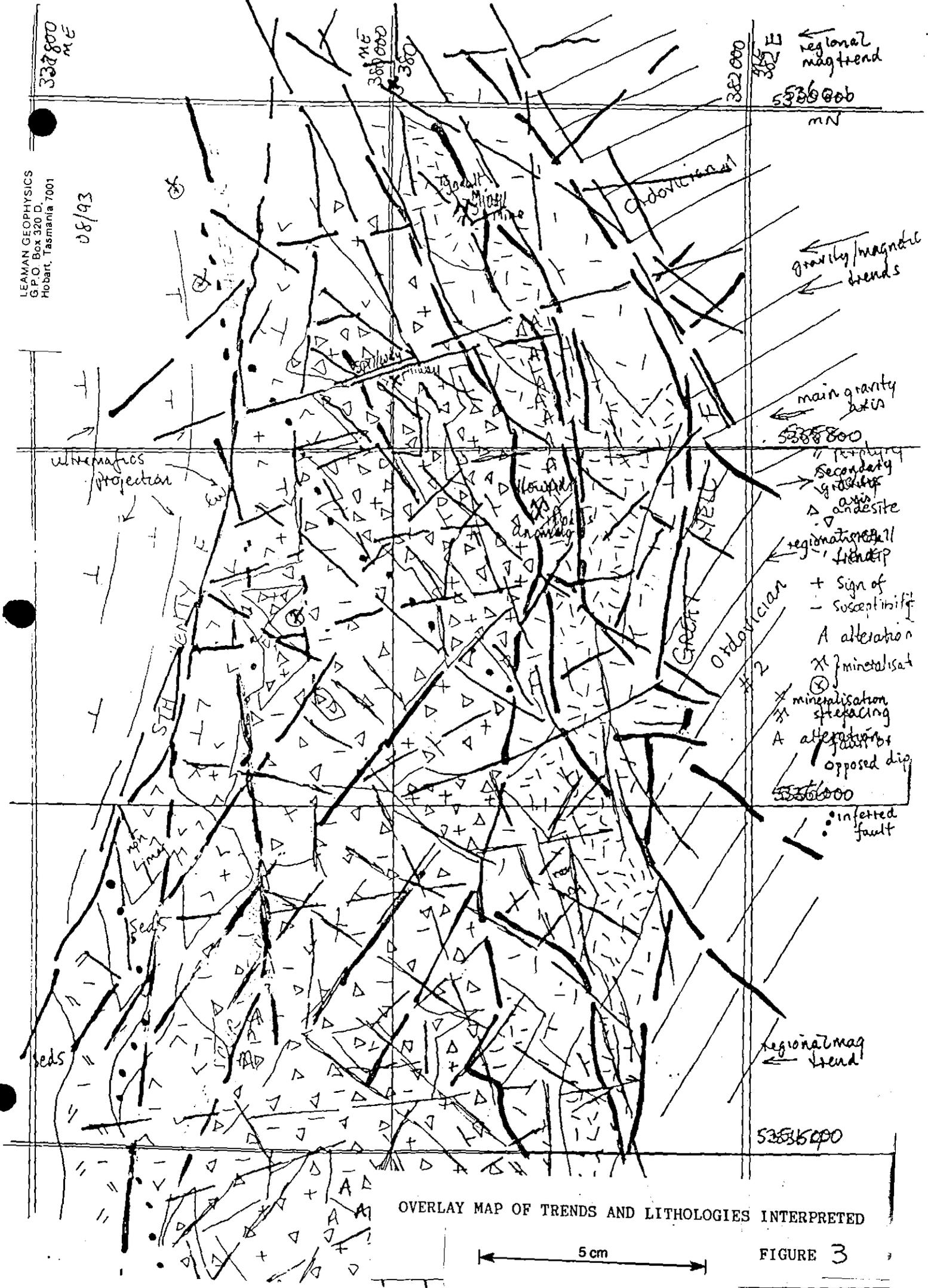
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2D MAGNETIC MODELS EAST HENTY: LINES 1 AND 2

FIGURE 2

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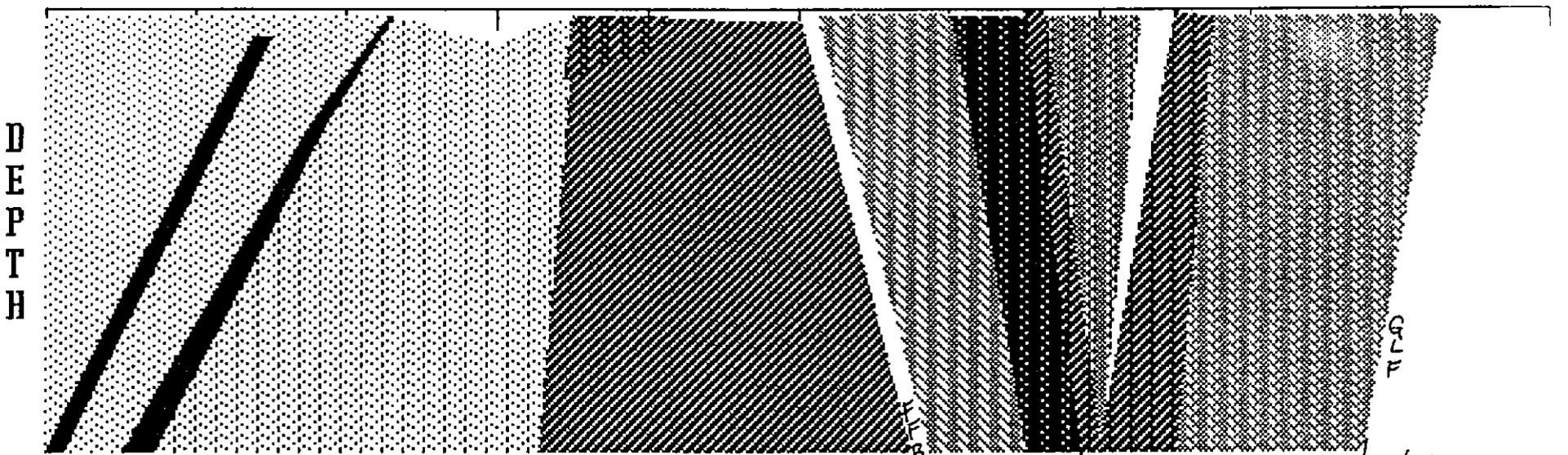
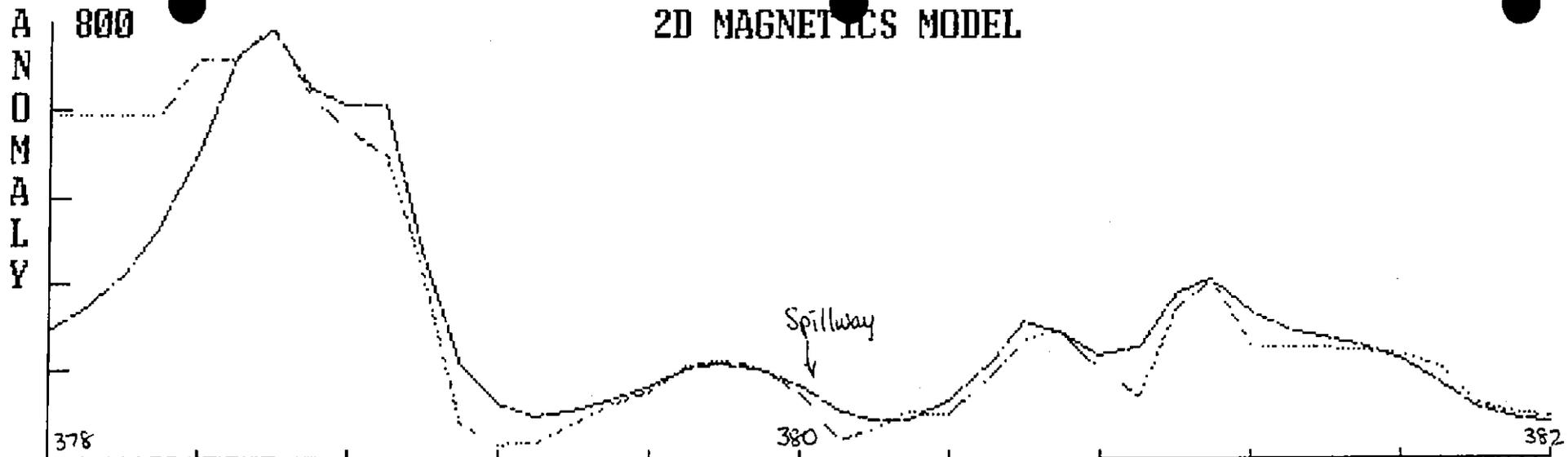


OVERLAY MAP OF TRENDS AND LITHOLOGIES INTERPRETED

5 cm

FIGURE 3

2D MAGNETICS MODEL



1500

$e_p b$ e_d e_v e_a e_{tg} ϕ_{td}

--- OBS SHIFT 100
 --- CALC SHIFT 100
 4000

PROFILE 10 DISTANCE

5358 500N 378-382 000E

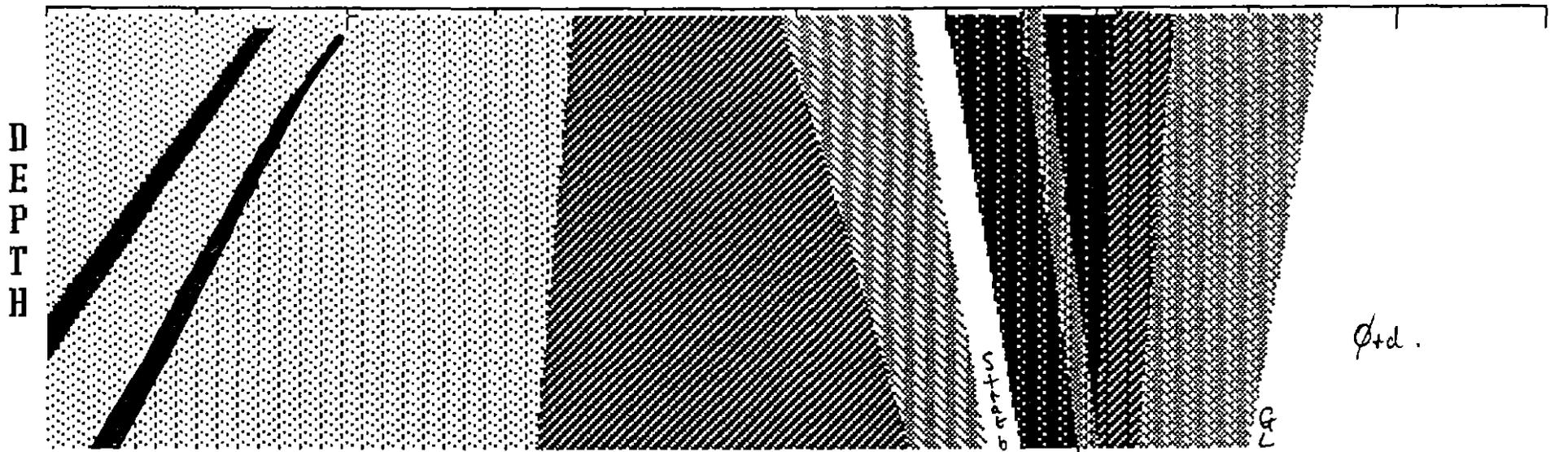
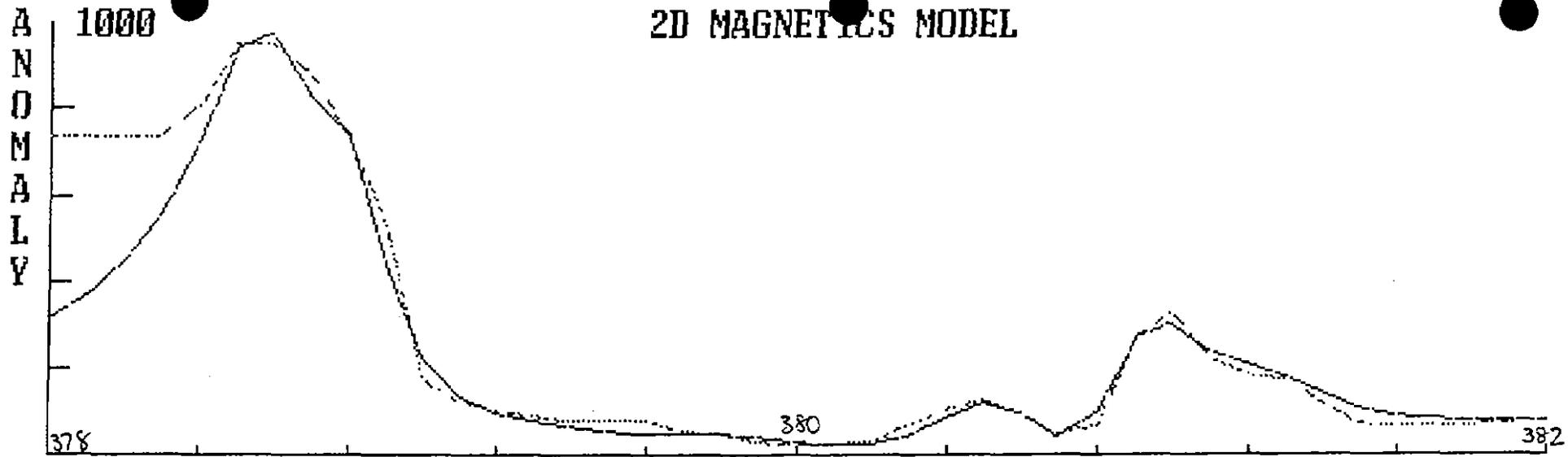
FIGURE 4

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2D MAGNETICS MODEL



1500

Epb
 Ed
 Strike-slip fault
 Ev
 Ely
 F

Std.

--- OBS SHIFT 100
 --- CALC SHIFT 100
 4000

PROFILE 11

DISTANCE

FIGURE 5

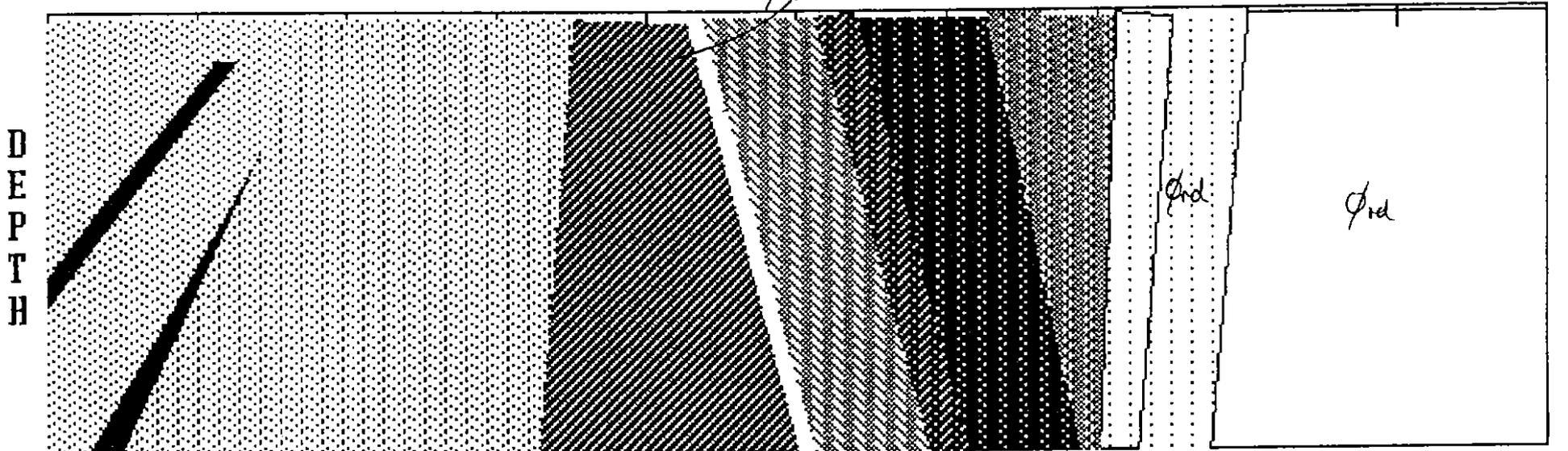
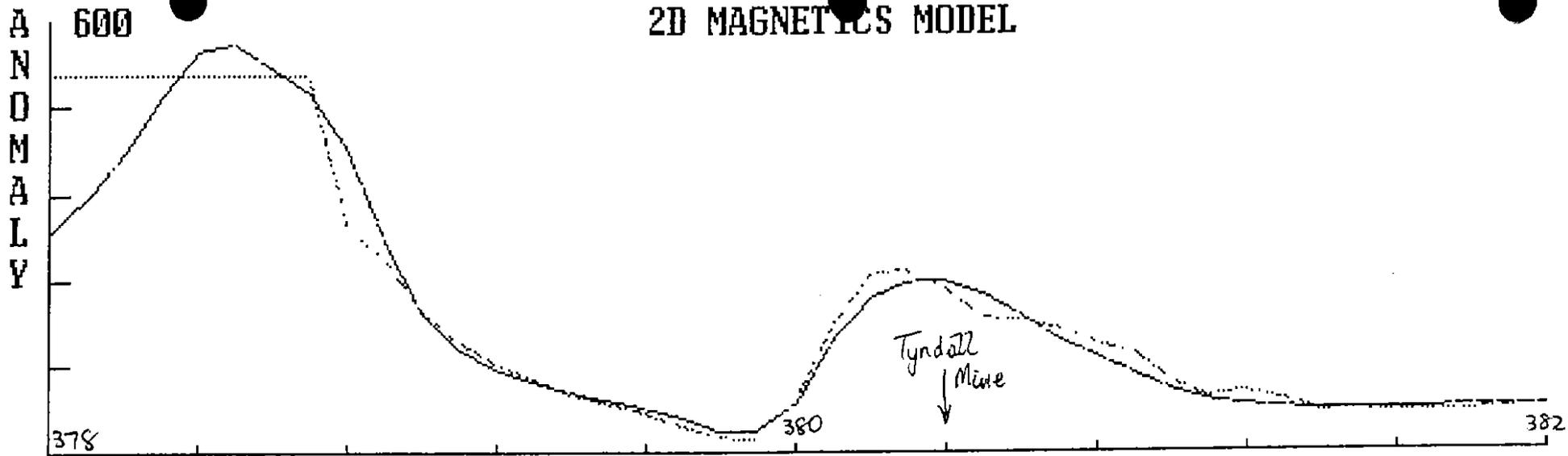
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5359 000N 378-382 000E

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2D MAGNETICS MODEL



1500
 OBS SHIFT 100
 CALC SHIFT 100
 4000

PROFILE 12

DISTANCE

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5359 500N

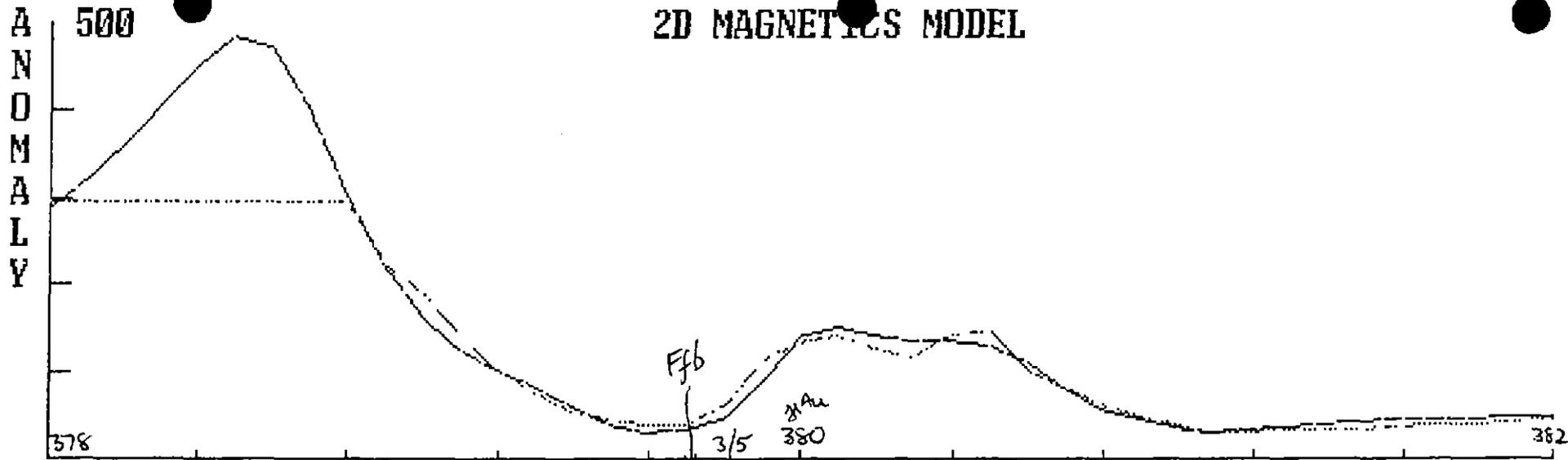
378-382 000E

FIGURE 6

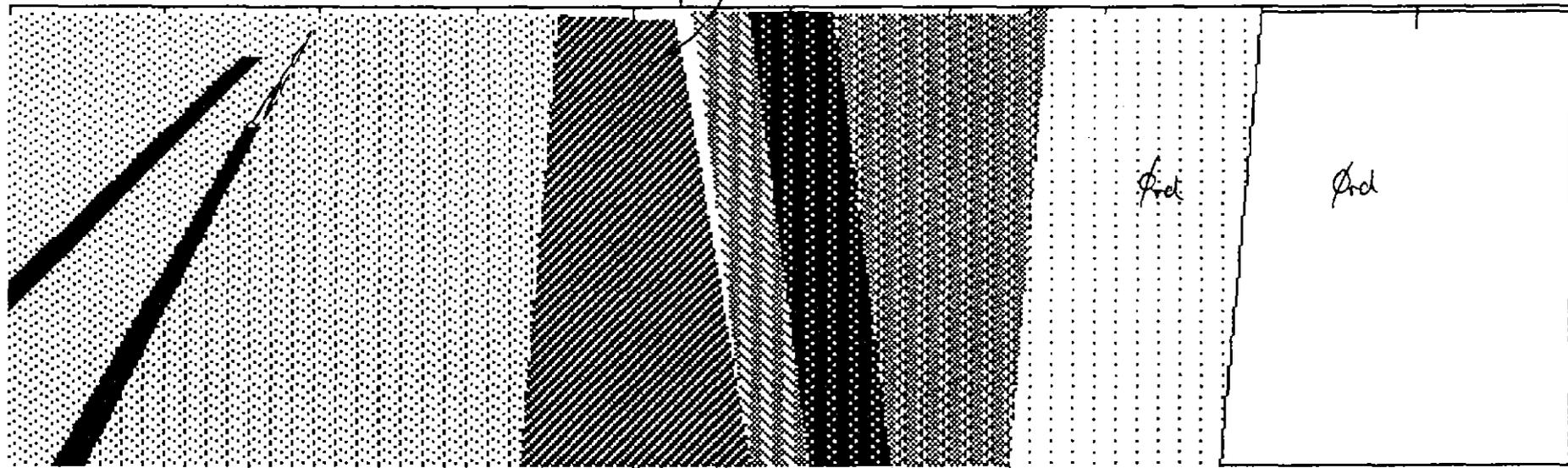
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2D MAGNETICS MODEL



DEPTH



1500

S.H.F. Epb ev ed ea | etq G.F. ϕ

--- OBS SHIFT 80
 --- CALC SHIFT 80
 4000

PROFILE 13

DISTANCE

FIGURE 7

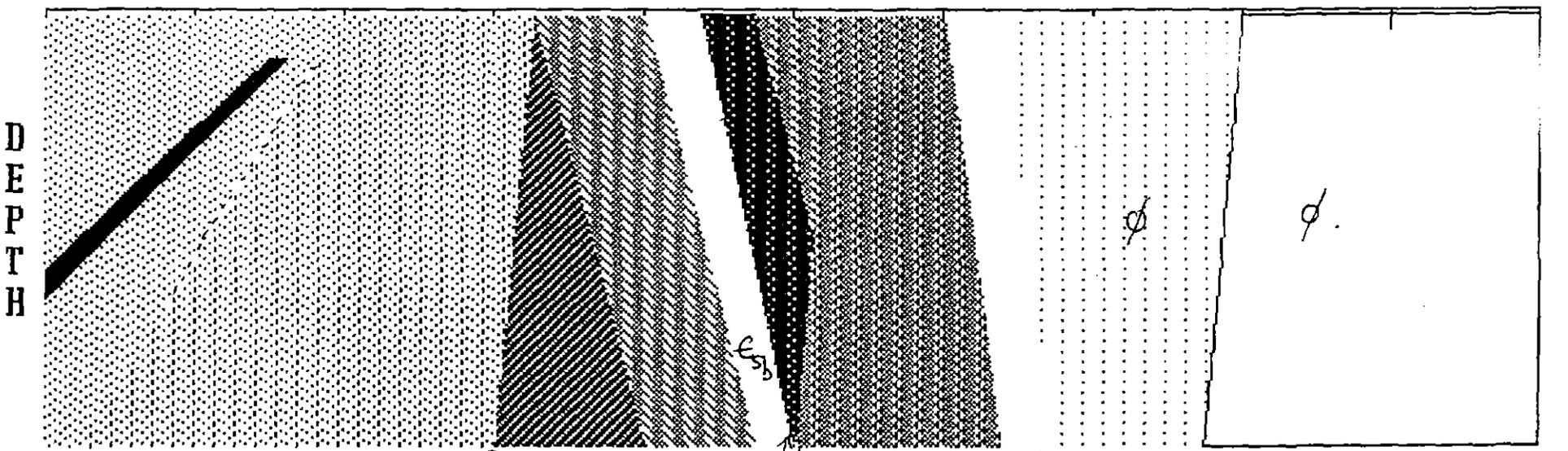
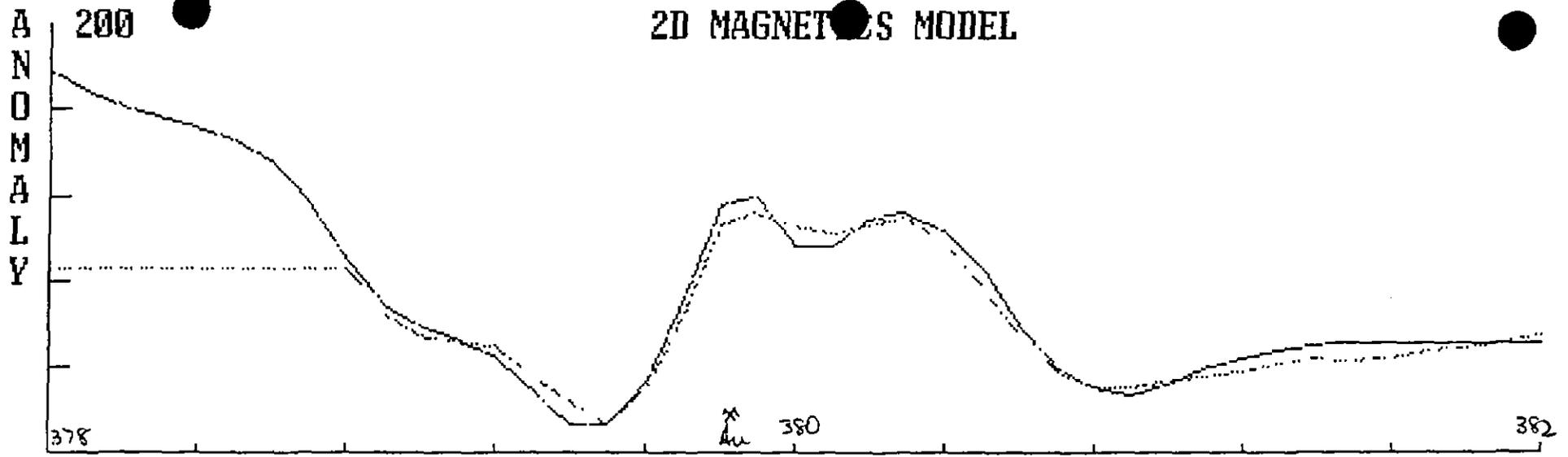
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5360 000N 378-382 000E

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897849

2D MAGNETIC MODEL



--- OBS SHIFT 80
 - - - CALC SHIFT 80
 4000

PROFILE 14

DISTANCE

FIGURE 8

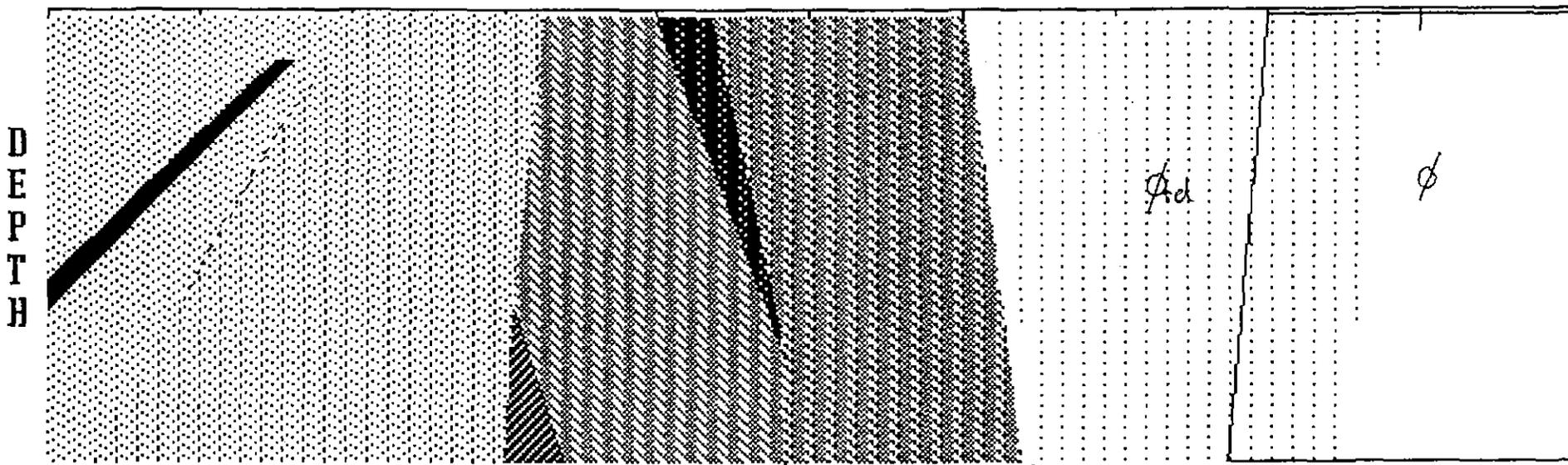
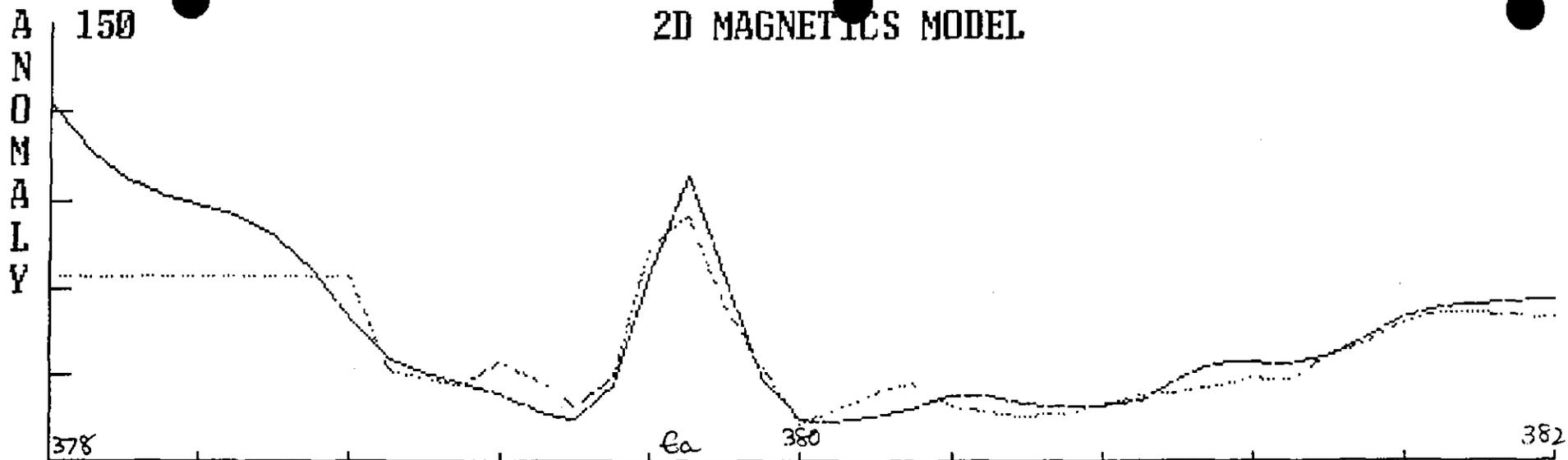
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5360 500N 378-382 000E

06/94

897350

2D MAGNETICS MODEL



1500

SH
Ep
F

Ed
Ev

Etg

phi
GLF

--- OBS SHIFT 60
-- CALC SHIFT 60

4000

PROFILE 15

DISTANCE

FIGURE 9

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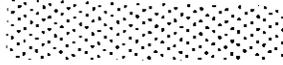
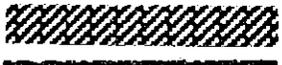
5361 000N

378-382 000E

06/94

897351

KEY TO PATTERNS AND PROPERTIES SHOWN IN FIGURES 4 TO 9
MAGNETIC INTERPRETATION DIAGRAMS

		~ x10 ⁻³ cgs
Cambrian? sediments and mafics (west of South Henty F)		0.5
Cambrian sediments adj to SHF		0.2
Cambrian ultramafics		17-20
Cambrian volcanics Pumice breccia etc		0.1
fire fountain mafics		0.0
dacitic sequence		-0.1
andesitic sequence		0.5
strat. breccias		0.0
variation		-0.3
Cambrian Tyndall Group variant 1		1-3
2		-1
3		0.0
4		0.6
5		0.25
6		-0.15
Ordovician		0.0
variant		-0.15

Properties are representative. See detailed variations in Figure 12.

Abbreviations shown on diagrams: SHF South Henty Fault
GLF Great Lyell Fault
FFB fire fountain basalt
Ev/Etg/0 boundaries volcs/Tyndall/Ord

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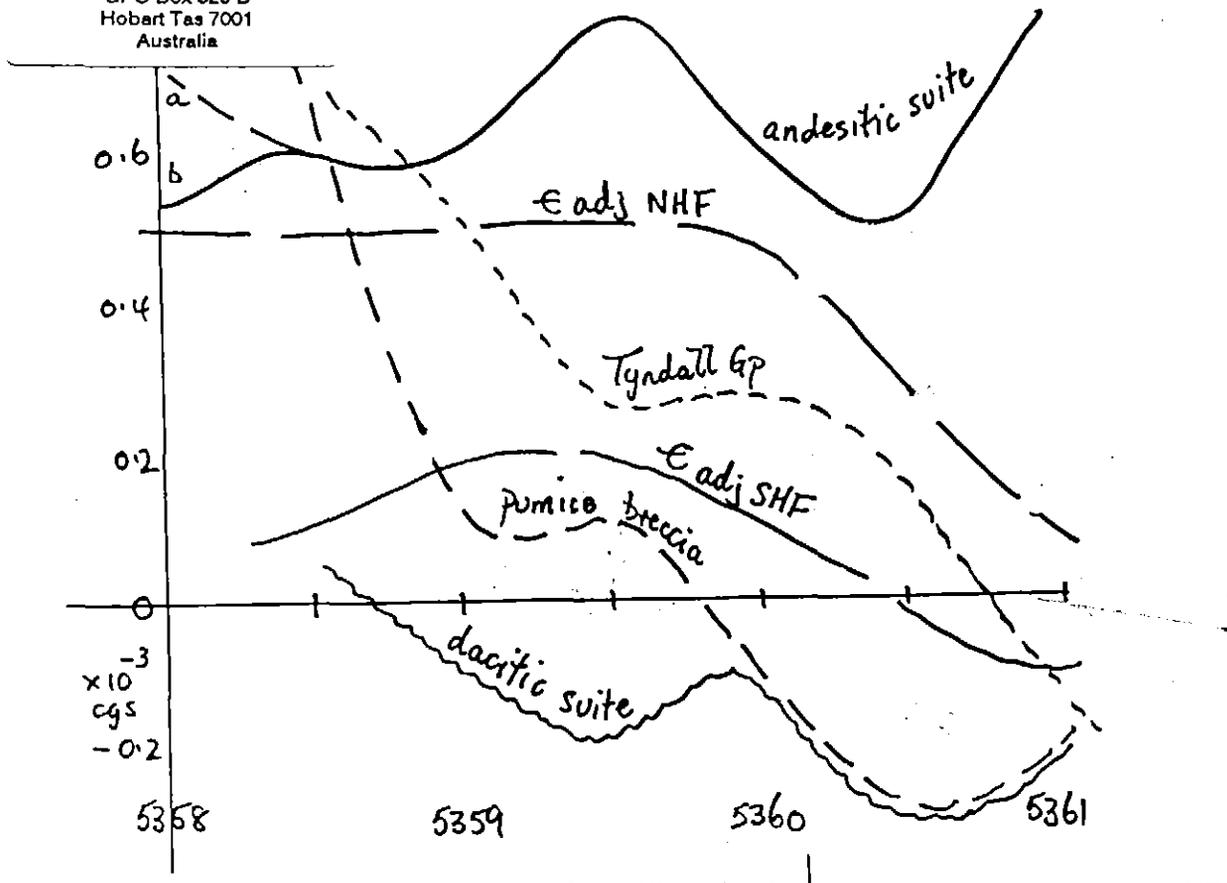


DIAGRAM SHOWING INTERPRETED VARIATION OF ROCK PROPERTIES AGAINST NORTHING FOR SEQUENCES IN THE HENTY RIVER REGION.

The properties of the Tyndall Group has been averaged due to limited knowledge of lithological variations.

5 cm

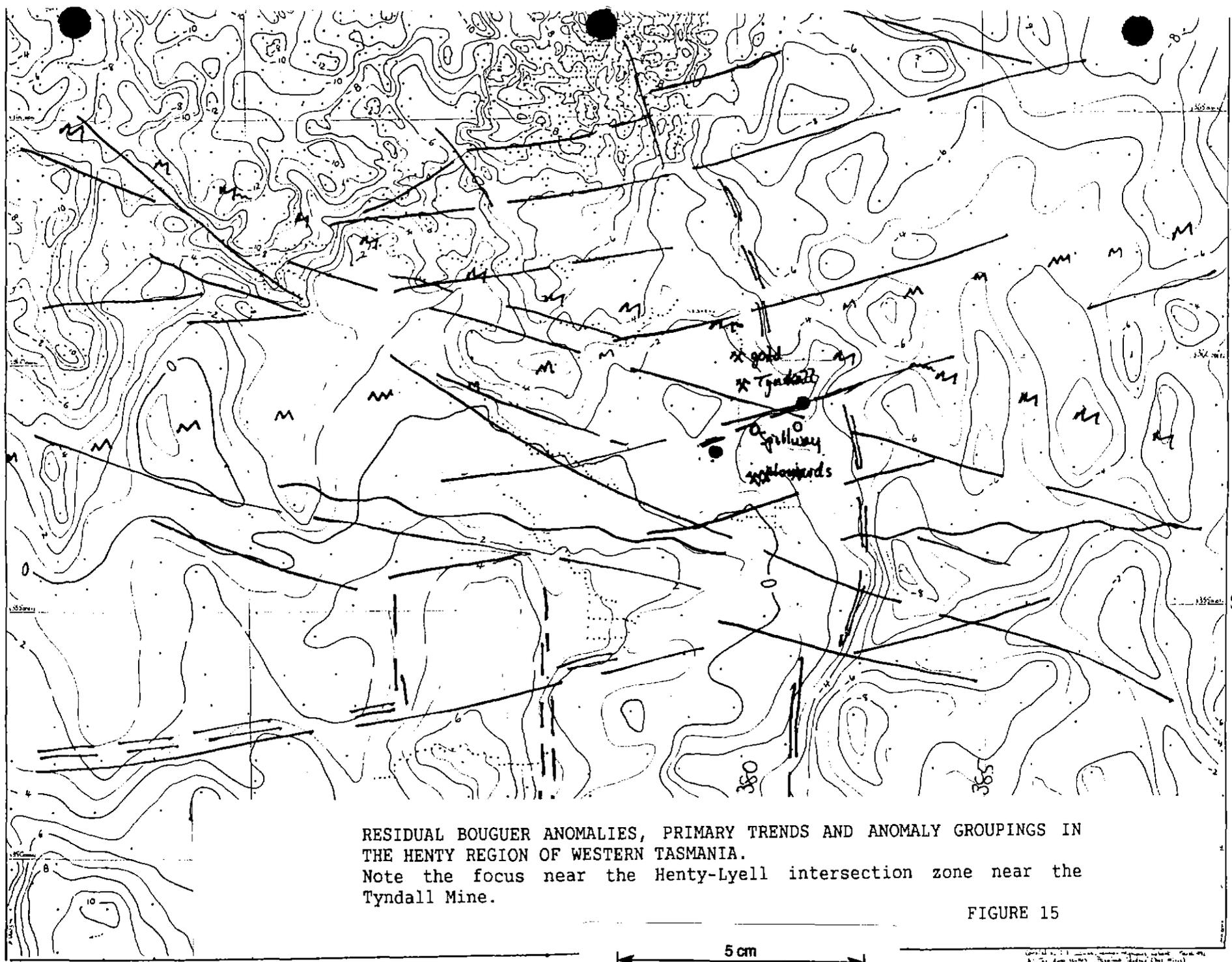
5360

N

PROJECT ORIGIN
 WEST AUSTRALIA
 REGIONAL PROJECTS
 Geographical Information
 Department of Mines
 1982



REGIONAL AEROMAGNETIC COMPILATION OF THE HENTY REGION OF WESTERN
 TASMANIA - CONTINUED TO 1500 M ASL. FIGURE 14



5360

5355

RESIDUAL BOUGUER ANOMALIES, PRIMARY TRENDS AND ANOMALY GROUPINGS IN THE HENTY REGION OF WESTERN TASMANIA.
Note the focus near the Henty-Lyell intersection zone near the Tyndall Mine.

FIGURE 15

5 cm

RESIDUAL BOUGUER ANOMALY HENTY REGION

897357

HOW TO "READ" THE MODEL INTERPRETATION DIAGRAMS

The model interpretation diagrams have a standard form and may be appraised consistently.

A title, describing the model or the particular version, is given at the bottom of the page.

A header, at the top of the page, describes the nature of the methods used (e.g. two dimensional - 2D) and whether gravity or magnetic data is involved.

Two scales are provided on the left hand side of the diagram. The upper scale defines the magnitude of the anomalous response. The full scale range is stated and there are five divisions of this range. The lower scale defines the depth range in the model. This is also divided into five parts and the maximum depth range is stated beneath the model.

A distance scale is given in the centre of the diagram. The length of the profile is stated and it is divided into ten equal parts.

All distances and depths are quoted in metres.

The magnetic anomaly scale is in nT, and the gravity scale in mgal.

The upper part of the diagram contains two profiles; the broken line represents the observed data and the heavier, continuous line the calculated effect of the model shown in the lower part of the diagram.

The model is defined by colour or pattern according to the sources and contrasts used. Separate magnetic and gravity models may be provided for the same section or profile since not all units may contribute to each calculation. Separate presentation allows for clear appraisal of what contributes to each anomaly type without confusion of many profiles in the upper half of the diagram.

Some other information is also provided in the diagram. The two shift statements in the lower right hand corner define precisely what was required to produce the curve match shown. The magnitude of the shift values is not usually important; their relationship is - and this should be consistent within a given area or data set. Irregularities in fit differential may indicate inconsistent or faulty solutions. This indication is provided regardless of the quality of fit, which may be absolutely perfect, but also quite irrelevant.

The issues involved in sound modelling practice and judgement about validity of solutions may be complex but have been distilled into five critical criteria. These have been discussed in three publications and review is recommended. Some of these criteria are often quoted but it is rare to find all five applied consistently. Most modern modelling programs either do not display, or do not retain, the crucial shift information which forms a critical part of one test.

The reader is referred to:

EAEG Extended Abstracts, 54th Annual Meeting, Paris, 1992, p.372-3.

First Break. April 1994.

Exploration Geophysics course manual. Vol 13. University of Tasmania Key Centre for Ore Deposit and Exploration Studies.

All papers are titled "Criteria for evaluation of potential field interpretations"

APPENDIX 12

DHEM SURVEYS ON YNC4 & YNC5

NEWTON CREEK

FILED



MEMORANDUM

**PASMINCO
EXPLORATION**

TO: M Quayle
FROM: NA Hughes
DATE: September 01, 1993
FILE: EP/02/3013
SUBJECT: Drill-hole EM Surveys on YNC4 and YNC5, Yolande Licence (EL25/91)

A Division of Pasminco 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

Summary

DHEM surveying of drill-holes YNC4 and YNC5 revealed no in-hole or off-hole anomalous EM responses.

Introduction

On August 2nd and 3rd 1993 drill-holes YNC4 and YNC5 on Pasmincos Yolande EL were surveyed by Crone Geophysics with the Crone DHEM system from two 400m x 500m transmitter loops, see Figure 1.

Interpretation

Figures 2 to 5 show the survey results for the first ten (10) channels (0.0765 to 1.0755 milliseconds) of decay of the secondary magnetic field and Primary Inducing Field for each loop/hole combination.

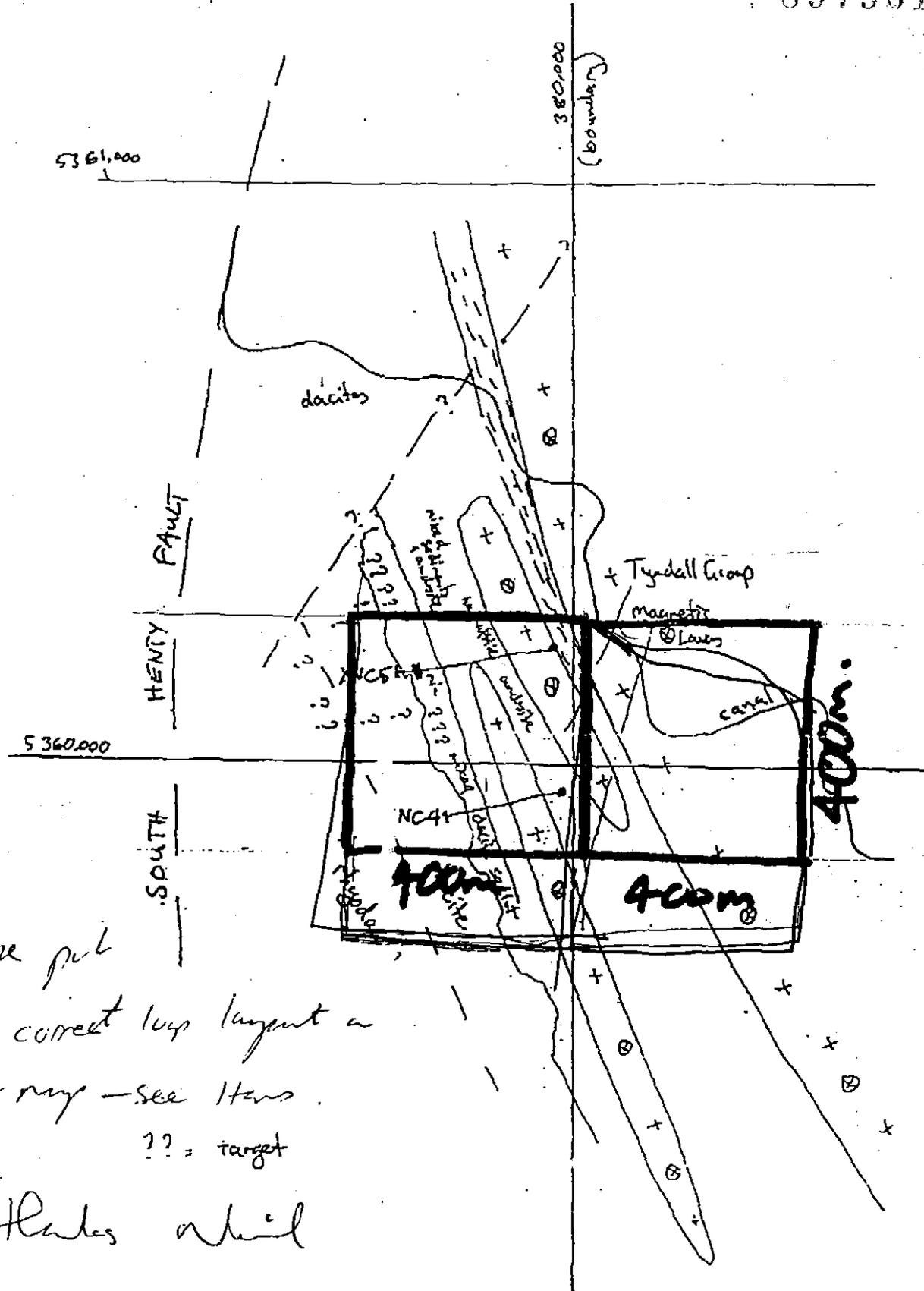
No in-hole or off-hole conductors were detected from either drill-hole using the axial component probe. As such the cross-component probe was not used.

