



TABLE OF CONTENTS

1.0	SUMMARY	1
2.0	INTRODUCTION	2
3.0	EXPLORATION HISTORY	3
4.0	PROSPECTS	5
5.0	CONCLUSIONS	7
6.0	EXPENDITURE STATEMENT	8

**FIGURES**

<b>No.</b>	<b>Title</b>	<b>Scale</b>
1.	Elliott Bay Location- Distribution of Mount Read Volcanics in Western Tasmania	1:250 000
2.	Tenement boundary and geology (after 1:25000 MRT geology plan).	100,000

**APPENDICES**

1. E.L. 20/96 - Elliott Bay, Southwestern Tasmania - A review. By Grant MacDonald and Peter McNeil.
2. E.L. 20/96 - Elliott Bay - Site Evaluation Report, Fimiston Mining N.L. (from a field visit conducted in late-February 1998). By Barry Fehlberg.

## 1.0 SUMMARY

E.L. 20/96 - Elliott Bay lies at the southern end of Tasmania's Mt Read Volcanics (see Figure 1), covering approximately 140 square kilometers of the Cambrian calc-alkaline felsic to mafic sequence, 20 square kilometers of Cambrian granites and 20 square kilometers of other lithologies. The belt hosts several world class, very high-value, high-grade VHMS and other deposits with reserves such as:

Rosebery	26.4 Mt of 0.6% Cu, 4.3% Pb, 13.5% Zn, 137 g/t Ag & 2.7 g/t Au
Hellyer	15.5 Mt of 0.3% Cu, 6.45% Pb, 12.6% Zn, 140 g/t Ag & 2.2 g/t Au
Mt Lyell	123 Mt of 1.25% Cu & 0.44 g/t Au
Henty	>0.5 Mt of 26.9 g/t Au.

Exploration and Management Consultants Pty Ltd (EMC) holds title to this prospective, 180 square kilometer tenement and are presently finalising a joint venture with Fimiston Mining N.L., who will sole fund exploration to completion of bankable feasibility (to earn a 90% equity).

Exploration to date has defined more than 30 base metal and / or gold prospects, with excellent potential to host world class deposits similar to or better than those noted above. Highlights of exploration to date on the E.L. 20/96 area include:

- \* High-grade polymetallic massive sulphide lenses in outcrop and drill core (to 5 meters wide), with grades such as 0.20% Cu, 13.9% Pb, 21.9% Zn, 680 g/t Ag and 0.8 g/t Au (approximately 1.85 Oz/ton gold equivalent at 8/97).
- \* Definition of three large coherent areas (>30 km sq.) of highly anomalous gold in stream sediments and pan concentrates, with only limited soil geochemical follow-up and four drill holes (the best result was 3m of 17.5 g/t Au, however 3 of the holes contained visible gold) in one area, 10 holes in the second and none in the third.
- \* Only regional style exploration completed on large areas of the highly prospective volcanics and virtually none in the granites and granite / volcanic contact zones.

Initial exploration on this tenement had a regional focus that rapidly concentrated on a few prospects. Later exploration placed a great deal of emphasis upon EM and geophysical methods, even though the known massive sulphide mineralisation had been shown to be non-conductive. Fimiston are planning to conduct an aggressive exploration program with an initial emphasis on massive sulphides, commencing with the drilling of 2 to 3 diamond core holes at the Silver Hills (Wart Hill / V19) Prospect scheduled for late March, 1998.

The tenement is prospective for gold rich VHMS, Cu + Au (Pb, Zn), stratabound gold, granitoid / shear hosted gold, Beshi base metal, epigenetic gold - base metal deposits and other styles of mineralisation.

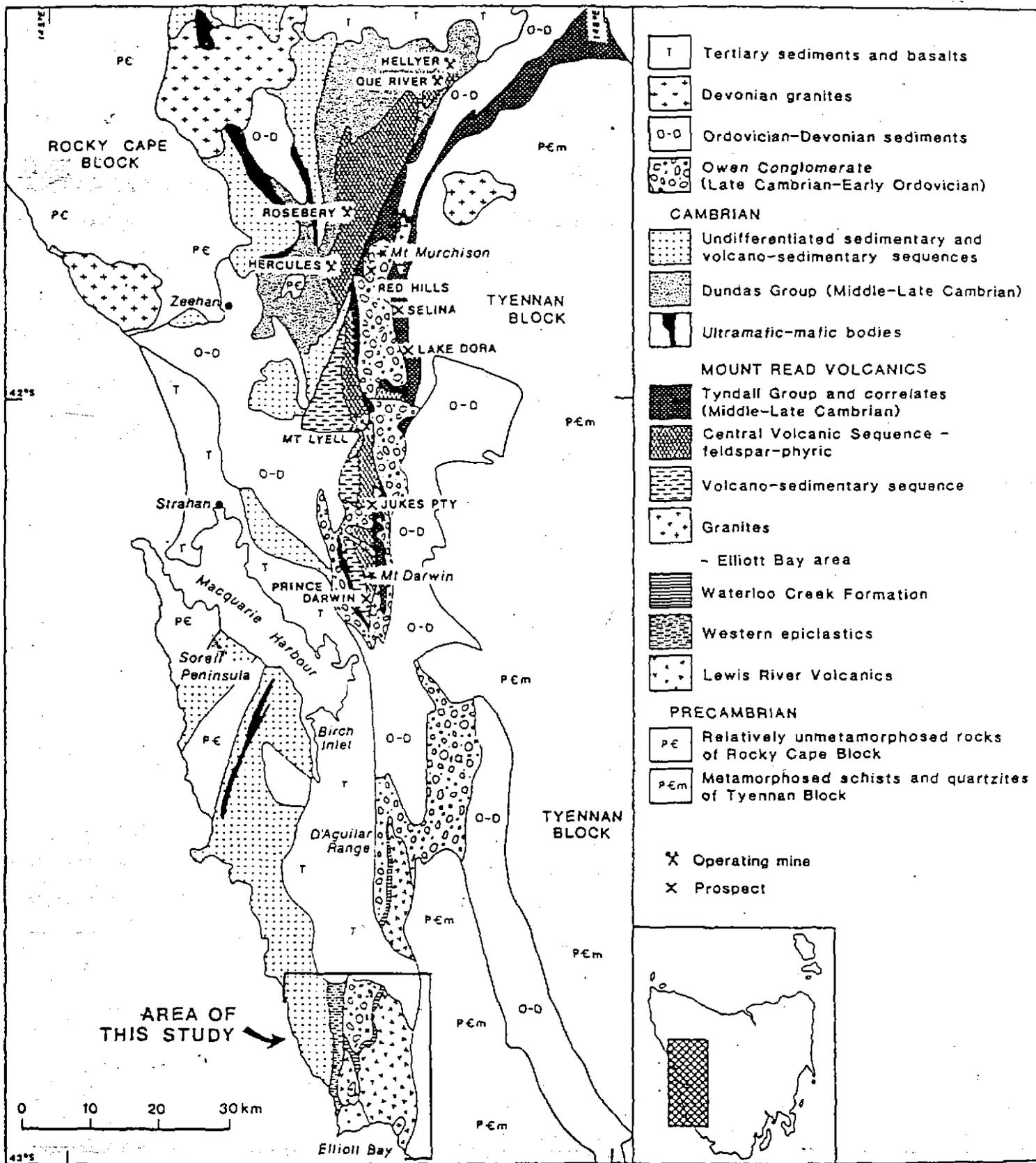


FIG. 1. Distribution of Mount Read Volcanics in western Tasmania.

(After/ from Large et al, 1987)

5 cm

## 2.0 INTRODUCTION

The E.L. 20/96 license is located on and near Tasmania's southwest coast and is accessible by the four wheel drive (??) Low Rocky Point track from Birch Inlet on Macquarie Harbour to the low Rocky Point Lighthouse, by boat to Cowrie Beach and by helicopter. Access within the tenement is relatively easy by foot, 4wd motorcycle or ATV.

'Elliott Bay' covers one of the largest single contiguous area of volcanics under one license in the Mt Read belt (Figure 2). The prospective rocks in the license are generally poorly outcropping and are often covered by short heath and thin (to 1m) Tertiary gravels.

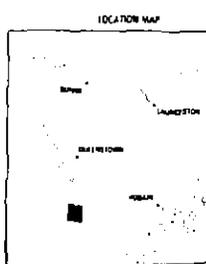


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- 025 Prospector 26
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- 028 Prospector 29
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- 063 Prospector 64
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- 066 Prospector 67
- 067 Prospector 68
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VALUE OF DEPOSIT

< \$10 <sup>6</sup>	034
\$10 <sup>6</sup> - \$10 <sup>7</sup>	023
\$10 <sup>7</sup> - \$10 <sup>8</sup>	058
> \$10 <sup>8</sup>	002

*Reduced.  
Tasmanian  
Mines Dept.  
1:25,000 geol.  
plan*



5 cm

### 3.0 EXPLORATION COMPLETED

Exploration was conducted initially by BHP, then almost continuously (during the summer field seasons) from 1976 to 1982 by Geopeko, from 1985 to 1992 by an Arimco (Cyprus)/Poseidon/Aberfoyle J.V. and from 1995 to 1996 by Plutonic Resources. The license area has been continuously held since 1965, but not systematically explored.

BHP's work was cursory, as the area was part of a much larger tenement. Geopeko's exploration was initially regional in extent, utilising geological mapping and stream geochemical sampling. In 1979, Geopeko discovered several small gossanous outcrops (Voyager 12 Prospect), with a number of gold assays in excess of 20g/t Au (a peak of 265 g/t Au). Subsequent drilling (5 generally short holes) intersected short intervals with anomalous gold (the best result was 2m of 1.6g/t Au), though not of the tenor sampled in outcrop.

Ongoing stream sampling, including gold analysis, led to the definition of a broad zone of highly anomalous gold in both panned concentrate and -80# mesh samples over a 6 kilometer strike length (Voyager 24/30). Limited soil sampling and geophysical surveys over the Voyager 24 Prospect were followed by a single drill hole which intersected silicified rhyolitic volcanics, with anomalous, but low grade gold mineralisation. Follow up drilling in 1984 consisted of three holes that intersected some high-grade, but apparently narrow, gold bearing sulphidic veins (e.g. 3m of 17.5 g/t Au, with visible gold in a number of narrow veins) in broad zones of low but anomalous gold (e.g. 53 meters at 0.15 g/t Au). They concluded that the drilling at Voyager 24 had been down the dip of the veining and as such, the zone was inadequately tested; it never, however, received any additional drilling.

In 1981, soil sampling in areas of strong chlorite-sericite alteration led to the discovery of two outcrops of high-grade (~32% combined Pb+Zn and ~400 g/t Ag) massive sulphide near Wart Hill (Voyager 19) and the focus of exploration shifted rapidly. Subsequent geophysical surveys and the drilling of three diamond drill holes indicated that the outcrops were either lenses or large clasts / rafts dislodged from a larger, high-grade VHMS deposit. Attempts were made to use geophysics (dipole-dipole IP and UTEM) over 6 to 8 kilometers of strike length in the favourable stratigraphy, however, the clasts are non-conductive and of low chargeability and the exercise was futile.

Geopeko discovered in excess of thirty prospects during their eight years of exploration in the Elliott Bay area, however, they did not attract a joint venture partner and rationalisation of their Tasmanian projects led to the relinquishment of the license.

Arimco/Poseidon were attracted by the base metal potential of the area that was highlighted by the outcropping massive sulphide lenses and the good intersections in Geopeko's drill holes. Their initial work consisted of an airborne EM survey (DIGHEM II) and additional gold stream geochemistry; the latter defined a new zone of anomalous gold / arsenic in streams over five kilometers in strike length, that was located to the immediate south of Voyager 12. Arimco drilled an additional five core holes at Voyager 12, with results similar to Geopeko's earlier work. In 1988 and 1989, Arimco focussed their attention on the massive sulphide occurrences at Wart Hill, after being encouraged by petrophysical studies that showed the sulphides in the lenses were non-conductive and of low chargeability (making previous EM and IP surveys ineffective).

Their J/V drilled an additional thirteen holes totaling (2,371.7m), with the initial six holes shallow and targeted largely on soil geochemical anomalies. The seven subsequent holes were designed to intersect the massive sulphide bearing units down dip and along strike. These holes also intersected high-grade massive sulphide lenses, some of which were up to 5m in width and had grades such as 2m of 6.02% Pb, 11.71% Zn, 59 g/t Ag and 2.33 g/t Au.

In 1990, Aberfoyle farmed into the Arimco-Poseidon J.V. and flew a QUESTEM airborne EM survey over a large part of the Mt Read Volcanics in the Elliott Bay license. Subsequent work involved the ground follow-up of nine anomalies defined by the survey and most were satisfactorily (?) explained. Two anomalies were surveyed with UTEM and one (immediately north along strike from Voyager 12) was considered to be due to a broad, near surface, slightly conductive source (massive sulphides?). The second anomaly at Cowrie Beach was drill tested, however, bad drilling (poor ground) conditions led to the hole being terminated short of the target depth. DHEM on the hole suggested the source could be a wide, weakly conductive fault zone. The license was compulsorily relinquished in 1994. Arimco re-tendered for the ground, but the license was awarded to Plutonic Resources.

Plutonic were largely attracted to the area by the sulphide lenses at Wart Hill and were apparently not interested in the areas' gold potential. They planned a drilling program to further test the Wart Hill targets, however, their management decided to carry out further geophysical surveys (moving loop SIROTEM and ground work), as well as undertaking a re-interpretation of the geology based on re-logging core (with limited field mapping), in order to define additional targets. No new targets were defined by the geophysics or mapping. Their geological assessment noted tenuousness in making interpretations due to difficulty in correlating between drillholes and returned to the need for deeper, drilling.

The other attraction to Plutonic was the EM anomaly at Cowrie Beach. This target was considered to have been adequately tested after a review of the EM data, even though the significance of the alteration in the immediate area was not resolved. Plutonic decided not to carry out any drilling and relinquished the tenement; they did not consider, evaluate or test any of the areas considerable gold potential.

## 4.0 PROSPECTS

### 4.1 Silver Hills (Voyager 19 / Wart Hill)

An obvious target at Elliott Bay is the source of the high-grade massive sulphide occurrences at Voyager 19. The two lenses that crop out returned 4m of 0.16% Cu, 10.2% Pb, 17.9% Zn, 138 g/t Ag and 0.6 g/t Au (lens A) and 3m of 0.20% Cu, 13.9% Pb, 21.9% Zn, 680 g/t Ag and 0.8 g/t Au (lens B). Drill intersections include 1.1m of 0.27% Cu, 10.4% Pb, 24.7% Zn, 123 g/t Ag and 0.63 g/t Au (DDH WH8 from 184.85m to 185.95m) and 5m of 2.54% Pb, 5.84% Zn, 33.5 g/t Ag and 1.45 g/t Au (DDH WH10 from 185m to 190m). The DDH WH010 intercept included 2m of 6.02% Pb, 11.71% Zn, 59 g/t Ag and 2.33 g/t Au.

There is professional disagreement over the origin of the massive sulphide occurrences. If the outcropping sulphides are clasts, their large size strongly implies that their source is relatively close to the known outcrops/drill intersections. Plutonic's geological re-appraisal did not confidently define vectors towards this source, but this may be possible with more geological data. If they are lenses (which seems more probable, given the high percentage of intersections by a limited number of drill holes), drilling targets exist immediately, both along strike and down dip.

### 4.2 Gold in Stream Geochemical Anomalies

Three large areas (>30 sq.km) of coherent very strongly gold anomalous streams remain inadequately explored and very poorly understood. There is strongly anomalous gold and to a lesser extent arsenic in a number of streams elsewhere at Elliott Bay, however, these are more discrete (smaller) occurrences. The three areas discussed below are characterised by (generally) consistently anomalous gold in streams over a large area. These areas definitely require systematic exploration followed by drilling.

#### 4.2.1 Voyager 24 and 30

This area is located in the western sector of the license (south of Voyager 19) and is a very coherent zone of anomalous gold in both -80# silt and panned concentrates. Gold is found in all creeks draining the Voyager 24 and 30 area. Panned concentrate samples taken by Geopeko contained 99.5, 86.7 and 60.5 g/t Au, commonly with up to 50 grains of gold (confirmed as primary) in pans.

Follow-up soil sampling in the immediate Voyager 24 area defined a zone of gold anomalous soils over a strike length of 2.4 kilometers (open ended), with a width of 200 to 300 meters. There is a coincident resistivity anomaly over much of this zone. The four diamond core holes (920 meters total) appear to have drilled down the dip of the mineralisation, with three of these holes located within a 125 meter strike length. This target has been inadequately tested, and initial work could involve drilling shallow fences of heel to toe holes in the opposite orientation and/or conducting various geophysical surveys.

Soil sampling in the Voyager 30 area located additional anomalous gold in soils and a dipole-dipole IP survey defined a number of chargeability anomalies, including one coincident with gold anomalous soils. The remainder of the anomalous drainages have not been covered by gold soil geochemical surveys.

The source of the gold appears to be sulphidic veins as intersected in the drill holes at Voyager 24. The significance of these veins is unknown, however, the gold anomalous drainages and soils (where taken) are proximal to a Cambrian microgranite, suggesting a casual relationship. The excellent potential, indicated by the high levels of gold in streams and the encouragement provided by the high-grade drill intersection, remains very significantly undertested.

#### 4.2.2 Voyager 3 to 12 Zone

This eight kilometer long, one to two kilometer wide zone in the southeastern part of the license contains consistently anomalous gold and / or arsenic in streams. Values of up to 100.0, 95.0, 67.2 and 56.0 g/t Au in panned concentrates, with up to 45 grains of gold in the pan were returned.

Only two small grids (~ 1.0 x 0.5 kilometers each) within this area have been soil sampled for gold. The northern grid (Voyager 12) was drill tested to some extent (a total of 10 short holes), however, the gold in soil anomalies on the southern grid remain untested. Grid-based soil sampling was undertaken over other parts of this zone, but with analyses for base metals only (a number of base metal anomalous zones were defined). Given the association between gold and base metals elsewhere at Elliott Bay, there is considerable scope for these anomalies to represent gold targets also and these grids need to be resampled for gold.

#### 4.2.3 North Eastern Zone

The northeastern zone of anomalous gold in streams extends over a strike length of >six kilometers and is one to two kilometers wide. Panned concentrate samples assayed up to 130.0, 36.3 and 32.8 g/t Au, with up to 30 grains of gold in the pan. This area has not been systematically soil sampled or drilled at all.

#### 4.3 Regional Prospects

Aside from the specific target areas defined above, the 140 square kilometers of Mt Read Volcanics and approximately 20 square kilometers of granites within the license area still have largely untested potential for both massive sulphides and gold deposits away from the previous foci of exploration. In particular, the volcanics on the entire western limb of the Mt Osmund syncline have seen relatively little exploration except for stream geochemical sampling and the altered volcanics at Cowrie Beach have not been adequately drill tested. There are numerous other prospects that also warrant further work.

## 5.0 CONCLUSIONS

The Elliott Bay license covers the most prospective and under explored area of Australia's highly mineralised Mt Read Volcanics. The source of the sulphide occurrences at Silver Hills (Wart Hill / Voyager 19) is probably a world class deposit, with particularly high combined zinc plus lead grades and very significant silver and gold credits. The source of the gold in all three areas that contain consistently anomalous gold in streams has not been located or defined, nor has systematic exploration been conducted in these zones. Drilling in one area located high-grade gold mineralisation (visible gold in 3 of 4 holes drilled), but appears to have drilled parallel to the dip of the veins that contain the mineralisation. Much of the property has only been subjected to limited and cursory exploration.

**6.0 EXPENDITURE STATEMENT**

	<u>EMC</u>	<u>FIMISTON</u> (estimate)
Geology .....	\$ 20,888	10,700
Geochemistry .....	\$	2,500
Geophysics – air (line km.....)	\$	
-ground (line km.....)	\$	
Feasibility studies .....	\$	
Rehabilitation/Drilling/Gridding .....	\$	
Administration .....	\$ 12,578	
Sub Total for this year.....	\$ 33,466	13,200
<b>GRAND TOTAL FOR THIS YEAR</b>	<b>\$ 46,666</b>	

**E.L. 20/96 - Elliott Bay,  
Southwestern Tasmania.**

Annual Report - 12/4/97 through 11/3/98.

APPENDIX 2.

E.L. 20/96 - Elliott Bay - Site Evaluation Report, Fimiston Mining N.L. By B.Fehlberg.

As noted to D.Burgess, Appendix 2 sent under separate cover from Fimiston Mining N.L.



**E.L. 20/96 - Elliott Bay,  
Southwestern Tasmania.**

Annual Report - 12/4/97 through 11/3/98.

APPENDIX 1.

E.L. 20/96 - Elliott Bay, Western Tasmania. A Review. By G.MacDonald & P.McNeil.

- A. Report text.
- B. Report figures (to #63). Plans (#>63) and the reports listed Appendices have not been submitted to MRT because they are already in the MRT files.

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ANNUAL REPORT-SW TASMANIA  
EL 20/96 - P MCNEIL-VOL20F3  
EXPL.& MANAGEMENT CONS.P/L

**E.L. 20/96 - Elliott Bay,**

**Western Tasmania.**

**A Review.**

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Perth, Western Australia.**

**Date: January, 1997**

TABLE OF CONTENTS

- 1.0 SUMMARY
- 2.0 INTRODUCTION
- 3.0 GEOLOGY
  - 3.1 INTRODUCTION
  - 3.2 REGIONAL GEOLOGY
  - 3.3 GEOLOGY OF ELLIOTT BAY
- 4.0 EXPLORATION HISTORY
  - 4.1 INTRODUCTION
  - 4.2 OLD WORKINGS
  - 4.3 L.E.E./B.H.P
  - 4.4 GEOPEKO (1976-1985)
  - 4.5 CYPRUS (ARIMCO) - POSEIDON (1985-1990)
  - 4.6 ABERFOYLE - ARIMCO - POSEIDON (1990-1993)
  - 4.7 PLUTONIC (1995-1996)
- 5.0 PROSPECTS
  - 5.1 INTRODUCTION
  - 5.2 VOYAGER 19 (WART HILL)
    - 5.2.1 Introduction
    - 5.2.2 Geology
    - 5.2.3 Alteration
    - 5.2.4 Structure
    - 5.2.5 Conclusions
  - 5.3 VOYAGER 19 HOST VOLCANICS ALONG STRIKE
    - 5.3.1 Introduction
    - 5.3.2 Prospects around the Mt Osmund Syncline
    - 5.3.3 Prospects south-south-east of Voyager 19
    - 5.3.4 Conclusions
  - 5.4 VOYAGER 24 (SASSY CREEK) / VOYAGER 30
    - 5.4.1 Introduction
    - 5.4.2 Geology
    - 5.4.3 Stream Anomalies
    - 5.4.4 Conclusions
  - 5.5 VOYAGERS 3-2-10-12 TREND (IN SOUTH EAST)
    - 5.5.1 Introduction
    - 5.5.2 V3 (Drake Creek or Cowrie Beach)
    - 5.5.3 Lewis River
    - 5.5.4 V10

- 5.5.5 V2 (Old Lewis River)
- 5.5.6 Voyager 12 / North Lewis
- 5.5.7 Conclusions
- 5.6 **GOLD PROSPECTS IN NORTH EASTERN PART OF ELLIOTT  
BAY AREA**
  - 5.6.1 Introduction
  - 5.6.2 Conclusions
- 5.7 **GOLD PROSPECTS IN NORTH EASTERN PART OF ELLIOTT  
BAY AREA**
  - 5.7.1 Introduction
  - 5.7.2 Conclusions
- 5.8 **MAINWARING RIVER GROUP PROSPECTS**
- 6.0 **CONCLUSIONS AND RECOMMENDATIONS**
  - 6.1 **CONCLUSIONS**
  - 6.2 **RECOMMENDATIONS**

**FIGURES**

<b>No.</b>	<b>Title</b>	<b>Scale</b>
1.	Elliott Bay Location	1:250 000
2.	Geology of Tasmania	as shown
3a.	Geology of central part of Mt Read Volcanic belt	as shown
3b.	Stratigraphy of Mt Read Volcanics between Elliott Bay and Beulah	as shown
4.	Geopeko Prospect Locations (and geology)	as shown
5.	Location of Geopeko Plans (KT Series)	1:100 000
6.	Location of Area Covered by Geopeko's Stream Sediments,	1:100 000
7.	DIGHAM Flight Lines	1:100 000
8.	QUESTEM Anomaly Location Plan (airborne EM anomalies Aberfoyle)	1:100 000
9.	Prospective Zones	1:100 000
10a.	Simplified Geology and DDH Locations (Wart Hill/V19)	1:2 500
10b.	Cyprus Legend for Geological Maps	NA
10c.	Geopeko Legend for Geological Maps	NA
10d.	Geology Wart Hill/East Camp (Plutonic) and SIROTEM Grid	~1:65 000
11a.	WH8 Host Horizon Intersection	1:125
11b.	Graphic Core Log WH-8	1:1000
12a.	WH9 Host Horizon Intersection	1:125
12b.	Graphic Core Log WH-9	1:1000
13a.	WH10 Host Horizon Intersection	1:125

13b.	Graphic Core Log WH-10	1:1000
14a.	WH12A Host Horizon Intersection	1:125
14b.	Graphic Core Log WH-12A	1:1000
15.	Metal Factors 10060E (Wart Hill/V19)	1:1000
16.	Host Volcanics along Strike (Location Plan)	1:10 000
17.	Zinc soil geochemical anomalies	as shown
18.	V33 Prospect Summary Diagram	1:10 000
19.	V22 Prospect Summary Diagram	1:10 000
20.	V29 Geological Summary Map	1:10 000
21.	V29 Zinc Geochemistry (soil geochemical anomalies)	1:10 000
22.	V34 Geochemistry (Soil geochemical anomalies)	1:10 000
23.	North Waterloo Creek Line 18 Duplicate Sampling	1:5 000
24.	Mt.Osmund East Geology (and geochemistry)	1:10 000
25.	Wooloomooloo Geology (and geochemistry)	1:10 000
26.	Gold Stream Geochemical Anomalous Zone	1:10 000
27.	V24 Prospect Summary	1:10 000
28.	V30 Summary of Geophysical Anomalies	1:10 000
29.	V30 Summary of Soil Geochemistry (Au & Fe)	1:10 000
30.	V3-V12 Area, Prospects, grids, stream Au geochemistry	1:25 000
31.	V3 Interpretative Geology (Geopeko)	
32.	V3 Anomalies (Geopeko)	
33.	EB-1 Prospect (V3) Proposed DDH location (and Anomalies)	

34.	V2 and V10 Prospect Summary Diagram	1:10 000
35.	V2 and V10 Geochemical and Geophysical Anomalies	1:10 000
36.	V2 Drill Section 10200N (DDH6)	1:1 000
37.	V12/North Lewis Soil Geochemistry (Gold) and DDH locations	1:5 000
38.	V12 Prospect Summary	1:5 000
39.	V12 Geophysics	1:5 000
40.	Magnetic Anomaly 4 (summary)	1:10 000
41.	V3-V12 zone. Location of Au soil sampling	1:25 000
42.	V3-V12 zone. Lead Soil Anomalies	1:25 000
43.	V3-V12 zone. Zinc Soil Anomalies	1:25 000
44.	Gold Exploration - Eastern half Elliott Bay showing Au soil reconnaissance lines	1:25 000
45.	North Porphyry Contact Geology (and Geochemistry)	1:10 000
46.	Magnetic Anomaly 5 (summary)	1:10 000
47.	Magnetic Anomaly 1 (summary)	1:10 000
48.	Magnetic Anomaly 2 (summary)	1:10 000
49.	Magnetic Anomaly 3 (summary)	1:10 000
50.	Porphyry Dolerite Contact Geology (summary)	1:10 000
51.	Gold Exploration - South-western half of Elliott Bay showing prospects	1:25 000
52.	V6 Geology (summary)	1:10 000
53.	Penders Prospect/V1 Geology (summary)	1:10 000
54.	Penders Prospect Rock-Chip Geochemistry Strip A	1:200
55.	Penders Prospect Rock-Chip Geochemistry Strip B	1:200

56.	Re-interpreted Geology	1:100 000
57.	Mainwaring/Wanderer River area prospect locations	1:100 000
58.	Wanderer South Geology (summary)	1:10 000
59.	Python Pit Geology (summary)	1:10 000
60.	V28-BHP track C Horizon geochemical profile	1:5 000
61.	V28-BHP track C Horizon geochemical profile (Jacro)	1:5 000
62.	Mainwaring River Dighem Anomaly No.11 Geology (summary)	1:10 000
63.	Geology of Mainwaring River	1:10 000
64.	Deleted	
65.	Deleted	
66.	Geology of the Elliott Bay-Mt.Osmund area (1991)	1:25 000
67.	Geology of the Wanderer River-Moores Valley area (1992)	1:25 000
68.	Elliott Bay Mineral Deposits Series, Tas. Mines Dept. (1988)	1:50 000
69.	Prospect Location Plan - Cyprus and Geopeko (1987)	1:25 000
70.	EL 27/76 Elliott Bay Geology - Geopeko (1983)	1:10 000
71.	Cyprus Geological Compilation (1987)	1:25 000
72.	EL 40/85 Elliott Bay Summary Plan (1992)	1:25 000
73.	EL 13/65 Mainwaring Belt Exploration work and geology (1971)	as shown
74.	Cyprus Area of Recommended Follow-up (1988)	1:25 000
75.	Geology and Prospect Locations (1987)	1:25 000
76.	Grid and DDH Locations (1987)	1:25 000
77.	Geophysical Anomaly Compilation (1987)	1:25 000

78.	Magnetic Surveys Coverage (1987)	1:25 000
79a	Aeromagnetic Contours (Cyprus plan 1987)	1:25 000
79b	Geopeko/BHP EM Coverage and Anomalies (Cyprus plan 1987)	1:25 000
79c	Regional Bouguer Gravity Contours (1987)	1:25 000
79d	Residual Bouguer Gravity Contours (1987)	1:25 000
79e	Aeromagnetic Lineaments (1987)	1:25 000
80.	IP Coverage and Anomalies (1987)	1:25 000
81.	Resistivity Coverage and Anomalies (1987)	1:25 000
82.	Location of Gold Stream Sampling and Anomalies (1994)	1:25 000
83.	DIGHEM EM anomalies and location of <i>Max-min</i> traverses (1986)	1:25 000
84.	Line 5 <i>Max-min</i> traverse - Geochemistry (1986)	1:5 000
85.	Line 5 <i>Max-min</i> traverse - Geophysics (1986)	1:5 000
86.	Line 2 <i>Max-min</i> traverse - Geochemistry (1986)	1:5 000
87.	Line 2 <i>Max-min</i> traverse - Geophysics (1986)	1:5 000
88.	Line 6 <i>Max-min</i> traverse - Geochemistry (1986)	1:5 000
89.	Line 8 <i>Max-min</i> traverse - Geochemistry (1986)	1:5 000
90.	Line 8 <i>Max-min</i> traverse - Geophysics (1986)	1:5 000
91.	Stream Sediment Geochemistry -80# Cyprus Sheet 1 (1987)	1:10 000
92.	Stream Sediment Geochemistry -80# Cyprus Sheet 2 (1987)	1:10 000
93.	Stream Sediment Geochemistry -80# Cyprus Sheet 3 (1987)	1:10 000
94.	Stream Sediment Geochemistry -80# Cyprus Sheet 4 (1987)	1:10 000

95.	Stream Sediment Geochemistry -80# Cyprus Sheet 5 (1987)	1:10 000
96.	Stream Sediment Geochemistry -80# Cyprus Sheet 6 (1987)	1:10 000
97.	Gold Geochemistry Compilation - Streams & rock chips Sheet 1 (1987),	1:10 000
98.	Gold Geochemistry Compilation - Streams & rock chips Sheet 2 (1987),	1:10 000
99.	Gold Geochemistry Compilation - Streams & rock chips Sheet 3 (1987),	1:10 000
100	Gold Geochemistry Compilation - Streams & rock chips Sheet 4 (1987),	1:10 000
101.	Gold Geochemistry Compilation - Streams & rock chips Sheet 5 (1987),	1:10 000
102.	Gold Geochemistry Compilation - Streams & rock chips Sheet 6 (1987),	1:10 000
103.	Stream Sediment -80# Au Geopeko - Sheet 2 (1980)	1:10 000
104.	Stream Sediment -80# Au (Mainwaring River) Geopeko - Sheet 3	1:10 000
105.	Stream Sediment -80# Au Geopeko - Sheet 4 (1980)	1:10 000
106.	Stream Sediment -80# Au Geopeko - Sheet 5 (1980)	1:10 000
107.	Stream Sediment -80# Au Geopeko - Sheet 6 (1980)	1:10 000
108.	Stream Sediment -80# Au Geopeko - Sheet 7 (1980)	1:10 000
109.	Stream Sediment Panned Concentrates Geopeko - Sheet 3 (1980)	1:10 000
110.	Wart Hill Geology (1988)	1:10 000
111.	Wart Hill Anomaly map (1988)	1:5 000
112.	Wart Hill Section 12950N (1988)	1:500
113.	Wart Hill Section 13000N (1988)	1:500

114.	Wart Hill Section 13050N (1988)	1:500
115.	Wart Hill Section 13100N (1988)	1:500
116.	Wart Hill Section 13150N (1988)	1:500
117.	Wart Hill Section 13200N (1988)	1:500
118.	Wart Hill Section 13250N (1988)	1:500
119.	Wart Hill Section 13300N (1988)	1:500
120.	Wart Hill Section 13350N (1988)	1:500
121.	Wart Hill Section 13400N (1988)	1:500
122.	Wart Hill Section 13450N (1988)	1:500
123.	East Camp Geology (1988)	1:5 000
124.	East Camp Anomaly map (1988)	1:5 000
125.	East Camp C-horizon Zn Contours (1988)	1:5 000
126.	East Camp C-horizon Pb Contours (1988)	1:5 000
127.	East Camp B/C-horizon Zn Contours (1988)	1:5 000
128.	East Camp B/C-horizon Pb Contours (1988)	1:5 000
129.	East Camp B/C-horizon Au, As results (1988)	1:5 000
130.	East Camp Section 10350N (1988)	1:5 000
131.	East Camp Section 10500N (1988)	1:5 000
132.	Wart Hill Soil Geochemistry Cu (1988)	1:1000
133.	Wart Hill Soil Geochemistry Pb (1988)	1:1000
134.	Wart Hill Soil Geochemistry Zn (1988)	1:1000
135.	Wart Hill Soil Geochemistry Ba (1988)	1:1000
136.	Wart Hill Soil Geochemistry As (1988)	1:1000

137.	Wart Hill Soil Geochemistry Au (1988)	1:1000
138.	Sassy Creek C-horizon soil geochemistry Au with drill hole locations (1988),	1:5 000
139.	V24 Geological plan	1:5 000
140.	V24 B-Horizon Au Soil Geochemistry	1:5 000
141.	V24 C-Horizon Au Soil Geochemistry	1:5 000
142.	V24 C-Horizon Pb Soil Geochemistry	1:5 000
143.	V24 C-Horizon Zn Soil Geochemistry	1:5 000
144.	V24 DDH 1 & 2 Cross-section (1984)	1:500
145.	V24 DDH 3 Cross-section (1984)	1:500
146.	V24 DDH 4 Cross-section (1984)	1:500
147.	V30 Geological Plan	1:5 000
148.	V30 Au C-horizon Geochemistry	1:5 000
149.	V30 As C-horizon Geochemistry	1:5 000
150.	V30 Stream Sediment and Rock Chip Results	1:5 000
151.	V3 Geological Map (part A)	1:5 000
152.	V3 Geological Map (part B)	1:5,000
153.	EB-1 Prospect Outcrop Geology	1:5 000
154.	V3 Summary Map, Pb soils, IP & EM	1:5 000
155.	V3 C-horizon Cu Soil Results/contours (part A)	1:5 000
156.	V3 C-horizon Cu Soil Results/contours (part B)	1:5 000
157.	V3 C-horizon Pb Soil Results/contours (part A)	1:5 000
158.	V3 C-horizon Pb Soil Results/contours (part B)	1:5 000

159.	V3 C-horizon Zn Soil Results/contours (part A)	1:5 000
160.	V3 C-horizon Zn Soil Results/contours (part B)	1:5 000
161.	EB-1 Cu Soil Geochemistry	1:5 000
162.	EB-1 Pb Soil Geochemistry	1:5 000
163.	EB-1 Zn Soil Geochemistry	1:5 000
164.	V3 profile of DDH V3/3 Geology and Geochemistry	1:500
165.	V3 DDH 1 Geological/geochemical Summary	1:250
166.	V3 DDH 2 Geological/geochemical Summary	1:250
167.	EB-1 Section 1600N-DDH EB-1	1:1 000
168.	Lewis River Geology	1:5 000
169.	Lewis River Rock Chip and Stream Sediment Results	1:5 000
170.	Lewis River Zn Soil Geochemistry	1:5 000
171.	Lewis River As Soil Geochemistry	1:5 000
172.	Lewis River Au Soil Geochemistry	1:5 000
173.	V10 Geological Map	1:5 000
174.	V10 Auger Hole Rock-Chip Geology	1:5 000
175.	V10 C-horizon Geochemical Results - Copper	1:5 000
176.	V10 C-horizon Geochemical Results - Lead	1:5 000
177.	V10 C-horizon Geochemical Results - Zinc	1:5 000
178.	V2 Geological Interpretation	1:5 000
179.	V2 C-horizon Geochemical Results - Copper	1:5 000
180.	V2 C-horizon Geochemical Results - Lead	1:5 000

181.	V2 C-horizon Geochemical Results - Zinc	1:5 000
182.	V2 DDH 1 Geological/geochemical Summary	1:250
183.	V2 DDH 2 Geological/geochemical Summary	1:250
184.	V2 DDH 3 Geological/geochemical Summary	1:250
185.	V2 DDH 4 Geological/geochemical Summary	1:250
186.	V2 DDH 5 Geological/geochemical Summary	1:250
187.	V2 DDH 6 Geochemical Profile	1:250
188.	V2 DDH 6 & DDH 1 Geological Cross-section	1:250
189.	North Lewis Geology	1:5 000
190.	North Lewis DDH Locations and Gold Geochemistry	1:5 000
191.	North Lewis Rock Chip & Stream Sediment Results Ag, As & Au	1:5 000
192.	North Lewis Soil Geochemistry - Lead	1:5 000
193.	North Lewis Soil Geochemistry - Zinc	1:5 000
194.	North Lewis Soil Geochemistry - Gold	1:5 000
195.	V12 DDH 1 Geological & Geochemical Summary	1:250
196.	V12 DDH 2 Geological & Geochemical Summary	1:250
197.	V12 DDH 3 & 5 Geological & Geochemical Summary	1:250
198.	V12 Geological Map	1:5 000
199.	EB-4 Reconnaissance Geology	1:5 000
200.	Wanderer South Line 5 profiles (1987)	1:5 000
201.	Wanderer South Line 6 profiles (1987)	1:5 000
202.	Wanderer South Line 7 profiles (1987)	1:5 000
203.	Python Pit Line 23 profiles (1987)	1:5 000

204.	Voyager 28-BHP Track Magnetic Profile (1981)	1:10 000
205.	Voyager 28-BHP Track Magnetic Profile (1981)	1:5 000
206.	Voyager 28-BHP Track Reconnaissance Geology (1981)	1:10 000
207.	Voyager 28-BHP Track Geology Profile (1981)	1:10 000
208.	V26 Geology (1981)	1:5 000
209.	V26 Geochemical & Magnetic Profile 9600N (1981)	1:5 000
210.	V26 Geochemical & Magnetic Profile 10 000N (1981)	1:5 000
211.	V26 Geochemical & Magnetic Profile 9200N (1981)	1:5 000
212.	V1 Auger Hole Geological Map (1978)	1:5 000
213.	V1 Geology (1978)	1:5 000
214.	V1 Copper Contours (1978)	1:5 000
215.	V1 Lead Contours (1978)	1:5 000
216.	V1 Lead and Zinc Contours (1978)	1:5 000
217.	Low Rocky Point Geological/Geochemical Compilation (1988),	1:10 000
218.	Low Rocky Point Line Profile 16000N - Cyprus (1988)	1:10 000
219.	Low Rocky Point Line Profile 11500N - Cyprus (1988)	1:10 000
220.	Low Rocky Point Line Profile 11400N - Cyprus (1988)	1:10 000
221.	Low Rocky Point Line Profile 10900N - Cyprus (1988)	1:10 000
222.	V21 C-horizon Geochemical Profiles (1980)	
223.	V21 Contours of Total Magnetic Intensity (1980)	1:5 000
224.	V7 C-horizon Geochemical Profiles Line 12800N (1980)	
225.	V7 C-horizon Geochemical Profiles Line 13000N (1980)	

226.	V7 & V21 Geology (1980)	1:5 000
227.	V7 Contours of Total Magnetic Intensity (1980)	1:5 000
228.	V14 Profiles of Total Magnetic Intensity (1980)	1:5 000
229.	North Porphyry Contact Line 6 Profiles (1987)	1:5 000
230.	North Porphyry Contact Line 7 Profiles (1987)	1:5 000
231.	North Porphyry Contact Line 7.5 Profiles (1987)	1:5 000
232.	North Porphyry Contact Line 7.6 & Line 8 Profiles (1987)	1:5 000
233.	North Porphyry Contact Line 9 Profiles (1987)	1:5 000
234.	Magnetic Anomaly 5 Profiles	1:5 000
235.	Porphyry Dolerite Contact Line 6450 Profiles	1:5 000
236.	"Elliott Bay" E.L. 53/94: Wart Hill Geology and Geophysical Compilation	1:2500
237.	"Elliott Bay" E.L. 53/94: East Camp Geology and EM Interpretation	1:2500
238.	"Elliott Bay" E.L. 53/94: Wart Hill UTEM Survey Channel 14	1:2500
239.	"Elliott Bay" E.L. 53/94: Wart Hill Ground Magnetic Contours	1:2500
240.	"Elliott Bay" E.L. 53/94: East Camp Ground Magnetic Contours	1:2500
241.	Wart Hill Section 12950N	1:500
242.	Wart Hill Section 13000N	1:500
243.	Wart Hill Section 13050N	1:500
244.	Wart Hill Section 13100N	1:500
245.	Wart Hill Section 13150N	1:500
246.	Wart Hill Section 13200N	1:500
247.	Wart Hill Section 13250N	1:500

248.	Wart Hill Section 13300N	1:500
249.	Wart Hill Section 13350N	1:500
250.	Wart Hill Section 13400N	1:500
251.	"Lewis", "Moores", "Osmund", "Montgomery" and "Veridian/Montgomery" Topographic maps covering the Elliott Bay Area	1:25 000

PLATES

- Plate 1. Low relief in foreground typical of Elliott Bay area. Mountain in the background is Mt Osmund (368 metres). Photo taken from east part of Elliott Bay looking west.
- Plate 2. Typical undulating open heath country (Woolloomooloo Creek prospect)
- Plate 3. Thick bauera in wet sclerophyll forest (Wanderer South prospect)
- Plate 4. Typical leached and bleached outcrop - rock in picture is porphyritic rhyolite.
- Plate 5. 64.6m in WH8. Rhyolitic quartz porphyry-ash flow tuff, quartz phenocryst, chloritic wisps may be glass and/or mafics (Poltock) from unit logged by Herrmann as a sericitic quartz phyric coherent massive rhyolite.
- Plate 6. 81.6m in WH10. Epiclastic-coarse tuffaceous sandstone, 20% pyrite associated with sericite alteration (Poltock) from unit logged by Herrmann as "Sericitic massive polymictic lithic volcanoclastic sandstone and breccia".
- Plate 7. 281.5m in WH12A. Host horizon equivalent. Breccia/conglomerate with clasts of banded pyrite and chert (centre), quartz porphyry, pumice (Poltock) from unit logged by Herrmann as polymictic with clasts of quartz phyric rhyolite and with a few small "lenses" of massive pyrite.
- Plate 8. Rhyolitic tuff (WH1) (Poltock)
- Plate 9. Epiclastic breccia. Clasts of marble (bottom left), grey pyritic chert (centre bottom), massive sphalerite-galena (top right) and pyrite (top left) in green quartz-feldspar tuffaceous sandstone matrix (WH4) (Poltock)
- Plate 10. Epiclastic sandstone/breccia containing massive sulphide fragments (browns and greys) in a green sericitised matrix (Poltock)
- Plate 11. Epiclastic sandstone/breccia which has been altered to a carbonate-silica-chlorite assemblage and contains minor disseminated sulphides and veinlets of calcite and quartz

- Plate 12. WH8. Massive sulphide intercept; 184.85 to 185.95, 1.1m @ 10.4% Pb, 24.7% Zn, 0.63g/t Au and 123 g/t Ag
- Plate 13. WH10. Massive sulphide intercept; 185 to 190, 5m @ 2.96% Pb, 6.04% Zn, 1.43 g/t Au and 31.6 g/t Ag
- Plate 14. Sulphide banding (disturbed) + carbonate in WH8 intersection (B) on plate 12a.
- Plate 15. Two limestone lenses (pale rock) interpreted by Poltock as "exhalite"
- Plate 16. Upper contact of upper (limestone) lens showing "haematitic chert and pyrite" (A) on Plate 15.
- Plate 17. Limestone from upper lens (B) on plate 15
- Plate 18. WH12A intersection showing interbedded shales, epiclastics and carbonates (top)
- Plate 19. 206.5m in WH8; Pumice tuff-chloritised patches are interpreted to be pumice/glass clasts within a sericitic tuffaceous sandstone matrix (Poltock) from unit logged by Herrmann as a sericitic massive pumiceous rhyolite lithic breccia.
- Plate 20. Banded massive sphalerite-galena-pyrite in WH4 (84-85m). Carbonate-quartz veining and alteration (bottom) overprints the massive sulphides (Poltock)
- Plate 21. Wart Hill; Rig shift from hole 6 to hole 7. Wart Hill is in the background
- Plate 22. Drill site, WH12A at Wart Hill
- Plate 23. 14m in EC1: Epiclastic with haematitic pyritic limestone clast (Poltock)
- Plate 24. 113.9m in EC1; Galena-pyrite-sphalerite band, part of 1 metres @ 0.25% Pb and 0.33% Zn (Poltock)
- Plate 25. Gossan from North Lewis containing fresh unoxidised pyrite (bottom right and top left)
- Plate 26. Quartz-pyrite vein. Occurs adjacent to granite contact ( Lewis River/ V6).

- Plate 27. North Lewis Prospect: Drill sites (looking south)
- Plate 28. North Lewis Prospect: Diamond drilling at V12/10
- Plate 29. North Lewis: Rig shift
- Plate 30. Wart Hill Camp: Core logging and diamond saw set-up
- Plate 31. Vein-Breccia Zone: Black tourmaline (upper right) is brecciated by chlorite-sulphide material (now oxidised)
- Plate 32. Veinlet-Fracture Zone: Extensive fine veinlet formation. Locally open voids and numerous fracture orientations

TABLES

1. Geopeko Voyager Prospects (Summary of Exploration)
2. Wart Hill /V19 Diamond Drilling (Statistics of V19/1-5 and Summary WH1 to WH12A)
3. Wart Hill /V19 - Significant Intersections (diamond drilling)
4. Wart Hill Diamond Drilling Summary (drill logs)
5. Sample Data Sheet - Wart Hill WH-8 (host horizon assays)
6. Sample Data Sheet - Wart Hill WH-9 (host horizon assays)
7. Sample Data Sheet - Wart Hill WH-10 (host horizon assays)
8. Sample Data Sheet - Wart Hill WH-12A (host horizon assays)
9. East Camp Diamond Drilling - Summaries (EC1 to EC2A)
10. Drilling Summary - V24
11. Diamond Drilling Summary - V3
12. Diamond Drilling Summary -V2
13. Analyses of Gossan Samples from North Lewis. (Geopeko Data)
14. North Lewis Rock chip samples. (Cyprus Samples)
15. North Lewis Diamond Drilling Summaries
16. North Porphyry Contact - Rock Samples

APPENDICES

- A. Summary of Geopeko's Exploration in EL 27/76 - Wally Herrmann
- B. Prospect Summaries (1982) Voyagers 1 to 35 - John Pemberton
- C. Tables of contents, tables, appendices and figures for Geopeko and Cyprus reports
- D. Compilation of geophysical surveys carries out at Elliott Bay (1988) - John Bishop
- E. Drill logs (Cyprus) and assays V12 (North Lewis)
- F. Chapter 5, J. Leas B Sc (Hons) thesis - "Mineralisation" - John Lee
- G. Notes on Voyager 24 gold mineralisation - Ross Large
- H. Annual Report on Exploration in EL 27/76, 1982-83 season - Wally Herrmann, Geopeko
- I. Base Metal Exploration of the Mount Read Volcanics, Western Tasmania: Pt. 1. Geology and Exploration, Elliott Bay - Large, Herrmann and Corbett (1987)
- J. Besshi type V.M.S. - A review - J.S. Fox
- K. Palaeozoic Mineral Deposits of Tasmania - Green (1990)
- L. Stratigraphic - Volcanic Setting of Massive Sulphide Deposits in the Cambrian Mount Read Volcanics, Tasmania - Corbett (1992)
- M. Australian Volcanic-Hosted Massive Sulphide Deposits: Features, Styles and Genetic Models - R.R. Large (1992)
- N. Stratigraphic-facies Associations and their Relationship to Mineralisation in the Mt. Read Volcanics - Pemberton and Corbett (1992)
- O. Annual Report on Exploration EL 53/94 Feb 1995 to Jan 1996 - Herrmann and Close (Plutonic).

## 1.0 Summary

The Cambrian Mt Read Volcanic belt on the west coast of Tasmania contains the world class V.H.M.S. deposits of Rosebery and Hellyer, as well as the world class Mt Lyell Cu-Au deposit. Elliott Bay lies at the southern end of this belt.

The dominantly felsic volcanics at Elliott Bay host a number of large (~10m x 3m) rafts of high grade massive sulphide with a typical grade of 3 m @ 0.2% Cu, 13.94% Pb, 21.9% Zn, 680 g/t Ag and 0.84 g/t Au.

Initially, and later predominantly, exploration has focussed on the V.H.M.S. base metal potential of this relatively large area of Mt Read Volcanics at the southernmost end of the belt. Of secondary importance has been the focus on gold mineralisation of varying styles, though almost invariably volcanic hosted. The discovery, in 1980/81 of the rafts of high grade massive sulphides at Voyager 19 or (Wart Hill) has shown the area to have proven prospectivity for the former whilst the considerable amount of alluvial gold in a number of streams and outcropping gossans assaying up to 265g/t Au at Voyager 12 (or North Lewis), amongst other anomalous values from other prospects, has lent weight to exploration for the latter commodity.

Exploration, whilst extending over the last two decades, has been somewhat fragmentary with field work usually confined to the summer months and operators changing three times in that period. It must be said that the potential for locating a massive sulphide deposit within 200 metres below the surface in the vicinity of the sulphide rafts has been diminished by this exploration, however, there has been effectively no exploration below this depth.

The numerous areas of coherently strongly anomalous gold in stream sediments have seen little effective exploration. The chances of a discovery using more effective exploration methods are high.

Elliott Bay has excellent potential for a world class V.H.M.S. deposit and/or a substantial gold deposits. The initial exploration may require a commitment to drilling geological targets, however, the rewards for such endeavours in this highly prospective part of a highly mineralised belt could be great.

## 2.0 Introduction

E.L. 20/96 Elliott Bay lies at the southern end of Tasmania's Mt Read Volcanics (see Figure 1), a belt of Cambrian calc-alkaline felsic to mafic volcanics which host a number of world class V.H.M.S. deposits as well as a number of associated deposits:

Hellyer	15.5Mt @ 0.3% Cu, 6.45% Pb, 12.6% Zn, 140 g/t Ag & 2.2 g/t Au
Que River	3.2Mt @ 0.46% Cu, 7.25% Pb, 13.3% Zn, 202 g/t Ag & 3.5 g/t Au
Rosebery	26.4Mt @ 0.6% Cu, 4.3% Pb, 13.5% Zn, 137 g/t Ag & 2.7 g/t Au
Hercules	3.1Mt @ 0.4% Cu, 5.6% Pb, 17.6% Zn, 176 g/t Ag & 2.9 g/t Au
Henty	0.5Mt @ 26.9 g/t Au
Mt Lyell	123Mt @ 1.25% Cu & 0.44 g/t Au

The total pre-mining value of these deposits at current prices is ~A\$21 billion.

E.L. 20/96 has an area of 180 square kilometres and it covers approximately 125 square kilometres of the Mt Read Volcanics (one of the largest single contiguous areas of the volcanics in the entire MRV belt), 40 square kilometres of associated intrusive rocks and 15 square kilometres of other lithologies. This report is intended to summarise the excellent base metal and/or gold potential of the Elliott Bay area effectively covered by E.L. 20/96.

Time constraints for data compilation precluded establishing a well ordered sequence of plan / figure numbers and also precluded drafting of the summary plans showing the locations of grids, geophysical surveys etc. (figures 75 to 81 [all at 1:25 000] are comprehensive summaries of Geopeko's work). There are also a number of other plans at 1:25000 which can be overlain. Particularly useful plans at this scale are as follows;

<u>Figure No.</u>	<u>Contains</u>
66.	"Mines Dept." geology southern half of Elliott Bay
67.	"Mines Dept." geology northern half of Elliott Bay
69.	Cyprus and Geopeko prospect locations
72.	Aberfoyle's prospect locations
75.	Cyprus geology and prospect locations
76.	Geopeko grid and DDH locations (Cyprus plan)
77.	Geopeko/BHP geophysical anomalies compilation (Cyprus plan)
78.	Geopeko magnetic surveys coverage (Cyprus plan)
79a.	Aeromagnetic contours (Cyprus plan)
79b.	Geopeko/BHP EM coverage and anomalies (Cyprus plan)
79c.	Regional bouguer gravity contours
79d.	Residual bouguer gravity contours
79e.	Aeromagnetic lineaments
80.	Geopeko IP coverage and anomalies (Cyprus plan)
81.	Geopeko resistivity coverage and anomalies (Cyprus plan)

- 82. Location of gold stream sampling and anomalies
- 83. DIGHEM EM anomalies and location of Max-min traverses
- 251. Set of topographic maps covering Elliott Bay area

The Elliott Bay "Mineral Deposits" series sheet in figure 68 (at 1:50 000) is also useful in illustrating the location of prospects, styles and mineralisation present. The notable exclusion from this sheet are the occurrences of alluvial gold.

Most prospects were defined by Geopeko who named them all Voyager 1, 2, 3 etc. Cyprus renamed some of these prospects according to their localities (Lewis River, North Lewis etc.) as well as defining a number of their own prospects. In the text these names are used somewhat interchangeably depending upon which company is being discussed at the time. Wherever I have remembered, the alternative names have been added in brackets. A useful plan in coming to terms with the prospect names and locations is figure 69.

## 2.1 Location/Access/Weather

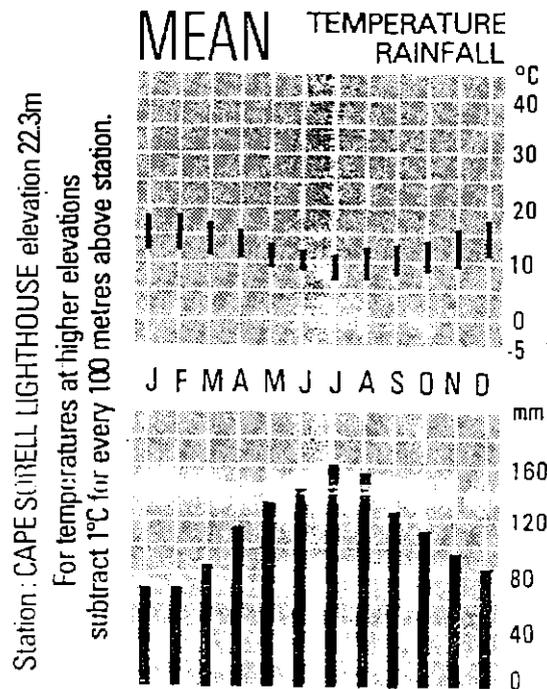
The Elliott Bay area is located on Tasmania's south-west coast (see Figure 1) around 40 kilometres west of Strathgordon and 90 kilometres south of Queenstown.

Access to the area is by the Low Rocky Point track, a rough 4WD track which runs from the southern end of Birchs Inlet (south-eastern corner of Macquarie Harbour) to the unmanned lighthouse at Low Rocky Point. The track is rarely used by large vehicles as they need to be transported across Macquarie Harbour on boat or barge. Previous exploration has seen bombardiers, excavators and drilling rigs (L38's) unloaded successfully at this landing.

Alternative access is by helicopter, with Strathgordon the closest staging point. Other points of departure are Queenstown airport, the Darwin damsite (at the southern end of Lake Burbury) or a helipad on the Mt McCall track around 10 kilometres south of the Darwin damsite. Large equipment has previously been transported down the coast by boat or barge and airlifted from the deck whilst the boat/barge is sheltered in the mouth of the Mainwaring River or off-loaded at Cowrie Beach. The Moores Valley airstrip (10 kilometres north of Mt Osmund) is serviceable by light aircraft.

Previous exploration has often used a combination of the above means of access.

The area lies on the south west coast and is exposed to the largely south westerly weather which dominates the western side of Tasmania. Even in summer there can be days on end in which there is persistent drizzle or driving rain. The average monthly rainfall and temperature recorded at Cape Sorell, ~80 kilometres north along the coast is shown below.



*Average monthly rainfall and temperature as recorded at Cape Sorell*

### 2.3 Land Status/Usage

Certain sectors of the south-west of Tasmania are World Heritage listed. The outcrops of Mt Read Volcanics (and some Eo-cambrian tholeiitic volcanics on the Sorell Peninsula) have been deliberately excluded from the World Heritage areas on the basis of their mineral prospectivity (and lesser wilderness values). Prior to the World Heritage classification of other parts of the south-west, all of the south-west was classified as the South West Conservation Area.

The Elliott Bay area remains part of the conservation area, however, more recently (1992), the Tasmanian government proclaimed the prospective rocks south of Macquarie Harbour to be within the Sorell Peninsula Prospectivity Zone, in recognition of the mineral potential of the area. Under this act any change in the status of the land within the zone requires the approval of both houses of the Tasmanian parliament with any affected party entitled to compensation (this does not cover any decisions of the Federal government).

Tasmania has no Mabo type aboriginal land claim problem and it is considered that the legislation is not relevant to the Tasmanian situation. Almost all Tasmanian aborigines died within 75 years of white settlement, with the remaining part aborigines descended from aboriginal women taken by sealers working in Bass Strait.

The land sees little use other than fishing boats which shelter in Elliott Bay and the extremely occasional party of motorcyclists who make the trip from Birchs Inlet to Low Rocky Point in order to catch crayfish or simply to make the journey.

### 2.3 Topography/Vegetation

The Elliott Bay area rises gradually from the coast (see Figure 1 and the topography maps in 'Figure' 251) and apart from Mt Osmund (368 metres), the highest ground is only around 200 metres above sea level. The country is best described as undulating and Plate 1 shows a view from the eastern part of the Elliott Bay area looking westwards towards Mt Osmund.

There are essentially two types of vegetation cover found at Elliott Bay. The prospective volcanics are covered by low heath vegetation (see Plates 1 and 2). In areas around some creeks and on the edges of rainforest (the other type) this heath can become taller and thicker, but in general vegetation cover is minimal. That is not to say that there are large areas of outcrop, as the volcanics are generally covered by a layer of peat with or without a gravel veneer. Outcrop is of the order of a few per cent and is generally leached and bleached.

The second vegetation type (rainforest) generally covers non or less prospective younger rocks. This vegetation often includes areas of almost impenetrable "horizontal" and bauera necessitating the cutting of grid lines and access tracks (see Plate 3). Fortunately this vegetation is only occasionally found over the prospective volcanics.

### 2.4 Tenure

E.L. 20/96 is current for 5 years from the granting date of (?) February, 1997, so long as "Mines Dept." requirements (i.e. expenditure on exploration, rental, fees etc.) are met.

### 3.0 Geology

#### 3.1 Introduction

Until the completion of 1:25 000 geological mapping by the "Mines Department" geologists (who also mapped the rest of the Mount Read Volcanic belt), the understanding of the geology of the Elliott Bay area was based upon mapping by B.H.P., Geopeko and Cyprus geologists. The Mines Department mapping (figures 66 and 67) has given an excellent regional background for more detailed mapping, however, as yet there have been no accompanying explanatory notes / reports. This allied with the lack of significant drilling and detailed mapping accompany mines and advanced prospects to the north has meant that the area has seen little of the recent detailed stratigraphic/facies architectural analysis applied to the northern part of the belt.

Descriptions of the regional geology of western Tasmania (Green, 1990) and the Mt. Read Volcanics in particular (Corbett, 1992; Pemberton and Corbett, 1992) have been included in Appendices K, L and M, respectively. The following historical approach to the geology of the Mt. Read Volcanics draws largely from Corbett (1992). The geology of the Elliott Bay area is based upon all mapping to date, with reference to Large *et al.* (1987).

#### 3.2 Regional Geology

The geological setting of the Mt Read Volcanics is shown in figure 2 and discussed by Green (1990) in Appendix K. The geology of the central part of the Mt. Read Volcanics is shown in figure 3a [after Corbett (1992) in Appendix L] with a more schematic representation of the correlation of major units within the belt in figure 3b [after Pemberton and Corbett (1992) in Appendix M]. The Appendices adequately discuss the location and relationship of major units, so the following is intended to describe the geological evolution of the Mt Read Volcanics.

Around 600 Ma attenuation and eventual rifting of Proterozoic continental crust in western-Tasmania resulted in the formation of a thinned continental margin transected by small rift basins in which shallow marine sediments of the Success Creek Group, followed by deeper marine greywackes-mudstone-chert sediments (associated with tholeiitic basalts of the Crimson Creek Group) were deposited.

This passive margin collided with an oceanic arc in the late - early to early - Middle Cambrian with major slices of fore-arc mafic/ultramafic complex(s) thrust westwards over "western Tasmania". The thrusting locked the plate boundary and a continued compression initiated back thrusting and the formation of half grabens (relaxation rifts) such as the Dundas Trough along the collision zone.

Initial sedimentation into the Dundas Trough was derived from the Proterozoic crystalline crust on the eastern side (i.e. deposited as the Sticht Range Beds) and the mafic/ultramafic complexes and the passive margin to the west. This sedimentation was followed and continued (as the Western Volcano-Sedimentary sequences) coincidentally with the eruption of the Mt Read Volcanics along the eastern side of the trough.

The initial volcanism was predominantly rhyolitic-dacitic, with the major unit the feldspar phyric Central Volcanic Complex (host to the Rosebery and Hercules V.H.M.S. deposits as well as the footwall style Mt Lyell copper deposit), whilst the predominantly quartz-feldspar phyric Eastern Quartz Phyric Sequence (possibly the host to the Elliott Bay massive sulphide rafts) erupted to the east, against the Sticht Range Beds.

This was followed by a phase of andesitic-basaltic volcanism with further rifting, focussed to some extent on the Henty Fault system. Major andesitic-basaltic volcanics include the Que-Hellyer Volcanics (host to the Que River and Hellyer V.H.M.S. deposits), the Anthony Road Andesite and the andesitic unit on the northern end of the Mt Lyell field, the top of which appears to mark the time at which the Mt Lyell deposit formed.

This andesitic-basaltic phase was followed by further rifting on the Henty Fault system and the formation of a small oceanic crustal section (including basalts, gabbros, dolerites and ultramafics) in the Henty Fault Wedge.

The final phase of volcanism was largely felsic with the deposition of the Tyndall Group and correlates further north.

Coeval with deposition of these dominantly volcanic sequences was the deposition of the Western Volcano-Sedimentary Sequences (Dundas Group, Yolande River Sequence and Mt Charter Group; these rocks contain sediments of mixed volcanic or metamorphic provenance and minor felsic and andesitic volcanics. Rocks from the Western Volcano-Sedimentary Sequences can be seen to interfinger with the other dominantly volcanic sequences.

The extensional tectonism that characterised the period of eruption and deposition of the Mt Read Volcanics was focussed on the Henty Fault system (on which the Henty gold deposit is located) and the Great Lyell Fault (against which the Mt Lyell mineralisation is focussed) as well as a possible third major extensional structure to the west of the Henty Fault. The extensional phase was followed by a phase of rebound back-thrusting which reactivated earlier extensional faults as reverse faults (e.g. Henty Fault) and produced upright north-south striking folds (the recognition of a significant late Cambrian event is a relatively new development and has considerable ramifications for Elliott Bay). This phase of deformation uplifted the Proterozoic crystalline crust which provided abundant coarse siliciclastic detritus which gradually filled the Dundas Trough as the Owen Conglomerate (which forms the mountain ranges of the central west coast).

The other period of significance to the geology and mineralisation on Tasmania's west coast (apart from Ordovician limestones and associated Irish style mineralisation, e.g. Oceana at Zeehan) is the period of deformation associated with granitoid intrusives throughout Tasmania in the Tabberabberan Orogeny. On the west coast this deformation is characterised by brittle wrench faults which formed under north-north-east directed compression. The Henty Fault was reactivated with sinistral strike slip movement at this time. Associated syn- to post-kinematic granitoids produced the considerable skarn, greisen and vein style tin deposits (e.g. Renison Bell and Mt Bischoff) as well as minor base metal and gold vein deposits.