What is obvious from the profiles however is the similarity of the secondary field profiles to that of the primary inducing field. This phenomena is common in very resistive terrains and is commonly referred to as "self response". It is not anticipated that this effect will mask a poor conductor of sufficient size. The cause of the self response is thought due to the ferrite cores used in the probe to boost the signal induced from the decay of secondary magnetic fields.

There was significant noise recorded during the surveys. To try increase the signal to noise ratio several readings were made at each station and then averaged. This appears to work better than increasing the number of stacks at each station for the Crone system.

Neil

897361

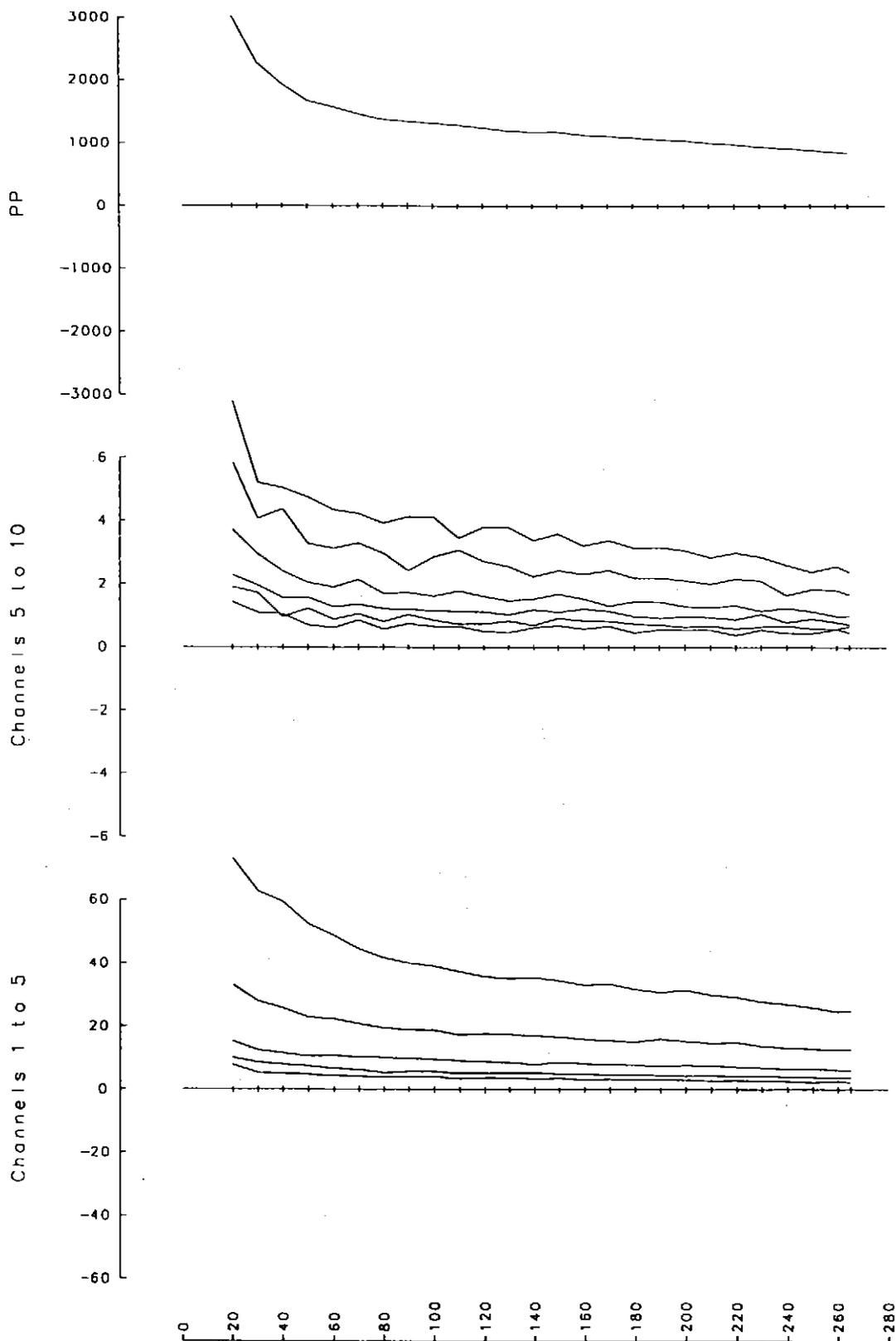


please put
the correct loop layout on
the map - see Hens
?? = target
Hales wheel

PASMINCO EXPLORATION
A Division of Pampco Australia Limited

FILED:	
NO:	
DATE:	
TIME:	
SCALE:	

Figure 1



Scale 1 : 2500

DHEM : YNC4 (Yolande EL25/91)
 Axial Component (nV/Amp-m2)

TX Loop : 1 --- 400m x 500m
 Survey by : Crone Geophysics, August 2, 1993
 Settings : Ramp off time 0.5ms, Frequency 25.0Hz
 Standard 20 Channel System

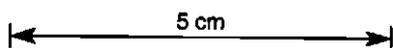
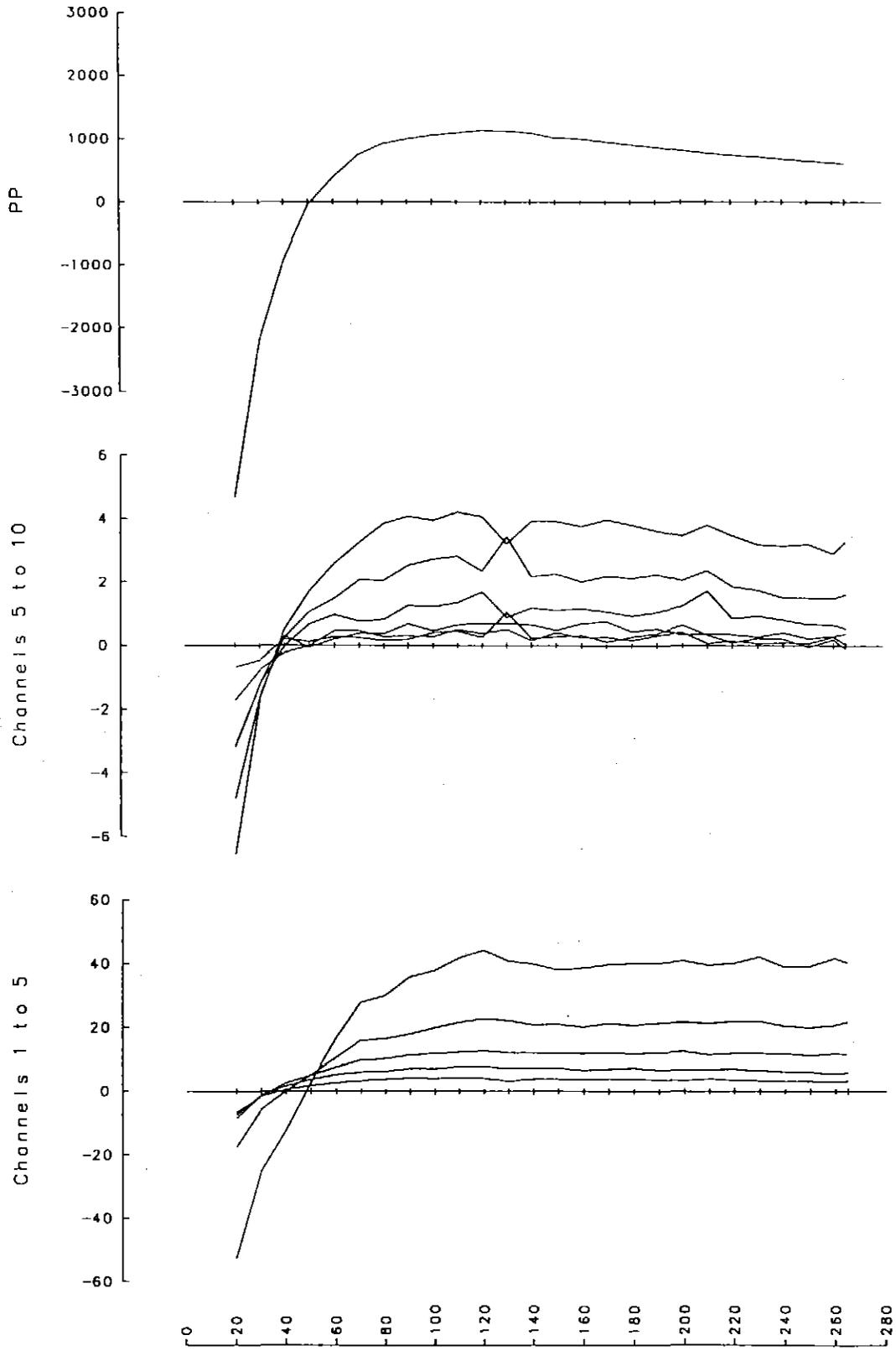


Figure 2



Scale 1 : 2500

DHEM : YNC4 (Yolande EL25/91)
 Axial Component (nV/Amp-m²)

TX Loop : 2 ---> 400m x 500m
 Survey by : Crone Geophysics, August 2, 1993
 Settings : Ramp off time 0.5ms, Frequency 25.0Hz
 Standard 20 Channel System

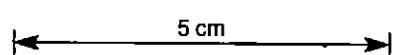
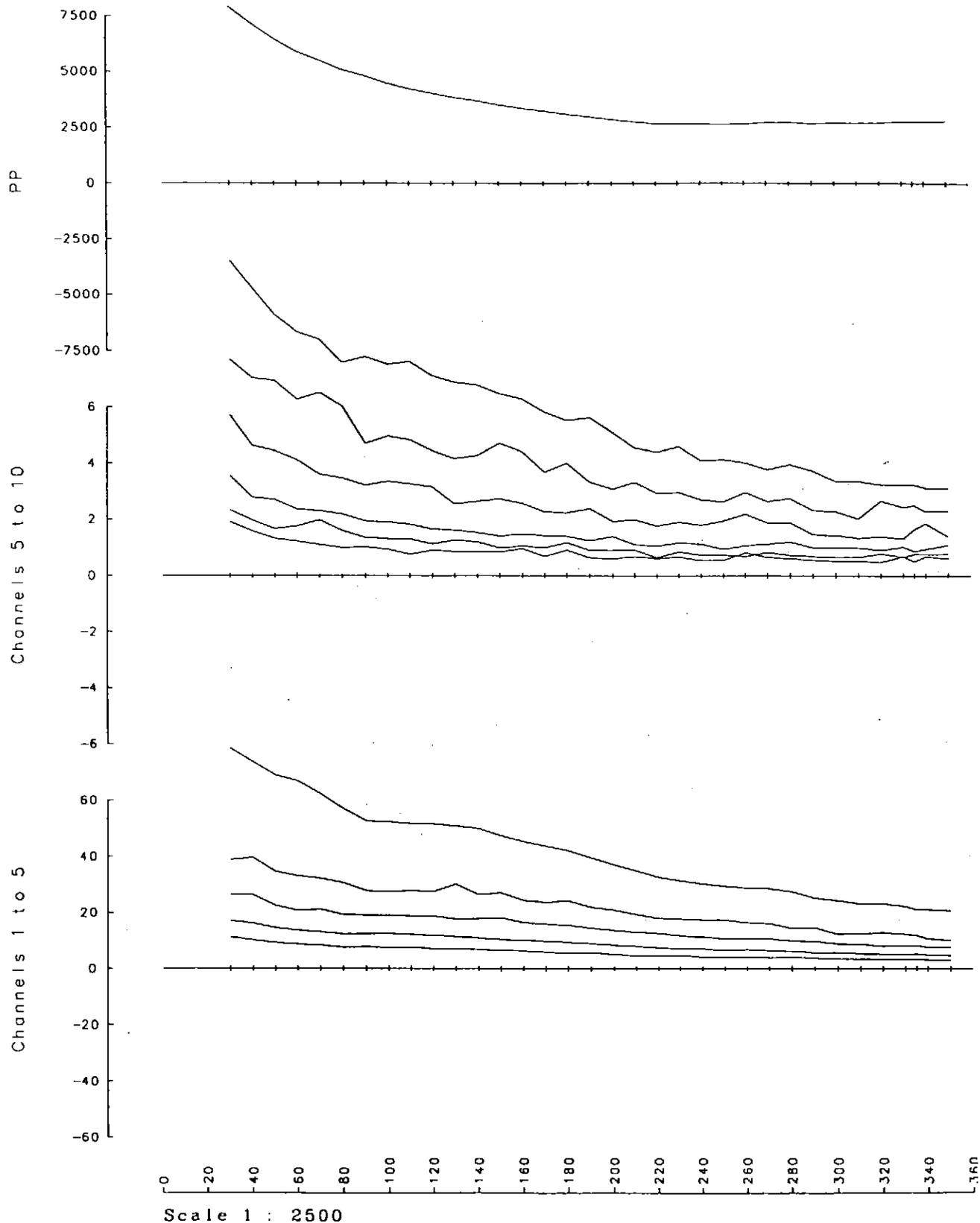


Figure 3



DHEM : YNC5 (Yolande EL25/91)
 Axial Component (nV/Amp-m²)

TX Loop : 1 --> 400m x 500m
 Survey by : Crone Geophysics, August 2, 1993
 Settings : Ramp off time 0.5ms. Frequency 25.0Hz
 Standard 20 Channel System

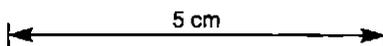
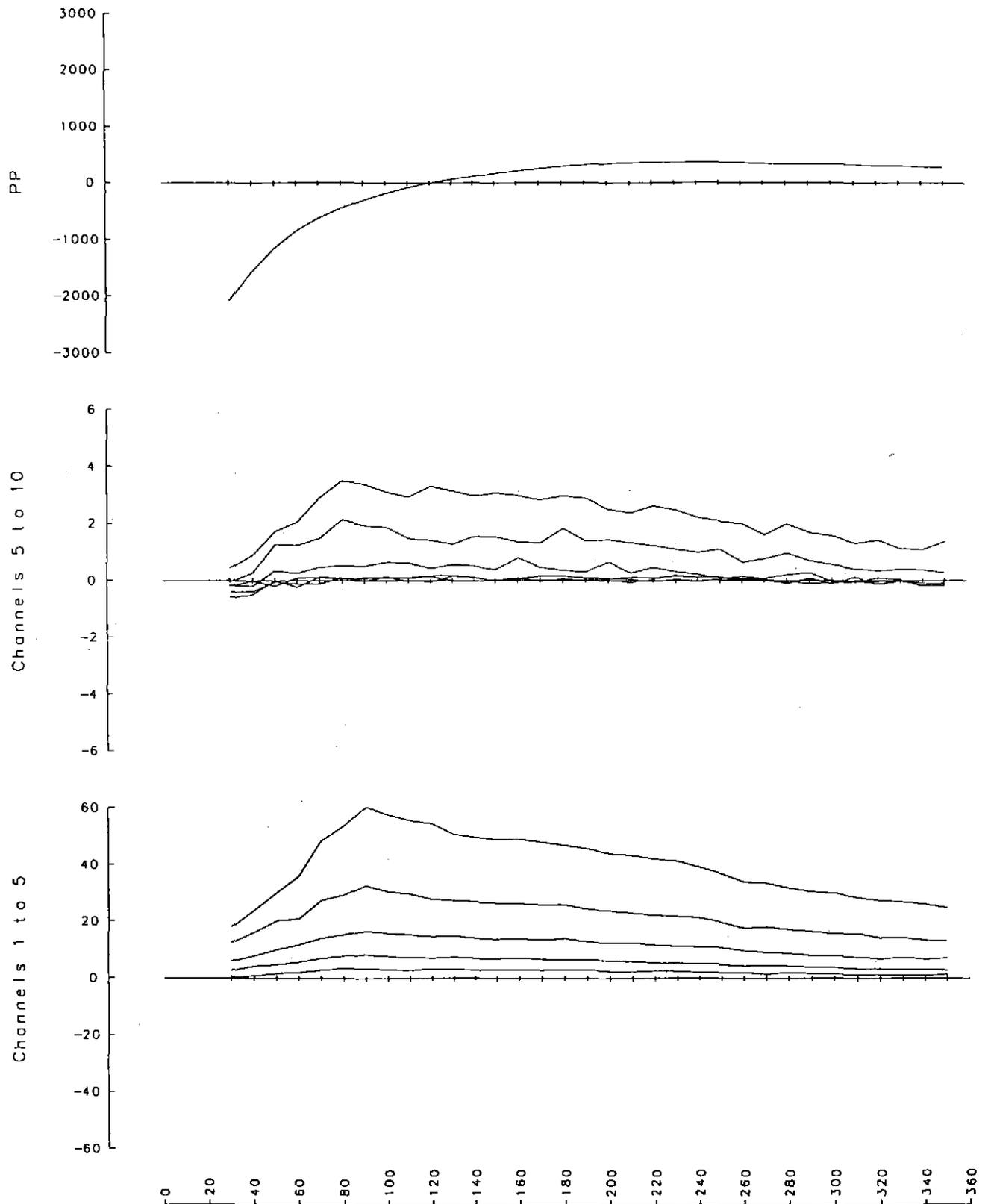


Figure 4



Scale 1 : 2500

DHEM : YNC5 (Yolande EL25/91)
 Axial Component (nV/Amp-m²)

TX Loop : 2 --- 400m x 500m
 Survey by : Crone Geophysics, August 2, 1993
 Settings : Ramp off time 0.5ms. Frequency 25.0Hz
 Standard 20 Channel System

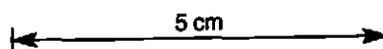


Figure 5

APPENDIX 13

DHEM SURVEYS ON YNC7 & YNC9

NEWTON CREEK

**PASMINCO
EXPLORATION**

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

MEMORANDUM

To: M Quayle
From: NA Hughes
Date: 10 February 1994
File: EP/02/3003
Subject: **DHEM Surveys, YNC7, Newton Creek**

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

On December 2nd, 1993, drill-hole YNC7 was logged with the Crone DHEM system from two 400mx400m transmit loops (Fig 7) by Outer-Rim Exploration of Townsville. Only the axial data was collected because no anomalies were detected during these surveys to warrant collecting the X and Y component data.

The surveys used a 10ms time base and 0.5ms ramp. Seventeen channels of data were recorded between 0.076 - 6.646 ms. Loop current was nominally 5 amps for both loops.

The responses near the top of the hole for both loops appear to be dominated by system or self response, ie. sympathetic to the inducing primary field.

The data is presented as linear profiles in Figures 1 to 6.

Neil

NAH_30.SAM/SR

OUTER-RIM EXPLORATION SERVICES
Operating Crone PEM System
BOREHOLE PEM

Client	: Pasminco Exploration	Hole	: YNC07
Grid	: Yolande (Henty)	Tx Loop	: Collar
Date	: 2nd Dec. 1993	File name	: YNC7ZC.AM2
Time Base	: 10.00 ms	# Readings	: 32
Ramp Time	: 0.50 ms	Stn Units	: Metric
# Channels	: 17	Coil Area	: 6500 sq m
Sync Type	: Cable	Polarity	: +
Loop Size	: 400m X 400m	Receiver	: Digital #105
Current	: 5 Amps	Operator	: Adrian Page

Loop Coordinates (X,Y,Z)

1. 79640m, 59400m, 0m	2. 80000m, 59400m, 0m
3. 80000m, 59800m, 0m	4. 79600m, 59800m, 0m
5. 79600m, 59600m, 0m	

Channel Times (usec)

Ch	Start	End	Center	Ch	Start	End	Center	Ch	Start	End	Center	
PP	-198	-99	-149	1	76	104	90	2	104	131	117	
	3	131	171	151	4	171	225	198	5	225	292	259
	6	292	378	335	7	378	490	434	8	490	639	565
	9	639	828	733	10	828	1075	952	11	1075	1395	1235
	12	1395	1809	1602	13	1809	2348	2078	14	2348	3046	2697
	15	3046	3951	3498	16	3951	5121	4536	17	5121	6646	5884

General Comments

Generally noisy - many stacks @ 1024
 22 KVA & 220 KVA power lines 1km NE of collar running NW to SE
 Axial survey only at 10m station intervals

OUTER-RIM EXPLORATION SERVICES
Operating Crone PEM System
BOREHOLE PEM

Client	: Pasminco Exploration	Hole	: YNC07
Grid	: Yolande (Henty)	Tx Loop	: East
Date	: 2nd Dec. 1993	File name	: YNC7ZE.AM2
Time Base	: 10.00 ms	# Readings	: 32
Ramp Time	: 0.50 ms	Stn Units	: Metric
# Channels	: 17	Coil Area	: 6500 sq m
Sync Type	: Cable	Polarity	: +
Loop Size	: 400m X 400m	Receiver	: Digital #105
Current	: 5.5 Amps	Operator	: Adrian Page

Loop Coordinates (X,Y,Z)

1. 80000m, 59400m, 0m	2. 80475m, 59400m, 0m
3. 80400m, 59600m, 0m	4. 80400m, 59800m, 0m
5. 80000m, 59800m, 0m	

Channel Times (usec)

Ch	Start	End	Center	Ch	Start	End	Center	Ch	Start	End	Center	
PP	-198	-99	-149	1	76	104	90	2	104	131	117	
	3	131	171	151	4	171	225	198	5	225	292	259
	6	292	378	335	7	378	490	434	8	490	639	565
	9	639	828	733	10	828	1075	952	11	1075	1395	1235
	12	1395	1809	1602	13	1809	2348	2078	14	2348	3046	2697
	15	3046	3951	3498	16	3951	5121	4536	17	5121	6646	5884

General Comments

Generally noisy - many stacks @ 1024
 22 & 220 KVA power lines, approx. 1km NE of collar, running NW to S
 Axial survey only

OUTER-RIM EXPLORATION SERVICES
Operating Crone PEM System
BOREHOLE PEM

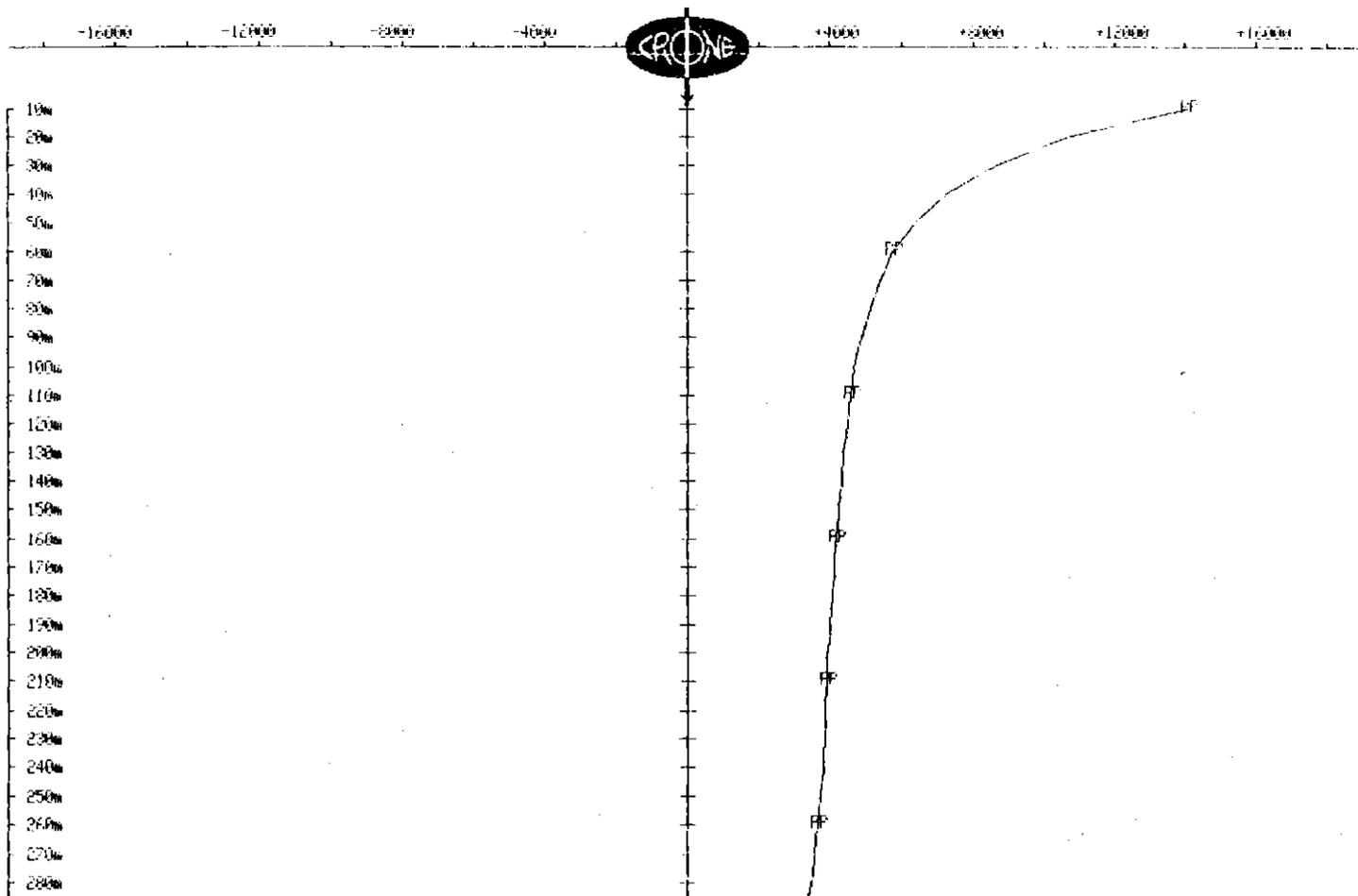
Client : Pasminco Exploration
 Grid : Yolande (Henty)
 Date : 2nd Dec. 1993

Hole : YNC07
 Tx Loop : Collar
 File name : YNC7ZC.AM2

Z COMPONENT dBz/dt nanoVolt/Amp-m² - 17 channels and PP

Scale: 1:2500

Unit Scale: 1cm = 2000



5 cm

OUTER-RIM EXPLORATION SERVICES
Operating Crone PEM System
BOREHOLE PEM

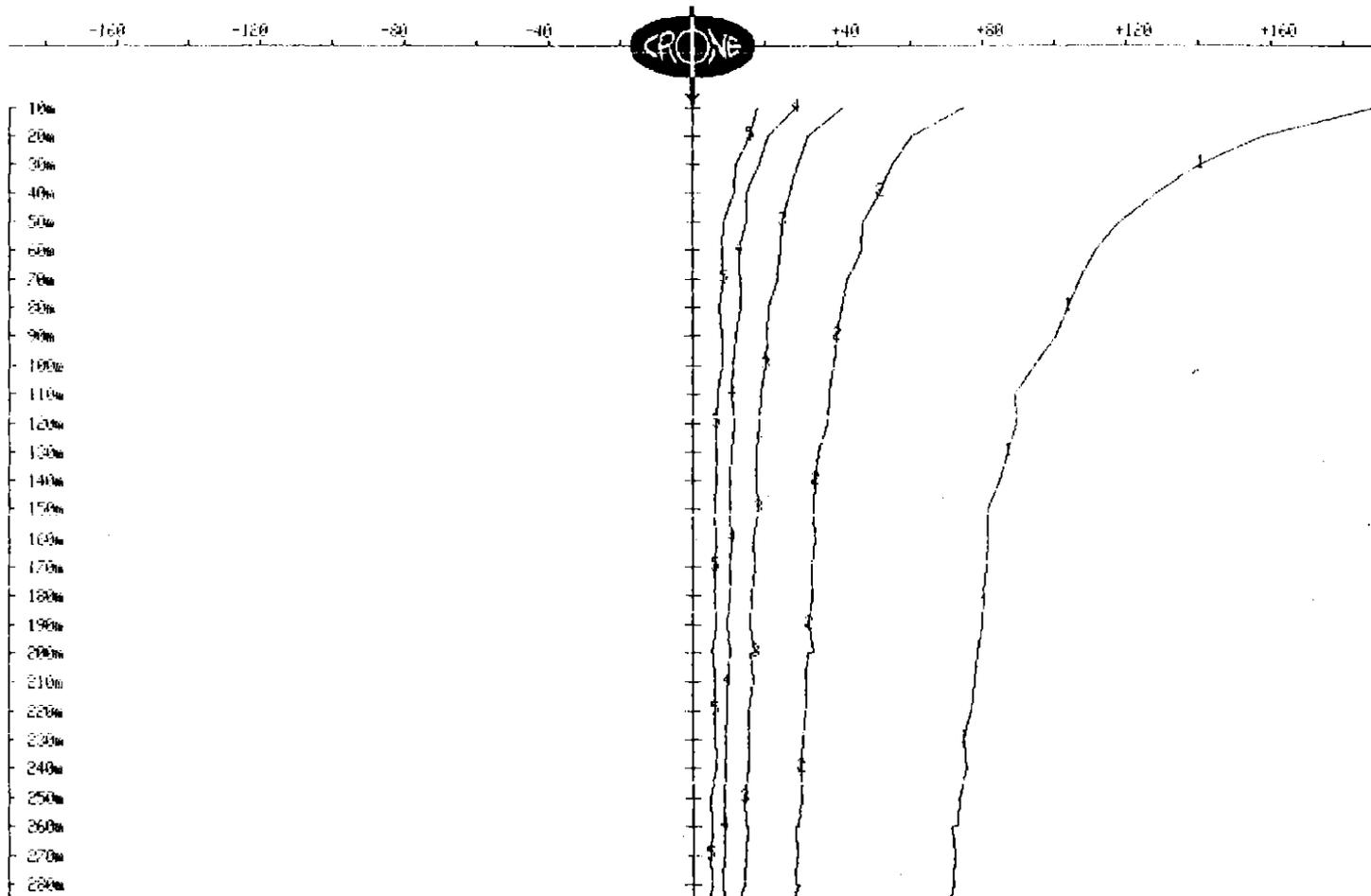
Client : Pasminco Exploration
Grid : Yolande (Henty)
Date : 2nd Dec. 1993

Hole : YNC07
Tx Loop : Collar
File name : YNC7ZC.AM2

Z COMPONENT dBz/dt nanoVolt/Amp-m² - 17 channels

Scale: 1:2500

Unit Scale: 1cm = 20



5 cm

OUTER-RIM EXPLORATION SERVICES
Operating Crone PEM System
BOREHOLE PEM

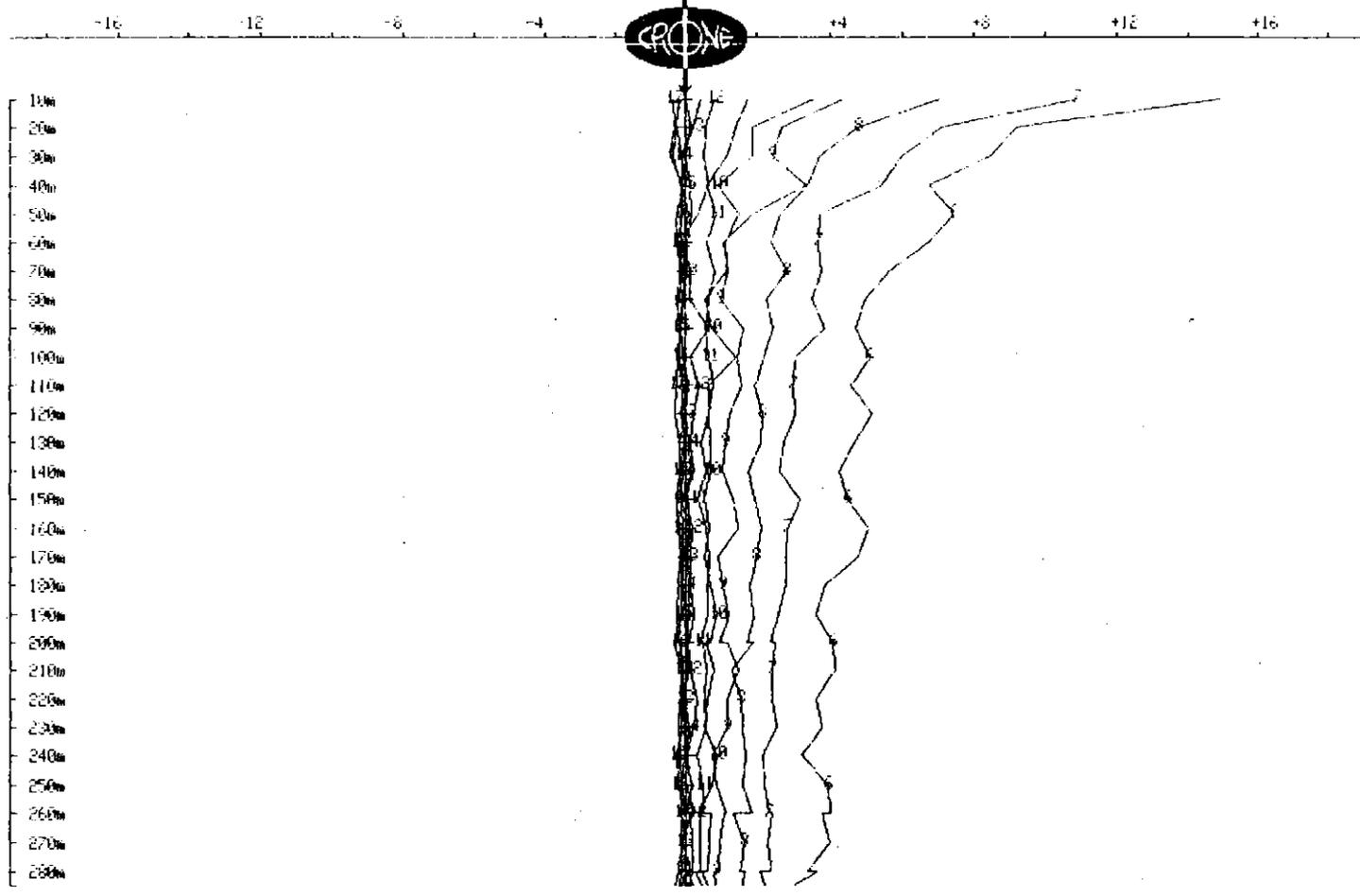
Client : Pasmenco Exploration
Grid : Yolande (Henty)
Date : 2nd Dec. 1993

Hole : YNC07
Tx Loop : Collar
File name : YNC7ZC.AM2

Z COMPONENT dBz/dt nanoVolt/Amp-m² - 17 channels

Scale: 1:2500

Unit Scale: 1cm = 2



OUTER-RIM EXPLORATION SERVICES
Operating Crone PEM System
BOREHOLE PEM

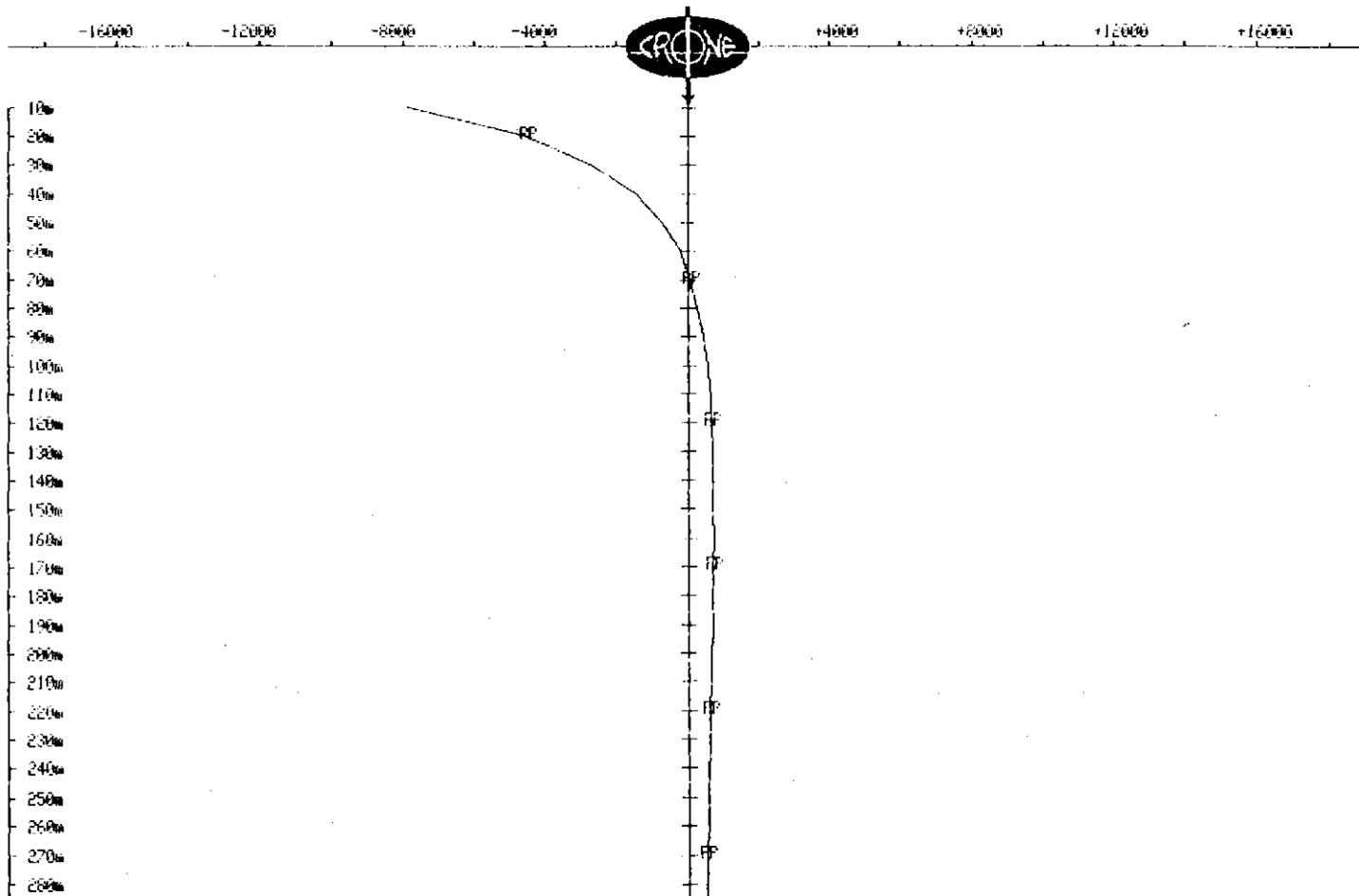
Client : Pasminco Exploration
 Grid : Yolande (Henty)
 Date : 2nd Dec. 1993

Hole : YNC07
 Tx Loop : East
 File name : YNC7ZE.AM2

Z COMPONENT dBz/dt nanoVolt/Amp-m² - 17 channels and PP

Scale: 1:2500

Unit Scale: 1cm = 2000



OUTER-RIM EXPLORATION SERVICES
Operating Crone PEM System
BOREHOLE PEM

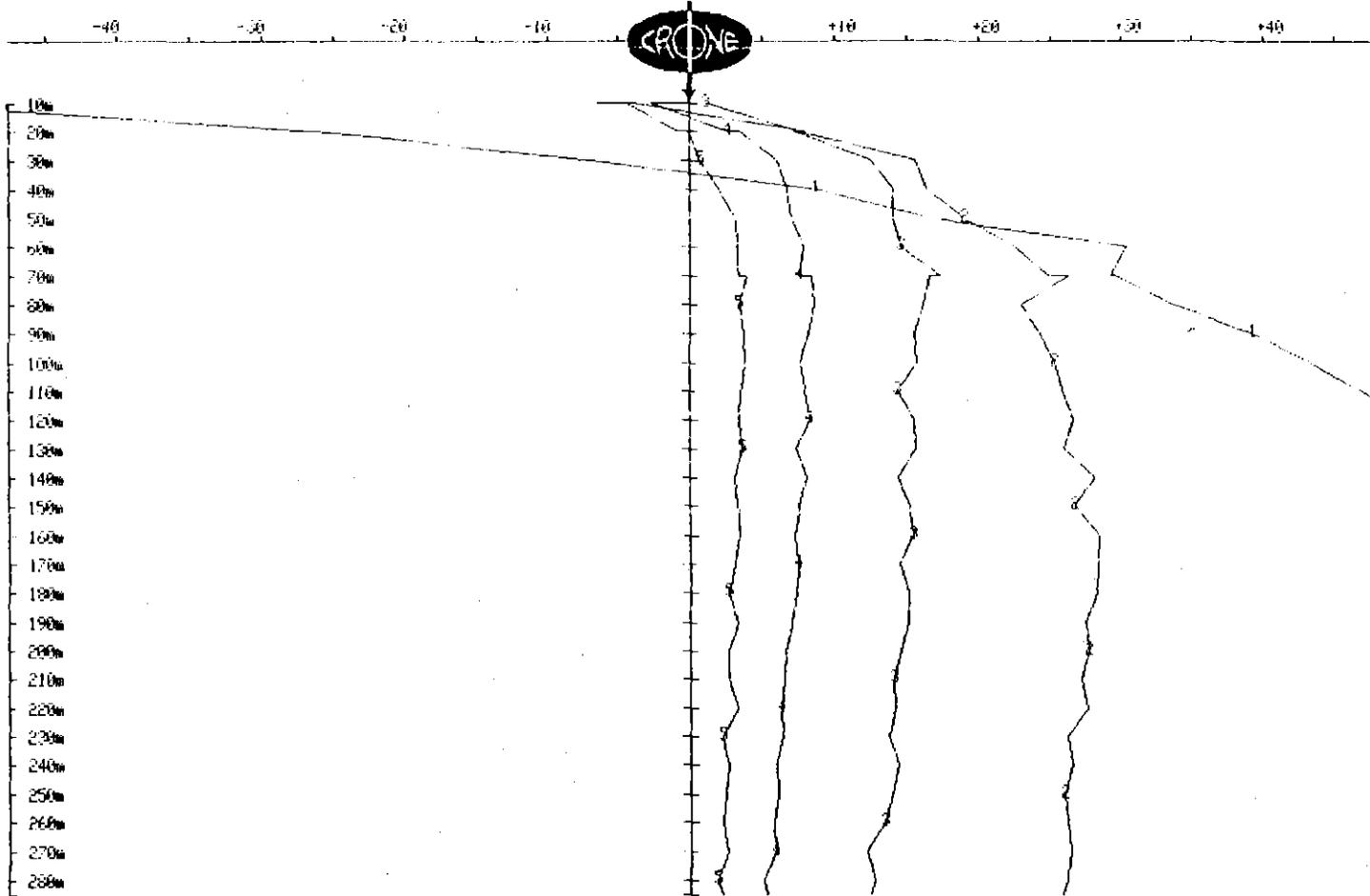
Client : Pasminco Exploration
Grid : Yolande (Henty)
Date : 2nd Dec. 1993

Hole : YNC07
Tx Loop : East
File name : YNC7ZE.AM2

Z COMPONENT dBz/dt nanoVolt/Amp-m² - 17 channels

Scale: 1:2500

Unit Scale: 1cm = 5



5 cm

OUTER-RIM EXPLORATION SERVICES
Operating Crone PEM System
BOREHOLE PEM

Client : Pasminco Exploration
Grid : Yolande (Henty)
Date : 2nd Dec. 1993

Hole : YNC07
Tx Loop : East
File name : YNC7ZE.AM2

Z COMPONENT dBz/dt nanoVolt/Amp-m² - 17 channels

Scale: 1:2500

Unit Scale: 1cm = 1

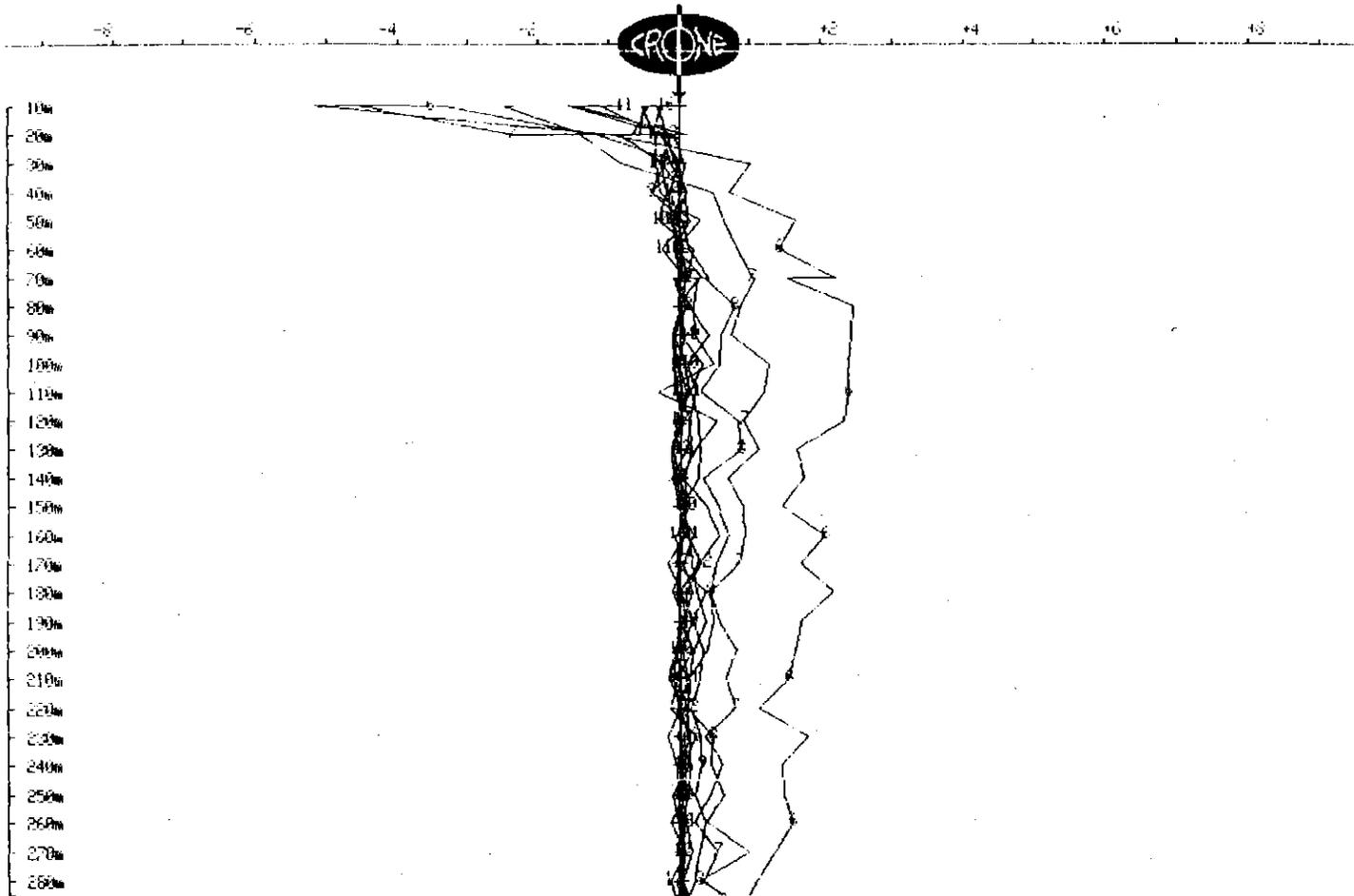


Fig 6

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004 316040

PAS. EXPLORATION →→ ROSEBERY
PASMINGO EXPLOR. →→ PASMINGO X MELB

897376

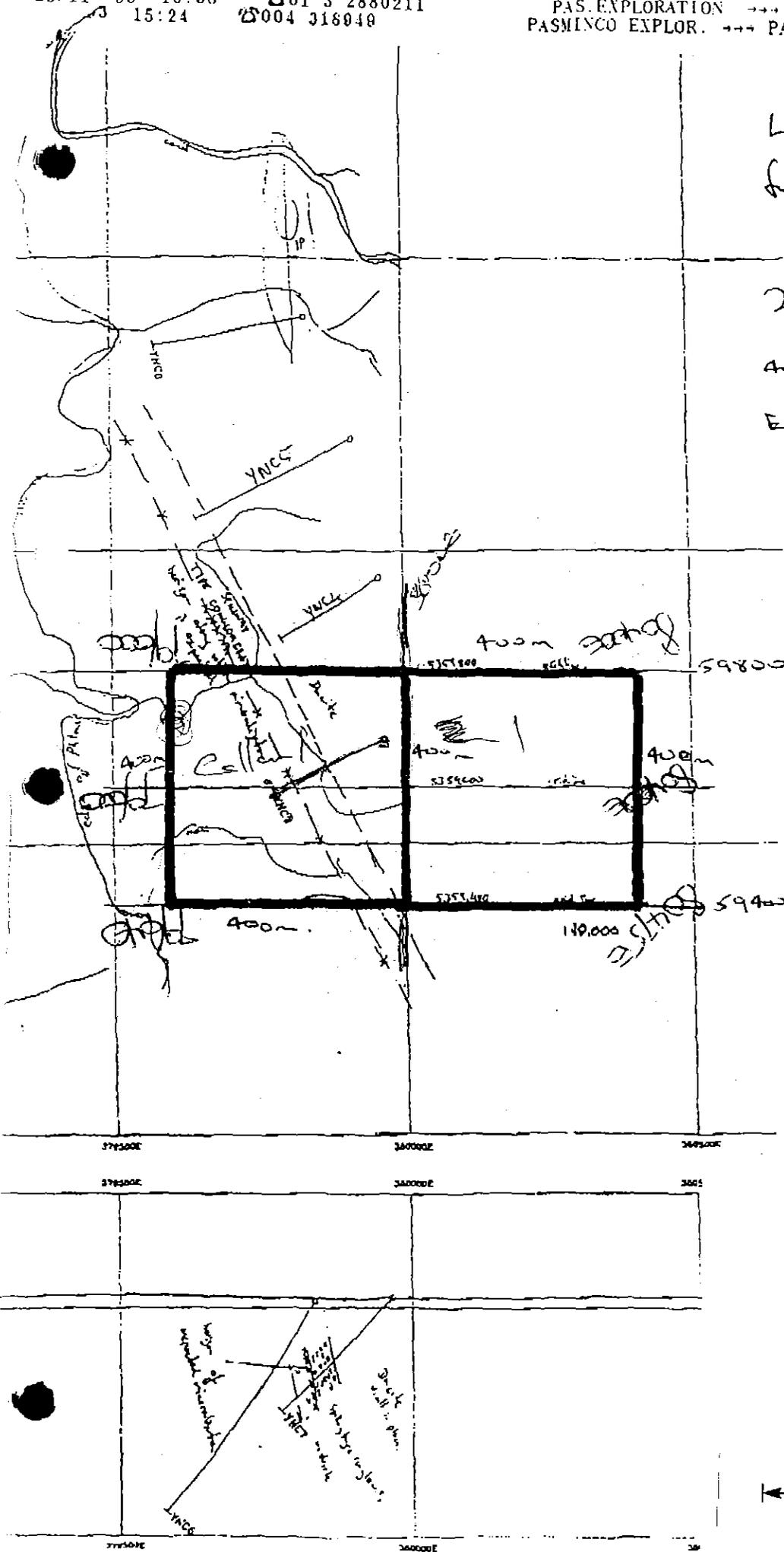
002/003
002

Loop layout
for YNCF.

2 loops

400 x 400 m.

East and West



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

TO: M. Quayle
FROM: N.A. Hughes
DATE: 28th June 1994
REF: EP\02\3009

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

South Mine Operations
Eyre Street, Broken Hill
Postal Address
P.O. Box 703
Broken Hill, N.S.W., 2880

SUBJECT: DHEM Surveys at Yolande, Tasmania.

Drill hole YNC9 was surveyed from three transmitter loops using the Crone DHEM system by Outer Rim Exploration of Townsville on 30th May 1994. Two of the transmitter loops were designed to couple conductors that were strike conformable and the third was designed to test a fault zone perpendicular to strike and south of the drill hole. The data is presented as profiles in PAS1071 to PAS1073. The geographic location of the drill hole and transmitter loops is shown in PAS1070. Survey specifications can be found with the data profiles.

Results

The data from loops 2 and 3 indicate no obvious in-hole or off-hole conductors. The loop 1 data however, appears to indicate conductive material in the fault zone. This is indicated by the negative to positive cross over in the data. I feel however, the response can be adequately explained by invoking a combination of "self response" and normal half space response.

I have included a report prepared by the CSIRO in 1989 on some comparison tests between the SIROTEM borehole and the GEONICS probe with regard to self response and false anomalies. The data was from the Sock Creek area.

OUTER-RIM EXPLORATION SERVICES
Operating Crone PEM System
BOREHOLE PEM

Client	: Pasminco Exploration	Hole	: YNC9
Grid	: Yolande	Tx Loop	: Loop 1
Date	: May 30, 1994	File name	: YNC9L1Z.PEM
Time Base	: 10.00 ms	# Readings	: 26
Ramp Time	: 0.50 ms	Stn Units	: Metric
# Channels	: 17	Coil Area	: 6500 sq m
Sync Type	: Cable	Polarity	: -
Loop Size	: 300m X 300m	Receiver	: Digital #106
Current	: 9 Amps	Operator	: Geoffrey Dunn

Loop Coordinates (X,Y,Z)

1. 379720m, 5.36018e+06m, 0m	2. 379460m, 5.35995e+06m, 0m
3. 379630m, 5.35968e+06m, 0m	4. 379880m, 5.35984e+06m, 0m

Hole Coordinates (X,Y,Z) or (Azimuth,Dip,Length)

1. 379660m, 5.36019e+06m, 0m

Channel Times (usec)

Ch	Start	End	Center	Ch	Start	End	Center	Ch	Start	End	Center
PP	-198	-99	-149	1	76	104	90	2	104	131	117
3	131	171	151	4	171	225	198	5	225	292	259
6	292	378	335	7	378	490	434	8	490	639	565
9	639	828	733	10	828	1075	952	11	1075	1395	1235
12	1395	1809	1602	13	1809	2348	2078	14	2348	3046	2697
15	3046	3951	3498	16	3951	5121	4536	17	5121	6646	5884

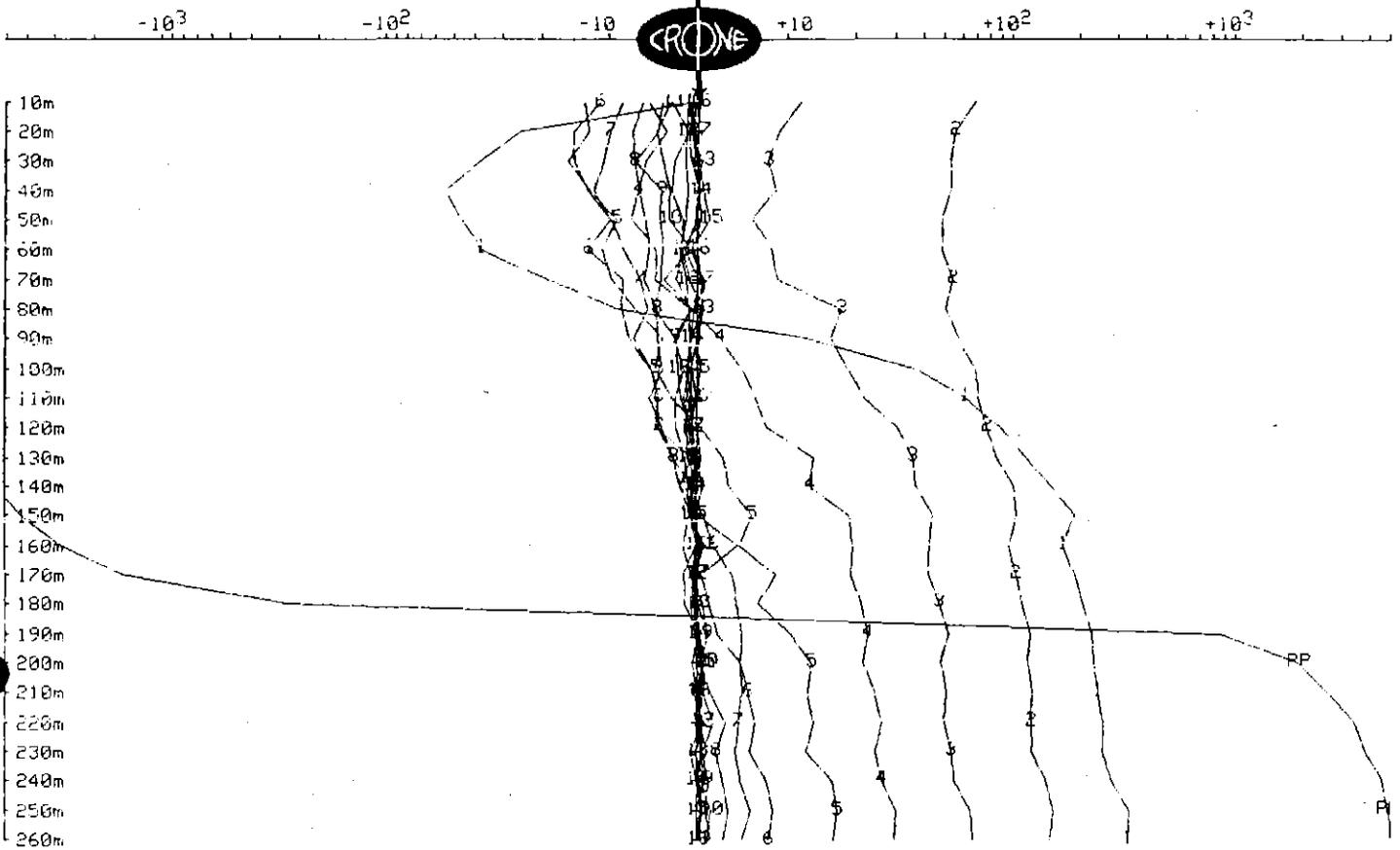
OUTER-RIM EXPLORATION SERVICES Operating Crone PEM System BOREHOLE PEM

Client : Pasminco Exploration
Grid : Yolande
Date : May 30, 1994

Hole : YNC9
Tx Loop : Loop 1
File name : YNC9L1Z.PEM

Z COMPONENT dBz/dt nanoTesla/sec - 17 channels and PP

Scale: 1:2500



OUTER-RIM EXPLORATION SERVICES Operating Crone PEM System BOREHOLE PEM

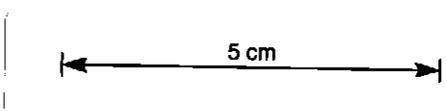
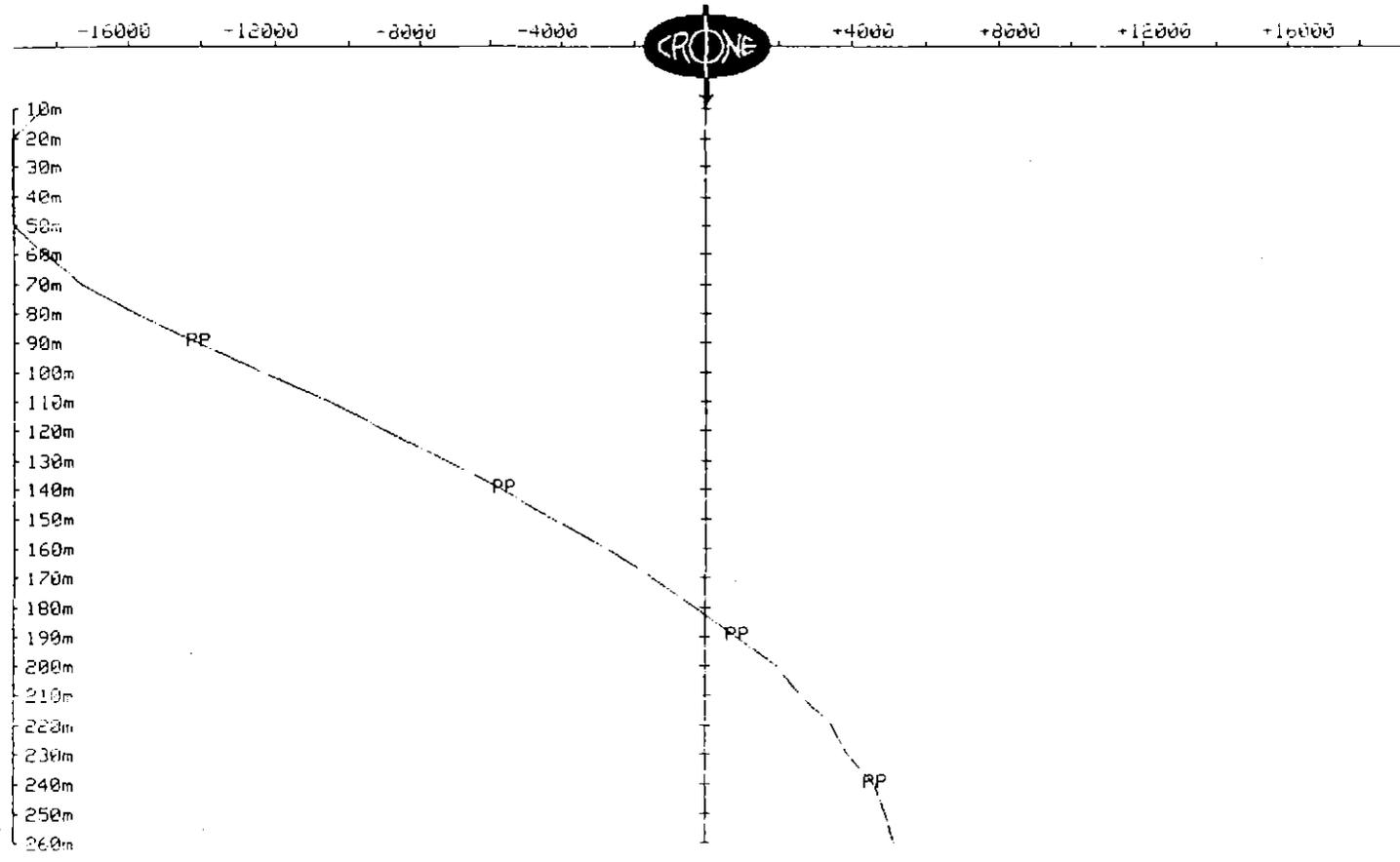
Client : Pasminco Exploration
Grid : Yolande
Date : May 30, 1994

Hole : YNC9
Tx Loop : Loop 1
File name : YNC9L1Z.PEM

Z COMPONENT dBz/dt nanoTesla/sec - 17 channels and PP

Scale: 1:2500

Unit Scale: 1cm = 2000 nT/s



OUTER-RIM EXPLORATION SERVICES
Operating Crone PEM System
BOREHOLE PEM

Client	: Pasminco Exploration	Hole	: YNC9
Grid	: Yolande	Tx Loop	: Loop 2
Date	: May 30, 1994	File name	: YNC9L2Z.PEM
Time Base	: 10.00 ms	# Readings	: 23
Ramp Time	: 0.50 ms	Stn Units	: Metric
# Channels	: 17	Coil Area	: 6500 sq m
Sync Type	: Cable	Polarity	: -
Loop Size	: 250m X 230m	Receiver	: Digital #106
Current	: 8 Amps	Operator	: Geoffrey Dunn

Loop Coordinates (X,Y,Z)

1. 379720m, 5.36018e+06m, 0m	2. 379600m, 5.36028e+06m, 0m
3. 379440m, 5.36016e+06m, 0m	4. 379550m, 5.36e+06m, 0m

Hole Coordinates (X,Y,Z) or (Azimuth,Dip,Length)

1. 379660m, 5.36019e+06m, 0m

Channel Times (usec)

Ch	Start	End	Center	Ch	Start	End	Center	Ch	Start	End	Center	
PP	-198	-99	-149	1	76	104	90	2	104	131	117	
	3	131	171	151	4	171	225	198	5	225	292	259
	6	292	378	335	7	378	490	434	8	490	639	565
	9	639	828	733	10	828	1075	952	11	1075	1395	1235
	12	1395	1809	1602	13	1809	2348	2078	14	2348	3046	2697
	15	3046	3951	3498	16	3951	5121	4536	17	5121	6646	5884

OUTER-RIM EXPLORATION SERVICES
Operating Crone PEM System
BOREHOLE PEM

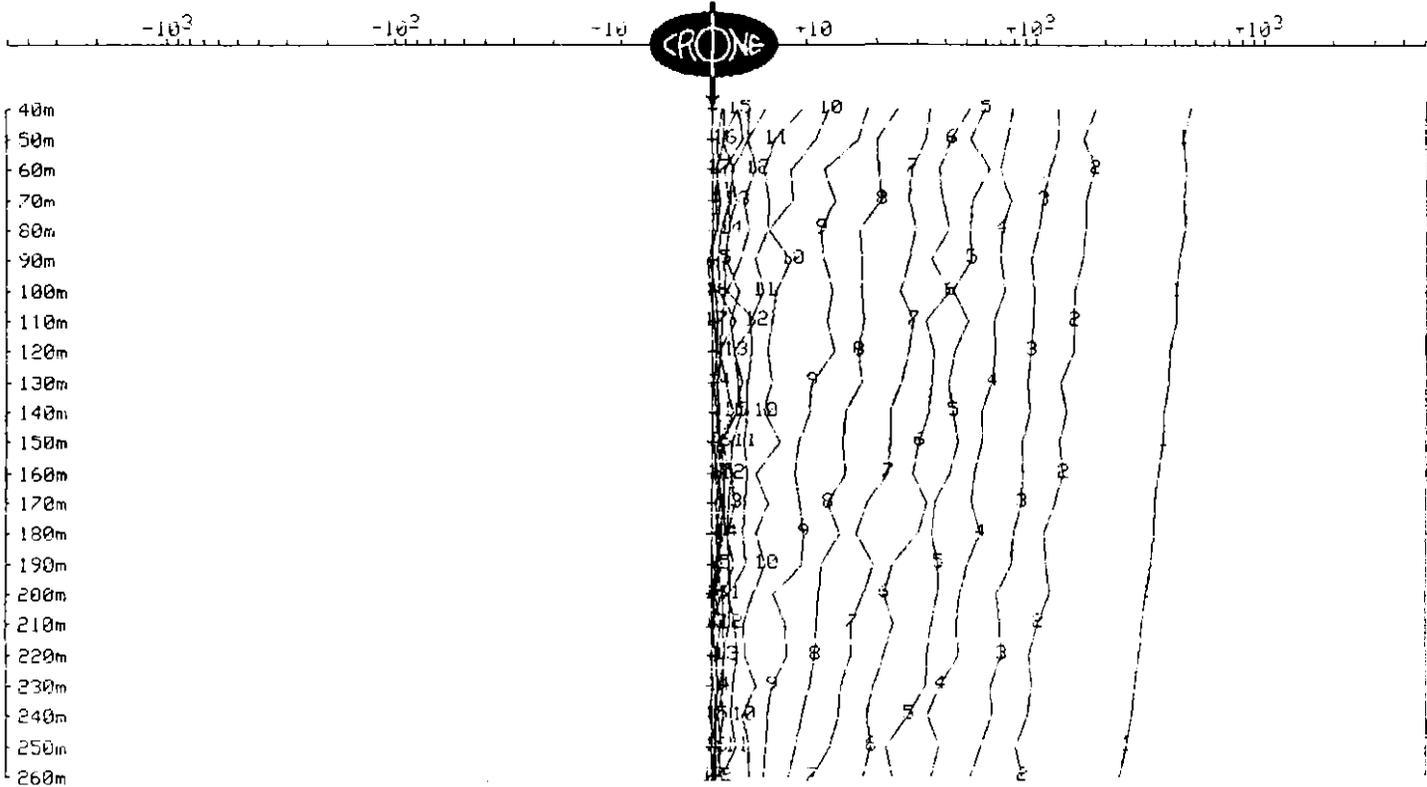
897382

Client : Pasminco Exploration
Grid : Yolande
Date : May 30, 1994

Hole : YNC9
Tx Loop : Loop 2
File name : YNC9L2Z.PEM

Z COMPONENT dBz/dt nanoTesla/sec - 17 channels and PP

Scale: 1:2500



5 cm

PAS1072a

OUTER-RIM EXPLORATION SERVICES
Operating Crone PEM System
BOREHOLE PEM

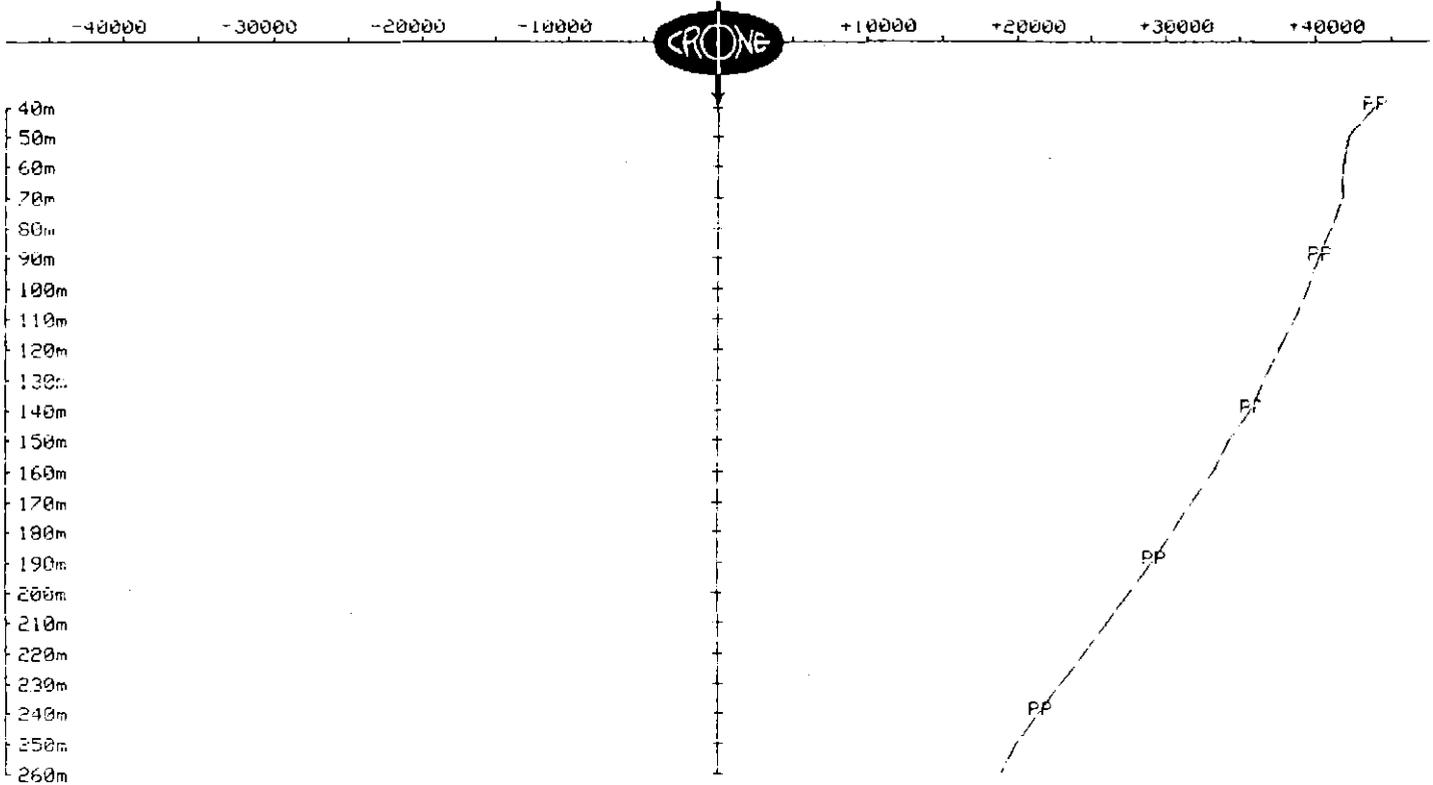
Client : Pasminco Exploration
Grid : Yolande
Date : May 30, 1994

Hole : YNC9
Tx Loop : Loop 2
File name : YNC9L2Z.PEM

Z COMPONENT dBz/dt nanoTesla/sec - 17 channels and PP

Scale: 1:2500

Unit Scale: 1cm = 5000 nT/



897384 OUTER-RIM EXPLORATION SERVICES
 Operating Crone PEM System
 BOREHOLE PEM

Client	: Pasminco Exploration	Hole	: YNC9
Grid	: Yolande	Tx Loop	: Loop 3
Date	: May 30, 1994	File name	: YNC9L3Z.PEM
Time Base	: 10.00 ms	# Readings	: 23
Ramp Time	: 0.50 ms	Stn Units	: Metric
# Channels	: 17	Coil Area	: 6500 sq m
Sync Type	: Cable	Polarity	: -
Loop Size	: 300m X 260m	Receiver	: Digital #106
Current	: 6 Amps	Operator	: Geoffrey Dunn

Loop Coordinates (X,Y,Z)

- | | |
|------------------------------|------------------------------|
| 1. 379720m, 5.36018e+06m, 0m | 2. 379980m, 5.36025e+06m, 0m |
| 3. 379840m, 5.36052e+06m, 0m | 4. 379600m, 5.36028e+06m, 0m |

Hole Coordinates (X,Y,Z) or (Azimuth,Dip,Length)

1. 379660m, 5.36019e+06m, 0m

Channel Times (usec)

Ch	Start	End	Center	Ch	Start	End	Center	Ch	Start	End	Center	
PP	-198	-99	-149	1	76	104	90	2	104	131	117	
	3	131	171	151	4	171	225	198	5	225	292	259
	6	292	378	335	7	378	490	434	8	490	639	565
	9	639	828	733	10	828	1075	952	11	1075	1395	1235
	12	1395	1809	1602	13	1809	2348	2078	14	2348	3046	2697
	15	3046	3951	3498	16	3951	5121	4536	17	5121	6646	5884

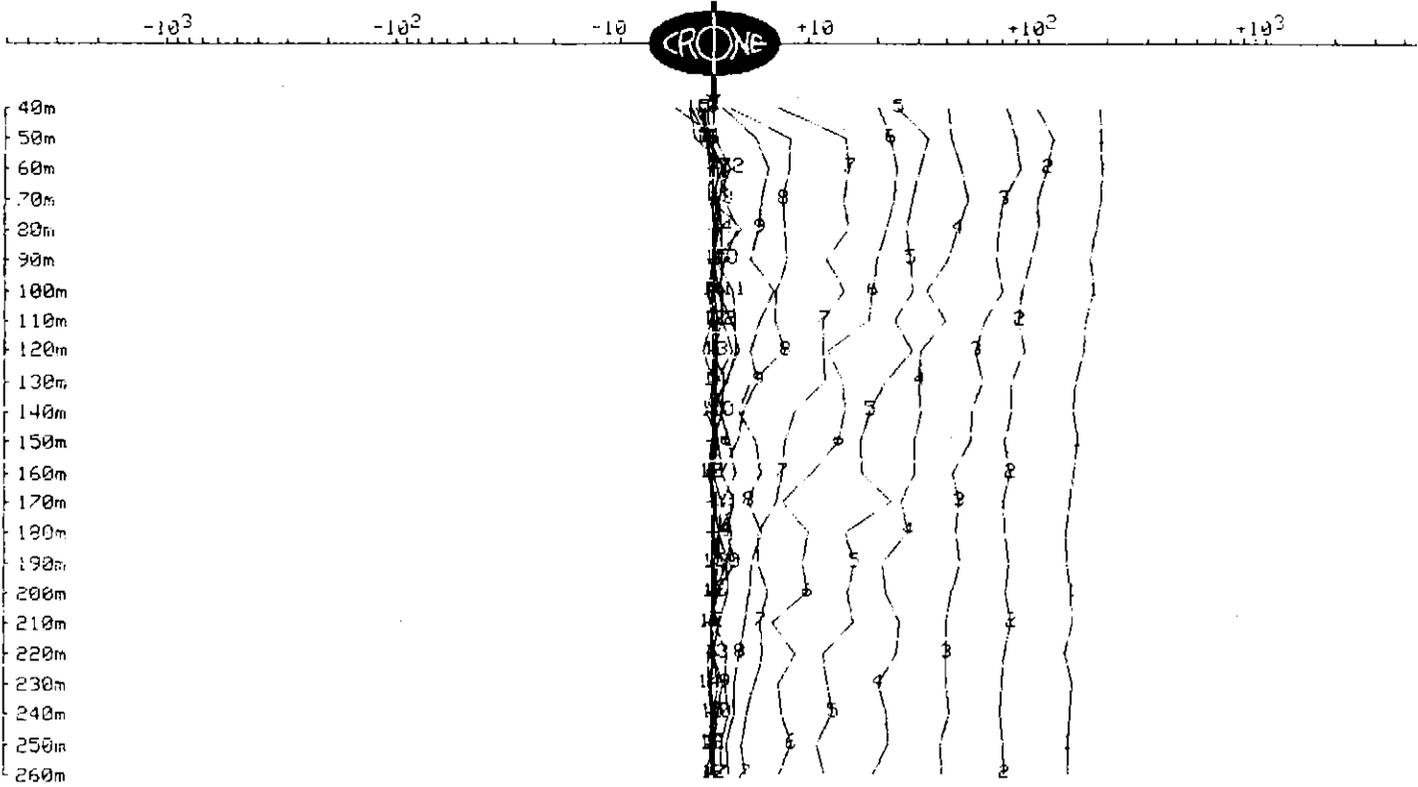
897385

OUTER-RIM EXPLORATION SERVICES
Operating Crone PEM System
BOREHOLE PEM

Client : Pasminco Exploration
Grid : Yolande
Date : May 30, 1994

Hole : YNC9
Tx Loop : Loop 3
File name : YNC9L3Z.PEM

Z COMPONENT dBz/dt nanoTesla/sec - 17 channels and PP
Scale: 1:2500



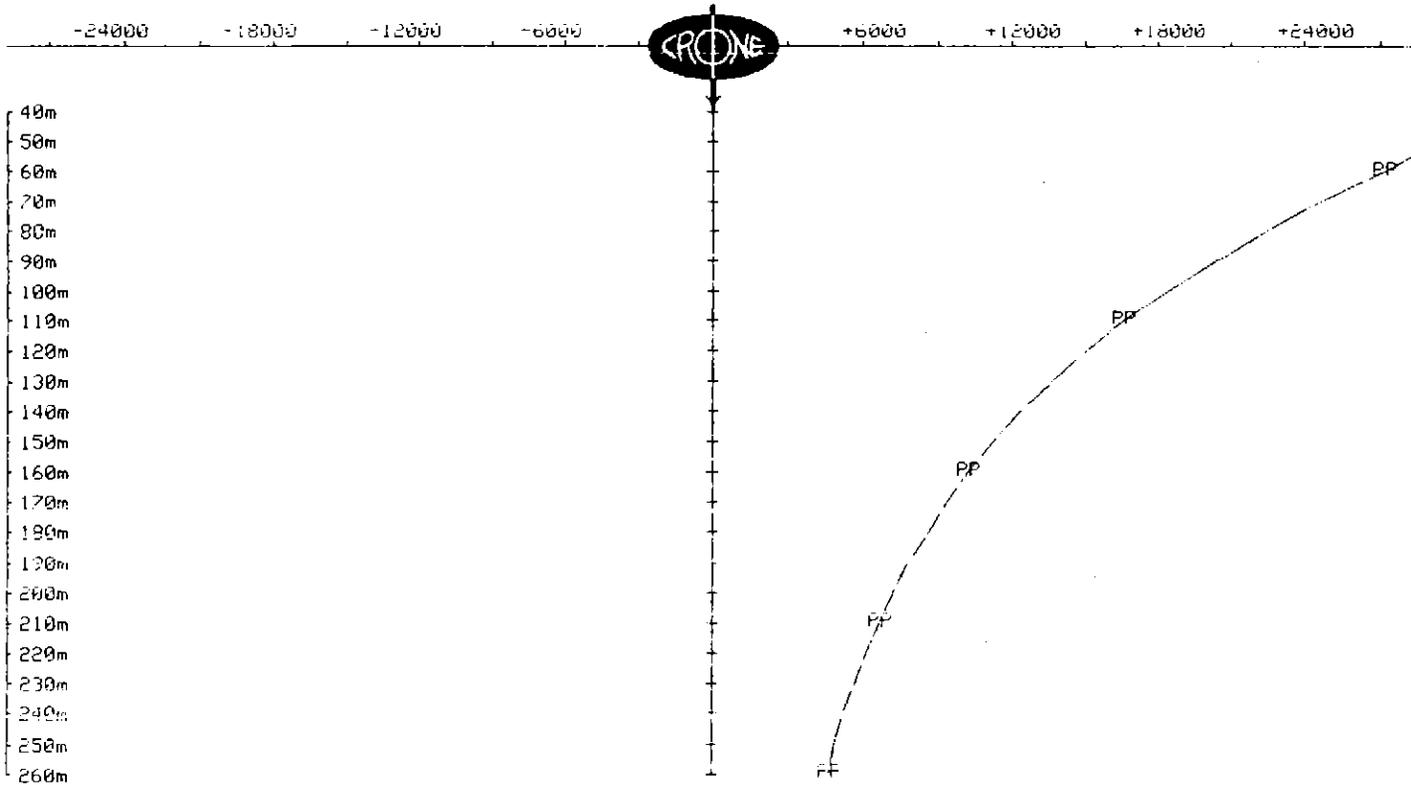
897386

OUTER-RIM EXPLORATION SERVICES
Operating Crone PEM System
BOREHOLE PEM

Client : Pasminco Exploration
Grid : Yolande
Date : May 30, 1994

Hole : YNC9
Tx Loop : Loop 3
File name : YNC9L3Z.PEM

Z COMPONENT dBz/dt nanoTesla/sec - 17 channels and PP
Scale: 1:2500 Unit Scale: 1cm = 3000 nT/s



00510726

897387

360 600N

5 360 500mN

360 400N

360 200N

5 360 000mN

359 800N

359 600N

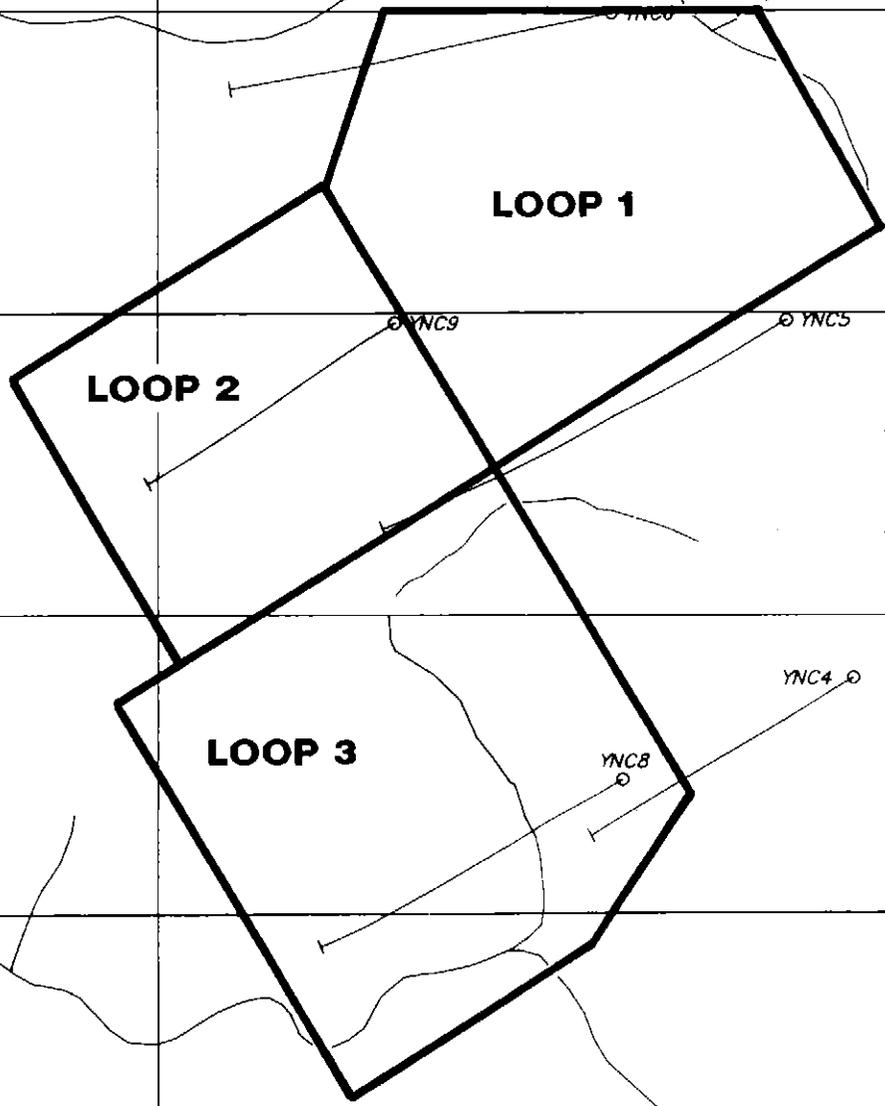
5 359 500mN

359 400N

379 500mE

379 500mE

Henly Canal



380 000E

5 cm



PASMINGO EXPLORATION

A Division of Pasmingo Australia Limited

COMPILED: N. A. H.

DATE: July 1994

DRAWN: P. G. R.

REF.:

REVISIONS:

E.L. 11/85 - YOLANDE

**NEWTON CREEK
DHEM LOOP LAYOUT
YNC9**

DRAWING No.

SCALE 1:5000

0 100 m

FIG. No.

APPENDIX 14

IP/RESISTIVITY SURVEYS ON THE HENTY VALLEY GRID

**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: M Quayle
From: NA Hughes
Date: 20 March 1994
File: EP/002/3003
Subject: IP / Resistivity Surveys on the Henty Valley Grid

Introduction

Four lines of IP/Resistivity data were collected over the Henty Valley grid by Pasma personnel during January and February 1994 using a Huntec Mk4 IP receiver and Huntec 7.5 kW IP transmitter. The survey was undertaken in two phases because of access and equipment problems. Prior to these surveys an attempt was made to do the survey in September 1993 using a Scintrex IPR8 IP receiver and Scintrex 850W low power IP transmitter but was abandoned due to equipment problems.

Survey Parameters

A 2 second bipolar interrupted square wave current was used to excite the ground.

Readings were recorded during the off time across ten time windows of 100ms duration after an initial delay of 100ms.

A pole-dipole array was used with 3 potential dipoles of 40m being read for each current injection point.

For the east to west lines the travel direction was from west to east with the current injection point to the west of the potential dipoles, and for the south to north line the travel direction was to the south with the current injection point to the south of the potential dipoles.

Results

The data is displayed as pseudosections of Apparent Resistivity and Summed Chargeability at a scale of 1:2500 (Figures 1 to 4), as well as contour plan maps and stacked profile maps of the Fraser filtered Apparent Resistivity, Summed Chargeability and Metal Factor (Figures 5 to 10).

The Metal Factor is the ratio of the Summed Chargeability to Apparent Resistivity multiplied by 1000. This type of processing highlights chargeable and conductive zones.

The Fraser filter used to process the 3 n levels of data to one is as follows :

	1	2	3	4	5
1	0	0	2	0	0
2	0	1	0.5	0.5	0
3	1	0.25	0.25	0.25	0.25

This type of filter is designed to match the asymmetric nature of the pole-dipole response so that the peak of the response will be as close to the actual position as possible.

The data from line L5400E has not been included in the production of the contour maps as some of this data was collected in the rain and the chargeability values, although apparently consistent with the other data, are suspect.

The apparent resistivity data appears to have mapped out the extension of the mineralization detected in the creek on line L1300N at 5380E to the north and south as well as mapping the position of the Henty Fault Zone. The known position and possible extension of the mineralization is particularly well defined by the Metal Factor which indicates the strongest response is over the outcropping mineralization.

Recommendations

The fact that the mineralization appears to be open to the north and south suggests that after drill testing to confirm the present results that further IP/Resistivity surveys to the north and south be undertaken to map these extensions.

Neil

NAH_34.SAM/SR

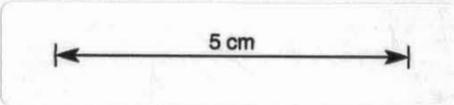
Yolande (EL 11/85)
Henty Valley

Survey Parameters

Pole-dipole Array
'a' = 40m, n=1 to 3
TD : E, C1 : W
MSum (100 - 1100ms)
2 sec timing
Jan 10/11, 1994

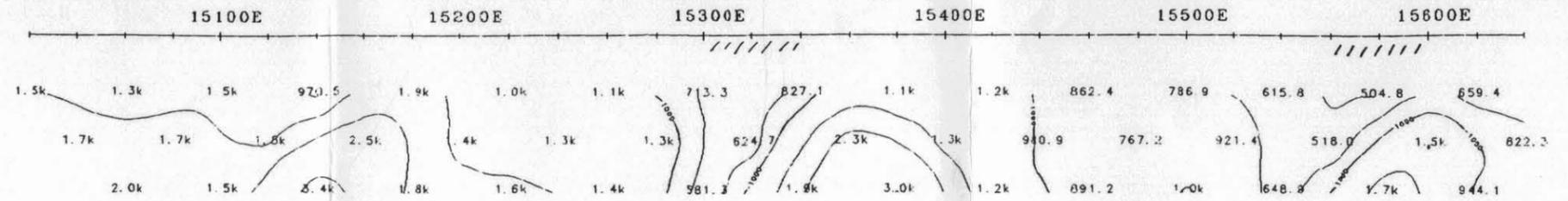
Line L1200N

Scale 1 : 2500



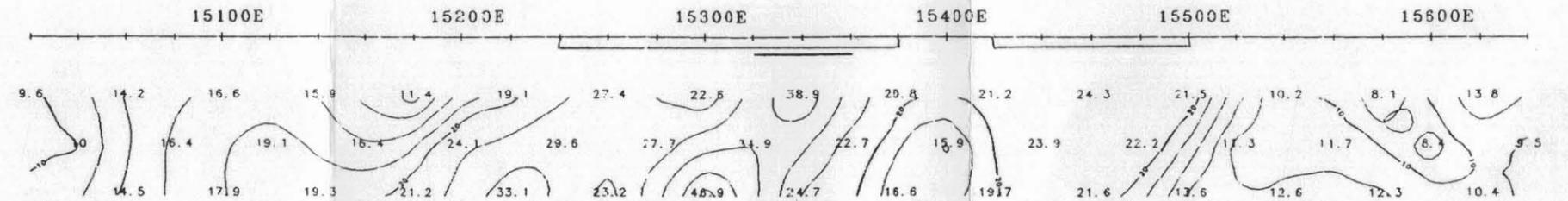
IP & Resistivity Survey

RES



Legend *|||||* low resistivity zone
— chargeability high zone

MSUM



Pasminco Exploration Ltd

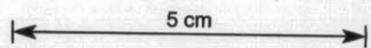
Yolande (EL 11/85)
Henty Valley

Survey Parameters

Pole-dipole Array
'a' = 40m, n=1 to 3
TD : E, C1 : W
MSum (100 - 1100ms)
2 sec timing
Feb 14/15, 1994

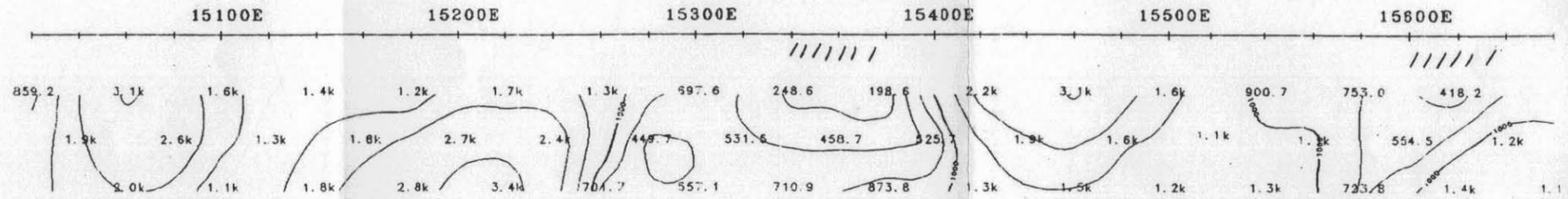
Line L1300N

Scale 1 : 2500

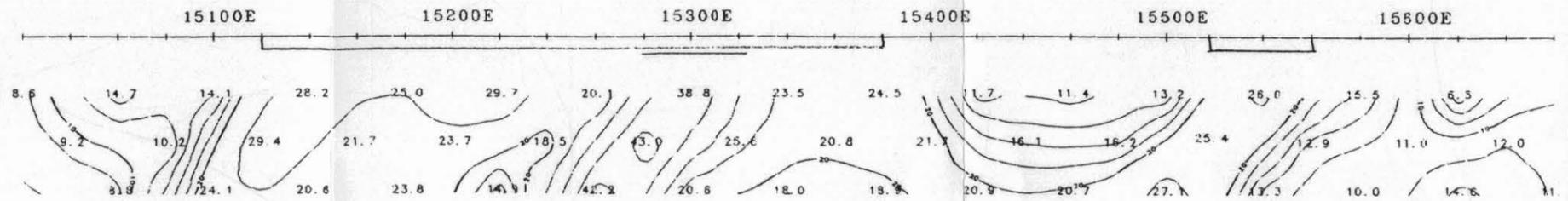


IP & Resistivity Survey

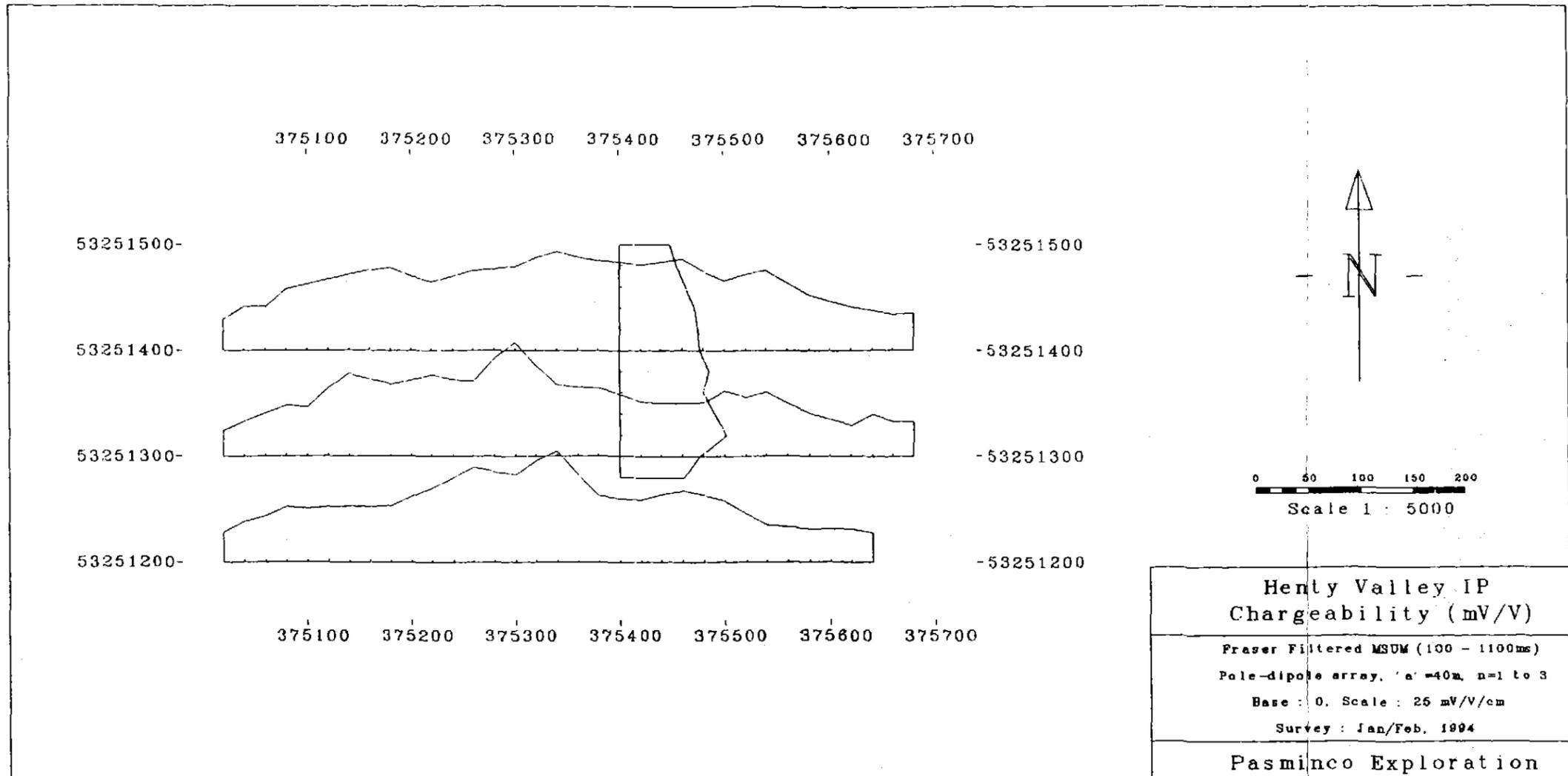
RES



MSUM



Figs



5 cm

Pasmico Exploration Ltd

Yolande (EL 11/85)

Henty Valley

Survey Parameters

Pole-dipole Array

'a' = 40m, n=1 to 3

TD : S, C1 : S

MSum (100 - 1100ms)