### 3.3 Elliott Bay Geology

The Elliott Bay volcanics lies on strike with the D'Aguiar Range/Thirkell Hill MRV correlates located immediately to the north beyond a Tertiary graben (Moores Valley) and the main belt of Mt Read Volcanics further north (beyond the Gordon River). This is shown in figures 66 and 67. This mapping forms the basis for figure 68 which has been reduced as figure 3c. Apart from Plutonic's geology of the Wart Hill/East Camp area (see Figure 10d) this mapping is considered the best regional mapping of the area.

A better understanding of the geology is hindered by the lack of drilling (away from a few discrete prospects), the indistinctiveness of most rocks (many rocks are felsic volcaniclastics which look very similar to one another) and the generally leached and bleached nature of outcrop (see Plate 4).

The Late Cambrian-Ordovician siliciclastics (Owen Conglomerate) that crop out in the central north of the 20/96 area are folded into a gently north plunging syncline with a shallowly dipping eastern limb and steeply dipping to slightly overturned western limb. Most interpretations see the Mt Read Volcanics as having an unconformable relationship with these overlying siliciclastics, though Poltock (1989) sees this contact as gradational. The unconformable relationship is considered by the author to be more likely, though this 'problem' needs to be given further attention. In such a case, the Mt Read Volcanics have probably been folded in the Cambrian event with the fold (Mt Osmund Syncline) in the Late Cambrian-Ordovician siliciclastics due to Devonian deformation.

The volcanic sequence on the eastern limb of the Mt Osmund Syncline is the easiest to understand.

From east to west the sequence is as follows:

- To the far east the Precambrian sequence is a multideformed package of meta-sediments.
- Directly overlying the Precambrian, with a probable faulted contact in parts and unconformable in others, is a westerly dipping unit of partly volcaniclastic, partly

siliclastic sediments correlated with the Sticht Range Beds, which are lithologically very similar and occupy a similar position between the Precambrian and quartz-feldspar-biotite porphyries along the eastern side of the main part of the belt to the north.

- To the east of this unit is a 2-3km thick quartz-feldspar-biotite porphyry known as the Elliott Point Porphyry. This unit has identical correlates occupying similar geologic positions for much of the far northern part of the Mt. Read belt (i.e. Bonds Range Porphyry). This latter porphyry is associated with gold mineralisation (e.g. Ten Mile Creek, Anio Creek). Apophyses of the Elliott Point Porphyry crop out within the lavas and volcanoclastics of the Lewis River Volcanics to the west and may have some relationship to mineralisation at V12-North Lewis. None of the above units crop out on the western limb of the syncline.

- West of the Elliott Point Porphyry is the eastern limb of the Lewis River Volcanics. Previous mapping differentiated these volcanics into the Hudson River Pyroclastics and Wart Hill Pyroclastics, based on both subtle lithological differences and alteration styles [dominantly chloritic and sericitic respectively (Large, 1981)]. Cyprus geologists saw no justification for the distinction, however, such a distinction has passed through into the Mines Department mapping though the boundary has shifted to the west with the Mines Department's boundary apparently along a line roughly due south of the synclinal axis in the Owen Conglomerate. Geopeko's boundary is shown in Figure 72.

The eastern limb is shown as consisting of quartz-feldspar phyric volcanoclastics including sediments and probable pyroclastics, quartz-feldspar phyric lavas (intrusives?), quartz-feldspar-biotite phyric lavas and intrusives (see above) and minor intermediate lavas or intrusives.

- Overlying the volcanics is a unit of felsic derived volcanoclastics, overlain by a unit of black pyritic shale with minor horizons of micaceous siltstones. In one location the shale contains an intercalated felsic lava or intrusive. Together these two units are called the Waterloo Creek Group and have been correlated with the Tyndall Group in the main part of the belt to the north (Corbett, 1992). Most interpretations show the contact between the volcanics and the Waterloo Creek Group to be unconformable, however, Poltock (1989) in Cyprus' last report concludes that in the light of their drilling, the contact is gradational.

- Conformably overlying the Waterloo Creek Group is the Owen Conglomerate siliclastics.

The rocks on the western side of the Waterloo Creek Group rocks (and also on the western limb according to Poltock, 1989), consist of quartz-feldspar phyric volcanoclastics including sediments, quartz-feldspar biotite phyric lavas (intrusives?), quartz-feldspar phyric lavas (intrusives?) and sediments ranging from black to grey shales, sandstones, vitric tuffaceous siltstones and siliclastic sandstone, conglomerate and breccia. Most evidence points to these rocks dipping and facing towards west-north-west

(this is discussed in later sections) though ambiguous facing indicators, indistinctive rocks and hydrothermal alteration make any interpretation open to question. These rocks [previously included as part of Large's (1981) Wart Hill Pyroclastic] are followed to the west by a unit of interbedded conglomerate and sandstone with minor shale and siltstone, varying from predominantly volcanoclastic to predominantly siliciclastic (previously called the Pleasant Creek Formation) in turn followed by a unit of shales and siltstones with minor volcanoclastics (previously referred to as the Sassy Creek Argillites). Together these two units are called the Western Epiclastics.

It is clear that this area mapped as the Western Epiclastics is more complex than the above description suggests. Truncating the western side of the Owen Conglomerate to the north is a major fault (Copper Creek Fault) which extends south to south-south-west through the Western Epiclastics (has been intersected in diamond drilling at V33). The Western Epiclastics to the west of this fault contain mafic volcanics, possibly akin to the Mainwaring River Group volcanics further to the west. It is quite possible that the Western Epiclastics to the east of this fault are associated with the felsic M.R. V's, whilst the rocks west of the fault are part of the Mainwaring River Group.

The western margin of the Western Epiclastics is quite clearly a fault. This fault (the Copper Creek fault) has been intersected in a diamond drill hole (at V33) and it truncates the western limb of the Owen Conglomerate.

The rocks to the west of this fault consist predominantly of sedimentary or volcanoclastic rocks of quartz-feldspar phyric and feldspar phyric composition. Although there is very little mapping in the area which these rocks crop out, a unit of plagioclase-pyroxene phyric lavas has been recognised. Also included in this package of rocks is a unit of black to grey shales, siltstones and sandstones, with an intercalated felsic to intermediate volcanoclastic.

The western boundary of the above package is marked by a faulted contact with the tholeiitic mafic lavas (intrusives) and mafic derived volcanoclastics of the Mainwaring River Group.

The relative timing of folding and the intrusion of the M.R. V's by the Cambrian granites and porphyries is uncertain.

Correlation of the major units in the Elliott Bay area with those in the main part of the Mt. Read's is relatively straight forward for the Elliott Point porphyry, the sediments lying between the Elliott Point Porphyry and the Precambrian (with the Sticht Range Beds) and the Late Cambrian to Ordovician siliciclastics (with the Owen Conglomerate), (see Figure 3a).

Corbett (1992) correlates the Lewis River Volcanics with the Eastern quartz-phyric sequence based on lithological similarities and similar geologic relationships. The Western Epiclastics would also be included in such a correlation. The Waterloo Creek

group is correlated with the Tyndall Group on the basis of lithological similarities and similar geologic position. This correlation is shown schematically in figure 3b.

The Mainwaring River Group have been geochemically and petrologically correlated with similar rocks in the Crimson Creek Formation in the Smithton Trough, at Miners Ridge and the Henty Dyke Swarm. These rocks are Eo-cambrian, predating and underlying the calc-alkaline Mt. Read Volcanics.

This leaves the fault bounded block between the Western Epiclastics/Owen Conglomerate and Mainwaring River Group. This unit is strongly schistose and may not every be a single stratigraphic unit.

McPhee and Allen (1992) recently concluded that the Tyndall Group rocks may be prospective for massive sulphides. This conclusion impacts on the Lewis River area as there are numerous airborne EM and geochemical anomalies within Tyndall Group correlates. McPhee and Allen (1992) state: "sea floor hydrothermal systems responsible for the massive sulfide mineralisation in the Mount Read Volcanics operated in a variety of volcanic hosts and settings. In particular, the volcanoclastic facies associations that dominate the western volcano-sedimentary sequences and the Tyndall Group may be as prospective as the formations dominated by lavas (Central Volcanic Complex, Que-Hellyer Volcanics). In fact, such a volcanoclastic association hosts the Hercules and Rosebery massive sulfide deposits. These volcanoclastic associations also offer a means of eventually establishing correlations within the Mt. Read Volcanics that will constrain the relative ages of the known ore deposits. For example, correlation of the lower part of the Southwell Subgroup, the White Spur Formation, and the upper part of the Hercules-Rosebery volcanoclastic sequence would imply that the mineralisation at Hellyer is lower in the stratigraphic pile than that at Hercules-Rosebery. Existing understanding suggests the reverse."

'Tasmania scale' gravity and magnetics surveys indicate the presence of a major N-S structure running from Birch's Inlet to near Veridian Point. Aeromagnetic surveys of the Macquarie Harbour and sea off the west coast suggest that there is a major sinistral strike slip fault joining the Sorell Peninsula to the rocks north of Zeehan. Further, drilling on the Sorell Peninsula has shown the Precambrian to be underlain by Cambrian (?) correlates, indicating thrusting. Hence, somewhere between the Mainwaring River Group and the Owen Conglomerate/ Western Epiclastics is a major structure with possibly at least tens of kilometres of strike slip movement. Within the Elliott Bay area itself the rocks generally show one north-north west trending cleavage with a second overprinting crenulation cleavage in parts. Brittle faults and shear zones have been mapped differently by different geologists. It is unclear as to which interpretation is correct.

## 4.0 Exploration History

### 4.1 Introduction

The Elliott Bay area lies at the extreme southern end of the M.R.V's. The area saw some prospecting around the turn of the century with T.B. Moore (one of the more famous prospectors) visiting the area. In 1955, the B.M.R. conducted an Airborne Scintillometer Survey over the southwest of Tasmania. The first EL, which included the Elliott Bay area, was that of Mt.Lyell-E.Z (L.E.E. joint venture) in 1957, which covered a vast area of south-western Tasmania.

### 4.2 Old Workings

Old workings are visible at V1 (hereafter Voyager is abbreviated to V - i.e. Voyager 1 becomes V1), Penders Prospect, V2 (Lewis River) and V3. These workings date back to 1890-1910, however, the area south of Macquarie Harbour did not see the level of prospecting activity which characterised the rest of the west coast. This was largely due to difficulty of access.

### 4.3 L.E.E./B.H.P.

The L.E.E. joint venture (between the Mt. Lyell and E.Z. companies, operators of the Mt. Lyell and Rosebery mines, respectively) carried out an airborne EM., magnetics and scintillometer survey over the vast "Gordon Concession" covering much of Tasmania's south-west. Ground inspection of old workings was made at V1, V3 and Lewis River with mapping and rock-chip sampling of the latter. Results of this work are poorly reported and have been superseded by later more detailed work. No data from their work is included in this report.

B.H.P explored the south-west from 1965-1975 as part of the large EL 13/65. Initial work involved an aeromagnetic survey including the northern part of Elliott Bay, followed by an airborne scintillometer survey. Ground work consisted of a stream sediment geochemical survey over most of the volcanics with some limited soil sampling. In 1975 B.H.P contracted Georex Pty Ltd to fly a McPhar H-400 EM survey over the Elliott Bay area. Figure 73 is indicative of the level of activity of B.H.P. in the Elliott Bay area and is the only data from their work included in this report. The McPhar H-400 EM survey has been superseded by later airborne EM surveys in the area, however, anomaly locations are shown in Figure 79b.

### 4.4 Geopeko (1976-1985)

Geopeko extensively summarised all of their work in their 1985 relinquishment report (Herrmann 1985). That report has been included as Appendix A. Their work defined 36

prospects given the prefix Voyager. Table 1 summarises these prospects and Figure 4 shows their locations (also see also figure 69 showing Geopeko's and Cyprus's prospect locations at 1:25 000). More detailed prospect summaries are included as Appendix B. A brief summary of exploration conducted annually by Geopeko follows. Unfortunately due to time constraints, I have not been able to refer to relevant plans in the summary of Geopeko's exploration even though most of the plans are included in this report. The date of the plans listed in the 'Figures' should give a clue to the relevant plan, as should reference to Appendix C.

#### 1976-77

Exploration (over a 3 week period in March/April) consisted largely of reconnaissance mapping and rock sampling and the collection of -80# stream sediments over a significant of the area of Mt. Read Volcanics. More detailed work was conducted over areas of old workings (V1 and V2), EM anomalies defined by the McPhar H-400 survey (V2, V3 and V4) and aeromagnetic anomalies from the same survey (V5 and V6).

#### 1977-78

Griding, soil sampling and geophysical surveys (dipole-dipole IP, VLF-EM and SP) were conducted over some of the prospects defined in the previous years work (V 1, 2, 3 and 9). The V 3, 2, 10 zone in the south-eastern part of the area was recognised as having potential for V.H.M.S. style mineralisation with anomalous streams, soils and IP responses. V 1 was also considered to have similar potential.

#### 1978-79

The regional work commenced in 1976/77 was extended to cover the area north of the Lewis River, with further mapping, rock sampling and -80# stream sediment sampling conducted. Some of this work was directed towards assessing further EM anomalies from the McPhar H-400 survey. This work led to the discovery of gold anomalous gossan at V12 (North Lewis), however, in general inconclusive results were obtained from following up the EM anomalies.

Detailed work was conducted over V 1 to 5, 10 and 12. This work involved further griding, soil sampling and geophysics (including magnetics, IP, SP, TURAM and VLF-EM). The first drilling (All Jacro AQ holes) was conducted in this season with 5 short holes (for 207.45 metres) at V2 (Lewis River), 2 short holes (for 61.2 metres) at V3 and 4 holes (for 185.4 metres) at Voyager 12 (with very poor recoveries).

Geochemical and geophysical anomalies at V2 were attributed to minor "erratic" lenses of mineralisation. Those at V3 remained unexplained by drilling, though the occurrence of sulphides (including Cu, Pb and Zn) in fine sediments was considered encouraging. Drilling at V12 (North Lewis) was rendered partly inconclusive by poor recovery, however, no drill assays approached the highly anomalous results (numerous samples >20g/t Au) obtained from the surface gossans).

## 1979-80

Work was conducted over a five month field season from December through April. The regional reconnaissance work was extended to cover much of the remainder of the Mt. Read Volcanics in the Elliott Bay area, with -80# stream sediment sampling and geological mapping. By this stage 26 Voyager prospects had been defined. At the end of the season Large (1981) defined six styles of mineralisation with economic potential in the Elliott Bay area. These were:

- (1) Cu (Pb-Zn) mineralisation (analogous to Mt Lyell) in pyritic alteration in the western part of the Elliott Bay area (specifically V9 and V19).
- (2) Stratabound gold in volcanics as evidenced by highly gold anomalous stream sediments in the V24 (Sassy Creek) area.
- (3) Rosebery type V.H.M.S. deposits in the V2-V3 area in the south east (as evidenced by disseminated Pb-Zn mineralisation) and the V4, V20 areas (as evidenced by anomalous base metals in stream sediments).
- (4) Epigenetic gold-base metal mineralisation related to the contacts with the Elliott Point Porphyry.
- (5) Copper-tungsten mineralisation associated with thin magnetite-pyrite-chlorite-siderite exhalatites (?) at V1 - V5.
- (6) Syngenetic copper mineralisation in dolomitic horizons in the tholeiitic
- (7) Mainwaring River Volcanics to the west of the Mt. Read Volcanics at Elliott Bay.

Priority (for exploration follow up) was assigned to styles 1 to 3.

Detailed work was conducted over a number of prospects with more significant work at V1 (gridding, magnetics, VLF-EM and TURAM), V2 (drilling 200.35 metre Jacro AQ DDH - V2/6), V6 (gridding, mapping, soils - though not assayed for gold, magnetics and VLF-EM), V9 [gridding, mapping, soils - (inc. Au analysis), magnetics, VLF-EM and a single 60 metre Jacro AQ DDH - V9/1), V12 (drilling of DDH V12/5 to 163.65 metres) and V20 (rock sampling and mapping).

The V2/6 diamond drill hole intersected 9 metres @ 1.61% Pb, 0.24% Zn and 21.2 g/t Ag in veinlets interpreted to possibly be remobilised from syngenetic disseminated mineralisation encountered throughout the hole. The magnetics at V6 defined a magnetite bearing dyke associated with a "tongue" of the Low Rock Point Granite (later shown by Cyprus to be associated with anomalous gold). Work at V9 was encouraging with widespread chlorite-magnetite and pyrite-sericite alteration recognised and anomalous base-metals. The single short diamond drill hole intersected sericitised felsic volcaniclastics with disseminated pyrite and disseminated /veinlet magnetite.

The diamond drill hole at V12 (North Lewis) was also disappointing with a best assay of 0.4g/t Au. Field work at V20 located haematitic and chloritic volcanics with potential for lead-zinc mineralisation.

**1980-81**

Field work concentrated on areas of alteration defined by previous work (V3, V9, V19, V22 and V29), the V24 (Sassy Creek)/V30 zone of anomalous gold in streams and also on a number of other prospects/reconnaissance work in the Mainwaring River Volcanics.

More significant exploration included the following: at V3 (further mapping, limited IP and drilling of a single 201.1 m DDH - V3/3), V9 (soil sampling, gradient array IP followed-up by dipole-dipole IP and the drilling of a single 232.15 m DDH - V9/2 under a copper soil anomaly), V19 (gridding, mapping, soil sampling, gradient array IP and follow-up dipole-dipole IP, magnetics, limited gravity, SP, MST-EM and trenching), V22 (gridding, mapping, rock and soil sampling) and at V29 (gridding, mapping, soil sampling and gradient array IP).

At the V24/V30 zone work included panned concentrate sampling (see Appendix G) and gridding, soil sampling, reconnaissance dipole-dipole IP, gradient array IP, SP and magnetics over the V24 area followed by a single 281.5 m diamond drill hole (V24/1).

The most significant discovery in the 1980/81 season was the discovery (by trenching small, but intense soil geochemical anomalies [e.g. 2.1% Pb and 8.8% Zn] of a small (4 metre wide) body of high grade polymetallic massive sulphide averaging 10.2% Pb, 17.9% Zn, 138 g/t Ag and 0.6 g/t Au) at V19 (Wart Hill). At V3 DDH V3/3 intersected felsic volcanoclastics with disseminated pyrite and minor local zinc mineralisation (8 metres @ 0.37% Zn). Hole V9/2 intersected chloritic alteration but no significant copper mineralisation. A similar sequence to V19 was recognised at V22 highlighting the moderately Pb - Zn anomalous soils whilst further soil anomalies were defined at V29.

The soil sampling at V24 defined zones of anomalous gold with the DDH intersecting a broad zone of siliceous-pyritic volcanic breccias with minor galena-sphalerite and low, but anomalous, gold mineralisation (inc. 80 metres @ 0.067 g/t Au) suggestive of stockwork style mineralisation.

Results from work on other prospects included the discovery of Ag-Au-As anomalous in pyrite-galena-sphalerite veins along the Copper Creek Fault (V31). Low order gold stream anomalies were defined in reconnaissance work in the Mainwaring River volcanics.

**1981-82**

Work in the 1981/82 season focussed on following-up the discovery of the body of massive sulphide the previous year. In particular work was conducted over the volcanics around the hinge of the Mt. Osmund syncline. Specifically this included the following: At V9 (extensions to grid, infill soil sampling, gravity, magnetics and the drilling of a single 158.55 metre DDH, V9/3 to test a dipole-dipole IP anomaly), V19 (detailed gravity, infill gridding and soil sampling, selected dipole-dipole IP, VLF-EM, trenching and drilling 5 DDH's for 882.56 metres), V22 (infill gridding, mapping, magnetics and soil sampling), V29 (soil sampling, magnetics, VLF-EM, gravity, SP and dipole-dipole IP),

V29 West (gridding, mapping, magnetics and VLF-EM), V30 (gridding, mapping, soil sampling, magnetics, trenching, reconnaissance dipole-dipole-IP, SP and gravity), V31 (gridding, mapping, soil sampling, magnetics and VLF-EM), V33 (gridding, mapping, soil sampling and magnetics) and V34 (gridding, mapping, soil sampling and magnetics).

Further work was conducted over prospects in the north-eastern part of the area of Mt. Read Volcanics. At V16 work included gridding, soil sampling and stream sediment sampling (including panned concentrates), VLF-EM and magnetics with similar work at V20.

Further work on the V24/V30 gold zone included more detailed steam sediment sampling, trenching of a base metal soil anomaly and a black shale, study of the morphology and geochemistry of alluvial gold and extending V24/1 to 281.5 metres.

The trenching at V19 exposed a second body of massive sulphide ~250 metres south of the first body. This body averaged 0.2% Cu, 13.9% Pb, 21.9% Zn, 680 g/t Ag and 0.83 g/t Au, over a 3 metre width. Gravity failed to locate a large body of massive sulphide near surface and the five DDH's failed to intersect significant mineralisation, however, it was considered that the bodies were lenses and thus identified a favourable stratigraphic horizon. It was recommended that fixed loop EM be used to identify conductive massive sulphide mineralisation to ~200 metres depth.

V9/3 intersected felsic volcanoclastics with interbedded fine sediments including pyritic black shales interpreted to indicate a favourable ore-forming environment. Magnetics indicated the presence of a large magnetic body at ~ 500 metres depth. Mapping at V22 indicated a similar sequence to V19, but soil responses were low. Similar work at V29 and V29 West defined a zone of strong soil anomalism associated with moderate IP and weak gravity anomalism. Anomalous (base metals) soils at V30 are associated with altered granite and pyritic volcanoclastics, but IP results are inconclusive. Mapping at V31 confirmed that the sulphides are located in quartz veins along a geological contact. Soil sampling at V33 defined two anomalous zones with potential for massive sulphides, whilst soil sampling at V34 defined a number of moderately anomalous zones with visible galena/sphalerite in auger chips.

Soil sampling at V16 and V20 in the north-east defined a number of anomalous zones. Analysis of alluvial gold indicated that it had a primary origin and was probably associated with sub-volcanic base metal mineralisation.

### 1982-83

Aquitaine Australia Minerals Ltd joint ventured into the project in 1982, but withdrew in 1983.

In spite of the disappointing results of drilling in the previous season it was considered that the sequence of volcanics around the Mt. Osmund syncline lay at the same broad stratigraphic level as the sulphide lenses at V19 and thus had the potential to host massive sulphides. Since massive sulphides could be expected to be chargeable, but not necessarily conductive, it was decided to carry out an extensive dipole-dipole IP survey over the volcanics on either side of the Mt. Osmund syncline from V33 on the western side to V34 on the eastern. 100 line kilometres (totalling ~ 25 square kilometres) was read using 50 metres dipoles on east-west lines spaced 200 metres apart. As part of this systematic work C-horizon soil sampling was completed over the same area along with detailed mapping/re-mapping. Magnetics was read over lines in the southern part of the survey area and infill soil sampling and IP conducted in areas where anomalous responses were recorded. Other work in the season was the extension of panned concentrate stream sampling on the eastern side of the Stony Creek Microgranite and a lead isotope study of occurrences of lead mineralisation.

The IP anomalies defined by the survey were only of subtle character, however, after consideration of other geological, geochemical and geophysical data, three were selected as priority targets for drilling in the following season with a further eight recommended for further infill IP or geochemical sampling. The stream sampling defined a zone of anomalous alluvial tin and extended the area of the gold anomalous zone (V24/V30 lie to the west of the Stony Creek Microgranite). The lead isotope study showed that Cambrian mineralisation could be distinguished from Devonian (less prospective) mineralisation.

#### 1983-84

The recommended drilling was not carried out. Instead a smaller programme (apparently designed to obtain encouraging enough results to carry on) was completed. In the V19, V9, V29 and V29 West areas this work consisted of a fixed loop UTEM III survey (four loops for ~ 40 line kilometres), a small dipole-dipole IP (10 and 20 metres dipoles) survey over the massive sulphide bodies at V19 and re-survey/infill of a strong IP anomaly at V29 West. Two DDH's (for 201.8 metres) were drilled into base metal veining at V33. Further soil sampling and re-assaying of previously collected soils at V24 for gold led to three holes (V24/2, V24/3 and V24/4 for 638 metres) being drilled under the best gold soil anomalies.

The UTEM survey did not locate any significant conducting bodies. The V33 DDH's confirmed that mineralisation is structurally controlled and narrow. Drilling at V24 intersected occasional narrow (to 4 cm) sulphidic veins with visible gold. The best assay of 3 metres @ 17.5 g/t Au is a result of the drilling apparently being down the dip of the vein orientation. Other than these discrete veinlets the hole intersected broad zones of low grade gold mineralisation (e.g. 85 metres @ 0.052 g/t Au).

Geopeko decided to withdraw from exploration in Tasmania in early -1984, however, a J.V. partner could not be found and the ground was dropped in mid -1985.

#### 4.5 Cyprus (Arimco)-Poseidon (1985-1990)

Cyprus (who became Arimco) were the licence holders of EL 40/85 from 1985 until late-1994 when the ground was compulsorily relinquished in spite of Cyprus's efforts to extend the E.L. It is believed that Cyprus and Poseidon maintained a 50:50 J.V. until Aberfoyle farmed in in 1990, with the split ~ 33% each from then on. Cyprus managed the property until 1989. In 1990 Aberfoyle began farming into and managing the EL, pulling out in 1993.

The following is a summary of exploration conducted by Cyprus from 1985 to 1990.

##### 1985-96

##### *Work Carried Out*

Field work in the six months from January to June, 1986 consisted of the following:

- Helicopter borne Dighem-magnetic survey in early January including 500 line km with 150 metre line spacing (see Figure 5).
- Ground follow-up of ten anomalous areas involving:
  - 14 lines totalling 19.25 km
  - Max-min EM survey and magnetics surveys over all lines
  - 455 C horizon soil samples on lines 1 to 12 and 14
  - 14 rock chip samples
  - reconnaissance geological mapping
  - 10 thin sections.

##### *Results*

A number of anomalies were recognised in the DIGHEM survey. Bishop (1986) recommended follow-up of 10 of these anomalies. Fourteen reconnaissance lines were completed over these anomalies (see Figure 83).

Ground magnetics were generally flat with only five peaks on lines 2, 3, 5 and 8. No geochemical anomalism was associated with these peaks except for line 2.

Line 2: Anomalous zinc in soils (to 550 ppm) from 10550E to 10850E.

Minor lead/zinc (to 100 and 200 ppm respectively) from 11000E to 11150E over spiky magnetics. (See Figures 86 & 87).

Line 5: Anomalous zinc in soils (to 690 ppm) and lead (to 175 ppm) with strong coincident Max-min response. (See Figures 84 & 85).

Line 6: Anomalous gold in soils averaging 0.5 ppm from 850E to 950E (peak of 0.96 ppm) (see Figure 88).

Line 8: Moderately anomalous zinc (to 190 ppm) and lead (to 100 ppm) in soils with coincident moderate Max-min EM anomaly. (See Figures 89 & 81). A separate single anomalous gold value of 1.01ppm at 1275E.

(No Au assayed for samples from lines 10 to 14).

Geologically the rocks were considered to become more altered to the south.

**1986-87**

Regional:

*Work Carried Out*

- Evaluation of all previous geophysical work by Mitre Geophysics (Bishop, 1987)
- Compilation of 1:10000 prospect mapping at 1:25000
- Regional Stream geochemical sampling using -80# and panned concentrates (Cu, Pb, Zn, As and Au).
- Rockchip sampling
- Air photo interpretation of structures.

*Results*

- Bishop (1987) recommended follow-up of a number of DIGHEM anomalies, DHEM on all holes at V19, compilation of all previous work at 1:25000 and regional gradient array IP over areas not covered by previous IP surveys.
- The stream geochemical sampling results along with subsequent years work are compiled at 1:10000 on Figures 91 to 96, with gold streams and rock chips on Figures 97 to 102, and anomalies shown in Figure 82.

Prospect evaluation was prioritised according to the following:

- follow-up of Dighem anomalies
- evaluation of old prospects
- follow-up of air magnetic anomalies
- follow-up of geological and geochemical anomalies determined from Cyprus stream and rock-chip sampling program.

Prospects are detailed below:

Wanderer South (Dighem anomaly)

*Work Carried Out*

- 3 lines totalling 3.15 km.
- 13 pan concentrate samples.
- B/C horizon sampling over all lines.
- 12 rock-chip samples.
- Max-min EM and ground magnetics surveys over all lines.

*Results*

The pyritic shales, felsic volcanoclastics, basic volcanics and gabbroic intrusives do not have associated anomalous geochemistry nor geophysics (see Figure 58).

Python Pit (Dighem anomaly)

*Work Carried Out*

- 1,000m grid anomaly.
- 4 -80# and 2 pan concentrate samples.

- 41 C horizon samples.
- 1 rock-chip.
- Max-min EM and ground magnetics surveys.

*Results*

Siltstones, shales and basic volcanics underlie soils with up to 200 ppm Cu, 42 ppm As and 0.65 ppm Au with a weak conductor coincident with a black shale (see Figure 59).

Mt Osmund West (Dighem anomaly)

*Work Carried Out*

- 2 old Geopeko lines resurveyed and extended 200m + one 500m line cut.
- 4 pan concentrates and 3 -80# stream samples.
- 5 rock-chip samples.
- 41 C horizon samples.
- Max-min EM and ground magnetics over all 3 lines.

*Results*

Felsic porphyries and sediments are drained by creeks with abundant visible gold (to 25 visible grains and 173.3 ppm Au). Rocks are up to 1,600 ppm Cu, 1,875 ppm Pb, 545 ppm Zn, 7,400 ppm As and 0.015 ppm Au in a ferricrete on quartz and 2,800 ppm Cu, 215 ppm Pb, 190 ppm Zn, 86 ppm As and 0.045 ppm Au in a silicified black shale. Soils were up to 940 and 300 ppm Pb and 370 ppm As. The EM detected very weak anomalies associated with pyritic black shales. Further detailed work was recommended.

Mainwaring River (Dighem anomaly)

*Work Carried Out*

- Follow-up undertaken along Mainwaring River and tributaries.
- 2 -80# and panned concentrate samples.
- 4 rock-chip samples.

*Results*

The basic volcanics and fine sediments have a sheared contact coincident with the EM anomalies. No anomalous geochemistry was revealed (see Figure 62).

Woolloomooloo Creek (Dighem anomaly)

*Work Carried Out*

- 800m grid line.
- 23 pan concentrate and 31 -80# stream sediment samples.
- 32 C horizon soil samples.
- 1 rock-chip sample.
- Ground magnetics and Max-min EM along adjacent line.

*Results*

Felsic volcanoclastics and porphyry are drained by creeks with anomalous gold (to 130 ppm in panned concentrates). 9.3 ppm Au was assayed in a -80# sample. All soils were low and the EM responses were weak and attributed to a shale unit. (See Figure 25).

Mt Osmund East (Dighem anomaly and Line 15 from previous years work)

*Work Carried Out*

- 2 extra lines + line 15, totalling 2.1 km, were surveyed.
- 78 C horizons soil samples.
- 2 rock-chip samples.
- 4 pan concentrate and 4 -80# stream samples.
- Ground magnetics and Max-min EM surveys over all lines.

*Results*

EM anomalies are weak, however, soils are up to 6,000 ppm Pb, 1,700 ppm Zn and one sample gave 1.85 ppm Au though re-sampling gave 0.008 ppm. Anomalous results are associated with zones of chlorite and quartz chlorite alteration (see Figure 24).

North Waterloo Creek (Dighem anomaly)*Work Carried Out*

- One 600 metre line was cut to cover each of the two anomalies.
- Soils over both lines.
- 2 and 1 rock over lines 18 and respectively.
- Ground magnetics and Max-min EM surveys over both lines.

*Results*

- Felsic volcanoclastics.
- Soils to 335 ppm Pb, 245 ppm Zn and 0.16 ppm Au on line 18 though Au results not repeatable. Line 5100 had a peak of 260 ppm Zn.
- All rocks low.
- Weak EM conductors on both lines. Weakly anomalous Zn associated with EM response on southern line (see Figure 23).

North Lewis (Voyager 12)*Work Carried Out*

- 6.9 line kilometres gridded.
- Geological mapping.
- 267 C horizon soil samples.
- 44 rock-chip samples.
- Rock-chip strip samples.
- 3 -80# stream sediment samples and 3 panned concentrate samples.
- 3 lines surveyed with Max-min EM.
- Re-log of DDH-5.
- One petrographic description of core from DDH-5.

*Results*

- Rocks are fine to coarse grained rhyolitic quartz crystal tuffs and minor interbedded tuffaceous siltstones and shales in contact with a quartz feldspar biotite porphyry (see Figure 189). Gossanous pods up to 20 cm wide and 2 m long assayed consistently up to 24.3 ppm Au. (Cyprus data) and 265 ppm Au (Geopeko data) and up to 3.05% As. (See Tables 14 and 13 respectively).
- Soil anomalies were defined with peak values of 2,200 ppm Pb, 600 ppm Zn, 980 ppm Cu, 3,110 ppm As and 0.11 ppm Au (see Figures 192 to 194).

- As noted rocks were consistently up to 24.3 ppm Au and 3.05% As (Figure 191).
- Rock-chip strip samples returned up to 1.63 ppm Au and 5,520 ppm As.
- Anomalous As to 210 ppm was detected in stream samples though Au in panned concentrates and -80# samples was surprisingly low (see Figure 191).
- Two anomalously magnetic zones coincident with mineralised outcrops were detected.
- No EM anomalies were detected.

It was recommended that in the soil anomalies, open ended to the north and north-east, should be closed off. Diamond drilling was also recommended, as was further V.L.F. EM and ground magnetics.

### Wart Hill (V19)

#### *Work Carried Out*

- Re-establishment of Geopeko grid.
- 125 infill C horizon soil samples.
- Reconnaissance geological mapping.
- Ground magnetics over 6 line km.
- Max-min EM survey over 6 line km.
- Petrophysical measurement of 2 samples of massive sulphide.

#### *Results*

- Soil samples were up to 235 ppm Cu, 5,000 ppm Pb, 3.15% Zn, 270 ppm As and 0.28 ppm Au.
- Ground magnetics gave a generally flat response.
- Several subtle but discrete zones of anomalism were defined.
- Massive sulphide samples were not conductive.

It was recommended that since both EM and IP had failed to locate significant conductive or chargeable bodies in the Wart Hill area, the gravity data should be re-evaluated and that further exploration be conducted along strike from the massive sulphide lenses.

### Penders Prospect (V1)

#### *Work Carried Out*

- 12 -80# and 11 panned concentrate stream sediment samples.
- 41 rock-chip samples.

#### *Results*

- Up to 1.07 ppm Au in -80# and 365.5 ppm Au in panned concentrates were taken from creeks in the vicinity of Penders Prospect. Best values were obtained just downstream of the volcanics/Low Rocky Point Granite contact. (See Figures 53 and 217).

Rock chip results are shown in Table 17 and Figures 54 and 55.

It was recommended that further mapping, rock-chip and soil sampling be carried out over the granite/volcanics contact with no further work on Penders Prospect itself.

#### Sassy Creek (V24)

##### *Work Carried Out*

- 1 -80# and 1 panned concentrate sample taken to orientate Cyprus's sampling against Geopeko's.
- 6 rock-chips assayed (not for Au).
- 3 petrological samples.

##### *Results*

- 500.8 ppm Au was obtained from the panned concentrate and 2.02ppm Au from the -80# sample correlating reasonably well with Geopeko's 60.5 and 0.395 respectively.
- Rocks were low
- Mineralisation, vein formation and alteration predate deformation

It was concluded that if quartz veins and stockwork zones were the source of the gold then Geopeko's drill holes were drilled down dip. It was recommended that the soil grid be extended to the south and two further drill holes be completed perpendicular to dominant vein sets.

#### Voyager 18-23 (Coastal Section)

##### *Work Carried Out*

- Reconnaissance mapping.
- 22 rock-chips.

##### *Results*

- Rock-chips assayed up to 2.15% Cu, 30 ppm Pb, 375 ppm Zn and 0.055 ppm Au.

No further work was recommended.

#### Voyager 6

##### *Work Carried Out*

- Reconnaissance mapping.
- 16 rock-chip samples.
- 15 pan concentrate and -80# stream samples.

##### *Results*

- Rock-chips up to 7.25 ppm Au. (See Figure 68).
- Streams up to 0.9 ppm Au in -80# and 22.6 ppm Au in panned concentrates (see Figure 52).

It was concluded that gold occurred in veins within altered volcanics on the margin of granite contacts. It was recommended that attention be paid to granite contacts elsewhere.

Porphyry-Dolerite Contact (Air Magnetic Anomaly)*Work Carried Out*

- 800 m grid line.
- 16 B/C horizon soils.
- 4 -80# and panned concentrate steam sediment samples.

*Results*

- Soils all low.
- One -80# has 0.88 ppm Au whilst one pan concentrate has 230 ppm Au (see Figure 50).

No further work was recommended.

Magnetic Anomaly 1*Work Carried Out*

- Traverses in vicinity of anomaly with ground magnetics.
- 9 soil samples.

*Results*

- Soils all low.
- Magnetic anomaly not located but probably lies south of traverse at volcanics/porphyry contact (see Figure 47).

No further follow-up recommended.

Magnetic Anomaly 2*Work Carried Out*

- 4 traverses totalling 1.1 line km.
- 8 soil samples.

*Results*

- Soils all low (see Figure 48).
- Anomaly located and considered to be deep.

No further work recommended.

Magnetic Anomaly 3*Work Carried Out*

- 6 traverse lines totalling 2.1 line km.
- 8 soil samples.

*Results*

- Anomaly located at contact of granite and rhyolitic tuffs.
- Soils up to 5,100 ppm Cu and 0.03 ppm Au at eastern end of line (see Figure 49).

Further detailed work recommended over contact zone.

Magnetic Anomaly 4*Work Carried Out*

- 6 traverse lines totalling 1.6 line km.
- 10 soil samples.

*Results*

- Anomaly located at eastern margin of chloritised quartz feldspar biotite porphyry.
- Soils up to 2,700 ppm Cu, 1,325 ppm Pb and 48 ppm As but no Au (See Figure 40)

No further work was recommended.

Magnetic Anomaly 5*Work Carried Out*

- 1 400 m traverse
- Soils and rock-chips.

*Results*

- Anomaly located over dacitic lavas and ignimbrite.
- Soils and rocks low (see Figure 46).

No further work was recommended.

North Porphyry Contact*Work Carried Out*

- 3.9 km of gridding.
- 13 -80# and panned concentrate stream sediment samples.
- 161 B/C horizon soil samples.
- 9 rock-chips.
- Max-min EM and magnetics surveys on all lines.

*Results*

- Rock-chips to 150 As and 0.025 Au.
- Streams to 30.5 ppm Au in pan concentrate and 0.59 ppm Au in -80# (see Figure 45).
- Soils to 990 ppm Zn (see Figures 45 and 229 to 223).
- Magnetic anomalies detected.

It was considered that the pyrite chlorite alteration zone adjacent to the porphyry had been adequately tested as had the magnetic anomalies.

Lewis River (V2)*Work Carried Out*

- 6.9 km of gridding.
- 229 C horizon soil samples.
- 16 rock chips.
- 7 panned concentrate and 7 -80# stream sediment samples.

- Ground magnetics over grid.
- One petrographic description.

#### *Results*

- Soils up to 625 ppm Cu, 585 ppm Pb, 4,350 ppm Zn, 83 ppm As and 0.71 ppm Au. (see Figures 170 to 172).
- Rocks up to 0.64 ppm Au and 5.55% As (see Figure 169).
- -80# to 0.8 ppm Au and 1 ppm As and up to 95 ppm Au in pan concentrate (see Figure 169).
- Ground magnetics flat.

The source of gold in creeks was considered to have not have been located. More detailed stream sediment sampling was recommended.

#### Waterloo Creek

##### *Work Carried Out*

- 1.7 line km of grid established.
- 56 C horizon soil samples.
- 5 rock chip samples.
- 2 panned concentrate and -80# stream sediment samples.

##### *Results*

- Soils to 125 ppm Cu, 430 ppm Pb, 515 ppm Zn but gold all low.
- Rocks up to 0.07 ppm Au.
- 1.97 and 22.7 ppm Au in -80# and pan concentrate, respectively.

It was recommended that further work be carried out on line 8800N where Geopeko had obtained anomalous Pb and Zn in soils with the gold also derived from the same area (see Figure 23).

Further work recommended by Cyprus consisted of the following:

##### Priority One:

- drill targets at North Lewis, extend grid northwards with continued geochemical, magnetic and VLF-EM surveys.
- drill V24 (Sassy Creek), extend grid southwards.
- re-evaluate gravity at Wart Hill and drill targets.
- evaluate regional gravity and computer enhanced magnetics.

##### Priority Two:

- detailed pan concentrate sampling in Lewis River area.
- stream sediment sampling of granite contacts.
- stream sediment sampling of zones of structural deformation.
- further work on western side of Mt. Osmund syncline, north of and including, Mt. Osmund West prospect.
- stream sediment sampling of contact between Elliott Point Porphyry and Precambrian rocks.

- geochemically assess western contact of Low Rocky Point granite.
- more detailed work at Magnetic Anomaly 3.

#### Priority Three:

- assay previously collected stream samples from areas of mafic volcanics for platinum group elements.
- extend traverses at Magnetic Anomaly 1.
- trench sample lead-zinc anomalies on line 8800N at Waterloo Creek.

#### **1987-88**

Cyprus carried out an extensive programme in the 1987-1988 season with a total of 12 DDH's totalling 927.7 metres as well as further geochemical sampling on extended grids. Prospects drill tested were North Lewis and Wart Hill.

#### Wart Hill (V19)

##### *Work Carried Out*

- Detailed soil sampling with 232 B/C horizon samples.
- 6 rock-chip samples.
- 7 DDH's totalling 578.1 m.
- DHEM on all holes.

##### *Results*

- Anomalous soils generally correspond to massive sulphide pods and epiclastics with massive sulphide fragments. A coincident lead/zinc anomaly was defined away from drilling. Barium anomalism does not correspond to base metal anomalism. An anomalous gold value of 14.78 ppm overlies a massive sulphide fragment (see Figures 132 to 137).
- Rock-chips from the host rocks to the massive sulphide were anomalous with up to 0.66% Cu, 8.52% Pb, 12.12% Zn, 0.12% As, 135 ppm Ag and 6.62 ppm Au. Rock-chips from the hanging wall (to mineralisation) Waterloo Creek group were not anomalous.
- The 7 DDH's are detailed in Section 5.0 (and shown in Figures 111 to 122).
- DHEM suggested possible off hole responses of the ends of WH5 and WH7.

#### East Camp (V29)

##### *Work Carried Out*

- 3.3 km of infill grid lines and re-establishment of old Geopeko grid in 4 areas of Pb-Zn anomalism.
- 187 B/C horizon soils assayed for Cu, Pb, Zn, As, Au and Ba, plus re-assaying of 88 Geopeko pulps.
- 4 costeans.

##### *Results*

- Generally poor repeatability of Geopeko's results except for one zone where a best result of 650 ppm Pb and 1,150 ppm Zn. Gold was up to 2.39 ppm. Anomalous

results were trenced with the best at 0.24 ppm. Results are detailed in Section 5.0 (and in Figures 123 to 131).

- Rock-chips in costeans were up to 1.15% Zn and another up to 0.37% Pb.

#### Sassy Creek (V24)

##### *Work Carried Out*

- 2.3 km of grid line cut plus 400 m of short infill lines.
- Soil sampling over grids.

##### *Results*

- No anomalous soils (see Figure 138).

#### North Lewis (V12)

##### *Work Carried Out*

- 5 DDH's totalling 349.6 m.

##### *Results*

- The results are detailed in Section 5.0 and Appendix 1.

#### Low Rocky Point Granite Contact

##### *Work Carried Out*

- 1.9 km of old grid (western contact) re-established.
- B/C horizon soil sampling over grid lines at 25 m spacings (western contact).
- Drainage samples (eastern contact).
- 9 Rock-chips (eastern contact).

##### *Results*

- Soils generally disappointing, but 0.03 and 0.07 ppm Au at western end of one line and another zone with values up to 0.06 ppm Au (see Figures 217 to 221).
- Streams revealed no visible Au in panned concentrates, but -80# samples were up to 0.57 ppm Au (see Figure 217).
- All rock-chips were B.D.L., except for 0.68 and 0.04 ppm Au in quartz-pyrite-specular haematite± sericite veins.

#### Regional

##### *Work carried out*

- Compilation of all previous geophysics (Bishop, 1988).
- Interpretation of air photographs and magnetic lineaments.

##### *Results*

- Bishop's (1988) report focussed on Geopeko's Voyager prospects with further work recommended for 22 of the 36 Voyager prospects. His summaries and conclusions are included as Appendix D.

Further geophysics was recommended in a number of areas:

- further follow-up of aeromagnetic anomalies
- gradient array IP over areas not covered in regional dipole-dipole survey, in particular the V3-V12 zone.

- dipole-dipole IP may provide drill targets in gold prospects eg V30.
- the extension of the resistivity high at V24 should be tested.
- UTEM survey over the V2-V12 area.
- DHEM at V12 prospect.
- completion of regional gravity to confirm two possible anomalies near V19 and further evaluate gravity at V9 and V29 in the light of drilling.
- carry out an integrated interpretation of aeromagnetic and gravity data to help define structure and deformation in the V19 area.

Bishops compilation also included a complete compilation of previous surveys, geology etc for the area at 1:25000 scale. These have been reduced in size and included (see Figures 75 to 81 ).

1988-89

*Work Carried Out*

- review of geophysical and geochemical data for Wart Hill and East Camp prospects.
- 6 DDH's totalling 1793.6 metres at Wart Hill and East Camp
- excavating, sampling and mapping 1655 metres of trenches
- DHEM of EC 1 and 2, WH 8 to 10 and V19/5 and V19/3

*Results*

- results from the review, drilling and trenching are detailed under Section 5 (see Figures 110 to 131).
- DHEM results are not available.
- further work was recommended as follows:
  - complete re-log of all core
  - clear broken PVC from WH-12A and run EM 37 survey
  - diamond drill extension of mineralisation intercepted in WH 8
  - diamond drill coincident gravity and UTEM anomalies in Waterloo Creek shales at 13000N, 10375E
  - trench and drill geochemical and geophysical anomalies at East Camp
  - geochemical and geophysical anomalies at Drake Creek/V3 prospect should be tested with ground EM and Wacker sampling
  - gold potential of the Low Rocky Point granite contact should be further evaluated.
  - the gold potential of the Sassy Creek area should be further evaluated with an RC drilling programme

#### **4.6 Aberfoyle-Arimco (Cyprus)-Poseidon (1990-1993)**

In 1989-1990 Aberfoyle began farming into the EL and no work was carried out in this season. At the same time Aberfoyle relinquished the outer parts of EL 40/85, much of which lay within EL 5/94 (until September, 1996).

**1991-92**

Aberfoyle flew a QUESTEM airborne EM survey over the prospective rocks (see Figure 8). Nine anomalies were recognised from the survey.

**1992-93**

Ground follow-up was carried out at all nine anomalies. This involved ground EM and soil surveys over some of the anomalies (see Figures 153, 161 to 163, 167 and 199). A single hole was planned to test the EB-1 anomaly. This hole was abandoned at shallow depth due to difficult drilling. A second hole was also abandoned short of the target depth. DHEM on this latter hole did not locate any conductors below the hole.

**4.7 Plutonic (1994-95)**

Plutonic were successful in tendering for the Elliott Bay area against three other companies (one of whom was Arimco). Their tender was based on a commitment to spend ~\$600 000 to \$700 000 and drill (?) ~3,000 metres in the first year with similar expenditure/drilling in the second year.

Plutonic's work was carried out in two phases.

Phase 1 involved the re-logging and re-mapping of core and outcrop at V3, 19 and 29, a review of previous EM, IP and gravity in the Wart Hill/East Camp area as well as various geophysical surveys in the V3 area, moving loop SIROTEM (9.7 kilometres) and ground magnetics over the Wart Hill/East Camp area and limited soil sampling over selected parts of the Wart Hill and East Camp Prospects. The main 'conclusion' drawn from this work was that drilling would have to be based upon geology alone. Plutonic's work essentially repeated that completed by previous explorers.

Phase 2 was carried out by consultant geologist Wally Herrmann whose brief was to carry out more detailed re-logging of the drill core from Wart Hill and define vectors towards mineralisation. His conclusion was that it may be very tentatively inferred that the source of the re-sedimented massive sulphide clasts/rafts may have been up dip and to the north. Herrmann's conclusions are discussed in more detail in Section 5.0. The text from Plutonic's annual/relinquishment report on its exploration activities is presented as Appendix O, with relevant figures included as figures 10d and 236 to 250.

## **5.0 Prospects**

### **5.1 Introduction**

A large number of prospects have been identified by Geopeko, Cyprus and Aberfoyle's work. Other prospects, particularly gold, are recognised in this report from anomalous results which have not been followed up. Those prospects considered to have good to very good potential for economic base metal and/or gold mineralisation are summarised below. Due to the large amount of data available, often in cumbersome formats, the summaries are often cumbersome. Prior to any major field work the full set of data for each prospect should be compiled into a manageable format. Having said this I am confident that such future work would not make a radically different assessment of the potential of the following prospects than that described in the following sections. The prospects considered to have the highest potential are as follows:

#### **Voyager 19 (Wart Hill)**

The most significant prospect at Elliott Bay appears to cover the occurrence of massive sulphides in outcrop and drill-core at V19 - Wart Hill. This prospect whilst adequately explored to shallow depths in the vicinity of the sulphide clasts, is still poorly understood geologically and has not been tested at depth. The number of clasts suggests a nearby source or host horizon and given the high grade of the clasts the source is potentially a world class polymetallic V.H.M.S. deposit.

#### **Voyager 19 host volcanics along strike**

As part of the exploration for the source the volcanics along strike from the Voyager 19 host rocks must be considered to have potential to host the source of these clasts or alternatively a separate deposit formed at the same time-stratigraphic horizon. Although the host rocks are difficult to distinguish, they must either trend south-south-westerly from V19 or fold in and around the Mt Osmund Syncline

#### **Voyager 24 (Sassy Creek)/Voyager 30**

The large quantities of alluvial gold in creeks draining these prospects and the inadequate drilling (even with the intersection of veinlets with visible gold) indicates that these prospects have considerable potential for a significant hard rock gold deposit (Field assistants spent there days off panning significant amounts of gold out of these creeks.

### **Voyager 3-2-10-12 trend in south-east**

Undrilled soil geochemical anomalies, with limited gold analyses, in this area with anomalous gold in streams and outcropping gold bearing structures indicate strong gold potential, in addition to the potential for V.H.M.S. mineralisation.

### **Gold Prospects in the North-Eastern and South Western Parts of Elliott Bay**

These two zones have similar potential for gold deposits as evidenced by coherently strongly anomalous gold in stream sediments.

### **Prospects in the Mainwaring River Group**

The Mainwaring River Group rocks have potential for Besshi style V.H.M.S. deposits.

## **5.2 Voyager 19/Wart Hill**

### **5.2.1 Introduction**

The Wart Hill Prospect is one of the best V.H.M.S. prospects in Western Tasmania. Its credentials are:

- Small massive sulphide pod (Lens A) exposed in trench with 4 m @ 0.3% Cu, 10.23% Pb, 17.94% Zn, 138 g/t Ag and 0.6 g/t Au.
- Second small massive sulphide pod (Lens B) exposed in trench with 3 m @ 0.2% Cu, 13.94% Pb, 21.9% Zn, 680 g/t Ag and 0.84 g/t Au.
- Massive sulphide intersection in WH8 from 184.85 m to 185.95 m with 1.1 m @ 0.27% Cu, 10.40% Pb, 24.70% Zn, 123 g/t Ag and 0.63 g/t Au.
- Massive sulphide intersection in WH10 from 185.0 m to 190.0 m with 2.96% Cu, 10.40% Pb, 6.04% Zn, 31.6 g/t Ag and 1.43 g/t Au (some 'host horizon' as WH8?).
- Soil samples up to 14.28 g/t Au.
- Numerous other small massive sulphide clasts in outcrop and drill core.

### 5.2.2 Geology

Cyprus's geology of the prospect is shown at 1:1000 in Figure 110 to 122, with drilling shown on Figures 112 to 122. A simplified earlier interpretation of geology is shown in Figure 10. This interpretation has been compiled by Roger Poltock and Chris Torrey "from previous mapping by Cyprus, geological re-interpretation of Geopeko data, diamond drill data and trench mapping" (Poltock, 1989). Plutonic (consultant Wally Herrmann's work), although re-logging the drill core from this prospect using graphic logging and interpreting the sections from a volcanic facies analysis perspective, presented their mapping poorly in their Annual Report (I believe that my colouring of their A4 is how they intended). Plutonic's mapping is also shown in figure 236, with graphic drill sections in figures 241 to 250.

Cyprus considered that diamond drilling and trenching in 1988-1989 strongly suggested that the prospective Cambrian sequence is overturned and facing east with an apparent conformity with the overlying Waterloo Creek group sediments. However, they note that there is some contradictory evidence in drill core suggesting a west facing. This east facing interpretation is the opposite of Geopeko's whose exploration was based upon their interpretation of a west facing host sequence with an unconformity or faulted contact with the Waterloo Creek group rocks. Wally Herrmann argues that although there are "some (uncertain) easterly facings" the "overwhelming majority in other holes are westerly". The facing of the sequence is obviously of considerable significance to further exploration and needs to be addressed though a west facing does seem to be more probable.

Roger Poltock gave quite detailed descriptions of the lithologies intersected in the drill holes he logged including publishing photographs. His mapping (figure 110) is specific to the immediate Wart Hill (V19) Prospect. The following descriptions are from his reports, with Wally Herrmann's alternative interpretations included where applicable.

From west to east the rocks are as follows:  
(Units in brackets refer to Figure 110)

*Rhyolitic quartz feldspar lithic tuffs (Unit 5b).*

Interpreted to be an extrusive and probably an ash-flow tuff. The rock is weakly altered, moderately foliated (90° to 210°) and irregularly jointed with several phases of quartz-carbonate-chlorite veining, with minor sulphides. The contact with the epiclastics to the east is at least partly fault controlled as indicated by shearing and the presence of a dolerite (basalt? [see below]) dyke (Unit 5h) swarm near the contact. Herrmann logs this as a coherent quartz (±feldspar, biotite) phyric rhyolite with subordinate, compositionally similar monomict breccias. An example is in plate 5.

*Epiclastics and massive sulphide host sequence (Unit 5a3).*

Characterised by a variety of rock types and grain sizes including conglomerates, breccias, sandstone, shale, chert, carbonate and massive sulphides. There is no defined

lithological sequence and the unit is interpreted to have been deposited in a small shallow water basin with many lensoid discontinuous horizons resulting from rapid facies variation. This basin is considered to have possibly been controlled by east-west graben faults with the contact between the Wart Hill volcanics and Waterloo Creek group at Wart Hill being disrupted and volcanics occur within the Waterloo Creek shales immediately overlying (to the east of) the massive sulphide host horizon. Herrmann logs this as polymictic volcanoclastic debris flow breccia, sandstone and siltstone with clasts dominantly quartz phyric rhyolite and quartz  $\pm$  feldspar, biotite phyric rhyolite with lesser rhyolitic pumice, cherty siltstone, limestone,

The rocks are moderately sericite altered, locally intensely sericite, chlorite, carbonate and silica altered, with all but silica probably associated with the massive sulphide system. Silica is interpreted to be due to later Cambrian granitic intrusives. Sulphides occur as fine disseminations, stringers and lenses. Examples are in plates 6 to 17.

Poltock (1989) considers that, although there has been considerable debate as to whether the massive sulphides are in-situ or rafted blocks, it appears that both cases occur. He considers that a single "host horizon" (see Figure 15), has been intersected by drilling with lateral facies variations i.e.;

- Massive galena sphalerite sulphides in WH8 and WH10 (see plates 12 and 13).
- Bedded chert-shale-limestone-breccias (unmineralised) in WH9 and WH12A (see plates 15, 16 and 17).
- In addition epiclastic breccias with massive sulphide clasts were intersected in DDH's WH1 to WH7 and trenches and are considered to predominate near the surface (see plates 7, 9 and 10).

In detail the above three units are described as:-

#### *Massive Sulphides*

Little is said about the two intersections in WH8 and WH10 in Poltock (1989) other than that in WH8 the massive sulphide is shown as in Figure 11, whilst in WH10 it is shown as in Figure 13. It is apparent from these two figures that massive sulphide is interbedded with chert and baritic epiclastics (see Plates 12 and 13)

In outcrop, the two main sulphide lenses (10 m x 4 m for lens A and 10 m x 3 m for lens B) display mineralogical banding sub-parallel to local schistosity with vertical dips, have features suggestive of small scale slump folding and are covered at surface by a white, porous siliceous gossan. Sulphides consist of iron-rich sphalerite, galena, marcasite, with chalcopyrite, marcasite and tetrahedrite in lens A and iron-poor sphalerite, galena, marcasite, more chalcopyrite (than Lens A), and less tetrahedrite (than lens A) in lens B. Lens B also contains clasts of barite.

Both lenses are hosted in chloritic-pyritic shales and rhyolitic tuff and are possibly large clasts and hence are more properly included in the third sub-section.

Herrmann interprets the massive sulphide intercepts as all being clasts. He does not consider the limestones to be exhalites.

*Bedded Chert-Shale-Limestone-Breccia*

These rocks are interpreted to be lateral facies equivalents of the massive sulphide horizon and consist of chert, jasper, massive pyrite, carbonates (sometimes oolitic), pyritic shale and breccia conglomerates. This horizon was intercepted in WH9 and WH12A (see Figures 12 and 14 respectively and plates 15 to 17 for the limestone and 18 for shale/epiclastic/limestone).

It is interesting to note that a similar looking limestone as well as chert, jasper and massive pyrite immediately stratigraphically overlies the alteration in which the Mt Lyell deposits lie (considered to have formed sub-seafloor). At Comstock, on the northern end of the Mt Lyell field, these limestones are associated with small but high-grade massive sulphide lenses, which almost certainly had a syngenetic origin.

*Epiclastic Breccias with Massive Sulphide Clasts*

Apart from three surface localities and the two initial massive sulphide discoveries (locations in Figure 10), 'clastic' sulphides have been intersected in most Wart Hill diamond drill holes. 'Clasts' are elongate due to subsequent deformation and are associated with a range of other allogenic clasts of varying sizes. Other clasts include:

- quartz feldspar porphyry
- chert (variably pyritic)
- shale
- marble (variably haematitic)
- banded calcite-haematite
- mudstone
- rhyolitic tuffs

with massive sulphide fragments including the following associations:-

- massive pyrite
- galena-sphalerite-pyrite
- chlorite-pyrite
- pyrite-sphalerite-chalcopryrite
- siderite or barite

*Chert (Unit 5a4)*

Light grey, laminated siliceous chert with fine grained disseminated pyrite. The rock is highly fractured in places, with pyrite and minor chalcopryrite veins forming a matrix to the breccias. An anastomosing, fine cleavage, infilled with iron poor sphalerite and pyrite has shattered the chert locally, but is possibly later stage. The chert is always contained within the epiclastics, predominantly as angular slabby fragments, and is intimately spatially associated with massive sulphide fragments.

*Pumiceous Tuff (Unit 5a1)*

The rock has a characteristic blotchy/tiger stripe appearance interpreted to reflect a primary compositional difference with cream sericitic material in the felspathic matrix and a dark green/grey chloritic material in pumice fragments (see Plate 19). The unit has

a gradational lower contact with the epiclastics whilst at the upper contact it is in part intercalated with rhyolitic porphyries, quartz rich clastics and shales, all part of the Waterloo Creek group. The tuff appears to have a transitional contact with brecciated rhyolitic lavas in the south. Herrmann also logs this rock as pumiceous (though Herrmann considers a relatively large amount of the rock intersected in drilling was pumiceous).

### **Waterloo Creek Group**

The contact between the prospective Cambrian volcanics and the Waterloo Creek Group rocks was previously considered to be faulted. Trenching has shown the two packages to interdigitate at their contact and drilling has also failed to locate any structure. The units from west to east are as follows:

#### *Agglomerate and Conglomerate (Unit 4a)*

The rock is a quartz rich clastic with varying amounts of volcanic (quartz porphyry) which ranges from a coarse conglomerate to a grit.

#### *Carbonaceous, Calcareous and Pyritic Shale (Unit 4c)*

[Descriptions of these rocks not included in my copy of Poltock (1989)].

#### *Quartz Feldspar Biotite Porphyry (Unit 4e)*

The porphyry is a massive rock with phenocrysts to five mm and is interpreted to be a lava, though the close spatial relationship to silicification may indicate that it is intrusive or is a brittle rock amenable to fracturing and fluid flow.

#### *Sandstone/Siltstone (Unit 4f)*

An interbedded sandstone/siltstone unit which overlies the shales.

The major difference between Poltock's and Herrmann's logging/mapping is in their interpretation of mafic rocks intersected in the drilling. Where Poltock logs these as meta-dolerites Herrmann interprets them to be basalts, generally as shallow intrusives (peperitic margins). This rock is distinctive lithochemically (Ti:Zr ratio in particular) and may be characteristic of the host sequence. No basalt was intersected in either of the two East Camp holes.

### **5.2.3 Alteration**

Alteration of the Cambrian Volcanics and Waterloo Creek Group rocks consists of the following assemblages (from Poltock, 1989):

#### *Sericite-chlorite*

All quartz feldspar bearing rocks have been sericite and chlorite altered with sericite dominating except in clastics where chlorite preferentially alters the clasts.

*Sericite-pyrite*

Occurs as pervasive replacement of tuffs or tuff clasts in epiclastic sequences near massive sulphides.

*Chlorite-sericite-pyrite*

This alteration occurs in rocks underlying lens A and clasts associated with massive sulphides in drillcore.

*Quartz-carbonate-sericite*

This is the most pervasive and intense alteration style. It is also vein controlled and there appears to be a gradation from pervasive pale green sericitisation to pervasive carbonate alteration to pervasive and vein controlled carbonate-quartz to carbonate-quartz-chlorite  $\pm$  sulphides in veins and stockworks.

Herrmann describes weak semi-pervasive sericite  $\pm$  carbonate  $\pm$  chlorite alteration in all drill holes and says that "in terms of V.H.M.S. footwall alteration they are weakly to moderately altered at best, possibly from the peripheral zones of a weak unfocussed hydrothermal system." He states that the best looking alteration "exists in a zone of patchy semi-pervasive, but not feldspar destructive silicification accompanied by irregular pyrite stringer veins".

*Veins*

Quartz-carbonate-sulphide veins are found in all rock types including quartz-feldspar-biotite phytic porphyries, dolerite dykes and the Waterloo Creek Group rocks. Veins are of laminated, colloform or stockwork type. Veins contain quartz, calcite, chlorite, sphalerite, galena and pyrite with galena the most common sulphide. Stockwork quartz-calcite-chlorite-sulphide veinlets occur in two locations (WH5-46 m to 60.3 m and 13080N/10140E), however, both sulphur isotopes and paragenetic relationships indicate a later, post-massive sulphide origin for these veins. Pb isotope analysis of lead associated with this alteration further indicates that the alteration postdated massive sulphide formation. Paragenetically, quartz-carbonate-sericite and pervasive sericite-chlorite alteration overprints all rock types and hence post dates massive sulphide formation. Sericite-pyrite and chlorite-sericite-pyrite veins in siltstone clasts suggests syn-massive sulphide formation alteration.

#### 5.2.4 Structure

The rocks in the Wart Hill area have undergone a least two phases of deformation with an S2 crenulation cleavage overprinting the S1 cleavage. Massive sulphides have been strongly deformed. The cleavages dip at 50° to 90° to the southwest.

The Ordovician siliciclastics east of the Waterloo Creek Group rocks are folded in a north-west plunging syncline. It is unclear as to which cleavage this folding is related.

Previous interpretations have placed considerable importance on the Osmund Fault, considered to have formed the contact between the volcanics and the Waterloo Creek Group. Poltock (1989) considers that the Osmund Fault has had little displacement and that the main structure is a thrust fault located between 13200N and 13400N with evidence for this fault supplied by the fact that the sandstones/siltstones of the Waterloo Creek Group were intersected at the base of WH8 and WH9. The fault is interpreted to strike east to north-east and dip 45° to the north-west with an interpreted sense of movement north block east and/or up. Hence, the massive sulphide sequence has been displaced and the host sequence north of the fault is underlain by Waterloo Creek Group rocks. Herrmann does not recognise this fault in his interpretation, but did not have the exposure that the Cyprus geologists did (in trenches).

### 5.2.5 Conclusions

Previous exploration of this prospect commenced in 1980/81 with the recognition of hydrothermal alteration near Wart Hill. Exploration since that date has seen the drilling of a number of diamond drill holes (see Tables 1 and 2), though only one has tested the sequence below ~150 metres below the surface (WH12A). DHEM has been carried out on all holes but WH12A (which contains broken P.V.C). The only responses were possible off hole responses off the ends of WH5 and WH7. Plutonic reviewed this geophysical data with no recommendations for drilling. Two ground EM surveys have been conducted over the Wart Hill area (UTEM by Geopeko in 1983/84 and SIROTEM by Plutonic in 1995). Neither survey located good conductivity anomalies, however this is not surprising nor of major concern given Cyprus' petrophysical work, which indicated that the sulphides in the surface lenses are not significantly conductive. Blanket IP's failure (in 1982/83) to locate a zone of high chargeability due to a sulphidic footwall alteration zone is more troubling, except that the survey would only see to ~150 metres depth. Regardless, it must be said that exploration to date has downgraded the top 150 metres of the host sequence in the immediate vicinity of Wart Hill, however, it has not downgraded the potential for a world-class polymetallic V.H.M.S. to lie just beneath this relatively shallow zone.