2 sec timing

Feb 14/15, 1994

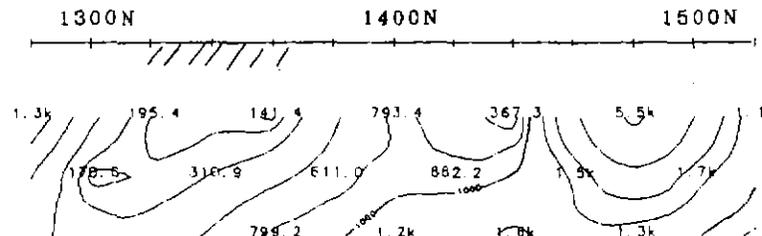
Line L5400E

Scale 1 : 2500

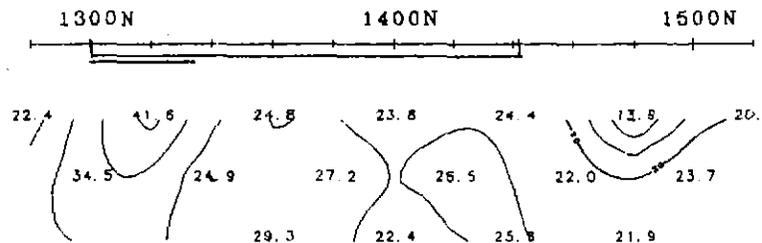
5 cm

IP & Resistivity Survey

RES

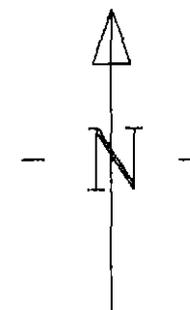
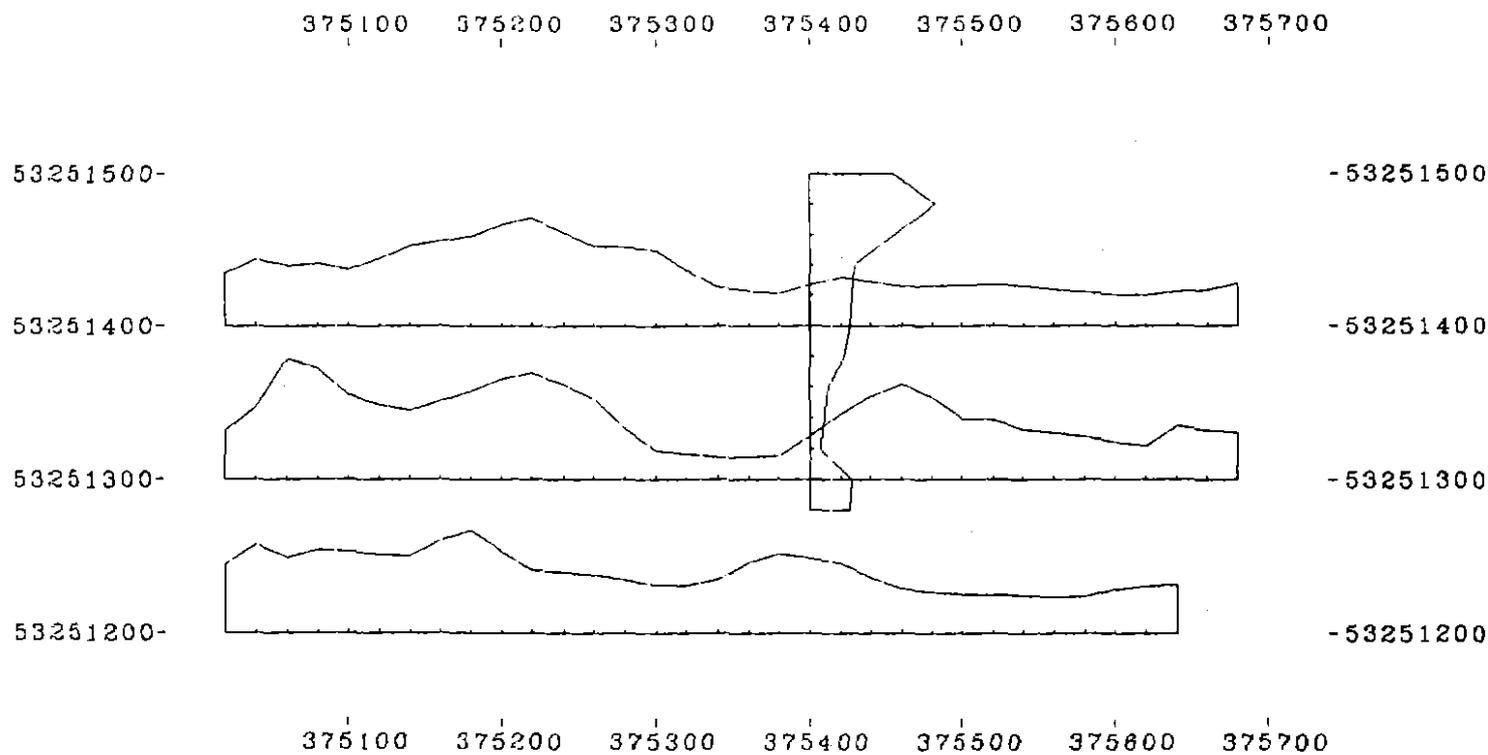


MSUM



897395

Fig 6



0 50 100 150 200
Scale 1 : 5000

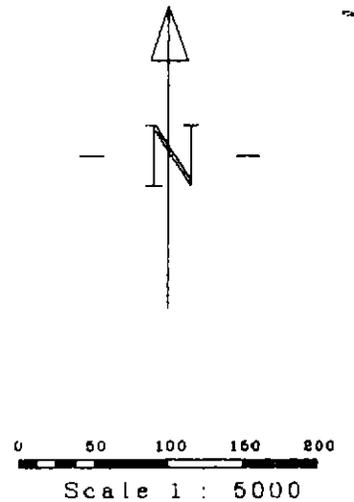
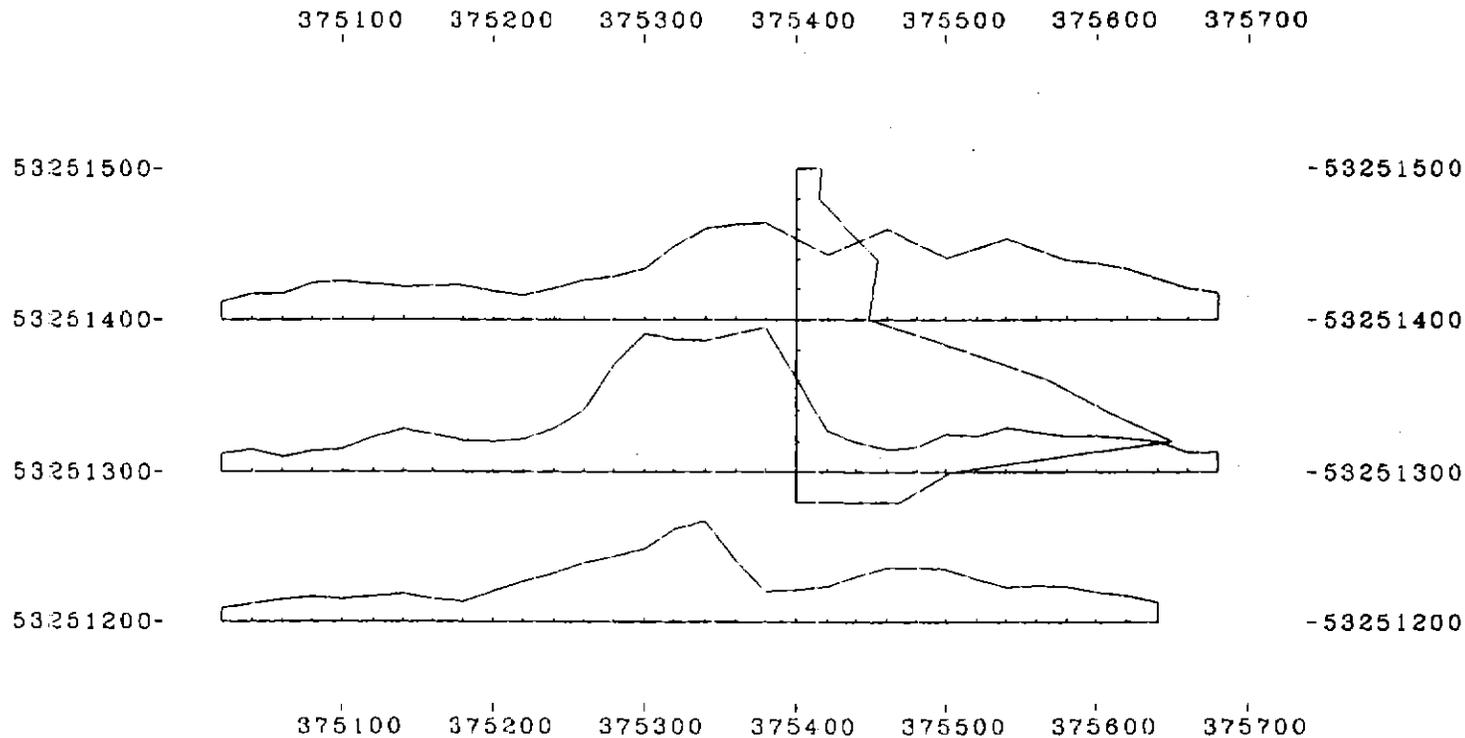
Henty Valley IP
Resistivity (ohm-m)

Fraser Filtered
Pole-dipole array, 'a' = 40m, n=1 to
Base : 0, Scale : 2500 ohm-m/cm
Survey : Jan/Feb, 1994

Pasminco Exploration

897396

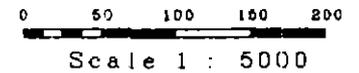
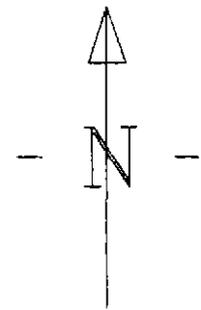
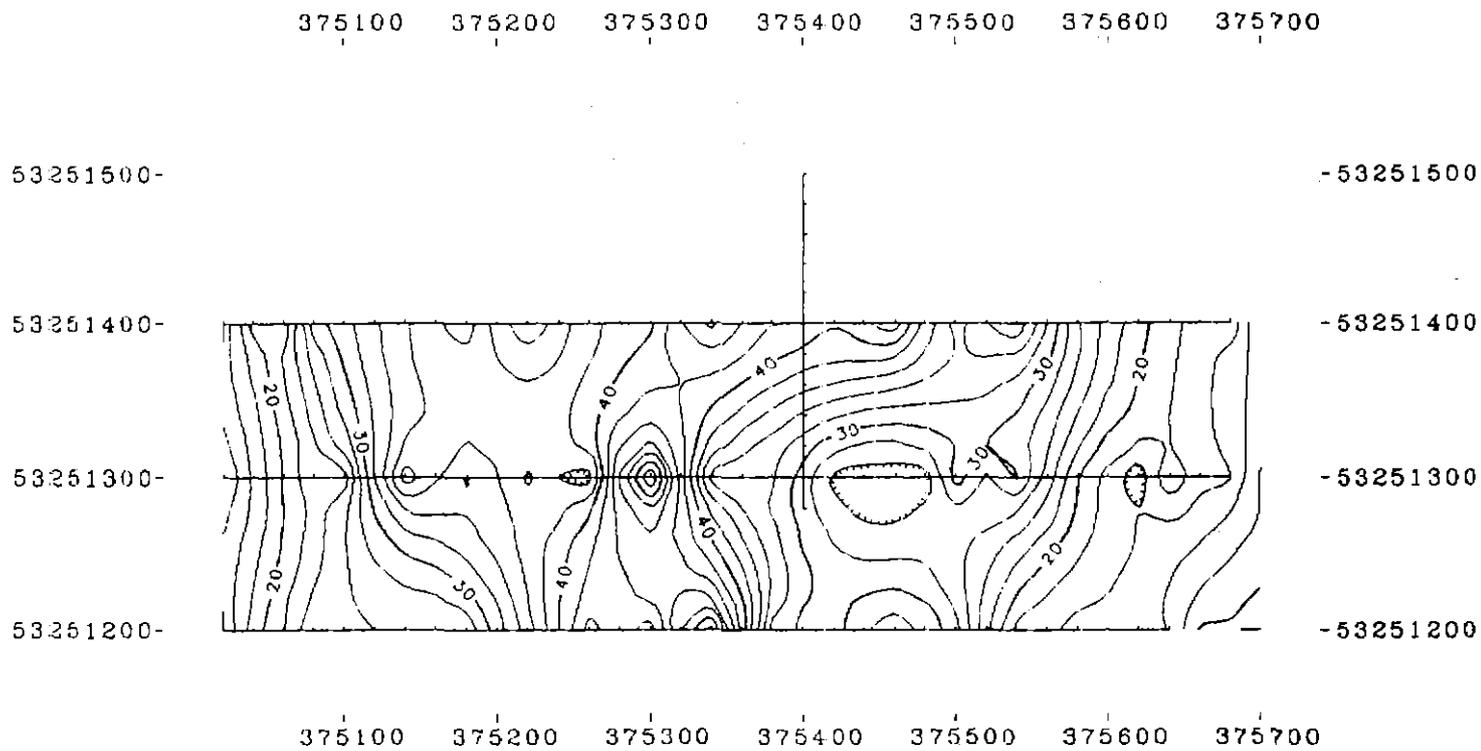
Fig 7



897397

Henty Valley IP Metal Factor
Fraser Filtered MF (MSUM*1000/Res Pole-dipole array, 'a'=40m, n=1 to Base : 0, Scale : 50 units/cm Survey : Jan/Feb, 1994
Pasminco Explorator

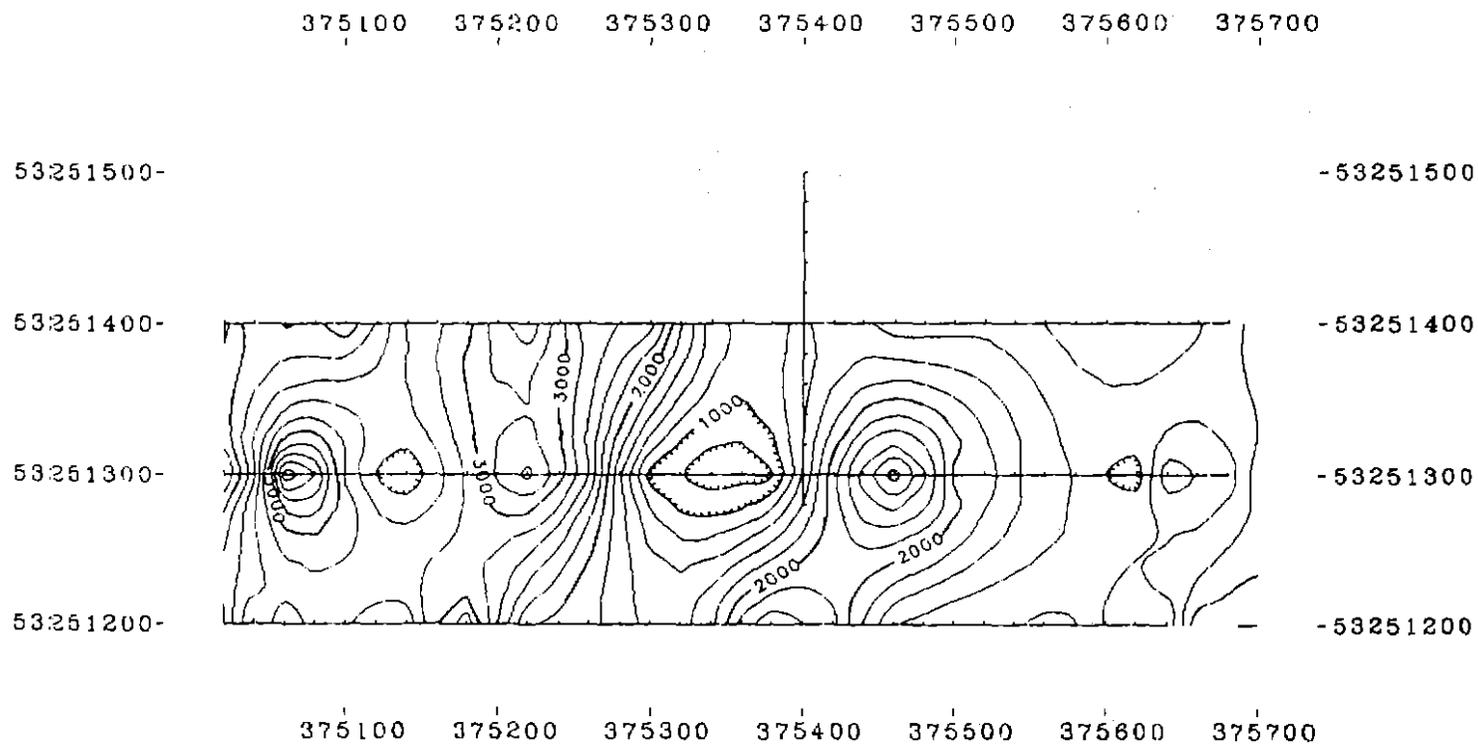
Fig 8



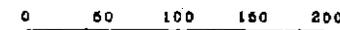
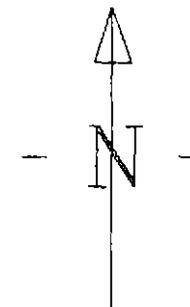
897308

Henty Valley IP Chargeability (mV/V)
Fraser Filtered MSUM (100-1100ms) Pole-dipole array, 'a' = 40m, n=1 t
Contour Interval : 2 mV/V
Survey : Jan/Feb, 1994
Pasminco Exploratio

Fig 9



5 cm



Scale 1 : 5000

897399

Henty Valley IP
Resistivity (ohm-m)

Fraser Filtered

Pole-dipole array, $a=40m$, $n=1$

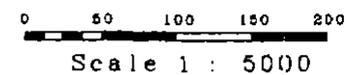
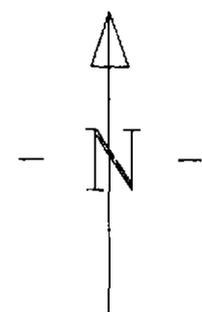
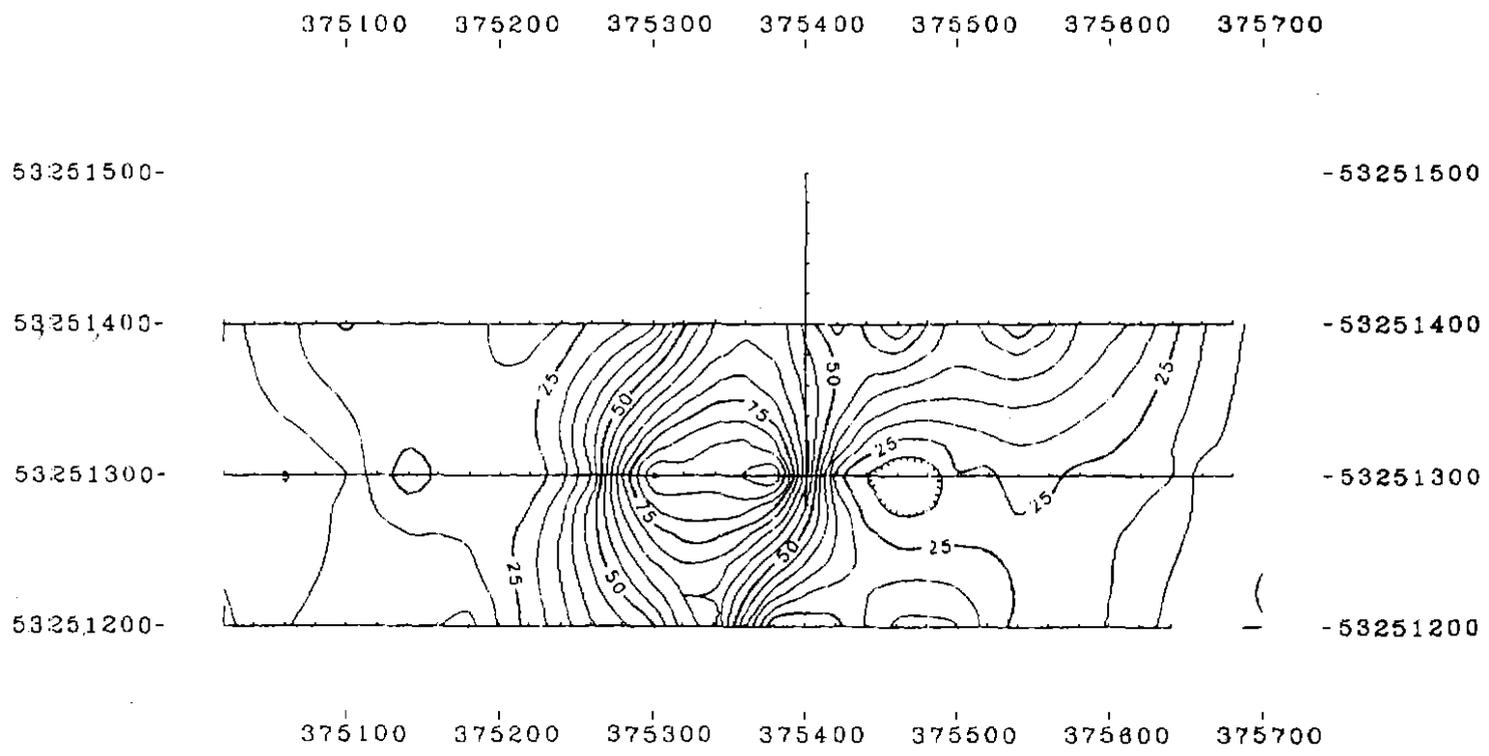
Contour Interval : 200 ohm-m

Survey : Jan/Feb, 1994

Pasminco Exploratio

Fig 1a

897400



Henty Valley IP Metal Factor
Fraser Filtered MF (MSUM*1000/R Pole-dipole array, $a = 40m$, $n=1$ Contour Interval : 5 Survey : Jan/Feb. 1994
Pasminco Exploratic

APPENDIX 15

**NEWTON CREEK - HENTY CANAL
GROUND MAGNETIC SURVEY**



**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: Mike Quayle
FROM: PW Basford
DATE: 12 July 1994
SUBJECT: Ground magnetic interpretation - Yolande
FILE: EP/02/3003/8.4

Summary

Ground magnetic data was collected on the **Yolande** tenement, Newton Creek, during November 1993. Observed responses correlate well with known geology, aiding in the interpretation of other anomalous responses.

11.39 line kilometres of data was recorded along east - west line traverses, spaced 200m apart, with sample spacing approximately 10m. Readings were also taken along a 2.75 line kilometre north-south baseline (line 380000E).

Modelling and Data Interpretation

All lines have been plotted at a scale of 1:10000, with a flat regional of 62100 nT removed. This was found to be adequate for most of the data, however, it is recognised that some local gradients do exist. The first is evident on the western edge of lines 59000N to 60200N, where a local body gives rise to an increase in the background magnetics. Another local gradient is located at the southwest section of the survey (lines 58000N and 58200N) where the background tends negative. Neither source has been modelled, both are assumed to basement features.

Principally, modelling was based on actual geology to determine if known features correlated with observed responses, thus allowing the development of base models and base parameters.

Elliptical models were used to replicate sills of Tyndall rhyolite, which are amongst mixed andesites and sediments, in the northeast section of the survey region. Two exposed sills were modelled (lines 60000N and 60200N) with responses correlating well with observed data. Several apparent anomalies west and north of the two known sills were subsequently modelled as rhyolite sills, using the developed base model of an ellipse. Data correlation was good.

Several models were used to generate matches, however, models began to overlap. It was assumed that two sills may be the source for all observed responses, so models were combined generating to strike extensive sills. Parameters of depth, thickness and strike were altered to generate fits on each individual profile. Modelled bodies 2 and 5 reflect continuous sills of Tyndall rhyolite, partially covered, varying in thickness and strike.

For lines 60400N and 60200N body 3 was used for modelling instead of body 2, as the strike of the rhyolite apparently changed. The two models, representing the same source, infer rotation of the stratigraphy.

Drill hole YNC7 intersected a basaltic body at depth, around line 59600N. An observed response on lines 59600N and 59400N is assumed to arise from the basalt. A rectangular dyke-like model was proposed (body 7), fitting the data reasonably well. The shallow depth interpreted correlates with a thin covering of glacial sediments.

An anomalous response south of body 7 on line 59200N was assumed to be caused by the same basalt. However, body 7 could not be used due to the necessary change in strike, so a clone (body 4) was created and used. Correlation of the data and model was good. The strike change was similar to that of the Tyndall rhyolite modelled to the north (bodies 2 and 3), inferring the same event rotated the two lithologies.

Similar anomalous responses are present on lines 59400N and 59200N, west of the intersected basalt. The same base model was used for modelling, resulting in the interpretation of another basaltic dyke (body 9). The line north also contained a response that may be attributable to body 9, but at a vastly different strike (similar rotation to previous two features). Body 10 was created from body 9, changing strike, depth of burial and thickness. The resultant fit is adequate, again implying rotation of stratigraphy.

Whilst modelling these lines (59200N to 59600N) it was apparent that hidden in the local gradient was a significant magnetic low. No source has been modelled for this 'anomaly', however, it does require investigation, which should initially be conducted through the aeromagnetic data.

The fault bounded andesite in the south also provided a start for modelling. A model was developed using the outcrop location of the andesite. Expected response was compared to observed response, with the general trend of the modelled data correlating well with field data. However, the observed data consists of abundant spikes (noise?) as well as a distinctive low on the eastern edge of the andesite.

'Noise' may be correlated with exposure/cover of the source. Depth of the model was varied and it was observed that a spiky response is apparent when the geology outcrops, fairly similar to that of the observed data (see second model, where model is outcropping). Alternatively, magnetic distribution may account for the 'noise'.

The magnetic low on the eastern edge of the line was also recorded on the base line. A feeder pipe containing remanent magnetisation was hypothesised and modelled on the base line data (body 11 - pipe; bodies 12 and 13 replicate andesite). Although many assumptions were made in producing this model, the resultant fit was better than any other model theorised. The actual geological cause may be as simple as a feeder pipe for the andesite, or some other

complex geological features. The same model however did not correlate with the east-west traverse data. Structurally, this region is worthy of further investigation, which should be conducted by way of a drill hole.

Southwest of the faulted andesite on line 58400 a broad anomalous response is present, not previously observed in the aeromagnetic data. A basaltic plug was assumed and modelled accordingly. Once again the general trend of the data was matched, with the observed response slightly more complex. Apparent 'noise' may be due to the non-uniform geometric shape of the assumed body, and/or changes in topography along the profile, thus depth to the source.

In this region, a significant (structural?) magnetic low was observed in the aeromagnetic data, but not recorded in the ground magnetics? One can not assume either the ground or aeromagnetic data to be more correct, as ground magnetic data has been 'aliased' (line spacing large with respect to sample spacing), whilst the aeromagnetic data may have been affected by the rapidly changing topography. The magnetic low may be of structural and/or lithological importance, thus the southwest region of the survey area should be further investigated. The magnetic gradient observed on the western edge of the two southern most lines may actually correlate with the aeromagnetic low, however, the location is slightly different.

Although two aeromagnetic data sets collected over the region contain the low, neither response is geometrically the same. Thus the best test of the magnetic low should be through drilling. The interpreted basaltic plug may also be of interest and may also require testing by way of a drill hole.

Conclusion

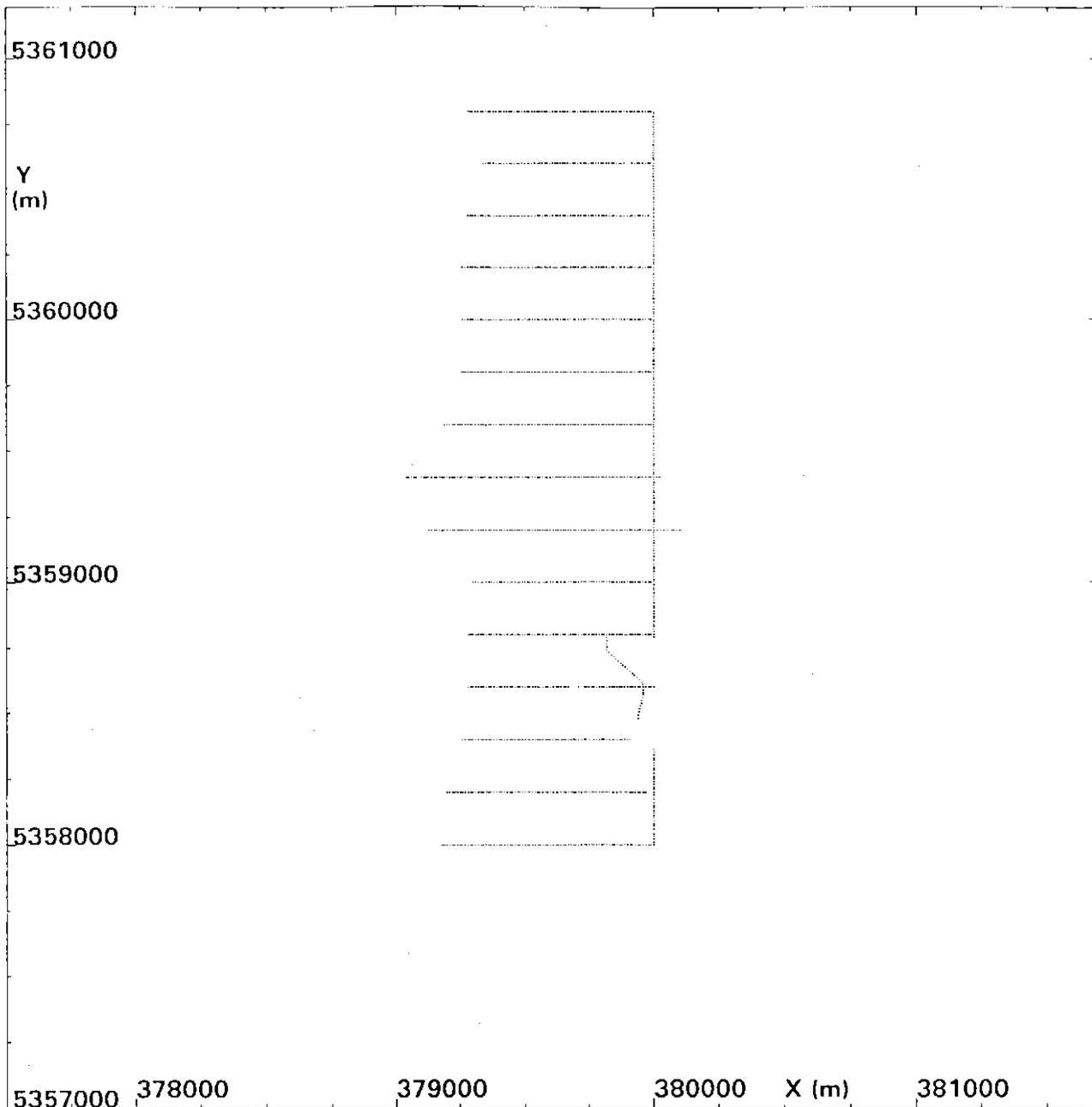
Actual geology can be used to explain most of the anomalous responses recorded. It has been inferred that two strike extensive Tyndall rhyolite sills caused responses on the northern section of the survey, where the sills vary along strike, in depth, thickness and strike orientation.

Two basaltic 'dykes' have been modelled in the centre of the survey area. Both change strike orientation from a northwesterly strike to a more northerly strike.

A fault bounded amphibolite unit generally replicates the observed responses, however, a magnetic low on the edge of the body can not be fully explained. Determination of the source of the low might best be conducted through a drill hole.

A significant magnetic low is inferred to be present on the west side of the survey area between lines 59200N and 59600N, which should be investigated, initially through correlation with aeromagnetic data.

The major aeromagnetic low in the southwest area of the survey region is not prominent on the observed ground data. A small 'basaltic plug' has been inferred to exist in the same region. Both the low and the basalt plug should be tested for lithological/structural significance.



Observations:

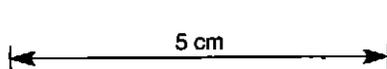
Yolande Ground Magnetics - Newton Creek

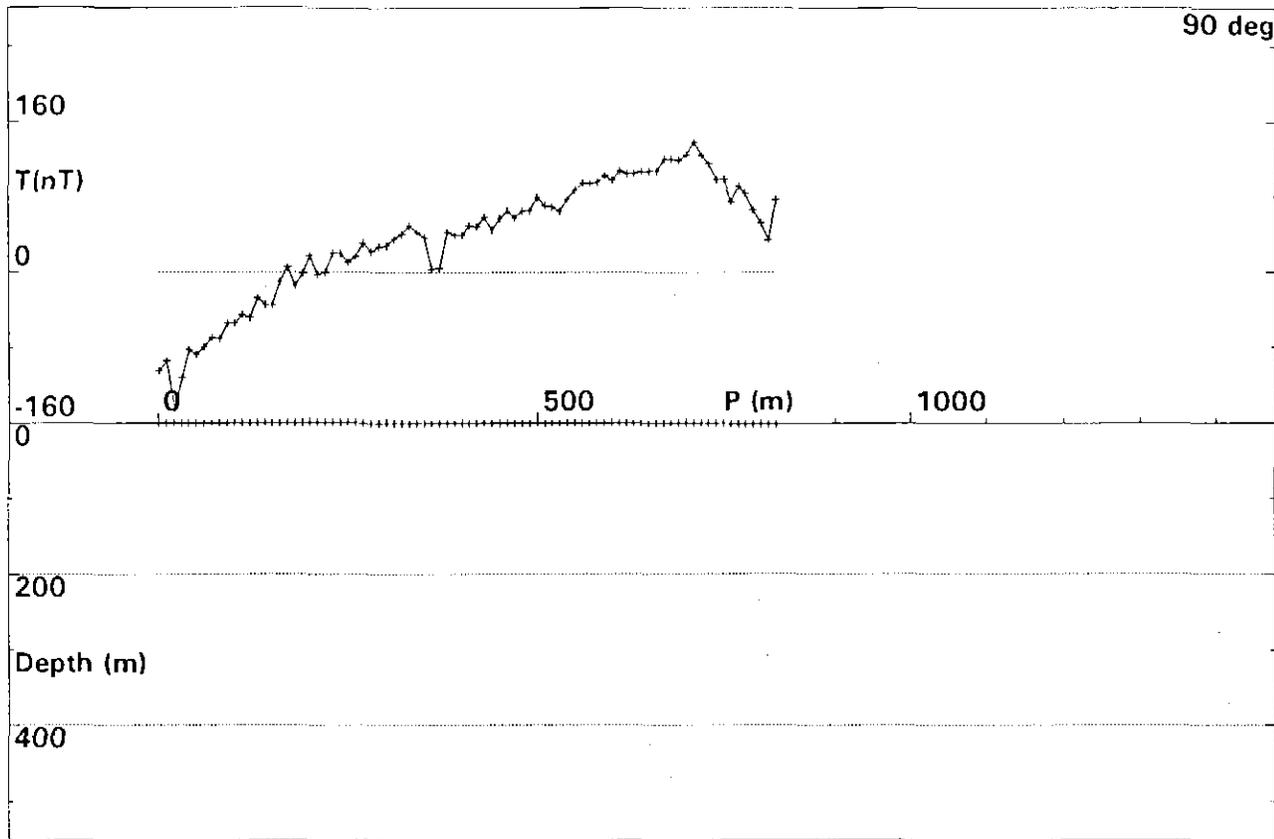
Model:

Scale 1:25000

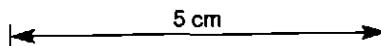
POTENT v3.03

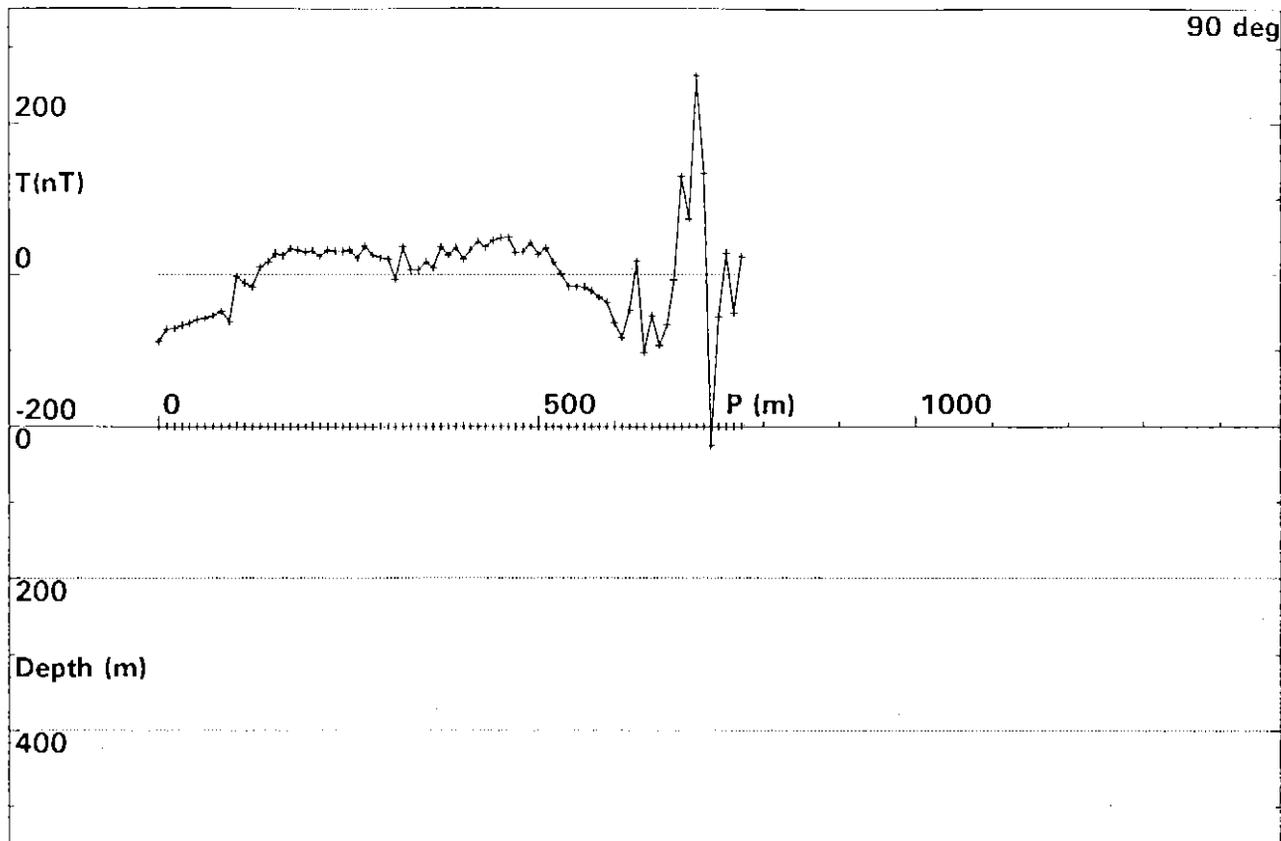
Plan drawn at 00:40 11/07/1994 for Pasmaenco Exploration



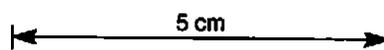


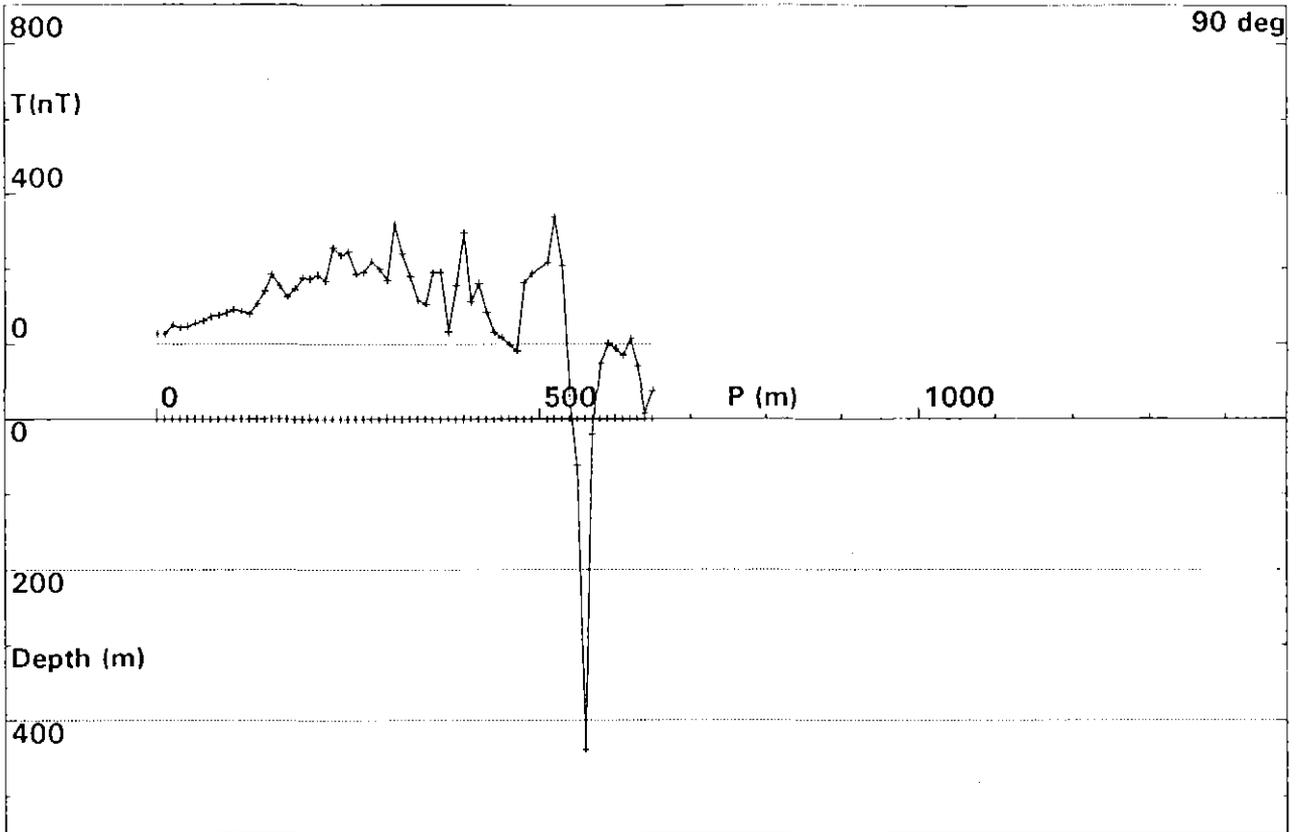
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Profile #1;	Line 58000N	Scale 1:10000
Model:		
Calculation mode:	Total Magnetic Intensity	
Observed:	_____	Calculated:
Residual:	_____	Individual body:
POTENT v3.03	Profile drawn at 00:17 11/07/1994 for Pasmenco Exploration	



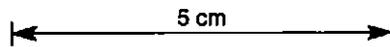


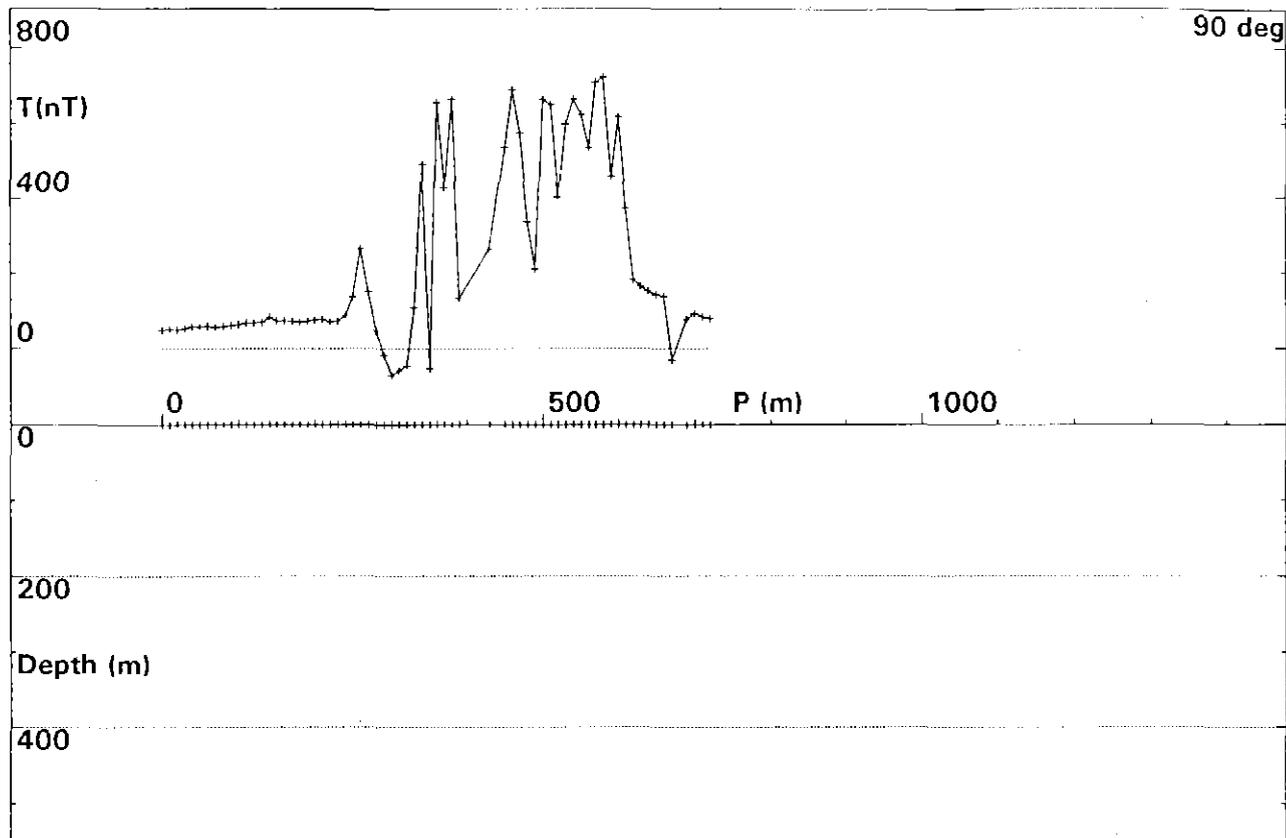
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Model:		
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Observed:	_____	Calculated: _____
Residual:	_____	Individual body: _____
POTENT v3.03	Profile drawn at 00:16 11/07/1994 for Pasminco Exploration	





Observations:	Yolande Ground Magnetics	
Profile #1;	Line 58400N	Scale 1:10000
Model:		
Calculation mode:	Total Magnetic Intensity	
Observed:	_____	Calculated: _____
Residual:	_____	Individual body: _____
POTENT v3.03	Profile drawn at 00:12 11/07/1994 for Pasminco Exploration	





Observations:

Yolande Ground Magnetics

Profile #1;

Line 58600N

Scale 1:10000

Model:

Calculation mode:

Total Magnetic Intensity

Observed: _____

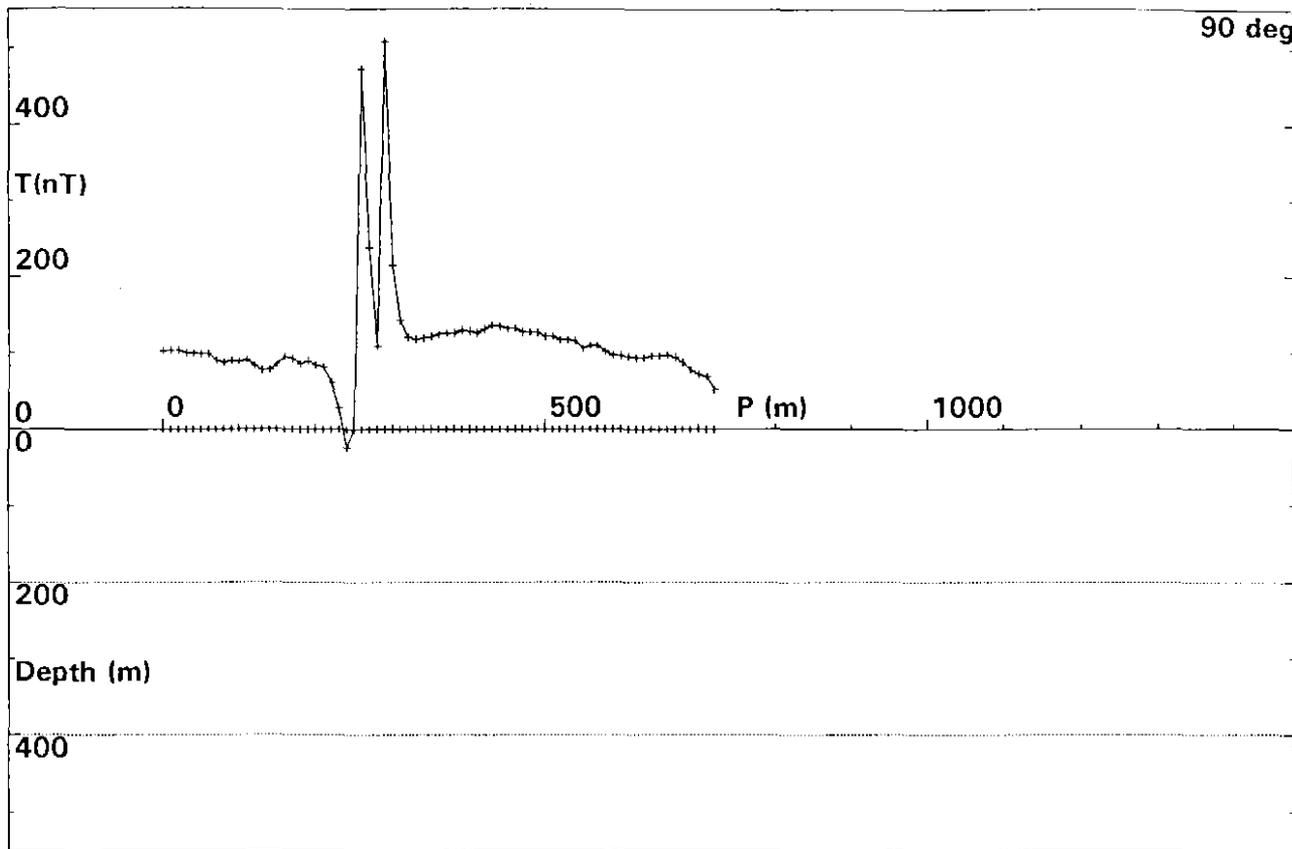
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Residual: _____