The preceding description of the geology/mineralisation is based largely upon Cyprus' and Plutonic's interpretation, particularly Poltock (1989) and Herrmann in Close and Herrmann (1996) (see Appendix O.).

The interpretation of a "host horizon" by Poltock is of particular significance. This horizon was inspected by the author at Aberfoyle's core shed with the relevant sections shown in the preceding photographs. The author considers that it is difficult to make a confident interpretation as to whether the massive sulphides, clasts and limestones are correlates (i.e. facies variations) or not. In some cases the "host horizon" is within an

epiclastic unit, and it does lie at a consistent stratigraphic level from 13150N to 13400N (see Figures 112 to 122). This horizon also corresponds with that which hosts the outcropping massive sulphides (see Figure 110). It is possible that intersections of massive sulphide, such as intersected in WH4 (see plate 19) are in-situ lenses.

The alternative possibility, that the sulphides are clasts, has been pursued by Herrmann. He concludes that there is very tentative evidence to suggest that the source may have been either up-dip or to the north. It is interesting to note that "rare" exhalite clasts (i.e. haematite/pyrite bearing limestone and massive galena-sphalerite and haematite-quartz-carbonate), as well as two massive sulphide rafts (?) occur in drill core at the East Camp Prospect 2 km south (see plates 23 and 24). It is also interesting that haematitic and jasper clasts are seen in epiclastics included in the Waterloo Creek Group at V33, 1 km to the northwest.

Herrmann concludes that there is "no alteration that is related to the massive sulphide clast forming mineralising system which could be used to identify the footwall zone of the V.H.M.S. favourable horizon or to infer alteration zonation vectors to the centre of mineralisation". However, the fact remains that there was (is?) a source for a number of large very high grade massive sulphide rafts/clasts and that the geophysical surveys would not have picked it up if the conductivity/chargeability of the body was comparable to the rafts, or if it was >200 metres deep. There is only one hole which has tested the sequence below 200 metres (WH12A at ~ 250 metres deep), with all other holes intersecting the target horizon/sequence at less than 150 metres below the surface.

The Voyager 19/Wart Hill Prospect has excellent potential. Initial work should involve an examination of the core, re-mapping, appraisal of existing geophysical survey data and compiling previous exploration data (in short repeating the work done by Plutonic). However, the major difference should be a willingness to drill at least a few conceptual geologically based drill-holes. This work would be best done by a review team of 2 geologists, with access to an experienced geophysicist. The drilling of such holes may well provide the vital information (e.g. intersect a footwall alteration system, intersect a clearly exhalative horizon, confirm the (west?) facing of the sequence or provide vectors towards the source of the clasts), as well as providing access for deeper looking DHEM. The prize for this commitment to drilling could well be a world class V.H.M.S. deposit (e.g. 25+Mt @ 5%Pb, 13%Zn and 2.5g/t Au).

### **5.3 Voyager 19 Host Volcanics along Strike**

#### **5.3.1 Introduction**

Recognition of the host volcanics to the massive sulphide clasts is a high priority. Unfortunately, the geology of the V19/Wart Hill and its relationship to the geology of the broader area appears to be relatively poorly understood. The zone around the Mt Osmund Syncline was prioritised for further work largely on Poltock's interpretation that

the host rocks to the V19/Wart Hill sulphides lie at the top of the sequence near to the contact with the Waterloo Creek Group rocks. In such a case the whole of this zone becomes highly prospective. Plutonic's work indicates that this may well not be the case, however, this is not certain.

With the likelihood that the sequence faces west and strikes south-south-west the zone around the Mt Osmund Syncline does not necessarily contain the correlate of the V19 host sequence. However, at the current level of understanding of the geology there are two possibilities. Firstly the sequence may extend in a south-south-west direction towards V29/East Camp and V24/V30. Alternatively, it may be folded and lie broadly in the area south-east and east of the Mt Osmund Syncline. This latter interpretation is suggested by the occurrence of altered volcanics, similar in appearance to those at Wart Hill, and associated soil anomalism. The prospects on the east side of the Mt Osmund Syncline (e.g. V22) lie <1 km east of the Wart Hill Prospect.

The following section describes those prospects which lie on either side of the Mt Osmund Syncline (see Figure 16). This section should also include a discussion of the prospects which extend south-south-westwards beyond the East Camp Prospect but this is included in the following section.

### **5.3.2 Prospects around Mt Osmund Syncline**

Eight previously identified Geopeko and Cyprus prospects lie around the Mt Osmund Syncline, being:

- V33
- V29/East Camp
- V9
- V22
- V34
- North Waterloo Creek
- Mt Osmund East
- Woolloomooloo Creek

In addition, there is a considerable strike length from V34 to Woolloomooloo Creek and beyond, which has seen little ground exploration. The extent of Geopeko and Cyprus soil sampling is shown in Figures 17 and 69, respectively. Prospects are discussed in turn.

#### **V33**

Exploration to the end of 1981-1982 is summarised in Appendix B. In 1982-83 the area was covered with dipole - dipole IP and in 1983-84 the most geochemically anomalous part was drill tested with the anomaly found to be due to vein style mineralisation in the Copper Creek Fault. A zone of anomalous soil geochemistry with up to 4,350 ppm Zn on

line 14200N (see Figure 18) (though not supported by IP) lies within rocks interpreted to be the V19 host rocks. It is interesting to note that the Waterloo Creek Group rocks are distinguished from the "unconformably" underlying the volcanics by the presence of haematitic and jasper clasts in the former epiclastic siltstones, sandstones and conglomerate. Iron staining and pyritic boxworks have been noted in the epiclastic conglomerate (Wilson et al., 1982). If this is the case then the IP coverage may have not extended over all of the prospective volcanics, as the map shows them stopping at the Waterloo Creek Group contact.

### V29/East Camp

(See Section 5.3.3)

### V22

This prospect lies on the eastern side of the apex of the Mt Osmund Syncline. To the end of the 1981-82 season the prospect had been defined by anomalous Pb and Zn in soils, associated with intense chlorite alteration. Lithologically the rocks appear to occupy the same stratigraphic horizon as V19, with strongly silicified breccias, agglomerates, lithic tuffs and tuffaceous sediments interpreted to represent a vent area (Wilson et al., 1982). A subtle resistivity response occurs at 11500E from 10300N to 10600N, but may correspond to an interpreted fault. No work has been carried out on V22 since the IP coverage in 1982-83.

### V34

V34 lies to the north, along strike from V22. By 1981-1982 the prospect consisted of combined Pb-Zn soil anomalies up to 4,450 ppm Pb and 3,550 Zn. V34 also lies on the eastern limb of the Mt Osmund syncline, directly opposite V19 on the western limb (see Figure 22. Wilson et al., (1982) considered that although correlation with V19 was difficult the anomalous geochemistry made V34 a high priority prospect. The prospect was covered by the 1982-1983 IP survey and remapped. Since that time no further ground work has been carried out on the prospect.

### North Waterloo Creek

This DIGHEM anomaly lies to the south east of V34. As noted previously, the ground follow-up produced only weak EM anomalies. Anomalous Pb, Zn and Au was not able to be repeated (see Figure 23).

## Mt Osmund East

These series of DIGHEM anomalies were covered by three traverses. Soils up to 6,000 ppm Pb and 1,700 ppm Zn with one sample of surface gravels returning 1.85 g/t Au, though follow-up augering was below detection limit. Anomalous soils correspond to pervasive chlorite and vein controlled quartz-chlorite alteration of fine to medium grained rhyolitic volcanoclastics (see Figure 24).

## Wooloomooloo Creek

This section of the prospective host horizon was 'quite adequately' explored with no significantly anomalous results. The DIGHEM anomalies were shown to be very weak (see Figure 25).

### 5.3.3 Prospects south-south-west of V19

The occurrence of similar clast composition (i.e. "rare" exhalite clasts i.e. haematite/pyrite bearing limestone and massive galena/sphalerite and haematite-quartz-carbonate [see plates 23 and 24]) as well as two massive sulphide "rafts" in the volcanoclastics indicates that this prospect at least contains the same sequence as at Wart Hill (though not necessarily the same source horizon). The geology of the East Camp Prospect is shown in figure 123 with an anomaly compilation (including work to 1988). The degree of alteration is encouraging as is the occurrence of sulphides in stringers (see Plate 24).

This prospect has been discussed to some degree in section 5.2

The East Camp/V29 area has been explored by both Cyprus and Plutonic with lower order geophysical and geochemical targets remaining untested. Exploration of V29 to the end of 1981-1982 is summarised in Appendix B. Plutonic also assessed the potential of this prospect as part of their work on Wart Hill. A number of anomalous soils are reported by Wilson *et al.*, (1982) with drilling recommended (see Figures 20 & 21). A UTEM survey over the grid in the 1983-84 season failed to locate a significant conductor.

Soil surveys over the area by Cyprus revealed anomalous soils with Zn to 4000 ppm, Pb to 2250 ppm and Cu to 1000. The two best anomalies were drilled by Cyprus as EBT-89-EC1 and EBT-89-EC2/2A, with somewhat disappointing results. A third hole was not drilled due to these results. Results are summarised in Table 9, and DDH Sections are shown in Figures 130 and 131. A resistivity low with moderately anomalous Pb in soils closer to the Waterloo Creek Group contact was not tested.

The Voyager 24/30 Prospects lie further south-south-west along strike (though slightly higher in the stratigraphy). These gold prospects are discussed in a later section, however,

it is significant that the gold anomalous creeks which originally located this hard rock prospect extend along the strike of the Wart Hill host volcanics (see Figure 26) to Wart Hill where the alluvial gold appears to be derived from the sulphides clasts.

#### 5.3.4 Conclusions

Of the two alternative interpretations of the trend of the host sequence at Wart Hill, the latter now appears more likely. These rocks should be explored in conjunction with exploration at Wart Hill itself. Drilling is required in order to provide geological information. This may be targeted upon untested lower order shallow soil and/or geophysical targets, as this prospect has not seen the same amount of drilling as Wart Hill.

### 5.4 V24(Sassy Creek)/V30

#### 5.4.1 Introduction

Early work by Geopeko defined a zone of significantly anomalous gold in panned concentrates often associated with Sn and W, running from west of V19 to south of V30. Later sampling extended this zone around to the eastern side of the microgranite to V19 (see Figures 26 and 82). Field assistants panned significant amounts of gold on their Sundays off during Geopeko stints. This zone is quite broad and is consistently strongly anomalous, with quite significant amounts of gold in the small creeks (the only thing stopping the area having been thoroughly panned/dredged by prospectors was the initial cost of access). The extent of this stream gold anomalism is shown in figures 6, 82 and 109).

Gold in the northern part of the anomalous zone is considered to have come from the massive sulphide bearing epiclastics. Further south the origin is unclear, though it is likely that some of the gold is shed from the narrow sulphidic veinlets with visible gold in two DDH's. The alternative interpretation, that gold is derived from V.H.M.S. related sulphides/veins/alteration has been touched on in the previous section and should not be discounted. Geopeko studied the alluvial gold from the V24 creeks and concluded that the gold is of primary origin, probably associated with sub- (syn-?) volcanic base metal mineralisation (see Appendix G).

Soil sampling was carried out by Geopeko over both the V24 and V30 grids. At V24 samples were taken from both the B and C horizon. B-horizon samples were up to 0.45, 0.43, 0.395, 0.365 and 0.27g/t Au (see Figure 140). C-horizon samples were up to 2.8, 2.3, 1.8, 1.7, 1.3, 1.2, 1.1, 0.62, 0.62, 0.59g/t Au (see Figure 138). Soil anomalies were quite coherent. This gold in soils is associated with moderately anomalous base metals (see Figures 142 and 143). The soil sampling defined a zone of gold anomalous soils over a strike length of 1.4 km (open ended) with a width of 200 to 300 metres.

At V30 C-horizon soil samples were up to 1.3, 0.112, 0.110, 0.105 and 0.100g/t Au (see Figure 148). Anomalous results were generally spiky. Arsenic over the V30 grid was generally low, with the best results 85,85,50,46 and 40 ppm As (see Figure 149). This spikiness of data is typical of soil geochemistry of the west coast, particularly for gold. This point is discussed further in Section 6.0.

A number of geophysical surveys were carried out over both V24 and V30 including ground magnetics, VLF-EM, dipole-dipole IP, self potential and gravity.

A stratigraphic drill-hole was completed at V24 to a depth of 129.30m in 1980/81 (see Figure 138). The hole intersected a silicified and weakly (sphalerite, galena, gold) mineralised rhyolitic agglomerate, suggestive (to Large, 1981) of a volcanic vent breccia. Assays ranged from 0.050 to 0.392g/t Au with 80m @ 0.067g/t Au. The hole was terminated before passing under the soil anomaly. In 1981/82 the hole was extended to 281.50m. Assays in the extension were from 0.008 to 0.10g/t Au.

Three more diamond drill holes were completed at V24 in 1983/84. Summary results are shown in Table 10 with sections in Figures 144 to 146. The results are also discussed further in Appendix G. The best intersection (3m @ 17g/t Au) was cut from core which had a 4cm wide sulphidic vein running sub-parallel to the core. Similar orientations are reported for other veins indicating that the drilling was ineffectual in testing the zone. Three of the four diamond drill holes at V24 were drilled within a 100 metre long section of the 1.4 km long zone.

#### 5.4.2 Geology

The geology of the V24/V30 area is summarised in Figures 139 and 147. Rocks strike north-east and dip and face steeply to the north-west.

From south-east to north-west the sequence consists of quartz pebble conglomerate and sandstone (adjacent to a microgranite) followed by dacitic lavas, quartz porphyritic lavas and tuff lavas. In the V24 area, this sequence is up to 800 m thick whilst in the V30 area faulting and granite intrusions have reduced the thickness. At V24, the sequence is followed by a 1 m thick grey shale. This is followed by 250 m of siliceous crystal lithic tuffs and agglomerates which consistently assay between 40 and 120 ppb Au. A 5 m thick carbonaceous shale marks the north-western edge of the sequence at V24 and possibly also at V30 (though not outcropping at V30).

Gold is apparently stratabound within the 250m felsic volcanoclastics and Large (1981) interpreted this to indicate a syngenetic origin for the gold mineralisation. His model for mineralisation is detailed in Appendices G and I.

Herrmann (1984) questions this interpretation and suggests that the stratabound nature of the gold may be due to:

- the relative brittleness of the unit, or
- tension fracturing complementary to strike, or
- a unique structural location

Herrmann (1984) considers the auriferous veins to be post-deformational, cross-cutting both the cleavage and smaller quartz carbonate veins.

Petrology of two samples from the 17.5g/t Au intersection argues against this paragenetic relationship and instead sees the sulphides and gold as predating fine quartz veins and "may have been introduced when fluids passed through poorly consolidated, very permeable and reactive sediment" essentially supporting Large's (1981) model.

Spatially the gold in streams is associated with the microgranite. Given similar spatial relationships between stream gold anomalism and both the Low Rocky Point Granite and the Elliott Point Porphyry it is reasonable to conclude that the gold may be related to the intrusion of the microgranite. Exploration to date has not adequately assessed the potential for this style of mineralisation.

#### 5.4.3 Stream Anomalies

Anomalous gold is also reported from a large number of creeks in the area other than those directly draining the V24 and V30 Prospects.

These are:

- creek draining the south of the V9 Prospect with panned concentrates (Geopeko's sampling) of 18, 13, 12, 11.3, 10.6, 7.4, 3.6, 2.4, 2.1, 2.0 and 1.1 ppm Au. The creek drains felsic epiclastics and lavas along an interpreted fault.
- a creek branching from the above returned panned concentrates of 10.2, 2.3 and 1.09 ppm Au. The creek drains the contact between the microgranite and chlorite altered epiclastics. A chargeability anomaly in the centre of the granite suggests that the granite itself may be the source. No sampling has been carried out within the granite.
- Watters Creek (north-west of V19) returned 1.0, 0.7 and 0.12 in -80# samples (Geopeko's survey). Here the source is likely to be the massive sulphide lenses of V19.
- A creek draining the western contact of the microgranite and felsic lavas returned 18.1, 6.8, 4.8 and 1.4 ppm Au in panned concentrates (Geopeko's survey). The V30 grid covers part of this drainage basin and values of up to 0.07 ppm Au were returned from soil sampling on the grid.
- Upper Boyds Creek returned panned concentrates of 28.0, 17.5, 10.0, 8.7, 6.9, 3.75, 3.72, 3.70, 3.17 and 2.59 (Geopeko's survey). Soils taken from the V29W grid returned up to 0.075, 0.075 and 0.055 ppm Au.
- Gerrard Creek is the one that led to the definition of the V24 Prospect. Geopeko's survey returned panned concentrate values of 99.5, 86.7, 60.5, 25.5, 5.25, 2.9 and 1.3 ppm Au and 3.0 and 1.4 ppm Au in -80#. An orientation sample (at the 60.5 ppm Au site) by Cyprus returned 500.8 ppm Au, with 50 visible grains of gold in the pan. This is

the highest assay from Cyprus' panned concentrates at Elliott Bay. This area has been extensively covered by the V24 sample lines.

#### 5.4.4 Conclusions

The V24/V30 area has excellent potential to host significant economic gold mineralisation. Only part of this broad zone of consistently strongly gold anomalous creeks has been soil sampled. Within the zone of anomalous soils there has been no effective drilling (tested small part of the anomalous zone, drilling down the dip of the veins) though the few intersections are very encouraging, given the high grades.

The potential of the area can be effectively tested by extending the gold soil sampling coverage to cover the whole gold stream anomalous zone. Anomalies defined should be RC drilled on fences across anomalous zones.

Since the Voyager 24/30 may also lie along strike from Wart Hill this work will also be undertaken in conjunction with exploration for V.H.M.S. deposits.

### 5.5 Voyager 3-2-10-12 Trend in South-East

#### 5.5.1 Introduction

The zone running N-N-E from V3/Drake Creek/Cowrie Beach in the south through Lewis River, V10, V2/Old Lewis River and V12/North Lewis to the Elliott Point Porphyry contact consists of a linear trend of the above prospects. The zone has excellent potential for both V.H.M.S. and/or gold mineralisation. Previous work and anomalous results in the zone are summarised in Figures 41, 42 and 43.

The zone contains a large number of anomalous panned concentrate gold and -80# gold and arsenic (see Figures 30 and 82) in stream sediments. Only the Lewis River and North Lewis grids have been soil sampled for gold (see Figures 41, 172 and 194). Anomalous base metal zones are shown in Figures 42 and 43. Rock sampling of a gossan at V12/North Lewis returned highly anomalous values (a number of assays were >20g/t Au) indicating the possible source of the gold in the streams. Although drill testing of the gossan has proven disappointing, the rest of this 7 km long zone remains largely untested and has excellent potential for a structurally hosted and/or intrusive (Elliott Point Porphyry) related gold deposit.

In the report detailing exploration for 1979-80 it was concluded that the V3-V10 area had considerable potential for massive sulphide mineralisation given the amount of finer sediments in the volcanics. Following the discovery of massive sulphide "lenses" at V19 in 1980-81 this zone was neglected. Cyprus and Aberfoyle both re-recognised the potential of this zone. Alteration of a V.H.M.S. style was noted at V3 on the coast.

### 5.5.2 V3 (Drake Creek or Cowrie Beach)

This prospect lies near the coast at Elliott Bay. It was previously defined by the presence of old workings on chalcopyrite-malachite veins. It was drilled by Aberfoyle in order to test an airborne/ground EM anomaly. Recent work by Herrmann and Close (1995) described the prospect as a zone of sericitic alteration on the coast.

Soil sampling by Geopeko produced anomalies up to 1300 ppm Au, 0.47% Pb and 1.0% Zn (see Figures 154 to 163). VLF-EM and dipole-dipole IP surveys were conducted over the grid. A north-east trending zone of anomalous soils and VLF-EM was drill tested by DDH's V3/1 and V3/2 whilst the best IP anomaly, with coincident anomalous soils was tested by V3/3. This drilling is summarised below and shown in Figures 164 to 166. It is apparent from core to bedding that V3/3 was drilled down-dip. Wilson (1981) states that the hole penetrated the eastern limb of a syncline with its axis to the west. The IP anomaly is 'explained' by 1-3% disseminated pyrite, but the soil anomaly may not have been explained (Wilson, 1980). Wilson (1981) also states that the best soil geochemistry in the southern part of the grid remained untested.

Aberfoyle's airborne EM survey located a north-north-west trending anomaly to the west of the V3 grid. Fixed loop EM confirmed this anomaly, which was subsequently drill tested by EB-1. The first attempt was abandoned due to ground conditions with the second attempt terminated short of the target depth. DHEM on this hole did not reveal any anomalies due to conductive sulphides. Prior to drilling, Aberfoyle conducted a C-horizon soil sampling survey on grid lines west of the V3 grid. Where the two grids overlap it is clear that the Aberfoyle results are an order of magnitude lower than Geopeko's. Geopeko's sampling was generally carried out using a JACRO 200 Auger rig on the back of a Muskeg Bombardier. In inaccessible locations hand augering was used. Aberfoyle's sampling would have been done with a hand held power auger. Aberfoyle's ground EM survey covered the southern two-thirds of the V3 grid, with no anomalies detected.

Aeromagnetic Anomaly 4 lies + km to the east of V3 (see Figure 40). All Au values are low.

### 5.5.3 Lewis River

Cyprus gridded and sampled the area to the south-west of Geopeko's V10 grid. The Lewis River grid lies 2 km to the north-east of V3.

Geologically the rocks are tuffaceous sediments and medium grained felsic volcanoclastics (see Figure 168). Two faults cut the prospect. A north-west trending fault

shows strong shearing and chlorite-talc-pyrite alteration. A second north-east trending fault contains localised highly chloritised zones. This north-east trending structure is shown on the Tasmanian Mines Department mapping.

Anomalous Arsenic in soils follows roughly the two structures whilst gold is more randomly distributed (see Figures 171 and 172). Base metals are elevated in a north-south trending zone (see Figure 170). A single rock-chip sample of 0.64g/t Au and 5.55% As was sampled in the north-west part of the grid.

This prospect is very instructive, as the area being drained by the creeks with visible gold in panned concentrates has been covered by a soil grid sampled for Au with only scattered anomalous Au in soils. Panned concentrates contain 20, 30, 25 and 19 grains with the best soils up to 0.23, 0.23, 0.71, 0.06, 0.03, 0.03, 0.03 and 0.02g/t Au with As to 83, 23, 21, 16 and 15 ppm (see Figures 169, 171 and 172).

Cyprus concluded that soil geochemistry was an ineffective method for gold exploration. It was recommended that closer spaced stream sediment sampling be carried out to locate the point of entry of gold into the streams.

#### 5.5.4 V10

The V10 prospect was originally defined by anomalous base metals in stream sediments. The prospect was gridded and soil sampled (not Au), however, hand augered and power augered samples did not agree. Soil results were up to 460 and 640 ppm Cu, 1600 and 3900 ppm Pb and 1900 ppm Zn, with an 800m long, 50m to 200m wide, north-south trending Pb-Zn anomaly defined over felsic volcanoclastics (see Figures 35 and 173 to 177).

No geophysical anomalies are associated with this anomalous geochemistry and so Geopeko recommended no further work.

The grid covers ground being drained by creeks yielding 12, 12, 11 and 23 grains of gold in panned concentrates.

#### 5.5.5 V2 (Old Lewis River)

This area of old workings was followed up early in Geopeko's tenure. The old workings consist of a trench and 2 small shafts along a line of gossan covering a siderite-quartz rich horizon carrying minor pyrite, chalcopyrite and galena within a complex unit of dominantly vitric tuff pyroclastics intercalated with both crystal tuff and rarer lithic tuffs with volcanoclastic sediments. Also present east of the prospect are quartz feldspar lavas and further east is the Elliott Point quartz-feldspar-biotite porphyry (Strickland 1978).

Strickland (1978) also describes the host rocks as being similar to those encountered at Voyager 3 on the coast. From the above description it would appear that they also bear considerable similarities to those at V12. The vein worked by prospectors strikes 152 degrees (true) and dips 45- 60 degrees to the west.

The prospect was gridded and soil sampled, but not assayed for gold (see Figures 179 to 181). Lead and zinc soils define a north-south trending anomaly on the northern two lines, whilst copper soils define four north-north-west trending anomalies separate from the lead and zinc anomalies. Geophysical surveys over the prospect included dipole-dipole IP and V.L.F.-EM.

The prospect also contains anomalous arsenic in -80# stream sediment samples.

Five short DDH's and a single longer DDH were drilled at V2. DDH positions and geology are shown in Figure 178.

DDH V2/2 and V2/5 were assayed for Au with best results in DDH2 of 1m @ 0.03g/t and in DDH5 of 2m @ 0.065g/t.

Drill sections are shown in figures 182 to 188.

The existence of fine disseminated galena > sphalerite was interpreted to mean that the mineralisation was originally syngenetic and only later remobilised into fractures.

#### 5.5.6 V12 (North Lewis)

This prospect was identified when rock samples taken during reconnaissance mapping returned up to 265.5 g/t Au (see Plate 25). Subsequent work revealed a north-north-east trending line of gossanous pods with a number of gold anomalous rocks with up to 24 g/t Au (see Tables 13 & 14). Co-ordinates refer to figures 189 to 198. The prospect is shown in figures 27 to 29.

#### **Geology**

The rocks are fine to medium grained rhyolitic quartz crystal tuffs and minor interbedded tuffaceous siltstone and shales, all in contact with a quartz-feldspar biotite porphyry to the east. The felsic volcanoclastics and sediments strike north-north-east and dip steeply to the west. The porphyry is interpreted to be conformable. A strong foliation in the rocks is approximately parallel to bedding and is generally defined by wispy chlorite or more rarely sericite.

The mineralised area is outlined by oxidised iron at surface, caused by weathering of chlorite and pyrite which appears to be an alteration halo, lying closely parallel to the

porphyry contact but trending towards it to the north. The gossanous pods are described as being after pyrite quartz chlorite veins.

All DDH's from Cyprus' 1988 drilling intercepted a wide zone of extensive faulting and brittle deformation up to 20m true thickness. Drill logs for all DDH's (Geopeko and Cyprus) and sections for Cyprus' holes are included in Appendix 10

A number of features are described from the zone.

*Vein Breccias Zones (see Plate 31)*

These occur in zones of strong deformation over widths of 1 to 15 m. The zones consist predominantly of vein material with at least two phases of veining. Quartz-tourmaline veins and breccia matrix material are clearly cut by later chlorite-pyrite-arsenopyrite± chalcopyrite ± galena ± sphalerite ± quartz veins. In most drill holes the sulphides and chlorite are oxidised. Zones of intense quartz-tourmaline veining correspond to zones of intense sulphide veining suggesting that both fluids have utilised the same conduits. Puggy faults and shear zones displace veins including the younger quartz-tourmaline veins, indicating at least three phases of deformation.

*Veinlet Fracture Zones (see Plate 32)*

All core shows extensive sulphide infilled fracturing with up to 25 veinlets per metre. Veins parallel schistosity in parts, cross-cutting in others.

Tourmaline occurs in these zones as pervasive replacement of country rock or as veinlets parallel to the cleavage.

## Geochemistry

Soil geochemical results are shown in Figures 192 to 194. Results of the drilling are shown in Table 15. Best assay from Cyprus' drilling was 2m at 0.38 g/t Au. Geopeko's best was 2m @ 1.6g/t Au.

Torrey *et al.*, (1988) conclude that "it is clear from rock-chip sampling ... and drilling ... that elevated gold values occur with chlorite-sulphide veins and not tourmaline quartz veins" (i.e. gold is associated with the later stage veining).

### 5.5.7 Conclusions

This 7 km long zone contains a large number of streams containing anomalous gold and/or arsenic. There has only been limited gold soil sampling in the drainage basins from where the gold appears to be derived and drilling results have been generally disappointing. However, as discussed in section 6.0, soil sampling (particularly for gold) on the west coast is often ineffectual, whilst drilling has only focussed on gold targets at

the V12/North Lewis Prospect. There is considerable untested potential for either gold and/or base metal mineralisation, however, exploration techniques effective in this environment need to be used.

High priority areas within the zone which require immediate attention include the V10 grid, from which soil samples were not assayed for gold even though there are base metal soil anomalies.

There are also considerable gaps in the stream sediment coverage, particularly the whole area to the west of the V3-V12 zone and the area to the north and north-east of V12. The latter zone lies along strike from the mineralisation at V12, coincides with Aberfoyle's EB4 EM anomaly and has considerable potential.

The base metal potential of the area is shown in the V2/1 and V2/6 drill-holes. Untested soil anomalies lie in the southern part of V3 and the north-eastern part of V10, however the best area must be to the north of the V2 intersections (i.e. north of the Lewis River and west of the V12 Prospect).

In all cases, initial gold exploration should be based upon the use of panned concentrate Au and -80# Au and As stream sediment sampling in order to determine the point of entry of gold into the streams. This should be supported with extensive rock chip sampling of both float and outcrop to determine potential sources of the gold. The exploration techniques considered effective are detailed in section 6.0. The role of the numerous faults in the zone must also be understood, both as foci for mineralising fluids and their dislocation of prospective stratigraphy. It is clear that the location of these structures are not well understood as they are shown in different locations.

## **5.6 Gold Prospects in north-eastern Elliott Bay**

### **5.6.1 Introduction**

The eastern side of the Elliott Bay tenement contains a large number of streams with anomalous gold in panned concentrates (see Figure 82). Within this 18 km long, 1 to 4 km wide zone are more discrete areas with coherently gold anomalous creeks. The V3-V12 zone discussed earlier is one of these. The other zones are summarised in figures 41 and 44. Spatially, the large zone parallels and broadly corresponds to the contact between the Elliott Point Porphyry and the volcanics to the east. It must also be stated that some streams wholly draining the porphyry (as mapped) or the volcanics (as mapped) also contain anomalous gold.

A number of these anomalous creeks drain aeromagnetic anomalies and prospects. The anomalies/prospects will be discussed from north to south. Figure 44 shows the location of stream anomalies and figure 82 shows the actual results. The prospects discussed are those which lay outside of Plutonic's EL 40/85 (but are within EL 20/96). Some of the

other more specific prospects within EL 20/96 were discussed in part in section 5.3. Specific prospects in this zone within EL 20/96 include Woolloomooloo Creek, V20, Mt Osmund East and North Waterloo Creek. The fact that the following prospects are discussed here and not the others is no indication of their relative potential. The relevant available data for these prospects is generally contained within figures in this report.

#### Northern Porphyry Contact (Names refer to zones shown on figures 44 and 41)

This zone was explored under the above title with 6 lines of soils accompanying panned concentrate and -80# sampling. Panned concentrate values of up to 16.9, 30.5 and 36.3 ppm were returned with -80# Au to 0.180 and 0.075 ppm. The anomalous creeks lie 500 metres within former EL 40/85 (see Figure 45).

#### Northern Contact

Less than 1 km to the south-east of Cyprus' "Northern Porphyry Contact" Prospect, two creeks contain 31.7 and 163.3 ppm Au in pan concentrates (see Figure 82.) The latter appears to drain an interpreted north-west trending structure whilst the former is mapped as draining the porphyry. As noted earlier the anomalous creeks immediately to the north-west in EL 40/85 have been covered by reconnaissance soil sampling traverses which gave generally uniformly low (below detection limit) gold in C-horizon samples. DIGHEM follow-up soil sampling traverses to the west were generally low with only a single 1.0 ppm Au result.

#### Northern Central

These four anomalous creeks are particularly prospective, as two drain into the Hudson River from the west, the other two from the east (see Figure 82). It also corresponds roughly with aeromagnetic Anomaly 5, though the single soil traverse conducted over aeromagnetic Anomaly 5 lies 200 metres to the north-west of the anomalous creeks. Creeks returned 37.7 and 89.3 ppm Au (draining from the west) and 456.1 and 4.24 ppm Au (draining from the east). All soils in the traverse were below detection limit (i.e. <0.01 ppm), however, as noted this line was not correctly positioned.

#### Southern

The area in the south-eastern corner of former EL 5/94 has quite good coverage by Cyprus' stream geochemical survey. There are scattered discretely anomalous streams (predominantly in -80# Au of As) in the very south-eastern corner, however, the best zone is the four anomalous pan concentrates (51.7, 39.3, 34.8 and 30.3 ppm) and the single 51.5 ppm pan concentrate (see Figures 41 and 82).

These streams appear to be draining the relatively unexplored aeromagnetic anomaly V14 which lies within the porphyry. The single 51.5 ppm pan concentrate is from a stream mapped as wholly draining the porphyry in the vicinity of V14.

Ground follow-up of the V14 airborne EM consisted of ground magnetics with disseminated magnetite recognised in chlorite altered Elliott Point porphyry. This prospect has seen no geochemical sampling.

The ground geophysics located two discrete anomalies (10325N and 9800N).

It is interesting to note that none of the streams draining aeromagnetic Anomaly 3 (V15) contain anomalous gold or arsenic which is not surprising, since soils over the anomaly were generally B.D.L., with only 2 at 0.03 ppm Au.

A stream draining aeromagnetic anomaly 1 returned 1.16 ppm and 0.48 pm Au in -80# though a single traverse of soil samples over the aeromagnetic anomaly were all B.D.L. (see Figure 47). One of these stream samples (0.48 ppm) may be also draining aeromagnetic Anomaly 2 (see Figure 48). A second stream draining this aeromagnetic anomaly returned 0.29 ppm Au in -80#. Soils over aeromagnetic Anomaly 2 were all also B.D.L., except for one at 0.06 ppm Au.

#### Porphyry Dolerite Contact

A single pan concentrate of 230 ppm was obtained from a creek draining Jurassic dolerite near its contact with the porphyry (see Figure 50). A single soil traverse was conducted, but around 400 metres to the south? All results were B.D.L., but the survey results are worthless. It is possible that this gold was shed from Tertiary gravels underlying a hill at the headwaters of the creek.

### 5.6.2 Conclusions

There are a large number of streams with anomalous gold which have seen little or ineffective (single traverse) follow-up (the single traverses were generally undertaken to follow-up DIGHEM anomalies). Soil sampling of selected discrete zones should be undertaken on a smaller scale grid using techniques discussed in section 6.0. The source of the gold is unknown and there is considerable potential to discover hard rock gold deposits in this relatively unexplored sector of the Elliott Bay license.

## 5.7 Gold Prospects in south-western Elliott Bay

### 5.7.1 Introduction

The south-western part of Elliott Bay is largely underlain by the Low Rocky Point Granite, however, creeks draining the contact between the granite and the volcanics are often anomalous in gold in panned concentrates. Gold anomalous rocks (up to 7g/t Au) have been sampled at V6 on this contact, but exploration (apart from the initial stream sampling) has been limited and ineffectual (no drilling has been undertaken).

#### Low Rocky Point Granite Contact

Cyprus conducted stream sediment sampling around the Low Rocky Point granite with highly anomalous gold in panned concentrates inland on the northern and eastern sides of

the granite, with stream sediment samples returning up to 50 grains of gold in panned concentrates inland from V1.

Cyprus soil sampled the drainage basin of the creek with the highest gold anomalism (see Figures 51 and 217 to 221). Results were generally poor with only 0.06g/t Au returned.

It is interesting to note that the soil results from Geopeko's grid over most of the granite-volcanics contact are unusually low (see Figures 214 to 216) suggesting that the auger may not have penetrated the overlying tertiary gravels.

Other than this grid and two lines at the V7 prospect there has been no soil sampling assayed for gold (see Figure 51).

#### V6

V6's summary is shown as Figure 52. A single rock-chip returned 7.25g/t Au, with the next best 1.81g/t, from narrow sulphidic quartz veins near the granite contact.

### 5.7.2 Conclusions

The strong gold stream anomalies, particularly on the western side of the granite have not been effectively tested by soil sampling. Future work should involve more detailed soil sampling over this region in conjunction with systematic stream sampling over the entire granite to check for fault/shear related gold mineralisation similar to Fort Knox in Alaska.

## 5.8 Mainwaring River Group Prospects

The Mainwaring River Group rocks have potential for Besshi type V.H.M.S. deposits. This is indicated by knowledge of both the geology of the Group as well as prospects within it.

#### V1

This prospect was defined by old workings on two parallel zones of pyrite/magnetite mineralisation with moderately elevated Cu, Zn and Au, and scheelite (from Geopeko). Detailed mapping and drilling (two Jacro holes totalling 53 metres) suggest that the lenses may be chemical sediments. It is possibly the most enigmatic mineralisation at Elliott Bay, however, it is of a relatively low tenor (see Figures 53 to 55). The prospect has been covered with dipole-dipole IP, VLF EM and TURAM and Jacro augered soil samples (see Figures 214 to 216). The geophysics and lack of significantly anomalous geochemistry have downgraded this prospect. Cyprus mapped the prospect as lying within the Western Epiclastics. The presence of a chemical sediment in these rocks may have some bearing on exploration to the north.

**V18**

V18 was defined by outcropping disseminated copper mineralisation. Geopeko carried out no soil sampling or geophysics over the prospect.

**V23**

V23 was defined by minor copper mineralisation in dolomitic siltstones. This was not followed up. Geopeko's rock chip samples were up to 1300 ppm Cu. The rocks are considered to lie at the same stratigraphic horizon as V18.

**V21**

This prospect is defined by an airborne magnetic anomaly to the north, along strike from Penders Prospect. JACRO power augered sampling gave no anomalous geochemical results, though Au was not assayed for. Stream sediment geochemical sampling by Cyprus in the immediate area of the aeromagnetic anomaly revealed generally only moderate gold results with the best result 8.6g/t Au.

**Discussion of V23, V18 and V1**

Geopeko prospects V18 and V23 consist of anomalous copper in dolomitic siltstones. V1 (or Penders Prospect) consists of two magnetite-pyrite lenses with anomalous Cu and Au in chloritic tuffs. These two prospects have previously not been considered as having any relationship. V21 which lies along strike from V1 magnetically is also included in this discussion which sees the four prospects which lie on the coast between Diorite Point and Low Rocky Point, as pointing to:

- (i) the potential of the Mainwaring River Group for Besshi-type Cu-Zn orebodies and
- (ii) the need to reassess the stratigraphic relationship between the Sassy Creek Argillites, the Pleasant Creek Formation and the Mainwaring River Group.

Further north in the Mainwaring River Group and Pleasant Creek Formation are a series of airborne EM anomalies from both BHP's McPhar H-400 and Cyprus' DIGHEM surveys - namely V35 and V36 (Geopeko) and Python Pit, Wanderer South, and Mainwaring River (Cyprus), as well as anomalous soils in a traverse along the old Cypress Creek track at V28.

V18 and V23 are particularly significant in that they point to the potential of the Mainwaring River Group for Besshi-type Cu-Zn (-Ag-Au±Co) deposits. These generally thin, but laterally extensive orebodies may not be the "elephants" required in such an isolated location as Elliott Bay, however, there are a number of characteristics which are particularly interesting.

- they are found in submarine tholeiitic rocks (the Mainwaring River Group contains tholeiitic rocks)
- they are associated with exhalative? carbonate (the dolomite at V23 and V18)
- oxide-silicate iron formation may be present
- manganeseiferous exhalite seems to be present in some of the type examples
- chlorite rich rocks envelope many of these ores

- exhalative Sn (-w) deposits are thought to form in roughly the same depositional environments.

The third, fifth and sixth points tie in with descriptions of Penders Prospect as magnetite lenses within chloritic tuffs with anomalous scheelite reported along strike (Geopeko).

Although most mapping of Penders puts it into the Lewis River Volcanics, early mapping called the host rocks the Penders Tuffs whilst the Mines Department mapping separates the host rocks from the bulk of the Mt. Read volcanics. It is quite possible that the Penders Prospect is part of a Besshi deposits.

The host rocks to the Penders Prospect are shown as the Sassy Creek Argillites by Geopeko and Cyprus and as a spatially separate part of the Lewis River Volcanics by the Mines Department. Early mapping referred to the rocks as the Penders Pyroclastics.

The author contends that the host rocks are in fact the Pleasant Creek Formation which should be included as a unit of the Mainwaring River Group, probably towards its top. The contact between these rocks and the Low Rocky Point Granite is faulted. This agrees with the reported deformation along the contact with the host rocks described as being sheared with two phases of deformation.

The poorly mapped Pleasant Creek Formation, with its mixture of felsic, intermediate and mafic volcanics plus fine sediments is compatible with the reported descriptions of the host rocks at Penders Prospect with felsic volcanics, reported andesitic rocks and sediments (Strickland, 1978). This interpretation also concurs with the trend of the Sassy Creek Argillites to the southern end of their mapped outcrop.

From an exploration perspective, the belt of rocks from Schist Point (2 kilometres north of Low Rocky Point) are now included as part of the allochthonous package originally consisting of the Mainwaring River Group, but now also including the Pleasant Creek Formation. This belt has considerable potential for exhalative Besshi-type Cu-Zn mineralisation.

In this light, given the association of Cu-Zn in these lenses with pyrite  $\pm$  magnetite  $\pm$  haematite, airborne geophysics should be a major tool in locating such deposits, however Besshi-type deposits are also associated with graphitic shales, so airborne EM anomalies will be ambiguous. Stream sediment should be assayed for Cu, Pb, Zn, Ag, Au, Mn, Co, Mo, W and Sn.

#### **Additional Prospects in the Mainwaring River Group**

Exploration to the north in the Mainwaring River Group and Pleasant Creek Formation has focussed upon airborne EM anomalies at V36, V35, Mt. Osmund West, Mainwaring River, Python Pit and Mainwaring South. All these properties are located within EL 20/96.

### Wanderer South

Follow-up using ground EM, magnetics, soil sampling and mapping downgraded Wanderer South, however, there are lower order Cu (400 ppm) and As (4 ppm) associated with a magnetic peak on Line 7 and Cu (200 ppm with native copper noted in outcrop) associated with a sharp magnetic peak on Line 6. These anomalies may be lithological (see Figure 58).

### Python Pit

The contact between the Mainwaring River Group and Pleasant Creek Formation is marked by a single soil sample of 0.065 ppm Au, 40 ppm As and 200 ppm Cu with a sharp rise in the ground magnetics profile to the west. Again results may be lithological (see Figure 59).

Geopeko's V28 prospect lies 1.0 to 1.5 kilometres to the south of Python Pit. Anomalous gold in soils obtained from C-horizon augering could not be replicated by Jacro geochemical sampling (see Figures 60 and 61).

### Mainwaring River

Ground follow-up downgraded this DIGHEM EM anomaly with the ground EM showing the anomalies to correspond to the contact between sheared black shales and basic volcanics. Stream sediment sampling returned moderately anomalous Cu and Zn in -80# and pan concentrates with up to 95 ppm and 120 ppm respectively in the former and 80 ppm and 75 ppm respectively in the latter. The stream sediment geochemistry in this area is shown in Figure 104 (Geopeko) and Figure 62 (Cyprus).

### V35 and V36

Previous work by Geopeko was carried out on a series of airborne EM anomalies. This follow-up was only -80# sampling and mapping. -80# samples returned anomalous Cu (to 185 ppm) and Zn (to 180 ppm). These anomalies are summarised in Figures 63 and 104.

## 6.0 Conclusions and Recommendations

### 6.1 Conclusions

The Elliott Bay area is one of the most prospective areas in the highly mineralised Mt Read Volcanics. The source of the massive sulphide lenses/clasts at Voyager 19/Wart Hill could well be a world class polymetallic V.H.M.S., with particularly high grade lead and zinc and significant silver and gold credits. In spite of the amount of exploration conducted to date, the geology of Wart Hill is still subject to debate. Exploration has not tested below 200 metres below the surface

There are a number of zones of coherent, strongly anomalous gold in stream sediments (panned concentrates) with limited (if any) or at best ineffectual follow-up. Only parts of a few of these anomalous zones have seen soil sampling with largely ineffectual drilling of gold targets at only two prospects.

The area has excellent potential for V.H.M.S. base metal and/or gold deposits.

More specifically conclusions are as follows:

- Soil sampling has not been an effective exploration tool in the Elliott Bay area. This is due to the lack of true soil development in the wet, acidic conditions typical of the area. Weathered bedrock is usually overlain by ~1 metre black peat with or without a thin gravel lag. The massive sulphide lenses at Wart Hill were located immediately underneath ~30 cm of such peat with the sulphides fresh and unweathered. There does not seem to be any mechanism for creating secondary dispersal in this 'soil' profile and C-horizon samples are effectively spot rock samples. Attempts have been made to develop sampling/analytical techniques specifically designed for this environment with the Huminox technique trialed apparently successfully (?) further north at Thirkell Hill (though not without problems). Consideration must be given to the type of surface geochemical sampling employed and with consideration for the commodity and style of mineralisation deposit expected. If C-horizon sampling is considered to be adequate then the following conclusion must be taken into account. It is clear from a comparison of different soil sampling surveys over the same areas that there is an incompatibility of results, particularly between samples taken by augers mounted on vehicles and hand held augers. Due to the extensive peat and quartz lag in places, Tertiary gravels in others, it is imperative that C-horizon soil samples be power augered to the true C-horizon. It may be necessary to use Nick Poltock's "Wacker" drill to collect the samples.
- Although the actual volcanics are generally magnetically uninteresting, it is surprising that there has not been any high resolution aeromagnetics flown over the area. This is a major deficiency on the data set.

■ The hard geological data available (i.e. outcrop and drill core) is insufficient to resolve the geology of the Wart Hill area. A commitment should be made to drilling geological targets (diamond drilling) so as to define discrete targets. This drilling need not be prohibitively expensive. Rigs available in Tasmania include a man-portable rig capable of drilling BQ to ~50 metres with excellent recovery and an LF70 (roughly equivalent to a L38), mounted on a bombardier and capable of NQ to ~500 metres or more.

■ A number of conclusions have been reached regarding gold exploration:

(i) The potential sources of gold in EL 20/96 can be summarised as being the following:

V.H.M.S. deposits (e.g V19/Wart Hill)

Quartz-pyrite-chlorite-tourmaline alteration zones related to shears (e.g the contacts between the Elliott Point Porphyry and the volcanics - V12/North Lewis River).

Quartz-gossanous zones associated with magnetite-chlorite alteration at granite margins

Stratabound replacement of coarse pyroclastics (V24/Sassy Creek)

Quartz veins (e.g Waterloo Creek and areas marginal to Elliott Point Porphyry)

Tertiary gravels (e.g North Waterloo Creek and Upper Hudson River).

(ii) Gold at V12 (North Lewis) appears to be structurally controlled with a spatial relationship to the Elliott Point Porphyry. Airborne EM (anomaly EB4-QUESTEM), VLF-EM and resistivity all indicate that this structure trends north-north-east beyond the area of soil sampling and drilling.

(iii) The V24 Prospect was located from anomalous Au in panned concentrates with some support from -80# Au, but not -80# As even though the auriferous veins intersected contain arsenopyrite. V12 (North Lewis) was discovered by fortuitous rock-chip sampling, with subsequent stream sampling revealing anomalous -80# As (to 210 ppm) and -80# Au, but no gold in panned concentrates.

(iv) Soil surveys have been erratic to ineffectual in locating zones of anomalous gold. More reliance may need to be placed on using arsenic as a pathfinder. As noted earlier, consideration must be given to the method of soil sampling used.

## 6.2 Recommendations

The following work is recommended for the first year:

### Initial

- Fully compile all previous exploration data into manageable (digital?) formats.

- Carry out orientation soil sampling surveys in the area to determine an effective method for gold exploration (and base metals?).

### Regional

- Flying of a high resolution aeromagnetics (and radiometrics) survey. The interpretation of this aeromagnetics should be made with the geologist(s) who have carried out the mapping/logging of outcrop/core to end up with a geologically reasonable interpretation.
- Complete stream sediment (panned concentrate) sampling and geological mapping in the area in the central part of the area largely unsampled. Integrate this mapping with previous reliable fact mapping. Study the morphology of the gold in order to help define its source. Use close spaced stream sediment sampling to locate point of entry of the gold to the creek.
- Determine priorities for further follow-up on the basis of the above phases of work and use soil sampling and dipole-dipole IP (short dipole spacing e.g. 25 metres) to define drill targets to be diamond drill tested.

### Wart Hill

- Re-log / re-map the prospect in order to become acquainted with the geology and to determine the optimal locations for future drilling.
- Drill (1 or 2) deeper diamond holes under the existing drilling with a third under the Mt Osmund Syncline in order to find footwall alteration, a host horizon (or massive sulphide deposit) and to serve as a vehicle for DHEM.

### Host Volcanics Along Strike

- Mapping to be followed by the drilling of a number of short DDH's in order to test existing geochemical anomalies and to provide geological information.  
Voyager 24 / Voyager 30
- Extend soil sampling (method to be determined) over the area of anomalous gold in streams.
- Run dipole-dipole IP over anomalous/prospective zones.
- Drill test soil and/or IP anomalies preferably using short diamond holes.

### Voyager 3 to Voyager 12 and Gold Prospects in the North Eastern and South Western Parts of Elliott Bay

- Infill stream sediment sampling and map. utilising high resolution aeromagnetics
- Carry out soil sampling surveys over anomalous basins.
- Run dipole-dipole IP over anomalous zones.
- Drill test (preferably with short diamond holes) the Sassy Creek (3m @ 17.5 g/t Au) zone using 2 wide spaced fences of heel to toe drill holes.

The second years work will be dependant on results from the first years work.

98-4124 Vol 3 of 3



**E.L. 20/96 - Elliott Bay,  
Southwestern Tasmania.**

Annual Report - 12/4/97 through 11/3/98.

425099

APPENDIX 1.

E.L. 20/96 - Elliott Bay, Western Tasmania. A Review. By G.MacDonald & P.McNeil.

- A. Report text.
- B. Report figures (to #63). Plans (#>63) and the reports listed Appendices have not been submitted to MRT because they are already in the MRT files.

**MICROFILMED**  
FICHE No.014565-68

98-4124

ANNUAL REPORT-SW TASMANIA  
EL 20/96 - P MCNEIL-VOL3OF3  
EXPL.& MANAGEMENT CONS.P/L

425100

**E.L. 20/96 - Elliott Bay,  
Western Tasmania.**

**A Review.**

**Figures (to # 63), Plates and Tables.**

Date: January, 1997



— EL 20/96 Boundary  
 — Boundary of Former Licenses 53/94 and 5/94

**EXPLORATION & MANAGEMENT CONSULTANTS P/L**  
 ELLIOTT BAY  
 LOCATION  
 1:250000  
 0 10 20 30 40 50  
 Completed: P.A.M. Date: \_\_\_\_\_ Drawn: NORTHPOINT Map Ref: \_\_\_\_\_  
 Drawn: NORTHPOINT Map Ref: \_\_\_\_\_ Plate: \_\_\_\_\_

FIG 1.

425101

5 cm

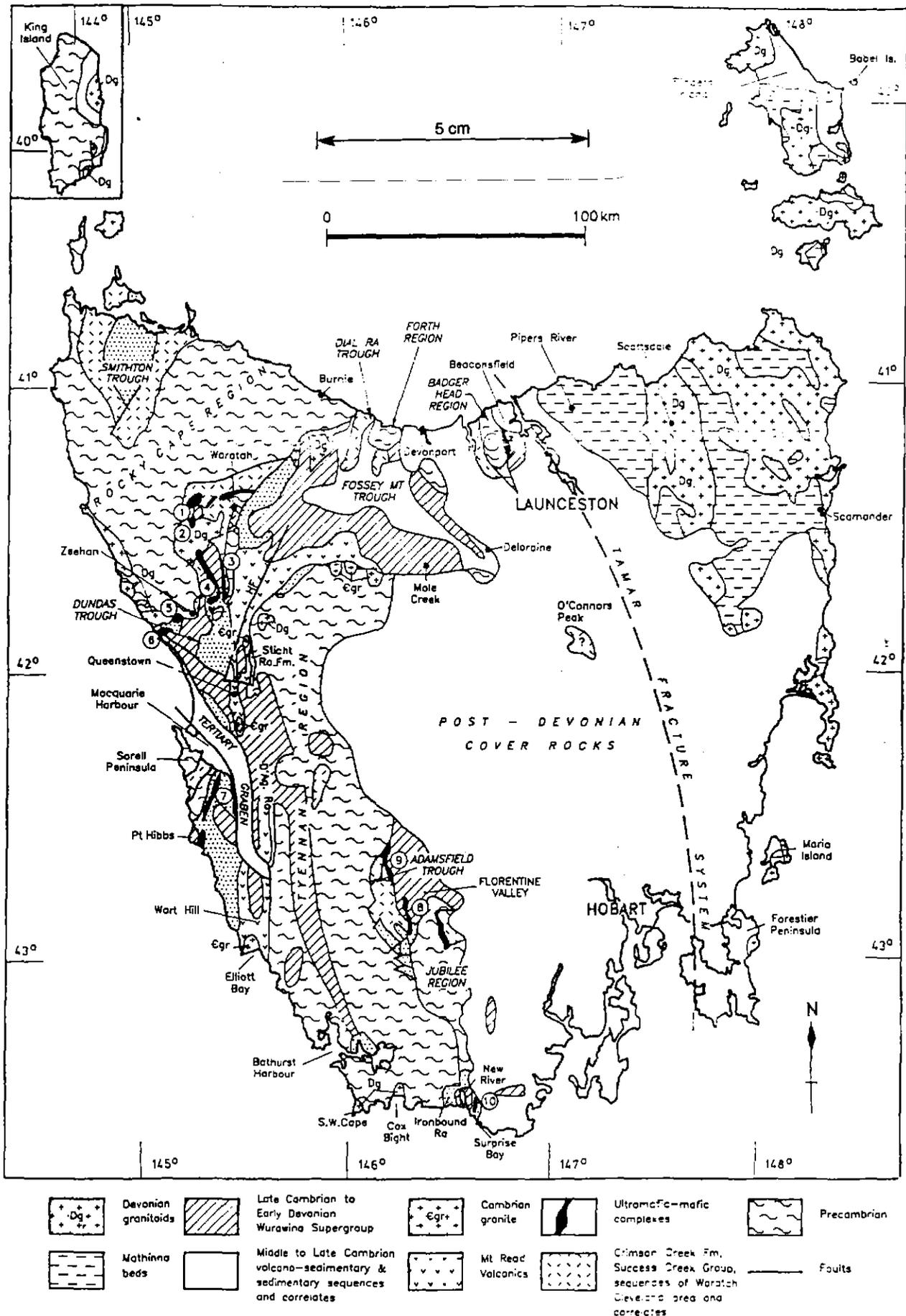


Fig. 2.—Sketch geological map showing the distribution of major stratotectonic elements of the Lower to Middle Palaeozoic of Tasmania. Ultramafic-mafic complexes referred to in text are: 1. Heanwood Fm.; 2. Mount St. Ian; 3. Huskinson River; 4. Serpentine Hill; 5. Melvors Hill; 6. Trial Harbour; 7. Cape Sorell; 8. Adamsheld; 9. Boyes River; 10. Rocky Boat Harbour; 11. Andersons Creek. The King Island scheelite deposits occur adjacent to the small granitoid plutons in the SE of the island. HF = Henty Fault; D'Ag.Ra. = D'Aguilar Range. After Corbett and Turner (1989), Williams (1978) and Brown (1986).

after Green (1992)

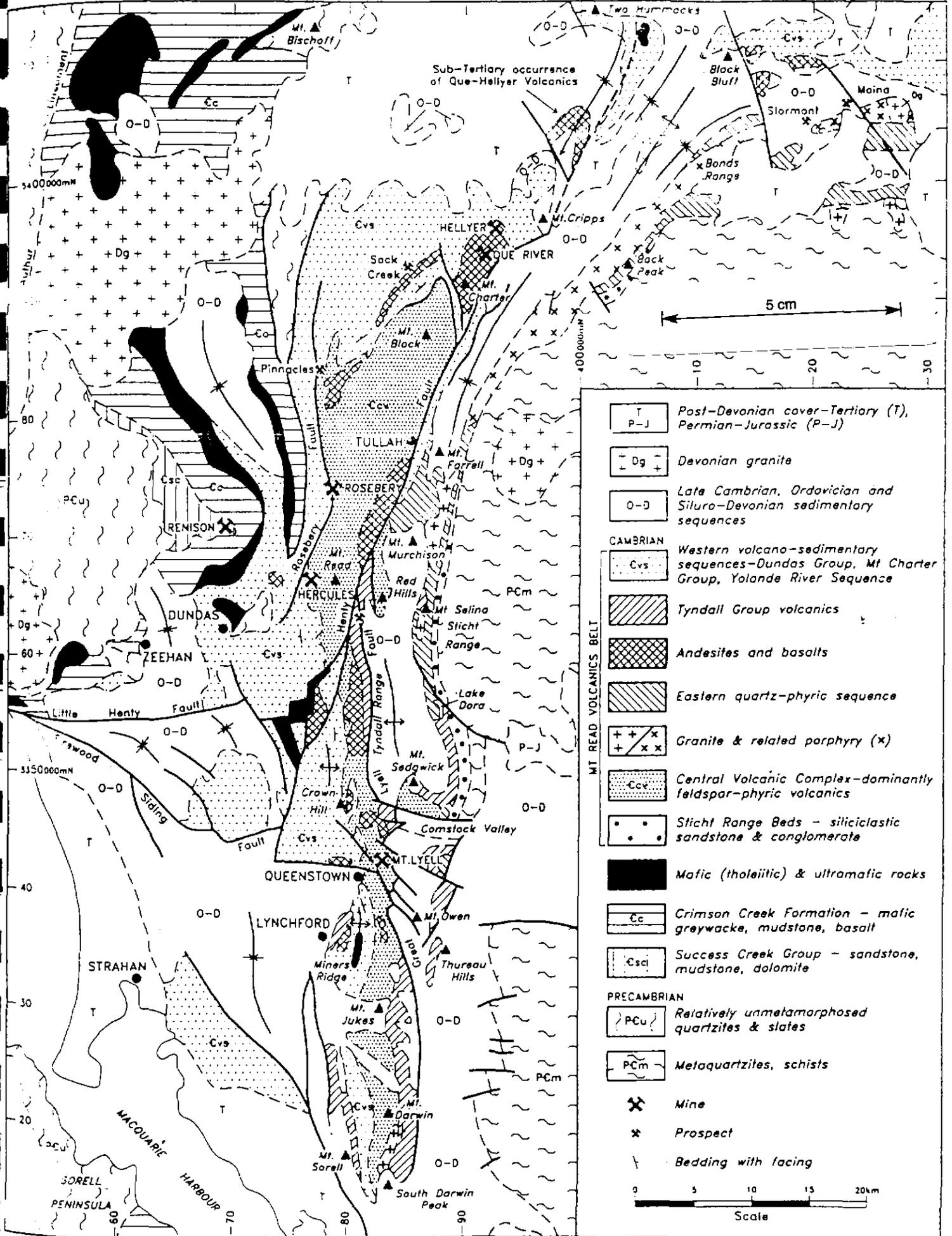


FIG. 3a. Geology of the central part of the Dundas trough from Mount Darwin to Moina, showing distribution of major lithologic associations of the Mount Read Volcanics belt and associated Cambrian and Proterozoic sequences. Based on published maps of the Mount Read Volcanics Project and Geological Survey.

after Corbett (1992)

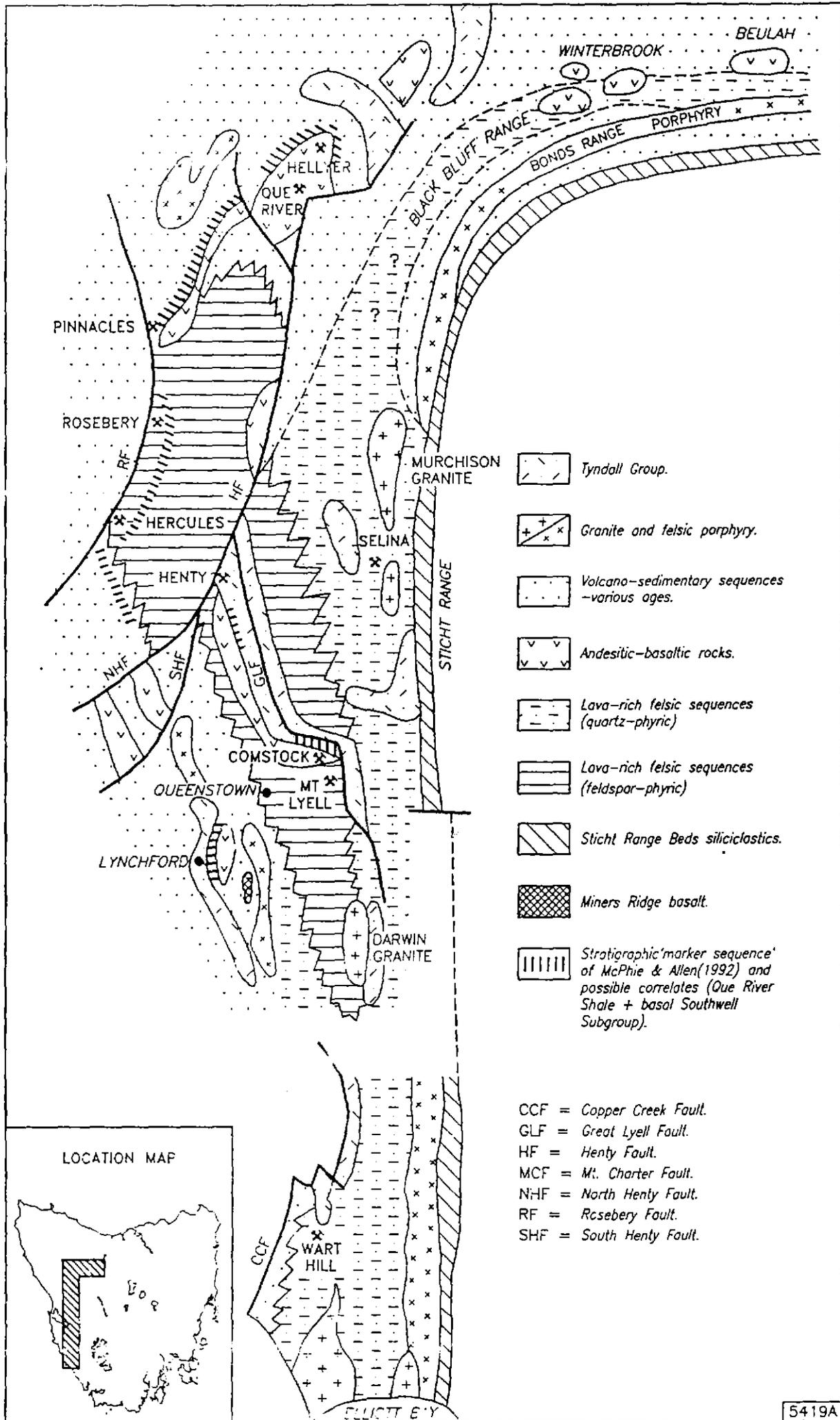
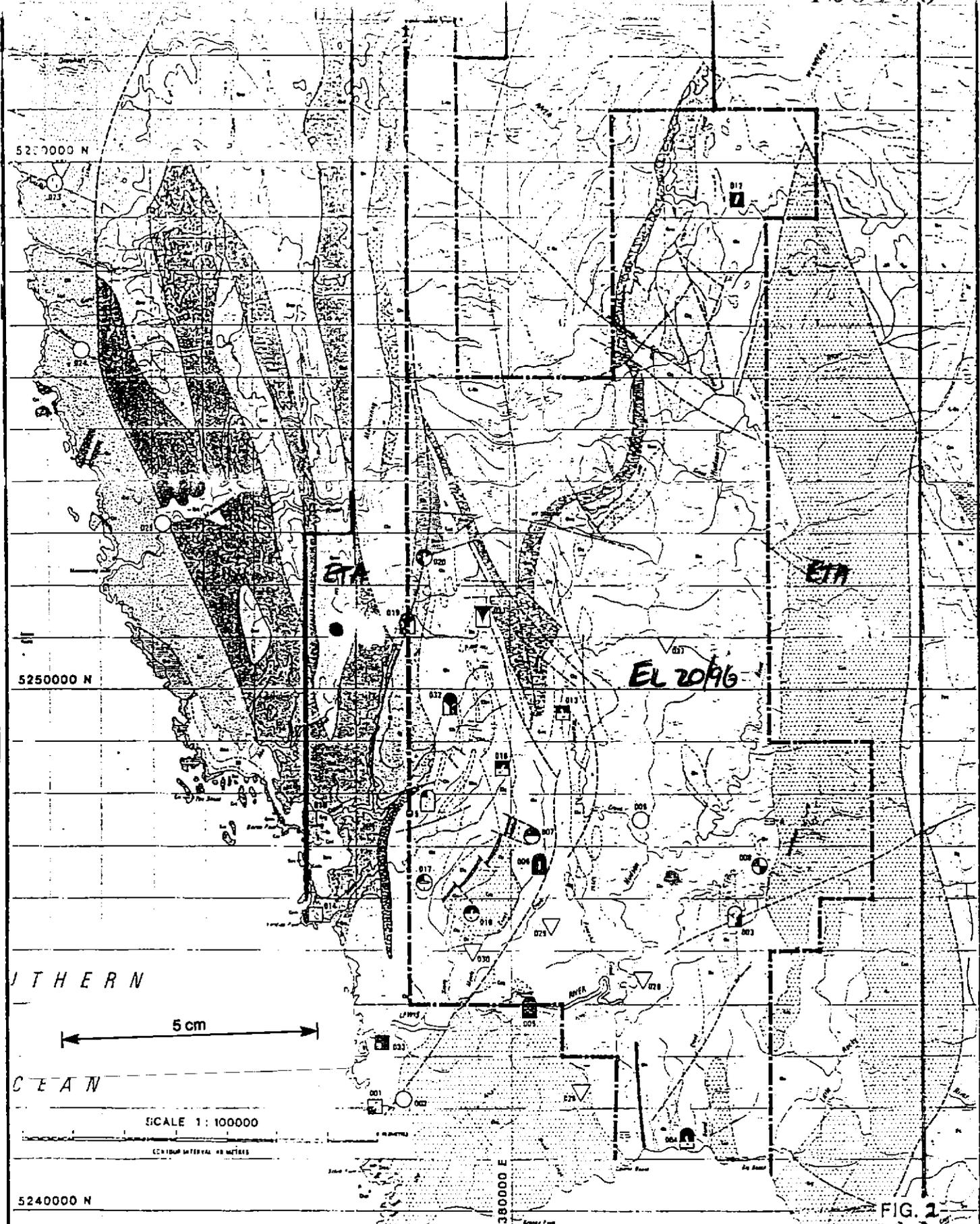