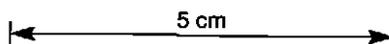
Individual body: _____

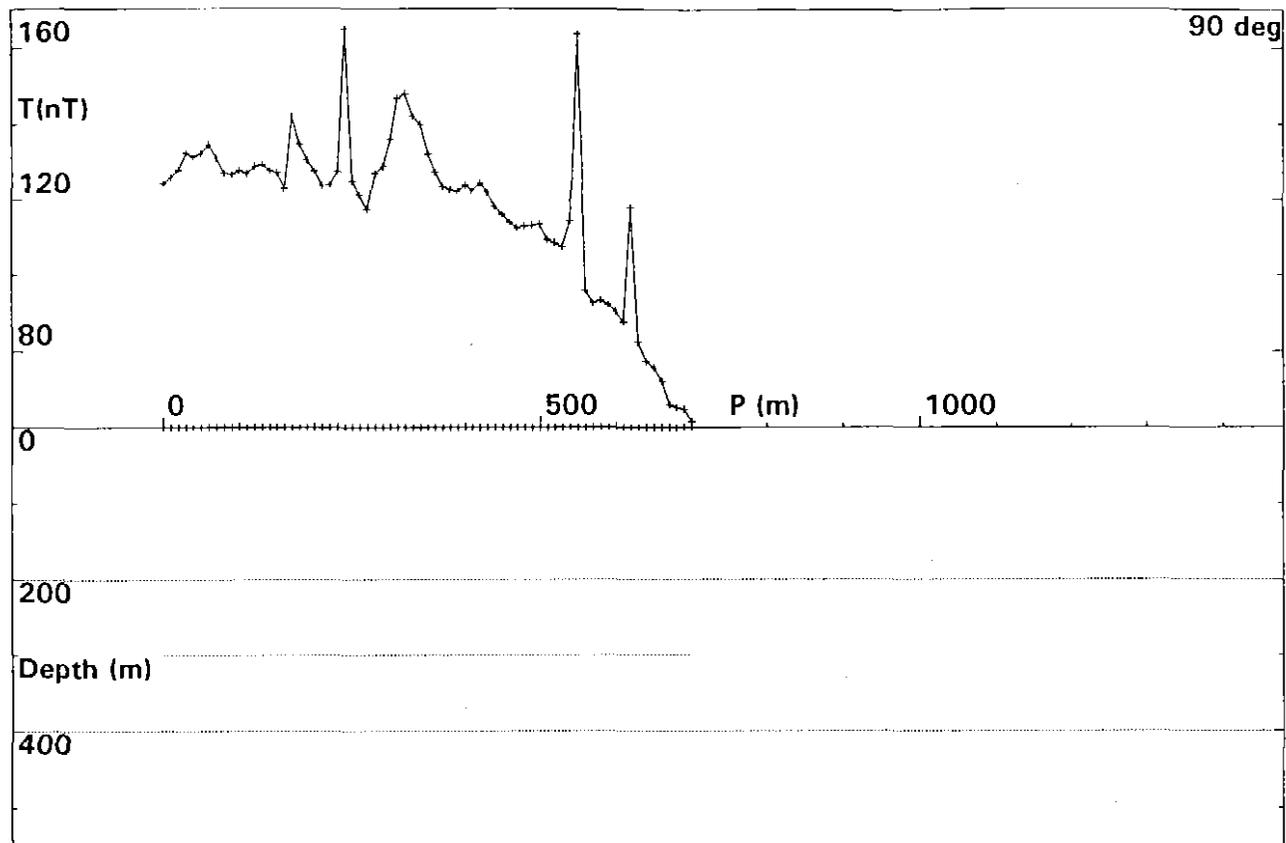
POTENT v3.03

Profile drawn at 00:07 11/07/1994 for Pasminco Exploration

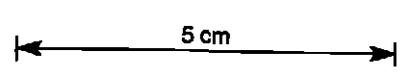


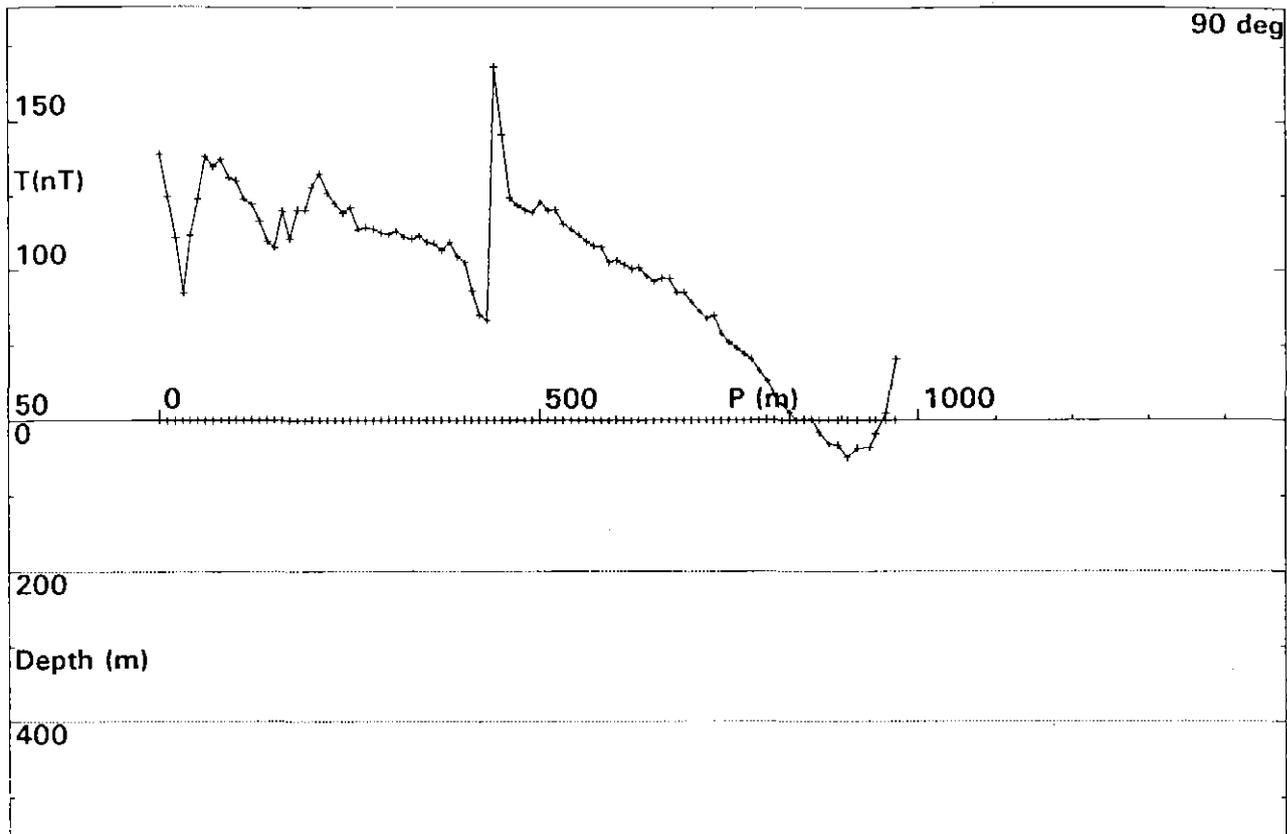
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Profile #1;	Line 58800N	Scale 1:10000
Model:		
Calculation mode:	Total Magnetic Intensity	
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Residual:	_____	Individual body: _____
POTENT v3.03	Profile drawn at 00:10 11/07/1994 for Pasmenco Exploration	



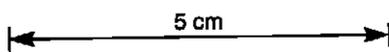


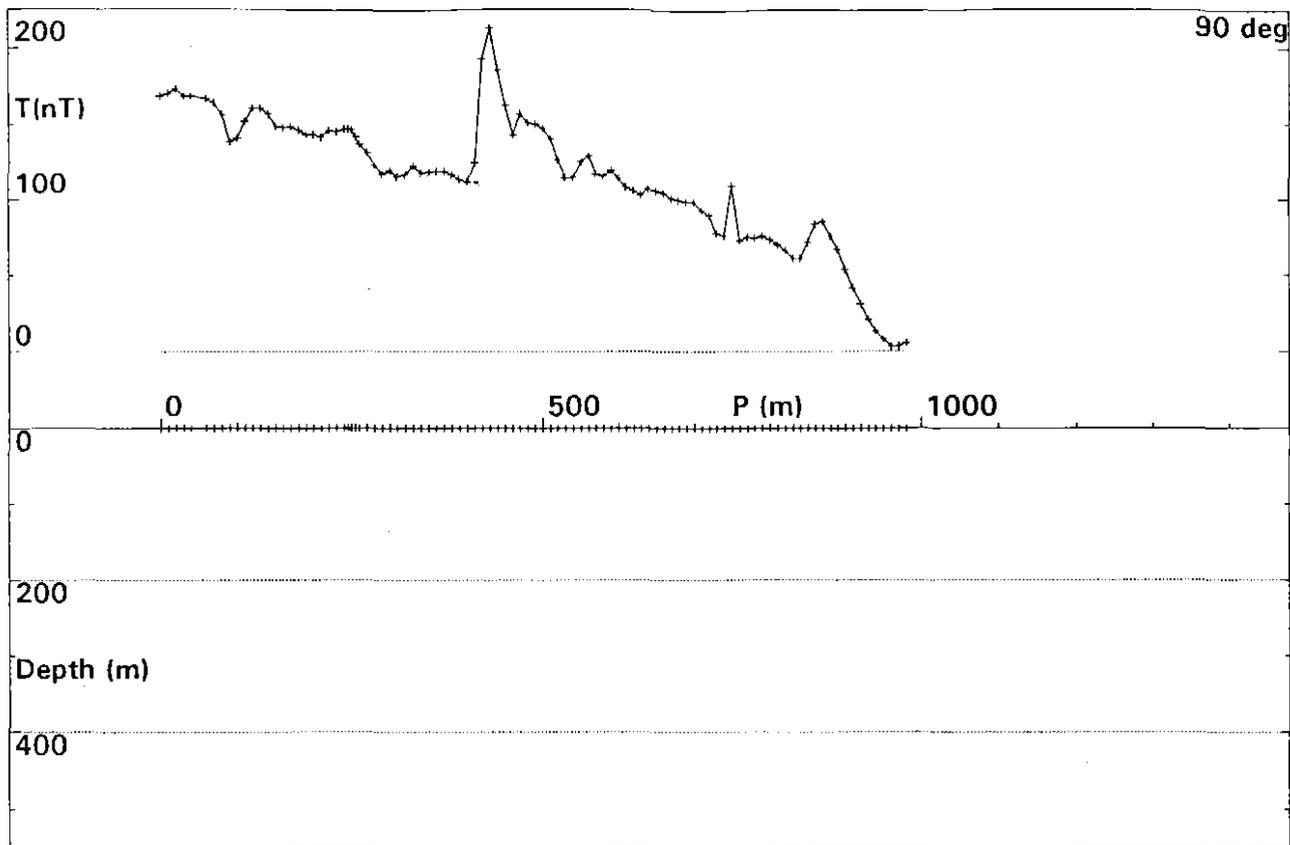
Observations:	Yolande Ground Magnetics	
Profile #1;	Line 59000N	Scale 1:10000
Model:		
Calculation mode:	Total Magnetic Intensity	
Observed:	_____	Calculated: _____
Residual:	_____	Individual body: _____
POTENT v3.03	Profile drawn at 23:43 10/07/1994 for Pasmenco Exploration	



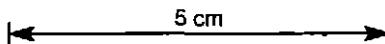


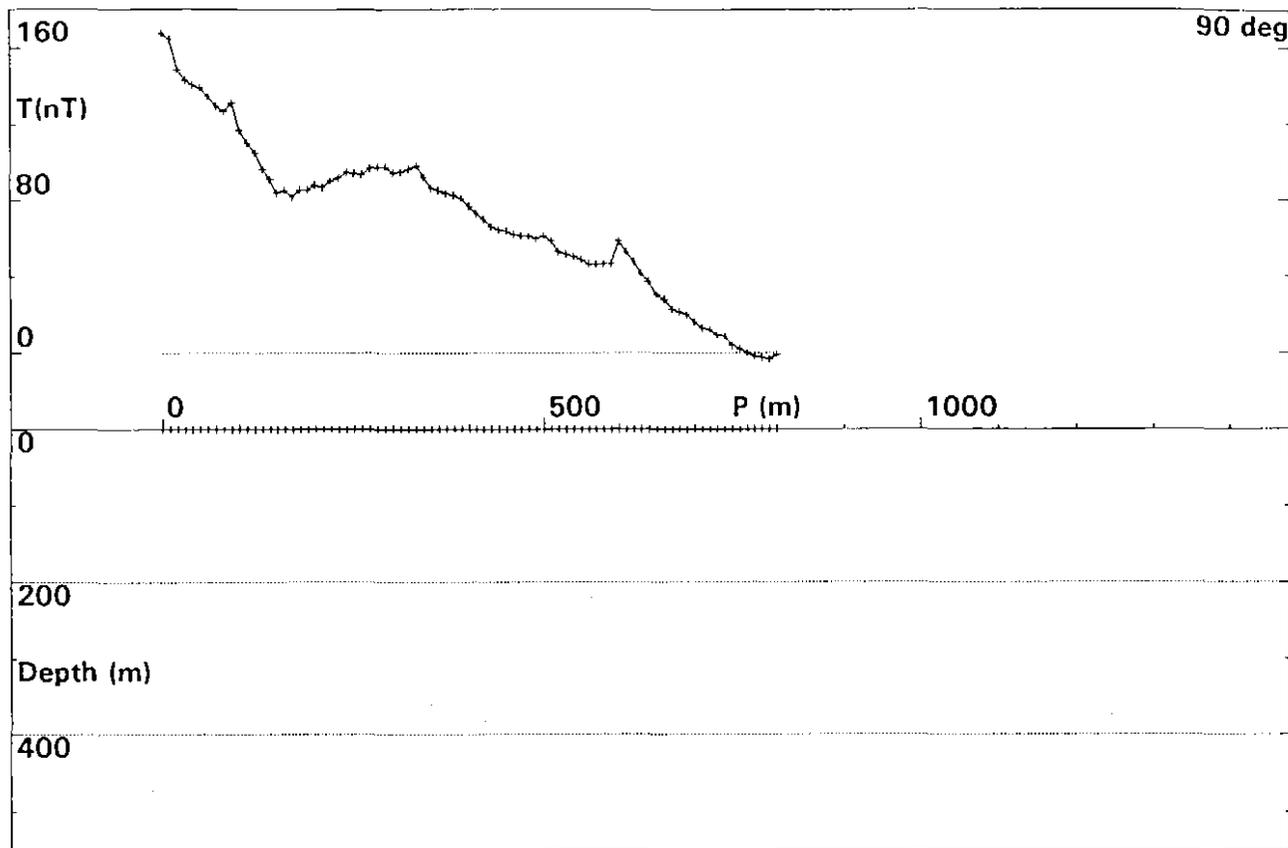
Observations:	Yolande Ground Magnetics	
Profile #1:	Line 59200N	Scale 1:10000
Model:		
Calculation mode:	Total Magnetic Intensity	
Observed:	_____	Calculated: _____
Residual:	_____	Individual body: _____
POTENT v3.03	Profile drawn at 00:31 11/07/1994 for Pasmenco Exploration	



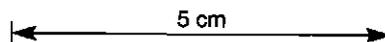


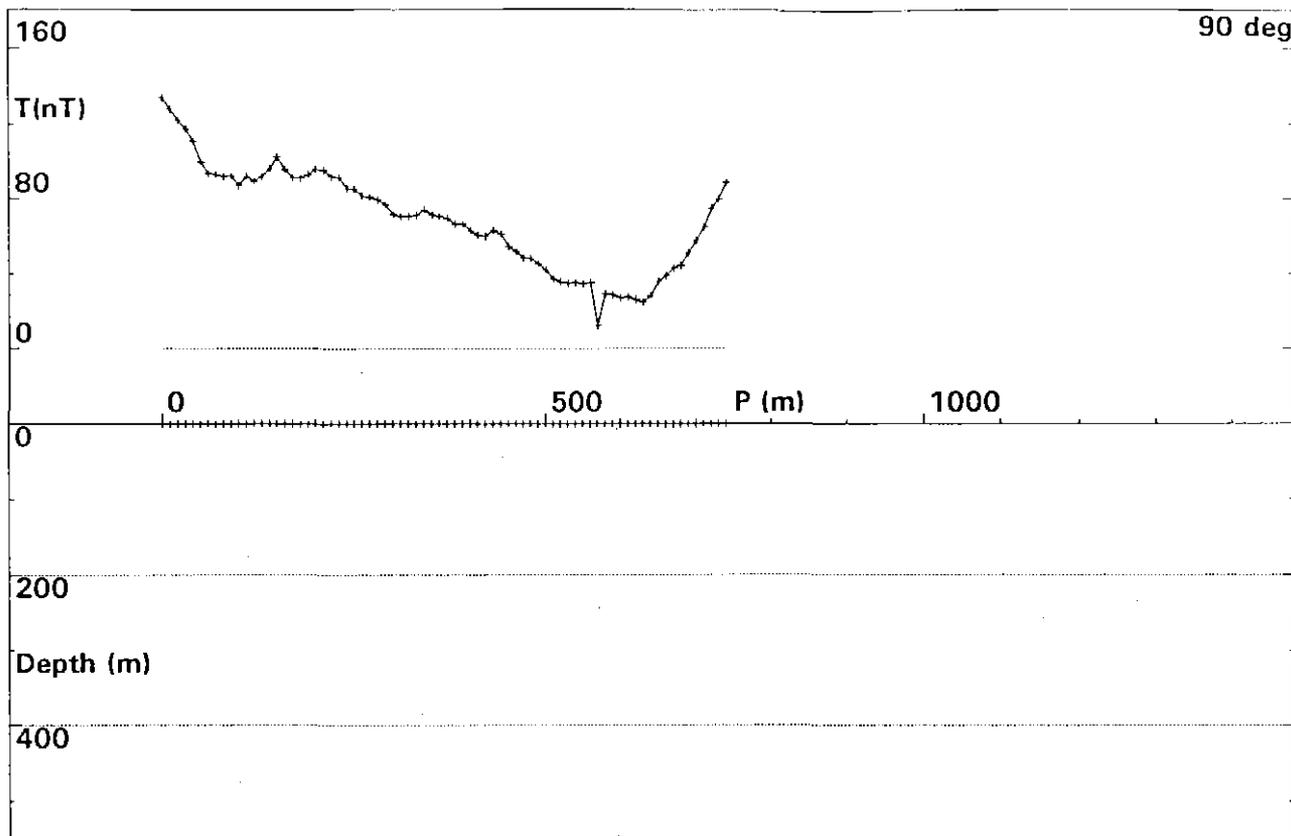
Observations:	Yolande Ground Magnetics	
Profile #1;	Line 59400N	Scale 1:10000
Model:		
Calculation mode:	Total Magnetic Intensity	
Observed:	_____	Calculated: _____
Residual:	_____	Individual body: _____
POTENT v3.03	Profile drawn at 23:35 10/07/1994 for Pasminco Exploration	



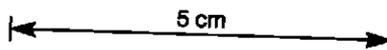


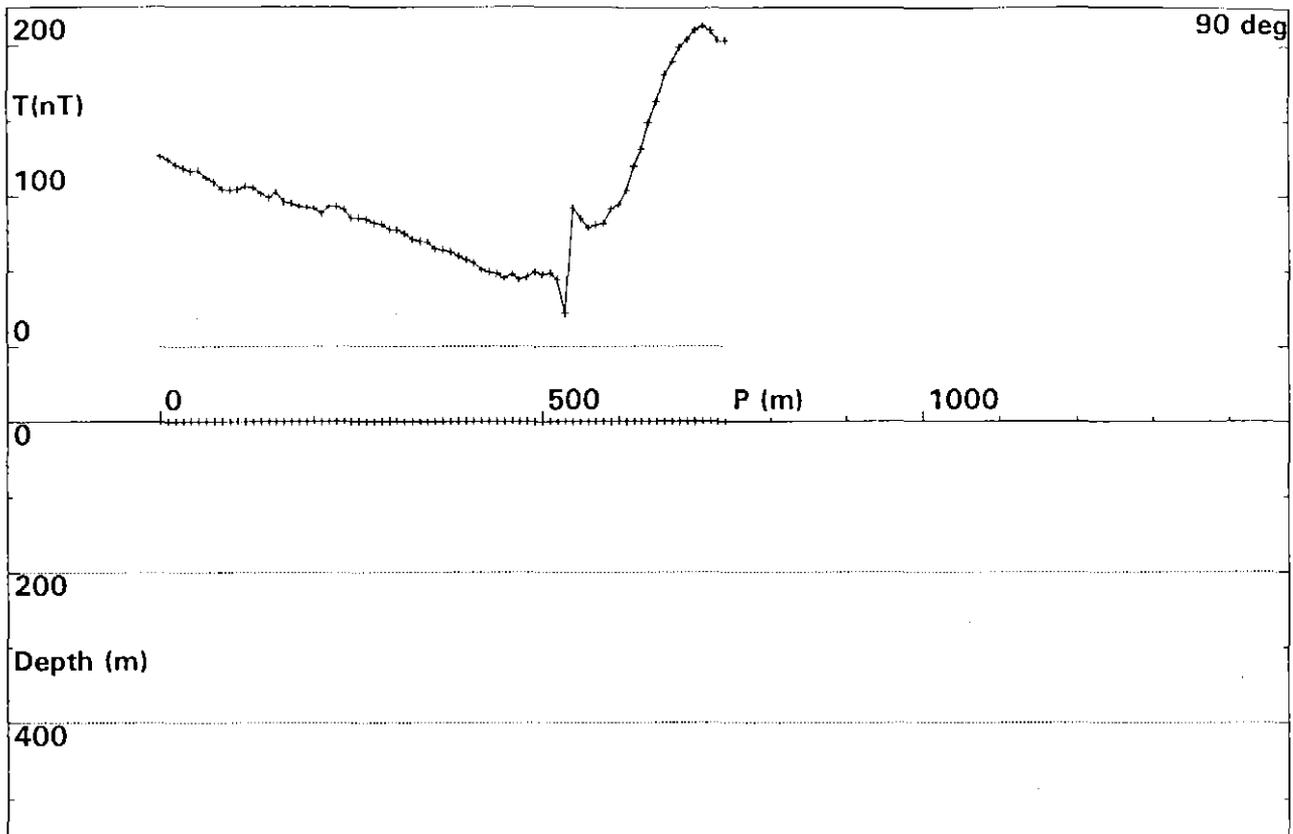
Observations:	Yolande Ground Magnetics	
Profile #1;	Line 59600N	Scale 1:10000
Model:		
Calculation mode:	Total Magnetic Intensity	
Observed:	_____	Calculated: _____
Residual:	Individual body: _____
POTENT v3.03	Profile drawn at 23:29 10/07/1994 for Pasmaenco Exploration	



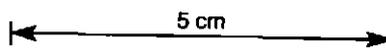


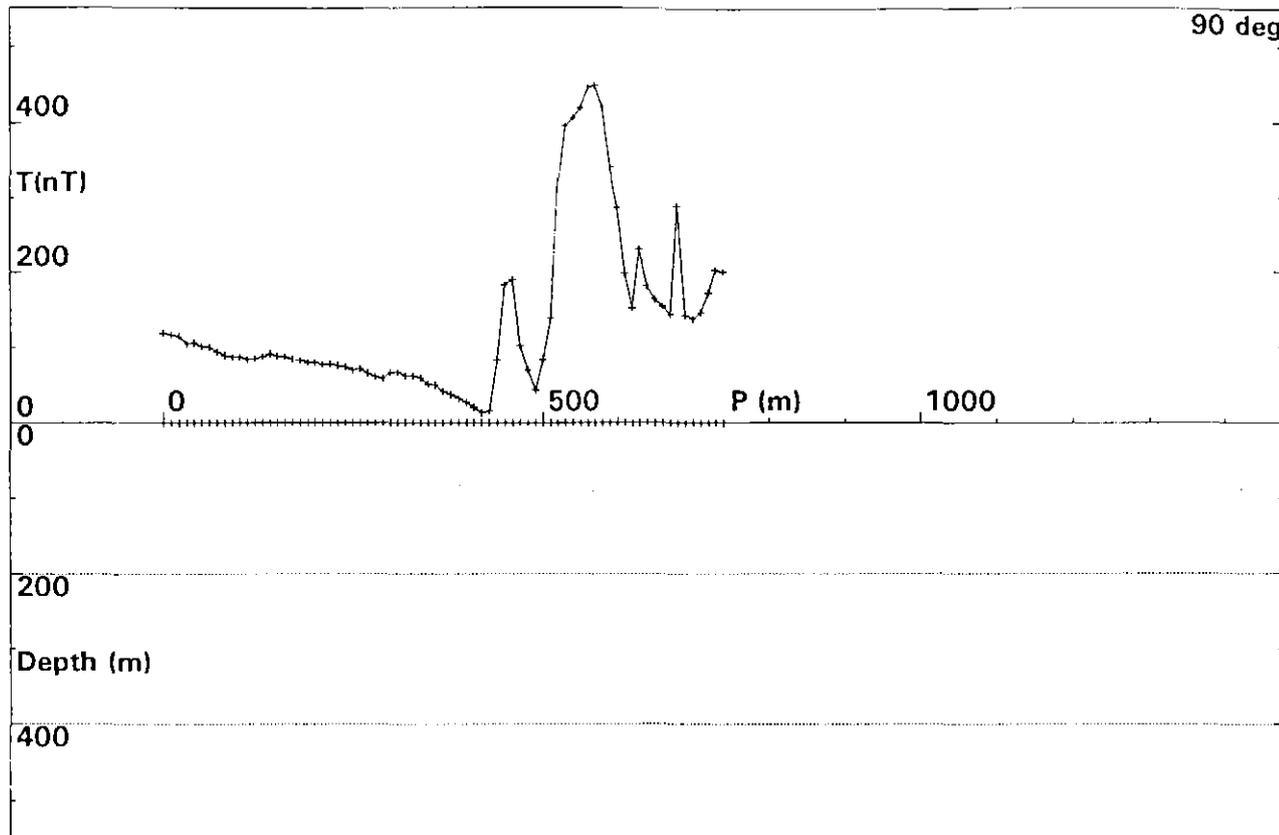
Observations:	Yolande Ground Magnetics	
Profile #1;	Line 59800N	Scale 1:10000
Model:		
Calculation mode:	Total Magnetic Intensity	
Observed:	_____	Calculated: _____
Residual:	_____	Individual body: _____
POTENT v3.03	Profile drawn at 23:26 10/07/1994 for Pasmenco Exploration	



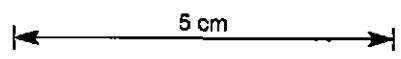


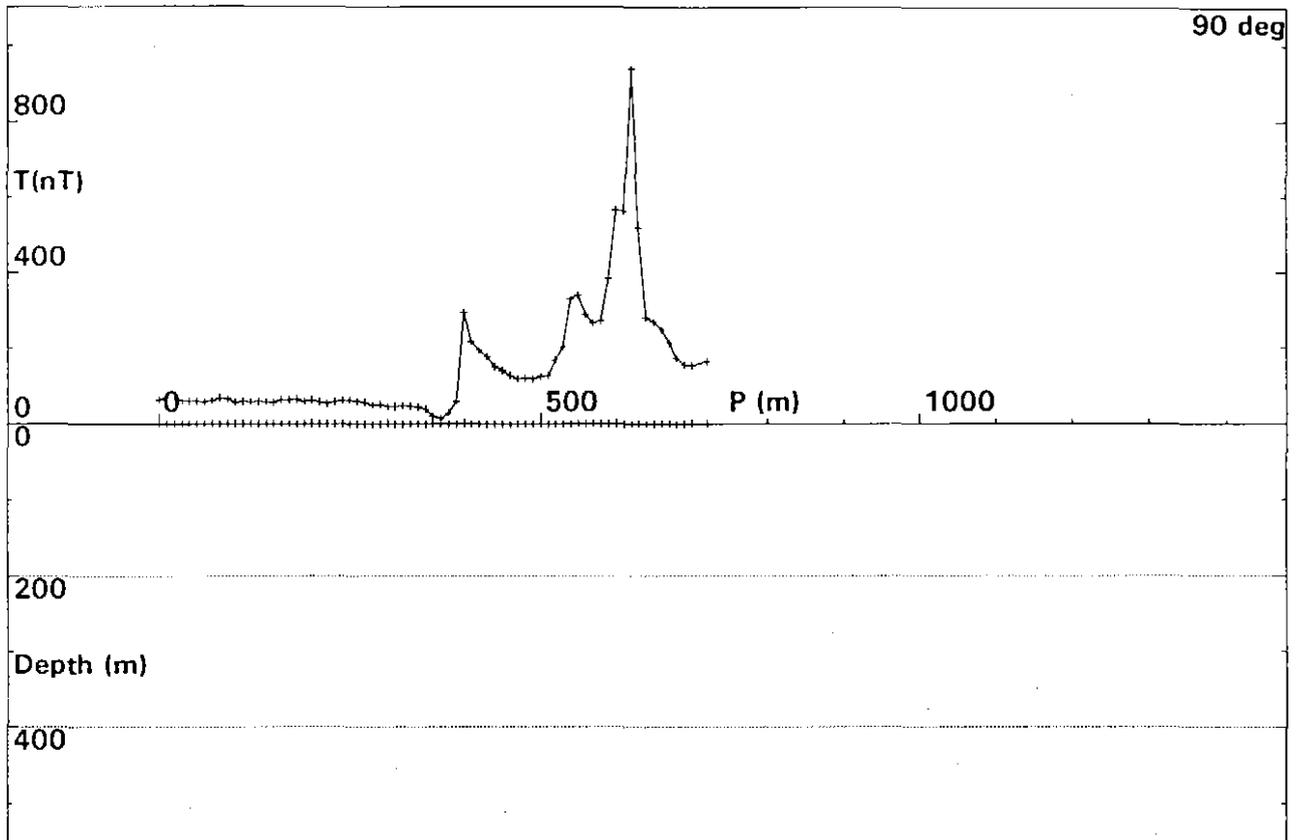
Observations:	Yolande Ground Magnetics	
Profile #1:	Line 6000N	Scale 1:10000
Model:		
Calculation mode:	Total Magnetic Intensity	
Observed:	_____	Calculated: _____
Residual:	_____	Individual body: _____
POTENT v3.03	Profile drawn at 23:25 10/07/1994 for Pasminco Exploration	



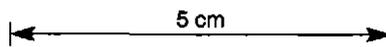


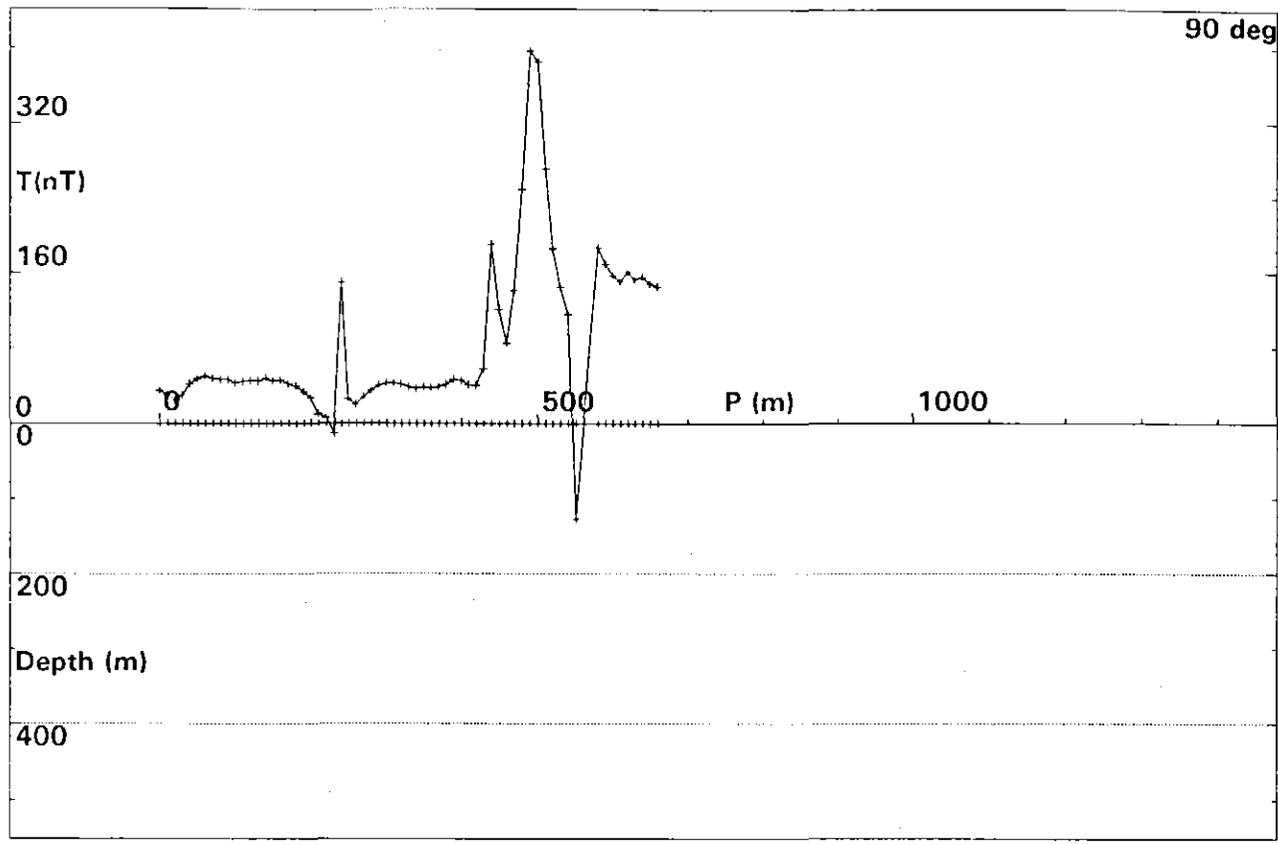
Observations:	Yolande Ground Magnetics	
Profile #1:	Line 60200N	Scale 1:10000
Model:		
Calculation mode:	Total Magnetic Intensity	
Observed:	_____	Calculated: _____
Residual:	_____	Individual body: _____
POTENT v3.03	Profile drawn at 22:58 10/07/1994 for Pasmenco Exploration	



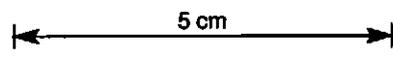


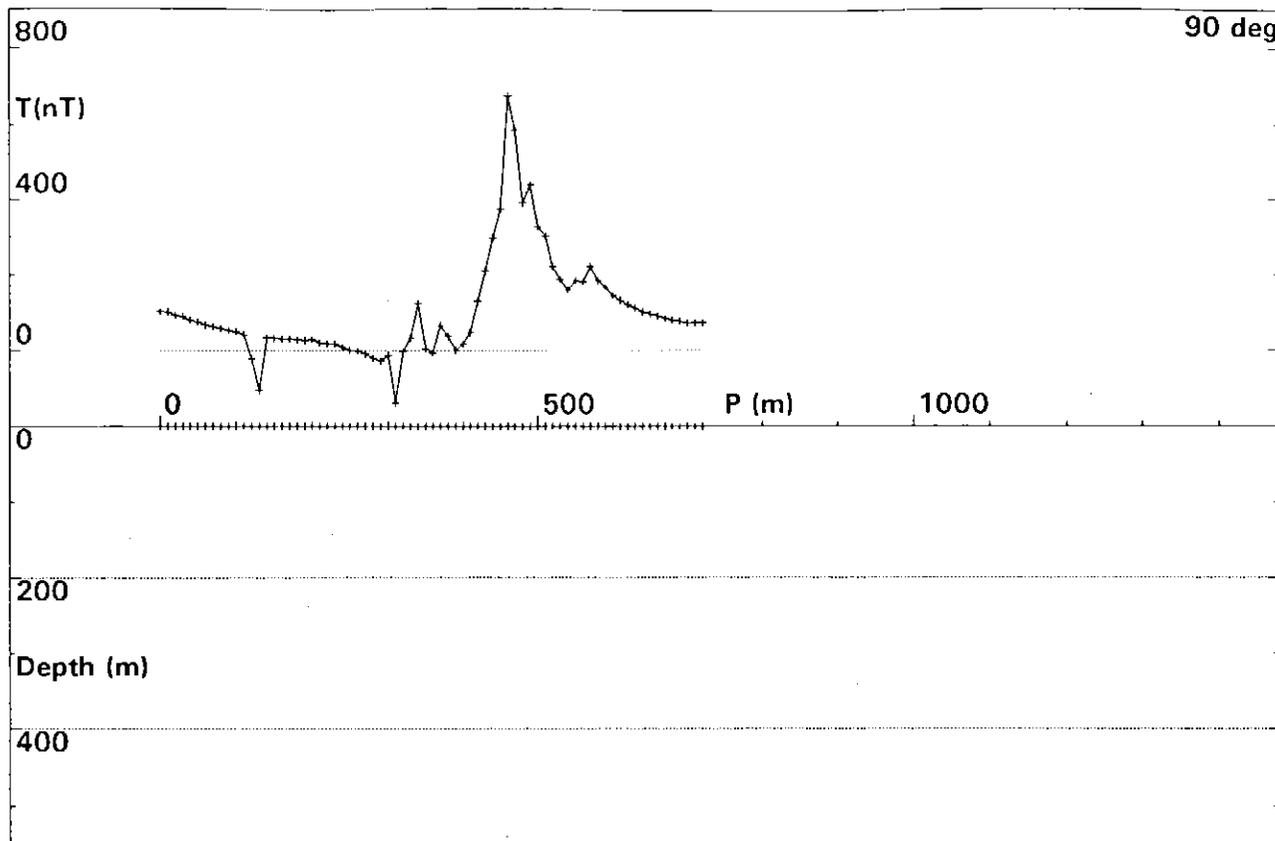
Observations:	Yolande Ground Magnetics	
Profile #1;	Line 60400N	Scale 1:10000
Model:		
Calculation mode:	Total Magnetic Intensity	
Observed:	_____	Calculated: _____
Residual:	_____	Individual body: _____
POTENT v3.03	Profile drawn at 22:54 10/07/1994 for Pasmenco Exploration	



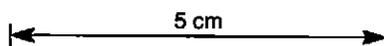


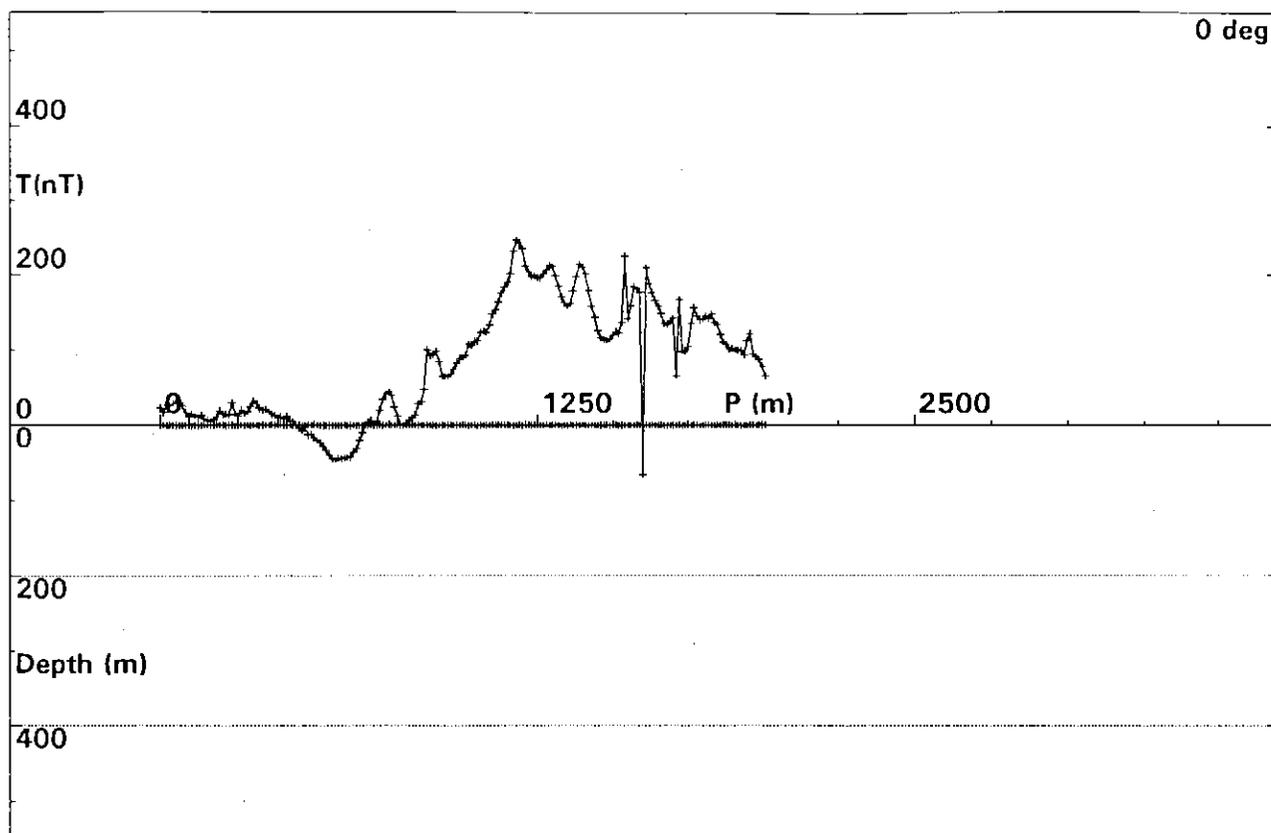
Observations:	Yolande Ground Magnetics	
Profile #1:	Line 60600N	Scale 1:10000
Model:		
Calculation mode:	Total Magnetic Intensity	
Observed:	_____	Calculated: _____
Residual:	_____	Individual body: _____
POTENT v3.03	Profile drawn at 22:49 10/07/1994 for Pasminco Exploration	





Observations:	Yolande Ground Magnetics	
Profile #1:	Line 60800N	Scale 1:10000
Model:		
Calculation mode:	Total Magnetic Intensity	
Observed:	_____	Calculated: _____
Residual:	_____	Individual body: _____
POTENT v3.03	Profile drawn at 22:29 10/07/1994 for Pasminco Exploration	

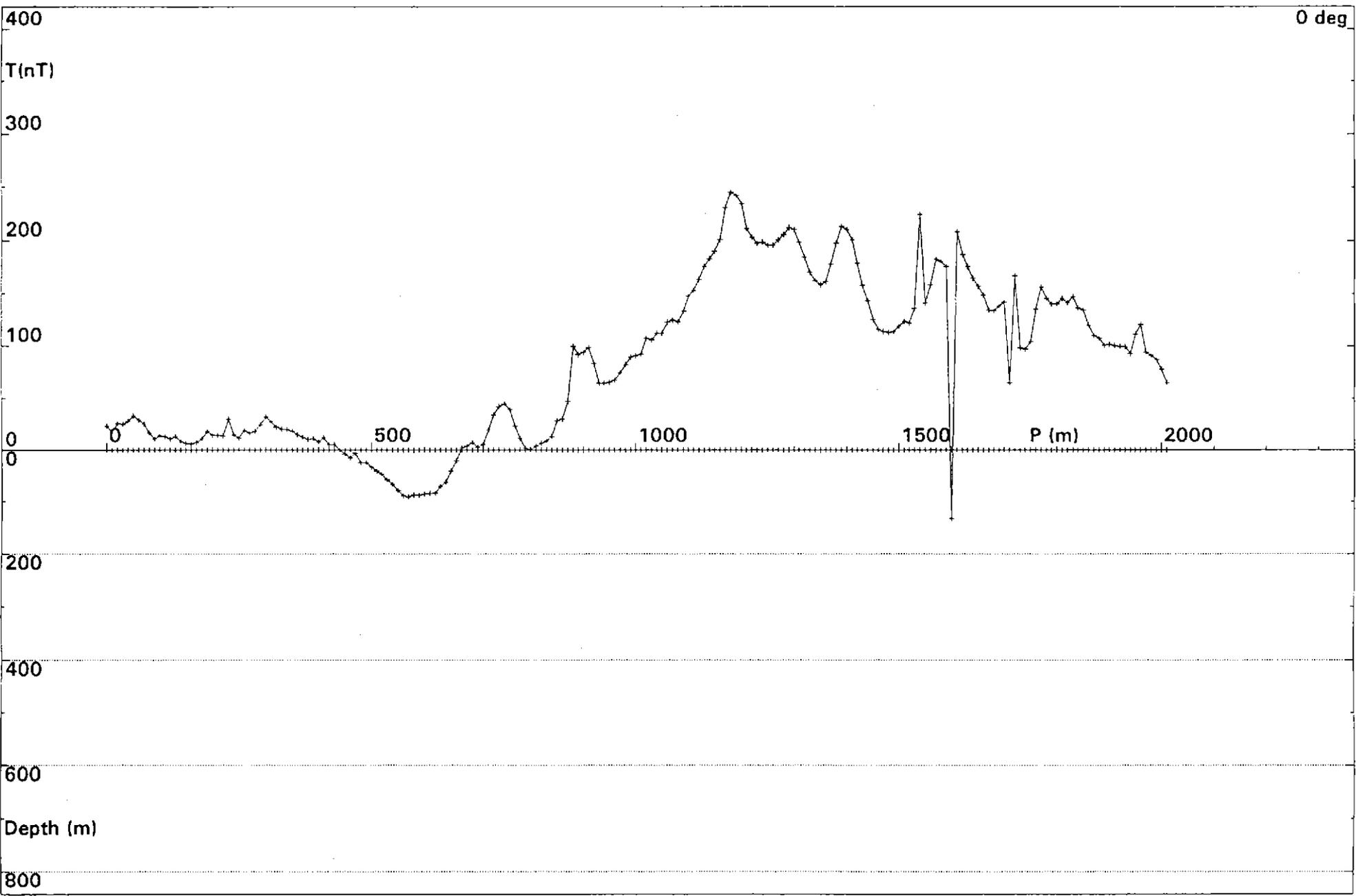




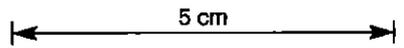
Observations:	Yolande Ground Magnetics - Newton Creek	
Profile #1;	Line 380000E (north section)	Scale 1:25000
Model:		
Calculation mode:	Total Magnetic Intensity	
Observed:	_____	Calculated: _____
Residual:	_____	Individual body: _____
POTENT v3.03	Profile drawn at 01:09 11/07/1994 for Pasmaenco Exploration	

5 cm

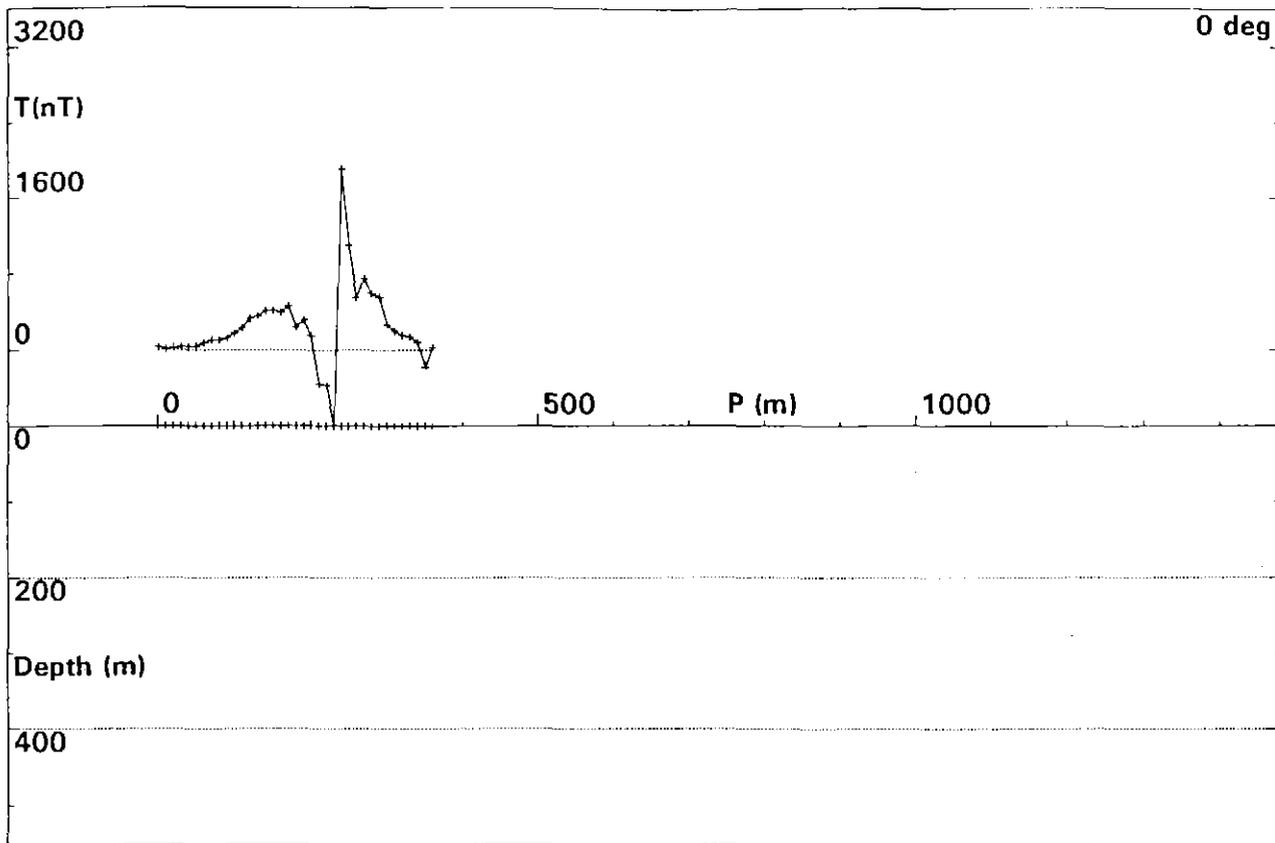
0 deg



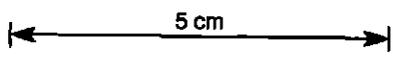
Observations: Yolande Ground Magnetics - Newton Creek
Profile #1; Line 380000E (north section) Scale 1:10000
Model:
Calculation mode: Total Magnetic Intensity