Figure 36

Stratigraphy of the Mt Read Volcanics between Elliott Bay and Beulah



**Aberfoyle Resources Limited**  
EXPLORATION DIVISION

REVISIONS			
Init.	Date	Init.	Date

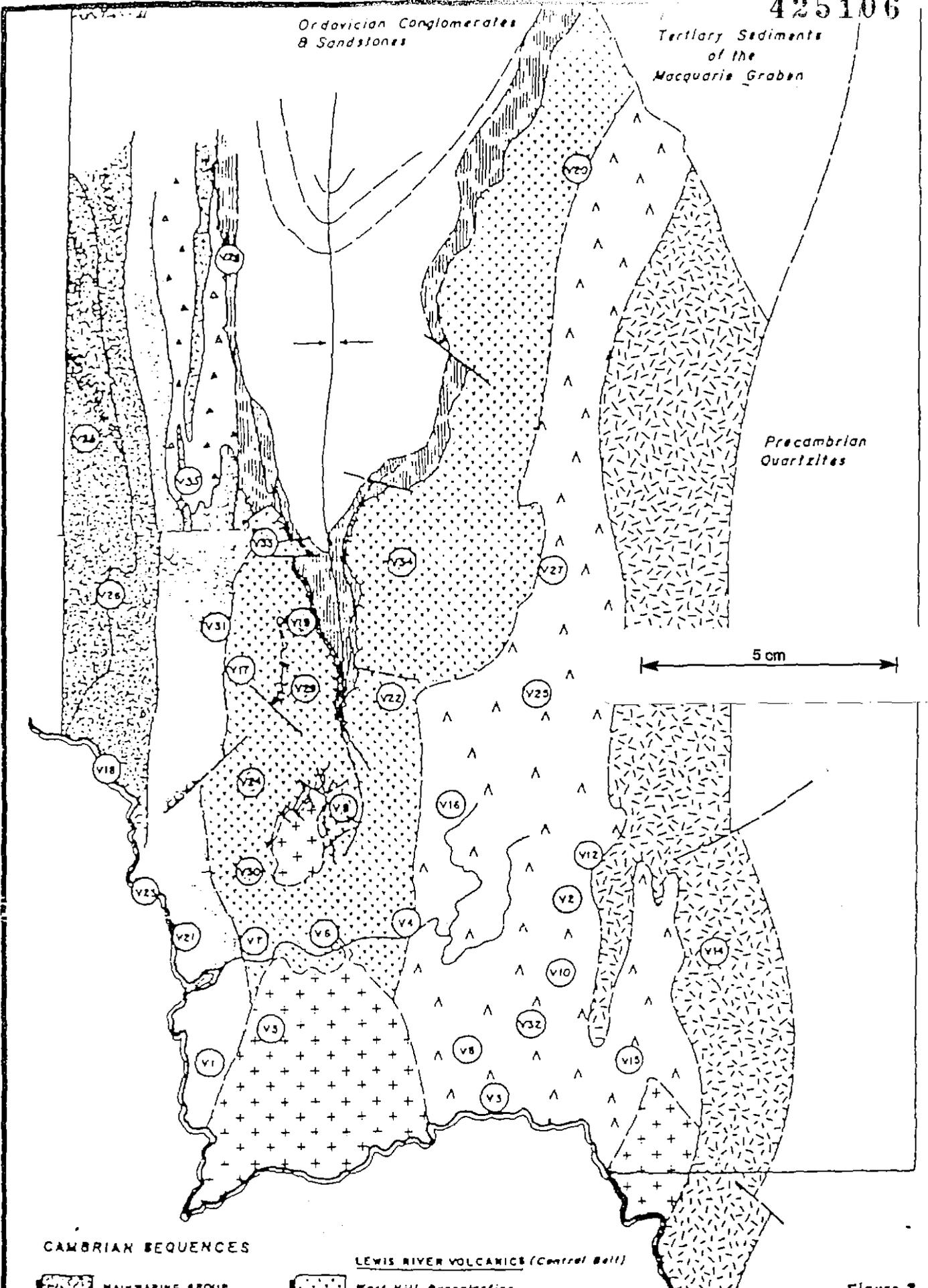
TASMANIA  
ELLIOTT BAY E.L. 40/85  
*GEOLOGY (reduced from figure 65). See fig 65 for key.*

Compiled : SR  
Drawn : RdeB  
Traced : MAR  
Checked :  
Plate No. *fig 3c*

Location Code : K55/7

Scale : 1:100 000

Date : December 1992



**CAMBRIAN SEQUENCES**

- MAIRWARRE GROUP
- MT. READ CORRELATES
- Western Sequence
- Tynel Group Correlates

**LEWIS RIVER VOLCANICS (Central Belt)**

- West Hill Pyroclastics
- Hudson River Pyroclastics
- Elliott Point Parahyry
- Granite
- Undifferentiated Acid Volcanics

Figure 2

E.L.27/76  
 ELLIOTT BAY, TASMANIA  
 GEOLOGY & PROSPECT LOCATION

0 1 2 3 4  
 KILOMETRES

GEOPEKO  
 PROSPECT LOCATIONS *fig 4.*  
 GEOPEKO-DEVONPORT BASE

425107

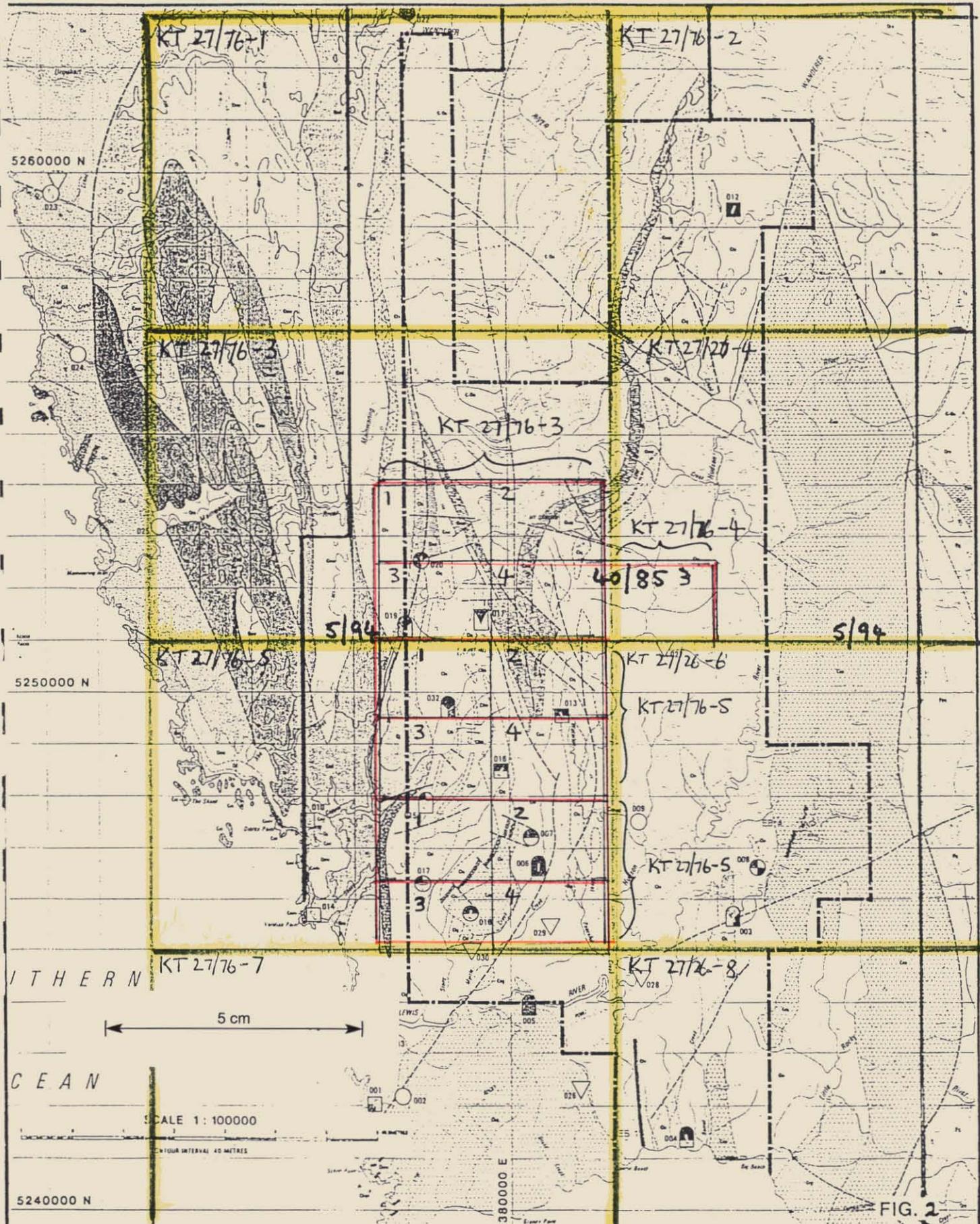


FIG. 2

Aberfoyle Resources Limited  
EXPLORATION DIVISION

 1:2500 series  
 1:10000 series

REVISIONS			
Init.	Date	Init.	Date

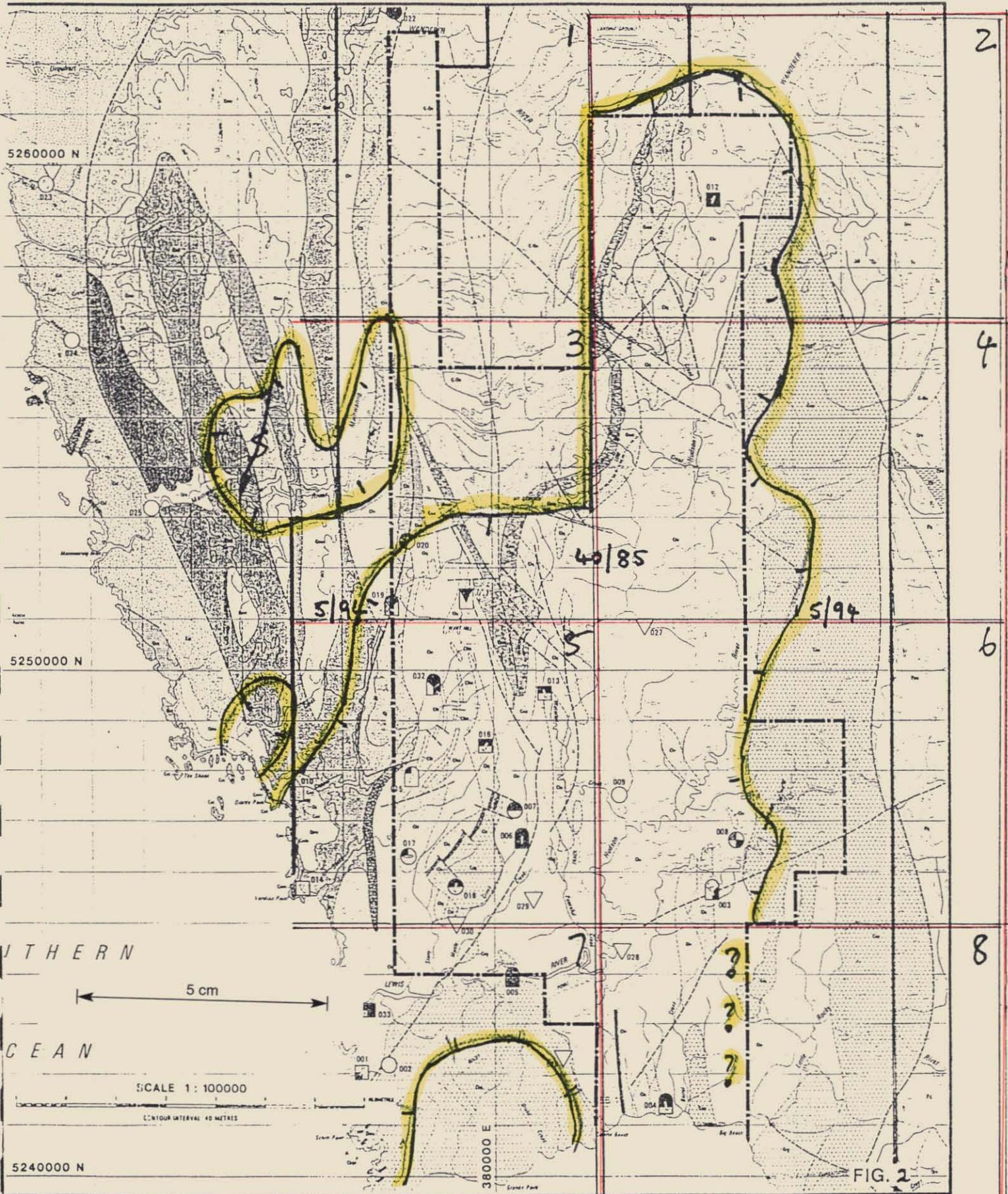
TASMANIA  
ELLIOTT BAY E.L. 40/85  
LOCATION OF GEOPEKO PLANS  
KT series

Compiled : SR  
Drawn : RdeB  
Traced : MAR  
Checked :  
Plate No. : ~~fig 5~~ fig 5

Location Code : K55/7

Scale : 1:100 000

Date : December 1992



N  
THERN  
5 cm  
C  
E  
A  
N

SCALE 1 : 100000  
CONTOUR INTERVAL 40 METRES

~~Aberfoyle Resources Limited~~

EXPLORATION DIVISION

TASMANIA  
ELLIOTT BAY E.L. 40/85

LOCATION PLAN



Geopelco  
Stream  
sed. sampling.

125108

Compiled : SR

Drawn : RdeB

Traced : MAR

Checked :

Plate No. : EB-10 fig 6

REVISIONS			
Init.	Date	Init.	Date

Scale : 1:100 000

Date : December 1992

Location Code : K55/7

2  
4  
6  
8

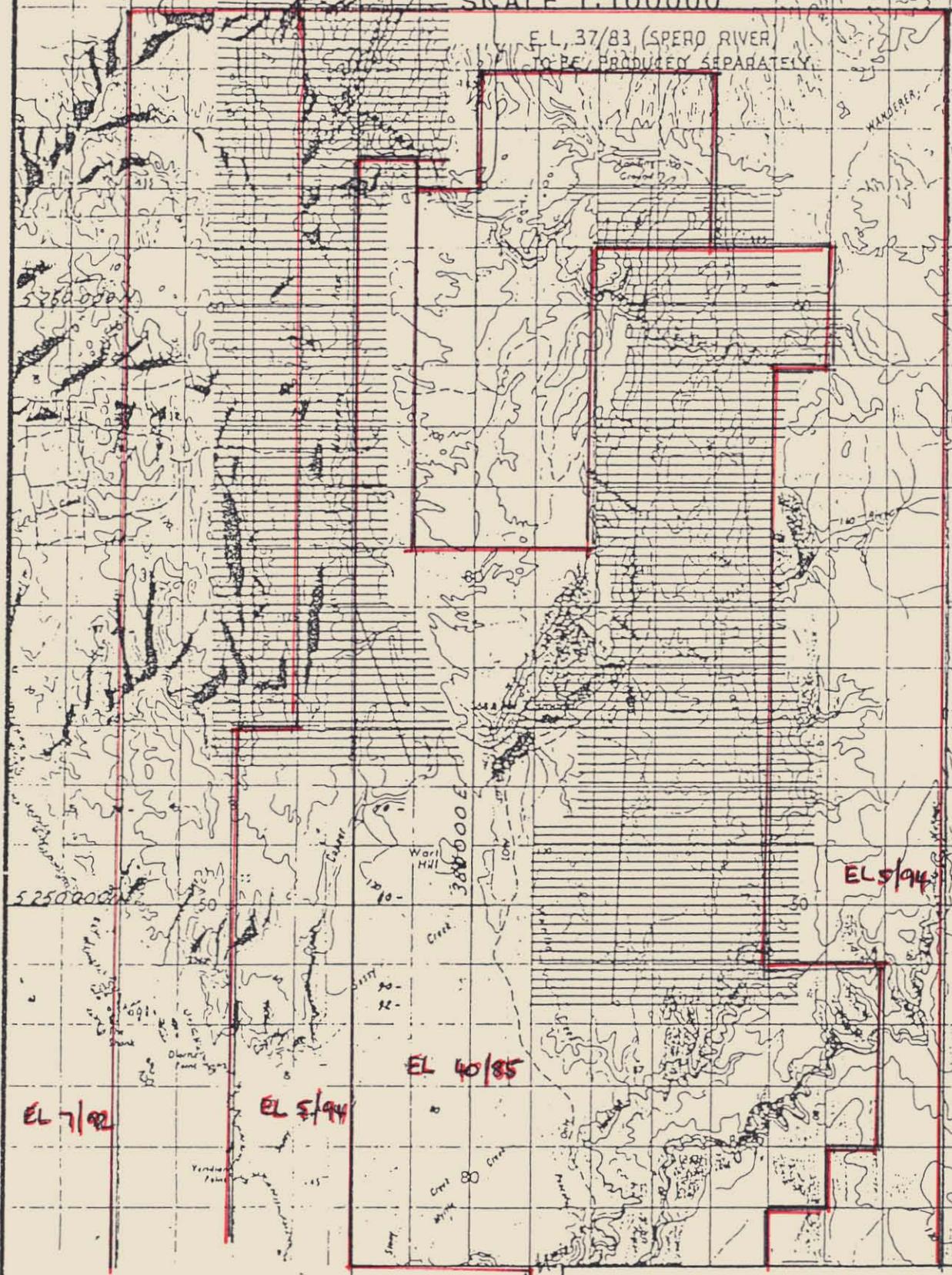
FIG. 2

425109

# ELLIOTT BAY

SCALE 1:100000

E.L. 37/83 (SPERO RIVER)  
TO BE PRODUCED SEPARATELY



630 line-km  
+ ~56 line km magnetics tie-lines

5 cm

MITRE GEOPHYSICS PTY. LTD.

ELLIOTT BAY, TAS.  
PROPOSED FLIGHT LINES  
DIGHEM SURVEY

DRAWN BY :	J.R.B
DRAFTSMAN:	
DATE :	Nov '85
REVISIONS :	

FILE NO.

SCALE 1:100,000

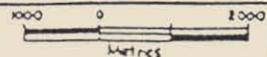
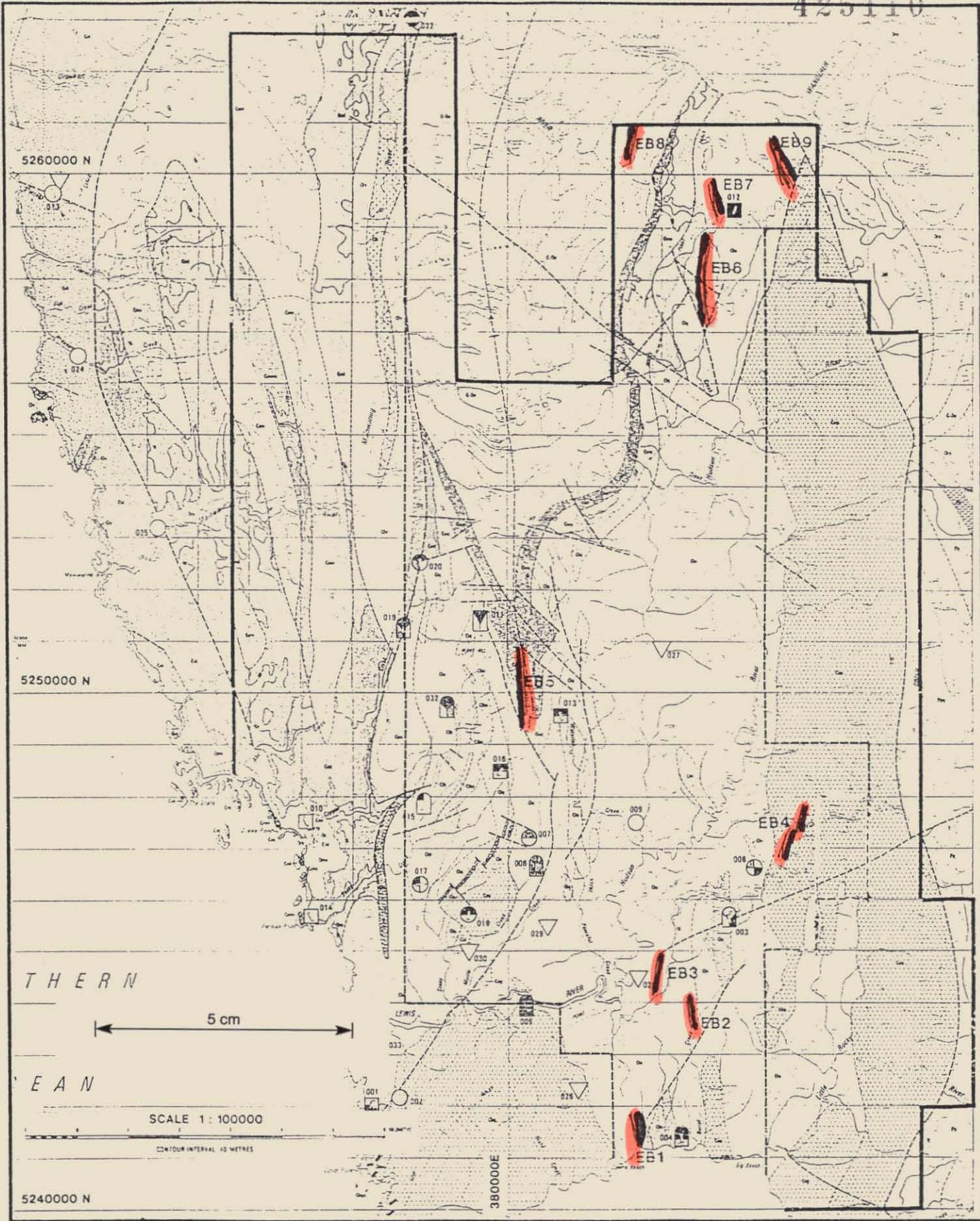


FIG. 7



**Aberfoyle Resources Limited**  
EXPLORATION DIVISION

SOUTH WEST TASMANIA  
**ELLIOTT BAY E.L. 40/85**

**QUESTEM ANOMALY LOCATION PLAN**

REVISIONS			
Init.	Date	Init.	Date

Compiled : DBW  
 Drawn : RdeB  
 Traced : JLR  
 Checked :  
 Plate No. : ~~EB~~ fig 8

Location Code :

Scale : 1:100 000

Date : December, 1991

1-5

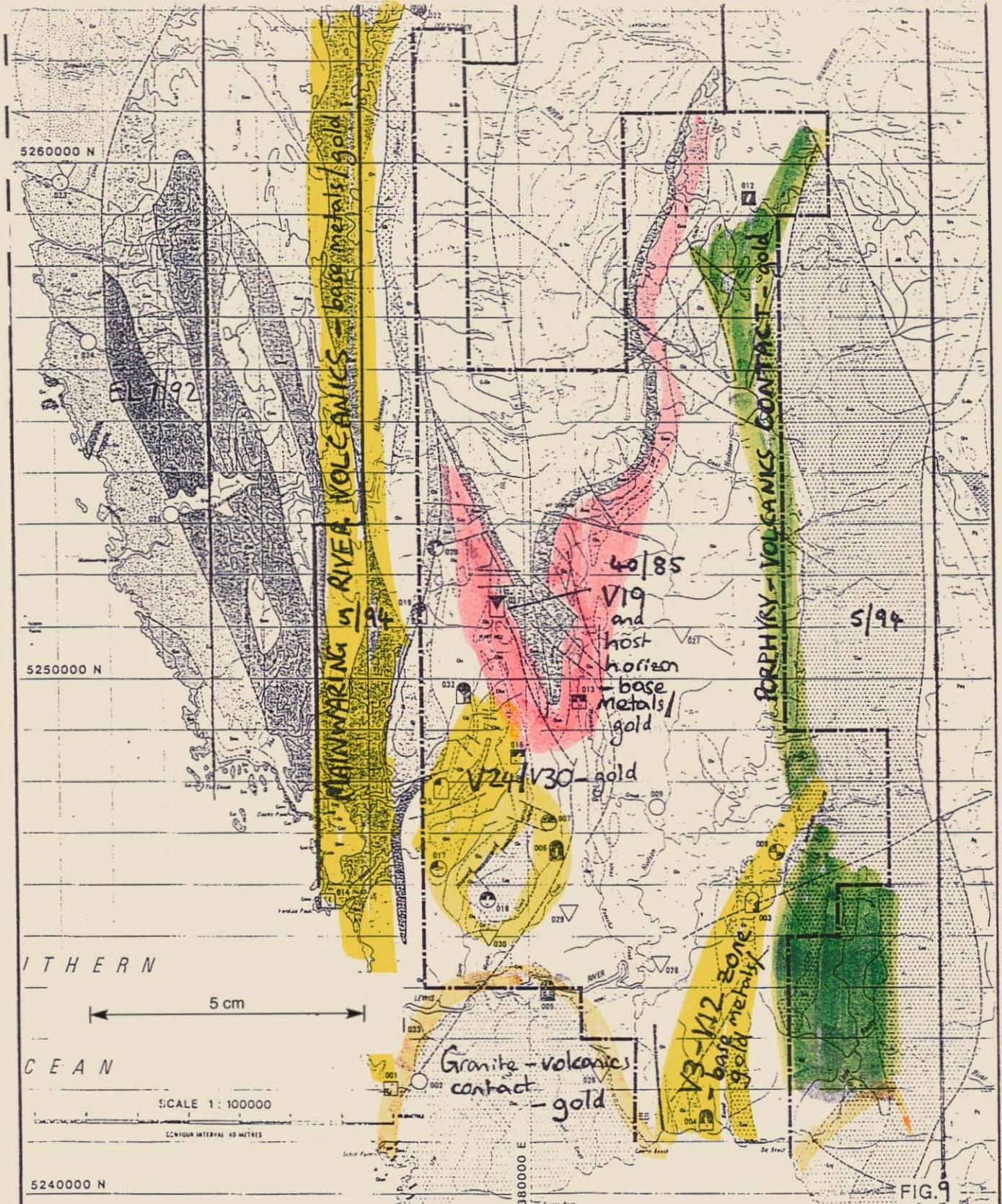


FIG. 9

Aberfoyle Resources Limited  
EXPLORATION DIVISION

TASMANIA  
ELLIOTT BAY E.L. 40/85  
PROSPECTIVE ZONES

Compiled : SR  
Drawn : RdeB  
Traced : MAR  
Checked :

REVISIONS			
Init.	Date	Init.	Date

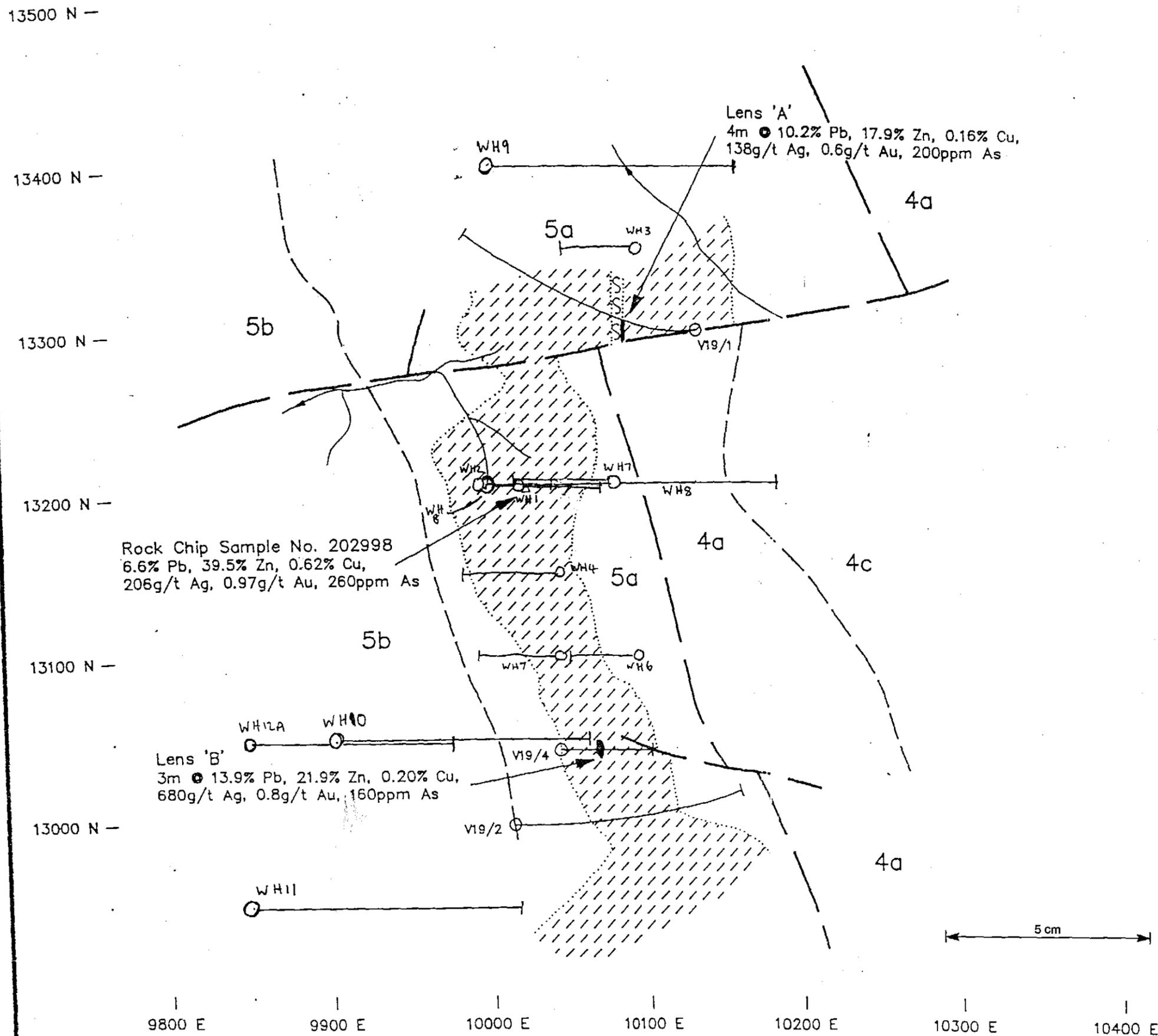
Location Code : K55/7

Scale : 1:100 000

Date : December 1992

Plate No. : EG-19 fig 9

15-1



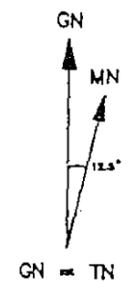
Rock Chip Sample No. 202998  
 6.6% Pb, 39.5% Zn, 0.62% Cu,  
 206g/t Ag, 0.97g/t Au, 260ppm As

Lens 'B'  
 3m ● 13.9% Pb, 21.9% Zn, 0.20% Cu,  
 680g/t Ag, 0.8g/t Au, 160ppm As

Lens 'A'  
 4m ● 10.2% Pb, 17.9% Zn, 0.16% Cu,  
 138g/t Ag, 0.6g/t Au, 200ppm As

**LEGEND**

- WATERLOO CREEK GROUP**
- 4a Hematite volcanoclastic conglomerate
  - 4c Black shale
- WART HILL VOLCANICS**
- 5a Fine to med. grained rhyolitic volcanoclastic
  - 5b Rhyolitic quartz-feldspar porphyry
- ALTERATION**
- [Hatched Box] Sericite
  - [SSS Box] Chlorite - pyrite
- [Vertical Line] Massive sulphide pod
  - [Dashed Line] Geological contact
  - [Dashed Line] Fault
  - [Circle with Dot] Diamond drill hole
  - [Wavy Line] Stream
  - [Triangle] Rock chip sample



CYPRUS MINERALS AUST. CO. & POSEIDON LTD.	
ELLIOTT BAY - E.L. 40/85	DRAWN BY: C.T.
WART HILL	DRAFTSMAN: T.G.D.S.
SIMPLIFIED GEOLOGY	DATE: April '87
9 DDH LOCATIONS	REVISIONS:
SCALE 1:2500	FILE No.:
	FIG. 10c

**TERTIARY**

1 Quartzose Gravel

**JURASSIC**

2 Dolerite

**LATE CAMBRIAN — EARLY ORDOVICIAN**

3 Owen Conglomerate — undifferentiated  
 3a — coarse quartzose sandstone  
 3b — siltstone

4 Waterloo Creek Group — undifferentiated  
 4a — hematitic volcanoclastic conglomerate  
 4b — tuffaceous coarse sandstone and grit  
 4c — black shale ± pyrite  
 4d — fine-med. grained rhyolitic volcanoclastic

**CAMBRIAN — MT. READ VOLCANICS**

5 Wart Hill and Hudson River Volcanics — undifferentiated  
 5a — fine to med. grained rhyolitic volcanoclastic  
 5b — rhyolitic quartz-feldspar porphyry (lavas and intrusives)  
 5c — dacitic porphyry  
 5d — coarse rhyolitic volcanoclastic  
 5e — siltstone  
 5f — siliceous conglomerate  
 5g — greywacke and siltstone

**CAMBRIAN INTRUSIVES**

6 Elliott Point Porphyry  
 7 Granite  
 8 Microgranite  
 9 Porphyritic Microgranite

**CAMBRIAN — WESTERN EPICLASTICS**

10 Western Epiclastics — undifferentiated  
 10a — andesitic — basaltic volcanics  
 10b — brown-grey tuffaceous siltstone and quartzose conglomerate  
 10c — black shale ± pyrite  
 10d — fine to medium grained rhyolitic volcanics  
 10e — gabbro  
 10f — coarse rhyolitic volcanoclastic sandstone

**CAMBRIAN — MAINWARING GROUP**

11 Mainwaring Group — undifferentiated  
 11a — gabbro  
 11b — andesite-basaltic volcanics  
 11c — dolomite  
 11d — black shale ± pyrite  
 11e — siltstone and sandstone

**PRECAMBRIAN**

12 Metamorphics — quartzite, schist and phyllite

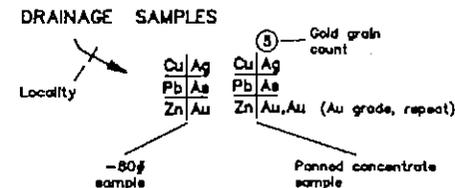
- Geological contact
- ~ Unconformity
- Fault
- SE Strike and dip of schistosity
- SE Strike and dip of bedding — facing indicated
- ↘ Plunging syncline
- ⚒ Old workings

**ALTERATION — Pervasive and vein controlled**

- ☐ Chlorite — magnetite
- ☐ Sericite
- ☐ Sericite — quartz
- ☐ Chlorite — pyrite
- ☐ Quartz — chlorite — pyrite — tourmaline
- ☐ Quartz — sericite — talc ± chlorite
- ☐ Quartz — chlorite
- ☐ Chlorite

- Quartz vein
- Alteration boundary

**GEOCHEMISTRY**



**ROCK CHIP SAMPLES**

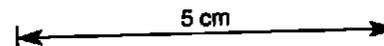
- △ 202587 — Sample location and number
- △ 202589 — Sample location number and assays  
 Cu/Ag  
 Pb/As  
 Zn/Au
- △ 202589 TS — Thin section sample
- V33/1 — Diamond drill hole location

**DETECTION LIMITS (ppm)**

	Cu	Pb	Zn	Ag	As	Au
Rocks	5	5	5	0.5	1	0.005
-80g plus panned concentrates	5	5	5	0.5	1	0.008
Sole	5	5	5	0.5	1	0.01 (AAS) 0.008 (Fire assay)

— Below limit of detection

425113



CYPRUS MINERALS AUST. CO. & POSEIDON LTD.

ELLIOTT BAY — E.L. 40/85

**LEGEND**

SCALE 1:

FIG 10B

DRAWN BY:	
DRAFTSMAN: T.G.D.S.	
DATE: 1 April '87	
REVISIONS:	
FILE No.	

425114

OPERATION OF LEGEND

- 1 Capital letter - indicates primary classification eg S - sedimentary rock, A - acid rock, M - basic rock
- 2 Lower case letters - indicate the following
  - (i) Colours - e.g. pk/grnA = pink fragments in an acid igneous rock with a green matrix
  - (ii) Textural or structural features - e.g. xIA = crystal tuff of acid composition, eg pA = porphyritic acid rock, e.g. oxA = oxidised acid rock.
- b. As suffixes in progressive order:
  - (i) Categorized - e.g. pAr = rhyolite, e.g. Ia = intermediate rock of andesitic composition
  - (ii) Mineralogy - e.g. pArf = porphyritic (rhyolite) with feldspar phenocrysts, e.g. lxt f/b = lithic crystal tuff with feldspar (phenocrysts component) and biotite (prominent matrix component), e.g. lxt fq = lithic crystal tuff with (major) feldspar crystals and (minor) quartz crystals, e.g. fb mg pArqfs (black specks) = flow banded porphyritic rhyolite with quartz (major phenocryst component, size range 1mm - 5mm), feldspar (minor phenocryst component), sericite (prominent matrix component), and black specks (minor undifferentiated accessory mineral).

SYMBOLS

IGNEOUS

A	acid igneous unclassified
Ar	rhyolite
I	intermediate igneous unclassified
Ia	andesite
Id	dacite
M	basic igneous unclassified
Mv	basalt
Ma	dolerite
Gr	granite

STRUCTURAL

	outcrop limit
	rubble boundary
	interpretative contact
	bedding
	joint
	cleavage
	primary foliation
	fault
	unconformity

COLOURS:

pk	pink
grn	green
brn	brown
pl	pale
dk	dark
wh	white
gr	grey
pur	purple

SEDIMENTARY

Ssh	shale
Sstst	siltstone
Ssst	sandstone
Sqtz	quartzite
Scong	conglomerate
Sv	volcaniclastic sediment

SILICATE MINERALOGY

q	quartz
f	feldspar
mus	muscovite
b	biotite
c	chlorite
s	sericite
cb	carbonate
mafics	mafics
hb	hornblende
sid	silicified
ferromag	ferromagnesian

GRAIN SIZE:

fg	fine grained (< 1mm)
mg	medium grained (1mm - 5mm)
cg	coarse grained (5mm - 5cm)

STRUCTURAL and TEXTURAL:

t	tuff unclassified
lt	lithic tuff
xt	crystal tuff
vt	vitric tuff
fb	flow banding
p	porphyritic
civd	cleaved
shd	sheared
ox	oxidized
vns	veins
lam	laminated
brec	brecciated
sch	schistose

SULPHIDE MINERALOGY

s	sulphides
py	pyrite
cpy	chaicopyrite
gn	galena
hm	hematite
mag	magnetite
gas	gossan
lim	limonite

MISCELLANEOUS

	TS 3033 Thin section and rock No
	III2 Geochemical analysis and rock No
	Grid traverse
	Anomaly centre (approximate)
	Old workings
	Composite

GEOLOGICAL INTERPRETATION

Pencil No		
19-1		TERT (Macquarie Beds)
19-6		L ORDO Conglomerate (Owen type), sandstones (Scong, Ssst)
19-50		Ia Andesite
19-67		M Basic dyke
19-10		uG? Granite (Gr)
19-13		C Sandstone (Ssst)
19-17		C Fine grained volcaniclastic sediments (fg Sv(ss), Sv(Ssh))
19-18		C Coarse grained sedimentary breccia (cg S(brec))
19-19		C Porphyritic quartz - feldspar rhyolitic lava (fbpArqf)
19-21		C Feldspar - quartz - biotite porphyry (cg pArfb)
19-24		C Rhyolitic vitric pyroclastics Vitric tuff, vitric crystal tuff (vtq, vsta)
19-28		C Rhyolitic crystal pyroclastics Crystal tuff, crystal lithic tuff (xtq, xltaf)
19-32		C Rhyolitic lithic pyroclastics Lithic tuff, lithic crystal tuff, lithic vitric tuff, (cgltaf, mglstaf, lvtaf)
19-70		PRE C Undifferentiated quartzite, quartz mica schist (Sqtz, fg lam sch Sshmus)

*Geopko's geological mapping codes.*

*fg tuff 10 etc.*





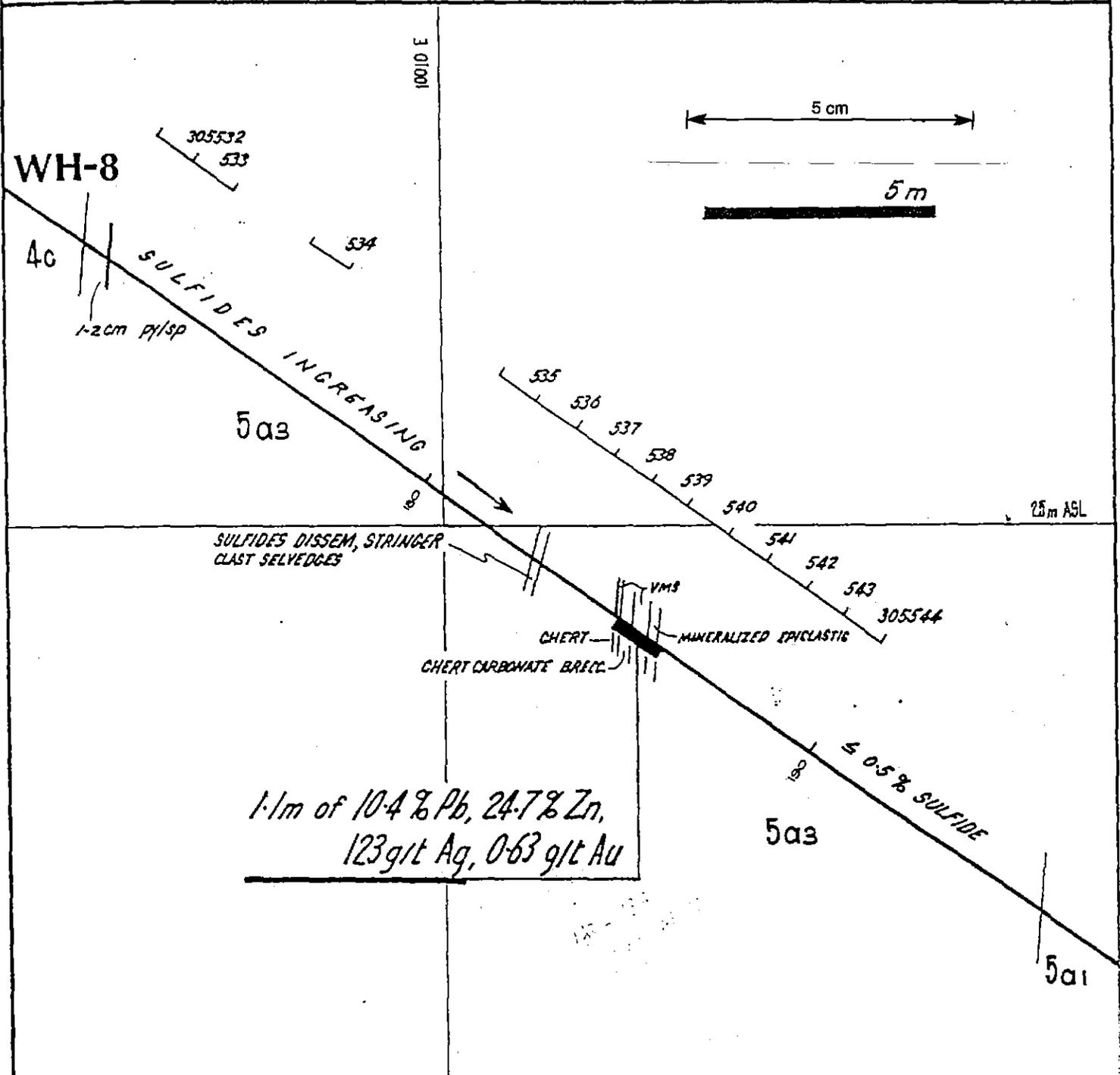
PROJECT \_\_\_\_\_

DESCRIPTION \_\_\_\_\_

DATE \_\_\_\_\_

DRAWN \_\_\_\_\_

REF \_\_\_\_\_



Wart Hill 13272 N

MASSIVE SULFIDE INTERCEPTS

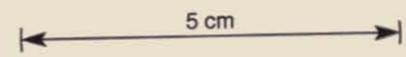
WH-8

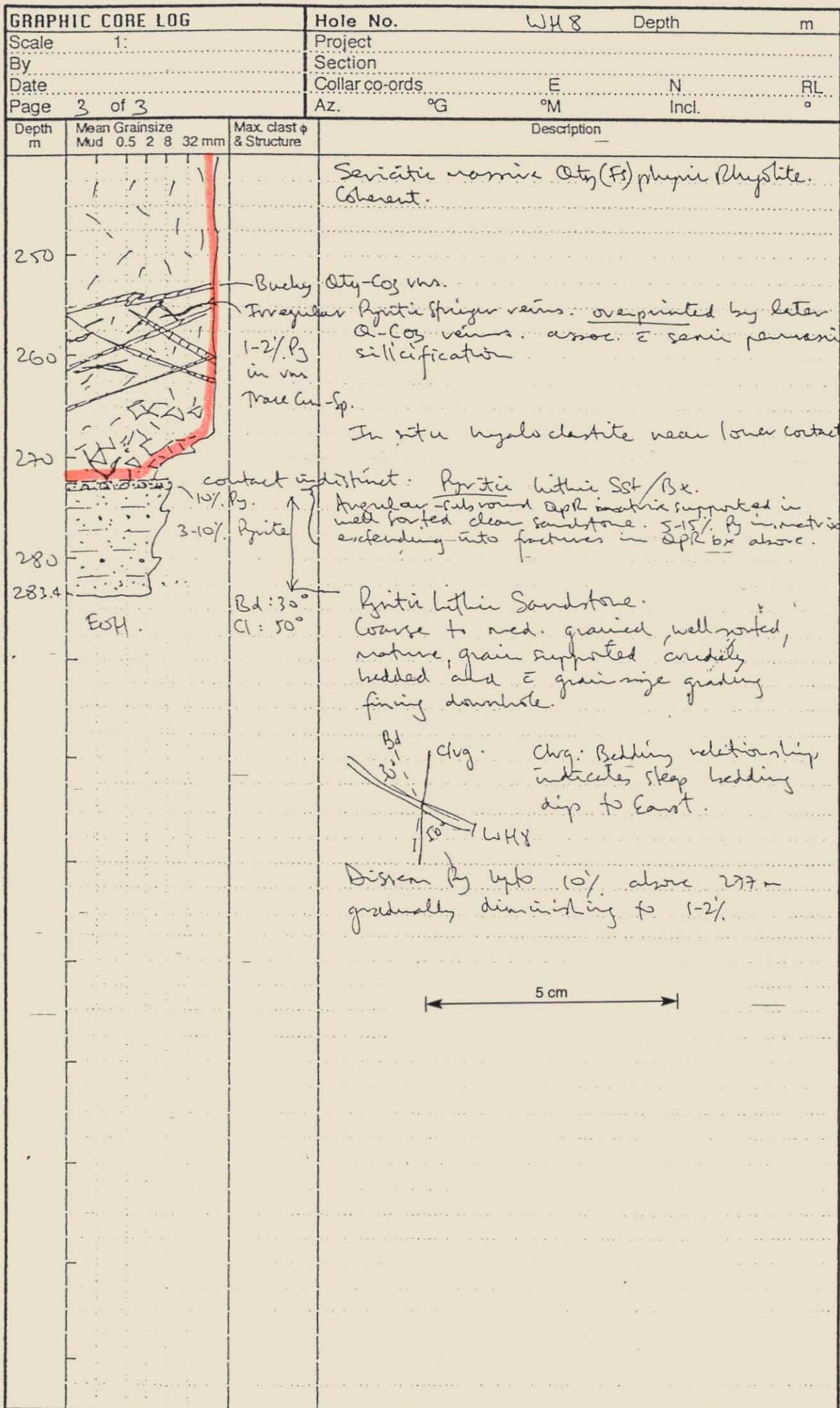
Figure 11.a

CYPRUS

GRAPHIC CORE LOG		Hole No. EBT-89	WH 8	Depth	m
Scale 1:500		Project Voyager 19		EL 53/94	
By W. HERRMANN		Section			
Date 24/10/95		Collar co-ords		E	N
Page 1 of 3		Az.	°G	°M	Incl.
Depth m	Mean Grainsize Mud 0.5 2 8 32 mm	Max. clast φ & Structure	Description..		
10		< 0.1 Py Sharp	Sericitic massive qtz phytic Plyslite ↑ leached above 10m. Chloritic amygdaloidal f.g. massive Basalt.		
20		Sharp.	← 5 cm →		
30					
40		Py < 0.1	Sericitic qtz phytic coherent massive Plyslite 3% 1-4mm clear qtz phenocrs. in sericitized pale buff grey felsic aphanitic matrix = minor shreds chlorite ex. Bist?		
50		cl: 30°	Occasional fine < 2mm An Sp-Q-Ce veinlets both sub// and cross cutting clvg. (ie partly post tectonic)		
60					
70		3-4% dis. Py	Contact ind B thin / indeterminate. Sericitic streaky foliated slt + Permian Bx. Mistite f.g. mudstone disrupted by permineral bx emplacement? looks vaguely peperitic?		
80		wk. cl: 35° 30% clasts flattened MS 20-30mm	Sericitic massive felsic 1/2 Sst, sparse "canonballs" of pervasive CO2 alteration. Sericitic (carbonated) massive polymictic Wheateclastic Breccia. Clasts: Qpk, CO2 alt. Qpk, rare pyritic cherty slt + Sp rich MS.		
90		MS + 20mm 1-2% Py Py dent.	Sericitic Qtz xtal rich permineral Sst? Similar to 78.8 - 87.1 m. + CO2 clasts. Similar to 65.3 - 74.2 m		
100		cl: 50°	Sericitic (carbonated) massive polymictic Breccia fewer CO2 and MS clasts; clast conc. increasing down		
110			Basalt.		
120			Q-CO2 vein.		

GRAPHIC CORE LOG			Hole No.	Depth	m
Scale 1:			Project		
By			Section		
Date			Collar co-ords		
Page 2 of 3			Az.	°G	°M
				Incl.	RL
Depth m	Mean Grainsize Mud 0.5 2 8 32 mm	Max. clast φ & Structure	Description		
130		Clasts: 3-400mm MS: 20-40mm Sulphide ~0.2%	Clast rich Rhyolite Bx. 10-20% clasts Some large clasts/bands py. clast. Rare Sp-Au-Py-Au MS clasts.		
140		20mm cl: 65°	Sericitic (chloritic) Permian (lithic) 1/2 Sst + Bx 5% "fiamme", rare lithic except near downhole contact. Nodular/cauliflower patches of Green CO <sub>2</sub> (20mm) in f.g. massive chlorite sericite matrix ± minor relic Sst. fabric. Alteration chl-CO <sub>2</sub> ?		
150			Sericitic massive Permian Breccia grading down hole to murky fine-coarse Rhyolite breccia. Could be pseudo fragmental??		
160		d: 60° ~0.2% Py.	Sericitic massive QF Bi p. Rhyolite, absent. 3-5% 1-4mm clear qtz xts. 1% 1-2mm chloritized biotite flakes and murky Fs ph. xts. in gray buff aphanitic matrix.		
170		20mm Sst. in bedded ser. felsic Sst.	Band		
180		QPR 20-100 ~0.5% Py. 30% Sulph.	Sericitic (carbonated) massive Permian/Rhyolitic lithic Breccia. locally psiloclastic below ~183m MASSIVE SULPHIDE f.g. Sp-Py-Au in silica-CO <sub>2</sub> gangue however contact irregular + conchoidal.		
190			Sericitic massive Permian/Rhyolitic lithic Breccia. large coherent Rhy lithic frags increasing (and cleaver outlined) downhole.		
200					
210					
220		d: 70° ~0.2% Py	Rhyolitic Bx below 231m. ± rounded clasts chert, CO <sub>2</sub> alt. QPR and feld/ser QPR		
230		main flow.	Basalt.		
240					







GRAPHIC CORE LOG			Hole No. EST-89	WH9	Depth	m
Scale	1:500		Project	VOYAGER 19		EL 53/A4 TAG.
By	W. HERRMANN		Section			
Date	8/11/85		Collar co-ords	E	N	RL
Page	1 of 2		Az.	°G	°M	Incl. °
Depth m	Mean Grainsize Mud 0.5 2 8 32 mm	Max. clast φ & Structure	Description			
10			← 5 cm →			
20						
30						
40						
50						
60						
60-80		cl: 30° ≤ 0.1% B	Sericitic (weakly Carbonated) massive coherent Q(Fs, Bi) phytic Phylolite. Similar to Qpr at end of WH3, slightly more flattened + cleaved. Weak stockwork of cream CO <sub>2</sub> veinlets.			
80-90		Bd // clv. 35° clv: 35°	Interbedded sericitic massive to laminated volcanoclastic sandstone and minor phylitic lithic sandstone/breccia. Qpr + dust clasts. Sericitic massive fine-grained Sandstone.			
90-100		clv: 35°	Chertic aphyric massive Basalt.			
100-110		clv: 35°	Sericitic massive lithic v/c Sandstone with patches of pervasive CO <sub>2</sub> alteration overprint. Pseudofamne? altered coherent Qpr?			
110-120		clast? = 3m.	Carbonate veined Basalt.			
120		Mainly Qpr clasts to 100mm				

GRAPHIC CORE LOG			Hole No.	WHS		Depth	m
Scale	1:500		Project				
By			Section				
Date			Collar co-ords	E	N	RL	
Page	2 of 2		Az.	°G	°M	Incl.	°
Depth m	Mean Grainsize Mud 0.5 2 8 32 mm	Max. clast φ & Structure	Description				
120			Chloritic carbonated f.g. massive aphyric amygdaloidal Basalt.				
130		Papertic					
140		Contacts obscured by veins Q-CO3	← 5 cm →				
150		Contact sharp + irregular	Sericitic massive / pseudo-fine altered sparsely quartz phytic Rhysite. Interpreted as contact with pseudo-fine alteration.				
160							
170		Contact: 20°	Basalt Sericitic / siliceous OpR Rhysite - Breccia. Hyaloclastite?				
180		Papertic	Basalt.				
190			Rhysitic Hyaloclastite Breccia?				
200		Bucky quartz veins	Volcaniclastic Conglomerate. Rounded clasts of OpR and carbonated OpR, sandy matrix.				
210		Bd: 50-55° d: 15-25°	Siliceous - limy calcareous bedded Sandstone. (WGA?) Well sorted grey quartz wacke, minor pale calcareous beds and black silty beds.				
220							

\* Oriented core at 219 m suggests clvg: trend ~120° / dip 80%w. which is unlikely. If ~~to~~ change is trending // regional clvg. ie: NW then bedding is <20° to NE implying minor folding.



JOB \_\_\_\_\_

SHEET \_\_\_\_\_ OF \_\_\_\_\_

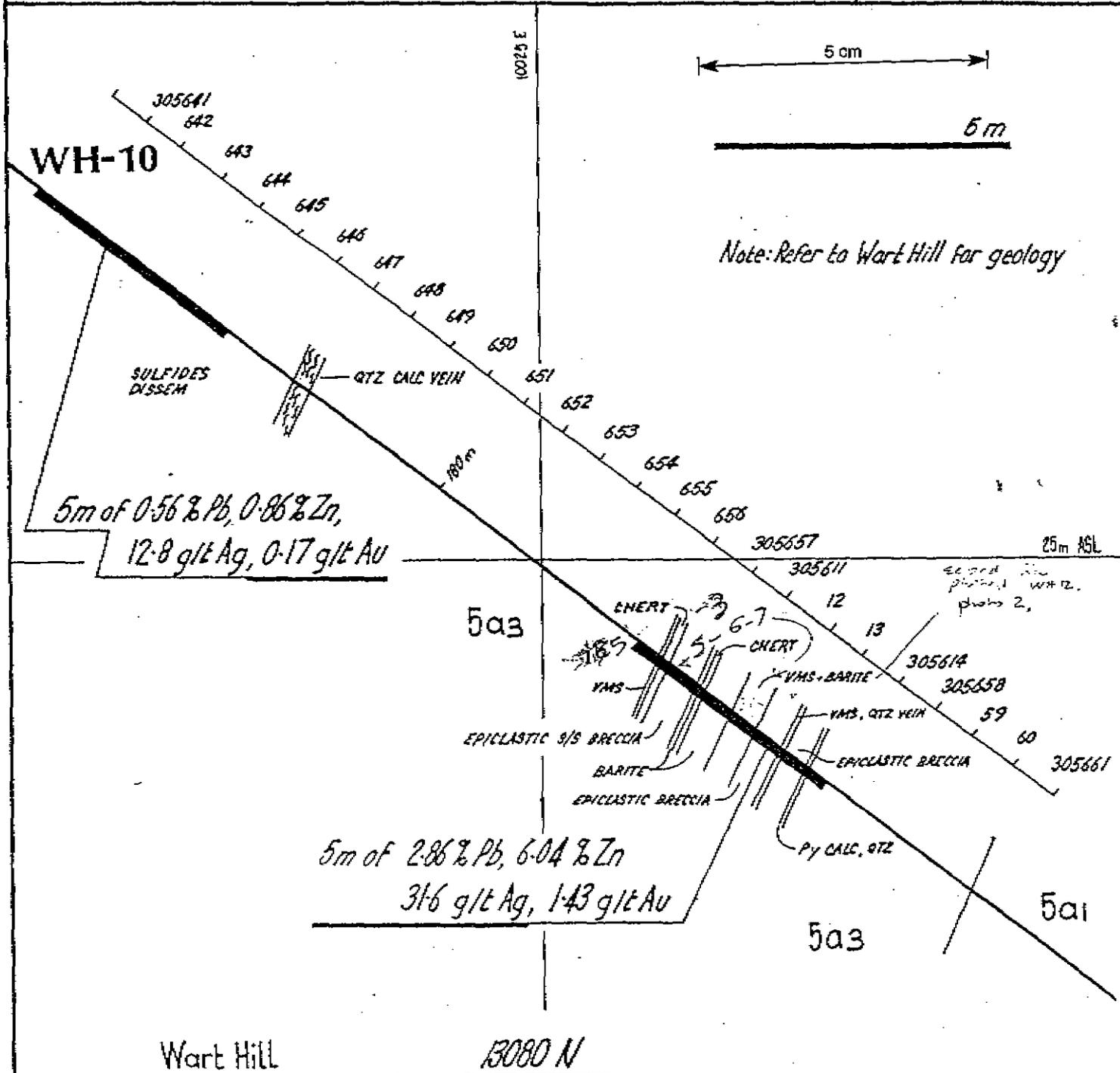
PROJECT \_\_\_\_\_

DESCRIPTION \_\_\_\_\_

DATE \_\_\_\_\_

DRAWN \_\_\_\_\_

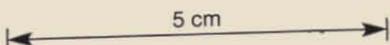
REF \_\_\_\_\_



MASSIVE SULFIDE INTERCEPTS

**WH-10**

Figure 13

GRAPHIC CORE LOG				Hole No. ERT-89 WH10 Depth m			
Scale 1:500				Project VOYAGER 19 EL53/44			
By W.HERRMANN				Section			
Date 3/11/95				Collar co-ords		E	N
Page 1 of 2				Az.	°G	°M	Incl. °
Depth m	Mean Grainsize Mud 0.5 2 8 32 mm	Max. clast φ & Structure	Description				
0			Sericitic massive (coherent) Quartz (Fs-Bi) porphyritic Plagioclase.				
10		BOCO	Equant embayed plagioclase clear quartz (1.5-3mm, ~5%) with subordinate tabular sericitized feldspar and book-like flakes of chloritized biotite in pale buff grey aphanitic felsic matrix ± weak wispy streaks (<10mm) of sericite aligned with spaced anastomosing cleavage.				
20			Irregular stockwork of carbonate veins generally 2-10/m increasing downwards				
30			Alteration intensity is weak; insignificant Py.				
40							
50							
60							
70							
80		Clasts: 100 m.	Sericitic massive Polymictic little volcanic-lastic Sandstone + Breccia. Clasts include white CO <sub>2</sub> , blk sandstone, grey chert, CO <sub>2</sub> alt. Phylite and minor pumice?				
85		Peloid Py ± 5% 82-85m, type D Pb	Isotopes. (Cannell, 1992)				
90		Semi pervanitic cream CO <sub>2</sub> alteration 92-102 m.	Sericitic/chloritic (locally carbonated) massive quartz crystal rich Pumice Breccia? No discernible relict pumice but has vague cataclitic fabric and faint fracture, uneven distribution of qtz cts (0.5-4mm) and locally distinctive ellipsoidal aggregates of radial quartz to 10mm, possibly relict spherulites.				
100							
110							
120			Chloritic f.g. massive Basalt; ± pegitic contacts.				

GRAPHIC CORE LOG			Hole No.	W110		Depth	m
Scale	1:		Project				
By			Section				
Date			Collar co-ords	E	N	RL	
Page	2 of 2		Az.	°G	°M	Incl.	°
Depth m	Mean Grainsize Mud 0.5 2 8 32 mm	Max. clast φ & Structure	Description				
120			← 5 cm →				
130			Basalt.				
140		CO <sub>3</sub> → 150mm Ba-Cu to 50mm.	Sericitic massive Polyminetic Sandstone/Breccia clasts Qpk, CO <sub>3</sub> and rare Sp Ba-Cu and grey chert, matrix supported, sandy base.				
150			Sericitic massive Med. grained Qtz xtal with volcaniclastic Sandstone.				
160		1-2% Pyrite Patchy Sil. alt. & traces Cu+Sp (Type C-Fb Isotops)	Duo-minetic Breccia CO <sub>3</sub> alt. Qpk + CO <sub>3</sub> clasts				
170		~2% Sulphide city veins 15-100 mm	Sericitic - Silicified - Carbonated (patchy) massive (mononetic) clast with Physilite Breccia				
180			Sericitic massive clast with polyminetic Breccia-conglomerate. Mainly Qpk, carbonate altered Qpk and carbonate clasts.				
190		Ba-Fs clasts 30 to 50 mm 0.2% Py. 1 @ 150m	Massive Barite & <del>quartz</del> rhyolite Fy-Sp Massive sulphide - Barite Chloritic/Sericitic fine-grained massive Sst.				
200		0.1% disily.	Siliceous-Sericitic massive to pseudo fragmental Q-Fs porphyritic Rhyolite looks originally coherent.				
210			Sericitic massive fine-grained and Rhyolitic lithic volcaniclastic Sandstone.				
220			Qpk lithics more abundant and distinct domes, matrix supported, look "flame" of physilites interp as collapsed pumice?				
230		cl: 70°	Normal sericitic alteration with very low pyrite concentration.				
240		contacts 70° LAC	Basalt.				
244.5		EOH					

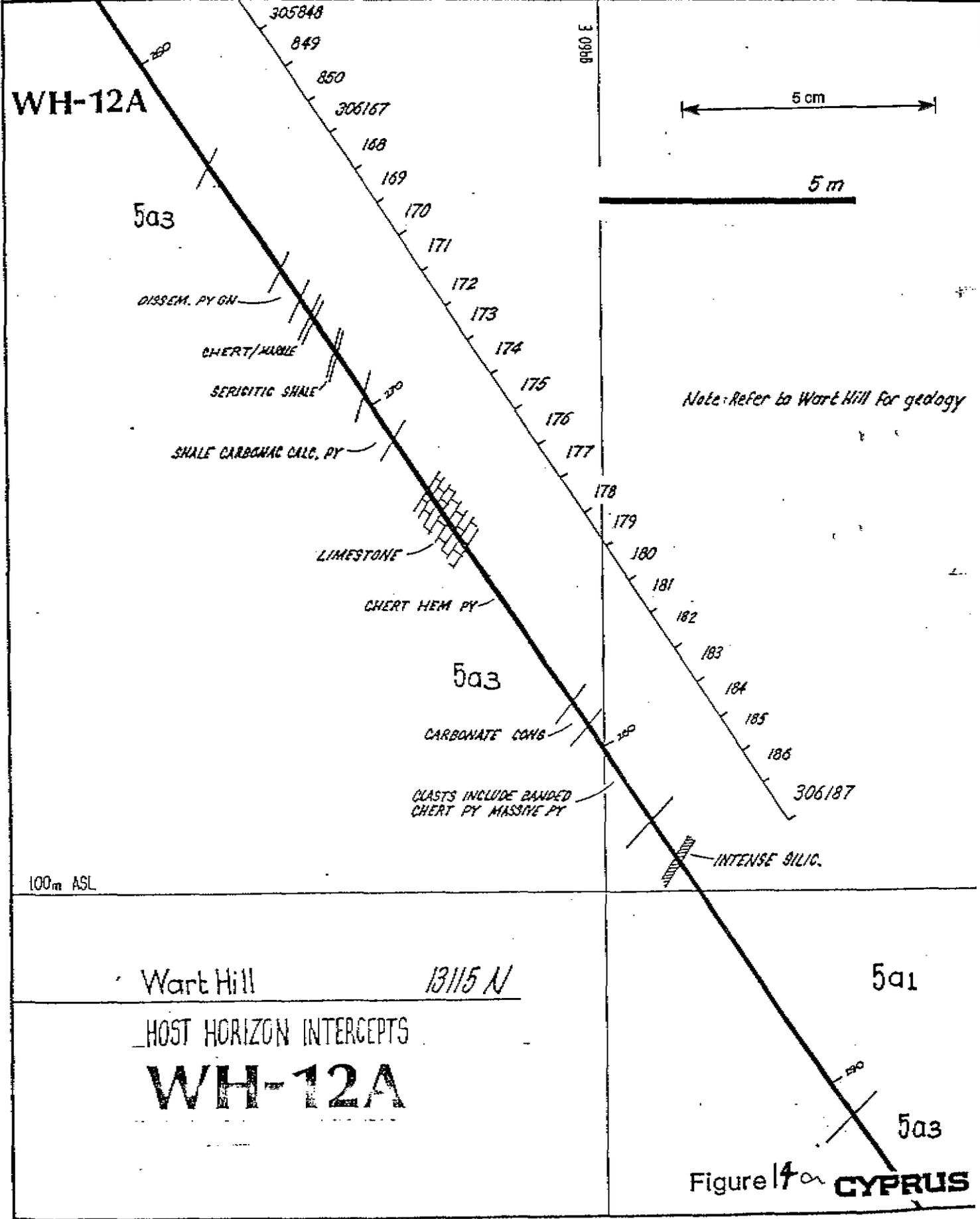


425126

Cyprus Gold Australia Corporation

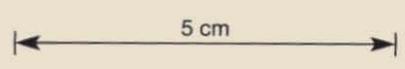
JOB	_____
SHEET	_____ OF _____
DATE	_____
DRAWN	_____
REF	_____

PROJECT	_____
DESCRIPTION	_____



425127 FIG 14B

GRAPHIC CORE LOG				Hole No. EBT-89 WH12A Depth m			
Scale 1:500				Project			
By W. HERRMANN				Section			
Date 12/11/95				Collar co-ords E		N	
Page 1 of 3				Az. °G		°M Incl.	
Depth m	Mean Grainsize Mud 0.5 2 8 32 mm			Max. clast φ & Structure	Description		
0							
10							
20							
30							
40							
50							
60							
70							
80							
90							
100							
110							
120							



Not Logged.