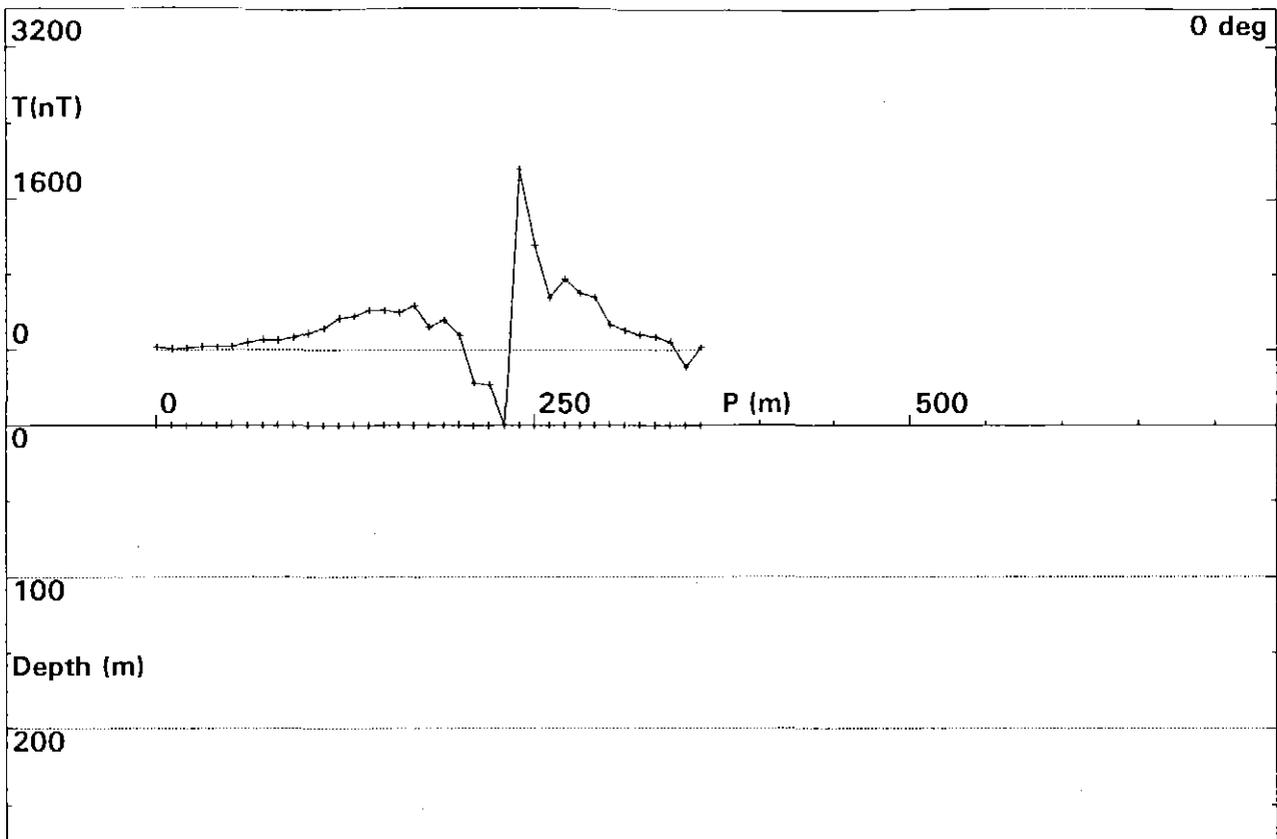


897422

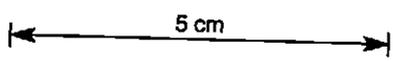


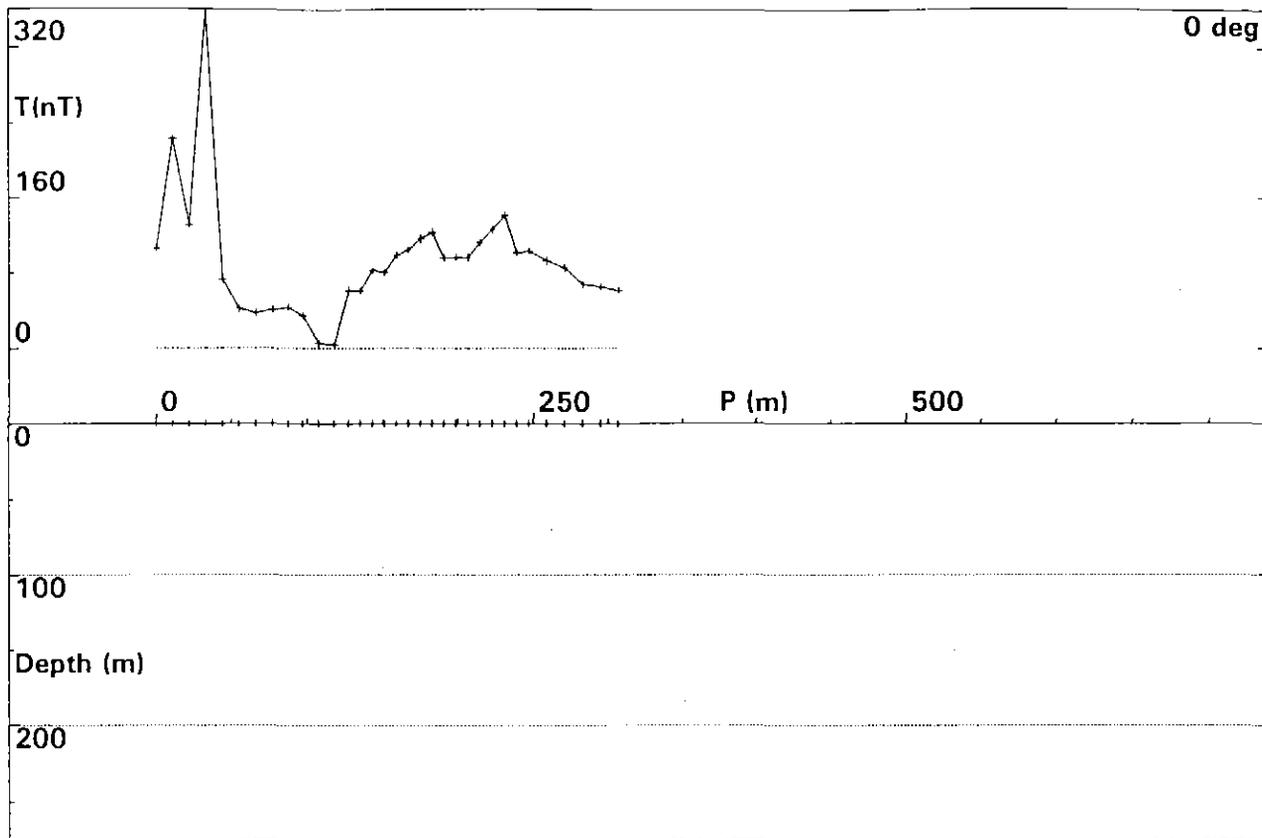
Observations:	Yolande Ground Magnetics - Newton Creek	
Profile #2;	Line 380000E (south section)	Scale 1:10000
Model:		
Calculation mode:	Total Magnetic Intensity	
Observed:	_____	Calculated: _____
Residual:	_____	Individual body: _____
POTENT v3.03	Profile drawn at 01:07 11/07/1994 for Pasminco Exploration	





Observations:	Yolande Ground Magnetics - Newton Creek	
Profile #2;	Line 380000E (south section)	Scale 1:5000
Model:		
Calculation mode:	Total Magnetic Intensity	
Observed:	_____	Calculated: _____
Residual:	_____	Individual body: _____
POTENT v3.03	Profile drawn at 01:18 11/07/1994 for Pasminco Exploration	





Observations:

Yolande Ground Magnetics - Newton Creek

Profile #3;

Line 380E (middle section) Scale 1:5000

Model:

Calculation mode:

Total Magnetic Intensity

Observed: _____

Calculated: _____

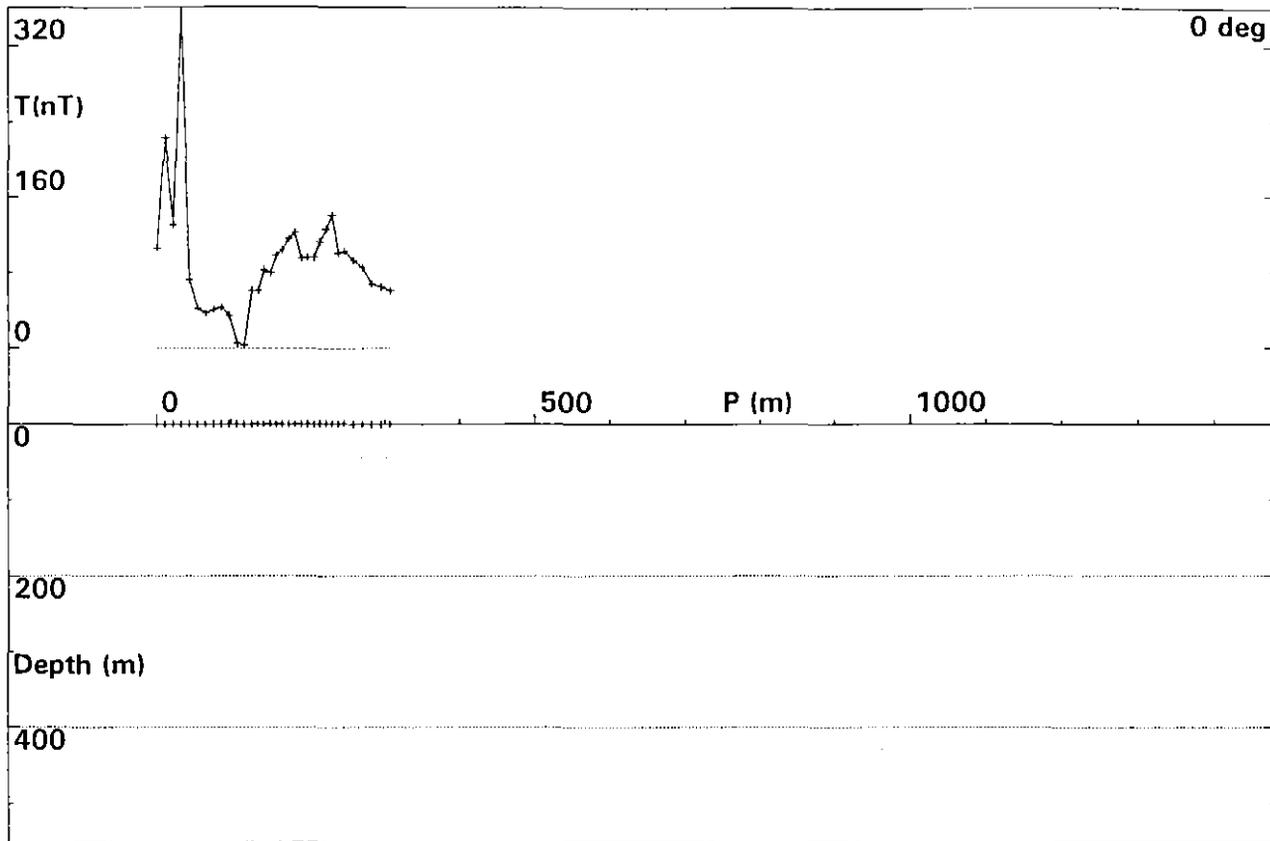
Residual: _____

Individual body: _____

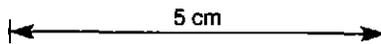
POTENT v3.03

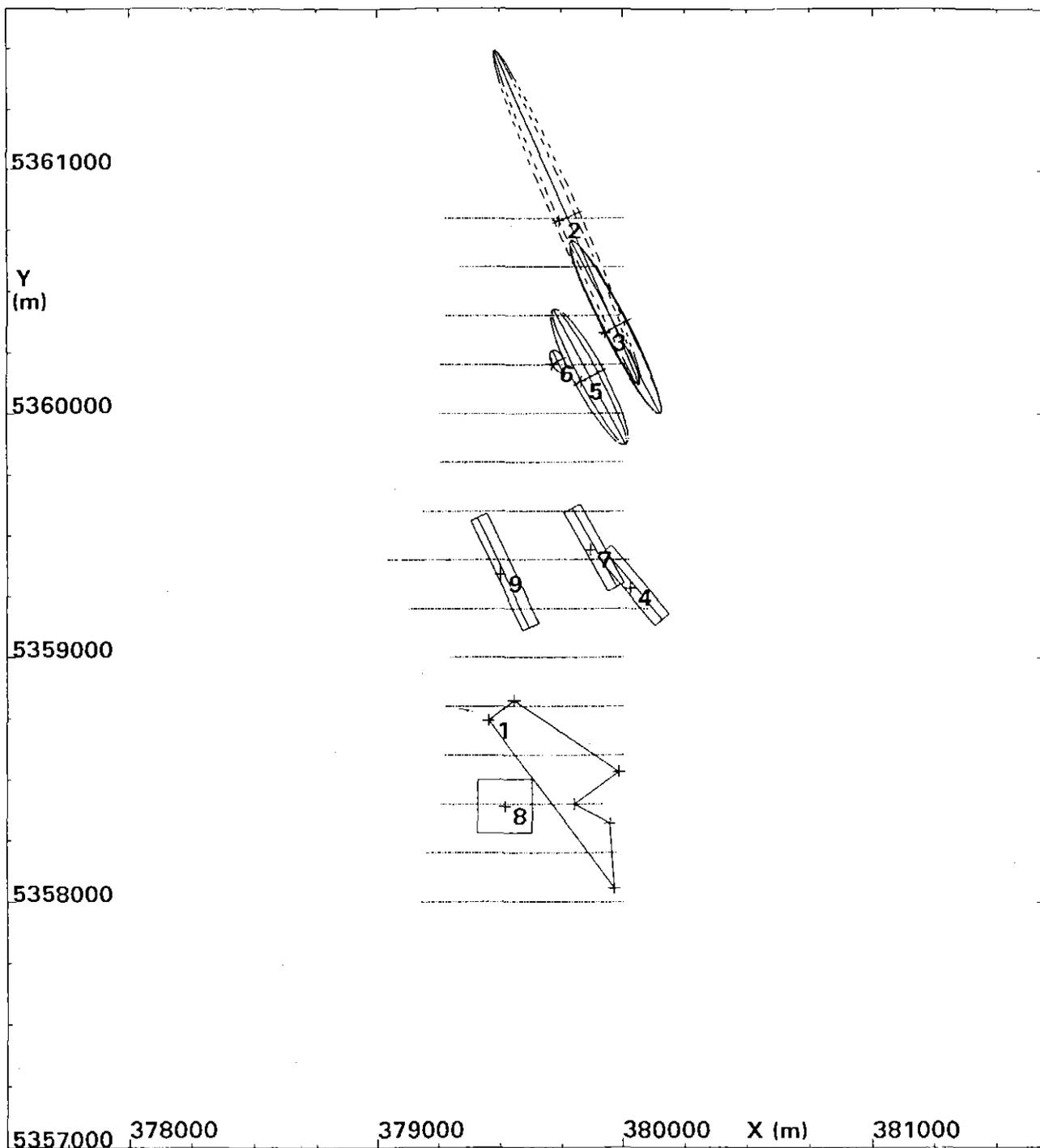
Profile drawn at 01:24 11/07/1994 for Pasmenco Exploration

5 cm



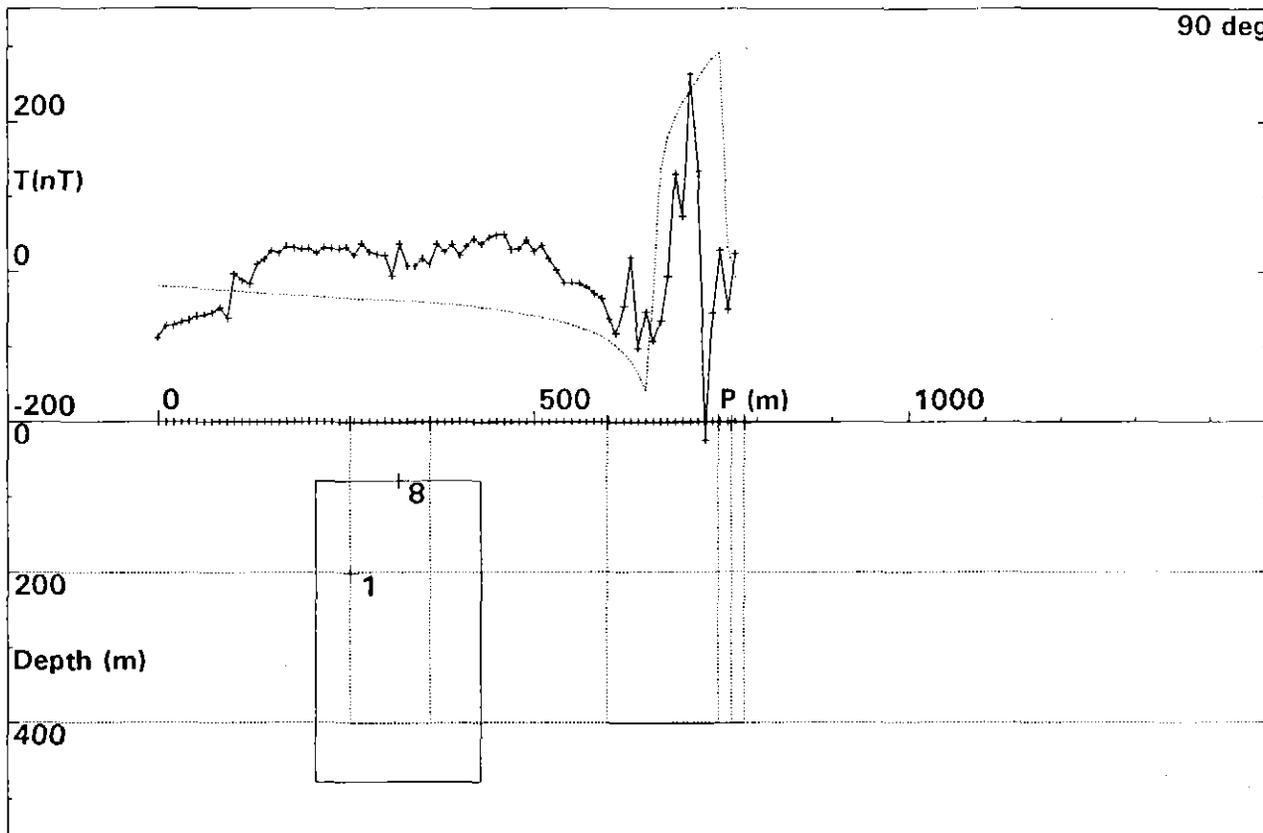
Observations:	Yolande Ground Magnetics - Newton Creek	
Profile #3:	Line 380E (middle section)	Scale 1:10000
Model:		
Calculation mode:	Total Magnetic Intensity	
Observed:	_____	Calculated: _____
Residual:	_____	Individual body: _____
POTENT v3.03	Profile drawn at 01:23 11/07/1994 for Pasmaenco Exploration	





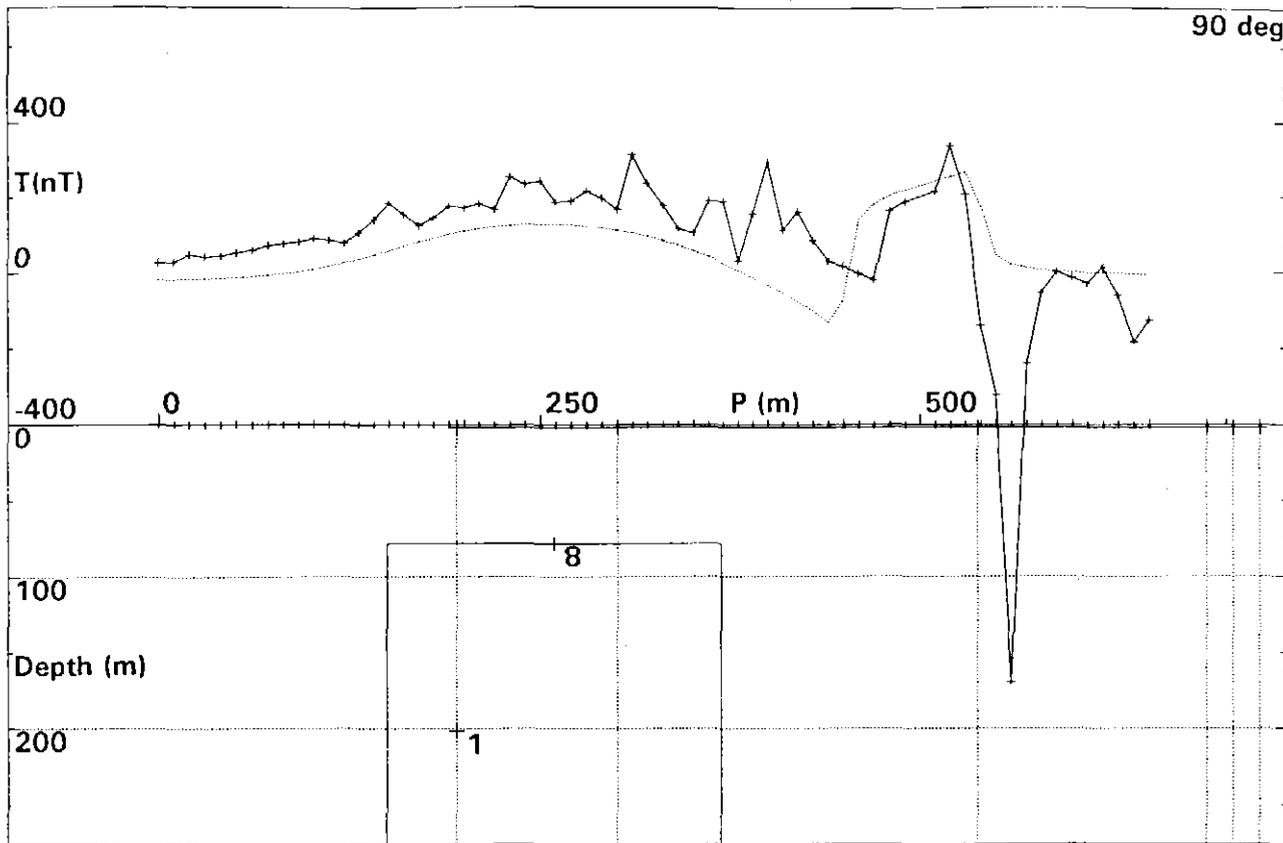
Observations:	Yolande Ground Magnetics
Model:	Scale 1:25000
POTENT v3.03	Plan drawn at 23:10 11/07/1994 for Pasmaenco Exploration

5 cm



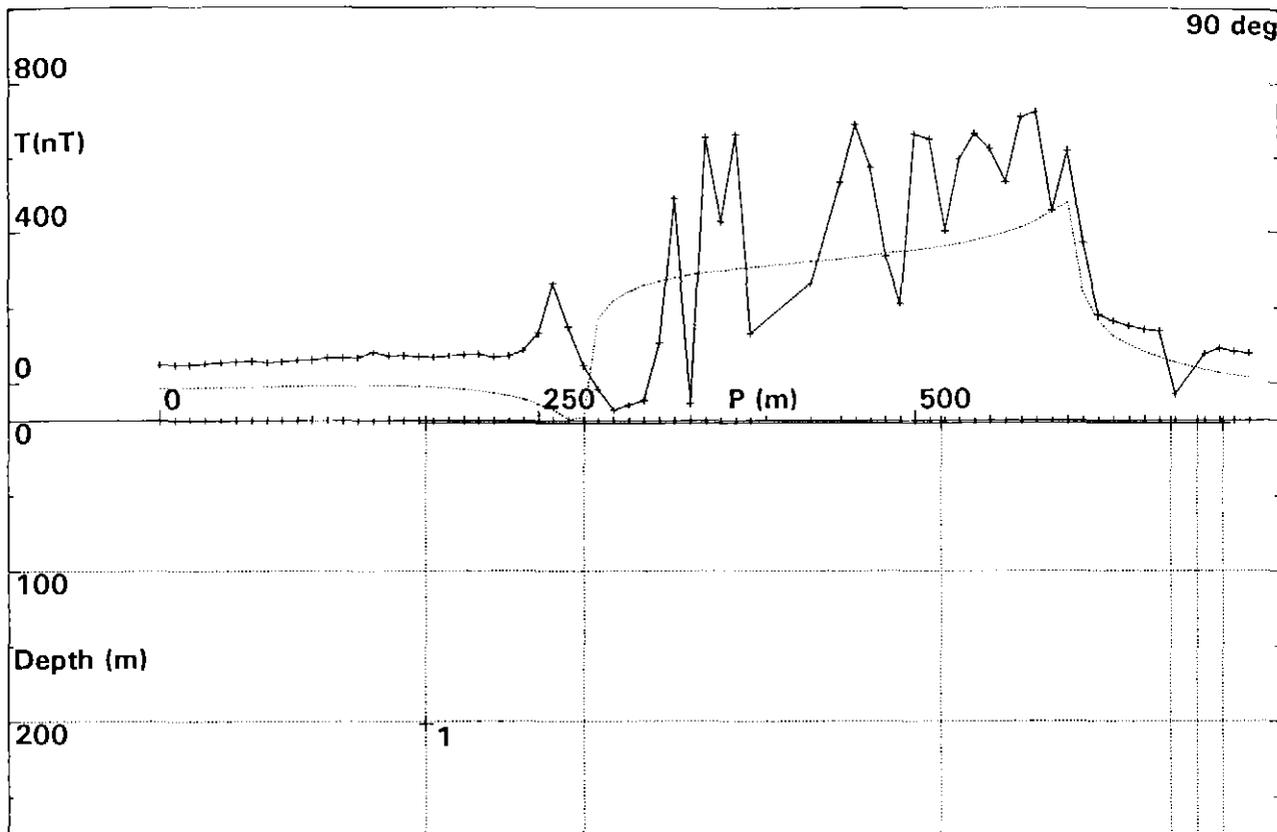
Observations:	Yolande Ground Magnetics	
Profile #4;	Line 58200N	
Model:	Scale 1:10000	
Calculation mode:	Total Magnetic Intensity	
Observed:	—————	Calculated:
Residual:		Individual body:
POTENT v3.03	Profile drawn at 00:05 12/07/1994 for Pasmaenco Exploration	

5 cm

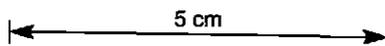


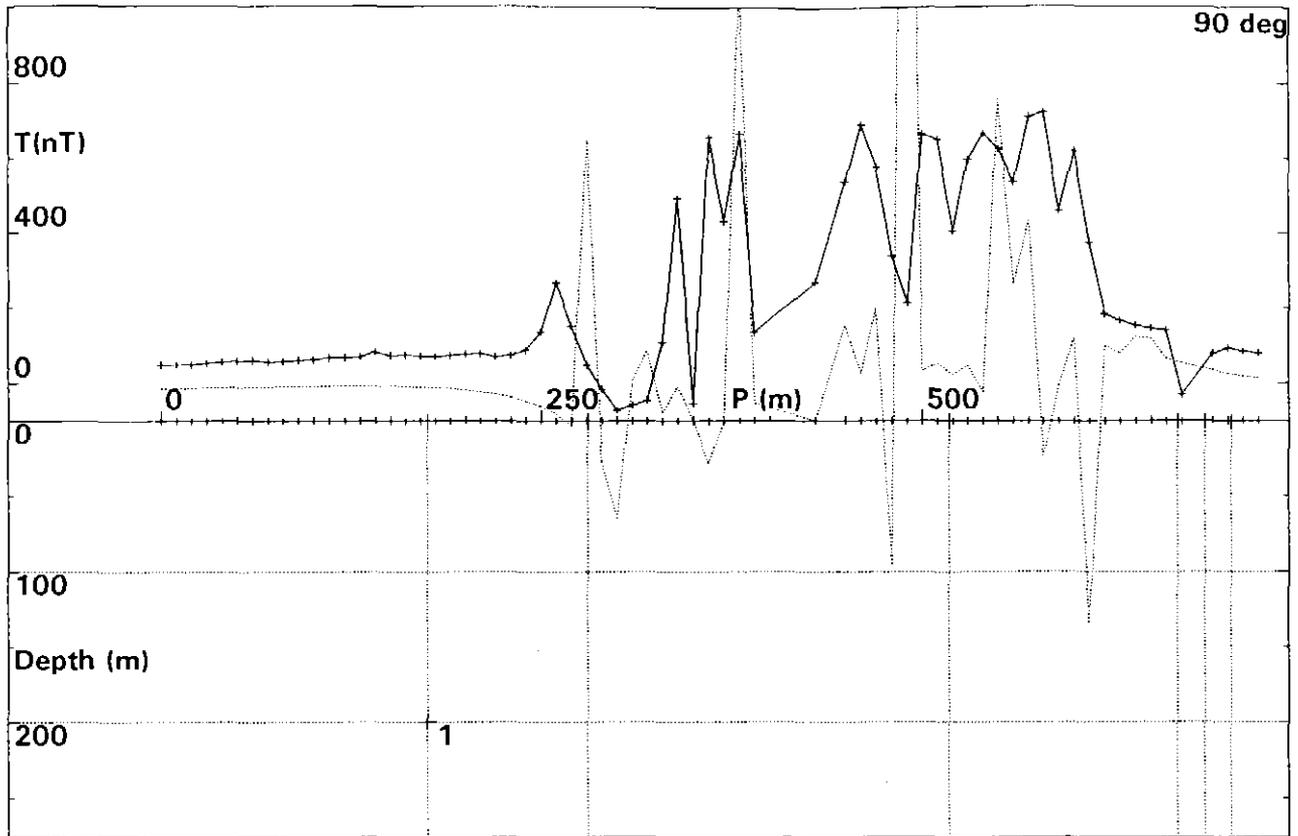
Observations:	Yolande Ground Magnetics	
Profile #3;	Line 58400N	
Model:	Scale 1:5000	
Calculation mode:	Total Magnetic Intensity	
Observed:	_____	Calculated:
Residual:	_____	Individual body:
POTENT v3.03	Profile drawn at 00:03 12/07/1994 for Pasminco Exploration	

5 cm

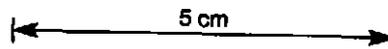


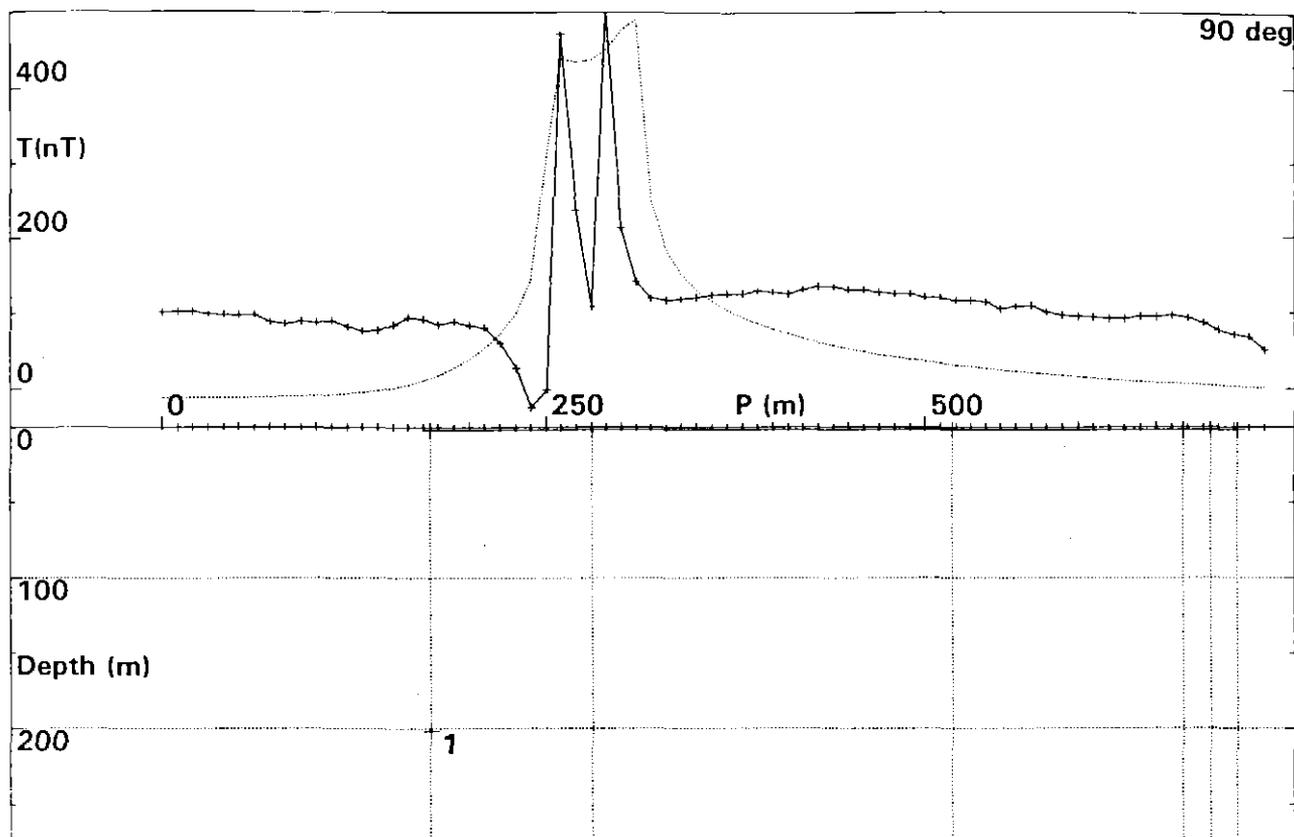
Observations:	Yolande Ground Magnetics	
Profile #2:	Line 58600N	
Model:	Scale 1:5000	
Calculation mode:	Total Magnetic Intensity	
Observed:	_____	Calculated:
Residual:		Individual body:
POTENT v3.03	Profile drawn at 23:59 11/07/1994 for Pasmenco Exploration	





Observations:	Yolande Ground Magnetics	
Profile #2:	Line 58600N	
Model:	Scale 1:10000	
Calculation mode:	Total Magnetic Intensity	
Observed:	_____	Calculated: _____
Residual:	_____	Individual body: _____
POTENT v3.03	Profile drawn at 00:13 12/07/1994 for Pasminco Exploration	





Observations: Yolande Ground Magnetics

Profile #1; Line 58800N

Model: Scale 1:5000

Calculation mode: Total Magnetic Intensity

Observed: _____

Calculated: _____

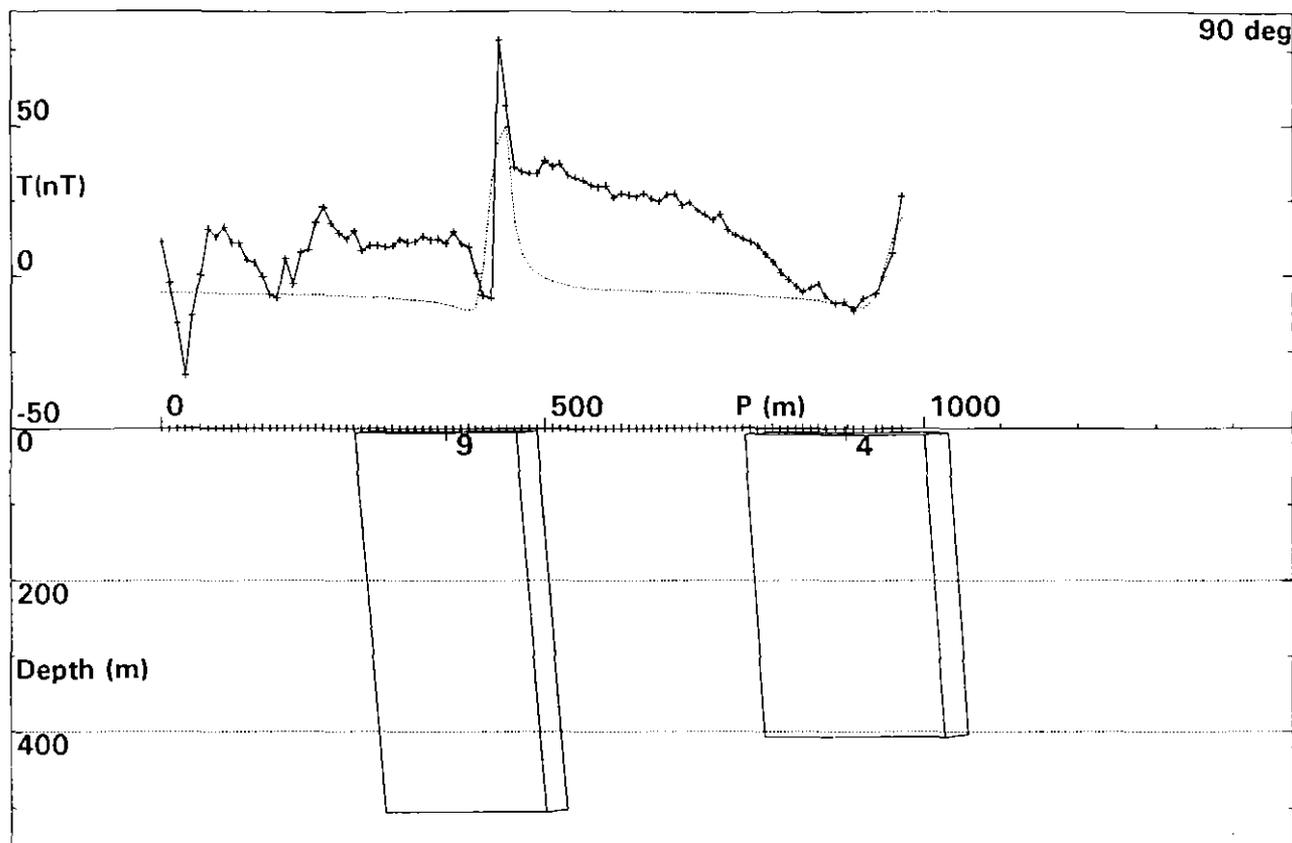
Residual: _____

Individual body: _____

POTENT v3.03

Profile drawn at 23:57 11/07/1994 for Pasminco Exploration

5 cm



Observations:

Yolande Ground Magnetics

Profile #3;

Line 59200N

Model:

Scale 1:10000

Calculation mode:

Total Magnetic Intensity

Observed:

—————

Calculated:

Residual:

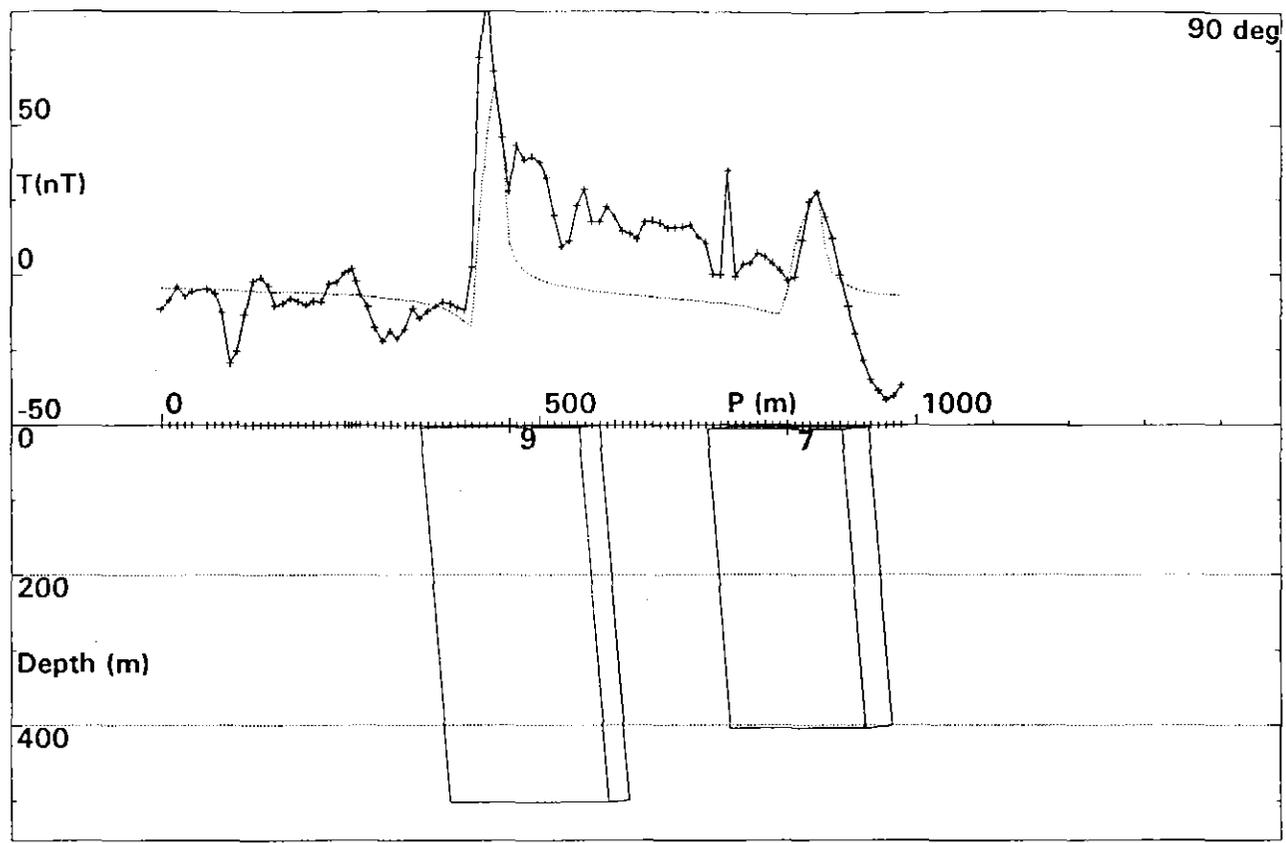
—————

Individual body:

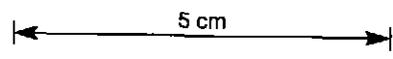
POTENT v3.03

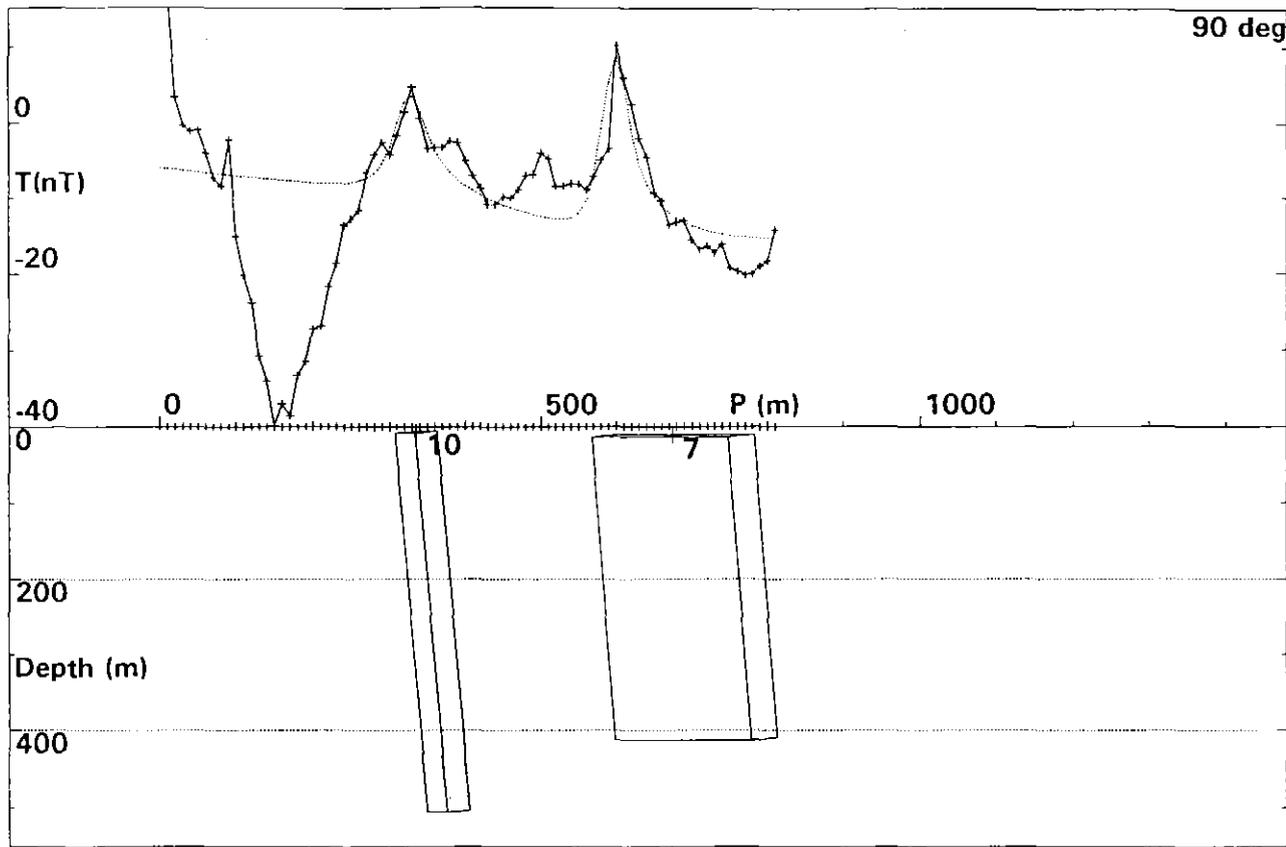
Profile drawn at 23:00 11/07/1994 for Pasmenco Exploration

5 cm

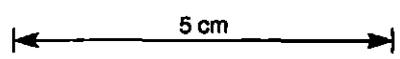


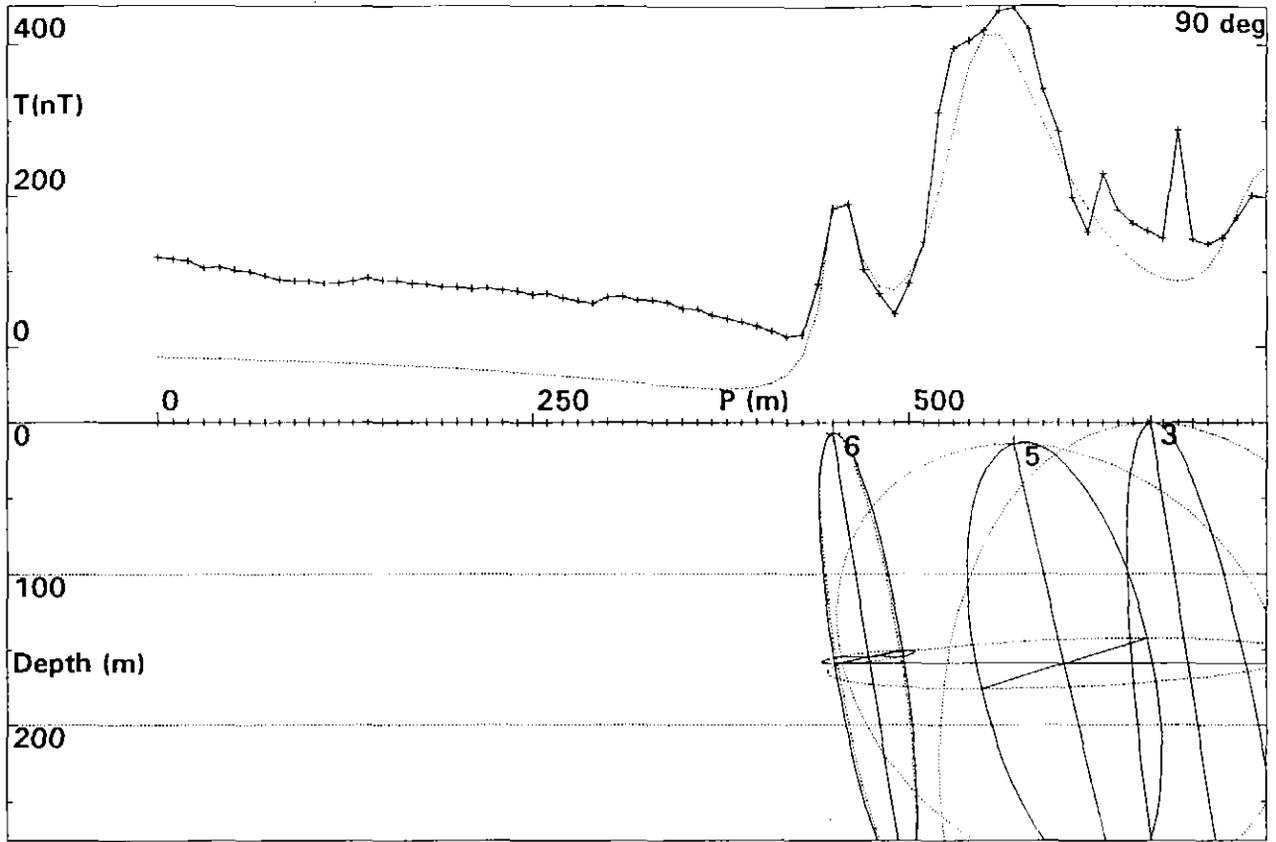
Observations:	Yolande Ground Magnetics	
Profile #2:	Line 59400N	
Model:	Scale 1:10000	
Calculation mode:	Total Magnetic Intensity	
Observed:	_____	Calculated: _____
Residual:	_____	Individual body: _____
POTENT v3.03	Profile drawn at 22:16 11/07/1994 for Pasmenco Exploration	