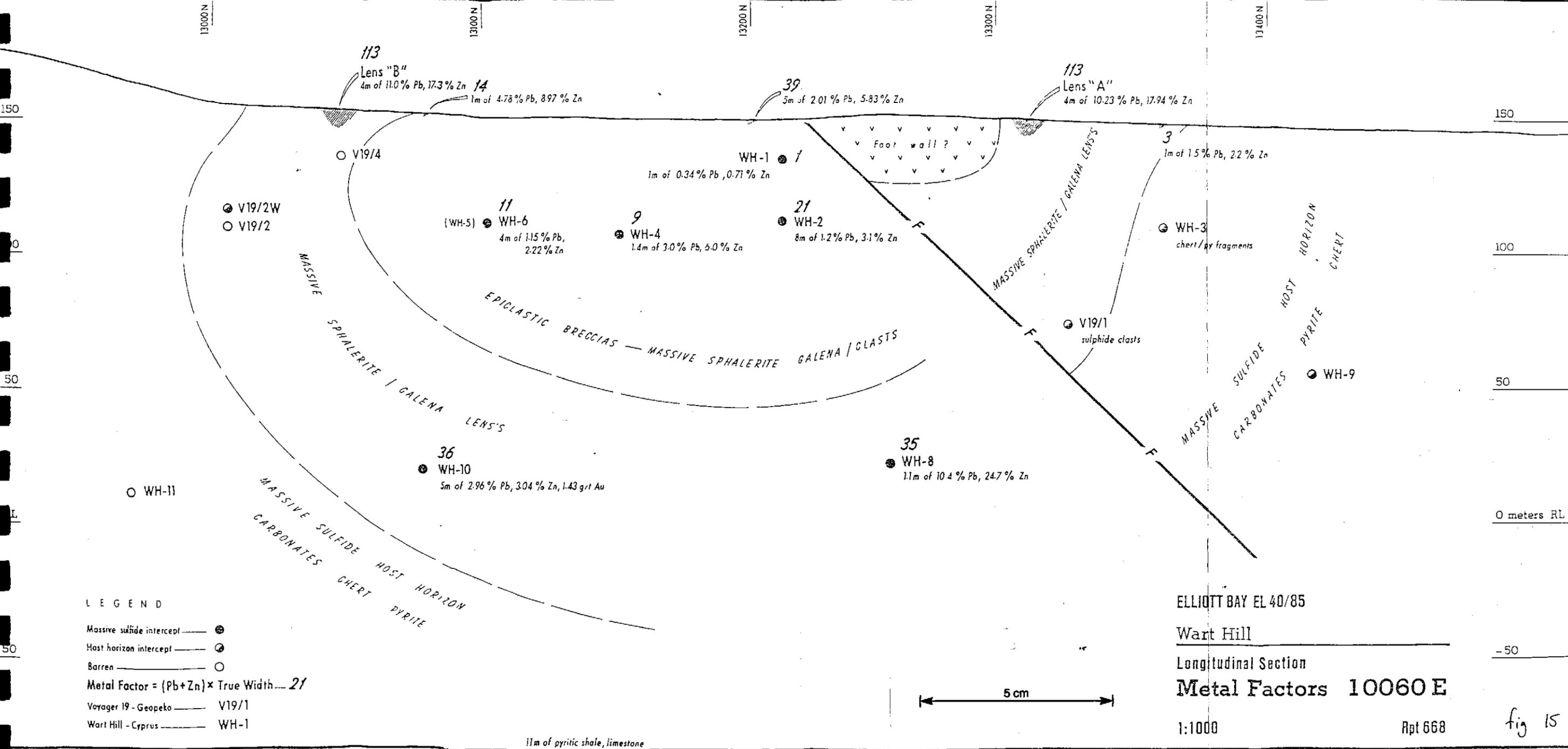
Senicitic (locally carbonated) massive coherent Qtz (Fr-Bi) porphyritic Rhyolite.

(Alteration: weak, No Pyrite.)



GRAPHIC CORE LOG				Hole No. WH12A		Depth		m		
Scale 1:				Project						
By				Section						
Date				Collar co-ords		E		N		
Page 2 of 3				Az.		°G		°M		
						Incl.		RL		
Depth m	Mean Grainsize Mud 0.5 2 8 32 mm				Max clast φ & Structure		Description			
120										
130							← 5 cm →			
135							Bridley quartz vein			
140					Bd: 40°		Sericitic, faintly bedded Rhy. lithic v/elastic Sandstone.			
150					Bd: 40°		Sericitic/chaotic massive felsic Permian Brecia Sandstone.			
160					Bd: 40°		Sericitic/chaotic massive felsic Permian Brecia Sandstone.			
170							Generally massive - 10% 0.5-2mm qtz xts and ~2% relict spherulites to 6mm (small radial quartz aggregates), bluish greenish grey wispy fumes interpreted as collapsed pumice clasts.			
180										
190										
200										
210										
220										
230										
240										

GRAPHIC CORE LOG			Hole No.	Depth		
Scale	1:		Project			
By			Section			
Date			Collar co-ords	E	N	RL
Page	3 of 3		Az.	°G	°M	Incl.
Depth m	Mean Grainsize Mud 0.5 2 8 32 mm	Max. clast & Structure	Description			
240						
250						
260		clv: 60°	Sericitic weakly stratified volcanoclastic sandstone with minor polymictic breccia beds. Clasts dominantly QPR and some chert, pumice.			
270			"Mictite" of sericitic qtz xtl v/c sandstone and interbedded/partly transposed dk. grey carbonaceous siltstone.			
280		clasts to 100 mm	Polymictic interbedded clast QPR, CO3 and interclasts of pyritic cherty siltstone. Few small "lenses" massive pyrite near lower few meters.			
290			Sericitic massive phylitic lithic/pumice Breccia			
300			Sericitic/silicified massive (QFB; phytic) Phylitic Breccia			
310			QPR clasts constitute about 80% vol. upto at least 1m size possible hydroclastite. Rare clasts buff colored aphanitic phylite or cherty silt and some possible fractured/collapsed pumice clasts.			
320			Sericitic pumiceous Sandstone			
330			Sericitic peperitic? mictite of coherent (FBI) phylite and qtz xtl with pumiceous sandstone.			
340		Qtz v/c O.S./dis Pyrite Cl: 60°	Sericitic/siliceous massive coherent (FS) phytic phylite.			
350						
360						

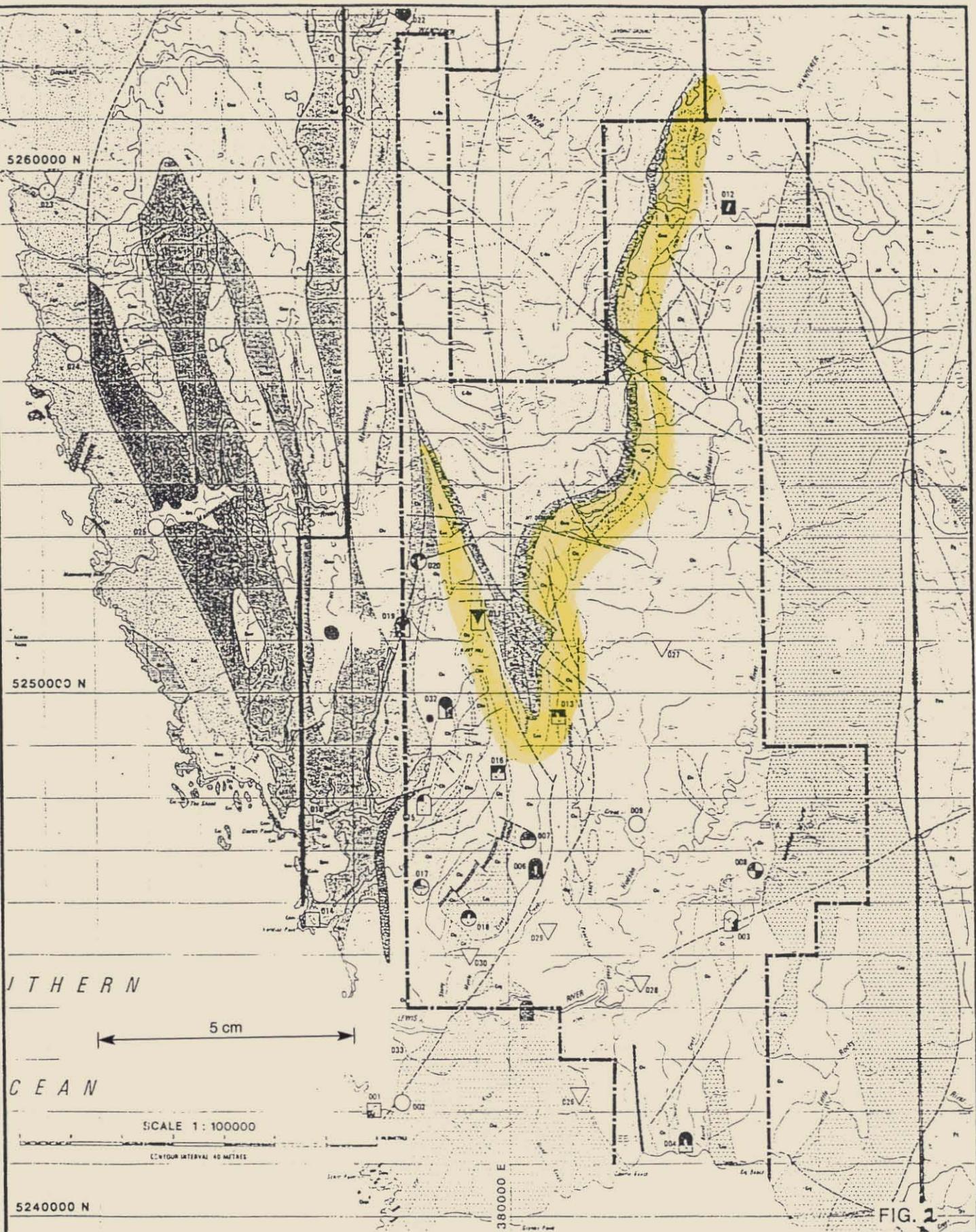


ELLIOTT BAY EL 40/85  
 Wart Hill  
 Longitudinal Section  
**Metal Factors 10060 E**  
 1:1000 Rpt 668

fig 15

Enclosure 2

425131



Aberfoyle Resources Limited  
EXPLORATION DIVISION

TASMANIA  
ELLIOTT BAY E.L. 40/85

**GEOLOGY**  
HOST VOLCANICS ALONG SYNCLINE

see fig 65  
for key.

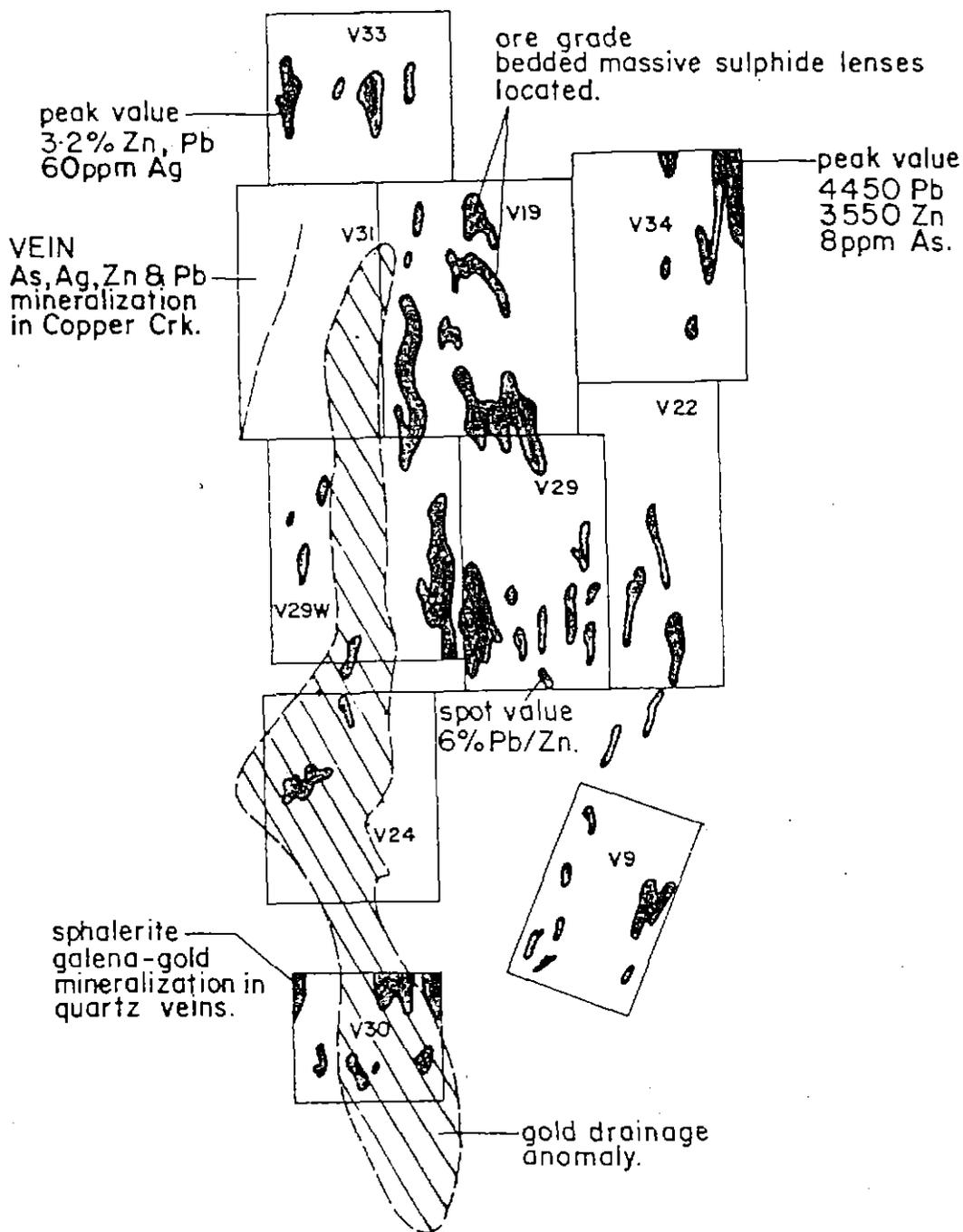
REVISIONS			
Init.	Date	Init.	Date

Location Code : K55/7

Scale : 1:100 000

Date : December 1992

Compiled : SR
Drawn : RdeB
Traced : MAR
Checked :
Plate No. : <u>fig 16</u>



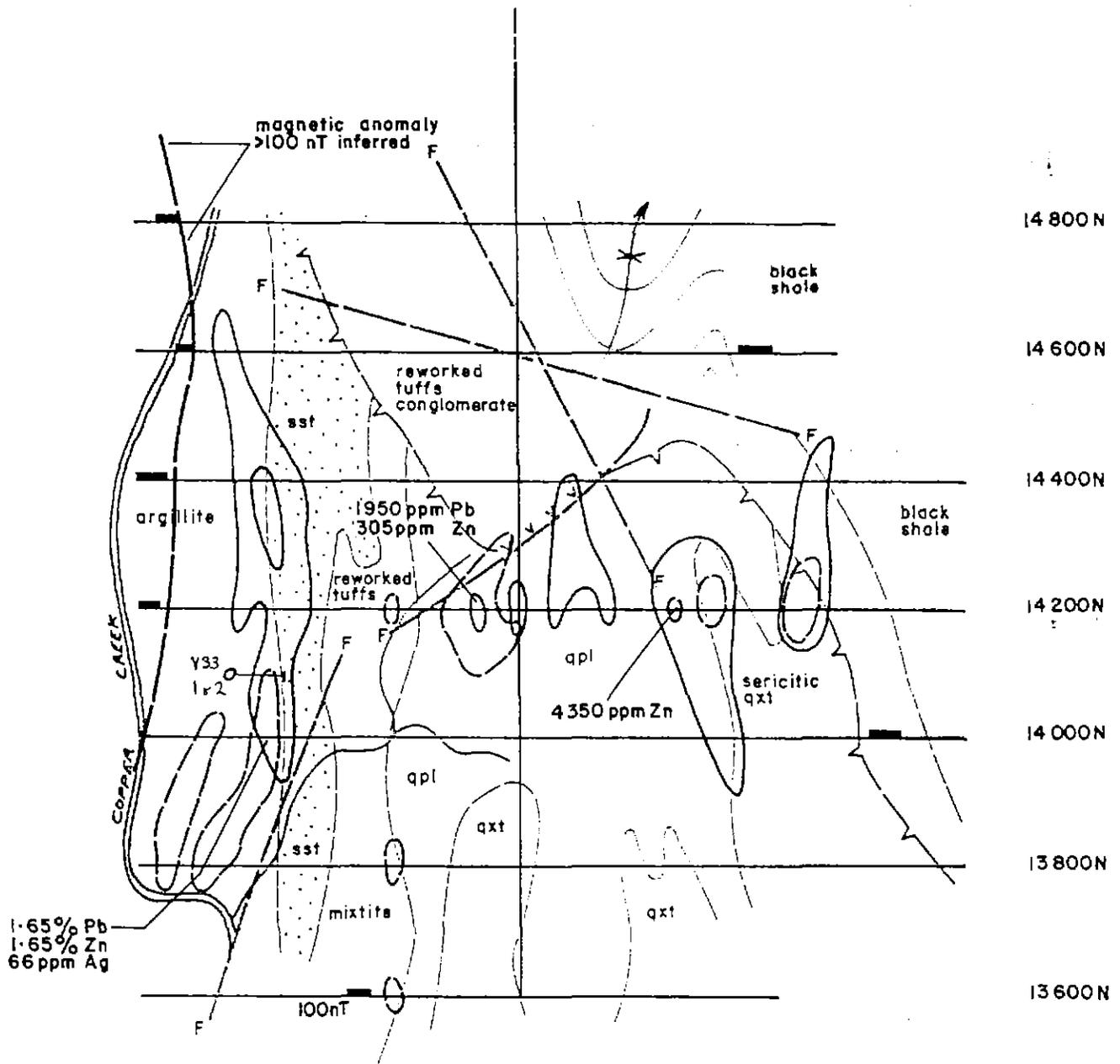
 Zone of anomalous gold drainage.

 Zinc anomalies 200-80000ppm

HOST VOLCANICS -  
Zinc soil geochemical anomalies.

Fig 17

8 800E 9 000E 9 200E 9 400E 9 600E 9 800E 10000E



**LEGEND:**  
 Zinc anomaly soils >200ppm  
 Lead anomaly soils >200ppm  
 Magnetic anomaly >100 nT

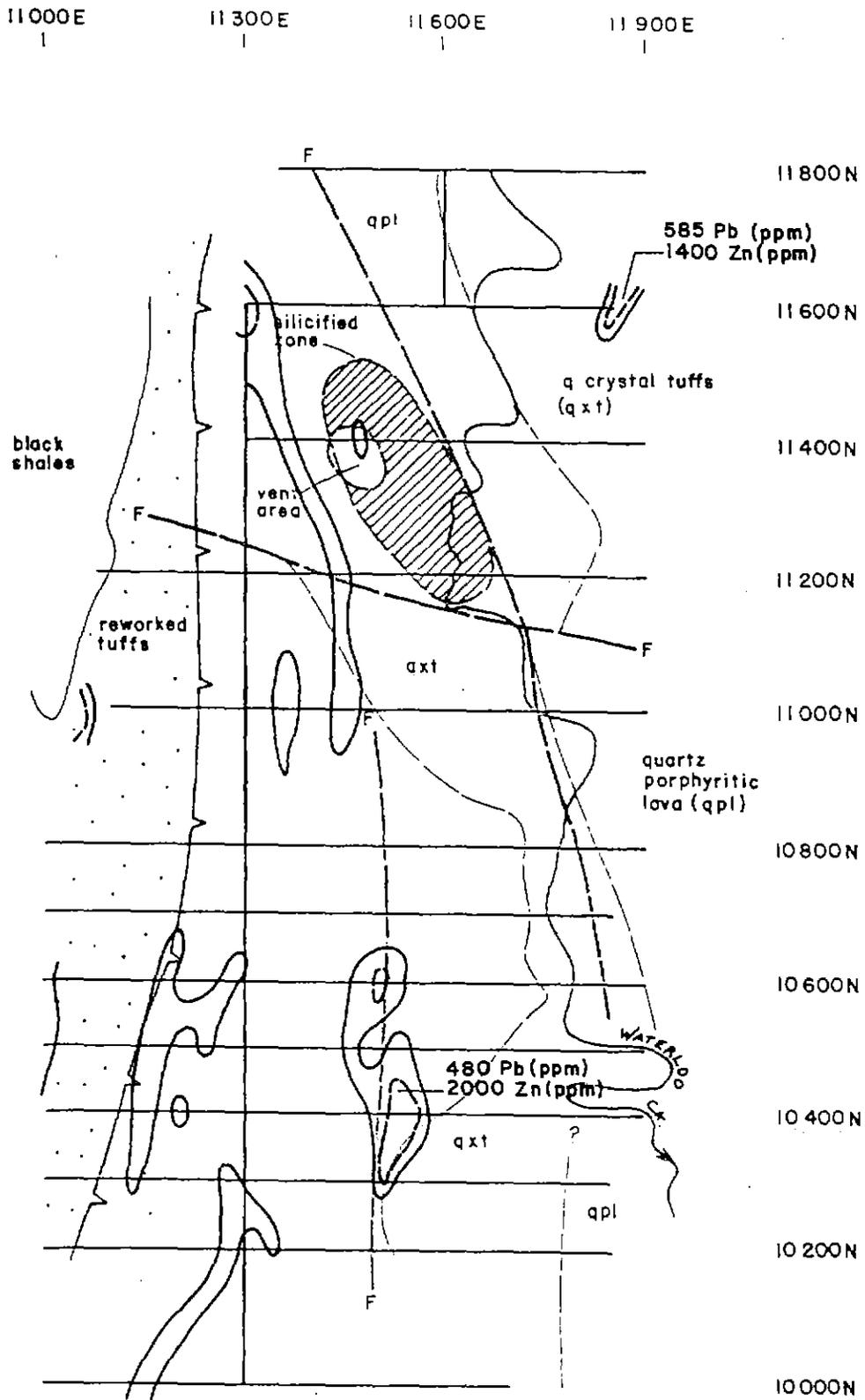
E.L.27/76 ELLIOTT BAY

VOYAGER 33

1:10 000

PROSPECT SUMMARY DIAGRAM

fig 18



**LEGEND:**  
 >200 ppm Zn in soils  
 >200 ppm Pb in soils

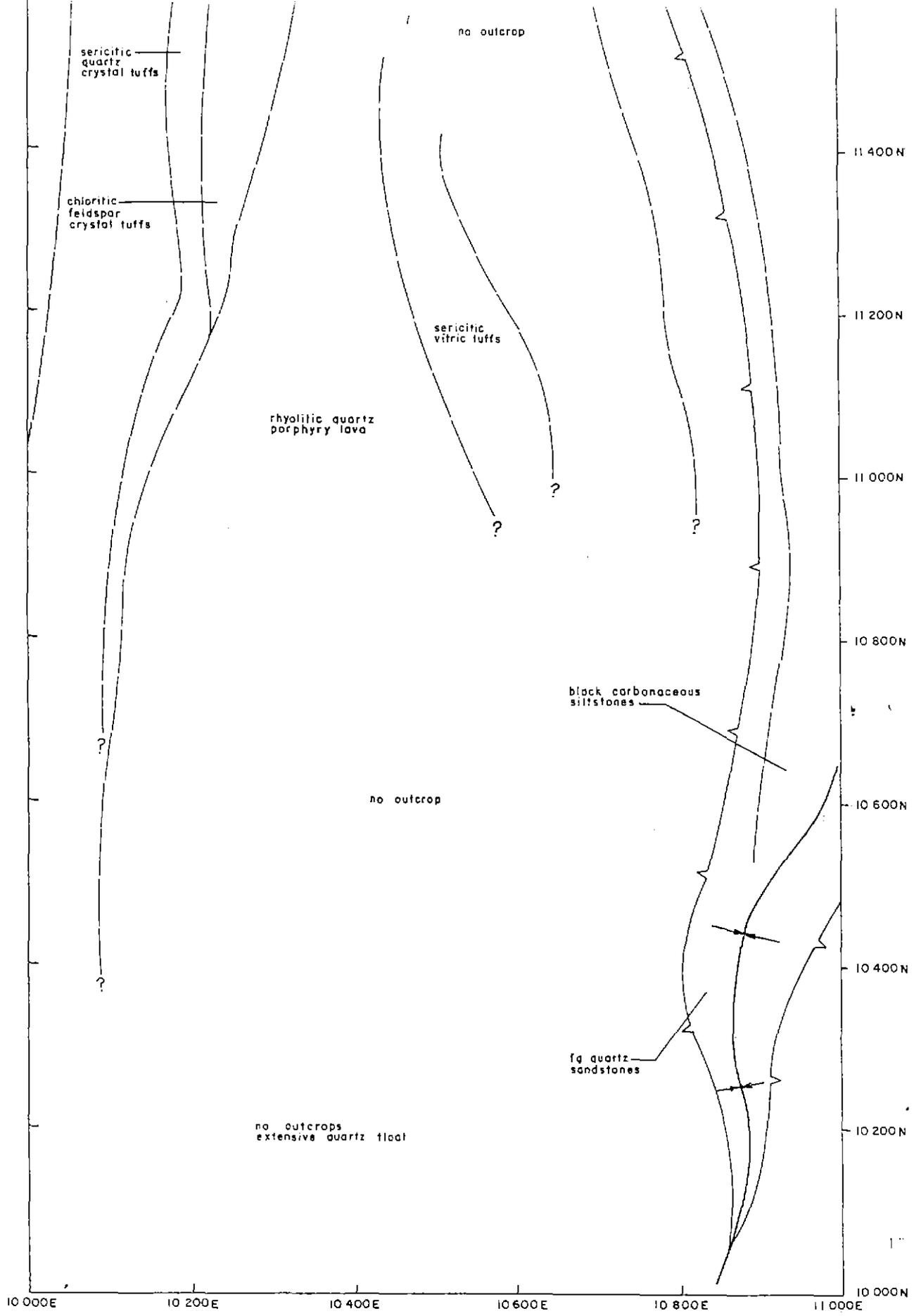
EL.27/76 ELLIOTT BAY

VOYAGER 22

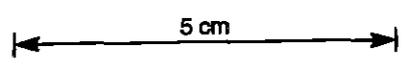
11000E

fig 19.

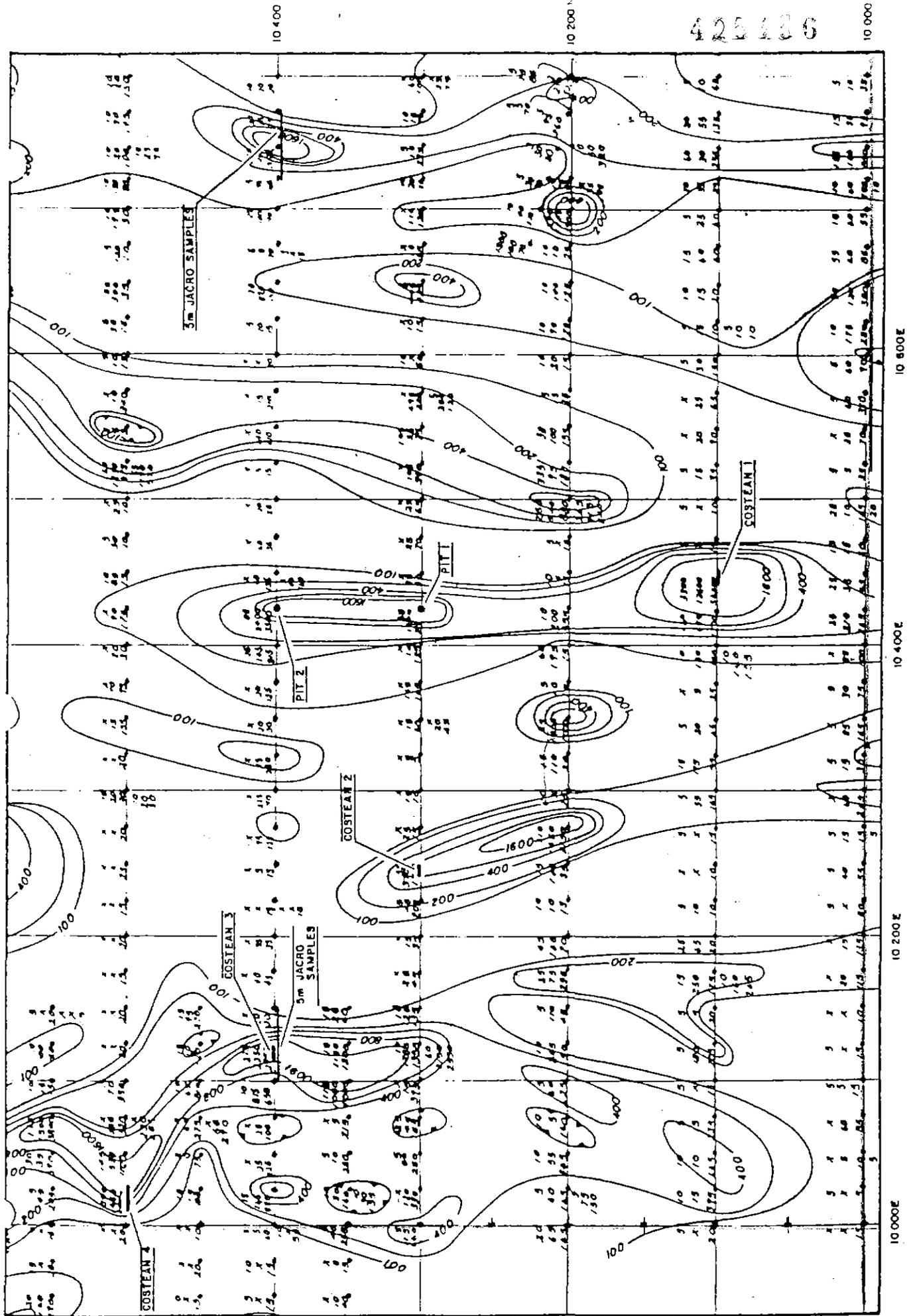
PROSPECT SUMMARY DIAGRAM



425135

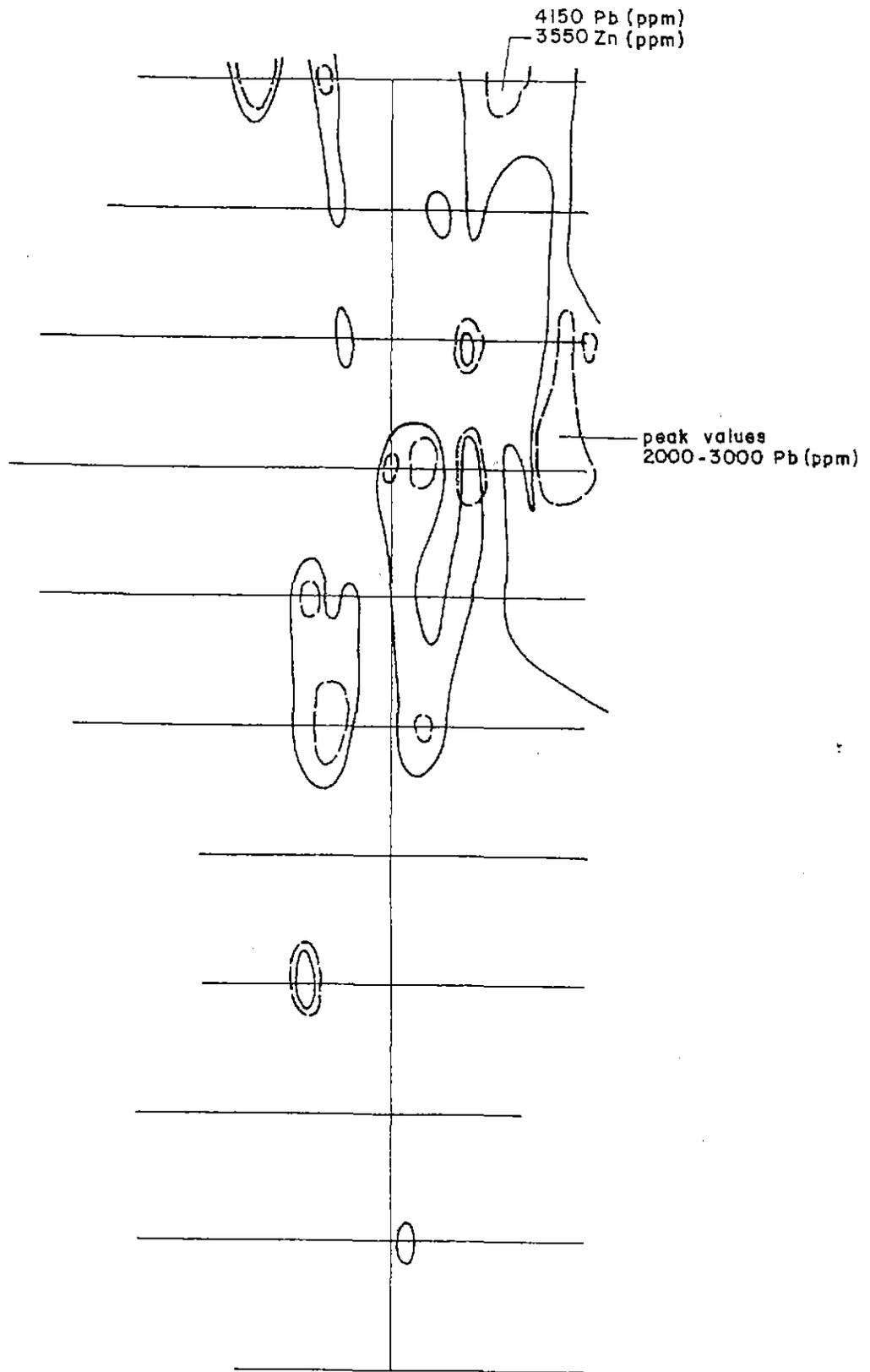


	<b>GEOPEKO</b>
	A DIVISION OF PEKO-WALLSEND OPERATIONS LTD
	<b>VOYAGER 29</b>
	GEOLOGICAL SUMMARY MAP
DATE 5/8/82	fig 20
GEOLOG. PAW	
OWN R. Toq	
CHKD	



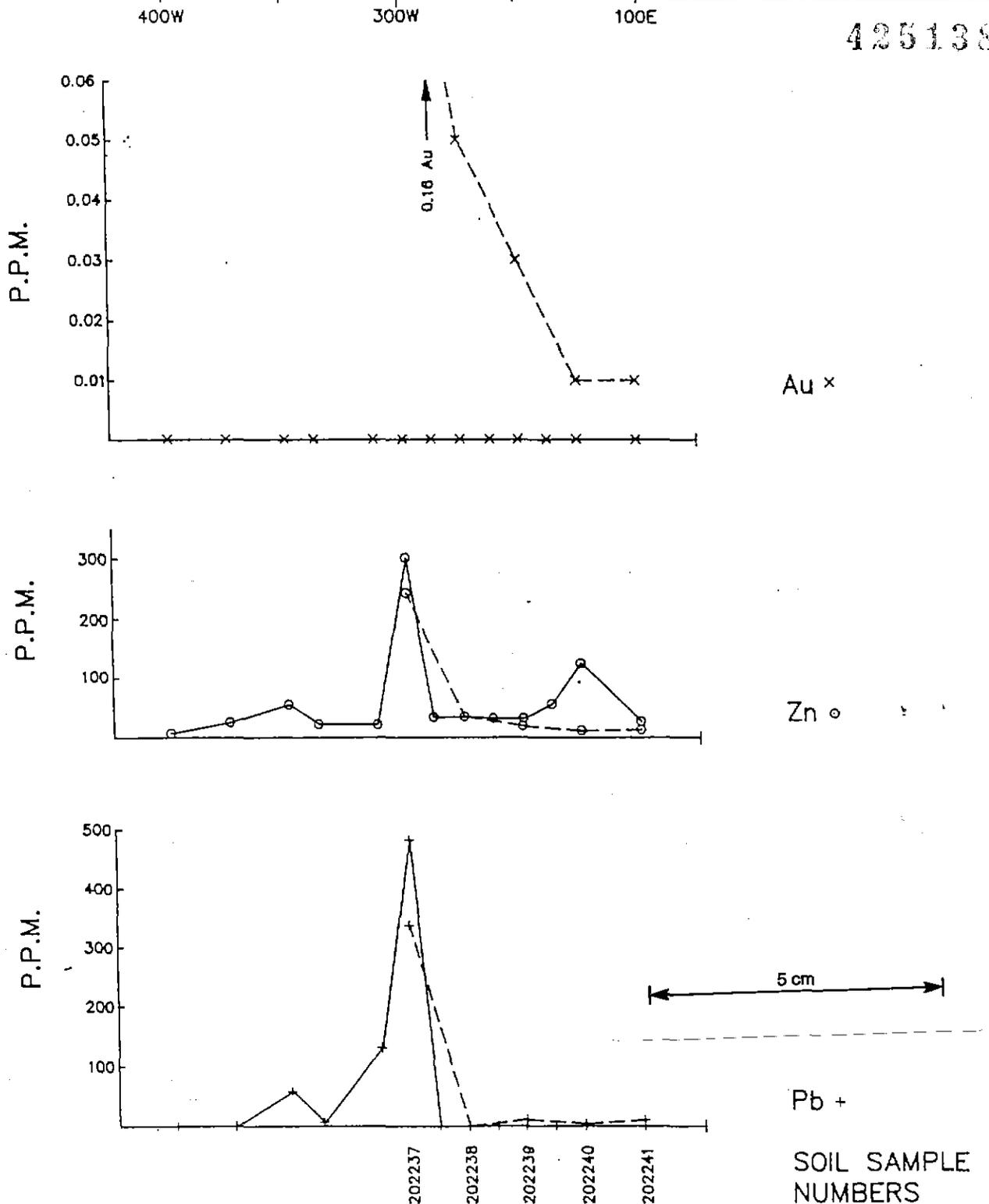
VOYAGER 29 ZINC GEOCHEMISTRY & POSITIONS OF COSTEANS, PITS & INFILL

fig 21



**LEGEND:**  
○ >100ppm Zn in soils  
○ >200ppm Pb in soils

425138



Early Samples (Fire Assay) - - - - -

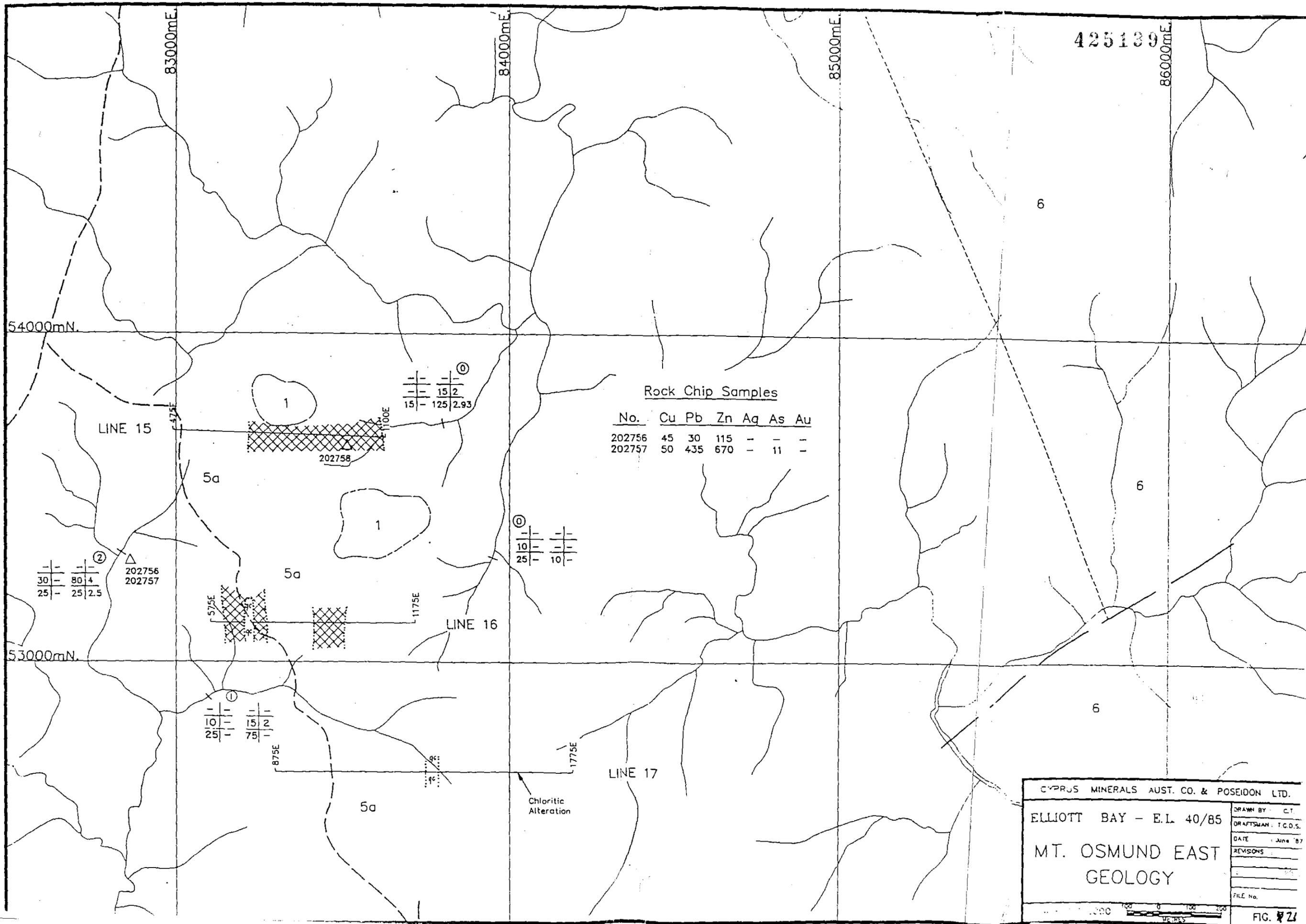
Late Samples (ASS and Fire Assay methods) - - - - -

Note: Cu and Ag all low, no marked change.

CYPRUS MINERALS AUST. CO. & POSEIDON LTD.	
ELLIOTT BAY - E.L. 40/85	
NORTH WATERLOO CREEK	
LINE 18	
Duplicate Sampling	
DRAWN BY: C.T.	REVISIONS:
DRAFTSMAN: T.G.D.S.	FILE NO.
DATE: May '87	FIG. 23

400W 300W

SCALE 1:2500



425139

Rock Chip Samples

No.	Cu	Pb	Zn	Ag	As	Au
202756	45	30	115	-	-	-
202757	50	435	670	-	11	-

CYPRUS MINERALS AUST. CO. & POSEIDON LTD.

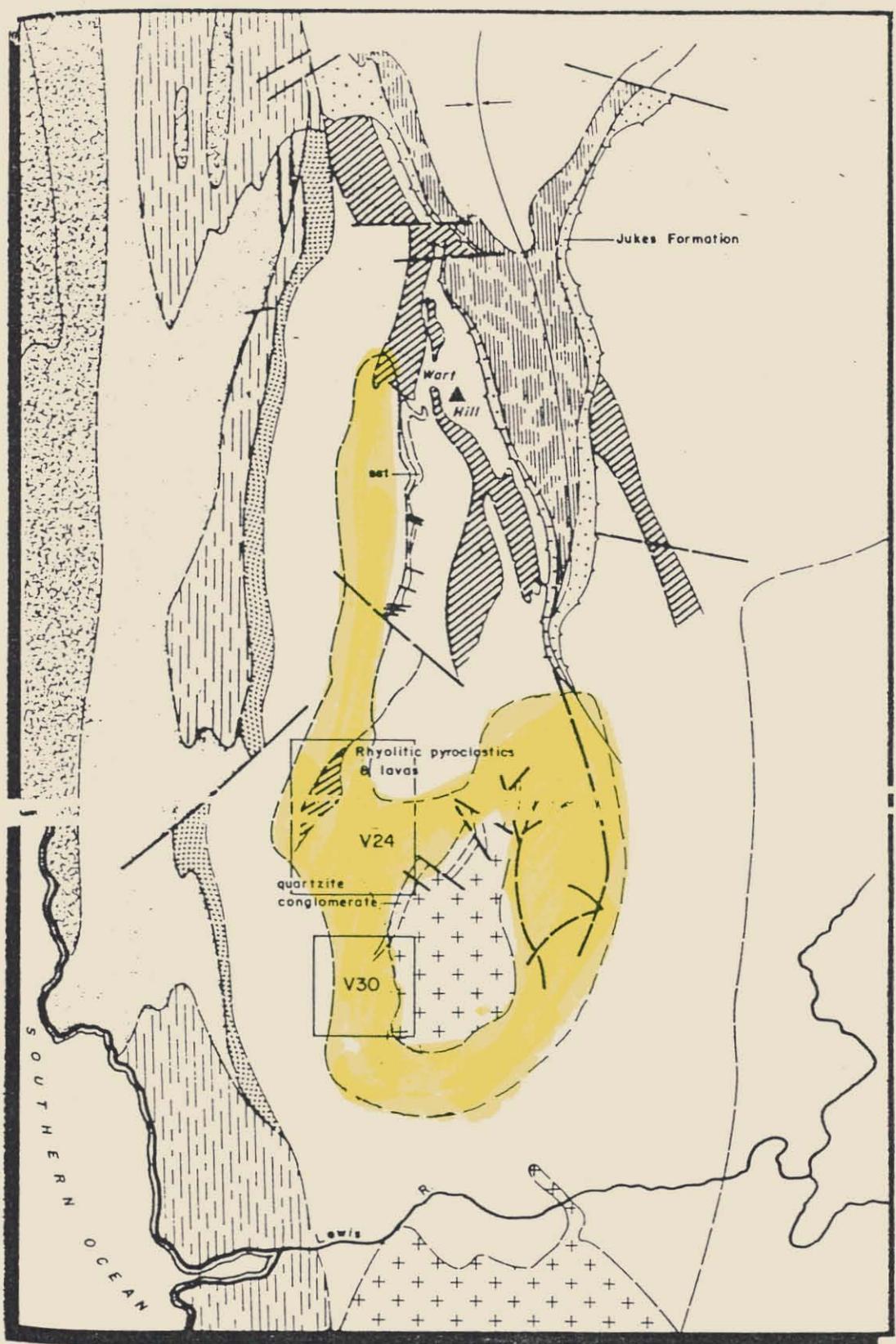
ELLIOTT BAY - E.L. 40/85

MT. OSMUND EAST GEOLOGY

DRAWN BY: C.T.  
 DRAFTSMAN: T.C.O.S.  
 DATE: June '87  
 REVISIONS:  
 FILE No.  
 FIG. 24

5 cm





Legend:

 zone of anomalous Au drainage geochemistry (>0.5 gm/t in panned concentrate)

5 cm

-  MAINWARING GROUP
-  MT. READ CORRELATES
-  Argillite
-  Rhyolite tuff
-  Sandstone-conglomerate

-  Tyndal Group
-  Reworked tuff
-  Blackshale/sandstone

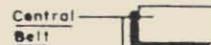
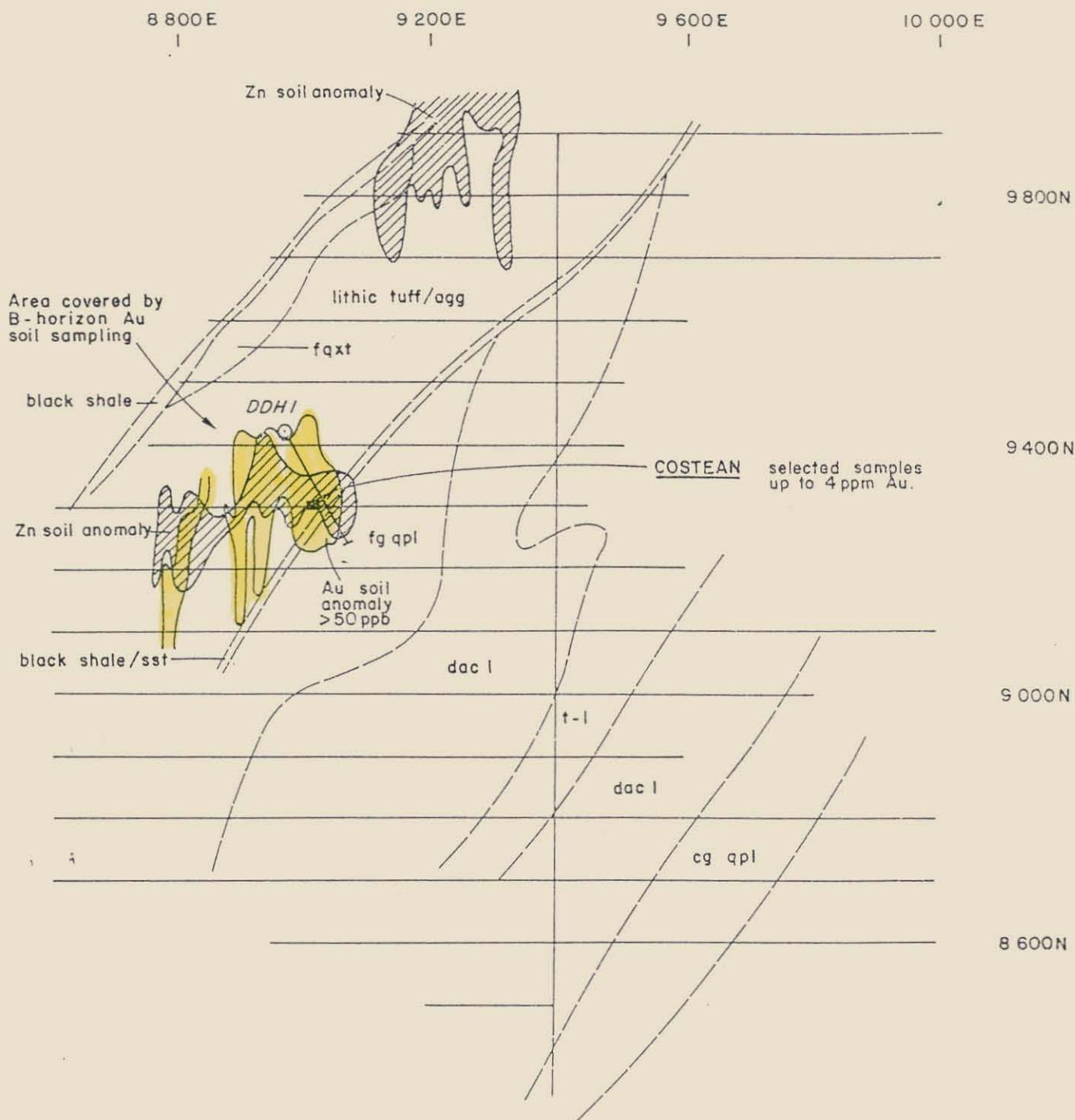
-  Central Belt
-  Rhyolite tuffs & lavas
-  Quartz porphyritic lava
-  Granite

Figure 50-

E.L.27/76  
ELLIOTT BAY, TASMANIA  
GEOLOGY of MT. OSMUND SYNCLINE

0 1 2 3  
KILOMETRES

fig 26



5 cm

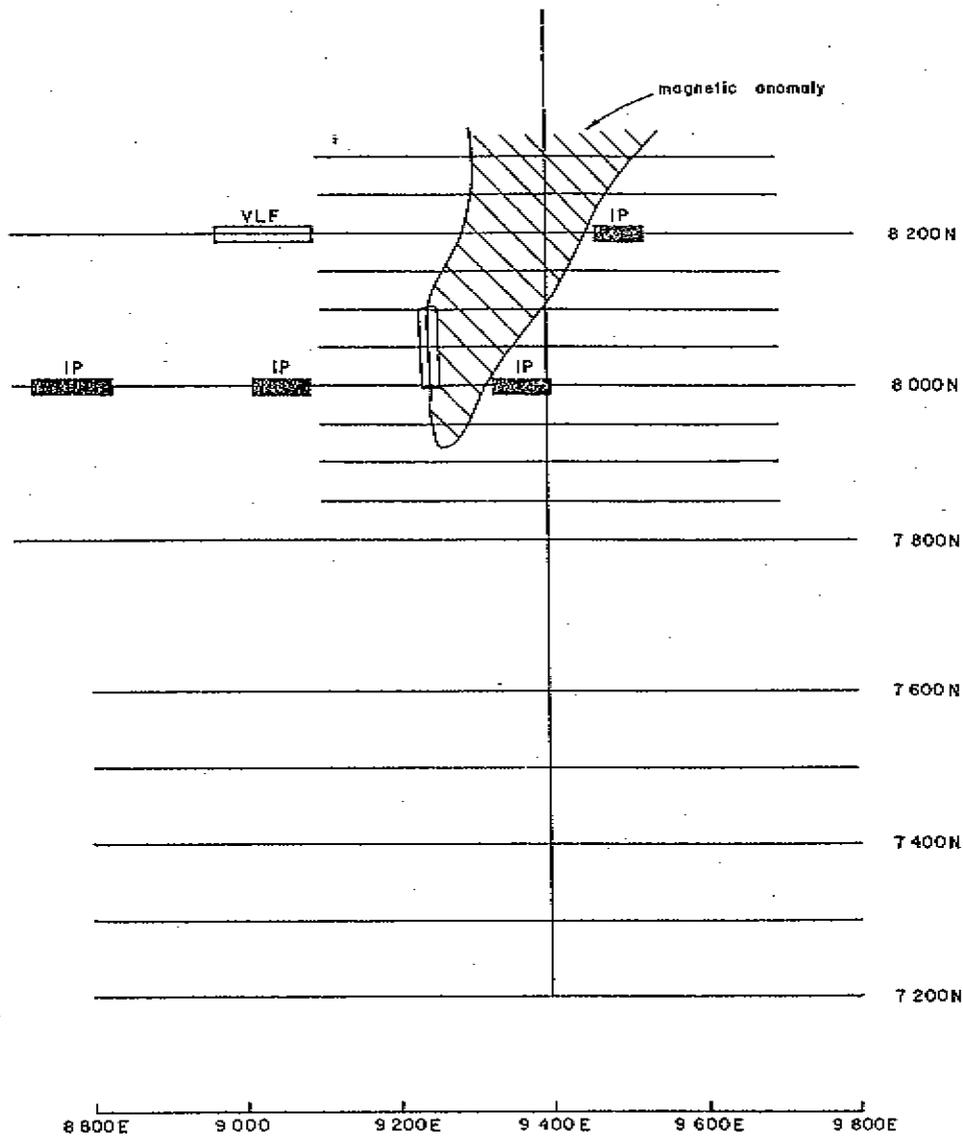
E.L.27/76 ELLIOTT BAY  
VOYAGER 24

1:10 000

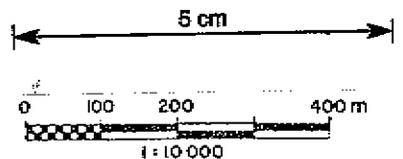
PROSPECT SUMMARY DIAGRAM

fig 27

425143



Magnetometer	All lines, station spacing 12.5 m
VLF-EM	All lines, station spacing 25 m
Dipole-dipole IP	8 200 N, 9 050 E - 9 550 E 8 000 N, 8 700 E - 9 600 E
Self Potential	8 000 N, 8 650 E - 9 600 E
Gravity	7 400 N, 8 800 E - 10 100 E, station spacing 50m



	<b>GEOPEKO</b> A DIVISION OF PEKO-WALLSEND OPERATIONS LTD
	<b>VOYAGER 30</b> SUMMARY OF GEOPHYSICAL PROSPECTING & ANOMALIES GENERATED
	Fig 28
	DATE 17/8/82 GEOL R.J.P CWN R.Tog CHKD

420141



- volcanics
- granite
- 96  gold > 25ppb in C-horizon soil samples
- Fe > 1% in C-horizon soil samples

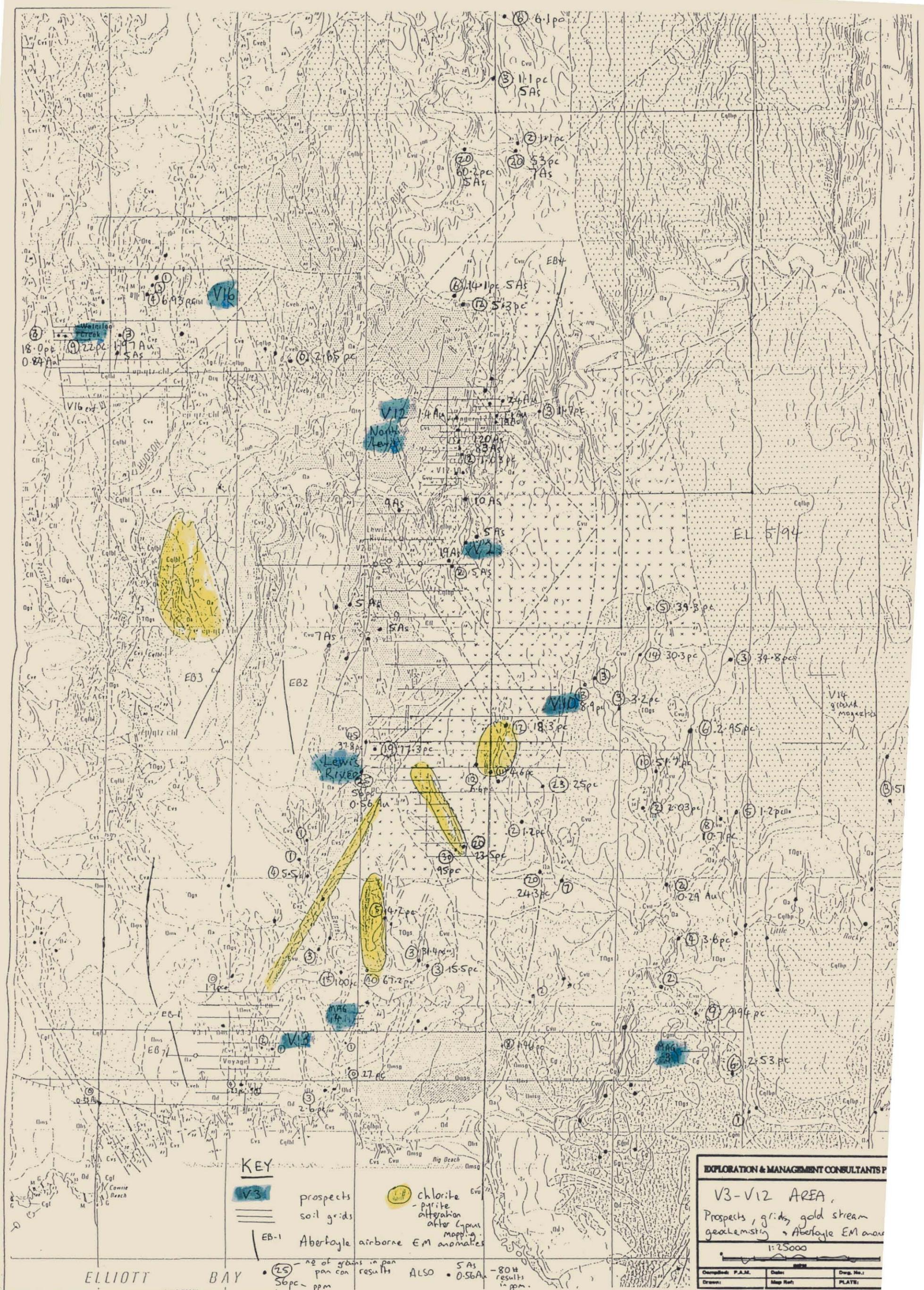
5 cm

0 100 200 400 m  
1:10 000

Fig. 59

	<b>GEOPEKO</b>	
	A DIVISION OF PEKO-WALLSEND OPERATIONS LTD	
	<b>VOYAGER 30</b>	
	SUMMARY OF Au & Fe C-HORIZON SOIL GEOCHEMISTRY	
DATE 16/8/82		
GEOL R.J.P		
DWN R.Toq		
CHKD		

*fig 29*



**KEY**

- V3 prospects
- ==== soil grids
- EB-1 Aberfoyle airborne EM anomalies
- # chlorite - pyrite alteration after Cyprus mapping
- 25 - no of grains in pan  
pan con results
- 50pc - ppm
- 80# results in ppm
- SAs
- 0.56Au

**EXPLORATION & MANAGEMENT CONSULTANTS P**

**V3-V12 AREA**  
Prospects, grids, gold stream geochem. - Aberfoyle EM anomalies

1:25000

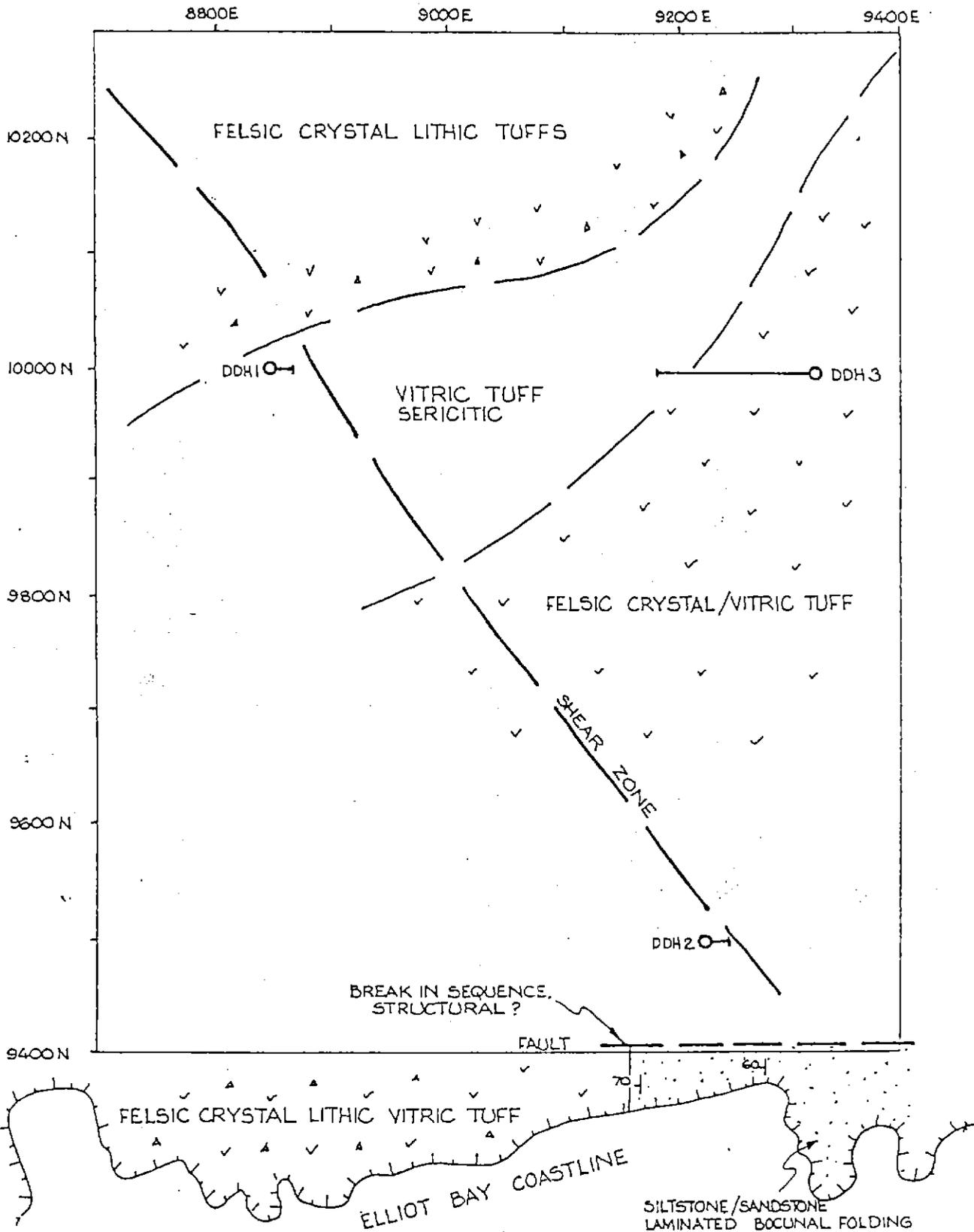
Compiled: P.A.M.	Date:	Dwg. No.:
Drawn:	Map Ref:	PLATE:

ELLIOTT BAY

425145

5 cm

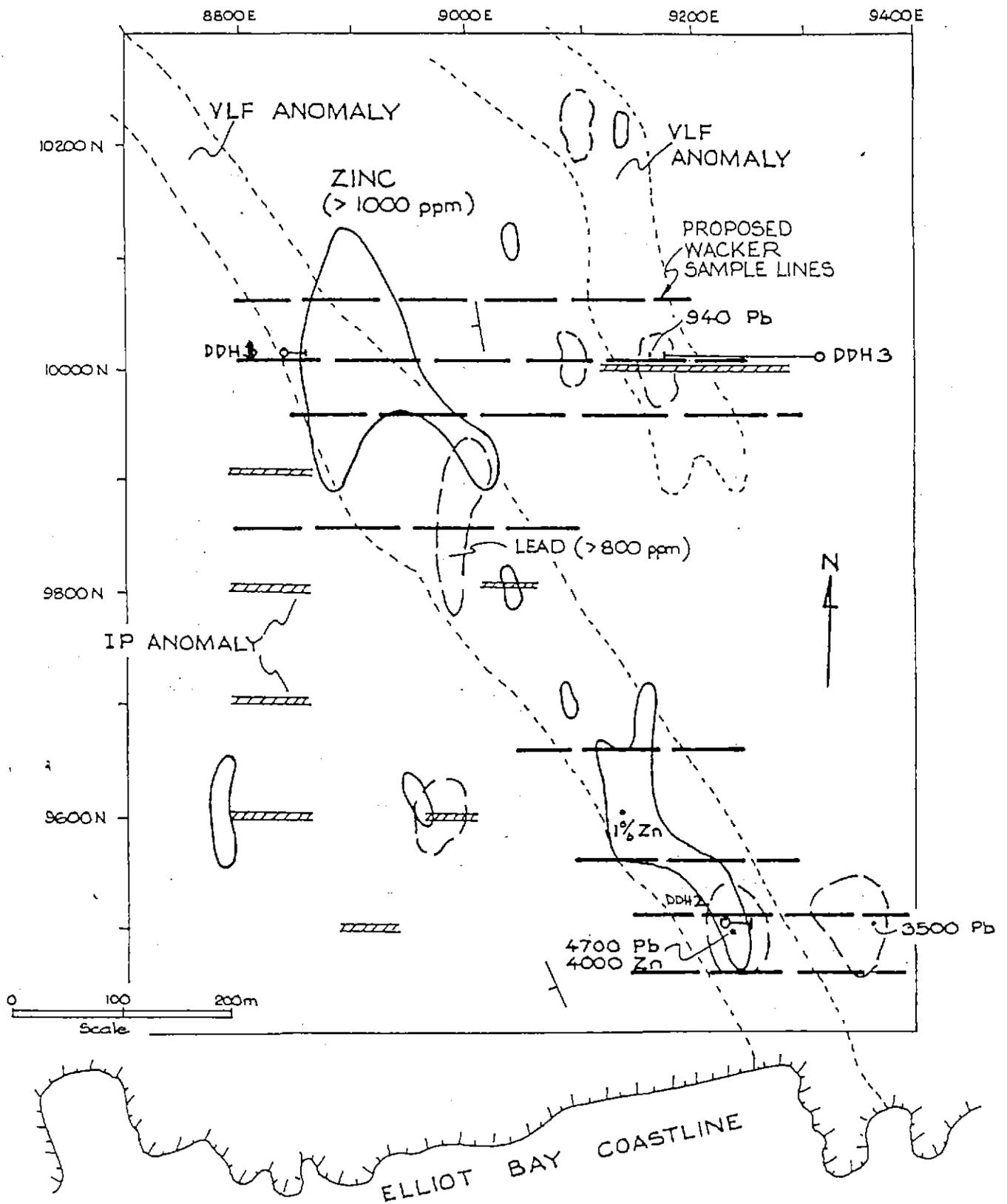
fr 30



# VOYAGER 3 INTERPRETIVE GEOLOGY

FIGURE 31

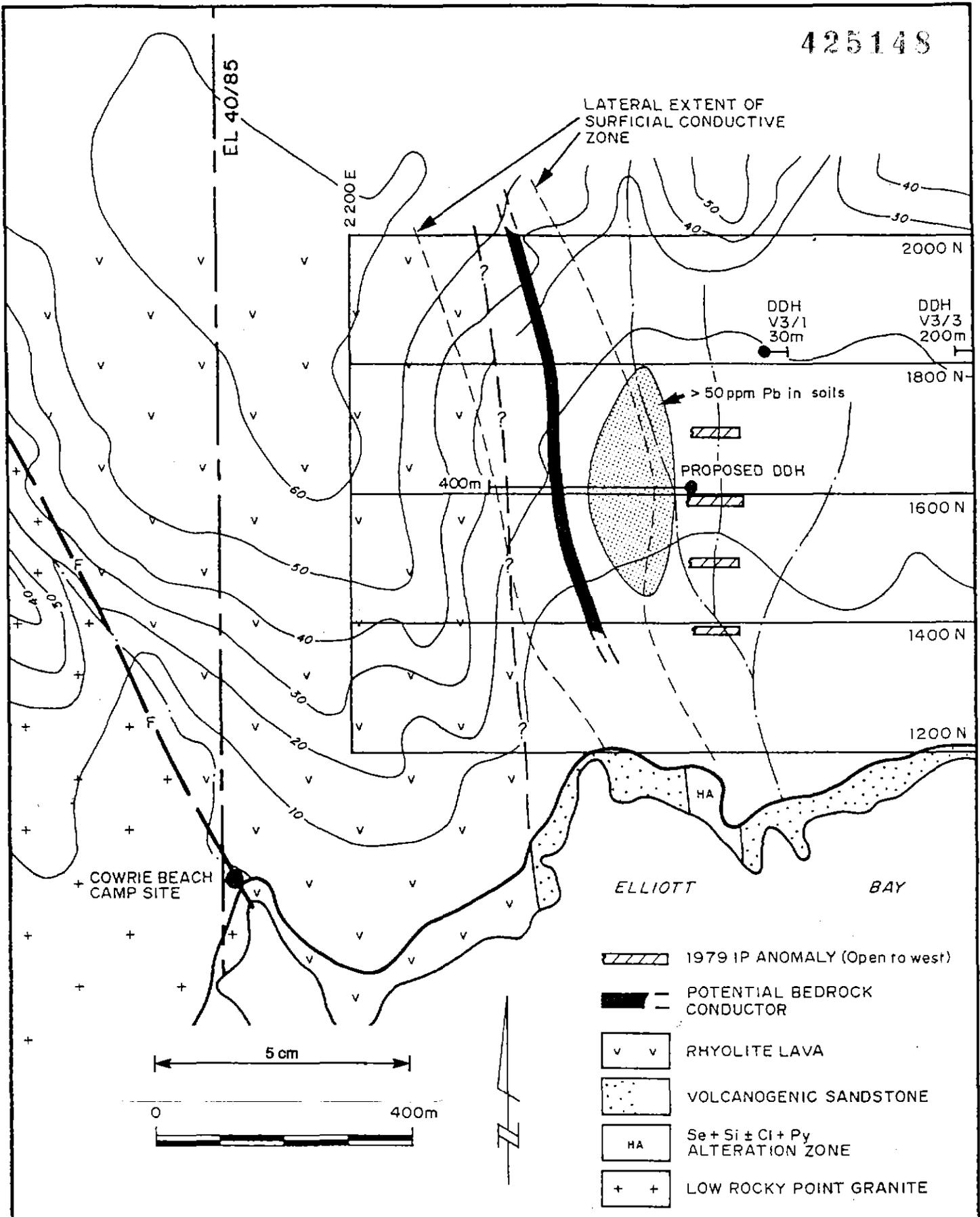
310



VOYAGER 3  
ANOMALIES

FIGURE 32

32



# Aberfoyle Resources Limited

EXPLORATION DIVISION

Figure 33

REVISIONS			
Init.	Date	Init.	Date
SR/ms	10-2-93		

TASMANIA  
 ELLIOTT BAY E.L. 40/85  
**EB-1 PROSPECT**  
**PROPOSED**  
**DRILL HOLE LOCATION**

Compiled :	SR
Drawn :	SR
Traced :	MAR
Checked :	SR

425149

LEWIS RIVER

10 400N

10 200N

siderite lode with py, gal, cpy

massive crystal-lithic tuffs & rhyolite lavas

10 000N

5 cm

9 800N

tuffaceous siltstones with crystal tuff horizons

E.L.27/76 ELLIOTT BAY

VOYAGER 2 & 10

1:10000

PROSPECT SUMMARY DIAGRAM

9 600N

9 400N

sandstone & siltstone

9 200N

F

9 000N

rhyolitic pyroclastics

8 800N

F

I.P. anomaly

8 600N

quartz-feldspar porphyry

8 400N

F

8 200N

rhyolitic pyroclastics

9 800E

10 000E

10 200E

10 400E

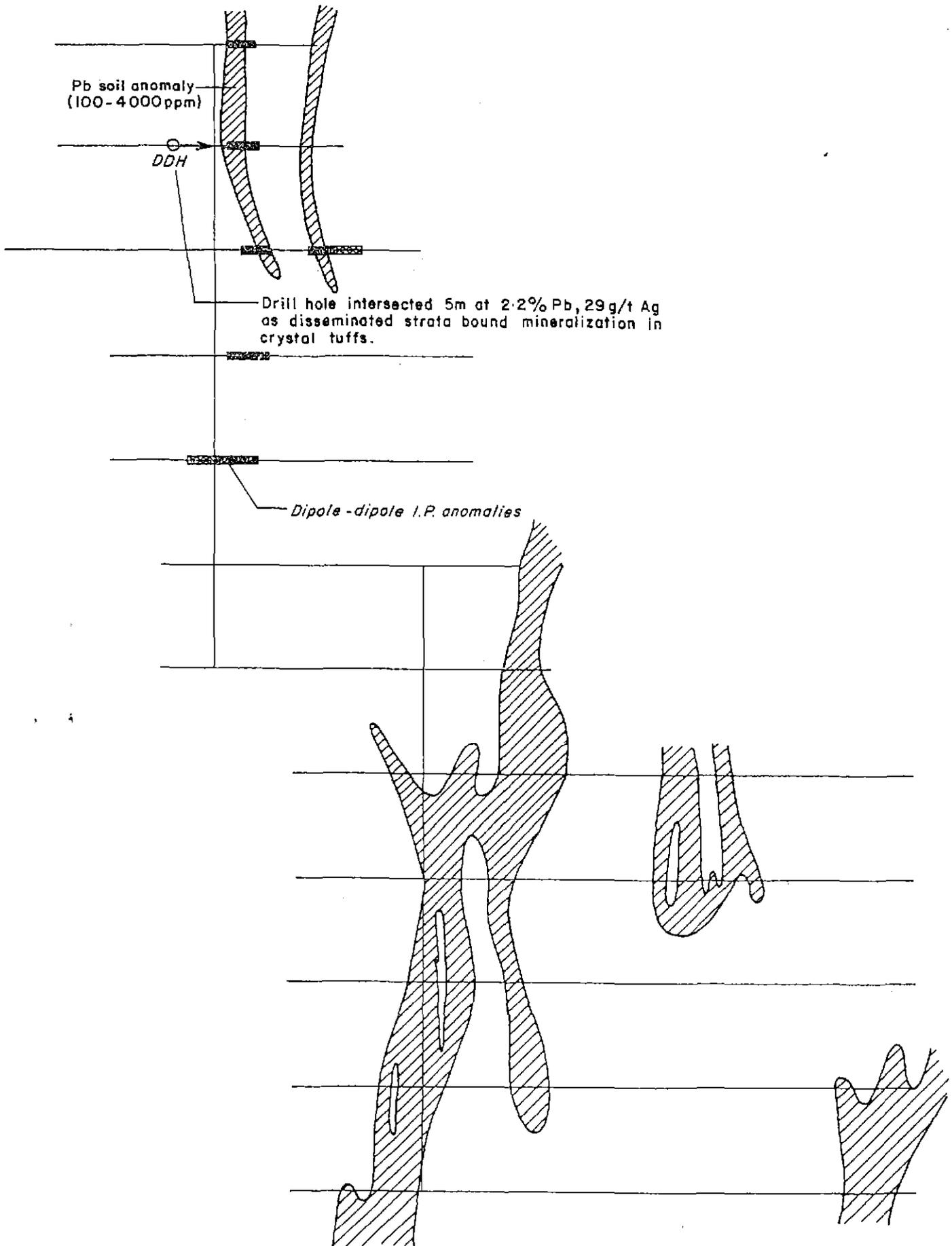
10 600E

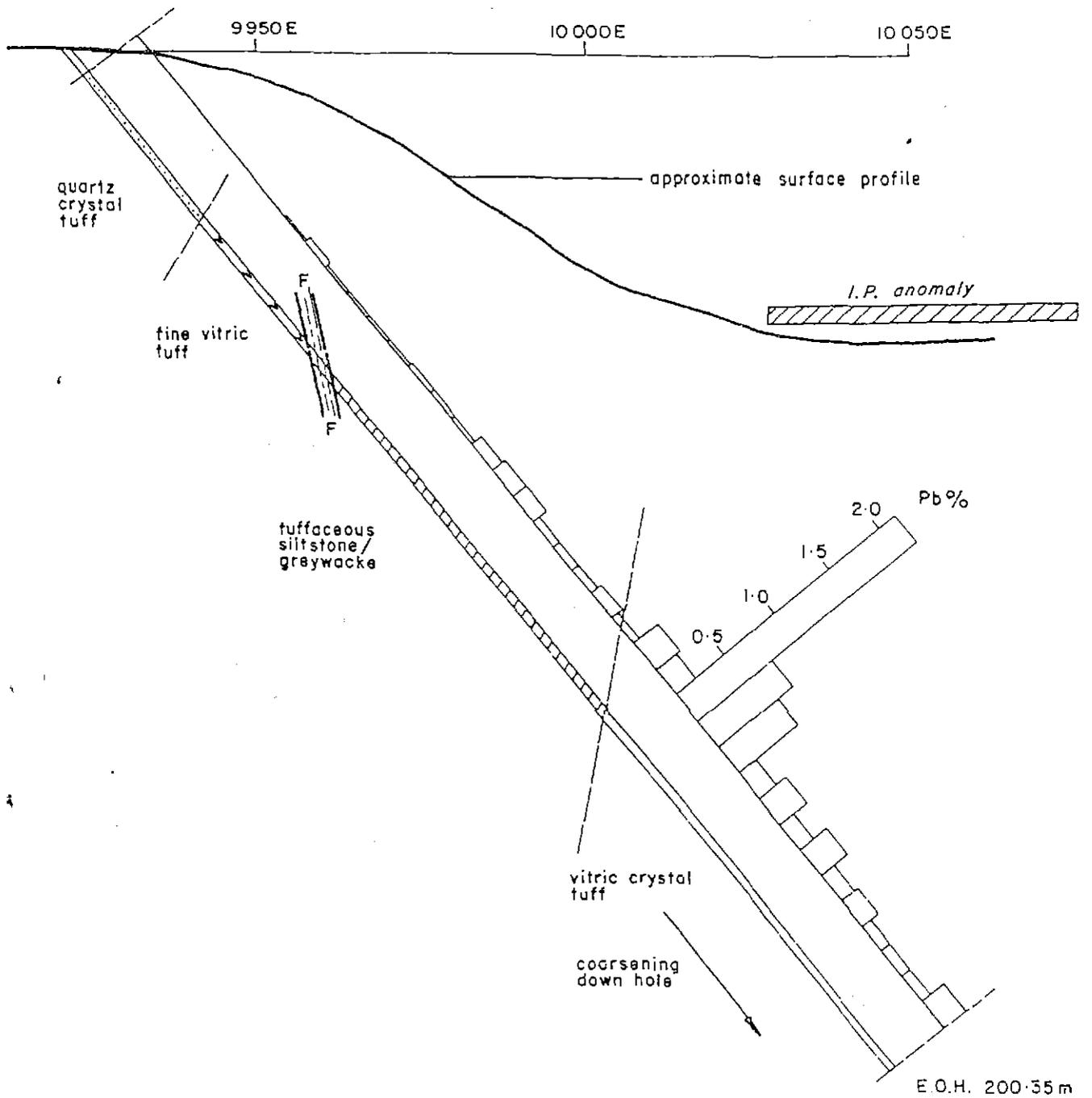
10 800E

11 000E

fig 34.

F





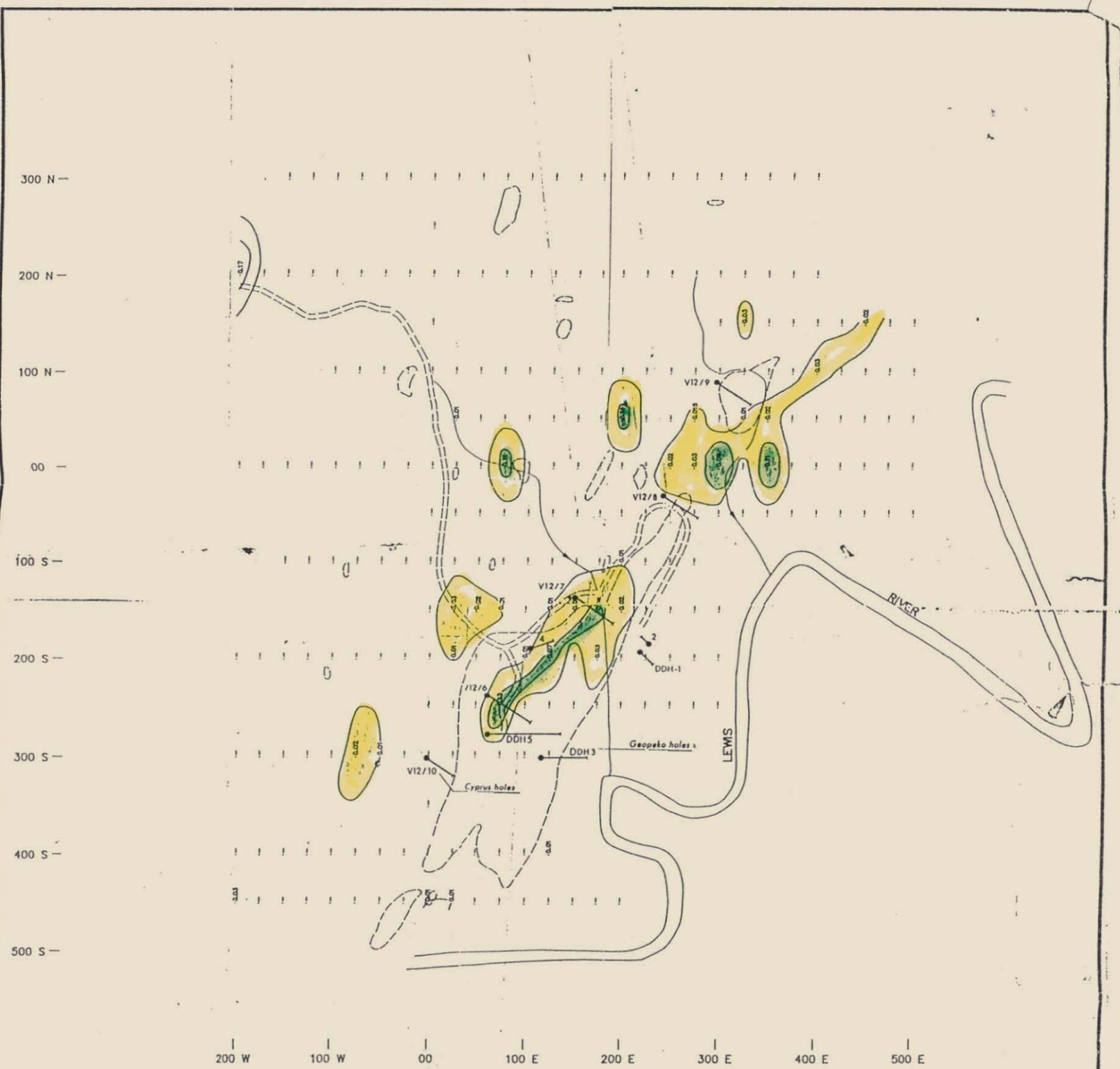
E.L.27/76 ELLIOTT BAY

VOYAGER 2

1:1000

fig 36

DRILLSECTION 10200N



CONTOUR INTERVAL

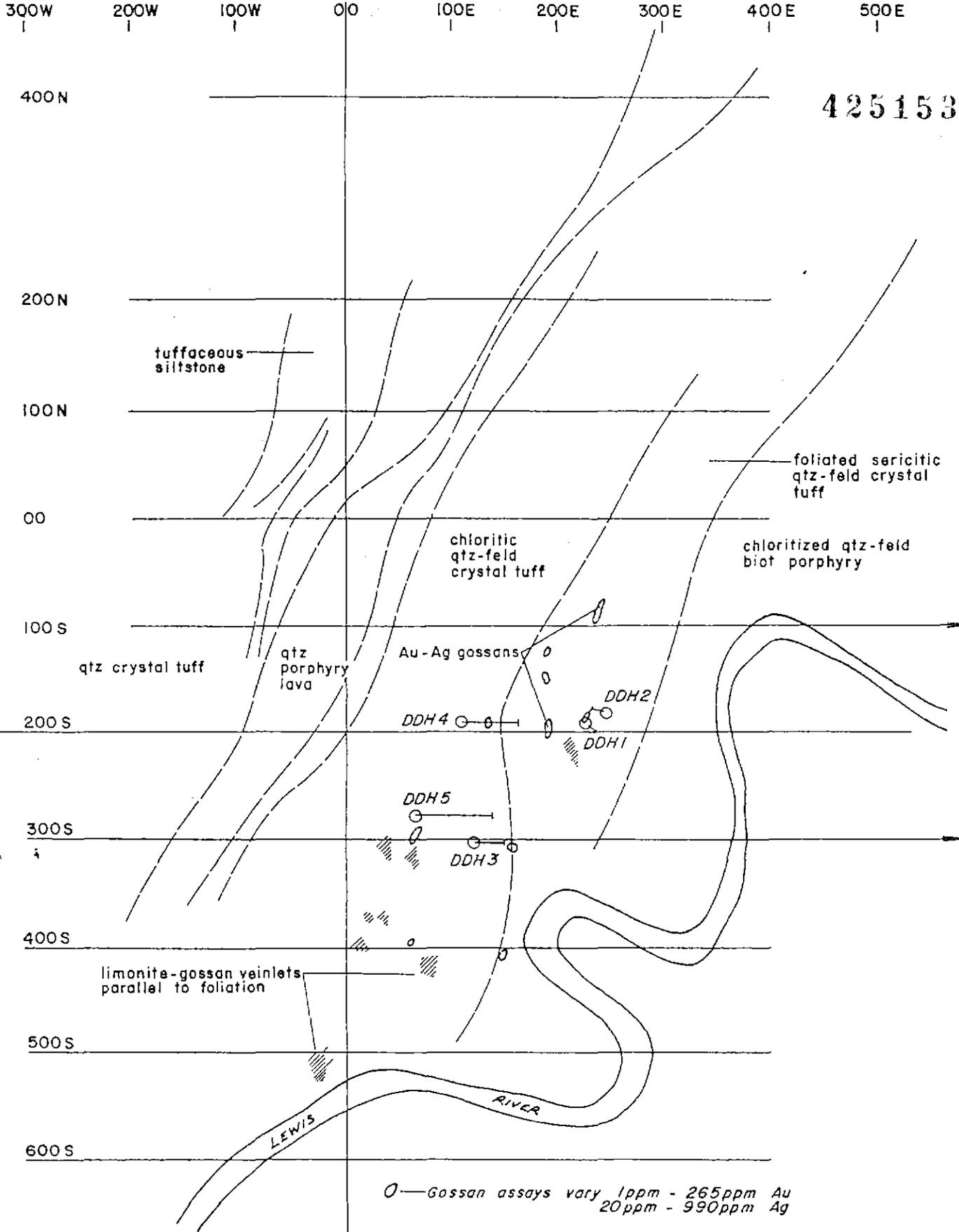
	>0.01 - 0.05 ppm
	>0.05 ppm



CYPRUS MINERALS AUST. CO. & POSEIDON LTD.	
ELLIOTT BAY - E.L. 40/05	
NORTH LEWIS	
SOIL GEOCHEMISTRY	
DRAWN BY: K.J.L.	DRAFTSMAN: I.S.U.S.
DATE: April '81	REVISION: 1

425152

5 cm



HOLE	DEPTH
DDH 1	30.6m
DDH 2	17.3m
DDH 3	90.0m
DDH 4	47.5m
DDH 5	163.6m

Best result 2m at 1.6ppm Au in DDH3

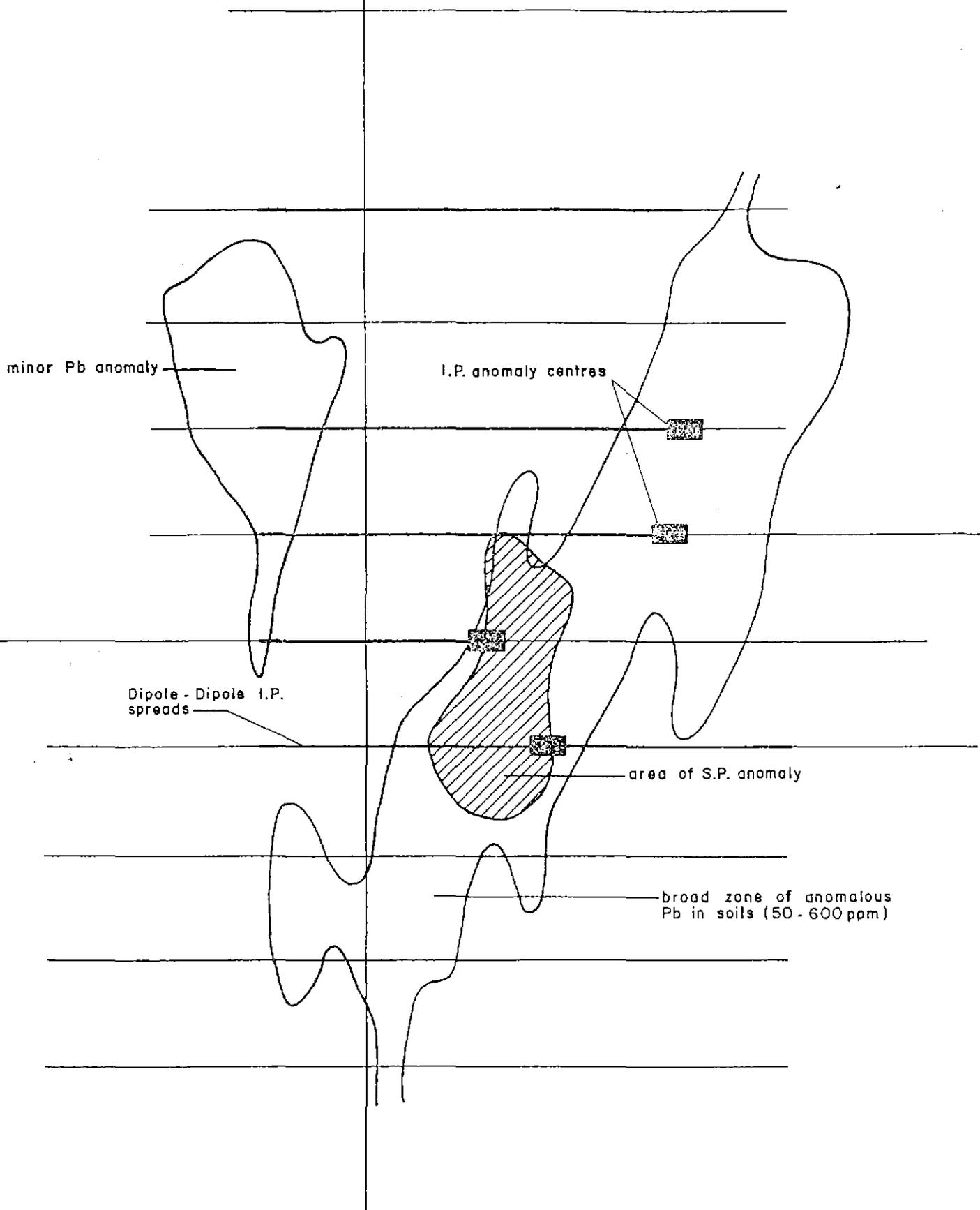
5 cm

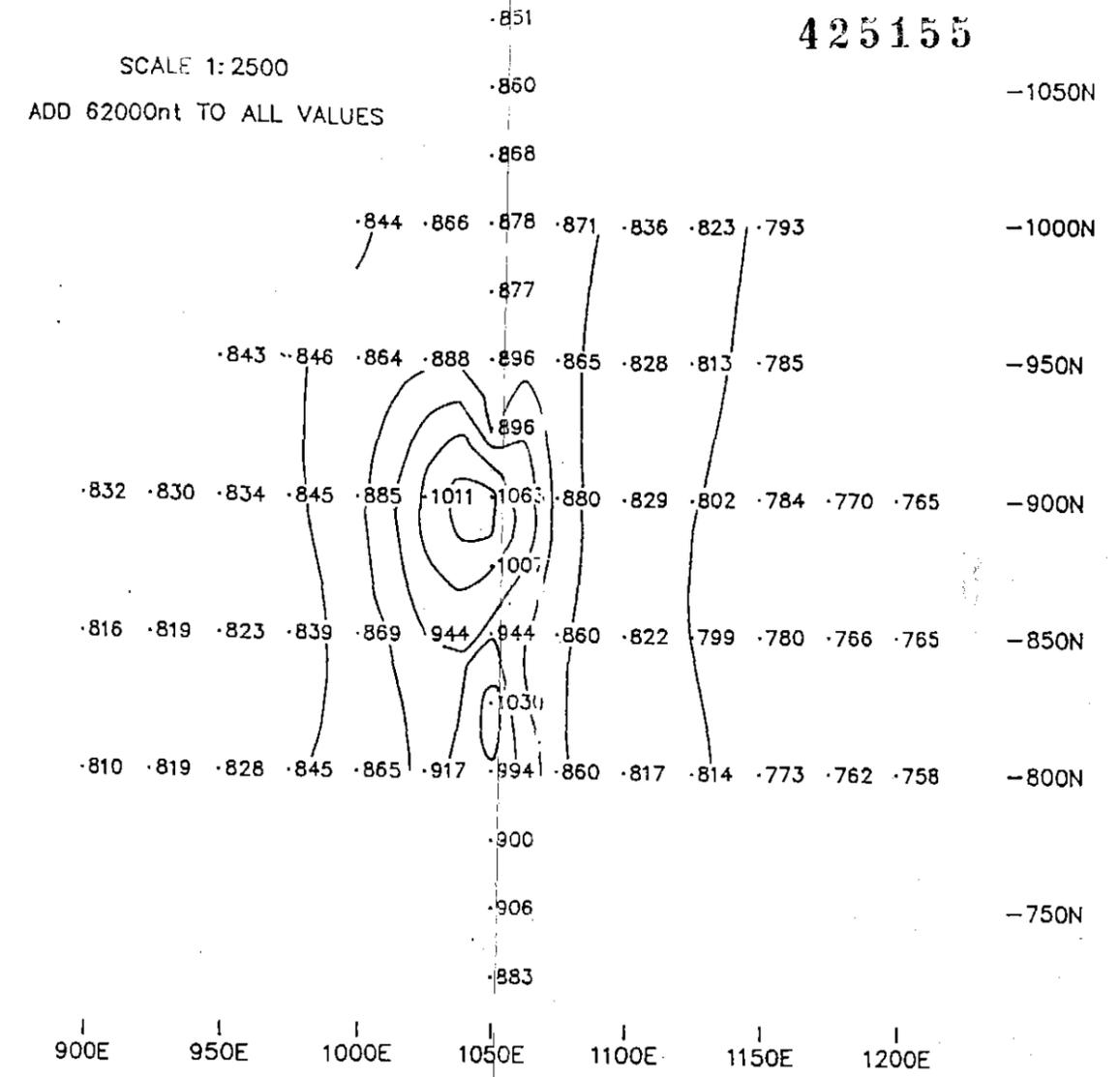
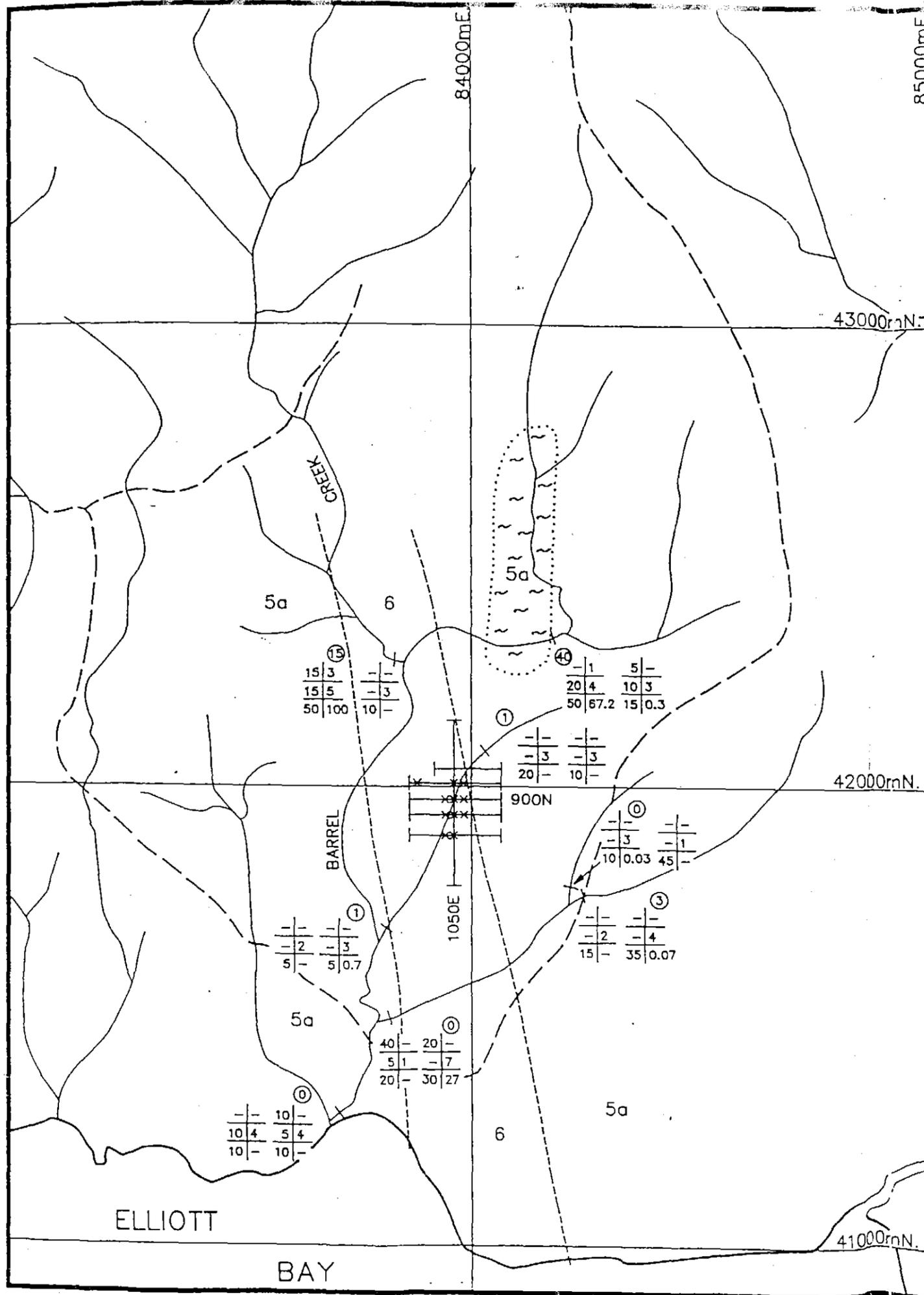
E.L.27/76 ELLIOTT BAY  
VOYAGER 12

1:5000

PROSPECT SUMMARY DIAGRAM

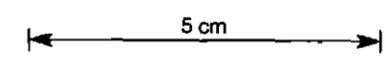
fig 38





Soil Sample Results

No.	Location	Cu	Pb	Zn	Ag	As	Au	Description
216414	950N 1050E	70	140	230	-	1	-	Highly chloritic qtz-feld biotite porphyry
216415	950N 975E	10	-	10	-	-	-	
216416	950N 1075E	5	30	40	-	-	-	
216417	900N 1075E	10	25	45	-	1	-	
216418	900N 1050E	15	15	65	-	-	-	
216419	900N 1025E	25	-	35	-	-	-	
216420	850N 1025E	50	-	45	-	-	-	
216421	850N 1050E	25	-	30	-	-	-	
216422	850N 1075E	10	-	35	-	-	-	
216423	800N 1050E	40	190	230	-	-	-	
216424	800N 1025E	2700	1325	35	-	48	-	+ Pyrite



CYPRUS MINERALS AUST. CO. & POSEIDON LTD.

ELLIOTT BAY - E.L. 40/85

MAGNETIC ANOMALY

4

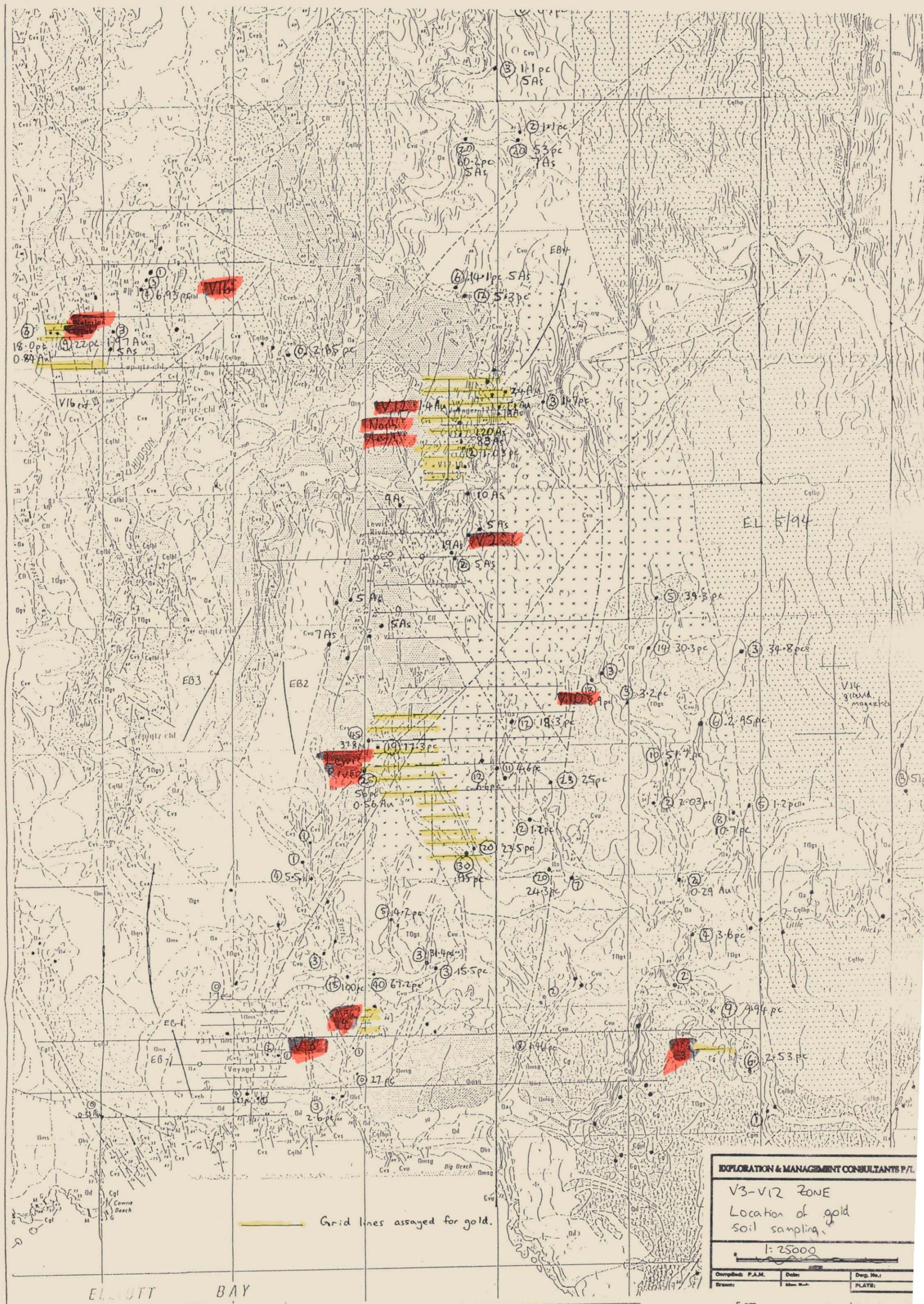
SCALE 1:10,000

100 0 100 200 METRES

DRAWN BY: R.H.  
DRAFTSMAN: T.G.D.S.  
DATE: June '85  
REVISIONS:  
FILE No.  
FIG. 38

x SOIL SAMPLE LOCATION

40



EXPLORATION & MANAGEMENT CONSULTANTS P/L

V3-V12 ZONE  
Location of gold  
soil sampling.

1:25000

Compiled: P.A.M.	Date:	Drawn:	Drawn:	Drawn:

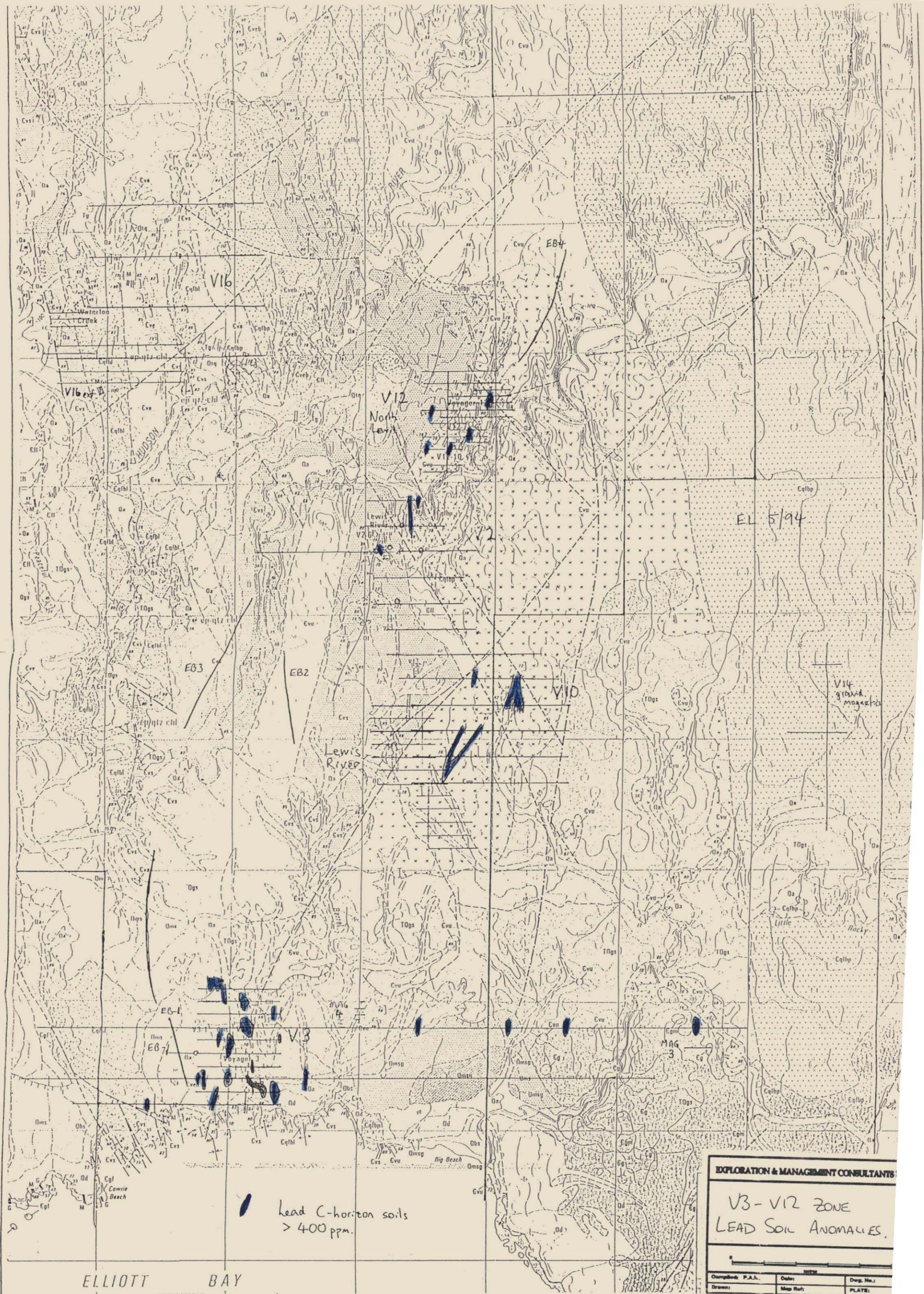
PLATE:

ELLIOTT BAY

425156

5 cm

941



ELLIOTT BAY

Lead C-horizon soils  
> 400 ppm.

EXPLORATION & MANAGEMENT CONSULTANTS

V3-V12 ZONE  
LEAD SOIL ANOMALIES

Scale: 5 cm

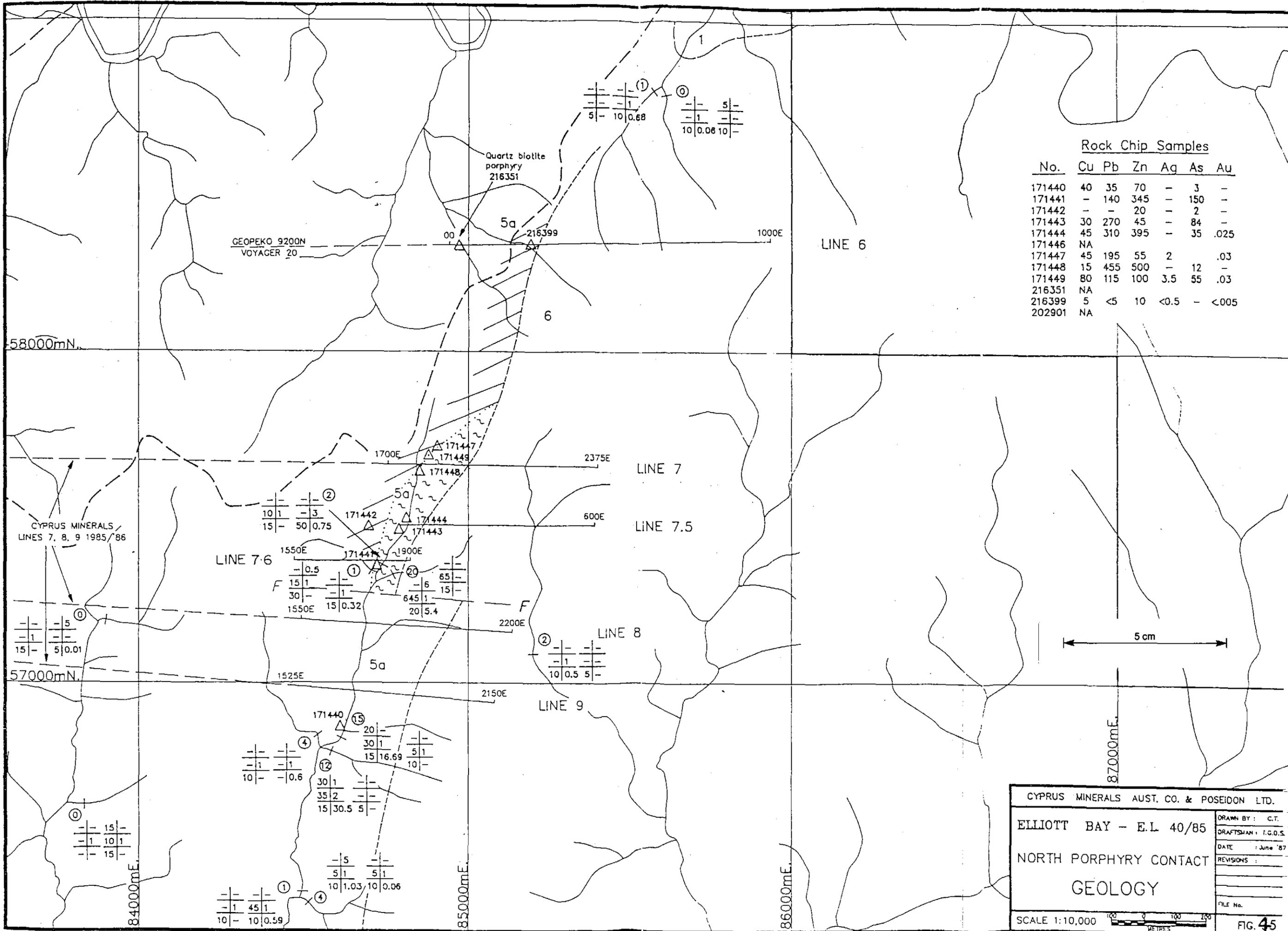
Drawn: P.A.A.	Date:	Dwg. No.:
Drawn: Map Ref:	Date:	PLATE:

425157

12







Rock Chip Samples

No.	Cu	Pb	Zn	Ag	As	Au
171440	40	35	70	-	3	-
171441	-	140	345	-	150	-
171442	-	-	20	-	2	-
171443	30	270	45	-	84	-
171444	45	310	395	-	35	.025
171446	NA					
171447	45	195	55	2		.03
171448	15	455	500	-	12	-
171449	80	115	100	3.5	55	.03
216351	NA					
216399	5	<5	10	<0.5	-	<005
202901	NA					

CYPRUS MINERALS AUST. CO. & POSEIDON LTD.

ELLIOTT BAY - E.L. 40/85

NORTH PORPHYRY CONTACT

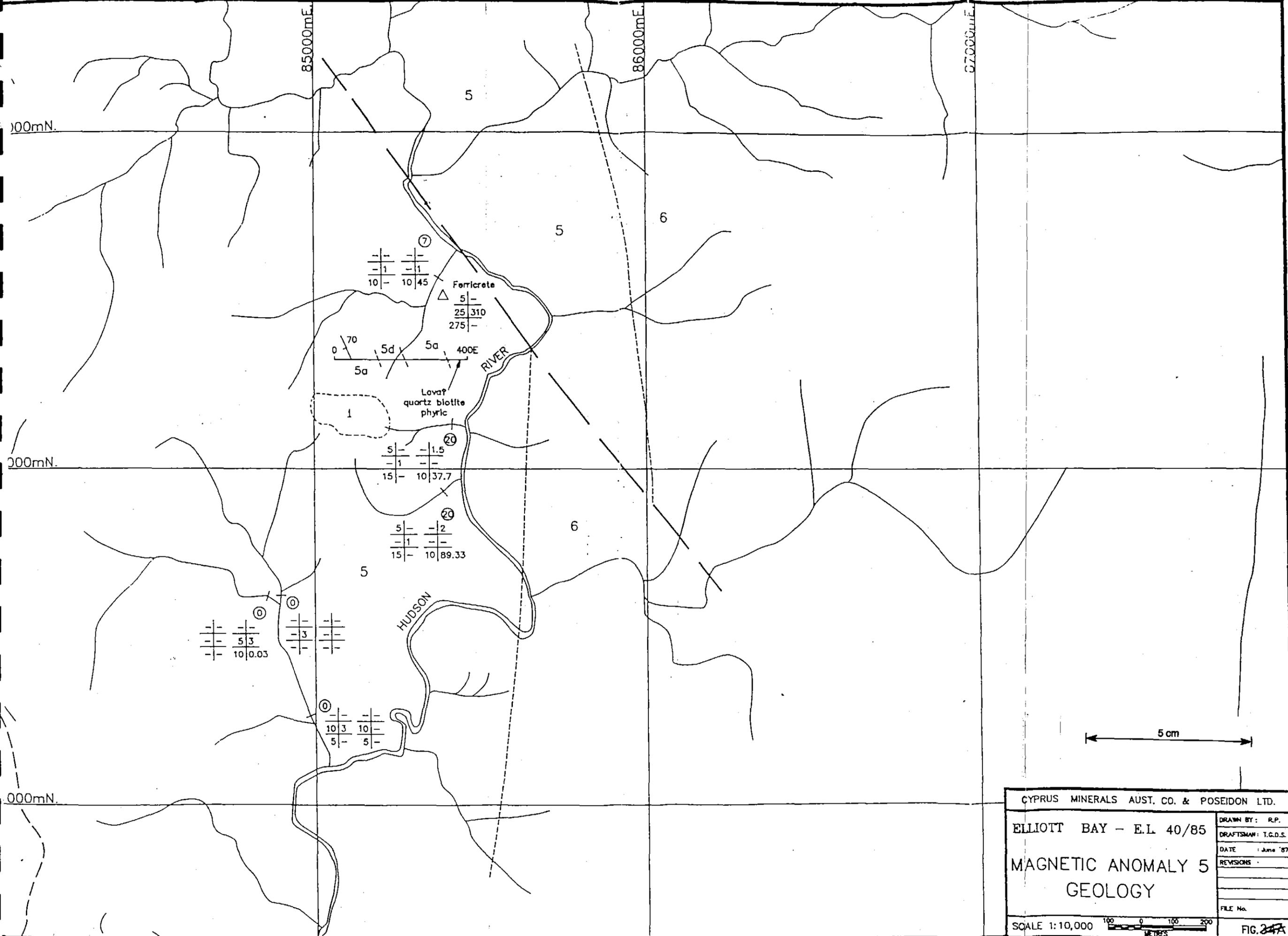
GEOLOGY

SCALE 1:10,000

FIG. 45

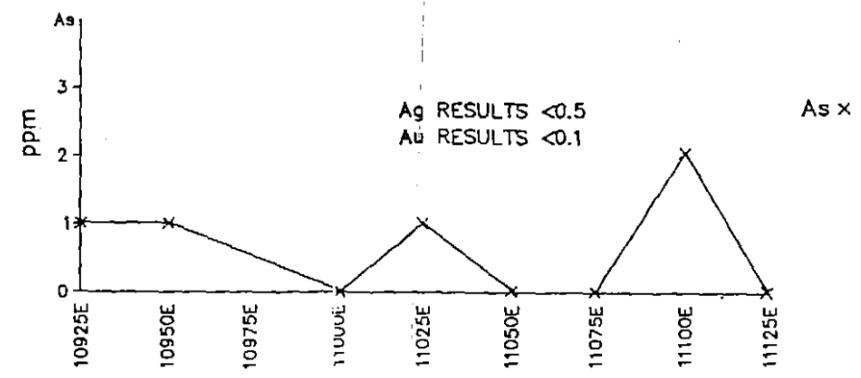
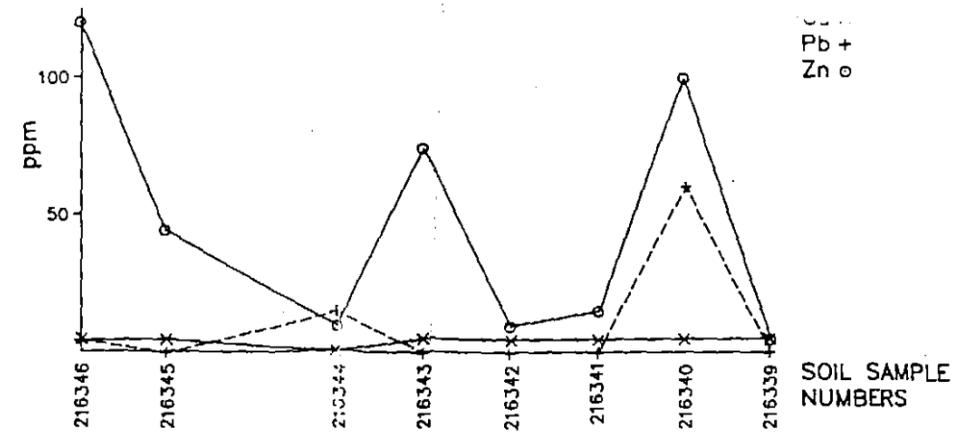
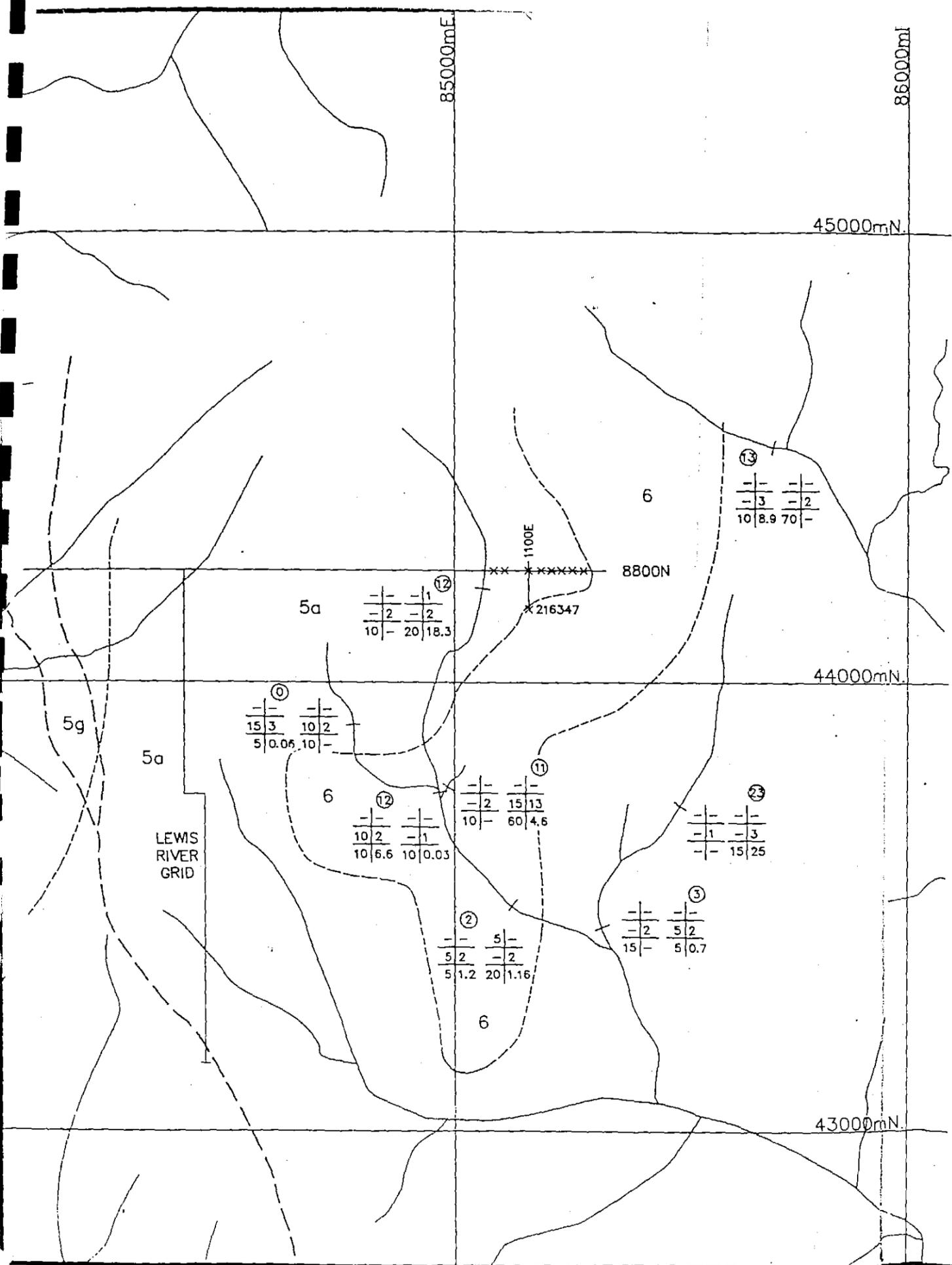
DRAWN BY: C.T.  
 DRAFTSMAN: F.G.O.S.  
 DATE: June '87  
 REVISIONS:  
 FILE No.

425161 425160

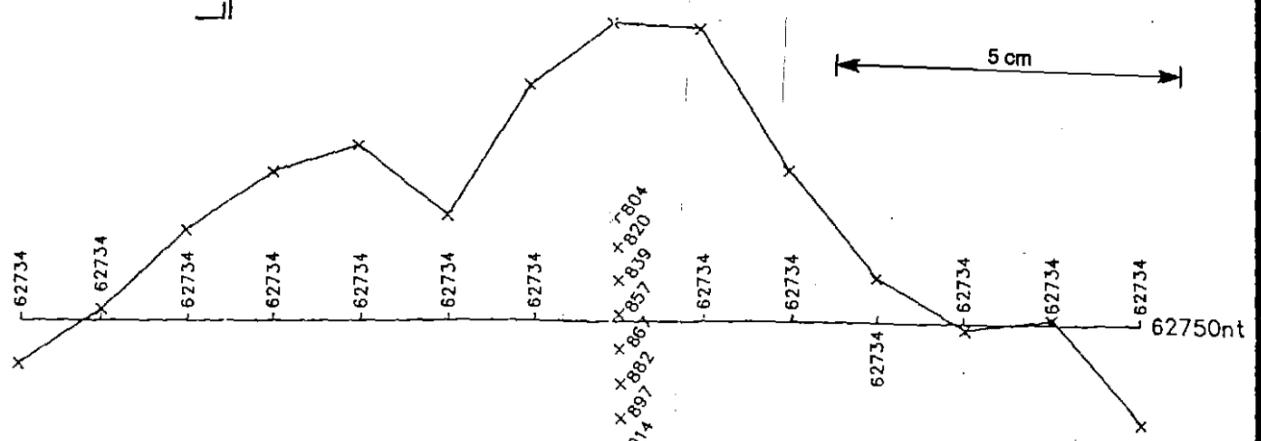


CYPRUS MINERALS AUST. CO. & POSEIDON LTD.  
 ELLIOTT BAY - E.L. 40/85  
 DRAWN BY: R.P.  
 DRAFTSMAN: T.G.D.S.  
 DATE: June '87  
 REVISIONS:  
 FILE No.  
 SCALE 1:10,000 100 0 100 200 METERS  
 FIG. 347A

fig 46



LINE 8800N



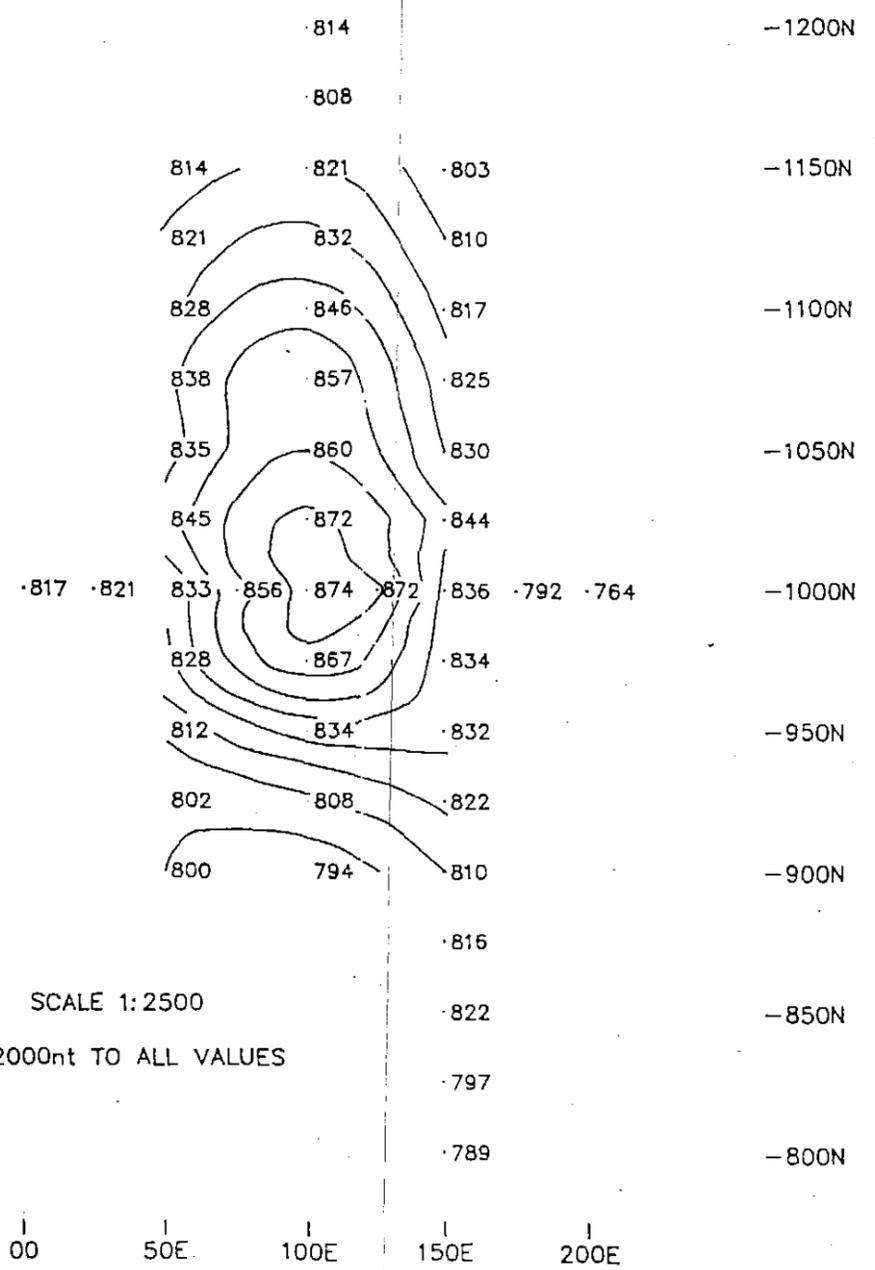
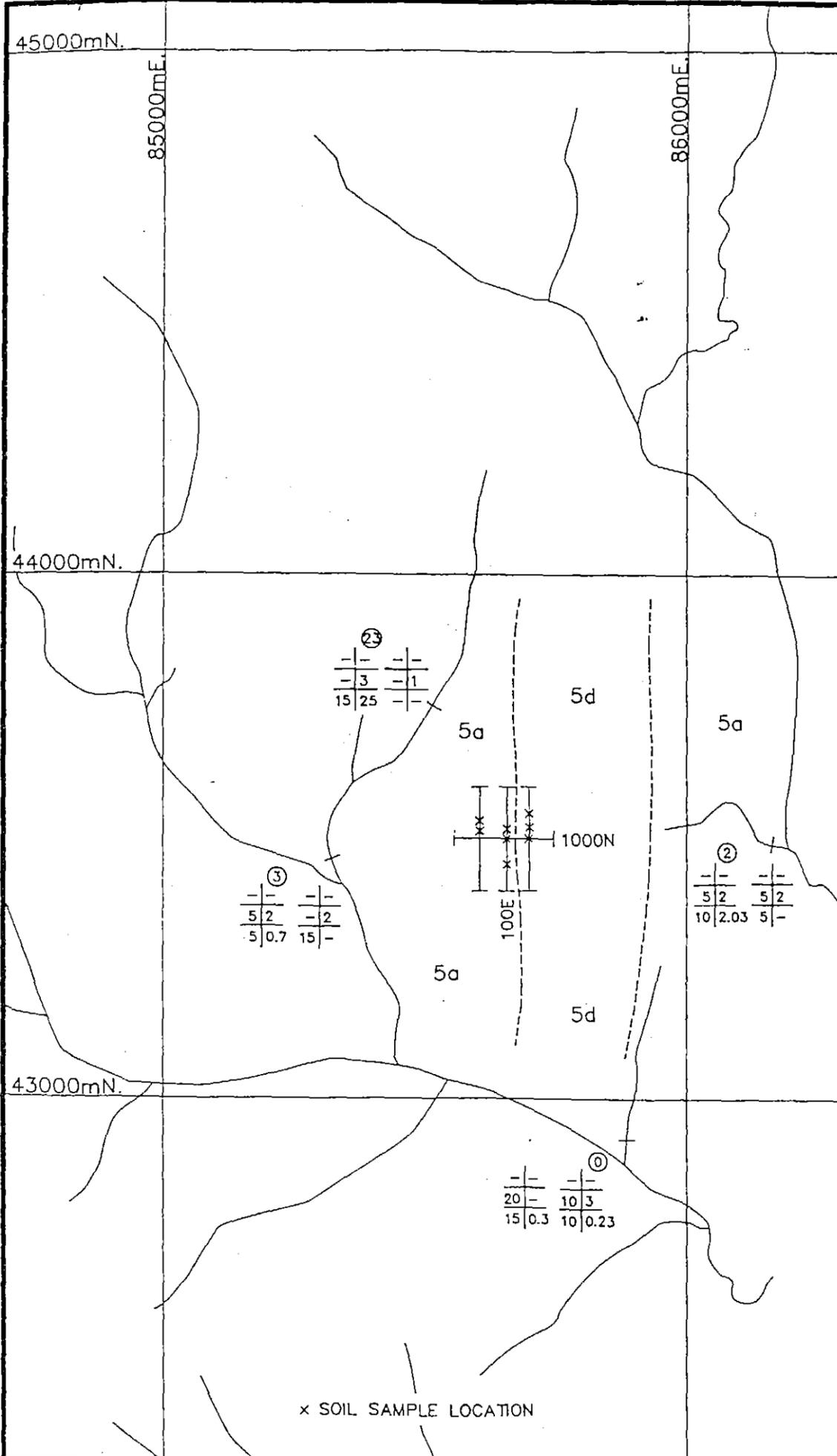
216347  

10	-
15	2
65	-

VERTICAL SCALE 1cm = 25nt  
 HORIZONTAL SCALE 1:2000

x SOIL SAMPLE LOCATIONS

CYPRUS MINERALS AUST. CO. & POSEIDON LTD.	
ELLIOTT BAY - E.L 40/85	
MAGNETIC ANOMALY	
1	
SCALE 1:10,000	100 0 100 200 METRES
FIG. 47	
DRAWN BY: R.H.	
DRAFTSMAN: T.G.D.S.	
DATE: June '87	
REVISIONS:	
FILE No.	



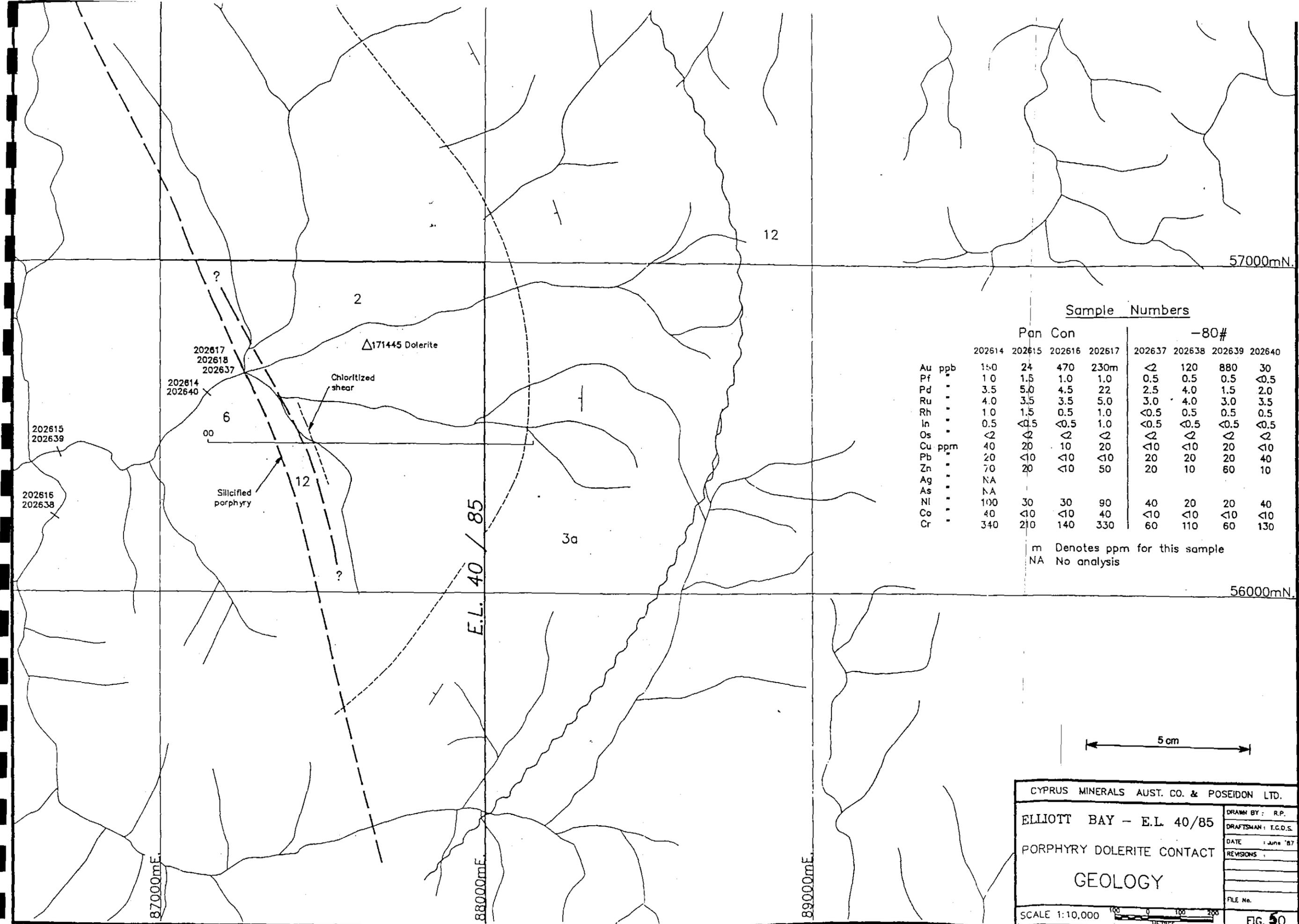
SCALE 1:2500  
ADD 62000nt TO ALL VALUES

Soil Sample Results

No.	Location	Cu	Pb	Zn	Ag	As	Au
216348	1025N 50E	10	10	25	-	-	-
216349	1050N 50E	10	-	25	-	1	-
216350	1025N 100E	10	-	15	-	-	0.06
216401	950N 100E	5	20	25	-	1	-
216402	1000N 150E	5	5	15	-	1	-
216403	1025N 150E	5	15	20	-	-	-
216404	1050N 150E	5	15	25	-	-	-

CYPRUS MINERALS AUST. CO. & POSEIDON LTD.	
ELLIOTT BAY - E.L. 40/85	
MAGNETIC ANOMALY	
2	
SCALE 1:10,000	100 0 100 200 METRES
DRAWN BY: R.H.	FILE No.
DRAFTSMAN: T.G.D.S.	FIG. 32
DATE: June '87	Fig 48
REVISIONS:	



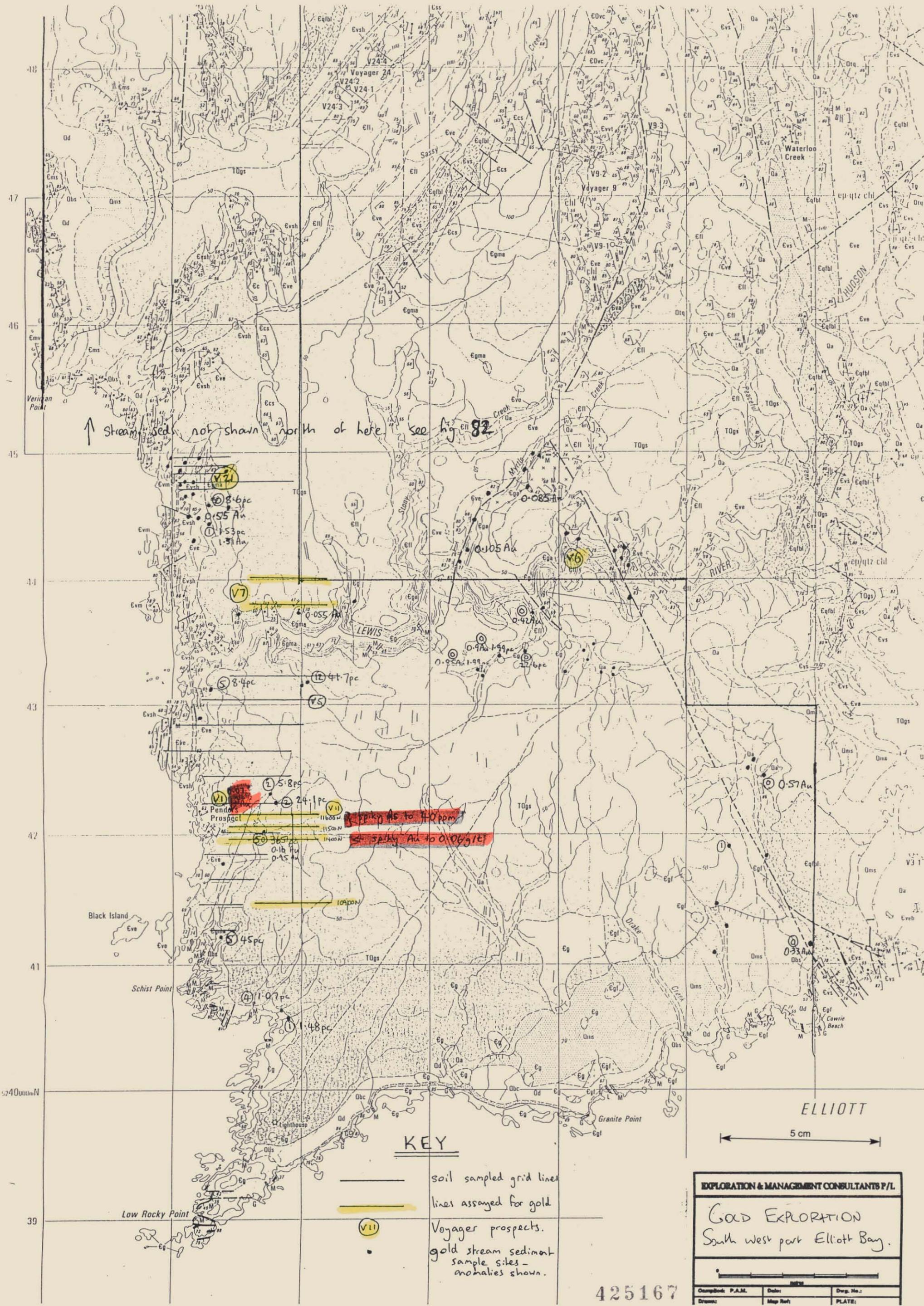


Sample Numbers

	Pan Con				-80#			
	202614	202615	202616	202617	202637	202638	202639	202640
Au ppb	15.0	24	470	230m	<2	120	880	30
Pf	1.0	1.5	1.0	1.0	0.5	0.5	0.5	<0.5
Pd	3.5	5.0	4.5	22	2.5	4.0	1.5	2.0
Ru	4.0	3.5	3.5	5.0	3.0	4.0	3.0	3.5
Rh	1.0	1.5	0.5	1.0	<0.5	0.5	0.5	0.5
In	0.5	<0.5	<0.5	1.0	<0.5	<0.5	<0.5	<0.5
Os	<2	<2	<2	<2	<2	<2	<2	<2
Cu ppm	40	20	10	20	<10	<10	20	<10
Pb	20	<10	<10	<10	20	20	20	40
Zn	70	20	<10	50	20	10	60	10
Ag	NA							
As	NA							
Ni	100	30	30	90	40	20	20	40
Co	40	<10	<10	40	<10	<10	<10	<10
Cr	340	210	140	330	60	110	60	130

m Denotes ppm for this sample  
NA No analysis

CYPRUS MINERALS AUST. CO. & POSEIDON LTD.	
ELLIOTT BAY - E.L. 40/85	
PORPHYRY DOLERITE CONTACT	
GEOLOGY	
SCALE 1:10,000	100 0 100 200 METRES
DRAWN BY: R.P.	FILE No.
DRAFTSMAN: T.G.O.S.	FIG. 50
DATE: June '87	
REVISIONS:	



↑ Stream Sed not shown north of here see fig 82

V7

V6

V1

V11

spiky Au to 70 ppm

spiky Au to 0.06 g/t

**KEY**

- soil sampled grid lines
- lines assayed for gold
- Voyager prospects.
- gold stream sediment sample sites - anomalies shown.

EXPLORATION & MANAGEMENT CONSULTANTS P/L

**GOLD EXPLORATION**  
South west part Elliott Bay.

425167

Compiled P.A.M.	Date:	Dwg. No.:
Drawn:	Map Ref:	PLATE:

FIG 51

5 cm

ELLIOTT

5240000mN

39

41

42

43

44

45

46

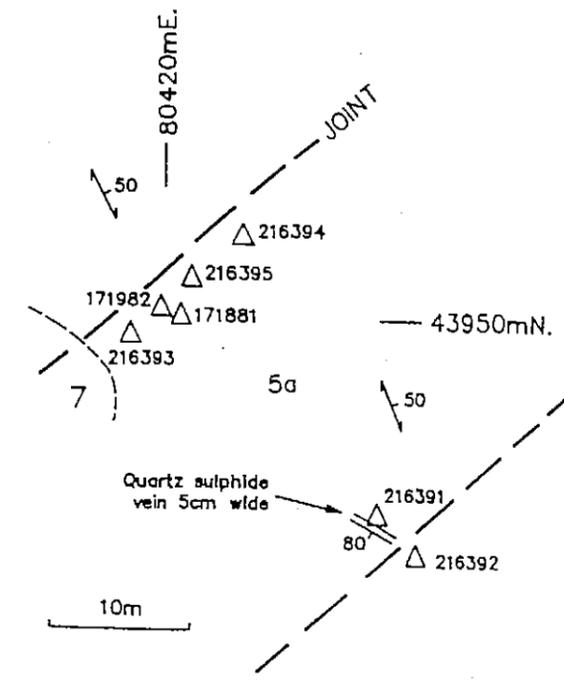
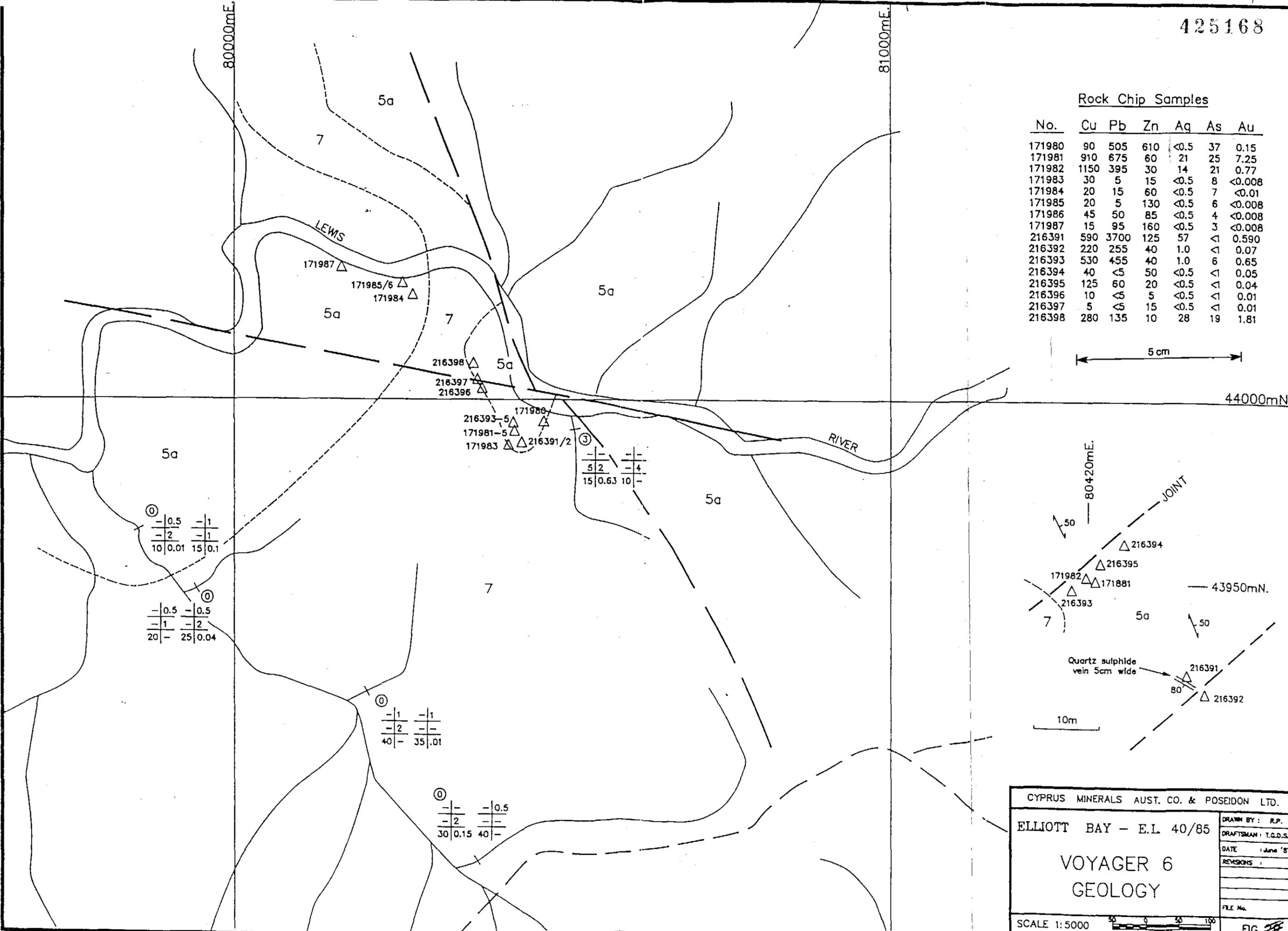
47

48

Rock Chip Samples

No.	Cu	Pb	Zn	Ag	As	Au
171980	90	505	610	<0.5	37	0.15
171981	910	675	60	21	25	7.25
171982	1150	395	30	14	21	0.77
171983	30	5	15	<0.5	8	<0.008
171984	20	15	60	<0.5	7	<0.01
171985	20	5	130	<0.5	6	<0.008
171986	45	50	85	<0.5	4	<0.008
171987	15	95	160	<0.5	3	<0.008
216391	590	3700	125	57	Δ	0.590
216392	220	255	40	1.0	Δ	0.07
216393	530	455	40	1.0	6	0.65
216394	40	<5	50	<0.5	Δ	0.05
216395	125	60	20	<0.5	Δ	0.04
216396	10	<5	5	<0.5	Δ	0.01
216397	5	<5	15	<0.5	Δ	0.01
216398	280	135	10	28	19	1.81

5 cm



CYPRUS MINERALS AUST. CO. & POSEIDON LTD.

ELLIOTT BAY - E.L. 40/85

VOYAGER 6 GEOLOGY

SCALE 1:5000

DRAWN BY: R.P.

DRAFTSMAN: T.G.D.S.

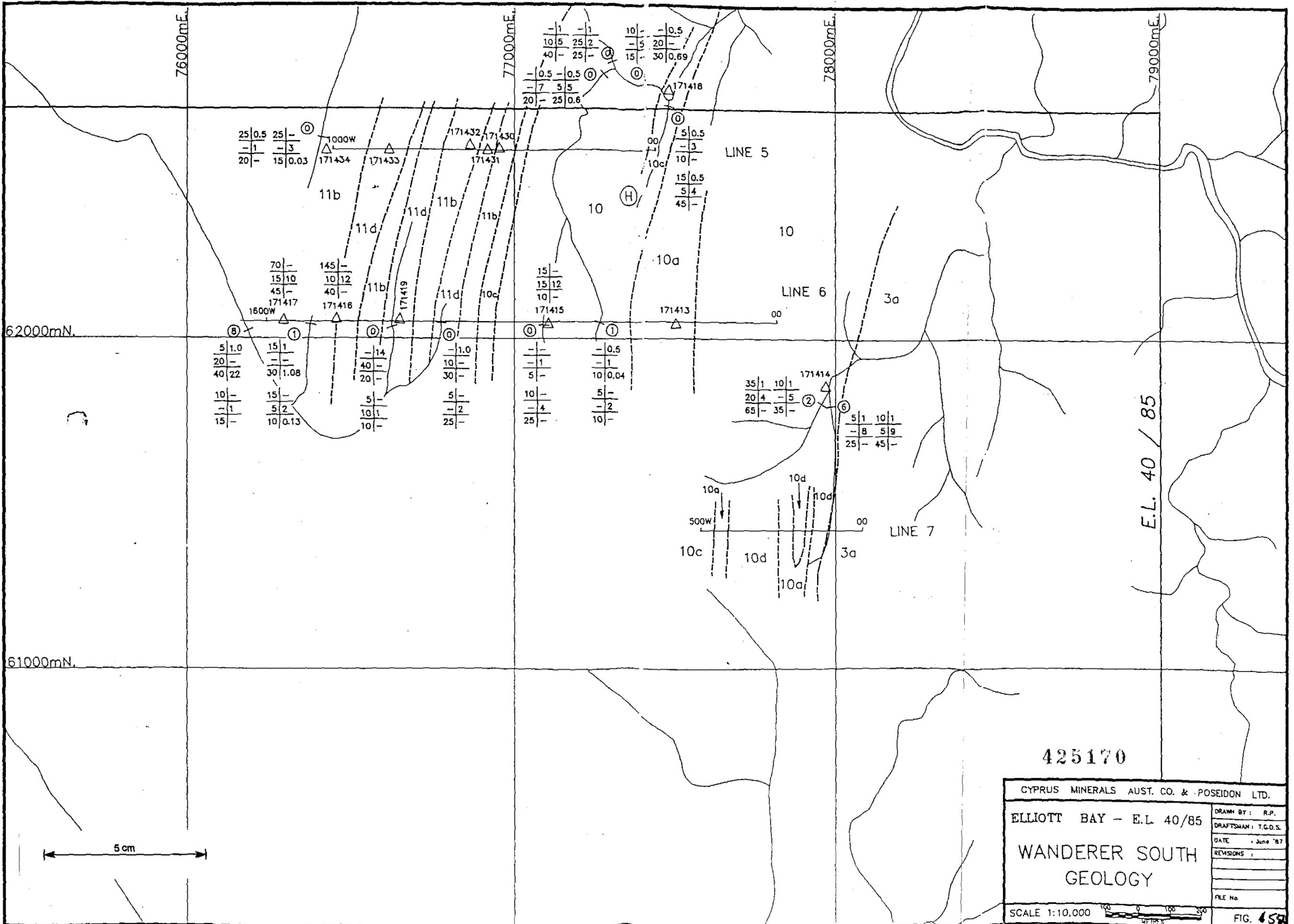
DATE: June '87

REVISIONS:

FILE No.

FIG. 52





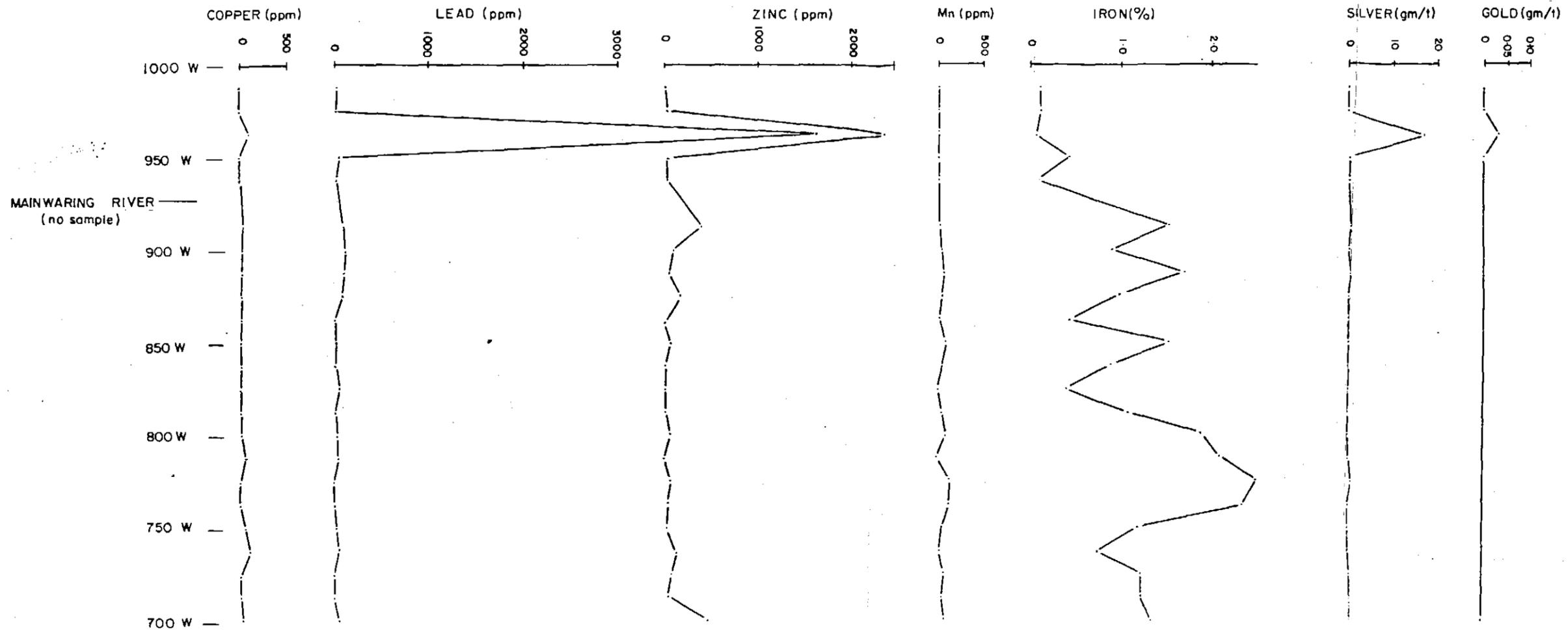
E.L. 40 / 85

425170

CYPRUS MINERALS AUST. CO. & POSEIDON LTD.	
ELLIOTT BAY - E.L. 40/85	
WANDERER SOUTH GEOLOGY	
SCALE 1:10,000	FIG. 458
DRAWN BY: R.P.	DATE: June '87
DRAFTSMAN: T.G.D.S.	REVISIONS:
FILE No.	

5 cm

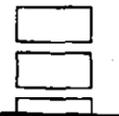




5 cm

425172  
**PLAN-80**

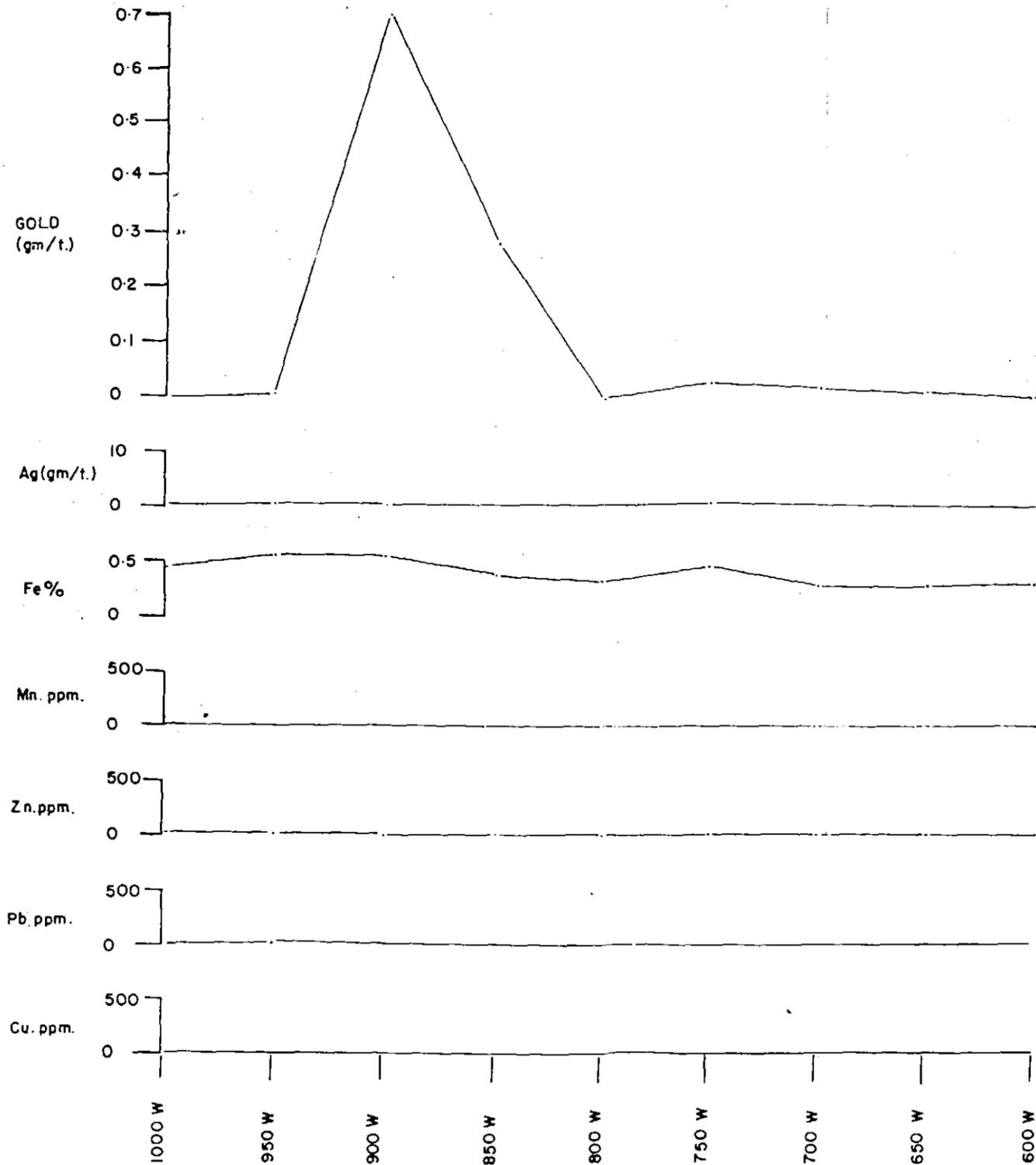
LEGEND:



12.5m. SPACINGS. 700 W — 987.5 W.

  
 DATE 10-5-81  
 GEOL WH  
 DWN M yd S

**GEOPEKO**  
 Scale: 1:2500      NR K  
 EL. 27/76 ELLIOTT BAY TAS. (60)  
 VOYAGER 28 BHP TRACK  
 C HORIZON GEOCHEM PROFILE



5 cm

425173

JALCO

**PLAN-81**

LEGEND:

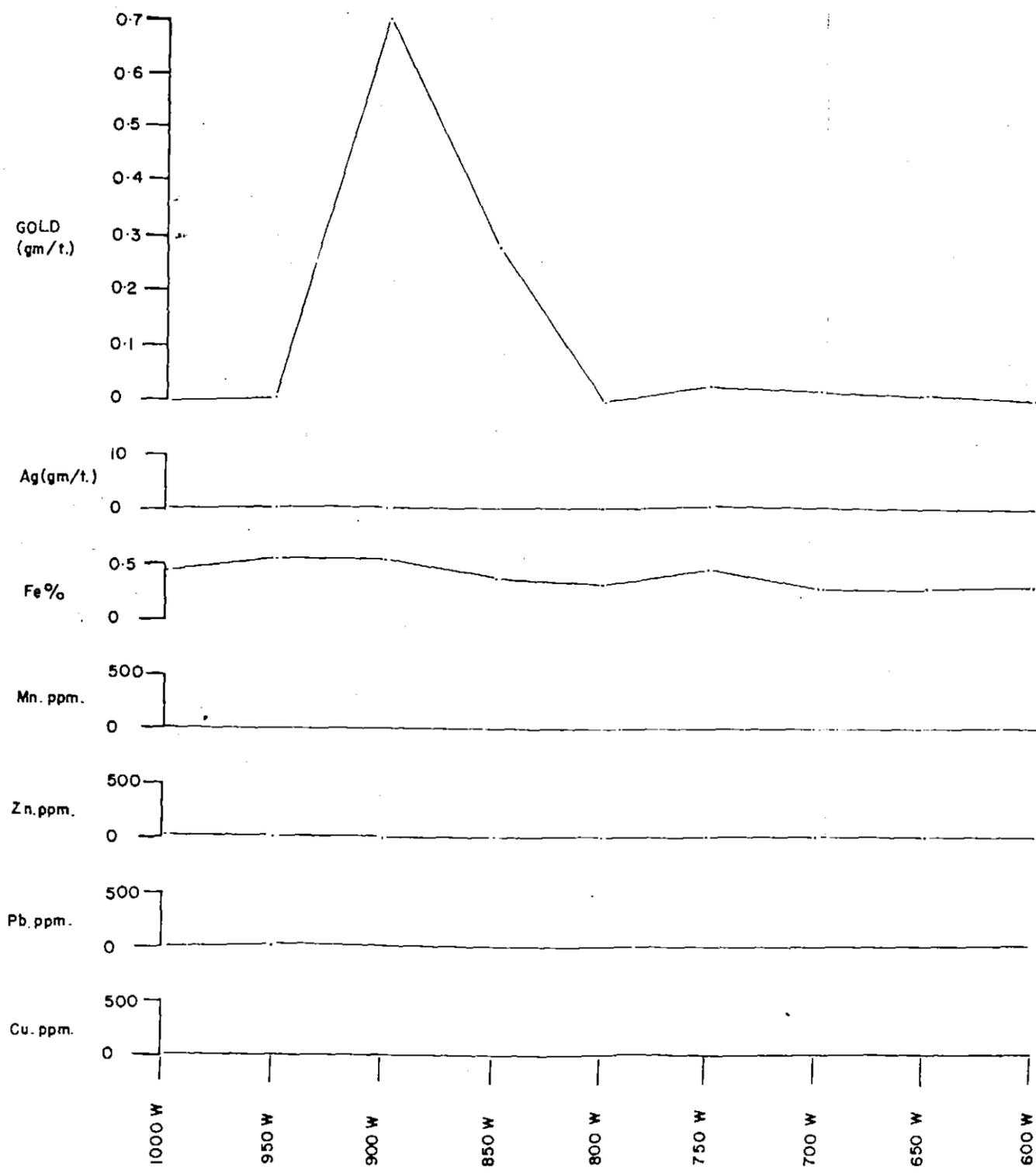
- 
- 
- 
- 

(POLTOCKS : 50m SPACINGS)



GEOPEKO	
Scale: 1:2500	NR K
EL27/76 ELLIOTT BAY TAS VOYAGER 28 - BHP TRACK C-HORIZON GEOCHEM PROFILE	

61



5 cm

Jacno  
**PLAN-81**

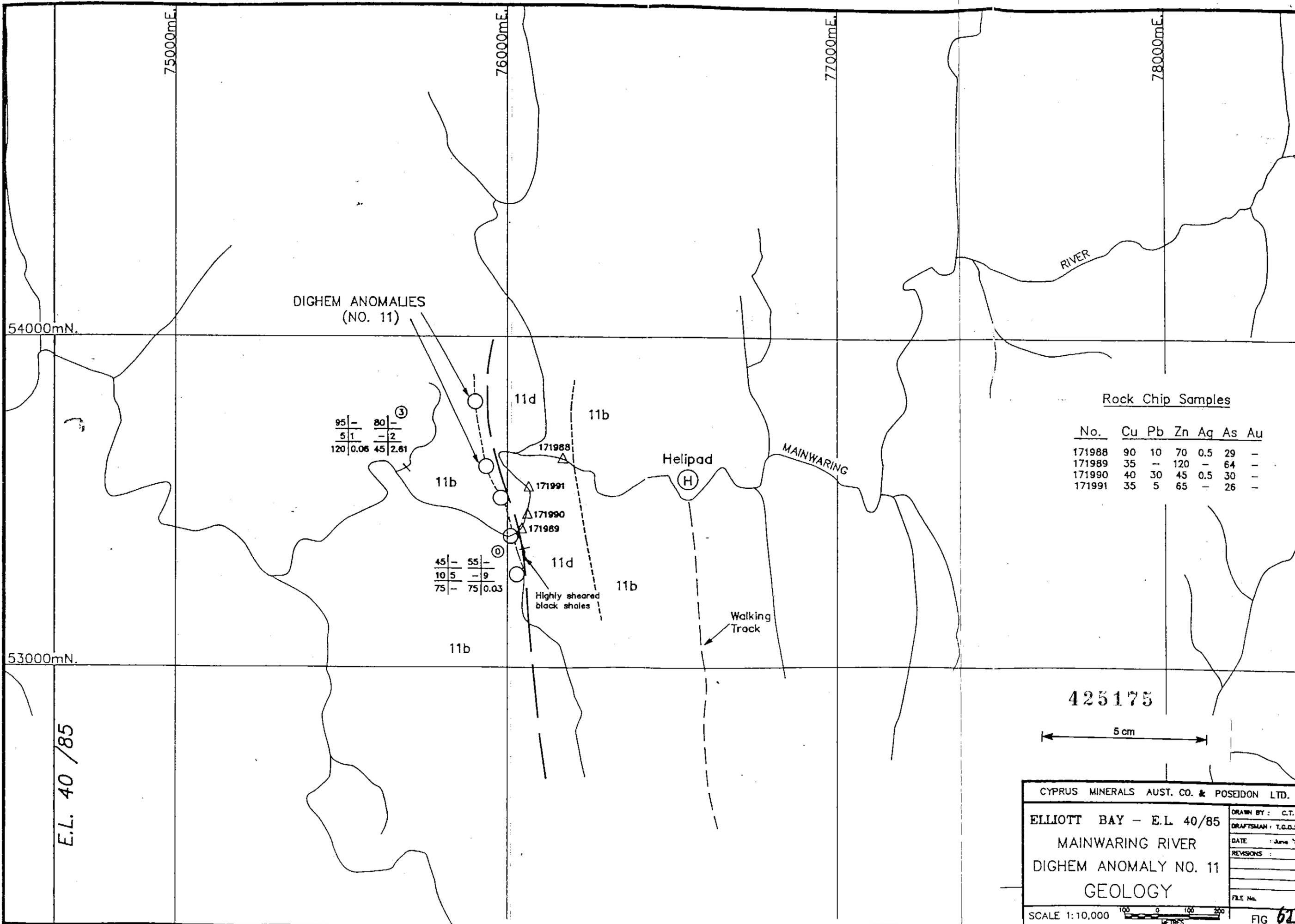
LEGEND:

- 
- 
- 
- 

425174

(POLTOCKS : 50m SPACINGS)

	<b>GEOPEKO</b>	
	Scale: 1:2500	NR K
DATE: 10-5-81	E.L.27/76 ELLIOTT BAY TAS	
GEOL. W.H.	VOYAGER 28 - BHP TRACK	
	C-HORIZON GEOCHEM PROFILE	



DIGHEM ANOMALIES  
(NO. 11)

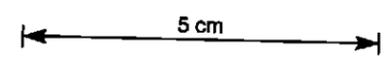
95	-	80	-
51	-	2	-
120	0.06	45	2.61

45	-	55	-
10	5	-	9
75	-	75	0.03

Rock Chip Samples

No.	Cu	Pb	Zn	Ag	As	Au
171988	90	10	70	0.5	29	-
171989	35	-	120	-	64	-
171990	40	30	45	0.5	30	-
171991	35	5	65	-	26	-

425175



CYPRUS MINERALS AUST. CO. & POSEIDON LTD.

ELLIOTT BAY - E.L. 40/85  
MAINWARING RIVER  
DIGHEM ANOMALY NO. 11  
GEOLOGY

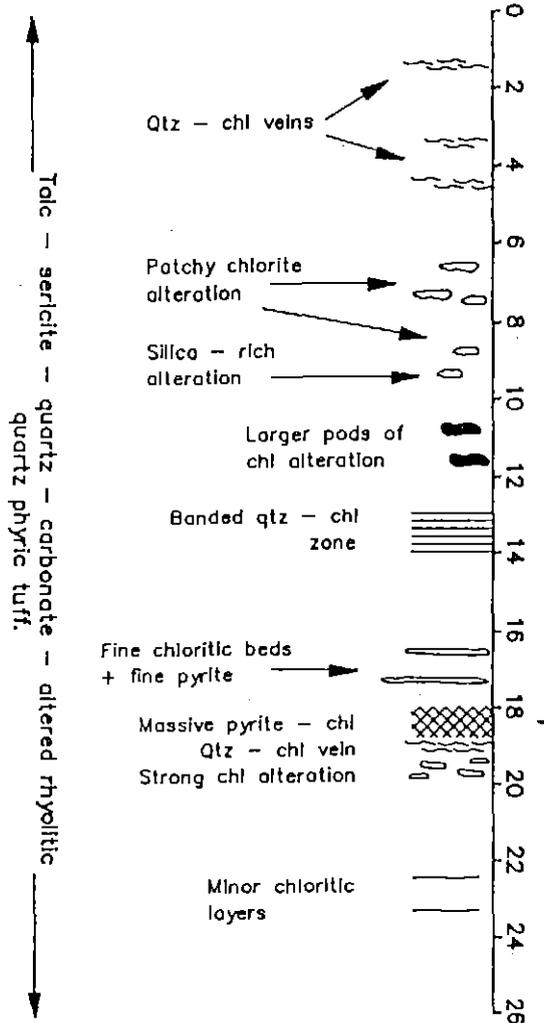
SCALE 1:10,000

DRAWN BY: C.T.  
DRAFTSMAN: T.G.D.S.  
DATE: June '85  
REVISIONS:  
FILE No.

FIG 62

E.L. 40/85

METRES	SAMPLE NUMBERS	Cu	Pb	Zn	Ag	As	Au
0	202720	15	-	10	-	1	-
2	202721	10	-	15	-	-	-
4	202722	15	-	35	-	1	-
6	202723	10	-	35	-	-	-
8	202724	10	-	15	-	-	-
10	202725	25	-	40	-	-	-
12	202726	40	-	40	-	2	-
14	202727	10	-	60	-	1	-
16	202728	15	-	110	-	3	-
18	202729	7500	245	3100	7.0	71	0.03
20	202730	35	-	65	-	6	-
22	202731	15	20	50	-	4	-
24	202732	30	25	50	-	7	-



425176

CYPRUS MINERALS AUST. CO. & POSEIDON LTD.

ELLIOTT BAY - E.L. 40/85

PENDERS PROSPECT

ROCK CHIP GEOCHEMISTRY STRIP 'A'

SCALE 1:200

0 2 4 METRES

DRAWN BY : C.T.

DRAFTSMAN: T.G.D.S.

DATE : May '87

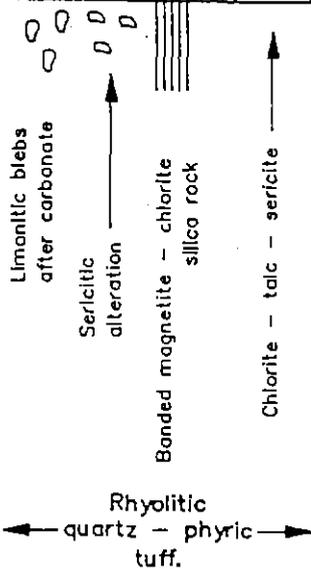
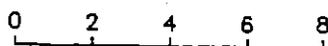
REVISIONS :

FILE NO.

FIG. 54

SAMPLE NUMBERS	Cu	Pb	Zn	Ag	As	Au
202733	20	-	55	-	1	-
202734	550	-	110	-	7	-
202735	80	70	185	-	8	0.005
202736	50	-	55	-	1	-

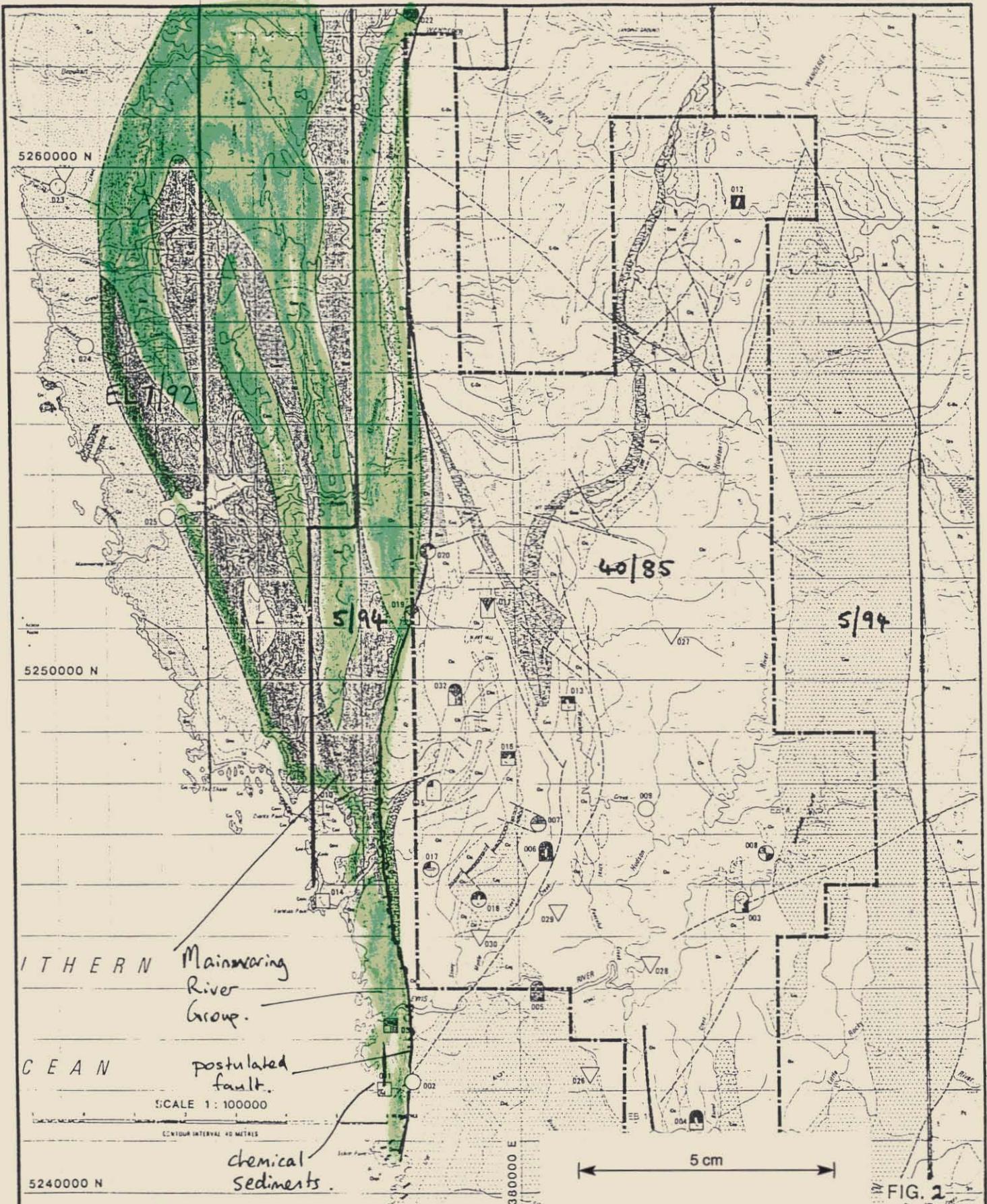
METRES



425177

5 cm

CYPRUS MINERALS AUST. CO. & POSEIDON LTD.	
ELLIOTT BAY - E.L. 40/85	
PENDERS PROSPECT	
ROCK CHIP GEOCHEMISTRY	
STRIP 'B'	
DRAWN BY : C.T.	
DRAFTSMAN: T.G.D.S.	
DATE : May '87	
REVISIONS :	
FILE NO.	
SCALE 1:200	
	FIG. 2859



Aberfoyle Resources Limited  
EXPLORATION DIVISION

425178

REVISIONS			
Init.	Date	Init.	Date

TASMANIA  
ELLIOTT BAY E.L. 40/85  
RE-INTERPRETED GEOLOGY.

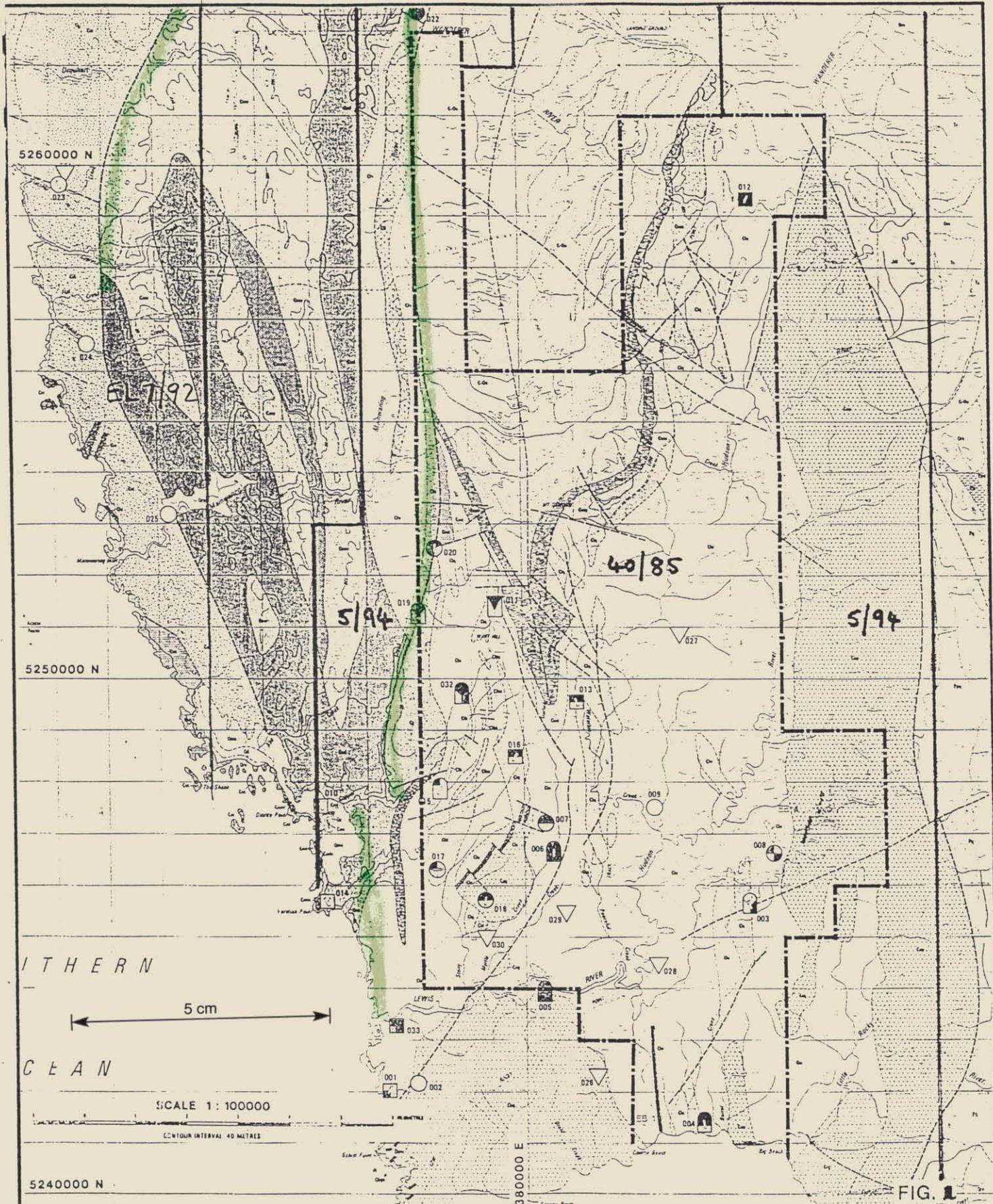
Compiled : SR  
 Drawn : RdeB  
 Traced : MAR  
 Checked :  
 Plate No. : EB-19 fig 56

Location Code : K55/7

Scale : 1:100 000

Date : December 1992

1-0-1



**Aberfoyle Resources Limited**  
EXPLORATION DIVISION

**425179**

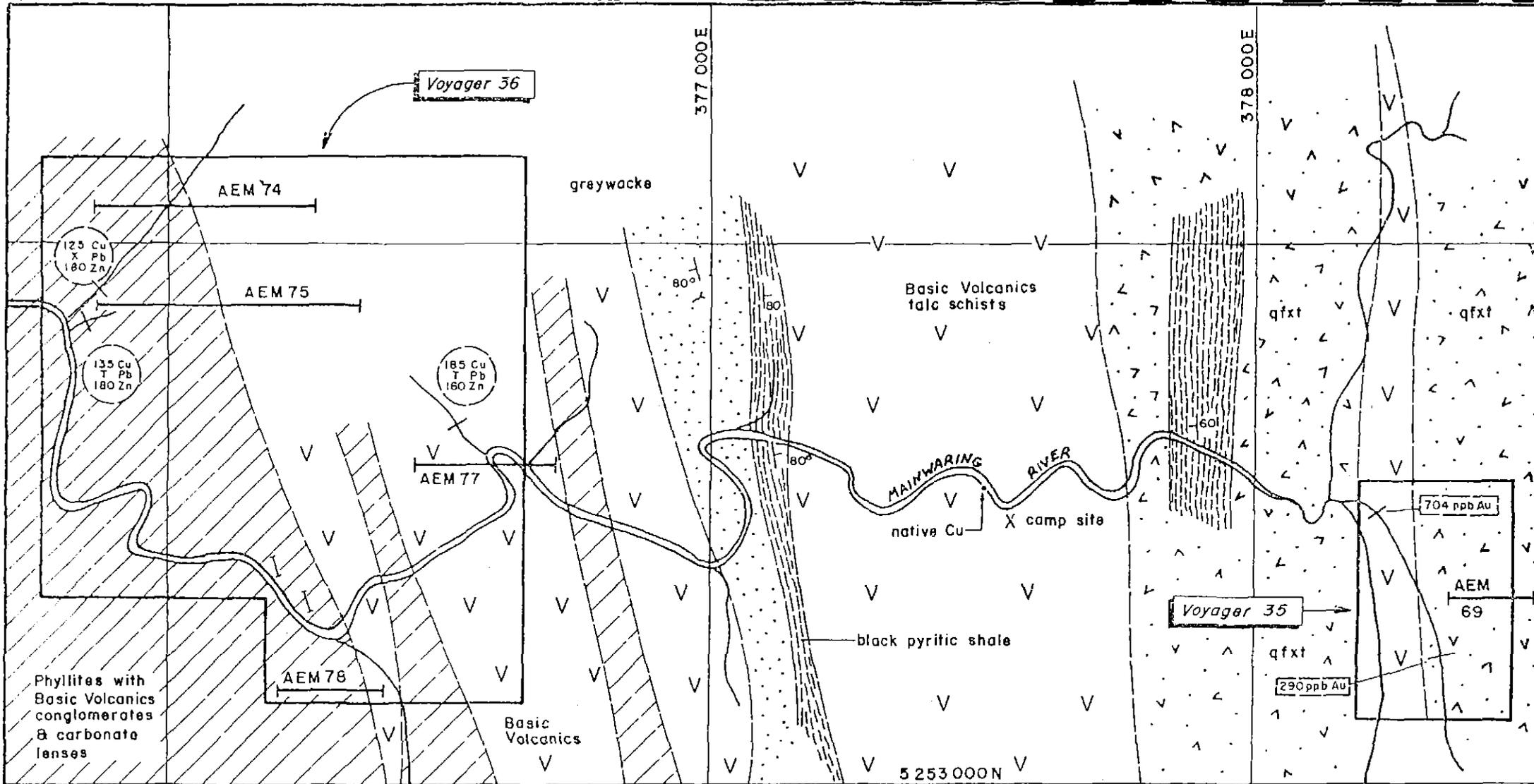
TASMANIA  
ELLIOTT BAY E.L. 40/85  
MAINWARING RIVER GROUP  
PROSPECTS

REVISIONS			
Init.	Date	Init.	Date

Compiled : SR  
 Drawn : RdeB  
 Traced : MAR  
 Checked :  
 Plate No. ~~5519~~ **fig 86**

Location Code : K55/7      Scale : 1:100 000      Date : December 1992

( not completed - see fia 69 )      fig 57



E.L.27/76 ELLIOTT BAY

1:10000

GEOLOGY ALONG THE MAINWARING RIVER AFTER POLTOCK (1981) SHOWING LOCATION OF VOYAGERS 35 & 36 AND AIRBORNE E.M. ANOMALIES.

425180

Fig 63



**Plate 1:** Low relief in foreground typical of Elliott Bay area. Mountain in the background is Mt Osmund (368 metres). Photo taken from east part of Elliott Bay looking west.



**Plate 2:** Typical undulating open heath country (Woolloomooloo Creek prospect)



**Plate 3:** Thick bauera in wet sclerophyll forest (Wanderer South prospect)

425182



Plate 4: Typical leached and bleached outcrop - rock in picture is porphyritic rhyolite.

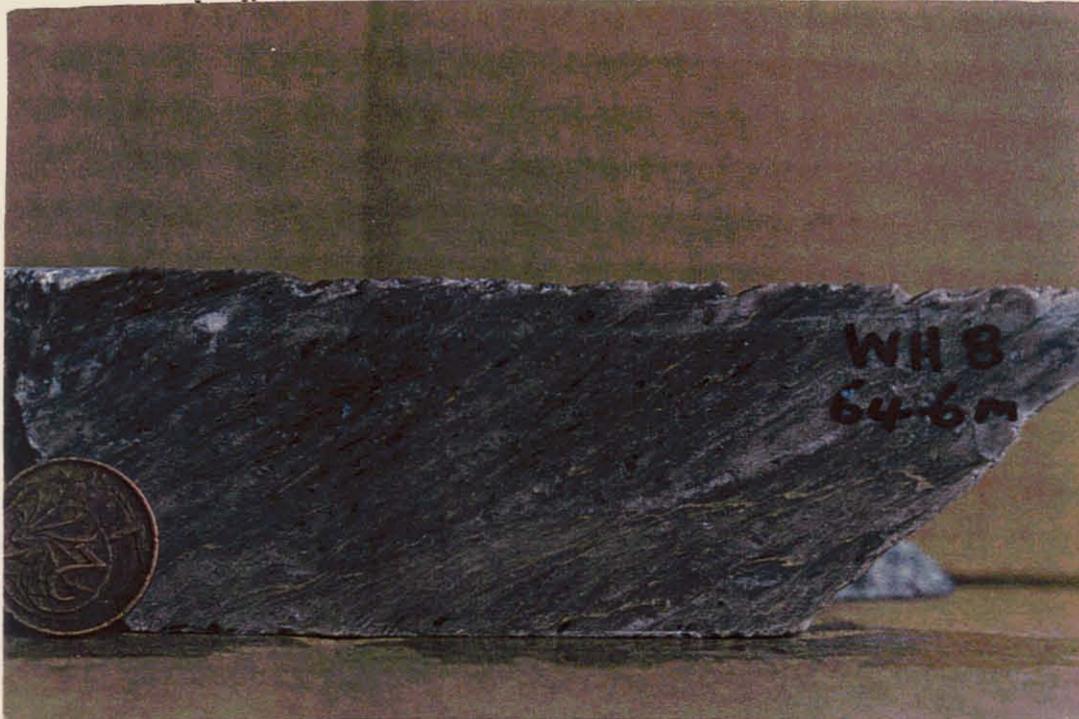


Plate 5: 64.6m in WH8. Rhyolitic quartz porphyry-ash flow tuff, quartz phenocryst, chloritic wisps may be glass and/or mafics (Poltock) from unit logged by Herrmann as a sericitic quartz phyric coherent massive rhyolite.



**Plate 6:** 81.6m in WH10. Epiclastic-coarse tuffaceous sandstone, 20% pyrite associated with sericite alteration (Poltock) from unit logged by Herrmann as "Sericitic massive polymictic lithic volcanoclastic sandstone and breccia".



**Plate 7:** 281.5m in WH12A. Host horizon equivalent. Breccia/conglomerate with clasts of banded pyrite and chert (centre), quartz porphyry, pumice (Poltock) from unit logged by Herrmann as polymictic with clasts of quartz phyric rhyolite and with a few small "lenses" of massive pyrite.

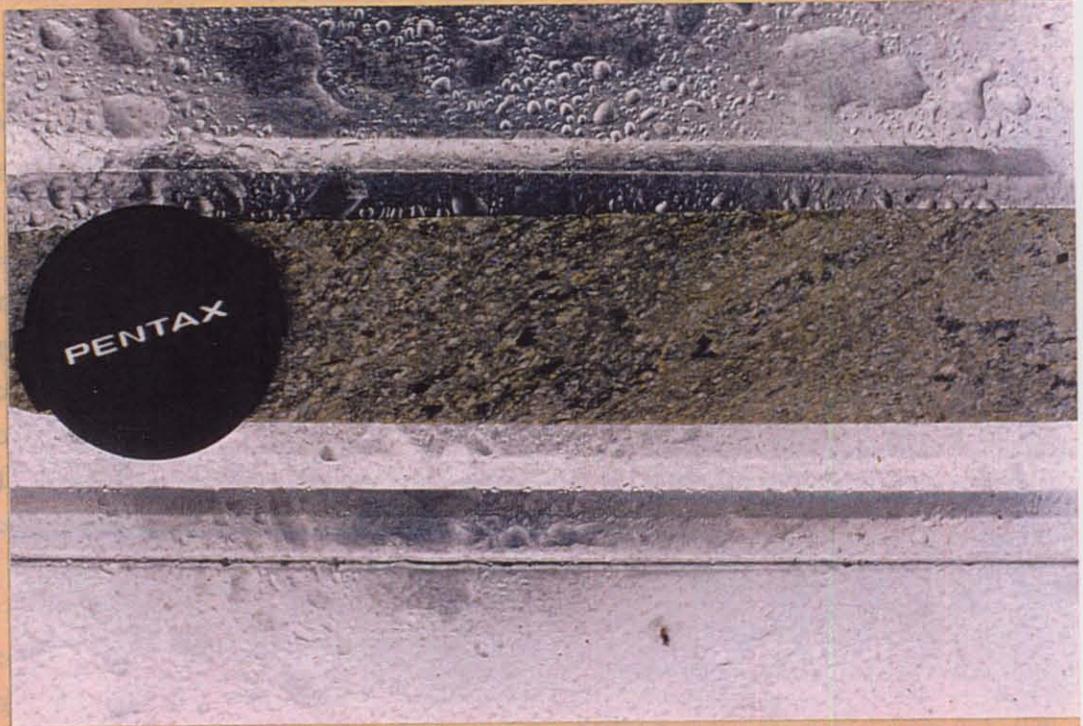


Plate 3: Rhyolitic tuff (WH1)



Plate 4: Epiclastic breccia. Clasts of marble (bottom left), grey pyritic chert (center bottom), massive sphalerite-galena (top right) and pyrite (top left) in green quartz-feldspar tuffaceous sandstone matrix (WH4)



Plate 10: Epiclastic sandstone/breccia containing massive sulfide fragments (browns and greys) in a green sericitized matrix



Plate 11: Epiclastic sandstone/breccia which has been altered to a carbonate-silica-chlorite assemblage and contains minor disseminated sulfides and veinlets of calcite and quartz



12a.