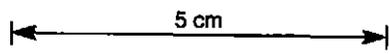


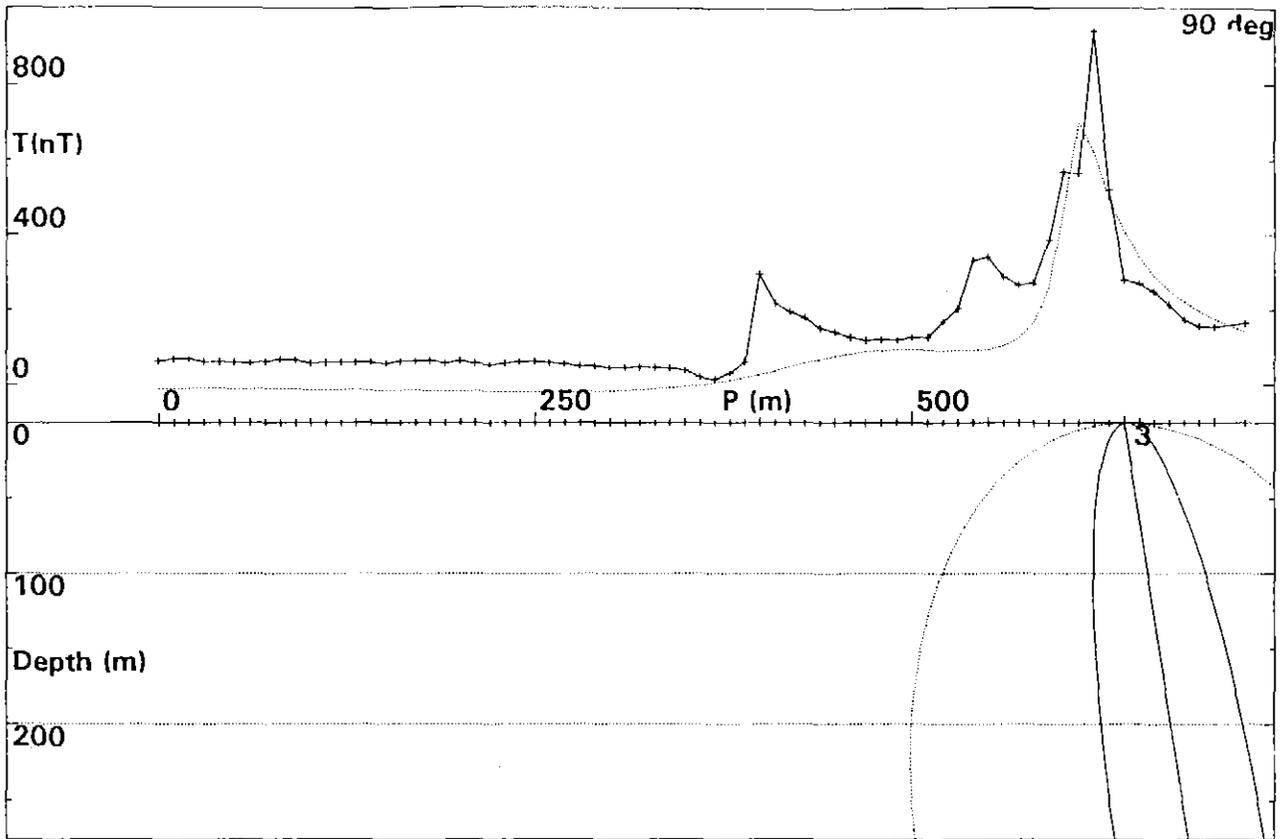
Observations:	Yolande Ground Magnetics	
Profile #1;	Line 59600N	
Model:	Scale 1:10000	
Calculation mode:	Total Magnetic Intensity	
Observed:	_____	Calculated: _____
Residual:		Individual body: _____
POTENT v3.03	Profile drawn at 23:23 11/07/1994 for Pasmenco Exploration	





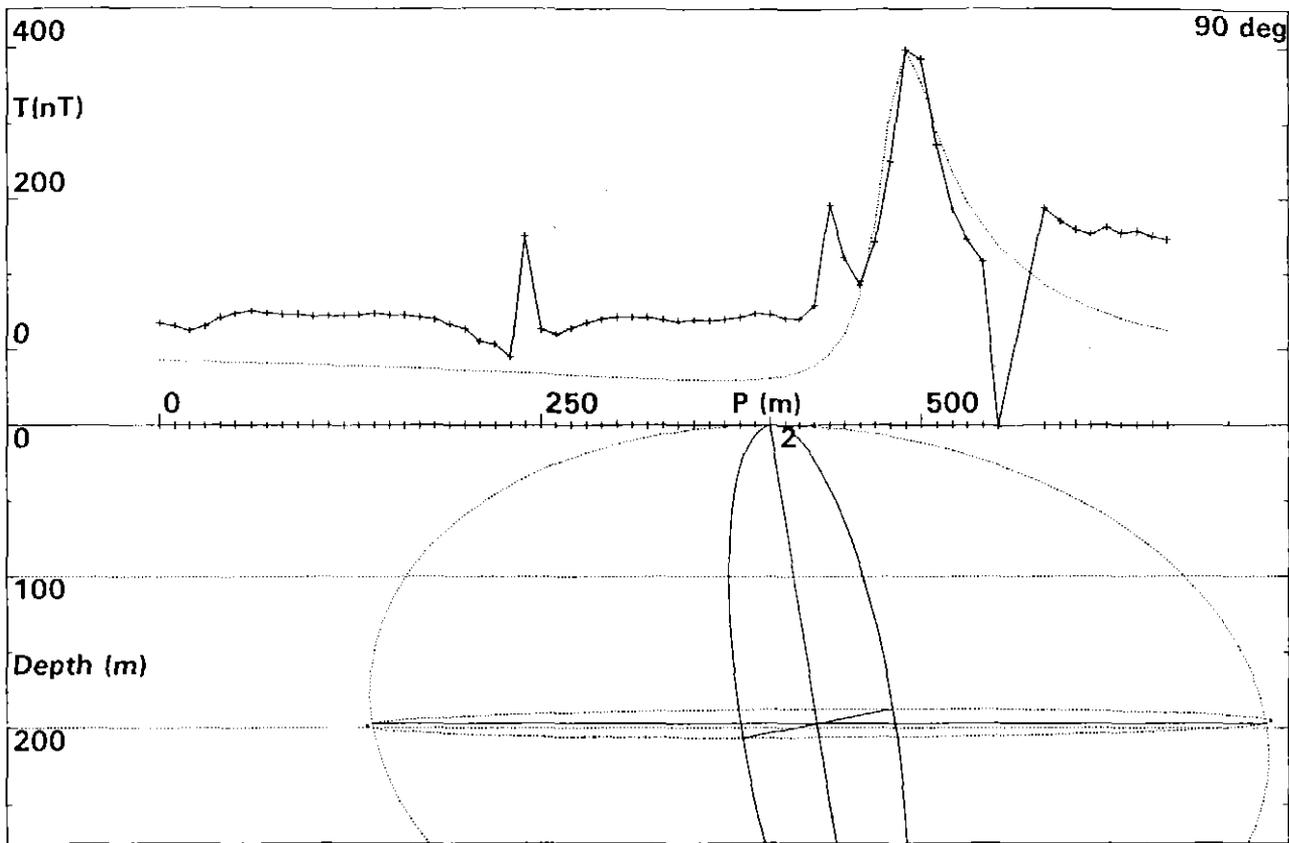
Observations:	Yolande Ground Magnetics	
Profile #1;	Line 60200N	
Model:	Scale 1:5000	
Calculation mode:	Total Magnetic Intensity	
Observed:	—————	Calculated: —————
Residual:		Individual body: —————
POTENT v3.03	Profile drawn at 20:53 11/07/1994 for Pasmenco Exploration	





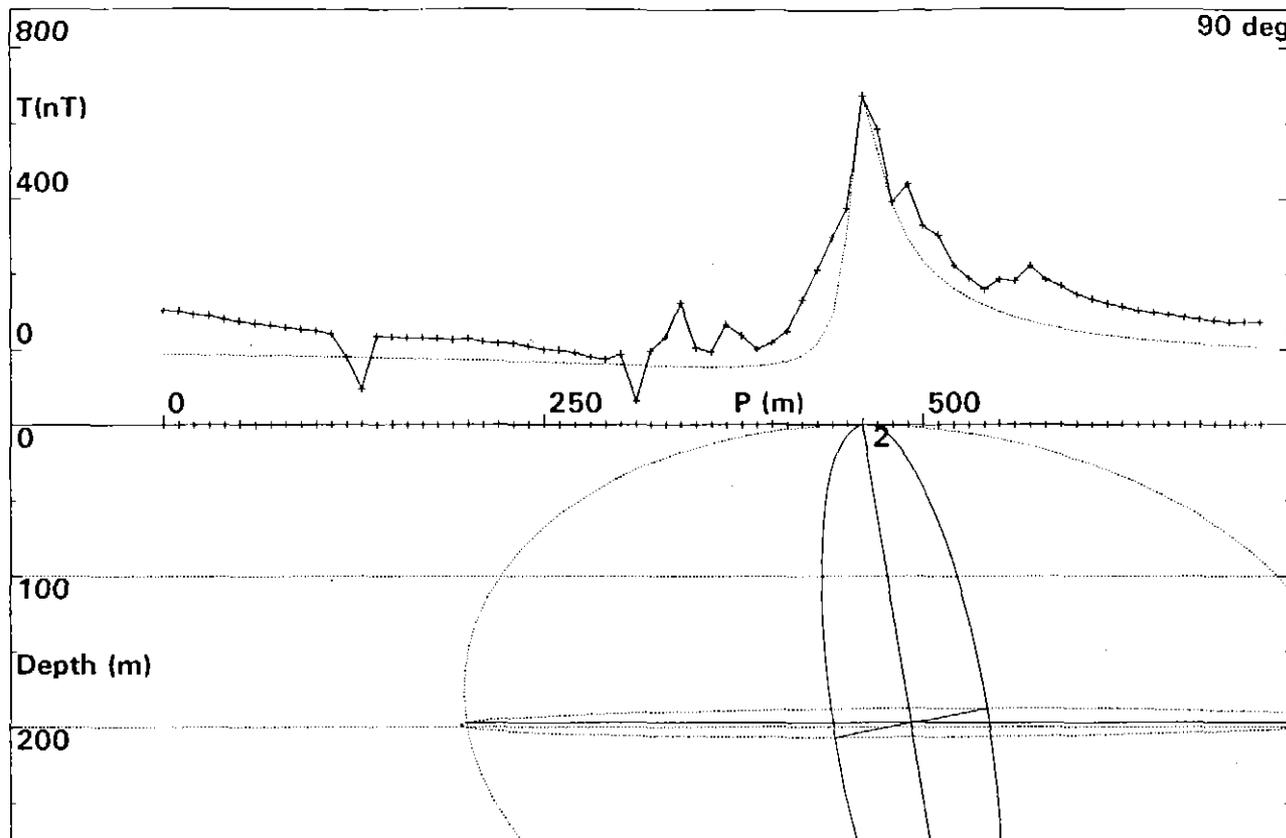
Observations:	Yolande Ground Magnetics	
Profile #3;	Line 60400N	
Model:	Scale 1:5000	
Calculation mode:	Total Magnetic Intensity	
Observed:	—————	Calculated: —————
Residual:		Individual body: —————
POTENT v3.03	Profile drawn at 06:35 11/07/1994 for Pasmenco Exploration	

5 cm

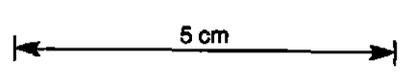


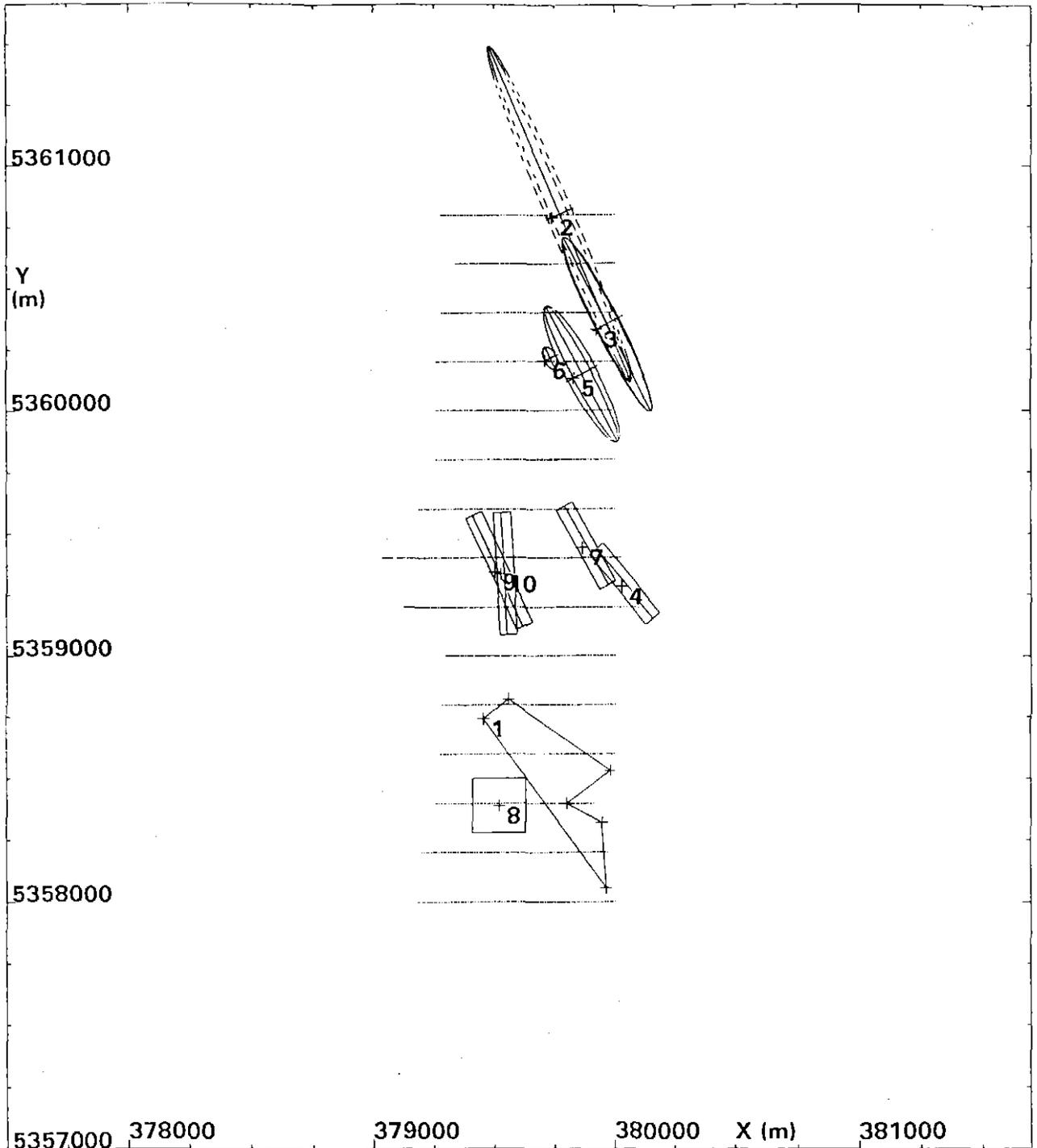
Observations:	Yolande Ground Magnetics	
Profile #2;	Line 60600N	
Model:	Scale 1:5000	
Calculation mode:	Total Magnetic Intensity	
Observed:	—————	Calculated:
Residual:		Individual body:
POTENT v3.03	Profile drawn at 06:29 11/07/1994 for Pasmenco Exploration	

←————— 5 cm —————→

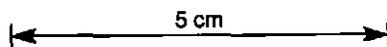


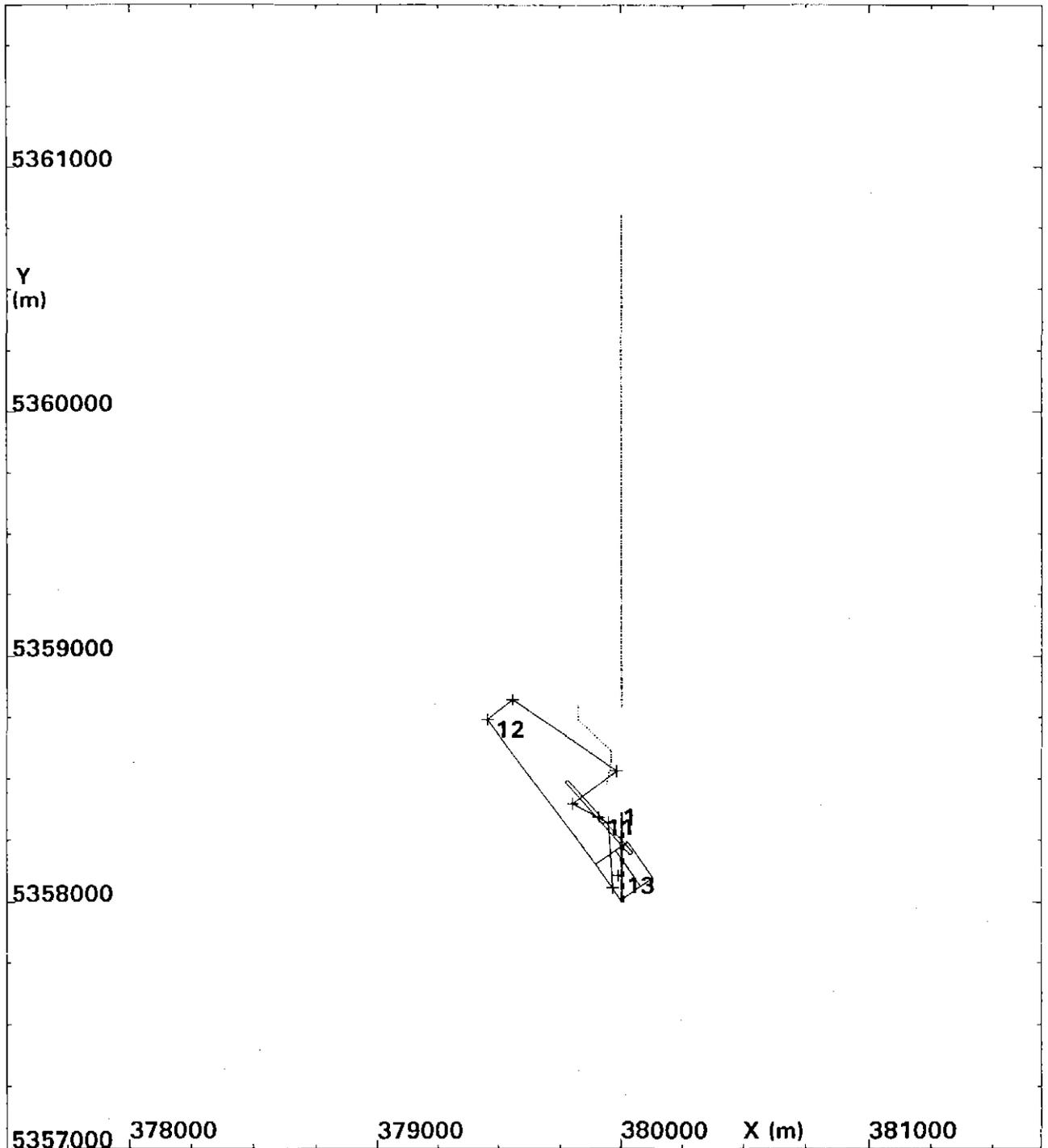
Observations:	Yolande Ground Magnetics	
Profile #1;	Line 60800N	
Model:	Scale 1:5000	
Calculation mode:	Total Magnetic Intensity	
Observed:	_____	Calculated: _____
Residual:		Individual body: _____
POTENT v3.03	Profile drawn at 06:28 11/07/1994 for Pasmaenco Exploration	





Observations:	Yolande Ground Magnetics
Model:	Scale 1:25000
POTENT v3.03	Plan drawn at 23:26 11/07/1994 for Pasmenco Exploration





Observations:

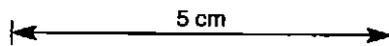
Yolande Ground Magnetics - Newton Creek

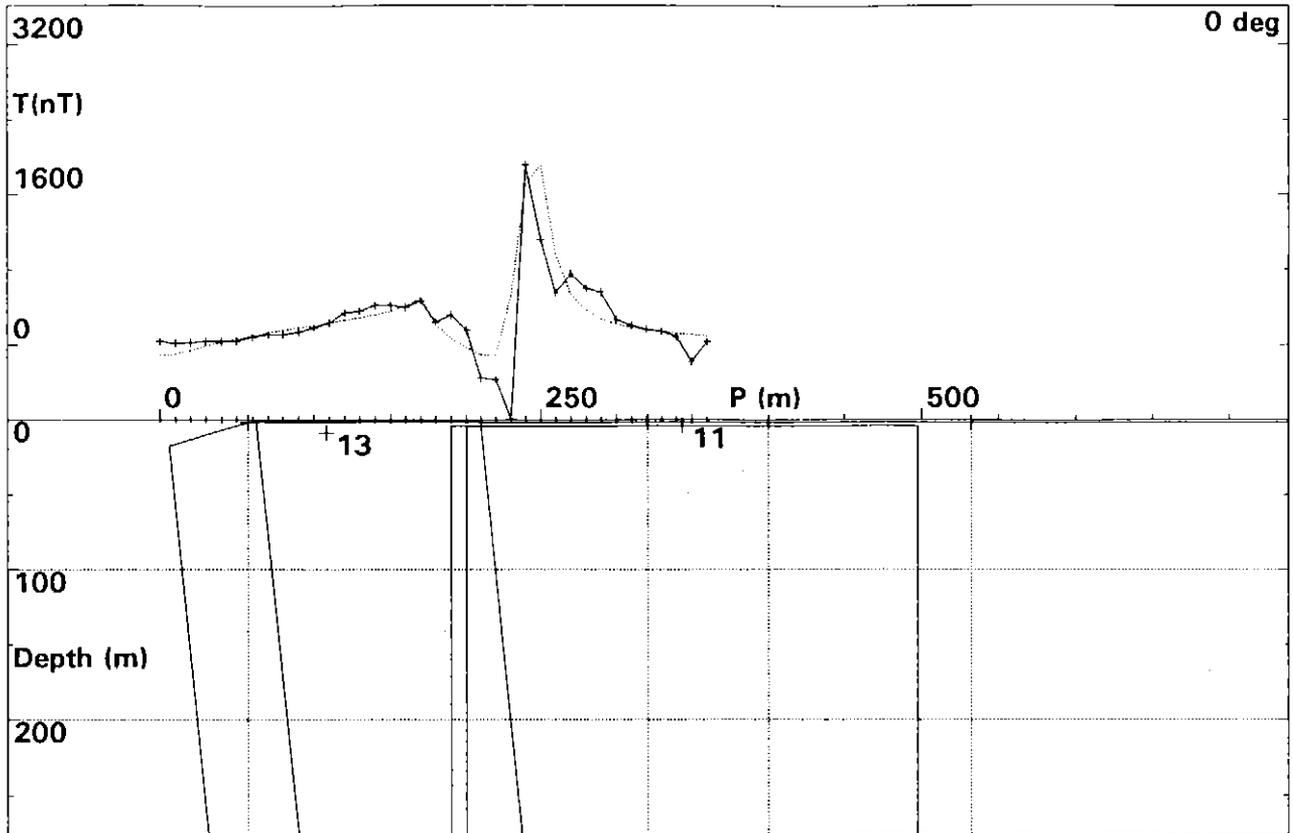
Model:

Scale 1:25000

POTENT v3.03

Plan drawn at 04:22 12/07/1994 for Pasmenco Exploration





Observations:

Profile #1;

Model:

Calculation mode:

Observed:

Residual:

POTENT v3.03

Yolande Ground Magnetics - Newton Creek

Line 380000E (south section)

Scale 1:5000

Total Magnetic Intensity

Calculated:

Individual body:

Profile drawn at 04:21 12/07/1994 for Pasminco Exploration

5 cm

Output from program IGRF - 1991 revision

IGRF for year = 1993.90

Newton Creek

Geodetic coordinates

Latitude = -41.0000 deg 54.000 min 42.1 sec (= -41.9117 deg)

Longitude = 145.0000 deg 33.000 min 11.0 sec (= 145.5531 deg)

Elevation = 0.500 km

	X(nT)	Y(nT)	Z(nT)	H(nT)	F(nT)	D(deg)	I(deg)
Field =	18375.8	4359.8	-59350.7	18885.9	62283.1	13.347	-72.348
SV/yr =	-8.6	14.1	7.8	-5.1	-9.0	0.048	-0.002

AMG (Easting,Northing) -> AGD (Lat,Long)

Newton Creek

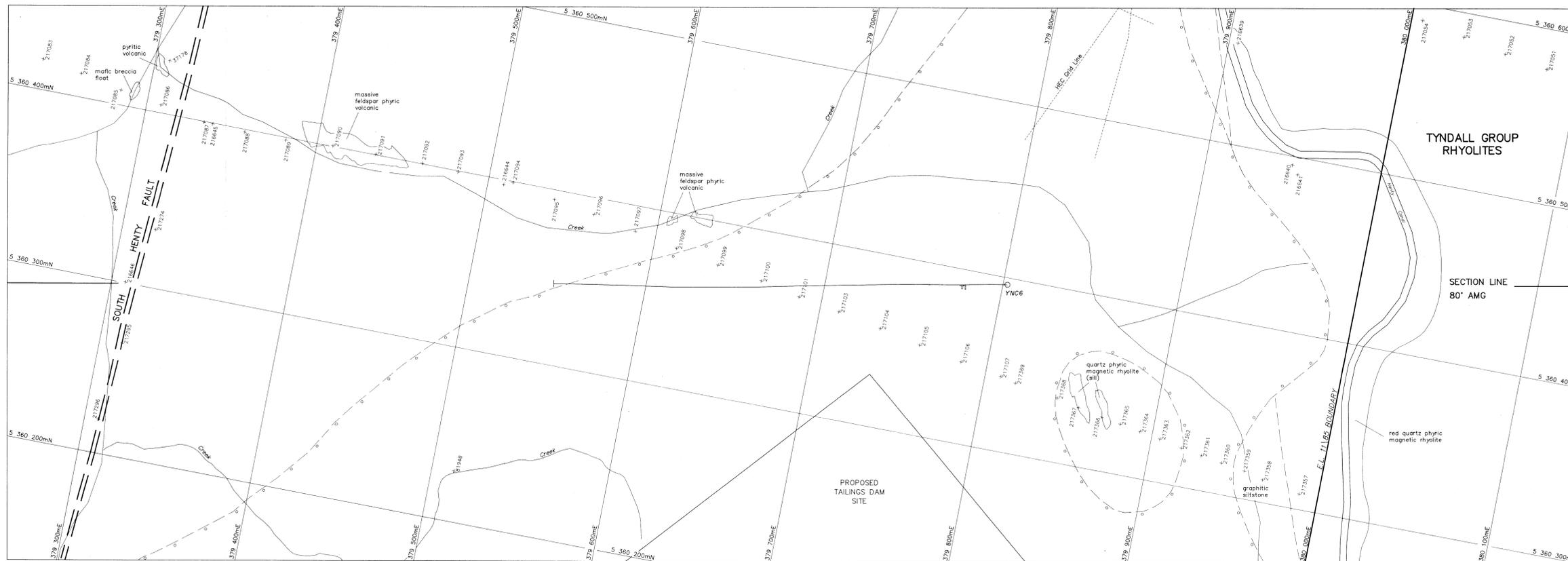
Easting = 380000.000 metres

Northing = 5359000.000 metres

Latitude = -41.deg 54.min 42.0915 sec (= -41.911692078 deg)

Longitude = 145.deg 33.min 10.9944 sec (= 145.553053996 deg)

FIGURES



LEGEND

DIAMOND DRILLHOLE

- Shear
- Strike Fault
- Geological contacts
- Cleavage
- Facing
- Bedding to LCA
- 325 AMG Bedding to LCA (10m and 5m)
- Flow banding
- Zones of disseminated and vesiculated sulphides
- Significant assay intervals
- Zn values

Geological Units:

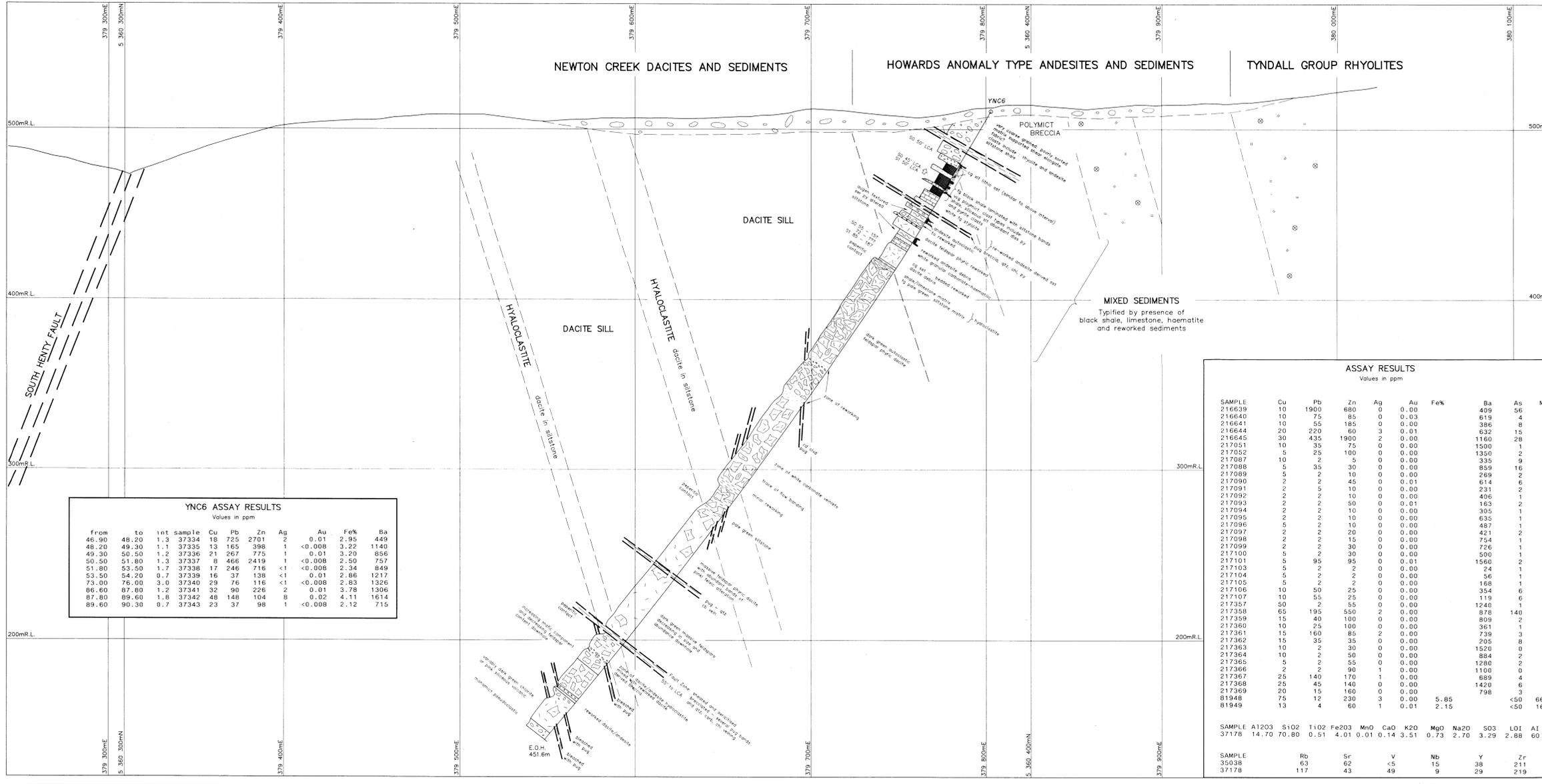
- Metasiltstone
- Sandstone
- Volcaniclastic Sandstone
- Conglomerate

Other Symbols:

- Chertic (Dacitic) Lenses/Sills
- Siliceous (Rhyolitic) Lenses/Sills
- Basic Dyke
- Hydrothermal Veinlets
- Lava/bedment breccias
- Breccias
- Feldspar
- Quartz Crystals
- Lithic Clasts
- Block Mudstone Clasts
- Vesicles/Amygdaloids
- Spherulites
- Sphincte/pseudo-fibrous
- Pumice Breccia
- Flow Banding
- Cloudy siliceous or Neoblast Calcareous alteration
- Sulphides
- Schistose
- Massive Sulphides
- Brecciation (epoke/Am-stu)

MAPPING SYMBOLS

- Fluvio-glacial gravels
- Outcrop geology
- Vertical cleavage
- Sample location



YNC6 ASSAY RESULTS
Values in ppm

from	to	int	sample	Cu	Pb	Zn	Ag	Au	Fe%	Ba
46.30	48.20	1.5	37334	18	725	2701	2	0.01	2.95	448
48.20	49.30	1.1	37335	13	165	398	1	<0.008	3.22	1140
49.30	50.50	1.2	37336	21	267	775	1	0.01	3.20	896
50.50	51.80	1.2	37337	8	466	2419	1	<0.008	2.50	757
51.80	53.50	1.7	37338	17	246	716	<1	<0.008	2.34	849
53.50	54.20	0.7	37339	16	37	138	<1	0.01	2.86	1217
73.00	76.00	3.0	37340	29	76	116	<1	<0.008	2.83	1326
86.60	87.80	1.2	37341	32	90	226	2	0.01	3.78	1306
87.80	89.60	1.8	37342	48	148	104	8	0.02	4.11	1614
89.60	90.30	0.7	37343	23	37	98	1	<0.008	2.12	715

ASSAY RESULTS
Values in ppm

SAMPLE	Cu	Pb	Zn	Ag	Au	Fe%	Ba	As	Mn
216639	10	1900	680	0	0.00		409	56	
216640	10	75	85	0	0.03		619	4	
216641	10	55	185	0	0.00		386	8	
216644	20	220	60	3	0.01		632	15	
216645	30	435	1900	2	0.00		1160	28	
217051	10	35	75	0	0.00		1500	1	
217052	5	25	100	0	0.00		1350	2	
217087	10	2	5	0	0.00		335	9	
217088	10	2	10	0	0.00		859	16	
217090	2	2	45	0	0.01		289	2	
217091	10	10	10	0	0.00		614	6	
217092	2	2	10	0	0.00		231	2	
217093	2	2	50	0	0.01		406	1	
217094	10	10	10	0	0.00		163	2	
217095	2	2	10	0	0.00		305	1	
217096	5	2	10	0	0.00		635	1	
217097	2	2	20	0	0.00		487	1	
217098	2	2	30	0	0.00		421	2	
217099	2	2	20	0	0.00		754	1	
217100	5	5	35	0	0.00		726	1	
217101	5	5	85	0	0.01		500	1	
217102	5	2	2	0	0.00		1560	2	
217103	5	2	2	0	0.00		24	1	
217104	5	2	2	0	0.00		56	1	
217105	2	2	2	0	0.00		168	1	
217106	10	50	25	0	0.00		354	6	
217107	10	55	25	0	0.00		119	6	
217357	50	55	50	0	0.00		1240	1	
217358	65	195	550	2	0.00		878	140	
217359	15	40	100	0	0.00		809	2	
217360	10	25	100	0	0.00		361	1	
217361	15	160	85	0	0.00		739	3	
217362	15	35	35	0	0.00		205	8	
217363	10	2	30	0	0.00		1520	0	
217364	10	2	50	0	0.00		884	2	
217365	5	2	55	0	0.00		1280	2	
217366	2	2	90	1	0.00		1100	0	
217367	2	140	170	1	0.00		689	4	
217368	25	45	140	0	0.00		1420	6	
217369	20	15	160	0	0.00		798	3	
81948	75	12	230	3	0.00	5.85	<50	660	
81949	13	4	60	1	0.01	2.15	<50	165	

94-3590

897445

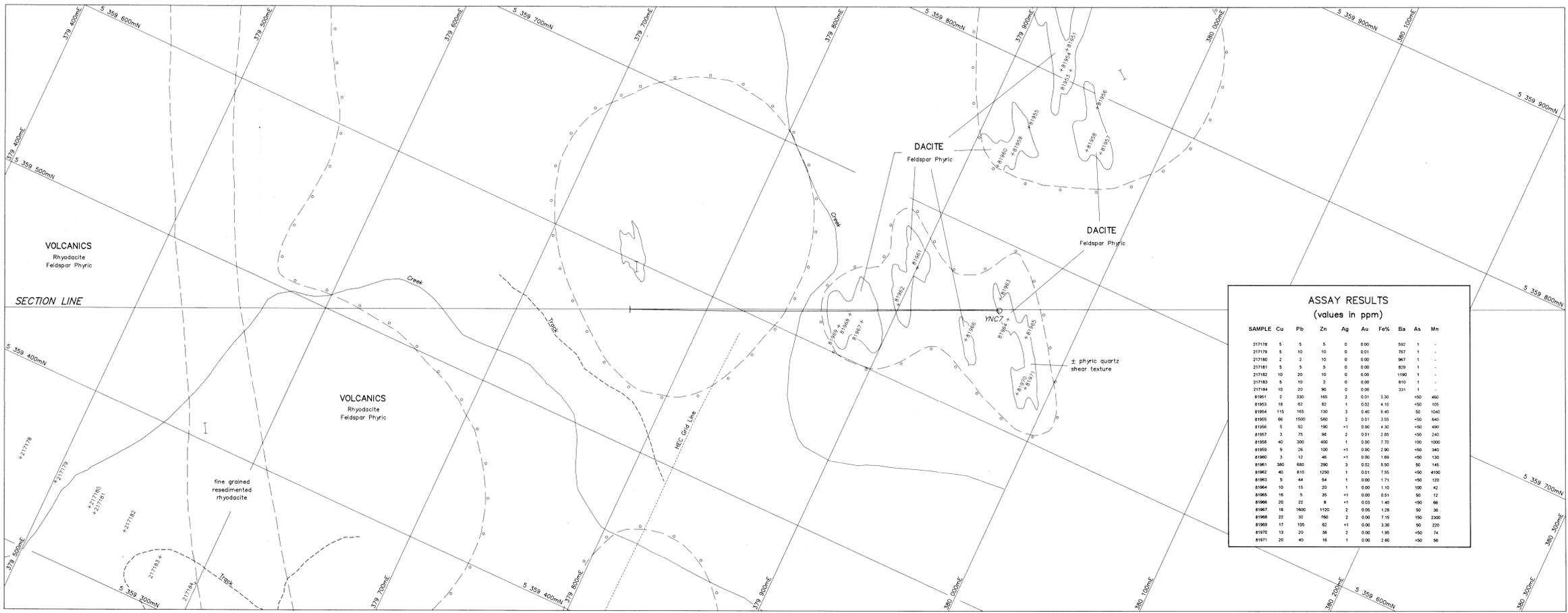
8cm

PASMINCO EXPLORATION
A Division of Pasminco Australia Limited

COMPILED: P.M.G.
DATE: Mar. 1994
DRAWN: G.M.B.
REFERENCE:
REVISIONS:
DRAWING No. YNC6_A0
SCALE 1:1000

E.L. 11/85 - YOLANDE
NEWTON CREEK
DRILL SECTION
YNC6
80' AMG

FIG. No. 5



LEGEND

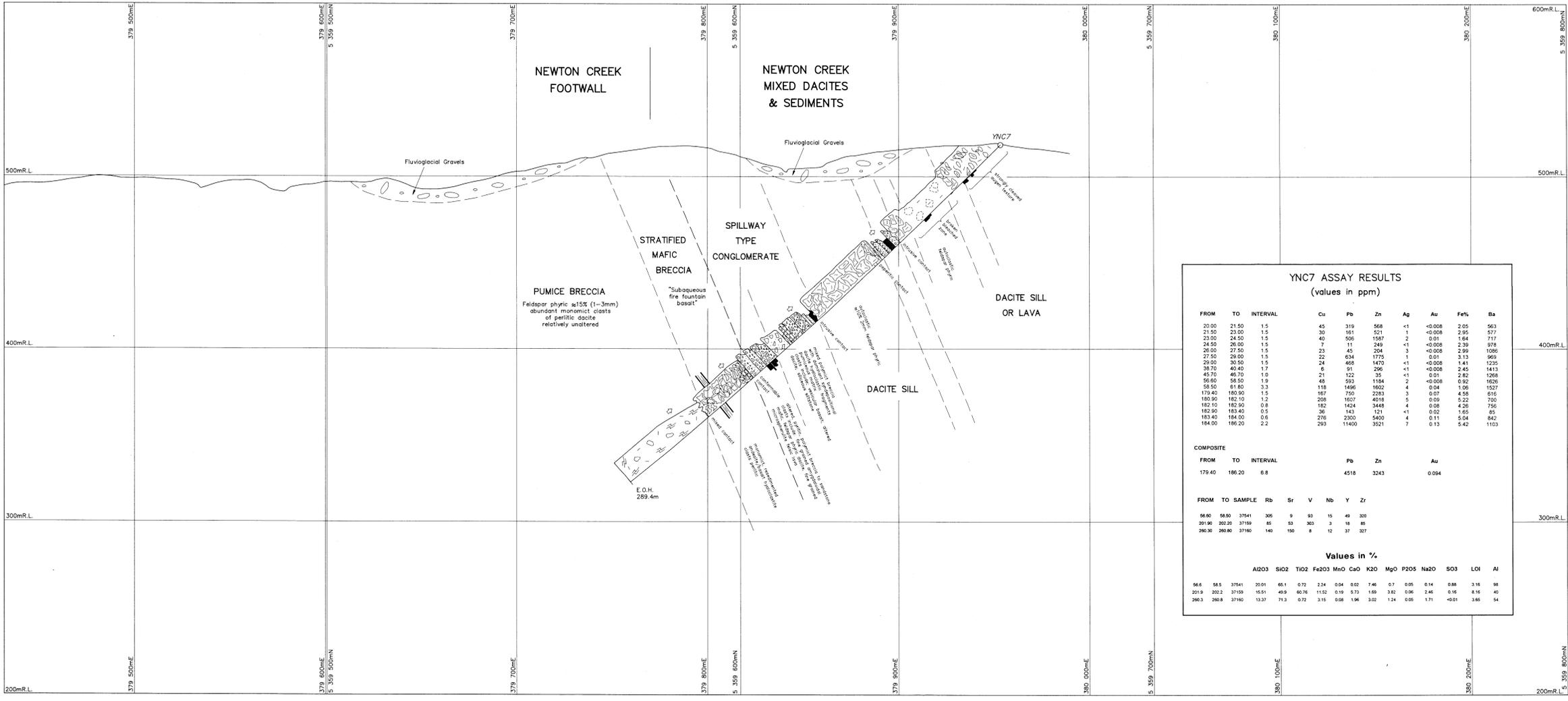
DIAMOND DRILLHOLE

MAPPING SYMBOLS

- Fluvioglacial gravels
- Outcrop geology
- Vertical cleavage
- Sample location

Geological Symbols:

- Chertic (Dacitic) Lenses/Sills
- Siliceous (Rhyolitic) Lenses/Sills
- Basic Dyke
- Hydroclastic, Papirite
- Lava/Sediment Breccia
- Breccia
- Feldspar
- Quartz Crystals
- Litic Clasts
- Black Mudstone Clasts
- Veicles/Amphiboles
- Spherulites
- Stylolite/"pseudo" Horns*
- Pumice Breccia
- Flow Banding
- Cloudy silica or Nodular Carbonate alteration
- Skaevs
- Sulphides
- Schistose
- Massive Sulphides
- Braciation (Crackles/n-hu)



897446

5 cm

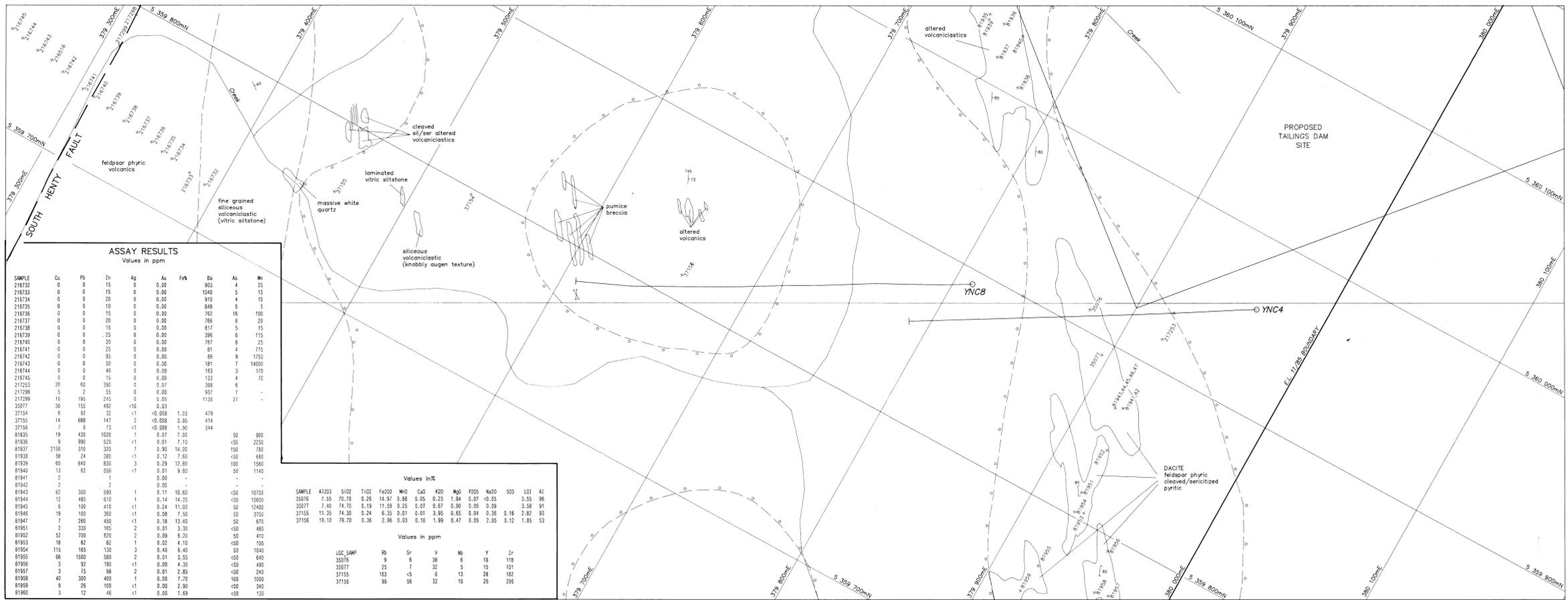
94-3590

PASMINCO EXPLORATION
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COMPILED: P.M.Q.
DATE: Mar., 1994
DRAWN: G.M.B.
REFERENCE:
REVISIONS:
DRAWING No. YNC7.A0
SCALE: 1:1000

E.L. 11/85 - YOLANDE
NEWTON CREEK
DRILL SECTION
YNC7
65' AMG

FIG. No. 6



LEGEND

DIAMOND DRILLHOLE

- Shear
- Bedding to LCA
- 300 AMG Bedding to LCA strike and dip (oriented)
- Flow banding
- Zones of disseminated and veinlet inclusions
- Significant assay intervals
- Zn values

Rock Types

- Siltstone
- Sandstone
- Volcaniclastic Sandstone
- Conglomerate

Structural Features

- Chertic (Dolitic) Lenses/Sills
- Siliceous (Rhyolitic) Lenses/Sills
- Basic Dike
- Hyaloclastite, Pseudite
- Breccia
- Feldspar
- Quartz Crystals
- Lithic Clasts
- Block Matrix Clasts
- Venicles/Amphiboles

Other Features

- Spherulites
- Stalactite/pseudotaxite
- Pumice Breccia
- Flow Banding
- Flow veins or vesicle Carbonate alteration
- Skarns
- Sulphides
- Schistose
- Massive Sulphides
- Brecciation (cracks/fractures)