12b.

- 12 EBT-89-WH8  
 Massive sulfide intercept  
 124.85-185.95 = 1.1 m of 10.4% lead,  
 24.7% zinc, 0.63 g/t gold, 123 g/t silver



13 8 EBT-89-WH10  
Massive sulfide intercept  
185 - 190 = 5 m of 2.96% lead,  
6.04% zinc, 1.43 g/t gold, 31.6 g/t silver

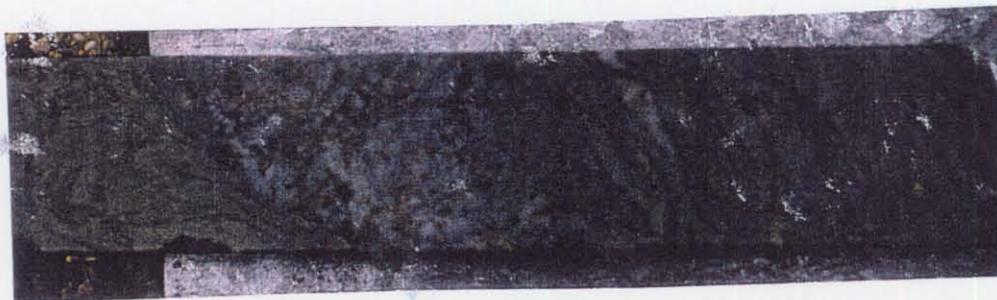


Plate 14. Sulphide Banding (disturbed) + carbonate on WH-8 intersection. (B) on plate 12a



Plate 15. Two limestone <sup>lenses</sup> (pale rock) interpreted by Poltock as "exhalite".

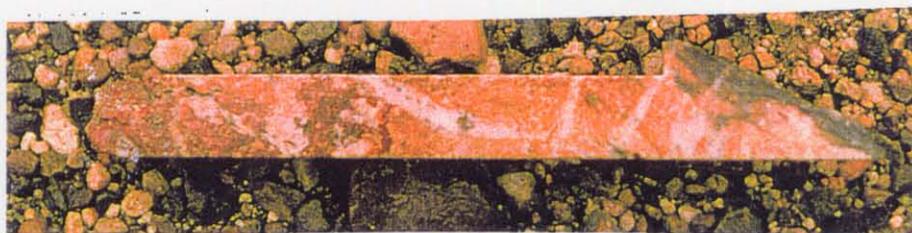


Plate 16. Upper contact of upper lens showing "haematitic chert + pyrite". (A) on plate 15.



Plate 17. Limestone from upper lens. (B) on plate 15.

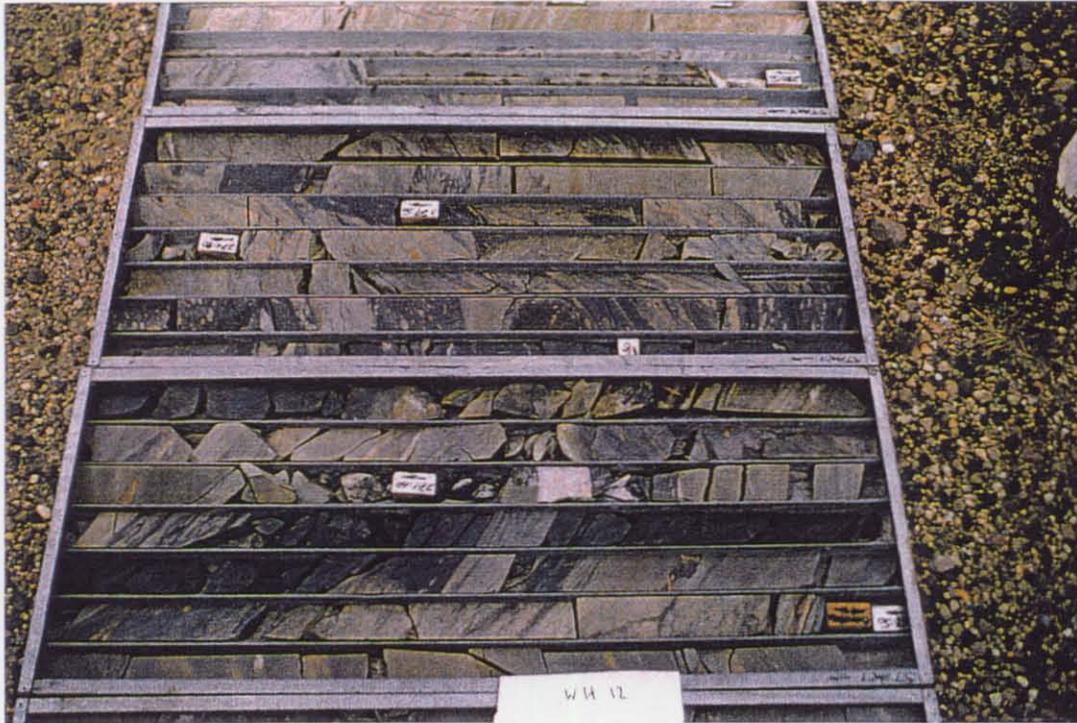
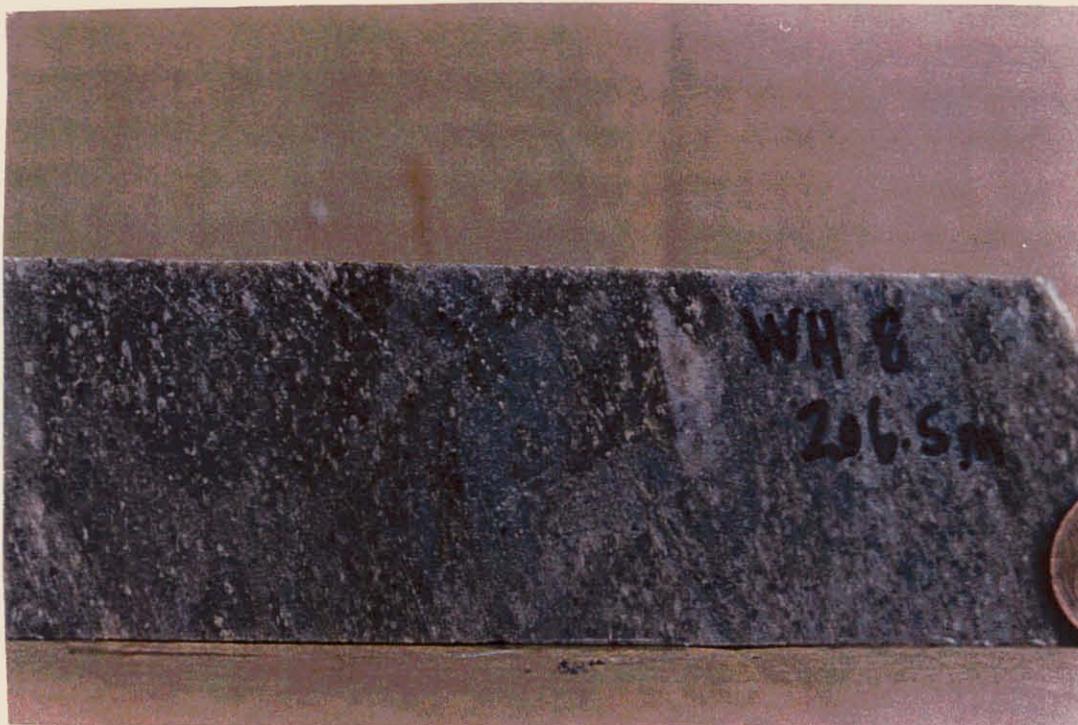


Plate 18. WH 12 A intersection showing interbedded shales, epiclastics and carbonates.



**Plate 19.** 206.5m in WH8; Pumice tuff-chloritised patches are interpreted to be pumice/glass clasts within a sericitic tuffaceous sandstone matrix (Poltock) from unit logged by Herrmann as a sericitic massive pumiceous rhyolite lithic breccia.



Plate 29: Banded massive sphalerite-galena-pyrite in WH4 (84-85m). Carbonate-quartz veining and alteration (bottom) overprints the massive sulfides

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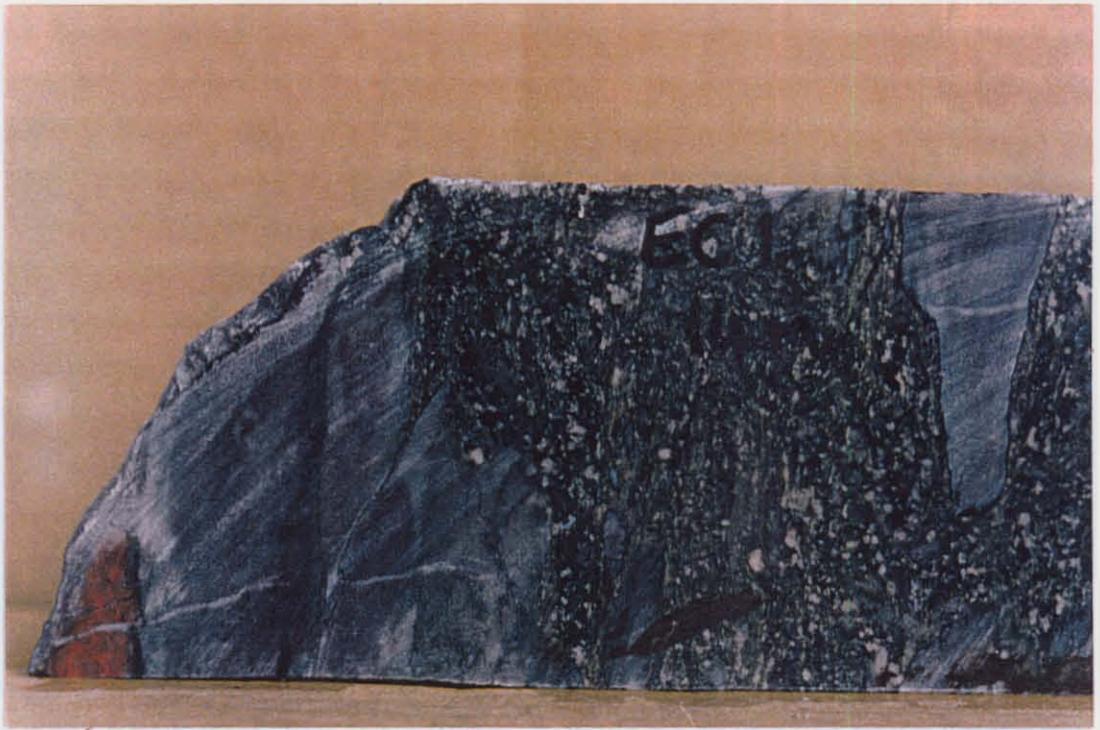


21. Wart Hill: Rig shift from Hole 6 to 7. Wart Hill in background

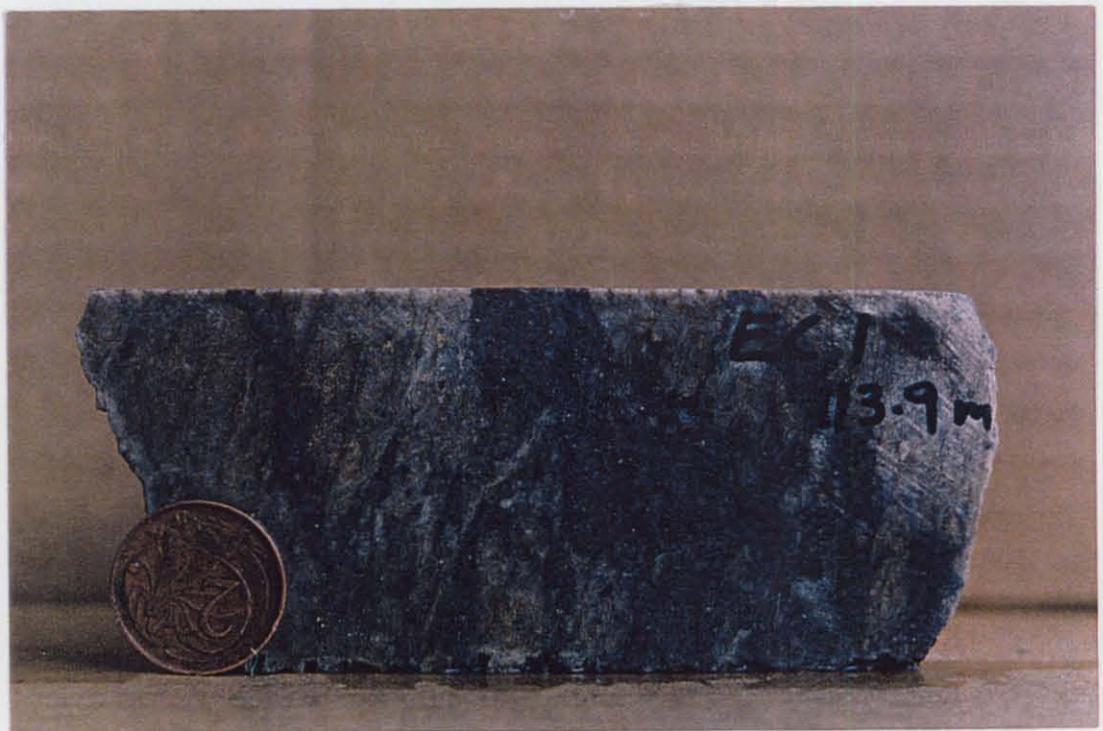


22.

3 Drill site EBT-89-WH12A at Wart Hill



23 EBT-89-EC1 14 m: Epiclastic with hematitic pyritic limestone clast



24 EBT-89-EC1  
113.9 m: Galena pyrite sphalerite band, part  
of 1 meter of 0.25% lead, 0.33% zinc



PLATE 25 Gossan from North Lewis containing fresh unoxidized pyrite (bottom right and top left).

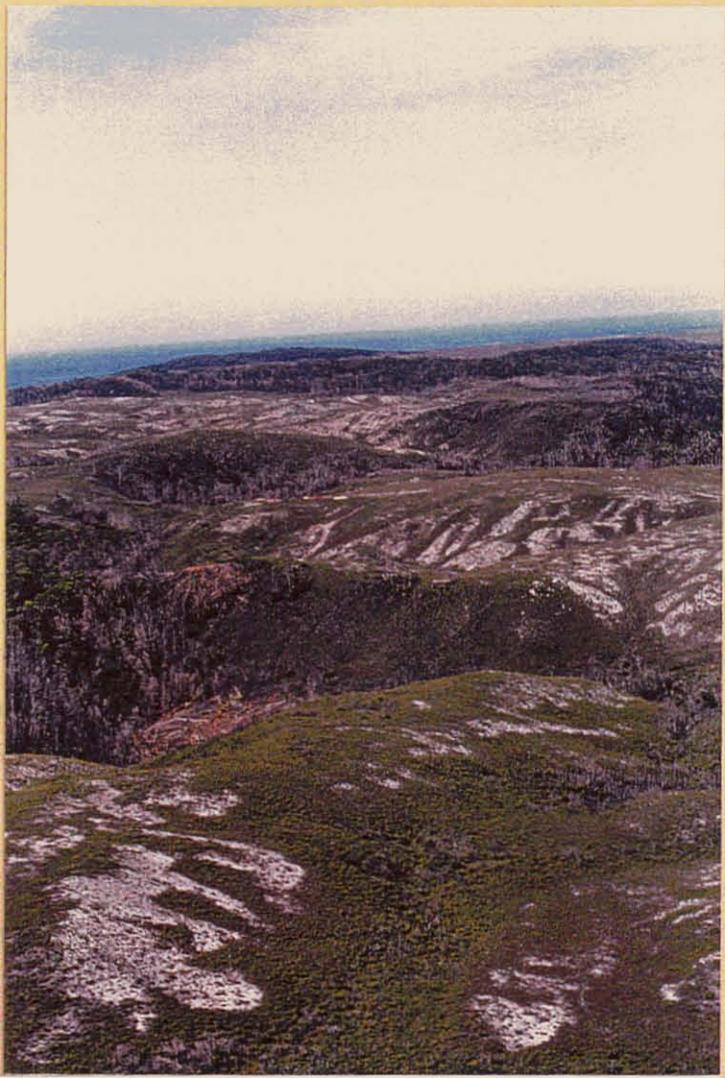


PLATE 26 Quartz-pyrite vein. Occurs adjacent to granite contact.

036

425197

27. North Lewis  
Prospect:  
Drill sites  
(looking south)



28. North Lewis Prospect: Diamond drilling at EBT-88-V12/10



29. North Lewis: Rig shift



30. Wart Hill Camp: Core logging and diamond saw set-up



Plate 31: Vein-Breccia Zone: Black tourmaline (upper right) is brecciated by chlorite-sulfide material (now oxidized)



Plate 32: Veinlet-Fracture Zone: Extensive fine veinlet formation. Locally open voids and numerous fracture orientations

TABLE 1. (continued)

425200

PROSPECT	DEFINITION	STYLE OF MINERALIZATION	WORK COMPLETED	SIGNIFICANT RESULTS	PRIORITY RATING
Voyager 31	Stream geochemical anomaly	Vein As-Pb-Zn-Ag mineralization along major lineament	<ul style="list-style-type: none"> <li>Gridding</li> <li>Mapping</li> <li>Soil sampling</li> <li>Rock chip sampling</li> </ul>	<ul style="list-style-type: none"> <li>Mineralization located in pyroclastics over a 1km length; erratic grade distribution, structurally controlled.</li> </ul>	B
Voyager 32	Area between Voyager 3 and Voyager 10 favourable stratigraphy	Stratiform Pb-Zn-Cu	<ul style="list-style-type: none"> <li>Regional geological mapping</li> <li>Rock chip sampling</li> </ul>	<ul style="list-style-type: none"> <li>Anomalous Cu in gossanous material from volcanic-sediment interface</li> </ul>	B
Voyager 33* <i>Drill Tested 1983/84</i>	Favourable stratigraphy N of V19 in western flank of the Mt Osmund syncline	Stratiform Pb-Zn-Cu	<ul style="list-style-type: none"> <li>Gridding</li> <li>Geological mapping</li> <li>Soil sampling</li> <li>VLF-EM</li> <li>Magnetics</li> <li>Pitting</li> </ul>	<ul style="list-style-type: none"> <li>Two good Pb-Zn-Ag soil geochemical anomalies located</li> <li>Costean revealed mineralization of 8m width @ 1.12Pb, 96gm/tAg.</li> <li>Strong coincident IP anomaly</li> </ul>	A <i>7.6m @ 1.24%Pb 0.8%Zn 5.0g/tAg</i>
Voyager 34*	Area having favourable stratigraphy on E of Mt Osmund syncline	Stratiform Pb-Zn-Cu	<ul style="list-style-type: none"> <li>Gridding</li> <li>Mapping</li> <li>Soil geochemistry</li> <li>Magnetics</li> <li>IP</li> </ul>	<ul style="list-style-type: none"> <li>Area of good Cu-Pb-Zn-Ag soil geochemistry located</li> <li>Weak IP character</li> </ul>	A
Voyager 35*	Drainage anomalies in Mainwaring group	Unknown	<ul style="list-style-type: none"> <li>No follow up</li> </ul>		B
	<u>PRIORITY RATING</u>	A - Good Potential B - Medium Potential C - Low Potential			
		* Prospects recommended for follow-up in 1983/84 season.			

TABLE 2 WART HILL/V19 DIAMOND DRILLING					
HOLE NO	CO-ORDS		AZI.	DECL.	FINAL DEPTH
V19/1	13300N	10125E	270°(T)	-45°	200.36m
V19/2	13000N	10010E	090°(T)	-45°	160.20m
V19/3	12650N	10006E	090°(T)	-45°	301.20m
V19/4	13045N	10040E	090°(T)	-45°	70.60m
V19/5	12000N	10275E	090°(T)	-45°	150.20m
EBT-88-WH1	13210N	10010E	090°(T)	-50°	78.50m
EBT-88-WH2	13210N	9985E	090°(T)	-50°	64.00m
EBT-88-WH3	13350N	10080E	270°(T)	-50°	69.20m
EBT-88-WH4	13150N	10040E	270°(T)	-50°	95.10m
EBT-88-WH5	13100N	10040E	270°(T)	-50°	82.50m
EBT-88-WH6	13100N	10090E	270°(T)	-50°	68.80m
EBT-88-WH7	13210N	10070E	270°(T)	-60°	120.00m
EBT-88-WH8	13210N	9887.5E	090°(T)	-50°	283.40m
EBT-89-WH9	13400N	10000E	090°(T)	-55°	233.00m
EBT-89-WH10	13050N	9900E	090°(T)	-50°	244.50m
EBT-89-WH11	12950N	9900E	090°(T)	-51°	264.70m
EBT-89-WH12	13050N	9850E	090°(T)	-65°	10.50m
EBT-89-WH12A	13050N	9850E	090°(T)	-70°	359.00m

TABLE 3 WART HILL/V19 - SIGNIFICANT INTERSECTIONS							
HOLE NO	FROM	TO	WIDTH	Pb(%)	Zn (%)	Au (g/t)	Ag (g/t)
V19/2	44.0	56.0	12m @	0.23	0.29		
WH2 incl.	32.0	36.0	4m @	0.70	2.38	0.09	19
	33.0	34.0	1m @	0.70	4.40	0.075	13
WH2 incl.	43.0	51.0	8m @	1.21	3.11	0.18	26
	44.0	45.0	1m @	3.40	10.67	0.275	52
WH4	53.3	54.3	1m @	5.53	11.18	0.085	74
	84.0	85.5	1.5m @	6.70	12.05	0.88	168
WH6	47.0	51.0	4m @	1.15	2.02	0.35	30
WH8	108.0	110.0	2m @	0.81	1.15	0.08	13.3
	184.85	185.95	1.1m @	7.78	23.55	0.59	122.0
	231.0	232.0	1m @	0.18	0.49	1.13	3.8
WH10	185.0	190.0	5m @	2.54	5.84	1.45	33.5

425202

TABLE 4

## WART HILL DIAMOND DRILLING - SUMMARY

Hole	Justification	From (m)	To (m)	Summary Log	Comments
EBT-88-WH1	Soil anomaly up to 1.7% zinc. Rockchips in old trench up to 39% zinc.	0.0	14.0	LAPILLI TUFF	Epiclastics first recognized. Alteration increasing downhole ie. toward Osmund Fault.  ● No Significant Mineralization
		14.0	37.8	MIXED LAPILLI TUFF & EPICLASTIC SEDIMENTS (Massive Sulfide Fragments)	
		37.8	73.8	PORPHYRITIC QUARTZ-FELDSPAR-BIOTITE TUFF 'Tiger striped' alteration increases in intensity downhole. (Carbonate-quartz-sericite)	
		73.8	76.9	EPICLASTIC SANDSTONE - ankerite veins	
		76.9	78.5	PORPHYRITIC QUARTZ-FELDSPAR-BIOTITE TUFF - mylonitized	
EBT-88-WH2	Soil anomaly up to 3000 ppm zinc. Coincident but subtle - UTEM - VLF - MAX-MIN - RESISTIVITY LOW anomalies.	0.0	11.0	TUFF	Pyritic stringer in chert may be responsible for geophysical anomalies. Massive sulfide intercept considered to be a large raft within the epiclastic sequence.  ● Significant Mineralization
		11.0	37.1	EPICLASTIC SEDIMENTS (Massive sulfide + chert fragments)	
		37.1	51.0	MASSIVE SULFIDE	
		51.0	64.0	EPICLASTIC SEDIMENTS	
EBT-88-WH3	Northern extension of the Lens 'A' geochemical anomaly up to 8300 ppm zinc.	0.0	26.7	PORPHYRITIC QUARTZ-FELDSPAR-BIOTITE TUFF	Epiclastic sequence intercepted - must pinch out before it reaches Geopako's V19/1.  ● No Significant Mineralization
		26.7	42.9	EPICLASTIC SANDSTONE & BRECCIA	
		42.9	48.7	DOLERITE	
		48.7	69.2	MASSIVE QUARTZ-FELDSPAR-BIOTITE PORPHYRY	
EBT-88-WH4	Soil anomaly up to 1.27% zinc. Broad weak - MAX-MIN anomaly.	0.0	2.1	MUDSTONE	Surface anomaly probably due to fault controlled mineralization.  78.3 to 83.6 Highly silicified and carbonated.  ● Significant Mineralization
		2.1	36.0	LAPILLI TUFF	
		36.0	45.4	EPICLASTIC SANDSTONE & BRECCIA	
		45.4	49.0	FAULT - Mineralized	
		49.0	54.3	EPICLASTIC SANDSTONE & BRECCIA	
		54.3	55.5	SULFIDE-CHERT BRECCIA	
		55.5	84.0	EPICLASTIC SANDSTONE & BRECCIA (Massive sulfide fragments)	
		84.0	85.4	MASSIVE SULFIDE	
		85.4	95.1	EPICLASTIC SANDSTONE & BRECCIA	

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TABLE 4 (Cont)

Hole	Justification	From (m)	To (m)	Summary Log	Comments	
EBT-88-WH5	Two soil anomalies up to 8250 ppm and 1600 ppm zinc.	0.0	7.5	TUFF		Surface anomalies due to sulfide fragments in epiclastics or fault controlled mineralization.
		7.5	27.5	EPICLASTIC SANDSTONE & BRECCIA	(Massive sulfide fragments)	
		27.5	30.5	FAULT (Melange)		
		30.5	43.0	EPICLASTIC SANDSTONE & BRECCIA	(Massive sulfide fragments)	
		43.0	46.0	TUFF		
		46.0	60.3	SILICIFIED STOCKWORK ZONE		
		60.3	63.0	EPICLASTIC SANDSTONE & BRECCIA		
		63.0	77.8	TUFF		
EBT-88-WH6	Two soil anomalies 1500 ppm and 2200 ppm zinc. Weak coincident - UTEM - VLF anomalies. Rockchip to 9.75% zinc and 4.17% lead.	0.0	42.0	PORPHYRITIC QUARTZ-FELDSPAR-BIOTITE TUFF	(Abundant Qtz-calcite-chlorite veins)	Eastern-most geochemical and geophysical anomalies not explained. Western-most geochemical anomaly due to sulfide fragments in epiclastics.
		42.0	68.8	EPICLASTIC SANDSTONE & BRECCIA	(Massive sulfide fragments)	
EBT-88-WH7	Assessment of geochemical anomalies targeted in holes WH1 & 2 at depth. Determination of dip.	0.0	90.5	PORPHYRITIC QUARTZ-FELDSPAR-BIOTITE TUFF	(Patchy silica-carbonate sericite alteration)	Westerly dip indicated.  • No Significant Mineralization
		90.5	117.5	EPICLASTIC SANDSTONE & BRECCIA	(Massive sulfide fragments)	
		117.5	120.0	PORPHYRITIC QUARTZ-FELDSPAR-BIOTITE TUFF		

TABLE 4 (cont.)

## WART HILL DIAMOND DRILLING - SUMMARY LOGS

Hole	Justification	From (m)	To (m)	Summary Log	Comments
EBT-89-WH8	Coincident Pb and Zn soil anomalies. UTEM anomaly. VLF-EM anomaly. Resistivity low. Max-Min anomaly. Offhole EM anomaly. Downdip test of sulfides in Wart Hill Epiclastics in WH-1 and 2. Intense alteration. Proximity to possible feeder zone (Osmund Fault). Test western part of Wart Hill Epiclastics. Apparent increase in size and abundance of sulfide clasts downdip. Gravity anomaly to west of geochemical anomalies.	0-	9.9	Rhyolitic quartz-biotite tuff	Significant mineralization 1.1m of 10.4% Pb, 24.7% Zn, 123 g/t Ag. Significant deflection of hole to north of section ending vertically beneath Lens A 13300N. Broad epiclastic sequence, clasts, carbonate/chert/pyrite. No massive galena sphalerite.
		9.9-	18.9	Metadolerite dike	
		18.9-	65.2	Rhyolite quartz-biotite tuff	
		65.2-	110.2	Epiclastic sandstone-breccia	
		110.2-	111.8	Metadolerite	
		111.8-	112.85	Epiclastic sandstone-breccia	
		112.85-	113.5	Metadolerite	
		113.5-	157.4	Epiclastic sandstone-breccia	
		157.4-	170.95	Rhyolitic quartz porphyry	
		170.95-	184.25	Epiclastic sandstone-breccia	
		184.25-	185.95	Banded massive sulfide	
		185.95-	233.95	Epiclastic sandstone-breccia	
		233.95-	272.1	Rhyolitic quartz porphyry	
272.1-	283.4	Coarse sandstone-conglomerate			
EBT-89-WH9	Coincident Pb and Zn soil anomalies. UTEM anomaly. VLF-EM anomaly (very broad). Intense alteration. Max-Min anomaly. Test Wart Hill Epiclastics at depth in north.	0-	82.55	Rhyolitic quartz/feldspar porphyry	No significant mineralization. Exhalite horizon hematites-carbonate, possible peripheral to a massive sulfide. Mixed meta dolerite intrusives? and epiclastics indicates fault zone. Intense silicification associated with faulting. Hole ends in Waterloo Creek Group sediments indicating presence of major thrust fault.
		82.55-	86.85	Epiclastic sandstone-breccia	
		96.85-	101.25	Metadolerite	
		101.25-	115.65	Carbonate rich epiclastic sandstone limestone-breccia	
		115.65-	117.1	Metadolerite	
		117.1-	118.2	Epiclastic breccia	
		118.2-	120.2	Metadolerite	
		120.2-	122.8	Epiclastic sandstone-breccia	
		122.8-	136.5	Metadolerite	
		136.5-	138.45	Epiclastic sandstone-breccia	
		138.45-	146.85	Metadolerite	
		146.85-	142.15	Epiclastic breccia	
		148.15-	152.1	Metadolerite	
152.1-	171.6	Epiclastic sandstone-breccia			
171.6-	174.2	Metadolerite/epiclastic sequence			

TABLE 4 (Cont)

Hole	Justification	From (m)	To (m)	Summary Log	Comments
EBT-89-WH9 (Cont)		174.2-	203.7	Epiclastic sandstone-breccia	
		203.7-	205.1	Conglomerate (Cambro-Ordovician)	
		205.1-	223.0	Quartzose sandstone (Cambro-Ordovician)	
EBT-89-WH10	Coincident Pb and Zn soil anomalies. UTEM anomaly. VLF-EM anomaly. Offhole EM anomaly (Hole WH-5). Max-Min anomaly. Test broad zone of Wart Hill Epiclastics with sulfide clasts incl. Lens B. Intense alteration. Extensive cherty exhalative rocks at surface.	0-	71.9	Rhyolite quartz porphyry	Significant mineralization 5 m of 2.86% Pb, 6.04% Zn, 31.6 g/t Ag, 1.43 g/t Au. The sulfide mineralization was interlayered with epiclastics, barite and chert.
		71.9-	114.85	Epiclastic sandstone-breccia	
		114.85-	121.05	Metadolerite dike	
		121.05-	185.6	Epiclastic sandstone-breccia	
		185.6-	189.65	Interbedded massive sulfide, barite, chert-epiclastic breccia	
	189.65-	244.5	Epiclastic sandstone-breccia		
EBT-89-WH11	Test the southern strike extent of sulfide mineralization. Southern continuation of Wart Hill UTEM axis.	0-	45.4	Quartz porphyry (porphyritic rhyolite)	No significant mineralization. Sequence dominated by epiclastic sandstone and breccia containing minor clasts of chert carbonate and massive pyrite.
		45.4-	66.0	Basalt	
		66.0-	103.76	Epiclastic breccia and sandstone	
		103.76-	148.25	Epiclastic sandstone	
		148.25-	149.25	Quartz feldspar biotite porphyry.	
		149.25-	151.4	Epiclastic conglomerate-breccia	
		151.4-	172.8	Epiclastic sandstone	
		172.8-	182.8	Epiclastic sandstone & conglomerate	
	182.8-	251.4	Epiclastic sandstone		
	251.4-	264.7	Epiclastic breccia-sandstone		

TABLE 4 (Cont)

Hole	Justification	From (m)	To (m)	Summary Log	Comments
EBT-89-WH12	Test WH10. Massive sulfide intercept down-dip.	0-	10.5	Rhyolite quartz porphyry	Hole abandoned due to redesigning.
EBT-89-WH12A	Test WH10. Massive sulfide intercept down-dip.	000.0-136.0		Rhyolite quartz porphyry	No significant mineralization. Target zone 260-282m interbedded carbonate-calcareous-pyritic shale, limestone, breccia/conglomerate with blocks of pyritic chert. Silicified pumice tuff and porphyry 320-359m.
		136.0-138.4		Epiclastic	
		138.4-150.5		Epiclastic-pumice tuff	
		150.5-185.9		Epiclastic-pumice tuff	
		185.9-196.2		Tuffaceous sandstone	
		196.2-217.5		Pumice tuff	
		217.5-259.1		Tuffaceous sandstone	
		259.1-259.8		Conglomerate-breccia	
		259.8-263.0		Tuffaceous sandstone	
		263.0-268.55		Tuffaceous sandstone with chert, shale and carbonate lenses	
		268.55-269.7		Conglomerate-tuffaceous sandstone	
		269.7-271.0		Shale	
		271.0-272.5		Tuffaceous sandstone	
		272.5-274.2		Limestone	
		274.2-275.8		Marble	
		275.0-278.75		Tuffaceous sandstone	
		278.75-279.4		Marble and marble conglomerate	
		279.4-282.2		Conglomerate	
		282.2-291.0		Pumice tuff and tuffaceous sandstone	
		291.0-322.5		Tuffaceous sandstone	
		322.5-343.2		Pumice tuff	
		343.2-359.0		Quartz porphyritic rhyolite	

## sample data sheet

CYPRUS

Despatch No  
Requested byOrder No  
Date

Project ELLIOTT BAY Prospect WART HILL Type 1/2 Drillcore

Sample Number	Coordinates, depth or location	Interval	Cu	Pb	Zn	Ag	As	Au	Ba
1 305532	WH-8	171-172	2450	1550	4050	12	23	0.01	1251
2 533		172-173	30	280	710	1.0	9	0.035	1531
3 534		175-176	40	425	1000	1.0	10	0.005	1346
4 535		180-181	10	130	380	0.5	4	0.005	1320
5 536		181-182	15	195	815	0.5	5	0.005	1260
6 537		182-183	40	2350	7400	3.5	4	0.01	1210
7 538		183-184	25	825	1600	1.5	11	0.005	1450
8 539		184-184.85	5	165	155	0.5	11	0.005	1851
9 540		184.85-185.95	2650	10.39	24.66	123	280	0.63	241
10 541		185.95-187	15	505	765	0.5	10	0.005	1531
11 542		187-188	25	290	385	0.5	2	0.005	1511
12 543		188-189	25	65	90	0.5	2	0.005	130
13 544		189-190	25	55	65	0.5	3	0.005	116
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TO ACCOMPANY FIGURE 4

CYPR

# sample data sheet

CYPRUS

Despatch No  
Requested by

Order No  
Date

Project ELLIOTT BAY Prospect WART HILL Type 1/2 Drillcore

Sample Number	Coordinates, depth or location	Interval	Cu	Pb	Zn	Ag	As	Au	Ba
1 305567	WH-9	97-98	125	560	950	0.5	32	10.005	1290
2 568		101-102	15	195	320	0.5	60	0.015	1160
3 569		103-104	20	845	1450	1.5	14	0.010	1120
4 570		105-106	20	310	510	10.5	6	0.010	1640
5 571		106-107	30	405	125	10.5	2	0.005	1340
6 572		107-108	25	105	60	10.5	7	10.005	1140
7 573		108-109	25	15	40	10.5	2	10.005	1250
8 574		109-110	25	5	45	10.5	2	0.005	1330
9 575		110-111	5	70	75	10.5	4	10.005	1370
10 576		111-112	10	50	45	10.5	3	10.005	1670
11 577		112-113	10	80	70	10.5	3	0.005	1760
12 578		113-114	15	435	435	0.5	7	10.005	1790
13 579		114-115	55	2450	450	3.5	12	0.005	1330
14 580		115-116	70	880	595	1.5	18	0.005	1640
15 581		116-117	10	60	155	10.5	13	0.005	1050
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## sample data sheet

CYPRUS

Despatch No  
Requested byOrder No  
Date

Project ELLIOTT BAY Prospect WART HILL Type 1/2 Drillcore

Sample Number	Coordinates, depth or location	Interval	Cu	Pb	Zn	Ag	As	Au	Ba
305641	WH-10	169-70	220	0.62%	1.2%	29	36	0.145	1790
642		170-71	240	0.54	1.2	18	50	0.170	1790
643		171-72	160	0.54	1.0	8	32	0.950	2830
644		172-73	105	0.29	1750	1.0	7	0.150	2120
645		173-74	150	0.82	7250	8.0	17	0.230	1070
646		174-75	20	0.17	2550	1.0	13	0.120	859
647		175-76	35	255	1550	10.5	20	0.025	1040
648		176-77	115	1150	2150	4.0	22	0.040	3780
649		177-78	10	145	590	10.5	12	0.010	1830
650		178-79	10	105	315	10.5	9	10.005	1740
651		179-80	95	0.32	745	6.0	28	0.015	1630
652		180-81	30	630	255	1.0	12	0.010	1180
653		181-82	5	135	145	0.5	11	10.005	970
654		182-83	5	70	130	10.5	8	10.005	690
655		183-84	5	85	185	10.5	15	0.005	1290
656		184-85	5	105	235	10.5	16	0.005	1670
657		185-86	490	2.0%	3.75%	19	25	0.045	2420
658		190-91	10	115	305	10.5	3	0.005	1500
659		191-92	5	25	245	10.5	2	10.005	750
660		192-93	5	15	205	10.5	1	10.005	1320
661		193-94	5	20	510	10.5	2	10.005	930
305611		186-87	990	0.16%	1.87%	15	47	1.540	1200
612		187-88	37	4.90	10.0	65	60	3.520	2000
613		188-89	71	7.15	13.1	53	46	1.080	640
614		189-90	445	0.63	1.17	5.5	25	0.50	990

TO ACCOMPANY FIGURE 5

CYPRUS

## sample data sheet

CYPRUS

Despatch No  
Requested byOrder No  
Date 15-5-89

Project ELLIOTT BAY Prospect WART HILL Type 1/2 DRILL CORE

Sample Number	Coordinates, depth or location	Interval	Cu	Pb	Zn	Ag	Au	Ba	
1	305848	WH-12A	260-261	20	875	905	3.0	0.02	1400
2	305849		261-62	5	60	165	0.5	0.005	1400
3	305850		262-63	30	120	215	1.5	0.005	1200
4	306167		263-64	5	80	185	0.5	0.016	1550
5	306168		264-65	5	35	85	0.5	0.005	1100
6	306169		265-66	5	110	365	1.0	0.010	1000
7	306170		266-67	10	270	710	1.5	0.005	870
8	306171		267-68	10	85	300	1.0	0.005	940
9	306172		268-69	10	70	315	1.0	0.005	720
10	306173		269-70	15	110	530	1.5	0.054	920
11	306174		270-71	20	175	1400	1.5	0.005	730
12	306175		271-72	10	50	210	1.0	0.005	1100
13	306176		272-73	15	105	215	1.0	0.005	1100
14	306177		273-74	40	520	1200	2.0	0.029	920
15	306178		274-75	80	1000	1850	3.5	0.027	2450
16	306179		275-76	20	360	750	1.5	0.015	1500
17	306180		276-77	10	50	140	0.5	0.009	1760
18	306181		277-78	10	60	140	1.0	0.005	1750
19	306182		278-79	15	140	285	1.0	0.010	1600
20	306183		279-80	10	150	215	1.0	0.007	1200
21	306184		280-81	10	100	330	0.5	0.005	1350
22	306185		281-82	10	70	220	1.0	0.005	1100
23	306186		282-83	5	40	520	0.5	0.010	1500
24	306187		283-84	5	25	405	0.5	0.005	1150
25									

TO ACCOMPANY FIGURE 7

CYPR

TABLE 4

## EAST CAMP DIAMOND DRILLING - SUMMARIES

Hole	Justification	From (m)	To (m)	Summary Log	Comments
EBT-89-EC1	Initial test of V29 target zone. Chargeability high/resistivity low. Anomalous soil Pb and Zn. Gravity anomaly. Sericite/chlorite alteration. UTEM anomaly.		0-178.5	Epiclastic sandstone & breccia (minor hematite/pyrite bearing limestone clasts).	No significant mineralization. Shales & limestone horizons intersected. Minor disseminated sulfides, predominantly pyrite.
EBT-89-EC2	Coincident Pb and Zn soil anomaly. Strike extension of gravity anomaly tested 150m to south. Sericite/chlorite alteration.	0- 43.4- 68.0- 68.0-	43.4 68.0 90.5	Tuffaceous sandstone (massive) Tuffaceous sandstone (bedded) Epiclastic breccia/tuff	No significant mineralization. Minor sulfides associated with quartz carbonate veining and dissemination. Hole was abandoned at 90.5m in shear zone.
EBT-89-EC2A	Coincident Pb and Zn soil anomaly. Strike extension of gravity anomaly tested 150m to south. Sericite/chlorite alteration.	51.0- 67.9- 81.4- 94.8- 94.8-	67.8 91.4 94.8 102.8	Tuffaceous sandstone Epiclastic breccia/tuff Sandstone siltstone Epiclastic breccia (trace trace pyrite throughout and clasts of galena/sphalerite and hematite quartz carbonate).	No significant mineralization. Hole wedged from 51m in EC2. Sulfide horizon 84.8-102.8m with dissemination and clasts of sulfide.
		102.8- 123.9- 123.9- 138.0- 138.0-	123.9 138.0 190.5	Sandstone Epiclastic breccia Sandstone	

TABLE 10 DRILLING SUMMARY - V24			
HOLE NO	DEPTH	BEST INTERSECTIONS, (g/t Au)	DESCRIPTION
V24-1	281.50	44-124m 80m @ 0.067	
V24-2	251.40	27-33m 6m @ 0.090 77-90m 13m @ 0.045 172-225m 53m @ 0.145 inc.202-206m 4m @ 2.7 208-209m 1m @ 0.6 216-217m 1m @ 0.95	visible gold in sphalerite veinlet  visible gold in 1cm carbonate quartz veinlet.
V24-3	167.10	40-125m 85m @ 0.052 125-128m 3m @ 17.5  128-167.1m 39.1m @ 0.145	vuggy sphalerite galena quartz pyrite vein to 4cm parallel to core.
V24-4	220.0	110-148m 38m @ 0.19 inc.111-112m 1m @ 3.5 167-180m 13m @ 0.055	veinlet of sphalerite galena

TABLE 11 V3 DIAMOND DRILLING SUMMARY			
HOLE NO	DEPTH	BEST INTERSECTION	DESCRIPTION
V3/1	30-80m	10-11m. 1m @ 0.34% Pb, 0.66 % Zn.	pyrite, sphalerite, galena veinlets in volcaniclastics siltstone
V3/2	30-70m	22-23m. 1m @ 0.11% Pb, 0.11% Zn.	minor sulphides within narrow fractures in sediments
V3/3	201-10m	87-88m. 1m @ 0.12% Pb, 0.62% Zn. 103-111m. 8m @ 0.06% Pb, 0.40% Zn. incl.104-105m. 1m @ 0.165%Pb, 1.25% Zn.	chloritic breccia disseminated sphalerite and pyrite in laminated chloritic vitric tuff

+ EB 1 DDH.

TABLE 12 DIAMOND DRILLING SUMMARY -V2

HOLE NO	DEPTH	TARGET	BEST INTERSECTION	DESCRIPTION
1.	33.0m	coincident IP & Pb geochemical anomaly	8-33m, 25m @ 0.36% Pb	fine galena-pyrite lenses parallel (?) to bedding in fine sediments
2.	47.0m	Cu-Pb geochemical anomaly		
3.	42.0m	Coincident IP, VLF-EM & Pb geochemical anomalies	22-34m, 12m @ 0.29% Pb	fine sericite /day /galena fractures parallel
4.	30.7m	Coincident IP and Cu geochemical anomalies.		
5*	54.75	Evaluate old workings.	8-13m, 5m @ 0.18% Cu & 0.04g/t Au.	massive siderite, sericite and quartz
6* (see Fig.36)	200.35m	Test mineralisation intersected in DDH1 at depth.	88-181m, 93m @ 0.31% Pb inc.  135-140m, 5m @ 2.24% Pb, 0.23% Zn and 0.017g/t Au  195-200m, 5m @ 0.18% Pb.	fine cross-cutting veinlets with quartz and siderite and as fine disseminations in fine to medium grained felsic . volcanoclastics.

TABLE 13 ANALYSES OF GOSSAN SAMPLES FROM NORTH LEWIS  
(Geopeko data)

Sample	Co-ordinates			Cu ppm	Pb ppm	Zn ppm	Ag ppm	As ppm	Au ppm
KR4951	002	S:008	W	0.26%	0.13%	580	4		0.035
4954	200	S:200	E	0.26%	0.26%	520	18		8.4
4955	500	S:030	W	0.13%	0.12%	115	10		0.185
4959	185	S:210	E	0.36%	0.64%	990	440		2.9
4961	100	S:300	E	20	90	0.70%	4		0.03
4963	180	S:140	E	520	0.68%	0.12%	166		265
4965	200	S:150	E	0.32%	0.22%	720	35		0.64
5001	184	S:212	E	0.48%	0.92%	530	80	0.92%	3.9
5002	184	S:212	E	0.32%	0.48%	890	290	0.63%	3.1
5003	184	S:212	E	0.40%	0.88%	0.17%	370	0.87%	3.9
5004	184	S:212	E	0.40%	0.66%	600	340	0.93%	3.4
5005	182.5S:	213.5E		0.19%	0.40%	510	125	0.36%	2.2
5006	182.5S:	213.5E		0.34%	0.82%	510	70	0.72%	1.9
5007	182.5S:	213.5E		0.18%	0.88%	640	195	0.56%	1.6
5008	180.5S:	214	E	0.23%	0.40%	230	100	0.50%	24
5009	180.5S:	214	E	0.38%	0.34%	220	120	0.54%	51.7
5010	183	S:125	E	1.33%	0.80%	0.12%	140	1.32%	29.4
5011	183	S:125	E	760	0.42%	0.11%	17	0.90%	10.8
5012	183	S:125	E	280	300	10	1	0.21%	0.39
5013	183	S:125	E	0.13%	0.38%	870	80	0.89%	9.6
5074	145	S:175	E	900	360	90	2	0.10%	0.085
5075	140	S:175	E	0.13%	520	310	3	0.43%	0.66
5076	135	S:195	E	0.32%	0.58%	690	10	0.49%	0.44
5077	085	S:210	E	0.30%	0.70%	85	25	1.17%	2.1
5078	205	S:195	E	0.17%	0.74%	990	20	0.93%	5

TABLE 4 NORTH LEWIS ROCKCHIP SAMPLING (CYPRUS SAMPLES)

425217

Sample	Co-ords	Description	Cu	Pb	Zn	Ag	As	Au
171663	440S: 40E	Quartz vein, mod FeOx veinlets	180	445	155	4.5	250	0.01
171664	470S: 25E	Rhyolitic tuff, major FeOx veinlets	310	585	190	2.5	3800	0.04
171665	440S: 00E	FeOx veinlets, trm Bx veinlets	1250	5750	915	31.5	4700	0.14
171666	500S: 50W	Quartz, trm Bx veinlets	395	145	65	2	800	0.03
171667	450S: 20W	Quartz, trm Bx veinlets, FeOx veinlets	475	1300	105	15	1.55%	1.09
171668	400S: 40W	Quartz, trm Bx veinlets	20	85	20	1	300	BLD
171669	425S: 10W	Quartz, trm Bx, FeOx veinlets	253	2000	95	19	4900	0.03
171670	390S: 5E	Quartz veinlets minor FeOx	325	795	100	3.5	150	BLD
171671	400S: 80E	FeOx veinlets	2480	1.3%	2050	53.5	1.25%	0.79
171672	350S: 75E	FeOx veinlets	505	2000	240	5.5	2100	0.14
171673	350S: 55E	Quartz veinlets minor FeOx	780	7400	555	7.5	8900	0.59
171674	315S: 55E	FeOx veinlets	655	3150	830	4.5	5500	0.65
171675	290S: 40E	Rhyolitic tuff, limonite stained	230	340	65	1	380	BLD
171676	215S:115W	Ferricrete	275	795	220	1.5	700	BLD
171677	205S: 45E	FeOx veinlets	1650	930	995	31	8300	1.65
171678	215S:130E	Quartz, trm Bx veinlets, FeOx	560	215	900	3.5	3400	0.13
171679	200S:198E	Gossan	160	175	25	48.5	1100	0.21
171680	175S:200E	Gossan	4550	8550	630	232	1.45%	2.63
171681	100S:199E	Gossan	2650	8150	1200	16.5	1.45%	4.72
171682	40S:250E	Quartz, trm Bx, FeOx veinlets	495	2650	125	3	9900	0.37
171683	20S:170E	Rhyolitic tuff, limonite stained	1510	140	95	3	880	0.03
171684	100N:150E	Quartz, pyrite veinlets	475	1275	BLD	201	2400	0.1
171685	80N:190E	FeOx veinlets	900	4200	500	2	9500	0.98
171686	180N:130E	FeOx veinlets	80	740	200	2	200	BLD
171687	150N:130E	Quartz, trm Bx	20	5	10	BLD	59	BLD
171688	150N:300W	Rhyolitic tuff	5	BLD	10	BLD	12	BLD
171689	150N:150W	Rhyolitic tuff	5	15	235	BLD	12	BLD
171690	75N: 35W	Quartz veinlets, spec hematite	10	15	40	BLD	17	BLD

TABLE 14 (cont.)

Sample	Co-ords	Description	Cu	Pb	Zn	Ag	As	Au
171691	375N:115E	Rhyolitic tuff, limonite	145	150	155	BLD	10	BLD
171692	75N:230E	Quartz, FeOx, pyrite veinlets	7800	2475	205	93	3700	0.33
171693	73N:330E	Quartz, FeOx, pyrite veinlets	2000	4175	300	13	4100	0.38
171694	71N:330E	Quartz, FeOx, pyrite veinlets, native Cu	2.85%	3000	335	34	4900	0.19
171695	250S: 60E	Gossan	1900	2750	1800	20	6500	0.51
171696	285S: 55E	Gossan	535	2125	560	16	4700	0.91
171697	180S:120E	Gossan	4.65%	8800	1900	161	2.4%	24.31
171698	140S:170E	Gossan, poss ferricrete	3600	1950	595	BLD	1.05%	1.15
171277	255N:275E	Gossan	2750	4.4%	420	133	2.75%	1.07
171278	100N:340E	FeOx veinlets in tuffs	200	525	25	11	700	0.01
171279	100N:300E	Ferricrete	80	80	25	0.5	320	BLD
171280	77N:330E	FeOx, pyrite veinlets	1.15%	4200	380	69	5700	0.52
180544	40N: 65E	Ferricrete	1750	735	380	BLD	1800	0.02
180545	75S:225E	Gossan	6025	1.77%	1200	383	3.05%	2.03
180546	260S:180E	FeOx, pyrite veinlets	8875	925	325	15	640	0.25
202999	70S:200E	Quartz, pyrite	510	1100	1900	39	3000	0.44

Abbreviations: trm - tourmaline, Bx - breccia, FeOx - iron oxide  
 Results in ppm unless stated otherwise

TABLE 15

## NORTH LEWIS DIAMOND DRILLING SUMMARIES

Hole No	Depth	Best Results				
		From	To	Width	Au (ppm)	As (ppm)
V12-1	30.6	4m 21m	6m 23m	4m @ 2m @	0.37 0.155	400 760
V12-2	17.3	none				
V12-3	90.0	21m 53m	25m 55m	4m @ 2m @	0.153 1.60	713 130
V12-4	475	22m 40m	28m 42m	6m @ 2m @	0.068 0.120	1400 730
V12-5	163.65	19m 38m 70m 76m 106m	20m 39m 71m 77m 107m	1m @ 1m @ 1m @ 1m @ 1m @	0.105 0.200 0.400 0.250 0.190	
V12-6	80.2	21m 26.5m 40m 54m	23m 28m 42m 56m	2m @ 1.5m @ 2m @ 2m @	0.38 0.15 0.19 0.15	1000 5200 1200 3300
V12/7	80.2	36m 66m	38m 68m	2m @ 2m @	0.17 0.17	3800 200
V12/8	69.0	26m	30m	4m @	0.28	6000
V12/9	70.7	36m	38m	2m @	0.25	3800
V12/10	49.5	10m 20m	16m 22m	6m @ 2m @	0.19 0.22	100 100

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TABLE 16 NORTH PORPHYRY CONTACT - ROCK SAMPLES

Sample	Cu	Pb	Zn	Ag	As	Au	Description
171440	40	35	70	-	3	-	Quartz phyrlic rhyolitic volcani- clastic, chloritized minor pyrite
171441	-	140	345	-	159	-	Gossan/ferricrete in stream bed at 202604/648
171442	-	-	20	-	2	-	Quartz veining with sericitized volcanics
171443	30	270	45	-	84	-	Limonitic volcanic with quartz veining
171444	45	310	395	-	35	0.025	Chloritized quartz phyrlic volcani- clastic with <20% pyrite, 5m north of 171443
171446	not analyzed						Microgranite with quartz chlorite veining
171447	45	195	55	2	-	0.03	Gossan and chloritized volcaniclastic
171448	15	455	500	-	12	-	Intensely sericitized volcaniclastic with <20% pyrite and minor galena
171449	80	115	100	3.5	55	0.03	Gossan and quartz chlorite veining
216351	not analyzed						Quartz feldspar biotite porphyry
216399	5	<5	10	-	-	-	Quartz veining within sericitized volcanics
202901	not analyzed						Foliated medium grained quartz phyrlic rhyolitic volcaniclastic

TABLE 17 PENDERS PROSPECT - ROCKCHIP SAMPLES (PPM)

Sample	Cu	Pb	Zn	Ag	As	Au	Description
171282	225	215	560	1	83	0.01	Silicified rhyolitic tuff minor py and malachite
171283	1950	10	505	-	94	0.065	Limonite-chlorite vein (0.5m)
171284	2.65%	220	940	27	450	0.675	Pyrite-magnetite-chlorite chalcopyrite massive sulfide as for 284
171285	9350	310	1800	20	550	0.2	
171286	435	70	630	1.5	31	0.02	Banded magnetite-pyrite chlorite bed (1.5m)
171287	590	-	160	2.5	6	-	Chloritic siltstone-minor py
171288	30	-	35	1	10	-	Carbonate-chlorite altered tuff with dissem pyrite
171289	15	5	50	0.5	2	-	Limonitic-chlorite tuff
171290	25	-	10	1	7	-	Chlorite-sericite-talc pyrite altered tuff
171291	30	-	30	1.5	32	0.04	Massive pyrite-quartz pod, 80% py
202713	85	5	15	-	43	-	Gossanous py-arsenopyrite quartz vein
202714	10	-	-	-	2	0.005	Quartz stockworked, quartz phyrlic tuff
202715	5	-	10	-	1	-	Chlorite altered, quartz stockworked tuff
202716	10	-	10	-	1	-	Sheared granite with quartz-chl-pyrite veins
202717	540	-	10	-	1	-	Chloritic microgranite with veins and dissem bn-cpy-py
202718	15	-	10	-	1	-	Chloritic tuff with veins and dissem of pyrite
202719	25	-	5	-	1	-	chloritic tuff with veins and dissem of pyrite
202737	1400	15	90	-	16	0.01	Quartz-chlorite-pyrite veins-minor cpy-malachite
202738	135	-	10	-	1	-	Quartz-chlorite vein
202739	770	-	40	-	58	0.01	Quartz-chlorite vein with trace malachite
202740	240	-	40	-	9	-	Quartz-chlorite vein
202741	8400	75	90	3	16	0.01	Quartz-chlorite vein with malachite and cpy

TABLE 18

Geopeko's <sup>best</sup> Rock Chips were:				
	Cu	Pb	Zn	Au (ppm)
pyrite-chalcopyrite zone from dolomite horizon	9800	30	70	0.185
dolomite with minor sulphides	1100	30	125	0.070
15m chip sample of shales stratigraphically above the dolomite horizon	1200	25	65	0.015

PROSPECT	DEFINITION	MINERALIZATION	COMPLETED	RESULTS	RATING
Voyager 1	Old Cu prospect	Cu-W Chemical Sediment	. Grid . Mapping . Soil geochem . IP . Turam . Magnetics . 2 JDM	. Magnetic anomaly . Turam anomaly	C
Voyager 2	Old Cu prospect	Stratiform Pb-Zn-Ag	. Grid . Mapping . Soil geochem . IP . 5 JDM . 1 200m DDM	. 5m at 2.21Pb, 29g/tAg in drill hole	B
Voyager 3	Old prospect	Stratiform Pb-Zn-Cu	. Grid . Mapping . Soil geochem . IP . VLF-EH . 2 JDM . 1 200m DDM	. Good soil Pb-Zn anomalies with coincident IP.. Drill holes intersected low grade mineralization	B
Voyager 4	A.E.M. anomaly Drainage Anomalies	Unknown	. Recy line of VLF-EH	. Anomaly not located	C
Voyager 5	Aeromagnetic Anomaly	Unknown	. Gridding . Magnetics . IP . 2 JDM	. No mineralization located	C
Voyager 6	Aeromagnetic Anomaly	Granite Contact Skarn?	. Gridding . Magnetics . VLF-EH	. Magnetic anomaly . Rock chip Cu, Pb, Au anomaly	C
Voyager 7	Aeromagnetic Anomaly	Unknown	. Gridding . Magnetics . Sampling . Soil	. No significant results	C
Voyager 8	Tin Stream Anomalies	Unknown	. Mapping . Pit sampling	. Source of Sn in Tertiary gravels	C
Voyager 9* <i>Tested by UTEM</i>	Aeromagnetic Anomaly Alteration zone	Stratiform Cu-Pb-Zn	. Gridding . Mapping . Magnetics . VLF-EH . Soil Sampling . IP . Gravity . 2 DDM . 1 JDM	. Good soil anomalies for Cu and for Pb + Zn. Chlorite stringer zone in drill core . IP anomalies revealed 1982/83 survey	A
Voyager 10	Pb-Zn Stream anomaly	Stratiform Pb-Zn-Cu	. Gridding . IP . Sampling . Soil	. No IP anomalies . Weak soil anomalies	C
Voyager 11	Airborne EM	Unknown	. Recy lines of VLF-EH	. Anomaly not located	C
Voyager 12	Au-Ag gossans	Epigenetic Au-Ag veins	. Gridding . Geology . IP . SP . VLF-EH . 4 JDM . 1 160m DDM	. Weak mineralization located	C
Voyager 14	Aeromagnetic Anomaly	Unknown	. Recy lines of magnetics	. Narrow anomaly located	C
Voyager 15	Aeromagnetic Anomaly	Unknown	. No work to date		C
Voyager 16	Aeromagnetic Anomaly Drainage Pb-Zn Anomaly	Stratiform Pb-Zn-Cu	. Gridding . Geology . Soil Sampling . Au panning . Magnetics	. Anomalous Au in streams . Good Cu Pb Zn Fe soil anomaly	C

Voyager 17	Aeromagnetic Anomaly	Unknown	<ul style="list-style-type: none"> <li>One grid line</li> <li>Magnetics</li> <li>Soil Sampling</li> </ul>	<ul style="list-style-type: none"> <li>Weak magnetic anomaly</li> </ul>	C
Voyager 18	Copper bearing outcrops	CPY-dolomite in basic volcanics	<ul style="list-style-type: none"> <li>Mapping</li> <li>Rock chip sampling</li> </ul>	<ul style="list-style-type: none"> <li>15m of 0.1% Cu in shales</li> </ul>	C
Voyager 19 <i>Tested by UTEM</i>	Large alteration zone Anomalous rock chip samples	Stratiform Cu-Pb-Zn-Ag	<ul style="list-style-type: none"> <li>Gridding</li> <li>Mapping</li> <li>Magnetics</li> <li>VLF-EM</li> <li>Gravity</li> <li>Soil Sampling</li> <li>IP</li> <li>Costeaming</li> <li>3 DDI</li> </ul>	<ul style="list-style-type: none"> <li>Massive galena-sphalerite mineralisation located in two zones 250m apart</li> <li>Weak IP anomaly revealed 1982/83</li> </ul>	A
Voyager 20	Coseismic zone Pb-Zn stream anomaly	Stratiform Pb-Zn-Cu	<ul style="list-style-type: none"> <li>Reconnaissance</li> <li>Gridding</li> <li>Mapping</li> <li>Soil Sampling</li> <li>Magnetics</li> </ul>	<ul style="list-style-type: none"> <li>Soil geochemical anomalies located at favourable stratigraphic position</li> </ul>	B
Voyager 21	A.E.M. Anomaly	Cu chemical Sediment	<ul style="list-style-type: none"> <li>Gridding</li> <li>Magnetics</li> <li>Turam</li> <li>Soil Sampling</li> </ul>	<ul style="list-style-type: none"> <li>Linear magnetic anomaly</li> <li>Weak turam anomaly</li> </ul>	C
Voyager 22	Sericite-chlorite Alteration Zone	Stratiform Cu-Pb-Zn	<ul style="list-style-type: none"> <li>Gridding</li> <li>Soil Sampling</li> <li>Magnetics</li> <li>Mapping</li> </ul>	<ul style="list-style-type: none"> <li>Moderate soil geochemical anomaly located</li> <li>No significant IP</li> </ul>	B
Voyager 23	Copper Bearing outcrops	CPY-dolomite in basic tuffs	<ul style="list-style-type: none"> <li>Mapping</li> <li>Rock chip sampling</li> </ul>	<ul style="list-style-type: none"> <li>Weak Cu mineralization located</li> </ul>	C
Voyager 24 <i>Drilled in 1983/84</i>	Au drainage anomaly	Vein or porphyry gold in rhyolitic agglomerates and tuffs	<ul style="list-style-type: none"> <li>Gridding</li> <li>Mapping</li> <li>Panned concentrate sampling</li> <li>Soil sampling</li> <li>Costeaming</li> <li>Resistivity</li> <li>300m DDI</li> </ul>	<ul style="list-style-type: none"> <li>Gold source traced to rhyolitic tuffs and silicified agglomerates.</li> <li>Coincident base metal anomalies</li> <li>IP anomalies revealed 1982/83</li> </ul>	A
Voyager 25	Pb-Zn-U drainage anomaly	Stratiform Pb-Zn-Cu	<ul style="list-style-type: none"> <li>Reconnaissance mapping only</li> </ul>		C
Voyager 26	Airborne E.M. anomalies	Cu-dolomite type	<ul style="list-style-type: none"> <li>Gridding</li> <li>Mapping</li> <li>Soil Sampling</li> <li>Magnetics</li> </ul>	<ul style="list-style-type: none"> <li>No significant mineralization Anomaly caused by black shales?</li> </ul>	C
Voyager 27	Pb-Zn drainage anomaly	Stratiform Pb-Zn-Cu	<ul style="list-style-type: none"> <li>No work done</li> </ul>		B
Voyager 28	Anomalous Au in soil sampling	Vein style Au?	<ul style="list-style-type: none"> <li>Geological reconnaissance</li> <li>Soil sampling</li> </ul>	<ul style="list-style-type: none"> <li>Gold believed to have a source in Tertiary gravel cover. Good single station base metal anomaly located</li> </ul>	C
Voyager 29 <i>Tested by UTEM</i>	Anomalous Ag-Pb-Zn in reconnaissance soil samples	Stratiform Pb-Zn-Ag	<ul style="list-style-type: none"> <li>Gridding</li> <li>Soil sampling</li> <li>Mapping</li> <li>VLF-EM</li> <li>Magnetics</li> <li>IP</li> <li>Gravity</li> <li>Pitting</li> </ul>	<ul style="list-style-type: none"> <li>Good soil geochemical Pb Zn Ag anomalies, highest value of 7% Cu Pb Zn.</li> <li>The best geochemical anomaly has coincident IP, gravity and SP response</li> <li>Deep IP anomaly on western side of grid</li> </ul>	A
Voyager 30	Anomalous Au-Sn in streams	Gold vein style	<ul style="list-style-type: none"> <li>Panned concentrate sampling</li> <li>Gridding</li> <li>Mapping</li> <li>Pitting</li> <li>VLF-EM</li> <li>Magnetics</li> <li>Soil sampling</li> <li>IP</li> </ul>	<ul style="list-style-type: none"> <li>Au source related to tuff horizon within Wart Hill pyroclastics.</li> <li>Coincident IP, SP VLF-EM magnetic and base metal soil anomaly</li> <li>Pb-Zn-Ag-Au mineralization located in quartz veins</li> <li>Complex IP response</li> </ul>	A