MAPPING SYMBOLS

- Fluvio-glacial groves
- Outcrop geology
- Vertical cleavage
- Sample location

ASSAY RESULTS

Values in ppm

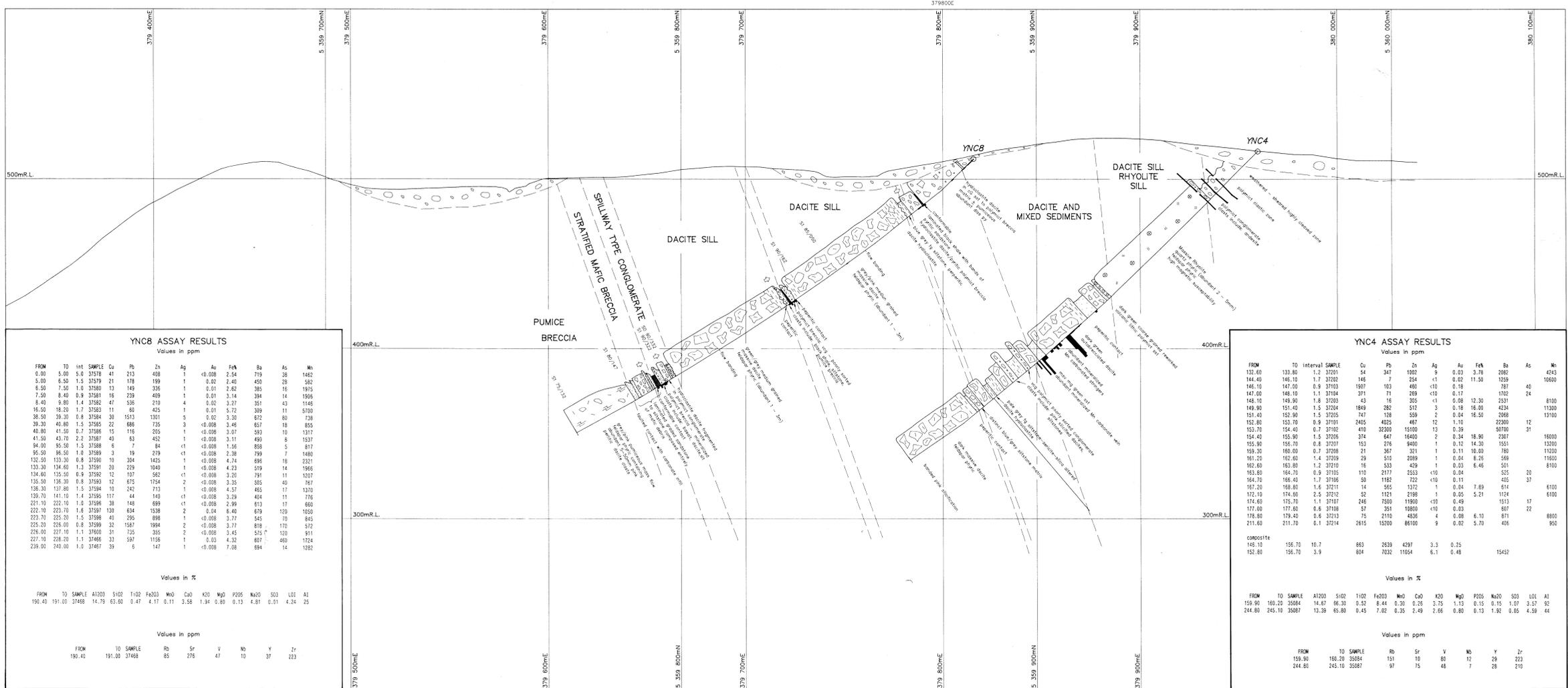
SAMPLE	Cu	Pb	Zn	Ag	Au	FeK	Ba	As	Mn
218732	0	0	15	0	0.00		803	4	25
218733	0	0	15	0	0.00		1040	5	15
218734	0	0	20	0	0.00		910	4	10
218735	0	0	10	0	0.00		848	6	5
218736	0	0	15	0	0.00		782	16	100
218737	0	0	20	0	0.00		786	6	20
218738	0	0	15	0	0.00		817	5	15
218739	0	0	25	0	0.00		396	6	115
218740	0	0	20	0	0.00		787	6	25
218741	0	0	25	0	0.00		81	4	175
218742	0	0	95	0	0.00		86	9	1750
218743	0	0	50	0	0.00		181	7	14000
218744	0	0	40	0	0.00		163	3	110
218745	0	0	15	0	0.00		133	4	70
217253	20	60	390	0	0.07		388	6	
217298	5	2	55	0	0.00		932	7	
217299	10	195	245	0	0.00		1130	27	
35077	30	155	492	<10	0.03				
37154	6	92	32	<1	<0.008	1.03	479		
37155	14	888	147	2	<0.008	3.95	414		
37156	7	8	73	<1	<0.008	1.90	544		
81935	19	430	1008	1	0.07	7.00		50	900
81936	9	990	520	<1	0.01	7.10		<50	2250
81937	2150	310	320	7	0.30	14.00		150	760
81938	58	24	280	<1	0.12	7.00		<50	650
81939	60	640	830	3	0.29	12.80		100	1560
81940	13	62	550	<1	0.01	9.80		50	1140
81941	2				0.00				
81942	2				0.00				
81943	62	300	590	1	0.11	19.60		<50	10700
81944	12	480	140	1	0.14	14.20		<50	1560
81945	6	100	410	<1	0.24	11.00		50	12400
81946	19	100	360	<1	0.08	7.30		50	3750
81947	7	260	140	<1	0.18	13.40		50	4970
81951	2	330	165	2	0.01	3.30		<50	460
81952	52	700	620	2	0.09	6.20		50	410
81953	18	62	140	0	0.02	4.10		50	1640
81954	115	165	130	3	0.40	6.40		50	1640
81955	66	1000	580	2	0.01	3.55		<50	640
81956	5	90	190	<1	0.00	4.30		<50	480
81957	3	75	98	2	0.01	2.85		<50	240
81958	40	300	400	1	0.00	7.70		100	1000
81959	9	28	100	<1	0.00	2.80		100	340
81960	3	12	46	<1	0.00	1.69		<50	130

Values in %

SAMPLE	Al2O3	SiO2	TiO2	Fe2O3	MnO	CaO	K2O	MgO	PO5	Na2O	SO3	LOI	A1
35077	7.40	74.70	0.26	14.97	0.88	0.06	0.23	1.84	0.07	0.26	3.55	96	
37155	11.35	74.30	0.24	6.35	0.01	0.01	3.95	0.65	0.04	0.36	0.16	2.82	93
37156	10.10	79.70	0.36	2.96	0.03	0.10	1.99	0.47	0.06	2.95	0.12	1.85	53

Values in ppm

LOC	SAMP	Rb	Sr	V	Nb	Y	Zr
35077		9	6	38	6	18	118
35077		25	7	32	5	15	101
37155		163	45	6	13	88	182
37156		99	56	32	10	26	206



YNC8 ASSAY RESULTS

Values in ppm

FROM	TO	SAMPLE	Cu	Pb	Zn	Ag	Au	FeK	Ba	As	Mn
0.00	5.00	5.0 37578	41	213	408	1	<0.008	2.84	219	38	1482
5.00	6.50	1.5 37579	21	178	199	1	0.02	2.40	450	28	582
6.50	7.50	1.0 37580	10	149	336	1	0.01	2.82	385	16	1975
7.50	8.40	0.9 37581	16	238	409	1	0.01	3.14	384	14	1996
8.40	9.80	1.4 37582	47	538	210	4	0.02	3.27	351	43	1148
16.50	18.20	1.7 37583	11	60	425	1	0.01	5.72	309	11	3700
38.50	39.30	0.8 37584	30	1513	1031	5	0.02	3.28	80	738	80
39.30	40.80	1.5 37585	22	688	735	3	<0.008	3.48	657	18	655
40.80	41.50	0.7 37586	15	116	295	1	<0.008	3.07	593	10	1317
41.50	43.70	2.0 37587	40	63	452	1	<0.008	3.11	469	6	1537
84.00	85.50	1.5 37588	6	7	84	<1	<0.008	1.56	858	5	817
95.50	96.50	1.0 37589	3	19	279	<1	<0.008	2.38	799	7	1480
102.50	103.30	0.8 37590	10	304	1425	1	<0.008	4.74	686	18	2321
103.30	104.40	1.3 37591	20	229	1040	1	<0.008	4.23	519	14	1966
104.40	105.50	0.9 37592	12	107	582	<1	<0.008	3.20	791	11	1207
105.50	106.30	0.8 37593	12	615	1754	2	<0.008	3.26	485	40	787
106.30	107.80	1.5 37594	10	242	713	1	<0.008	4.57	465	17	1370
107.80	109.10	1.4 37595	117	44	140	<1	<0.008	3.29	404	11	776
121.10	122.10	1.0 37596	36	148	689	<1	<0.008	2.99	613	17	680
122.10	123.70	1.6 37597	130	634	1538	2	0.04	6.40	679	120	1050
123.70	125.20	1.5 37598	40	295	898	1	<0.008	3.77	545	70	845
125.20	126.60	0.8 37599	32	1567	1944	2	<0.008	3.71	818	170	572
126.60	127.10	1.1 37600	33	735	365	2	<0.008	3.45	575	120	911
127.10	128.20	1.1 37601	33	597	1158	1	0.03	4.32	607	480	1724
128.20	130.00	1.0 37602	39	6	147	1	<0.008	7.08	884	14	1282

Values in %

FROM	TO	SAMPLE	Al2O3	SiO2	TiO2	Fe2O3	MnO	CaO	K2O	MgO	PO5	Na2O	SO3	LOI	A1
190.40	191.00	37488	14.79	63.80	0.47	4.17	0.11	3.58	1.34	0.80	0.13	4.81	0.01	4.24	25

Values in ppm

FROM	TO	SAMPLE	Rb	Sr	V	Nb	Y	Zr
190.40	191.00	37488	85	276	47	10	37	223

YNC4 ASSAY RESULTS

Values in ppm

FROM	TO	Interval	SAMPLE	Cu	Pb	Zn	Ag	Au	FeK	Ba	As	Mn
133.80	133.80	1.2 37201	54	347	1002	9	0.03	3.78	2082			4243
144.40	146.10	1.7 37202	146	7	254	<1	0.02	11.50	1259			10600
146.10	147.00	0.9 37103	1697	103	480	<10	0.18	18.00	781	40		8100
147.00	148.10	1.1 37104	371	71	269	<10	0.17	1702	24			8100
148.10	149.90	1.8 37203	43	16	305	<1	0.08	12.30	2531			8100
149.90	151.40	1.5 37204	1849	282	572	3	0.18	18.00	4234			13200
151.40	152.90	1.5 37205	747	128	559	2	0.04	16.50	2068			13100
152.90	153.70	0.9 37101	2405	4025	487	12	1.10	22300	12			8100
153.70	154.40	0.7 37102	418	32300	15100	13	0.29	50700	31			16000
154.40	155.90	1.5 37206	374	647	16400	2	0.34	18.90	2387			16000
155.90	156.70	0.8 37207	153	276	9400	1	0.12	14.20	1551			13200
156.70	160.60	0.7 37208	21	367	321	1	0.11	18.00	780			11200
160.60	162.60	1.4 37209	29	510	2099	1	0.04	6.20	569			11600
162.60	163.80	1.2 37210	16	533	429	1	0.03	6.46	501			8100
163.80	164.70	0.9 37105	110	2117	2533	<10	0.04	505	20			8100
164.70	166.40	1.7 37106	50	1182	122	<10	0.11	455	37			8100
166.40	168.80	1.6 37211	14	565	1272	1	0.04	7.69	614			6100
172.10	174.60	2.5 37212	28	1121	2198	1	0.05	5.21	1124			6100
174.60	175.70	1.1 37107	246	7600	11900	<10	0.49	1513	17			6100
177.60	177.60	0.6 37108	57	351	10880	<10	0.03	607	22			8100
178.80	179.40	0.6 37213	75	2110	4836	4	0.08	6.10	871			8800
211.80	211.70	0.1 37214	2616	15209	88100	9	0.02	5.70	426			900

composite

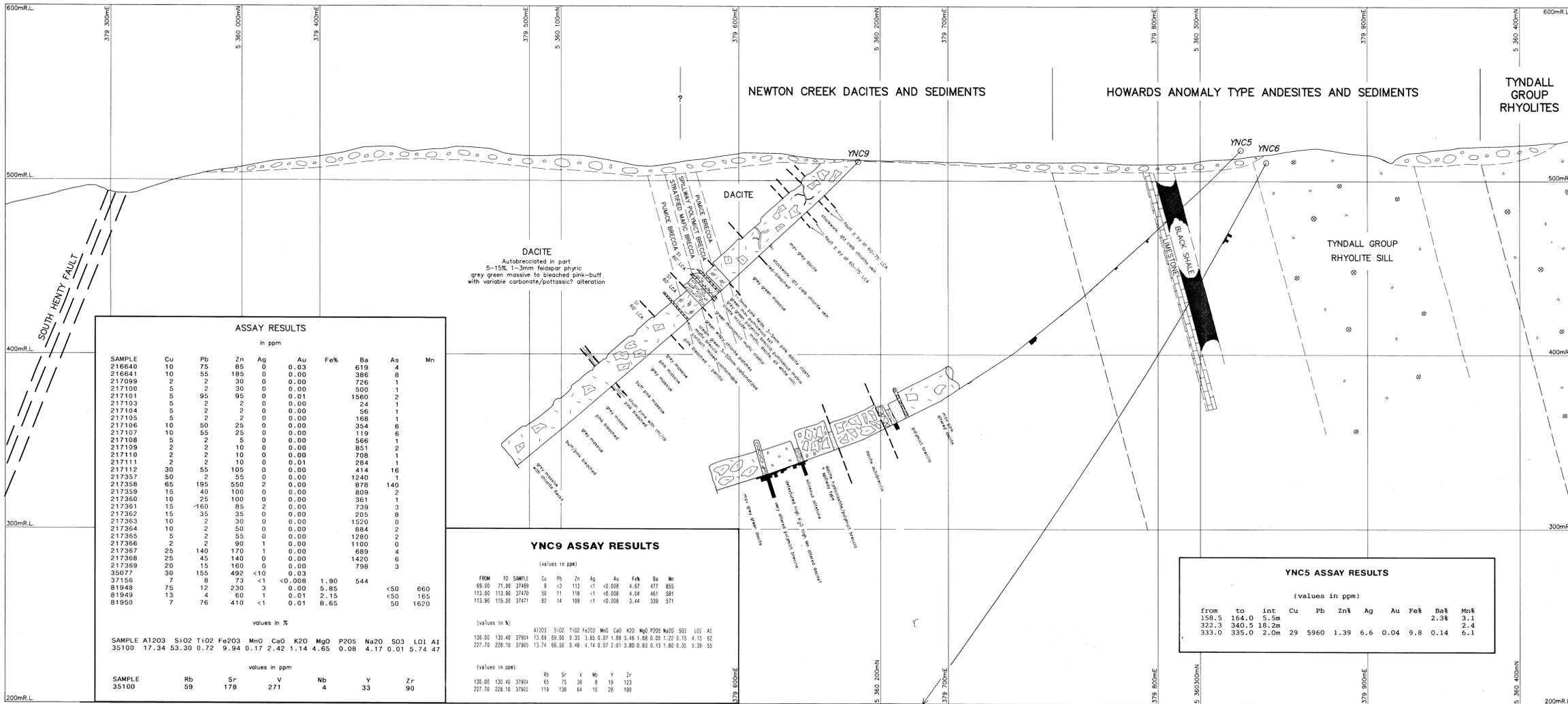
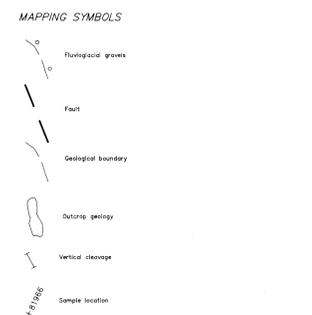
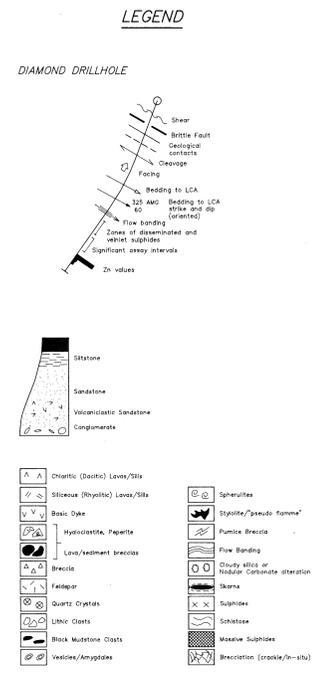
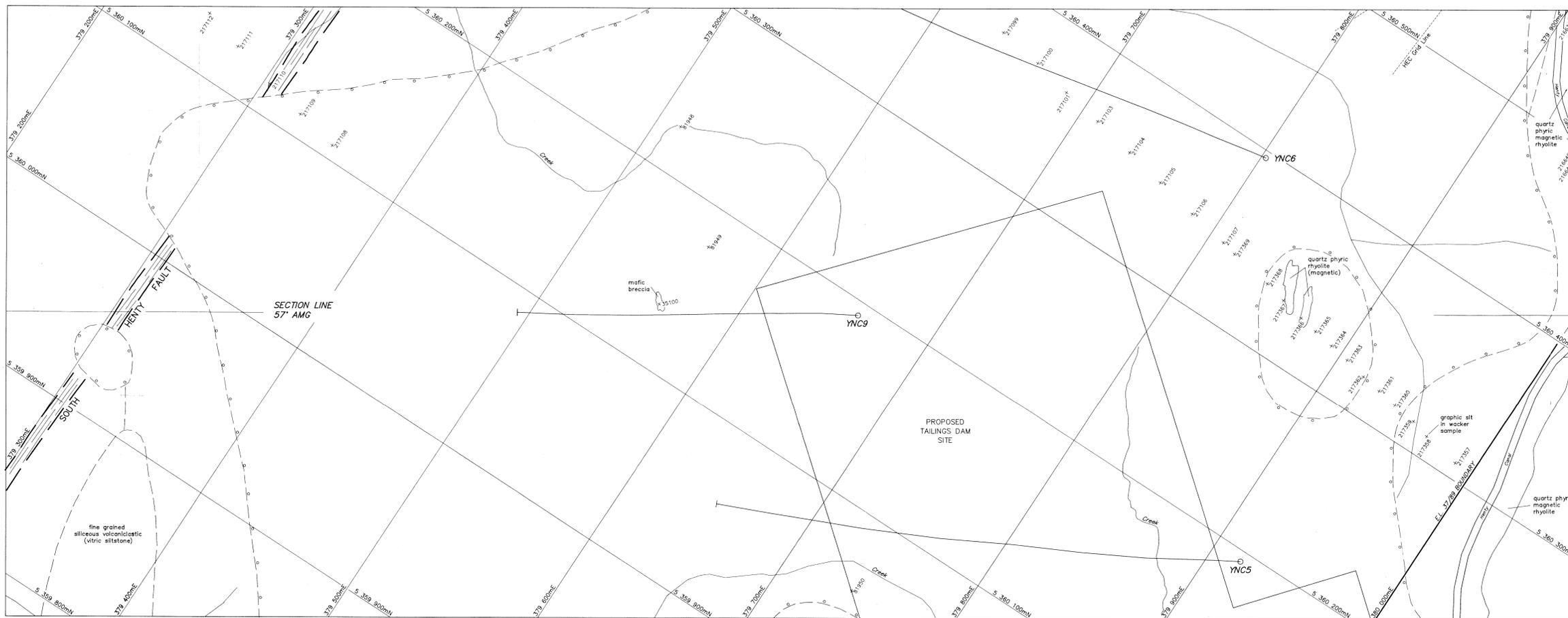
FROM	TO	SAMPLE	Cu	Pb	Zn	Ag	Au	FeK	Ba	As	Mn
145.10	156.70	10.7	863	2639	4297	3.3	0.25				
152.80	156.70	3.9	804	7032	11654	6.1	0.48				

Values in %

FROM	TO	SAMPLE	Al2O3	SiO2	TiO2	Fe2O3	MnO	CaO	K2O	MgO	PO5	Na2O	SO3	LOI	A1
159.90	160.20	35684	14.67	66.30	0.52	8.44	0.30	0.26	3.75	1.13	0.15	0.15	1.07	3.57	92
244.80	245.10	35687	13.29	65.80	0.45	7.02	0.35	2.49	2.66	0.80	0.13	1.92	0.05	4.59	44

Values in ppm

FROM	TO	SAMPLE	Rb	Sr	V	Nb	Y
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ASSAY RESULTS

in ppm

SAMPLE	Cu	Pb	Zn	Ag	Au	Fe%	Ba	As	Mn
216640	10	75	85	0	0.03	619	4	8	
216641	10	55	185	0	0.00	386	8	1	
217099	2	2	30	0	0.00	726	1	1	
217100	5	2	30	0	0.00	500	1	1	
217101	5	95	95	0	0.01	1560	2	1	
217103	5	2	2	0	0.00	24	1	1	
217104	2	2	2	0	0.00	56	1	1	
217105	5	2	2	0	0.00	168	1	1	
217106	10	50	25	0	0.00	354	6	1	
217107	10	55	25	0	0.00	708	1	1	
217108	5	2	5	0	0.00	566	1	1	
217109	2	2	10	0	0.00	851	2	1	
217110	2	2	10	0	0.00	708	1	1	
217111	2	2	10	0	0.01	294	1	1	
217112	30	55	105	0	0.00	414	16	1	
217357	50	2	55	0	0.00	1240	1	1	
217358	85	195	550	2	0.00	878	140	1	
217359	15	40	100	0	0.00	809	2	1	
217360	10	25	100	0	0.00	361	1	1	
217361	15	160	85	2	0.00	739	3	1	
217362	15	35	35	0	0.00	205	8	1	
217363	10	2	30	0	0.00	1520	0	1	
217364	10	2	60	0	0.00	884	2	1	
217365	5	2	55	0	0.00	1280	2	1	
217366	2	2	90	1	0.00	1100	0	1	
217367	25	140	170	1	0.00	659	4	1	
217368	25	45	140	0	0.00	1420	6	1	
217369	20	15	160	0	0.00	798	3	1	
35077	30	155	492	<10	0.03				
37156	7	8	73	<1	<0.008	1.90	544		
81948	75	12	230	3	0.00	5.85	<50	660	
81949	13	4	60	1	0.01	2.15	<50	165	
81950	7	76	410	<1	0.01	8.65	<50	1620	

YNC9 ASSAY RESULTS

(values in ppm)

FROM	TO	SAMPLE	Cu	Pb	Zn	Ag	Au	Fe%	Ba	Mn
130.00	130.40	37804	8	<3	113	<1	<0.008	4.67	477	855
113.00	113.80	37809	59	11	118	<1	<0.008	4.04	461	581
113.90	115.00	37811	82	14	108	<1	<0.008	3.44	339	571

YNC5 ASSAY RESULTS

(values in ppm)

from	to	int	Cu	Pb	Zn%	Ag	Au	Fe%	Ba%	Mn%
158.5	164.0	5.5m	322.3	340.0	16.2m				2.3%	3.1
333.0	335.0	2.0m	29	5960	1.39	6.6	0.04	9.8	0.14	6.1

values in %

SAMPLE	A1203	S102	T102	Fe203	MnO	CaO	K2O	MgO	P2O5	Na2O	SO3	LOI	A1
35100	17.34	53.30	0.72	9.94	0.17	2.42	1.14	4.65	0.08	4.17	0.01	5.74	47

values in ppm

SAMPLE	Rb	Sr	V	Nb	Y	Zr
35100	59	178	271	4	33	90

(values in %)

SAMPLE	Rb	Sr	V	Nb	Y	Zr		
130.00	130.40	37804	65	75	36	8	19	123
227.70	228.10	37805	119	136	64	10	28	160

897448

5 cm

94-3590

PASMINCO EXPLORATION
A Division of Pasminco Australia Limited

COMPILED : P.M.G.
DATE : April 1994
DRAWN : G.M.B.
REFERENCE :
REVISIONS :
E.L. 11/85 - YOLANDE
NEWTON CREEK
DRILL SECTION
YNC9
57' AMG

DRAWING No. YNC9_A0 SCALE 1:1000 FIG. No. 8



ASSAY RESULTS

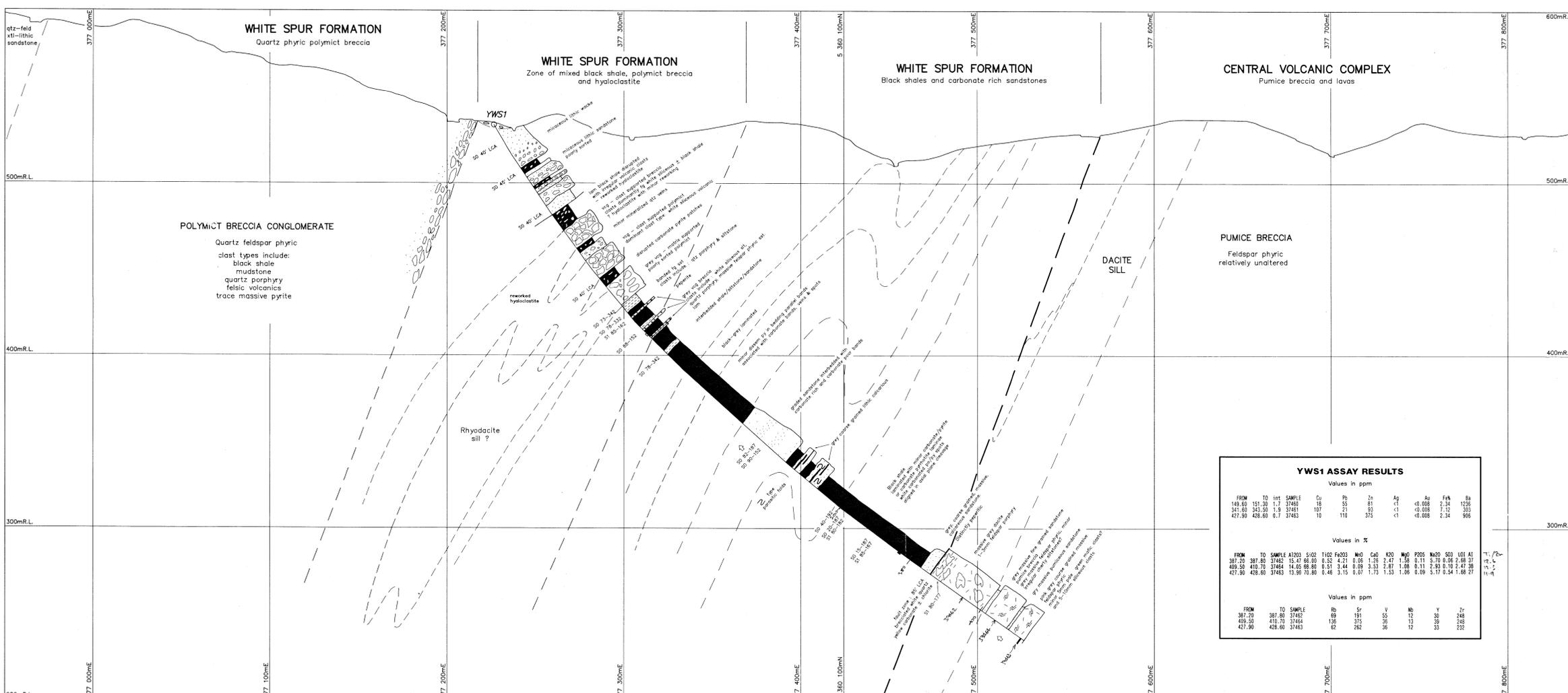
SAMPLE	Al2O3	SiO2	TiO2	Fe2O3	MnO	CaO	K2O	MgO	PO5	Na2O	SO3	LOI	AI
35070	12.40	72.29	0.35	3.84	0.01	0.01	2.71	1.05	0.06	1.07		4.49	78
35071	14.74	70.55	0.51	5.25	0.08	0.89	1.71	1.03	0.10	0.99		1.76	89
37110	15.28	69.30	0.58	4.02	0.06	1.33	2.93	1.22	0.11	1.76		0.83	2.96
37111	15.29	69.80	0.57	3.73	0.07	0.89	0.98	1.05	0.11	1.54		0.83	1.54
37112	14.38	69.30	0.55	3.43	0.05	0.35	5.11	1.05	0.09	2.24		0.37	2.33
37113	21.65	69.80	0.75	2.58	0.09	2.36	0.80	4.13	0.16	0.59		0.86	4.86
37114	13.68	73.30	0.34	2.25	0.04	0.99	3.81	1.14	0.07	2.17		0.86	1.29
37115	16.19	65.88	0.51	3.76	0.07	2.17	2.66	2.49	0.10	1.88		0.89	4.47
37116	13.17	73.10	0.41	3.93	0.04	0.86	4.06	0.65	0.09	3.32		0.02	1.86

SAMPLE	RB	Sr	Nb	Y	Zr	Ti/B
35071	38	187	26	15	33	263
37110	167	427	33	12	39	214
37111	62	298	31	10	40	283
37112	178	187	71	4	33	238
37113	286	366	48	13	61	339
37114	177	229	9	10	40	212
37115	152	412	43	13	38	247
37116	121	134	41	6	28	207

LEGEND

DIAMOND DRILLHOLE

Mapping Symbols



YWS1 ASSAY RESULTS

Values in ppm

FROM	TO	int	SAMPLE	Cu	Pb	Zn	Ag	Au	Fe%	Ba
498.60	451.80	1.7	37460	86	45	81	<1	<0.008	2.34	1236
341.60	343.30	1.9	37461	187	21	93	<1	<0.008	1.12	593
427.99	428.60	0.7	37463	10	110	375	<1	<0.008	2.34	906

Values in %

FROM	TO	SAMPLE	Al2O3	SiO2	TiO2	Fe2O3	MnO	CaO	K2O	MgO	PO5	Na2O	SO3	LOI	AI
387.20	387.80	37462	15.47	66.60	0.52	4.21	0.06	1.26	2.47	1.58	0.11	5.70	0.06	2.89	37
409.59	410.75	37464	14.05	66.89	0.51	3.44	0.06	0.53	3.81	1.08	0.11	2.83	0.10	2.47	38
427.90	428.60	37463	13.99	70.80	0.46	3.15	0.07	1.73	1.53	1.08	0.09	5.17	0.34	1.88	27

Values in ppm

FROM	TO	SAMPLE	RB	Sr	Nb	Y	Zr
387.20	387.80	37462	69	191	53	12	36
409.59	410.75	37464	105	375	36	13	36
427.90	428.60	37463	82	262	36	12	33

MAPPING SYMBOLS

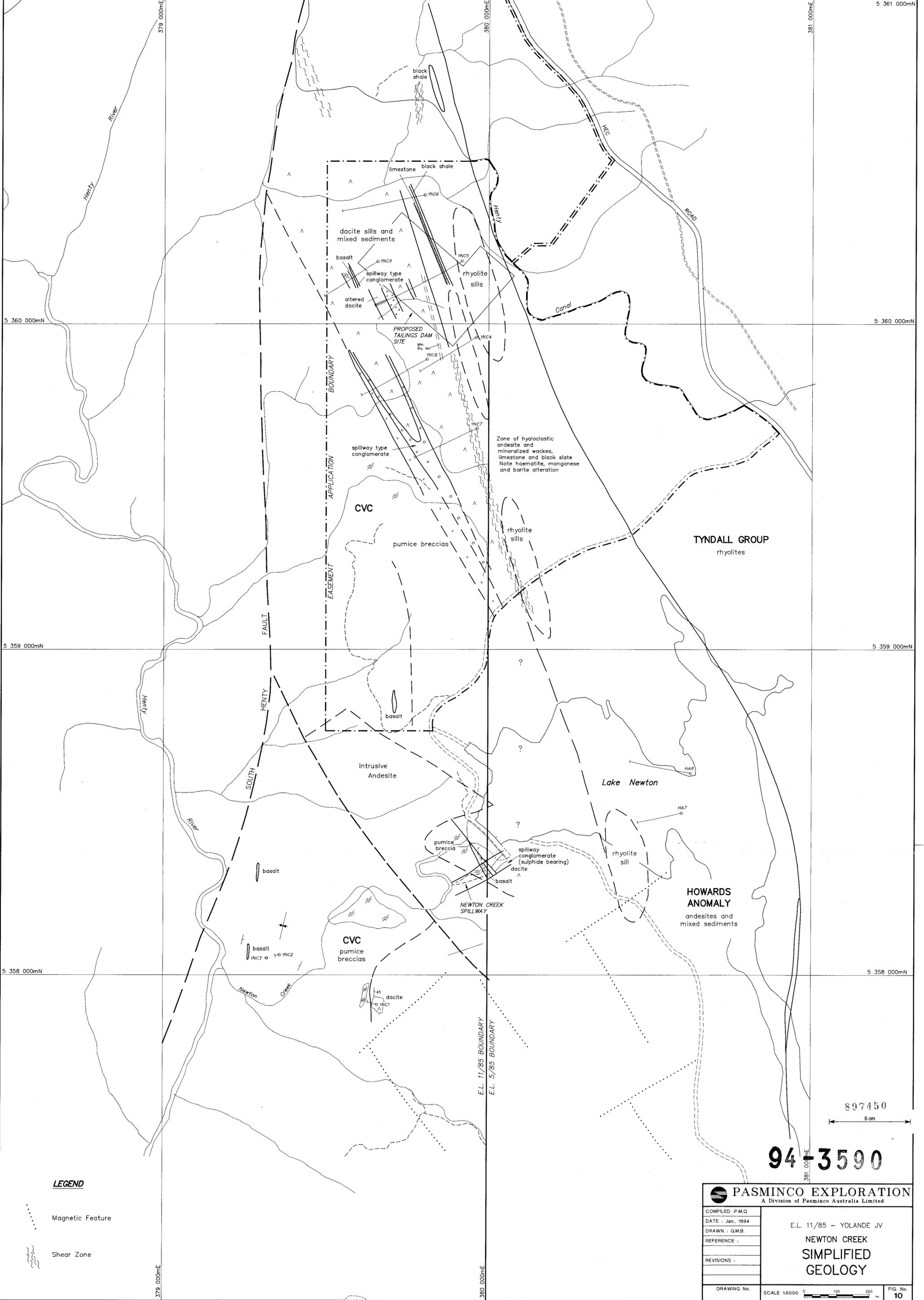
897449

5 cm

94-3590

PASMINCO EXPLORATION
A Division of Pasminco Australia Limited

COMPILED: P.M.G.
DATE: April 1984
DRAWN: G.M.B.
REFERENCE:
REVISIONS:
DRAWING No. YWS1_A0
SCALE 1:1000
E.L. 11/85 - YOLANDE
NEWTON CREEK
DRILL SECTION
YWS1
80° AMG
FIG. No. 9



LEGEND

-  Magnetic Feature
-  Shear Zone

897450
5 cm

94-3590

PASMINCO EXPLORATION A Division of Pasminco Australia Limited	
COMPILED P.M.Q.	E.L. 11/85 - YOLANDE JV
DATE: Jan. 1994	NEWTON CREEK
DRAWN: G.M.B.	SIMPLIFIED GEOLOGY
REFERENCE:	
REVISIONS:	
DRAWING No.	SCALE 1:6000
	100 200 m
	FIG. No. 10

LAKE
NEWTON

TOP OF FOOTWALL
PUMICE BRECCIAS AND
STRATIFIED MAFIC BRECCIA

BASE OF MIXED SEDIMENTS
AND DACITES
'TARGET HORIZON'

SPILLWAY CONGLOMERATE

dacite hyaloclastite
mixed with
polymict conglomerate

POLYMICT
WACKE
(Mineralized)

abundant red
sphalerite
(possible clasts)
abnt dissem. py

Abundant white
flow banded lava
clasts

Sulphide clasts

PUMICE BRECCIA

Sub-aqueous mass flow

STRATIFIED
MAFIC
BRECCIA

(Basaltic sub aqueous
fire fountain deposit)
dark green upwards
fining with globular
mafic clasts in
mafic hyaloclastite

MAGNETITE BEARING
HORNBLENDE
ANDESITE

STRATIFIED
MAFIC
BRECCIA

DACITE

Massive feldspar phyric
with peperitic margins

Sulphide clasts

also containing
abundant
feldspar phyric
lava clasts

Blocks of mafic breccia
and siltstone

FAULT
Juxtaposing
eastern zone - fold closure position
western zone - limb position
local feature, little stratigraphy is missing

Sharp intrusive
contact (vertical)

897451

5cm

94-3590

PASMINCO EXPLORATION
A Division of Pasminco Australia Limited

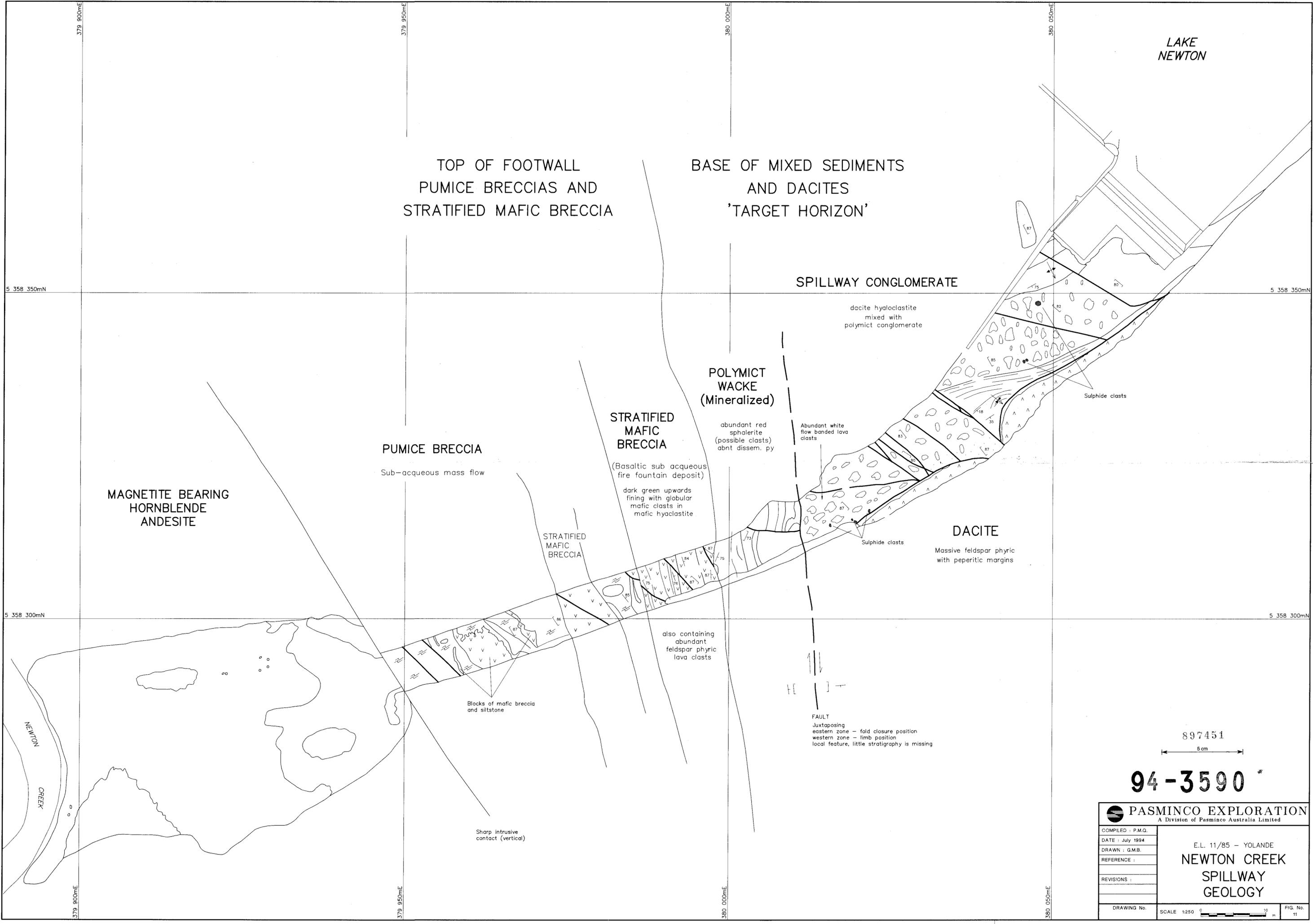
COMPILED : P.M.Q.
DATE : July 1994
DRAWN : G.M.B.
REFERENCE :
REVISIONS :

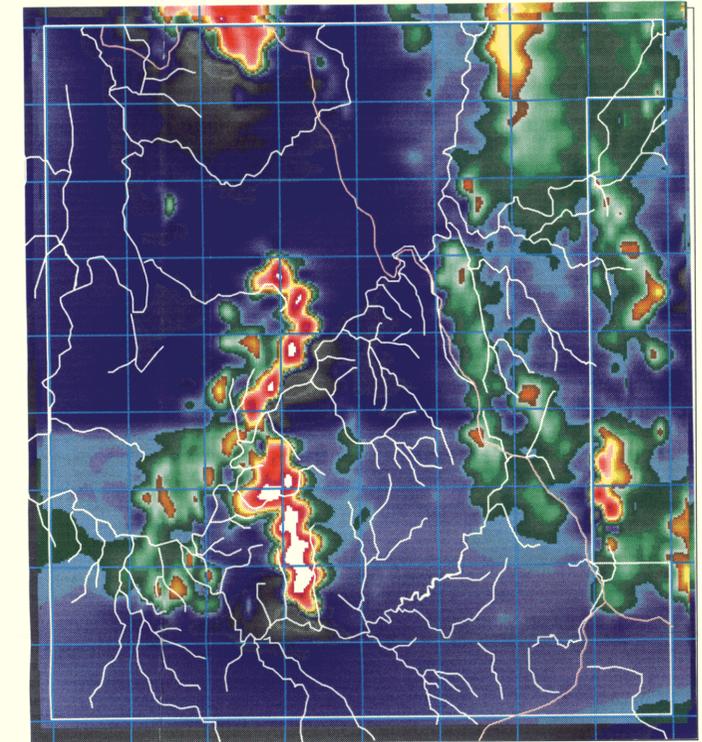
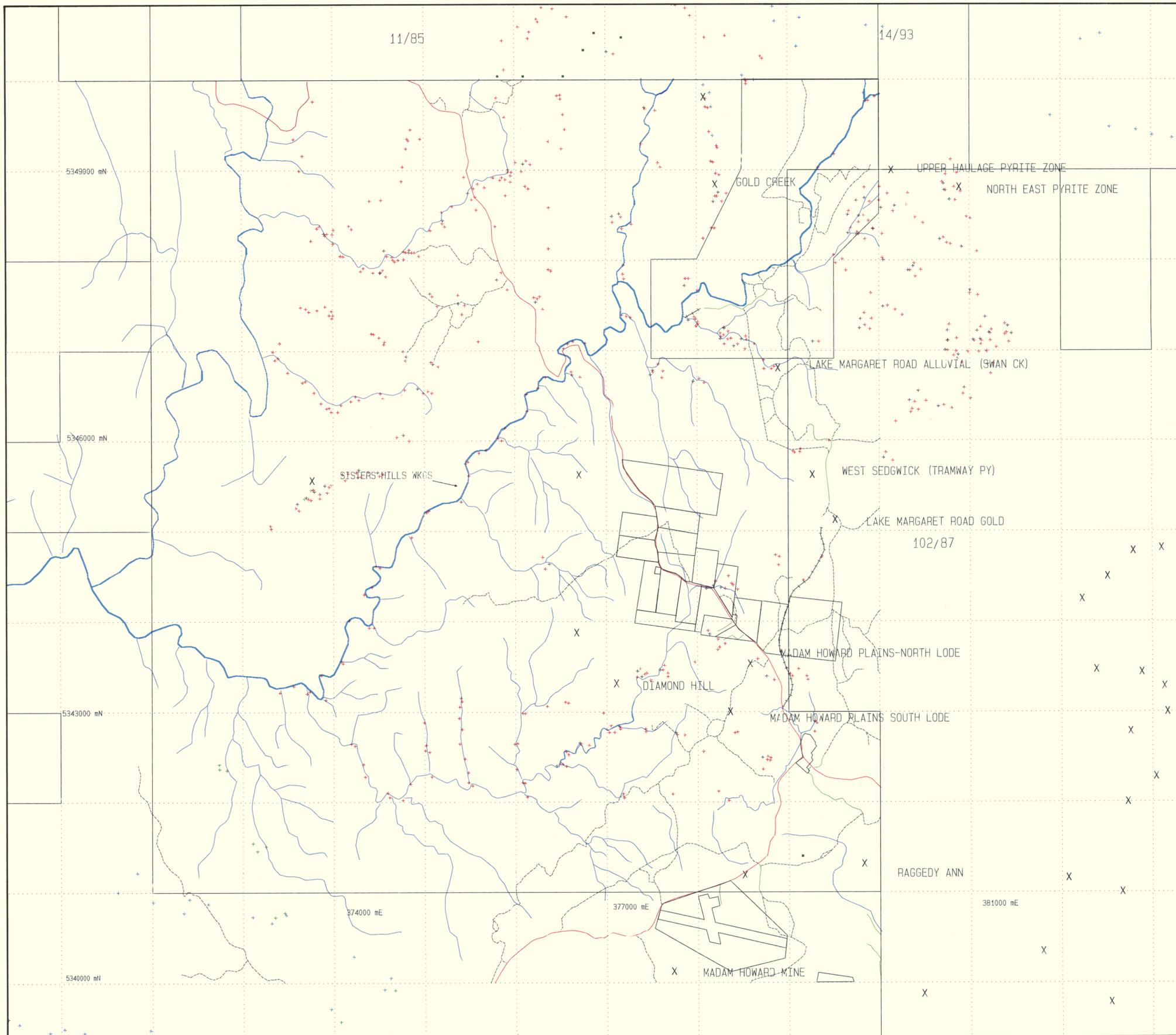
E.L. 11/85 - YOLANDE
**NEWTON CREEK
SPILLWAY
GEOLOGY**

DRAWING No.

SCALE 1:250

FIG. No.
11





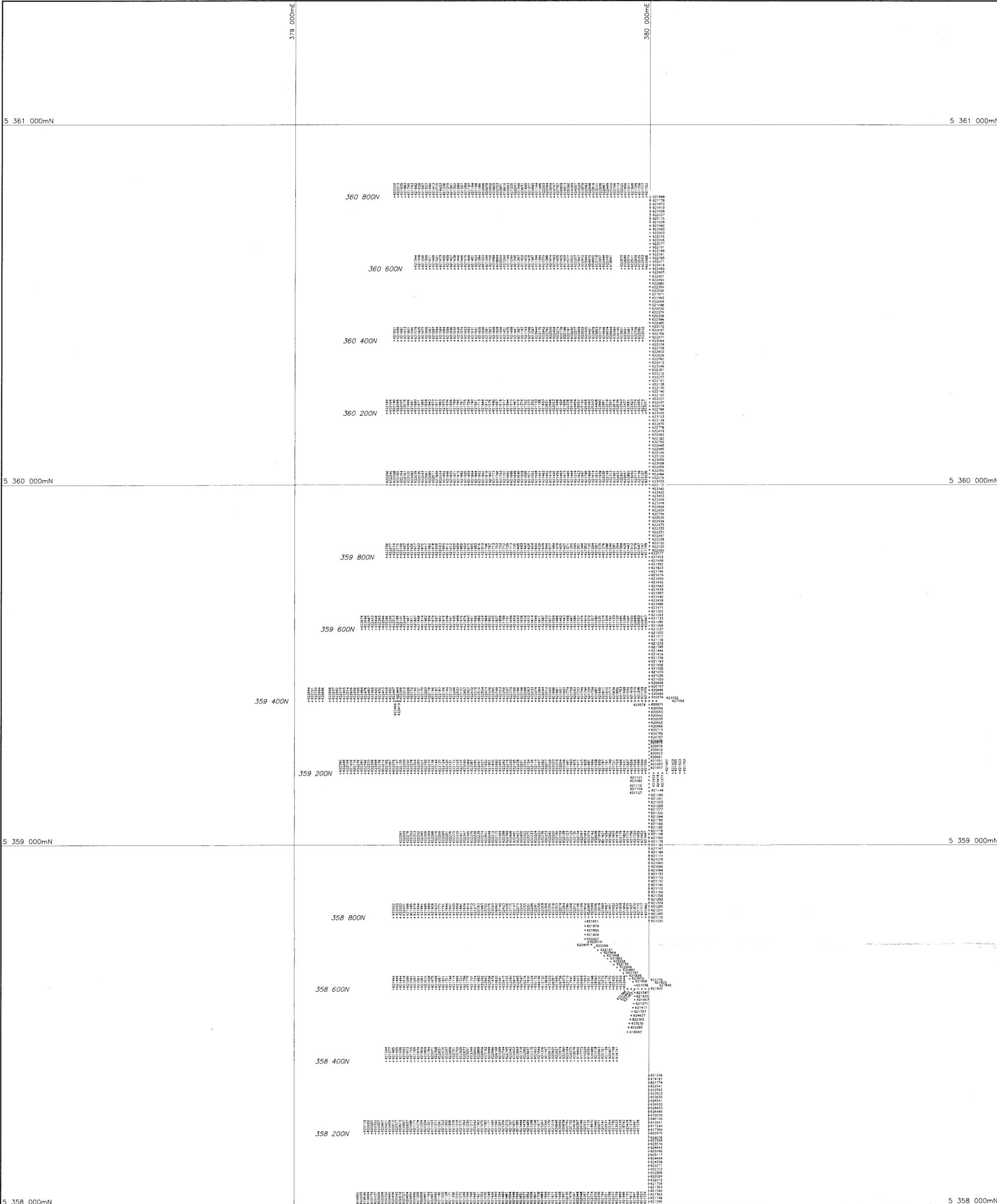
MAGNETICS COLOUR DRAPE
S/A 45 -70
1:50,000

KEY

- Mines Department Lithochemical and Trace Element Samples
- + Mt. Lyell 1974 Stream Sediment Samples
Cu, Pb, Zn, Co, Ni, Mn, Sn
- Mt. Lyell 1974 Stream Sediment Samples
Cu, Pb, Zn, Ag, Au, Fe, Mn
- + Pickands Mather Stream Sediment Samples
Cu, Pb, Zn, Ni,
- + Arimco/Cyprus 1985 Stream
Cu, Pb, As
- X Mineral Occurrence (MIRLOCH)

897452
5 cm
94-3590

PASMINCO EXPLORATION <small>A Division of Pasminco Australia Limited</small>	
COMPILED : P.M.Q.	E.L. 11/85 - YOLANDE YOLANDE RIVER BASE MAP WITH GEOCHEMISTRY AND MINERAL OCCURRENCES
DATE : July 1994	
DRAWN :	
REFERENCE :	
REVISIONS :	
DRAWING No.	SCALE 1:25,000 km
	FIG. No. 13



897453
5cm

94-3590

 A Division of Pasminco Australia Limited	
COMPILED : P.M.Q. DATE : July 1994 DRAWN : G.M.B. REFERENCE : REVISIONS :	E.L. 11/85 - YOLANDE NEWTON CREEK GROUND MAGNETICS LOCATIONS AND VALUES
DRAWING No.	SCALE 1:5000 0 100 200 m
FIG. No. 23	